

---

# Vital and Health Statistics

---

## Health Data on Older Americans: United States, 1992

Series 3:  
Analytic and Epidemiological Studies  
No. 27

Includes data from various sources concerning the health status and determinants of health of older persons. Data on persons aged 55–64 years are included for comparison purposes

---

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Public Health Service  
Centers for Disease Control and Prevention  
National Center for Health Statistics

Hyattsville, Maryland  
January 1993  
DHHS Publication No. (PHS) 93-1411

#### Trade name disclaimer

The use of trade names is for identification only and does not imply endorsement by the Public Health Service, U.S. Department of Health and Human Services.

---

#### Copyright Information

All material appearing in this report, except for Chapter 11 where specific source is given, is in the public domain and may be reproduced or copied without permission; citation as to source, however, is appreciated.

---

#### Suggested Citation

Van Nostrand, JF, Furner SE, Suzman R, eds. Health data on older Americans: United States, 1992. National Center for Health Statistics. Vital Health Stat 3(27). 1993.

---

#### Library of Congress Cataloging-in-Publication Data

Health data on older Americans : United States, 1992.  
p. cm. — (DHHS publication ; no. (PHS) 93-1411) (Vital and health statistics. Series 3, Analytical and epidemiological studies ; no. 27)  
Includes bibliographical references.  
ISBN 0-8406-0470-X

1. Aged—Health and hygiene—United States—Statistics. 2. United States—Statistics, Medical. I. National Center for Health Statistics (U.S.) II. Series. III. Series: Vital and health statistics. Series 3, Analytical and epidemiological studies ; no. 27.

[DNLM: 1. Aged. 2. Health Services for the Aged—United States—statistics. 3. Health Status. 4. Health Surveys—United States. W2 A N148vc no.27]

RA407.3.H4 1992

362.1'9897'00973021 -- dc20

DNLM/DLC

for Library of Congress

92-48880  
CIP

---

## **National Center for Health Statistics**

Manning Feinleib, M.D., Dr.P.H., *Director*

Jack R. Anderson, *Acting Deputy Director*

Jacob J. Feldman, Ph.D., *Associate Director for Analysis and Epidemiology*

Gail F. Fisher, Ph.D., *Associate Director for Planning and Extramural Programs*

Peter L. Hurley, *Associate Director for Vital and Health Statistics Systems*

Robert A. Israel, *Associate Director for International Statistics*

Stephen E. Nieberding, *Associate Director for Management*

Charles J. Rothwell, *Associate Director for Data Processing and Services*

Monroe G. Sirken, Ph.D., *Associate Director for Research and Methodology*

David L. Larson, *Assistant Director, Atlanta*

## **Office of Vital and Health Statistics Systems**

Peter L. Hurley, *Associate Director for Vital and Health Statistics Systems*

Joan F. Van Nostrand, *NCHS Coordinator of Data on Aging*

# Contents

## Part I. Introduction

Background by <i>Joan F. Van Nostrand, Sylvia E. Furner, and Richard Suzman</i> .....	1
---	---

## Part II. Health status

Chapter 1. Measures of health by <i>Robin Mermelstein, Baila Miller, Thomas Prohaska, Veronica Benson, and Joan F. Van Nostrand</i> .....	9
Chapter 2. Functional status and living arrangements by <i>Thomas Prohaska, Robin Mermelstein, Baila Miller, and Susan Jack</i> .....	23
Chapter 3. Changes in functional status and risk of institutionalization and death by <i>Baila Miller, Thomas Prohaska, Robin Mermelstein, and Joan F. Van Nostrand</i> .....	41
Chapter 4. Mortality by <i>Sylvia E. Furner, Jeffrey Maurer, and Harry Rosenberg</i> .....	77

## Part III. Health care use and its cost

Chapter 5. Acute care by <i>Sylvia E. Furner and Lola Jean Kozak</i> .....	115
Chapter 6. Selected issues in long-term care: Profile of cognitive disability of nursing home residents and the use of informal and formal care by elderly in the community by <i>Joan F. Van Nostrand, Baila Miller, and Sylvia E. Furner</i> .....	143
Chapter 7. Patterns of drug prescribing by <i>Todd P. Selma, Arthur Schwartz, Hugo Koch, and Cheryl Nelson</i> .....	187
Chapter 8. Cost of health care and sources of payment by <i>Lawrence J. Frateschi and Sylvia E. Furner</i> .....	209

## Part IV. Special topics

Chapter 9. Health of older black Americans by <i>Karen Smith Blesch and Sylvia E. Furner</i> .....	229
Chapter 10. Musculoskeletal disorders: Time trends, comorbid conditions, self-assessed health status, and associated activity limitations by <i>Toni P. Miles, Katherine Flegal, and Tamara Harris</i> .....	275
Chapter 11. International aging by <i>Toni P. Miles and Jacob Brody</i> .....	289

## Part V. Appendixes

I. Technical notes on methods .....	301
II. How to order PC Lotus Diskette of tables .....	307
III. Guide to tables .....	309

## List of tables

### Chapter 1

Table 1. Average annual percent distribution of persons 55 years of age and over by respondent-assessed health status, according to sex, race, and age: United States, 1985–87 .....	14
Table 2. Percent distribution of persons 65 years of age and over by number of activities of daily living for which difficulty was reported, according to sex, age, and respondent-assessed health status: United States, 1986.....	15
Table 3. Percent distribution of persons 65 years of age and over by number of instrumental activities of daily living for which difficulty was reported, according to sex, age, and respondent-assessed health status: United States, 1986.....	17
Table 4. Average annual number of selected reported acute conditions per 1,000 persons 55 years of age and over, by type of acute condition, race, sex, and age: United States, 1985–87....	19
Table 5. Average annual number of selected reported impairments per 1,000 persons 55 years of age and over, by type of impairment, race, sex, and age: United States, 1985–87.....	20
Table 6. Average annual number of selected reported chronic conditions per 1,000 persons 55 years of age and over, by type of chronic condition, sex, and age: United States, 1979–81, 1982–84, and 1985–87.....	21

### Chapter 2

Table A. Percent who reported “does not do” for instrumental activities of daily living, by sex and age .....	24
Table B. Percent distribution of persons with difficulty in activities of daily living and instrumental activities of daily living, by sex and age .....	26
Table 1. Percent distribution of persons 65 years of age and over by number of activities of daily living for which difficulty was reported and percent of persons who received the help of another person in performing activities of daily living, according to race, sex, and age: United States, 1986.....	29
Table 2. Percent of persons 65 years of age and over with reported difficulty performing activities of daily living, by race, sex, and age: United States, 1986 .....	30
Table 3. Percent of persons 65 years of age and over who reported receiving the help of another person with performing activities of daily living, by race, sex, and age: United States, 1986.....	31
Table 4. Percent distribution of persons 65 years of age and over by number of instrumental activities of daily living for which difficulty was reported and percent of persons who received the help of another person in performing instrumental activities of daily living, according to race, sex, and age: United States, 1986 .....	32
Table 5. Percent of persons 65 years of age and over with reported difficulty performing instrumental activities of daily living, by race, sex, and age: United States, 1986 .....	33
Table 6. Percent of persons 65 years of age and over who reported receiving the help of another person with performing instrumental activities of daily living, by race, sex, and age: United States, 1986.....	34
Table 7. Percent distribution of persons 65 years of age and over by living arrangement, according to race, age, and sex: United States, 1986 .....	35
Table 8. Percent distribution of persons 65 years of age and over by number of activities of daily living for which difficulty was reported, according to living arrangement, sex, and age: United States, 1986 .....	36
Table 9. Percent of persons 65 years of age and over with reported difficulty performing activities of daily living, by living arrangement, sex, age, and activity: United States, 1986 .....	37
Table 10. Percent distribution of persons 65 years of age and over by number of instrumental activities of daily living for which difficulty was reported, according to living arrangement, sex, and age: United States, 1986 .....	38

Table 11. Percent of persons 65 years of age and over with reported difficulty performing instrumental activities of daily living, by living arrangement, sex, age, and activity: United States, 1986.....	39
--	----

### Chapter 3

Table A. Percent distribution of persons 70 years of age or over by extent of difficulty in performing activities of daily living in 1984 and at 1986 recontact for those living in the community between 1984 and 1986.....	44
Table B. Percent distribution of persons 70 years of age or over, by extent of difficulty in performing instrumental activities of daily living in 1984 and at 1986 recontact for those living in the community between 1984 and 1986.....	46
Table 1. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to age, sex, and 1984 marital status: United States.....	48
Table 2. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to number of activities of daily living for which difficulty or the help of another person was reported in 1984: United States.....	49
Table 3. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to number of instrumental activities of daily living for which difficulty or the help of another person was reported in 1984: United States.....	50
Table 4. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with performing activities of daily living reported in 1984: United States.....	51
Table 5. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with bathing reported in 1984: United States.....	54
Table 6. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with dressing reported in 1984: United States.....	56
Table 7. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with walking reported in 1984: United States.....	58
Table 8. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with transferring reported in 1984: United States.....	60
Table 9. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with performing instrumental activities of daily living reported in 1984: United States.....	62
Table 10. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with meal preparation reported in 1984: United States.....	64
Table 11. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with shopping reported in 1984: United States.....	66
Table 12. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with heavy housework reported in 1984: United States.....	68
Table 13. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with walking up 10 steps reported in 1984: United States.....	70
Table 14. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with walking one-quarter mile without rest reported in 1984: United States.....	72

Table 15. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with lifting 25 pounds reported in 1984: United States .....	74
---	----

**Chapter 4**

Table A. Provisional death rates for all causes, according to race, sex, and age: 1988–90 .....	78
Table B. Comparison of death rates per 100,000 for persons 65 years of age and over: 1960–86.	79
Table C. Percent change in death rates for persons 55 years of age and over, according to age, sex, and race: 1960–86 .....	80
Table D. Life expectancy at 65 years of age, according to race and sex: 1986–90 .....	81
Table E. Percent change in death rates for diseases of the heart for persons 55 years of age and over, according to age, sex, and race: 1980–86.....	81
Table F. Comparison of age-adjusted death rates per 100,000 for diseases of the heart for persons 65 years of age and over: 1960–86 .....	82
Table G. Percent change in death rates for cancer for persons 55 years of age and over, according to age, sex, and race: 1980–86 .....	82
Table H. Comparison of age-adjusted death rates per 100,000 for cancer for persons 65 years of age and over: 1960–86 .....	83
Table J. Percent change in death rates for respiratory cancer for persons 55 years of age and over, according to age, sex, and race: 1980–86.....	83
Table K. Comparison of age-adjusted death rates per 100,000 for respiratory cancer for persons 65 years of age and over: 1960–86 .....	84
Table L. Percent change in death rates for cerebrovascular disease for persons 55 years of age and over, according to age, sex, and race: 1980–86.....	84
Table M. Comparison of age-adjusted death rates per 100,000 for cerebrovascular disease for persons 65 years of age and over: 1960–86 .....	84
Table N. Percent change in death rates for diabetes mellitus for persons 55 years of age and over, according to age, sex, and race: 1980–86 .....	84
Table O. Percent change in death rates for suicide for persons 55 years of age and over, according to age, sex, and race: 1980–86 .....	85
Table 1. Death rates for all causes among persons 55 years of age and over, by sex, race, and age: United States, selected years 1960–86 .....	87
Table 2. Life expectancy at specified ages, by race and sex: United States, selected years 1960–86 .....	89
Table 3. Life expectancy at individual ages 65–85 years, by race and sex: United States, 1986...	90
Table 4. Death rates for the 10 leading causes of death in rank order among persons 55 years of age and over: United States, 1986 .....	91
Table 5. Death rates for diseases of the heart among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86.....	93
Table 6. Death rates for malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues, among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86 .....	95
Table 7. Death rates for malignant neoplasms of the respiratory and intrathoracic organs among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86 ..	97
Table 8. Death rates for cerebrovascular diseases among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86.....	99
Table 9. Death rates for diabetes mellitus among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86 .....	101
Table 10. Death rates for pneumonia and influenza among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86 .....	103

Table 11. Death rates for suicide among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86 .....	105
Table 12. Number of deaths from the 10 leading causes of death in each age-sex-race group among persons 65 years of age and over, by reported or underlying cause and ratio of reported causes to underlying causes: United States, 1986.....	107

## Chapter 5

Table 1. Average annual number of physician visits per person, by race, sex, respondent-assessed health status, and age: United States, 1985–87 .....	121
Table 2. Number of mentions of most common patient reasons for a physician visit for ambulatory patients 55 years of age and over and rank for males and females, by age: United States, 1985 .....	122
Table 3. Percent of office visits by persons 55 years of age and over to selected physician specialists, by sex and age: United States, 1985 .....	124
Table 4. Number of mentions of most frequent all-listed diagnoses for ambulatory patients 55 years of age and over and rank for males and females, by age: United States, 1985.....	125
Table 5. Number of mentions per 1,000 visits of common diagnostic services for ambulatory patients 55 years of age and over, according to sex and age: United States, 1985 .....	127
Table 6. Number of patients discharged, rate of discharges, days of care, and average length of stay for males 55 years of age and over, by age and selected first-listed diagnoses: United States, 1981 and 1987.....	128
Table 7. Number of patients discharged, rate of discharges, days of care, and average length of stay for females 55 years of age and over, by age and selected first-listed diagnoses: United States, 1981 and 1987.....	130
Table 8. Number and rate of surgical procedures for males 55 years of age and over discharged from short-stay hospitals, by age and selected procedures: United States, 1981 and 1987 .....	132
Table 9. Number and rate of surgical procedures for females 55 years of age and over discharged from short-stay hospitals, by age and selected procedures: United States, 1981 and 1987 .....	134
Table 10. Number and rate of diagnostic and other nonsurgical procedures for males 55 years of age and over discharged from short-stay hospitals, by age and selected procedures: United States, 1981 and 1987.....	136
Table 11. Number and rate of diagnostic and other nonsurgical procedures for females 55 years of age and over discharged from short-stay hospitals, by age and selected procedures: United States, 1981 and 1987.....	138
Table 12. Number of patients discharged, rate of discharges, and average length of stay for persons 55 years of age and over with a diagnosis of pneumonia or influenza, by sex and age: United States, 1981 and 1987.....	140
Table 13. Rate of patients discharged with a diagnosis of fractures, all sites, or hip fracture (fracture of neck of femur) for persons 55 years of age and over, by sex and age: United States, 1981 and 1987.....	141
Table 14. Percent distribution of patients 55 years of age and over discharged from short-stay hospitals by disposition status, according to sex and age: United States, 1981 and 1987.....	142

## Chapter 6

Table A. Nursing home residents 65 years of age and over per 1,000 population, according to age, sex, and race: United States, 1963, 1973–74, 1977, and 1985 .....	144
Table B. Codes for items in the current resident questionnaire of the 1985 National Nursing Home Survey used to identify cognitive disability .....	145
Table C. Rate of cognitive disabilities per 1,000 nursing home residents: United States, 1985... ..	146
Table D. Rate of cognitive disabilities per 1,000 nursing home residents by age: United States, 1985.....	146



Table E. Rate of cognitive disabilities per 1,000 nursing home residents by race: United States, 1985.....	147
Table F. Rate of cognitive disabilities per 1,000 nursing home residents by sex: United States, 1985.....	147
Table G. Percent of young-old and oldest-old nursing home residents in fair or poor physical health, by selected cognitive disabilities: United States, 1985 .....	148
Table H. Rate of cognitive disabilities per 1,000 nursing home discharges: United States, 1984–85 .....	152
Table J. Percent of frail persons 65 years of age and over using only informal helpers in 1982 by the number of informal helpers in 1982, according to race, sex, age, and help with activities of daily living: United States.....	156
Table 1. Number and percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, and race: United States, 1985.....	160
Table 2. Percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, race, and staff-assessed physical health status: United States, 1985 .....	161
Table 3. Percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, race, and number of disruptive behaviors: United States, 1985 .....	163
Table 4. Percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, race, and whether memory impaired: United States, 1985 .....	165
Table 5. Percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, race, and presence of depression or anxiety: United States, 1985 .....	167
Table 6. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and number and type of activities of daily living for which help of another person is required: United States, 1985 .....	169
Table 7. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and number and type of instrumental activities of daily living for which help of another person is required: United States, 1985.....	171
Table 8. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and continence status: United States, 1985 .....	173
Table 9. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and type of therapy received in past month: United States, 1985 .....	174
Table 10. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and primary source of payment: United States, 1985.....	175
Table 11. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and living arrangement prior to admission: United States, 1985 .....	177
Table 12. Percent of nursing home discharges, by presence of selected cognitive disabilities, age, duration of stay, and discharge status: United States, 1984–85.....	179
Table 13. Percent of frail persons 65 years of age and over using selected community health and social services, by race, sex, age, and help with activities of daily living: United States, 1984.....	181
Table 14. Percent of frail persons 65 years of age and over using only informal helpers in 1982 by use in 1984, according to race, sex, age, and help with activities of daily living: United States ...	182
Table 15. Percent of frail persons 65 years of age and over using both formal and informal helpers in 1982 by use in 1984, according to race, sex, age, and help with activities of daily living: United States .....	184

## Chapter 7

Table A. Distribution of therapies for persons 55 years of age and over .....	188
Table B. Number and percent distribution of mentions of cardiac glycosides by selected principal diagnoses and ICD–9–CM codes for persons 55 years of age and over, according to patient age: United States, 1985 .....	190

Table C. Number and percent distribution of mentions of benzodiazepines, antidepressants, and antipsychotics by selected principal diagnoses and ICD-9-CM codes for persons 55 years of age and over, according to patient age: United States, 1985.....	192
Table 1. Number and percent distribution of office visits and drug mentions, and percent of office visits during which 1 drug or multiple drugs were mentioned for persons 55 years of age and over, according to age, sex, race, and ethnicity: United States, 1985.....	194
Table 2. Percent distribution of drug mentions by selected dimensions of drugs by persons 55 years of age and over, according to patient age: United States, 1985.....	195
Table 3. Number of mentions, rank order, and therapeutic use of 50 generic ingredients most frequently mentioned by physicians in office-based practice for patients in age groups 55 years and over: United States, 1985.....	196
Table 4. Number and percent distribution of office visits to physicians by persons 55 years of age and over and of drug mentions by physicians and percent of office visits during which 1 drug or multiple drugs were mentioned by principal diagnosis, according to patient age: United States, 1985.....	199
Table 5. Number and percent distribution of drug mentions by therapeutic categories for persons 55 years of age and over, according to patient age: United States, 1985.....	202
Table 6. Number and percent distribution of office visits and drug mentions, and percent of office visits during which 1 drug or multiple drugs were mentioned by physician identity and specialty for persons 55 years of age and over, according to patient age: United States, 1985....	204
Table 7. Number and percent of persons 55 years of age and over currently using vitamin or mineral supplements, by selected characteristics: United States, 1986.....	206
Table 8. Percent of persons 55 years of age and over using vitamin or mineral supplements, by sex, age, and vitamin or mineral supplement used: United States, 1986.....	207

## Chapter 8

Table 1. Percent distribution of persons 70 years of age and over by Medicare coverage, according to sex and age: United States, 1984.....	215
Table 2. Medicare enrollment, persons served, and payments for Medicare enrollees 65 years of age and over, by selected characteristics: 1967, 1977, and 1986.....	216
Table 3. Percent distribution of persons 70 years of age and over by type of private health insurance coverage, according to age and sex: United States, 1984.....	217
Table 4. Percent distribution of persons 70 years of age and over by health care coverage, according to age and sex: United States, 1984.....	217
Table 5. Percent distribution of persons 70 years of age and over by type of Medicare and/or private health insurance coverage, according to age and sex: United States, 1984.....	218
Table 6. Percent distribution of hospital discharges for persons 55 years of age and over by expected principal source of payment, according to sex and age: United States, 1987.....	219
Table 7. Percent of visits to office-based physicians by persons 55 years of age and over by expected sources of payment, according to sex and patient age: United States, 1985.....	220
Table 8. Number of nursing home residents 55 years of age and over and average monthly nursing home charge, by sex, age, and primary source of payment in month before interview: United States, 1985.....	221
Table 9. Percent distribution of persons 70 years of age and over by whether Medicaid benefits were received in previous 12 months, according to sex and age: United States, 1984.....	222
Table 10. Percent distribution of persons 70 years of age and over in 1984 by whether Medicaid benefits were received in 1986, according to sex, age, and whether Medicaid benefits were received in 1984: United States.....	223
Table 11. Amount and percent distribution of per capita personal health care expenditures for persons 65 years of age and over by source of funds, according to type of service and age: United States, 1987.....	225

## Chapter 9

Table A. Projections in thousands and percent change in the black and white populations 65 years of age and over, by age subgroup, for the years 2000 and 2010 .....	229
Table B. Percent distribution of activities of daily living difficulties, by respondent-assessed health status, sex, and race for persons 65 years of age and over: United States, 1986 .....	231
Table C. Percent distribution of instrumental activities of daily living difficulties, by respondent-assessed health status, sex, and race for persons 65 years of age and over: United States, 1986..	232
Table D. Discharge rates for black and white persons 65 years of age and over, by selected first-listed diagnoses: United States, 1987 .....	237
Table E. Average length of stay, by race, sex, and selected first-listed diagnoses for persons 65 years of age and over: United States, 1981 and 1987.....	238
Table F. Discharge rates for pneumonia-influenza for black and white persons, 65 years of age and over: United States, 1987 .....	238
Table G. Percent distribution of males and females 65 years of age and over, by race and discharge disposition: United States, 1981 and 1987.....	239
Table 1. Average annual percent distribution of black persons 55 years of age and over by respondent-assessed health status, according to sex and age: United States, 1985–87 .....	243
Table 2. Percent distribution of black persons 65 years of age and over by number of activities of daily living for which difficulty was reported, according to sex and respondent-assessed health status: United States, 1986.....	244
Table 3. Percent distribution of black persons 65 years of age and over by number of instrumental activities of daily living for which difficulty was reported, according to sex and respondent-assessed health status: United States, 1986 .....	245
Table 4. Average annual number of selected reported chronic conditions per 1,000 black persons 55 years of age and over, by sex and age: United States, 1985–87.....	246
Table 5. Average annual number of selected reported impairments per 1,000 black persons 55 years of age and over, by sex and age: United States, 1985–87.....	247
Table 6. Percent distribution of black persons 65 years of age and over by number of activities of daily living for which difficulty was reported and percent of persons who received the help of another person in performing activities of daily living, according to sex and age: United States, 1986.....	247
Table 7. Percent distribution of black persons 65 years of age and over by number of instrumental activities of daily living for which difficulty was reported and percent of persons who received the help of another person in performing instrumental activities of daily living, according to sex and age: United States, 1986.....	248
Table 8. Percent distribution of black persons 65 years of age and over by living arrangement, according to sex and age: United States, 1986.....	249
Table 9. Percent distribution of black persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with performing activities of daily living reported in 1984: United States .....	250
Table 10. Percent distribution of black persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with performing instrumental activities of daily living reported in 1984: United States.....	252
Table 11. Death rates for all causes among black persons 55 years of age and over, by sex and age: United States, selected years 1960–86 .....	254
Table 12. Life expectancy at specified ages for black persons, by sex: United States, 1960, 1970, 1980, and 1986 .....	255
Table 13. Life expectancy for black persons at individual ages 65–85 years, by sex: United States, 1986.....	256
Table 14. Death rates for selected causes among black persons 55 years of age and over, by sex and age: United States, selected years 1980–86 .....	257

Table 15. Average annual number of physician visits per person for black persons, by sex, respondent-assessed health status, and age: United States, 1985–87 ..... 260

Table 16. Number of mentions of most frequent all-listed diagnoses per 1,000 visits to office-based physicians by black patients 55 years of age and over and rank for males and females, by age: United States, 1985 ..... 261

Table 17. Number of mentions of common diagnostic services per 1,000 visits to office-based physicians for black patients 55 years of age and over, by sex and age: United States, 1985..... 262

Table 18. Number of patients discharged from short-stay hospitals, days of care, and average length of stay for black persons 55 years of age and over, by sex, age, and selected first-listed diagnoses: United States, 1981 and 1987 ..... 263

Table 19. Number of patients discharged from short-stay hospitals and average length of stay for black persons 55 years of age and over with a diagnosis of pneumonia or influenza, by sex and age: United States, 1981 and 1987..... 265

Table 20. Percent distribution of black patients 55 years of age and over discharged from short-stay hospitals by disposition status, according to sex and age: United States, 1981 and 1987..... 266

Table 21. Number and percent of nursing home residents, by presence of selected cognitive disabilities and race: United States, 1985..... 267

Table 22. Percent of nursing home residents, by presence of selected cognitive disabilities, race, and staff-assessed physical health status: United States, 1985..... 268

Table 23. Percent of nursing home residents, by presence of selected cognitive disabilities, race, and whether memory impaired: United States, 1985 ..... 269

Table 24. Number and percent of visits to office-based physicians and drug mentions and percent of office visits for which drugs were mentioned for black persons 55 years of age and over, according to age: United States, 1985 ..... 270

Table 25. Number and percent of black persons 55 years of age and over currently using vitamin or mineral supplements, by selected characteristics: United States, 1986 ..... 270

Table 26. Percent of black persons 55 years of age and over currently using vitamin or mineral supplements, by sex, age, and vitamin or mineral supplement used: United States, 1986..... 271

Table 27. Percent distribution of black persons 70 years of age and over by whether Medicaid benefits were received in previous 12 months, according to sex: United States, 1984..... 271

Table 28. Percent distribution of black persons 70 years of age and over in 1984 by whether Medicaid benefits were received in 1986, according to sex and whether Medicaid benefits were received in 1984: United States..... 272

Table 29. Percent of black persons 55 years of age and over who reported joint pain or physician-diagnosed arthritis, by sex and age: United States, selected time periods ..... 273

Table 30. Rate of selected comorbid conditions among black persons 55 years of age and over reporting arthritis, by sex and age: United States, 1984 ..... 273

**Chapter 10**

Table A. Survey and response items used in table 1..... 276

Table 1. Percent of persons 55 years of age and over who reported joint pain or physician-diagnosed arthritis, by sex, race, and age: United States, selected time periods ..... 283

Table 2. Percent of persons 55–74 years of age who reported any pain in joints, by site of pain, according to race, sex, and age: United States, 1971–75..... 284

Table 3. Percent distribution of respondent-assessed health status among persons 55 years of age and over reporting arthritis, according to race, sex, and age: United States, 1984 ..... 285

Table 4. Percent of selected comorbid conditions among persons 55 years of age and over reporting arthritis, by race, sex, and age: United States, 1984..... 286

Table 5. Percent of persons 55 years of age and over, reporting arthritis, with difficulty performing activities of daily living, by race, sex, and age: United States, 1984 ..... 287

Table 6. Percent of persons 55 years of age and over reporting arthritis, with difficulty performing instrumental activities of daily living, by race, sex, and age: United States, 1984 .....	288
--	-----

## Chapter 11

Table 1. Average expected remaining years of life for persons 65, 75, and 85 years of age, by sex: Selected countries, selected years.....	292
Table 2. Percent of population 65 years of age and over and deaths of persons 65 years of age and over as a percent of all deaths: Selected countries, selected years .....	293
Table 3. Mortality rates per 1,000 population for selected age groups, by sex: Selected countries, selected years .....	294
Table 4. Percent of deaths from diseases of the heart, cerebrovascular disease, cancer, and all other causes among persons 65 years of age and over: Selected countries, selected years .....	295

---

### Symbols

---	Data not available
. . .	Category not applicable
-	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision

---

**Part I**

**Introduction**

# Background

by Joan F. Van Nostrand, M.P.A., National Center for Health Statistics; Sylvia E. Furner, Ph.D., University of Illinois at Chicago; and Richard Suzman, Ph.D., National Institute on Aging, Editors

The “graying” of America is a phenomenon of the 20th century that is without precedence. More and more Americans are living to older ages. At the turn of the century, life expectancy was 47.3 years. By 1991, life expectancy (provisional estimate) had increased to 75.7 years. This increase has raised questions about the quality of these additional 28.4 years of life gained over the century. Are these added years ones of vigor or ones of dysfunction and disability? To address these questions, this report analyzes health data on older Americans from a variety of perspectives. Data cover functioning, mortality, use of health care, and changes in health status over time. The report is comprehensive in that it includes in one volume information from virtually all of the data systems of the National Center for Health Statistics. The report also includes data from sources other than the National Center for Health Statistics, most notably data on health care financing, international comparisons, and long-term care. A subject matter guide to the 170 tables in this report is presented in the appendix. The tables are cross-indexed by certain variables, such as race, the oldest-old, activities of daily living, use of nursing homes, and selected chronic conditions. Because older Americans are a heterogeneous population, the tables emphasize detailed

---

Support for preparation of this report was provided by the Federal Interagency Forum on Aging-Related Statistics sponsored by the National Institute on Aging of the National Institutes of Health. Preparation of this report was a cooperative activity between the National Center for Health Statistics and the School of Public Health of the University of Illinois at Chicago through the Association of Schools of Public Health.

age groups, from the young-old (aged 65–74 years) to the oldest-old (aged 85 and over). Data on those who are approaching older ages (persons 55–64 years of age) are presented for comparison purposes.

This report is an update and expansion of a 1986 report on the health of older Americans (1). An advisory group was convened to review the 1986 report and advise on the content and format of this update. Organizations that were members of the advisory group were:

- American Association of Retired Persons
- Brookings Institution
- Congressional Budget Office
- Congressional Research Service
- General Accounting Office
- Gerontological Society of America
- National Council on Aging
- National Institute on Aging
- Office of Technology Assessment
- U.S. Senate Special Committee on Aging
- U.S. House of Representatives Select Committee on Aging

The advisory group recommended two different formats for releasing health data on older Americans: a detailed data report aimed at those who wanted indepth information for research and a chartbook aimed at those who wanted summary information. This is the detailed data report; the chartbook is also available (2). The advisory group also recommended:

- development of a pocket edition for both the detailed data report and the chartbook so that data highlights could be easily accessed

- a separate chapter on long-term care (see chapter 6)
- a chapter on minority aging (see chapter 9 on older black Americans)
- a focus on chronic conditions that, although not generally fatal, result in serious disability (see chapter 10 on musculoskeletal conditions).

The report has two innovations compared with the 1986 edition. The first innovation is the emphasis on statistical testing of hypotheses. Because many of the estimates in this report are based on a sample survey, they may differ somewhat from the figures that would have been obtained if a complete census had been taken using the same survey and processing procedures. The validity of hypotheses about sample survey estimates was evaluated according to statistical protocols described in the appendix. Terms in the text relating to differences, such as “higher” and “less,” indicate that the differences are statistically significant. Terms such as “similar” or “no difference” mean that no statistically significant difference exists between the estimates being compared. Generally, statistical tests performed were two-tailed tests unless the authors had an a priori one-tailed hypothesis. All comparisons were tested at the 5-percent level of significance. See the appendix for details.

The second innovation is the availability of a PC Lotus diskette of all 170 tables in this report. The diskette was created to assist researchers and others interested in manipulation and analysis of the data. Users can conduct analyses based on their own hypotheses. See the appendix of the report for information on how to order the diskette.

## Highlights

This section highlights the significant findings for each chapter of the report.

Chapter 1: Measures of health. Respondent-assessed health status was inversely associated with age; as age increases, perceptions of health decrease. Across all age groups and both sexes, significantly greater numbers of white than black persons rated their health as excellent or very good, and significantly greater numbers of black than white people rated their health as fair or poor. Respondent-assessed health status was also clearly related to difficulties in both activities of daily living (ADL's) and instrumental activities of daily living (IADL's), such that as the number of ADL's or IADL's causing difficulty increased, perceptions of health decreased. Difficulties in both ADL's and IADL's were also related to sex and advanced age.

Acute and chronic conditions, as well as impairments, may affect perceptions of health. Among older persons, respiratory illnesses were a frequently reported acute condition, hypertension was one of the most common chronic conditions, and hearing impairments were frequently reported. In persons 65 years of age and over, females reported significantly lower rates of ischemic heart disease than did men, but higher rates of hypertension.

Chapter 2: Functional status and living arrangements. Most adults, aged 65 years and over, reported no difficulty with either ADL's or IADL's, and two-thirds of the total older population reported no difficulties with any of the ADL's or IADL's. Significantly more adults in the group aged 65–74 reported being free of ADL difficulties than did those in the 75-and-over group. All other races were less likely than whites, and females were less likely than males to report having no basic ADL or IADL difficulties.

More than 30 percent of those 65 years and over and residing in the community lived alone, and more than one-half of those 85 and over lived alone (52 percent). For the group aged 65–74, there were no significant differences by



living arrangement in the percent of men and women who had no ADL difficulties. However, older women (75 years and over) who lived alone were more likely to report having no ADL difficulties than were women of the same age group who lived with others. There were no significant differences by living arrangement for males aged 75 years and over who reported no basic ADL difficulties.

Chapter 3: Changes in functional status and risk of institutionalization and death. The presence of two or more limitations in basic ADL's and IADL's was associated with risk of death and nursing home residence. Within each ADL limitation, those 80 years and over had lower proportions of persons who maintained independence over the 2-year period. When the level of individual changes in functional limitations was assessed, there were no sex differences in either rates of decline or rates of improvement for all limitations, except for difficulty lifting 25 pounds.

Chapter 4: Mortality. In 1986, 71 percent of the deaths occurred in people 65 years of age and over. This was in contrast to 1960, when the corresponding percentage was 59. From 1960 to 1986, age-specific death rates for males were higher than for females for both black and white people. In 1986, life expectancy at birth was 74.8 years. Life expectancy for females was 7 years longer than for males, and life expectancy for white persons was 6 years longer than for black persons. From 1960 to 1989, life expectancy at age 65 was highest for white females, followed by black females, white males, and black males. In 1989, life expectancy at age 85 showed a crossover in that for each sex, it was higher for black than for white people. This crossover also occurred in 1960 and 1970.

The three leading causes of death for this population included diseases of the heart, malignant neoplasms, and cerebrovascular disease. Death rates for diseases of the heart and cerebrovascular disease declined in virtually all

of the race-sex groups during the 1980's, while death rates for malignant neoplasms increased. Most of the increase in deaths from malignant neoplasms was the result of substantial increases in lung cancer death rates.

Chapter 5: Acute care. An estimated 130.5 million office visits were made to nonfederally employed office-based physicians in the United States from 1985 to 1986 by persons 65 years of age and over (21 percent of all visits). The number of visits to office-based physicians increased by 60.6 million from 1980 to 1985 for the older population. In 1987, 31 percent of discharges and 42 percent of hospital days were reported for older patients treated in short-stay non-Federal hospitals in the United States. Additionally, the hospital discharge rate increased from 1970 until 1983, when the prospective payment system was introduced. From 1983 to 1987, the total discharge rate decreased 17 percent, with the rate of decrease being less for older persons than for persons under 65 years of age. The average length of stay decreased from 1965 to 1987 by 4.4 days for patients 65 years of age and over.

The discharge rate for persons diagnosed with malignant neoplasms decreased for both males and females 65 years of age and over from 1981 to 1987. The discharge rate for persons with pneumonia increased for males 65 years of age and over as a group. There were substantial declines from 1981 to 1987 in average length of stay for some of the diagnoses.

Persons 65 years of age and over who rated their health as fair or poor had a greater number of physician visits than those who rated their health as good or excellent. Health status, more than increasing age, appeared to dictate the need for physician service. Essential hypertension was the most common diagnosis rendered by office-based physicians for older patients. In conjunction with this, the most frequent diagnostic procedure was the blood pressure check. For

hospitalized older persons, the most frequently listed diagnosis was diseases of the heart.

Variation in hospital discharge disposition was evident over time and within age and sex. More females than males were discharged to long-term care facilities, and older patients were more likely to be discharged to long-term care than were younger patients.

Chapter 6: Selected issues in long-term care: Profile of cognitive disability of nursing home residents and the use of informal and formal care by elderly in the community. For every 1,000 nursing home residents, 674 had at least one cognitive disability. The most prevalent cognitive disability was organic brain syndromes; females had higher rates than males. In comparison to nursing home residents without cognitive disabilities, those with Alzheimer's disease, organic brain syndromes, anxiety, and depression had significantly higher proportions who required help with five to seven ADL's. Residents with schizophrenia and alcohol and drug abuse, in contrast, had significantly lower proportions who required help. For most who were cognitively disabled, Medicaid was the major primary source of payment. In contrast, own income or family support was the major primary source for those with Alzheimer's disease and with no cognitive disability.

Among community-living functionally impaired Medicare-eligible persons 65 years of age and over (frail elderly), physician office care and hospitalization were frequently used health services, at 39 and 34 percent, respectively. White people were more likely to be hospitalized than people of all other races, and women were more likely to use auxiliary health services than men. A smaller proportion of those 85 and over used physician office care and hospitalization than those 65-74 years of age. Use of health care services was to some extent dependent on level of ADL disability.

In 1982, persons of all other races, those 85 years of age and over, and persons receiving help with three to five ADL's were significantly more likely to have more than one informal helper than were white people, elderly persons in younger age groups, and elderly persons with less ADL dependency. The number of informal helpers a frail elder had was associated with subsequent mortality. A trend of increasing mortality rates with increasing number of helpers was evident for males but not females. In contrast to the association seen with mortality, there was no trend evident between institutionalization rates and number of informal helpers.

Chapter 7: Patterns of drug prescribing. For 67 percent of office visits by persons 55 years of age and over, a therapy involving drug treatment was mentioned. For all age groups, between 67 and 75 percent of all medications reported were a continuation of existing therapy. Cardiovascular agents dominated prescribing patterns, representing 8 of the 10 most frequently mentioned medications. Two analgesics, aspirin and acetaminophen, accounted for the remaining two most frequently mentioned medications.

Chapter 8: Costs of health care and sources of payment. Health care spending for the older population totaled \$162 billion in 1987. Total enrollment in the Medicare program in 1986 was 29 million; Medicare served 732 persons per 1,000 enrollees. Nearly two-thirds of the population 70 years of age and over have some private health insurance in addition to Medicare.

Medicare was the expected principal source of payment for 93 percent of hospital discharges for the population 65 years of age and over. The primary sources of payment for nursing home care were Medicaid and the patient's own income. When all sources are considered, Medicare was the expected source of payment for more than 70 percent of the older population for visits to office-based physicians.

Chapter 9: Health of older black Americans. Fewer black Americans aged 65 and over rate their health as excellent or very good, compared with their white counterparts. More older black Americans rate their health as fair or poor. For black males and females, significantly more of those reporting excellent or very good health reported no ADL difficulties, compared with those reporting fair or poor health. Fewer elderly black females reported no ADL difficulties than their white counterparts; however, this difference by race did not hold for males.

Among black persons aged 70 and over, those aged 70–79 were more likely to show 2-year improvement in functional status than those aged 80 years and over. Of the population aged 70 and over, a smaller proportion of black Americans was able to maintain independence in ADL's and IADL's over a 2-year period than were white Americans. Of the population aged 70 and over reporting some ADL and some IADL difficulties in 1984, black persons experienced lower 2-year mortality than white persons.

Average length of stay in short-stay hospitals for diagnoses of pneumonia/influenza decreased significantly for elderly black persons between 1981 and 1987. In 1981, elderly black persons had a longer average length of stay than their white counterparts, but there was no difference in 1987. A higher proportion of black elders received Medicaid benefits in 1984 than did their white counterparts. However, of those receiving Medicaid benefits in 1984, a greater proportion of white elders than black elders continued to receive benefits in 1986.

Chapter 10: Musculoskeletal disorders: Time trends, comorbid conditions, self-assessed health status, and associated activity limitations. The most prevalent of chronic conditions among older persons are skeletal disorders such as osteoarthritis, osteoporosis, and chronic low back pain. Among persons 55 years of age and over with

arthritis, 48 percent also reported hypertension. Ability to walk was most commonly limited, particularly among those 85 and over (46 percent). Starting with a cohort aged 55–59 years, increased pain and diagnosis prevalence was observed over a 25-year period.

Chapter 11: International aging. Cross-national comparisons of age-specific life expectancy, causes of death, and mortality rates can provide clues to the development of public health promotion efforts that capitalize on the experiences of other countries. For all countries examined, female life expectancy at age 65 exceeded male life expectancy by at least 1.4 years. In most countries, the proportionate contribution to all deaths made by persons 65 and over was well in excess of their representation in the population. There was considerable variation in mortality risk with age across the listed countries, however, the contribution to overall mortality from heart disease, cancer, and stroke was consistently more than 50 percent in all countries studied.

Appendix: The average annual growth rate for the segment of the population 65 years and over for the decade of the 1980's was 2.2 percent, more than twice the corresponding rate for the total population. Included in the expansion of the older population is a disproportionate increase in the oldest-old, those 85 years of age and over. During the decade of the 1980's, the average annual growth rate of this group was 3.5 percent.

## References

1. Havlik RJ et al. Health Statistics on Older Persons: United States, 1986. National Center for Health Statistics. Vital Health Stat 3(25). 1987.
2. Cohen RA, Van Nostrand JF, Furner SE. Chartbook of Health Data on Older Americans: United States, 1992. National Center for Health Statistics. Vital Health Stat 3(29). 1993.

## **Part II**

### **Health status**

# Chapter 1

## Measures of health

by Robin Mermelstein, Ph.D., Baila Miller, Ph.D., and Thomas Prohaska, Ph.D., University of Illinois at Chicago; Veronica Benson, and Joan F. Van Nostrand, M.P.A., National Center for Health Statistics

### Introduction

There are a variety of ways of measuring health status, including the presence of disease, functional limitations, and general health perceptions. This chapter examines factors that may contribute to or vary with the elderly's perceptions of health and also presents data on selected acute and chronic conditions among the elderly. Factors considered include both demographics (age, sex, and race) and functional status (ability to perform everyday personal care and home-management activities). The different measures of health often show high intercorrelations (1–3). For example, one might hypothesize that both acute and chronic conditions could certainly influence functional limitations and perceived health, and perceived health could, in turn, influence role functioning and other illness behaviors. Despite the presence of chronic conditions, however, many older adults may still respond positively to the question, “Would you say your health is excellent, very good, good, fair, or poor?” It is likely that both an individual's subjective perceptions of his or her health status and more objective measures, such as disease states, are important in predicting risk of hospitalization, institutionalization, or death (4).

This chapter considers measures of health only among older persons living in the community. Thus, the segment of the older population

with the poorest health—those in nursing homes or long-term hospitals—is not included. Because institutionalized older adults are likely to have more chronic conditions and functional limitations than those residing in the community, the figures reported in this chapter are an underestimate of the prevalence of these conditions in the total older population.

This is especially true of the segment of the population aged 85 and over. In 1985, approximately 22 percent of the population aged 85 and over resided in long-term care facilities (5). Therefore, comparisons of the noninstitutionalized population aged 85 years and over with younger age groups must be interpreted with great caution.

### Sources of data

The two sources of data for this chapter are the health status and demographic components of the National Health Interview Survey (NHIS) (1985–87) and the 1986 Functional Limitations Supplement of the NHIS. The NHIS is a continuing nationwide survey based on household interviews of the civilian noninstitutionalized population of the United States. By combining data from several years of the survey, sufficient sample size is available to consider health conditions in race, sex, and age subgroups. Also, because of the recurrent nature of the survey, trend analysis is possible. In this chapter, age-specific prevalence rates are shown for ischemic heart disease, hypertension, and diabetes for 1979–81, 1982–84, and 1985–87.

---

The authors wish to acknowledge Richard Suzman, Ph.D., National Institute on Aging, National Institutes of Health, for his helpful comments on the manuscript.

In 1986, the Functional Limitations Supplement of the NHIS focused on activities of daily living (ADL's) and instrumental activities of daily living (IADL's) for the population 65 years of age and over. The 1986 NHIS is the most recent one to collect detailed information on ADL's and IADL's of the entire elderly population living in the community. The ADL's covered in the supplement were seven personal care activities: eating, toileting, dressing, bathing, walking, getting in and out of a bed or chair (transferring), and getting outside. IADL's covered in the supplement were six home-management activities: preparing meals, shopping for personal items, managing money, using the telephone, doing heavy housework, and doing light housework. Respondents were considered to have difficulty with either an ADL or an IADL if they answered "yes" to the question, "Because of a health or physical problem, do you have any difficulty in performing the activity?" In some cases, proxies responded to the question.

## Results and comments

### Health assessment

Respondent-assessed general health is one of the simplest but also one of the most informative measures of health, given its association with objective health status, such as physical exams and physician ratings (6), mortality (4), and life satisfaction. It was hypothesized that respondent-assessed health status would show an inverse relationship with age, such that as age increases, the level of assessed health decreases. The data support this hypothesis. About one-third (33 percent) of the population aged 65 years and over rated their health as good, and this proportion remained stable with increasing age (table 1). However, the proportion of older adults who rated their health as excellent declined from ages 55–59, when almost one-quarter (24 percent) of the respondents rated

their health as excellent, through the age group 60–64 years, when only 20 percent rated their health as excellent, and stabilized at approximately 18 percent for the age groups over 60–64 years. The proportion of older adults who rated their health as only fair or poor increased significantly at two points:

- after ages 55–59, when 20 percent of respondents rated their health as fair or poor, compared with 25 percent of respondents aged 60–64
- after ages 70–74, when 30 percent of respondents rated their health as fair or poor, compared with 34 percent of those aged 75–79.

When race-specific responses were investigated, significant differences in self-assessed health emerged between black and white people. Across all age groups and both sexes, significantly greater numbers of white than black persons rated their health as excellent or very good, while significantly greater numbers of black than white persons rated their health as fair or poor.

### Health assessment and functional limitations

It was also hypothesized that respondent-assessed health status would be clearly related to difficulties in both ADL's (table 2) and IADL's (table 3), such that as the number of ADL's or IADL's causing difficulty increases, perceptions of health decrease. Respondents who reported that they did not do an ADL were counted with those who reported difficulty in performing the activity (table 2). Given that ADL's are necessities, not doing one most likely means that an individual is unable to do so. However, for IADL's, respondents who reported not doing an activity were counted as not having difficulty (table 3). Unlike the ADL's, IADL's are not necessities of life and may not be done for a variety of reasons (e.g., role socialization) other than disability.

As expected, self-ratings of health were related to reported difficulties in performing ADL's and IADL's (tables 2 and 3). Across all age groups, and for each sex, a significantly greater percentage of respondents who rated their health as at least good reported no difficulties in ADL's than did those who rated their health as fair or poor. Individuals who reported difficulties in three or more ADL's or IADL's were most likely to rate their health as fair or poor, compared with good, or with excellent or very good.

Difficulties in ADL's are also related to age and sex. As has been found in other national surveys, problems with ADL's increase with advancing age. However, specific prevalence rates of difficulties with ADL's may vary slightly across different surveys because of methodology differences in classification and selection of ADL's, wording of questions, or timeframe and methods used to collect the data (7). Overall, 15 percent of males 65–69 years had difficulty performing at least one ADL. By ages 85 and over, 35 percent of male respondents reported difficulty performing at least one ADL, which was a significant increase from the age group 65–69 years old. There was a significant jump in the percentage of men reporting difficulty in performing three or more ADL's between the age groups of 65–69, when 6 percent reported difficulty with three or more ADL's, and 85 and over, when 18 percent reported difficulty. Women also showed a significant jump in the percentage of respondents reporting difficulty in performing three or more ADL's at two points: between the ages of 70–74 and 75–79, when the percentage reporting difficulty rose from 8 to 15 percent; and between the ages of 75–79 and 80–84, when the percentage reporting difficulty with three or more ADL's jumped from 15 to 21 percent.

In the age groups 75–79 and 80–84, women who rated their health as either fair or poor reported significantly more problems in performing ADL's than did men with similar

self-reported health status. For example, in the 75–79 age group, about twice as many women (33 percent) as men (16 percent) who rated their health as fair or poor reported difficulty in performing three or more ADL's, and significantly fewer women than men reported no difficulties in ADL's. Thus, in these age groups, women who rated their health as less than good reported more difficulties performing everyday personal care tasks than did men with similar self-assessed ratings of health.

Similar age and sex differences can be found with IADL's (table 3). For men aged 65–69 years, 15 percent reported difficulty in performing at least one IADL, and 4 percent reported difficulty in performing three or more. For men aged 85 years and over, however, these rates increased significantly, to 43 percent reporting difficulty in performing at least one IADL, and 24 percent reporting difficulty in performing three or more. At every age group, significantly more women than men reported difficulty in performing IADL's. For example, in the group aged 65–69 years, 24 percent of the women reported difficulty with at least one IADL (compared with 15 percent of the men), and in the group aged 85 years and over, 64 percent reported difficulty with at least one IADL (compared with 43 percent of the men). The same pattern held true in the age groups 70–74, 75–79, and 80–85 for those reporting difficulty with three or more IADL's. By the age of 80–84 years, 21 percent of the women reported difficulty with three or more IADL's (versus 10 percent of the men). These sex differences may not, however, be the result of true functional differences between men and women. Rather, they may be the result of differences in role socialization (with men typically performing fewer IADL's than women and thus men's reports of difficulty may be underestimates), or the result of an age bias within each age grouping (on average, within any given age group, women have higher mean ages than men).

The differences may also be the result of the analytic decision to count those who reported that they did not do an IADL as not having difficulty.

### **Acute conditions**

The incidence of acute conditions (table 4), based on respondents' reports of illnesses occurring during the 2 weeks prior to the week of the interview, tended to remain stable with age, with the exception of respiratory illnesses. The group aged 55–64 years reported more respiratory infections than the age groups of 75–84 and 85 and over. Respiratory illnesses were the most frequently reported acute condition, followed by the group “other” acute conditions (which included eye conditions; ear conditions; urinary tract infections; skin conditions; acute back, spine, and neck pain; other musculoskeletal conditions; headache, excluding migraine; and all other acute conditions), injuries, and lastly, digestive conditions. Because the category “other” acute conditions comprises many more diverse conditions than do the more specific categories of respiratory illnesses, injuries, and digestive conditions, comparisons with it need to be interpreted with caution.

### **Impairments**

The rates of reported visual impairment and cataract appeared higher with increasing age and varied by sex and race (table 5). The category of visual impairment includes blindness in both eyes and other problems with seeing. The rates of cataract, but not visual impairment, increased significantly in the group aged 65–74 years, compared with those 55–64 years of age, and again in the group aged 75–84 years, compared with those aged 65–74 years. After age 65, white women had significantly higher rates of cataract than did white men. There were no significant sex differences for visual impairment.

The category of hearing impairment (table 5) includes deafness in both ears and other

hearing impairments. Hearing impairments were the most common type of impairment among the elderly, with 383 per 1,000 of those 65 years and over reporting some hearing impairment, and approximately one-half (530 per 1,000) of the respondents aged 85 and over reporting a hearing impairment. White males reported significantly higher rates of hearing impairment than did white women in all age groups, but this sex difference did not hold true for black persons. Despite some seemingly apparent differences between black and white males, there was no significant difference in rates of reported hearing impairment between either black and white males or black and white females.

Among white females, there was an increase in deformities or orthopedic impairments with age (table 5), but this was not true for white or black males or for black females. For white females, the reported rates of orthopedic impairment increased from 164 per 1,000 in the group aged 55–64 years to 231 per 1,000 for those 65 years and over.

### **Chronic conditions**

The reported rates of both ischemic heart disease and hypertension in 1985–87 showed significant increases from the group aged 55–64 years to those 65–74 years of age (table 6). After age 65, however, there was no significant difference in reported rates of ischemic heart disease for men, but there continued to be an increase in the rates for women by age group. Women aged 75 years and over reported significantly higher rates of ischemic heart disease than did those 65–74 years of age. Except for the youngest age group (55–64), for which there was no sex difference, women reported significantly lower rates of ischemic heart disease than did men. Unlike the sex pattern shown with ischemic heart disease, women reported significantly higher rates of hypertension than men in every age group except the youngest (55–64), for which, as for ischemic heart disease, there was no sex



difference. Overall, hypertension was one of the most common chronic conditions among the elderly, with almost 40 percent of those 65 years and over reporting being hypertensive.

As with the chronic cardiovascular conditions, the reported rates of diabetes increased significantly from the group aged 55–64 years to the group aged 65–74 years. Unlike the cardiovascular diseases, however, there were no significant sex differences in the reported rates of diabetes.

### Trends

The increase of ischemic heart disease prevalence that has occurred since the mid-1960's may be attributed to the decrease in rates of ischemic heart disease mortality. This would occur if the case-fatality rate were dropping in the absence of a change in incidence. For the age group 65 years and over, shown in table 6, the reported rates of ischemic heart disease increased from 1979–81 to 1985–87. This increase is primarily the result of a significant increase in rates among males aged 65 and over between 1979–81 and 1985–87. There was no significant increase for females aged 65 and over. It is possible that more diagnostic studies have been done in recent years, resulting in an increase in the number of cases being diagnosed.

The rates of hypertension for both men and women did not change significantly from 1979–81 to 1985–87. Throughout all these years, there was an increase in screening and public awareness of the disease (8).

Finally, the reported rates of diabetes increased significantly for the total population

aged 65 or over from 1979–81 to 1985–87. However, the increase was significant only for men. An increase in reported prevalence may reflect a decrease in mortality from the disease or an increase in public awareness and detection, or both.

### References

1. Stewart AL, Ware JE, Brook RH. Construction and scoring of aggregate functional status measures, vol 1. Contract No. R-2551-1-HHS. Santa Monica, California: The Rand Corporation. 1982.
2. Ware J, Davies-Avery A, Donald C. Conceptualization and measurement of health for adults in the health insurance study: Vol V general health perceptions. Contract No. R-1987/5-HEW. Santa Monica, California: The Rand Corporation. 1978.
3. Ware J, Karmos A. Development and validation of scales to measure perceived health and patient role propensity: Vol 11 of a final report. Carbondale, Illinois: Southern Illinois University School of Medicine. 1976.
4. Kaplan G, Barell V, Lusky A. Subjective state of health and survival in elderly adults. *J Gerontol* 43:S114–20. 1988.
5. National Center for Health Statistics. Health, United States, 1988. Hyattsville, Maryland: Public Health Service. 1989.
6. LaRue A, Bank B, Jarvik L, Hetland M. Health in old age: How do physicians' ratings and self-ratings compare? *J Gerontol* 34:687–91. 1979.
7. Wiener JM, Hanley RJ, Clark R, Van Nostrand JF. Measuring the activities of daily living: Comparisons across national surveys. *J Gerontol* 45(6):S229–37. 1990.
8. National High Blood Pressure Education Program. The 1988 report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure. Bethesda, Maryland: U.S. Department of Health and Human Services, National Heart, Lung, and Blood Institute. May 1988.

**Table 1. Average annual percent distribution of persons 55 years of age and over by respondent-assessed health status, according to sex, race, and age: United States, 1985–87**

[Data are based on household interviews of the civilian noninstitutionalized population]

Sex, race, and age	Total	Respondent-assessed health status <sup>1</sup>				
		Excellent	Very good	Good	Fair	Poor
Total <sup>2</sup>	Number of persons in thousands	Percent distribution <sup>3</sup>				
55–59 years. . . . .	11,105	24.3	24.9	30.5	13.3	7.0
60–64 years. . . . .	10,779	19.8	23.5	32.2	16.0	8.6
65–69 years. . . . .	9,456	17.8	21.3	33.9	18.9	8.2
70–74 years. . . . .	7,444	16.0	21.2	32.8	20.9	9.0
75–79 years. . . . .	5,312	14.0	19.7	32.4	23.0	11.0
80–84 years. . . . .	3,161	13.9	19.2	31.7	23.3	12.0
55–64 years. . . . .	21,884	22.1	24.2	31.3	14.6	7.8
65–74 years. . . . .	16,900	17.0	21.3	33.4	19.8	8.5
75–84 years. . . . .	8,473	14.0	19.6	32.1	23.1	11.3
65 years and over. . . . .	27,405	15.9	20.7	32.8	20.9	9.7
75 years and over. . . . .	10,505	14.2	19.7	31.8	22.8	11.7
85 years and over. . . . .	2,032	14.9	20.2	30.4	21.5	13.0
White male						
55–64 years. . . . .	9,144	24.7	25.2	29.5	12.7	7.9
65–74 years. . . . .	6,721	18.3	21.5	32.5	19.1	8.7
75–84 years. . . . .	2,868	14.3	19.6	32.4	21.9	11.8
65 years and over. . . . .	10,201	17.0	20.8	32.4	20.0	9.8
75 years and over. . . . .	3,480	14.5	19.5	32.4	21.7	12.0
85 years and over. . . . .	612	15.6	19.0	32.0	20.3	13.1
Black male						
55–64 years. . . . .	929	16.1	16.8	28.6	23.6	14.9
65 years and over. . . . .	921	10.6	16.2	28.5	27.7	17.0
White female						
55–64 years. . . . .	10,227	21.6	24.8	33.1	14.1	6.4
65–74 years. . . . .	8,470	17.1	21.9	35.0	18.9	7.1
75–84 years. . . . .	4,794	14.6	20.2	32.7	22.6	10.0
65 years and over. . . . .	14,509	16.1	21.3	33.8	20.3	8.5
75 years and over. . . . .	6,038	14.7	20.3	32.2	22.3	10.6
85 years and over. . . . .	1,244	15.0	21.0	30.2	21.2	12.6
Black female						
55–64 years. . . . .	1,141	10.7	17.5	30.2	27.1	14.5
65 years and over. . . . .	1,372	8.6	16.9	27.6	29.4	17.5

<sup>1</sup>Excludes unknown respondent-assessed health status.

<sup>2</sup>Includes races other than white and black.

<sup>3</sup>May not add to 100 percent because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.

**Table 2. Percent distribution of persons 65 years of age and over by number of activities of daily living for which difficulty was reported, according to sex, age, and respondent-assessed health status: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and respondent-assessed health status<sup>1</sup></i>	<i>Total</i>	<i>Number of activities of daily living causing difficulty</i>			
		<i>None</i>	<i>1</i>	<i>2</i>	<i>3 or more</i>
	Number of persons in thousands <sup>2</sup>	Percent distribution <sup>3</sup>			
<b>Male, 65–69 years</b>					
All health statuses . . . . .	4,092	85.0	5.3	3.5	6.2
Excellent and very good . . . . .	1,615	96.0	*1.5	*1.7	*0.7
Good . . . . .	1,392	92.3	3.4	*1.0	3.3
Fair and poor . . . . .	1,085	59.3	13.5	9.2	18.1
<b>Male, 70–74 years</b>					
All health statuses . . . . .	3,223	84.7	7.6	3.1	4.6
Excellent and very good . . . . .	1,313	94.8	3.0	*0.6	*1.6
Good . . . . .	1,007	89.2	4.6	*3.5	*2.7
Fair and poor . . . . .	904	65.1	17.8	6.2	10.9
<b>Male, 75–79 years</b>					
All health statuses . . . . .	2,115	80.5	9.4	3.7	6.4
Excellent and very good . . . . .	724	94.0	*4.4	*1.0	*0.6
Good . . . . .	666	85.8	8.7	*3.3	*2.2
Fair and poor . . . . .	724	62.1	15.1	*6.8	16.0
<b>Male, 80–84 years</b>					
All health statuses . . . . .	1,081	74.6	11.8	*2.4	11.1
Excellent and very good . . . . .	341	88.1	*5.6	*2.2	*4.2
Good . . . . .	379	80.8	11.6	*1.0	*6.7
Fair and poor . . . . .	362	55.4	18.0	*4.2	22.4
<b>Male, 85 years and over</b>					
All health statuses . . . . .	587	64.6	11.7	5.9	17.8
Excellent and very good . . . . .	241	77.6	*9.4	*2.1	*10.9
Good . . . . .	178	70.5	*9.8	*7.2	*12.6
Fair and poor . . . . .	168	39.9	*17.2	*10.0	33.0
<b>Female, 65–69 years</b>					
All health statuses . . . . .	5,095	84.3	6.1	3.5	6.1
Excellent and very good . . . . .	1,935	96.4	2.4	*0.9	*0.4
Good . . . . .	1,757	90.4	4.9	*1.9	*2.7
Fair and poor . . . . .	1,403	59.9	12.7	9.2	18.2
<b>Female, 70–74 years</b>					
All health statuses . . . . .	4,169	78.8	8.7	4.7	7.9
Excellent and very good . . . . .	1,516	92.0	5.0	*1.8	*1.3
Good . . . . .	1,481	85.5	5.8	4.3	4.3
Fair and poor . . . . .	1,172	53.3	17.0	8.7	20.9

**Table 2. Percent distribution of persons 65 years of age and over by number of activities of daily living for which difficulty was reported, according to sex, age, and respondent-assessed health status: United States, 1986—Con.**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and respondent-assessed health status<sup>1</sup></i>	<i>Total</i>	<i>Number of activities of daily living causing difficulty</i>			
		<i>None</i>	<i>1</i>	<i>2</i>	<i>3 or more</i>
	Number of persons in thousands <sup>2</sup>	Percent distribution <sup>3</sup>			
<i>Female, 75–79 years</i>					
All health statuses . . . . .	3,147	70.3	9.1	5.5	15.1
Excellent and very good . . . . .	1,083	87.1	4.5	*3.6	*4.8
Good . . . . .	1,018	77.0	11.5	4.0	7.4
Fair and poor . . . . .	1,047	46.5	11.5	8.9	33.1
<i>Female, 80–84 years</i>					
All health statuses . . . . .	2,037	60.3	10.4	8.8	20.5
Excellent and very good . . . . .	703	80.8	5.4	7.1	*6.7
Good . . . . .	649	64.7	10.4	9.2	15.7
Fair and poor . . . . .	685	35.1	15.6	10.0	39.3
<i>Female, 85 years and over</i>					
All health statuses . . . . .	1,351	51.6	12.0	9.2	27.2
Excellent and very good . . . . .	492	70.3	13.2	9.8	6.8
Good . . . . .	384	49.4	14.5	13.5	22.6
Fair and poor . . . . .	475	34.1	8.6	5.2	52.1

<sup>1</sup>Excludes unknown respondent-assessed health status.

<sup>2</sup>Excludes those for whom information was missing on all activities of daily living (ADL's).

<sup>3</sup>May not add to 100 percent because of rounding.

NOTES: Persons reported as not performing an ADL were classified with those reported as having difficulty with that ADL. ADL's include eating, toileting, dressing, bathing, walking, getting in and out of a bed or chair, and getting outside.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 3. Percent distribution of persons 65 years of age and over by number of instrumental activities of daily living for which difficulty was reported, according to sex, age, and respondent-assessed health status: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

Sex, age, and respondent-assessed health status <sup>1</sup>	Total	Number of IADL's causing difficulty			
		None	1	2	3 or more
	Number of persons in thousands <sup>2</sup>	Percent distribution <sup>3</sup>			
<b>Male, 65–69 years</b>					
All health statuses . . . . .	4,083	85.1	8.1	3.1	3.7
Excellent and very good . . . . .	1,615	96.3	2.5	*0.9	*0.2
Good . . . . .	1,386	91.8	*4.6	*2.0	*1.7
Fair and poor . . . . .	1,081	59.9	20.8	7.9	11.5
<b>Male, 70–74 years</b>					
All health statuses . . . . .	3,223	85.3	9.0	2.2	3.6
Excellent and very good . . . . .	1,313	96.3	*2.7	*0.7	*0.3
Good . . . . .	1,007	90.4	6.3	*0.8	*2.4
Fair and poor . . . . .	904	63.5	21.1	5.8	9.6
<b>Male, 75–79 years</b>					
All health statuses . . . . .	2,111	78.9	10.7	4.7	5.7
Excellent and very good . . . . .	724	93.1	*4.7	*2.3	0.0
Good . . . . .	666	88.6	7.9	*2.8	*0.7
Fair and poor . . . . .	720	55.8	19.2	*8.9	16.1
<b>Male, 80–84 years</b>					
All health statuses . . . . .	1,074	74.3	12.7	3.5	9.6
Excellent and very good . . . . .	338	84.6	*9.1	*2.2	*4.1
Good . . . . .	379	77.0	*11.5	*5.7	*5.8
Fair and poor . . . . .	358	61.7	17.2	*2.4	18.7
<b>Male, 85 years and over</b>					
All health statuses . . . . .	584	57.0	15.0	*4.4	23.6
Excellent and very good . . . . .	241	75.0	11.4	*2.8	*10.8
Good . . . . .	178	56.1	*21.1	*4.2	18.5
Fair and poor . . . . .	165	31.8	*13.7	*6.9	47.7
<b>Female, 65-69 years</b>					
All health statuses . . . . .	5,061	75.9	14.2	4.1	5.7
Excellent and very good . . . . .	1,920	92.7	5.8	*1.0	*0.5
Good . . . . .	1,738	80.8	15.2	*2.0	*2.0
Fair and poor . . . . .	1,403	47.0	24.6	10.9	17.5
<b>Female, 70–74 years</b>					
All health statuses . . . . .	4,145	71.2	18.2	3.5	7.1
Excellent and very good . . . . .	1,510	86.6	10.6	*1.0	1.8
Good . . . . .	1,466	77.9	15.3	*2.9	3.9
Fair and poor . . . . .	1,168	43.0	31.6	7.5	18.0

**Table 3. Percent distribution of persons 65 years of age and over by number of instrumental activities of daily living for which difficulty was reported, according to sex, age, and respondent-assessed health status: United States, 1986—Con.**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and respondent-assessed health status<sup>1</sup></i>	<i>Total</i>	<i>Number of IADL's causing difficulty</i>			
		<i>None</i>	<i>1</i>	<i>2</i>	<i>3 or more</i>
	<i>Number of persons in thousands<sup>2</sup></i>	<i>Percent distribution<sup>3</sup></i>			
<b>Female, 75-79 years</b>					
All health statuses . . . . .	3,140	61.8	18.0	6.2	14.1
Excellent and very good . . . . .	1,079	81.8	11.9	*3.7	*2.6
Good . . . . .	1,014	74.1	16.2	*3.1	6.6
Fair and poor . . . . .	1,047	29.1	25.9	11.8	33.2
<b>Female, 80-84 years</b>					
All health statuses . . . . .	2,029	50.8	17.8	10.8	20.7
Excellent and very good . . . . .	699	71.2	16.6	7.3	*4.9
Good . . . . .	649	59.8	16.5	10.3	13.3
Fair and poor . . . . .	681	21.3	20.1	14.7	43.9
<b>Female, 85 years and over</b>					
All health statuses . . . . .	1,343	35.8	21.3	10.3	32.6
Excellent and very good . . . . .	488	56.6	26.0	*7.0	10.4
Good . . . . .	384	37.4	20.6	10.5	31.5
Fair and poor . . . . .	471	12.9	17.1	13.4	56.5

<sup>1</sup>Excludes unknown respondent-assessed health status.

<sup>2</sup>Excludes those for whom information was missing on all IADL's.

<sup>3</sup>May not add to 100 percent because of rounding.

NOTES: Persons reported as not performing an instrumental activity of daily living (IADL) were not classified with those reported as having difficulty with that IADL. IADL's include meal preparation, shopping, managing money, using the telephone, light housework, and heavy housework.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 4. Average annual number of selected reported acute conditions per 1,000 persons 55 years of age and over, by type of acute condition, race, sex, and age: United States, 1985–87**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Race, sex, and age</i>	<i>Type of acute condition</i>			
	<i>Respiratory</i>	<i>Digestive</i>	<i>Injury</i>	<i>Other<sup>1</sup></i>
Total <sup>2</sup>	Number per 1,000 persons			
55–59 years. . . . .	547.9	*12.4	158.0	253.6
60–64 years. . . . .	554.5	39.3	198.0	256.7
65–69 years. . . . .	487.4	49.1	177.8	241.5
70–74 years. . . . .	416.5	48.5	194.6	325.5
75–79 years. . . . .	374.6	94.3	222.3	270.4
80–84 years. . . . .	454.6	*63.7	203.6	299.3
55–64 years. . . . .	551.1	25.7	177.7	255.1
65–74 years. . . . .	456.1	48.8	185.2	278.6
75–84 years. . . . .	404.5	82.9	215.3	281.2
65 years and over. . . . .	426.7	65.0	205.3	299.5
75 years and over. . . . .	379.4	91.0	237.7	333.1
85 years and over. . . . .	275.0	*125.1	331.1	549.2
White male				
55–64 years. . . . .	501.0	*20.5	198.4	153.8
65–74 years. . . . .	432.9	*24.7	139.2	236.3
75–84 years. . . . .	364.6	*34.9	144.2	205.6
65 years and over. . . . .	400.0	27.9	144.9	241.7
75 years and over. . . . .	336.5	*34.0	155.9	252.2
85 years and over. . . . .	*204.8	*29.7	*210.8	469.9
Black male				
55–64 years. . . . .	426.4	–	*135.3	*266.1
65 years and over. . . . .	*153.5	*70.8	*173.0	*203.3
White female				
55–64 years. . . . .	625.7	29.7	174.7	328.9
65–74 years. . . . .	490.8	49.5	234.0	314.5
75–84 years. . . . .	437.2	118.9	254.3	339.5
65 years and over. . . . .	460.0	83.0	253.6	348.9
75 years and over. . . . .	416.8	129.8	281.0	397.0
85 years and over. . . . .	338.3	*171.6	384.0	618.7
Black female				
55–64 years. . . . .	403.6	*62.1	*92.2	319.2
65 years and over. . . . .	479.0	119.9	*154.8	262.0

<sup>1</sup>Includes the following conditions: eye conditions; ear conditions; urinary tract infections; skin conditions; acute back, spine, or neck pain; other musculoskeletal conditions; headache, excluding migraine; and all other acute conditions.

<sup>2</sup>Includes races other than white and black.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.

**Table 5. Average annual number of selected reported impairments per 1,000 persons 55 years of age and over, by type of impairment, race, sex, and age: United States, 1985–87**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Race, sex, and age</i>	<i>Type of impairment</i>			
	<i>Visual impairment<sup>1</sup></i>	<i>Cataract</i>	<i>Hearing impairment<sup>2</sup></i>	<i>Deformity or orthopedic impairment<sup>3</sup></i>
<b>Total<sup>4</sup></b>	Number per 1,000 persons			
55–59 years. . . . .	43.0	21.0	214.1	173.6
60–64 years. . . . .	59.8	46.5	278.1	184.3
65–69 years. . . . .	56.4	74.0	335.5	183.7
70–74 years. . . . .	81.0	130.4	368.8	200.6
75–79 years. . . . .	113.8	218.2	405.6	225.3
80–84 years. . . . .	107.6	259.7	425.5	203.9
55–64 years. . . . .	51.3	33.6	245.7	178.8
65–74 years. . . . .	69.7	71.1	365.0	220.2
75–84 years. . . . .	133.9	197.0	697.6	380.8
65 years and over. . . . .	89.5	155.7	383.0	203.2
75 years and over. . . . .	125.2	246.9	435.7	222.4
85 years and over. . . . .	182.6	302.0	530.4	243.8
<b>White male</b>				
55–64 years. . . . .	66.3	27.3	332.2	190.8
65–74 years. . . . .	84.9	70.2	443.3	159.7
75–84 years. . . . .	103.0	161.6	477.7	198.5
65 years and over. . . . .	94.4	107.1	465.1	172.7
75 years and over. . . . .	112.9	178.3	507.1	197.8
85 years and over. . . . .	159.1	256.2	643.9	194.3
<b>Black male</b>				
55–64 years. . . . .	66.8	*32.7	166.7	224.4
65 years and over. . . . .	112.9	79.5	307.8	125.2
<b>White female</b>				
55–64 years. . . . .	36.7	38.3	182.5	163.5
65–74 years. . . . .	52.5	117.4	287.8	216.5
75–84 years. . . . .	110.8	282.4	395.5	242.7
65 years and over. . . . .	85.0	191.4	342.9	231.4
75 years and over. . . . .	130.4	294.9	420.0	252.1
85 years and over. . . . .	205.8	343.4	514.6	288.4
<b>Black female</b>				
55–64 years. . . . .	52.3	*20.4	*194.1	188.5
65 years and over. . . . .	66.7	189.5	240.2	190.9

<sup>1</sup>Visual impairment includes blindness in both eyes and other visual impairments.

<sup>2</sup>Hearing impairment includes deafness in both ears, other hearing impairments, and tinnitus.

<sup>3</sup>Deformity or orthopedic impairment includes back, upper extremities, and lower extremities.

<sup>4</sup>Includes races other than white and black.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.



**Table 6. Average annual number of selected reported chronic conditions per 1,000 persons 55 years of age and over, by type of chronic condition, sex, and age: United States, 1979–81, 1982–84, and 1985–87**

[Data are based on household interviews of the civilian noninstitutionalized population]

Sex and age	Type of chronic condition									
	Ischemic heart disease			Hypertension			Diabetes			
	1979–81	1982–84	1985–87	1979–81	1982–84	1985–87	1979–81	1982–84	1985–87	
Both sexes		Number per 1,000 persons								
55–64 years. . . . .	58.8	75.7	70.1	286.4	306.5	302.7	66.1	71.6	76.1	
65–74 years. . . . .	105.0	115.7	114.1	365.6	392.5	400.8	87.7	92.8	99.0	
65 years and over. . . . .	103.7	116.2	121.5	376.6	393.8	392.5	85.9	89.7	99.7	
75 years and over. . . . .	101.3	117.1	133.6	395.8	396.1	379.3	82.8	84.7	100.8	
Male										
55–64 years. . . . .	77.6	107.5	98.9	275.2	291.2	287.6	65.3	72.1	79.1	
65–74 years. . . . .	133.9	149.9	150.7	305.6	335.7	359.3	84.8	79.9	101.9	
65 years and over. . . . .	125.0	142.8	152.6	297.3	318.6	331.1	82.8	83.0	102.5	
75 years and over. . . . .	106.6	128.9	156.3	280.4	285.6	276.6	78.6	88.7	103.6	
Female										
55–64 years. . . . .	42.1	47.9	44.7	296.4	320.0	316.1	66.9	71.3	73.4	
65–74 years. . . . .	82.8	89.4	85.3	411.7	436.0	433.4	90.0	102.7	96.7	
65 years and over. . . . .	88.8	97.9	99.8	431.9	445.8	435.7	88.1	94.3	97.7	
75 years and over. . . . .	98.2	110.4	120.4	463.7	460.0	438.9	85.3	82.3	99.1	

NOTE: These rates are based on unduplicated counts; a person was counted only once for each condition regardless of the number of mentions of that condition.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.

# Chapter 2

## Functional status and living arrangements

by Thomas Prohaska, Ph.D., Robin Mermelstein, Ph.D., and Baila Miller, Ph.D., University of Illinois at Chicago; and Susan Jack, M.S., National Center for Health Statistics

### Introduction

Functional status is commonly defined in terms of the ability of an individual to perform basic and instrumental activities of daily living (ADL's, IADL's). Functional limitation, along with whether an individual receives assistance for functional limitation, and living arrangements are important because they serve as key indicators of an older person's ability to remain independent in the community. These factors have implications for community service delivery and affect the older adult's risk of institutionalization (1–3). The ability to perform activities of daily living also has implications for quality of life and active life expectancy (4).

This chapter focuses on both the distribution of ADL and IADL difficulties and the assistance received for them among an older, noninstitutionalized population in the United States. As previously demonstrated (5,6), it is hypothesized that difficulties in performing both ADL's and IADL's will be related to age, sex, and race, such that older adults, females, and persons of all races other than white should report more difficulties in performing these ADL's and IADL's. This chapter also addresses how difficulty with ADL's and IADL's varies by living arrangement for various demographic groups. It is hypothesized that adults aged 75 and over who live with

others will have greater difficulty with ADL's and IADL's than those who live alone. However, for the younger elderly (aged 65–74 years), there should be little association between ADL and IADL difficulties and living arrangement.

### Definitions of activity limitations

ADL's include seven personal care activities (eating, toileting, dressing, bathing, transferring, walking, and getting outside). Respondents were considered to have difficulty with an ADL if they reported difficulty performing specific activities, by themselves and without using special equipment, because of a health or physical problem. IADL's refer to six home-management activities (meal preparation, shopping, money management, telephone use, light housework, and heavy housework). Respondents were considered to have difficulty with an IADL if, because of a health problem, they had difficulty performing specific activities by themselves.

Respondents were asked if they received help from anyone for each ADL and IADL. Only persons who reported difficulty with a specific activity were asked about assistance received for that activity. Therefore, assistance received for ADL's and IADL's can be considered an underestimate of total assistance provided to the older adult because some receive assistance when no difficulty is present.

It was decided to count those who reported that they do not do ADL's as functionally limited. Because ADL's are so fundamental to the

---

The authors wish to acknowledge Richard Suzman, Ph.D., National Institute on Aging, National Institutes of Health, for his helpful comments on the manuscript.

**Table A. Percent who reported “does not do” for instrumental activities of daily living, by sex and age**

IADL	Male			Female		
	65 years and over	65–74 years	75 years and over	65 years and over	65–74 years	75 years and over
Meal preparation . . . . .	12.43	11.21	14.81	1.16	0.67	1.86
Shopping . . . . .	2.79	2.16	4.01	1.21	0.57	2.12
Money management . . . . .	2.30	2.04	2.81	1.47	1.02	2.11
Telephone use . . . . .	1.10	0.90	1.49	0.29	0.18	0.46
Light housework . . . . .	9.14	8.64	10.11	0.86	0.41	1.51
Heavy housework . . . . .	15.85	14.02	19.39	5.02	3.23	7.56

NOTE: IADL is instrumental activities of daily living.

existence of the individual, it is likely that a respondent who “does not do” probably has functional limitations. The percentages of those reporting “does not do” were less than 1 percent for any given ADL.

IADL’s, on the other hand, may be performed by others without consequence to the older adult. Those who reported that they do not do IADL’s were counted as not limited. Because many IADL’s are associated with a female gender role (e.g., housework, meal preparation), this decision may result in some underestimation of difficulty with IADL’s for older males. This is further supported by the percentages of males who reported “does not do” for IADL’s in table A.

### Sources of data

The National Health Interview Survey (NHIS) 1986 Functional Limitations Supplement was the source of data for this chapter. The 1986 survey was the most recent NHIS to collect detailed information on ADL’s and IADL’s. The NHIS is a continuing nationwide survey based on household interviews of the civilian noninstitutionalized population of the United States. The 1986 survey included a supplementary questionnaire, directed at the population 65 years of age and over, that focused on ADL’s and IADL’s. The ADL’s included were seven personal care activities: eating, toileting, dressing, bathing, walking, getting in and out of a bed or chair (trans-

ferring), and getting outside. IADL’s included were six home-management activities: preparing meals, shopping for personal items, managing money, using the telephone, doing heavy housework, and doing light housework.

### Results and comments

#### Functional status: Basic activities of daily living

As can be seen in table 1, more than 75 percent of the total population aged 65 and over reported no problems performing the ADL’s. Of this age group, 13 percent reported only one or two such difficulties and 10 percent reported difficulty with three or more basic ADL’s.

As hypothesized, the number of reported ADL difficulties varied by age, race, and sex. Significantly more adults in the group aged 65 to 74 years reported being free of ADL difficulties than did those in the 75-and-over group (83 percent versus 68 percent). Persons of all other races were less likely than were white persons, and females were less likely than were males to report having no basic ADL difficulties. Also, a significantly smaller percentage of both males and females in the group aged 65–74 years reported having difficulty with three or more ADL’s than did those 75 years and over. Table 1 also shows the percentage of persons aged 65 and over who had difficulty and received help of another person, by the number of ADL’s for

which help was received, by race, sex, and age. A significantly greater percentage of females than males reported receiving assistance with two or more ADL's. For both males and females, a significantly greater percentage of those aged 75 and over received help for two or more ADL's than did those 65–74 years of age.

The extent to which community-residing adults aged 65 and over reported difficulty in each of seven basic ADL's is shown in table 2. For this population, the most commonly reported basic ADL's with which this group had difficulty were walking (18 percent) and getting outside (12 percent). Difficulty with eating and toileting were cited the least frequently. For six of the seven ADL's, a significantly greater percentage of the group aged 75 and over reported having difficulty than did those aged 65–74 years (difficulty with eating did not differ significantly by the two age groups). Males reported fewer difficulties than females in five of the seven basic ADL's (difficulties in eating and dressing showed no differences between the sexes).

It is interesting to note that the percentages of those with specific ADL difficulties were similar to the percentages of those receiving help of another (table 3) for some ADL's, such as eating and toileting. For other ADL's, such as walking or getting outside, the percentages reporting difficulty and receiving help were not as similar. This suggests that some basic ADL's are more fundamental to human existence than others (e.g., eating, toileting) and that those who have difficulty with but do not receive help for the less fundamental ADL's (e.g., walking and getting out) survive with a certain level of difficulty.

Table 3 shows the percentage of persons who had difficulty and received assistance for the seven basic ADL's by race, sex, and age. The two most frequent basic activities for which help was received were getting outside (6 percent) and bathing (6 percent). Females were

significantly more likely than males to receive assistance with getting outside. Males aged 75 and over were significantly more likely to receive help than males aged 65–74 in only one ADL—getting outside. Females, however, showed more differences between the two age groups. A significantly greater percentage of those 75 and over, when compared with those 65–74 years, reported receiving assistance for all but one of the ADL's (eating).

### **Functional status: Instrumental activities of daily living**

The pattern of IADL difficulties was similar to that found for the basic ADL's. Approximately 72 percent (table 4) of the total population aged 65 and over reported having no difficulties with IADL's, and less than 10 percent of the population reported difficulty with three or more IADL's. Significantly more adults aged 65–74 years reported no difficulties with IADL's than did those in the group aged 75 and over. Also, a greater percentage of males than females and white persons than persons of all other races were free of IADL problems.

The percentage of persons who received assistance with two or more IADL's (table 4) varied by race, sex, and age. Fewer white people reported receiving help with two or more IADL's than did people of all other races, and fewer males received help with two or more IADL's than did females. As expected, a greater percentage of respondents aged 75 and over received help with two or more IADL's than did those 65–74 years of age.

Table 5 shows the percentage of persons aged 65 and over who reported difficulty performing each of six IADL's, by race, sex, and age. Difficulty with heavy housework was the most frequently reported limitation (24 percent). Shopping difficulties were also common, with more than 12 percent of older adults living in the

community having such problems. Compared with white people, a significantly greater percentage of people of all other races had difficulties with meal preparation, shopping, and light house work. Sex differences were also found for the IADL's, with females generally reporting more difficulties. Compared with males, significantly greater proportions of females had difficulty with all IADL's except telephone usage. As noted earlier, this may be partly the result of sex-role differences in performing the activities. A significantly greater percentage of those 75 years and over had difficulty in each of the six IADL's than did those 65–74 years of age (table 5).

Table 6 shows the percentage of persons who had difficulty and received help with each of six IADL's. The two IADL's for which help was most frequently received were heavy housework (19 percent) and shopping (12 percent). A significantly greater percentage of all races other than white received assistance with meal preparation, shopping, and light housework (table 6). With the exception of telephone usage and money management, significantly more females reported receiving help with IADL's than did males. Finally, for all six IADL's, those aged 65–74 were less likely to receive assistance than were those aged 75 years and over.

Table B shows the percentage of persons reporting on difficulties in performing ADL's and IADL's by sex and age. As can be seen in the table, 67 percent of the total population had no difficulties with either ADL's or IADL's, while 17 percent reported one or more difficulties with both. Five percent of the total population reported difficulty with ADL's only. Eleven percent of the total population reported difficulty with IADL's only.

A greater percentage of males than females were free of difficulty with both ADL's and IADL's. Males were also more likely to report difficulties with ADL's only, but were less likely to report difficulties with IADL's only. The percentage of persons reporting difficulty with IADL's only and with both ADL's and IADL's increases significantly with age. As expected, the percentage of persons reporting no difficulties with IADL's and ADL's decreases with age. Age patterns in those with difficulty in ADL's only were not evident.

### Living arrangements and functional status

Table 7 shows the percent distribution by living arrangement according to race, age, and sex for community-residing adults in the United States, aged 65 and over. More than 30 percent of this population reported living alone, and the

**Table B. Percent distribution of persons with difficulty in activities of daily living and instrumental activities of daily living, by sex and age**

<i>Sex and age</i>	<i>Difficulties in ADL's and IADL's</i>			
	<i>None</i>	<i>ADL difficulty only</i>	<i>IADL difficulty only</i>	<i>Both</i>
Total . . . . .	66.6	5.2	10.9	17.3
<i>Sex</i>				
Male . . . . .	74.7	6.6	7.4	11.3
Female . . . . .	60.9	4.3	13.4	21.5
<i>Age</i>				
65–74 years . . . . .	74.1	4.7	9.2	12.0
75–84 years . . . . .	58.7	6.5	12.5	22.4
85 years or over . . . . .	37.1	4.8	18.3	39.8

NOTE: ADL is activities of daily living. IADL is instrumental activities of daily living.

proportion increases significantly with age. More than one-half of those aged 85 and over lived alone. White people 65 years of age and over were more likely to live with a spouse and less likely to live with others when compared with persons of all other races. The percentage living alone, however, did not vary by race. Among those 65 years of age and over, females were significantly more likely to live alone than males (43 percent versus 16 percent). This sex difference in the percentage living alone holds within age categories (65–69, 70–74, 75 years and over). Another major difference between men and women in living arrangements was the proportion who lived with a spouse. Although more than 76 percent of the men aged 65 and over lived with their wives, less than 40 percent of the women lived with their husbands. The sex difference in living with a spouse is significant within each of the age groups of 65–69 years, 70–74 years, and 75 and over. It should be noted that in the United States, husbands are generally older than their wives, and also, age-specific mortality rates for males at all ages are greater than for females. These factors result in a greater percentage of older widows than widowers.

The following comparisons are designed to assess the relationships between living arrangements, ADL's, IADL's, and age. It is hypothesized that the older and more disabled (as defined by the number of ADL's and IADL's) a person is, the greater the likelihood that that person will be living with others. Table 8 shows the percentage of those having zero, one, two, and three or more basic ADL difficulties by living arrangement, age, and sex. For the group aged 65–74 years, there were no significant differences by living arrangement in the percentage of men and women with no ADL difficulties. Similarly, for the same age group, there were no differences by living arrangement for men and women with three or more ADL difficulties. However, older women (75 years and over) living alone were

more likely to report having no ADL difficulties than were women of the same age group who lived with others. Also, a greater percentage of older women living with others reported three or more ADL difficulties (23 percent) than did women of similar age who lived alone (16 percent). There were no significant differences by living arrangement for males aged 75 years and over who reported no ADL difficulties. There also were no significant differences by living arrangement for males aged 75 and over who reported three or more ADL difficulties.

Table 9 contains the percentage of those reporting difficulty with each of seven ADL's by living arrangement, age, and sex. For the population aged 65–74, there were no significant differences by living arrangement in the percentage of persons having difficulty with ADL's. This was the case for both males and females. The relationship between specific ADL difficulties and living arrangement becomes evident in the group aged 75 and over. Within this group, women living alone were less likely to have difficulties in the ADL's of eating, dressing, bathing, and getting outside than were women who lived with others. The pattern between ADL's and living arrangement for women was not evident for men.

Table 10 shows the percent distribution of older adults reporting zero, one, two, and three or more IADL difficulties by living arrangement, age, and sex. Among males aged 65–74 years, those who lived with others were more likely to report no IADL difficulties than those who lived alone. For females aged 75 and over, those who lived with others were more likely to report having difficulty with three or more IADL's than those who lived alone (26 percent versus 15 percent). These findings of IADL differences by living arrangement were generally in agreement with those reported for ADL's in table 8. For both ADL's and IADL's, a greater percentage of women aged 75 and over and living with others

reported three or more difficulties, compared with women of the same age living alone.

Table 11 contains the percentage of persons aged 65 and over reporting difficulty with each of six IADL's by living arrangement, age, and sex. As with the findings reported for ADL's and living arrangements, for both men and women aged 65-74 years, there were no significant differences in the percentage of persons having difficulty with the six IADL's by living arrangement. There was one exception to this finding. A significantly greater percentage of women aged 65-74 years and living with others reported more difficulty with light housework than women of the same age who lived alone.

Differences in the percentage of persons with IADL difficulties by living arrangement become striking in the age group of 75 years and over. Women in this age group living with others were significantly more likely to have difficulty with meal preparation, managing money, using the telephone, and light housework than were women of the same age living alone (table 11). Males aged 75 years and over, on the other hand, did not differ significantly by living arrangement in reported difficulty for the six IADL's.

Given that the findings presented above are based on cross-sectional data, it is difficult to

determine the direction of influence between living arrangement and ADL and IADL difficulties. It is possible that, as older adults develop difficulties in personal care, home management, and mobility, they may find it necessary to live with another person. Longitudinal data following changes in ADL's and IADL's in older adults as they change living arrangements would address this issue.

## References

1. Wolinski F. Assessing the effects of predisposing, enabling, and illness morbidity characteristics on health service utilization. *J Health Soc Behav* 19:384-96. 1978.
2. Branch L, Jette A. A prospective study of long-term care institutionalization among the aged. *Am J Public Health* 72:1373-9. 1982.
3. Shapiro E, Tate R. Who is really at risk of institutionalization? *Gerontologist* 28(2):237-45. 1988.
4. Katz S, Branch L, Branson M, et al. Active life expectancy. *N Engl J Med* 309(20):1218-23. 1983.
5. Wiener JM, Hanley RJ, Clark R, Van Nostrand JF. Measuring the activities of daily living: Comparisons across national surveys. *J Gerontol* 45(6):S229-37. 1990.
6. Fulton JP, Katz S, Jack SS, Hendershot GE. Physical functioning of the aged: United States, 1984. *Vital Health Stat* 10(167). Washington: National Center for Health Statistics. 1989.

**Table 1. Percent distribution of persons 65 years of age and over by number of activities of daily living for which difficulty was reported and percent of persons who received the help of another person in performing activities of daily living, according to race, sex, and age: United States, 1986**  
 [Data are based on household interviews of the civilian noninstitutionalized population]

Race, sex, and age	Total	Number of ADL's					
		With difficulty				Help of another person received	
		None	1	2	3 or more	1	2 or more
	Number of persons in thousands <sup>1</sup>	Percent distribution <sup>2</sup>				Percent	
<b>Race</b>							
White . . . . .	24,317	77.9	8.1	4.6	9.4	3.6	5.9
All other . . . . .	2,739	72.6	8.5	5.1	13.8	4.7	8.5
<b>Sex</b>							
Male . . . . .	11,133	81.9	7.8	3.5	6.9	2.4	4.3
Female . . . . .	15,923	74.2	8.4	5.4	12.0	4.6	7.5
<b>Age</b>							
65-74 years . . . . .	16,646	83.2	6.9	3.7	6.3	2.5	3.4
75-84 years . . . . .	8,456	71.1	9.8	5.5	13.7	4.9	8.6
65 years and over . . . . .	27,057	77.4	8.1	4.6	9.9	3.7	6.2
75 years and over . . . . .	10,411	68.2	10.2	6.0	15.7	5.7	10.6
85 years and over . . . . .	1,954	55.5	11.8	8.3	24.3	9.2	19.6
<b>Male</b>							
65-74 years . . . . .	7,335	84.8	6.4	3.4	5.5	1.9	3.3
75-84 years . . . . .	3,206	78.5	10.2	3.3	8.1	2.9	5.1
65 years and over . . . . .	11,133	81.9	7.8	3.5	6.9	2.4	4.3
75 years and over . . . . .	3,798	76.4	10.4	3.7	9.6	3.4	6.3
85 years and over . . . . .	592	64.9	11.6	5.9	17.6	*6.0	12.9
<b>Female</b>							
65-74 years . . . . .	9,310	81.9	7.3	4.0	6.9	2.9	3.5
75-84 years . . . . .	5,250	66.6	9.5	6.8	17.1	6.1	10.7
65 years and over . . . . .	15,923	74.2	8.4	5.4	12.0	4.6	7.5
75 years and over . . . . .	6,613	63.5	10.0	7.4	19.2	7.0	13.1
85 years and over . . . . .	1,363	51.5	11.9	9.4	27.3	10.5	22.4

<sup>1</sup>Excludes those for whom information was missing on all ADL's.

<sup>2</sup>May not add to 100 percent because of rounding.

NOTES: Persons reported as not performing an activity of daily living (ADL) are included with those reported as having difficulty or receiving help with that ADL. ADL's include eating, toileting, dressing, bathing, walking, getting in and out of a bed or chair, and getting outside.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.



**Table 2. Percent of persons 65 years of age and over with reported difficulty performing activities of daily living, by race, sex, and age: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

Race, sex, and age	Total	ADL with difficulty						
		Eating	Toileting	Dressing	Bathing	Transferring <sup>1</sup>	Walking	Getting outside
	Number of persons in thousands	Percent						
<b>Race</b>								
White . . . . .	24,753	1.9	4.4	5.7	9.5	8.2	17.8	11.3
All other . . . . .	2,784	1.3	7.0	8.6	14.0	11.6	22.1	15.6
<b>Sex</b>								
Male . . . . .	11,357	1.7	3.4	5.2	7.1	6.4	14.9	7.5
Female . . . . .	16,181	1.9	5.6	6.5	12.0	10.1	20.6	14.8
<b>Age</b>								
65-74 years . . . . .	16,987	1.5	2.8	4.2	6.3	6.2	13.5	7.0
75-84 years . . . . .	8,552	1.8	6.3	7.3	13.9	11.2	23.4	16.9
65 years and over . . . . .	27,538	1.8	4.7	6.0	10.0	8.6	18.2	11.7
75 years and over . . . . .	10,551	2.4	7.7	8.8	16.0	12.3	25.8	19.4
85 years and over . . . . .	1,999	5.0	14.0	15.1	24.8	17.1	35.9	30.1
<b>Male</b>								
65-74 years . . . . .	7,490	1.7	2.7	4.5	6.0	5.6	12.6	5.7
75-84 years . . . . .	3,251	*1.1	3.4	5.2	7.8	6.9	17.3	9.2
65 years and over . . . . .	11,357	1.7	3.4	5.2	7.1	6.4	14.9	7.5
75 years and over . . . . .	3,866	1.9	4.7	6.4	9.4	8.0	19.2	10.9
85 years and over . . . . .	615	*5.7	11.6	12.7	18.1	14.0	28.9	19.7
<b>Female</b>								
65-74 years . . . . .	9,496	1.3	2.8	4.0	6.5	6.7	14.2	8.0
75-84 years . . . . .	5,301	2.3	8.0	8.6	17.6	13.8	27.2	21.6
65 years and over . . . . .	16,181	1.9	5.6	6.5	12.0	10.1	20.6	14.8
75 years and over . . . . .	6,685	2.8	9.5	10.2	19.7	14.8	29.6	24.3
85 years and over . . . . .	1,384	*4.7	15.0	16.1	27.8	18.5	39.1	34.7

<sup>1</sup>Transferring means getting in and out of a bed or chair.

NOTE: Persons reported as not performing an activity of daily living (ADL) were classified with those reported as having difficulty with that ADL.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 3. Percent of persons 65 years of age and over who reported receiving the help of another person with performing activities of daily living, by race, sex, and age: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Race, sex, and age</i>	<i>Total</i>	<i>ADL for which help of another person received</i>						
		<i>Eating</i>	<i>Toileting</i>	<i>Dressing</i>	<i>Bathing</i>	<i>Transferring<sup>1</sup></i>	<i>Walking</i>	<i>Getting outside</i>
	Number of persons in thousands	Percent						
<b>Race</b>								
White . . . . .	24,753	1.1	2.3	4.2	5.6	3.0	4.5	6.1
All other . . . . .	2,784	*0.6	3.5	6.1	9.4	5.2	5.8	7.8
<b>Sex</b>								
Male . . . . .	11,357	1.0	1.9	3.9	4.3	2.6	3.1	3.8
Female . . . . .	16,181	1.1	2.8	4.7	7.2	3.7	5.8	8.0
<b>Age</b>								
65-74 years . . . . .	16,987	0.8	1.4	2.9	3.2	2.1	2.6	3.2
75-84 years . . . . .	8,552	1.1	3.3	5.4	8.6	4.0	6.4	9.2
65 years and over . . . . .	27,538	1.1	2.4	4.4	6.0	3.2	4.6	6.3
75 years and over . . . . .	10,551	1.6	4.1	6.8	10.6	5.0	8.0	11.3
85 years and over . . . . .	1,999	4.1	7.5	12.6	19.0	9.4	14.8	20.6
<b>Male</b>								
65-74 years . . . . .	7,490	0.9	1.5	3.2	3.3	2.3	2.3	2.7
75-84 years . . . . .	3,251	*0.6	1.9	4.2	4.9	2.3	3.7	4.8
65 years and over . . . . .	11,357	1.0	1.9	3.9	4.3	2.6	3.1	3.8
75 years and over . . . . .	3,866	1.3	2.5	5.2	6.4	3.2	4.5	6.0
85 years and over . . . . .	615	*4.7	*5.9	10.0	14.1	7.8	8.3	12.8
<b>Female</b>								
65-74 years . . . . .	9,496	0.6	1.3	2.6	3.1	2.0	2.8	3.5
75-84 years . . . . .	5,301	1.3	4.1	6.1	10.9	5.0	8.0	11.9
65 years and over . . . . .	16,181	1.1	2.8	4.7	7.2	3.7	5.8	8.0
75 years and over . . . . .	6,685	1.8	5.0	7.7	13.0	6.1	10.0	14.4
85 years and over . . . . .	1,384	*3.9	8.3	13.8	21.2	10.1	17.8	24.1

<sup>1</sup>Transferring means getting in and out of a bed or chair.

NOTE: Persons reported as not performing an activity of daily living (ADL) were classified with those reported as receiving help with that ADL.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 4. Percent distribution of persons 65 years of age and over by number of instrumental activities of daily living for which difficulty was reported and percent of persons who received the help of another person in performing instrumental activities of daily living, according to race, sex, and age: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

Race, sex, and age	Total	Number of IADL's				Help of another person received	
		None	1	2	3 or more	1	2 or more
	Number of persons in thousands <sup>1</sup>	Percent distribution <sup>2</sup>				Percent	
<b>Race</b>							
White . . . . .	24,218	72.6	13.9	4.6	8.9	11.2	11.4
All other . . . . .	2,731	64.9	14.9	6.3	13.9	11.5	17.2
<b>Sex</b>							
Male . . . . .	11,110	81.3	9.7	3.4	5.7	6.7	7.7
Female . . . . .	15,839	65.2	17.1	5.8	12.0	14.4	15.1
<b>Age</b>							
65-74 years . . . . .	16,579	78.8	12.7	3.4	5.2	9.9	6.6
75-84 years . . . . .	8,427	65.1	15.3	6.7	12.9	12.7	17.0
65 years and over . . . . .	26,948	71.9	14.0	4.8	9.4	11.3	12.0
75 years and over . . . . .	10,369	60.8	16.1	7.0	16.1	13.5	20.7
85 years and over . . . . .	1,943	41.9	19.4	8.7	30.0	16.9	36.4
<b>Male</b>							
65-74 years . . . . .	7,326	85.1	8.6	2.8	3.6	6.3	5.1
75-84 years . . . . .	3,195	77.3	11.3	4.4	7.0	7.0	10.1
65 years and over . . . . .	11,110	81.3	9.7	3.4	5.7	6.7	7.7
75 years and over . . . . .	3,783	74.1	11.9	4.5	9.6	7.6	12.8
85 years and over . . . . .	588	56.6	14.9	*5.2	23.4	11.0	27.2
<b>Female</b>							
65-74 years . . . . .	9,253	73.8	16.0	3.8	6.4	12.7	7.8
75-84 years . . . . .	5,232	57.7	17.7	8.1	16.5	16.2	21.3
65 years and over . . . . .	15,839	65.2	17.1	5.8	12.0	14.4	15.1
75 years and over . . . . .	6,586	53.1	18.5	8.5	19.9	16.8	25.2
85 years and over . . . . .	1,354	35.5	21.4	10.2	32.9	19.4	40.4

<sup>1</sup>Excludes those for whom information was missing on all instrumental activities of daily living (IADL's).

<sup>2</sup>May not add to 100 percent because of rounding.

NOTES: Persons reported as not performing an IADL are not included with those reported as having difficulty or receiving help with that IADL. IADL's include preparing meals, shopping, managing money, using the telephone, light housework, and heavy housework.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 5. Percent of persons 65 years of age and over with reported difficulty performing instrumental activities of daily living, by race, sex, and age: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

Race, sex, and age	Total	IADL with difficulty					
		Meal preparation	Shopping	Managing money	Using telephone	Light housework	Heavy housework
Race	Number of persons in thousands	Percent					
White . . . . .	24,753	6.6	12.1	4.9	4.8	7.5	23.3
All other . . . . .	2,784	12.8	18.8	8.2	6.7	12.8	28.0
<b>Sex</b>							
Male . . . . .	11,357	4.5	8.1	4.1	5.1	5.6	13.0
Female . . . . .	16,181	9.2	16.0	6.0	4.9	9.8	31.3
<b>Age</b>							
65-74 years . . . . .	16,987	4.0	7.3	2.5	3.2	4.6	18.0
75-84 years . . . . .	8,552	9.9	18.1	7.3	5.9	11.1	29.5
65 years and over . . . . .	27,538	7.3	12.8	5.2	5.0	8.1	23.8
75 years and over . . . . .	10,551	12.5	21.5	9.6	7.8	13.6	33.0
85 years and over . . . . .	1,999	23.4	36.0	19.5	16.1	24.4	48.0
<b>Male</b>							
65-74 years . . . . .	7,490	3.1	5.7	2.6	3.4	3.8	10.6
75-84 years . . . . .	3,251	5.3	10.5	5.7	6.3	6.9	15.2
65 years and over . . . . .	11,357	4.5	8.1	4.1	5.1	5.6	13.0
75 years and over . . . . .	3,866	7.3	12.8	7.1	8.4	9.2	17.6
85 years and over . . . . .	615	17.5	25.2	14.5	19.7	21.5	30.7
<b>Female</b>							
65-74 years . . . . .	9,496	4.7	8.7	2.4	3.1	5.3	23.9
75-84 years . . . . .	5,301	12.7	22.8	8.3	5.6	13.7	38.3
65 years and over . . . . .	16,181	9.2	16.0	6.0	4.9	9.8	31.3
75 years and over . . . . .	6,685	15.5	26.6	11.1	7.4	16.2	41.9
85 years and over . . . . .	1,384	26.0	40.8	21.8	14.4	25.7	55.6

NOTE: Persons reported as not performing an instrumental activity of daily living (IADL) were not classified with those reported as having difficulty with that IADL.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 6. Percent of persons 65 years of age and over who reported receiving the help of another person with performing instrumental activities of daily living, by race, sex, and age: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

Race, sex, and age	Total	IADL for which help of another person received					
		Meal preparation	Shopping	Managing money	Using telephone	Light housework	Heavy housework
	Number of persons in thousands	Percent					
<b>Race</b>							
White . . . . .	24,753	5.9	11.4	4.6	2.9	6.6	18.7
All other . . . . .	2,784	11.6	17.0	7.4	4.6	10.9	22.6
<b>Sex</b>							
Male . . . . .	11,357	4.2	7.6	3.9	2.8	5.0	10.0
Female . . . . .	16,181	8.0	15.1	5.6	3.2	8.4	25.4
<b>Age</b>							
65-74 years . . . . .	16,987	3.5	6.7	2.1	1.8	3.8	13.7
75-84 years . . . . .	8,552	8.7	17.1	7.1	3.6	9.7	24.2
65 years and over . . . . .	27,538	6.5	12.0	4.9	3.0	7.0	19.1
75 years and over . . . . .	10,551	11.3	20.5	9.4	5.0	12.2	27.8
85 years and over . . . . .	1,999	22.3	35.1	19.2	10.8	23.1	43.6
<b>Male</b>							
65-74 years . . . . .	7,490	2.8	5.4	2.4	1.9	3.1	7.9
75-84 years . . . . .	3,251	5.2	9.5	5.7	3.4	6.4	11.4
65 years and over . . . . .	11,357	4.2	7.6	3.9	2.8	5.0	10.0
75 years and over . . . . .	3,866	6.9	11.9	7.0	4.6	8.7	14.2
85 years and over . . . . .	615	15.9	24.6	13.8	10.7	20.9	28.9
<b>Female</b>							
65-74 years . . . . .	9,496	4.0	7.8	2.0	1.8	4.3	18.2
75-84 years . . . . .	5,301	10.9	21.7	7.9	3.7	11.7	32.0
65 years and over . . . . .	16,181	8.0	15.1	5.6	3.2	8.4	25.4
75 years and over . . . . .	6,685	13.8	25.4	10.7	5.2	14.2	35.8
85 years and over . . . . .	1,384	25.2	39.8	21.5	10.8	24.0	50.2

NOTE: Persons reported as not performing an instrumental activity of daily living (IADL) were not classified with those reported as receiving help with that IADL.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 7. Percent distribution of persons 65 years of age and over by living arrangement, according to race, age, and sex: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Race, age, and sex</i>	<i>Living arrangement</i>		
	<i>Lives alone</i>	<i>Lives with others<sup>1</sup></i>	<i>Lives with spouse</i>
<b>Race</b>		<b>Percent distribution<sup>2</sup></b>	
White .....	31.7	12.2	56.1
All other .....	31.2	27.4	41.4
<b>Age</b>			
65–69 years .....	22.6	10.9	66.5
70–74 years .....	28.7	11.8	59.6
65 years and over .....	31.7	13.7	54.7
75 years and over .....	41.9	17.6	40.5
85 years and over .....	51.9	26.4	21.8
<b>Male</b>			
65–69 years .....	12.9	6.3	80.8
70–74 years .....	13.8	7.5	78.7
65 years and over .....	16.2	7.5	76.4
75 years and over .....	21.7	8.8	69.6
85 years and over .....	34.1	17.8	48.2
<b>Female</b>			
65–69 years .....	30.3	14.6	55.1
70–74 years .....	40.1	15.0	44.9
65 years and over .....	42.5	18.1	39.4
75 years and over .....	53.6	22.7	23.7
85 years and over .....	59.8	30.2	10.0

<sup>1</sup>Lives with a nonrelative or a relative other than a spouse.

<sup>2</sup>May not add to 100 percent because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 8. Percent distribution of persons 65 years of age and over by number of activities of daily living for which difficulty was reported, according to living arrangement, sex, and age: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Age and number of ADL's with difficulty</i>	<i>Living arrangement</i>			
	<i>Lives alone</i>		<i>Lives with others<sup>1</sup></i>	
	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>
65-74 years	Percent distribution <sup>2</sup>			
None .....	80.0	80.0	85.6	82.9
1.....	10.1	7.4	5.8	7.2
2.....	*4.0	4.7	3.3	3.7
3 or more.....	5.9	7.9	5.4	6.3
75 years and over				
None .....	76.0	66.3	76.5	60.2
1.....	7.9	10.1	11.1	9.9
2.....	*6.1	7.7	3.0	7.0
3 or more.....	10.0	15.9	9.4	23.0

<sup>1</sup>Includes spouse.

<sup>2</sup>May not add to 100 percent because of rounding.

NOTES: Persons reported as not performing an activity of daily living (ADL) are included with those reported as having difficulty with that ADL. ADL's include eating, toileting, dressing, bathing, getting in and out of a bed or chair, walking, and getting outside.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 9. Percent of persons 65 years of age and over with reported difficulty performing activities of daily living, by living arrangement, sex, age, and activity: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Age and ADL's with difficulty</i>	<i>Living arrangement</i>				
	<i>Lives alone</i>		<i>Lives with others<sup>1</sup></i>		
	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	
65-74 years		Percent			
Eating .....	*1.0	1.1	1.8	1.4	
Toileting .....	4.1	2.7	2.5	2.9	
Dressing .....	5.2	3.0	4.4	4.5	
Bathing .....	8.6	6.3	5.6	6.6	
Transferring <sup>2</sup> .....	4.2	7.4	5.8	6.4	
Walking .....	15.8	16.1	12.1	13.1	
Getting outside .....	7.6	8.9	5.4	7.6	
75 years and over					
Eating .....	*1.7	1.1	1.9	4.6	
Toileting .....	*4.5	7.7	4.7	11.5	
Dressing .....	*4.6	7.3	6.9	13.4	
Bathing .....	7.5	16.2	10.0	23.9	
Transferring <sup>2</sup> .....	8.7	13.2	7.8	16.6	
Walking .....	20.4	27.8	18.8	31.7	
Getting outside .....	13.3	20.6	10.2	28.5	

<sup>1</sup>Includes spouse.

<sup>2</sup>Transferring means getting in and out of a bed or chair.

NOTE: Persons reported as not performing an activity of daily living (ADL) are included with those reported as having difficulty with that ADL.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.



**Table 10. Percent distribution of persons 65 years of age and over by number of instrumental activities of daily living for which difficulty was reported, according to living arrangement, sex, and age: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Age and number of ADL's with difficulty</i>	<i>Living arrangement</i>			
	<i>Lives alone</i>		<i>Lives with others<sup>1</sup></i>	
	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>
65-74 years		Percent distribution <sup>2</sup>		
None .....	79.5	72.9	85.9	74.3
1.....	11.4	17.3	8.1	15.3
2.....	5.0	4.5	2.4	3.4
3 or more.....	4.2	5.3	3.5	6.9
75 years and over				
None .....	71.5	54.8	74.8	51.2
1.....	8.7	21.1	12.7	15.5
2.....	6.1	9.5	4.1	7.3
3 or more.....	13.6	14.7	8.4	26.0

<sup>1</sup>Includes spouse.

<sup>2</sup>May not add to 100 percent because of rounding.

NOTES: Persons reported as not performing an instrumental activity of daily living (IADL) are not included with those reported as having difficulty with that IADL. IADL's include meal preparation, shopping, managing money, using the telephone, light housework, and heavy housework.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 11. Percent of persons 65 years of age and over with reported difficulty performing instrumental activities of daily living, by living arrangement, sex, age, and activity: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Age and IADL's with difficulty</i>	<i>Living arrangement</i>			
	<i>Lives alone</i>		<i>Lives with others</i> <sup>1</sup>	
	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>
65–74 years	Percent			
Meal preparation . . . . .	4.1	3.1	3.0	5.6
Shopping . . . . .	9.9	8.8	5.0	8.6
Managing money . . . . .	*4.1	2.0	2.4	2.6
Using telephone . . . . .	*2.8	2.6	3.5	3.3
Light housework . . . . .	*3.3	3.0	3.9	6.5
Heavy housework . . . . .	15.2	24.6	9.9	23.5
75 years and over				
Meal preparation . . . . .	11.3	10.1	6.1	21.7
Shopping . . . . .	15.9	23.4	12.0	30.2
Managing money . . . . .	8.9	7.8	6.6	14.9
Using telephone . . . . .	7.2	4.0	8.8	11.4
Light housework . . . . .	13.8	11.5	8.0	21.6
Heavy housework . . . . .	20.9	40.1	16.7	43.9

<sup>1</sup>Includes spouse.

NOTE: Persons reported as not performing an instrumental activity of daily living (IADL) are not included with those reported as having difficulty with that IADL.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

# Chapter 3

## Changes in functional status and risk of institutionalization and death

by Baila Miller, Ph.D., Thomas Prohaska, Ph.D., and Robin Mermelstein, Ph.D., University of Illinois at Chicago; and Joan F. Van Nostrand, M.P.A., National Center for Health Statistics

### Introduction

Although the general association of declining functional status with increasing risk of institutionalization and death has been well established (1,2), estimates of individual patterns of change in functional status have been limited because of the lack of longitudinal data. Analysis of a Massachusetts longitudinal study suggested that transitions between dependence and independence in functional status and institutionalization vary by age, but do not show uniform decline in functional ability (3). Results from the 1982–84 National Long Term Care Survey of persons 65 years of age and over show that a large majority of persons who were nondisabled in 1982 remained nondisabled in 1984, and significant numbers of community residents showed improvement in physical functioning. The risks of becoming disabled were approximately the same for females and males (2). Other analyses of the Longitudinal Study of Aging 1984–86 note that even among people receiving help, some improved in health status or at least did not become worse (1). One such recent study that examined the risk of functional decline among the cohort aged 70–74 suggested that participation in an active lifestyle may protect against functional decline (4). Understanding changes over time in the prevalence of each level of functional limitations makes it easier to assess quality of life and the need for health and social services in the aging population.

This chapter presents trends in functional status by level of functional difficulty in 1984 of noninstitutionalized community elderly persons 70 years of age and over. Changes in functional status (ability to perform everyday personal care and home-management activities) and risk of institutionalization and death by age, sex, and race are examined. The ability to perform everyday tasks is divided into two general categories: personal care (activities of daily living, or ADL's) and home management (instrumental activities of daily living, or IADL's). More specifically, ADL limitations refer to persons having difficulty because of a health or physical problem with eating, toileting, bathing, dressing, walking, getting in and out of a bed or chair, and getting outside. IADL limitations refer to persons having difficulty because of a health or physical problem with meal preparation, shopping, managing money, using the telephone, light housework, and heavy housework.

An important difference between ADL limitations and IADL limitations involves the way in which limitations are counted. Respondents who reported that they did not do an ADL were counted with those who reported difficulty in performing the activity. Given that ADL's are necessities, not doing one most likely means that an individual is unable to do so. However, for IADL's, respondents who reported not doing an activity were counted as not having difficulty. Unlike the ADL's, IADL's are not necessities of

life and may not be done for a variety of reasons other than disability. For example, as a result of role socialization, men typically perform fewer IADL's than women and thus their reports of difficulties may be underestimates. This chapter also presents measures of physical performance, which represent selected capacities important to maintaining independent functioning. These measures are assessments of mobility and arm strength.

The following hypotheses are examined: (a) increased age will be associated with a decline in functional status, a smaller probability of improved functional status, an increased risk of institutionalization, and an increased risk of death; and (b) sex differences will be found in the risks of institutionalization and mortality, such that females are more likely to be institutionalized, but will be at a lower risk of death at all ages (5). Sex differences in improvement or decline in functional status are not hypothesized (4). Recent research suggests that sex differences in the national prevalence of disabilities arise from the greater longevity of females at any given level of age and functional impairment (2).

### **Source of data**

The source of data for this chapter is the Longitudinal Study of Aging (LSOA), conducted by the National Center for Health Statistics in collaboration with the National Institute on Aging. The baseline data for this longitudinal followup is the 1984 Supplement on Aging (SOA) to the National Health Interview Survey. The SOA is a survey specifically directed toward civilian noninstitutionalized persons 55 years of age or over. The 1986 LSOA sample included all persons 80 years of age or over and approximately one-half of those aged 70–79 who participated in the SOA (1).

### **Results and comments**

The extent to which demographic factors and levels of functional limitations in 1984 influenced the transition rates for risk of death and institutionalization in 1986 are examined in tables 1–3. As previously noted, those considered limited in personal care activities (ADL) include all those who reported they did not do the specific ADL task. Those considered limited in home-management activities (IADL) did not include those who reported they did not do the IADL task. Tables 4–14 further distinguish two levels of difficulty in performance. The level of “no difficulty” indicates that a person has no difficulty in performing the activity because of a health or physical problem. The level of “some difficulty” includes those persons who have any difficulty in performing an activity, are unable to perform it, or receive the help of another person with the activity. This category is further subdivided into those who receive help of another person and those who do not. As can be seen in the data below, older persons receiving help from another person represent a different, possibly lower, functioning level. Persons in greater need of help with daily activities may be able to remain in the community only because they receive help. Receipt of help may also be dependent on a variety of sociodemographic factors, such as living arrangements and kin availability.

### **Risk of death and institutionalization**

The risk of death or institutionalization varied by demographic factor and degree and type of functional limitation. Mortality trends by age and sex are well documented in table 1. Persons 80 years of age and over and men had the highest mortality rates. Although both men and women 80 and over were more likely to be in

nursing homes than those in younger age groups, women 80 and over were at significantly higher risk of nursing home placement than their male age peers (6.0 percent versus 3.6 percent). Marital status did not affect the death rate, but nonmarried persons had a higher risk of nursing home placement than married persons.

Two or more limitations in ADL's and IADL's were associated with risk of death and nursing home residence (tables 2 and 3, respectively). Approximately 20 percent of those who in 1984 had two or more limitations in ADL and IADL were deceased in 1986, and approximately 6–7 percent were institutionalized. Questions about receipt of help from another person were only asked of those who reported difficulty in task performance. Those who received help with two or more ADL's or IADL's in 1984 were more likely to be deceased in 1986 than those who received help with only one ADL or IADL. Although there was no association between nursing home residence in 1986 and the number of ADL's help was received within 1984, nursing home residence in 1986 was more likely for those who received help for two or more IADL's in 1984.

### **Changes in ADL limitations**

Changes in ADL limitations can be analyzed within two contexts: (a) the total-population approach, which includes individuals who have died or become institutionalized over the 2-year period; and (b) the community-subpopulation approach, representing those who remain in the community throughout the 2-year period. Because those with more ADL limitations are more likely to die or be institutionalized, patterns of change in ADL limitations may differ by context. For example, the community subpopulation may represent a hardier group and thus may exhibit a higher proportion of improvement in functional status than in the total population. Policy planners will benefit from knowledge of patterns of

relative stability and change in functional status of the elderly who are able to maintain themselves in the community.

Within the context of the total-population approach to nursing home placement and death, tables 4–8 focus on the degree of population change in ADL's. The overall pattern of changes in difficulties in ADL functioning shows both positive and negative transitions in functional abilities among the population aged 70 and over between 1984 and 1986 (table 4). Among those without any limitations in 1984, 62 percent remained independent, whereas 21 percent reported some difficulty in 1986. Among those who reported some difficulty in 1984, 51 percent continued to have difficulties, and 14 percent improved to an independent status. Among those with no difficulty in ADL functioning in 1984, 1 percent were in nursing homes and 7 percent died within the next 2 years. Compared with this group, those who had some difficulty in ADL functioning in 1984 were at higher risk of being in a nursing home (5 percent) or deceased (19 percent) in 1986.

As expected, age was associated with a transition to functional decline. Among those with no difficulty in 1984, those 80 years of age and over were less likely than those 70–79 years to remain independent in 1986 (50 percent versus 66 percent). Similarly, among those with some difficulty in ADL function in 1984, a smaller proportion of those 80 years of age and over improved in functional ability (8 percent versus 19 percent). Differences by sex in decline or improvement were not significant, however. Because the risks of becoming disabled are similar for males and females, sex differences in the national prevalence of disabilities may arise because of the greater longevity of females and their overrepresentation in the higher age groups that have the higher risks of disability (2).

These shifts in functional status represent total-population shifts and thus reflect age- and

**Table A. Percent distribution of persons 70 years of age or over by extent of difficulty in performing activities of daily living in 1984 and at 1986 recontact for those living in the community between 1984 and 1986**

<i>Age, sex, and ADL difficulty in 1984</i>	<i>ADL difficulty in 1986</i>		
	<i>Number in 1984 in thousands</i>	<i>No difficulty</i>	<i>Some</i>
Total			
All levels of difficulty .....	13,472	63.1	36.9
No difficulty .....	10,507	74.7	25.3
Some difficulty.....	2,965	22.0	78.0
Age			
70-79 years:			
All levels of difficulty .....	10,202	67.8	32.2
No difficulty .....	8,341	77.1	22.9
Some difficulty.....	1,861	26.3	73.7
80 years and over:			
All levels of difficulty .....	3,270	48.4	51.6
No difficulty .....	2,165	65.7	34.3
Some difficulty.....	1,105	14.6	85.4
Sex			
Male:			
All levels of difficulty .....	5,099	66.2	33.9
No difficulty .....	4,258	73.9	26.1
Some difficulty.....	841	26.8	73.2
Female:			
All levels of difficulty .....	8,373	61.2	38.8
No difficulty .....	6,248	75.2	24.8
Some difficulty.....	2,124	20.1	79.9

NOTE: ADL is activity of daily living.

sex-linked patterns of mortality and institutionalization. In analyzing only the community subpopulation, the hypothesis is that because those who are the oldest and sickest are most likely to die or be institutionalized, transition rates among those remaining in the community may differ. Thus, to assess the association of age and sex with changes in functional status for those older persons who resided in the community throughout the 2 years, adjustments for mortality and institutionalization rates should be made.

Table A shows the percent distribution of persons 70 years of age and over performing

seven ADL's in 1984, by functional ability outcome at 1986 recontact, for only those who were living in the community at both times. As in the total-population analysis, age was associated with stability of independence or improvement in functional ability. Among those with no difficulty in 1984, a smaller proportion of those 80 years of age and over remained independent in 1986 than those in the group 70-79 years of age (66 percent versus 77 percent). Among those with some difficulty in ADL in 1984, a smaller proportion of those 80 years and over improved in functional ability compared with the younger age category (15 percent versus 26 percent).

There were no significant sex differences in changes in functional abilities for the continuous community residents. For example, 27 percent of men who had some ADL difficulty in 1984 reported no difficulty in 1986 compared with 20 percent of the women. The patterns of change among the community subpopulation are similar to those found in the total population analysis, although the actual proportions differ as a result of selection from mortality and institutionalization. Thus, these proportions permit more specific estimates of service needs by age and sex of those older persons who remain in the community.

Tables 5–8 present descriptions of change in four specific areas of ADL limitation: bathing, dressing, walking, and transferring to or from a bed or chair. Does the total pattern of change in dependency status by age and sex described above apply to each specific limitation in the same way? In general, the answer is yes. Within each ADL limitation, those 80 years and over had lower proportions of persons who maintained independence. For example, of those with no difficulty in 1984, 53 percent in this age group maintained independence in walking compared with 69 percent among those aged 70–79 (table 7). In table 6, comparable proportions in maintenance of independence in dressing were 64 percent (80 years and over) and 79 percent (70–79 years). Similarly, a lower proportion of those 80 years and over regained independence across all the specific activities, with differences between age groups of 10 percent in bathing (table 5) to 12 percent in walking and transfer (tables 7 and 8). There were no significant sex differences in stability of independence and proportion improved within each specific ADL limitation.

### **Changes in IADL limitations**

Limitations in the IADL's reflect inability to perform social maintenance and home-

management activities. Because performance of these activities is conditioned in part by social roles and reasons other than disability, persons reported as not performing the activity were not classified with those who had difficulty in performance.

Changes in IADL activities (tables 9–12) follow the general patterns observed for ADL limitations. Those aged 80 and over with no difficulty in 1984 were more likely than those aged 70–79 to develop some difficulties in IADL's by 1986. Differences between men and women were not significant. Similar proportions of men and women retained their ability over the 2-year period to carry out meal preparation, shopping, and heavy housework.

Table B shows the percent distribution of persons 70 and over performing IADL's in 1984 by functional ability outcome at 1986 recontact for only those who were living in the community at both times. As in the total-population analysis of IADL limitations, age was associated with little change in independence or improvement in home-management abilities. Among those with no difficulty in 1984, a smaller proportion of those 80 years of age and over remained independent in 1986 than those in the group aged 70–79 (54 percent versus 72 percent). Among those with some difficulty in IADL's in 1984, a smaller proportion of those 80 years and over improved in functional ability compared with the younger age category (12 percent versus 18 percent). There were no significant sex differences in changes in functional abilities for the continuous community residents. For example, 16 percent of both men and women who had some IADL difficulty in 1984 reported no difficulty in 1986. As with the analysis of ADL limitations, the patterns of change among the community subpopulation were similar to those found in the total-population analysis, although the actual proportions differed as a result of selection from mortality and institutionalization.

**Table B. Percent distribution of persons 70 years of age or over, by extent of difficulty in performing instrumental activities of daily living in 1984 and at 1986 recontact for those living in the community between 1984 and 1986**

<i>Age, sex, and IADL difficulty in 1984</i>	<i>IADL difficulty in 1986</i>		
	<i>Number in 1984 in thousands</i>	<i>No difficulty</i>	<i>Some</i>
Total			
All levels of difficulty . . . . .	13,413	53.8	46.2
No difficulty . . . . .	9,721	68.2	31.8
Some difficulty . . . . .	3,692	15.8	84.1
Age			
70–79 years:			
All levels of difficulty . . . . .	10,183	59.2	40.8
No difficulty . . . . .	7,800	71.8	28.2
Some difficulty . . . . .	2,383	18.2	81.8
80 years or over:			
All levels of difficulty . . . . .	3,230	36.7	63.3
No difficulty . . . . .	1,921	53.7	46.4
Some difficulty . . . . .	1,309	11.7	88.3
Sex			
Male:			
All levels of difficulty . . . . .	5,063	59.9	40.1
No difficulty . . . . .	4,114	70.0	30.0
Some difficulty . . . . .	949	16.2	83.8
Female:			
All levels of difficulty . . . . .	8,350	50.1	49.9
No difficulty . . . . .	5,607	66.9	33.1
Some difficulty . . . . .	2,743	15.8	84.2

NOTE: IADL is instrumental activities of daily living.

### Changes in physical performance

Mobility (walking up 10 steps without rest, walking one-quarter mile without rest) and arm strength (lifting 25 pounds) represent a set of physical capacities important to the maintenance of independent functioning in the community (tables 13–15). Measures of physical performance have been linked to good health and low risk of morbidity and mortality over a 2-year period among the oldest old (1).

Change in both types of mobility patterns (tables 13 and 14) is strongly associated with age, such that compared with those aged 80 and

over, higher proportions of those 70–79 maintained (i.e., remained stable with no difficulty) or improved ability (i.e., shifted from some difficulty in 1984 to no difficulty in 1986). Similar proportions of males and females aged 70 and over maintained independence in both indicators of walking ability (approximately 66–68 percent).

Difficulty in lifting 25 pounds (table 15) is a test of muscle strength. Not only do more women have difficulty than men at baseline, women are less likely to sustain this ability. For example, 63 percent of the men reported no difficulty in lifting at both time periods compared with



51 percent of the women. Furthermore, almost 23 percent of the men improved in function compared with only 13 percent of the women.

In sum, the pattern of stability and change in functional limitations, risk of institutionalization, and death are complex. The data confirm the oft-observed associations between age, sex, and functional limitations with mortality and risk of institutionalization. At the level of individual changes in functional limitations at the time of 2-year followup, however, men and women show similar rates of decline and improvement in functional limitations, with the exception of difficulties in lifting. Men were more likely to have no difficulty and to improve in the lifting function over the 2-year period.

## References

1. Harris T, Kovar MG, Suzman R, et al. Longitudinal study of physical ability in the oldest-old. *Am J Public Health* 79(6):698-702. 1989.
2. Manton K. A longitudinal study of functional change and mortality in the United States. *J Gerontol* 43(5):S153-61. 1988.
3. Branch L, Katz S, Kniepmann K, Papsider J. A prospective study of functional status among community elders. *Am J Public Health* 74(3):266-8. 1984.
4. Mor V, Murphy J, Masterson-Allen WC, et al. Risk of functional decline among well elders. *J Clin Epidemiol* 42(9):895-904. 1989.
5. Hing E, Sekscenski E, Strahan G. The National Nursing Home Survey, 1985 summary for the United States. *Vital Health Stat* 13(97). Washington: National Center for Health Statistics. 1989.

**Table 1. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to age, sex, and 1984 marital status: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Age, sex, and marital status</i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>			
		<i>Alive and living in the community<sup>1</sup></i>	<i>Deceased</i>	<i>In nursing home<sup>2</sup></i>	<i>Unknown<sup>3</sup></i>
<i>Age in 1984</i>	<i>Number in thousands</i>	<i>Percent distribution</i>			
70–74 years. . . . .	7,190	84.9	6.7	0.7	7.7
75–79 years. . . . .	5,311	80.0	9.5	1.6	9.0
70–79 years. . . . .	12,501	82.8	7.9	1.0	8.2
80–84 years. . . . .	2,941	72.2	15.4	4.3	8.1
80 years and over. . . . .	4,834	69.1	17.2	5.2	8.5
85 years and over. . . . .	1,893	64.2	20.1	6.7	9.0
<i>Sex</i>					
Male. . . . .	6,711	76.9	14.0	1.4	7.7
Female. . . . .	10,624	80.3	8.3	2.7	8.7
<i>Male</i>					
70–79 years. . . . .	5,135	80.4	11.1	*0.7	7.8
80 years and over. . . . .	1,576	65.4	23.4	3.6	7.6
<i>Female</i>					
70–79 years. . . . .	7,366	84.5	5.7	1.3	8.6
80 years and over. . . . .	3,258	70.8	14.3	6.0	8.9
<i>Marital status in 1984<sup>4</sup></i>					
Married . . . . .	8,308	81.6	10.6	1.1	6.8
Not married. . . . .	8,984	76.6	10.4	3.3	9.7

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>3</sup>Includes persons not located in 1986.

<sup>4</sup>Excludes persons whose marital status was unknown.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1984 Supplement on Aging and 1986 Longitudinal Study on Aging.

**Table 2. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to number of activities of daily living for which difficulty or the help of another person was reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

1984 ADL status and number of ADL's with difficulty	Total in 1984	Outcome at 1986 recontact			
		Alive and living in the community <sup>1</sup>	Deceased	In nursing home <sup>2</sup>	Unknown <sup>3</sup>
	Number in thousands	Percent distribution <sup>4</sup>			
With difficulty					
None .....	12,643	83.5	7.3	1.1	8.1
1.....	1,697	70.8	15.9	4.2	9.1
2 or more.....	2,898	64.5	21.3	5.8	8.3
Help of another person received					
1.....	772	63.9	19.0	7.3	9.8
2 or more.....	1,244	55.7	31.3	7.2	5.9

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>3</sup>Includes persons not located in 1986.

<sup>4</sup>Excludes those for whom information was missing on all ADL's.

NOTES: Persons reported as not performing an activity of daily living (ADL) were classified with those reported as having difficulty with that ADL. ADL's include eating, toileting, dressing, bathing, walking, getting in and out of a bed or chair, and getting outside.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1984 Supplement on Aging and 1986 Longitudinal Study on Aging.

**Table 3. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to number of instrumental activities of daily living for which difficulty or the help of another person was reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

1984 IADL status and number of IADL's with difficulty	Total in 1984	Outcome at 1986 recontact			
		Alive and living in the community <sup>1</sup>	Deceased	In nursing home <sup>2</sup>	Unknown <sup>3</sup>
	Number in thousands	Percent distribution <sup>4</sup>			
With difficulty					
None .....	11,818	83.1	7.5	1.2	8.2
1.....	2,692	78.7	10.7	2.0	8.6
2 or more.....	2,716	61.9	23.0	7.1	8.1
Help of another person received					
1.....	2,052	78.6	11.6	2.2	7.7
2 or more.....	2,999	62.7	22.7	6.7	8.0

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>3</sup>Includes persons not located in 1986.

<sup>4</sup>Excludes those for whom information was missing on all IADL's.

NOTES: Persons reported as not performing an instrumental activity of daily living (IADL) were not classified with those reported as having difficulty with that IADL. IADL's include meal preparation, shopping, managing money, using the telephone, light housework, and heavy housework.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1984 Supplement on Aging and 1986 Longitudinal Study on Aging.

**Table 4. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with performing activities of daily living reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and extent of difficulty with ADL's reported in 1984<sup>2</sup></i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>						
		<i>Extent of difficulty with ADL's reported for persons alive and living in the community<sup>1</sup></i>						
		<i>None</i>	<i>Total</i>	<i>Some</i>		<i>Deceased</i>	<i>In nursing home<sup>3</sup></i>	<i>Unknown<sup>4</sup></i>
				<i>No help of another person received</i>	<i>Help of another person received</i>			
<i>Both sexes, 70 years and over</i>		<i>Percent distribution</i>						
<i>Total</i> . . . . .	17,166	49.5	29.0	24.5	4.5	10.5	2.2	8.8
<i>No difficulty</i> . . . . .	12,643	62.1	21.0	18.4	2.6	7.3	1.1	8.5
<i>Some difficulty</i> . . . . .	4,523	14.4	51.2	41.3	9.9	19.4	5.3	9.8
<i>No help of another person received</i> . . .	3,416	16.5	51.7	44.8	6.9	16.2	4.9	10.7
<i>Help of another person received</i> . . . . .	1,108	7.9	49.5	30.2	19.3	29.4	6.4	6.8
<i>Both sexes, 70-79 years</i>								
<i>Total</i> . . . . .	12,393	55.8	26.5	23.3	3.2	7.9	1.1	8.8
<i>No difficulty</i> . . . . .	9,794	65.6	19.5	17.9	1.6	5.8	0.6	8.4
<i>Some difficulty</i> . . . . .	2,599	18.8	52.8	43.5	9.3	15.7	2.7	10.0
<i>No help of another person received</i> . . .	2,043	20.7	53.1	47.1	6.0	13.6	1.7	10.8
<i>Help of another person received</i> . . . . .	556	11.9	51.4	30.1	21.3	23.3	*6.2	7.2
<i>Both sexes, 80 years and over</i>								
<i>Total</i> . . . . .	4,773	33.2	35.3	27.5	7.8	17.2	5.3	9.0
<i>No difficulty</i> . . . . .	2,849	49.9	26.1	20.3	5.8	12.3	2.9	8.8
<i>Some difficulty</i> . . . . .	1,924	8.4	49.0	38.3	10.7	24.4	8.8	9.4
<i>No help of another person received</i> . . .	1,373	10.2	49.6	41.5	8.1	20.0	9.7	10.6
<i>Help of another person received</i> . . . . .	552	*4.0	47.5	30.3	17.2	35.4	6.6	6.5
<i>Male, 70 years and over</i>								
<i>Total</i> . . . . .	6,649	50.7	25.9	22.3	3.6	13.9	1.4	8.1
<i>No difficulty</i> . . . . .	5,277	59.7	21.1	19.0	2.1	10.3	0.8	8.2
<i>Some difficulty</i> . . . . .	1,372	16.4	44.9	35.2	9.7	27.5	3.9	7.3
<i>No help of another person received</i> . . .	1,021	18.2	47.1	39.6	7.5	23.0	4.2	7.5
<i>Helper person received</i> . . . . .	351	*11.3	38.2	22.3	15.9	40.4	*3.1	*6.9

**Table 4. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with performing activities of daily living reported in 1984: United States—Con.**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and extent of difficulty with ADL's reported in 1984<sup>2</sup></i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>						
		<i>Extent of difficulty with ADL's reported for persons alive and living in the community<sup>1</sup></i>						
		<i>None</i>	<i>Total</i>	<i>Some</i>		<i>Deceased</i>	<i>In nursing home<sup>3</sup></i>	<i>Unknown<sup>4</sup></i>
				<i>No help of another person received</i>	<i>Help of another person received</i>			
Male, 70–79 years	Number in thousands	Percent distribution						
Total . . . . .	5,087	55.9	24.2	21.6	2.6	11.0	0.7	8.2
No difficulty . . . . .	4,222	62.8	20.1	18.5	*1.6	8.1	*0.5	8.6
Some difficulty . . . . .	865	22.1	44.5	36.6	7.9	25.0	*2.0	6.3
No help of another person received . . .	643	24.3	46.5	40.4	*6.1	20.6	*2.1	*6.5
Help of another person received . . . . .	222	*15.8	38.8	25.8	*13.0	37.5	*2.0	*5.8
Male, 80 years and over								
Total . . . . .	1,562	33.9	31.7	24.8	6.9	23.2	3.6	7.7
No difficulty . . . . .	1,055	47.0	25.0	20.9	4.1	19.1	*2.0	7.0
Some difficulty . . . . .	507	6.7	45.4	32.7	12.7	31.7	7.1	9.1
No help of another person received . . .	378	7.7	48.3	38.4	9.9	27.0	*7.8	9.2
Help of another person received . . . . .	129	*3.7	37.2	16.3	20.9	45.5	*5.0	*8.7
Female, 70 years and over								
Total . . . . .	10,517	48.8	30.9	25.8	5.1	8.3	2.7	9.3
No difficulty . . . . .	7,366	63.8	21.1	18.1	3.0	5.1	1.4	8.7
Some difficulty . . . . .	3,151	13.5	53.9	43.9	10.0	15.8	5.9	10.8
No help of another person received . . .	2,395	15.8	53.7	47.1	6.6	13.3	5.2	12.1
Help of another person received . . . . .	756	6.4	54.7	33.9	20.8	24.2	8.0	6.8
Female, 70–79 years								
Total . . . . .	7,306	55.8	28.1	24.4	3.7	5.7	1.3	9.2
No difficulty . . . . .	5,571	67.8	19.2	17.5	1.7	4.0	0.7	8.3
Some difficulty . . . . .	1,734	17.2	56.9	46.9	10.0	11.1	3.0	11.9
No help of another person received . . .	1,401	19.1	56.2	50.2	6.0	10.4	*1.6	12.8
Help of another person received . . . . .	334	*9.3	59.8	33.0	26.8	13.9	*9.0	*8.1

Female, 80 years and over

Total . . . . .	3,211	32.8	37.2	28.9	8.3	14.3	6.1	9.7
No difficulty . . . . .	1,794	51.6	26.8	19.9	6.9	8.3	3.4	9.9
Some difficulty . . . . .	1,417	9.0	50.3	40.3	10.0	21.8	9.4	9.5
No help of another person received . . .	994	11.1	50.1	42.7	7.4	17.3	10.4	11.1
Help of another person received . . . . .	423	*4.1	50.7	34.6	16.1	32.3	7.1	5.8

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

NOTES: Persons reported as not performing an activity of daily living (ADL) were classified with those reported as having difficulty with that ADL. ADL's include eating, toileting, dressing, bathing, walking, getting in and out of a bed or chair, and getting outside.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

**Table 5. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with bathing reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and extent of difficulty with bathing reported in 1984<sup>2</sup></i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>							
		<i>Extent of difficulty with bathing reported for persons alive and living in the community<sup>1</sup></i>						<i>Deceased</i>	<i>Unknown<sup>4</sup></i>
		<i>None</i>	<i>Total</i>	<i>Some</i>		<i>In nursing home<sup>3</sup></i>			
				<i>No help of another person received</i>	<i>Help of another person received</i>				
		Percent distribution							
<b>Both sexes, 70 years and over</b>									
Total . . . . .	17,221	66.4	12.4	5.0	7.4	10.5	2.2	8.6	
No difficulty . . . . .	15,187	72.6	8.9	4.2	4.7	8.5	1.6	8.3	
Some difficulty . . . . .	2,034	19.7	37.9	10.9	27.0	25.0	6.6	10.8	
No help of another person received . . . . .	775	33.2	36.0	23.4	12.6	12.8	4.5	13.5	
Help of another person received . . . . .	1,259	11.4	39.2	3.3	35.9	32.5	7.8	9.1	
<b>Both sexes, 70–79 years</b>									
Total . . . . .	12,427	72.7	10.0	4.8	5.2	7.9	1.1	8.4	
No difficulty . . . . .	11,409	77.0	7.2	3.8	3.4	6.9	0.9	8.2	
Some difficulty . . . . .	1,019	24.7	42.1	16.3	25.8	19.2	*3.2	10.9	
No help of another person received . . . . .	470	37.1	40.0	29.9	10.1	11.0	-	12.0	
Help of another person received . . . . .	548	14.0	43.9	*4.7	39.2	26.2	*6.0	9.9	
<b>Both sexes, 80 years and over</b>									
Total . . . . .	4,794	50.0	18.5	5.5	13.0	17.2	5.2	9.1	
No difficulty . . . . .	3,778	59.4	14.4	5.5	8.9	13.6	4.0	8.7	
Some difficulty . . . . .	1,016	14.8	33.8	5.5	28.3	30.9	9.9	10.7	
No help of another person received . . . . .	305	27.2	29.8	13.4	16.4	15.7	11.5	15.8	
Help of another person received . . . . .	711	9.4	35.6	2.2	33.4	37.4	9.2	8.5	
<b>Male, 70 years and over</b>									
Total . . . . .	6,662	66.8	10.3	4.3	6.0	13.9	1.4	7.7	
No difficulty . . . . .	6,114	71.1	8.3	3.8	4.5	11.6	1.2	7.8	
Some difficulty . . . . .	549	18.6	32.1	9.4	22.7	39.2	*3.6	6.6	
No help of another person received . . . . .	169	29.4	32.0	*20.1	*11.9	30.5	*2.6	*5.5	
Help of another person received . . . . .	380	13.8	32.1	*4.7	27.4	43.0	*4.0	*7.2	



Male, 70–79 years and over									
Total	5,096	72.0	8.6	3.8	4.8	11.0	*0.7	7.7	
No difficulty	4,798	75.1	7.0	3.3	3.7	9.4	*0.7	7.8	
Some difficulty	297	22.3	34.2	*12.1	22.1	36.7	*1.5	*5.3	
No help of another person received	110	*32.4	*32.7	*24.8	*7.9	*28.6	-	*6.4	
Help of another person received	187	*16.3	35.3	*4.7	30.6	41.6	*2.4	*4.6	
Male, 80 years and over									
Total	1,567	49.8	15.6	5.7	9.9	23.3	3.6	7.8	
No difficulty	1,315	56.6	12.9	5.6	7.3	19.7	3.2	7.7	
Some difficulty	251	14.2	29.5	*6.2	23.3	42.0	*6.1	*8.3	
No help of another person received	58	*23.7	*30.7	*11.2	*19.5	34.3	*7.6	*3.8	
Help of another person received	193	*11.4	29.1	*4.7	24.4	44.3	*5.6	*9.7	
Female, 70 years and over									
Total	10,559	66.1	13.7	5.5	8.2	8.3	2.7	9.1	
No difficulty	9,073	73.6	9.4	4.5	4.9	6.5	1.9	8.6	
Some difficulty	1,485	20.1	40.2	11.5	28.7	19.8	7.6	12.3	
No help of another person received	606	34.2	37.1	24.3	12.8	7.9	5.1	15.7	
Help of another person received	879	10.4	42.2	*2.6	39.6	28.0	9.4	9.9	
Female, 70–79 years									
Total	7,331	73.1	11.0	5.5	5.5	5.7	1.3	8.9	
No difficulty	6,610	78.3	7.3	4.2	3.1	5.0	1.0	8.4	
Some difficulty	721	25.6	45.3	18.0	27.3	11.9	*3.9	13.2	
No help of her person received	360	38.5	42.2	31.4	*10.8	*5.5	-	13.7	
Help of another person received	361	12.8	48.4	*4.7	43.7	18.3	*7.9	12.6	
Female, 80 years and over									
Total	3,227	50.1	19.9	5.4	14.5	14.3	6.0	9.8	
No difficulty	2,463	61.0	15.2	5.5	9.7	10.3	4.4	9.2	
Some difficulty	764	14.9	35.2	5.3	29.9	27.2	11.1	11.4	
No help of another person received	246	28.0	29.5	13.9	15.6	11.3	12.4	18.7	
Help of another person received	518	8.7	37.9	*1.2	36.7	34.8	10.5	8.0	

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

NOTE: Persons reported as not performing an activity were classified with those reported as having difficulty with that activity.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

8 Table 6. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with dressing reported in 1984: United States

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and extent of difficulty with dressing reported in 1984<sup>2</sup></i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>						
		<i>Extent of difficulty with dressing reported for persons alive and living in the community<sup>1</sup></i>						
		<i>None</i>	<i>Total</i>	<i>Some</i>		<i>Deceased</i>	<i>In nursing home<sup>3</sup></i>	<i>Unknown<sup>4</sup></i>
				<i>No help of another person received</i>	<i>Help of another person received</i>			
	<i>Number in thousands</i>	<i>Percent distribution</i>						
<b>Both sexes, 70 years and over</b>								
Total . . . . .	17,214	71.4	7.5	2.8	4.7	10.5	2.2	8.5
No difficulty . . . . .	15,988	75.1	5.6	2.5	3.1	9.1	1.8	8.4
Some difficulty . . . . .	1,226	23.4	32.2	7.0	25.2	28.5	6.9	9.0
No help of another person received . . . . .	337	40.5	17.8	12.2	*5.6	13.6	10.5	17.7
Help of another person received . . . . .	889	17.0	37.7	5.0	32.7	34.2	5.5	5.7
<b>Both sexes, 70-79 years</b>								
Total . . . . .	12,427	76.4	6.4	2.5	3.9	7.9	1.1	8.3
No difficulty . . . . .	11,791	79.0	4.7	2.2	2.5	7.3	0.9	8.2
Some difficulty . . . . .	636	28.3	38.3	9.4	28.9	19.0	*4.1	10.4
No help of another person received . . . . .	181	46.1	16.0	*14.8	*1.2	*8.7	*3.9	25.3
Help of another person received . . . . .	455	21.2	47.0	*7.2	39.8	23.1	*4.2	*4.5
<b>Both sexes, 80 years and over</b>								
Total . . . . .	4,786	58.6	10.2	3.5	6.7	17.2	5.1	8.9
No difficulty . . . . .	4,197	64.2	8.1	3.4	4.7	14.2	4.5	9.1
Some difficulty . . . . .	589	18.2	25.7	4.4	21.3	38.8	9.9	7.4
No help of another person received . . . . .	156	34.0	19.7	*9.1	*10.6	19.2	18.3	*8.8
Help of another person received . . . . .	434	12.5	27.9	*2.7	25.2	45.8	6.9	6.9
<b>Male, 70 years and over</b>								
Total . . . . .	6,667	70.3	6.9	2.6	4.3	13.8	1.4	7.6
No difficulty . . . . .	6,260	73.1	5.6	2.3	3.3	12.4	1.3	7.7
Some difficulty . . . . .	407	27.5	27.1	*7.1	20.0	36.9	*3.2	*5.3
No help of another person received . . . . .	70	49.0	*13.7	*6.7	*7.0	*18.6	*9.3	*9.5
Help of another person received . . . . .	336	23.1	29.9	*7.2	22.7	40.7	*2.0	*4.4

Male, 70–79 years								
Total	5,100	74.5	6.3	2.5	3.8	11.0	*0.7	7.6
No difficulty	4,856	76.5	5.0	2.1	2.9	10.1	*0.7	7.7
Some difficulty	244	34.4	31.5	*10.0	21.5	27.7	*1.8	*4.7
No help of another person received	41	67.2	*6.1	*6.1	-	*16.0	-	*10.8
Help of another person received	204	27.8	36.5	*10.7	25.8	30.0	*2.2	*3.5
Male, 80 years and over								
Total	1,567	56.9	8.6	2.8	5.8	23.3	3.6	7.6
No difficulty	1,404	61.4	7.2	2.8	4.4	20.1	3.4	7.8
Some difficulty	162	17.2	20.6	*2.9	17.7	50.7	*5.4	*6.2
No help of another person received	29	*23.7	24.1	*7.5	*16.6	*22.3	*22.3	*7.6
Help of another person received	133	*15.8	19.8	*1.9	17.9	57.0	*1.6	*5.8
Female, 70 years and over								
Total	10,547	72.1	7.9	3.0	4.9	8.3	2.7	9.0
No difficulty	9,728	76.4	5.6	2.6	3.0	7.0	2.2	8.9
Some difficulty	819	21.4	34.8	6.9	27.9	24.4	8.7	10.8
No help of another person received	267	38.3	18.8	13.6	*5.2	12.3	10.8	19.8
Help of another person received	552	13.2	42.4	*3.6	38.8	30.2	7.7	*6.4
Female, 70–79 years								
Total	7,327	77.7	6.5	2.6	3.9	5.7	1.3	8.8
No difficulty	6,935	80.8	4.4	2.2	2.2	5.3	1.0	8.5
Some difficulty	392	24.4	42.5	*9.0	33.5	13.6	*5.6	14.0
No help of another person received	140	39.9	18.9	*17.3	*1.6	*6.6	*5.0	*29.5
Help of another person received	251	*15.8	55.5	*4.3	51.2	17.5	*5.9	*5.3
Female, 80 years and over								
Total	3,220	59.4	11.0	3.8	7.2	14.3	5.9	9.5
No difficulty	2,792	65.7	8.5	3.7	4.8	11.2	5.0	9.7
Some difficulty	427	18.6	27.6	*4.9	22.7	34.3	11.6	7.9
No help of another person received	126	36.4	18.7	*9.5	*9.2	18.5	*17.3	*9.1
Help of another person received	301	11.1	31.5	*3.1	28.4	40.9	9.2	*7.4

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

NOTE: Persons reported as not performing an activity were classified with those reported as having difficulty with that activity.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

**Table 7. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with walking reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and extent of difficulty with walking reported in 1984<sup>2</sup></i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>						
		<i>Extent of difficulty with walking reported for persons alive and living in the community<sup>1</sup></i>						
		<i>None</i>	<i>Total</i>	<i>Some</i>		<i>Deceased</i>	<i>In nursing home<sup>3</sup></i>	<i>Unknown<sup>4</sup></i>
				<i>No help of another person received</i>	<i>Help of another person received</i>			
Both sexes, 70 years and over	Number in thousands	Percent distribution						
Total . . . . .	17,176	55.3	23.3	17.9	5.4	10.5	2.2	8.8
No difficulty . . . . .	13,414	65.0	17.2	14.4	2.8	8.3	1.3	8.2
Some difficulty . . . . .	3,763	20.8	45.0	30.1	14.9	18.2	5.2	10.8
No help of another person received . . .	2,787	24.7	44.7	33.7	11.0	14.7	4.6	11.3
Help of another person received . . . . .	975	9.8	46.0	19.8	26.2	28.2	7.0	9.1
Both sexes, 70–79 years								
Total . . . . .	12,403	61.2	21.4	17.5	3.9	7.8	1.0	8.7
No difficulty . . . . .	10,231	68.6	16.1	14.3	1.8	6.5	0.7	8.1
Some difficulty . . . . .	2,172	26.1	45.7	32.3	13.4	14.1	2.7	11.4
No help of another person received . . .	1,712	29.8	44.5	34.9	9.6	12.1	*1.9	11.8
Help of another person received . . . . .	460	*12.2	50.7	22.9	27.8	21.4	*5.8	10.0
Both sexes, 80 years and over								
Total . . . . .	4,773	40.0	28.4	18.9	9.5	17.3	5.2	9.1
No difficulty . . . . .	3,182	53.2	20.6	14.8	5.8	14.0	3.6	8.7
Some difficulty . . . . .	1,591	13.7	44.0	27.1	16.9	23.8	8.5	9.9
No help of another person received . . .	1,076	16.7	45.1	31.9	13.2	18.8	8.8	10.7
Help of another person received . . . . .	515	7.6	41.8	17.0	24.8	34.2	8.0	8.4
Male, 70 years and over								
Total . . . . .	6,651	55.7	21.1	17.8	3.3	13.9	1.4	8.0
No difficulty . . . . .	5,504	62.4	17.5	15.7	1.8	11.3	0.9	7.9
Some difficulty . . . . .	1,147	23.1	38.5	27.8	10.7	26.0	3.9	8.6
No help of another person received . . .	878	27.8	39.6	30.6	9.0	20.2	4.1	8.3
Help of another person received . . . . .	269	*7.6	35.3	19.0	16.3	44.7	*3.2	*9.3

Male, 70-79 years								
Total.....	5,089	60.6	19.8	17.1	2.7	10.9	*0.7	8.0
No difficulty.....	4,363	65.8	16.8	15.1	1.7	8.9	*0.4	8.2
Some difficulty.....	726	29.2	38.3	29.6	8.7	23.2	*2.4	7.0
No help of another person received..	561	35.0	37.4	30.4	*7.0	18.5	*2.4	*6.7
Help of another person received....	165	*9.4	41.1	*26.8	*14.3	39.0	*2.7	*7.9
Male, 80 years and over								
Total.....	1,562	39.7	25.3	19.9	5.4	23.3	3.6	8.1
No difficulty.....	1,141	49.7	20.2	18.1	*2.1	20.6	2.6	6.9
Some difficulty.....	421	12.5	39.0	24.8	*14.2	30.8	*6.4	11.3
No help of another person received..	317	15.1	43.2	30.8	12.4	23.3	*7.2	11.3
Help of another person received....	104	*4.6	26.1	*6.6	*19.5	53.6	*4.1	*11.6
Female, 70 years and over								
Total.....	10,526	55.1	24.7	17.9	6.8	8.3	2.7	9.3
No difficulty.....	7,910	66.7	17.1	13.6	3.5	6.2	1.7	8.4
Some difficulty.....	2,616	19.9	47.9	31.1	16.8	14.8	5.7	11.7
No help of another person received..	1,909	23.3	47.1	35.2	11.9	12.2	4.8	12.7
Help of another person received....	706	10.6	50.1	20.1	30.0	21.9	8.4	9.1
Female, 70-79 years								
Total.....	7,314	61.6	22.4	17.7	4.7	5.7	1.2	9.1
No difficulty.....	5,868	70.7	15.8	13.8	2.0	4.7	0.8	8.0
Some difficulty.....	1,446	24.5	49.5	33.7	15.8	9.5	*2.9	13.6
No help of another person received..	1,151	27.2	47.9	37.1	10.8	9.0	*1.7	14.3
Help of another person received....	295	*13.7	56.1	20.7	35.4	*11.5	*7.5	*11.2
Female 80 years and over								
Total.....	3,212	40.2	30.0	18.4	11.6	14.3	6.0	9.6
No difficulty.....	2,042	55.1	20.8	12.9	7.9	10.3	4.1	9.7
Some difficulty.....	1,170	14.2	45.8	27.9	17.9	21.3	9.3	9.4
No help of another person received..	759	17.3	45.9	32.4	13.5	17.0	9.4	10.4
Help of another person received....	411	8.4	45.7	19.6	26.1	29.3	9.0	7.6

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

NOTE: Persons reported as not performing an activity were classified with those reported as having difficulty with that activity.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

**Table 8. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with transferring reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and extent of difficulty with transferring reported in 1984<sup>2</sup></i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>						
		<i>Extent of difficulty with transferring reported for persons alive and living in the community<sup>1</sup></i>						
		<i>None</i>	<i>Total</i>	<i>Some</i>		<i>Deceased</i>	<i>In nursing home<sup>3</sup></i>	<i>Unknown<sup>4</sup></i>
				<i>No help of another person received</i>	<i>Help of another person received</i>			
<i>Both sexes, 70 years and over</i>		<i>Percent distribution</i>						
Total.....	17,204	66.3	12.5	8.6	3.9	10.4	2.2	8.6
No difficulty.....	15,578	70.7	10.1	7.5	2.6	9.2	1.8	8.3
Some difficulty.....	1,625	23.6	35.9	19.9	16.0	22.7	6.6	11.2
No help of another person received....	1,021	28.8	37.6	29.3	8.3	15.3	5.6	12.7
Help of another person received.....	604	14.7	33.1	*4.1	29.0	35.2	8.4	8.7
<i>Both sexes, 70-79 years</i>								
Total.....	12,412	71.4	11.2	8.1	3.1	7.8	1.1	8.5
No difficulty.....	11,513	74.8	9.1	6.9	2.2	7.1	0.9	8.1
Some difficulty.....	899	28.6	38.9	23.3	15.6	17.1	*2.7	12.8
No help of another person received....	601	34.1	39.0	32.6	*6.4	12.8	-	14.0
Help of another person received.....	298	17.6	38.5	*4.4	34.1	25.7	*8.0	*10.2
<i>Both sexes, 80 years and over</i>								
Total.....	4,791	52.8	15.9	10.0	5.9	17.2	5.3	8.9
No difficulty.....	4,065	59.2	12.9	8.9	4.0	15.0	4.1	8.8
Some difficulty.....	727	17.3	32.3	15.8	16.5	29.6	11.5	9.4
No help of another person received....	420	21.2	35.6	24.6	11.0	18.8	13.6	10.9
Help of another person received.....	307	11.9	27.7	*3.7	24.0	44.4	8.7	*7.3
<i>Male, 70 years and over</i>								
Total.....	6,662	66.8	10.1	7.2	2.9	13.8	1.4	7.9
No difficulty.....	6,264	69.6	8.8	6.5	2.3	12.4	1.2	8.0
Some difficulty.....	398	23.0	30.8	17.6	13.2	35.6	*5.0	*5.7
No help of another person received....	217	31.3	35.6	30.1	*5.5	24.0	*5.2	*4.0
Help of another person received.....	181	*13.1	25.0	*2.5	22.5	49.5	*4.8	*7.7

Male, 70–79 years								
Total	5,098	70.9	9.7	7.1	2.6	10.9	*0.7	7.9
No difficulty	4,858	72.8	8.6	6.5	2.1	10.1	*0.7	8.0
Some difficulty	240	32.6	32.2	*18.8	*13.4	27.9	*1.8	*5.5
No help of another person received	135	43.7	*30.1	*30.1	–	*19.8	–	*6.5
Help of another person received	105	*18.3	35.0	*4.3	*30.7	38.4	*4.2	*4.2
Male, 80 years and over								
Total	1,564	53.6	11.7	7.6	4.1	23.3	3.6	7.8
No difficulty	1,407	58.7	9.8	6.7	3.1	20.6	3.0	8.0
Some difficulty	158	*8.4	28.6	15.7	*12.9	47.3	*9.8	*6.1
No help of another person received	82	*10.7	44.7	30.2	*14.5	30.9	*13.7	
Help of another person received	76	*6.0	*11.1	–	*11.1	64.8	*5.6	*12.6
Female, 70 years and over								
Total	10,541	65.9	14.0	9.5	4.5	8.3	2.7	9.0
No difficulty	9,314	71.5	11.0	8.1	2.9	6.9	2.2	8.5
Some difficulty	1,227	23.7	37.6	20.7	16.9	18.5	7.1	13.0
No help of another person received	804	28.1	38.2	29.1	9.1	12.9	5.7	15.1
Help of another person received	423	15.4	36.6	*4.8	31.8	29.1	9.9	9.2
Female, 70–79 years								
Total	7,314	71.9	12.3	8.8	3.5	5.7	1.3	8.9
No difficulty	6,656	76.3	9.5	7.2	2.3	4.9	1.1	8.2
Some difficulty	658	27.2	41.3	24.9	16.4	13.1	*3.0	15.4
No help of another person received	466	31.3	41.7	33.4	*8.3	10.8	–	16.2
Help of another person received	193	*17.2	40.5	*4.5	36.0	*18.8	*10.1	*13.5
Female, 80 years and over								
Total	3,227	52.4	17.8	11.1	6.7	14.3	6.0	9.5
No difficulty	2,658	59.4	14.5	10.1	4.4	12.0	4.8	9.3
Some difficulty	569	19.7	33.3	15.8	17.5	24.7	12.0	10.3
No help of another person received	338	23.7	33.4	23.3	10.1	15.8	13.5	13.5
Help of another person received	231	13.9	33.2	*5.0	28.2	37.7	9.7	*5.6

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

NOTES: Persons reported as not performing an activity were classified with those reported as having difficulty with that activity. Transferring means getting in and out of a bed or chair.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

**Table 9. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with performing instrumental activities of daily living reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and extent of difficulty with IADL's reported in 1984<sup>2</sup></i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>						
		<i>Extent of difficulty with IADL's reported for persons alive and living in the community<sup>1</sup></i>						
		<i>None</i>	<i>Total</i>	<i>Some</i>		<i>Deceased</i>	<i>In nursing home<sup>3</sup></i>	<i>Unknown<sup>4</sup></i>
				<i>No help of another person received</i>	<i>Help of another person received</i>			
<b>Both sexes, 70 years and over</b>		<b>Percent distribution</b>						
Total . . . . .	17,140	42.1	36.2	13.6	22.6	10.5	2.2	9.1
No difficulty . . . . .	11,794	56.2	26.2	11.3	14.9	7.5	1.2	8.9
Some difficulty . . . . .	5,346	11.0	58.2	18.5	39.7	17.0	4.5	9.5
No help of another person received . . .	1,426	13.9	54.6	24.3	30.3	14.0	5.2	12.4
Help of another person received . . . . .	3,919	9.9	59.4	16.3	43.1	18.1	4.2	8.5
<b>Both sexes, 70–79 years</b>								
Total . . . . .	12,373	48.8	33.6	13.0	20.6	7.8	1.0	8.9
No difficulty . . . . .	9,236	60.6	23.8	10.7	13.1	6.1	0.7	8.8
Some difficulty . . . . .	3,137	13.8	62.1	19.5	42.6	12.8	2.0	9.2
No help of another person received . . .	882	16.6	59.0	23.5	35.5	11.1	*0.5	12.8
Help of another person received . . . . .	2,256	12.7	63.4	18.0	45.4	13.5	2.6	7.8
<b>Both sexes, 80 years and over</b>								
Total . . . . .	4,767	24.8	42.9	15.1	27.8	17.3	5.2	9.7
No difficulty . . . . .	2,558	40.3	34.8	13.6	21.2	12.5	2.9	9.5
Some difficulty . . . . .	2,208	7.0	52.3	16.9	35.4	22.9	7.9	10.0
No help of another person received . . .	545	9.5	47.4	25.6	21.8	18.5	12.8	11.8
Help of another person received . . . . .	1,663	6.1	54.0	14.1	39.9	24.3	6.3	9.3
<b>Male, 70 years and over</b>								
Total . . . . .	6,631	45.7	30.6	12.6	18.0	13.8	1.3	8.5
No difficulty . . . . .	5,178	55.6	23.9	11.1	12.8	10.8	1.1	8.6
Some difficulty . . . . .	1,454	10.5	54.7	18.3	36.4	24.6	2.2	8.0
No help of another person received . . .	398	10.9	54.7	25.2	29.5	21.8	*3.9	*8.7
Help of another person received . . . . .	1,056	10.4	54.7	15.7	39.0	25.6	*1.5	7.7



Male, 70–79 years								
Total	5,069	51.8	28.4	12.1	16.3	10.9	*0.6	8.3
No difficulty	4,149	60.2	21.6	10.7	10.9	9.0	*0.7	8.6
Some difficulty	920	13.5	59.5	18.6	40.9	19.4	*0.5	7.2
No help of another person received	243	*15.1	57.6	*23.6	34.0	*15.9	-	*11.5
Help of another person received	677	12.9	60.1	16.7	43.4	20.6	*0.7	5.7
Male, 80 years and over								
Total	1,562	26.1	37.7	14.3	23.4	23.5	3.6	9.1
No difficulty	1,029	36.8	33.1	12.5	20.6	18.2	2.9	9.0
Some difficulty	534	5.4	46.6	17.8	28.8	33.6	5.1	9.4
No help of another person received	155	*4.3	50.0	27.6	22.4	31.3	*10.1	*4.3
Help of another person received	379	*5.9	45.2	13.8	31.4	34.5	*3.1	11.4
Female, 70 years and over								
Total	10,508	39.8	39.6	14.1	25.5	8.3	2.7	9.5
No difficulty	6,616	56.7	28.1	11.6	16.5	4.9	1.2	9.1
Some difficulty	3,892	11.1	59.4	18.5	40.9	14.1	5.3	10.1
No help of another person received	1,028	15.0	54.6	24.0	30.6	10.9	5.7	13.9
Help of another person received	2,863	9.7	61.2	16.6	44.6	15.3	5.2	8.7
Female, 70–79 years								
Total	7,304	46.7	37.1	13.5	23.6	5.7	1.3	9.3
No difficulty	5,087	61.0	25.6	10.7	14.9	3.8	0.7	8.9
Some difficulty	2,217	13.9	63.3	19.9	43.4	10.1	2.7	10.0
No help of another person received	638	17.2	59.6	23.5	36.1	9.3	*0.7	13.3
Help of another person received	1,579	12.6	64.8	18.5	46.3	10.4	3.5	8.7
Female, 80 years and over								
Total	3,204	24.2	45.5	15.6	29.9	14.3	6.0	10.0
No difficulty	1,530	42.6	36.0	14.4	21.6	8.7	2.9	9.9
Some difficulty	1,674	7.4	54.1	16.6	37.5	19.4	8.8	10.2
No help of another person received	390	11.5	46.4	24.8	21.6	13.5	13.8	14.8
Help of another person received	1,284	6.2	56.5	14.1	42.4	21.3	7.3	8.7

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

NOTES: Persons reported as not performing an instrumental activity of daily living (IADL) were not classified with those reported as having difficulty with that IADL. IADL's include meal preparation, shopping, managing money, using the telephone, light housework, and heavy housework.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

**Table 10. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with meal preparation reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age and extent of difficulty with meal preparation reported in 1984<sup>2</sup></i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>						
		<i>Extent of difficulty with meal preparation reported for persons alive and living in the community<sup>1</sup></i>						
		<i>None</i>	<i>Total</i>	<i>Some</i>		<i>Deceased</i>	<i>In nursing home<sup>3</sup></i>	<i>Unknown<sup>4</sup></i>
				<i>No help of another person received</i>	<i>Help of another person received</i>			
<b>Both sexes, 70 years and over</b>	<b>Number in thousands</b>	<b>Percent distribution</b>						
Total.....	17,206	69.0	9.6	1.7	7.9	10.4	2.2	8.8
No difficulty.....	15,757	74.0	6.9	1.6	5.3	8.8	1.7	8.7
Some difficulty.....	1,450	14.5	39.1	3.0	36.1	28.6	7.9	10.0
No help of another person received....	221	30.2	34.3	*11.0	23.3	*11.5	*8.8	15.2
Help of another person received.....	1,229	11.6	39.9	*1.5	38.4	31.6	7.7	9.1
<b>Both sexes, 70-79 years</b>								
Total.....	12,418	75.2	7.4	1.6	5.8	7.8	1.1	8.6
No difficulty.....	11,807	78.1	5.5	1.5	4.0	7.2	0.9	8.4
Some difficulty.....	611	19.4	42.6	*2.6	40.0	21.0	*4.7	12.4
No help of another person received....	106	36.5	37.5	*8.1	*29.4	*8.1	—	*18.0
Help of another person received.....	505	15.8	43.7	*1.4	42.3	23.7	*5.6	11.2
<b>Both sexes, 80 years and over</b>								
Total.....	4,788	52.8	15.4	2.1	13.3	17.2	5.3	9.3
No difficulty.....	3,950	61.7	11.0	1.9	9.1	13.6	4.2	9.5
Some difficulty.....	838	10.8	36.6	*3.3	33.3	34.1	10.2	8.4
No help of another person received....	114	24.4	31.4	*13.8	17.6	*14.8	*16.9	*12.5
Help of another person received.....	724	8.7	37.3	*1.6	35.7	37.2	9.1	7.7
<b>Male, 70 years and over</b>								
Total.....	6,660	69.9	6.9	0.7	6.2	13.8	1.4	8.0
No difficulty.....	6,316	72.9	5.5	*0.5	5.0	12.2	1.3	8.1
Some difficulty.....	344	14.2	32.8	*4.8	28.0	43.1	*3.2	*6.7
No help of another person received....	30	*22.1	*44.1	*22.2	*21.9	*18.9	*14.9	—
Help of her person received.....	314	13.5	31.8	*3.2	28.6	45.4	*2.1	*7.3

Male, 70–79 years								
Total . . . . .	5,093	74.6	5.8	0.7	5.1	10.9	0.7	8.0
No difficulty . . . . .	4,932	76.4	4.9	*0.5	4.4	9.9	*0.7	8.1
Some difficulty . . . . .	161	*18.8	35.1	*7.1	28.0	40.6	–	*5.5
No help of another person received . . .	17	*26.8	*52.3	*26.1	*26.2	*21.0	–	–
Help of another person received . . . . .	144	*17.9	33.1	*4.9	28.2	42.9	–	*6.1
Male, 80 years and over								
Total . . . . .	1,567	54.5	10.4	0.8	9.6	23.4	3.6	8.1
No difficulty . . . . .	1,384	60.4	7.6	*0.5	7.1	20.5	3.3	8.2
Some difficulty . . . . .	183	*10.2	30.8	*2.8	28.0	45.3	*6.0	*7.7
No help of another person received . . .	13	*16.0	*33.7	*17.3	*16.4	*16.3	*34.0	–
Help of another person received . . . . .	170	*9.7	30.6	*1.7	28.9	47.6	*3.8	*8.3
Female, 70 years and over								
Total . . . . .	10,547	68.4	11.3	2.4	8.9	8.3	2.7	9.3
No difficulty . . . . .	9,441	74.7	7.9	2.4	5.5	6.5	2.0	9.1
Some difficulty . . . . .	1,106	14.5	41.0	*2.4	38.6	24.1	9.3	11.1
No help of another person received . . .	191	31.5	32.8	*9.3	*23.5	*10.4	*7.8	*17.5
Help of another person received . . . . .	915	11.0	42.7	*0.9	41.8	26.9	9.6	9.7
Female, 70–79 years								
Total . . . . .	7,325	75.7	8.4	2.2	6.2	5.7	1.3	9.0
No difficulty . . . . .	6,875	79.3	6.0	2.3	3.7	5.2	0.9	8.6
Some difficulty . . . . .	451	19.6	45.2	*0.9	44.3	14.0	*6.3	14.8
No help of another person received . . .	89	*38.4	*34.7	*4.7	*30.0	*5.6	–	*21.4
Help of another person received . . . . .	361	15.0	47.9	–	47.9	16.1	*7.9	13.2
Female, 80 years and over								
Total . . . . .	3,222	51.9	18.0	2.8	15.2	14.2	6.1	9.9
No difficulty . . . . .	2,567	62.4	12.8	2.6	10.2	9.9	4.7	10.2
Some difficulty . . . . .	655	11.0	38.1	*3.4	34.7	31.0	11.4	8.5
No help of another person received . . .	101	25.5	31.1	*13.4	*17.7	*14.6	*14.7	*14.1
Help of another person received . . . . .	554	8.4	39.4	*1.6	37.8	34.0	10.8	7.5

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

NOTE: Persons reported as not performing an activity were not classified with those reported as having difficulty with that activity.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

8 Table 11. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with shopping reported in 1984: United States

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

Sex, age, and extent of difficulty with shopping reported in 1984 <sup>2</sup>	Total in 1984	Outcome at 1986 recontact						
		Extent of difficulty with shopping reported for persons alive and living in the community <sup>1</sup>						
		None	Total	Some		Deceased	In nursing home <sup>3</sup>	Unknown <sup>4</sup>
				No help of another person received	Help of another person received			
Both sexes, 70 years and over	Number in thousands	Percent distribution						
Total . . . . .	17,195	64.5	14.2	1.1	13.1	10.4	2.2	8.6
No difficulty . . . . .	14,745	72.5	9.3	1.0	8.3	8.3	1.3	8.7
Some difficulty . . . . .	2,449	16.4	44.0	2.0	42.0	23.6	7.4	8.6
No help of another person received . . .	108	52.4	*25.8	*9.8	*16.0	*10.0	*8.0	*3.9
Help of another person received . . . . .	2,342	14.7	44.9	1.7	43.2	24.2	7.4	8.8
Both sexes, 70–79 years								
Total . . . . .	12,414	71.9	10.8	1.2	9.6	7.8	1.0	8.5
No difficulty . . . . .	11,267	77.1	7.2	1.1	6.1	6.7	0.7	8.4
Some difficulty . . . . .	1,147	20.7	47.0	*2.4	44.6	19.4	4.4	8.7
No help of another person received . . .	65	65.5	*15.2	*8.6	*6.6	*6.4	*6.7	*6.4
Help of another person received . . . . .	1,082	18.0	48.8	*2.0	46.8	20.2	4.3	8.8
Both sexes, 80 years and over								
Total . . . . .	4,780	45.4	23.0	0.9	22.1	17.2	5.3	9.2
No difficulty . . . . .	3,478	57.6	16.1	*0.6	15.5	13.4	3.5	9.4
Some difficulty . . . . .	1,302	12.6	41.6	1.8	39.8	27.3	10.1	8.5
No help of another person received . . .	42	*32.1	42.1	*11.6	*30.5	*15.7	*10.1	—
Help of another person received . . . . .	1,260	11.9	41.5	*1.4	40.1	27.7	10.1	8.8
Male, 70 years and over								
Total . . . . .	6,655	66.3	10.7	1.2	9.5	13.8	1.3	7.9
No difficulty . . . . .	6,054	71.1	8.0	1.1	6.9	11.7	1.2	7.9
Some difficulty . . . . .	602	17.9	36.6	*1.8	34.8	35.3	*2.9	7.1
No help of another person received . . .	25	*53.6	*18.5	*9.2	*9.3	*18.7	*9.2	—
Help of another person received . . . . .	577	16.4	37.4	*1.5	35.9	36.1	*2.7	7.4

Male, 70–79 years								
Total.....	5,091	71.8	8.9	1.2	7.7	10.9	0.6	7.8
No difficulty.....	4,780	75.1	6.7	1.1	5.6	9.5	*0.7	8.0
Some difficulty.....	312	21.1	42.3	*1.9	40.4	31.6	—	*5.0
No help of another person received....	13	100.0	—	—	—	—	—	—
Help of another person received.....	298	17.7	44.2	*2.0	42.2	33.0	—	*5.2
Male, 80 years and over								
Total.....	1,564	48.5	16.5	1.4	15.1	23.4	3.6	7.9
No difficulty.....	1,274	56.2	13.3	*1.3	12.0	19.8	3.1	7.6
Some difficulty.....	290	14.5	30.6	*1.8	28.8	39.4	6.1	9.4
No help of another person received....	11	—	*39.9	*19.9	*20.0	*40.4	*19.8	—
Help of another person received.....	279	15.1	30.2	*1.0	29.2	39.4	5.5	9.8
Female, 70 years and over								
Total.....	10,539	63.4	16.4	1.0	15.4	8.3	2.7	9.1
No difficulty.....	8,691	73.5	10.0	0.8	9.2	5.9	1.4	9.2
Some difficulty.....	1,848	15.8	46.5	2.1	44.4	19.8	8.9	9.1
No help of another person received....	83	52.0	*27.9	*9.9	*18.0	*7.5	*7.7	*5.0
Help of another person received.....	1,765	14.1	47.3	1.7	45.6	20.3	8.9	9.3
Female, 70–79 years								
Total.....	7,323	72.0	12.1	1.2	10.9	5.7	1.3	8.9
No difficulty.....	6,487	78.7	7.4	1.0	6.4	4.5	0.7	8.7
Some difficulty.....	836	20.5	48.6	*2.5	46.1	14.9	6.0	10.0
No help of another person received....	52	56.8	*18.9	*10.7	*8.2	*8.0	*8.3	*8.0
Help of another person received.....	784	18.1	50.6	*2.0	48.6	15.3	5.9	10.2
Female, 80 years and over								
Total.....	3,216	43.8	26.2	0.7	25.5	14.2	6.1	9.8
No difficulty.....	2,204	58.4	17.7	*0.2	17.5	9.8	3.7	10.4
Some difficulty.....	1,012	12.0	44.8	*1.8	43.0	23.8	11.3	8.3
No help of another person received....	31	*43.9	*42.9	*8.6	*34.3	*6.7	*6.6	—
Help of another person received.....	981	11.0	44.8	*1.6	43.2	24.3	11.4	8.5

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

NOTE: Persons reported as not performing an activity were not classified with those reported as having difficulty with that activity.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

**Table 12. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with heavy housework reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and extent of difficulty with heavy housework reported in 1984<sup>2</sup></i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>						
		<i>Extent of difficulty with heavy housework reported for persons alive and living in the community<sup>1</sup></i>						
		<i>None</i>	<i>Total</i>	<i>Some</i>		<i>Deceased</i>	<i>In nursing home<sup>3</sup></i>	<i>Unknown<sup>4</sup></i>
				<i>No help of another person received</i>	<i>Help of another person received</i>			
Both sexes, 70 years and over	Number in thousands	Percent distribution						
Total . . . . .	17,142	47.7	30.5	6.8	23.7	10.5	2.2	9.2
No difficulty . . . . .	12,491	60.1	21.6	6.0	15.6	7.9	1.4	9.0
Some difficulty . . . . .	4,650	14.2	54.3	8.9	45.4	17.3	4.3	9.9
No help of another person received . . .	822	23.3	50.1	19.2	30.9	11.8	*2.5	12.2
Help of another person received . . . . .	3,828	12.2	55.1	6.6	48.5	18.5	4.7	9.4
Both sexes, 70-79 years								
Total . . . . .	12,375	53.9	28.3	7.1	21.2	7.8	1.0	8.9
No difficulty . . . . .	9,608	64.5	19.8	6.1	13.7	6.3	0.7	8.8
Some difficulty . . . . .	2,767	17.1	58.0	10.7	47.3	13.1	2.3	9.5
No help of another person received . . .	590	25.4	53.3	19.2	34.1	10.8	-	10.5
Help of another person received . . . . .	2,177	14.8	59.3	8.4	50.9	13.8	2.9	9.2
Both sexes, 80 years and over								
Total . . . . .	4,767	31.5	35.9	5.9	30.0	17.3	5.2	10.1
No difficulty . . . . .	2,884	45.6	27.6	5.8	21.8	13.2	3.9	9.8
Some difficulty . . . . .	1,883	9.9	48.8	6.2	42.6	23.5	7.4	10.4
No help of another person received . . .	232	18.0	42.0	19.1	22.9	14.4	*8.9	16.7
Help of another person received . . . . .	1,652	8.8	49.8	4.4	45.4	24.8	7.1	9.6
Male, 70 years and over								
Total . . . . .	6,631	54.8	21.3	4.9	16.4	13.8	1.3	8.7
No difficulty . . . . .	5,573	62.3	16.7	4.4	12.3	11.0	1.3	8.8
Some difficulty . . . . .	1,058	15.7	45.7	7.6	38.1	28.8	*1.7	8.1
No help of another person received . . .	202	21.7	47.5	*11.0	36.5	23.1	*1.2	*6.6
Help of another person received . . . . .	856	14.3	45.3	6.8	38.5	30.1	*1.8	8.5

Male, 70–79 years									
Total	5,071	59.9	20.3	5.2	15.1	10.8	0.6	8.4	
No difficulty	4,389	66.2	15.6	4.7	10.9	8.9	*0.6	8.7	
Some difficulty	682	19.4	50.1	*7.9	42.2	23.3	*0.7	6.6	
No help of another person received	152	*24.0	51.3	*8.8	42.5	*18.9	–	*5.8	
Help of another person received	530	18.0	49.9	*7.7	42.2	24.5	*0.8	*6.8	
Male, 80 years and over									
Total	1,560	38.4	24.9	4.2	20.7	23.5	3.7	9.6	
No difficulty	1,184	47.7	20.8	3.3	17.5	18.7	3.7	9.1	
Some difficulty	376	9.1	37.7	7.0	30.7	38.8	*3.5	11.0	
No help of another person received	50	*14.6	36.0	*17.6	*18.4	35.8	*4.9	*8.8	
Help of another person received	326	8.3	37.9	*5.4	32.5	39.2	*3.3	11.3	
Female, 70 years and over									
Total	10,511	43.2	36.2	8.0	28.2	8.3	2.7	9.6	
No difficulty	6,919	58.4	25.5	7.3	18.2	5.4	1.5	9.2	
Some difficulty	3,592	13.7	56.8	9.2	47.6	14.0	5.1	10.4	
No help of another person received	620	23.9	51.0	21.9	29.1	8.1	*2.9	14.1	
Help of another person received	2,973	11.6	58.0	6.6	51.4	15.2	5.6	9.6	
Female, 70–79 years									
Total	7,304	49.8	34.0	8.5	25.5	5.7	1.3	9.3	
No difficulty	5,219	63.1	23.4	7.3	16.1	4.1	0.7	8.9	
Some difficulty	2,085	16.4	60.6	11.6	49.0	9.8	2.8	10.4	
No help of another person received	438	25.9	54.1	22.9	31.2	*8.0	–	12.1	
Help of another person received	1,647	13.8	62.3	8.6	53.7	10.3	3.6	10.0	
Female, 80 years and over									
Total	3,207	28.2	41.3	6.8	34.5	14.3	6.0	10.3	
No difficulty	1,700	44.1	32.2	7.5	24.7	9.5	4.0	10.3	
Some difficulty	1,507	10.1	51.6	6.0	45.6	19.7	8.3	10.3	
No help of another person received	181	19.0	43.6	19.5	24.1	*8.5	*10.0	18.9	
Help of another person received	1,326	8.9	52.6	4.1	48.5	21.2	8.1	9.1	

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

NOTE: Persons reported as not performing an activity were not classified with those reported as having difficulty with that activity.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

**Table 13. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with walking up 10 steps reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and extent of difficulty with walking up 10 steps reported in 1984<sup>2</sup></i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>				
		<i>Extent of difficulty with walking up 10 steps reported for persons alive and living in the community<sup>1</sup></i>				
		<i>None</i>	<i>Some</i>	<i>Deceased</i>	<i>In nursing home<sup>3</sup></i>	<i>Unknown<sup>4</sup></i>
	<i>Number in thousands</i>	<i>Percent distribution</i>				
<b>Both sexes, 70 years and over</b>						
Total. . . . .	16,970	53.4	22.5	10.4	2.2	11.6
No difficulty . . . . .	12,084	66.8	13.1	7.4	1.2	11.6
Some difficulty. . . . .	4,886	20.3	45.8	17.9	4.5	11.5
<b>Both sexes, 70-79 years</b>						
Total. . . . .	12,291	59.4	20.4	7.8	1.0	11.4
No difficulty . . . . .	9,389	70.6	11.6	5.9	0.6	11.3
Some difficulty. . . . .	2,902	23.3	48.5	14.1	2.3	11.7
<b>Both sexes, 80 years and over</b>						
Total. . . . .	4,679	37.6	28.1	17.2	5.2	12.0
No difficulty . . . . .	2,695	53.6	18.0	12.6	3.3	12.6
Some difficulty. . . . .	1,983	15.9	41.7	23.4	7.8	11.2
<b>Male, 70 years and over</b>						
Total. . . . .	6,611	57.6	16.9	13.7	1.4	10.4
No difficulty . . . . .	5,133	67.8	9.9	10.5	1.1	10.8
Some difficulty. . . . .	1,478	22.1	41.0	25.0	2.7	9.2
<b>Male, 70-79 years</b>						
Total. . . . .	5,065	62.7	15.6	10.9	*0.7	10.1
No difficulty . . . . .	4,098	71.6	8.9	8.5	*0.5	10.6
Some difficulty. . . . .	966	25.3	43.8	20.9	*1.8	8.3
<b>Male, 80 years and over</b>						
Total. . . . .	1,547	40.8	21.2	23.0	3.7	11.4
No difficulty . . . . .	1,035	52.9	14.1	18.2	3.4	11.5
Some difficulty. . . . .	512	16.2	35.7	32.8	*4.3	11.0



Female, 70 years and over						
Total	10,359	50.7	26.1	8.3	2.7	12.3
No difficulty	6,951	66.1	15.4	5.1	1.4	12.1
Some difficulty	3,407	19.5	47.9	14.8	5.3	12.5
Female, 70-79 years						
Total	7,227	57.1	23.7	5.7	*1.2	12.3
No difficulty	5,291	69.8	13.8	3.8	*0.8	11.8
Some difficulty	1,936	22.4	50.9	10.7	2.5	13.5
Female, 80 years and over						
Total	3,132	36.0	31.4	14.3	5.9	12.3
No difficulty	1,660	54.0	20.4	9.2	3.2	13.2
Some difficulty	1,472	15.7	43.8	20.2	9.0	11.3

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

**Table 14. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with walking one-quarter mile without rest reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and extent of difficulty with walking one-quarter mile without rest reported in 1984<sup>2</sup></i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>				
		<i>Extent of difficulty with walking one-quarter mile without rest reported for persons alive and living in the community<sup>1</sup></i>				
		<i>None</i>	<i>Some</i>	<i>Deceased</i>	<i>In nursing home<sup>3</sup></i>	<i>Unknown<sup>4</sup></i>
Both sexes, 70 years and over	Number in thousands	Percent distribution				
Total.....	17,103	49.8	27.7	10.5	2.2	9.8
No difficulty.....	11,191	67.6	15.9	6.2	1.1	9.2
Some difficulty.....	5,912	16.2	49.8	18.7	4.3	11.0
Both sexes, 70-79 years						
Total.....	12,350	57.0	24.6	7.9	1.1	9.5
No difficulty.....	8,841	71.7	14.1	4.9	0.6	8.7
Some difficulty.....	3,509	20.2	50.8	15.4	2.2	11.4
Both sexes, 80 years and over						
Total.....	4,753	31.1	35.7	17.4	5.2	10.6
No difficulty.....	2,350	52.2	22.8	11.1	3.1	10.9
Some difficulty.....	2,403	10.5	48.3	23.6	7.2	10.4
Male, 70 years and over						
Total.....	6,636	52.8	23.7	14.1	1.4	8.0
No difficulty.....	4,706	67.0	14.3	9.3	1.0	8.4
Some difficulty.....	1,930	18.2	46.4	25.6	2.5	7.2
Male, 70-79 years						
Total.....	5,082	58.7	21.4	11.2	*0.7	8.0
No difficulty.....	3,805	71.1	12.6	7.6	*0.5	8.3
Some difficulty.....	1,277	21.7	47.8	21.9	*1.4	7.2

Male, 80 years and over						
Total . . . . .	1,554	33.7	30.9	23.6	3.7	8.1
No difficulty . . . . .	901	49.9	21.6	16.9	*2.9	8.7
Some difficulty . . . . .	653	11.4	43.8	32.8	4.7	7.3
Female, 70 years and over						
Total . . . . .	10,467	47.9	30.2	8.3	2.7	10.9
No difficulty . . . . .	6,484	68.0	17.1	4.0	1.2	9.8
Some difficulty . . . . .	3,983	15.3	51.4	15.4	5.1	12.8
Female, 70-79 years						
Total . . . . .	7,268	55.9	26.7	5.6	1.3	10.5
No difficulty . . . . .	5,035	72.1	15.3	3.0	*0.6	9.0
Some difficulty . . . . .	2,233	19.2	52.6	11.7	2.7	13.8
Female, 80 years and over						
Total . . . . .	3,199	29.9	38.0	14.4	6.0	11.8
No difficulty . . . . .	1,449	53.6	23.5	7.4	3.3	12.2
Some difficulty . . . . .	1,750	10.2	50.0	20.1	8.2	11.5

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

**Table 15. Percent distribution of persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with lifting 25 pounds reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and extent of difficulty with lifting 25 pounds reported in 1984<sup>2</sup></i>	<i>Total in 1984</i>	<i>Outcome at 1986 recontact</i>				
		<i>Extent of difficulty with lifting 25 pounds reported for persons alive and living in the community<sup>1</sup></i>				
		<i>None</i>	<i>Some</i>	<i>Deceased</i>	<i>In nursing home<sup>3</sup></i>	<i>Unknown<sup>4</sup></i>
<b>Both sexes, 70 years and over</b>		<b>Percent distribution</b>				
Total. . . . .	Number in thousands 16,820	39.0	37.3	10.5	2.2	11.0
No difficulty . . . . .	9,639	56.9	23.7	7.1	1.2	11.2
Some difficulty. . . . .	7,181	14.9	55.6	15.1	3.5	10.8
<b>Both sexes, 70–79 years</b>						
Total. . . . .	12,214	45.8	34.7	7.9	1.0	10.7
No difficulty . . . . .	7,720	61.7	21.4	5.8	0.6	10.6
Some difficulty. . . . .	4,494	18.4	57.6	11.5	1.7	10.8
<b>Both sexes, 80 years and over</b>						
Total. . . . .	4,607	21.1	44.2	17.5	5.3	12.1
No difficulty . . . . .	1,920	37.8	32.8	12.3	3.5	13.6
Some difficulty. . . . .	2,687	9.1	52.3	21.1	6.5	11.0
<b>Male, 70 years and over</b>						
Total. . . . .	6,593	52.6	23.3	13.8	1.3	9.1
No difficulty . . . . .	4,858	63.2	16.5	9.9	1.0	9.4
Some difficulty. . . . .	1,735	22.6	42.3	24.6	2.2	8.3
<b>Male, 70–79 years</b>						
Total. . . . .	5,053	59.0	20.6	10.9	*0.6	8.8
No difficulty . . . . .	3,896	68.3	14.0	8.3	*0.5	9.0
Some difficulty. . . . .	1,157	27.9	43.1	19.9	*1.1	8.0
<b>Male, 80 years and over</b>						
Total. . . . .	1,540	31.3	32.0	23.1	3.6	10.1
No difficulty . . . . .	962	42.8	26.7	16.5	3.2	10.9
Some difficulty. . . . .	578	12.0	40.8	34.1	4.2	8.9

Female, 70 years and over						
Total.....	10,227	30.3	46.3	8.4	2.7	12.3
No difficulty.....	4,781	50.5	31.0	4.2	1.3	13.0
Some difficulty.....	5,446	12.5	59.9	12.1	3.9	11.7
Female, 70–79 years						
Total.....	7,161	36.4	44.7	5.7	1.2	12.0
No difficulty.....	3,824	55.0	28.9	3.2	*0.7	12.2
Some difficulty.....	3,337	15.1	62.7	8.6	1.9	11.7
Female, 80 years and over						
Total.....	3,066	15.9	50.3	14.6	6.2	13.0
No difficulty.....	958	32.7	39.0	8.1	3.9	16.3
Some difficulty.....	2,109	8.3	55.4	17.6	7.2	11.5

<sup>1</sup>Includes persons hospitalized at time of recontact.

<sup>2</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

# Chapter 4

## Mortality

by Sylvia E. Furner, Ph.D., University of Illinois at Chicago; Jeffrey Maurer, M.S., and Harry Rosenberg, Ph.D., National Center for Health Statistics

### Introduction

Death rates for the population 65 years of age and over, contrary to the beliefs of many, have continued to decline (1). Substantial declines in death rates in conjunction with dramatic increases in life expectancy, measured either from birth or from older ages, have led to an unprecedented growth in the percentage of the population 65 years of age and over. This prolonging of life of the aged population, although not totally understood, appears to be the result in part of large declines in cardiovascular mortality resulting from changes in lifestyle and improved access to health care for some segments of the population. Whatever its causes, the accelerating growth of the aged population is putting demands on somewhat fragile social welfare and health care systems. To better prepare our public officials for the future needs of our society in general, and more specifically the needs of older persons, it is important to investigate and identify the changing mortality trends.

Indepth analysis of the mortality statistics of those persons 65 years of age and over can help to elucidate some of the effects of aging and causes of death on this population. It is apparent that for each race-sex group, death rates increase with age, but this increase varies by cause of death as well as within each race-sex group. This variation contributes to the differences seen in life expectancy by race-sex groups.

---

The authors wish to acknowledge Richard Suzman, Ph.D., National Institute on Aging, National Institutes of Health, for his helpful comments on the manuscript.

Furthermore, study of the trends in death rates over decades reveals patterns that are fundamental to the ability to make projections about the future needs of this segment of the population.

### Sources of data

Mortality data are compiled by the National Center for Health Statistics (NCHS) through the National Vital Statistics System. This system is a cooperative effort of the Federal Government and the States, with the States providing information based on death certificates filed in their respective vital statistics registration offices. For this report, the source of some of the rates for 1960–86 is the annual volumes of *Vital Statistics of the United States*; the source for others is *Health, United States, 1988*. For rates for 1987 and later, the sources are *Health, United States, 1991* and *Monthly Vital Statistics Report*, Vol. 39, No. 13. Population estimates, the denominators of the death rates, are published annually by the U.S. Bureau of the Census in *Current Population Reports*, Series P-25. For census years, the population counts are based on the census enumeration on April 1 of the respective census years, and population estimates for all other years are estimated for July 1 of the respective years. Data on multiple causes of death are produced annually by NCHS from information on all diseases, conditions, and injuries reported on the death certificates (2).

## Results and comments

In 1986, there were 2,105,361 deaths in the United States; 1,488,161 (71 percent) of these deaths occurred in people aged 65 years of age and over (3). Of the deaths occurring in this age group, 52 percent were females, 48 percent were males, 90 percent were white persons, and 9 percent were black persons. The overall death rate for the population 65 years of age and over was 5,102 per 100,000; for males, the corresponding rate was 5,997 and for females, the rate was 4,492, or 25 percent lower than the rate for males. In 1990, there were 2,162,000 deaths (provisional data) in the United States. There was little change in the percent distribution of 1990 deaths compared with those of 1986. Seventy-two percent of deaths occurred in people aged 65 and over, compared with 71 percent in 1986. Of deaths occurring in this age group, 53 percent were females, 47 percent males, 90 percent were white persons and 9 percent were black persons. Provisional death rates for 1988–90 by age-race-sex groups are presented in table A. For both sexes and all races, death

rates by age groups dropped between 1988 and 1990. The exceptions were for white males aged 75–84 and white females aged 65–74; death rates for these groups increased between 1989 and 1990. (data not shown).

Declines in death rates for persons under 65 years of age have over time led to the growth in the population aged 65 and over and, therefore, have contributed to an increase in the percentage of deaths accounted for by the older population. To illustrate this, one can compare the above statistics with the corresponding statistics in 1960. At that time, there were 1,711,982 deaths in the United States; 1,010,047 (59 percent) of these deaths occurred in the 65-and-over population, compared with 71 percent in 1986.

## Mortality trends

From 1960 to 1986, the death rate for the population 65 years of age and over decreased by 16.3 percent. The decline was greater for males, 15.8 percent, compared with females, 14.5 percent. This trend in death rates was not

**Table A. Provisional death rates for all causes, according to race, sex, and age: 1988–90**

[Data are based on a 10-percent sample of death certificates from the National Vital Statistics Systems]

<i>Sex and age</i>	<i>All races</i>		<i>White</i>		<i>Black</i>	
	<i>1988</i>	<i>1990</i>	<i>1988</i>	<i>1990</i>	<i>1988</i>	<i>1990</i>
Deaths per 100,000 resident population						
Both sexes						
65–74 years. . . . .	2,731.2	2,607.4	2,679.4	2,565.7	3,587.3	3,319.7
75–84 years. . . . .	6,324.4	6,084.5	6,305.2	6,081.0	7,257.6	6,873.2
85 years and over. . . . .	15,577.7	14,784.4	15,888.0	15,087.7	13,206.1	12,707.3
Male						
65–74 years. . . . .	3,583.2	3,358.5	3,533.8	3,316.2	4,527.3	4,172.9
75–84 years. . . . .	8,243.2	7,950.2	8,234.6	7,976.4	9,360.3	8,731.4
85 years and over. . . . .	18,475.2	17,521.6	18,933.7	17,973.3	15,342.9	14,743.2
Female						
65–74 years. . . . .	2,051.4	2,002.1	1,993.0	1,956.9	2,887.1	2,673.9
75–84 years. . . . .	5,166.6	4,941.7	5,145.3	4,921.1	5,997.8	5,763.7
85 years and over. . . . .	14,451.7	13,727.5	14,727.8	13,993.7	12,259.5	11,831.4

NOTE: Includes deaths of nonresidents of the United States.

shared equally by white and black people. White males experienced a 16.2-percent decline in death rates, while black males showed only a 3.1-percent decline. For females, the corresponding declines in death rates by race were 14.4 percent and 8.4 percent, respectively.

Although these declines in death rates appear to be of substantial magnitude, no correction has been made to adjust for the aging population. A more accurate comparison is of the age-adjusted death rates, as these rates remove the effect of the different age distribution for each of the years being compared (table B), by assuming a fixed age distribution (that of the U.S. population in 1940) over time. The age-adjusted comparisons show more clearly the magnitude of the decline in death rates, free of the effects of changes in age composition.

The decline in death rates of the elderly population from 1960 to 1986 varied by age (table C). The decline for males was most evident in the younger age groups (55–59, 60–64, and 65–69 years of age); of interest was the increase in death rates for black males 75 years of age and over. For females, the decline in death rates showed less variation with age and, in contrast to males, the greatest declines occurred in the older age groups (70–74, 75–79, and 80–84 years of age). The variation with age was greater for black females compared with white females, with a 44.0-percent decline for

the age group 55–59 and a 4.2-percent decline for those 85 years or over.

### Mortality patterns

From 1960 to 1986, age-specific death rates for males were higher than the corresponding rates for females across all age groups, for both white and black persons (table 1). For 1980 and 1986, among the age groups 55–84 years, death rates for black persons exceeded those for white persons; a crossover in death rates occurred between the groups aged 80–84 and 85 years and over.

### Life expectancy

Life expectancy at birth is defined as the average number of years that a group of infants born in a particular year would expect to live if they were to experience, throughout life, the age-specific death rates prevailing in that calendar year. In 1986, life expectancy at birth was 74.8 years. Life expectancy for females was 7.0 years longer than for males (table 2), and life expectancy for white people was 6.0 years longer than for black people. A comparison of sex differences in life expectancy within race groups reveals that black females' life expectancy was 8.3 years greater than that of black males and that this excess was of greater magnitude than the corresponding difference in life expectancy for white persons (6.8 years).

**Table B. Comparison of death rates per 100,000 for persons 65 years of age and over: 1960–86**

Sex and race	Unadjusted			Age-adjusted <sup>1</sup>		
	1960	1986	Percent change	1960	1986	Percent change
Both sexes and all races . . . . .	6,098.9	5,102.0	-16.3	5,714.2	4,206.6	-26.4
Males . . . . .	7,120.4	5,997.4	-15.8	6,902.1	5,462.1	-20.9
White male . . . . .	7,137.3	5,979.9	-16.2	6,908.9	5,428.1	-21.4
Black male . . . . .	6,979.0	6,760.8	-3.1	6,873.4	6,359.5	-7.5
Females . . . . .	5,253.7	4,492.1	-14.5	4,727.1	3,357.6	-29.0
White female . . . . .	5,256.7	4,502.1	-14.4	4,696.6	3,313.3	-29.5
Black female . . . . .	5,287.3	4,842.7	-8.4	5,101.1	4,103.7	-19.6

<sup>1</sup>Adjusted to the 1940 population distribution.



**Table C. Percent change in death rates for persons 55 years of age and over, according to age, sex, and race: 1960–86**

Age	Male			Female		
	Total	White	Black	Total	White	Black
55–59 years. . . . .	-29.7	-31.6	-28.4	-24.7	-21.6	-44.0
60–64 years. . . . .	-30.0	-29.5	-36.5	-26.4	-22.6	-41.5
65–69 years. . . . .	-27.7	-28.2	-28.3	-26.2	-25.4	-32.4
70–74 years. . . . .	-22.1	-22.1	-11.5	-29.2	-29.2	-27.3
75–79 years. . . . .	-18.2	-19.7	+5.0	-32.9	-34.3	-15.2
80–84 years. . . . .	-19.8	-20.1	+10.2	-35.6	-36.2	-3.2
85 years and over. . . . .	-14.2	-14.6	+4.3	-24.8	-25.5	-4.2

The overall decline in death rates for the total population has resulted in an increase in life expectancy at birth and at other ages, including 65, 75, and 85 (table 2). For life expectancy at birth, the increase from 1960 to 1986 was evident for all race and sex groups (table 2). However, the increases were not the same for each race-sex group. Between 1960 and 1986, males and females experienced increases in life expectancy of 4.7 and 5.2 years, respectively. For white persons, the increase in life expectancy was 4.6 years for males and 4.7 years for females; for black persons, the increase was 4.5 years for males and 7.6 years for females. Although life expectancy at birth for black persons increased from 1960 to 1986, it actually declined from 1984 to 1986 (3).

Changes in life expectancy between 1960 and 1986 at older ages were also evident, with each race-sex group experiencing increases in life expectancy at age 65 (table 2); the largest increase was for white females (2.8 years). At age 75, with the exception of black males, each race-sex group showed an increase in life expectancy, with the largest increase appearing for white females (2.5 years). At age 85, life expectancy for white females increased 1.5 years between 1960 and 1986, but the trends for the other three race-sex groups were not clear.

In 1986 (table 3), at each age from 65 to 85, life expectancy for females exceeded that of males. This sex differential was evident for both

black and white people. For both sexes combined, white people had a longer life expectancy than black people until ages 83, 84, and 85. This crossover occurred at age 81 for males and at age 83 for females. Provisional data for life expectancy at age 65 shows small, steady increases for each race-sex group between 1988 and 1990 (table D). Increases were largest for black males; next largest were increases for black females.

### **Causes of death**

Table 4 shows the leading causes of death in the older population by 5-year age groups. Although the rankings varied with age, the top three diseases for each of the age groups remained the same; diseases of the heart, malignant neoplasms, and cerebrovascular disease. The ranking of pneumonia and influenza was seventh for those 65–69, compared with fourth for the population aged 85 years of age and over.

Death rates for diseases of the heart (table 5) continued their previously documented decline (4). From 1980 to 1986, death rates declined in virtually all of the race-sex groups (table E). Large declines in death rates for heart disease were experienced by males 65–69 years of age (an 18.2-percent decline), with white males experiencing the greatest change in rates. Similar patterns of decline were noted for females (a 13.3-percent decline) in the group aged

**Table D. Life expectancy at 65 years of age, according to race and sex: 1986–90**

[Data are based on the National Vital Statistics System]

Year	All races			White			Black		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Remaining life expectancy in years									
1986.....	16.8	14.7	18.6	16.9	14.8	18.7	15.4	13.4	17.0
1987.....	16.9	14.8	18.7	17.0	14.9	18.8	15.4	13.5	17.1
1988.....	16.9	14.9	18.6	17.0	14.9	18.7	15.4	13.4	16.9
1989.....	17.2	15.2	18.8	17.3	15.2	19.0	15.5	13.6	17.0
Provisional data:									
1988 <sup>1</sup> .....	16.9	14.8	18.6	17.0	14.9	18.7	15.5	13.6	17.1
1989 <sup>1</sup> .....	17.2	15.2	18.8	17.3	15.2	18.9	15.8	13.8	17.4
1990 <sup>1</sup> .....	17.3	15.3	19.0	17.3	15.3	19.0	16.1	14.2	17.6

<sup>1</sup>Includes deaths of nonresidents of the United States.**Table E. Percent change in death rates for diseases of the heart for persons 55 years of age and over, according to age, sex, and race: 1980–86**

Age	Male			Female		
	Total	White	Black	Total	White	Black
55–59 years.....	-18.9	-19.1	-16.9	-13.8	-14.2	-15.0
60–64 years.....	-16.5	-16.4	-10.0	-10.7	-11.5	-7.1
65–69 years.....	-18.2	-18.8	-10.9	-13.3	-13.6	-9.1
70–74 years.....	-14.9	-15.3	-8.0	-12.7	-13.0	-9.0
75–79 years.....	-13.0	-13.3	-6.5	-12.8	-13.3	-5.4
80–84 years.....	-10.3	-10.7	-2.4	-11.4	-12.0	-1.4
85 years and over.....	-9.6	-9.1	-8.1	-6.3	-6.4	-1.7

65–69, with white females having the greatest change.

The sex differential in mortality due to diseases of the heart was evident in all age groups (table 5); rates for males were consistently higher than rates for females for both black and white persons. Comparing the rates for black people and white people, it is interesting to note the crossover in rates. The rates for black males were higher until ages 80–84, when the rates for white males surpassed them. For females, this corresponding crossover did not occur until ages 85 and over.

As with overall death rates, the long-term trends of cause-specific death rates should be

assessed with age-adjusted rates. Although these age-adjusted comparisons are difficult for some causes of death because of the periodic revisions in the International Classification of Diseases (ICD), the difficulty is not great for the major causes of death. In assessing the change in cause-specific death rates from 1960 to 1986, it is necessary to account for two revisions of the ICD: the seventh revision (used 1958 to 1967) to the eighth revision (used 1968 to 1978), and the eighth revision to the ninth revision (used since 1979). To assess these changes, ratios of the number of deaths for two revisions are constructed. These ratios, called comparability ratios, provide indications of the amount of

**Table F. Comparison of age-adjusted death rates per 100,000 for diseases of the heart for persons 65 years of age and over: 1960–86**

<i>Sex and race</i>	<i>1960</i>	<i>1986</i>	<i>Percent change</i>
Both sexes and all races . . . . .	2,640.2	1,693.9	-35.8
White male . . . . .	3,257.0	2,207.9	-32.2
Black male . . . . .	2,749.5	2,297.0	-16.5
White female . . . . .	2,161.5	1,325.1	-38.7
Black female . . . . .	2,155.8	1,677.3	-22.2

NOTES: Adjusted to the 1940 population distribution. For diseases of the heart the comparability ratio for seventh to eighth revisions = 1.0045 and for eighth to ninth revisions = 1.0126.

discontinuity between revisions (5,6). Ratios close to the value of one clearly indicate comparability.

Comparison of the age-adjusted death rates for diseases of the heart for 1960–86 in persons 65 years of age and over reveal large declines for both sexes and for both white and black persons (table F). The greatest declines in these rates were for white females and white males.

Deaths due to malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (hereinafter called “cancer”), increased during the period 1980–86 (table 6). Although this increase was not evident for all the age-race-sex groups, higher cancer death rates for older persons can be seen. The groups with the largest increase in cancer death rates were those at the upper end of the age spectrum: namely, males aged 80–84 years, with a 5.9-percent increase in rates (5.8 percent for white males and 10.6 percent for black males) (table G). For females,

the largest increases were for those aged 70–74. The differential by race showed greater increases in death rates for black people in all age-sex groups except females 70–74 years of age.

Comparison of the age-adjusted death rates for cancer for the population 65 years of age and over for 1960 and 1986 reveals substantial increases for both sexes and for both white and black persons (table H).

A large part of the increase in cancer mortality was the result of substantial increases in death rates for malignant neoplasms of the respiratory and intrathoracic organs (hereinafter called “respiratory cancer”) (table 7). With few exceptions, each age-race-sex group showed increases in rates (table J). For males, the changes in rates between 1980 and 1986 ranged from a 1.3-percent decrease for those aged 65–69 to a 22.4-percent increase for those 85 years and

**Table G. Percent change in death rates for cancer for persons 55 years of age and over, according to age, sex, and race: 1980–86**

<i>Age</i>	<i>Male</i>			<i>Female</i>		
	<i>Total</i>	<i>White</i>	<i>Black</i>	<i>Total</i>	<i>White</i>	<i>Black</i>
55–59 years. . . . .	-2.0	-0.3	-12.4	-1.2	-0.5	-6.1
60–64 years. . . . .	+0.4	+0.3	+0.8	+5.0	+5.3	+4.8
65–69 years. . . . .	-2.4	-2.2	-1.1	+6.8	+6.9	+11.6
70–74 years. . . . .	+0.9	+0.4	+6.9	+9.4	+10.3	+4.2
75–79 years. . . . .	+1.4	+0.8	+11.0	+6.6	+6.9	+7.8
80–84 years. . . . .	+5.9	+5.8	+10.6	+4.5	+4.1	+13.0
85 years and over. . . . .	+3.8	+3.6	+9.5	+1.7	+1.3	+8.2

**Table H. Comparison of age-adjusted death rates per 100,000 for cancer for persons 65 years of age and over: 1960–86**

<i>Sex and race</i>	<i>1960</i>	<i>1986</i>	<i>Percent change</i>
Both sexes and all races . . . . .	848.2	989.2	+ 16.6
White male . . . . .	1,056.8	1,312.7	+ 24.2
Black male . . . . .	976.4	1,702.8	+ 74.4
White female . . . . .	687.3	759.3	+ 10.5
Black female . . . . .	588.3	815.1	+ 38.5

NOTES: Adjusted to the 1940 population distribution. For cancer the comparability ratio for seventh to eighth revisions = 1.0017 and for eighth to ninth revisions = 1.0026.

**Table J. Percent change in death rates for respiratory cancer for persons 55 years of age and over, according to age, sex, and race: 1980–86**

<i>Age</i>	<i>Male</i>			<i>Female</i>		
	<i>Total</i>	<i>White</i>	<i>Black</i>	<i>Total</i>	<i>White</i>	<i>Black</i>
55–59 years . . . . .	–0.4	+ 1.1	–9.6	+ 22.6	+ 23.8	+ 14.7
60–64 years . . . . .	+ 2.4	+ 2.0	+ 5.3	+ 27.9	+ 28.5	+ 28.9
65–69 years . . . . .	–1.3	–1.9	+ 5.9	+ 36.0	+ 36.3	+ 42.4
70–74 years . . . . .	+ 1.7	+ 1.0	+ 12.2	+ 51.7	+ 53.6	+ 42.6
75–79 years . . . . .	+ 8.6	+ 8.1	+ 18.1	+ 48.9	+ 49.3	+ 50.0
80–84 years . . . . .	+ 15.7	+ 15.2	+ 28.7	+ 50.2	+ 51.5	+ 55.8
85 years and over . . . . .	+ 22.4	+ 22.0	+ 35.2	+ 17.3	+ 17.6	+ 12.8

over. White males experienced a range of changes from a 1.9-percent decline to a 22.0-percent increase; black males experienced changes from a 5.9-percent increase to a 35.2-percent increase. The largest increases in respiratory cancer mortality, however, were for women, with a range of 17.3–51.7 percent; in black women, the range was 12.8–55.8 percent, and in white women, the rates increased from 17.6 percent to 53.6 percent.

Although the respiratory cancer death rates have clearly increased from 1980 to 1986, the long-term trends from 1960 to 1986 are even more dramatic (table K). The greatest increases—more than 400 percent—have been experienced by females. The increase was more than 200 percent for black males, compared with 100 percent for white males. Although the percent increases are larger for females than for males, the death rate in 1986 for white males is three times that for white females, and the rate for black males is 4.3 times that for black females.

Death rates for cerebrovascular diseases have declined rapidly in this country since 1973 (7); this decline was evident in the comparisons made here (table 8). The declines between 1980 and 1986 existed for all the age-race-sex groupings ranging from 17.2 percent to 29.5 percent (table L). The long-term trends between 1960 and 1986 in cerebrovascular disease death rates for the population 65 years of age and over revealed substantial declines for both sexes and for both white and black people (table M).

Diabetes mellitus, which ranked as the sixth or seventh leading cause of mortality among older persons, depending on the age group, is a disease for which death rates have declined (table 9). For 1980 to 1986, for those persons 65 years of age and over, the rates were consistently lower for each age group for all males and all females (table N). Although the decline in rates was evident for both sexes, the same did not hold true for both white and black persons.

**Table K. Comparison of age-adjusted death rates per 100,000 for respiratory cancer for persons 65 years of age and over: 1960–86**

<i>Sex and race</i>	<i>1960</i>	<i>1986</i>	<i>Percent change</i>
Both sexes and all races . . . . .	112.2	277.7	+147.7
White male . . . . .	213.0	458.1	+115.1
Black male . . . . .	167.0	555.0	+232.3
White female . . . . .	29.8	152.6	+412.3
Black female . . . . .	24.7	127.9	+418.4

NOTES: Adjusted to the 1940 population distribution. For respiratory cancer the comparability ratio for seventh to eighth revisions = 1.0316 and for eighth to ninth revisions = 1.0007.

**Table L. Percent change in death rates for cerebrovascular disease for persons 55 years of age and over, according to age, sex, and race: 1980–86**

<i>Age</i>	<i>Male</i>			<i>Female</i>		
	<i>Total</i>	<i>White</i>	<i>Black</i>	<i>Total</i>	<i>White</i>	<i>Black</i>
55–59 years. . . . .	-18.5	-20.0	-19.4	-18.8	-17.2	-27.3
60–64 years. . . . .	-22.7	-22.1	-28.2	-18.9	-20.1	-17.8
65–69 years. . . . .	-28.6	-28.9	-28.1	-21.8	-20.1	-28.4
70–74 years. . . . .	-29.1	-29.1	-29.1	-22.6	-22.4	-25.0
75–79 years. . . . .	-29.2	-29.5	-25.5	-27.2	-27.3	-25.6
80–84 years. . . . .	-25.3	-25.5	-22.2	-27.0	-27.4	-19.9
85 years and over. . . . .	-24.7	-24.1	-27.9	-22.5	-22.4	-20.7

**Table M. Comparison of age-adjusted death rates per 100,000 for cerebrovascular disease for persons 65 years of age and over: 1960–86**

<i>Sex and race</i>	<i>1960</i>	<i>1986</i>	<i>Percent change</i>
Both sexes and all races . . . . .	857.1	332.3	-61.2
White male . . . . .	900.6	345.7	-61.6
Black male . . . . .	1,117.5	498.0	-55.4
White female . . . . .	789.4	304.7	-61.4
Black female . . . . .	1,048.3	430.2	-59.0

NOTES: Adjusted to the 1940 population distribution. For cerebrovascular disease the comparability ratio for seventh to eighth revisions = 0.9905 and for eighth to ninth revisions = 1.0049.

**Table N. Percent change in death rates for diabetes mellitus for persons 55 years of age and over, according to age, sex, and race: 1980–86**

<i>Age</i>	<i>Male</i>			<i>Female</i>		
	<i>Total</i>	<i>White</i>	<i>Black</i>	<i>Total</i>	<i>White</i>	<i>Black</i>
55–59 years. . . . .	-	+2.2	-12.7	-5.1	-9.4	-0.4
60–64 years. . . . .	-5.0	-7.7	+3.9	-4.4	-5.0	-2.4
65–69 years. . . . .	-6.7	-7.0	-9.3	-10.6	-8.8	-14.6
70–74 years. . . . .	-6.8	-8.6	+8.0	-10.6	-12.1	-2.9
75–79 years. . . . .	-9.0	-8.9	-11.1	-9.2	-10.5	-0.9
80–84 years. . . . .	-4.4	-5.1	+13.5	-4.3	-6.8	+13.3
85 years and over. . . . .	-4.0	-5.3	+6.9	-3.5	-5.6	+12.8

Black people experienced increased death rates for diabetes for a few age groups, with the largest increases being experienced by males and females aged 80–84. These same trends were evident when death rates for diabetes mellitus for 1960 were compared with the rates for 1986.

As the population ages, there are obvious shifts in the leading causes of death. Pneumonia and influenza, as a group, have shown increased importance in the older age groups. In 1986, the rate for males 85 years of age and over was 24 times the rate for males 65–69; in the corresponding comparison for females, the rate for women aged 85 and over was 32 times the rate for the group aged 65–69 (table 10).

Concern has emerged regarding suicide deaths among the older population. Table 11 shows that the death rates for males were approximately 3–13 times the rates for females for the various age groups. These ratios mostly reflect the high rates for white males compared with white females, ratios that clearly increased with age. The death rates for suicide for persons 65 years of age and over during the period 1980–86 increased from 9.3 percent to 33.8 percent for men of all races; increasing trends also were observed for women, especially for those 70–84 years of age (table O).

The data in tables 1–11 are presented in terms of an underlying cause of death. As the

age at death increases, the number of chronic diseases increases. Therefore, it has become important to use multiple cause-of-death data because they can augment the picture of mortality among the elderly. Multiple cause-of-death data provide useful information on concurrent conditions and on contributory causes (8). Table 12 compares the number of deaths reported when multiple causes of death are considered with the number of deaths reported as the underlying cause. Many of the diseases that have the larger ratios of reported cause to underlying cause are those that by themselves may not be fatal, but when present with other conditions, may add to the risk of mortality. Large ratios of reported cause to underlying cause also occur for diseases that may complicate another disease that actually leads to death. The data in table 12 indicate that septicemia, nephritis and nephrosis, pneumonia, diabetes mellitus, arteriosclerosis, chronic obstructive pulmonary diseases and allied conditions, and accidents and adverse effects are conditions that generally have ratios of reported to underlying cause of two or more. These ratios appear to be similar in magnitude for males and females and for different age groups. These conditions clearly are ones that may exacerbate another condition and lead to death. Four other causes of death had ratios generally less than two: diseases of the heart,

**Table O. Percent change in death rates for suicide for persons 55 years of age and over, according to age, sex, and race: 1980–86**

Age	Male			Female		
	Total	White	Black	Total	White	Black
55–59 years. . . . .	+6.0	+9.2	-22.1	-2.3	-3.2	+90.5
60–64 years. . . . .	+12.6	+13.4	-7.2	+2.4	+1.1	+76.0
65–69 years. . . . .	+9.3	+7.7	+39.5	+4.5	+2.8	+27.8
70–74 years. . . . .	+24.8	+24.0	+52.3	+20.3	+17.4	+126.7
75–79 years. . . . .	+27.2	+26.9	+54.3	+33.9	+35.5	+70.6
80–84 years. . . . .	+33.8	+34.2	+48.9	+46.8	+49.0	+150.0
85 years and over. . . . .	+21.7	+25.6	-5.3	-14.5	-13.8	---

malignant neoplasms, cerebrovascular disease, and chronic liver disease and cirrhosis. From an epidemiologic point of view, these ratios of reported to underlying cause are important for generating hypotheses concerning the etiology of disease and death.

## References

1. Verbrugge LA. The dynamics of population aging and health. In: *Aging and health: linking research and public policy*. Chelsea, Michigan: Lewis Publishers, Inc. 1989.
2. National Center for Health Statistics. Multiple causes of death in the United States. *Monthly vital statistics report*; vol 32 no 10, suppl 2. Hyattsville, Maryland: Public Health Service. 1984.
3. National Center for Health Statistics. Advance report of final mortality statistics, 1986. *Monthly vital statistics report*; vol 37 no 6. Hyattsville, Maryland: Public Health Service. 1988.
4. Fingerhut LA. Changes in mortality among the elderly, United States, 1940-78, supplement to 1980. *Vital Health Stat.* 3(22a). Washington: National Center for Health Statistics. 1984.
5. National Center for Health Statistics. Comparability of mortality statistics for the seventh and eighth revisions of the International Classification of Diseases, United States. Hyattsville, Maryland: Health Resources Administration. 1975.
6. National Center for Health Statistics. Estimates of selected comparability ratios based on dual coding of 1976 death certificates by the eighth and ninth revisions of the International Classification of Diseases. Hyattsville, Maryland: Public Health Service. 1980.
7. Whelpton PK. Declining mortality from hypertension and stroke. *Southern Med Jrnl* 75(1):33-8. 1982.
8. Israel RA, Rosenberg HM, Curtin LR. Analytical potential for multiple cause-of-death data. *Am J Epidemiol* 124(2):161-79. 1986.

**Table 1. Death rates for all causes among persons 55 years of age and over, by sex, race, and age: United States, selected years 1960–86**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1960</i> <sup>1</sup>	<i>1970</i>	<i>1980</i>	<i>1986</i>
	Number of deaths per 100,000 resident population			
<b>Male, all races<sup>2</sup></b>				
55–59 years. ....	1,837.0	1,857.2	1,460.7	1,291.0
60–64 years. ....	2,893.2	2,786.3	2,231.0	2,023.8
65–69 years. ....	4,129.9	4,117.9	3,393.8	2,984.1
70–74 years. ....	5,986.1	5,893.4	5,078.3	4,661.6
75–79 years. ....	8,573.8	8,676.8	7,480.2	7,012.9
80–84 years. ....	13,508.7	12,386.8	11,239.6	10,838.7
65 years and over. ....	7,120.4	7,200.8	6,387.9	5,997.4
75 years and over. ....	11,849.2	11,448.4	10,734.3	10,205.8
85 years and over. ....	21,186.3	17,821.5	18,801.1	18,187.4
<b>White male</b>				
55–59 years. ....	1,784.6	1,774.6	1,375.6	1,221.5
60–64 years. ....	2,751.4	2,708.4	2,140.6	1,939.8
65–69 years. ....	4,050.7	4,046.1	3,312.1	2,908.7
70–74 years. ....	5,909.2	5,828.0	5,022.8	4,602.1
75–79 years. ....	8,698.7	8,693.4	7,468.5	6,988.1
80–84 years. ....	13,544.3	12,606.8	11,267.0	10,825.7
65 years and over. ....	7,137.3	7,237.0	6,377.3	5,979.9
75 years and over. ....	12,017.6	11,606.5	10,808.5	10,259.3
85 years and over. ....	21,750.0	18,551.7	19,097.3	18,576.1
<b>Black male</b>				
55–59 years. ....	2,664.5	2,825.8	2,457.2	2,075.4
60–64 years. ....	4,199.6	3,778.7	3,377.1	3,075.6
65–69 years. ....	5,226.5	5,051.3	4,484.0	4,074.1
70–74 years. ....	6,664.5	6,936.6	6,047.7	5,797.0
75–79 years. ....	7,653.7	8,827.8	8,092.2	8,038.1
80–84 years. ....	10,757.1	10,629.9	11,554.2	11,854.7
65 years and over. ....	6,979.0	7,151.7	6,919.8	6,760.8
75 years and over. ....	9,695.2	10,047.9	10,530.5	10,552.9
85 years and over. ....	14,844.8	12,222.2	16,098.8	15,488.1
<b>Female, all races<sup>2</sup></b>				
55–59 years. ....	924.2	907.0	749.0	695.7
60–64 years. ....	1,518.3	1,316.7	1,144.0	1,118.0
65–69 years. ....	2,257.6	2,042.4	1,717.7	1,665.8
70–74 years. ....	3,676.1	3,244.2	2,672.8	2,601.3
75–79 years. ....	6,039.1	5,380.1	4,256.6	4,049.9
80–84 years. ....	10,629.1	8,772.3	7,260.1	6,846.2
65 years and over. ....	5,253.7	4,950.8	4,484.1	4,492.1
75 years and over. ....	9,663.9	8,518.4	7,699.3	7,526.6
85 years and over. ....	19,008.4	15,518.0	14,746.9	14,297.5
<b>White female</b>				
55–59 years. ....	829.7	830.8	695.9	650.4
60–64 years. ....	1,362.2	1,222.9	1,079.2	1,055.0
65–69 years. ....	2,154.9	1,924.5	1,642.9	1,608.2
70–74 years. ....	3,583.2	3,134.1	2,585.1	2,536.7
75–79 years. ....	6,084.2	5,349.8	4,188.7	3,995.0
80–84 years. ....	10,654.3	8,869.4	7,236.4	6,794.5
65 years and over. ....	5,256.7	4,952.8	4,482.6	4,502.1
75 years and over. ....	9,787.2	8,611.0	7,740.4	7,561.0
85 years and over. ....	19,477.7	15,980.2	14,979.6	14,502.9



**Table 1. Death rates for all causes among persons 55 years of age and over, by sex, race, and age: United States, selected years 1960–86—Con.**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	1960 <sup>1</sup>	1970	1980	1986
Black female		Number of deaths per 100,000 resident population		
55–59 years. ....	2,051.1	1,688.5	1,305.8	1,148.2
60–64 years. ....	3,113.2	2,335.8	1,860.7	1,822.3
65–69 years. ....	3,551.9	3,285.3	2,538.4	2,402.1
70–74 years. ....	4,832.6	4,728.5	3,759.6	3,514.8
75–79 years. ....	5,931.2	6,059.7	5,243.8	5,032.1
80–84 years. ....	8,437.3	7,761.0	8,030.1	8,170.6
65 years and over. ....	5,287.3	5,151.1	4,766.7	4,842.7
75 years and over. ....	7,943.4	7,642.8	7,612.3	7,753.0
85 years and over. ....	13,052.6	10,706.6	12,367.2	12,510.3

<sup>1</sup>Includes deaths of nonresidents of the United States.

<sup>2</sup>Includes races other than white and black.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. Selected years.

**Table 2. Life expectancy at specified ages, by race and sex: United States, selected years 1960–86**

[Data are based on the National Vital Statistics System]

Age and year	All races <sup>1</sup>			White			Black		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Remaining life expectancy in years									
At birth									
1960 <sup>2</sup> .....	69.7	66.6	73.1	70.6	67.4	74.1	63.2	60.7	65.9
1970.....	70.8	67.1	74.7	71.7	68.0	75.6	64.1	60.0	68.3
1980.....	73.7	70.0	77.4	74.4	70.7	78.1	68.1	63.8	72.5
1986.....	74.8	71.3	78.3	75.4	72.0	78.8	69.4	65.2	73.5
At 65 years									
1960 <sup>2</sup> .....	14.3	12.8	15.8	14.4	12.9	15.9	13.9	12.7	15.1
1970.....	15.2	13.1	17.0	15.2	13.1	17.1	14.2	12.5	15.7
1980.....	16.4	14.1	18.3	16.5	14.2	18.4	15.1	13.0	16.8
1986.....	16.8	14.7	18.6	16.9	14.8	18.7	15.4	13.4	17.0
At 75 years									
1960 <sup>2</sup> .....	8.7	7.9	9.4	8.7	7.9	9.3	9.8	9.1	10.4
1970.....	9.6	8.3	10.5	9.5	8.3	10.4	9.9	8.8	10.9
1980.....	10.4	8.8	11.5	10.4	8.8	11.5	9.7	8.3	10.7
1986.....	10.7	9.1	11.7	10.7	9.1	11.8	10.1	8.7	11.1
At 85 years									
1960 <sup>2</sup> .....	4.8	4.5	5.0	4.7	4.4	4.9	6.0	5.7	6.2
1970.....	5.8	5.3	6.1	5.6	5.2	5.9	6.6	5.9	7.0
1980.....	5.9	5.0	6.4	5.9	5.0	6.3	5.5	4.5	6.1
1986.....	6.0	5.2	6.4	6.0	5.1	6.4	6.3	5.5	6.7

<sup>1</sup>Includes races other than white and black.<sup>2</sup>Includes deaths of nonresidents of the United States.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. Selected years.

**Table 3. Life expectancy at individual ages 65–85 years, by race and sex: United States, 1986**

[Data are based on the National Vital Statistics System]

Age	All races <sup>1</sup>			White			Black		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Remaining life expectancy in years									
65 years. ....	16.8	14.7	18.6	16.9	14.8	18.7	15.4	13.4	17.0
66 years. ....	16.2	14.1	17.9	16.2	14.1	18.0	14.8	12.9	16.4
67 years. ....	15.5	13.4	17.1	15.6	13.5	17.2	14.2	12.3	15.7
68 years. ....	14.8	12.8	16.4	14.9	12.9	16.5	13.6	11.8	15.1
69 years. ....	14.2	12.2	15.7	14.2	12.3	15.8	13.1	11.3	14.5
70 years. ....	13.6	11.7	15.0	13.6	11.7	15.1	12.5	10.8	13.9
71 years. ....	12.9	11.1	14.3	13.0	11.1	14.4	12.0	10.4	13.3
72 years. ....	12.4	10.6	13.7	12.4	10.6	13.7	11.5	9.9	12.7
73 years. ....	11.8	10.1	13.0	11.8	10.1	13.0	11.0	9.5	12.1
74 years. ....	11.2	9.6	12.4	11.2	9.6	12.4	10.5	9.1	11.6
75 years. ....	10.7	9.1	11.7	10.7	9.1	11.8	10.1	8.7	11.1
76 years. ....	10.1	8.6	11.1	10.1	8.6	11.1	9.6	8.3	10.5
77 years. ....	9.6	8.2	10.5	9.6	8.1	10.5	9.1	7.9	10.0
78 years. ....	9.1	7.7	9.9	9.1	7.7	9.9	8.7	7.5	9.5
79 years. ....	8.6	7.3	9.4	8.6	7.3	9.4	8.3	7.2	9.0
80 years. ....	8.1	6.9	8.8	8.1	6.9	8.8	7.9	6.8	8.5
81 years. ....	7.7	6.5	8.3	7.6	6.5	8.3	7.5	6.5	8.1
82 years. ....	7.2	6.1	7.8	7.2	6.1	7.8	7.1	6.2	7.7
83 years. ....	6.8	5.8	7.3	6.8	5.7	7.3	6.8	5.9	7.3
84 years. ....	6.4	5.5	6.8	6.4	5.4	6.8	6.5	5.7	7.0
85 years. ....	6.0	5.2	6.4	6.0	5.1	6.4	6.3	5.5	6.7

<sup>1</sup>Includes races other than white and black.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. 1986.

**Table 4. Death rates for the 10 leading causes of death in rank order among persons 55 years of age and over: United States, 1986**

[Data are based on the National Vital Statistics System]

Rank	Age, cause of death and ICD-9 code <sup>1</sup>	Number of deaths per 100,000 resident population
55-59 years		
	All causes . . . . .	978.8
1	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues . . . . .140-208	352.7
2	Diseases of heart . . . . .390-398,402,404-429	318.9
3	Cerebrovascular diseases . . . . .430-438	39.4
4	Accidents and adverse effects . . . . .E800-E949	32.5
5	Chronic obstructive pulmonary disease and allied conditions . . . . .490-496	31.3
6	Chronic liver disease and cirrhosis . . . . .571	29.5
7	Diabetes mellitus . . . . .250	19.8
8	Suicide . . . . .E950-E959	17.0
9	Pneumonia and influenza . . . . .480-487	13.4
10	Septicemia . . . . .38	6.8
60-64 years		
	All causes . . . . .	1,539.1
1	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues . . . . .140-208	538.7
2	Diseases of heart . . . . .390-398,402,404-429	532.5
3	Cerebrovascular diseases . . . . .430-438	67.0
4	Chronic obstructive pulmonary disease and allied conditions . . . . .490-496	63.4
5	Accidents and adverse effects . . . . .E800-E949	37.1
6	Chronic liver disease and cirrhosis . . . . .571	35.0
7	Diabetes mellitus . . . . .250	32.4
8	Pneumonia and influenza . . . . .480-487	24.0
9	Suicide . . . . .E950-E959	17.0
10	Nephritis, nephrotic syndrome, and nephrosis . . . . .580-589	12.7
65-69 years		
	All causes . . . . .	2,263.0
1	Diseases of heart . . . . .390-398,402,404-429	820.4
2	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues . . . . .140-208	736.2
3	Cerebrovascular diseases . . . . .430-438	116.3
4	Chronic obstructive pulmonary disease and allied conditions . . . . .490-496	113.6
5	Diabetes mellitus . . . . .250	48.3
6	Accidents and adverse effects . . . . .E800-E949	41.4
7	Pneumonia and influenza . . . . .480-487	41.0
8	Chronic liver disease and cirrhosis . . . . .571	36.9
9	Nephritis, nephrotic syndrome, and nephrosis . . . . .580-589	20.0
10	Septicemia . . . . .38	17.8
70-74 years		
	All causes . . . . .	3,479.7
1	Diseases of heart . . . . .390-398,402,404-429	1,323.4
2	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues . . . . .140-208	986.6
3	Cerebrovascular diseases . . . . .430-438	224.4
4	Chronic obstructive pulmonary disease and allied conditions . . . . .490-496	194.1
5	Pneumonia and influenza . . . . .480-487	80.8
6	Diabetes mellitus . . . . .250	73.1
7	Accidents and adverse effects . . . . .E800-E949	58.6
8	Chronic liver disease and cirrhosis . . . . .571	37.7
9	Nephritis, nephrotic syndrome, and nephrosis . . . . .580-589	35.4
10	Septicemia . . . . .38	28.6

**Table 4. Death rates for the 10 leading causes of death in rank order among persons 55 years of age and over: United States, 1986—Con.**

[Data are based on the National Vital Statistics System]

Rank	Age, cause of death and ICD-9 code <sup>1</sup>	Number of deaths per 100,000 resident population
75-79 years		
	All causes .....	5,206.1
1	Diseases of heart .....390-398,402,404-429	2,098.1
2	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues .....140-208	1,188.4
3	Cerebrovascular diseases .....430-438	422.0
4	Chronic obstructive pulmonary disease and allied conditions .....490-496	271.2
5	Pneumonia and influenza .....480-487	172.7
6	Diabetes mellitus .....250	103.9
7	Accidents and adverse effects .....E800-E949	86.5
8	Nephritis, nephrotic syndrome, and nephrosis .....580-589	62.0
9	Septicemia .....38	50.3
10	Atherosclerosis .....440	49.3
80-84 years		
	All causes .....	8,230.0
1	Diseases of heart .....390-398,402,404-429	3,526.1
2	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues .....140-208	1,450.3
3	Cerebrovascular diseases .....430-438	823.7
4	Pneumonia and influenza .....480-487	358.3
5	Chronic obstructive pulmonary disease and allied conditions .....490-496	333.7
6	Diabetes mellitus .....250	151.7
7	Accidents and adverse effects .....E800-E949	139.0
8	Atherosclerosis .....440	116.9
9	Nephritis, nephrotic syndrome, and nephrosis .....580-589	108.1
10	Septicemia .....38	88.3
85 years and over		
	All causes .....	15,398.9
1	Diseases of heart .....390-398,402,404-429	7,178.7
2	Cerebrovascular diseases .....430-438	1,762.6
3	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues .....140-208	1,612.0
4	Pneumonia and influenza .....480-487	1,032.1
5	Atherosclerosis .....440	432.6
6	Chronic obstructive pulmonary disease and allied conditions .....490-496	362.9
7	Accidents and adverse effects .....E800-E949	252.2
8	Nephritis, nephrotic syndrome, and nephrosis .....580-589	216.4
9	Diabetes mellitus .....250	213.9
10	Septicemia .....38	181.9

<sup>1</sup>Coded according to the *International Classification of Diseases, Ninth Revision*.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. 1986.

**Table 5. Death rates for diseases of the heart among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Male, all races <sup>1</sup>				
Number of deaths per 100,000 resident population				
55–59 years. . . . .	596.1	553.8	520.4	483.7
60–64 years. . . . .	923.6	874.1	831.3	777.9
65–69 years. . . . .	1,418.9	1,350.0	1,242.1	1,160.5
70–74 years. . . . .	2,150.8	2,020.8	1,927.4	1,829.8
75–79 years. . . . .	3,213.8	3,051.4	2,940.8	2,796.5
80–84 years. . . . .	4,959.2	4,629.7	4,635.6	4,450.5
65 years and over. . . . .	2,778.3	2,638.8	2,546.9	2,429.3
75 years and over. . . . .	4,778.2	4,495.5	4,416.6	4,230.3
85 years and over. . . . .	8,752.7	8,221.3	8,154.8	7,911.5
White male				
55–59 years. . . . .	579.4	537.3	506.2	468.5
60–64 years. . . . .	907.2	858.0	813.6	758.2
65–69 years. . . . .	1,413.7	1,339.9	1,235.6	1,148.4
70–74 years. . . . .	2,160.8	2,029.1	1,924.8	1,830.6
75–79 years. . . . .	3,249.6	3,098.1	2,985.9	2,818.2
80–84 years. . . . .	5,017.6	4,716.2	4,664.6	4,482.4
65 years and over. . . . .	2,812.4	2,671.7	2,576.1	2,450.2
75 years and over. . . . .	4,861.6	4,592.4	4,499.9	4,292.0
85 years and over. . . . .	8,958.0	8,442.2	8,416.4	8,138.4
Black male				
55–59 years. . . . .	824.5	787.0	709.9	685.5
60–64 years. . . . .	1,184.4	1,141.9	1,110.9	1,067.1
65–69 years. . . . .	1,593.7	1,586.5	1,426.6	1,420.3
70–74 years. . . . .	2,206.3	2,123.6	2,161.2	2,028.9
75–79 years. . . . .	3,084.7	2,790.1	2,785.7	2,885.2
80–84 years. . . . .	4,586.2	4,109.4	4,569.9	4,475.6
65 years and over. . . . .	2,623.6	2,517.5	2,474.0	2,465.5
75 years and over. . . . .	4,190.0	3,826.8	3,905.4	3,990.0
85 years and over. . . . .	6,819.5	6,378.6	6,015.9	6,268.7
Female, all races <sup>1</sup>				
55–59 years. . . . .	196.7	187.4	183.0	169.5
60–64 years. . . . .	357.5	339.8	330.5	319.3
65–69 years. . . . .	621.4	588.3	566.0	538.6
70–74 years. . . . .	1,084.8	1,021.3	1,000.4	947.2
75–79 years. . . . .	1,893.8	1,771.4	1,719.6	1,651.3
80–84 years. . . . .	3,424.6	3,171.5	3,155.5	3,035.8
65 years and over. . . . .	2,027.4	1,945.4	1,945.2	1,913.0
75 years and over. . . . .	3,674.8	3,478.1	3,472.0	3,415.3
85 years and over. . . . .	7,350.5	6,970.8	6,885.9	6,889.3
White female				
55–59 years. . . . .	175.5	167.3	161.1	150.6
60–64 years. . . . .	329.8	312.8	304.0	291.8
65–69 years. . . . .	588.8	560.8	538.9	508.6
70–74 years. . . . .	1,051.0	994.7	967.0	914.7
75–79 years. . . . .	1,873.3	1,765.3	1,705.5	1,624.2
80–84 years. . . . .	3,432.0	3,186.4	3,138.3	3,021.8
65 years and over. . . . .	2,040.0	1,964.4	1,957.0	1,922.5
75 years and over. . . . .	3,716.4	3,530.1	3,505.6	3,444.0
85 years and over. . . . .	7,501.6	7,118.6	7,044.7	7,021.3

**Table 5. Death rates for diseases of the heart among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86 – Con.**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Black female	Number of deaths per 100,000 resident population			
55–59 years. ....	416.8	387.2	391.0	354.1
60–64 years. ....	663.1	635.0	621.6	616.0
65–69 years. ....	983.1	916.5	881.1	893.5
70–74 years. ....	1,517.8	1,374.6	1,438.0	1,381.0
75–79 years. ....	2,241.2	1,980.3	2,040.3	2,120.9
80–84 years. ....	3,582.0	3,253.4	3,668.3	3,533.3
65 years and over. ....	2,036.2	1,909.1	1,975.5	2,027.4
75 years and over. ....	3,411.2	3,125.2	3,281.7	3,399.0
85 years and over. ....	5,796.5	5,491.3	5,315.0	5,698.6

<sup>1</sup>Includes races other than white and black.

NOTE: Diseases of the heart comprise codes 390–398, 402, and 404–429 of the *International Classification of Diseases, Ninth Revision*.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. Selected years.

**Table 6. Death rates for malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues, among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Male, all races <sup>1</sup>				
Number of deaths per 100,000 resident population				
55–59 years. ....	414.8	412.7	424.4	406.7
60–64 years. ....	645.2	644.2	644.3	647.7
65–69 years. ....	947.5	954.2	929.5	925.0
70–74 years. ....	1,292.5	1,276.7	1,297.7	1,303.8
75–79 years. ....	1,656.2	1,671.1	1,673.8	1,678.9
80–84 years. ....	2,033.9	2,027.1	2,109.6	2,154.9
65 years and over. ....	1,371.4	1,380.8	1,387.2	1,395.6
75 years and over. ....	1,901.4	1,914.9	1,941.2	1,961.3
85 years and over. ....	2,369.5	2,409.7	2,427.2	2,459.5
White male				
55–59 years. ....	391.9	389.4	400.6	390.8
60–64 years. ....	620.7	616.0	614.6	622.6
65–69 years. ....	921.5	927.9	907.5	900.9
70–74 years. ....	1,274.3	1,253.3	1,270.5	1,279.6
75–79 years. ....	1,648.5	1,664.6	1,660.0	1,661.6
80–84 years. ....	2,014.5	2,016.5	2,075.6	2,130.6
65 years and over. ....	1,355.5	1,332.0	1,367.5	1,375.8
75 years and over. ....	1,894.7	1,822.1	1,927.1	1,946.0
85 years and over. ....	2,375.6	2,413.4	2,438.6	2,462.3
Black male				
55–59 years. ....	688.8	695.1	690.3	603.6
60–64 years. ....	962.4	1,006.0	1,016.7	970.5
65–69 years. ....	1,287.7	1,332.0	1,248.7	1,273.5
70–74 years. ....	1,600.7	1,662.8	1,716.5	1,710.6
75–79 years. ....	1,862.7	1,900.0	2,007.7	2,067.6
80–84 years. ....	2,369.8	2,329.4	2,668.7	2,620.9
65 years and over. ....	1,642.9	1,708.6	1,727.8	1,752.6
75 years and over. ....	2,098.2	2,144.4	2,275.5	2,324.9
85 years and over. ....	2,393.9	2,566.1	2,471.4	2,620.9
Female, all races <sup>1</sup>				
55–59 years. ....	307.5	310.6	313.5	303.8
60–64 years. ....	423.0	428.0	440.0	444.0
65–69 years. ....	542.9	564.9	573.7	579.9
70–74 years. ....	686.5	683.7	714.8	750.8
75–79 years. ....	820.5	840.9	860.7	874.6
80–84 years. ....	1,030.2	1,017.3	1,073.4	1,076.5
65 years and over. ....	767.8	781.7	808.3	825.6
75 years and over. ....	988.6	996.5	1,028.3	1,038.0
85 years and over. ....	1,255.7	1,256.5	1,271.5	1,277.2
White female				
55–59 years. ....	301.1	304.5	307.6	299.7
60–64 years. ....	416.6	421.9	434.1	438.7
65–69 years. ....	542.4	563.5	574.5	580.0
70–74 years. ....	681.9	683.2	714.4	752.4
75–79 years. ....	822.3	843.8	864.4	879.0
80–84 years. ....	1,031.3	1,017.5	1,065.7	1,073.5
65 years and over. ....	770.6	785.4	812.1	829.9
75 years and over. ....	993.6	1,002.5	1,032.0	1,041.8
85 years and over. ....	1,266.8	1,270.6	1,284.3	1,283.6



**Table 6. Death rates for malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues, among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86 – Con.**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Black female	Number of deaths per 100,000 resident population			
55–59 years. . . . .	394.4	394.6	396.3	370.2
60–64 years. . . . .	516.1	526.0	536.2	540.8
65–69 years. . . . .	578.1	622.7	613.3	645.2
70–74 years. . . . .	776.5	737.8	777.4	809.3
75–79 years. . . . .	842.3	862.2	892.4	907.6
80–84 years. . . . .	1,077.1	1,087.0	1,233.8	1,217.6
65 years and over. . . . .	780.8	796.8	828.6	862.0
75 years and over. . . . .	977.9	985.6	1,048.4	1,077.6
85 years and over. . . . .	1,159.9	1,129.6	1,154.9	1,254.5

<sup>1</sup>Includes races other than white and black.

NOTE: Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues, comprise codes 140–208 of the *International Classification of Diseases, Ninth Revision*.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. Selected years.

**Table 7. Death rates for malignant neoplasms of the respiratory and intrathoracic organs among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
	Number of deaths per 100,000 resident population			
<b>Male, all races<sup>1</sup></b>				
55–59 years. . . . .	179.7	181.1	187.2	178.9
60–64 years. . . . .	275.6	278.5	278.3	282.1
65–69 years. . . . .	382.3	391.4	380.9	377.2
70–74 years. . . . .	476.4	480.2	486.9	484.7
75–79 years. . . . .	517.7	535.9	550.7	562.0
80–84 years. . . . .	500.3	510.8	559.4	578.8
65 years and over. . . . .	444.5	457.4	463.7	468.0
75 years and over. . . . .	487.4	508.9	532.6	550.0
85 years and over. . . . .	386.3	432.6	442.8	472.9
<b>White male</b>				
55–59 years. . . . .	170.8	171.1	177.2	172.6
60–64 years. . . . .	266.7	267.0	265.4	272.1
65–69 years. . . . .	375.5	384.0	373.3	368.5
70–74 years. . . . .	477.0	477.3	484.4	481.6
75–79 years. . . . .	522.3	543.3	554.4	564.7
80–84 years. . . . .	505.0	517.5	560.5	581.9
65 years and over. . . . .	443.9	456.3	461.5	465.2
75 years and over. . . . .	492.1	515.8	535.7	553.3
85 years and over. . . . .	391.5	439.1	446.8	477.5
<b>Black male</b>				
55–59 years. . . . .	292.8	310.2	307.0	264.7
60–64 years. . . . .	397.9	434.9	449.3	419.2
65–69 years. . . . .	490.4	516.9	502.0	519.2
70–74 years. . . . .	512.3	570.8	567.1	574.9
75–79 years. . . . .	516.5	514.9	571.4	610.2
80–84 years. . . . .	465.2	488.2	586.7	598.8
65 years and over. . . . .	489.4	520.8	534.9	553.8
75 years and over. . . . .	469.0	483.4	545.9	576.0
85 years and over. . . . .	337.7	385.7	423.8	456.7
<b>Female, all races<sup>1</sup></b>				
55–59 years. . . . .	63.7	70.8	75.9	78.1
60–64 years. . . . .	86.6	97.7	104.0	110.8
65–69 years. . . . .	104.1	118.9	131.4	141.6
70–74 years. . . . .	108.5	121.9	139.6	164.6
75–79 years. . . . .	102.7	112.1	132.3	152.9
80–84 years. . . . .	90.6	103.9	121.4	136.1
65 years and over. . . . .	102.5	114.0	129.0	145.7
75 years and over. . . . .	97.6	105.7	121.1	137.6
85 years and over. . . . .	96.3	96.2	101.0	113.0
<b>White female</b>				
55–59 years. . . . .	62.9	70.6	76.0	77.9
60–64 years. . . . .	87.0	98.0	104.2	111.8
65–69 years. . . . .	106.4	121.5	135.2	145.0
70–74 years. . . . .	110.1	126.0	144.0	169.1
75–79 years. . . . .	105.0	114.7	134.8	156.8
80–84 years. . . . .	90.5	103.3	122.3	137.1
65 years and over. . . . .	104.1	116.2	132.0	148.8
75 years and over. . . . .	98.7	106.7	122.8	139.8
85 years and over. . . . .	96.8	96.1	102.5	113.8

**Table 7. Death rates for malignant neoplasms of the respiratory and intrathoracic organs among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86—Con.**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Black female	Number of deaths per 100,000 resident population			
55–59 years. . . . .	79.0	82.3	85.1	90.6
60–64 years. . . . .	89.5	104.9	113.3	115.4
65–69 years. . . . .	89.0	105.7	106.0	126.7
70–74 years. . . . .	95.5	88.7	106.3	136.2
75–79 years. . . . .	79.2	90.6	113.7	118.8
80–84 years. . . . .	84.7	112.3	109.7	132.0
65 years and over. . . . .	88.6	97.3	106.0	125.8
75 years and over. . . . .	83.3	96.3	105.9	118.1
85 years and over. . . . .	90.5	88.7	86.5	102.1

<sup>1</sup>Includes races other than white and black.

NOTE: Malignant neoplasms of the respiratory and intrathoracic organs comprise codes 160–165 of the *International Classification of Diseases, Ninth Revision*.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. Selected years.

**Table 8. Death rates for cerebrovascular diseases among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Male, all races <sup>1</sup>				
Number of deaths per 100,000 resident population				
55–59 years. ....	54.1	51.2	47.5	44.1
60–64 years. ....	99.0	85.1	80.8	76.5
65–69 years. ....	184.7	164.1	146.6	131.9
70–74 years. ....	361.2	312.8	283.2	256.1
75–79 years. ....	675.9	580.6	519.0	478.5
80–84 years. ....	1,217.1	1,019.7	977.1	908.8
65 years and over. ....	556.9	484.7	447.7	410.1
75 years and over. ....	1,123.7	961.1	892.8	822.7
85 years and over. ....	2,199.2	1,908.0	1,797.0	1,656.4
White male				
55–59 years. ....	45.5	42.7	39.1	36.4
60–64 years. ....	86.0	73.4	70.5	67.0
65–69 years. ....	167.3	148.6	133.2	119.0
70–74 years. ....	340.1	294.9	265.8	241.3
75–79 years. ....	657.4	565.3	510.3	463.2
80–84 years. ....	1,208.1	1,020.0	965.2	900.0
65 years and over. ....	544.9	474.3	438.0	400.9
75 years and over. ....	1,121.2	961.6	894.8	819.6
85 years and over. ....	2,236.9	1,944.7	1,846.4	1,697.0
Black male				
55–59 years. ....	145.1	139.6	128.8	116.9
60–64 years. ....	244.0	215.0	194.0	175.2
65–69 years. ....	376.4	347.6	296.0	270.5
70–74 years. ....	609.4	530.8	495.7	432.3
75–79 years. ....	908.1	770.8	644.6	676.1
80–84 years. ....	1,392.8	1,091.8	1,173.5	1,083.7
65 years and over. ....	720.3	634.0	568.9	536.9
75 years and over. ....	1,219.6	1,021.9	935.0	920.1
85 years and over. ....	1,873.2	1,637.5	1,395.2	1,350.7
Female, all races <sup>1</sup>				
55–59 years. ....	43.2	38.5	36.1	35.1
60–64 years. ....	72.4	65.6	61.9	58.7
65–69 years. ....	132.1	117.3	106.0	103.3
70–74 years. ....	259.4	225.9	213.2	200.9
75–79 years. ....	530.0	456.2	423.1	385.9
80–84 years. ....	1,067.1	918.0	860.1	778.6
65 years and over. ....	583.9	519.9	495.1	466.2
75 years and over. ....	1,126.6	986.6	934.9	868.9
85 years and over. ....	2,328.2	2,039.9	1,918.9	1,804.6
White female				
55–59 years. ....	36.1	32.5	30.6	29.9
60–64 years. ....	62.8	56.3	53.6	50.2
65–69 years. ....	117.1	104.9	94.1	93.6
70–74 years. ....	241.0	212.5	196.1	187.1
75–79 years. ....	512.4	441.7	408.2	372.7
80–84 years. ....	1,060.0	911.4	844.2	769.8
65 years and over. ....	580.5	518.0	492.3	464.9
75 years and over. ....	1,130.1	990.8	937.7	871.8
85 years and over. ....	2,367.8	2,074.5	1,962.5	1,837.3

**Table 8. Death rates for cerebrovascular diseases among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86 – Con.**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Black female	Number of deaths per 100,000 resident population			
55–59 years. ....	111.5	97.1	84.9	81.1
60–64 years. ....	170.6	162.8	143.5	140.3
65–69 years. ....	283.5	247.0	223.9	203.1
70–74 years. ....	468.7	375.4	406.5	351.6
75–79 years. ....	759.3	643.7	620.5	564.6
80–84 years. ....	1,217.7	1,074.0	1,135.2	975.2
65 years and over. ....	654.6	577.5	565.6	526.2
75 years and over. ....	1,141.4	999.2	967.5	910.8
85 years and over. ....	1,896.3	1,689.6	1,470.7	1,504.1

<sup>1</sup>Includes races other than white and black.

NOTE: Cerebrovascular diseases comprise codes 430–438 of the *International Classification of Diseases, Ninth Revision*.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. Selected years.

**Table 9. Death rates for diabetes mellitus among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Male, all races <sup>1</sup>				
Number of deaths per 100,000 resident population				
55–59 years. . . . .	21.2	20.5	18.8	21.2
60–64 years. . . . .	34.0	32.0	31.5	32.3
65–69 years. . . . .	52.2	50.5	48.6	48.6
70–74 years. . . . .	79.9	74.5	73.2	74.5
75–79 years. . . . .	115.4	109.9	112.3	105.0
80–84 years. . . . .	160.0	154.0	161.0	153.0
65 years and over. . . . .	92.8	87.9	89.4	87.4
75 years and over. . . . .	147.8	138.3	145.5	138.2
85 years and over. . . . .	217.3	191.8	213.6	208.7
White male				
55–59 years. . . . .	18.3	18.5	16.8	18.7
60–64 years. . . . .	31.2	29.5	27.7	28.8
65–69 years. . . . .	48.6	47.6	44.1	45.2
70–74 years. . . . .	76.5	72.3	69.7	69.9
75–79 years. . . . .	110.8	106.9	108.5	100.9
80–84 years. . . . .	157.3	151.0	158.0	146.3
65 years and over. . . . .	89.7	85.5	86.1	83.4
75 years and over. . . . .	145.1	136.0	143.1	133.9
85 years and over. . . . .	219.2	191.9	215.9	207.6
Black male				
55–59 years. . . . .	51.1	41.9	37.6	44.6
60–64 years. . . . .	64.8	59.4	69.3	67.3
65–69 years. . . . .	90.6	85.6	94.1	82.2
70–74 years. . . . .	117.6	100.8	113.3	127.0
75–79 years. . . . .	171.3	143.5	160.1	152.3
80–84 years. . . . .	203.9	187.1	209.6	231.4
65 years and over. . . . .	130.1	118.0	128.1	130.5
75 years and over. . . . .	187.2	166.6	178.3	187.5
85 years and over. . . . .	209.4	201.8	185.7	223.9
Female, all races <sup>1</sup>				
55–59 years. . . . .	19.6	18.8	17.0	18.6
60–64 years. . . . .	33.9	31.9	31.9	32.4
65–69 years. . . . .	53.7	48.5	46.9	48.0
70–74 years. . . . .	80.5	72.8	74.6	72.0
75–79 years. . . . .	113.7	104.1	105.5	103.2
80–84 years. . . . .	157.6	157.6	153.1	150.9
65 years and over. . . . .	102.7	98.1	98.2	97.6
75 years and over. . . . .	153.6	149.0	148.3	146.4
85 years and over. . . . .	223.9	220.7	218.1	216.0
White female				
55–59 years. . . . .	15.9	15.3	13.6	14.4
60–64 years. . . . .	28.0	26.1	26.6	26.6
65–69 years. . . . .	45.5	42.2	40.3	41.5
70–74 years. . . . .	72.5	66.3	65.2	63.7
75–79 years. . . . .	106.2	98.3	97.9	95.0
80–84 years. . . . .	149.8	149.8	143.3	139.6
65 years and over. . . . .	95.5	92.4	91.2	89.8
75 years and over. . . . .	146.6	143.3	141.2	136.9
85 years and over. . . . .	217.9	216.7	213.9	205.6

**Table 9. Death rates for diabetes mellitus among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86—Con.**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Black female	Number of deaths per 100,000 resident population			
55–59 years. ....	53.7	50.4	47.5	53.5
60–64 years. ....	88.7	90.4	84.6	86.6
65–69 years. ....	131.8	114.0	111.4	112.5
70–74 years. ....	168.3	140.3	174.2	163.5
75–79 years. ....	200.5	170.1	195.1	198.6
80–84 years. ....	267.7	262.3	290.3	303.3
65 years and over. ....	183.5	163.1	178.8	187.1
75 years and over. ....	243.7	220.8	239.9	264.9
85 years and over. ....	311.2	280.0	273.7	351.0

<sup>1</sup>Includes races other than white and black.

NOTE: Diabetes mellitus comprises code 250 of the *International Classification of Diseases, Ninth Revision*.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. Selected years.

**Table 10. Death rates for pneumonia and influenza among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Male, all races <sup>1</sup>				
Number of deaths per 100,000 resident population				
55–59 years. . . . .	19.5	17.9	17.4	17.8
60–64 years. . . . .	32.8	28.1	30.6	33.5
65–69 years. . . . .	58.4	49.0	50.9	56.8
70–74 years. . . . .	107.4	95.0	109.6	115.0
75–79 years. . . . .	216.3	195.1	222.8	250.3
80–84 years. . . . .	465.7	401.4	461.4	512.8
65 years and over. . . . .	212.5	189.0	214.9	241.4
75 years and over. . . . .	466.3	412.1	471.7	534.2
85 years and over. . . . .	1,145.4	1,018.4	1,172.1	1,360.9
White male				
55–59 years. . . . .	16.4	15.4	15.0	15.4
60–64 years. . . . .	29.2	24.9	27.3	30.5
65–69 years. . . . .	53.3	46.4	47.6	53.5
70–74 years. . . . .	104.4	90.9	105.9	111.6
75–79 years. . . . .	212.2	197.7	220.7	249.4
80–84 years. . . . .	471.8	409.2	464.7	514.7
65 years and over. . . . .	212.4	190.7	215.9	242.3
75 years and over. . . . .	472.4	422.9	479.8	541.5
85 years and over. . . . .	1,172.7	1,051.6	1,215.3	1,402.7
Black male				
55–59 years. . . . .	53.9	44.3	41.6	42.7
60–64 years. . . . .	74.4	63.6	63.5	67.3
65–69 years. . . . .	112.8	79.3	86.4	98.1
70–74 years. . . . .	144.5	143.2	154.9	163.5
75–79 years. . . . .	249.8	173.9	255.4	272.7
80–84 years. . . . .	399.8	341.2	425.3	511.6
65 years and over. . . . .	215.7	176.9	211.5	245.4
75 years and over. . . . .	396.8	307.9	398.1	476.6
85 years and over. . . . .	816.8	642.9	742.9	967.2
Female, all races <sup>1</sup>				
55–59 years. . . . .	10.2	8.3	8.1	9.4
60–64 years. . . . .	15.0	13.5	13.3	15.7
65–69 years. . . . .	26.9	21.6	24.2	27.9
70–74 years. . . . .	51.0	42.7	50.3	55.3
75–79 years. . . . .	111.0	87.6	106.8	123.0
80–84 years. . . . .	260.5	203.8	248.4	276.3
65 years and over. . . . .	154.9	128.7	158.9	186.0
75 years and over. . . . .	316.1	257.7	317.6	370.1
85 years and over. . . . .	772.2	633.7	766.6	902.3
White female				
55–59 years. . . . .	8.9	7.1	7.3	8.6
60–64 years. . . . .	14.4	12.6	12.6	14.3
65–69 years. . . . .	25.5	20.8	23.0	26.6
70–74 years. . . . .	49.5	41.9	49.2	54.6
75–79 years. . . . .	109.9	88.3	107.4	123.3
80–84 years. . . . .	264.7	206.9	249.8	278.4
65 years and over. . . . .	158.9	132.7	163.5	191.8
75 years and over. . . . .	324.2	265.5	326.4	380.5
85 years and over. . . . .	796.7	654.6	793.1	933.7



**Table 10. Death rates for pneumonia and influenza among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86 – Con.**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Black female	Number of deaths per 100,000 resident population			
55–59 years. ....	24.1	18.5	15.6	17.1
60–64 years. ....	22.2	22.3	21.2	31.0
65–69 years. ....	41.7	29.6	37.0	41.5
70–74 years. ....	66.1	51.9	63.6	66.9
75–79 years. ....	121.3	81.9	107.6	128.9
80–84 years. ....	215.7	172.6	237.2	269.3
65 years and over. ....	116.4	91.6	117.8	140.0
75 years and over. ....	223.5	172.0	224.2	270.3
85 years and over. ....	459.2	370.4	440.6	541.4

<sup>1</sup>Includes races other than white and black.

NOTE: Pneumonia and influenza comprise codes 480–487 of the *International Classification of Diseases, Ninth Revision*.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. Selected years.

**Table 11. Death rates for suicide among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Male, all races <sup>1</sup>				
Number of deaths per 100,000 resident population				
55–59 years. . . . .	24.9	26.1	27.5	26.4
60–64 years. . . . .	23.9	26.4	26.8	26.9
65–69 years. . . . .	28.1	28.3	29.1	30.7
70–74 years. . . . .	33.5	34.9	39.3	41.8
75–79 years. . . . .	41.5	43.7	45.2	52.8
80–84 years. . . . .	43.8	47.8	54.7	58.6
65 years and over. . . . .	35.0	36.4	38.9	42.7
75 years and over. . . . .	43.9	46.1	49.1	56.1
85 years and over. . . . .	50.6	50.2	51.7	61.6
White male				
55–59 years. . . . .	26.2	27.7	29.2	28.6
60–64 years. . . . .	25.4	28.2	28.4	28.8
65–69 years. . . . .	30.0	29.9	31.0	32.3
70–74 years. . . . .	35.9	37.4	41.7	44.5
75–79 years. . . . .	44.9	47.2	48.3	57.0
80–84 years. . . . .	46.5	50.8	58.6	62.4
65 years and over. . . . .	37.5	38.9	41.6	45.6
75 years and over. . . . .	46.9	49.5	52.7	60.3
85 years and over. . . . .	52.8	53.9	55.8	66.3
Black male				
55–59 years. . . . .	12.2	13.4	13.3	9.5
60–64 years. . . . .	11.1	10.2	13.5	10.3
65–69 years. . . . .	11.4	12.9	10.5	15.9
70–74 years. . . . .	10.7	11.2	18.4	16.3
75–79 years. . . . .	9.2	9.3	16.7	14.2
80–84 years. . . . .	13.3	17.6	12.0	19.8
65 years and over. . . . .	11.4	12.4	14.0	16.2
75 years and over. . . . .	12.1	12.9	14.3	16.4
85 years and over. . . . .	18.9	16.1	11.1	17.9
Female, all races <sup>1</sup>				
55–59 years. . . . .	8.6	9.5	9.2	8.4
60–64 years. . . . .	8.2	8.0	7.8	8.4
65–69 years. . . . .	6.6	7.3	7.6	6.9
70–74 years. . . . .	6.4	6.4	7.1	7.7
75–79 years. . . . .	5.9	6.3	6.3	7.9
80–84 years. . . . .	4.7	5.1	6.3	6.9
65 years and over. . . . .	6.1	6.2	6.7	7.0
75 years and over. . . . .	5.4	5.3	5.9	6.8
85 years and over. . . . .	5.5	3.9	4.9	4.7
White female				
55–59 years. . . . .	9.3	10.3	9.9	9.0
60–64 years. . . . .	8.9	8.7	8.3	9.0
65–69 years. . . . .	7.2	7.8	8.1	7.4
70–74 years. . . . .	6.9	6.9	7.5	8.1
75–79 years. . . . .	6.2	6.7	6.9	8.4
80–84 years. . . . .	4.9	5.2	6.7	7.3
65 years and over. . . . .	6.5	6.6	7.2	7.5
75 years and over. . . . .	5.7	5.6	6.3	7.2
85 years and over. . . . .	5.8	3.9	5.1	5.0

**Table 11. Death rates for suicide among persons 55 years of age and over, by sex, race, and age: United States, selected years 1980–86 – Con.**

[Data are based on the National Vital Statistics System]

<i>Sex, race, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Black female	Number of deaths per 100,000 resident population			
55–59 years. ....	2.1	2.4	3.2	4.0
60–64 years. ....	2.5	2.0	3.0	4.4
65–69 years. ....	1.8	2.3	2.6	2.3
70–74 years. ....	1.5	1.9	2.4	3.4
75–79 years. ....	1.7	0.8	0.4	2.9
80–84 years. ....	0.8	2.1	0.7	2.0
65 years and over. ....	1.4	1.8	1.8	2.4
75 years and over. ....	1.1	1.2	0.6	1.9
85 years and over. ....	–	0.9	0.8	–

<sup>1</sup>Includes races other than white and black.

NOTE: Suicide comprises codes E950–E959 of the *International Classification of Diseases, Ninth Revision*.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. Selected years.

**Table 12. Number of deaths from the 10 leading causes of death in each age-sex-race group among persons 65 years of age and over, by reported or underlying cause and ratio of reported causes to underlying causes: United States, 1986**

[Data are based on the National Vital Statistics System]

<i>Age, sex, race, cause of death, and ICD-9 code<sup>1</sup></i>	<i>Reported cause</i>	<i>Underlying cause</i>	<i>Ratio of reported causes to underlying causes</i>
Total, 65-74 years			
Number of deaths			
Diseases of heart. . . . .390-398,402,404-429	285,815	180,772	1.6
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140-208	164,080	146,803	1.1
Cerebrovascular diseases. . . . .430-438	51,225	28,444	1.8
Chronic obstructive pulmonary diseases and allied conditions . . . . .490-496	58,442	25,866	2.3
Diabetes mellitus . . . . .250	44,218	10,269	4.3
Pneumonia and influenza . . . . .480-487	34,899	10,154	3.4
Accidents and adverse effects . . . . .E800-E949	21,937	8,499	2.6
Chronic liver disease and cirrhosis. . . . .571	10,391	6,455	1.6
Nephritis, nephrotic syndrome, and nephrosis. . .580-589	26,801	4,649	5.8
Septicemia. . . . .038	22,003	3,915	5.6
Male, 65-74 years			
Diseases of heart. . . . .390-398,402,404-429	170,711	110,630	1.5
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140-208	93,820	83,119	1.1
Chronic obstructive pulmonary diseases and allied conditions . . . . .490-496	38,184	16,137	2.4
Cerebrovascular diseases. . . . .430-438	26,637	14,147	1.9
Pneumonia and influenza . . . . .480-487	22,125	6,247	3.5
Accidents and adverse effects . . . . .E800-E949	12,910	5,094	2.5
Diabetes mellitus . . . . .250	21,506	4,564	4.7
Chronic liver disease and cirrhosis. . . . .571	6,570	3,972	1.7
Nephritis, nephrotic syndrome, and nephrosis. . .580-589	15,148	2,538	6.0
Septicemia. . . . .038	12,030	2,135	5.6
White male, 65-74 years			
Diseases of heart. . . . .390-398,402,404-429	150,955	99,076	1.5
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140-208	82,677	73,112	1.1
Chronic obstructive pulmonary diseases and allied conditions . . . . .490-496	35,375	14,894	2.4
Cerebrovascular diseases. . . . .430-438	22,541	11,788	1.9
Pneumonia and influenza . . . . .480-487	19,485	5,390	3.6
Accidents and adverse effects . . . . .E800-E949	11,364	4,384	2.6
Diabetes mellitus . . . . .250	18,746	3,835	4.9
Chronic liver disease and cirrhosis. . . . .571	5,964	3,637	1.6
Nephritis, nephrotic syndrome, and nephrosis. . .580-589	12,855	2,035	6.3
Septicemia. . . . .038	9,919	1,718	5.8
Black male, 65-74 years			
Diseases of heart. . . . .390-398,402,404-429	18,090	10,591	1.7
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140-208	10,265	9,211	1.1
Cerebrovascular diseases. . . . .430-438	3,710	2,138	1.7
Chronic obstructive pulmonary diseases and allied conditions . . . . .490-496	2,566	1,127	2.3
Pneumonia and influenza . . . . .480-487	2,388	793	3.0
Septicemia. . . . .038	1,958	709	2.8
Diabetes mellitus . . . . .250	2,439	638	3.8
Accidents and adverse effects . . . . .E800-E949	1,387	633	2.2

**Table 12. Number of deaths from the 10 leading causes of death in each age-sex-race group among persons 65 years of age and over, by reported or underlying cause and ratio of reported causes to underlying causes: United States, 1986—Con.**

[Data are based on the National Vital Statistics System]

<i>Age, sex, race, cause of death, and ICD-9 code<sup>1</sup></i>	<i>Reported cause</i>	<i>Underlying cause</i>	<i>Ratio of reported causes to underlying causes</i>
Black male, 65–74 years—Con.			
Number of deaths			
Nephritis, nephrotic syndrome, and nephrosis. . .580–589	2,108	476	4.4
Chronic liver disease and cirrhosis. . . . .571	530	302	1.8
Female, 65–74 years			
Diseases of heart. . . . .390–398,402,404–429	115,104	70,142	1.6
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140–208	70,260	63,684	1.1
Cerebrovascular diseases. . . . .430–438	24,588	14,297	1.7
Chronic obstructive pulmonary diseases and allied conditions . . . . .490–496	20,258	9,729	2.1
Diabetes mellitus . . . . .250	22,712	5,705	4.0
Pneumonia and influenza . . . . .480–487	12,774	3,907	3.3
Accidents and adverse effects . . . . .E800–E949	9,027	3,405	2.7
Chronic liver disease and cirrhosis. . . . .571	3,821	2,483	1.5
Nephritis, nephrotic syndrome, and nephrosis. . .580–589	11,653	2,111	5.5
Septicemia. . . . .038	9,973	1,780	5.6
White female, 65–74 years			
Diseases of heart. . . . .390–398,402,404–429	98,163	60,073	1.6
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140–208	62,852	57,022	1.1
Cerebrovascular diseases. . . . .430–438	20,309	11,797	1.7
Chronic obstructive pulmonary diseases and allied conditions . . . . .490–496	19,138	9,234	2.1
Diabetes mellitus . . . . .250	18,425	4,471	4.1
Pneumonia and influenza . . . . .480–487	11,317	3,407	3.3
Accidents and adverse effects . . . . .E800–E949	8,010	2,990	2.7
Chronic liver disease and cirrhosis. . . . .571	3,436	2,242	1.5
Nephritis, nephrotic syndrome, and nephrosis. . .580–589	9,352	1,591	5.9
Septicemia. . . . .038	8,212	1,441	5.7
Black female, 65–74 years			
Diseases of heart. . . . .390–398,402,404–429	15,941	9,509	1.7
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140–208	6,840	6,156	1.1
Cerebrovascular diseases. . . . .430–438	3,985	2,304	1.7
Diabetes mellitus . . . . .250	4,018	1,158	3.5
Nephritis, nephrotic syndrome, and nephrosis. . .580–589	2,148	490	4.4
Pneumonia and influenza . . . . .480–487	1,319	452	2.9
Chronic obstructive pulmonary diseases and allied conditions . . . . .490–496	1,027	451	2.3
Accidents and adverse effects . . . . .E800–E949	918	371	2.5
Septicemia. . . . .038	1,675	323	5.2
Chronic liver disease and cirrhosis. . . . .571	328	207	1.6
Total, 75–84 years			
Diseases of heart. . . . .390–398,402,404–429	368,329	238,956	1.5
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140–208	138,783	116,632	1.2
Cerebrovascular diseases. . . . .430–438	91,616	51,982	1.8
Chronic obstructive pulmonary diseases and allied conditions . . . . .490–496	61,204	26,708	2.3
Pneumonia and influenza . . . . .480–487	59,506	21,995	2.7

**Table 12. Number of deaths from the 10 leading causes of death in each age-sex-race group among persons 65 years of age and over, by reported or underlying cause and ratio of reported causes to underlying causes: United States, 1986—Con.**

[Data are based on the National Vital Statistics System]

<i>Age, sex, race, cause of death, and ICD-9 code<sup>1</sup></i>	<i>Reported cause</i>	<i>Underlying cause</i>	<i>Ratio of reported causes to underlying causes</i>
Total, 75-84 years—Con.			
	Number of deaths		
Diabetes mellitus . . . . .250	48,220	11,048	4.4
Accidents and adverse effects . . . . .E800-E949	25,895	9,633	2.7
Nephritis, nephrotic syndrome, and nephrosis. . .580-589	35,095	7,196	4.9
Atherosclerosis . . . . .440	35,437	6,781	5.2
Septicemia. . . . .038	28,547	5,857	4.9
Male, 75-84 years			
Diseases of heart. . . . .390-398,402,404-429	178,653	114,305	1.6
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140-208	75,522	62,493	1.2
Cerebrovascular diseases. . . . .430-438	38,958	21,304	1.8
Chronic obstructive pulmonary diseases and allied conditions . . . . .490-496	40,174	16,996	2.4
Pneumonia and influenza . . . . .480-487	32,564	11,588	2.8
Accidents and adverse effects . . . . .E800-E949	12,782	4,908	2.6
Diabetes mellitus . . . . .250	19,669	4,126	4.8
Nephritis, nephrotic syndrome, and nephrosis. . .580-589	18,609	3,615	5.1
Atherosclerosis . . . . .440	15,963	2,959	5.4
Septicemia. . . . .038	13,346	2,701	4.9
White male, 75-84 years			
Diseases of heart. . . . .390-398,402,404-429	161,566	104,267	1.5
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140-208	67,794	55,943	1.2
Cerebrovascular diseases. . . . .430-438	34,606	18,901	1.8
Chronic obstructive pulmonary diseases and allied conditions . . . . .490-496	37,747	16,011	2.4
Pneumonia and influenza . . . . .480-487	29,837	10,502	2.8
Accidents and adverse effects . . . . .E800-E949	11,521	4,314	2.7
Diabetes mellitus . . . . .250	17,607	3,580	4.9
Nephritis, nephrotic syndrome, and nephrosis. . .580-589	16,287	3,067	5.3
Atherosclerosis . . . . .440	14,712	2,680	5.5
Septicemia. . . . .038	11,385	2,273	5.0
Black male, 75-84 years			
Diseases of heart. . . . .390-398,402,404-429	15,174	8,927	1.7
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140-208	6,961	5,893	1.2
Cerebrovascular diseases. . . . .430-438	3,826	2,122	1.8
Pneumonia and influenza . . . . .480-487	2,323	920	2.5
Chronic obstructive pulmonary diseases and allied conditions . . . . .490-496	2,080	831	2.5
Accidents and adverse effects . . . . .E800-E949	1,078	516	2.1
Nephritis, nephrotic syndrome, and nephrosis. . .580-589	2,059	514	4.0
Diabetes mellitus . . . . .250	1,725	467	3.7
Septicemia. . . . .038	1,773	394	4.5
Atherosclerosis . . . . .440	1,104	249	4.4
Female, 75-84 years			
Diseases of heart. . . . .390-398,402,404-429	189,676	124,651	1.5
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140-208	63,261	54,139	1.2

**Table 12. Number of deaths from the 10 leading causes of death in each age-sex-race group among persons 65 years of age and over, by reported or underlying cause and ratio of reported causes to underlying causes: United States, 1986—Con.**

[Data are based on the National Vital Statistics System]

<i>Age, sex, race, cause of death, and ICD-9 code<sup>1</sup></i>	<i>Reported cause</i>	<i>Underlying cause</i>	<i>Ratio of reported causes to underlying causes</i>
Female, 75–84 years—Con.			
Number of deaths			
Cerebrovascular diseases . . . . .430–438	52,658	30,678	1.7
Pneumonia and influenza . . . . .480–487	26,942	10,407	2.6
Chronic obstructive pulmonary diseases and allied conditions . . . . .490–496	21,030	9,712	2.2
Diabetes mellitus . . . . .250	28,551	6,922	4.1
Accidents and adverse effects . . . . .E800–E949	13,113	4,725	2.8
Atherosclerosis . . . . .440	19,474	3,822	5.1
Nephritis, nephrotic syndrome, and nephrosis. . .580–589	16,486	3,581	4.6
Septicemia . . . . .038	15,201	3,156	4.8
White female, 75–84 years			
Diseases of heart. . . . .390–398,402,404–429	170,516	112,628	1.5
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140–208	57,780	49,407	1.2
Cerebrovascular diseases . . . . .430–438	46,920	27,416	1.7
Pneumonia and influenza . . . . .480–487	24,830	9,559	2.6
Chronic obstructive pulmonary diseases and allied conditions . . . . .490–496	20,181	9,365	2.2
Diabetes mellitus . . . . .250	24,949	5,822	4.3
Accidents and adverse effects . . . . .E800–E949	12,052	4,307	2.8
Atherosclerosis . . . . .440	17,792	3,486	5.1
Nephritis, nephrotic syndrome, and nephrosis. . .580–589	14,133	2,960	4.8
Septicemia . . . . .038	12,930	2,647	4.9
Black female, 75–84 years			
Diseases of heart. . . . .390–398,402,404–429	17,924	11,281	1.6
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140–208	5,075	4,377	1.2
Cerebrovascular diseases . . . . .430–438	5,458	3,056	1.8
Diabetes mellitus . . . . .250	3,314	1,014	3.3
Pneumonia and influenza . . . . .480–487	1,910	769	2.5
Nephritis, nephrotic syndrome, and nephrosis. . .580–589	2,179	580	3.8
Septicemia . . . . .038	2,130	486	4.4
Accidents and adverse effects . . . . .E800–E949	931	364	2.6
Atherosclerosis . . . . .440	1,576	316	5.0
Chronic obstructive pulmonary diseases and allied conditions . . . . .490–496	753	304	2.5
Total, 85 years and over			
Diseases of heart. . . . .390–398,402,404–429	293,213	199,281	1.5
Cerebrovascular diseases . . . . .430–438	82,380	48,931	1.7
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140–208	59,493	44,749	1.3
Pneumonia and influenza . . . . .480–487	61,753	28,652	2.2
Atherosclerosis . . . . .440	42,963	12,009	3.6
Chronic obstructive pulmonary diseases and allied conditions . . . . .490–496	25,062	10,075	2.5
Accidents and adverse effects . . . . .E800–E949	20,431	7,002	2.9
Nephritis, nephrotic syndrome, and nephrosis. . .580–589	25,573	6,006	4.3
Diabetes mellitus . . . . .250	23,945	5,939	4.0
Septicemia . . . . .038	21,848	5,049	4.3

**Table 12. Number of deaths from the 10 leading causes of death in each age-sex-race group among persons 65 years of age and over, by reported or underlying cause and ratio of reported causes to underlying causes: United States, 1986 – Con.**

[Data are based on the National Vital Statistics System]

<i>Age, sex, race, cause of death, and ICD-9 code<sup>1</sup></i>	<i>Reported cause</i>	<i>Underlying cause</i>	<i>Ratio of reported causes to underlying causes</i>
Male, 85 years and over			
Number of deaths			
Diseases of heart. . . . .390–398,402,404–429	95,414	62,184	1.5
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140–208	26,306	19,332	1.4
Cerebrovascular diseases. . . . .430–438	22,650	13,019	1.7
Pneumonia and influenza . . . . .480–487	23,784	10,697	2.2
Chronic obstructive pulmonary diseases and allied conditions . . . . .490–496	14,189	5,858	2.4
Atherosclerosis . . . . .440	12,220	3,267	3.7
Accidents and adverse effects . . . . .E800–E949	7,349	2,786	2.6
Nephritis, nephrotic syndrome, and nephrosis. . .580–589	11,100	2,494	4.5
Septicemia . . . . .038	7,398	1,661	4.5
Diabetes mellitus . . . . .250	6,905	1,640	4.2
White male, 85 years and over			
Diseases of heart. . . . .390–398,402,404–429	87,783	57,457	1.5
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140–208	23,847	17,384	1.4
Cerebrovascular diseases. . . . .430–438	20,846	11,981	1.7
Pneumonia and influenza . . . . .480–487	22,120	9,903	2.2
Chronic obstructive pulmonary diseases and allied conditions . . . . .490–496	13,399	5,531	2.4
Atherosclerosis . . . . .440	11,407	3,051	3.7
Accidents and adverse effects . . . . .E800–E949	6,776	2,528	2.7
Nephritis, nephrotic syndrome, and nephrosis. . .580–589	9,906	2,186	4.5
Diabetes mellitus . . . . .250	6,325	1,466	4.3
Septicemia . . . . .038	6,457	1,424	4.5
Black male, 85 years and over			
Diseases of heart. . . . .390–398,402,404–429	6,705	4,200	1.6
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140–208	2,212	1,756	1.3
Cerebrovascular diseases. . . . .430–438	1,567	905	1.7
Pneumonia and influenza . . . . .480–487	1,365	648	2.1
Nephritis, nephrotic syndrome, and nephrosis. . .580–589	1,050	275	3.8
Chronic obstructive pulmonary diseases and allied conditions . . . . .490–496	635	267	2.4
Accidents and adverse effects . . . . .E800–E949	484	215	2.3
Septicemia . . . . .038	835	212	3.9
Atherosclerosis . . . . .440	709	201	3.5
Diabetes mellitus . . . . .250	494	150	3.3
Female, 85 years and over			
Diseases of heart. . . . .390–398,402,404–429	197,799	137,097	1.4
Cerebrovascular diseases. . . . .430–438	59,730	35,912	1.7
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140–208	33,187	25,417	1.3
Pneumonia and influenza . . . . .480–487	37,969	17,955	2.1
Atherosclerosis . . . . .440	30,763	8,742	3.5
Diabetes mellitus . . . . .250	17,040	4,299	4.0
Chronic obstructive pulmonary diseases and allied conditions . . . . .490–496	10,873	4,217	2.6
Accidents and adverse effects . . . . .E800–E949	13,082	4,216	3.1
Nephritis, nephrotic syndrome, and nephrosis. . .580–589	14,473	3,512	4.1
Septicemia . . . . .038	14,450	3,388	4.3



**Table 12. Number of deaths from the 10 leading causes of death in each age-sex-race group among persons 65 years of age and over, by reported or underlying cause and ratio of reported causes to underlying causes: United States, 1986—Con.**

[Data are based on the National Vital Statistics System]

<i>Age, sex, race, cause of death, and ICD-9 code<sup>1</sup></i>	<i>Reported cause</i>	<i>Underlying cause</i>	<i>Ratio of reported causes to underlying causes</i>
White female, 85 years and over			
Number of deaths			
Diseases of heart. . . . .390-398,402,404-429	184,018	128,139	1.4
Cerebrovascular diseases. . . . .430-438	55,615	33,530	1.7
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140-208	30,746	23,426	1.3
Pneumonia and influenza . . . . .480-487	35,986	17,040	2.1
Atherosclerosis . . . . .440	29,178	8,302	3.5
Chronic obstructive pulmonary diseases and allied conditions . . . . .490-496	10,416	4,064	2.6
Accidents and adverse effects . . . . .E800-E949	12,322	3,917	3.1
Diabetes mellitus . . . . .250	15,443	3,752	4.1
Nephritis, nephrotic syndrome, and nephrosis. . .580-589	12,879	3,058	4.2
Septicemia . . . . .038	12,720	2,959	4.3
Black female, 85 years and over			
Diseases of heart. . . . .390-398,402,404-429	12,658	8,263	1.5
Cerebrovascular diseases. . . . .430-438	3,742	2,181	1.7
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues. . . . .140-208	2,225	1,819	1.2
Pneumonia and influenza . . . . .480-487	1,689	785	2.2
Diabetes mellitus . . . . .250	1,450	509	2.8
Nephritis, nephrotic syndrome, and nephrosis. . .580-589	1,469	423	3.5
Atherosclerosis . . . . .440	1,467	407	3.6
Septicemia . . . . .038	1,611	402	4.0
Accidents and adverse effects . . . . .E800-E949	661	262	2.5
Chronic obstructive pulmonary diseases and allied conditions . . . . .490-496	383	133	2.9

<sup>1</sup>Coded according to the *International Classification of Diseases, Ninth Revision*.

NOTE: Causes of death are ranked according to underlying cause.

SOURCE: National Center for Health Statistics: Mortality Statistics Branch, Division of Vital Statistics.

## **Part III**

### **Health care use and its costs**

## Chapter 5

### Acute care

by Sylvia E. Furner, Ph.D., University of Illinois at Chicago; and Lola Jean Kozak, Ph.D., National Center for Health Statistics

#### Introduction

The focus of this chapter is on the acute medical care of the elderly, which is examined in both outpatient and inpatient settings. The importance of acute care is illustrated by its financial impact. In 1987, national health care expenditures in the United States totaled \$500 billion. Physician services accounted for 21 percent of these expenditures and hospital care for 39 percent (1).

According to data from the National Ambulatory Medical Care Survey (NAMCS), an estimated 636.4 million office visits were made to nonfederally employed office-based physicians in the United States from March 1985 to February 1986 (2). Of these, 130.5 million visits (21 percent) were made by persons 65 years of age and over, 13 percent by females and 8 percent by males. In 1987, 33.4 million discharges and 214.9 million hospital days were reported for patients treated in short-stay non-Federal hospitals in the United States, according to data from the National Hospital Discharge Survey (3). Persons 65 years of age and over accounted for 31 percent of the discharges and 42 percent of the days of care.

A number of factors have affected the use of acute care services, including the introduction, in October 1983, of a prospective payment system based on diagnosis-related groups (DRG's) for hospitalizations of Medicare patients. Other factors include advances in medical technology, the availability of long-term care facilities, the emergence of home health care, and the financial

ramifications of catastrophic illness. In addition to the ambulatory care provided in physicians' offices, walk-in clinics, outpatient facilities, and ambulatory surgery centers have emerged as important sources of ambulatory services. Despite these alternatives, the number of visits to office-based physicians increased by 60.6 million from 1980 to 1985, and the proportion of visits accounted for by the population 65 years of age and over increased from 17 to 21 percent (4).

The hospital discharge rate increased throughout the 1970's for all persons, including those 65 years of age and over (5). This increase continued until 1983, when the prospective payment system based on DRG's was introduced. From 1983 to 1987, the total discharge rate decreased 17 percent. Surprisingly, the rate decrease for persons 65 years of age and over was somewhat less than the decrease for persons under 65 years of age. Average lengths of stay in U.S. short-stay hospitals have been declining since the 1960's, well before the introduction of the prospective payment system. From 1965 to 1987, the average length of stay decreased 1.4 days (18 percent) for all patients and 4.4 days (43 percent) for patients 65 years of age and over.

#### Sources of data

The National Health Interview Surveys (NHIS) of 1985 through 1987 are the source of person-level data on physician visits. The NHIS is a continuing nationwide survey of the noninstitutionalized civilian population. The 1985 NAMCS, a national probability sample of

office-based physicians, is the source of data on office visits. The 1981 and 1987 National Hospital Discharge Surveys (NHDS), continuous voluntary surveys of patient discharges from a nationally representative sample of short-stay non-Federal hospitals, provide the data for inpatient visits.

## Results

### Health interview survey data

Persons 65 years of age and over who rated their health as fair or poor had a greater number of physician visits than those who rated their health as good or excellent (table 1). This difference in number of physician visits by health status was evident for both sexes and for both white and black persons.

Within the "all health statuses" and the "excellent and good health" categories, the number of physician visits per person per year was significantly lower for the 65–69-year age group than for the group 85 years of age and over. This difference was evident for both males and females; males 70–74 years of age also had significantly fewer physician office visits per person than did males 85 years of age and over within these health status categories. No relationship was evident between age and number of physician visits per person in the "fair or poor health" category. Thus, in this category, health status, more than increasing age, appeared to dictate the need for physician services.

Females 65 years of age and over reported more physician visits than males for all health statuses. When this statistically significant difference in rates of physician visits by sex was investigated by race, it was found that this sex difference was statistically significant only for black persons, not for white persons. The rates of physician visits for males and females at 85 years of age and over were not significantly different.

### Office-based physician data

Reasons that patients cited for a visit to a physician are shown in table 2. The reasons are classified according to the Reason for Visit Classification for Ambulatory Care (RVC). Postoperative visit, general medical examination, and progress visit were among the most common reasons for physician visits for all age groups 65 years of age and over. Hypertension and/or blood pressure check were also frequently mentioned across age groups, as was vertigo. Cough and diabetes mellitus were common reasons for visits for groups under 85 years of age. Diminished vision and cataract were frequently mentioned by older age groups.

Rankings of reasons for visits were generally similar by sex for the age groups under 80 years of age. For those 80 years of age and over, however, there are some differences in rankings between males and females. For example, diabetes mellitus ranked as the 7th leading reason for an office visit for females 80 to 84 years of age, but it ranked significantly lower at 39th for males in that age group. This may suggest that women with diabetes mellitus survive longer than men, that men are in a more fragile state of health than women (leading them to be institutionalized), or that there are other competing reasons leading men to visit a physician. Hypertension ranked as the 5th most common reason for females aged 85 years of age and over to visit a physician, but it ranked significantly lower, as the 43d most common reason for visits by males in this age group. As with diabetes mellitus, reasons for this could be differences in survival, institutionalization, or disease patterns.

One-half of the physician visits of persons 65 years of age and over were to physicians in general practice (29 percent) or internal medicine (22 percent) (table 3). Visits to ophthalmologists made up 14 percent of the physician visits of persons 65 years of age and over, but the proportions varied with age. Persons 65–69 and

70–74 years of age had significantly lower proportions of visits to ophthalmologists than did those 85 years of age and over. The same age pattern was found for females, and males 65–69 years of age had a lower proportion of visits to ophthalmologists than did males 85 years of age and over. In contrast, the proportion of visits to orthopedic surgeons was smaller for persons 85 years of age and over than for those 65–69 years of age. This age variation was the result of differences in proportions of visits for males; 4 percent of visits for males 65–69 years of age, but only 1 percent of visits for males 85 years of age and over, were to orthopedic surgeons. The proportion of visits to cardiovascular specialists was greater for males than for females but showed no particular pattern by age.

The most common diagnoses rendered by office-based physicians for patients 65 years of age and over are shown in table 4. These diagnoses are classified by the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD–9–CM). Essential hypertension was the leading diagnosis for all age categories and for both sexes except males 85 years of age and over. Diabetes mellitus was the second leading diagnosis for both males and females in each 5-year age group of those 65–79 years of age and the fourth or fifth leading diagnosis for groups 80 years of age and over. Essential hypertension and diabetes mellitus ranked similarly as diagnoses for males and females, but rankings for some conditions varied by sex. Chronic airway obstruction was a leading diagnosis for males but ranked much lower for females; a possible reflection of the greater rate of smoking among men. In contrast, osteoarthritis and allied disorders and arthropathies were leading diagnoses for females but ranked lower for males, which reflects the known higher prevalence rates of these conditions in females (6–8).

Table 5 illustrates the type of diagnostic procedures that the population 65 years of age and

over received in the ambulatory setting. The most frequent diagnostic procedure for both males and females in all age groups was the blood pressure check. Urinalysis was the second most frequent diagnostic test. Blood pressure checks and urinalyses were conducted with the same frequency for males and females and at a consistent rate across the age groups. Rates of certain tests did vary with age for females, including pelvic exams, breast exams, and visual acuity tests. The number of pelvic exams per 1,000 visits was significantly lower for women 75 years of age and over—32, compared with women 65–69 years of age—64. The number of breast exams per 1,000 visits was also lower for women 75 years of age and over than for women 65–69 years of age. The number of visual acuity tests per 1,000 visits was significantly greater for females 75 years of age and over than for their counterparts 65–69 years old.

### Hospital-based data

The number of hospital discharges, the discharge rate, the number of days of care, and the average length of stay are shown according to first-listed diagnoses for males in table 6 and for females in table 7. In 1987, diseases of the heart was the most frequently listed diagnosis for both males and females in all age groups 65 years of age and over. For males, malignant neoplasms was the second most frequent diagnosis, followed by cerebrovascular disease, except for the group 85 years of age and over. For females, there was slightly more variation in the three leading diagnoses, but clearly, in addition to diseases of the heart, malignant neoplasms and cerebrovascular disease were important causes of hospitalization. Other diagnoses that were important causes of hospitalization for males 65 years of age and over included fractures, pneumonia, hyperplasia of the prostate, and inguinal hernia. For females, other important diagnoses

included cholelithiasis, fractures, pneumonia, volume depletion (dehydration), and urinary tract infections.

A comparison of discharge rates for selected diagnoses for males between 1981 and 1987 (table 6) reveals a few differences. The discharge rate for diseases of the heart increased for males 70–74 years of age but did not change significantly for other age groups. The malignant neoplasm discharge rate for males 65 years of age and over decreased from 48 per 1,000 population in 1981 to 40 per 1,000 population in 1987. Discharge rates for cerebrovascular disease remained stable for males in all age groups 65 years of age and over. The pneumonia discharge rate increased for males 65 years of age and over as a group. There were large increases in the rates for the age groups 75–79 and 80–84 years of age but no significant changes in the rates for the other age groups.

Discharge rates for selected conditions for females aged 65 and over (table 7) were relatively stable from 1981 to 1987. Discharge rates for heart disease and for cerebrovascular disease among females did not change significantly. The discharge rate for malignant neoplasms decreased for females 65 years of age and over. The discharge rate for dehydration increased among females 85 years of age and over and the discharge rate for urinary tract infections increased for females 75 years of age and over.

In contrast to the small changes in discharge rates, there were substantial declines from 1981 to 1987 in average length of stay for some of the diagnoses in tables 6 and 7. Average stays for heart disease and hyperplasia of the prostate decreased for each 5-year age group of males 65 years of age and over. Males 65 years of age and over as a group had shorter average stays in 1987 than in 1981 for cerebrovascular disease and malignant neoplasms. For females, average stays decreased for each 5-year age group of those 65 years of age and over for heart disease, and for

each group except females 85 years of age and over for malignant neoplasms. The average lengths of stay for fractures also decreased for all the female age groups 65 years of age and over, with the greatest decreases occurring in the age groups 70–74 and 80–84 years of age.

Tables 8–11 present data on the number and rate of surgical and nonsurgical procedures performed on male and female hospital patients 55 years of age and over. In 1981 and 1987, the leading procedure for males 65 years of age and over as a group was the prostatectomy (table 8). In 1981, prostatectomy was also the most frequent procedure for each of the male age groups within the group 65 years of age and over. Procedures related to heart disease were more common in the younger portion of this population than in the older portion. Once males reached 80 years of age, more of the surgical procedures they received were related to conditions other than heart disease.

Females 65 years of age and over had a different set of surgical procedures than males (table 9), although there was some overlap, for example, cardiac catheterization and pacemaker insertion. Other surgical procedures performed with high rates for females included reduction of fractures, cholecystectomy, hysterectomy, and arthroplasty and hip replacement. High rates of cholecystectomy persisted across the age groups and increased for females 85 years of age and over from 1981 to 1987. Among females 65 years of age and over, hysterectomy was a frequent procedure only in the group aged 65–69. Arthroplasty and hip replacement procedures were performed with high rates for females 70 years of age and over. In 1981 and 1987, the rate of these procedures was significantly higher for females 85 years and over than for females 70–74 years of age. The 1987 rates of arthroplasty and hip replacement were significantly higher than the 1981 rates for females 80–84 years of age.

Investigation of the leading nonsurgical procedures in 1981 and 1987 for patients 55 years of age and over gives an indication of the changes in medical technology during this period. In 1981, the radioisotope scan was the nonsurgical procedure performed most frequently for males 65 years of age and over (table 10). Although this procedure was performed at the same rate in 1987, it shifted to the fourth most frequently used nonsurgical procedure because of large increases in other nonsurgical procedures. The use of the computerized axial tomography or CAT scan quadrupled between 1981 and 1987 for male patients 65 years of age and over. Rates of most of the other leading procedures were higher in 1987 than in 1981 for each 5-year age group. Exceptions were the rate of radioisotope scans, which increased only for males 80–84 years of age; the rate of intravenous pyelograms, which did not increase for males 85 years of age and over; and the rate of arteriography using contrast material, which did not increase for those 65–69 years or 85 years of age and over.

Table 11 shows numbers and rates of nonsurgical procedures for females 55 years of age and over. In 1987, the highest rates for females were for CAT scans and diagnostic ultrasounds. The frequency of these procedures increased from 1981 to 1987. The rate of radioisotope scans did not increase significantly during this period, and by 1987, it had dropped to the third most frequently used procedure, with a rate less than one-half that for CAT scans. As is the case for males, these findings could indicate changes in the approach to medical care for older females or increased reporting of nonsurgical procedures by hospitals providing data to NHDS through abstract services.

In addition to changes in the approach to medical care, these increases in nonsurgical procedures may be the result of a change in the data collection methodology of the NHDS. Beginning in 1985, data from commercial abstracting services

were included in the NHDS. A greater number of nonsurgical procedures per patient were reported by hospitals whose data were obtained from abstracting services than by hospitals in which data were collected by the traditional manual system.

Discharge rates and average lengths of stay are shown in table 12 for pneumonia and influenza, diagnoses that are increasingly important as the population ages. In 1987, the discharge rate for pneumonia and influenza increased with age for both males and females 65 years of age and over. This relationship was not evident in 1981. The discharge rate for pneumonia and influenza was higher in 1987 than in 1981 for males 65 years of age and over, but the rate for elderly females did not change between these two years. The average length of stay for pneumonia and influenza was not significantly different between 1981 and 1987.

Fractures of all sites, and especially hip fractures, also increase in importance as the population ages. As seen in table 13, rates of fractures did not change appreciably between 1981 and 1987. The fracture rates for females, for both all fractures and hip fractures, were higher than the rates for males in all age groups and for both years examined.

The disposition of patients discharged from short-stay hospitals can give an indication of severity of illness. In 1987, 82 percent of persons 65–74 years of age were classified as routine discharges; 6 percent were discharged to long-term care facilities; and 5 percent died while hospitalized. In contrast, for the group 85 years of age and over, only 53 percent were routine discharges, while significantly more, 21 percent, were discharged to long-term care facilities, and 10 percent died while hospitalized.

Table 14 presents the discharge disposition by sex for the years 1981 and 1987. The percentage of both male and female patients 65 years of age and over who died in the hospital increased

with age both in 1981 and 1987. Male fatality rates exceeded female fatality rates except for those 85 years of age and over in 1981. For persons aged 65 years and over, the highest fatality rates were for the diagnoses of diseases of the heart (27.0 per 100 deaths), malignant neoplasms (16.4 per 100 deaths), and cerebrovascular disease (9.7 per 100 deaths).

As the population ages, the percentage discharged to long-term care facilities increases. This pattern was found in both 1981 and 1987 and for both males and females. Females had a larger percentage of discharges to long-term care facilities than males in both 1981 and 1987 for all age groups except those 85 years of age and over in 1987.

## References

1. National Center for Health Statistics. Health, United States, 1989. Washington: Public Health Service. 1990.
2. McLemore T, DeLozier J. 1985 Summary: National Ambulatory Medical Care Survey. Advance data from vital and health statistics; no 128. Hyattsville, Maryland: National Center for Health Statistics. 1987.
3. Graves EJ. National Hospital Discharge Survey: Annual Summary, 1987. Vital Health Stat 13(99). Washington: National Center for Health Statistics. 1989.
4. Nelson C, McLemore T. The National Ambulatory Medical Care Survey: United States, 1975-1981 and 1985 trends. Vital Health Stat 13(93). Washington: National Center for Health Statistics. 1988.
5. Pokras R, Kozak LJ, McCarthy E, Graves EJ. Trends in hospital utilization: United States, 1965-1986. Vital Health Stat 13(101). Washington: National Center for Health Statistics. 1989.
6. Collins JG. Prevalence of selected chronic conditions: United States, 1979-1981. Vital Health Stat 10(155). Washington: National Center for Health Statistics. 1986.
7. Cunningham LS, Kelsey JL. Epidemiology of musculoskeletal impairments and associated disability. Am J Public Health 74(6):574-9. 1984.
8. Collins JG. Prevalence of selected chronic conditions, United States, 1983-1985. Advance data from vital and health statistics; no 155. Washington: National Center for Health Statistics. 1988.



**Table 1. Average annual number of physician visits per person, by race, sex, respondent-assessed health status, and age: United States, 1985–87**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Respondent-assessed health status and age</i>	<i>All races<sup>1</sup></i>		<i>White</i>		<i>Black</i>	
	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>
All health statuses <sup>2</sup>						
Number of visits per person per year						
55–59 years. . . . .	4.2	4.7	4.1	4.5	4.8	6.2
60–64 years. . . . .	4.8	5.2	4.7	5.1	5.9	6.5
65–69 years. . . . .	4.9	5.4	4.8	5.3	6.0	7.0
70–74 years. . . . .	5.4	5.8	5.3	5.5	5.7	8.4
75–79 years. . . . .	5.5	5.9	5.5	5.8	5.5	6.6
80–84 years. . . . .	5.9	6.3	5.9	6.3	6.5	7.4
65 years and over. . . . .	5.4	5.8	5.4	5.7	5.9	7.4
75 years and over. . . . .	6.0	6.2	6.0	6.1	6.1	6.9
85 years and over. . . . .	7.5	6.6	7.5	6.6	7.7	6.9
Good or excellent health						
55–59 years. . . . .	2.7	3.1	2.7	3.2	1.9	3.0
60–64 years. . . . .	3.2	3.3	3.2	3.3	2.9	3.6
65–69 years. . . . .	3.4	3.9	3.4	3.9	2.7	4.5
70–74 years. . . . .	3.5	4.0	3.6	4.1	2.9	3.6
75–79 years. . . . .	3.9	4.5	3.9	4.5	3.6	4.7
80–84 years. . . . .	4.4	4.5	4.5	4.4	3.8	4.8
65 years and over. . . . .	3.7	4.2	3.8	4.2	3.1	4.3
75 years and over. . . . .	4.3	4.6	4.3	4.6	3.9	4.8
85 years and over. . . . .	5.1	5.2	5.1	5.2	5.6	4.9
Fair or poor health						
55–59 years. . . . .	10.5	10.6	10.2	10.6	10.6	11.1
60–64 years. . . . .	9.8	11.0	9.7	11.2	10.0	10.4
65–69 years. . . . .	8.9	9.6	8.8	9.5	9.7	10.0
70–74 years. . . . .	9.5	10.1	9.5	9.4	9.8	*14.2
75–79 years. . . . .	8.5	8.6	8.7	8.6	7.3	8.8
80–84 years. . . . .	8.6	9.9	8.6	10.0	9.3	9.6
65 years and over. . . . .	9.2	9.5	9.2	9.3	9.2	10.8
75 years and over. . . . .	9.2	9.2	9.3	9.2	8.2	9.2
85 years and over. . . . .	12.1	9.3	12.3	9.4	9.9	9.5

<sup>1</sup>Includes races other than white and black.

<sup>2</sup>Includes unknown respondent-assessed health status.

SOURCE: National Center for Health Statistics. Data from the National Health Interview Survey.

**Table 2. Number of mentions of most common patient reasons for a physician visit for ambulatory patients 55 years of age and over and rank for males and females, by age: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

Rank	Age and most common patient reason for a physician visit	Number of mentions per 1,000 visits	Rank	
			Male	Female
55-59 years				
1	Hypertension . . . . .	56	1	2
2	General medical examination. . . . .	50	4	1
3	Postoperative visit . . . . .	49	2	3
4	Blood pressure test . . . . .	41	3	4
5	Cough. . . . .	37	6	5
6	Progress visit . . . . .	27	5	12
7	Diabetes mellitus . . . . .	26	7	9
8	Back pain . . . . .	22	9	11
9	Shoulder pain. . . . .	20	8	19
10	Headache . . . . .	20	21	7
60-64 years				
1	General medical examination. . . . .	60	3	1
2	Postoperative visit . . . . .	55	1	2
3	Hypertension . . . . .	53	2	3
4	Blood pressure test . . . . .	39	5	4
5	Diabetes mellitus . . . . .	38	4	7
6	Progress visit . . . . .	37	6	6
7	Cough. . . . .	30	12	5
8	Back pain . . . . .	25	10	9
9	Anxiety . . . . .	25	19	8
10	Chest pain (excluding heart pain) . . . . .	24	8	15
65-69 years				
1	General medical examination. . . . .	60	3	1
2	Postoperative visit . . . . .	54	1	3
3	Hypertension . . . . .	53	2	2
4	Blood pressure test . . . . .	40	5	4
5	Progress visit . . . . .	39	4	5
6	Diabetes mellitus . . . . .	30	6	7
7	Cough. . . . .	29	9	6
8	Vertigo . . . . .	28	8	8
9	Chest pain (excluding heart pain) . . . . .	25	7	10
10	Shortness of breath . . . . .	21	13	11
70-74 years				
1	Postoperative visit . . . . .	78	1	1
2	General medical examination. . . . .	60	2	2
3	Hypertension . . . . .	46	3	4
4	Progress visit . . . . .	39	4	5
5	Blood pressure test . . . . .	38	7	3
6	Diabetes mellitus . . . . .	33	6	6
7	Cough. . . . .	32	5	9
8	Diminished vision . . . . .	26	10	7
9	Vertigo . . . . .	24	16	8
10	Back pain . . . . .	23	9	12

**Table 2. Number of mentions of most common patient reasons for a physician visit for ambulatory patients 55 years of age and over and rank for males and females, by age: United States, 1985—Con.**

[Data are based on reporting by a sample of office-based physicians]

Rank	Age and most common patient reason for a physician visit	Number of mentions per 1,000 visits	Rank	
			Male	Female
75–79 years				
1	Postoperative visit . . . . .	74	1	1
2	General medical examination. . . . .	62	2	3
3	Hypertension . . . . .	51	4	2
4	Progress visit . . . . .	44	3	4
5	Blood pressure test . . . . .	37	9	5
6	Diabetes mellitus . . . . .	31	6	8
7	Cataract . . . . .	29	10	6
8	Cough. . . . .	28	5	14
9	Vertigo . . . . .	27	17	7
10	Diminished vision . . . . .	27	11	9
80–84 years				
1	Postoperative visit . . . . .	82	1	1
2	General medical examination. . . . .	63	2	2
3	Progress visit . . . . .	52	3	3
4	Diminished vision . . . . .	40	6	4
5	Cataract . . . . .	34	10	6
6	Hypertension . . . . .	32	11	8
7	Vertigo . . . . .	31	24	5
8	Shortness of breath . . . . .	28	4	18
9	Diabetes mellitus . . . . .	27	39	7
10	Cough. . . . .	24	5	19
85 years and over				
1	General medical examination. . . . .	64	1	3
2	Postoperative visit . . . . .	64	2	1
3	Vertigo . . . . .	44	16	2
4	Diminished vision . . . . .	41	8	4
5	Cataract . . . . .	40	5	7
6	Progress visit . . . . .	38	3	10
7	Back pain . . . . .	35	28	6
8	Hypertension . . . . .	*34	43	5
9	Leg pain . . . . .	*32	13	8
10	Skin lesion . . . . .	*30	19	9

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

**Table 3. Percent of office visits by persons 55 years of age and over to selected physician specialists, by sex and age: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

Sex and age	Visits to all physicians	Specialty						
		General practice	Internal medicine	General surgery	Ophthalmology	Orthopedic surgery	Cardiovascular specialty	Other specialty
Both sexes	Number in thousands	Percent						
Total . . . . .	205,582	29.9	20.2	6.4	11.4	4.2	3.8	10.3
55-59 years . . . . .	37,218	29.6	16.8	6.7	7.4	6.4	3.2	12.6
60-64 years . . . . .	37,826	33.1	16.9	6.6	8.4	5.0	4.3	10.5
65-69 years . . . . .	39,781	28.8	22.3	6.0	10.4	4.2	4.0	10.4
70-74 years . . . . .	35,646	28.8	22.0	6.8	12.1	2.9	3.9	10.6
75-79 years . . . . .	29,354	28.6	22.3	7.1	14.7	3.5	4.1	9.2
80-84 years . . . . .	16,227	29.2	21.4	4.9	19.1	2.6	3.5	8.6
65 years and over . . . . .	130,539	29.1	22.1	6.2	13.5	3.4	3.8	9.7
75 years and over . . . . .	55,111	29.4	22.1	6.0	16.6	3.1	3.8	8.5
85 years and over . . . . .	9,530	32.3	22.5	4.5	18.1	2.6	3.1	6.3
Male								
Total . . . . .	82,112	28.7	19.1	6.6	10.3	4.0	5.2	10.8
55-59 years . . . . .	15,520	28.7	15.8	5.8	7.6	7.4	4.4	13.0
60-64 years . . . . .	15,588	30.5	16.9	6.8	8.2	5.1	6.5	10.4
65-69 years . . . . .	16,707	28.4	20.9	5.9	9.9	4.2	5.7	10.3
70-74 years . . . . .	14,058	26.4	21.7	8.3	10.8	2.0	4.7	11.1
75-79 years . . . . .	11,518	28.0	21.7	6.9	12.4	2.2	4.7	10.2
80-84 years . . . . .	5,808	30.5	18.2	6.4	16.0	1.5	4.8	8.0
65 years and over . . . . .	51,004	28.1	20.8	6.7	11.8	2.6	5.0	10.2
75 years and over . . . . .	20,239	29.1	20.2	6.2	14.0	1.8	4.7	9.5
85 years and over . . . . .	2,912	30.8	18.1	3.2	16.1	1.1	4.2	10.3
Female								
Total . . . . .	123,469	30.7	20.9	6.2	12.2	4.4	2.9	10.0
55-59 years . . . . .	21,698	30.2	17.5	7.2	7.3	5.7	2.3	12.2
60-64 years . . . . .	22,237	34.9	16.8	6.5	8.6	4.9	2.9	10.5
65-69 years . . . . .	23,074	29.1	23.3	6.1	10.7	4.2	2.7	10.4
70-74 years . . . . .	21,588	30.4	22.2	5.7	12.9	3.5	3.3	10.3
75-79 years . . . . .	17,835	29.0	22.7	7.3	16.2	4.4	3.7	8.6
80-84 years . . . . .	10,419	28.5	23.2	4.1	20.8	3.2	2.7	8.9
65 years and over . . . . .	79,535	29.7	23.0	5.9	14.5	3.8	3.1	9.3
75 years and over . . . . .	34,873	29.6	23.2	5.9	18.1	3.8	3.2	7.9
85 years and over . . . . .	6,618	32.9	24.4	5.1	19.1	3.3	2.7	4.5

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

**Table 4. Number of mentions of most frequent all-listed diagnoses for ambulatory patients 55 years of age and over and rank for males and females, by age: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

Rank	Age, most frequent all-listed <sup>1</sup> diagnoses, and ICD-9—CM code <sup>2</sup>	Number of mentions per 1,000 visits	Rank	
			Male	Female
55–59 years				
1	Essential hypertension . . . . . 401	143	1	1
2	Diabetes mellitus . . . . . 250	61	2	2
3	Chronic ischemic heart disease . . . . . 414	28	3	17
4	Neurotic disorders . . . . . 300	26	9	4
5	Disorders of refraction and accommodation . . . . . 367	26	6	5
6	Osteoarthritis and allied disorders . . . . . 715	25	4	9
7	Arthropathies, other and unspecified . . . . . 716	19	10	11
8	Obesity . . . . . 278	16	27	10
9	Bronchitis . . . . . 490	16	16	13
10	Acute upper respiratory infections . . . . . 465	16	47	6
60–64 years				
1	Essential hypertension . . . . . 401	159	1	1
2	Diabetes mellitus . . . . . 250	83	2	2
3	Chronic ischemic heart disease . . . . . 414	46	3	3
4	Osteoarthritis and allied disorders . . . . . 715	28	5	5
5	Disorders of refraction and accommodation . . . . . 367	26	8	4
6	Arthropathies, other and unspecified . . . . . 716	21	10	9
7	Chronic airway obstruction, not elsewhere classified . . . . 496	19	4	38
8	Neurotic disorders . . . . . 300	19	19	7
9	Angina pectoris . . . . . 413	19	6	22
10	Cardiac dysrhythmias . . . . . 427	17	16	11
65–69 years				
1	Essential hypertension . . . . . 401	157	1	1
2	Diabetes mellitus . . . . . 250	78	2	2
3	Chronic ischemic heart disease . . . . . 414	47	3	5
4	Osteoarthritis and allied disorders . . . . . 715	43	10	3
5	Cataract . . . . . 366	30	8	4
6	Cardiac dysrhythmias . . . . . 427	26	5	6
7	Angina pectoris . . . . . 413	24	6	11
8	Chronic airway obstruction, not elsewhere classified . . . . 496	23	4	17
9	Arthropathies, other and unspecified . . . . . 716	23	9	9
10	Disorders of refraction and accommodation . . . . . 367	22	11	8
70–74 years				
1	Essential hypertension . . . . . 401	145	1	1
2	Diabetes mellitus . . . . . 250	81	2	2
3	Chronic ischemic heart disease . . . . . 414	53	3	4
4	Cataract . . . . . 366	48	5	3
5	Osteoarthritis and allied disorders . . . . . 715	35	8	5
6	Cardiac dysrhythmias . . . . . 427	27	6	10
7	Chronic airway obstruction, not elsewhere classified . . . . 496	27	4	12
8	Heart failure . . . . . 428	25	9	8
9	Arthropathies, other and unspecified . . . . . 716	24	18	6
10	Glaucoma . . . . . 365	24	14	7

**Table 4. Number of mentions of most frequent all-listed diagnoses for ambulatory patients 55 years of age and over and rank for males and females, by age: United States, 1985—Con.**

[Data are based on reporting by a sample of office-based physicians]

Rank	Age, most frequent all-listed <sup>1</sup> diagnoses, and ICD-9-CM code <sup>2</sup>	Number of mentions per 1,000 visits	Rank	
			Male	Female
75-79 years				
1	Essential hypertension . . . . . 401	170	1	1
2	Diabetes mellitus . . . . . 250	91	2	2
3	Chronic ischemic heart disease . . . . . 414	67	3	4
4	Cataract . . . . . 366	61	5	3
5	Osteoarthritis and allied disorders . . . . . 715	48	7	5
6	Heart failure . . . . . 428	37	6	7
7	Cardiac dysrhythmias . . . . . 427	34	4	9
8	Glaucoma . . . . . 365	32	8	6
9	Arthropathies, other and unspecified . . . . . 716	27	12	8
10	Neurotic disorders . . . . . 300	21	15	11
80-84 years				
1	Essential hypertension . . . . . 401	133	1	1
2	Cataract . . . . . 366	74	5	2
3	Chronic ischemic heart disease . . . . . 414	72	2	3
4	Diabetes mellitus . . . . . 250	56	8	4
5	Heart failure . . . . . 428	54	3	6
6	Osteoarthritis and allied disorders . . . . . 715	54	6	5
7	Glaucoma . . . . . 365	32	9	7
8	Cardiac dysrhythmias . . . . . 427	30	7	11
9	Other eye disorders . . . . . 379	27	14	8
10	Chronic airway obstruction, not elsewhere classified . . . . . 496	27	4	26
85 years and over				
1	Essential hypertension . . . . . 401	122	4	1
2	Chronic ischemic heart disease . . . . . 414	77	1	3
3	Cataract . . . . . 366	74	3	2
4	Heart failure . . . . . 428	66	2	4
5	Diabetes mellitus . . . . . 250	44	5	5
6	Osteoarthritis and allied disorders . . . . . 715	37	9	6
7	Glaucoma . . . . . 365	35	8	8
8	Cardiac dysrhythmias . . . . . 427	*33	6	12
9	Other disorders of urethra and urinary tract . . . . . 599	*31	16	9
10	Other skin cancer . . . . . 173	*31	7	11

<sup>1</sup>"All-listed" means listed as first, second, or third diagnosis.

<sup>2</sup>Coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

**Table 5. Number of mentions per 1,000 visits of common diagnostic services for ambulatory patients 55 years of age and over, according to sex and age: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

<i>Sex and age</i>	<i>Blood glucose</i>	<i>Urine glucose</i>	<i>Breast exam<sup>1</sup></i>	<i>Pelvic exam<sup>1</sup></i>	<i>Rectal exam</i>	<i>Visual acuity</i>	<i>Urinalysis</i>	<i>Hematology</i>	<i>Pap test<sup>1</sup></i>	<i>Blood pressure check</i>	<i>Electrocardiogram</i>	<i>Chest x ray</i>	<i>Other radiologic test</i>
Total													
55-59 years. ....	98	84	128	105	77	68	128	97	75	468	62	44	73
60-64 years. ....	107	80	117	82	67	80	132	100	53	475	61	48	75
65-69 years. ....	104	80	99	64	73	86	134	100	39	502	61	42	72
70-74 years. ....	107	84	83	49	66	103	143	110	31	515	65	40	70
75-79 years. ....	113	84	69	35	53	117	128	115	*18	511	62	51	58
80-84 years. ....	92	88	66	31	*54	160	141	113	*20	458	55	39	57
65 years and over. ....	104	82	79	46	62	112	135	109	27	502	61	42	65
75 years and over. ....	103	82	64	32	51	136	132	116	17	492	58	45	57
85 years and over. ....	90	64	*47	*28	40	154	127	123	*10	495	49	*34	50
Male													
55-59 years. ....	99	81	...	...	62	72	125	80	...	444	80	52	68
60-64 years. ....	121	87	...	...	80	77	135	95	...	452	90	62	69
65-69 years. ....	95	81	...	...	72	84	139	88	...	480	74	35	71
70-74 years. ....	106	92	...	...	89	100	153	97	...	504	68	41	55
75-79 years. ....	119	97	...	...	78	99	142	124	...	519	76	65	43
80-84 years. ....	69	98	...	...	64	142	140	105	...	411	56	31	59
65 years and over. ....	98	89	...	...	76	101	143	102	...	487	69	45	58
75 years and over. ....	96	93	...	...	70	117	141	118	...	481	67	57	48
85 years and over. ....	*62	*66	...	...	*54	137	138	117	...	467	*54	32	45
Female													
55-59 years. ....	97	86	128	105	88	66	130	109	75	485	48	38	76
60-64 years. ....	98	75	117	82	57	83	130	104	53	491	41	38	79
65-69 years. ....	111	79	99	64	73	86	130	109	39	518	52	47	72
70-74 years. ....	108	80	83	49	52	105	136	118	31	522	64	39	79
75-79 years. ....	109	76	69	35	37	129	120	109	*18	505	54	42	68
80-84 years. ....	105	83	66	31	49	171	142	118	*20	484	55	32	57
65 years and over. ....	108	78	79	46	53	118	130	114	27	511	56	40	69
75 years and over. ....	106	75	64	32	40	147	127	115	17	499	53	37	61
85 years and over. ....	103	63	*47	*28	*34	162	122	125	*10	507	*47	*34	52

<sup>1</sup>Includes only visits by female patients.

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

**Table 6. Number of patients discharged, rate of discharges, days of care, and average length of stay for males 55 years of age and over, by age and selected first-listed diagnoses: United States, 1981 and 1987**

[Discharges from non-Federal short-stay hospitals]

Age, first-listed diagnosis, and ICD-9-CM code <sup>1</sup>	Discharges				Days of care		Average length of stay	
	1981	1987	1981	1987	1981	1987	1981	1987
	Number in thousands		Number per 1,000 population		Number in thousands		Stay in days	
<b>55-59 years</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	227	238	41.5	44.8	1,846	1,407	8.1	5.9
Malignant neoplasms . . . .140-208,230-234	91	76	16.6	14.3	954	704	10.5	9.3
Cerebrovascular disease . . . . . 430-438	30	31	5.5	5.9	292	366	9.6	11.7
Inguinal hernia . . . . . 550	37	25	6.8	4.6	179	52	4.8	2.1
Fractures, all sites . . . . . 800-829	23	23	4.2	4.0	192	154	8.3	7.4
Hyperplasia of prostate . . . . . 600	24	21	4.4	3.9	154	93	6.4	4.5
<b>60-64 years</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	224	270	46.9	53.1	1,864	1,681	8.3	6.2
Malignant neoplasms . . . .140-208,230-234	117	118	24.4	23.3	1,207	1,036	10.3	8.8
Cerebrovascular disease . . . . . 430-438	36	42	7.5	8.3	419	376	11.7	8.9
Hyperplasia of prostate . . . . . 600	40	39	8.3	7.6	288	186	7.2	4.8
Inguinal hernia . . . . . 550	39	31	8.2	6.1	190	66	4.8	2.2
Pneumonia, all forms . . . . . 480-486	19	26	4.0	5.1	206	215	10.8	8.4
<b>65-69 years</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	271	285	68.6	63.3	2,506	1,992	9.3	7.0
Malignant neoplasms . . . .140-208,230-234	153	131	38.8	29.0	1,959	1,186	12.8	9.1
Cerebrovascular disease . . . . . 430-438	56	60	14.2	13.4	628	537	11.2	8.9
Hyperplasia of prostate . . . . . 600	53	59	13.6	13.2	454	294	8.5	5.0
Pneumonia, all forms . . . . . 480-486	26	35	6.7	7.7	260	334	9.9	9.6
Inguinal hernia . . . . . 550	38	24	9.7	5.4	205	64	5.4	2.6
<b>70-74 years</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	221	294	75.0	88.2	2,169	2,128	9.8	7.2
Malignant neoplasms . . . .140-208,230-234	145	145	49.3	43.4	1,815	1,228	12.5	8.5
Cerebrovascular disease . . . . . 430-438	62	67	20.9	20.1	674	607	10.9	9.1
Hyperplasia of prostate . . . . . 600	58	54	19.5	16.2	513	283	8.9	5.3
Pneumonia, all forms . . . . . 480-486	34	48	11.7	14.4	417	479	12.1	10.0
Inguinal hernia . . . . . 550	31	21	10.7	6.4	193	74	6.1	3.5
<b>75-79 years</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	166	223	87.6	98.3	1,683	1,748	10.1	7.9
Malignant nesms . . . . .140-208,230-234	106	111	55.9	49.0	1,366	1,092	12.9	9.8
Cerebrovascular disease . . . . . 430-438	57	63	30.0	27.7	834	587	14.7	9.4
Pneumonia, all forms . . . . . 480-486	27	47	14.4	20.9	326	470	11.9	9.9
Hyperplasia of prostate . . . . . 600	35	46	18.7	20.5	314	263	8.9	5.7
Fractures, all sites . . . . . 800-829	14	20	7.3	9.0	226	237	16.5	11.7



**Table 6. Number of patients discharged, rate of discharges, days of care, and average length of stay for males 55 years of age and over, by age and selected first-listed diagnoses: United States, 1981 and 1987 – Con.**

[Discharges from non-Federal short-stay hospitals]

Age, first-listed diagnosis, and ICD-9-CM code <sup>1</sup>	Discharges				Days of care		Average length of stay	
	1981	1987	1981	1987	1981	1987	1981	1987
	Number in thousands		Number per 1,000 population		Number in thousands		Stay in days	
<b>80-84 years</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	118	157	110.4	128.3	1,215	1,163	10.3	7.4
Malignant neoplasms . . . .140-208,230-234	62	61	57.9	49.7	780	639	12.7	10.5
Cerebrovascular disease . . . . .430-438	45	48	42.1	39.4	580	466	12.9	9.7
Pneumonia, all forms . . . . .480-486	20	47	19.2	38.5	259	472	12.7	10.0
Hyperplasia of prostate. . . . .600	22	29	20.5	23.9	224	182	10.3	6.2
Fractures, all sites. . . . .800-829	14	21	13.2	17.2	328	275	23.4	13.0
<b>65 years and over</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	868	1,054	82.2	87.0	8,563	7,714	9.9	7.3
Malignant neoplasms . . . .140-208,230-234	506	485	47.9	40.0	6,449	4,522	12.8	9.3
Cerebrovascular disease . . . . .430-438	252	273	23.8	22.5	3,090	2,498	12.2	9.1
Pneumonia, all forms . . . . .480-486	141	222	13.4	18.4	1,652	2,190	11.7	9.8
Hyperplasia of prostate. . . . .600	181	206	17.1	17.0	1,690	1,166	9.3	5.7
Fractures, all sites. . . . .800-829	80	97	7.6	8.0	1,280	1,168	16.0	12.0
<b>75 years and over</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	376	476	102.6	110.8	3,888	3,595	10.3	7.6
Malignant neoplasms . . . .140-208,230-234	207	210	56.5	48.8	2,675	2,109	12.9	10.1
Cerebrovascular disease . . . . .430-438	134	146	36.5	34.0	1,788	1,354	13.4	9.3
Pneumonia, all forms . . . . .480-486	81	140	22.0	32.5	976	1,377	12.1	9.9
Hyperplasia of prostate. . . . .600	70	93	19.1	21.7	724	588	10.4	6.3
Fractures, all sites. . . . .800-829	49	61	13.3	14.2	891	766	18.2	12.5
<b>85 years and over</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	93	96	131.1	119.4	991	683	10.7	7.1
Pneumonia, all forms . . . . .480-486	33	45	46.4	56.0	391	435	11.9	9.6
Malignant neoplasms . . . .140-208,230-234	40	38	56.7	43.6	530	377	13.4	10.0
Cerebrovascular disease . . . . .430-438	32	35	45.7	47.0	374	301	11.6	8.6
Fractures, all sites. . . . .800-829	21	20	30.0	24.4	337	254	15.9	12.9
Hyperplasia of prostate. . . . .600	13	17	18.0	21.5	185	143	14.6	8.2

<sup>1</sup>Coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

SOURCE: National Center for Health Statistics: Data from the National Hospital Discharge Survey.

**Table 7. Number of patients discharged, rate of discharges, days of care, and average length of stay for females 55 years of age and over, by age and selected first-listed diagnoses: United States, 1981 and 1987**

[Discharges from non-Federal short-stay hospitals]

Age, first-listed diagnosis, and ICD-9-CM code <sup>1</sup>	Discharges				Days of care		Average length of stay	
	1981	1987	1981	1987	1981	1987	1981	1987
	Number in thousands		Number per 1,000 population		Number in thousands		Stay in days	
<b>55-59 years</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	126	118	20.6	20.3	1,113	723	8.8	6.1
Malignant neoplasms . . . .140-208,230-234	115	96	18.8	16.4	1,214	687	10.5	7.2
Cholelithiasis . . . . .574	28	28	4.6	4.9	262	170	9.2	6.0
Cerebrovascular disease . . . . .430-438	20	24	3.3	4.1	228	245	11.3	10.2
Fractures, all sites . . . . .800-829	28	24	4.5	4.1	258	156	9.3	6.5
Pneumonia, all forms . . . . .480-486	21	18	3.4	3.1	171	116	8.3	6.5
<b>60-64 years</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	152	179	27.4	30.7	1,467	1,306	9.6	7.3
Malignant neoplasms . . . .140-208,230-234	148	144	26.7	24.8	1,570	1,098	10.6	7.6
Cerebrovascular disease . . . . .430-438	32	40	5.8	6.8	425	396	13.1	10.0
Fractures, all sites . . . . .800-829	34	28	6.2	4.9	397	238	11.5	8.4
Cholelithiasis . . . . .574	31	27	5.5	4.7	300	180	9.7	6.6
Pneumonia, all forms . . . . .480-486	22	25	4.0	4.2	226	210	10.1	8.6
<b>65-69 years</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	198	225	40.1	41.8	1,944	1,571	9.8	7.0
Malignant neoplasms . . . .140-208,230-234	156	140	31.6	26.0	1,819	1,194	11.7	8.5
Cerebrovascular disease . . . . .430-438	58	47	11.8	8.7	734	508	12.6	10.9
Fractures, all sites . . . . .800-829	42	40	8.5	7.3	494	435	11.8	11.0
Pneumonia, all forms . . . . .480-486	29	32	5.8	6.0	299	289	10.4	9.0
Cholelithiasis . . . . .574	32	30	6.4	5.6	349	208	11.0	6.9
<b>70-74 years</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	228	271	56.0	60.9	2,288	1,970	10.0	7.3
Malignant neoplasms . . . .140-208,230-234	121	120	29.6	27.0	1,607	1,152	13.3	9.6
Cerebrovascular disease . . . . .430-438	68	81	16.8	18.2	921	898	13.5	11.1
Fractures, all sites . . . . .800-829	46	50	11.3	11.2	689	460	14.9	9.2
Pneumonia, all forms . . . . .480-486	27	37	6.6	8.2	287	386	10.7	10.6
Cholelithiasis . . . . .574	25	23	6.1	5.2	301	196	12.1	8.4
<b>75-79 years</b>								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	244	265	80.8	75.4	2,401	2,102	9.9	7.9
Malignant neoplasms . . . .140-208,230-234	101	95	33.3	27.0	1,298	805	12.9	8.5
Cerebrovascular disease . . . . .430-438	71	87	23.5	24.6	947	880	13.4	10.2
Fractures, all sites . . . . .800-829	64	55	21.2	15.7	108	657	16.9	11.9
Pneumonia, all forms . . . . .480-486	32	43	10.5	12.2	348	389	11.0	9.0
Cholelithiasis . . . . .574	21	24	6.9	6.7	253	232	12.1	9.9

**Table 7. Number of patients discharged, rate of discharges, days of care, and average length of stay for females 55 years of age and over, by age and selected first-listed diagnoses: United States, 1981 and 1987—Con.**

[Discharges from non-Federal short-stay hospitals]

Age, first-listed diagnosis, and ICD-9-CM code <sup>1</sup>	Discharges				Days of care		Average length of stay	
	1981	1987	1981	1987	1981	1987	1981	1987
80-84 years	Number in thousands		Number per 1,000 population		Number in thousands		Stay in days	
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	199	209	98.4	91.0	2,210	1,664	11.1	8.0
Cerebrovascular disease . . . . . 430-438	72	89	35.8	38.7	918	942	12.7	10.6
Fractures, all sites . . . . . 800-829	59	67	29.2	29.0	987	807	16.7	12.1
Malignant neoplasms . . . .140-208,230-234	60	66	29.8	28.8	848	691	14.1	10.5
Pneumonia, all forms . . . . . 480-486	29	46	14.5	19.8	366	480	12.5	10.6
Urinary tract infection . . . . .599.0	11	26	5.2	11.4	117	289	11.2	11.0
65 years and over								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	1,048	1,186	66.8	66.9	10,904	9,027	10.4	7.6
Malignant neoplasms . . . .140-208,230-234	483	468	30.8	26.4	6,220	4,431	12.9	9.5
Cerebrovascular disease . . . . . 430-438	342	392	21.8	22.1	4,570	4,189	13.4	10.7
Fractures, all sites . . . . . 800-829	292	307	18.6	17.3	4,833	3,595	16.6	11.7
Pneumonia, all forms . . . . . 480-486	161	223	10.3	12.6	1,827	2,245	11.3	10.1
Cholelithiasis . . . . .574	99	107	6.3	6.0	1,180	978	12.0	9.2
75 years and over								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	622	690	92.9	87.6	6,672	5,486	10.7	8.0
Cerebrovascular disease . . . . . 430-438	215	265	32.2	33.6	2,915	2,783	13.5	10.5
Fractures, all sites . . . . . 800-829	204	218	30.5	27.7	3,650	2,700	17.9	12.4
Malignant neoplasms . . . .140-208,230-234	207	208	30.9	26.4	2,793	2,085	13.5	10.0
Pneumonia, all forms . . . . . 480-486	106	154	15.8	19.5	1,241	1,570	11.7	10.2
Urinary tract infection . . . . .599.0	39	74	5.8	9.4	407	719	10.5	9.8
85 years and over								
Diseases of heart . . . . .391-392.0,393-398, 402,404,410-416,420-429	180	215	108.4	104.4	2,062	1,719	11.5	8.0
Fractures, all sites . . . . . 800-829	81	96	49.2	46.7	1,583	1,236	19.4	12.9
Cerebrovascular disease . . . . . 430-438	72	89	43.6	43.2	1,050	961	14.5	10.8
Pneumonia, all forms . . . . . 480-486	45	65	27.1	31.6	527	701	11.8	10.7
Malignant neoplasms . . . .140-208,230-234	46	47	27.7	22.9	647	589	14.1	12.5
Volume depletion, dehydration . . . . .276.5	18	33	10.7	15.9	204	423	11.5	12.9

<sup>1</sup>Coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

SOURCE: National Center for Health Statistics: Data from the National Hospital Discharge Survey.

**Table 8. Number and rate of surgical procedures for males 55 years of age and over discharged from short-stay hospitals, by age and selected procedures: United States, 1981 and 1987**

[Discharges from non-Federal short-stay hospitals]

<i>Age, procedure category, and ICD-9-CM code<sup>1</sup></i>	<i>1981</i>	<i>1987</i>	<i>1981</i>	<i>1987</i>
	Number of procedures in thousands		Number of procedures per 10,000 population	
55-59 years				
Cardiac catheterization . . . . .37.21-37.23	48	84	88.3	157.7
Direct heart revascularization . . . . .36.1	26	40	46.6	75.1
Repair of inguinal hernia . . . . .53-53.1	40	26	73.9	49.1
Prostatectomy . . . . .60.2-60.6	24	24	43.8	46.2
Reduction of fracture <sup>2</sup> . . . . .76.70, 76.78-76.79,79.0-79.6	12	15	22.5	29.1
60-64 years				
Cardiac catheterization . . . . .37.21-37.23	40	89	83.3	176.0
Prostatectomy . . . . .60.2-60.6	45	56	94.0	109.9
Direct heart revascularization . . . . .36.1	25	44	52.9	87.6
Repair of inguinal hernia . . . . .53-53.1	42	32	87.5	62.6
Cholecystectomy . . . . .51.2	13	18	26.8	35.0
65-69 years				
Cardiac catheterization . . . . .37.21-37.23	34	87	85.0	194.2
Prostatectomy . . . . .60.2-60.6	64	79	161.5	175.4
Direct heart revascularization . . . . .36.1	23	48	58.8	106.7
Repair of inguinal hernia . . . . .53-53.1	42	28	107.2	62.1
Cholecystectomy . . . . .51.2	17	19	43.9	43.1
70-74 years				
Prostatectomy . . . . .60.2-60.6	80	85	271.0	256.5
Cardiac catheterization . . . . .37.21-37.23	17	53	58.3	159.6
Direct heart revascularization . . . . .36.1	10	39	32.8	116.1
Repair of inguinal hernia . . . . .53-53.1	34	26	115.8	77.1
Pacemaker insertion <sup>3</sup> . . . . .37.7-37.8	18	21	62.7	63.8
75-79 years				
Prostatectomy . . . . .60.2-60.6	57	77	298.5	338.9
Cardiac catheterization . . . . .37.21-37.23	7	30	35.5	134.6
Pacemaker insertion <sup>3</sup> . . . . .37.7-37.8	14	26	74.4	116.7
Repair of inguinal hernia . . . . .53-53.1	25	20	132.9	87.8
Cholecystectomy . . . . .51.2	10	16	50.3	70.7
80-84 years				
Prostatectomy . . . . .60.2-60.6	41	47	386.4	386.7
Pacemaker insertion <sup>3</sup> . . . . .37.7-37.8	13	18	118.7	146.4
Repair of inguinal hernia . . . . .53-53.1	13	13	123.8	109.4
Resection of intestine . . . . .45.6-45.8	9	12	84.5	102.0
Reduction of fracture <sup>2</sup> . . . . .76.70, 76.78-76.79,79.0-79.6	4	10	41.5	81.5
65 years and over				
Prostatectomy . . . . .60.2-60.6	263	318	248.7	262.7
Cardiac catheterization . . . . .37.21-37.23	60	182	56.9	149.8
Direct heart revascularization . . . . .36.1	36	105	34.2	86.8
Repair of inguinal hernia . . . . .53-53.1	122	96	115.2	79.2
Pacemaker insertion <sup>3</sup> . . . . .37.7-37.8	69	95	65.3	78.6

**Table 8. Number and rate of surgical procedures for males 55 years of age and over discharged from short-stay hospitals, by age and selected procedures: United States, 1981 and 1987 – Con.**

[Discharges from non-Federal short-stay hospitals]

<i>Age, procedure category, and ICD–9–CM code<sup>1</sup></i>	<i>1981</i>	<i>1987</i>	<i>1981</i>	<i>1987</i>
	Number of procedures in thousands		Number of procedures per 10,000 population	
75 years and over				
Prostatectomy . . . . .60.2–60.6	119	154	324.5	358.8
Pacemaker insertion <sup>3</sup> . . . . .37.7–37.8	35	58	95.9	135.8
Repair of inguinal hernia . . . . .53–53.1	45	42	123.3	98.8
Cardiac catheterization . . . . .37.21–37.23	9	41	25.4	95.9
Resection of intestine . . . . .45.6–45.8	24	28	66.4	65.6
85 years and over				
Prostatectomy . . . . .60.2–60.6	21	30	301.1	372.5
Pacemaker insertion <sup>3</sup> . . . . .37.7–37.8	8	14	119.1	173.4
Reduction of fracture <sup>2</sup> . . . . .76.70, 76.78–76.79,79.0–79.6	8	10	111.2	130.0
Repair of inguinal hernia . . . . .53–53.1	7	9	97.0	113.6
Arthroplasty and replacement of hip . .81.5–81.6	5	7	77.0	87.8

<sup>1</sup>Coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

<sup>2</sup>Excluding skull, nose, and jaw.

<sup>3</sup>Including replacement, removal, and repair.

SOURCE: National Center for Health Statistics: Data from the Hospital Discharge Survey.

**Table 9. Number and rate of surgical procedures for females 55 years of age and over discharged from short-stay hospitals, by age and selected procedures: United States, 1981 and 1987**

[Discharges from non-Federal short-stay hospitals]

<i>Age, procedure category, and ICD-9-CM code<sup>1</sup></i>	<i>1981</i>	<i>1987</i>	<i>1981</i>	<i>1987</i>
	<i>Number of procedures in thousands</i>		<i>Number of procedures per 10,000 population</i>	
55-59 years				
Cardiac catheterization . . . . .37.21-37.23	17	43	27.2	73.3
Cholecystectomy . . . . .51.2	29	31	47.8	53.3
Hysterectomy . . . . .68.3-68.7	27	24	44.3	41.5
Oophorectomy and salpingo- oophorectomy . . . . .65.3-65.6	23	19	38.2	33.2
Reduction of fracture <sup>2</sup> . . . . .76.70, 76.78-76.79,79.0-79.6	17	13	27.8	21.6
60-64 years				
Cardiac catheterization . . . . .37.21-37.23	22	51	39.7	87.9
Cholecystectomy . . . . .51.2	31	31	55.7	52.8
Hysterectomy . . . . .68.3-68.7	26	25	47.3	43.1
Mastectomy . . . . .85.4	17	23	30.6	40.0
Reduction of fracture <sup>2</sup> . . . . .76.70, 76.78-76.79,79.0-79.6	19	18	33.8	31.1
65-69 years				
Cardiac catheterization . . . . .37.21-37.23	20	56	40.4	103.8
Cholecystectomy . . . . .51.2	28	32	57.5	59.6
Hysterectomy . . . . .68.3-68.7	22	24	45.2	44.4
Reduction of fracture <sup>2</sup> . . . . .76.70, 76.78-76.79,79.0-79.6	25	24	50.1	43.8
Resection of intestine . . . . .45.6-45.8	16	20	31.5	37.1
70-74 years				
Cardiac catheterization . . . . .37.21-37.23	12	47	28.6	106.4
Reduction of fracture <sup>2</sup> . . . . .76.70, 76.78-76.79,79.0-79.6	19	29	47.2	64.9
Cholecystectomy . . . . .51.2	24	26	59.6	58.5
Resection of intestine . . . . .45.6-45.8	16	26	38.1	57.5
Arthroplasty and replacement of hip . . .81.5-81.6	16	19	39.7	43.7
75-79 years				
Cardiac catheterization . . . . .37.21-37.23	7	28	24.0	80.1
Reduction of fracture <sup>2</sup> . . . . .76.70, 76.78-76.79,79.0-79.6	31	27	101.8	75.8
Arthroplasty and replacement of hip . . .81.5-81.6	17	24	56.9	67.0
Resection of intestine . . . . .45.6-45.8	13	19	41.7	53.6
Pacemaker insertion <sup>3</sup> . . . . .37.7-37.8	16	18	51.7	51.5
80-84 years				
Reduction of fracture <sup>2</sup> . . . . .76.70, 76.78-76.79,79.0-79.6	29	33	141.9	142.9
Arthroplasty and replacement of hip . . .81.5-81.6	17	30	82.1	131.6
Pacemaker insertion <sup>3</sup> . . . . .37.7-37.8	16	19	80.2	82.3
Resection of intestine . . . . .45.6-45.8	11	13	55.1	58.3
Cholecystectomy . . . . .51.2	10	12	49.7	54.2
65 years and over				
Reduction of fracture <sup>2</sup> . . . . .76.70, 76.78-76.79,79.0-79.6	134	169	85.2	95.2
Cardiac catheterization . . . . .37.21-37.23	41	146	26.1	82.5
Arthroplasty and replacement of hip . . .81.5-81.6	82	115	52.5	65.1
Cholecystectomy . . . . .51.2	86	106	55.0	59.8
Resection of intestine . . . . .45.6-45.8	66	92	42.2	51.8

**Table 9. Number and rate of surgical procedures for females 55 years of age and over discharged from short-stay hospitals, by age and selected procedures: United States, 1981 and 1987 – Con.**

[Discharges from non-Federal short-stay hospitals]

Age, procedure category, and ICD-9-CM code <sup>1</sup>	1981	1987	1981	1987
75 years and over	Number of procedures in thousands		Number of procedures per 10,000 population	
Reduction of fracture <sup>2</sup> . . . . .76.70, 76.78–76.79,79.0–79.6	90	116	134.2	147.2
Arthroplasty and replacement of hip . . .81.5–81.6	52	75	77.4	95.5
Pacemaker insertion <sup>3</sup> . . . . .37.7–37.8	45	53	67.5	67.4
Cholecystectomy . . . . .51.2	34	48	50.2	60.6
Resection of intestine . . . . .45.6–45.8	35	46	52.6	58.5
85 years and over				
Reduction of fracture <sup>2</sup> . . . . .76.70, 76.78–76.79,79.0–79.6	30	56	184.1	273.7
Arthroplasty and replacement of hip . . .81.5–81.6	18	21	109.2	103.8
Pacemaker insertion <sup>3</sup> . . . . .37.7–37.8	13	16	80.7	77.9
Resection of intestine . . . . .45.6–45.8	11	14	69.4	67.2
Cholecystectomy . . . . .51.2	6	12	35.2	60.3

<sup>1</sup>Coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

<sup>2</sup>Excluding skull, nose, and jaw.

<sup>3</sup>Including replacement, removal, and repair.

SOURCE: National Center for Health Statistics: Data from the Hospital Discharge Survey.

**Table 10. Number and rate of diagnostic and other nonsurgical procedures for males 55 years of age and over discharged from short-stay hospitals, by age and selected procedures: United States, 1981 and 1987**

[Discharges from non-Federal short-stay hospitals]

<i>Age, procedure category, and ICD-9-CM code<sup>1</sup></i>	<i>1981</i>	<i>1987</i>	<i>1981</i>	<i>1987</i>
	Number of procedudres in thousands		Number of procedures per 10,000 population	
55-59 years				
Angiocardiology using contrast material. . . .88.5	50	102	92.3	192.9
Computerized axial tomography (CAT scan) . . . . .87.03,87.41, 87.71,88.01,88.38	17	61	30.5	115.4
Diagnostic ultrasound . . . . .88.7	16	46	29.8	86.4
Arteriography using contrast material . . . . .88.4	29	31	52.9	58.2
Radioisotope scan . . . . .92-92.1	25	30	45.9	57.4
60-64 years				
Angiocardiology using contrast material. . . .88.5	34	107	70.6	211.0
Computerized axial tomography (CAT scan) . . . . .87.03,87.41, 87.71,88.01,88.38	12	72	25.8	142.6
Diagnostic ultrasound . . . . .88.7	13	62	26.1	122.2
Radioisotope scan . . . . .92-92.1	27	36	57.1	71.8
Arteriography using contrast material . . . . .88.4	28	32	57.8	63.2
65-69 years				
Angiocardiology using contrast material. . . .88.5	31	99	79.4	220.3
Computerized axial tomography (CAT scan) . . . . .87.03,87.41, 87.71,88.01,88.38	26	81	65.6	180.2
Diagnostic ultrasound . . . . .88.7	20	67	49.6	148.0
Radioisotope scan . . . . .92-92.1	42	42	106.9	94.4
Arteriography using contrast material . . . . .88.4	23	35	58.5	77.0
70-74 years				
Computerized axial tomography (CAT scan) . . . . .87.03,87.41, 87.71,88.01,88.38	21	92	70.3	274.9
Diagnostic ultrasound . . . . .88.7	14	86	48.3	258.8
Angiocardiology using contrast material. . . .88.5	12	58	42.4	174.5
Radioisotope scan . . . . .92-92.1	33	45	112.9	136.7
Arteriography using contrast material . . . . .88.4	25	42	84.2	127.2
75-79 years				
Computerized axial tomography (CAT scan) . . . . .87.03,87.41, 87.71,88.01,88.38	17	69	89.4	304.0
Diagnostic ultrasound . . . . .88.7	10	62	52.1	275.1
Radioisotope scan . . . . .92-92.1	28	32	148.3	142.7
Angiocardiology using contrast material. . . .88.5	3	30	18.1	131.8
Arteriography using contrast material . . . . .88.4	16	26	43.8	116.3



**Table 10. Number and rate of diagnostic and other nonsurgical procedures for males 55 years of age and over discharged from short-stay hospitals, by age and selected procedures: United States, 1981 and 1987—Con.**

[Discharges from non-Federal short-stay hospitals]

Age, procedure category, and ICD-9-CM code <sup>1</sup>	1981	1987	1981	1987
	Number of procedures in thousands		Number of procedures per 10,000 population	
80-84 years				
Computerized axial tomography (CAT scan) . . . . .87.03,87.41, 87.71,88.01,88.38	12	56	111.7	460.5
Diagnostic ultrasound . . . . .88.7	6	49	59.8	396.8
Radioisotope scan . . . . .92-92.1	13	30	124.8	241.1
Arteriography using contrast material . . . . .88.4	5	15	50.7	119.6
Angiocardiology using contrast material . . .88.5	*Z	9	*9.7	72.1
65 years and over				
Computerized axial tomography (CAT scan) . . . . .87.03,87.41, 87.71,88.01,88.38	80	337	76.2	278.1
Diagnostic ultrasound . . . . .88.7	56	290	52.9	239.7
Angiocardiology using contrast material . .88.5	49	196	46.3	162.0
Radioisotope scan . . . . .92-92.1	127	167	120.4	137.9
Arteriography using contrast material . . . . .88.4	74	121	70.0	99.7
75 years and over				
Computerized axial tomography (CAT scan) . . . . .87.03,87.41, 87.71,88.01,88.38	34	165	92.2	383.1
Diagnostic ultrasound . . . . .88.7	22	138	60.2	320.8
Radioisotope scan . . . . .92-92.1	52	79	141.1	184.2
Arteriography using contrast material . . . . .88.4	26	44	71.0	102.1
Angiocardiology using contrast material . .88.5	5	39	13.9	91.3
85 years and over				
Computerized axial tomography (CAT scan) . . . . .87.03,87.41, 87.71,88.01,88.38	5	39	70.7	487.9
Diagnostic ultrasound . . . . .88.7	6	27	82.4	333.5
Radioisotope scan . . . . .92-92.1	10	17	146.0	214.5
Intravenous pyelogram . . . . .87.73	5	3	67.0	40.9
Arteriography using contrast material . . . . .88.4	5	3	67.1	35.9

<sup>1</sup>Coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

SOURCE: National Center for Health Statistics: Data from the Hospital Discharge Survey.

**Table 11. Number and rate of diagnostic and other nonsurgical procedures for females 55 years of age and over discharged from short-stay hospitals, by age and selected procedures: United States, 1981 and 1987**

[Discharges from non-Federal short-stay hospitals]

<i>Age, procedure category, and ICD-9-CM code<sup>1</sup></i>	<i>1981</i>	<i>1987</i>	<i>1981</i>	<i>1987</i>
	Number of procedures in thousands		Number of procedures per 10,000 population	
55-59 years				
Angiocardiology using contrast material . . . . .88.5	13	53	20.9	91.3
Computerized axial tomography (CAT scan). . . . .87.03,87.41,87.71,88.01,88.38	19	53	30.9	90.8
Diagnostic ultrasound . . . . .88.7	13	46	21.1	79.7
Radioisotope scan. . . . .92-92.1	23	32	37.8	55.3
Arteriography using contrast material. . . . .88.4	18	16	29.4	26.8
60-64 years				
Computerized axial tomography (CAT scan). . . . .87.03,87.41,87.71,88.01,88.38	20	64	35.2	110.4
Diagnostic ultrasound . . . . .88.7	21	59	38.4	101.9
Angiocardiology using contrast material . . . .88.5	16	54	27.9	92.6
Radioisotope scan. . . . .92-92.1	43	37	77.3	63.3
Arteriography using contrast material. . . . .88.4	19	30	34.8	51.3
65-69 years				
Computerized axial tomography (CAT scan). . . . .87.03,87.41,87.71,88.01,88.38	24	77	47.8	142.0
Diagnostic ultrasound . . . . .88.7	19	75	38.0	138.8
Angiocardiology using contrast material . . . .88.5	17	64	35.1	119.4
Radioisotope scan. . . . .92-92.1	42	54	85.6	100.7
Arteriography using contrast material. . . . .88.4	25	29	50.5	53.4
70-74 years				
Computerized axial tomography (CAT scan). . . . .87.03,87.41,87.71,88.01,88.38	21	95	52.2	213.5
Diagnostic ultrasound . . . . .88.7	19	90	46.9	202.6
Angiocardiology using contrast material . . . .88.5	9	56	23.3	126.0
Radioisotope scan. . . . .92-92.1	33	46	80.3	103.6
Arteriography using contrast material. . . . .88.4	20	29	50.0	65.7
75-79 years				
Computerized axial tomography (CAT scan). . . . .87.03,87.41,87.71,88.01,88.38	20	104	67.4	295.9
Diagnostic ultrasound . . . . .88.7	23	79	75.9	224.7
Radioisotope scan. . . . .92-92.1	29	51	96.8	144.1
Angiocardiology using contrast material . . . .88.5	4	35	13.8	98.4
Arteriography using contrast material. . . . .88.4	13	26	43.9	73.5
80-84 years				
Computerized axial tomography (CAT scan). . . . .87.03,87.41,87.71,88.01,88.38	15	92	73.5	400.4
Diagnostic ultrasound . . . . .88.7	12	76	60.0	328.9
Radioisotope scan. . . . .92-92.1	22	38	110.1	164.8
Arteriography using contrast material. . . . .88.4	8	19	40.9	83.5
Angiocardiology using contrast material . . . .88.5	*Z	9	1.4	40.2
65 years and over				
Computerized axial tomography (CAT scan). . . . .87.03,87.41,87.71,88.01,88.38	93	461	59.2	259.9
Diagnostic ultrasound . . . . .88.7	81	387	51.7	218.3
Radioisotope scan. . . . .92-92.1	143	219	91.2	123.7
Angiocardiology using contrast material . . . .88.5	32	169	20.6	95.2
Arteriography using contrast material. . . . .88.4	72	107	46.1	60.5

**Table 11. Number and rate of diagnostic and other nonsurgical procedures for females 55 years of age and over discharged from short-stay hospitals, by age and selected procedures: United States, 1981 and 1987—Con.**

[Discharges from non-Federal short-stay hospitals]

<i>Age, procedure category, and ICD-9-CM code<sup>1</sup></i>	<i>1981</i>	<i>1987</i>	<i>1981</i>	<i>1987</i>
	Number of procedures in thousands		Number of procedures per 10,000 population	
75 years and over				
Computerized axial tomography (CAT scan) . . . . .87.03,87.41,87.71,88.01,88.38	48	289	71.9	367.0
Diagnostic ultrasound . . . . .88.7	43	222	64.6	281.6
Radioisotope scan . . . . .92-92.1	68	119	102.0	150.8
Arteriography using contrast material . . . . .88.4	27	49	40.4	62.5
Angiocardiology using contrast material . . . . .88.5	5	48	8.1	61.2
85 years and over				
Computerized axial tomography (CAT scan) . . . . .87.03,87.41,87.71,88.01,88.38	13	93	78.4	451.0
Diagnostic ultrasound . . . . .88.7	8	67	49.8	326.0
Radioisotope scan . . . . .92-92.1	17	30	101.7	146.5
Angiocardiology using contrast material . . . . .88.5	1	4	6.1	21.3
Arteriography using contrast material . . . . .88.4	6	4	33.5	20.1

<sup>1</sup>Coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

SOURCE: National Center for Health Statistics: Data from the Hospital Discharge Survey.

**Table 12. Number of patients discharged, rate of discharges, and average length of stay for persons 55 years of age and over with a diagnosis of pneumonia or influenza, by sex and age: United States, 1981 and 1987**

[Discharges from non-Federal short-stay hospitals]

Sex and age	Discharges				Average length of stay	
	1981	1987	1981	1987	1981	1987
Both sexes	Number in thousands		Number per 1,000 population		Stay in days	
55-59 years. . . . .	46	37	4.0	3.3	8.1	7.7
60-64 years. . . . .	47	52	4.6	4.7	9.7	8.3
65-69 years. . . . .	63	68	7.1	6.9	9.8	9.3
70-74 years. . . . .	72	87	10.2	11.2	10.9	10.1
75-79 years. . . . .	69	92	14.1	15.9	11.0	9.4
80-84 years. . . . .	61	94	19.8	26.7	11.7	10.2
65 years and over. . . . .	351	454	13.4	15.2	11.0	9.9
75 years and over. . . . .	216	299	20.9	24.5	11.4	10.0
85 years and over. . . . .	86	113	36.3	39.3	11.6	10.2
Male						
55-59 years. . . . .	20	18	3.6	3.3	8.0	9.0
60-64 years. . . . .	21	26	4.4	5.1	10.3	8.3
65-69 years. . . . .	30	35	7.7	7.7	9.7	9.6
70-74 years. . . . .	38	48	13.0	14.5	11.6	9.9
75-79 years. . . . .	31	48	16.4	21.4	11.5	9.8
80-84 years. . . . .	24	47	22.4	38.5	12.1	10.0
65 years and over. . . . .	159	225	15.1	18.5	11.3	9.8
75 years and over. . . . .	90	141	24.6	32.9	11.7	9.8
85 years and over. . . . .	35	46	50.2	56.9	11.6	9.5
Female						
55-59 years. . . . .	26	19	4.3	3.3	8.1	6.5
60-64 years. . . . .	27	26	4.8	4.4	9.2	8.3
65-69 years. . . . .	32	33	6.5	6.1	10.0	8.9
70-74 years. . . . .	34	39	8.2	8.7	10.1	10.3
75-79 years. . . . .	38	44	12.7	12.4	10.7	9.0
80-84 years. . . . .	37	47	18.5	20.4	11.4	10.4
65 years and over. . . . .	192	229	12.2	12.9	10.8	10.0
75 years and over	126	157	18.8	20.0	11.2	10.1
85 years and over	50	67	30.3	32.4	11.5	10.6

NOTE: Pneumonia or influenza comprises codes 480-487 of the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

SOURCE: National Center for Health Statistics: Data from the 1981 and 1987 National Hospital Discharge Surveys.

**Table 13. Rate of patients discharged with a diagnosis of fractures, all sites, or hip fracture (fracture of neck of femur) for persons 55 years of age and over, by sex and age: United States, 1981 and 1987**

[Discharges from non-Federal short-stay hospitals]

Sex and age	Fractures, all sites		Hip fracture	
	1981	1987	1981	1987
Both sexes				
Number of discharges per 1,000 population				
55-59 years.....	4.4	4.0	0.8	0.7
60-64 years.....	5.1	4.1	0.9	0.7
65-69 years.....	6.3	5.7	1.7	1.8
70-74 years.....	9.0	8.9	3.5	3.4
75-79 years.....	15.8	13.0	7.1	7.5
80-84 years.....	23.7	24.9	12.9	15.3
65 years and over.....	14.2	13.5	6.8	7.3
75 years and over.....	24.5	22.9	13.4	14.2
85 years and over.....	43.4	40.4	27.3	26.2
Male				
55-59 years.....	4.2	4.0	0.4	0.6
60-64 years.....	3.8	3.3	0.5	0.5
65-69 years.....	3.7	3.6	0.9	1.5
70-74 years.....	5.7	5.9	2.0	2.4
75-79 years.....	7.3	9.0	4.1	5.2
80-84 years.....	13.2	17.2	5.5	11.5
65 years and over.....	7.6	8.0	3.5	4.5
75 years and over.....	13.3	14.2	7.6	9.4
85 years and over.....	30.0	24.4	20.3	18.1
Female				
55-59 years.....	4.5	4.1	1.1	0.7
60-64 years.....	6.2	4.9	1.3	0.9
65-69 years.....	8.5	7.3	2.4	2.2
70-74 years.....	11.3	11.2	4.5	4.1
75-79 years.....	21.2	15.7	9.1	9.1
80-84 years.....	29.2	29.0	16.8	17.4
65 years and over.....	18.6	17.3	9.0	9.1
75 years and over.....	30.5	27.7	16.6	16.8
85 years and over.....	49.2	46.7	30.2	29.3

NOTE: Fractures, all sites, comprise codes 800-829, and hip fracture comprises code 820 of the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

SOURCE: National Center for Health Statistics: Data from the 1981 and 1987 National Hospital Discharge Surveys.

**Table 14. Percent distribution of patients 55 years of age and over discharged from short-stay hospitals by disposition status, according to sex and age: United States, 1981 and 1987**

[Discharges from non-Federal short-stay hospitals]

<i>Age and disposition status</i>	<i>Male</i>		<i>Female</i>	
	<i>1981</i>	<i>1987</i>	<i>1981</i>	<i>1987</i>
55-64 years				
Percent distribution				
Total . . . . .	100.0	100.0	100.0	100.0
Routine discharge . . . . .	82.5	87.3	83.3	88.6
Discharged to long-term care . . . . .	1.3	2.3	1.4	2.4
Died . . . . .	3.1	3.3	2.9	3.1
Other and unknown . . . . .	13.1	7.1	12.4	5.9
65-74 years				
Total . . . . .	100.0	100.0	100.0	100.0
Routine discharge . . . . .	78.2	81.7	79.8	81.9
Discharged to long-term care . . . . .	2.8	5.0	4.2	6.9
Died . . . . .	6.2	5.7	3.7	4.0
Other and unknown . . . . .	12.8	7.6	12.3	7.2
75-84 years				
Total . . . . .	100.0	100.0	100.0	100.0
Routine discharge . . . . .	71.9	73.4	72.1	70.9
Discharged to long-term care . . . . .	7.6	11.5	10.6	15.7
Died . . . . .	8.3	8.1	6.0	6.3
Other and unknown . . . . .	12.2	7.0	11.3	7.1
65 years and over				
Total . . . . .	100.0	100.0	100.0	100.0
Routine discharge . . . . .	73.9	75.9	73.0	72.1
Discharged to long-term care . . . . .	6.0	9.6	9.6	14.9
Died . . . . .	7.6	7.2	5.7	5.9
Other and unknown . . . . .	12.5	7.3	11.7	7.1
75 years and over				
Total . . . . .	100.0	100.0	100.0	100.0
Routine discharge . . . . .	68.5	69.6	67.2	64.5
Discharged to long-term care . . . . .	10.1	14.6	14.3	21.2
Died . . . . .	9.5	8.8	7.5	7.3
Other and unknown . . . . .	11.9	7.0	11.0	7.0
85 years and over				
Total . . . . .	100.0	100.0	100.0	100.0
Routine discharge . . . . .	57.5	56.6	55.0	50.6
Discharged to long-term care . . . . .	18.2	25.3	23.5	33.3
Died . . . . .	13.3	11.4	11.2	9.6
Other and unknown . . . . .	11.0	6.7	10.3	6.5

SOURCE: National Center for Health Statistics: Data from the National Hospital Discharge Survey.

# Chapter 6

## Selected issues in long-term care: Profile of cognitive disability of nursing home residents and the use of informal and formal care by elderly in the community

by Joan F. Van Nostrand, M.P.A., National Center for Health Statistics; Baila Miller, Ph.D., and Sylvia E. Furner, Ph.D., University of Illinois at Chicago

### Introduction

Long-term care (LTC) refers to care delivered to individuals who are dependent on others for assistance with the basic tasks necessary for physical, mental, and social functioning over sustained periods. The goal of such care is to enable the recipients to function at the highest level of autonomy possible (1). Issues about LTC have been receiving greater attention recently, especially from researchers and policymakers (2,3). A major reason for this is that those at greatest risk of needing LTC, the oldest-old aged 85 and over, have been the most rapidly growing segment of the older population. This rapid growth is projected to continue so that between 1990 and 2030, the number of oldest-old is expected to more than double (4). Policymakers in particular have raised a myriad of issues about LTC. These issues address the interrelationships among need, use, supply, and costs of LTC (5) from both formal and informal care perspectives. The intent of this chapter is to examine two of the issues frequently raised about LTC. The issues concern the health of particular LTC subpopulations:

- cognitively disabled nursing home residents
- the disabled elderly living in the community and their use of informal and formal care

### Profile of cognitive disability of nursing home residents<sup>a</sup>

#### Background

The enactment of Medicare and Medicaid in 1965 led to the rapid growth of the nursing home industry in the late 1960's. Rates of use per 1,000 elderly population increased dramatically from the mid-1960's to the early 1970's and have leveled off since then (table A). Rates have been consistently highest for those 85 and over, especially for females. The physical health status of nursing home residents has been well documented at the national level (6,7), with recent trends toward more dependency in activities of daily living (ADL's) (8).

Less attention has been given to national data about the cognitive functioning of nursing home residents. Of the few reports that present national data, the focus is on the cognitively disabled as one group of nursing home residents "with mental conditions" (9,10) or on dementia versus other mental disorders (11). Reports about the subgroup of persons with dementia, whether they live in nursing homes or in the community,

---

<sup>a</sup>by Joan F. Van Nostrand, M.P.A., National Center for Health Statistics

**Table A. Nursing home residents 65 years of age and over per 1,000 population, according to age, sex, and race: United States, 1963, 1973–74, 1977, and 1985**

<i>Age, sex, and race</i>	<i>Residents per 1,000 population<sup>1</sup></i>			
	<i>1963</i>	<i>1973–74<sup>2</sup></i>	<i>1977<sup>3</sup></i>	<i>1985</i>
<b>Age</b>				
All ages . . . . .	25.4	44.7	47.1	46.2
65–74 years . . . . .	7.9	12.3	14.4	12.5
75–84 years . . . . .	39.6	57.7	64.0	57.7
85 years and over . . . . .	148.4	257.3	225.9	220.3
<b>Sex</b>				
Male . . . . .	18.1	30.0	30.3	29.0
65–74 years . . . . .	6.8	11.3	12.6	10.8
75–84 years . . . . .	29.1	39.9	44.9	43.0
85 years and over . . . . .	105.6	182.7	146.3	145.7
Female . . . . .	31.1	54.9	58.6	57.9
65–74 years . . . . .	8.8	13.1	15.8	13.8
75–84 years . . . . .	47.5	68.9	75.4	66.4
85 years and over . . . . .	175.1	294.9	262.4	250.1
<b>Race<sup>4</sup></b>				
White . . . . .	26.6	46.9	48.9	47.7
65–74 years . . . . .	8.1	12.5	14.2	12.3
75–84 years . . . . .	41.7	60.3	67.0	59.1
85 years and over . . . . .	157.7	270.8	234.2	228.7
Black . . . . .	10.3	22.0	30.7	5.0
65–74 years . . . . .	5.9	11.1	17.6	15.4
75–84 years . . . . .	13.8	26.7	33.4	45.3
85 years and over . . . . .	41.8	105.7	133.6	141.5

<sup>1</sup>Residents per 1,000 population for 1973–74 and 1977 differ from those presented in the original source reports because the rates have been recomputed using revised census estimates for these years.

<sup>2</sup>Excludes residents in personal care or domiciliary care homes.

<sup>3</sup>Includes residents in domiciliary care homes.

<sup>4</sup>For data years 1973–74 and 1977, all people of Hispanic origin were included in the white category. For 1963, "black" includes all other races.

have addressed research (12) and policy (13) concerns.

The intent of this section of the chapter is to provide a profile of cognitive disability in nursing homes by specific diagnostic categories. In this analysis, cognitive disabilities cover a wide range of conditions from dementias, psychiatric conditions, affective states, substance abuse, and mental retardation. This analysis investigates whether nursing home residents with cognitive disabilities are a homogeneous group or not.

There are two classes of hypotheses in this

section of the chapter: those that compare residents with a specific cognitive disability and residents with no cognitive disability and those that compare characteristics of subgroups of residents within a particular cognitive disability. It is hypothesized that (a) there is no difference in characteristics of residents with a specific cognitive disability and residents with no cognitive disability, and (b) there is no difference in characteristics of subgroups of residents within a particular cognitive disability.



## Sources of data

The source of data for this section is the 1985 National Nursing Home Survey (NNHS). The NNHS is a national sample survey of nursing homes, their residents, discharges, and staff in the conterminous United States. The 1985 NNHS included all types of nursing and related-care homes that had three or more beds set up and staffed for use and routinely providing care. Facilities were either freestanding establishments or nursing care units. Residential care facilities were excluded. Although the 1985 NNHS included nine questionnaires, the source of data for tables 1–11 was the Current Resident Questionnaire (CRQ), and for table 12, the Discharge Resident Questionnaire (DRQ). An interviewer completed the CRQ and the DRQ for each sampled resident by interviewing the member of the nursing staff most familiar with care provided to that resident. The nurse referred to the resident's medical record when responding. No resident was interviewed directly. A detailed description of survey procedures and facsimiles of the CRQ and DRQ have been published (7).

For tables 1–11 based on the CRQ, current residents with specific cognitive disabilities were identified by responses to (a) a question on

primary and secondary diagnoses current at the time of the survey and (b) a checklist of cognitive, affective, and substance abuse conditions. For table 12, based on the DRQ, discharged residents with specific cognitive disabilities were identified by responses to a question on primary and secondary diagnoses at the time of discharge. The checklist in the CRQ was not included in the DRQ. Hence, data on discharges from table 12 may be an underestimate in comparison to data on current residents, particularly for affective and substance abuse conditions.

Table B presents the specific *International Classification of Diseases, Ninth Revision* codes and the checklist categories used to define specific cognitive disabilities. Data presented in this section may differ from other estimates of cognitive disabilities from the 1985 NNHS (7,9,10) because of differences in the definitions and methodologies.

## Findings

*Prevalence by demographic characteristics—* Cognitive disabilities are a significant health problem in nursing homes. In 1985, nursing home residents of all ages were more likely to have one or more cognitive disabilities than not. This analysis includes residents of all ages be-

**Table B. Codes for items in the current resident questionnaire of the 1985 National Nursing Home Survey used to identify cognitive disability**

<i>Cognitive disabilities</i>	<i>ICD-9-CM<sup>1</sup> code (question 14)</i>		<i>Checklist code (question 15)</i>
Organic brain syndromes . . . . .	290,310,797	or	04
Alzheimer's disease and other degeneration of the brain . . .	331.0–331.9		
Schizophrenia and other psychoses . . . . .	293–299	or	06,07
Depressive disorders . . . . .	311,300.4	or	05
Anxiety disorders . . . . .	300.7,300.9, 300.00,300.10, 300.11,300.20, 300.81	or	08
Alcohol and drug abuse . . . . .	291–292	or	02
	303–305	or	03
Mental retardation . . . . .	317–319	or	01

<sup>1</sup>*International Classification of Diseases, Ninth Revision, Clinical Modification.*

**Table C. Rate of cognitive disabilities per 1,000 nursing home residents: United States, 1985**

<i>Cognitive disabilities</i>	<i>Rate</i>
None . . . . .	326
One or more . . . . .	674
Organic brain syndromes . . . . .	461
Alzheimer's disease and other degeneration of the brain . . . . .	53
Schizophrenia and other psychoses . . . . .	130
Depressive disorders . . . . .	144
Anxiety disorders . . . . .	144
Alcohol and drug abuse . . . . .	39
Mental retardation . . . . .	56

cause most were either elderly (88 percent) or pre-elderly (6 percent were age 55–64) and because cognitive disabilities are prevalent for both the pre-elderly and the elderly groups. For every 1,000 residents, 674 had at least one cognitive disability (table C, calculated from table 1). The prevalence of multiple disabilities was high. When only the 1.0 million residents of all ages with cognitive disabilities were considered, an average of 1.5 disabilities was reported per resident.

Nursing homes provide the bulk of inpatient care to the elderly (65 years and over) population with cognitive disabilities. In 1985, there were 868,000 elderly with cognitive disabilities who were current residents in nursing homes. This is in contrast to the 17,909 elderly under care in inpatient psychiatric facilities as of April 1, 1986 (14). One possible reason for this 98–2

percent split between nursing home residence versus psychiatric facility residence is that those in nursing homes have serious physical infirmities as well. The upcoming discussion of physical health status (see table 2) addresses this issue in detail for the nursing home population.

The most prevalent cognitive disability in nursing homes was organic brain syndromes, with a rate of 461 per 1,000 residents. Schizophrenia and other psychoses (hereafter labeled “schizophrenia”), depressive disorders, and anxiety disorders were less common, with rates of about 140 per 1,000. Least common were Alzheimer’s disease and other degeneration of the brain (hereafter labeled “Alzheimer’s disease”), mental retardation, and alcohol and drug abuse, with rates of around 50 per 1,000 residents.

For most of the cognitive disabilities, prevalence decreased with age (table D, calculated from table 1). When only the elderly are considered, rates were highest for the young-old (aged 65–74) and lowest for the oldest-old (age 85 and over). There were two exceptions to this inverse relationship. For Alzheimer’s disease, the rates by age did not differ. For organic brain syndromes, the rates rose significantly from 385 to 551 per 1,000.

There were no significant differences in the rates for white compared with black residents for any of the specific cognitive disabilities (table E, calculated from table 1).

**Table D. Rate of cognitive disabilities per 1,000 nursing home residents by age: United States, 1985**

<i>Cognitive disabilities</i>	<i>Under 65 years</i>	<i>65–74 years</i>	<i>75–84 years</i>	<i>85 years and over</i>
None . . . . .	207	294	346	351
One or more . . . . .	793	706	654	649
Organic brain syndromes . . . . .	186	385	477	551
Alzheimer's disease and other degeneration of the brain . . . . .	*31	82	66	40
Schizophrenia and other psychoses . . . . .	316	212	103	74
Depressive disorders . . . . .	178	186	159	108
Anxiety disorders . . . . .	195	165	152	116
Alcohol and drug abuse . . . . .	101	81	33	13
Mental retardation . . . . .	263	98	27	*1

**Table E. Rate of cognitive disabilities per 1,000 nursing home residents by race: United States, 1985**

<i>Cognitive disabilities</i>	<i>White</i>	<i>Black</i>
None . . . . .	324	343
One or more . . . . .	676	657
Organic brain syndromes . . . . .	460	479
Alzheimer's disease and other degeneration of the brain . . . . .	55	*34
Schizophrenia and other psychoses . . . . .	128	153
Depressive disorders . . . . .	147	101
Anxiety disorders . . . . .	145	135
Alcohol and drug abuse . . . . .	38	60
Mental retardation . . . . .	56	*45

When rates for male residents were compared with those for female residents, there were no significant differences in the prevalence of cognitive disabilities. For both sexes, the rate for having one or more cognitive disabilities was about 675 per 1,000 (table F, calculated from table 1). There were differences, however, for specific cognitive disabilities. Female residents had higher rates of organic brain syndromes (486 versus 397 per 1,000). Male residents had rates four times higher for alcohol and drug abuse (89 versus 20 per 1,000) and two times higher for mental retardation (89 versus 42 per 1,000).

*Health, behavior, and memory*—Does the physical health of residents with cognitive disabilities differ from that of residents without such disabilities? Staff of the nursing homes were asked to

**Table F. Rate of cognitive disabilities per 1,000 nursing home residents by sex: United States, 1985**

<i>Cognitive disabilities</i>	<i>Male</i>	<i>Female</i>
None . . . . .	324	326
One or more . . . . .	676	674
Organic brain syndromes . . . . .	397	486
Alzheimer's disease and other degeneration of the brain . . . . .	55	52
Schizophrenia and other psychoses . . . . .	152	122
Depressive disorders . . . . .	129	150
Anxiety disorders . . . . .	137	147
Alcohol and drug abuse . . . . .	89	20
Mental retardation . . . . .	89	42

rate the sampled residents' physical health using four categories from excellent to poor (table 2). In comparison to residents with no cognitive disabilities, the proportion of all residents judged to be in fair or poor physical health was greater for those with organic brain syndromes, Alzheimer's disease, and depressive and anxiety disorders. This physical-mental comorbidity may be one reason that more cognitively disabled elderly are in nursing homes than in mental hospitals. Nursing homes may be the locus of care because they can address the resident's heavy needs for physical care.

The notable exception to the association between poor physical and cognitive health was for residents with mental retardation, who had a smaller percentage in fair or poor physical health. This group may be physically healthier because it is somewhat younger; the prevalence of mental retardation is highest for those under age 65 (see table D). For certain cognitive disabilities, the percentage of residents in fair or poor health increased with age. Table G presents data to compare the percentage in fair or poor health of the young-old with that of the oldest-old for selected cognitive disabilities. For organic brain syndromes and schizophrenia, the percentage in fair or poor health increased with age. For Alzheimer's disease and for depressive disorders, observable differences were not statistically significant.

Serious disruptive behavior, along with the need for ADL assistance, can be a precipitating factor in a family's decision to admit an elderly family member to a nursing home (15). In particular, families find it difficult to cope with abusive behavior or with wandering, especially if wandering occurs in the middle of the night. A study of disruptive behavior of residents in skilled nursing facilities found that more than 11 percent were physically resistant to care in that they exhibited such behaviors as spitting out medicine and refusing to eat (16). Table 3 presents data

**Table G. Percent of young-old and oldest-old nursing home residents in fair or poor physical health by selected cognitive disabilities: United States, 1985**

Cognitive disabilities	Percent in fair or poor health	
	Young-old <sup>1</sup>	Oldest-old <sup>2</sup>
Organic brain syndromes . . . . .	62.4	72.8
Alzheimer's disease and other degeneration of the brain . . . . .	56.8	75.9
Schizophrenia and other psychoses . . . . .	47.2	64.0
Depressive disorders . . . . .	66.5	79.4

<sup>1</sup>Aged 65–74 years.

<sup>2</sup>Aged 85 years and over.

on whether the resident displayed any of six disruptive behaviors, including disrobing or exposing oneself, screaming, being physically abusive, stealing, getting lost or wandering, and being unable to avoid simple dangers. Wandering has been associated with increased use of restraints during the first month of a nursing home stay (17). Compared with residents without cognitive disabilities, a greater percentage of those with each of the cognitive disabilities under analysis here exhibited one or more disruptive behaviors. More than one-half of residents with Alzheimer's disease, anxiety disorders, organic brain syndromes, or schizophrenia displayed such behavior.

Table 4 presents the percentage of residents with memory impairment, that is, the inability to remember dates or time, familiar locations or people, or recent events, or to make straightforward judgments to such an extent that performance of ADL's, instrumental ADL's, and mobility is impaired nearly every day. Not surprisingly, memory impairment was a major problem for the cognitively disabled in nursing homes. A greater percentage of those with the specific cognitive disabilities studied here had such memory impairment than did those without such disability. For each cognitive disability except alcohol and drug abuse, the percentage of those with memory impairment was twice as high. There were no differences, however, in the

percentage of women versus men with impaired memory.

*Severe depression and anxiety*—The nursing staff were asked if the sampled residents displayed depression or anxiety to such a degree that functioning was restricted nearly every day (table 5). This question was independent of questions on diagnoses and conditions used here to classify residents with specific cognitive disabilities (see table B). Data on degree of restriction is a measure of the functional impact of depressive and anxiety disorders. Some possible reasons that residents with these disorders did not display an impact on functioning were that the impact was less severe (i.e., did not meet the "nearly every day" criterion) or was mitigated by medication. Symptoms of depression have been associated with increased use of physical restraints during the first year after admission (17). Depression has also been associated with mortality in nursing homes. When significant predictors of mortality were examined for new admissions, those with major depressive disorders were 59 percent more likely to die during the first year of stay than those without such disorders (18).

In comparison to those with no cognitive disabilities, those with each cognitive disability studied here had a significantly higher percentage with anxiety that restricted functioning. The percentage with such anxiety was at least three

times higher for those with cognitive disabilities. For all of the cognitive disabilities except mental retardation, the percentage with depression was twice as high as the percentage for those without cognitive disabilities. For each cognitive disability, there were no differences in the percentage with anxiety or depression between males and females. The one exception was for schizophrenia, for which a greater percentage of females than males had anxiety that restricted functioning (41 versus 29 percent, as calculated from tables 1 and 5).

*Activities of daily living and continence*—ADL disabilities have been found to be significant predictors of mortality in general and admission to a nursing home (19), as well as of mortality during the first year of a nursing home stay (18). The nursing staff reported on whether help of another person was required for each of seven ADL's listed in table 6. Compared with residents without cognitive disabilities, those with Alzheimer's disease, organic brain syndromes, and anxiety and depressive disorders had significantly higher proportions who required help with five to seven ADL's. Given the relationship between ADL disabilities and mortality in nursing homes, this subgroup of residents had a higher risk of mortality during the first year of their stays. Residents with schizophrenia and alcohol and drug abuse, in contrast, had significantly lower proportions who required help with five to seven ADL's and a lower risk of mortality.

The percentage of residents requiring help for specific ADL's differed by type of cognitive disability and by type of ADL. Residents with organic brain syndromes and Alzheimer's disease had a significantly greater percentage who required help in transferring (getting in or out of a bed or chair). About 70 percent of these persons required personal help. The inability to transfer from bed or chair has been found to be a significant predictor for use of physical restraints in the first month after admission and

during the first year of a stay (17). Given this finding, cognitively disabled people who required help to transfer were likely to be at increased risk of being physically restrained. In contrast, residents with schizophrenia, alcohol and drug abuse, and mental retardation had significantly lower percentages (33–41 percent) of persons who required help in transferring. When the need for help with walking was examined, the situation was quite different. There was no significant increase in the percentage of residents with specific cognitive disabilities studied here who required help with walking when compared with those with no cognitive disabilities. The only notable difference was in the smaller percentage requiring help for those with schizophrenia, alcohol and drug abuse, and mental retardation. As discussed earlier, this lower level of ADL disability may be because residents with these cognitive disabilities were younger and had fewer physical infirmities. Residents with Alzheimer's disease, organic brain syndromes, and depressive and anxiety disorders were 1.5–2 times more likely to require personal help with eating than those with no cognitive disabilities. In conclusion, ADL disability, both in aggregate and for specific activities, is significantly greater for residents with cognitive disabilities studied here. Because personal help is required, the extent of ADL disability of this special subpopulation places important demands on the staff directly providing care.

Instrumental activities of daily living (IADL's) are activities more complex than ADL's that are essential for living independently in the community (20). The questions on IADL's in the 1985 NNHS covered the receipt of personal help or supervision for four IADL's: care of personal possessions, handling money, securing personal items (such as newspapers, toilet articles, snack food), and using the telephone for dialing or receiving calls. When compared with residents without cognitive disabilities, a greater percent-

age of those with disabilities (except alcohol and drug abuse) received personal help for three to four IADL's (table 7). The situation was the same when specific IADL's were analyzed. A significantly higher percentage of residents with cognitive disabilities (except for alcohol and drug abuse) received help for each of the four specific IADL's. Assuming that help was provided because it was needed (rather than as a blanket policy of the facility or because of a dependency-induced phenomenon), it is likely that residents with cognitive disabilities would have extreme difficulty living independently in the community.

Table 8 presents continence status, that is, whether the resident currently had difficulty in controlling bladder, bowels, or both. A smaller percentage of residents with Alzheimer's disease, organic brain syndromes, anxiety and depressive disorders, and mental retardation were continent (30–60 percent), in comparison to those with no cognitive disabilities (nearly 75 percent). About 12 percent of residents with no cognitive disabilities had severe incontinence, that is, difficulty in controlling both bladder and bowels. For these same cognitive disabilities listed above, the percentage with severe incontinence was 1.5–3.5 times greater. Those with Alzheimer's disease (45 percent) and organic brain syndromes (40 percent) had the highest levels of severe incontinence.

*Receipt of therapy*—Do the cognitively disabled receive mental health therapy or other therapy services at a greater rate than residents without such disabilities? Table 9 presents data on mental, social, and other types of therapy received in the past month. Therapy provided by a licensed, registered, or professionally trained therapist was counted, whether it was received inside or outside the facility. A significantly greater percentage of residents with schizophrenia, depressive and anxiety disorders, alcohol and drug abuse, and mental retardation received mental health evaluation or treatment in the

past month. This included mental health evaluation or treatment by a psychiatrist, psychologist, psychiatric or clinical social worker, psychiatric nurse, or physician other than a psychiatrist. Although the percentages receiving mental therapy were significantly higher than the 3 percent of nondisabled persons receiving such therapy, the percentages were not large. Only 10–20 percent of these five subgroups of cognitively disabled residents received mental health therapy. The 3 percent of cognitively nondisabled persons who fell into this category likely received a mental health evaluation rather than a treatment. Some view restrictions on public reimbursements for psychiatric services (18) as a probable factor in the limited receipt of mental health therapy. For example, States differ as to whether services beyond those federally required are allowable costs. A national survey in 1988 (21) on Medicaid payment policies found major differences among the States. Only residents with mental retardation and depressive disorders had greater receipt of social services from a social worker than did those without cognitive disabilities. Receipt of social services by the mentally retarded was twice as high as for those not cognitively disabled (20 versus 10 percent). Other therapy services cover physical, occupational, recreational, and speech-hearing therapies. These were combined into one category because the estimates for each specific therapy did not meet established levels of precision. The notable difference was that the percentage of persons using other therapy services was significantly lower for those with organic brain syndromes and alcohol and drug abuse than for those with no cognitive disabilities. The percentage receiving other therapy was similar for all other types of cognitive disability under study here compared with those without such disability. Although receipt of the various therapy services was less than 30 percent, it is possible that special services were provided through special

units or programs for meeting the needs of the cognitively disabled. A 1987 national survey (22) found that 8 percent of all nursing homes had such specialty units and that they accounted for 54,000 beds (3.3 percent). The 1985 NNHS did not collect information on whether patients with cognitive disabilities were in specialty care units.

*Primary source of payment*—The most prevalent primary source of payment (PSP) for last month's care for residents without cognitive disabilities was own income or family support (48 percent) (table 10). It was followed closely by Medicaid (44 percent). Medicare, in contrast, was the PSP for less than 3 percent. The PSP profile for those with Alzheimer's disease was similar. Own income was the PSP for 52 percent, Medicaid for 44 percent, and Medicare for less than 1 percent of those with Alzheimer's disease. For persons with the remaining cognitive disabilities (except alcohol and drug abuse), the PSP profile was quite different. Medicaid was the most prevalent PSP and own income or family support played a lesser role. The percentage whose PSP was Medicaid was significantly higher (52–65 percent) than for those with no cognitive disabilities (44 percent). As noted previously, there are major differences among States in the amount of Medicaid payments and in the services that are covered (21). These differences make it difficult to determine what special services are available to the cognitively disabled who are Medicaid residents. The percentage of the mentally retarded who used other sources as their PSP (i.e., government assistance other than Medicaid and Medicare, religious or volunteer groups, and life care) was four times larger than for those with no cognitive disabilities.

*Living arrangements prior to admission*—Living arrangements prior to admission can provide information about the informal support system for those residents admitted from a private residence and about shifts in the locus of care for those admitted from other health facilities.

The percentage of residents with organic brain syndromes and Alzheimer's disease that were admitted directly from home (i.e., a private or semiprivate residence) was the same as for those with no cognitive deficits (table 11). The major difference was that a smaller percentage of those with organic brain syndromes and Alzheimer's disease lived alone at home prior to admission. This is consistent with other findings about the importance of the informal support system to elderly with dementia. Families try to maintain their elderly members at home for as long as possible (13). The weakening or breakdown of the informal support system precipitates the admission to a nursing home (15). The small percentage living alone also relates to the previous finding that cognitively disabled residents are unable to live independently in the community as indicated by the large percentage who needed personal help with three to four IADL's (see table 7).

The profile of living arrangements prior to admission was different for residents with schizophrenia, depression, anxiety, alcohol and drug abuse, and mental retardation. A greater percentage of persons with these disabilities was admitted from another health facility and a smaller percentage from home. At least 60 percent of these residents were admitted from another health facility, usually from a short-stay hospital (9). There were few admissions from another nursing home (about 5 percent), regardless of the type of cognitive disability. Nearly 25 percent of residents with mental retardation or with schizophrenia were admitted from a mental hospital or mental center. This was three times more than for residents with any cognitive disabilities. The shift in locus of care for elderly schizophrenics from mental hospital to nursing home can be viewed as a consequence of the deinstitutionalization of the mentally ill. Because community-based residential programs for the mentally ill have not been developed to meet the

needs of deinstitutionalized persons, nursing homes have provided an unintended source of community placement for the mentally ill who are elderly or near-elderly (9). Another possible factor in this shift could be the need for a care setting to address the increasing physical infirmities of the elderly with schizophrenia. The positive relationship between age and fair or poor health for schizophrenic residents is illustrated in table G.

*Discharges*—In addition to collecting data about residents who were currently living in the nursing home, the 1985 NNHS also collected data about discharges. The sample included persons discharged 12 months prior to the survey. Because of the dates of the data collection for the NNHS, data on discharges cover the period August 1984–January 1986. Data about discharges over a 12-month period highlight persons with relatively short stays and underestimate those with relatively long stays. Data about current residents, however, have the opposite characteristics; they highlight persons with relatively long stays and underestimate those with relatively short stays. Because persons with relatively longer stays are more likely to be in a nursing home on any given day, they are more likely to be eligible for the current resident sample. It is often useful to examine both discharge and resident data to gain a greater understanding of nursing home utilization. A detailed description of the conceptual differences between discharge and current resident data in the 1985 NNHS has been published (23).

Table H presents the rate of cognitive disabilities per 1,000 nursing home discharges. For every 1,000 discharges, 273 had at least one cognitive disability. The rate of cognitive disabilities per 1,000 discharges was significantly lower for current residents (273 versus 674, from tables H and C, respectively). The same was true when rates for the individual cognitive disabilities were compared. This difference is an indication that

**Table H. Rate of cognitive disabilities per 1,000 nursing home discharges: United States, 1984–85**

<i>Cognitive disabilities</i>	<i>Rate</i>
None . . . . .	727
One or more . . . . .	273
Organic brain syndromes . . . . .	141
Alzheimer's disease and other degeneration of the brain . . . . .	39
Schizophrenia and other psychoses . . . . .	62
Depressive disorders . . . . .	24
Anxiety disorders . . . . .	11
Alcohol and drug abuse . . . . .	22
Mental retardation . . . . .	10

the cognitively disabled tend to have relatively longer lengths of stay. This is because discharge data, in highlighting shorter stays, focus on those without cognitive disability, while current-resident data, in highlighting longer stays, focus on those with cognitive disability.

One strength of data on nursing home discharges is that it characterizes a completed episode of care and sheds light on outcomes of care. In comparison to discharges without cognitive disabilities, a greater percentage of discharges with organic brain syndromes, Alzheimer's disease, schizophrenia, and mental retardation had long stays of 1 year or more (table 12). For the mentally retarded, the percentage with long stays was twice as high. About 70 percent of those without cognitive disability were discharged alive. About 70 percent of those discharged with organic brain syndromes and Alzheimer's disease also had a live outcome. The percentage discharged alive was higher for the other cognitive disabilities: schizophrenia, depressive and anxiety disorders, alcohol and drug abuse, and mental retardation. Except for those with schizophrenia, more than 90 percent of those discharged with these cognitive disabilities were discharged alive. The large percentage of those discharged alive with depressive disorders is not consistent with findings from a 1-year longitudinal study of new admissions with major depressive disorders (18). However, the longitu-



dinal nature of the study, its focus on new admissions, and its use of research psychiatrists to identify depressive disorders differ so greatly from the methodology of the 1985 NNHS that comparisons are not appropriate.

## Summary

In summary, cognitive disabilities are a significant health problem in nursing homes. For every 1,000 residents, 674 had one or more cognitive disabilities. Residents with cognitive disabilities are not a homogeneous group. Rather, different profiles exist depending on the type of cognitive disability.

The profile for residents with organic brain syndromes and with Alzheimer's disease identifies certain common characteristics. When compared with residents with no cognitive disabilities, they had:

- a greater percentage in fair or poor physical health
- a greater percentage who required help with five to seven ADL's
- a greater percentage with disruptive behavior
- a greater percentage with severe incontinence
- a smaller percentage who lived alone at home prior to admission

Residents with organic brain syndromes had a distinctive profile in the following respects: Rates were higher for females than males and increased with age. The percentage in fair or poor physical health also increased with age. The percentage receiving other therapy last month (that is, physical, occupational, recreational, or speech-hearing therapy) was significantly lower when compared with those without cognitive disability.

Although the cognitive disabilities of schizophrenia and mental retardation differ substantially, profiles of residents with these disabilities had some similarities. The prevalence of these disabilities decreased with age. When compared

with residents with no cognitive disabilities, those with schizophrenia and with mental retardation had:

- a greater percentage who received a mental health evaluation or treatment in the past month
- a greater percentage admitted from another health facility, usually a mental hospital
- a greater percentage discharged alive
- a smaller percentage who needed help transferring and walking

Note that this profile differs substantially from the profile for residents with organic brain syndromes and with Alzheimer's disease.

Residents with mental retardation had a distinctive profile in the following respects: Rates were twice as high for males as for females. In comparison to those with no cognitive disabilities, those with mental retardation had a smaller percentage in fair or poor physical health, a smaller percentage with severe depression, and a larger percentage receiving social services. Residents with mental retardation also had a greater percentage who used government sources other than Medicaid or Medicare, religious sources, or life care as a primary source of payment.

Residents with schizophrenia also had a distinctive profile. They had a large percentage admitted from a mental hospital, a large percentage with disruptive behavior, and a smaller percentage needing help with five to seven ADL's.

## Use of informal and formal care by elderly in the community<sup>a</sup>

### Background

Long-term care (LTC) refers to care delivered to individuals who are dependent on others for assistance with the basic tasks necessary for

<sup>a</sup>by Baila Miller, Ph.D., and Sylvia E. Furner, Ph.D., University of Illinois at Chicago

physical, mental, and social functioning over sustained periods. The goal of such care is to enable the recipients to function at the highest level of autonomy possible (1). Approximately 80–90 percent of community-based LTC comes from informal networks of family or friends (24). Although most family care is provided by a primary caregiver, recent studies suggest that 60–70 percent of frail older persons have two or more helpers (25,26). Formal sources of help include medical and community services provided by profit, nonprofit, and governmental agencies. Distribution of and access to these services varies by community.

This section presents data on the use of health and social services in 1984 and change in the number of informal helpers between 1982 and 1984 for a national sample of frail elders. In the context of this section, frail elders are defined as persons who are eligible for Medicare, living in the community, and needing assistance with at least one ADL. The number of helpers used may be interpreted in two different ways. It may reflect family composition and the range of social networks of the dependent elder. Secondary caregivers are most likely to occur when the primary caregiver is offspring, another relative, or friends of the older person (26,27). Alternatively, use of more than one helper may reflect increased need for help by those older persons with higher levels of dependency. Each interpretation suggests ways that the number of helpers may be associated with mortality and nursing home placement. If having more helpers reflects family composition and social network availability, little association between number of helpers and mortality and nursing home use rates would be expected. If having more helpers reflects greater ADL dependency, however, it is expected that the number of helpers will be positively associated with mortality and nursing home use rates.

The hypotheses examined in this section focus on variations by age, sex, race, and level of ADL

disability in use of formal services, the number of helpers in 1982, and the amount of change in the number of helpers over a 2-year period. It is hypothesized that: (a) males and white persons will be more likely to use formal services than females and persons of all other races as a result of having greater socioeconomic resources, and older elderly persons and those with higher levels of ADL dependency will be more likely to use formal services than younger elderly and those with less ADL dependency because of a greater need for services; (b) for similar reasons, males, white people, older elderly persons, and those with higher levels of ADL dependency will be more likely to have more than one helper in 1982 than females, persons of all other races, younger elderly, and those with less ADL dependency; and (c) patterns of stability and change in the number of informal and formal helpers over the 2 years will not differ by age, sex, race, or ADL status.

### **Sources of data**

The sources of data for this section are the 1982 and 1984 National Long-Term Care Surveys, which investigated the demographic characteristics, health and functioning, and patterns of assistance of a national sample of noninstitutionalized persons 65 years of age or over (see tables 13–15). A similar questionnaire for community-dwelling residents was used in both surveys. The 1982 survey was funded by the Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation (ASPE), and the Health Care Financing Administration (HCFA). The 1984 survey was funded by HCFA and the National Institute on Aging (NIA). Recently, the data from the 1989 survey, funded by NIA and ASPE, were released but could not be included in these analyses because of time constraints.

In 1982, a random sample of approximately 36,000 persons drawn from the Master Medicare Beneficiary Files was screened to identify per-

sons with functional limitations, defined as the inability to perform at least one activity of personal care or management of daily affairs for 3 months or more. More than 6,400 persons were identified and 96 percent were interviewed. These interviews and completed followup interviews of those remaining in the community in 1984 are the sources of data for the longitudinal analyses in tables 14 and 15 (28).

The source of the cross-sectional data in table 13 is the 1984 survey, along with two additional sampling design elements. First, persons identified as chronically disabled in 1982 and still living in the community were reinterviewed ( $n = 4,530$ ). Second, more than 12,000 persons identified as nondisabled in 1982 were rescreened, and those identified as disabled in 1984 were interviewed ( $n = 1,170$ ). Table 13 presents estimates based on the complete responses from this set of interviews.

## Findings

*Use of selected community health and social services*—The percentages of frail persons aged 65 and over utilizing selected community health and social services are presented in table 13. Examination of utilization rates by type of service suggests variation. Physician office care and hospitalization were frequently used health care services, at 39 and 34 percent, respectively. Auxiliary health care services, such as care by dentists and optometrists, were used by 18 percent of older frail persons. Four percent used the services of rehabilitation therapists, and less than 1 percent used mental health services. Approximately 7 percent used the services of senior centers.

Relatively few differences in the use of community health and social services by sociodemographic factors were evident. As expected, white persons were more likely to be hospitalized in the previous year and to use auxiliary health care services than persons of all other races, but,

contrary to expectation, did not differ in their utilization patterns for the other health and social services. Women (20 percent) were more likely to receive care from auxiliary health services than men (15 percent), but no other utilization differences by sex were evident. There were few differences by age group in the use of these services, except that, contrary to expectation, a smaller proportion of those 85 years of age and over used physician office care and hospitalization than those 65–74 years of age.

Use of health care services was, to some extent, dependent on the need for service. As expected, those receiving help with three to five ADL's were more likely to be hospitalized in the previous year (55 percent) than those receiving no help (29 percent). Surprisingly, however, those who received help with three to five ADL's were less likely to use auxiliary health services (13 percent) than those who received no help (19 percent).

In 1982, as expected, persons of all other races, persons aged 85 years and over, and persons receiving help with three to five ADL's were significantly more likely to have more than one helper than were white people, elderly people in the younger age groups, and elderly people with less ADL dependency (table J). Contrary to what was hypothesized, females were more likely to have more than one helper than males. Marital patterns may account for some of this difference. A person is more likely to have multiple helpers when the primary caregiver is not a spouse (26). Because older men are more likely to be married than older women, female spouses are more available to care for dependent men. Dependent women are more likely to be widowed, divorced, or never married, and cared for by adult children (24).

*Changes in use of informal helpers between 1982 and 1984*—Table 14 presents the number of informal helpers used in 1982 and the change in number of informal helpers between 1982 and

**Table J. Percent of frail persons 65 years of age and over using only informal helpers in 1982 by the number of informal helpers in 1982, according to race, sex, age, and help with activities of daily living: United States**

<i>Race, sex, age, and help with ADL's</i>	<i>Number of informal helpers in 1982</i>		
	<i>1</i>	<i>2</i>	<i>3 or more</i>
Total.....	53.1	26.8	20.0
Race			
White.....	54.5	26.2	19.3
All other.....	45.3	30.4	24.3
Sex			
Male.....	65.0	21.7	13.3
Female.....	45.0	30.4	24.6
Age			
65-74 years.....	61.7	21.8	16.5
75-84 years.....	49.7	28.9	21.5
65 years and over.....	53.1	26.8	20.0
75 years and over.....	46.4	30.9	22.8
85 years and over.....	39.3	35.2	25.5
Help with ADL's			
No help received.....	56.9	25.7	17.4
Help with 1.....	47.5	29.1	23.4
Help with 2.....	52.7	24.6	22.7
Help with 3-5.....	39.5	31.7	28.8

NOTE: ADL is activity of daily living.

1984. For purposes of this analysis, all of the frail elders had at least one informal helper in 1982. The number of informal helpers a frail elder had was associated with subsequent mortality; those with three or more informal helpers in 1982 were more likely to die by 1984 (25 percent deceased) than those with one informal helper (18 percent deceased). Further investigation of the association between the number of informal helpers and mortality revealed a trend of increasing mortality rates with increasing number of informal helpers for males only. For females, there was a higher mortality rate for those who had three or more helpers in 1982 (20 percent), compared with those who had one helper (15 percent); however, there was no trend of increasing mortality rates with increasing

numbers of informal helpers. The association between mortality and number of informal helpers was evident in white people: those with three or more informal helpers were more likely to die (25 percent) than those with one helper (18 percent), but this was not true for persons of all other races. Among the age groups, the association between number of informal helpers and mortality was only evident in the 65-74-year age group and the 85-and-over age group. Those with three or more helpers in the 65-74-year age group were more likely to die (21 percent) than those with one helper in the same age group (13 percent). The same relationship was evident for the 85-and-over group. Contrary to expectation, there was no association between mortality and number of informal helpers within levels of

ADL dependency. Although it appeared that, among those who received help with three to five ADL's, those with three or more helpers were more likely to die than those with fewer helpers, the difference was not statistically significant.

With respect to institutionalization, i.e., nursing home residence, those who had two helpers in 1982 were more likely to be institutionalized in 1984 than those with one helper. In contrast to the association seen with mortality, there was no trend of increasing institutionalization rates with increasing numbers of informal helpers. This was true for all sex, race, age, and ADL dependency groups.

Stability and change in the number of informal helpers over the 2-year period can be observed in table 14 by comparing the number of helpers in 1982 with the number of helpers in 1984. Overall, 45 percent of the sample who had one helper in 1982 had one helper in 1984. Twenty-nine percent of those with two helpers in 1982 had the same number of helpers in 1984. Similarly, 29 percent of those with three or more helpers in 1982 had the same number of helpers in 1984. Of note is a change to no helpers in 1984. A larger percentage of those with one helper in 1982 did not have any helpers in 1984 (8 percent), compared with those with two (4 percent) or three or more helpers (3 percent) in 1982.

There is an association between change in use of informal helpers and race. White persons with one helper in 1982 were more likely to show stability in the number of helpers (46 percent) than were persons of all other races (35 percent). People of all other races with one helper were more likely than white people to show an increase to two informal helpers (20 percent compared with 14 percent). Men showed more stability in having one helper than women, but there was no difference in stability of helper networks for men and women with two or three or more helpers. There was no difference by sex

in the shift to no helpers; however, women were more likely to shift from one informal helper to two (17 percent) than were men (12 percent).

Comparison of the stability of having one helper by age group revealed a decreasing trend with increasing age. Fifty-one percent of those 65–74 years of age with one helper in 1982 had one helper in 1984, in comparison to 42 percent and 33 percent for those 75–84 and 85 and over. No association was evident between the stability in the number of helpers and the level of ADL disability.

*Changes in the use of both formal and informal helpers between 1982 and 1984*—Change in the use of only formal helpers cannot be estimated because of the overall low use and the subsequent large variance in these estimates. Table 15 presents the use of both formal and informal helpers in 1984 by such use in 1982. For purposes of this analysis, all older persons in the 1982 sample had at least one informal helper. Thus, if both informal and formal helpers were used, the minimum size of the helper network was two. Examination of mortality rates by number of formal and informal helpers across race, sex, age, and ADL groupings revealed only one significant difference. For persons of all races other than white, those with three or more helpers were more likely to die within 2 years (38 percent) than those with two helpers (20 percent). More than 45 percent of males with three or more helpers and persons receiving help with three to five ADL's died during the 2-year interval; this suggests that these are the groups at highest risk of death. No consistent pattern between institutionalization rates and use of formal and informal helpers was evident.

For the total sample, those persons with three or more formal and informal helpers in 1982 showed greater stability (36 percent) in network size than those with two-helper networks (18 percent). This stability was evident

among females and white persons but not among males and persons of all other races.

## Summary

In summary, this section suggests that hospital care and physician office care are frequently used community health care services. There were relatively few differences by sex, age, or race in patterns of community health service use. There were differences by sex, age, race, and level of ADL disability in the number of informal helpers a frail elder used. Marital patterns appear to be an important underlying influence on the number of informal helpers. When a spouse is present, he or she becomes the primary and only helper in many instances. The number of informal helpers that a frail elder had was associated with an increased risk of mortality and institutionalization. Overall, there is somewhat more stability than change in the number of informal helpers over the 2-year period. This section, however, could not identify if the composition of the informal helper network remained the same over time.

## References

1. Kane RA, Kane RL. Long term care: Principles, programs and policies. New York: Springer. 1987.
2. Rivlin AM, Wiener JM. Caring for the disabled elderly: Who will pay? Washington, D.C.: The Brookings Institution. 1988.
3. The Pepper Commission, U.S. Bipartisan Commission on Comprehensive Health Care. A Call for Action. Washington: U.S. Government Printing Office. 1990.
4. Spencer G. Projections of the population of the United States by age, sex and race: 1988 to 2080. Current Population Report, P-25, No. 1018. Washington: U.S. Government Printing Office. 1989.
5. Van Nostrand JF. Data needs for policy analysis of LTC. In: Health of an aging America: Issues on data for policy analysis. National Center for Health Statistics. Vital Health Stat 4(25). 1988.
6. Van Nostrand JF, et al. The National Nursing Home Survey, 1977 summary for the United States. National Center for Health Statistics. Vital Health Stat 13(43). 1979.
7. Hing E, Sekscenski E, Strahan G. The National Nursing Home Survey: 1985 summary for the United States. National Center for Health Statistics. Vital Health Stat 13(97). 1985.
8. Hing E. Nursing home utilization by current residents: United States, 1985. National Center for Health Statistics. Vital Health Stat 13(102). 1989.
9. Strahan G, Burns BJ. Mental Illness in Nursing Homes: United States, 1985. National Center for Health Statistics. Vital Health Stat 13(105). 1991.
10. Strahan G. Prevalence of selected mental disorders in nursing and related care homes. In Manderschied RW and Sonnenschein MA, eds. Mental health, United States, 1990. National Institute of Mental Health. Pub. No. (ADM) 90-1708. Washington: U.S. Government Printing Office. 1990.
11. Lair T, Lefkowitz D. Mental health and functional status of residents of nursing and person care homes. Agency for Health Care Policy and Research. National Medical Expenditure Survey Research Findings 7. Washington: U.S. Government Printing Office. 1990.
12. Advisory Panel on Alzheimer's Disease. Second report of the Advisory Panel on Alzheimer's Disease. Pub. No. (ADM) 91-1791. Washington: U.S. Government Printing Office. 1991.
13. U.S. Congress, Office of Technology Assessment. Losing a million minds: Confronting the tragedy of Alzheimer's disease and other dementias. OTA-BA-232. Washington: U.S. Government Printing Office. 1987.
14. Manderschied RW and Sonnenschein MA, eds. Mental health, United States, 1990. National Institute of Mental Health. Pub. No. (ADM) 90-1708. Washington: U.S. Government Printing Office. 1990.
15. Shanas E, Van Nostrand JF. The family, the elderly and long term care. In Dunkle RE, Wykle ML, eds. Decision making in long term care. New York: Springer. 1988.
16. Zimmer JG, Watson N, Treat A. Behavioral problems among patients in skilled nursing facilities. Am J Public Health 74(10). 1984.
17. Burton LY, German PS, Rovner BW, et al. Mental illness and the use of restraints in nursing homes. Gerontologist 32(2). 164-79. 1992.
18. Rovner BW, German PS, Brant LJ, et al. Depression and mortality in nursing homes. JAMA 265(8):993-996. 1991.

19. Wiener JM, Hanley RJ, Clark R, Van Nostrand JF. Measuring the activities of daily living: Comparisons across national surveys. *J Gerontol* 45(6): S229-37. 1990.
20. Lawton MP, Brody E. Assessment of older people: Self-maintaining and instrumental activities of daily living. *Gerontologist* 9(179-186). 1969.
21. Buchanan R, Madel P, Persons D. Medicare payment policies for nursing home care: A national survey. *Health Care Financing Review* 13(1). 1991.
22. Leon J, Potter D, Cunningham P. Current and projected availability of special nursing home programs for Alzheimer's disease patients. Agency for Health Care Policy and Research. National Medicare Expenditure Survey Data Summary 1. 1990.
23. Sekscenski ES. Discharges from nursing homes: 1985 National Nursing Home Survey. National Center for Health Statistics. *Vital Health Stat* 13(103). 1990.
24. Stone R, Cafferata G, Sangl J. Caregivers of the frail elderly: A national profile. *Gerontologist* 27:616-26. 1987.
25. Stephens SA, Christianson JB. Informal care of the elderly. Lexington, Massachusetts: Lexington Books. 1986.
26. Tennstedt SL, McKinlay JB, Sullivan LM. Informal care for frail elders: The role of secondary caregivers. *Gerontologist* 29:677-83. 1989.
27. Miller B, McFall S. Stability and change in the informal task support networks of frail older persons. *Gerontologist* 31:735-45. 1991.
28. Manton KG. A longitudinal study of functional change and mortality in the United States. *J Gerontol* 43(5):S153-61. 1988.





**Table 2. Percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, race, and staff-assessed physical health status: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Sex, age, race, and staff-assessed health status</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
Number										
All residents <sup>2</sup> . . . . .	1,452,300	472,000	980,300	669,500	77,000	189,000	212,000	212,000	56,600	81,300
Percent										
All statuses . . . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Excellent to good . . . . .	39.3	44.7	36.7	31.5	36.3	49.3	30.7	34.7	49.4	60.3
Fair and poor . . . . .	60.7	55.3	63.3	68.5	65.3	50.4	69.0	65.3	51.4	40.1
Sex										
Male:										
All statuses . . . . .	28.4	28.3	28.4	24.6	29.4	32.5	25.5	26.6	64.0	45.6
Excellent to good . . . . .	11.6	11.7	11.5	7.5	9.8	16.8	8.0	10.0	34.1	28.7
Fair and poor. . . . .	16.8	16.6	16.9	17.1	20.0	15.8	17.4	16.7	30.2	17.1
Female:										
All statuses . . . . .	71.6	71.6	71.6	75.4	71.6	67.2	74.6	73.6	36.7	53.7
Excellent to good . . . . .	27.7	32.9	25.2	24.0	26.2	32.4	22.8	24.7	15.6	31.2
Fair and poor. . . . .	43.9	38.6	46.4	51.4	44.7	34.8	51.7	48.7	21.4	22.7
Age										
Under 65 years:										
All statuses . . . . .	11.0	7.0	12.9	4.4	*6.0	26.6	13.6	15.0	27.7	52.3
Excellent to good . . . . .	6.4	3.0	8.0	2.1	*2.9	17.0	6.8	8.8	19.1	37.7
Fair and poor. . . . .	4.6	4.0	5.0	2.3	*3.2	9.6	6.9	6.3	*8.7	14.5
65-74 years:										
All statuses . . . . .	14.0	12.5	14.8	11.7	22.2	23.1	18.2	16.0	28.8	25.0
Excellent to good . . . . .	5.8	5.4	6.0	4.3	9.6	12.1	6.1	5.0	12.9	12.5
Fair and poor. . . . .	8.2	7.0	8.8	7.3	12.6	10.9	12.1	11.0	15.8	12.5
75-84 years:										
All statuses . . . . .	33.8	35.7	32.8	34.9	42.1	26.5	37.2	35.6	29.4	16.3
Excellent to good . . . . .	13.0	16.0	11.6	11.7	16.0	11.2	11.3	10.6	11.0	*7.2
Fair and poor. . . . .	20.8	19.8	21.2	23.2	26.6	15.3	25.9	25.0	18.1	8.9
65 years and over:										
All statuses . . . . .	88.5	92.3	86.6	95.2	95.2	72.8	85.5	84.2	72.6	47.4
Excellent to good . . . . .	32.8	41.6	28.6	29.3	33.4	31.8	23.8	25.6	29.4	22.3
Fair and poor. . . . .	55.7	50.7	58.1	65.9	62.0	41.1	61.8	58.7	42.8	24.9
75 years and over:										
All statuses . . . . .	74.5	79.7	71.9	83.5	73.0	49.3	67.3	68.3	43.9	21.3
Excellent to good . . . . .	27.0	36.1	22.6	24.9	23.4	19.5	17.6	20.5	16.6	9.6
Fair and poor. . . . .	47.5	43.7	49.3	58.6	49.2	29.9	49.7	47.8	26.8	11.9

**Table 2. Percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, race, and staff-assessed physical health status: United States, 1985—Con.**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Sex, age, race, and staff-assessed health status</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
85 years and over:										
						Percent				
All statuses . . . . .	40.7	43.9	39.1	48.6	29.9	22.8	30.1	32.6	13.6	*5.8
Excellent to good . . . . .	14.0	20.1	11.0	13.2	*7.7	8.4	6.3	9.9	*5.7	*2.2
Fair and poor . . . . .	26.7	23.8	28.1	35.4	22.7	14.6	23.9	22.7	*8.2	*3.3
Race <sup>3</sup>										
White:										
All statuses . . . . .	92.3	91.7	92.6	92.3	95.8	91.6	93.5	92.3	89.9	92.3
Excellent to good . . . . .	36.4	42.3	33.5	28.6	33.6	44.5	29.2	31.1	43.8	54.6
Fair and poor . . . . .	55.9	49.5	59.0	63.5	62.2	46.9	64.3	61.3	45.9	37.9
Black:										
All statuses . . . . .	6.9	7.4	6.7	7.2	*4.6	7.6	4.9	6.4	10.6	*5.8
Excellent to good . . . . .	2.6	2.1	2.8	2.8	*2.3	3.8	*1.2	*2.8	*5.7	*3.7
Fair and poor . . . . .	4.4	5.3	3.9	4.4	*2.2	3.8	3.7	3.7	*4.8	*2.1

<sup>1</sup>Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

<sup>2</sup>Excludes those for whom health status was missing.

<sup>3</sup>Excludes races other than white and black.

NOTE: Column percents may not add to 100 because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.

**Table 3. Percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, race, and number of disruptive behaviors: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Sex, age, race, and number of disruptive behaviors<sup>1</sup></i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>2</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
	Number									
All residents.....	1,489,500	485,400	1,004,100	686,400	79,600	194,100	214,400	214,800	58,700	82,700
	Percent									
All statuses.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
None.....	61.6	84.9	50.4	44.1	40.4	47.3	57.4	43.6	61.0	48.9
1 or more.....	38.4	15.1	49.6	55.9	59.6	52.7	42.6	56.4	39.0	51.1
3 or more.....	7.6	*1.0	10.7	12.7	17.8	13.7	9.9	13.7	*9.8	12.1
Sex										
Male:										
None.....	17.4	24.2	14.2	9.8	8.5	17.1	13.4	10.8	37.2	25.7
1 or more.....	10.9	4.1	14.3	14.6	20.7	16.0	12.1	16.1	27.0	19.7
3 or more.....	2.5	*0.6	3.4	3.9	5.7	4.3	2.9	4.1	*6.3	*4.6
Female:										
None.....	44.2	60.8	36.2	34.3	31.5	30.2	43.9	33.1	24.7	23.1
1 or more.....	27.4	10.9	35.4	41.2	39.0	36.6	30.7	40.1	11.1	31.1
3 or more.....	5.1	*0.5	7.3	8.9	12.2	9.5	6.9	9.6	*3.5	7.5
Age										
Under 65 years:										
None.....	6.8	6.1	7.2	2.0	*3.2	14.9	7.7	5.9	17.1	27.5
1 or more.....	4.4	*1.0	6.0	2.5	*3.3	12.2	6.2	9.1	11.5	25.4
3 or more.....	0.8	*0.1	1.1	*0.3	—	*2.4	*0.3	*1.5	*2.7	*5.7
65–74 years:										
None.....	8.9	11.1	7.8	5.1	8.5	12.9	9.9	7.5	20.1	11.8
1 or more.....	5.1	1.6	6.9	6.7	12.9	10.0	8.2	8.6	*8.5	12.8
3 or more.....	1.1	*0.1	1.6	1.9	*4.9	*2.8	*1.8	*1.7	*1.4	*1.8
75–84 years:										
None.....	20.5	31.1	15.3	14.0	16.1	10.5	20.9	15.5	14.5	7.4
1 or more.....	13.2	4.6	17.4	20.8	25.2	16.1	16.3	20.2	14.1	9.0
3 or more.....	2.7	*0.1	3.9	4.9	8.4	4.4	4.6	6.2	*3.6	*3.0
65 years and over:										
None.....	54.4	78.2	42.9	41.9	36.7	32.2	49.5	37.4	42.8	20.6
1 or more.....	33.9	13.9	43.5	53.1	56.4	40.0	36.4	46.7	26.6	25.0
3 or more.....	6.8	*1.0	9.5	12.4	17.8	11.4	9.5	12.1	*7.0	*6.2
75 years and over:										
None.....	45.5	67.1	35.1	36.9	28.1	19.2	39.5	30.0	23.1	9.0
1 or more.....	28.7	12.4	36.6	46.4	43.5	30.2	28.1	38.0	18.2	12.4
3 or more.....	5.6	*0.8	8.0	10.5	12.9	8.5	7.7	10.4	*5.6	*4.5

**Table 3. Percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, race, and number of disruptive behaviors: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Sex, age, race, and number of disruptive behaviors<sup>1</sup></i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>2</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
85 years and over:										
None .....	25.1	35.9	19.8	22.9	12.2	8.8	18.6	14.6	*8.9	*2.3
1 or more .....	15.5	7.7	19.2	25.6	18.0	14.0	11.8	17.9	*4.3	*3.3
3 or more .....	3.0	*0.7	4.1	5.6	*4.6	4.1	3.1	4.2	*2.0	*1.3
Race <sup>3</sup>										
White:										
None .....	57.0	78.2	46.7	40.6	38.4	42.8	53.8	41.5	56.4	46.2
1 or more .....	35.2	13.5	45.7	51.5	56.7	48.1	40.1	51.0	32.2	46.9
3 or more .....	7.0	*1.1	9.9	11.9	16.9	12.6	9.5	12.5	*7.3	11.4
Black:										
None .....	4.1	6.0	3.1	3.2	*1.2	3.9	*2.7	*1.9	*4.0	*2.6
1 or more .....	2.9	1.3	3.7	4.1	*3.3	4.3	*2.2	4.6	*6.5	*3.0
3 or more .....	0.5	—	0.8	*0.8	*1.0	*1.1	*0.2	*1.3	*2.4	*0.6

<sup>1</sup> Includes six behaviors: Disrobing or exposing oneself, screaming, being physically abusive, stealing, getting lost or wandering, and being unable to avoid simple dangers.

<sup>2</sup> Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

<sup>3</sup> Excludes races other than white and black.

NOTE: Column percents may not add to 100 because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.

**Table 4. Percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, race, and whether memory impaired: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Sex, age, race, and presence of memory impairment</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
Number										
All residents . . . . .	1,471,500	478,100	993,400	678,800	79,000	191,400	212,700	212,000	58,800	82,300
Percent										
All statuses . . . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Not impaired . . . . .	37.4	67.2	23.1	13.3	9.1	24.4	34.2	28.3	46.8	26.1
Impaired . . . . .	62.6	32.8	76.9	86.7	90.9	75.6	65.8	71.7	53.2	73.9
Sex										
Male:										
Not impaired . . . . .	11.5	19.2	7.8	3.7	3.2	9.5	9.4	7.8	28.6	14.3
Impaired . . . . .	16.8	9.2	20.5	20.7	26.0	23.5	16.1	19.1	34.9	31.3
Female:										
Not impaired . . . . .	25.9	48.0	15.2	9.6	5.3	14.9	24.7	20.6	18.1	12.0
Impaired . . . . .	45.8	23.7	56.4	65.9	64.8	52.1	50.0	52.7	17.2	42.6
Age										
Under 65 years:										
Not impaired . . . . .	4.7	4.9	4.6	1.2	*1.2	8.1	5.2	5.0	14.1	16.0
Impaired . . . . .	6.3	2.1	8.4	3.2	*4.8	18.7	8.2	9.8	13.9	36.9
65-74 years:										
Not impaired . . . . .	6.0	9.6	4.3	1.8	*0.9	7.0	6.2	5.2	12.3	*6.7
Impaired . . . . .	8.0	3.0	10.5	9.9	20.7	16.1	12.0	11.1	16.1	18.1
75-84 years:										
Not impaired . . . . .	13.1	24.5	7.7	4.7	*4.2	5.9	14.0	10.5	15.1	*3.5
Impaired . . . . .	20.6	11.3	25.0	30.2	37.6	20.6	23.2	25.2	13.4	12.5
65 years and over:										
Not impaired . . . . .	32.4	61.6	18.3	12.0	*7.2	16.2	28.7	23.4	31.6	10.4
Impaired . . . . .	56.0	30.5	68.3	83.0	85.5	56.4	57.3	61.0	39.2	36.1
75 years and over:										
Not impaired . . . . .	26.4	52.0	14.1	10.2	*6.4	9.1	22.5	18.3	19.1	3.3
Impaired . . . . .	48.0	27.6	57.8	73.2	65.2	40.2	45.1	49.9	22.8	18.0
85 years and over:										
Not impaired . . . . .	13.3	27.6	6.4	5.5	*2.5	3.3	8.4	7.7	4.0	0.0
Impaired . . . . .	27.4	16.3	32.7	43.0	27.5	19.8	22.2	24.9	8.9	5.4

**Table 4. Percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, race, and whether memory impaired: United States, 1985—Con.**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Sex, age, race, and presence of memory impairment</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
Race <sup>2</sup>										
White:										
Not impaired . . . . .	34.7	62.2	21.5	12.3	8.4	22.2	32.7	26.8	40.8	24.2
Impaired. . . . .	57.5	29.5	70.9	79.8	86.7	69.4	61.3	65.8	46.0	67.9
Black:										
Not impaired . . . . .	2.3	4.4	1.3	*0.8	*0.4	*1.9	*1.1	1.5	4.3	1.3
Impaired. . . . .	4.6	3.0	5.4	6.4	*4.1	5.8	3.8	5.1	6.3	4.4

<sup>1</sup>Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

<sup>2</sup>Excludes races other than white and black.

NOTE: Memory impairment is inability to remember dates or time, familiar location or people, or recent events or to make straightforward judgments to such an extent that performance of activities of daily living, instrumental activities of daily living, and mobility is impaired.

NOTE: Column percents may not add to 100 because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.

**Table 5. Percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, race, and presence of depression or anxiety: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Sex, age, race, and presence of depression or anxiety</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
	Number									
All residents . . . . .	1,489,500	485,100	1,004,400	686,000	79,200	194,200	214,800	215,000	58,700	82,800
	Percent									
All statuses . . . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Depression . . . . .	23.6	12.3	29.1	25.3	24.9	34.9	71.4	50.9	28.8	14.9
Anxiety . . . . .	25.4	10.4	32.7	31.0	31.6	37.3	49.1	71.7	34.9	28.4
Neither . . . . .	57.1	74.4	48.8	50.7	50.5	44.2	20.2	18.6	50.7	63.7
Sex										
Male:										
Depression . . . . .	6.3	3.2	7.7	6.2	7.7	11.1	17.8	13.3	17.2	6.4
Anxiety . . . . .	6.5	2.6	8.4	7.4	10.0	9.6	11.6	18.8	19.8	13.4
Neither . . . . .	17.4	22.2	15.1	13.0	14.4	15.6	6.2	5.6	34.5	28.2
Female:										
Depression . . . . .	17.3	9.0	21.3	19.0	16.9	23.8	53.6	37.6	11.4	8.4
Anxiety . . . . .	18.9	7.9	24.3	23.6	21.7	27.6	37.4	52.9	14.9	15.0
Neither . . . . .	39.7	52.0	33.7	37.7	35.8	28.6	14.0	12.9	16.1	35.7
Age										
Under 65 years:										
Depression . . . . .	3.1	1.3	3.9	1.5	*1.4	11.1	10.6	8.0	*8.3	*5.3
Anxiety . . . . .	2.9	*0.7	3.9	1.6	*2.3	10.2	7.4	8.6	*8.5	9.8
Neither . . . . .	6.4	5.0	7.1	2.2	*3.3	10.4	2.9	4.4	15.5	38.8
65-74 years:										
Depression . . . . .	4.1	2.4	5.0	3.9	*5.8	8.2	12.4	9.2	*6.3	*3.9
Anxiety . . . . .	4.1	1.5	5.3	4.0	*7.1	8.3	9.3	12.4	*10.6	9.5
Neither . . . . .	7.3	8.9	6.6	5.1	9.4	10.4	4.1	*2.1	16.3	12.4
75-84 years:										
Depression . . . . .	8.4	4.6	10.2	9.1	11.0	8.7	26.5	19.3	*8.3	*3.9
Anxiety . . . . .	8.4	3.7	10.7	10.3	12.8	9.9	18.3	26.7	10.5	*5.6
Neither . . . . .	19.6	27.3	16.0	18.3	22.9	12.2	7.8	5.9	13.5	9.5
65 years and over:										
Depression . . . . .	20.4	11.0	25.0	23.6	23.4	23.5	60.4	42.6	19.7	9.6
Anxiety . . . . .	22.5	9.7	28.7	29.2	29.2	26.7	41.5	62.8	26.3	18.6
Neither . . . . .	50.3	68.6	41.5	48.4	47.3	33.6	17.1	13.6	34.5	24.4
75 years and over:										
Depression . . . . .	16.3	8.6	20.0	19.7	17.8	15.1	47.9	33.3	13.2	*5.6
Anxiety . . . . .	18.4	8.2	23.3	25.1	22.2	18.5	32.2	50.4	15.9	8.9
Neither . . . . .	43.0	59.7	35.0	43.2	38.0	23.1	13.1	11.6	18.6	11.6

**Table 5. Percent of nursing home residents, by presence of selected cognitive disabilities, sex, age, race, and presence of depression or anxiety: United States, 1985—Con.**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Sex, age, race, and presence of depression or anxiety</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
Percent										
85 years and over:										
Depression.....	7.9	3.9	9.9	10.6	*6.7	6.5	21.5	14.0	*5.0	*1.7
Anxiety.....	10.0	4.6	12.6	14.9	9.4	8.6	13.8	23.8	*5.3	*3.4
Neither.....	23.4	32.4	19.0	25.0	14.9	10.9	5.3	5.7	*5.3	*2.1
Race <sup>2</sup>										
White:										
Depression.....	21.9	11.6	26.9	23.3	22.7	33.1	66.2	47.2	27.2	13.0
Anxiety.....	24.0	10.1	30.7	29.0	29.3	34.9	46.0	66.4	31.0	26.3
Neither.....	52.3	67.8	44.9	46.5	48.2	38.9	19.6	17.0	43.8	59.3
Black:										
Depression.....	1.5	*0.6	1.9	1.7	*2.0	*1.7	4.0	3.4	*1.5	*1.3
Anxiety.....	1.3	*0.2	1.8	1.8	*2.2	*2.2	*2.4	4.7	*3.6	*1.6
Neither.....	4.3	5.8	3.5	4.0	*1.4	4.6	*0.8	*1.1	*6.0	*3.5

<sup>1</sup>Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

<sup>2</sup>Excludes races other than white and black.

NOTE: Presence of depression or anxiety means that depression or anxiety is displayed to such a degree that functioning is restricted. Column percents may exceed 100 because a resident may have had both depression and anxiety.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.



**Table 6. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and number and type of activities of daily living for which help of another person is required: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Age and ADL's for which help of another person is required</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
						Number				
All ages . . . . .	1,489,500	484,600	1,004,900	685,500	78,800	194,300	214,700	215,200	58,800	83,200
						Percent				
Number:										
None . . . . .	8.2	10.5	7.1	2.8	*2.6	17.2	10.2	8.2	21.9	8.4
1-2 . . . . .	20.1	24.1	18.2	14.5	8.7	28.4	18.4	20.6	32.1	25.6
3-4 . . . . .	27.9	26.5	28.5	30.1	33.2	25.2	25.5	24.5	20.5	29.9
5-7 . . . . .	43.8	38.9	46.2	52.6	55.5	29.2	45.9	46.7	25.5	36.1
Type:										
Eating . . . . .	37.0	25.6	42.5	51.0	60.1	27.0	37.0	39.2	18.8	33.8
Toileting . . . . .	48.2	42.2	51.0	58.1	65.5	33.6	49.5	48.0	29.3	39.7
Dressing . . . . .	73.7	65.7	77.6	85.7	87.8	59.9	73.7	74.5	50.5	70.0
Bathing . . . . .	88.0	84.6	89.6	95.4	96.4	77.6	87.3	87.7	73.6	83.5
Transferring <sup>2</sup> . . . . .	59.2	55.7	60.9	69.1	69.4	37.2	60.0	58.2	33.0	41.4
Walking . . . . .	34.1	33.8	34.3	37.4	38.7	25.4	36.4	37.3	24.2	23.8
Getting outside . . . . .	36.7	40.7	34.8	31.7	36.1	36.0	36.9	36.8	35.3	47.3
65 years and over										
Number:										
None . . . . .	5.5	9.2	3.7	1.9	*2.4	6.8	5.3	4.3	*9.7	*0.7
1-2 . . . . .	17.3	22.8	14.6	13.4	7.8	19.1	15.2	15.9	22.8	12.4
3-4 . . . . .	25.0	24.9	25.1	28.8	30.3	19.0	22.9	20.8	15.9	13.0
5-7 . . . . .	40.5	35.2	43.0	51.1	52.8	27.3	42.1	42.9	21.6	20.3
Type:										
Eating . . . . .	33.7	22.5	39.1	49.3	57.3	24.0	33.7	35.2	15.4	15.7
Toileting . . . . .	44.7	38.4	47.8	56.6	62.5	31.2	45.9	44.3	26.1	24.0
Dressing . . . . .	67.2	60.6	70.5	82.7	82.6	50.5	66.7	66.1	40.9	36.1
Bathing . . . . .	79.9	78.6	80.5	91.6	90.5	63.1	78.1	77.4	58.7	42.9
Transferring <sup>2</sup> . . . . .	54.7	50.6	56.7	67.1	65.1	34.0	55.1	53.4	27.7	22.5
Walking . . . . .	31.9	31.6	32.0	36.2	36.7	22.7	33.9	35.5	19.4	16.6
Getting outside . . . . .	31.9	37.3	29.2	29.9	32.5	26.6	31.8	31.1	25.8	18.8
75 years and over										
Number:										
None . . . . .	3.8	7.6	2.0	1.2	*2.0	*2.4	2.9	*2.3	*2.4	*0.8
1-2 . . . . .	14.1	19.8	11.3	11.3	*7.2	11.1	11.7	12.4	14.6	*5.3
3-4 . . . . .	21.4	22.2	21.0	25.0	22.7	14.6	18.0	16.9	*9.8	*6.5
5-7 . . . . .	34.9	29.9	37.3	45.8	40.2	21.4	34.9	36.5	15.0	9.4

**Table 6. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and number and type of activities of daily living for which help of another person is required: United States, 1985—Con.**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Age and ADL's for which help of another person is required</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
75 years and over—Con.										
Type:										
Eating.....	29.2	19.3	34.0	44.1	44.2	18.8	28.2	30.5	11.1	7.3
Toileting.....	38.3	32.8	40.9	50.1	46.3	24.1	37.7	37.6	16.5	11.0
Dressing.....	57.5	52.0	60.2	73.3	63.1	38.8	53.9	55.0	27.7	17.5
Bathing.....	68.1	68.2	68.0	80.8	69.4	45.4	62.8	64.1	38.0	19.5
Transferring <sup>2</sup>	47.4	43.5	49.2	60.0	48.3	27.2	45.7	45.2	18.0	11.9
Walking	27.7	27.8	27.7	32.4	27.3	18.5	27.7	29.4	13.4	8.9
Getting outside	26.9	32.6	24.1	26.2	23.9	18.3	26.5	25.7	18.4	*6.7
85 years and over										
Number:										
None.....	1.5	3.5	*0.6	*0.4	*0.9	*0.6	—	*0.6	—	—
1-2.....	6.7	11.1	4.6	5.2	*1.8	3.9	4.3	4.8	*3.9	*0.6
3-4.....	12.0	12.4	11.8	14.6	9.1	7.1	8.8	8.1	*2.4	*2.1
5-7.....	20.3	16.6	22.0	28.3	18.8	11.4	16.7	19.1	*6.7	*2.9
Type:										
Eating.....	16.8	10.2	20.0	26.8	20.3	10.7	13.1	15.9	*5.9	*2.1
Toileting.....	22.5	18.9	24.3	31.1	20.0	13.5	18.1	19.5	*6.3	*4.0
Dressing.....	32.7	29.0	34.4	43.7	27.8	19.5	25.9	28.1	11.6	*4.7
Bathing.....	37.8	37.8	37.8	47.4	29.3	21.8	29.1	31.2	13.4	*5.4
Transferring <sup>2</sup> .....	27.6	23.7	29.5	37.5	24.0	15.0	22.4	23.7	*8.4	*4.5
Walking.....	15.9	15.6	16.0	19.5	12.0	9.3	14.0	15.1	*4.4	*2.3
Getting outside.....	14.3	18.2	12.5	14.6	9.2	7.5	11.5	11.3	*6.2	*1.3

<sup>1</sup>Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

<sup>2</sup>Transferring means getting in and out of a bed or chair.

NOTE: Column percents may not add to 100 because of rounding. ADL is activity of daily living.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.

**Table 7. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and number and type of instrumental activities of daily living for which help of another person is required: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Age and IADL's for which help of another person is required</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
						Number				
All ages . . . . .	1,489,600	485,300	1,004,300	685,400	78,700	194,300	214,600	214,700	58,900	82,700
						Percent				
Number:										
None . . . . .	15.3	25.7	10.2	5.5	*3.2	18.6	13.3	12.5	25.8	8.0
1-2 . . . . .	14.9	19.9	12.5	9.3	*5.6	13.9	15.4	15.3	22.9	19.0
3-4 . . . . .	69.9	54.5	77.3	85.2	91.2	67.5	71.3	72.2	51.2	73.0
Type:										
Care of personal possessions . . . . .	73.4	59.3	80.3	87.8	93.1	68.7	74.9	76.4	55.7	79.4
Handling money . . . . .	75.3	61.3	82.1	87.7	94.0	75.6	76.3	77.9	62.8	86.8
Securing personal items <sup>2</sup> . . . . .	76.2	63.9	82.2	89.0	93.7	71.9	77.2	78.3	61.7	78.3
Using the telephone . . .	62.7	49.6	69.0	77.1	84.2	58.2	65.3	65.7	44.4	59.9
65 years and over										
Number:										
None . . . . .	12.3	23.0	7.1	4.6	*3.0	9.4	8.7	8.6	13.9	*2.9
1-2 . . . . .	12.6	18.7	9.7	8.5	*5.5	8.1	12.5	10.8	17.6	8.6
3-4 . . . . .	63.4	50.4	69.6	82.1	85.1	54.9	64.7	65.1	38.4	35.4
Type:										
Care of personal possessions . . . . .	66.4	54.6	72.1	84.3	86.7	55.5	67.3	67.7	43.7	38.3
Handling money . . . . .	67.6	57.1	72.7	84.1	88.3	58.1	68.5	68.0	46.2	39.0
Securing personal items <sup>2</sup> . . . . .	69.0	59.5	73.6	85.4	87.4	57.6	68.9	69.4	48.8	37.3
Using the telephone . . .	57.1	45.8	62.6	74.1	78.9	48.6	59.1	58.6	36.1	27.8
75 years and over										
Number:										
None . . . . .	9.7	19.4	5.0	3.7	*2.2	4.0	6.3	6.5	*5.7	*1.2
1-2 . . . . .	10.4	16.2	7.6	7.4	*3.7	5.1	9.8	8.5	11.6	*3.9
3-4 . . . . .	54.1	43.8	59.0	72.4	66.5	40.2	51.4	53.3	24.6	16.6
Type:										
Care of personal possessions . . . . .	56.5	47.7	60.7	74.2	67.3	40.3	53.7	55.7	27.1	18.3
Handling money . . . . .	57.6	49.8	61.3	74.1	67.5	42.4	54.8	55.5	30.6	17.6
Securing personal items <sup>2</sup> . . . . .	58.8	51.6	62.3	75.5	69.0	41.9	54.3	56.3	28.2	18.0
Using the telephone . . .	48.8	39.7	53.2	65.0	60.0	36.3	47.7	48.4	23.4	13.2

**Table 7. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and number and type of instrumental activities of daily living for which help of another person is required: United States, 1985—Con.**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Age and IADL's for which help of another person is required</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
85 years and over										
										Percent
Number:										
None .....	4.4	9.4	2.0	1.6	*1.4	*1.2	*2.3	*2.0	*0.7	—
1–2.....	5.5	9.4	3.5	3.7	*0.7	*2.0	3.8	4.0	*3.7	*1.0
3–4.....	30.7	24.8	33.5	43.2	28.4	19.8	24.3	26.6	*8.5	*4.4
Type:										
Care of personal possessions.....	31.7	27.2	33.9	43.6	27.6	19.7	24.7	27.7	*9.6	*5.7
Handling money .....	32.4	28.3	34.4	43.9	28.2	20.4	25.9	28.4	11.5	*4.7
Securing personal items <sup>2</sup> .....	33.3	29.5	35.2	44.9	29.0	20.7	25.4	27.5	*10.1	*4.8
Using the telephone	27.4	22.5	29.7	38.3	25.4	17.4	21.7	23.6	*9.0	*3.9

<sup>1</sup>Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

<sup>2</sup>Securing personal items means shopping for items such as newspapers, toilet articles, and snack foods.

NOTE: Column percents may not add to 100 because of rounding. IADL is instrumental activity of daily living.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.



**Table 9. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and type of therapy received in past month: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Age and therapy received in past month<sup>1</sup></i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>2</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
						Number				
Total <sup>3</sup> . . . . .	1,464,500	476,500	988,000	677,800	77,500	189,100	213,100	212,000	58,200	81,400
All ages						Percent				
Total . . . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No therapy . . . . .	70.0	70.7	69.8	72.7	72.0	64.5	63.6	65.5	47.3	63.1
Mental health evaluation or treatment . . . . .	6.2	3.2	7.6	4.7	*5.2	18.5	11.6	9.8	9.5	12.4
Social services by social worker . . . . .	11.3	9.9	11.9	11.2	10.7	11.6	14.7	12.6	8.8	19.7
Other <sup>4</sup> . . . . .	23.4	26.1	22.1	20.9	22.6	21.2	26.3	24.6	16.2	28.5
65 years and over										
No therapy . . . . .	63.2	65.7	62.1	69.9	68.0	49.7	55.5	58.0	49.3	29.9
Mental health evaluation or treatment . . . . .	4.2	2.6	4.9	4.1	*5.2	9.0	8.5	6.2	*7.4	*4.2
Social services by social worker . . . . .	9.6	9.0	9.9	10.5	10.3	8.1	12.9	9.4	*6.4	8.0
Other <sup>4</sup> . . . . .	19.9	22.8	18.6	19.6	21.2	15.3	22.6	19.9	16.0	11.6
75 years and over										
No therapy . . . . .	53.6	57.1	52.0	61.3	52.3	34.8	44.1	48.0	31.4	14.5
Mental health evaluation or treatment . . . . .	3.1	2.2	3.5	3.3	*4.1	4.7	5.4	3.8	*2.1	*2.7
Social services by social worker . . . . .	8.0	8.1	8.1	9.2	8.0	5.1	9.2	7.3	*2.4	*3.9
Other <sup>4</sup> . . . . .	16.4	19.2	15.0	17.0	14.8	10.0	17.6	15.9	*9.1	*4.1
85 years and over										
No therapy . . . . .	29.7	31.6	28.8	35.8	19.5	16.2	21.1	22.3	10.8	*4.9
Mental health evaluation or treatment . . . . .	1.5	1.3	1.7	1.9	*2.3	*2.2	*2.4	*1.5	*0.4	—
Social services by social worker . . . . .	4.6	5.2	4.3	5.3	*6.2	*2.8	3.7	4.6	*0.5	*0.2
Other <sup>4</sup> . . . . .	8.6	10.2	7.9	9.7	8.4	5.2	7.8	8.5	*1.7	*0.6

<sup>1</sup>Therapy received either inside or outside the nursing home.

<sup>2</sup>Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

<sup>3</sup>Residents with more than one type of therapy are counted only once.

<sup>4</sup>Includes physical, occupational, recreational, and speech or hearing therapy.

NOTE: Column percents may add to more than 100 because a person may have received several types of therapy.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.

**Table 10. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and primary source of payment: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Age and primary source of payment in last month</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
						Number				
All sources.....	1,470,100	476,300	993,800	682,100	79,400	191,100	211,700	213,200	57,300	82,300
All ages						Percent				
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Own income or family support.....	42.2	48.2	39.4	41.2	52.4	32.8	41.3	40.5	32.5	18.1
Medicare.....	1.4	2.5	0.9	1.1	*0.4	*1.1	*0.7	*1.0	*1.1	*0.5
Medicaid:										
Total.....	51.0	44.3	54.3	54.4	43.5	56.1	52.8	52.1	51.0	64.7
Skilled care.....	17.8	14.8	19.2	20.0	16.8	17.1	16.9	20.3	20.5	16.9
Intermediate care.....	33.2	29.4	35.0	34.4	26.4	39.3	35.8	31.8	30.7	48.6
Veteran's Administration contract.....	1.1	*1.0	1.2	1.0	*1.9	*2.5	*1.4	*1.0	*6.1	*0.4
All other <sup>2</sup> .....	4.2	4.0	4.3	2.1	*1.6	7.2	4.1	5.4	*8.2	16.3
65 years and over										
All sources.....	88.4	92.0	86.7	94.9	93.4	72.8	86.6	84.2	72.6	45.8
Own income or family support.....	39.0	45.8	35.7	39.7	51.2	24.3	36.8	36.0	26.0	8.4
Medicare.....	1.4	2.4	0.9	1.1	*0.4	*1.1	*0.7	*1.0	*0.7	*0.5
Medicaid:										
Total.....	44.3	39.7	46.6	51.5	39.4	42.3	45.9	42.8	37.5	30.1
Skilled care.....	15.2	12.8	16.3	18.7	15.5	11.7	14.1	16.4	12.1	7.6
Intermediate care.....	29.1	27.0	30.2	32.7	24.3	30.7	31.8	26.3	25.4	22.4
Veteran's Administration contract.....	0.7	*0.7	0.7	*0.7	*1.6	*1.2	*0.2	*0.5	*3.5	—
All other <sup>2</sup> .....	3.1	3.5	2.9	1.9	*0.7	4.0	*2.7	3.9	*4.7	7.4
75 years and over										
All sources.....	74.5	79.8	72.0	83.2	71.7	50.4	68.3	67.8	42.0	21.3
Own income or family support.....	34.1	40.2	31.3	35.5	42.4	19.2	29.9	29.9	14.9	*4.3
Medicare.....	1.0	1.6	0.8	1.0	*0.4	*0.7	*0.6	*0.8	*0.5	*0.5
Medicaid:										
Total.....	36.9	35.0	37.9	44.9	28.7	27.8	35.6	34.6	24.6	14.5
Skilled care.....	13.1	11.4	13.8	16.8	13.3	8.9	11.2	13.6	*7.7	*3.7
Intermediate care.....	23.9	23.6	24.0	28.0	15.0	18.9	24.5	21.1	16.5	10.7
Veteran's Administration contract.....	*0.4	*0.4	*0.3	*0.4	*0.3	*0.3	*0.2	—	*1.7	—
All other <sup>2</sup> .....	2.1	2.8	1.7	1.5	*0.5	*2.3	*1.7	*2.5	*1.1	*2.6

**Table 10. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and primary source of payment: United States, 1985—Con.**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Age and primary source of payment in last month</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
85 years and over						Percent				
All sources.....	40.6	43.7	39.1	48.4	30.1	23.1	30.4	32.5	13.5	*5.8
Own income or family support .....	18.5	22.0	16.9	20.2	15.1	9.3	13.0	13.9	*6.6	*1.0
Medicare .....	*0.4	*0.7	*0.2	*0.3	—	*0.3	*0.2	*0.3	—	*0.5
Medicaid:										
Total .....	20.6	19.1	21.3	26.9	14.9	13.0	16.3	17.2	*6.9	*3.7
Skilled care .....	7.5	6.0	8.2	10.3	*6.7	5.0	6.0	7.2	*1.7	*2.0
Intermediate care.....	13.1	13.1	13.1	16.6	8.2	7.9	10.3	10.0	*5.0	*1.6
Veteran's Administration contract .....	*0.1	*0.2	*0.1	*0.2	—	*0.1	—	—	—	—
All other <sup>2</sup> .....	1.0	1.7	0.7	*0.9	*0.3	*0.6	*1.1	*1.2	—	*0.1

<sup>1</sup>Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

<sup>2</sup>Includes other Government assistance or welfare, religious or volunteer agencies, life care, and other sources.

NOTE: Column percents may not add to 100 because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.



**Table 11. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and living arrangement prior to admission: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Age and living arrangement prior to admission</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
Number										
All ages . . . . .	1,441,600	470,300	971,300	664,600	78,253	185,500	206,600	209,900	55,800	79,600
Percent										
All arrangements . . . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Private or semiprivate residence <sup>2</sup> . . . . .	39.3	42.8	37.5	40.5	46.3	26.8	36.4	35.3	29.4	28.5
Alone . . . . .	13.9	18.1	11.9	12.5	10.0	9.9	13.5	13.0	12.2	*4.0
With others . . . . .	22.4	21.1	23.0	25.0	34.2	14.8	20.8	20.0	15.6	22.7
Another health facility <sup>2</sup> . . . . .	60.7	57.2	62.5	59.5	53.7	73.2	63.6	64.7	70.6	71.5
Nursing home . . . . .	5.3	5.4	5.3	5.4	*4.9	4.2	5.8	5.9	*7.5	*4.4
Mental hospital, unit, or center . . . . .	5.1	*0.2	7.4	3.5	*2.7	22.5	6.7	7.3	*6.4	25.4
65 years and over										
Private or semiprivate residence <sup>2</sup> . . . . .	36.3	40.6	34.2	39.5	44.8	22.3	32.7	31.2	23.4	12.5
Alone . . . . .	13.4	18.0	11.2	12.2	9.9	8.3	12.4	11.6	*10.4	*2.7
With others . . . . .	20.2	19.3	20.7	24.4	33.9	12.1	18.5	17.5	11.5	9.2
Another health facility <sup>2</sup> . . . . .	52.2	51.8	52.4	55.7	48.1	50.7	52.8	53.4	47.2	35.0
Nursing home . . . . .	4.8	4.8	4.8	5.2	*4.9	3.6	5.3	5.5	*6.6	*2.8
Mental hospital, unit, or center . . . . .	2.7	*0.2	3.9	2.6	*2.3	11.4	3.9	3.2	*2.9	9.4
75 years and over										
Private or semiprivate residence <sup>2</sup> . . . . .	32.1	35.7	30.4	36.0	36.7	17.5	28.9	27.6	16.6	*5.2
Alone . . . . .	12.2	16.1	10.3	11.5	9.2	7.1	11.5	10.1	*8.2	*1.1
With others . . . . .	17.5	16.5	18.0	21.8	26.7	9.1	15.7	15.6	*7.7	*4.1
Another health facility <sup>2</sup> . . . . .	42.3	43.9	41.5	47.4	35.1	32.9	38.6	41.0	25.1	16.9
Nursing home . . . . .	4.0	4.0	4.0	4.6	—	*2.8	4.4	4.5	*4.1	*0.7
Mental hospital, unit, or center . . . . .	1.6	*0.1	2.3	2.0	*1.8	5.3	*1.3	*1.3	*1.1	*5.5

**Table 11. Percent of nursing home residents, by presence of selected cognitive disabilities, age, and living arrangement prior to admission: United States, 1985—Con.**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Age and living arrangement prior to admission</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
85 years and over										
Private or semiprivate residence <sup>2</sup> .....	18.1	20.4	17.0	20.8	16.0	9.7	13.5	13.9	*7.5	*1.0
Alone .....	7.2	9.2	6.3	7.3	*4.9	3.8	6.3	4.6	*4.1	—
With others .....	9.4	9.2	9.5	11.7	10.9	4.7	6.2	7.6	*3.1	*0.8
Another health facility <sup>2</sup> ...	22.5	23.1	22.2	27.8	14.5	13.8	16.9	18.7	*5.8	*4.5
Nursing home .....	1.8	1.9	1.8	2.3	*0.6	*1.0	*1.6	*1.9	*0.4	—
Mental hospital, unit, or center.....	0.5	*0.1	0.7	*0.8	*1.0	*1.7	*0.4	*0.2	*0.7	*0.4

<sup>1</sup>Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

<sup>2</sup>Does not add to total shown because of missing information and other categories.

NOTE: Column percents may not add to 100 because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.

**Table 12. Percent of nursing home discharges, by presence of selected cognitive disabilities, age, duration of stay, and discharge status: United States, 1984-85**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the discharges sampled]

<i>Age, duration of stay, and discharge status</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
						Number				
All ages . . . . .	1,221,300	887,900	333,400	172,200	47,600	75,700	29,300	13,400	26,900	12,200
All ages						Percent				
Duration of stay:										
Total . . . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 6 months. . . .	56.3	59.3	48.3	43.5	46.2	48.1	58.6	61.4	66.5	45.0
6 months to less than 1 year . . . . .	17.7	17.5	18.2	19.1	18.6	18.8	16.2	*12.9	18.5	*14.1
1 year to less than 3 years . . . . .	15.1	13.4	19.7	21.0	28.3	20.3	17.0	*11.0	*6.2	*19.7
3 years or more . . . . .	10.9	9.8	13.7	16.7	*6.1	12.5	*7.7	*16.8	*6.9	*27.2
Discharge status:										
Alive . . . . .	71.7	69.8	76.7	70.7	66.2	82.1	89.6	91.3	94.5	86.6
Dead . . . . .	28.1	29.9	23.3	29.7	33.1	17.7	*9.4	*10.2	*3.8	*13.4
65 years and over										
Duration of stay:										
Total . . . . .	88.3	89.9	84.1	96.5	92.9	72.7	84.6	80.3	48.2	44.2
Less than 6 months. . . .	49.3	53.1	39.0	41.6	43.0	33.4	49.3	44.8	29.1	*14.8
6 months to less than 1 year . . . . .	15.5	15.5	15.5	18.3	18.3	14.0	*12.9	*9.9	*8.5	*3.1
1 year to less than 3 years . . . . .	13.5	12.0	17.3	20.0	25.9	14.8	*14.6	*7.4	*5.5	*9.4
3 years or more . . . . .	10.0	9.2	12.2	16.4	*5.1	10.2	*7.9	*14.6	*2.7	*16.0
Discharge status:										
Alive . . . . .	61.5	61.5	61.5	67.2	61.5	54.6	76.9	67.1	42.0	36.9
Dead . . . . .	26.7	28.3	22.4	28.9	30.8	17.2	*8.9	*9.7	*3.6	*10.7
75 years and over										
Duration of stay:										
Total . . . . .	74.3	76.1	69.4	86.4	74.3	53.9	68.1	—	20.3	*22.3
Less than 6 months. . . .	40.2	43.4	31.8	36.8	37.1	25.3	41.9	40.2	*12.8	*4.0
6 months to less than 1 year . . . . .	13.3	13.5	12.6	16.3	14.7	9.4	*9.4	*4.8	*2.4	—
1 year to less than 3 years . . . . .	11.5	10.5	14.3	17.7	19.2	12.1	*10.1	*6.3	*4.2	*4.6
3 years or more . . . . .	9.2	8.7	10.6	15.6	*3.8	7.3	*6.5	*10.9	*1.7	*12.0

**Table 12. Percent of nursing home discharges, by presence of selected cognitive disabilities, age, duration of stay, and discharge status: United States, 1984–85—Con.**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the discharges sampled]

<i>Age, duration of stay, and discharge status</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
75 years and over—Con.										
Percent										
Discharge status:										
Alive . . . . .	50.5	50.9	49.6	59.1	47.9	40.7	61.1	50.5	18.4	*10.1
Dead . . . . .	23.6	25.1	19.7	27.2	26.7	13.0	*6.9	*10.7	*1.1	*7.1
85 years and over										
Duration of stay:										
Total . . . . .	38.1	38.7	36.6	51.4	25.4	19.7	23.8	38.1	*5.2	*7.6
Less than 6 months . . . .	18.0	19.1	15.2	20.2	*9.3	7.3	*15.0	*29.5	*2.5	—
6 months to less than 1 year . . . . .	6.6	6.9	6.0	8.6	*3.9	*3.7	*1.1	*0.6	*1.2	—
1 year to less than 3 years . . . . .	6.8	6.3	8.1	10.4	10.5	6.3	*5.1	*1.2	*1.9	*1.4
3 years or more . . . . .	6.6	6.4	7.4	12.1	*1.5	*2.7	*3.3	*7.3	*0.6	*6.0
Discharge status:										
Alive . . . . .	23.5	23.4	23.8	32.4	12.1	13.3	22.6	34.2	*6.4	*4.7
Dead . . . . .	14.5	15.2	12.8	19.0	13.8	6.6	*1.8	*6.6	—	*2.9

<sup>1</sup>Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

NOTE: Column percents may not add to 100 because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.

**Table 13. Percent of frail persons 65 years of age and over using selected community health and social services, by race, sex, age, and help with activities of daily living: United States, 1984**

[Data are based on personal interviews of the functionally impaired Medicare eligibles living in the community]

Race, sex, age, and help with ADL's	Number of persons in thousands	Health and social services					
		Hospitalization last year	Physician office care	Auxiliary health services <sup>1</sup>	Mental health services	Rehabilitation therapies <sup>2</sup>	Senior centers
<b>Race</b>							
White . . . . .	4,872	34.7	38.8	19.1	0.9	3.5	6.5
All other . . . . .	782	27.4	41.7	12.9	*0.8	3.2	6.5
<b>Sex</b>							
Male . . . . .	1,951	35.9	37.7	15.0	0.9	3.3	5.0
Female . . . . .	3,703	32.5	40.0	19.9	0.9	3.5	7.3
<b>Age</b>							
65-74 years . . . . .	2,083	34.6	41.5	19.0	1.8	4.3	5.9
75-84 years . . . . .	2,459	34.8	39.5	18.2	*0.5	3.3	7.7
65 years and over . . . . .	5,654	33.7	39.2	18.2	0.9	3.5	6.5
75 years and over . . . . .	3,571	33.2	37.9	17.7	*0.4	3.0	6.9
85 years and over . . . . .	1,133	29.7	34.3	16.8	*0.0	2.2	5.1
<b>Help with ADL's<sup>3</sup></b>							
No help received . . . . .	4,023	29.3	38.8	19.0	0.8	2.3	7.8
Help with 1 . . . . .	765	38.4	42.0	17.9	*1.3	3.7	4.3
Help with 2 . . . . .	318	41.8	44.7	17.9	*1.3	4.4	3.5
Help with 3-5 . . . . .	548	55.1	35.4	12.6	*1.6	11.1	*1.8

<sup>1</sup>Includes dentists, podiatrists, optometrists, and chiropractors.

<sup>2</sup>Includes physical therapists, occupational therapists, speech therapists, and hearing therapists.

<sup>3</sup>Receives help of another person with the following activities of daily living (ADL's): bathing, dressing, transferring, toileting, eating.

SOURCE: National Long Term Care Survey, 1984.

**Table 14. Percent of frail persons 65 years of age and over using only informal helpers in 1982 by use in 1984, according to race, sex, age, and help with activities of daily living: United States**

[Data are based on personal interviews of the functionally impaired Medicare eligibles living in the community]

Race, sex, age, help received with ADL's, and number of informal helpers in 1982	Number of persons in thousands	Number of informal helpers or status in 1984					
		0	1	2	3	Institutionalized	Deceased
Percent							
Total:							
1 helper . . . . .	1,717	8.2	45.0	14.4	8.6	5.8	18.1
2 helpers . . . . .	867	3.9	18.5	29.1	17.0	9.0	22.4
3 or more helpers . . . . .	646	3.3	15.2	19.5	28.9	7.9	25.1
Race							
White:							
1 helper . . . . .	1,508	7.6	46.4	13.6	8.2	6.2	18.1
2 helpers . . . . .	727	3.8	18.8	29.9	16.3	9.9	21.4
3 or more helpers . . . . .	534	3.6	14.8	18.8	28.9	8.7	25.3
All other:							
1 helper . . . . .	208	12.7	34.5	20.4	11.5	*3.2	17.7
2 helpers . . . . .	140	*4.6	17.5	25.2	20.7	*4.2	27.9
3 or more helpers . . . . .	112	*2.1	17.4	22.8	29.1	*4.3	24.4
Sex							
Male:							
1 helper . . . . .	853	7.6	48.8	11.7	7.1	3.9	20.9
2 helpers . . . . .	286	*2.2	17.0	26.7	14.8	8.2	31.2
3 or more helpers . . . . .	174	*1.9	17.8	11.6	23.9	*4.5	40.2
Female:							
1 helper . . . . .	863	8.9	41.2	17.1	10.0	7.6	15.2
2 helpers . . . . .	582	4.8	19.3	30.3	18.1	9.4	18.1
3 or more helpers . . . . .	472	3.8	14.3	22.4	30.8	9.2	19.5
Age							
65-74 years:							
1 helper . . . . .	880	11.4	50.5	13.6	8.1	3.3	13.2
2 helpers . . . . .	310	4.5	23.9	29.0	20.2	5.6	16.9
3 or more helpers . . . . .	236	5.3	20.2	19.8	28.6	5.6	20.5
75-84 years:							
1 helper . . . . .	615	6.0	41.5	15.4	8.4	7.3	21.4
2 helpers . . . . .	357	4.5	16.9	29.1	13.3	10.7	25.5
3 or more helpers . . . . .	266	*2.5	16.1	19.6	31.6	7.6	22.5
65 years and over:							
1 helper . . . . .	1,717	8.2	45.0	14.4	8.6	5.8	18.1
2 helpers . . . . .	867	3.9	18.5	29.1	17.0	9.0	22.4
3 or more helpers . . . . .	646	3.3	15.2	19.5	28.9	7.9	25.1
75 years and over:							
1 helper . . . . .	837	4.9	39.1	15.2	9.1	8.5	23.2
2 helpers . . . . .	557	3.6	15.6	29.2	15.2	10.9	25.5
3 or more helpers . . . . .	410	2.2	12.3	19.3	29.1	9.3	27.8
85 years and over:							
1 helper . . . . .	222	*1.9	32.6	14.9	11.0	11.7	28.0
2 helpers . . . . .	200	*2.0	13.2	29.4	18.6	11.2	25.6
3 or more helpers . . . . .	145	*1.5	5.4	18.7	24.5	12.4	37.5

**Table 14. Percent of frail persons 65 years of age and over using only informal helpers in 1982 by use in 1984, according to race, sex, age, and help with activities of daily living: United States—Con.**  
 [Data are based on personal interviews of the functionally impaired Medicare eligibles living in the community]

Race, sex, age, help received with ADL's, and number of informal helpers in 1982	Number of persons in thousands	Number of informal helpers or status in 1984					
		0	1	2	3	Institutionalized	Deceased
		Percent					
Help with ADL's <sup>1</sup>							
No help received:							
1 helper .....	1,211	10.3	47.0	15.4	7.9	5.2	14.3
2 helpers .....	547	5.1	20.1	31.6	17.6	7.7	17.9
3 or more helpers .....	370	4.2	17.7	22.6	29.9	5.7	19.8
Help with 1:							
1 helper .....	245	4.9	45.0	12.4	9.2	7.3	21.3
2 helpers .....	150	*1.7	14.9	28.4	17.9	12.5	24.7
3 or more helpers .....	121	*3.2	11.5	18.7	34.1	*8.0	24.6
Help with 2:							
1 helper .....	119	*1.6	36.0	13.6	8.0	*8.5	32.3
2 helpers .....	55	*6.5	18.3	17.2	13.7	*11.8	32.5
3 or more helpers .....	51	—	*14.3	15.4	26.9	*15.3	28.2
Help with 3–5:							
1 helper .....	142	*2.3	34.8	10.3	13.7	*6.3	32.5
2 helpers .....	114	—	16.0	23.9	14.5	9.2	36.4
3 or more helpers .....	104	*1.7	11.2	11.4	20.4	12.2	43.1

<sup>1</sup>Receives help of another person with the following activities of daily living (ADL's): bathing, dressing, transferring, toileting, eating.

SOURCE: National Long Term Care Survey, 1984.

**Table 15. Percent of frail persons 65 years of age and over using both formal and informal helpers in 1982 by use in 1984, according to race, sex, age, and help with activities of daily living: United States**

[Data are based on personal interviews of the functionally impaired Medicare eligibles living in the community]

<i>Race, sex, age, help with ADL's, and number of formal and informal helpers in 1982</i>	<i>Number of persons in thousands</i>	<i>Number of formal and informal helpers or status in 1984</i>				<i>Institutionalized</i>	<i>Deceased</i>
		<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>		
<b>Total:</b>		Percent					
2 helpers .....	347	3.4	12.8	18.2	25.2	12.2	28.2
3 or more helpers .....	527	*0.9	6.3	11.9	36.3	13.4	31.2
<b>Race</b>							
<b>White:</b>							
2 helpers .....	308	3.7	11.7	17.6	24.8	13.0	29.3
3 or more helpers .....	453	*0.5	5.5	11.4	37.6	14.8	30.2
<b>All other:</b>							
2 helpers .....	39	*1.6	21.3	22.8	28.7	*5.8	19.9
3 or more helpers .....	75	*3.3	*10.6	14.7	28.5	*5.4	37.6
<b>Sex</b>							
<b>Male:</b>							
2 helpers .....	107	*2.8	9.9	14.9	24.5	9.8	38.2
3 or more helpers .....	138	—	8.3	9.9	24.1	12.5	45.3
<b>Female:</b>							
2 helpers .....	240	3.7	14.0	19.7	25.5	13.3	23.8
3 or more helpers .....	389	1.2	5.5	12.6	40.7	13.8	26.2
<b>Age</b>							
<b>65-74 years:</b>							
2 helpers .....	105	*5.7	17.7	18.6	24.7	*5.1	28.3
3 or more helpers .....	167	*1.5	7.1	12.8	39.1	10.4	29.2
<b>75-84 years:</b>							
2 helpers .....	149	*3.4	10.1	21.4	26.6	15.6	22.8
3 or more helpers .....	223	*1.1	7.7	13.5	34.0	12.8	31.0
<b>65 years and over:</b>							
2 helpers .....	347	3.4	12.8	18.2	25.2	12.2	28.2
3 or more helpers .....	527	*0.9	6.3	11.9	36.3	13.4	31.2
<b>75 years and over:</b>							
2 helpers .....	243	*2.5	10.6	18.0	25.5	15.3	28.2
3 or more helpers .....	360	*0.7	5.9	11.4	35.0	14.8	32.2
<b>85 years and over:</b>							
2 helpers .....	93	*0.9	11.4	12.5	23.6	14.8	36.7
3 or more helpers .....	137	—	*2.9	8.0	36.8	18.2	34.1



**Table 15. Percent of frail persons 65 years of age and over using both formal and informal helpers in 1982 by use in 1984, according to race, sex, age, and help with activities of daily living: United States—Con.**

[Data are based on personal interviews of the functionally impaired Medicare eligibles living in the community]

<i>Race, sex, age, help with ADL's, and number of formal and informal helpers in 1982</i>	<i>Number of persons in thousands</i>	<i>Number of formal and informal helpers or status in 1984</i>				<i>Institutionalized</i>	<i>Deceased</i>
		<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>		
Help with ADL's <sup>1</sup>		Percent					
No help received:							
2 helpers .....	176	6.4	16.3	22.6	23.2	11.1	20.4
3 or more helpers .....	209	*1.9	9.4	15.6	41.6	11.1	20.4
Help with 1:							
2 helpers .....	76	*0.8	15.7	13.4	25.5	16.2	28.4
3 or more helpers .....	129	*0.6	7.0	12.0	34.8	16.0	29.5
Help with 2:							
2 helpers .....	25	—	*8.5	*17.8	33.2	*11.8	28.6
3 or more helpers .....	49	—	*5.4	*10.0	34.6	*10.0	40.1
Help with 3–5:							
2 helpers .....	70	—	*2.0	12.5	27.2	*10.8	47.6
3 or more helpers .....	140	—	*1.2	6.7	30.6	15.8	45.8

<sup>1</sup>Receives help of another person with the following activities of daily living (ADL's): bathing, dressing, transferring, toileting, eating.

SOURCE: National Long Term Care Survey, 1984.

## Chapter 7

# Patterns of drug prescribing

by Todd P. Semla, Pharm.D., and Arthur Schwartz, Ph.D., University of Illinois at Chicago; Hugo Koch, M.H.A., and Cheryl Nelson, M.S.P.H., National Center for Health Statistics

### Introduction

The elderly utilize a disproportionate share of health care in general, and drugs in particular. Recent statistics on drug utilization by the elderly indicate that although this group accounts for 12 percent of the population, they purchase 31 percent of all prescription drugs sold in the United States each year (1). There is good reason for the increased use of drugs by the elderly—the incidence and prevalence of chronic illnesses increase with age. Medications are the most frequently utilized and perhaps the most important therapeutic intervention that health care has to offer this age group. However, the inappropriate prescribing of medications or their misuse can increase the risk of iatrogenic illness and toxicity. These problems are of special concern when dealing with the elderly because of their increased drug use as well as the physiologic consequences of aging and disease on the distribution, metabolism, and elimination of drugs from the body or altered sensitivity to the effects of drugs. As such, drug usage in the elderly is an area of particular interest for practitioners and policymakers. The vast majority of the elderly are noninstitutionalized and for the most part are self-sufficient in the management of their drug therapy. A description of drug prescribing patterns in the population aged 55 and over, based on data from the 1985 National Ambulatory Medical Care Survey (NAMCS), is presented. This survey was chosen because of its recent completion and focus on the ambulatory population.

When the estimated sample size permitted, the effects of age, race, and sex on specific drugs, therapeutic categories, number of drugs prescribed for a principal diagnosis, number of office visits, and physician specialty were tested for statistical significance. All statistical tests were based upon tables of the estimated relative standard errors provided by the National Center for Health Statistics for the 1985 NAMCS; specific estimates greater than or equal to 30 percent relative standard error were considered unreliable, and statistical testing was not done. All hypothesis testing was subjected to two-tailed testing.

### Sources of data

Data presented for tables 1–6 are from the NAMCS conducted from March 1985 through February 1986. The survey has as its sampling unit the physician-patient encounter for office-based, patient care physicians in the conterminous United States. Physician selection was accomplished through lists obtained from the American Medical Association and the American Osteopathic Association. Physicians specializing in radiology, anesthesiology, and pathology were excluded from the sample as were encounters such as telephone contacts. The survey utilizes a multistage probability design weighted to allow for estimates of the U.S. population. A complete description of the 1985 NAMCS and its methodology is available from the National Center for Health Statistics (2).

The 1985 NAMCS collected data on patients, their physicians, their office visits, and treatment characteristics. Tables 1–6 are based on selected data from the records of office visits by those patients aged 55 and over at the time of the survey. Patients are divided into the following age cohorts: 55–64, 65–74, and greater than or equal to 55, 65, or 75 years of age. There were an estimated 205 million office visits and 297 million drug mentions for the noninstitutionalized population aged 55 and over based on the 1985 NAMCS (table 1).

Data presented for tables 7 and 8 are from the 1986 National Health Interview Survey Supplement on Vitamins and Minerals. This supplement, conducted in collaboration with the U.S. Food and Drug Administration, collected information to produce measures of supplement use and the composition and quantities of specific vitamins and minerals consumed.

## Results and comments

It must be remembered that the data on drugs refer to drugs that were either started or to be continued as a part of patient therapy as a result of a recorded office visit, and do not imply actual use by the patient. Of the estimated 205 million office visits by the 55-and-over population in the 1985 NAMCS, the most common treatment modality was drug therapy alone, accounting for 50 percent of all treatments. Only 22 percent of office visits were associated with no form of treatment. The remaining office visits were divided between nondrug-only treatment and a combination of drug and nondrug treatment, representing 11 and 17 percent of all treatment modalities, respectively (table A).

Of particular interest are those office visits in which the treatment included drug therapy (alone or in combination with nondrug therapy). The breakdown of office visits and drug mentions by select patient characteristic are shown in table 1. For persons 55 years of age and over, at

**Table A. Distribution of therapies for persons 55 years of age and over**

<i>Therapy</i>	<i>Percent</i>
Drug only . . . . .	49.6
Neither . . . . .	21.8
Nondrug only . . . . .	11.2
Both drug and nondrug . . . . .	17.4

least 65 percent of all office visits were associated with at least one drug mention. The percentage of office visits with one or more drug mentions did not increase with age. Among those office visits with two or more drug mentions, there was a significant increase from 35 percent for the group aged 55–64 to 43 percent for the 75 years and over age group. For both males and females, approximately two-thirds of all office visits were associated with one or more drug mentions. An age effect was not found within or between the sexes with respect to office visits involving one or more drug mentions. For women, the percentage of office visits with two or more drug mentions increased from 36 percent for the group aged 55–64 to 44 percent for the 75-and-over age group; no age effect was found for men. Sixty-six percent of all office visits by white people were associated with one or more drug mentions; the corresponding percent was 76 for black people. Seventy-two percent of all office visits by Hispanic people were associated with one or more drug mentions, compared with 67 percent for those who were not Hispanic. These differences by racial and ethnic groups were not statistically significant.

Selected characteristics of the drugs recorded in the three age cohorts are shown in table 2. The percentage reported as new medications tended to decrease with age; however, only the difference between the 55–64 and 75-and-over age groups was significant. For all age cohorts, 67–75 percent of all medications reported were a continuation of existing therapy. This finding is in concordance with the prevalence of chronic illnesses such as hypertension,

heart disease, and diabetes mellitus, rather than acute conditions, requiring a new prescription for each occurrence (3). Nearly 70 percent of all medications reported were for the patient's principal diagnosis. The percentage of medications mentioned for the principal diagnosis would appear to decrease with age, however, a significant difference was not found between any of the age groups. Approximately 85 percent of all drugs reported were prescription drugs, and they were most often recorded by the physician by their trade or proprietary name. This may be a result of the design of the survey, focusing on physician office visits and the accompanying complaint, concentrating on prescription drugs, and truncating the number of drugs recorded at five. Therefore, those drugs perceived to be more important or potent may have been selected first. In addition, many older patients do not always inform their physicians of all the medications they are taking, particularly nonprescription drugs, nor do they always seek the advice of their physicians or pharmacists when self-medicating (4). Most drug products reported contained only a single active ingredient as opposed to combination products that contained two or more active ingredients. Less than 10 percent of all drug products reported contained a controlled substance. Examples included opiates, barbiturates, and other potentially addictive compounds.

The top 50 drugs for each age cohort, by generic ingredient, are shown in table 3. The total of 297 million drug mentions resulted in 371 million drug ingredients (because a drug mention may contain multiple generic ingredients). Hydrochlorothiazide, alone or in combination with other drugs, was the most frequently reported generic ingredient for patients 55–64 and 65–74 years old. Digoxin replaced hydrochlorothiazide in the 75-and-over cohort, with hydrochlorothiazide ranking second. Digoxin was the only drug in the top 10 to show a consistent

statistically significant increase in frequency of mention with age. The number of mentions of furosemide, a diuretic, was significantly greater in the group aged 75 years and over, compared with the two younger age cohorts. Potassium supplement mentions appeared to increase with age. However, this increase was only statistically significant between the groups aged 55–64 years old and 75 and over.

The cardiac glycosides, specifically digoxin, are one of the most commonly used drug categories by the elderly. Cardiac glycosides received 6.6 million mentions associated with a primary diagnosis for all persons 55 years of age and over (table B). Overall, nearly 80 percent of cardiac glycosides were for diseases of the circulatory system (table B). Specific diagnostic categories most commonly associated with the cardiac glycosides were congestive heart failure, cardiac dysrhythmias, and ischemic heart disease.

The finding that digoxin and hydrochlorothiazide were the two most frequently reported drugs is consistent with population studies (3,5). The number of mentions for furosemide, a more potent diuretic than hydrochlorothiazide, increased in rank from sixth in the youngest age group to third in the oldest. The increase in mentions for these drugs is most likely a result of the increased prevalence of congestive heart failure (CHF) in the elderly. Because a common side effect of diuretic therapy is potassium loss, the triad of hydrochlorothiazide, digoxin, and furosemide is responsible for the volume of potassium-replacement products. Furthermore, hypokalemia in the face of digoxin therapy increases the risk for digoxin-induced arrhythmias. As a result, potassium-replacement products are often prescribed in conjunction with diuretic therapy.

The mentions of the remaining top 10 drugs did not significantly increase or decrease with age. Only those drugs in the overall top 10 were tested. Eight out of the top 10 and 19 of the top

**Table B. Number and percent distribution of mentions of cardiac glycosides by selected principal diagnoses and ICD-9-CM codes for persons 55 years of age and over, according to patient age: United States, 1985**

<i>Age, principal diagnosis, and International Classification of Diseases Codes</i> <sup>1</sup>	<i>Number of mentions</i> <sup>2</sup>	<i>Percent distribution</i>
55 years and over		
All principal diagnoses . . . . .	6,586,855	100.0
Diseases of the circulatory system . . . . .390-459	5,207,808	79.1
Other forms of ischemic heart disease . . . . .410-414	1,907,384	29.0
Cardiac dysrhythmias . . . . .427	720,177	10.9
Heart failure . . . . .428	1,025,155	15.6
65 years and over		
All principal diagnoses . . . . .	5,379,041	100.0
Diseases of the circulatory system . . . . .390-459	4,191,214	77.9
Other forms of ischemic heart disease . . . . .410-414	1,431,141	26.6
Cardiac dysrhythmias . . . . .427	608,491	11.3
Heart failure . . . . .428	935,283	17.4
75 years and over		
All principal diagnoses . . . . .	3,185,482	100.0
Diseases of the circulatory system . . . . .390-459	2,561,280	80.4
Other forms of ischemic heart disease . . . . .410-414	814,714	25.6
Cardiac dysrhythmias . . . . .427	*372,819	*11.7
Heart failure . . . . .428	654,095	20.5

<sup>1</sup>Coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

<sup>2</sup>Only mentions of drugs specifically intended for the principal (first-listed) diagnosis are included. Mentions of drugs associated with other-listed diagnoses or utilized for any other reason are not included.

NOTES: Cardiac glycosides include digoxin, digitoxin, and gitalin. Both mentions as the generic form of single-ingredient drugs and mentions as an ingredient of combination drugs are included.

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

50 drugs reported are considered to be cardiovascular agents. This reflects the frequency of cardiovascular disease in the elderly (table 4). The two other drugs in the top 10 were aspirin and acetaminophen, both nonprescription analgesics and antipyretics. It is conceivable that much of their use was because of the frequency of arthritic complaints by the elderly (table 4).

The 1985 NAMCS allowed for the drug mentioned to be linked to a principal diagnosis. Table 4 shows the distribution of office visits by principal diagnosis and drug mentions for the three age cohorts. Diseases of the circulatory system ranked as the number one principal diagnosis and accounted for approximately 30 percent of drug mentions for all age groups. During these office visits, at least one drug was prescribed 82-85 percent of the time and two or

more drugs 55-64 percent of the time. Within diseases of the circulatory system, essential hypertension was the single most frequently reported principal diagnosis, resulting in 8-9 percent of office visits and 12-14 percent of all drug mentions; a drug was prescribed for a circulatory system disease 86-90 percent of the time. The only single diagnosis with a higher number of mentions was acute upper respiratory infections (86-94 percent).

As noted previously, the percentage of office visits with two or more drug mentions for the principal diagnosis rose from 35 percent for the 55-64 age group to 43 percent for persons 75 years and over. The principal diagnostic categories for which 50 percent of office visits accounted for two or more drug mentions were consistent across the three age groups with two

exceptions. Only for individuals 75 years and over did the percentage of office visits with two or more drug mentions for mental disorders and the arthropathies exceed 50 percent. And only for patients 75 and over with two or more drug mentions for a principal diagnosis involving musculoskeletal disorders was there a significant difference compared with patients 55–64 years old. This finding suggests the increased prevalence and difficulty of treating these conditions in advanced age.

The drug mentions were further categorized based on their respective primary therapeutic categories using the American Hospital Formulary Service Classification System (table 5). The largest percentage of drug mentions, overall and within each age cohort, was the cardiovascular drugs. Although the percentage of all cardiovascular drug mentions appeared to increase with age, no significant difference was found between any of the age cohorts. The second most frequently reported therapeutic category was for electrolyte, caloric, and water balance drugs. This category is composed primarily of diuretics and potassium supplements. The number of drug mentions for this therapeutic category increased with age, with a statistically significant difference between the youngest and oldest age cohorts. It is unknown whether this increase is entirely the result of an increase in the use of furosemide and potassium replacements or a combined contribution of other drugs in this category. Other frequently reported therapeutic categories included analgesics and antipyretics, and hormones and synthetic substances (including all dosage forms for glucocorticosteroids).

The relationships between physician specialty, office visits, and drug mentions are shown in table 6. For all age groups, 56 percent or more of office visits were to physicians with specialties in general or family practice, internal medicine, and ophthalmology. Ophthalmology was the only specialty to increase across all the

three age cohorts from 8 percent in the youngest cohort to 17 percent in oldest. The percentage of office visits to psychiatrists was significantly higher in individuals 55–64 than individuals 65–74 years of age. The percentage of drug mentions by physician specialty for all age groups showed that general and family practitioners ranked first and internists second in all age cohorts, accounting for 34 percent or more and 24 percent or more of all drug mentions, respectively. Cardiologists ranked third highest in the number of drug mentions for the two youngest age cohorts. Ophthalmologists ranked third in the number of drug mentions for patients age 75 and over. The percentage of ophthalmology office visits with one or more drug mentions was significantly greater in the 75-and-over group compared with the group aged 55–64.

Table C displays the number and percent of drug mentions of three classes of psychoactive drugs by selected principal diagnoses. These data are shown because the indiscriminate use of these agents is considered to be a major health risk for older Americans. The use of these agents is associated with an increased risk of falls, confusion, and other iatrogenic illness in the elderly (6). Benzodiazepines are often prescribed as antianxiety agents, as sedatives or hypnotics, and as skeletal muscle relaxants. For persons 55 and over, mental disorders were the most common principal diagnosis associated with benzodiazepines, accounting for 37.5 percent of mentions (table C). The second most common principal diagnosis was diseases of the circulatory system. No benzodiazepine carries a Food and Drug Administration indication for the treatment of hypertension, congestive heart failure, ischemic heart disease, or any disease of the circulatory system.

The antidepressants received 2.8 million mentions associated with a principal diagnosis for all persons 55 years of age and over (table C). Seventy-one percent of their mentions in patients

**Table C. Number and percent distribution of mentions of benzodiazepines, antidepressants, and antipsychotics by selected principal diagnoses and ICD-9-CM codes for persons 55 years of age and over, according to patient age: United States, 1985**

<i>Age, drug class, principal diagnosis, and International Classification of Diseases Codes</i> <sup>1</sup>	<i>Number of mentions</i> <sup>2</sup>	<i>Percent distribution</i>
55 years and over		
Benzodiazepines:		
All principal diagnoses . . . . .	3,950,590	100.0
Mental disorders . . . . .290-319	1,482,277	37.5
Diseases of the circulatory system . . . . .390-459	888,777	22.5
Antidepressants:		
All principal diagnoses . . . . .	2,778,385	100.0
Mental disorders . . . . .290-319	1,967,169	70.8
Antipsychotics:		
All principal diagnoses . . . . .	1,183,800	100.0
Mental disorders . . . . .290-319	836,450	70.6
65 years and over		
Benzodiazepines:		
All principal diagnoses . . . . .	2,111,777	100.0
Mental disorders . . . . .290-319	752,864	35.7
Diseases of the circulatory system . . . . .390-459	601,015	28.5
Antidepressants:		
All principal diagnoses . . . . .	1,612,245	100.0
Mental disorders . . . . .290-319	1,071,098	66.4
Antipsychotics:		
All principal diagnoses . . . . .	730,017	100.0
Mental disorders . . . . .290-319	*421,470	*57.7
75 years and over		
Benzodiazepines:		
All principal diagnoses . . . . .	954,575	100.0
Mental disorders . . . . .290-319	*312,889	*32.8
Diseases of the circulatory system . . . . .390-459	*396,084	*41.5
Antidepressants:		
All principal diagnoses . . . . .	713,876	100.0
Mental disorders . . . . .290-319	*416,597	*58.3
Antipsychotics:		
All principal diagnoses . . . . .	*325,066	*100.0
Mental disorders . . . . .290-319	*148,619	*45.7

<sup>1</sup>Coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

<sup>2</sup>Only mentions of drugs specifically intended for the principal (first-listed) diagnosis are included. Mentions of drugs associated with other-listed diagnoses or used for any other reason are not included.

NOTES: Benzodiazepines include but are not limited to diazepam, lorazepam, and flurazepam. Antidepressants include tricyclic antidepressants, monoamine oxidase inhibitors, and lithium. Antipsychotics include but are not limited to chlorpromazine, thioridazine, and haloperidol. Both mentions as the generic form of single-ingredient drugs and mentions as an ingredient of combination drugs are included.

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

55 years and over were in association with a mental disorder. This percentage fell to 66.4 percent for patients 65 years and over. The prevalence of depression in the elderly is reported to be similar or perhaps even greater than in younger populations (7).

The antipsychotics received 1.2 million mentions in association with a principal diagnosis for

all persons 55 years of age and over (table C). Seventy-one percent of their mentions in patients 55 years and over were in association with a mental disorder.

### Vitamins and minerals

The 1986 National Health Interview Survey Supplement on Vitamins and Minerals provided

an estimate of self-reported prescription and nonprescription vitamin and mineral supplement use in the 2 weeks prior to interview among persons aged 55 and over (tables 7 and 8). A larger percentage of women than men, as well as those with higher income compared with those with lower income, reported the current use of a vitamin or mineral supplement at the time of interview. Age had no apparent influence on use, and a lower percentage of black persons reported use of vitamin or mineral supplements compared with persons of other races (table 7). The use of individual vitamin and mineral supplements by age and sex are displayed in table 8. No important differences were noted based upon these variables.

## Conclusion

Drug prescribing patterns for the ambulatory elderly has been characterized by several population studies. The unique methodology of the NAMCS does not allow a complete comparison to these studies. For example, the mean number of drugs per person for those 65 and over has been reported to be between three and four, however, the NAMCS truncated the number of drugs at five, thus potentially underestimating mean number of drugs prescribed (3,5). On the other hand, the NAMCS relates drug prescribing to principal diagnosis, and population studies either do not match diagnosis to drug or they rely upon respondents do so. The majority of drug mentions were regarding the continuation of existing therapy. The distribution of the most frequently prescribed drugs and their corresponding diagnoses are consistent with what has been identified by studies of geographically defined populations. Multiple drug mentions for a principal diagnosis were found to increase with age. Physician prescribers were primarily general and family practitioners and internists.

## References

1. Baum C, Kennedy DL, Forbes MB, et al. Drug use in the United States in 1981. *JAMA* 241(10):1293-7. 1984.
2. McLemore T, DeLozier J. National Ambulatory Medical Care Survey, 1985 summary. Advance data from vital and health statistics; no 128. Hyattsville, Maryland: National Center for Health Statistics. 1987.
3. Helling DK, Lemke JH, Semla TP, et al. Medication use characteristics in the elderly: The Iowa 65+ Rural Health Study. *J Am Geriatr Soc* 35(1):4-12. 1987.
4. Brody EM, Kleban MH, Moles E. What older people do about their day-to-day mental and physical health symptoms. *J Am Geriatrics Soc* 31(8):489-98. 1983.
5. May FE, Stewart RB, Hale WE, et al. Prescribed and nonprescribed drug use in an ambulatory elderly population. *So Med J* 75(5):522-8. 1982.
6. Ray WA, Griffin MR, Schaffner W, et al. Psychotropic drug use and the risk of hip fracture. *New Eng J Med* 316(7):363-9. 1987.
7. Blazer D, Hughes DC, George LK. The epidemiology of depression in an elderly community population. *Gerontologist* 27(3):281-7. 1987.



**Table 1. Number and percent distribution of office visits and drug mentions, and percent of office visits during which 1 drug or multiple drugs were mentioned for persons 55 years of age and over, according to age, sex, race, and ethnicity: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

<i>Age, sex, race, and ethnicity</i>	<i>Office visits</i>		<i>Drug mentions</i>		<i>Percent of visits during which—</i>	
	<i>Number in thousands</i>	<i>Percent distribution</i>	<i>Number in thousands</i>	<i>Percent distribution</i>	<i>1 drug or more mentioned<sup>1</sup></i>	<i>2 drugs or more mentioned<sup>1</sup></i>
<b>55–64 years</b>						
Total.....	75,044	100.0	99,132	100.0	64.9	34.8
Sex:						
Female.....	43,935	58.5	59,033	59.6	66.1	35.6
Male.....	31,109	41.5	40,099	40.4	63.3	33.8
Race:						
White.....	68,192	90.9	88,982	89.8	64.1	34.3
Black.....	5,869	7.8	8,758	8.8	75.0	39.5
Other <sup>2</sup> .....	983	1.3	1,392	1.4	62.8	41.8
Ethnicity:						
Hispanic.....	3,688	4.9	4,926	5.0	68.8	35.7
Non-Hispanic.....	71,356	95.1	94,206	95.0	64.7	34.8
<b>65–74 years</b>						
Total.....	75,427	100.0	109,785	100.0	67.1	38.5
Sex:						
Female.....	44,662	59.2	65,579	59.7	67.7	39.5
Male.....	30,765	40.8	44,206	40.3	66.2	37.2
Race:						
White.....	70,107	93.0	100,926	91.9	66.5	38.0
Black.....	4,559	6.0	7,616	6.9	75.4	44.1
Other <sup>2</sup> .....	762	1.0	1,242	1.2	71.7	56.8
Ethnicity:						
Hispanic.....	3,627	4.8	5,848	5.3	71.3	45.6
Non-Hispanic.....	71,800	95.2	103,936	94.7	66.9	38.2
<b>75 years and over</b>						
Total.....	55,111	100.0	88,797	100.0	69.7	42.6
Sex:						
Female.....	34,873	63.3	57,461	64.7	70.3	43.7
Male.....	20,239	36.7	31,336	35.3	68.7	40.9
Race:						
White.....	51,552	93.5	82,397	92.8	69.1	42.1
Black.....	3,223	5.8	5,912	6.7	79.2	52.7
Other <sup>2</sup> .....	336	0.6	488	0.5	67.0	34.2
Ethnicity:						
Hispanic.....	2,771	5.0	5,101	5.7	77.2	49.3
Non-Hispanic.....	52,341	95.0	83,695	94.3	69.3	42.3

<sup>1</sup>Only mentions of drugs specifically intended for the principal (first-listed) diagnosis are included. Mentions of drugs associated with other-listed diagnoses or utilized for any other reason are not included.

<sup>2</sup>Asian, Pacific Islander, American Indian, or Alaskan Native.

**Table 2. Percent distribution of drug mentions by selected dimensions of drugs by persons 55 years of age and over, according to patient age: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

Drug dimensions	Patient age		
	55-64 years	65-74 years	75 years and over
	Number of drug mentions		
All mentions. . . . .	99,132,000	109,785,000	88,797,000
	Percent distribution		
Total. . . . .	100.0	100.0	100.0
New or continued status			
New medication . . . . .	29.9	26.4	22.2
Continued medication. . . . .	67.0	70.7	75.3
Unknown. . . . .	3.1	2.8	2.5
Therapeutic target			
Principal diagnosis . . . . .	72.3	68.2	66.6
Other problem(s). . . . .	25.6	29.4	31.4
Unknown. . . . .	2.1	2.4	2.0
Entry status <sup>1</sup>			
Generic name . . . . .	16.5	17.0	16.7
Trade name. . . . .	76.2	77.0	78.1
Unknown. . . . .	7.3	5.9	5.3
Prescription status			
Prescription drug. . . . .	84.4	84.4	84.8
Nonprescription drug . . . . .	8.9	9.8	9.9
Unknown. . . . .	6.7	5.7	5.3
Composition status			
Single-ingredient drug . . . . .	77.4	78.9	80.2
Combination drug. . . . .	15.2	15.2	14.6
Unknown. . . . .	7.3	5.9	5.3
Federal control status			
Controlled drug. . . . .	7.7	6.5	5.5
Schedule II drug . . . . .	0.5	0.6	0.2
Schedule III drug. . . . .	1.5	1.1	1.0
Schedule IV drug . . . . .	5.0	4.4	3.7
Schedule V drug. . . . .	0.7	0.4	0.6
Noncontrolled drug. . . . .	85.8	87.8	89.4
Unknown. . . . .	6.5	5.7	5.1

<sup>1</sup>National Ambulatory Medical Care Survey respondents used the same form of entry (generic or trade name) that was used on the patient's medical record and/or on any prescription that the respondent wrote.

NOTE: Both mentions as the generic form of single-ingredient drugs and mentions as an ingredient of combination drugs are included. Vitamins, minerals, and vaccines are omitted.

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

**Table 3. Number of mentions, rank order, and therapeutic use of 50 generic ingredients most frequently mentioned by physicians in office-based practice for patients in age groups 55 years and over: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

<i>Age and generic ingredient</i>	<i>Number of mentions in thousands</i>	<i>Rank</i>	<i>Therapeutic use</i>
55-64 years			
All drugs . . . . .	125,143		
Acetaminophen . . . . .	2,247	4	Analgesic, antipyretic
Allopurinol . . . . .	776	34	Gout, hyperuricemia
Alprazolam . . . . .	598	50	Anxiety disorders
Amitriptyline . . . . .	739	38	Antidepressant
Ampicillin . . . . .	629	49	Antibiotic
Aspirin . . . . .	2,016	5	Analgesic, antipyretic, anti-inflammatory
Atenolol . . . . .	1,787	10	Antihypertensive, angina pectoris
Bacitracin . . . . .	621	49	Antibiotic
Cephalexin . . . . .	985	25	Antibiotic
Chlorpheniramine . . . . .	968	26	Antihistaminic
Chlorpropamide . . . . .	816	31	Hypoglycemic
Cimetidine . . . . .	1,035	24	Duodenal or gastric ulcer
Codeine . . . . .	1,462	12	Analgesic, antitussive
Dexamethasone . . . . .	770	35	Steroidal anti-inflammatory agent
Diazepam . . . . .	694	42	Anxiety disorders
Digoxin . . . . .	1,960	7	Cardiotonic
Dipyridamole . . . . .	1,123	22	Angina pectoris
Erythromycin . . . . .	1,415	15	Antibiotic
Estrogens . . . . .	1,482	11	Estrogen replacement therapy, oral contraceptive
Furosemide . . . . .	1,965	6	Diuretic, antihypertensive
Guaifenesin . . . . .	662	43	Expectorant
Hydralazine . . . . .	717	39	Antihypertensive
Hydrochlorothiazide . . . . .	5,992	1	Diuretic, antihypertensive
Hydrocortisone . . . . .	812	32	Steroidal anti-inflammatory agent
Ibuprofen . . . . .	1,441	13	Nonsteroidal anti-inflammatory agent
Indomethacin . . . . .	650	46	Nonsteroidal anti-inflammatory agent
Insulin . . . . .	1,401	16	Hypoglycemic
Isosorbide . . . . .	869	30	Vasodilator
Methyldopa . . . . .	1,238	18	Antihypertensive
Metoprolol . . . . .	1,164	20	Antihypertensive, angina pectoris
Naproxen . . . . .	1,206	19	Nonsteroidal anti-inflammatory agent
Neomycin . . . . .	942	27	Antibiotic
Nifedipine . . . . .	657	44	Angina, antihypertensive
Nitroglycerin . . . . .	1,836	8	Vasodilator
Phenylephrine . . . . .	1,156	21	Sympathomimetic
Phenylpropanolamine . . . . .	1,056	23	Sympathomimetic
Polymixin B36 . . . . .	801	33	Antibiotic
Potassium replacement solutions . . . . .	1,827	9	Replacement preparation
Prazosin . . . . .	702	41	Antihypertensive
Prednisone . . . . .	1,345	17	Steroidal anti-inflammatory agent
Propoxyphene . . . . .	704	40	Analgesic
Propranolol . . . . .	2,376	3	Arrhythmia, angina pectoris, antihypertensive, migraine
Sulfamethoxazole . . . . .	912	28	Antibiotic
Theophylline . . . . .	1,428	14	Bronchodilator
Timolol . . . . .	762	36	Glaucoma
Triamcinolone . . . . .	744	37	Steroidal anti-inflammatory agent
Triamterene . . . . .	2,498	2	Diuretic, antihypertensive
Trimethoprim . . . . .	894	29	Antibiotic
Vitamin B-12 . . . . .	653	45	Replacement preparation
Warfarin . . . . .	641	47	Anticoagulant

**Table 3. Number of mentions, rank order, and therapeutic use of 50 generic ingredients most frequently mentioned by physicians in office-based practice for patients in age groups 55 years and over: United States, 1985 – Con.**

[Data are based on reporting by a sample of office-based physicians]

<i>Age and generic ingredient</i>	<i>Number of mentions in thousands</i>	<i>Rank</i>	<i>Therapeutic use</i>
65–74 years			
All drugs . . . . .	136,256		
Acetaminophen . . . . .	2,189	9	Analgesic, antipyretic
Albuterol . . . . .	712	45	Bronchodilator
Aspirin . . . . .	3,170	4	Analgesic, antipyretic, anti-inflammatory
Atenolol . . . . .	1,148	20	Antihypertensive, angina pectoris
Calcium replacement agents . . . . .	887	29	Replacement preparation
Captopril . . . . .	734	43	Antihypertensive, congestive heart failure
Cephalexin . . . . .	856	33	Antibiotic
Chlorpheniramine . . . . .	884	31	Antihistaminic
Chlorpropamide . . . . .	787	40	Hypoglycemic
Cimetidine . . . . .	1,234	19	Duodenal or gastric ulcer
Codeine . . . . .	905	28	Analgesic, antitussive
Dexamethasone . . . . .	846	34	Steroidal anti-inflammatory agent
Digoxin . . . . .	3,990	2	Cardiotonic
Diltiazem . . . . .	723	44	Angina pectoris
Dipyridamole . . . . .	1,674	11	Angina pectoris, anti-platelet
Ergocalciferol . . . . .	698	47	Replacement preparation
Erythromycin . . . . .	1,007	24	Antibiotic
Estrogens . . . . .	884	30	Estrogen replacement therapy, oral contraceptive
Furosemide . . . . .	3,098	5	Diuretic, antihypertensive
Hydralazine . . . . .	694	48	Antihypertensive
Hydrochlorothiazide . . . . .	6,704	1	Diuretic, antihypertensive
Ibuprofen . . . . .	1,557	15	Nonsteroidal anti-inflammatory agent
Insulin . . . . .	1,638	12	Hypoglycemic
Isosorbide . . . . .	1,514	16	Vasodilator
Levothyroxine . . . . .	796	38	Thyroid replacement
Meclizine . . . . .	687	49	Anti-emetic
Methyldopa . . . . .	1,621	13	Antihypertensive
Metoprolol . . . . .	979	25	Antihypertensive, angina pectoris
Naproxen . . . . .	1,390	18	Nonsteroidal anti-inflammatory agent
Neomycin . . . . .	1,029	23	Antibiotic
Nifedipine . . . . .	811	37	Angina, antihypertensive
Nitroglycerin . . . . .	2,451	7	Vasodilator
Phenylephrine . . . . .	793	39	Sympathomimetic
Polymixin B36 . . . . .	966	26	Antibiotic
Potassium replacement solutions . . . . .	3,182	3	Replacement preparation
Prazosin . . . . .	704	46	Antihypertensive
Prednisolone . . . . .	933	27	Steroidal anti-inflammatory agent
Prednisone . . . . .	1,489	17	Steroidal anti-inflammatory agent
Propoxyphene . . . . .	815	36	Analgesic
Propranolol . . . . .	2,425	8	Arrhythmia, angina pectoris, antihypertensive, migraine
Reserpine . . . . .	866	32	Antihypertensive
Spironolactone . . . . .	741	42	Diuretic
Sulfamethoxazole . . . . .	1,057	22	Antibiotic
Sulindac . . . . .	673	50	Nonsteroidal anti-inflammatory agent
Tetracycline . . . . .	785	41	Antibiotic
Theophylline . . . . .	1,758	10	Bronchodilator
Timolol . . . . .	1,578	14	Glaucoma
Triamterene . . . . .	2,712	6	Diuretic, antihypertensive
Trimethoprim . . . . .	1,131	21	Antibiotic
Warfarin . . . . .	823	35	Anticoagulant

**Table 3. Number of mentions, rank order, and therapeutic use of 50 generic ingredients most frequently mentioned by physicians in office-based practice for patients in age groups 55 years and over: United States, 1985—Con.**

[Data are based on reporting by a sample of office-based physicians]

<i>Age and generic ingredient</i>	<i>Number of mentions in thousands</i>	<i>Rank</i>	<i>Therapeutic use</i>
75 years and over			
All drugs . . . . .	110,184		
Acetaminophen . . . . .	1,794	8	Analgesic, antipyretic
Aspirin . . . . .	1,934	7	Analgesic, antipyretic, anti-inflammatory
Atenolol . . . . .	590	41	Antihypertensive, angina pectoris
Calcium replacement agents . . . . .	695	32	Replacement preparation
Captopril . . . . .	759	30	Antihypertensive, congestive heart failure
Chlorpheniramine . . . . .	562	43	Antihistaminic
Chlorpropamide . . . . .	949	22	Hypoglycemic
Cimetidine . . . . .	537	48	Duodenal or gastric ulcer
Codeine . . . . .	987	20	Analgesic, antitussive
Dexamethasone . . . . .	979	21	Steroidal anti-inflammatory agent
Digoxin . . . . .	5,117	1	Cardiotonic
Dipyridamole . . . . .	1,482	12	Angina pectoris
Erythromycin . . . . .	636	36	Antibiotic
Furosemide . . . . .	3,955	3	Diuretic, antihypertensive
Hydralazine . . . . .	558	45	Antihypertensive
Hydrochlorothiazide . . . . .	4,976	2	Diuretic, antihypertensive
Hydroxypropyl methylcellulose . . . . .	797	27	Laxative
Ibuprofen . . . . .	1,051	18	Nonsteroidal anti-inflammatory agent
Indomethacin . . . . .	509	49	Nonsteroidal anti-inflammatory agent
Insulin . . . . .	881	23	Hypoglycemic
Iron preparations . . . . .	629	37	Replacement preparation
Isosorbide . . . . .	1,121	17	Vasodilator
Levothyroxine . . . . .	663	34	Thyroid replacement
Meclizine . . . . .	585	42	Anti-emetic
Methyldopa . . . . .	1,698	10	Antihypertensive
Metoprolol . . . . .	559	44	Antihypertensive, angina pectoris
Naproxen . . . . .	830	25	Nonsteroidal anti-inflammatory agent
Neomycin . . . . .	1,187	13	Antibiotic
Nifedipine . . . . .	537	47	Angina, antihypertensive
Nitroglycerin . . . . .	2,690	5	Vasodilator
Phenylephrine . . . . .	544	46	Sympathomimetic
Pilocarpine . . . . .	751	31	Glaucoma
Polymixin B36 . . . . .	1,156	15	Antibiotic
Potassium replacement solutions . . . . .	2,995	4	Replacement preparation
Prednisolone . . . . .	1,164	14	Steroidal anti-inflammatory agent
Prednisone . . . . .	875	24	Steroidal anti-inflammatory agent
Propoxyphene . . . . .	607	39	Analgesic
Propranolol . . . . .	1,492	11	Arrhythmia, angina pectoris, antihypertensive, migraine
Ranitidine . . . . .	498	50	Duodenal or gastric ulcer
Reserpine . . . . .	622	38	Antihypertensive
Riboflavin . . . . .	658	35	Replacement preparation
Spirolactone . . . . .	594	40	Diuretic
Sulfamethoxazole . . . . .	790	28	Antibiotic
Theophylline . . . . .	1,123	16	Bronchodilator
Thiamine . . . . .	773	29	Replacement preparation
Timolol . . . . .	1,713	9	Glaucoma
Triamterene . . . . .	1,969	6	Diuretic, antihypertensive
Trimethoprim . . . . .	820	26	Antibiotic
Vitamin B-12 . . . . .	1,023	19	Replacement preparation
Warfarin . . . . .	692	33	Anticoagulant

NOTE: Both mentions as the generic form of single-ingredient drugs and mentions as an ingredient of combination drugs are included. Vitamins, minerals, and vaccines are omitted.

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

**Table 4. Number and percent distribution of office visits to physicians by persons 55 years of age and over and of drug mentions by physicians and percent of office visits during which 1 drug or multiple drugs were mentioned by principal diagnosis, according to patient age: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

Age, principal diagnosis, and ICD-9-CM code <sup>1</sup>	Office visits		Drug mentions		Percent of visits during which—	
	Number in thousands	Percent distrib- ution	Number in thousands	Percent distrib- ution	1 drug or more mentioned <sup>2</sup>	2 drugs or more mentioned <sup>2</sup>
55-64 years						
All principal diagnoses . . . . .	75,044	100.0	71,652	100.0	64.9	34.8
Infectious and parasitic diseases . . . . .001-139	1,738	2.3	1,947	2.7	80.0	38.6
Neoplasms. . . . .140-239	4,236	5.6	2,455	3.4	40.8	19.5
Endocrine, nutritional, and metabolic diseases, and immunity disorders . . . . .240-279	4,680	6.2	4,576	6.4	76.7	48.0
Diseases of endocrine glands. . . . .240-259	3,669	4.9	3,699	5.2	80.6	51.2
Obesity. . . . .278	*289	*0.3	*339	*0.5	75.5	64.7
Diseases of blood and blood-forming organs . . . . .280-289	345	0.4	*254	*0.3	68.0	20.4
Mental disorders . . . . .290-319	3,161	4.2	3,047	4.3	67.6	33.3
Nonpsychotic disorders. . . . .300-316	2,278	3.0	1,792	2.5	59.4	24.7
Diseases of the nervous system and sense organs . . . . .320-389	7,927	10.6	5,360	7.5	48.5	23.1
Diseases of the central nervous system . . . . .320-349	687	0.9	730	1.0	76.0	49.3
Eye disorders. . . . .360-379	5,074	6.8	2,966	4.1	40.2	17.1
Otitis media . . . . .382	*273	0.4	*324	*0.5	79.4	44.0
Diseases of the circulatory system. . . . .390-459	13,094	17.4	20,476	28.6	81.5	55.0
Essential hypertension . . . . .401	6,768	9.0	10,028	14.0	86.1	54.7
Ischemic heart disease . . . . .410-414	2,843	3.8	6,401	8.9	87.2	74.1
Diseases of the respiratory system. . . . .460-519	6,786	9.0	10,291	14.4	87.2	58.9
Acute upper respiratory infection . . . . .465	749	1.0	1,315	1.8	93.6	73.5
Asthma. . . . .493	677	0.9	1,419	2.0	88.9	66.8
Diseases of the digestive system. . . . .520-579	3,596	4.8	2,867	4.0	59.3	29.4
Diseases of the genitourinary system. . . . .580-629	4,780	6.4	3,593	5.0	64.7	22.6
Male genitourinary system . . . . .600-608	1,003	1.3	615	0.9	53.0	11.4
Female genitourinary system . . . . .614-629	1,620	2.2	1,475	2.0	75.4	33.3
Diseases of skin and subcutaneous tissue . . . . .680-709	4,045	5.4	3,281	4.6	61.0	28.3
Diseases of the musculoskeletal system . . . . .710-739	7,453	9.9	6,891	9.6	72.2	30.4
Arthropathies . . . . .711-716	2,564	3.4	2,915	4.1	81.7	40.2
Symptoms, signs, and ill-defined conditions . . . . .780-799	2,700	3.6	1,720	2.4	58.1	29.8
Injury and poisoning . . . . .800-999	4,851	6.5	2,708	3.8	48.6	19.5
Other or undetermined . . . . .	5,652	7.5	2,186	3.1	---	---
65-74 years						
All principal diagnoses . . . . .	75,427	100.0	74,880	100.0	67.1	38.5
Infectious and parasitic diseases . . . . .001-139	1,006	1.3	1,097	1.5	77.8	34.8
Neoplasms. . . . .140-239	4,472	5.9	2,358	3.1	---	---
Endocrine, nutritional, and metabolic diseases, and immunity disorders . . . . .240-279	4,739	6.3	5,446	7.3	77.6	51.9

**Table 4. Number and percent distribution of office visits to physicians by persons 55 years of age and over and of drug mentions by physicians and percent of office visits during which 1 drug or multiple drugs were mentioned by principal diagnosis, according to patient age: United States, 1985 – Con.**

[Data are based on reporting by a sample of office-based physicians]

<i>Age, principal diagnosis, and ICD-9-CM code<sup>1</sup></i>	<i>Office visits</i>		<i>Drug mentions</i>		<i>Percent of visits during which—</i>	
	<i>Number in thousands</i>	<i>Percent distri- bution</i>	<i>Number in thousands</i>	<i>Percent distri- bution</i>	<i>1 drug or more mentioned<sup>2</sup></i>	<i>2 drugs or more mentioned<sup>2</sup></i>
Diseases of endocrine glands . . . . .240-259	4,013	5.3	4,706	6.3	78.6	51.5
Obesity . . . . .278	*234	0.3	*310	*0.4	89.6	57.1
Diseases of blood and blood-forming organs . . . . .280-289	575	0.8	*335	*0.4	77.5	44.3
Mental disorders . . . . .290-319	1,789	2.4	2,110	2.8	80.8	41.3
Nonpsychotic disorders . . . . .300-316	1,305	1.7	1,261	1.7	77.6	36.4
Diseases of the nervous system and sense organs . . . . .320-389	9,609	12.7	6,407	8.6	50.2	21.4
Diseases of the central nervous system . . . . .320-349	761	1.0	813	1.1	76.4	42.7
Eye disorders . . . . .360-379	6,947	9.2	4,444	5.9	46.7	19.4
Otitis media . . . . .382	*158	0.2	*209	0.3	81.0	42.2
Diseases of the circulatory system . . . .390-459	14,543	19.3	23,077	30.8	84.0	60.2
Essential hypertension . . . . .401	6,365	8.4	9,514	12.7	87.2	57.9
Ischemic heart disease . . . . .410-414	2,965	3.9	6,391	8.5	91.0	76.1
Diseases of the respiratory system . . . .460-519	6,407	8.5	9,590	12.8	84.5	59.9
Acute upper respiratory infection . . . . .465	812	1.1	1,034	1.4	92.8	53.1
Asthma . . . . .493	722	1.1	1,613	2.2	87.1	72.4
Diseases of the digestive system . . . . .520-579	3,614	4.8	2,703	3.6	65.3	37.3
Diseases of the genitourinary system . .580-629	4,301	5.7	3,063	4.1	62.5	22.2
Male genitourinary system . . . . .600-608	1,172	1.6	530	0.7	46.6	10.8
Female genitourinary system . . . . .614-629	1,037	1.4	754	1.0	69.4	30.0
Diseases of skin and subcutaneous tissue . . . . .680-709	3,992	5.3	3,012	4.0	58.1	27.6
Diseases of the musculoskeletal system . . . . .710-739	7,900	10.5	8,199	10.9	77.7	40.5
Arthropathies . . . . .711-716	3,399	4.5	4,001	5.3	85.5	48.2
Symptoms, signs, and ill-defined conditions . . . . .780-799	3,114	4.1	2,760	3.7	68.8	38.8
Injury and poisoning . . . . .800-999	3,244	4.3	1,706	2.3	51.4	18.8
Other or undetermined . . . . .	6,142	8.1	3,027	4.0	---	---
<b>75 years and over</b>						
All principal diagnoses . . . . .	55,111	100.0	59,134	100.0	69.7	42.6
Infectious and parasitic diseases . . . . .001-139	714	1.3	730	1.2	80.3	36.9
Neoplasms . . . . .140-239	3,240	5.9	1,913	3.2	42.6	22.6
Endocrine, nutritional, and metabolic diseases, and immunity disorders . . . . .240-279	2,979	5.4	3,422	5.8	80.2	52.3
Diseases of endocrine glands . . . . .240-259	2,496	4.5	2,772	4.7	78.6	51.8
Obesity . . . . .278	*77	0.1	*104	*0.2	*100.0	*54.6
Diseases of blood and blood-forming organs . . . . .280-289	804	1.5	796	1.3	81.0	41.9
Mental disorders . . . . .290-319	880	1.6	1,264	2.1	83.7	55.9
Nonpsychotic disorders . . . . .300-316	568	1.0	635	1.1	79.5	47.0

**Table 4. Number and percent distribution of office visits to physicians by persons 55 years of age and over and of drug mentions by physicians and percent of office visits during which 1 drug or multiple drugs were mentioned by principal diagnosis, according to patient age: United States, 1985—Con.**

[Data are based on reporting by a sample of office-based physicians]

Age, principal diagnosis, and ICD-9-CM code <sup>1</sup>	Office visits		Drug mentions		Percent of visits during which—	
	Number in thousands	Percent distri- bution	Number in thousands	Percent distri- bution	1 drug or more mentioned <sup>2</sup>	2 drugs or more mentioned <sup>2</sup>
75 years and over—Con.						
Diseases of the nervous system and sense organs . . . . .320-389	9,470	17.2	7,258	12.3	56.4	28.3
Diseases of the central nervous system . . . . .320-349	602	1.1	643	1.1	82.0	46.4
Eye disorders . . . . .360-379	7,637	13.9	5,810	9.8	53.2	26.0
Otitis media . . . . .382	*191	*0.3	*240	*0.4	94.6	31.3
Diseases of the circulatory system . . . .390-459	12,411	22.5	21,609	36.5	84.9	64.0
Essential hypertension . . . . .401	4,396	8.0	7,322	12.4	90.7	67.8
Ischemic heart disease . . . . .410-414	2,633	4.8	5,600	9.5	88.1	70.7
Diseases of the respiratory system . . . .460-519	3,791	6.9	5,463	9.2	85.2	60.6
Acute upper respiratory infection . . . . .465	521	0.9	658	1.1	86.4	51.1
Asthma . . . . .493	*223	*0.4	*349	*0.6	79.4	66.6
Diseases of the digestive system . . . . .520-579	2,331	4.2	1,704	2.9	62.5	35.2
Diseases of the genitourinary system . .580-629	2,522	4.6	1,588	2.7	64.3	22.8
Male genitourinary system . . . . .600-608	560	1.0	*201	*0.3	43.4	4.4
Female genitourinary system . . . . .614-629	*296	*0.5	*180	*0.3	64.3	14.5
Diseases of skin and subcutaneous tissue . . . . .680-709	2,608	4.7	2,652	4.5	64.1	35.8
Diseases of the musculoskeletal system . . . . .710-739	4,610	8.4	5,018	8.5	81.7	47.8
Arthropathies . . . . .711-716	2,519	4.6	2,798	4.7	86.8	52.0
Symptoms, signs, and ill-defined conditions . . . . .780-799	2,047	3.7	1,843	3.1	75.4	48.8
Injury and poisoning . . . . .800-999	2,562	4.6	1,240	2.1	53.0	22.9
Other or undetermined . . . . .	4,142	7.5	2,634	4.4	---	---

<sup>1</sup>Coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

<sup>2</sup>Only mentions of drugs specifically intended for the principal (first-listed) diagnosis are included. Mentions of drugs associated with other-listed diagnoses or utilized for any other reason are not included.

NOTE: Both mentions as the generic form of single-ingredient drugs and mentions as an ingredient of combination drugs are included. Vitamins, minerals, and vaccines are omitted.

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.



**Table 5. Number and percent distribution of drug mentions by therapeutic categories for persons 55 years of age and over, according to patient age: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

<i>Therapeutic category</i> <sup>1</sup>	<i>55-64 years</i>		<i>65-74 years</i>		<i>75 years and over</i>	
	<i>Number of mentions in thousands</i>	<i>Percent distribution</i>	<i>Number of mentions in thousands</i>	<i>Percent distribution</i>	<i>Number of mentions in thousands</i>	<i>Percent distribution</i>
All drugs . . . . .	99,132	100.0	109,785	100.0	88,797	100.0
Anti-infective agents (systemic) . . . . .	7,860	7.9	7,651	7.0	4,722	5.3
Antibiotics . . . . .	6,118	6.2	5,775	5.3	3,113	3.5
Cephalosporins . . . . .	1,613	1.6	1,340	1.2	761	0.9
Erythromycins . . . . .	1,407	1.4	905	0.8	574	0.6
Penicillins . . . . .	1,765	1.8	1,828	1.7	933	1.1
Tetracyclines . . . . .	903	0.9	1,230	1.1	594	0.7
Sulfonamides . . . . .	1,021	1.0	1,173	1.1	906	1.0
All other anti-infective agents . . . . .	721	0.7	703	0.6	703	0.8
Antineoplastic agents . . . . .	1,464	1.5	1,527	1.4	908	1.0
Autonomic drugs . . . . .	2,933	3.0	3,522	3.2	2,452	2.8
Anticholinergic agents . . . . .	1,080	1.1	1,459	1.3	1,038	1.2
Sympathomimetic (adrenergic) agents . . . . .	1,031	1.0	1,243	1.1	811	0.9
Skeletal muscle relaxants . . . . .	759	0.8	*387	*0.4	*206	*0.2
Blood formation and coagulation agents . . . . .	1,024	1.0	1,101	1.0	1,375	1.5
Anti-anemia drugs . . . . .	*369	*0.4	*258	*0.2	628	0.7
Cardiovascular drugs . . . . .	18,665	18.8	24,045	21.9	21,038	23.7
Cardiac drugs . . . . .	6,959	7.0	10,157	9.3	8,990	10.1
Antihypertensive agents . . . . .	7,518	7.6	7,756	7.1	6,053	6.8
Vasodilating agents . . . . .	3,974	4.0	5,999	5.5	5,888	6.6
Analgesics and antipyretics . . . . .	10,382	10.5	11,424	10.4	8,122	9.1
Nonsteroidal anti-inflammatory agents . . . . .	7,612	7.7	8,711	7.9	5,863	6.6
Psychotropic drugs . . . . .	7,060	7.1	6,527	5.9	4,738	5.3
Anxiolytics, sedatives, and hypnotics . . . . .	4,231	4.3	4,147	3.8	2,785	3.1
Antidepressants . . . . .	1,948	2.0	1,746	1.6	1,364	1.5
Major tranquilizers and antimanic drugs . . . . .	881	0.9	634	0.5	589	0.7
Electrolyte, caloric, and water balance agents . . . . .	11,558	11.7	15,013	13.7	14,164	16.0
Diuretics . . . . .	8,293	8.4	10,280	9.4	9,808	11.0
Replacement solutions . . . . .	2,289	2.3	3,913	3.6	3,614	4.1
Antihistamines, antitussives, expectorants, and mucolytic agents . . . . .	4,233	4.3	3,141	2.9	1,888	2.1
Eye, ear, nose, and throat preparations . . . . .	3,966	4.0	5,913	5.4	7,441	8.4
Anti-infectives . . . . .	1,074	1.1	1,352	1.2	1,911	2.2
Antibiotics . . . . .	687	0.7	958	0.9	1,466	1.7
Anti-inflammatory agents . . . . .	596	0.6	1,120	1.0	1,188	1.3
Miotics . . . . .	993	1.0	1,878	1.7	2,418	2.7
Gastrointestinal drugs . . . . .	4,158	4.2	5,256	4.8	3,844	4.3
Antacids and absorbents . . . . .	594	0.6	698	0.6	509	0.6
Cathartics and laxatives . . . . .	594	0.6	1,046	1.0	784	0.9
Emetics and anti-emetics . . . . .	653	0.7	896	0.8	763	0.9

**Table 5. Number and percent distribution of drug mentions by therapeutic categories for persons 55 years of age and over, according to patient age: United States, 1985—Con.**

[Data are based on reporting by a sample of office-based physicians]

<i>Therapeutic category</i> <sup>1</sup>	<i>55–64 years</i>		<i>65–74 years</i>		<i>75 years and over</i>	
	<i>Number of mentions in thousands</i>	<i>Percent distribution</i>	<i>Number of mentions in thousands</i>	<i>Percent distribution</i>	<i>Number of mentions in thousands</i>	<i>Percent distribution</i>
Gastrointestinal drugs—Con.						
Miscellaneous gastrointestinal drugs (used chiefly in treating duodenal ulcer) . . . . .	1,920	1.9	2,149	2.0	1,482	1.7
Hormones and synthetic substances . . . . .	10,154	10.2	9,333	8.5	6,103	6.9
Adrenals . . . . .	3,145	3.2	3,003	2.7	2,039	2.3
Estrogens . . . . .	2,311	2.3	1,311	1.2	564	0.6
Antidiabetic agents . . . . .	3,045	3.1	3,443	3.1	2,523	2.8
Insulins . . . . .	1,401	1.4	1,631	1.5	881	1.0
Thyroid and antithyroid agents . . . . .	1,061	1.1	1,320	1.2	891	1.0
Serums, toxins, and vaccines . . . . .	780	0.8	833	0.8	843	1.0
Skin and mucous membrane agents . . . . .	3,689	3.7	3,445	3.1	2,424	2.7
Anti-infectives . . . . .	1,270	1.3	1,437	1.3	999	1.1
Fungicides . . . . .	*344	*0.3	*429	*0.4	*230	*0.3
Anti-inflammatory agents . . . . .	1,451	1.5	1,373	1.3	951	1.1
Keratolytic agents . . . . .	*118	*0.1	*28	—	*45	—
Smooth muscle relaxants . . . . .	1,895	1.9	2,092	1.9	1,465	1.7
Vitamins . . . . .	1,359	1.4	1,516	1.4	2,015	2.3
Vitamin B complex . . . . .	771	0.8	886	0.8	1,460	1.6
Multivitamin preparations . . . . .	*296	*0.3	252	0.2	*255	*0.3
Other or undetermined . . . . .	7,952	8.0	7,446	6.8	5,255	5.9

<sup>1</sup>Based on American Hospital Formulary Service Classification System, Drug Product Information File, The American Druggist Blue Book Data Center, San Bruno, California, 1985.

NOTE: Both mentions as the generic form of single-ingredient drugs and mentions as an ingredient of combination drugs are included. Vitamins, minerals, and vaccines are omitted.

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

**Table 6. Number and percent distribution of office visits and drug mentions, and percent of office visits during which 1 drug or multiple drugs were mentioned by physician identity and specialty for persons 55 years of age and over, according to patient age: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

<i>Patient age, physician identity, and specialty</i>	<i>Office visits</i>		<i>Drug mentions</i>		<i>Percent of office visits during which—</i>	
	<i>Number in thousands</i>	<i>Percent distri- bution</i>	<i>Number in thousands</i>	<i>Percent distri- bution</i>	<i>1 drug or more mentioned<sup>1</sup></i>	<i>2 drugs or more mentioned<sup>1</sup></i>
<b>55–64 years</b>						
All physicians . . . . .	75,044	100.0	99,132	100.0	64.9	34.8
Physician identity:						
Doctor of medicine . . . . .	70,760	94.3	93,848	94.7	64.9	35.0
Doctor of osteopathy . . . . .	4,284	5.7	5,284	5.3	65.4	32.8
Specialty:						
General or family practice . . . . .	23,511	31.3	34,988	35.3	76.0	39.9
Internal medicine . . . . .	12,644	16.8	23,664	23.9	81.1	51.0
Obstetrics and gynecology . . . . .	2,398	3.2	2,054	2.1	60.0	17.5
Ophthalmology . . . . .	5,937	7.9	3,806	3.8	39.5	16.7
Orthopedic surgery . . . . .	4,285	5.7	2,420	2.4	38.0	12.0
General surgery . . . . .	4,979	6.6	3,091	3.1	34.5	16.0
Dermatology . . . . .	2,870	3.8	2,956	3.0	60.6	28.2
Psychiatry . . . . .	1,859	2.5	2,308	2.3	62.8	36.0
Otolaryngology . . . . .	1,983	2.6	1,363	1.4	47.2	17.8
Urologic surgery . . . . .	2,090	2.8	1,230	1.2	47.4	8.7
Cardiology . . . . .	2,820	3.7	7,810	7.9	85.8	72.4
Neurology . . . . .	777	1.0	700	0.7	54.4	21.2
All other specialties . . . . .	8,892	11.9	12,742	12.9	64.6	37.2
<b>65–74 years</b>						
All physicians . . . . .	75,427	100.0	109,785	100.0	67.1	38.5
Physician identity:						
Doctor of medicine . . . . .	71,833	95.2	104,073	94.8	66.7	38.4
Doctor of osteopathy . . . . .	3,594	4.8	5,712	5.2	74.5	41.2
Specialty:						
General or family practice . . . . .	21,735	28.8	37,061	33.8	80.2	46.0
Internal medicine . . . . .	16,699	22.1	32,970	30.0	81.0	54.1
Obstetrics and gynecology . . . . .	1,482	2.0	1,167	1.1	48.7	20.7
Ophthalmology . . . . .	8,435	11.2	6,215	5.7	44.3	19.2
Orthopedic surgery . . . . .	2,682	3.6	1,379	1.3	34.8	9.3
General surgery . . . . .	4,790	6.4	3,989	3.6	43.5	21.0
Dermatology . . . . .	2,617	3.5	2,177	2.0	52.5	19.5
Psychiatry . . . . .	882	1.2	1,455	1.3	78.7	45.3
Otolaryngology . . . . .	1,805	2.4	1,096	1.0	40.5	13.7
Urologic surgery . . . . .	2,762	3.7	1,529	1.4	45.5	8.7
Cardiology . . . . .	2,950	3.9	8,235	7.5	85.8	72.3
Neurology . . . . .	626	0.8	741	0.7	66.3	35.0
All other specialties . . . . .	7,961	10.5	11,771	10.7	64.9	39.0

**Table 6. Number and percent distribution of office visits and drug mentions, and percent of office visits during which 1 drug or multiple drugs were mentioned by physician identity and specialty for persons 55 years of age and over, according to patient age: United States, 1985 – Con.**

[Data are based on reporting by a sample of office-based physicians]

<i>Patient age, physician identity, and specialty</i>	<i>Office visits</i>		<i>Drug mentions</i>		<i>Percent of office visits during which –</i>	
	<i>Number in thousands</i>	<i>Percent distrib- ution</i>	<i>Number in thousands</i>	<i>Percent distrib- ution</i>	<i>1 drug or more mentioned<sup>1</sup></i>	<i>2 drugs or more mentioned<sup>1</sup></i>
75 years and over						
All physicians .....	55,111	100.0	88,797	100.0	69.7	42.6
Physician identity:						
Doctor of medicine .....	52,620	95.5	84,677	95.4	69.4	42.4
Doctor of osteopathy.....	2,492	4.5	4,120	4.6	76.3	47.3
Specialty:						
General or family practice.....	16,206	29.4	31,054	35.0	82.5	51.0
Internal medicine.....	12,171	22.1	27,152	30.6	82.7	59.1
Obstetrics and gynecology.....	*387	0.7	*403	*0.5	63.1	23.1
Ophthalmology .....	9,127	16.6	8,188	9.2	53.5	25.6
Orthopedic surgery.....	1,699	3.1	719	0.8	31.4	9.2
General surgery.....	3,316	6.0	2,867	3.2	49.9	21.0
Dermatology .....	1,791	3.2	1,609	1.8	55.0	24.2
Psychiatry .....	*293	*0.5	674	0.8	82.9	67.7
Otolaryngology .....	933	1.7	612	0.7	40.6	15.5
Urologic surgery .....	1,872	3.4	1,134	1.3	47.3	10.8
Cardiology.....	2,065	3.7	6,378	7.2	87.0	78.3
Neurology .....	*422	0.8	*419	0.5	67.4	25.0
All other specialties.....	4,830	8.8	7,588	8.5	63.5	42.7

<sup>1</sup>Only mentions of drugs specifically intended for the principal (first-listed) diagnosis are included. Mentions of drugs associated with other-listed diagnoses or utilized for any other reason are not included.

NOTE: Both mentions as the generic form of single-ingredient drugs and mentions as an ingredient of combination drugs are included. Vitamins, minerals, and vaccines are omitted.

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

**Table 7. Number and percent of persons 55 years of age and over currently using vitamin or mineral supplements, by selected characteristics: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Characteristic</i>	<i>Total number in thousands</i>	<i>Percent</i>
<b>Sex</b>		
Male.....	21,652	35.0
Female.....	27,807	47.2
<b>Age</b>		
55-64 years.....	22,073	41.9
65-74 years.....	16,906	42.7
75-84 years.....	8,652	40.6
65 years and over.....	27,386	41.8
75 years and over.....	10,480	40.3
85 years and over.....	1,828	38.8
<b>Race</b>		
White.....	44,160	43.9
Black.....	4,360	21.6
All other.....	939	40.1
<b>Education</b>		
High school or less.....	37,543	39.0
More than high school.....	11,916	50.7
<b>Income</b>		
Less than \$20,000.....	25,676	38.1
\$20,000 or more.....	21,632	46.5
<b>Respondent-assessed health status</b>		
Excellent or very good.....	20,751	44.8
Good.....	15,944	21.8
Fair or poor.....	12,502	36.7

NOTE: Current usage includes those reporting nonprescription and prescription vitamin or mineral supplement use in the past 2 weeks.

SOURCE: National Center for Health Statistics: Data from the 1986 National Health Interview Survey Supplement on Vitamins and Minerals.

**Table 8. Percent of persons 55 years of age and over using vitamin or mineral supplements, by sex, age, and vitamin or mineral supplement used: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Vitamin or mineral supplement used</i>	<i>Total</i>	<i>Sex</i>		<i>Age</i>			
		<i>Male</i>	<i>Female</i>	<i>55-64 years</i>	<i>65-74 years</i>	<i>75-84 years</i>	<i>85 years and over</i>
Vitamin				Percent			
Vitamin A . . . . .	24.2	21.6	26.3	24.9	24.1	23.8	20.3
Vitamin C . . . . .	33.1	29.5	36.0	33.6	33.2	32.6	29.1
Vitamin D . . . . .	25.9	21.4	29.4	25.9	26.3	25.9	22.0
Vitamin E . . . . .	28.5	26.1	30.3	29.5	28.5	26.4	25.7
Vitamin B-6 . . . . .	27.5	24.3	29.9	28.3	26.6	27.4	25.1
Vitamin B-12 . . . . .	27.1	24.0	29.5	27.7	26.7	26.6	25.1
Folic acid . . . . .	23.2	21.0	24.9	24.3	23.0	20.7	22.5
Niacin . . . . .	27.1	24.4	29.3	28.1	26.6	26.5	23.5
Riboflavin . . . . .	27.2	24.3	29.5	28.1	26.5	26.8	24.7
Thiamine . . . . .	27.6	24.6	29.9	28.5	27.0	27.0	25.1
Mineral							
Calcium . . . . .	22.5	15.5	28.1	22.7	24.3	19.3	19.7
Copper . . . . .	14.9	13.3	16.1	14.8	15.8	13.3	15.8
Iodine . . . . .	14.9	13.7	15.9	14.7	15.9	13.1	16.9
Iron . . . . .	20.0	17.7	21.8	19.8	21.0	18.8	19.9
Magnesium . . . . .	16.5	14.9	17.8	15.9	18.1	14.9	17.3
Phosphorus . . . . .	9.8	8.8	10.7	9.7	10.3	9.0	11.6
Potassium . . . . .	11.7	10.0	13.1	11.0	13.4	10.2	12.4
Selenium . . . . .	9.5	8.0	10.7	9.1	10.7	8.1	*10.8
Zinc . . . . .	17.3	15.8	18.5	17.3	18.5	15.1	18.2

NOTE: Current usage includes those reporting nonprescription and prescription vitamin or mineral supplement use in the past 2 weeks.

SOURCE: National Center for Health Statistics: Data from the 1986 National Health Interview Supplement on Vitamins and Minerals.

# Chapter 8

## Cost of health care and sources of payment

by Lawrence J. Frateschi, M.A., College of Dupage; and Sylvia E. Furner, Ph.D., University of Illinois at Chicago

### Introduction

National health expenditures have more than doubled during the 1980's and account for an increasing share of the Nation's production (1). In 1980, national health care expenditures totaled \$249 billion, which represented approximately \$1,059 per capita and 9 percent of the Nation's gross national product (GNP). By 1988, national health care expenditures totaled \$540 billion. This figure represents approximately \$2,124 per capita and more than 11 percent of the GNP (2).

### Sources of increase in health expenditures

Personal health care expenditures, defined as spending for the direct consumption of medical care services and supplies by individuals, amounted to \$478 billion in 1988 (2). This figure was only \$218 billion in 1980 (2). Many factors have contributed to this increase in personal health care expenditures: the increased cost of obtaining care, the development of new medical techniques, the discovery of new illnesses and diseases, the growth and aging of the population, changes in intensity of consumption patterns, changes in real income, and increases in third-party payment for services.

During the 1980's, price inflation accounted for approximately 60 percent of the increase in

personal health care expenditures (2). When adjusting for inflation, as measured by the GNP implicit price deflator, real personal health care expenditures (expressed in 1982 constant dollars) grew from \$265 billion in 1980 to \$338 billion in 1988, an increase of more than 27 percent.

The implementation of public and private cost-containment policies that focused on inpatient hospital services altered the overall growth and mix of health care services during the 1980's (3). Between 1980 and 1988, the percentage of real personal health care dollars accounted for by hospital care decreased from 47 to 46 percent, while the percentage accounted for by physician services increased from 19 to 21 percent, and real expenditures for nursing home care increased from 9 to 10 percent. Thus, the previous long-term trend of faster growth for hospital care than for physician services was reversed (3).

### Source of funds

With the introduction of the Medicare and Medicaid programs in 1966, the percentage of personal health care expenditures funded publicly increased from 22 percent in 1965 to 40 percent in 1981 (1). Since then, the public share has remained virtually constant. The Federal Government's share of personal health expenditures has nearly tripled during this period, growing from 10 percent in 1965 to more than 28 percent in 1980. It has increased more slowly since then, to approximately 30 percent in 1987. State

---

The authors wish to acknowledge Thomas Hodgson, Ph.D., Chief Economist of the Office of Analysis and Epidemiology, National Center for Health Statistics, for his helpful comments on the manuscript.

and local governments' share has decreased slightly during this same period from 12 percent in 1965 to 11 percent in 1980, to 10 percent in 1987. The share of personal health expenditures accounted for by private health insurance increased steadily from 24 percent in 1965 to 31 percent in 1980 (1). Since then, it has increased only slightly.

In contrast to the increase in percentage of personal health care expenditures funded publicly and by private health insurance, consumers' direct out-of-pocket payments decreased from 52 percent in 1965 to 29 percent in 1980 (1). During the decade of the 1980's, this percentage declined slightly to 28 percent in 1987 (1).

### **Sources of data**

The source of data on health insurance coverage (tables 1, 3-5, and 9-10) for the population 70 years of age and over was the Longitudinal Study of Aging (LSOA), conducted by the National Center for Health Statistics in collaboration with the National Institute on Aging. The baseline data for this longitudinal followup is the 1984 Supplement on Aging (SOA) to the National Health Interview Survey. The SOA is a survey specifically directed toward civilian non-institutionalized persons 55 years of age or over. The 1986 LSOA sample included all persons 80 years of age or over and approximately one-half of those aged 70-79 who participated in the SOA.

Hospital discharge data (table 6) come from the 1987 National Hospital Discharge Survey (NHDS), a continuous voluntary survey of patient discharges from a nationally representative sample of short-stay non-Federal hospitals.

Data on physician office visits (table 7) were obtained from the 1985 National Ambulatory Medical Care Survey (NAMCS), a national probability sample survey of office-based physician providers.

The source of data on nursing home residents (table 8) is the 1985 National Nursing Home Survey (NNHS), a nationwide (excluding Alaska and Hawaii) sample survey of nursing and related-care homes, their residents, their discharges, and their staff. This survey is conducted periodically by the National Center for Health Statistics and is based on a probability sample of nursing homes.

## **The elderly population**

### **Demographic characteristics**

Demographic characteristics of the elderly are associated with the use and cost of health care. The population of the United States is aging, and this demographic change will have significant implications for our Nation's health care system. The number of elderly increased by 17 percent between 1980 and 1987. People aged 65 years or over comprised 12 percent of the 243 million Americans in 1987, up from 11 percent in 1980 (1). The fastest growing group was those 85 years of age and over, which increased by 28 percent over this period (1).

The U.S. Bureau of the Census estimates that the population will grow to 302 million by the year 2040, with the population aged 65 and over projected to increase to more than 22 percent of that total (4). The largest percentage increases are projected for the age group 75 and over (4).

### **Insurance coverage**

In 1984, 97 percent of the population 70 years of age and over living in the community reported being enrolled in Medicare (table 1). Males 80 years and over had a significantly higher rate of coverage than males 70-79 years, but there was no difference in rate of coverage by age among the females.

Total enrollment of the elderly in the Medicare program increased from 24 million in 1977



to 29 million in 1986, an average annual increase of nearly 2 percent (table 2). In 1986, Medicare served 732 persons per 1,000 enrollees. There was a sex differential in this figure, with more women being served than men. Medicare funds reimbursed an average of \$2,870 per person served in 1986, and this dollar amount was 24 percent higher for males than for females. The number of persons served per 1,000 enrollees and reimbursements per person served have historically increased with age, and this trend continued in 1986. Among those 85 years and over, compared with those aged 65 and 66, 27 percent more persons were served per 1,000 enrollees, and payments per person served were 64 percent higher.

Table 3 shows that in 1984, nearly two-thirds of the population 70 years of age and over living in the community reported having private health insurance coverage for hospital and physician services. These figures did not differ by age or sex.

Approximately 98 percent of the elderly 70 years of age and over living in the community reported having health care coverage by Medicare and/or private health insurance in 1984 (table 4). Within this group, nearly 97 percent had Medicare and/or private health insurance for both physician and hospital care, irrespective of sex or age (table 5).

### **Health care utilization**

Persons 65 years and over are major users of health care services. Health care spending for this segment of the population totaled \$162 billion in 1987, approximately 4 percent of GNP (5). From 1977 to 1987, expenditures for health care by the elderly grew at an average annual rate of nearly 14 percent, while the actual number of individuals 65 years of age and over increased by an average of only 2 percent annually (5).

A substantial change in the use of health care services by the elderly occurred during the

1980's. These changes involved the decreased use of inpatient hospital services and the increased use of outpatient services (6).

Non-Federal short-stay hospital use, as measured by days of care per 1,000 population, declined by 8 percent between 1985 and 1987 (7). In contrast, days of care per 1,000 population declined by 18 percent between 1983 and 1985, the time period immediately after implementation of the prospective payment system. The decline in short-stay hospital use between 1983 and 1985 was the result of both shorter hospital stays and a decline in the hospital discharge rate. The decline in hospital use between 1985 and 1987 primarily reflected a decline in the hospital discharge rate (7).

Table 6 shows that in 1987, discharges per 1,000 persons were significantly higher for those 65 years and over than for those 55-64 years. This was true for both males and females. Among those 65 years of age and over, the number of hospital discharges per 1,000 persons increased with age in both males and females. The expected principal source of payment for those 65 years and over for 93 percent of these discharges was Medicare. Medicaid was the expected principal source of payment for 1 percent of these discharges, and less than 1 percent were expected to involve any out-of-pocket expenses. For those aged 55-64, Blue Cross/Blue Shield or another commercial insurance company was the expected principal source of payment for 66 percent of the hospital discharges, Medicare was the expected principal source of payment for 16 percent of the discharges, Medicaid for nearly 7 percent, and more than 5 percent involved some personal expense.

Another important component of health care for the elderly is the office visit to the physician. The number of office-based physician visits per capita for 1985 was three for persons 55-64 years, and was nearly five visits per capita for those 65 years and over (table 7).

Although an office visit could have several sources of payment, the majority of all visits were reimbursed by Medicare. For 67 percent of those 65–74 years, Medicare was the expected source of payment; the corresponding figure for those 85 years and over was 78 percent (table 7).

In contrast to hospital discharges, office-based physician visits were expected to involve substantial out-of-pocket expense for the individual. For those 65 years and over, 33 percent of the visits were expected to involve self-payment. Thirty-four percent of the visits for those 65–74 years were expected to involve some personal expense. This figure was 28 percent for those 85 years and over.

As was true with hospital discharges, only a small portion of office-based physician visits had Medicaid as the expected source of payment. For those 65–74 years, 1 percent of the hospital discharges and 7 percent of the office-based physician visits had Medicaid as the expected source of payment. Among those 85 years and over, these numbers were 1 percent and 14 percent, respectively.

An additional component of health care for the older population is nursing home care. As has been reported, the rate of nursing home use increases with age and is greater for females (8). There were approximately 209,000 nursing home residents 65–74 years of age in 1985 (table 8). This number of residents increased significantly to 604,000 for the age group 85 years or over. This significant difference by age was evident in both males (79,000 and 114,000) and females (130,000 and 490,000). Among nursing home residents in age groups 65–74, 75–84, and 85 or over, there were more females than males (table 8).

At the time of admission, 48 percent of nursing home residents relied on their own income or family support to pay for care (8). The second most common primary source of payment at

admission was Medicaid (41 percent). Five percent relied on Medicare to pay for care (8). However, by the month before the survey of nursing home residents, it was found that Medicaid was the most frequent primary source of payment for both skilled nursing and intermediate care (50 percent), 42 percent relied on their own income or family support for primary payment, and 1 percent relied on Medicare (8). This shift from Medicare to Medicaid was a necessity for many nursing home residents because of the limitations of benefits and stringent requirements for coverage under the Medicare skilled nursing care program in 1985 (8).

Among the nursing home residents 65 and over, the primary payment source reported in the month before the interview continued to be Medicaid, regardless of age (table 8). The major difference between younger and older nursing home residents was in the use of their own income (or family support) as the primary source of payment. Forty-five percent (272,000) of the 85-and-over residents used their own income, in contrast to only 34 percent (71,000) of the 65–74-year-old residents (table 8). This difference was evident for males but not for females.

## Medicare

Medicare expenditures totaled \$37 billion in 1980, of which \$26 billion was for hospital insurance (HI) and \$11 billion was for supplementary medical insurance (SMI) (1). By 1987, Medicare expenditures grew to nearly \$83 billion, of which \$51 billion was for HI and \$32 billion was for SMI. Inpatient hospital care accounts for a majority of HI spending, but its share fell from 94 percent in 1980 to 92 percent in 1987, while home health agency care grew from 2 percent to more than 4 percent. Physician care accounted for 73 percent and outpatient hospital care for 17 percent of SMI expenditures in 1980. In 1987, these figures were 71 percent and 19 percent, respectively (1).

## Medicaid

Medicaid spent nearly \$9 billion for those persons 65 years of age and over in 1980 and \$16 billion in 1987 (1). But during this time, the actual number of aged receiving Medicaid remained fairly constant, varying only slightly from 3 million (1). During 1984, only 5 percent of those aged 70–79 years who lived in the community received Medicaid during the previous 12 months; for those 80 years and over, 7 percent received Medicaid (table 9). Although only 3 percent of the males 70 years and over received Medicaid, regardless of age grouping, nearly 7 percent of the females 70 and over were recipients of Medicaid.

Table 10 illustrates the change in the receipt of Medicaid benefits over a 2-year period. Of those aged 70–79 living in the community, who received Medicaid in 1984, 64 percent were still receiving it in 1986. Of those aged 80 and over, 61 percent were still receiving Medicaid in 1986. These percentages were similar for males and females.

Among those who did not receive Medicaid benefits in 1984, 7 percent received them in 1986. This percentage was 6 percent for those 70–79 years of age and increased to more than 9 percent for those 80 and over. This age differential existed for females but not for males.

Finally, among those aged 70–79 who received Medicaid benefits in 1984, 25 percent did not receive these benefits in 1986. The corresponding percentage for those 80 and over was 22 percent.

## Per capita expenditures

Per capita personal health expenditures for the entire population in 1987 were \$1,776, with spending for those under 65 being \$1,286 per person (5). For those 65 years and over, the figure was \$5,360, and for those 85 years and over, it was \$9,178 (table 11). Among the older population, per capita spending increased with

age and varied according to the type of service and the source of payment. For those 65 years and over, private sources paid for 37 percent of all personal health care expenditures, Medicare paid for 45 percent, and Medicaid paid for 12 percent. In comparison, for those 85 years and over, private sources paid slightly more (40 percent), Medicare paid for less (35 percent), and Medicaid paid for more (19 percent) (table 11).

Medicare is a Federal program designed to primarily cover hospital and physician expenses of the aged. All elderly, regardless of their income levels, receive the same benefits and must pay the same deductibles and copayments. Medicaid is a Federal-State matching program designed to serve the poor. Because Medicaid is administered by each State, there are wide variations in services covered and in eligibility requirements. Because Medicare benefits are not income-related and because there may be large out-of-pocket expenses and coverage gaps, many of the aged must rely on Medicaid. The distribution of the private share of spending for the older population revealed that 15 percent was for hospital care, 36 percent was for physician services, and 58 percent was for nursing home care. In contrast, the Medicare spending distribution revealed that 70 percent was for hospital care, 61 percent for physician services, and only 2 percent for nursing home care. Finally, the Medicaid spending distribution revealed that 5 percent was for hospital care, 2 percent for physician services, and 36 percent for nursing home expenditures (table 11).

The per capita spending in 1987 varied greatly by age. For physician services, hospital care, and nursing home care, the amount of spending for those 85 and over exceeded the amount spent for those 65–69 (table 11). Among sources of funds, the difference in per capita spending among age groups was most pronounced for Medicaid. For those 65–69, Medicaid's portion

of spending for all personal health care was 7 percent, and for those 85 and over, it was 19 percent.

Thus, despite public and private efforts to contain costs, real personal health care expenditures for the population 65 years of age and over have continued to increase, even with the reduction of inpatient care. Additionally, because the population is aging, expenditures will continue to increase, even after adjusting for changes in prices, as a result of the observed increased use of nursing home care with age and increased use of office-based physician services in comparison to those under 65 years of age.

## References

1. National Center for Health Statistics. Health, United States, 1989. Hyattsville, Maryland: Public Health Service. 1990.
2. Office of National Cost Estimates. National health expenditures, 1988. Health Care Financing Review 11(4):1-54. 1990.
3. Kowalczyk G, Freeland M, Levit K. Using marginal analysis to evaluate health spending trends. Health Care Financing Review 10(2):123-9. 1988.
4. U.S. Bureau of the Census. Current population reports; series P-23, no 128. Washington: U.S. Department of Commerce. 1988.
5. Waldo D, Sonnefeld S, McKusick D, Arnett R. Health expenditures by age group, 1977 and 1987. Health Care Financing Review 10(4):111-20. 1989.
6. Division of National Cost Estimates, Office of the Actuary, Health Care Financing Administration. National health expenditures, 1986-2000. Health Care Financing Review 8(4):1-36. 1987.
7. National Center for Health Statistics. Health, United States, 1988. Hyattsville, Maryland: Public Health Service. 1989.
8. Hing E. National Center for Health Statistics. Vital and health statistics: Nursing home utilization by current residents: United States, 1985; series 13, no 102. Washington: Public Health Service. 1989.

**Table 1. Percent distribution of persons 70 years of age and over by Medicare coverage, according to sex and age: United States, 1984**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and age</i>	<i>Total</i>	<i>Medicare coverage</i>		
		<i>Covered</i>	<i>Not covered</i>	<i>Unknown</i>
	Number in thousands	Percent distribution		
<b>Both sexes</b>				
Total. ....	17,335	96.9	3.0	*0.1
70-79 years. ....	12,501	96.8	3.1	*0.1
80 years and over. ....	4,834	97.1	2.7	*0.2
<b>Male</b>				
Total. ....	6,711	96.5	3.3	*0.1
70-79 years. ....	5,135	96.1	3.8	*0.1
80 years and over. ....	1,576	98.0	1.7	*0.3
<b>Female</b>				
Total. ....	10,624	97.1	2.8	*0.1
70-79 years. ....	7,366	97.3	2.7	*0.0
80 years and over. ....	3,258	96.6	3.2	*0.2

NOTE: Row percents may not add to 100 because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey Longitudinal Study on Aging, 1986.

**Table 2. Medicare enrollment, persons served, and payments for Medicare enrollees 65 years of age and over, by selected characteristics: 1967, 1977, and 1986**

[Data are compiled by the Health Care Financing Administration]

Characteristic	Enrollment in millions <sup>1</sup>			Persons served per 1,000 enrollees <sup>2</sup>			Payments per person served <sup>3</sup>			Payments per enrollee <sup>3</sup>		
	1967	1977	1986	1967	1977	1986	1967	1977	1986	1967	1977	1986
Total.....	19.5	23.8	28.8	367	570	732	\$592	\$1,332	\$2,870	\$217	\$ 759	\$2,100
Age												
65-66 years.....	2.8	3.3	3.9	300	533	652	496	1,075	2,118	149	573	1,381
67-68 years.....	2.6	3.2	3.5	326	511	656	521	1,173	2,441	170	599	1,601
69-70 years.....	2.4	2.9	3.3	339	531	689	530	1,211	2,579	180	643	1,777
71-72 years.....	2.3	2.6	3.1	351	555	719	560	1,228	2,777	197	681	1,997
73-74 years.....	2.1	2.3	2.8	369	576	735	574	1,319	2,910	212	759	2,140
75-79 years.....	3.9	4.5	5.6	398	597	768	624	1,430	3,100	248	853	2,380
80-84 years.....	2.2	3.0	3.6	430	623	808	693	1,549	3,310	298	965	2,674
85 years and over.....	1.3	2.1	2.9	465	652	827	740	1,636	3,477	345	1,068	2,875
Sex												
Male.....	8.3	9.6	11.5	357	546	691	647	1,505	3,272	231	821	2,261
Female.....	11.3	14.2	17.3	373	586	759	554	1,223	2,626	207	717	1,992
Race <sup>4</sup>												
White.....	17.4	21.1	25.2	375	576	738	593	1,328	2,842	222	765	2,097
All other.....	1.5	2.1	2.7	260	514	683	557	1,404	3,185	145	722	2,174
Geographic region <sup>5</sup>												
Northeast.....	5.1	5.7	6.5	385	613	775	604	1,426	2,933	233	874	2,274
Midwest.....	5.6	6.3	7.3	352	541	729	599	1,401	2,894	211	757	2,110
South.....	5.6	7.5	9.4	351	556	736	528	1,198	2,744	186	666	2,018
West.....	2.9	3.8	5.0	455	632	727	620	1,341	3,051	282	848	2,218

<sup>1</sup>Includes fee-for-service and health maintenance organization (HMO) enrollees; as of July 1 each year.

<sup>2</sup>Excludes HMO enrollees.

<sup>3</sup>Excludes amounts for HMO services.

<sup>4</sup>Excludes persons of unknown race.

<sup>5</sup>Includes the resident population of the United States but not residence unknown.

NOTES: Data include the United States, residence unknown, Puerto Rico, Virgin Islands, Guam, other outlying areas, and foreign countries. Some numbers in this table have been revised and differ from those shown in previous editions of *Health, United States*.

SOURCE: National Center for Health Statistics: *Health, United States, 1989*; based on unpublished data from the Bureau of Data Management and Strategy, Health Care Financing Administration.

**Table 3. Percent distribution of persons 70 years of age and over by type of private health insurance coverage, according to age and sex: United States, 1984**

[Data are based on household interviews of the civilian noninstitutionalized population]

Type of private health insurance coverage	Total	70 years and over		70-79 years		80 years and over	
		Male	Female	Male	Female	Male	Female
Private health insurance	Number in thousands	Percent distribution					
Hospital only . . . . .	289	1.6	1.7	1.6	1.6	1.8	2.0
Hospital and physician . . . . .	11,468	67.5	65.3	69.3	68.9	61.5	57.4
Physician only . . . . .	24	*0.1	*0.2	*0.1	*0.1	*0.1	*0.3
No private health insurance coverage . . . . .	4,961	28.4	28.8	26.9	25.3	33.3	36.5
Other . . . . .	580	2.4	3.9	2.0	4.0	3.3	3.7
Unknown . . . . .	13	*0.0	*0.1	*0.1	*0.1	—	*0.1

NOTE: Column percents may not add to 100 because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey Longitudinal Study on Aging, 1986.

**Table 4. Percent distribution of persons 70 years of age and over by health care coverage, according to age and sex: United States, 1984**

[Data are based on household interviews of the civilian noninstitutionalized population]

Health care coverage	Total	70 years and over		70-79 years		80 years and over	
		Male	Female	Male	Female	Male	Female
Medicare and/or private health insurance	Number in thousands	Percent distribution					
Covered by one or both . . . . .	17,081	98.4	98.6	98.1	99.0	99.3	97.8
Not covered by either . . . . .	239	1.5	1.3	1.8	1.0	*0.7	2.0
Unknown . . . . .	15	*0.1	*0.1	*0.1	*0.0	—	*0.2
Other public assistance program <sup>1</sup>							
Covered . . . . .	51	*0.1	*0.4	*0.1	*0.5	*0.1	*0.3
Not covered . . . . .	17,277	99.9	99.5	99.9	99.5	99.9	99.7
Unknown . . . . .	7	—	*0.1	—	*0.1	—	*0.1

<sup>1</sup>Specific survey questions ask about coverage by public assistance programs other than Medicaid that pay for health care.

NOTE: Column percents may not add to 100 because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey Longitudinal Study on Aging, 1986.

**Table 5. Percent distribution of persons 70 years of age and over by type of Medicare and/or private health insurance coverage, according to age and sex: United States, 1984**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Medicare and/or private health insurance coverage</i>	<i>Total</i>	<i>70 years and over</i>		<i>70-79 years</i>		<i>80 years and over</i>	
		<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>
	Number in thousands	Percent distribution					
Hospital only . . . . .	149	0.8	0.9	0.9	0.9	*0.6	0.9
Hospital and physician . . . . .	16,709	96.4	96.4	96.4	96.8	96.5	95.3
Physician only . . . . .	21	*0.1	*0.1	*0.2	*0.1	—	*0.1
No Medicare or private health insurance coverage . . . . .	239	1.5	1.3	1.8	1.0	*0.7	2.0
Unknown <sup>1</sup> . . . . .	216	1.2	1.3	*0.7	1.2	2.2	1.7

<sup>1</sup>Unknown category includes those for whom Medicare and/or private health coverage breakdown is unknown.

NOTE: Column percents may not add to 100 because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey Longitudinal Study on Aging, 1986.



**Table 6. Percent distribution of hospital discharges for persons 55 years of age and over by expected principal source of payment, according to sex and age: United States, 1987**

[Discharges from non-Federal short-stay hospitals]

Sex and age	Total discharges	Discharges	Expected principal source of payment						
			Medicare	Medicaid	Blue Cross/ Blue Shield	Other commercial insurance	Worker's compensation	Self-pay	Other or no charge
Both sexes	Number in thousands	Number per 1,000 persons	Percent distribution						
55-64 years.....	4,049	183.9	16.1	6.5	25.4	40.5	1.5	5.2	4.8
65-74 years.....	4,963	280.9	91.5	1.1	1.7	3.7	0.9	0.7	0.4
75-84 years.....	3,968	426.6	94.8	0.7	0.7	2.5	0.6	0.5	0.2
65 years and over.....	10,459	350.5	93.4	0.9	1.1	3.0	0.7	0.5	0.4
75 years and over.....	5,496	451.7	95.1	0.7	0.6	2.3	0.6	0.4	0.3
85 years and over.....	1,528	533.0	96.1	0.8	0.3	1.7	0.6	0.3	0.2
Male									
55-64 years.....	2,077	200.4	18.1	4.4	24.2	42.0	2.2	4.6	4.5
65-74 years.....	2,416	308.8	90.4	1.0	2.0	4.4	1.0	0.6	0.6
75-84 years.....	1,714	491.3	93.7	0.6	0.7	3.4	0.7	0.5	0.4
65 years and over.....	4,629	382.0	92.2	0.8	1.4	3.8	0.9	0.5	0.4
75 years and over.....	2,213	515.3	94.1	0.6	0.7	3.1	0.7	0.4	0.4
85 years and over.....	499	619.1	95.6	0.6	0.5	2.0	0.7	0.4	0.2
Female									
55-64 years.....	1,972	169.2	14.1	8.8	26.6	39.0	0.8	5.9	4.8
65-74 years.....	2,547	258.7	92.6	1.1	1.3	3.1	0.8	0.7	0.4
75-84 years.....	2,254	387.9	95.6	0.7	0.7	1.9	0.5	0.5	0.1
65 years and over.....	5,830	329.1	94.4	0.9	0.9	2.4	0.6	0.6	0.2
75 years and over.....	3,283	417.0	95.8	0.8	0.6	1.8	0.5	0.4	0.1
85 years and over.....	1,029	499.3	96.3	1.0	0.3	1.6	0.5	0.3	-

SOURCE: National Center for Health Statistics: Data from the National Hospital Discharge Survey.

**Table 7. Percent of visits to office-based physicians by persons 55 years of age and over by expected sources of payment, according to sex and patient age: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

Sex and patient age	Total visits	Visits per capita	Expected sources of payment					
			Medicare	Medicaid	Blue Cross/ Blue Shield	Other commercial insurance	Pre-paid plan	Self- pay
Both sexes	Number in thousands	Rate	Percent					
55-64 years.....	75,044	3.4	9.2	5.4	17.3	22.8	7.5	48.1
65-74 years.....	75,427	4.5	67.2	6.8	14.8	11.8	5.8	34.3
75-84 years.....	45,581	5.5	76.9	9.4	16.6	8.1	3.6	31.0
65 years and over.....	130,538	4.8	71.4	8.2	15.4	10.2	4.9	32.7
75 years and over.....	55,111	5.3	77.1	10.2	16.3	8.0	3.6	30.4
85 years and over.....	9,530	4.8	78.0	13.9	14.8	7.7	3.5	27.7
Male								
55-64 years.....	31,109	3.1	9.3	4.3	16.7	25.0	8.3	45.6
65-74 years.....	30,765	4.2	65.9	4.8	15.4	12.6	6.6	33.6
75-84 years.....	17,327	5.5	75.5	6.9	16.5	9.2	4.6	30.6
65 years and over.....	51,004	4.6	69.6	5.8	15.8	11.4	5.7	32.6
75 years and over.....	20,239	5.4	75.1	7.3	16.4	9.6	4.4	31.0
85 years and over.....	2,912	4.5	72.6	*10.1	16.1	11.8	*3.1	33.5
Female								
55-64 years.....	43,935	3.8	9.2	6.3	17.7	21.2	6.9	49.9
65-74 years.....	44,662	4.8	68.1	8.2	14.4	11.3	5.3	34.8
75-84 years.....	28,254	5.4	77.7	11.0	16.7	7.5	3.0	31.2
65 years and over.....	79,535	5.0	72.5	9.8	15.2	9.5	4.4	32.7
75 years and over.....	34,873	5.3	78.2	11.9	16.2	7.2	3.2	30.1
85 years and over.....	6,618	5.0	80.4	15.5	14.2	5.8	*3.7	25.1

NOTE: Percents may add to more than 100 because a visit could have more than one expected source of payment.

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

**Table 8. Number of nursing home residents 55 years of age and over and average monthly nursing home charge, by sex, age, and primary source of payment in month before interview: United States, 1985**

[Data are based on reporting by a sample of nursing homes]

Primary source of payment	Both sexes				Male				Female			
	55-64 years	65-74 years	75-84 years	85 years and over	55-64 years	65-74 years	75-84 years	85 years and over	55-64 years	65-74 years	75-84 years	85 years and over
All sources												
Number of residents in thousands . . . . .	88	209	502	604	43	79	140	114	45	130	362	490
Average monthly charge . . . . .	\$1,358	\$1,367	\$1,471	\$1,492	\$1,415	\$1,330	\$1,457	\$1,510	\$1,304	\$1,389	\$1,476	\$1,487
Own income or family support												
Number of residents in thousands . . . . .	27	71	229	272	14	27	63	62	12	44	167	210
Average monthly charge . . . . .	\$1,118	\$1,425	\$1,450	\$1,513	\$1,258	\$1,349	\$1,455	\$1,535	\$ 953	\$1,472	\$1,448	\$1,506
Medicare												
Number of residents in thousands . . . . .	*1	*5	10	*5	*1	*2	*3	*1	-	*3	7	*4
Average monthly charge . . . . .	\$3,507	\$1,748	\$2,360	\$1,966	\$3,507	\$1,903	\$2,676	\$2,289	-	\$1,614	\$2,220	\$1,901
Medicaid												
Skilled nursing facility benefit:												
Number of residents in thousands . . . . .	17	31	82	110	7	9	22	17	11	22	60	93
Average monthly charge . . . . .	\$1,981	\$1,846	\$1,904	\$1,839	\$1,963	\$1,810	\$1,889	\$1,912	\$1,992	\$1,860	\$1,909	\$1,826
Intermediate care facility benefit:												
Number of residents in thousands . . . . .	30	78	159	192	12	28	42	28	18	49	117	165
Average monthly charge . . . . .	\$1,291	\$1,229	\$1,295	\$1,303	\$1,400	\$1,248	\$1,244	\$1,283	\$1,222	\$1,218	\$1,314	\$1,306
Other government assistance or welfare												
Number of residents in thousands . . . . .	*6	14	12	11	*4	*5	*5	*2	*3	9	*6	9
Average monthly charge . . . . .	\$ 710	\$ 770	\$ 908	\$1,185	\$ 641	\$ 797	\$1,058	\$1,042	\$ 801	\$ 758	\$ 789	\$1,217
All other sources <sup>1</sup>												
Number of residents in thousands . . . . .	7	10	10	13	*6	8	*5	*4	*1	*3	*6	9
Average monthly charge . . . . .	\$1,414	\$1,136	\$ 997	\$ 957	\$1,460	\$1,126	\$1,044	\$1,078	\$1,209	\$1,166	\$ 957	\$ 897

<sup>1</sup>Includes religious organizations, Veterans' Administration contracts, initial payment-life care funds, and unknown.

SOURCE: National Center for Health Statistics: Data from the 1985 National Nursing Home Survey.

**Table 9. Percent distribution of persons 70 years of age and over by whether Medicaid benefits were received in previous 12 months, according to sex and age: United States, 1984**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and age</i>	<i>Total</i>	<i>Received Medicaid benefits</i>		
		<i>Yes</i>	<i>No</i>	<i>Unknown</i>
	Number in thousands	Percent distribution		
<b>Both sexes</b>				
Total. . . . .	17,335	5.4	94.6	*0.0
70-79 years. . . . .	12,501	4.9	95.1	*0.0
80 years and over. . . . .	4,834	6.7	93.3	*0.1
<b>Male</b>				
Total. . . . .	6,711	3.0	97.0	*0.0
70-79 years. . . . .	5,135	2.9	97.1	
80 years and over. . . . .	1,576	3.2	96.7	*0.1
<b>Female</b>				
Total. . . . .	10,624	6.9	93.0	*0.0
70-79 years. . . . .	7,366	6.3	93.7	*0.0
80 years and over. . . . .	3,258	8.3	91.6	*0.1

NOTE: Row percents may not add to 100 because of rounding.

SOURCE: National Center for Health Statistics; Data from the National Health Interview Survey Longitudinal Study on Aging, 1986.

**Table 10. Percent distribution of persons 70 years of age and over in 1984 by whether Medicaid benefits were received in 1986, according to sex, age, and whether Medicaid benefits were received in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and whether Medicaid benefits were received in 1984</i>	<i>Total</i>	<i>Received Medicaid benefits in 1986</i>		
		<i>Yes</i>	<i>No</i>	<i>Unknown</i>
<b>Both sexes</b>	<b>Number in thousands</b>	<b>Percent distribution</b>		
All ages 70 years and over.....	14,079	9.8	84.2	6.1
Medicaid benefits in 1984:				
Yes.....	723	62.8	23.9	13.3
No.....	13,351	6.9	87.5	5.7
Unknown.....	4	*50.2	*49.8	—
70–79 years.....	10,497	8.8	86.4	4.8
Medicaid benefits in 1984:				
Yes.....	500	63.8	24.6	11.7
No.....	9,995	6.1	89.5	4.5
Unknown.....	2	—	*100.0	—
80 years and over.....	3,582	12.6	77.7	9.7
Medicaid benefits in 1984:				
Yes.....	223	60.6	22.4	17.1
No.....	3,356	9.3	81.5	9.2
Unknown.....	2	*100.0	—	—
<b>Male</b>				
All ages 70 years and over.....	5,272	9.1	85.0	5.9
Medicaid benefits in 1984:				
Yes.....	131	62.7	20.8	16.5
No.....	5,141	7.8	86.6	5.6
Unknown.....	—	—	—	—
70–79 years.....	4,182	8.7	86.4	5.0
Medicaid benefits in 1984:				
Yes.....	103	63.8	*19.9	*16.3
No.....	4,079	7.3	88.0	4.7
Unknown.....	—	—	—	—
80 years and over.....	1,090	10.8	79.7	9.4
Medicaid benefits in 1984:				
Yes.....	28	58.6	*23.9	17.5
No.....	1,062	9.6	81.2	9.2
Unknown.....	—	—	—	—
<b>Female</b>				
All ages 70 years and over.....	8,807	10.2	83.7	6.2
Medicaid benefits in 1984:				
Yes.....	592	62.8	24.6	12.6
No.....	8,210	6.3	88.0	5.7
Unknown.....	4	*50.2	*49.8	—

**Table 10. Percent distribution of persons 70 years of age and over in 1984 by whether Medicaid benefits were received in 1986, according to sex, age, and whether Medicaid benefits were received in 1984: United States—Con.**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex, age, and whether Medicaid benefits were received in 1984</i>	<i>Total</i>	<i>Received Medicaid benefits in 1986</i>		
		<i>Yes</i>	<i>No</i>	<i>Unknown</i>
Female—Con.	Number in thousands	Percent distribution		
70–79 years . . . . .	6,314	8.9	86.4	4.7
Medicaid benefits in 1984:				
Yes . . . . .	396	63.8	25.8	10.5
No . . . . .	5,916	5.3	90.4	4.3
Unknown . . . . .	2	—	*100.0	—
80 years and over . . . . .	2,492	13.3	76.9	9.9
Medicaid benefits in 1984:				
Yes . . . . .	196	60.9	22.1	17.0
No . . . . .	2,294	9.2	81.6	9.3
Unknown . . . . .	2	*100.0	—	—

NOTE: Row percents may not add to 100 because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey Longitudinal Study on Aging, 1986.

**Table 11. Amount and percent distribution of per capita personal health care expenditures for persons 65 years of age and over by source of funds, according to type of service and age: United States, 1987**

<i>Type of service and age</i>	<i>Total</i>	<i>Source of funds</i>			
		<i>Private</i>	<i>Medicare</i>	<i>Medicaid</i>	<i>Other</i>
All personal health care		Amount			
65-69 years. ....	\$3,728	\$1,430	\$1,849	\$ 245	\$204
70-74 years. ....	4,424	1,564	2,234	357	268
75-79 years. ....	5,455	1,843	2,685	569	358
80-84 years. ....	6,717	2,333	3,023	908	453
65 years and over. ....	5,360	2,004	2,391	645	321
85 years and over. ....	9,178	3,631	3,215	1,742	591
Hospital care					
65-69 years. ....	1,682	312	1,144	67	158
70-74 years. ....	2,062	327	1,431	93	212
75-79 years. ....	2,536	341	1,786	127	283
80-84 years. ....	2,935	355	2,070	161	348
65 years and over. ....	2,248	333	1,566	110	239
85 years and over. ....	3,231	376	2,246	198	411
Physician services					
65-69 years. ....	974	380	558	14	22
70-74 years. ....	1,086	389	655	17	25
75-79 years. ....	1,191	398	745	19	29
80-84 years. ....	1,246	407	789	20	31
65 years and over. ....	1,107	393	671	17	26
85 years and over. ....	1,262	420	792	20	31
Nursing home care					
65-69 years. ....	165	94	5	60	6
70-74 years. ....	360	205	11	131	13
75-79 years. ....	802	461	22	292	28
80-84 years. ....	1,603	927	37	584	56
65 years and over. ....	1,085	634	19	395	38
85 years and over. ....	3,738	2,191	56	1,361	131
Other personal health care					
65-69 years. ....	907	644	142	103	18
70-74 years. ....	916	644	137	117	18
75-79 years. ....	925	644	133	130	18
80-84 years. ....	934	644	128	144	18
65 years and over. ....	920	644	135	123	18
85 years and over. ....	947	645	121	164	18

**Table 11. Amount and percent distribution of per capita personal health care expenditures for persons 65 years of age and over by source of funds, according to type of service and age: United States, 1987—Con.**

Type of service and age	Total	Source of funds			
		Private	Medicare	Medicaid	Other
All personal health care		Percent distribution			
65–69 years. ....	100.0	38.4	49.6	6.6	5.5
70–74 years. ....	100.0	35.4	50.5	8.1	6.1
75–79 years. ....	100.0	33.8	49.2	10.4	6.6
80–84 years. ....	100.0	34.7	45.0	13.5	6.7
65 years and over. ....	100.0	37.4	44.6	12.0	6.0
85 years and over. ....	100.0	39.6	35.0	19.0	6.4
Hospital care					
65–69 years. ....	100.0	18.6	68.0	4.0	9.4
70–74 years. ....	100.0	15.9	69.4	4.5	10.3
75–79 years. ....	100.0	13.5	70.4	5.0	11.2
80–84 years. ....	100.0	12.1	70.5	5.5	11.9
65 years and over. ....	100.0	14.8	69.7	4.9	10.6
85 years and over. ....	100.0	11.6	69.5	6.1	12.7
Physician services					
65–69 years. ....	100.0	39.0	57.3	1.4	2.3
70–74 years. ....	100.0	35.8	60.3	1.6	2.3
75–79 years. ....	100.0	33.4	62.6	1.6	2.4
80–84 years. ....	100.0	32.7	63.3	1.6	2.5
65 years and over. ....	100.0	35.5	60.6	1.5	2.4
85 years and over. ....	100.0	33.3	62.8	1.6	2.5
Nursing home care					
65–69 years. ....	100.0	57.0	3.0	36.4	3.6
70–74 years. ....	100.0	56.9	3.1	36.4	3.6
75–79 years. ....	100.0	57.5	2.7	36.4	3.5
80–84 years. ....	100.0	57.8	2.3	36.4	3.5
65 years and over. ....	100.0	58.4	1.8	36.4	3.5
85 years and over. ....	100.0	58.6	1.5	36.4	3.5
Other personal health care					
65–69 years. ....	100.0	71.0	15.7	11.4	2.0
70–74 years. ....	100.0	70.3	15.0	12.8	2.0
75–79 years. ....	100.0	69.6	14.4	14.0	2.0
80–84 years. ....	100.0	69.0	13.7	15.4	1.9
65 years and over. ....	100.0	70.0	14.7	13.4	2.0
85 years and over. ....	100.0	68.1	12.8	17.3	1.9

NOTES: Hospital care and physician services include both inpatient and outpatient care. Percents may not add to 100 because of rounding.

SOURCE: Waldo D, Sonnefeld S, McKusick D, Arnett R. Health expenditures by age group, 1977 and 1987. *Health Care Financing Review* 10(4):111-20. 1989.



## **Part IV**

### **Special topics**

# Chapter 9

## Health of older black Americans

by Karen Smith Blesch, M.S., and Sylvia E. Furner, Ph.D., University of Illinois at Chicago

### Introduction

In 1987, there were 2,448,000 black Americans aged 65 and over, representing a 14-percent increase since 1980. Black Americans comprise 8.2 percent of the total population aged 65 and over (1). It is projected that, by the year 2010, this proportion will increase to 9.8 percent (2).

Although white Americans will continue to comprise the vast majority of the population aged 65 and over, the black American subpopulation is aging. Table A shows projections and percent changes in the black population compared with the white population aged 65 and over by age subgroup for the years 2000 and 2010 (2). Although substantial growth will occur in all age subgroups in the black subpopulation, the largest percent increase (35 percent) will occur in the group aged 85 years and over. In the white subpopulation, the largest percent increase will also occur in the subgroup aged 85 years and over. Of interest is the relative stability of the white subpopulation aged 75–84. In 1980, the median age of the black American population was 24.9 years; by 2010, it is expected to be 32.9 years. This compares with the white population's median age of 30.9 years in 1980 and 40.3 years in 2010 (2).

The distribution of age and income within a population may affect estimates of its health

**Table A. Projections in thousands and percent change in the black and white populations 65 years of age and over, by age subgroup, for the years 2000 and 2010**

<i>Race and age</i>	<i>2000</i>	<i>2010</i>	<i>Percent change</i>
Black			
65–74 years. . . . .	1,848	2,277	+23.2
75–84 years. . . . .	929	1,106	+19.1
85 years and over. . . . .	354	478	+35.0
White			
65–74 years. . . . .	15,811	17,875	+23.2
75–84 years. . . . .	10,779	10,632	–1.4
85 years and over. . . . .	4,186	5,476	+30.8

SOURCE: Spencer G. Projections of the population of the United States, by age, sex, and race: 1988 to 2080. Current Population Reports; series P-25 no 1018. Washington: U.S. Department of Commerce. 1989.

status. The black subpopulation tends to be younger and poorer than the white subpopulation. Youth is generally associated with better health, but poverty is associated with poorer health (3). Because the analyses presented here are limited to the subpopulations aged 65 years and over, the influence of youth is largely removed. However, the influence of poverty remains. Twenty-nine percent of black Americans 65 and over live in poverty, and 8 percent of their white counterparts do (3). However, because of the magnitude of the sampling errors associated with the estimates derived in this chapter, the results cannot be considered in terms of income differentials. Thus, all reported differences between black and white persons

NOTE: The authors wish to acknowledge Peter Ries, Division of Health Statistics, National Center for Health Statistics, and Harry Rosenberg, Ph.D., Division of Vital Statistics, NCHS, for their helpful comments on the manuscript.

may in part derive from income or social status differences.

Black Americans of all ages have different health experiences than their white counterparts. Reports of acute conditions were more common among white persons of all ages than among black persons. This relationship was also true for the subgroup aged 65 years and over. Some common chronic conditions, a major source of health problems for all older Americans, occur differentially between the races. Prevalence rates of hypertension, asthma, and diabetes were higher among black persons than white persons, whereas white people reported higher rates of ischemic heart disease, arthritis, and vision and hearing impairments. Except for those with annual family incomes of \$20,000 or more, black Americans aged 65 and over had higher rates of activity limitation resulting from chronic conditions. More older black Americans reported their health as being either fair or poor than did older white Americans (46 percent versus 29 percent) (3).

Because of their growing numbers and because their health circumstances may demand different approaches to health care and health services delivery (4), the health of older black Americans merits separate examination. The purpose of this chapter is to examine selected health characteristics discussed throughout this volume as they occur in older black Americans. The headings for the sections of this chapter are identical to the chapter titles from which the content is drawn. Table contents are identical to those of their parent tables in other chapters.

### **Source and limitations of the data**

Because the various sections of this chapter use the same data sources as their parent chapters in this volume, the same limitations apply. The reader is referred to the individual parent chapters for detailed information regarding the sources of data.

Although their numbers are growing, older black Americans still constitute a relatively small subpopulation. Despite oversampling by the National Center for Health Statistics (NCHS) to obtain adequate numbers of respondents in subpopulations of interest, many of the estimates for the older black American population are considered statistically unreliable (relative standard errors of 30 percent or more). In order to present statistically reliable estimates, only some of the tables from other chapters have been included here, and many of the data categories in those tables have been combined. Special effort has been given to maintaining as similar a format as possible to the other chapters so that comparisons can be made.

## **Measures of health**

### **Sources of data**

The two sources of data for measures of health are the health status and demographic components of the National Health Interview Survey (NHIS) (1985–87) and the 1986 Functional Limitations Supplement of the NHIS. In 1986, the Functional Limitations Supplement of the NHIS focused on activities of daily living (ADL's) and instrumental activities of daily living (IADL's) for the population 65 years of age and over. Activities of daily living include bathing, dressing, toileting, eating, transferring to or from a bed or chair, walking, and getting outside. Instrumental activities of daily living include meal preparation, shopping, managing money, using the telephone, light housework, and heavy housework. Respondents were considered to have difficulty with either an ADL or an IADL if they answered yes to the question, "Because of a health or physical problem do you have ANY difficulty in" performing the activity.

Respondents who reported that they did not do an ADL were counted with those who reported difficulty in performing the activity. Given

that ADL's are necessities, not doing one most likely means that an individual is unable to do so. However, for IADL's, respondents who reported not doing an activity were counted as not having difficulty. Unlike the ADL's, IADL's are not necessities of life, and may not be done for a variety of reasons (e.g., role socialization) other than disability. Detailed information on these data sources is reported in chapter 1.

## Findings

Respondent-assessed health status is a simple but informative indicator of health. At age 65 and over, more black people rated their health as fair or poor than as excellent or very good (table 1). This pattern was consistent for both males and females. There were significant differences in respondent-assessed health between black and white persons. For both age groups shown and both sexes, significantly greater proportions of white than black people rated their health as excellent or very good, and significantly greater proportions of black than white persons rated their health as fair or poor (chapter 1, table 1).

Functional status, measured as one's ability to perform ADL's and IADL's, is closely related

to respondent-assessed health. Among older black persons, for all health statuses, more females than males reported difficulty performing one or more ADL's (table 2). For both sexes, significantly more of those reporting excellent or very good health reported no ADL difficulties, compared with those reporting fair or poor health. Approximately one-half of both sexes reporting fair or poor health reported one or more ADL difficulties.

These patterns of self-assessed health by ADL difficulties are also apparent within the white subpopulation (table B). Fewer elderly black females reported no ADL difficulties than their white counterparts, however this difference by race did not hold for males.

For IADL difficulties, the patterns among black persons by sex and age were similar to those for ADL difficulties (table 3). More females than males of all health statuses reported one or more IADL difficulties. This sex difference may not, however, be the result of true functional differences between men and women. Rather, it may be the result of differences in role socialization (with men typically performing fewer IADL's than women, thus possibly causing men's reports of difficulty to be underestimated) or the

**Table B. Percent distribution of activities of daily living difficulties, by respondent-assessed health status, sex, and race for persons 65 years of age and over: United States, 1986**

<i>Sex and respondent-assessed health status</i>	<i>Race and ADL difficulties</i>					
	<i>Black</i>			<i>White</i>		
	<i>Total</i>	<i>None</i>	<i>1 or more</i>	<i>Total</i>	<i>None</i>	<i>1 or more</i>
Male						
All health statuses . . . . .	100.0	76.2	23.8	100.0	82.5	17.5
Excellent/very good . . . . .	100.0	98.9	*1.1	100.0	93.6	6.4
Fair/poor . . . . .	100.0	54.4	45.6	100.0	60.9	39.1
Female						
All health statuses . . . . .	100.0	67.8	32.2	100.0	74.7	25.3
Excellent/very good . . . . .	100.0	86.8	13.2	100.0	89.4	10.6
Fair/poor . . . . .	100.0	46.1	53.9	100.0	49.4	50.6

NOTE: ADL is activity of daily living.

result of an age bias within each age subgrouping (on average, within any given age subgroup, women have higher mean ages than men). It may also be the result of the analytic decision to count those reporting they do not do an IADL as not having difficulty. For those reporting fair or poor health, more females than males had one or more IADL difficulties (67 percent versus 51 percent). For both sexes, a greater percentage of those reporting excellent or very good health reported no IADL difficulties, compared with those in fair or poor health.

In the white subpopulation, the patterns of IADL difficulties by self-assessed health status were similar to those of the black subpopulation (table C). For IADL difficulties, sex differences by race occurred in the opposite direction than for ADL difficulties. Significantly fewer elderly black males reported no IADL difficulties than elderly white males; however, there was no difference by race among females.

The prevalence of three common chronic conditions reported from 1985 to 1987 by age and sex is shown in table 4. In the age group 65 and over, hypertension was most prevalent, followed by diabetes and ischemic heart disease. The only significant age and sex difference was

for hypertension, which was more prevalent in females aged 65 years and over than in males.

In the white subpopulation aged 65 and over, of the three chronic conditions investigated, hypertension was the most common (382 affected persons per 1,000 population), followed by ischemic heart disease (130 affected persons per 1,000 population) and diabetes (93 affected persons per 1,000 population). Ischemic heart disease was less prevalent in the black subpopulation aged 65 and over (47 affected persons per 1,000 population), and diabetes was more prevalent, with 167 affected persons per 1,000 population. Hypertension was not significantly more prevalent in older black persons (474 per 1,000) than in older white people (382 per 1,000). However, when persons of all ages were considered, hypertension was more prevalent in the black subpopulation (3).

Despite appearances to the contrary, reported impairments did not vary statistically by sex in black Americans aged 65 and over (table 5). Reports of hearing and visual impairments, cataracts, and deformity or orthopedic impairments were just as common for males as females.

**Table C. Percent distribution of instrumental activities of daily living difficulties, by respondent-assessed health status, sex, and race for persons 65 years of age and over: United States, 1986**

Sex and respondent-assessed health status	IADL difficulties					
	Black			White		
	Total	None	1 or more	Total	None	1 or more
Male						
Percent distribution						
All health statuses . . . . .	100.0	71.3	28.7	100.0	82.4	17.6
Excellent/very good . . . . .	100.0	96.1	*3.9	100.0	93.6	6.4
Fair/poor . . . . .	100.0	49.2	50.8	100.0	59.9	40.1
Female						
All health statuses . . . . .	100.0	57.2	42.8	100.0	65.9	34.1
Excellent/very good . . . . .	100.0	83.5	16.5	100.0	83.1	16.9
Fair/poor . . . . .	100.0	33.3	66.7	100.0	35.1	64.9

NOTE: IADL is instrumental activity of daily living.

In the elderly white population, females had higher rates of cataract than males, and males reported higher rates of hearing impairment (chapter 1, table 5). There were no significant differences in rates of reported hearing impairment by race between older males or between older females (chapter 1). When persons of all ages and both sexes were considered, deafness was more prevalent in the white subpopulation (3). White males aged 65 years and over had higher rates of cataract than their black counterparts; this difference was not found for older females.

## **Functional status and living arrangements**

### **Source of data**

The source of data on functional status and living arrangements is the 1986 Functional Limitations Supplement to the NHIS. For detailed information on this data source as it applies to the parameters under consideration, the reader is referred to chapter 2 of this report.

### **Findings**

Functional status is commonly defined in terms of one's ability to perform basic and instrumental activities of daily living (ADL's and IADL's). Functional limitation, along with whether an individual receives assistance for functional limitation, and living arrangements are each important because they serve as key indicators of the older person's ability to remain independent in the community.

Significantly fewer older black females than males reported no ADL difficulties. For those with difficulty, the extent was greater for females, with more females than males reporting three or more ADL difficulties. The number of ADL difficulties increased with age. Among black persons aged 65 and over, 14 percent reported

three or more ADL difficulties; by age 85 and over, this percentage had more than doubled to 35 percent. The percentage of persons receiving help with two or more ADL's tripled with age, from 9 percent at age 65 and over to 30 percent by age 85 and over (table 6).

Similar patterns of having difficulty and receiving help are demonstrated with IADL's (table 7). Among older black persons, fewer females than males reported no IADL difficulties, and more females reported difficulty with three or more IADL's than males. At age 65 and over, 15 percent of persons reported difficulty with three or more IADL's; this proportion nearly tripled to 44 percent by age 85 and over. Receipt of help of another person for two or more IADL's more than doubled with age, from 19 percent at age 65 and over to 49 percent by age 85 and over.

Older black Americans are less likely than older white Americans to report no ADL difficulties (71 percent versus 78 percent). For those reporting difficulties, there are no differences by race in the percentages of those receiving help of another person for two or more ADL's. Difficulties with and receipt of help for IADL's follow a similar pattern: Fewer older black than white people reported no IADL difficulties (63 percent versus 73 percent); of those reporting difficulties, there are no differences by race in the percentages of those receiving the help of another person with two or more IADL's.

Table 8 describes living arrangements in the black subpopulation by sex and age. At age 65 and over, more females lived alone or with others (i.e., persons other than their spouses), whereas more males lived with spouses. Because of the longer life expectancy of women, there were major differences in the proportion of males and females living alone. More than one-half of females aged 85 and over lived alone, and 43 percent lived with others. More than one-half of males aged 85 and over lived with others.

The proportion of black Americans aged 65 and over living alone was the same as that of their white counterparts, approximately 32 percent. However, significant differences existed between black and white people who lived with persons other than spouses (29 percent and 12 percent, respectively) and those who lived with spouses (39 percent and 56 percent, respectively) (chapter 2, table 7).

## **Changes in functional status and risk of institutionalization and death**

### **Source of data**

The source of data for these parameter estimates is the Longitudinal Study of Aging (LSOA), conducted by NCHS in collaboration with the National Institute on Aging. The baseline data for this longitudinal followup are the 1984 Supplement on Aging (SOA) to the NHIS. The SOA is a survey specifically directed toward civilian noninstitutionalized persons 55 years of age or over. The 1986 LSOA sample included all persons 80 years of age or over and approximately one-half of those aged 70–79 who participated in the SOA (5).

### **Findings**

The impact of functional status at one point in time on outcomes at a later point in time is of interest for its potential predictive ability. This section examines the functional status of persons aged 70 and over in 1984 in terms of the impact of that status on their 1986 outcomes: stability, improvement, or decline in functional status; institutionalization; death; or unknown status.

For these analyses, functional status in 1984 is dichotomized into two levels of difficulty with ADL's and IADL's: no difficulty or some difficulty. Although a certain amount of precision is lost in this classification approach, it was necessary in order to generate statistically reliable estimates for the relatively small black subpopulation.

From 1984 to 1986, approximately 18 percent of older black Americans reported improvement in functional status, from some ADL difficulties to no ADL difficulties (table 9). Nearly 27 percent of older black Americans reported a decline in functional status, from no difficulty in 1984 to some difficulty in 1986. Approximately 50 percent of older black Americans maintained their functional status over the 2-year period. A significant finding from these analyses concerns age differences in improvement in functional status from some ADL difficulty in 1984 to no ADL difficulty in 1986. Of those black persons aged 70–79 experiencing some ADL difficulties in 1984, 22 percent had improved to no ADL difficulties by 1986. In the group aged 80 years and over, only 9 percent had improved their functional status, suggesting that age may be an important predictor of functional status improvement. Although other age differences in change in functional status are suggested by the data in table 9, none of them was statistically significant.

The impact of functional status alone on risk of death was examined within age groups. In both age groups, there was no difference in risk of death between those with no ADL difficulties and those with some ADL difficulties.

In the white subpopulation aged 70 and over, nearly 63 percent of those with no ADL difficulties in 1984 also reported no ADL difficulties in 1986. This is significantly greater than the 54 percent of the black subpopulation. However, slightly more than 10 percent of black persons aged 70 and over who reported some ADL difficulties in 1984 had died by 1986, compared with just over 20 percent of their white counterparts. These differences suggest that, although elderly white persons with no ADL difficulties at baseline are more likely than their black counterparts to maintain their level of functioning, elderly white people with impaired functioning are more likely to die.

Examination of functional status and 2-year outcomes in terms of IADL difficulties revealed

no age or functional-status relationships with 2-year outcomes (table 10). Because of the low numbers of respondents who were institutionalized at followup, conclusions about risk of institutionalization related to prior functional status cannot be drawn. The finding of an age relationship with improvement in ADL functioning did not hold for IADL functioning.

The patterns between the races for IADL status are similar to those for ADL status. A smaller proportion of black persons remained stable with no IADL difficulties compared with white persons (50 percent versus 57 percent). There were no differences between the races in the proportions of those reporting some IADL difficulties both in 1984 and 1986. However, of those reporting some IADL difficulties in 1984, 10.6 percent of black persons had died by 1986, compared with 17.6 percent of white persons. Thus, as measured by either ADL or IADL difficulties, black persons with some functional-status impairment were less likely to die within 2 years than their white counterparts.

## Mortality

### Source of data

Mortality and life expectancy data were obtained from annual volumes of *Vital Statistics of the United States*, vol II, part A. A detailed explanation of this data source can be found in chapter 4 of this report.

### Findings

From 1960 to 1986, the crude death rate for black males aged 65 years and over declined 3 percent; for older black females, the decline was 8 percent (table 11). These rates do not account for the aging of the black population. Age-adjusted death rates have declined by 8 percent for black males and 20 percent for black females (chapter 4, table A). These age-

adjusted declines compare with 21 percent for white males and 30 percent for white females.

Changes in age-specific death rates also occurred from 1960 to 1986 (chapter 4, table B). Of interest is the rise in death rates for black males aged 75 and over, while rates for black females continued to decline. From 1960 to 1986, age-specific death rates for males were higher than the corresponding rates for females across all age groups. For 1980 and 1986, among the age groups 65–84 years, death rates for black persons exceeded those for white persons; a crossover, in which death rates for white people began to exceed those for black people, occurred between the groups aged 80–84 years and 85 years and over (chapter 4).

Life expectancy trends from 1960 to 1986 (table 12) show that life expectancy at birth increased by 4.5 years for black males and 7.6 years for black females. At age 65, the increase was 0.7 years for males and 1.9 years for females. At age 75, life expectancy declined for black males and only increased by 0.7 years for females. At age 85, male life expectancy continued to decline, but female life expectancy increased slightly.

In 1986, life expectancy at birth was 8.3 years longer for black females than for black males. Females experienced longer life expectancy than males at all ages from 1960 to 1986, but this difference declined with age (table 12).

In all years, life expectancy from birth to age 75 was longer for white Americans than for their black counterparts, with a crossover occurring at age 75 (chapter 4, table 2).

Table 13 shows life expectancy for older black Americans by individual ages in 1986. Beyond age 65, black females could expect to live approximately 1 to 3.5 years longer than their male counterparts, with the difference declining with increasing age. This same sex differential was evident for white people. Older white Americans had a longer life expectancy than older black



Americans until age 83. This crossover occurred at age 81 for males and age 83 for females (chapter 4, table 3).

Cause-specific mortality in elderly black Americans rose with age for heart disease, cerebrovascular disease, most malignant neoplasms, diabetes mellitus, and pneumonia and influenza (table 14). Mortality from malignant respiratory neoplasms declined beyond age 85. Male and female mortality rates at age 65 and over were similar for cerebrovascular disease. Except for those with diabetes mellitus, male mortality rates at age 65 and over exceeded female mortality rates for the other causes shown.

Mortality from heart disease declined at all ages and for both sexes from 1980 to 1986. Mortality from malignant neoplasms increased, especially in older age groups. Much of this increase arose from increasing mortality from respiratory malignancies, with the largest increases in mortality from this cause being for females. Death rates from cerebrovascular disease declined for both males and females in all age groups from 1980 to 1986. Mortality from diabetes increased for a few age groups and declined slightly or remained stable for others. The largest increase in mortality from diabetes was for black males aged 80–84. Death rates from pneumonia and influenza rose after age 70 for both sexes. Extensive analyses and comparisons of trends in cause-specific mortality by race, age, and sex are presented in chapter 4, tables C–K.

## Acute care

### Source of data

The NHIS (1985–87), the National Ambulatory Medical Care Survey (NAMCS) (1985), and the National Hospital Discharge Surveys (NHDS) of 1981 and 1987 are the data sources for estimating acute care utilization. These data sources are discussed in detail in chapter 5.

## Findings

The NHIS (1985–87) is the source of data concerning physician visits. The number of physician visits was estimated by the response to the following question: “During the past 12 months, ABOUT how many times did [–/anyone] see or talk to a medical doctor or assistant?” Visits occurring during an overnight stay in a hospital were not included (6). At age 65 and over, both black males and females in fair or poor health had a higher average annual number of physician visits than their counterparts in good or excellent health (table 15). Males aged 65 and over in fair or poor health reported nearly three times as many visits as those in good or excellent health (9.2 versus 3.1 visits). Black females aged 65 and over in fair or poor health reported more than twice as many visits as their healthier counterparts (10.8 versus 4.3 visits). White persons over the age of 65 in fair or poor health also reported more physician visits than those in good or excellent health (chapter 5, table 1). When black people of all health statuses were considered, females reported more visits than males at age 65 and over (7.4 compared with 5.9 visits) (table 15). This difference in number of visits by sex was not statistically significant in the white subpopulation (chapter 5, table 1).

The NAMCS (1985) is the data source for visits to office-based physicians. The three most common diagnoses rendered by office-based physicians for visits by black persons 65 years of age and over were essential hypertension, diabetes mellitus, and arthropathies, in descending order (table 16). In the white subpopulation, the most common diagnosis was essential hypertension, followed in order by diabetes mellitus and chronic ischemic heart disease. The black subpopulation had 72 mentions for hypertension per 1,000 visits compared with 49 mentions for white persons, and 42 mentions for diabetes per 1,000 visits for black patients compared with 24 mentions for

white patients. These apparent differences are not statistically significant.

The frequency of selected common ambulatory diagnostic services received by black persons aged 65 years and over is shown in table 17. Despite appearances to the contrary, there are no age or sex differences in the receipt of these services. Blood pressure testing is the most common ambulatory diagnostic service. There were no differences by race in the number of mentions of the common ambulatory diagnostic services.

The NHDS of 1981 and 1987 are the data source for estimates of short-stay hospital care. Use of short-stay hospital care by older black Americans is detailed in tables 18–20. Table 18 shows the number of hospital discharges, days of care, and average length of stay, according to first-listed diagnoses. For black males aged 65 and over, heart disease accounted for 49,000 hospital discharges in 1981 and 61,000 discharges in 1987. This compares with 72,000 discharges for heart disease in 1981 and 76,000 discharges in 1987 among elderly black females. Malignant neoplasms accounted for 41,000 discharges each for males and females in 1981. In 1987, malignant neoplasms accounted for 40,000 discharges in elderly black males and 29,000 discharges in their female counterparts.

Although average length of stay appeared to decline between 1981 and 1987 for both heart disease and malignant neoplasms in elderly black males, the difference was not significant. For

black females aged 65 and over, average length of stay for heart disease declined significantly during this time period, from 12.7 to 7.7 days. There were no significant changes in average length of stay for either malignant neoplasms or cerebrovascular disease in black females.

In 1987, black persons 65 and over experienced significantly lower rates of discharge for heart disease than their white counterparts. The two subpopulations had equal discharge rates for malignant neoplasms. There was no difference in discharge rates for cerebrovascular disease (table D). Average length of stay in the white subpopulation aged 65 and over declined from 1981 to 1987 for heart disease and cerebrovascular disease (table E). The decline was about 25 percent for each of the causes. In the black subpopulation, only the length of stay for heart disease declined, also by about 25 percent.

Pneumonia and influenza are diagnoses that are increasingly important as causes of death as a population ages (table 14). Hospital discharges for pneumonia and influenza in the black subpopulation aged 65 and over numbered 22,000 in both 1981 and 1987. Discharges for males were 9,000 in 1981 and 12,000 in 1987. Females experienced 13,000 discharges in 1981 and 11,000 discharges in 1987. From 1981 to 1987, average length of stay in days declined significantly for both black males and females (table 19).

In 1987, elderly black persons experienced significantly lower rates of discharge for

**Table D. Discharge rates for black and white persons 65 years of age and over, by selected first-listed diagnoses: United States, 1987**

<i>First-listed diagnosis</i>	<i>Black</i>		<i>White</i>	
	<i>Number of discharges in thousands</i>	<i>Rate per thousand</i>	<i>Number of discharges in thousands</i>	<i>Rate per thousand</i>
Heart disease . . . . .	137	56.0	1,833	68.2
Malignant neoplasms . . . . .	69	28.2	757	28.2
Cerebrovascular disease . . . . .	54	22.1	522	19.4

**Table E. Average length of stay by race, sex, and selected first-listed diagnoses for persons 65 years of age and over: United States, 1981 and 1987**

<i>Sex and first-listed diagnosis</i>	<i>Black</i>		<i>White</i>	
	<i>1981</i>	<i>1987</i>	<i>1981</i>	<i>1987</i>
Average length of stay in days				
Both sexes				
Heart disease .....	12.3	8.0	10.0	7.5
Malignant neoplasm .....	15.3	11.8	12.6	9.2
Cerebrovascular disease .....	14.6	14.0	12.7	9.7
Male				
Heart disease .....	11.8	8.3	9.7	7.3
Malignant neoplasm .....	15.3	12.6	12.6	8.9
Cerebrovascular disease .....	15.4	12.8	12.1	8.6
Female				
Heart disease .....	12.7	7.7	10.3	7.7
Malignant neoplasm .....	15.3	10.8	12.7	9.5
Cerebrovascular disease .....	14.2	14.7	13.3	10.4

pneumonia and influenza than their white counterparts (table F). Of interest is the differential in average length of stay between the races. In 1981, black persons aged 65 and over were hospitalized for pneumonia an average of 16.4 days. This declined to 10.0 days by 1987. In contrast, the white subpopulation experienced no change in average length of stay of 10.7 days in 1981 and 9.8 days in 1987 (data not shown). The reasons for the large discrepancy between these subpopulations in 1981 as well as the reason for the disappearance of this discrepancy are unclear. However, the discrepancy in 1981 may be related to the overall health status of the two groups, with elderly black persons experiencing pneumonia in an overall poorer state of

health, resulting in longer hospitalizations. Whatever the reason for the 1981 difference, some equalizing force occurred prior to 1987, perhaps the implementation of the prospective payment system.

The disposition of patients discharged from short-stay hospitals can give an indication of severity of illness as well as need for long-term care services. Table 20 shows that the majority of discharges for older black Americans were classified as "routine." In 1987, the percentage of routine discharges for males declined from 79 percent between the ages of 65 and 74 to 63 percent at age 85 and over. For females in these age groups, the percentage of routine discharges declined from 80 percent to 52 percent. Between 1981 and 1987, the percentage of discharges to long-term care for black males and females aged 65 and over increased significantly. For both males and females, in 1987, discharges to long-term care increased with age.

In the white subpopulation aged 65 and over, the majority of discharges were also classified as "routine." Discharges to long-term care for the

**Table F. Discharge rates for pneumonia-influenza for black and white persons, 65 years of age and over: United States, 1987**

<i>Race</i>	<i>Number of discharges in thousands</i>	<i>Rate per thousand</i>
Black .....	22	9.0
White .....	372	13.8

**Table G. Percent distribution of males and females 65 years of age and over, by race and discharge disposition: United States, 1981 and 1987**

<i>Race and discharge disposition</i>	<i>Male</i>		<i>Female</i>	
	<i>1981</i>	<i>1987</i>	<i>1981</i>	<i>1987</i>
Black				
Percent distribution				
Total. ....	100.0	100.0	100.0	100.0
Routine. ....	67.5	72.8	70.3	71.0
Long-term care . . . . .	6.1	10.2	6.9	13.7
Died . . . . .	7.7	8.3	6.6	6.3
Other/unknown . . . . .	18.7	8.7	16.2	9.1
White				
Total. ....	100.0	100.0	100.0	100.0
Routine. ....	74.3	76.1	73.1	71.8
Long-term care . . . . .	6.1	9.6	9.9	15.3
Died . . . . .	7.7	7.0	5.7	5.8
Other/unknown . . . . .	11.9	7.3	11.3	7.1

elderly white subpopulation also increased from 1981 to 1987.

The increase in the number of discharges to long-term care between 1981 and 1987 in both subpopulations merits closer examination. Although it would be expected that declines in the number of routine discharges and deaths would contribute to the increase, from table G it can be seen that the changes in the proportions of routine discharges and the proportions of persons who died while hospitalized are not of a magnitude sufficient to account for the increases in discharges to long-term care. However, significant declines in the proportions of “other” and “unknown” statuses occurred between the years being compared. It seems then that significant numbers of persons whose discharge status was classified as “other” or “unknown” in 1981 were classified as being discharged to long-term care in 1987.

### Long-term care

#### Source of data

The 1985 National Nursing Home Survey (NNHS) is the source of data on long-term care.

For a detailed discussion of this data source, the reader is referred to chapter 6 of this report.

### Findings

In 1985, there were approximately 1.5 million nursing home residents. Ninety-two percent of these residents were white and 7 percent were black. Seventy-nine percent of black nursing home residents were 65 years of age or over, and 89 percent of white nursing home residents were in this age group. Because of the small sample size, the profile of black nursing home residents and the comparisons to their white counterparts presented in tables 21–23 are not restricted to the older population, but rather reflect the entire age spectrum.

Sixty-six percent of black nursing home residents had cognitive disabilities, and 68 percent of white nursing home residents had cognitive disabilities (table 21). Although there appears to be a larger percentage of white nursing home residents with depressive disorders (15 percent), compared with black nursing home residents (10 percent), this difference is not statistically significant. The distribution of other

cognitive disabilities does not differ between black and white nursing home residents.

Differences by race in the relationship of staff-assessed physical health status and the presence of selected cognitive disabilities among nursing home residents are shown in table 22. Among nursing home residents reported as being in fair or poor physical health, less black people (60 percent) had cognitive disabilities than white people (71 percent). Apparent differences in the percentage of black and white residents with depressive disorders or anxiety were not statistically significant.

Memory impairment among nursing home residents is a common problem. Sixty-seven percent of black residents were reported to have impaired memory; the corresponding percentage for white residents was 62 (table 23). Seventy-nine percent of black residents with memory impairment had cognitive disabilities, and 83 percent of white residents with memory impairment had cognitive disabilities.

## **Patterns of drug prescribing**

### **Source of data**

The NAMCS (1985) and the 1986 NHIS Supplement on Vitamins and Minerals provided data for the estimates presented here. The data on drugs refer to drugs that were prescribed by a physician as part of a patient's therapy during a visit to an office-based physician but do not imply actual use by the patient. Chapter 7 contains a detailed discussion of these data sources in relation to the estimates presented below.

### **Findings**

For black Americans 55 years of age and over, there were more than 22 million drug mentions for 13.6 million visits to office-based physicians. One or more drugs were mentioned for 75 percent of visits in the 65–74 age group and for 79 percent of visits in the 75-and-over

age group (table 24). The percentage of visits for which two or more drugs were mentioned increases with age (44 and 53 percent, respectively), reflecting, perhaps, the well-known phenomenon of polypharmacy among the elderly (7). Compared with white Americans aged 65–74 and 75 and over, black persons had a higher percentage of office visits associated with one or more drug mentions (76 percent versus 66 percent) (chapter 7, table 1).

Factors associated with vitamin or mineral use in black Americans 55 years of age and over are shown in table 25. A minority of older black persons use vitamin or mineral supplements. Vitamin or mineral use is more common in females, in the pre-elderly, in people with more than high school education, in those whose income is \$20,000 or more, and in those who rate their health status as good. Fewer black Americans use vitamin and mineral supplements than their white counterparts (chapter 7, table 7).

Use of specific vitamin and mineral supplements is detailed in table 26. No significant differences in use of specific agents by sex or age were found. However, for all the listed vitamin supplements and for calcium and iron, a significantly lower percentage of black persons 65 years of age or over reported using these agents, compared with their white counterparts.

## **Cost of health care**

### **Source of data**

The LSOA is the source of data for the estimates of cost of health care. The LSOA was conducted by NCHS in collaboration with the National Institute on Aging. The baseline data for this longitudinal followup are the 1984 SOA to the NHIS. The SOA is a survey specifically directed toward civilian noninstitutionalized persons 55 years of age or over. The 1986 LSOA sample included all persons 80 years of age or over and approximately one-half of those aged

70–79 who participated in the SOA (5). A detailed discussion of this data source in relation to these estimates can be found in chapter 8.

## Findings

In 1984, Medicaid benefits were received by 20 percent of black Americans aged 70 and over. One-quarter of black females aged 70 and over received Medicaid benefits, compared with just over 11 percent of their male counterparts, a significant difference (table 27). In the white subpopulation, 4 percent of persons aged 70 and over received Medicaid benefits, significantly fewer than in the black subpopulation. As in the black subpopulation, more older white females received Medicaid benefits than did males (5 percent versus 2 percent).

Consistency in receipt of Medicaid benefits from 1984 to 1986 is shown in table 28. Fifty percent of those older black persons who received Medicaid benefits in 1984 also received them in 1986. In the white subpopulation, Medicaid benefits in 1986 were received by 68 percent of those who had received them in 1984, a significantly higher proportion than in the black subpopulation. There were no other differences by race or sex.

## Musculoskeletal conditions

### Source of data

A number of data sources were used to develop the estimates discussed here. These include the National Health Examination Survey (NHES, 1960–62), the second National Health and Nutrition Examination Survey (NHANES II, 1976–80), and the National Health Interview Survey Supplement on Aging (SOA, 1984). The NHES was conducted on a national probability sample of the adult civilian noninstitutionalized population of the United States to provide prevalence estimates of a variety of specific diseases and physical and physiological parameters. The

NHANES continued the work started by NHES, but included emphasis on nutritional status and oversampling of certain high-risk subpopulations including low-income groups. The 1984 SOA is a survey specifically directed toward civilian non-institutionalized persons 55 years of age or over. The SOA provided baseline data for the LSOA. A detailed examination and discussion of these data sources may be found in chapter 10.

## Findings

Arthritis and joint pain are major health problems in old age. In 1984, black females aged 65 and over had higher rates of physician-diagnosed arthritis than did males (table 29). The prevalence of arthritis did not change significantly beyond age 65 in either sex.

In the white subpopulation aged 65 and over, females also had a higher prevalence of arthritis than did males in 1984. For both sexes, physician-diagnosed arthritis was more common in black elders than their white counterparts (data not shown).

Comorbid conditions are a major health concern in older people. Because the prevalence of arthritis is high in this age group, examining the occurrence of comorbid conditions with arthritis is of interest in examining overall health. Table 30 examines the occurrence of selected conditions with arthritis among black persons aged 55 and over. Hypertension occurs in more than one-half of all black persons aged 65 and over reporting arthritis, followed in frequency by diabetes and heart disease. Hypertension, as a comorbid condition with arthritis, occurs more frequently in elderly black females than in males. No apparent sex differences for diabetes and heart disease were found.

Hypertension is also the most common comorbid condition in white people aged 65 and over with arthritis, followed by heart disease, diabetes, and cancer. Hypertension and diabetes are more common in the black subpopulation with arthritis, and cancer is more common in

white people. The prevalence of heart disease does not vary significantly between the two groups (data not shown).

## References

1. U.S. Bureau of the Census. United States population estimates, by age, sex, and race, 1980–87. Current population reports; series P-25, no 1022. Washington: U.S. Department of Commerce. 1988.
2. Spencer G. Projections of the population of the United States, by age, sex, and race: 1988–2080. Current population reports; series P-25, no 1018. Washington: U.S. Department of Commerce. 1989.
3. Ries P. Health of black and white Americans, 1985–87. Data from the National Health Interview Survey. National Center for Health Statistics. Vital Health Stat 10(171). 1990.
4. Manton KG, Patric CH, Johnson KW. Health differentials between blacks and whites: recent trends in mortality and morbidity. *Milbank Quarterly* 65(Suppl. 1):129–99. 1987.
5. Harris T, Kovar MG, Suzman R, et al. Longitudinal study of physical ability in the oldest-old. *Am J Public Health* 79(6):698–702. 1989.
6. National Center for Health Statistics. Public use data tape documentation, NHIS, 1985. U.S. Department of Health and Human Services. Washington: Public Health Service.
7. Davison W. Adverse drug reactions in the elderly: general considerations. In: Butler RN, Bears AG, eds. *The aging process: therapeutic implications*. New York: Raven Press, 101–11. 1984.

**Table 1. Average annual percent distribution of black persons 55 years of age and over by respondent-assessed health status, according to sex and age: United States, 1985–87**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and age</i>	<i>Total</i>	<i>Respondent-assessed health status</i> <sup>1</sup>				
		<i>Excellent</i>	<i>Very good</i>	<i>Good</i>	<i>Fair</i>	<i>Poor</i>
	Number of persons in thousands	Percent distribution <sup>2</sup>				
Both sexes						
55–64 years. . . . .	2,070	13.1	17.2	29.5	25.5	14.7
65 years and over. . . . .	2,293	9.4	16.7	28.0	28.7	17.3
Male						
55–64 years. . . . .	929	16.1	16.8	28.6	23.6	14.9
65 years and over. . . . .	921	10.6	16.2	28.5	27.7	17.0
Female						
55–64 years. . . . .	1,141	10.7	17.5	30.2	27.1	14.5
65 years and over. . . . .	1,372	8.6	16.9	27.6	29.4	17.5

<sup>1</sup>Excludes unknown respondent-assessed health status.

<sup>2</sup>May not add to 100 percent because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.



**Table 2. Percent distribution of black persons 65 years of age and over by number of activities of daily living for which difficulty was reported, according to sex and respondent-assessed health status: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and respondent-assessed health status<sup>1</sup></i>	<i>Total</i>	<i>Number of ADL's causing difficulty</i>	
		<i>None</i>	<i>1 or more</i>
	<i>Number of persons in thousands<sup>2</sup></i>	<i>Percent distribution<sup>3</sup></i>	
<i>Male</i>			
All health statuses . . . . .	904	76.2	23.8
Excellent and very good . . . . .	232	98.9	*1.1
Good . . . . .	265	89.7	*10.3
Fair and poor . . . . .	406	54.4	45.6
<i>Female</i>			
All health statuses . . . . .	1,352	67.8	32.2
Excellent and very good . . . . .	386	86.8	13.2
Good . . . . .	364	83.4	16.6
Fair and poor . . . . .	602	46.1	53.9

<sup>1</sup>Excludes unknown respondent-assessed health status.

<sup>2</sup>Excludes those for whom information was missing on all activities of daily living (ADL's).

<sup>3</sup>May not add to 100 percent because of rounding.

NOTES: Persons reported as not performing an ADL were classified with those reported as having difficulty with that ADL. ADL's include eating, toileting, dressing, bathing, walking, getting in and out of a bed or chair, and getting outside.

SOURCE: National Center for Health Statistics; Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 3. Percent distribution of black persons 65 years of age and over by number of instrumental activities of daily living for which difficulty was reported, according to sex and respondent-assessed health status: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and respondent-assessed health status</i> <sup>1</sup>	<i>Total</i>	<i>Number of IADL's causing difficulty</i>	
		<i>None</i>	<i>1 or more</i>
	Number of persons in thousands <sup>2</sup>	Percent distribution <sup>3</sup>	
Male			
All health statuses . . . . .	904	71.3	28.7
Excellent and very good . . . . .	232	96.1	*3.9
Good . . . . .	265	83.6	16.4
Fair and poor . . . . .	406	49.2	50.8
Female			
All health statuses . . . . .	1,348	57.2	42.8
Excellent and very good . . . . .	382	83.5	16.5
Good . . . . .	364	69.0	31.0
Fair and poor . . . . .	602	33.3	66.7

<sup>1</sup>Excludes unknown respondent-assessed health status.

<sup>2</sup>Excludes those for whom information was missing on all instrumental activities of daily living (IADL's).

<sup>3</sup>May not add to 100 percent because of rounding.

NOTES: Persons reported as not performing an IADL were not classified with those reported as having difficulty with that IADL. IADL's include meal preparation, shopping, managing money, using the telephone, light housework, and heavy housework.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 4. Average annual number of selected reported chronic conditions per 1,000 black persons 55 years of age and over, by sex and age: United States, 1985–87**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and age</i>	<i>Ischemic heart disease</i>	<i>Hypertension</i>	<i>Diabetes</i>
Both sexes			
Number per 1,000 persons			
55–64 years. ....	44.6	418.2	143.2
65–74 years. ....	59.8	509.7	157.4
65 years and over. ....	47.4	474.4	166.8
75 years and over. ....	26.2	413.4	182.9
Male			
55–64 years. ....	47.2	425.1	117.1
65–74 years. ....	55.3	384.0	143.3
65 years and over. ....	49.8	324.1	135.3
75 years and over. ....	39.1	205.4	119.5
Female			
55–64 years. ....	42.5	412.6	164.6
65–74 years. ....	63.0	601.3	167.7
65 years and over. ....	45.8	575.1	187.9
75 years and over. ....	18.7	534.0	219.7

NOTE: These rates are based on unduplicated counts; a person was counted only once for each condition regardless of the number of mentions of that condition.

SOURCE: National Center for Health Statistics; Data from the National Health Interview Survey.

**Table 5. Average annual number of selected reported impairments per 1,000 black persons 55 years of age and over, by sex and age: United States, 1985-87**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and age</i>	<i>Visual impairment<sup>1</sup></i>	<i>Cataract</i>	<i>Hearing impairment<sup>2</sup></i>	<i>Deformity or orthopedic impairment<sup>3</sup></i>
Both sexes				
Number per 1,000 persons				
55-64 years. ....	58.8	25.9	181.8	204.6
65 years and over. ....	85.3	145.3	267.4	164.5
Male				
55-64 years. ....	66.8	*32.7	166.7	224.4
65 years and over. ....	112.9	79.5	307.8	125.2
Female				
55-64 years. ....	52.3	*20.4	*194.1	188.5
65 years and over. ....	66.7	189.5	240.2	190.9

<sup>1</sup>Visual impairment includes blindness in both eyes and other visual impairments.

<sup>2</sup>Hearing impairment includes deafness in both ears, other hearing impairments, and tinnitus.

<sup>3</sup>Deformity or orthopedic impairment includes back, upper extremities, and lower extremities.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.

**Table 6. Percent distribution of black persons 65 years of age and over by number of activities of daily living for which difficulty was reported and percent of persons who received the help of another person in performing activities of daily living, according to sex and age: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and age</i>	<i>Total</i>	<i>Number of ADL's</i>					
		<i>With difficulty</i>				<i>Help of another person received</i>	
		<i>None</i>	<i>1</i>	<i>2</i>	<i>3 or more</i>	<i>1</i>	<i>2 or more</i>
	Number of persons in thousands <sup>1</sup>	Percent distribution <sup>2</sup>				Percent	
Total. ....	2,258	71.3	8.6	5.9	14.1	4.4	9.2
Sex							
Male. ....	904	76.5	10.3	*2.8	10.4	*3.8	5.8
Female. ....	1,354	67.8	7.5	8.0	16.6	4.8	11.4
Age							
65 years and over. ....	2,258	71.3	8.6	5.9	14.1	4.4	9.2
75 years and over. ....	824	59.9	10.4	5.2	24.5	5.9	16.8
85 years and over. ....	159	47.1	*9.8	*8.6	34.5	10.3	29.9

<sup>1</sup>Excludes those for whom information was missing on all activities of daily living (ADL's).

<sup>2</sup>May not add to 100 percent because of rounding.

NOTES: Persons reported as not performing an ADL are included with those reported as having difficulty or receiving help with that ADL. ADL's include eating, toileting, dressing, bathing, walking, getting in and out of a bed or chair, and getting outside.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 7. Percent distribution of black persons 65 years of age and over by number of instrumental activities of daily living for which difficulty was reported and percent of persons who received the help of another person in performing instrumental activities of daily living, according to sex and age: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and age</i>	<i>Total</i>	<i>Number of IADL's</i>					
		<i>With Difficulty</i>				<i>Help of another person received</i>	
		<i>None</i>	<i>1</i>	<i>2</i>	<i>3 or more</i>	<i>1</i>	<i>2 or more</i>
	<i>Number of persons in thousands<sup>1</sup></i>	<i>Percent distribution<sup>2</sup></i>				<i>Percent</i>	
Total.....	2,254	62.9	15.2	6.9	15.1	11.1	18.9
<i>Sex</i>							
Male.....	904	71.3	12.7	5.1	10.9	7.5	14.7
Female.....	1,350	57.2	16.9	8.0	17.9	13.6	21.7
<i>Age</i>							
65 years and over.....	2,254	62.9	15.2	6.9	15.1	11.1	18.9
75 years and over.....	824	50.7	14.7	7.5	27.1	12.0	31.8
85 years and over.....	159	30.6	20.2	*5.3	43.9	*18.7	48.2

<sup>1</sup>Excludes those for whom information was missing on all instrumental activities of daily living (IADL's).

<sup>2</sup>May not add to 100 percent because of rounding.

NOTES: Persons reported as not performing an IADL are not included with those reported as having difficulty or receiving help with that IADL. IADL's include preparing meals, shopping, managing money, using the telephone, light housework, and heavy housework.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 8. Percent distribution of black persons 65 years of age and over by living arrangement, according to sex and age: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex and age</i>	<i>Living arrangement</i>		
	<i>Lives alone</i>	<i>Lives with others</i> <sup>1</sup>	<i>Lives with spouse</i>
<b>Both sexes</b>		<b>Percent distribution<sup>2</sup></b>	
65 years and over.....	32.1	28.5	39.4
75 years and over.....	38.5	35.6	25.9
85 years and over.....	44.9	45.7	*9.4
<b>Male</b>			
65 years and over.....	22.2	18.2	59.6
75 years and over.....	28.0	27.5	44.5
85 years and over.....	*22.7	53.6	*23.6
<b>Female</b>			
65 years and over.....	38.7	35.4	25.9
75 years and over.....	44.5	40.3	15.2
85 years and over.....	51.6	43.3	*5.1

<sup>1</sup>Lives with a nonrelative or a relative other than a spouse.

<sup>2</sup>May not add to 100 percent because of rounding.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey 1986 Functional Limitations Supplement.

**Table 9. Percent distribution of black persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with performing activities of daily living reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

Sex, age, and extent of difficulty with ADL's reported in 1984 <sup>1</sup>	Total in 1984	Outcome at 1986 recontact				
		Extent of difficulty with ADL's reported for persons alive and living in the community <sup>2</sup>				
		None	Some difficulty	Deceased	In nursing home <sup>3</sup>	Unknown <sup>4</sup>
Both sexes, 70 years and over		Percent distribution				
Total . . . . .	Number in thousands 1,444	41.8	37.1	8.4	*1.0	11.6
No difficulty . . . . .	959	54.0	26.8	7.4	*0.8	11.1
Some difficulty . . . . .	486	17.8	57.6	10.4	*1.5	12.7
Both sexes, 70-79 years		Percent distribution				
Total . . . . .	1,085	46.0	34.5	7.0	*0.9	11.7
No difficulty . . . . .	763	56.1	26.3	6.2	*0.3	11.1
Some difficulty . . . . .	322	22.3	53.8	8.8	*2.3	12.9
Both sexes, 80 years and over		Percent distribution				
Total . . . . .	359	29.2	45.1	12.7	*1.4	11.6
No difficulty . . . . .	196	46.0	28.5	12.0	*2.5	*11.0
Some difficulty . . . . .	163	9.1	65.1	13.7	-	*12.2
Male, 70 years and over		Percent distribution				
Total . . . . .	539	49.1	28.2	10.6	*0.5	11.6
No difficulty . . . . .	409	53.2	24.1	10.5	*0.6	11.6
Some difficulty . . . . .	129	36.2	41.1	*11.1	-	*11.6
Male, 70-79 years		Percent distribution				
Total . . . . .	435	52.1	27.2	9.4	-	11.3
No difficulty . . . . .	342	53.9	25.9	8.5	-	11.7
Some difficulty . . . . .	93	45.2	32.2	*12.6	-	*10.0
Male, 80 years and over		Percent distribution				
Total . . . . .	104	36.8	32.2	*15.7	*2.4	*12.9
No difficulty . . . . .	67	49.6	*15.1	*20.3	*3.7	*11.3
Some difficulty . . . . .	37	*13.4	63.5	*7.3	-	*15.7

Female, 70 years and over						
Total. ....	906	37.5	42.5	7.1	*1.3	11.6
No difficulty . . . . .	549	54.6	28.8	5.1	*0.9	10.7
Some difficulty . . . . .	356	11.2	63.6	10.2	*2.1	13.0
Female, 70-79 years						
Total. ....	650	42.0	39.4	5.3	*1.5	11.9
No difficulty . . . . .	421	57.8	26.7	*4.3	*0.5	10.7
Some difficulty . . . . .	230	13.0	62.6	*7.2	*3.2	14.1
Female, 80 years and over						
Total. ....	255	26.2	50.3	11.5	*1.0	*11.0
No difficulty . . . . .	129	44.1	35.4	*7.7	*1.9	*10.9
Some difficulty . . . . .	126	*7.8	65.5	15.5	-	*11.2

<sup>1</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>2</sup>Includes persons hospitalized at time of recontact.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

NOTES: Persons reported as not performing an activity of daily living (ADL) were classified with those reported as having difficulty with that ADL. ADL's include eating, toileting, dressing, bathing, getting in and out of a bed or chair, walking, and getting outside.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.



**Table 10. Percent distribution of black persons 70 years of age and over in 1984 by outcome at 1986 recontact, according to sex, age, and extent of difficulty with performing instrumental activities of daily living reported in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

Sex, age, and extent of difficulty with IADL's reported in 1984 <sup>1</sup>	Total in 1984	Outcome at 1986 recontact				
		Extent of difficulty with IADL's reported for persons alive and living in the community <sup>2</sup>				
		None	Some difficulty	Deceased	In nursing home <sup>3</sup>	Unknown <sup>4</sup>
Both sexes, 70 years and over		Percent distribution				
Total . . . . .	1,423	34.0	44.5	8.5	*0.8	12.1
No difficulty . . . . .	580	49.5	32.4	7.1	*0.3	10.8
Some difficulty . . . . .	842	11.5	62.1	10.6	*1.7	14.2
Both sexes, 70-79 years		Percent distribution				
Total . . . . .	1,067	38.5	41.2	7.1	*0.9	12.3
No difficulty . . . . .	675	53.2	30.0	6.1	*0.3	10.5
Some difficulty . . . . .	391	13.3	60.6	8.7	*1.9	15.5
Both sexes, 80 years and over		Percent distribution				
Total . . . . .	356	20.3	54.5	12.9	*0.7	11.7
No difficulty . . . . .	167	34.5	42.4	11.1	0.0	*12.0
Some difficulty . . . . .	189	7.8	65.1	14.4	*1.3	*11.4
Male, 70 years and over		Percent distribution				
Total . . . . .	531	40.5	36.0	10.8	*0.5	12.2
No difficulty . . . . .	382	51.0	27.3	9.2	0.0	12.6
Some difficulty . . . . .	148	*13.5	58.6	*14.8	*1.7	*11.4
Male, 70-79 years		Percent distribution				
Total . . . . .	427	44.7	33.7	9.6	-	12.1
No difficulty . . . . .	322	53.8	25.6	8.3	-	12.3
Some difficulty . . . . .	105	*16.7	58.3	*13.6	-	*11.4
Male, 80 years and over		Percent distribution				
Total . . . . .	104	23.3	45.7	*15.7	*2.4	*12.9
No difficulty . . . . .	61	35.8	36.1	*14.3	-	*13.9
Some difficulty . . . . .	43	*5.7	59.3	*17.8	*5.7	11.5

Female, 70 years and over						
Total . . . . .	892	30.1	49.6	7.2	1.1	12.1
No difficulty . . . . .	460	48.2	36.7	*5.4	*0.5	9.3
Some difficulty . . . . .	432	10.8	63.3	9.1	*1.7	15.1
Female, 70-79 years						
Total . . . . .	640	34.5	46.2	5.4	*1.5	12.5
No difficulty . . . . .	354	52.6	33.9	*4.2	*0.6	8.8
Some difficulty . . . . .	286	12.1	61.4	6.9	*2.6	17.0
Female, 80 years and over						
Total . . . . .	252	19.1	58.1	11.7	—	*11.2
No difficulty . . . . .	106	33.7	46.1	*9.3	—	*10.9
Some difficulty . . . . .	146	*8.4	66.8	*13.4	—	*11.4

<sup>1</sup>Excludes persons for whom status of difficulty in 1984 was unknown.

<sup>2</sup>Includes persons hospitalized at time of recontact.

<sup>3</sup>Excludes persons discharged from nursing homes prior to recontact.

<sup>4</sup>Includes persons not located in 1986.

NOTES: Persons reported as not performing an instrumental activity of daily living (IADL) were not classified with those reported as having difficulty with that IADL. IADL's include meal preparation, shopping, managing money, using the telephone, light housework, and heavy housework.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

**Table 11. Death rates for all causes among black persons 55 years of age and over, by sex and age: United States, selected years 1960–86**

[Data are based on the National Vital Statistics System]

<i>Sex and age</i>	<i>1960</i> <sup>1</sup>	<i>1970</i>	<i>1980</i>	<i>1986</i>
Male				
Number of deaths per 100,000 resident population				
55–59 years. ....	2,664.5	2,825.8	2,457.2	2,075.4
60–64 years. ....	4,199.6	3,778.7	3,377.1	3,075.6
65–69 years. ....	5,226.5	5,051.3	4,484.0	4,074.1
70–74 years. ....	6,664.5	6,936.6	6,047.7	5,797.0
75–79 years. ....	7,653.7	8,827.8	8,092.2	8,038.1
80–84 years. ....	10,757.1	10,629.9	11,554.2	11,854.7
65 years and over. ....	6,979.0	7,151.7	6,919.8	6,760.8
75 years and over. ....	9,695.2	10,047.9	10,530.5	10,552.9
85 years and over. ....	14,844.8	12,222.2	16,098.8	15,488.1
Female				
55–59 years. ....	2,051.1	1,688.5	1,305.8	1,148.2
60–64 years. ....	3,113.2	2,335.8	1,860.7	1,822.3
65–69 years. ....	3,551.9	3,285.3	2,538.4	2,402.1
70–74 years. ....	4,832.6	4,728.5	3,759.6	3,514.8
75–79 years. ....	5,931.2	6,059.7	5,243.8	5,032.1
80–84 years. ....	8,437.3	7,761.0	8,030.1	8,170.6
65 years and over. ....	5,287.3	5,151.1	4,766.7	4,842.7
75 years and over. ....	7,943.4	7,642.8	7,612.3	7,753.0
85 years and over. ....	13,052.6	10,706.6	12,367.2	12,510.3

<sup>1</sup>Includes deaths of nonresidents of the United States.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. Selected years.

**Table 12. Life expectancy at specified ages for black persons, by sex: United States, 1960, 1970, 1980, and 1986**

[Data are based on the National Vital Statistics System]

<i>Age and year</i>	<i>Both sexes</i>	<i>Male</i>	<i>Female</i>
Remaining life expectancy in years			
At birth			
1960 <sup>1</sup> .....	63.2	60.7	65.9
1970 .....	64.1	60.0	68.3
1980 .....	68.1	63.8	72.5
1986 .....	69.4	65.2	73.5
At 65 years			
1960 <sup>1</sup> .....	13.9	12.7	15.1
1970 .....	14.2	12.5	15.7
1980 .....	15.1	13.0	16.8
1986 .....	15.4	13.4	17.0
At 75 years			
1960 <sup>1</sup> .....	9.8	9.1	10.4
1970 .....	9.9	8.8	10.9
1980 .....	9.7	8.3	10.7
1986 .....	10.1	8.7	11.1
At 85 years			
1960 <sup>1</sup> .....	6.0	5.7	6.2
1970 .....	6.6	5.9	7.0
1980 .....	5.5	4.5	6.1
1986 .....	6.3	5.5	6.7

<sup>1</sup>Includes deaths of nonresidents of the United States.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. Selected years.

**Table 13. Life expectancy for black persons at individual ages 65–85 years, by sex: United States, 1986**

[Data are based on the National Vital Statistics System]

<i>Age</i>	<i>Both sexes</i>	<i>Male</i>	<i>Female</i>
	Remaining life expectancy in years		
65 years.....	15.4	13.4	17.0
66 years.....	14.8	12.9	16.4
67 years.....	14.2	12.3	15.7
68 years.....	13.6	11.8	15.1
69 years.....	13.1	11.3	14.5
70 years.....	12.5	10.8	13.9
71 years.....	12.0	10.4	13.3
72 years.....	11.5	9.9	12.7
73 years.....	11.0	9.5	12.1
74 years.....	10.5	9.1	11.6
75 years.....	10.1	8.7	11.1
76 years.....	9.6	8.3	10.5
77 years.....	9.1	7.9	10.0
78 years.....	8.7	7.5	9.5
79 years.....	8.3	7.2	9.0
80 years.....	7.9	6.8	8.5
81 years.....	7.5	6.5	8.1
82 years.....	7.1	6.2	7.7
83 years.....	6.8	5.9	7.3
84 years.....	6.5	5.7	7.0
85 years.....	6.3	5.5	6.7

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. 1986.

**Table 14. Death rates for selected causes among black persons 55 years of age and over, by sex and age: United States, selected years 1980–86**

[Data are based on the National Vital Statistics System]

<i>Cause of death, sex, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Diseases of heart <sup>1</sup>				
Number of deaths per 100,000 resident population				
Male:				
55–59 years. . . . .	824.5	787.0	709.9	685.5
60–64 years. . . . .	1,184.4	1,141.9	1,110.9	1,067.1
65–69 years. . . . .	1,593.7	1,586.5	1,426.6	1,420.3
70–74 years. . . . .	2,206.3	2,123.6	2,161.2	2,028.9
75–79 years. . . . .	3,084.7	2,790.1	2,785.7	2,885.2
80–84 years. . . . .	4,586.2	4,109.4	4,569.9	4,475.6
65 years and over. . . . .	2,623.6	2,517.5	2,474.0	2,465.5
75 years and over. . . . .	4,190.0	3,826.8	3,905.4	3,990.0
85 years and over. . . . .	6,819.5	6,378.6	6,015.9	6,268.7
Female:				
55–59 years. . . . .	416.8	387.2	391.0	354.1
60–64 years. . . . .	663.1	635.0	621.6	616.0
65–69 years. . . . .	983.1	916.5	881.1	893.5
70–74 years. . . . .	1,517.8	1,374.6	1,438.0	1,381.0
75–79 years. . . . .	2,241.2	1,980.3	2,040.3	2,120.9
80–84 years. . . . .	3,582.0	3,253.4	3,668.3	3,533.3
65 years and over. . . . .	2,036.2	1,909.1	1,975.5	2,027.4
75 years and over. . . . .	3,411.2	3,125.2	3,281.7	3,399.0
85 years and over. . . . .	5,796.5	5,491.3	5,315.0	5,698.6
Cerebrovascular diseases <sup>2</sup>				
Male:				
55–59 years. . . . .	145.1	139.6	128.8	116.9
60–64 years. . . . .	244.0	215.0	194.0	175.2
65–69 years. . . . .	376.4	347.6	296.0	270.5
70–74 years. . . . .	609.4	530.8	495.7	432.3
75–79 years. . . . .	908.1	770.8	644.6	676.1
80–84 years. . . . .	1,392.8	1,091.8	1,173.5	1,083.7
65 years and over. . . . .	720.3	634.0	568.9	536.9
75 years and over. . . . .	1,219.6	1,021.9	935.0	920.1
85 years and over. . . . .	1,873.2	1,637.5	1,395.2	1,350.7
Female:				
55–59 years. . . . .	111.5	97.1	84.9	81.1
60–64 years. . . . .	170.6	162.8	143.5	140.3
65–69 years. . . . .	283.5	247.0	223.9	203.1
70–74 years. . . . .	468.7	375.4	406.5	351.6
75–79 years. . . . .	759.3	643.7	620.5	564.6
80–84 years. . . . .	1,217.7	1,074.0	1,135.2	975.2
65 years and over. . . . .	654.6	577.5	565.6	526.2
75 years and over. . . . .	1,141.4	999.2	967.5	910.8
85 years and over. . . . .	1,896.3	1,689.6	1,470.7	1,504.1
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues <sup>3</sup>				
Male:				
55–59 years. . . . .	688.8	695.1	690.3	603.6
60–64 years. . . . .	962.4	1,006.0	1,016.7	970.5
65–69 years. . . . .	1,287.7	1,332.0	1,248.7	1,273.5
70–74 years. . . . .	1,600.7	1,662.8	1,716.5	1,710.6
75–79 years. . . . .	1,862.7	1,900.0	2,007.7	2,067.6
80–84 years. . . . .	2,369.8	2,329.4	2,668.7	2,620.9

**Table 14. Death rates for selected causes among black persons 55 years of age and over, by sex and age: United States, selected years 1980–86—Con.**

[Data are based on the National Vital Statistics System]

<i>Cause of death, sex, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
<b>Male—Con.</b>				
65 years and over.....	1,642.9	1,708.6	1,727.8	1,752.6
75 years and over.....	2,098.2	2,144.4	2,275.5	2,324.9
85 years and over.....	2,393.9	2,566.1	2,471.4	2,620.9
<b>Female:</b>				
55–59 years.....	394.4	394.6	396.3	370.2
60–64 years.....	516.1	526.0	536.2	540.8
65–69 years.....	578.1	622.7	613.3	645.2
70–74 years.....	776.5	737.8	777.4	809.3
75–79 years.....	842.3	862.2	892.4	907.6
80–84 years.....	1,077.1	1,087.0	1,233.8	1,217.6
65 years and over.....	780.8	796.8	828.6	862.0
75 years and over.....	977.9	985.6	1,048.4	1,077.6
85 years and over.....	1,159.9	1,129.6	1,154.9	1,254.5
<b>Malignant neoplasms of respiratory and intrathoracic organs<sup>4</sup></b>				
<b>Male:</b>				
55–59 years.....	292.8	310.2	307.0	264.7
60–64 years.....	397.9	434.9	449.3	419.2
65–69 years.....	490.4	516.9	502.0	519.2
70–74 years.....	512.3	570.8	567.1	574.9
75–79 years.....	516.5	514.9	571.4	610.2
80–84 years.....	465.2	488.2	586.7	598.8
65 years and over.....	489.4	520.8	534.9	553.8
75 years and over.....	469.0	483.4	545.9	576.0
85 years and over.....	337.7	385.7	423.8	456.7
<b>Female:</b>				
55–59 years.....	79.0	82.3	85.1	90.6
60–64 years.....	89.5	104.9	113.3	115.4
65–69 years.....	89.0	105.7	106.0	126.7
70–74 years.....	95.5	88.7	106.3	136.2
75–79 years.....	79.2	90.6	113.7	118.8
80–84 years.....	84.7	112.3	109.7	132.0
65 years and over.....	88.6	97.3	106.0	125.8
75 years and over.....	83.3	96.3	105.9	118.1
85 years and over.....	90.5	88.7	86.5	102.1
<b>Diabetes mellitus<sup>5</sup></b>				
<b>Male:</b>				
55–59 years.....	51.1	41.9	37.6	44.6
60–64 years.....	64.8	59.4	69.3	67.3
65–69 years.....	90.6	85.6	94.1	82.2
70–74 years.....	117.6	100.8	113.3	127.0
75–79 years.....	171.3	143.5	160.1	152.3
80–84 years.....	203.9	187.1	209.6	231.4
65 years and over.....	130.1	118.0	128.1	130.5
75 years and over.....	187.2	166.6	178.3	187.5
85 years and over.....	209.4	201.8	185.7	223.9
<b>Female:</b>				
55–59 years.....	53.7	50.4	47.5	53.5
60–64 years.....	88.7	90.4	84.6	86.6
65–69 years.....	131.8	114.0	111.4	112.5
70–74 years.....	168.3	140.3	174.2	163.5
75–79 years.....	200.5	170.1	195.1	198.6

**Table 14. Death rates for selected causes among black persons 55 years of age and over, by sex and age: United States, selected years 1980–86 – Con.**

[Data are based on the National Vital Statistics System]

<i>Cause of death, sex, and age</i>	<i>1980</i>	<i>1982</i>	<i>1984</i>	<i>1986</i>
Female—Con.				
80–84 years. . . . .	267.7	262.3	290.3	303.3
65 years and over. . . . .	183.5	163.1	178.8	187.1
75 years and over. . . . .	243.7	220.8	239.9	264.9
85 years and over. . . . .	311.2	280.0	273.7	351.0
Pneumonia and influenza <sup>6</sup>				
Male:				
55–59 years. . . . .	53.9	44.3	41.6	42.7
60–64 years. . . . .	74.4	63.6	63.5	67.3
65–69 years. . . . .	112.8	79.3	86.4	98.1
70–74 years. . . . .	144.5	143.2	154.9	163.5
75–79 years. . . . .	249.8	173.9	255.4	272.7
80–84 years. . . . .	399.8	341.2	425.3	511.6
65 years and over. . . . .	215.7	176.9	211.5	245.4
75 years and over. . . . .	396.8	307.9	398.1	476.6
85 years and over. . . . .	816.8	642.9	742.9	967.2
Female:				
55–59 years. . . . .	24.1	18.5	15.6	17.1
60–64 years. . . . .	22.2	22.3	21.2	31.0
65–69 years. . . . .	41.7	29.6	37.0	41.5
70–74 years. . . . .	66.1	51.9	63.6	66.9
75–79 years. . . . .	121.3	81.9	107.6	128.9
80–84 years. . . . .	215.7	172.6	237.2	269.3
65 years and over. . . . .	116.4	91.6	117.8	140.0
75 years and over. . . . .	223.5	172.0	224.2	270.3
85 years and over. . . . .	459.2	370.4	440.6	541.4

<sup>1</sup>Diseases of the heart comprise ICD–9 codes 390–398, 402, and 404–429.

<sup>2</sup>Cerebrovascular diseases comprise ICD–9 codes 430–438.

<sup>3</sup>Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues, comprise ICD–9 codes 140–208.

<sup>4</sup>Malignant neoplasms of the respiratory and intrathoracic organs comprise ICD–9 codes 160–165.

<sup>5</sup>Diabetes mellitus comprises ICD–9 code 250.

<sup>6</sup>Pneumonia and influenza comprise ICD–9 codes 480–487.

NOTE: ICD–9 is *International Classification of Diseases, Ninth Revision*.

SOURCE: National Center for Health Statistics. Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service. Selected years.



**Table 15. Average annual number of physician visits per person for black persons, by sex, respondent-assessed status, and age: United States, 1985–87**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Respondent-assessed health status and age</i>	<i>Male</i>	<i>Female</i>
All health statuses <sup>1</sup>		
55–59 years. . . . .	4.8	6.2
60–64 years. . . . .	5.9	6.5
65–69 years. . . . .	6.0	7.0
70–74 years. . . . .	5.7	8.4
75–79 years. . . . .	5.5	6.6
80–84 years. . . . .	6.5	7.4
65 years and over. . . . .	5.9	7.4
75 years and over. . . . .	6.1	6.9
85 years and over. . . . .	7.7	6.9
Good or excellent health		
55–59 years. . . . .	1.9	3.0
60–64 years. . . . .	2.9	3.6
65–69 years. . . . .	2.7	4.5
70–74 years. . . . .	2.9	3.6
75–79 years. . . . .	3.6	4.7
80–84 years. . . . .	3.8	4.8
65 years and over. . . . .	3.1	4.3
75 years and over. . . . .	3.9	4.8
85 years and over. . . . .	5.6	4.9
Fair or poor health		
55–59 years. . . . .	10.6	11.1
60–64 years. . . . .	10.0	10.4
65–69 years. . . . .	9.7	10.0
70–74 years. . . . .	9.8	*14.2
75–79 years. . . . .	7.3	8.8
80–84 years. . . . .	9.3	9.6
65 years and over. . . . .	9.2	10.8
75 years and over. . . . .	8.2	9.2
85 years and over. . . . .	9.9	9.5

<sup>1</sup>Includes unknown respondent-assessed health status.

SOURCE: National Center for Health Statistics: Data from the National Health Interview Survey.

**Table 16. Number of mentions of most frequent all-listed diagnoses per 1,000 visits to office-based physicians by black patients 55 years of age and over and rank for males and females, by age: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

Rank	Age, most frequent all-listed <sup>1</sup> diagnoses, and ICD-9-CM code <sup>2</sup>	Number of mentions per 1,000 visits	Rank by sex	
			Male	Female
55-64 years				
1	Essential hypertension.....401	78	1	1
2	Diabetes mellitus.....250	42	2	2
3	Osteoarthritis and allied disorders.....715	20	3	4
4	Arthropathies, other and unspecified.....716	13	10	6
5	Neurotic disorders.....300	11	—	3
6	Acute upper respiratory infections.....465	11	29	5
7	Sprains and strains of other and unspecified parts of back.....847	10	6	12
8	Gastritis and duodenitis.....535	10	4	16
9	Chronic ischemic heart disease.....414	9	5	14
10	Menopausal and postmenopausal disorders.....627	9	...	7
65 years and over				
1	Essential hypertension.....401	72	1	1
2	Diabetes mellitus.....250	42	2	2
3	Arthropathies, other and unspecified.....716	17	3	3
4	Osteoarthritis and allied disorders.....715	16	8	4
5	Chronic ischemic heart disease.....414	14	14	7
6	Glaucoma.....365	14	17	6
7	Cataract.....366	14	20	5
8	Other disorders of urethra and urinary tract.....599	11	15	8
9	Hypertensive heart disease.....402	10	23	9
10	Heart failure.....428	10	9	11

<sup>1</sup>"All-listed" means listed as first, second, or third diagnosis.

<sup>2</sup>Coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

SOURCE: National Center for Health Statistics; Data from the National Ambulatory Medical Care Survey.

**Table 17. Number of mentions of common diagnostic services per 1,000 visits to office-based physicians for black patients 55 years of age and over, by sex and age: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

<i>Sex and age</i>	<i>Blood glucose</i>	<i>Urine glucose</i>	<i>Breast exam</i> <sup>1</sup>	<i>Visual acuity</i>	<i>Urinalysis</i>	<i>Hematology</i>	<i>Pap test</i> <sup>1</sup>	<i>Blood pressure check</i>
Both sexes								
55-64 years. . . . .	146	113	55	61	167	81	*22	553
65-74 years. . . . .	132	125	*42	88	209	95	*19	610
75-84 years. . . . .	129	166	*61	*126	225	128	*9	604
65 years and over. . . . .	123	140	80	99	216	104	*28	610
75 years and over. . . . .	110	162	74	115	225	116	*22	611
Male								
55 years and over. . . . .	122	157	---	70	236	98	---	551
65 years and over. . . . .	102	176	---	81	259	114	---	598
Female								
55 years and over. . . . .	139	113	80	90	172	92	*28	605
65 years and over. . . . .	134	122	74	109	193	99	*22	617

<sup>1</sup>Female only.

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

**Table 18. Number of patients discharged from short-stay hospitals, days of care, and average length of stay for black persons 55 years of age and over, by sex, age, and selected first-listed diagnoses: United States, 1981 and 1987**

[Discharges from non-Federal short-stay hospitals]

<i>Sex, age, first-listed diagnosis, and ICD-9-CM code<sup>1</sup></i>	<i>Discharges</i>		<i>Days of care</i>		<i>Average length of stay</i>	
	<i>1981</i>	<i>1987</i>	<i>1981</i>	<i>1987</i>	<i>1981</i>	<i>1987</i>
<i>Male, 55-64 years</i>						
	Number in thousands				Stay in days	
Diseases of heart . . . 391-392.0,393-398,402,404,410-416,420-429	30	35	277	238	9.3	6.9
Malignant neoplasms . . . . . 140-208,230-234	20	10	254	137	12.5	13.5
Cerebrovascular disease . . . . . 430-438	7	8	131	139	18.0	17.8
Hyperplasia of prostate . . . . . 600	6	6	34	31	8.0	5.5
Pneumonia, all forms . . . . . 480-486	4	6	45	51	11.4	9.2
Diabetes mellitus . . . . . 250	10	4	135	42	13.3	9.5
<i>Male, 65-74 years</i>						
Diseases of heart . . . 391-392.0,393-398,402,404,410-416,420-429	27	32	334	277	12.5	8.6
Malignant neoplasms . . . . . 140-208,230-234	28	20	443	300	15.6	15.2
Cerebrovascular disease . . . . . 430-438	9	11	117	143	13.0	13.6
Diabetes mellitus . . . . . 250	6	6	93	108	14.9	19.0
Hyperplasia of prostate . . . . . 600	10	5	99	28	10.3	5.2
Pneumonia, all forms . . . . . 480-486	4	5	83	57	19.2	10.8
<i>Male, 65 years and over</i>						
Diseases of heart . . . 391-392.0,393-398,402,404,410-416,420-429	49	61	579	504	11.8	8.3
Malignant neoplasms . . . . . 140-208,230-234	41	40	626	508	15.3	12.6
Cerebrovascular disease . . . . . 430-438	18	20	283	258	15.4	12.8
Hyperplasia of prostate . . . . . 600	16	12	180	86	11.4	7.4
Pneumonia, all forms . . . . . 480-486	9	11	148	113	16.3	10.3
Diabetes mellitus . . . . . 250	11	9	202	154	19.1	16.9
<i>Male, 75 years and over</i>						
Diseases of heart . . . 391-392.0,393-398,402,404,410-416,420-429	22	29	244	227	11.0	7.9
Malignant neoplasms . . . . . 140-208,230-234	13	20	183	208	14.6	10.2
Cerebrovascular disease . . . . . 430-438	9	10	167	115	17.7	11.9
Hyperplasia of prostate . . . . . 600	6	6	81	58	13.2	9.3
Pneumonia, all forms . . . . . 480-486	5	6	65	56	13.7	9.9
Urinary tract infection . . . . . 599.0	2	5	34	38	14.0	7.7

**Table 18. Number of patients discharged from short-stay hospitals, days of care, and average length of stay for black persons 55 years of age and over, by sex, age, and selected first-listed diagnoses: United States, 1981 and 1987 – Con.**

[Discharges from non-Federal short-stay hospitals]

Sex, age, first-listed diagnosis, and ICD-9-CM code <sup>1</sup>	Discharges		Days of care		Average length of stay	
	1981	1987	1981	1987	1981	1987
Female, 55–64 years	Number in thousands				Stay in days	
Diseases of heart . . . 391–392.0,393–398,402,404,410–416,420–429	34	31	353	189	10.4	6.1
Malignant neoplasms . . . . . 140–208,230–234	25	25	289	220	11.4	8.8
Diabetes mellitus . . . . . 250	20	11	205	101	10.5	9.0
Cerebrovascular disease . . . . . 430–438	8	8	146	104	18.2	12.8
Essential hypertension . . . . . 401	11	5	62	25	5.9	5.0
Pneumonia, all forms . . . . . 480–486	4	4	36	29	9.7	7.9
Female, 65–74 years	Number in thousands				Stay in days	
Diseases of heart . . . 391–392.0,393–398,402,404,410–416,420–429	38	34	423	258	11.2	7.5
Malignant neoplasms . . . . . 140–208,230–234	25	19	393	193	15.8	10.0
Cerebrovascular disease . . . . . 430–438	14	15	207	244	14.4	15.9
Diabetes mellitus . . . . . 250	15	8	188	76	12.2	9.5
Volume depletion, dehydration . . . . . 276.5	1	3	12	27	10.0	7.9
Essential hypertension . . . . . 401	8	3	79	27	9.3	8.0
Female, 65 years and over	Number in thousands				Stay in days	
Diseases of heart . . . 391–392.0,393–398,402,404,410–416,420–429	72	76	915	590	12.7	7.7
Cerebrovascular disease . . . . . 430–438	32	34	449	503	14.2	14.7
Malignant neoplasms . . . . . 140–208,230–234	41	29	630	317	15.3	10.8
Diabetes mellitus . . . . . 250	23	14	276	135	12.0	9.4
Volume depletion, dehydration . . . . . 276.5	5	13	66	187	12.8	14.0
Pneumonia, all forms . . . . . 480–486	11	11	196	107	18.5	10.2
Female, 75 years and over	Number in thousands				Stay in days	
Diseases of heart . . . 391–392.0,393–398,402,404,410–416,420–429	35	42	492	332	14.3	8.0
Cerebrovascular disease . . . . . 430–438	17	19	242	259	14.0	13.7
Malignant neoplasms . . . . . 140–208,230–234	16	10	237	124	14.6	12.3
Volume depletion, dehydration . . . . . 276.5	4	10	55	160	13.5	16.1
Pneumonia, all forms . . . . . 480–486	6	7	143	71	22.7	9.7
Fractures, all sites . . . . . 800–829	6	6	172	118	29.6	18.4

<sup>1</sup>Coded according to the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

SOURCE: National Center for Health Statistics: Data from the National Hospital Discharge Survey.

**Table 19. Number of patients discharged from short-stay hospitals and average length of stay for black persons 55 years of age and over with a diagnosis of pneumonia or influenza, by sex and age: United States, 1981 and 1987**

[Discharges from non-Federal short-stay hospitals]

Sex and age	Discharges		Average length of stay	
	1981	1987	1981	1987
Both sexes	Number in thousands		Stay in days	
55-64 years.....	8	9	10.1	8.7
65-74 years.....	10	9	14.8	10.6
75-84 years.....	9	10	18.0	9.1
65 years and over.....	22	22	16.4	10.0
75 years and over.....	12	13	17.7	9.6
85 years and over.....	3	3	16.7	11.2
Male				
65 years and over.....	9	12	16.2	10.0
Female				
65 years and over.....	13	11	16.5	10.0

NOTE: Pneumonia or influenza comprises codes 480-487 of the *International Classification of Diseases, Ninth Revision, Clinical Modification*.

SOURCE: National Center for Health Statistics: Data from the National Hospital Discharge Survey.

**Table 20. Percent distribution of black patients 55 years of age and over discharged from short-stay hospitals by disposition status, according to sex and age: United States, 1981 and 1987**

[Discharges from non-Federal short-stay hospitals]

<i>Age and disposition status</i>	<i>Male</i>		<i>Female</i>	
	<i>1981</i>	<i>1987</i>	<i>1981</i>	<i>1987</i>
Percent distribution				
<b>55–64 years</b>				
Total.....	100.0	100.0	100.0	100.0
Routine discharge.....	74.8	82.3	76.8	83.2
Discharged to long-term care.....	1.3	3.8	1.2	3.3
Died.....	4.2	4.6	3.8	4.7
Other and unknown.....	19.7	9.3	18.2	8.8
<b>65–74 years</b>				
Total.....	100.0	100.0	100.0	100.0
Routine discharge.....	68.3	79.2	75.4	80.0
Discharged to long-term care.....	4.2	6.1	3.5	6.8
Died.....	7.2	6.1	5.1	4.8
Other and unknown.....	20.3	8.6	16.0	8.3
<b>75–84 years</b>				
Total.....	100.0	100.0	100.0	100.0
Routine discharge.....	67.3	67.1	68.9	67.0
Discharged to long-term care.....	7.3	12.7	7.8	15.3
Died.....	8.6	10.8	7.2	7.9
Other and unknown.....	16.8	9.4	16.1	9.8
<b>65 years and over</b>				
Total.....	100.0	100.0	100.0	100.0
Routine discharge.....	67.5	72.8	70.3	71.0
Discharged to long-term care.....	6.1	10.2	6.9	13.7
Died.....	7.7	8.3	6.6	6.3
Other and unknown.....	18.7	8.7	16.2	9.1
<b>75 years and over</b>				
Total.....	100.0	100.0	100.0	100.0
Routine discharge.....	66.4	66.1	64.4	62.5
Discharged to long-term care.....	8.7	14.4	10.9	20.1
Died.....	8.5	10.7	8.3	7.6
Other and unknown.....	16.4	8.8	16.4	9.8
<b>85 years and over</b>				
Total.....	100.0	100.0	100.0	100.0
Routine discharge.....	62.9	62.5	52.6	52.3
Discharged to long-term care.....	13.8	20.8	18.9	31.0
Died.....	8.2	10.2	11.5	7.0
Other and unknown.....	15.1	6.6	17.0	9.7

SOURCE: National Center for Health Statistics: Data from the National Hospital Discharge Survey.

**Table 21. Number and percent of nursing home residents, by presence of selected cognitive disabilities and race: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Race</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
Number of residents										
All residents.....	1,489,500	485,100	1,004,400	686,000	79,200	194,200	214,800	215,000	58,700	82,800
Race <sup>2</sup>										
White.....	1,373,100	445,100	928,000	631,900	75,300	176,400	201,600	198,500	51,800	76,700
Black.....	104,000	35,700	68,300	49,800	*3,500	15,900	10,500	14,000	6,200	*4,700
Percent of total residents										
All residents.....	100.0	32.6	67.4	46.1	5.3	13.0	14.4	14.4	3.9	5.6
Race <sup>2</sup>										
White.....	100.0	32.4	67.6	46.0	5.5	12.8	14.7	14.5	3.8	5.6
Black.....	100.0	34.3	65.7	47.9	*3.4	15.3	10.1	13.5	6.0	*4.5

<sup>1</sup>Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

<sup>2</sup>Excludes races other than white and black.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.



**Table 22. Percent of nursing home residents, by presence of selected cognitive disabilities, race, and staff-assessed physical health status: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

<i>Race<sup>1</sup> and staff-assessed health status</i>	<i>Total</i>	<i>No cognitive disabilities</i>	<i>Cognitive disabilities<sup>1,2</sup></i>	<i>Organic brain syndromes</i>	<i>Alzheimer's disease</i>	<i>Schizophrenia and other psychoses</i>	<i>Depressive disorders</i>	<i>Anxiety disorders</i>	<i>Alcohol and drug abuse</i>	<i>Mental retardation</i>
<b>White</b>	<b>Number</b>	<b>Percent</b>								
All statuses . . . . .	1,340,200	32.3	67.7	46.1	5.5	12.9	14.8	14.6	3.8	5.6
Excellent to good . . . . .	528,300	37.8	62.2	36.3	4.9	15.9	11.7	12.5	4.7	8.4
Fair and poor . . . . .	811,900	28.8	71.2	52.4	5.9	10.9	16.8	16.0	3.2	3.8
<b>Black</b>										
All statuses . . . . .	100,500	34.7	65.3	47.8	*3.5	14.2	10.4	13.6	6.0	*4.7
Excellent to good . . . . .	37,400	26.7	73.3	49.5	*4.8	19.0	*7.0	*15.8	*8.6	*8.0
Fair and poor . . . . .	63,200	39.6	60.4	46.7	*2.7	11.4	12.3	12.5	*4.3	*2.7

<sup>1</sup>Excludes races other than white and black.

<sup>2</sup>Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.

**Table 23. Percent of nursing home residents, by presence of selected cognitive disabilities, race, and whether memory impaired: United States, 1985**

[Data are based on personal interviews of the nursing home staff most knowledgeable about the residents sampled]

Race <sup>1</sup> and memory impairment	Total	No cognitive disabilities	Cognitive disabilities <sup>1,2</sup>	Organic brain syndromes	Alzheimer's disease	Schizophrenia and other psychoses	Depressive disorders	Anxiety disorders	Alcohol and drug abuse	Mental retardation
<b>White</b>										
Not impaired . . . . .	510,900	58.2	41.8	16.4	1.3	8.3	13.6	11.1	4.7	3.9
Impaired . . . . .	845,900	16.7	83.3	64.0	8.1	15.7	15.4	16.5	3.2	6.6
<b>Black</b>										
Not impaired . . . . .	34,000	61.8	38.2	*16.5	*0.9	*10.9	*6.8	*9.4	*7.4	*3.2
Impaired . . . . .	68,200	21.3	78.7	63.6	*4.8	16.3	11.9	15.8	*5.4	*5.3

<sup>1</sup>Excludes races other than white and black.

<sup>2</sup>Includes residents with all types of cognitive disabilities. Residents with multiple disabilities are counted only once in the total.

NOTE: Memory impairment is inability to remember dates or time, familiar locations or people, or recent events, or to make straightforward judgments to such an extent that performance of activities of daily living, instrumental activities of daily living, and mobility is impaired.

SOURCE: National Center for Health Statistics: Data from the National Nursing Home Survey.

**Table 24. Number and percent of visits to office-based physicians and drug mentions and percent of office visits for which drugs were mentioned for black persons 55 years of age and over, according to age: United States, 1985**

[Data are based on reporting by a sample of office-based physicians]

Age	Office visits		Drug mentions		Percent of visits for which—	
	Number in thousands	Percent	Number in thousands	Percent	1 drug or more mentioned <sup>1</sup>	2 drugs or more mentioned <sup>1</sup>
55–64 years. . . . .	5,869	7.8	8,758	8.8	75.0	39.5
65–74 years. . . . .	4,559	6.0	7,616	6.9	75.4	44.1
75 years and over. . . . .	3,223	5.8	5,912	6.7	79.2	52.7

<sup>1</sup>Only mentions of drugs specifically intended for the principal (first-listed) diagnosis are included. Mentions of drugs associated with other-listed diagnoses or utilized for any other reason are not included.

NOTES: Both mentions as the generic form of single-ingredient drugs and mentions as an ingredient of combination drugs are included. Vitamins, minerals, and vaccines are omitted.

SOURCE: National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

**Table 25. Number and percent of black persons 55 years of age and over currently using vitamin or mineral supplements, by selected characteristics: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

Characteristic	Total number in thousands	Percent
Total. . . . .	4,360	21.6
Sex		
Male. . . . .	1,851	18.2
Female. . . . .	2,509	24.1
Age		
55–64 years. . . . .	2,074	24.5
65 years and over. . . . .	2,286	18.9
Education		
High school or less. . . . .	3,695	20.3
More than high school. . . . .	665	28.6
Family income		
Less than \$20,000. . . . .	3,283	19.6
\$20,000 or more. . . . .	880	32.6
Respondent-assessed health status		
Excellent or very good. . . . .	1,213	20.3
Good. . . . .	1,179	28.3
Fair or poor. . . . .	1,954	18.5

NOTE: Current usage includes those reporting nonprescription and prescription vitamin or mineral supplement use in the past 2 weeks.

SOURCE: National Center for Health Statistics: Data from the 1986 National Health Interview Survey Supplement on Vitamins and Minerals.

**Table 26. Percent of black persons 55 years of age and over currently using vitamin or mineral supplements, by sex, age, and vitamin or mineral supplement used: United States, 1986**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Vitamin or mineral supplement used</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>55-64 years</i>	<i>65 years and over</i>
			Percent		
Vitamin					
Vitamin A . . . . .	9.8	9.3	10.2	10.9	8.8
Vitamin C . . . . .	14.4	11.7	16.3	15.4	13.4
Vitamin D . . . . .	9.5	8.1	10.4	8.7	10.1
Vitamin E . . . . .	10.9	9.8	11.8	12.5	9.5
Vitamin B-6 . . . . .	13.0	11.6	14.0	13.2	12.8
Vitamin B-12 . . . . .	12.8	10.7	14.3	13.6	12.1
Folic acid . . . . .	10.9	9.0	12.2	11.9	9.9
Niacin . . . . .	13.1	11.6	14.1	13.4	12.8
Riboflavin . . . . .	13.1	11.6	14.1	13.4	12.8
Thiamine . . . . .	13.2	11.8	14.1	13.6	12.8
Mineral					
Calcium . . . . .	6.9	7.2	6.6	8.0	5.8
Copper . . . . .	5.3	5.3	*5.3	6.1	*4.5
Iodine . . . . .	4.4	5.3	*3.7	5.2	*3.7
Iron . . . . .	9.8	7.6	11.4	10.8	8.9
Magnesium . . . . .	4.9	*4.9	4.9	6.2	*3.7
Phosphorus . . . . .	3.2	*2.7	*3.6	2.7	*3.7
Potassium . . . . .	4.6	6.8	*3.0	5.1	*4.1
Selenium . . . . .	3.2	*3.9	*2.7	*3.3	*3.1
Zinc . . . . .	5.9	6.2	5.6	7.5	*4.4

NOTE: Current usage includes those reporting nonprescription and prescription vitamin or mineral supplement use in the past 2 weeks.

SOURCE: National Center for Health Statistics: Data from the 1986 National Health Interview Supplement on Vitamins and Minerals.

**Table 27. Percent distribution of black persons 70 years of age and over by whether Medicaid benefits were received in previous 12 months, according to sex: United States, 1984**

[Data are based on household interviews of the civilian noninstitutionalized population]

<i>Sex</i>	<i>Total</i>	<i>Received Medicaid benefits</i>		
		<i>Yes</i>	<i>No</i>	<i>Unknown</i>
	Number of persons in thousands	Percent distribution <sup>1</sup>		
Both sexes . . . . .	1,459	19.9	80.1	—
Male . . . . .	544	11.0	89.0	—
Female . . . . .	915	25.2	74.8	—

<sup>1</sup>May not add to 100 percent because of rounding.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

**Table 28. Percent distribution of black persons 70 years of age and over in 1984 by whether Medicaid benefits were received in 1986, according to sex and whether Medicaid benefits were received in 1984: United States**

[Data are based on 1986 telephone followup of 1984 household interviews of the civilian noninstitutionalized population]

<i>Sex and whether Medicaid benefits were received in 1984</i>	<i>Total</i>	<i>Received Medicaid benefits in 1986</i>		
		<i>Yes</i>	<i>No</i>	<i>Unknown</i>
Both sexes	Number of persons in thousands	Percent distribution <sup>1</sup>		
Medicaid benefits in 1984:				
Total.....	1,182	22.7	66.8	10.5
Yes.....	228	50.0	27.7	22.3
No.....	954	16.2	76.2	7.7
Unknown.....	—	—	—	—
Male				
Medicaid benefits in 1984:				
Total.....	427	19.8	71.8	8.4
Yes.....	48	*34.2	*24.9	40.9
No.....	379	18.0	77.7	4.3
Unknown.....	—	—	—	—
Female				
Medicaid benefits in 1984:				
Total.....	755	24.3	64.0	11.7
Yes.....	181	54.2	28.4	17.4
No.....	575	14.9	75.1	9.9
Unknown.....	—	—	—	—

<sup>1</sup> May not add to 100 percent because of rounding.

SOURCE: National Center for Health Statistics: Data from the 1986 Longitudinal Study on Aging.

**Table 29. Percent of black persons 55 years of age and over who reported joint pain or physician-diagnosed arthritis, by sex and age: United States, selected time periods**

[Data for 1960–84 are based on interviews of samples of the civilian noninstitutionalized population]

Sex and age	Joint pain <sup>1</sup>		Physician-diagnosed arthritis <sup>2</sup>		
	1960–62	1976–80	1960–62	1976–80	1984
Male.....	41.4	44.7	30.2	36.4	47.5
55–64 years.....	45.5	49.1	33.6	31.9	43.3
65–74 years.....	38.9	38.4	26.8	42.8	51.7
65 years and over.....	25.1	38.4	35.2	42.8	51.5
75 years and over.....	*21.4	...	*18.8	...	51.1
Female.....	58.4	50.0	45.0	59.7	61.2
55–64 years.....	55.8	49.9	49.9	58.5	50.1
65–74 years.....	62.8	50.2	44.5	61.3	69.9
65 years and over.....	39.1	50.2	61.5	61.3	71.2
75 years and over.....	57.0	...	*19.7	...	73.6

<sup>1</sup>Specific questions concerned “joint pains” and “pain in back, neck, or other joint.”

<sup>2</sup>Specific question concerned a physician confirming or ever telling the person he/she had arthritis.

SOURCES: National Center for Health Statistics: 1960–62 data from the Health Examination Survey; 1976–80 data from the second National Health and Nutrition Examination Survey; 1984 data from the National Health Interview Survey Supplement on Aging.

**Table 30. Rate of selected comorbid conditions among black persons 55 years of age and over reporting arthritis, by sex and age: United States, 1984**

[Data are based on household interviews of the civilian noninstitutionalized population]

Sex and age	Total	Condition				
		Heart disease <sup>1</sup>	Hyper-tension	Stroke	Cancer	Diabetes
	Number of persons in thousands <sup>2</sup>	Number per 1,000 persons reporting arthritis				
Total.....	1,998	121.6	646.7	62.8	24.9	195.8
Sex						
Male.....	672	109.6	554.6	67.5	*17.6	148.4
Female.....	1,326	127.7	693.4	60.5	*28.6	219.8
Age						
55–64 years.....	826	96.9	639.1	*23.2	*15.2	186.6
65 years and over.....	1,172	139.0	652.0	90.7	31.7	202.3
Male						
55–64 years.....	310	*103.1	554.8	*13.8	–	*129.5
65 years and over.....	362	115.2	554.3	113.5	*32.8	164.7
Female						
55–64 years.....	516	93.1	689.8	*29.0	*24.4	220.9
65 years and over.....	810	149.7	695.7	80.5	31.2	219.1

<sup>1</sup>Includes rheumatic heart disease, coronary heart disease, angina, and myocardial infarction.

<sup>2</sup>Excludes unknown respondent-assessed health status, unknown arthritis status, and proxy respondents.

SOURCE: National Center for Health Statistics: Data from the 1984 National Health Interview Survey Supplement on Aging.

# Chapter 10

## Musculoskeletal disorders: Time trends, comorbid conditions, self-assessed health status, and associated activity limitations

by Toni P. Miles, M.D., Ph.D., University of Illinois at Chicago; Katherine Flegal, M.P.H., Ph.D., National Center for Health Statistics; and Tamara Harris, M.D., M.S., National Institute on Aging

### Introduction

Musculoskeletal disease encompasses a wide variety of disorders including rheumatoid arthritis, osteoarthritis, osteoporosis, and chronic low back pain syndrome, as well as the long-term sequelae of acute injuries. Basic epidemiologic studies describing disease prevalence and risk factors for the development of disease have focused on using clinical criteria to identify cases of specific disorders (1–15).

For example, data on serum rheumatoid factor were collected during the National Health Examination Survey (NHES 1960–62) to estimate the prevalence of rheumatoid arthritis. Radiographs taken during the NHES and the First National Health and Nutrition Examination Survey (NHANES I 1971–75) have been used to develop prevalence estimates for osteoarthritis at a number of sites (5,6,16).

When considered as a group, disorders referable to the musculoskeletal system are the most prevalent of chronic conditions among persons 45–64 years of age and those 65 years and over (17). Common manifestations of these disorders—symptoms of back, leg, knee, or foot pain—together account for 10 percent of all complaints to physicians during office visits among persons 75 years and over (17). Damage to muscles, bones, and joints is the final common

pathway leading to pain, disability, and loss of independent physical function associated with all musculoskeletal disorders (8,17). Estimates of the population at risk for related disability can be artificially low when those persons with joint pain who do not meet other diagnostic criteria are excluded. Consider the example of osteoarthritis of the knee. Radiographic evidence of bony changes is the standard for diagnosing this disease. Among persons who seek medical attention for knee pain, radiographic evidence of osteoarthritis may not be present (7). However, persons who have knee pain without radiographic evidence of osteoarthritis also appear to be at increased risk of having difficulty in arising from a sitting position and difficulty walking, based on followup interviews conducted 8–13 years later in a national cohort (15).

All of these disorders are associated with impaired physical function, regardless of specific diagnosis. To allocate health care resources for the current population of older persons, estimates of the size of the pool of affected individuals and their pattern of associated disability as well as comorbidity are needed. Estimates of time trends in these disorders are required to prepare for future cohorts of older persons. This chapter includes time trends of the prevalence of musculoskeletal problems and information on

affected joints. Associations between reporting a history of musculoskeletal disease and other chronic disease were also explored. Although these data have been used in other reports to identify risk factors associated with a clinical diagnosis of specific arthritides (6,18), the purpose of this report is to focus on persons in national surveys who report either joint pain or a medical history of arthritis. By defining a case using these broad criteria, it was possible to compare several surveys on related health and physical function indicators.

## Sources of data

### National Health Examination Survey (NHES 1960–62), Cycle I

The NHES was conducted on a national probability sample of the adult civilian noninstitutionalized population of the United States (19). The purpose of this survey was to provide prevalence estimates for the total U.S. population of a variety of specific diseases, using standardized diagnostic criteria, and to secure distributions of the general population with respect to selected physical and physiological mea-

surements. Items in the survey specific for arthritis included seven medical history questions, joint-by-joint examination of hands and feet, radiographs of hands and feet, and a serum bentonite flocculation test for rheumatoid factor (2,3,5).

The analytic sample ( $n = 1,551$ ) presented in table 1 is composed of black and white persons aged 55 years and over. These individuals responded to both medical history items concerning joint pain and the medical history of physician-diagnosed arthritis items (see table A for specific questions).

### National Health and Nutrition Examination Survey (NHANES I 1971–75)

The NHANES I is a national probability sample of the civilian noninstitutionalized population of the United States with oversampling of specific high-risk groups including low-income groups and the elderly up to age 74 years (20–22). The purpose of this survey was similar to NHES, with the added task of monitoring nutritional status. The arthritis component of this survey contained a greater emphasis on determining disease in joints more likely to cause disability; therefore, arthritis of the hip, knee, and lower

**Table A. Survey and response items used in table 1**

<i>Survey</i>	<i>Response item</i>
National Health Examination Survey 1960–62	<ul style="list-style-type: none"> <li>• Have you ever had any reason to think that you may have rheumatism or arthritis?</li> <li>• Did a doctor tell you it was rheumatism or arthritis?</li> <li>• How about pain in the joints? Have you noticed anything like that?</li> </ul>
National Health and Nutrition Examination Survey I 1971–75, augmentation (Table 2 only)	<ul style="list-style-type: none"> <li>• Pain in neck or back on most days for AT LEAST 1 month?</li> <li>• Pain in or around either hip joint including buttock, groin, and side of the upper thigh on most days for AT LEAST 1 month?</li> <li>• Pain in or around the knee including the back of the knee on most days for AT LEAST 1 month?</li> <li>• Pain in other joints on most days for AT LEAST 1 month?</li> </ul>
National Health and Nutrition Examination Survey II	<ul style="list-style-type: none"> <li>• Has a doctor EVER told you that you had? (arthritis, gout).</li> <li>• Have you EVER had pain in you back on most days for at least 2 weeks?</li> <li>• Have you EVER had pain in your neck on most days for at least 2 weeks?</li> <li>• Have you EVER had pain or aching in any joint, other than the back or neck, on most days for at least 6 weeks?</li> </ul>
Supplement on Aging 1984	<ul style="list-style-type: none"> <li>• During the PAST 12 MONTHS, did you have (arthritis)?</li> </ul>



back was stressed (16). A previous analysis of the data used in this chapter has been presented elsewhere with an emphasis on adults aged 25–74 years (18).

Joint-pain questions were asked of all survey participants. However, participants in the augmentation survey were asked three separate joint-specific pain questions, and other participants were asked only a more general one. To develop the joint-pain categories used in table 2, a person in the augmentation survey was included if they responded yes to any one of the four joint-pain questions. Estimates presented in table 4 on site-specific joint-pain prevalence were based on the arthritis supplement derived from the augmentation subsample. To be included in the supplement, an individual had to report joint pain on most days for at least 1 month. This analytic sample consisted of black and white persons aged 55 years and over who had responses to all joint-pain questions ( $n = 1,126$ ).

### **National Health and Nutrition Examination Survey (NHANES II 1976–80)**

The NHANES II is another in the series of health examination surveys conducted by the National Center for Health Statistics to monitor the prevalence of disease and the nutritional status of the civilian noninstitutionalized U.S. population (23). As in previous surveys, arthritis-related information in this survey includes medical history items and physician examination of joints for pathology. Although lateral lumbar and cervical spine radiographs were taken of persons aged 25 years and over (excluding lumbar spine films for women under 50 years of age), readings from these films are not currently available for public use.

Data from this survey presented in table 1 were based on an analytic sample ( $n = 6,846$ ) that includes all black and white persons aged 55 years and over who had complete responses to pain items and medical history items (see table A

for specific questions). To develop the joint-pain category used in table 1, a person was included if they responded yes to any one of three questions regarding pain in the back, neck, or other joints.

### **Supplement on Aging to the 1984 National Health Interview Survey**

The National Health Interview Survey is a continuous survey designed to provide national data on the prevalence of chronic conditions and impairments, the extent of disability, and the utilization of health care services for a random sample of the U.S. population (24). Data obtained during this survey are based on responses to questionnaires administered during interviews. Unlike the health examination surveys, this survey contains no physical measurement data. History of arthritis in this survey refers to the “medical conditions during the past 12 months” item. There was no item concerning joint pain in this survey.

The analytic sample ( $n = 14,359$ ) presented in table 1 excludes persons with proxy reports and those missing a response to the arthritis question. The analytic sample ( $n = 7,097$ ) presented in tables 2, 3, 5, and 6 from this survey is limited to those persons answering yes to the arthritis question and excludes persons with proxy reports, missing information on medical conditions, and activity or instrumental activities of daily living items.

Proxy reports were excluded from these analyses for the following reasons. Data from this survey were specifically analyzed for information regarding associated comorbid conditions and physical functioning of persons with a medical history of arthritis. Several studies indicate a bias toward reporting poorer health status and greater difficulty with physical function when the proxy respondent was not a spouse (25,26). In addition, a recent study of comparability in information provided by elderly persons and sur-

rogate pairs indicated that the best surrogates (generally spouses) reported the existence of a medical history of arthritis in only 60 percent of pairs (27).

To examine time trends, the analyses presented in table 1 use response items from a number of different surveys to create joint-pain and physician-diagnosed arthritis categories. The previous table (table A) shows survey year and specific response items used in the creation of table 1.

Differences in the underlying age distribution across the survey periods are a potential source of bias. To examine this bias, prevalence estimates for table 1 in all four surveys were standardized to the 1970 U.S. population. The difference between adjusted and unadjusted prevalence estimates for sex, race, and age groups by survey period and response item was less than 0.1 percent for almost all groups except black males and females in both the NHES and NHANES I surveys. For black persons in these two surveys, the adjusted estimates were 1–2 percent higher in NHES and 0.5–1.0 percent lower in NHANES I.

## Results

Table 1 shows prevalence estimates for persons aged 55 years and over who reported joint pain or a medical history of physician-diagnosed arthritis in one of several surveys conducted in the periods 1960–62, 1976–80, and 1984. Among older persons, at least 28 percent of males and 45 percent of females reported having either joint pain or a medical history of physician-diagnosed arthritis in most survey years. Across the 25-year reporting period, the prevalence of a medical history of physician-diagnosed arthritis was 37 percent in 1960–62, 44 percent in 1976–80, and 48 percent in 1984. Although fewer time periods were available, 42 percent of persons reported joint pain in the 1960–62 survey,

and 49 percent of persons in 1976–80 also reported joint pain.

Which survey item identifies the largest number of persons: joint pain or a medical history of physician-diagnosed arthritis? A comparison of these two items within each individual survey period shows that overall and within each age stratum there were at least 2–3 percent more persons reporting pain than a history of physician-diagnosed arthritis in most age categories. This pattern was also seen most consistently among males. Among females, particularly in later survey years, the pattern was reversed.

Can these data from different time periods be used to assess whether complaints from arthritis continue to increase as a cohort ages? These data offer only a rough approximation but suggest that this may be the case for the oldest persons. Of persons aged 55–59 years in NHES (midpoint 1961), 42 percent reported a diagnosis of arthritis. Among persons aged 70–74 years, 48 percent reported a diagnosis of arthritis in NHANES II (midpoint 1978). By 1984, in the Supplement on Aging, 55 percent of those aged 76–80 reported a diagnosis of arthritis. Similarly, prevalence of joint pain for the cohort aged 55–59 years in NHES was 38 percent. In the NHANES II survey, 48 percent of persons aged 70–74 reported joint pain.

What site was most commonly affected by pain? Among persons who reported any joint pain on most days for at least 1 month in NHANES I (table 2), the most common pain site was back or neck (46 percent), followed by other joints (36 percent), knees (33 percent), and hips (22 percent). This pattern was seen for both white and black people, both sexes, and all ages. Among persons reporting any joint pain, the percent reporting back or neck pain was remarkably constant across race and sex groups, with white persons reporting 46 percent, black persons 45 percent, males 45 percent, and females 46 percent.

Self-assessed health status is an important indicator of disease severity. Among persons aged 55 years and over who reported arthritis in 1984, a significant proportion (38 percent) assessed their health status as fair or poor rather than good, very good, or excellent (table 3). This pattern was seen among both black and white people, both sexes, and for most ages, except those 85 years and over. Black persons with arthritis were more likely than white people to report their health as being fair or poor (58 percent versus 35 percent). Males (39 percent) and females (37 percent) were equally likely to report their health status as fair or poor. The proportion of persons with arthritis reporting fair or poor health status did not increase significantly with increasing age.

The prevalence estimates for selected comorbid medical conditions among persons aged 55 years and over who reported having arthritis during the past 12 months in the 1984 Supplement on Aging to the National Health Interview Survey are shown in table 4. Hypertension was the most commonly reported comorbid condition overall (48 percent of persons with arthritis), among white persons (46 percent), black persons (65 percent), both sexes (males 41 percent and females 51 percent), and all age groups. Hypertension was significantly more common among females with arthritis than among males, and more common among black than white people with arthritis. Heart disease, the second most common comorbid condition (16 percent), occurred with greater frequency than either diabetes (11 percent) or cancer (11 percent). Stroke was the least common comorbid condition (5 percent).

Activities of daily living (ADL's, table 5) and instrumental activities of daily living (IADL's, table 6), which potentially involve back, hip, and knee mobility, were most commonly reported as being difficult to perform by persons reporting arthritis in 1984. In presenting the ADL data,

persons who reported not doing an activity were included with those who reported difficulty with an activity. The most common ADL disability reported by persons with arthritis was difficulty walking (21 percent). This proportion was stable across sex (males 19 percent and females 22 percent) and race groups (white people 21 percent and black people 25 percent). There was a significantly greater proportion of persons reporting difficulty in walking among those aged 75–84 years (31 percent) and those 85 years and over (46 percent), compared with persons aged 65–74 years (20 percent). Other ADL's that also require back, hip, and knee flexion were reported as being difficult to perform by a smaller but consistent proportion of persons with arthritis: bathing (9 percent), transferring from bed or chair (10 percent), and getting outside (9 percent). Eating (1 percent), toileting (3 percent), and dressing (6 percent) were least often reported as being difficult to perform.

The proportions of persons with arthritis who report difficulty with IADL's are shown in table 6. For the IADL's, persons who reported not doing a particular activity were excluded from the group reporting difficulty with an activity. This strategy can potentially depress the proportion of males reporting difficulty with tasks such as housework and shopping, so that male-female differences in performance should be interpreted with caution. Among persons with arthritis, difficulty with heavy housework (27 percent) was reported most commonly followed by difficulty with shopping (9 percent). Females (33 percent) rather than males (16 percent) and black persons (35 percent) rather than white persons (27 percent) were more likely to report difficulty with heavy housework. Age-related difficulties with heavy housework seemed to emerge after age 75. For example, persons aged 55–64 years (23 percent) and 65–74 years (25 percent) were equally likely to report difficulty with heavy housework, and the percent reporting difficulty

increased among those 75–84 years (37 percent) and 85 years and over (52 percent). The pattern described for heavy housework was also noted for those reporting difficulty with shopping.

## Summary

In this report, cases of musculoskeletal disease were identified by a yes response to questions involving joint pain and/or physician-diagnosed arthritis in four national surveys for the following objectives: (a) to assess time trends in case prevalence; (b) to describe respondent health status; (c) to estimate prevalence of joint pain by location; (d) to estimate prevalence of selected comorbid medical conditions; and (e) to estimate among these persons the burden of ADL and IADL disability. These surveys were conducted over a 25-year interval (1960–84). Joint pain is the final common pathway through which a number of these disorders operate and could be expected to identify a subset of persons who have not sought medical consultation. Physician diagnosis of disease is an item that is conceptually a measure of severity. In these samples, there were slightly more persons reporting joint pain than reporting a diagnosis of arthritis in most years. Increases in the prevalence of both joint pain and physician-diagnosed arthritis were noted across survey years and for the cohort aged 65–69 years in NHANES I.

Although this analysis is based on national data from persons with arthritis, estimates of disability prevalence from national surveys of the total U.S. population (18,28) are also available for comparison. In this report, persons with arthritis suffer from poorer health status and more disability when compared with U.S. population prevalence. Overall, 14 percent of persons aged 65–74 years reported difficulty walking, and 20 percent of persons with arthritis reported this difficulty. In the U.S. cohort aged 75–84 years, 23 percent reported difficulty walking, compared with 31 percent of those with

arthritis. Among persons aged 85 years and over, 40 percent reported difficulty walking, compared with 46 percent of respondents with arthritis. It should be recognized that persons with arthritis are included in the total population estimates and these differences in disability prevalence, therefore, could be much larger. It is important to note, however, that for tasks such as toileting, dressing, and managing money, estimates of disability for the total U.S. and arthritic U.S. populations are similar. These data suggest that arthritis may be a large contributor to certain types of disability.

Arthritis is considered to be the most prevalent chronic disease, and estimating the proportion of persons with both arthritis and other medical conditions is of interest (29–33). For instance, it is estimated that 24 percent of all persons aged 60 years and over have both arthritis and hypertension (31–33). Yet among those with arthritis, prevalence of hypertension is far greater (48 percent). What this represents in terms of hypotheses regarding shared etiology, patterns of medical utilization and case-finding, or the potential contribution of each diagnosis to disability is unclear and will require further research. Because musculoskeletal complaints are so common in old age, analyses of comorbidity may prove fruitful for each of these areas.

Joint-pain complaints remain a major problem for older persons with the prevalence of complaints increasing across age groups and only a suggestion of leveling off in very old age. Pain affecting the back and its relationship to lower extremity arthritis (hip or knee) is important, as it may be musculoskeletal disease referable to these joints, which is particularly problematic in terms of mobility-limiting disability. The biomechanical relationships between back, hip, and knee require that all three joints work in concert. Lower back dysfunction, whether or not it is accompanied by pain, is usually investigated in the context of its effect on midlife

workers (34). More research is needed to fill the gaps in our knowledge about lower back dysfunction and its role in the evolution of disease and disability once a person leaves the workplace. Accurately estimating the size of the pool of persons with musculoskeletal disease is required for the strategic application of health promotion and secondary prevention efforts.

## References

- Brighton SW, DeLaHarpe AL, Van Staden DA. The prevalence of osteoarthrosis in a rural African community. *Br J Rheumatol* 24(4):321-5. 1985.
- Engel A. Osteoarthritis and body measurements. National Center for Health Statistics. *Vital Health Stat* 11(29). 1968.
- Engel A, Roberts J, Burch TA. Rheumatoid arthritis in adults, United States, 1960-1962. National Center for Health Statistics. *Vital Health Stat* 11(17). 1966.
- Hadler N. Osteoarthritis as a public health problem. *Clin Rheum Dis* 11(2):175-85. 1985.
- Roberts J, Burch TA. Prevalence of osteoarthritis in adults by age, sex, race, and geographic area, United States, 1960-1962. National Center for Health Statistics. *Vital Health Stat* 11(15). 1966.
- Lawrence RC, Hockberg MC, Kelsey JL, et al. Estimates of the prevalence of selected arthritic and musculoskeletal diseases in the United States. *J Rheumatol* 16(4):427-41. 1989.
- Anderson J, Felson D. Factors associated with osteoarthritis of the knee in the First National Health and Nutrition Examination Survey (NHANES I). *Am J Epidemiol* 128(1):179-89. 1988.
- Moskowitz RW. Osteoarthritis. In Katz WA, ed. *Diagnosis and management of rheumatic diseases*. 2d ed. Philadelphia: Lippincott Co. 1988.
- Cummings S, Kelsey J, Nevitt M, O'Dowd K. Epidemiology of osteoporosis and osteoporotic fractures. *Epidemiol Rev* 7:178-208. 1985.
- DeRousseau CJ. Osteoarthritis in Rhesus monkeys and gibbons: A locomotor model of joint degeneration. New York: Karger. 1988.
- Felson D, Anderson J, Naimark A, et al. Obesity and knee osteoarthritis. *Ann Intern Med* 109:18-24. 1988.
- Hartz A, Fischer M, Bril G, et al. The association of obesity with joint pain and osteoarthritis in the NHANES data. *J Chron Dis* 39(4):311-9. 1986.
- U.S. Department of Health and Human Services. The Surgeon General's report on nutrition and health, 1988. Chapter 7, skeletal diseases. Washington: Public Health Service.
- Davis M, Ettinger W, Neuhaus J, Hauck W. Sex differences in osteoarthritis of the knee. *Am J Epidemiol* 127(5):1019-30. 1988.
- Lawrence RC, Everett DS, Hochberg MC. Arthritis. In Corroni-Huntley JC, Huntley RR, Feldman JJ, eds. *Health status and well being of the elderly. National Health and Nutrition Examination I Epidemiologic Followup Survey*. New York: Oxford University Press. 1990.
- Maurer K. Basic data on arthritis knee, hip, and sacroiliac joints in adults 25-74 years, United States, 1971-1975. National Center for Health Statistics. *Vital Health Stat* 11(213). 1979.
- White LR, Cartwright WS, Corroni-Huntley J, Brock DB. Geriatric epidemiology. *Ann Rev Gerontol and Geriatrics* 6:215-311. 1986.
- Cunningham LS, Kelsey JL. Epidemiology of musculoskeletal impairments and associated disability. *Am J Public Health* 74(6):574-9. 1984.
- National Center for Health Statistics. Plan and initial program of the Health Examination Survey. National Center for Health Statistics. *Vital Health Stat* 1(4). 1965.
- Miller HW. Plan and operation of the Health and Nutrition Examination Survey, United States, 1971-1973. National Center for Health Statistics. *Vital Health Stat* 1(10a). 1973.
- National Center for Health Statistics. Plan and operation of the Health and Nutrition Examination Survey, United States, 1971-73. National Center for Health Statistics. *Vital Health Stat* 1(10b). 1973.
- Engel A, Murphy RS, Maurer K, Collins E. Plan and operation of the NHANES I Augmentation Survey of Adults 25-74 years, United States, 1974-1975. National Center for Health Statistics. *Vital Health Stat* 1(14). 1978.
- McDowell A, Engel A, Massey JT, Maurer K. Plan and operation of the second National Health and Nutrition Examination Survey, 1976-80. National Center for Health Statistics. *Vital Health Stat* 1(15). 1981.
- Fitti JE, Kovar MG. The Supplement on Aging to the 1984 National Health Interview Survey. National Center for Health Statistics. *Vital Health Stat* 1(21). 1987.

25. Kelsey JL, O'Brien LA, Grisso JA, Hoffman S. Issues in carrying out epidemiologic research in the elderly. *Am J Epidemiol* 130(5):857-66. 1989.
26. Magaziner J, Simonsick EM, Kashner TM, et al. Patient-proxy response comparability on measures of patient health and functional status. *J Clin Epidemiol* 41(11):1065-74. 1988.
27. Farrow et al. Comparability of information provided by elderly cancer patients and surrogates regarding health and functional status, social support, and life events. *Society for Epidemiology Research Meetings Abstract*; no 271, 1990.
28. National Center for Health Statistics. Aging in the eighties: Functional limitations of individuals age 65 years and over, June 1987, and unpublished data from the Supplement on Aging to the 1984 National Health Interview Survey.
29. Collins JG. Prevalence of selected chronic conditions, United States, 1979-81. National Center for Health Statistics. *Vital Health Stat* 10(155). 1986.
30. Centers for Disease Control. Prevalence of arthritic conditions, United States, 1987. Office of Surveillance and Analysis and Division of Chronic Disease Control and Community Intervention. Center for Chronic Disease Prevention and Health Promotion. *MMWR Morb Mortality Wkly Rep* 39(6):99-102. 1990.
31. Comorbidity of chronic conditions and disability among older persons-United States, 1984. *JAMA* 263(2):209-10. 1990.
32. Guralnik JM, LaCroix AZ, Everett DF. Comorbidity of chronic conditions and disability among older persons-United States, 1984. *MMWR Morb Mortal Wkly Rep* 38(46):788-91. 1989.
33. Guralnik JM, LaCroix AZ, Everett DF, Kovar MG. Aging in the eighties: The prevalence of comorbidity and its association with disability. Advance data from vital and health statistics; no 170. Hyattsville, Maryland: National Center for Health Statistics. 1989.
34. Quinet RJ, Hadler NM. Mechanical problems of the dorsolumbar spine. In Katz WA, ed. *Diagnosis and management of rheumatic diseases*. 2d ed. Philadelphia: Lippincott Co. 1988.

**Table 1. Percent of persons 55 years of age and over who reported joint pain or physician-diagnosed arthritis, by sex, race, and age: United States, selected time periods**

[Data for 1960–84 are based on interviews of samples of the civilian noninstitutionalized population]

<i>Sex, race, and age</i>	<i>Joint pain<sup>1</sup></i>		<i>Physician-diagnosed arthritis<sup>2</sup></i>		
	<i>1960–62</i>	<i>1976–80</i>	<i>1960–62</i>	<i>1976–80</i>	<i>1984</i>
Total.....	41.5	48.9	37.2	44.3	47.7
55–59 years.....	37.9	49.9	34.7	38.9	38.4
60–64 years.....	45.1	50.0	37.0	44.2	44.6
65–69 years.....	37.7	47.5	35.9	48.4	48.8
70–74 years.....	49.1	47.6	42.1	48.0	55.5
75–79 years.....	38.8	...	39.7	...	54.2
80 years and over.....	...	...	...	...	55.6
Male.....	33.9	49.3	28.3	37.2	38.9
55–59 years.....	29.1	50.0	24.4	32.6	29.2
60–64 years.....	37.0	50.3	28.8	38.2	37.0
65–69 years.....	34.7	48.4	32.1	40.9	42.2
70–74 years.....	41.3	47.2	28.4	38.7	47.8
75–79 years.....	26.4	...	29.7	...	43.3
80 years and over.....	...	...	...	...	45.1
White male.....	33.1	49.7	28.1	37.3	38.2
55–59 years.....	27.2	50.5	22.8	33.5	28.2
60–64 years.....	36.0	50.0	28.8	38.0	36.1
65–69 years.....	34.9	49.1	32.0	40.3	41.3
70–74 years.....	40.8	48.4	29.2	38.9	47.4
75–79 years.....	26.8	...	30.5	...	42.4
80 years and over.....	...	...	...	...	44.8
Black male.....	41.4	44.7	30.2	36.4	47.5
55–64 years.....	45.5	49.1	33.6	31.9	43.3
65–74 years.....	38.9	38.4	26.8	42.8	51.7
75 years and over.....	*21.4	...	*18.8	...	51.1
Female.....	48.2	48.7	45.1	50.2	54.0
55–59 years.....	45.6	49.9	43.7	44.1	45.5
60–64 years.....	53.0	49.6	45.1	50.0	50.9
65–69 years.....	40.2	46.8	39.0	54.2	54.0
70–74 years.....	55.5	47.9	53.3	54.9	60.7
75–79 years.....	51.3	...	49.8	...	61.3
80 years and over.....	...	...	...	...	60.4
White female.....	47.3	48.5	45.1	49.2	53.2
55–59 years.....	47.5	49.4	43.1	42.2	45.5
60–64 years.....	49.1	50.2	44.5	49.6	50.4
65–69 years.....	38.5	46.2	39.4	52.8	52.9
70–74 years.....	54.8	47.9	53.1	55.2	59.3
75–79 years.....	50.7	...	53.0	...	60.2
80 years and over.....	...	...	...	...	59.3
Black female.....	58.4	50.0	45.0	59.7	61.2
55–64 years.....	55.8	49.9	49.9	58.5	50.1
65–74 years.....	62.8	50.2	44.5	61.3	69.9
75 years and over.....	57.0	...	*19.7	...	73.6

<sup>1</sup>Specific questions concerned "joint pains" and "pain in back, neck, or other joint."

<sup>2</sup>Specific question: "Doctor confirm or ever told sample person that he/she had arthritis?"

SOURCES: National Center for Health Statistics: 1960–62 data from the Health Examination Survey; 1976–80 data from the second National Health and Nutrition Examination Survey; 1984 data from the National Health Interview Survey Supplement on Aging.

**Table 2. Percent of persons 55–74 years of age who reported any pain in joints, by site of pain, according to race, sex, and age: United States, 1971–75**

[Data are based on interviews of the civilian noninstitutionalized population]

<i>Race, sex, and age</i>	<i>Total</i>	<i>Joint pain<sup>1</sup></i>			
		<i>Neck or back</i>	<i>Hip</i>	<i>Knee</i>	<i>Other<sup>2</sup></i>
	<i>Number of persons in thousands</i>	<i>Percent<sup>3</sup></i>			
Total <sup>4</sup> . . . . .	14,596	45.6	22.4	33.1	35.7
<i>Race</i>					
White . . . . .	13,367	45.7	22.5	32.2	35.2
Black . . . . .	1,229	44.5	20.5	43.2	41.3
<i>Sex</i>					
Male . . . . .	6,016	44.5	21.3	31.3	36.8
Female . . . . .	8,580	46.4	23.1	34.4	34.9
<i>Age</i>					
55–64 years . . . . .	8,294	46.9	23.7	30.3	40.9
65–74 years . . . . .	6,278	43.7	20.6	36.6	28.9
<i>Male</i>					
55–64 years . . . . .	3,614	46.9	24.0	28.7	42.6
65–74 years . . . . .	2,386	40.5	17.4	34.7	28.1
<i>Female</i>					
55–64 years . . . . .	4,680	47.0	23.5	31.6	39.6
65–74 years . . . . .	3,891	45.7	22.6	37.8	29.4

<sup>1</sup>Pain at specific site on most days for at least 1 month.

<sup>2</sup>Includes fingers, wrist, elbow, shoulder, ankle, and foot.

<sup>3</sup>May not add to 100 percent because of reports of multiple pain sites.

<sup>4</sup>Excludes races other than white and black.

SOURCE: National Center for Health Statistics: Data from the 1971–75 National Health and Nutrition Examination Survey Arthritis Supplement.



**Table 3. Percent distribution of respondent-assessed health status among persons 55 years of age and over reporting arthritis, according to race, sex, and age: United States, 1984**

[Data are based on household interviews of the civilian noninstitutionalized population]

Race, sex, and age	Total	Respondent-assessed health status		
		Excellent or very good	Good	Fair or poor
	Number of persons in thousands <sup>1</sup>	Percent distribution <sup>2</sup>		
Total <sup>3</sup> .....	20,456	30.5	31.8	37.7
Race				
White .....	18,370	31.6	32.9	35.4
Black .....	2,086	20.5	21.4	58.2
Sex				
Male .....	7,006	30.7	30.2	39.2
Female .....	13,450	30.4	32.6	37.0
Age				
55-64 years .....	8,118	30.8	32.1	37.1
65-74 years .....	7,642	29.8	31.6	38.6
75-84 years .....	3,985	30.3	31.9	37.8
65 years and over .....	12,338	30.3	31.5	38.2
75 years and over .....	4,696	31.1	31.4	37.5
85 years and over .....	711	35.8	28.7	35.5
Male				
55-64 years .....	2,881	31.3	30.6	38.1
65-74 years .....	2,782	30.3	28.6	41.1
75-84 years .....	1,172	29.2	33.3	37.4
65 years and over .....	4,125	30.2	29.8	40.0
75 years and over .....	1,343	30.1	32.4	37.6
85 years and over .....	171	35.7	25.6	38.7
Female				
55-64 years .....	5,237	30.6	32.9	36.5
65-74 years .....	4,360	29.5	33.3	37.2
75-84 years .....	2,814	30.7	31.3	38.0
65 years and over .....	8,213	30.3	32.4	37.3
75 years and over .....	3,353	31.5	31.0	37.5
85 years and over .....	540	35.9	29.7	34.5

<sup>1</sup>Excludes unknown respondent-assessed health status, unknown arthritis status, and proxy respondents.

<sup>2</sup>May not add to 100 percent because of rounding.

<sup>3</sup>Excludes races other than white and black.

SOURCE: National Center for Health Statistics: Data from the 1984 National Health Interview Survey Supplement Aging.

**Table 4. Percent of selected comorbid conditions among persons 55 years of age and over reporting arthritis, by race, sex, and age: United States, 1984**

[Data are based on household interviews of the civilian noninstitutionalized population]

Race, sex, and age	Total	Condition				
		Heart disease <sup>1</sup>	Hyper-tension	Stroke	Cancer	Diabetes
	Number of persons in thousands <sup>2</sup>	Percent				
Total <sup>3</sup> .....	20,016	15.9	47.8	4.7	10.8	10.8
Race						
White.....	18,019	16.3	45.9	4.5	11.7	9.8
Black.....	1,998	12.2	64.7	6.3	2.5	19.6
Sex						
Male.....	6,849	19.5	41.0	5.4	10.9	10.4
Female.....	13,167	14.0	51.3	4.4	10.7	10.9
Age						
55-64 years.....	7,980	13.1	44.3	2.4	7.8	10.3
65-74 years.....	7,454	17.0	48.5	5.1	12.1	11.6
75-84 years.....	3,896	19.0	53.4	8.2	14.1	10.8
65 years and over.....	12,036	17.7	50.1	6.3	12.7	11.1
75 years and over.....	4,582	18.7	52.5	8.2	13.7	10.2
85 years and over.....	686	16.9	47.5	8.0	11.1	6.8
Male						
55-64 years.....	2,812	16.4	40.7	2.5	7.4	9.4
65-74 years.....	2,713	21.8	43.0	6.5	12.2	12.6
75-84 years.....	1,156	22.3	38.4	9.6	16.1	8.2
65 years and over.....	4,037	21.6	41.2	7.3	13.3	11.2
75 years and over.....	1,323	21.3	37.5	9.1	15.6	8.2
85 years and over.....	167	*14.5	31.0	*5.1	12.4	*8.2
Female						
55-64 years.....	5,168	11.3	46.3	2.3	8.1	10.8
65-74 years.....	4,741	14.3	51.7	4.3	12.0	11.0
75-84 years.....	2,740	17.7	59.7	7.6	13.3	11.9
65 years and over.....	8,000	15.7	54.5	5.7	12.4	11.0
75 years and over.....	3,259	17.7	58.6	7.8	12.9	11.0
85 years and over.....	519	17.6	52.8	8.9	10.7	6.3

<sup>1</sup>Includes rheumatic heart disease, coronary heart disease, angina, and myocardial infarction.

<sup>2</sup>Excludes unknown respondent-assessed health status, unknown arthritis status, and proxy respondents.

<sup>3</sup>Excludes races other than white and black.

SOURCE: National Center for Health Statistics: Data from the 1984 National Health Interview Survey Supplement on Aging.

**Table 5. Percent of persons 55 years of age and over reporting arthritis, with difficulty performing activities of daily living, by race, sex, and age: United States, 1984**

[Data are based on household interviews of the civilian noninstitutionalized population]

Race, sex, and age	Total	ADL with difficulty						
		Eating	Toileting	Dressing	Bathing	Transferring <sup>1</sup>	Walking	Getting outside
	Number of persons in thousands <sup>2</sup>	Percent						
Total <sup>3</sup> .....	20,454	1.1	3.1	6.0	9.3	9.7	21.1	8.7
Race								
White.....	18,367	1.1	3.0	5.9	9.2	9.5	20.6	8.2
Black.....	2,087	*0.9	3.7	6.8	10.6	11.5	25.3	13.3
Sex								
Male.....	6,985	1.3	2.1	6.3	8.0	7.7	19.2	6.0
Female.....	13,469	1.0	3.7	5.8	10.0	10.7	22.1	10.1
Age								
55-64 years.....	8,141	0.8	2.0	5.2	7.1	8.9	15.9	5.1
65-74 years.....	7,625	1.0	2.6	5.0	7.7	8.4	19.5	6.7
75-84 years.....	3,988	1.5	5.4	8.4	14.6	11.7	30.5	16.0
65 years and over.....	12,316	1.3	3.9	6.5	10.8	10.2	24.6	11.1
75 years and over.....	4,689	1.6	5.9	8.8	15.9	13.1	32.8	18.3
85 years and over.....	701	*2.3	8.5	11.1	23.7	21.2	45.9	31.7
Male								
55-64 years.....	2,869	*1.1	1.9	6.1	7.4	8.9	17.2	4.8
65-74 years.....	2,778	1.4	1.9	5.3	6.7	6.3	17.9	5.0
75-84 years.....	1,169	*0.9	2.7	8.5	10.8	7.5	25.0	9.3
65 years and over.....	4,117	1.4	2.2	6.4	8.3	6.9	20.7	6.9
75 years and over.....	1,338	*1.4	2.9	8.7	11.6	8.1	26.5	10.8
85 years and over.....	169	*4.3	*4.8	*10.1	17.3	*12.6	37.0	21.7
Female								
55-64 years.....	5,272	*0.6	2.1	4.7	6.9	8.9	15.2	5.2
65-74 years.....	4,846	0.8	3.0	4.9	8.2	9.5	20.4	7.6
75-84 years.....	2,819	1.8	6.6	8.4	16.1	13.5	32.8	18.7
65 years and over.....	8,197	1.2	4.7	6.5	12.1	11.8	26.5	13.2
75 years and over.....	3,351	1.8	7.1	8.8	17.7	15.2	35.4	21.3
85 years and over.....	532	*1.6	9.7	11.4	25.7	23.9	48.7	34.9

<sup>1</sup>Transferring means getting in and out of a bed or chair.

<sup>2</sup>Excludes proxy respondents and those for whom information was missing on any of the activities of daily living (ADL's).

<sup>3</sup>Excludes races other than white and black.

NOTE: Persons reported as not performing activities of daily living (ADL) were classified with those reported as having difficulty with that ADL.

SOURCE: National Center for Health Statistics: Data from the 1984 National Health Interview Survey, Supplement on Aging.

**Table 6. Percent of persons 55 years of age and over reporting arthritis, with difficulty performing instrumental activities of daily living, by race, sex, and age: United States, 1984**

[Data are based on household interviews of the civilian noninstitutionalized population]

Race, sex, and age	Total	IADL with difficulty					
		Meal preparation	Shopping	Managing money	Using telephone	Light housework	Heavy housework
		Number of persons in thousands <sup>1</sup>		Percent			
Total <sup>2</sup> .....	20,337	5.1	9.4	2.2	2.3	5.5	27.3
<b>Race</b>							
White.....	18,272	4.7	8.8	2.0	2.3	5.1	26.5
Black.....	2,065	8.5	14.1	3.8	*1.8	8.7	34.5
<b>Sex</b>							
Male.....	6,980	3.1	5.5	2.0	3.3	3.7	16.0
Female.....	13,358	6.2	11.4	2.3	1.7	6.4	33.2
<b>Age</b>							
55-64 years.....	8,010	3.0	5.5	0.9	1.3	3.4	23.0
65-74 years.....	7,596	4.1	7.1	1.3	2.0	4.6	25.0
75-84 years.....	3,946	9.0	17.8	4.7	4.1	9.3	36.5
65 years and over.....	12,237	6.5	11.9	3.1	2.9	6.9	30.2
75 years and over.....	4,641	10.4	19.9	5.9	4.3	10.7	38.7
85 years and over.....	695	18.0	31.5	13.2	5.2	18.6	51.6
<b>Male</b>							
55-64 years.....	2,881	1.8	4.4	*1.1	2.1	3.1	15.7
65-74 years.....	2,762	2.3	3.6	1.6	2.8	2.7	13.5
75-84 years.....	1,165	6.5	10.5	3.9	6.6	6.2	20.1
65 years and over.....	4,098	3.9	6.2	2.7	4.1	4.1	16.3
75 years and over.....	1,336	7.4	11.7	5.1	6.9	6.9	22.0
85 years and over.....	171	*13.5	19.8	13.3	*8.7	*11.8	34.4
<b>Female</b>							
55-64 years.....	5,219	3.7	6.1	*0.8	*0.9	3.5	27.0
65-74 years.....	4,834	5.1	9.1	1.2	1.6	5.7	31.5
75-84 years.....	2,781	10.1	20.9	5.0	3.1	10.6	43.3
65 years and over.....	8,139	7.8	14.8	3.2	2.3	8.3	37.2
75 years and over.....	3,305	11.6	23.2	6.3	3.2	12.3	45.5
85 years and over.....	524	19.5	35.3	13.2	*4.0	20.8	57.1

<sup>1</sup>Excludes proxy respondents and those for whom information was missing on any of the instrumental activities of daily living (IADL's).

<sup>2</sup>Excludes races other than white and black.

NOTE: Persons reported as not performing an IADL were not classified with those reported as having difficulty with that IADL.

SOURCE: National Center for Health Statistics: Data from the 1984 National Health Interview Survey, Supplement on Aging.

# Chapter 11

## International aging

by Toni P. Miles, M.D., Ph.D., and Jacob Brody, M.D., University of Illinois at Chicago

### Introduction

Population aging worldwide as well as in the United States has been accomplished by improving survival of children (of both sexes) and females of all ages and delaying mortality for older persons (1–3). Improved nutrition and sanitation practices have increased survival to even older ages for the current oldest cohorts. Mortality events in the United States now occur primarily in the population over age 65 years, with heart disease and stroke as the leading causes of death (4). In the period preceding death, declining health status caused by increasing numbers of comorbid chronic diseases and conditions is the predominant pattern of morbidity in the United States for older persons.

An increase in the absolute number of persons aged 65 years and over is a phenomenon that is occurring in both industrialized and non-industrialized nations (1–3,5). Among industrialized countries, there has also been a proportionate growth in the older population. The shift in age structure for these countries has been achieved at varying speeds by low birth rates coupled with the lowest mortality rates in history. In many cases (Japan is the most notable example), there has been a low birth rate coupled with a rapid decline in premature mortality (death before age 65 years). Speed of population aging can be expressed in the amount of time each country will take to double the size of its current population over the age of 65 years. Japan will take only 26 years to double its proportion of elderly from 7 percent to 14 percent

(1970–96), while the same process in France will take 115 years, and in the United States 66 years (1). The growth of this population segment creates its own set of imperatives that are felt by each country to varying degrees.

However, while seemingly ideal for characterizing features of health status among populations of older persons, international health and vital statistics data can be biased in ways that make it difficult to identify the sources of cross-national differences. Population factors such as ethnicity, cohort life expectancy, and population density (urbanization) vary greatly among countries. Apparent disease risk factors may be biased in countries with large immigrant populations. Emigration can artificially depress mortality rates if older persons who immigrated to an area return “home” to die. Obtaining comparable time period data for individual countries can be limited by the type of information required, adequacy and completeness of a country’s recording system, and inability of international agencies to standardize health and vital status information.

The type of information collected on a standard death certificate can have broad implications for research on aging (6). Multiple pathologic conditions can give rise to difficulty in analyzing cause-of-death information for older persons. The underlying cause of death is usually reported when there is a need to attribute death to a single condition. However, it has been speculated that this practice would underestimate the role of cardiovascular disease as a

cause of death (7,8). Even among industrialized nations, there is considerable variation in both diagnostic procedures as well as coding practices, which can lead to biased estimates of cause-specific mortality rates (9).

Despite these caveats, comparing characteristics of population aging in the United States with those of other countries can yield valuable insights into the broader features of this phenomenon. Cross-national data on age- and sex-specific life expectancy can provide clues allowing us to discern age and cohort effects. Proportionate mortality and cause-of-death data can be used to target public health promotion and mortality prevention efforts. Comparison of age-specific mortality rates can conceivably lead to the development of a targeted “ideal mortality rate” for older adults comparable to the international “gold standard” infant mortality rate of 5–6 per 1,000 live births.

### Source of data

Data cited in this chapter were abstracted from the *United Nations Demographic Yearbook* (1976, 1985, 1986, and 1988) and *Vital and Health Statistics of the United States* (1988). The demographic yearbook presents special topics on a yearly basis in addition to standardized material. Mortality was the special topic in 1985, and data for tables 2 and 4 are based on this edition of the yearbook. Data for table 1 are derived from the 1988 edition and for table 3 are derived from the 1986 edition. In reporting cause-of-death data to the United Nations, countries have used either the Adapted Mortality List derived from the 1975 *International Classification of Diseases, Ninth Revision* (ICD–9) or the 1965 eighth revision (ICD–8). The short-list rubrics presented in table 4 by country are:

Disease	ICD–8 Sweden, Switzerland, Denmark, Norway	ICD–9 All others
Diseases of the heart <sup>1</sup>	B27–B29	M28–30, AM32–33
Cerebrovascular disease	B30	AM31
Cancer	B19–B20	AM13–AM20

<sup>1</sup>Excludes codes specific for cerebrovascular disease.

In the 1985 edition, age-specific cause-of-death data were available for 5-year age groups through age 84 years and for persons 85 years and over.

### Results

Life expectancy among older persons in the United States and worldwide is increasing. Measuring the life expectancy or expected remaining years at age 65 is an increasingly useful statistic to assess cohort survival in view of the decline in premature mortality. Table 1 shows the average number of remaining years for persons aged 65, 75, and 85 years, by sex. The trend for all listed countries was that females in virtually every older age group live longer than males of comparable age. In the United States, a female aged 65 years in 1986 could expect to live an additional 18.6 years, and a male aged 65 an additional 14.7 years. Similar averages for males and females 65 years of age were observed in most countries, with ranges for males from 13.0 years (Belgium) to 16.1 years (Japan), and females 16.5 years (Israel) to 19.7 years (Japan). Persons 85 years of age living in the United States or Canada had the greatest average number of expected remaining years, with males having an average 5.2 additional years, Canadian females an average 6.7 years, and U.S. females 6.4 years.

In most countries, the proportionate contribution to all deaths made by persons aged 65 years and over was well in excess of their representation in the population (table 2). Comparison of current proportionate mortality

information with data from 1976 reveals that most countries recorded an increase in deaths attributable to persons over age 65 years ranging from 0.1 percent (Belgium) to 9.9 percent (Hong Kong), while the overall proportion of this population remained stable or increased slightly (0.3 percent to 3 percent). Decreased premature mortality (deaths before age 65 years) between 1976 and 1985 and aging of the population over age 65 years were contributing factors to this increased proportionate mortality.

Mortality risk was not uniformly distributed across the population aged 65 years and over in each listed country (table 3). In all countries, there was a gradient of increasing risk, such that rates were lowest for those persons aged 65–69 years and highest among those aged 85 years for both sexes.

The change, however, in mortality risk with age was subject to considerable variation across countries. This is best illustrated by examining the risk of mortality for the older age groups relative to that of persons aged 65–69 years. For example, in Japan, where mortality rates for both males and females were among the lowest, the relative mortality risk (RMR) for females aged 75–79 years was 3.4, and for females aged 85 years and over, the RMR was 13.9. By contrast, a female in the United States aged 75–79 years had a lower relative risk (RMR = 2.4), as did U.S. females aged 85 years and over (RMR = 8.6). The slower increase in mortality risk in the United States appears to be a function of both very low mortality rates among the oldest-old as well as moderately elevated rates among the younger group.

Table 4 lists cause-specific mortality in four broad categories (diseases of the heart, cerebrovascular disease, cancer, and all other causes) for persons aged 65 years and over in 17 countries. Diseases of the heart, cancer, and cerebrovascular disease account for 58–78 percent of all deaths in these countries. Of these three major causes of death, heart disease was the

leading cause of death in the United States and most countries (24–43 percent), with the exception of Hong Kong (20 percent). In countries where cancer was the second most frequent cause of death, 17–25 percent of deaths were attributed to this disease. Greece (23 percent) and Japan (22 percent) had the highest cerebrovascular mortality rates. In the United States, 29 percent of deaths were listed as being from “all other causes,” and for most other countries, 22–42 percent of deaths were in this category. Research in the area of all other causes of mortality may yield valuable information.

## References

1. Torrey BB, Kinsella K, Taeuber CM. An aging world. *International Population Reports*; series P-95, no 78. Washington: U.S. Bureau of the Census. 1987.
2. Kinsella K. Aging in the third world. *International Population Reports*; series P-95, no 79. Washington: U.S. Bureau of the Census. 1988.
3. Oram AR. The epidemiologic transition: A theory of the epidemiology of population change. *Milbank Q* 49(4):509–38. 1971.
4. Fingerhut L. Changes in mortality among the elderly, U.S., 1940–1978. *Vital Health Stat* 3(22). Washington: National Center for Health Statistics. 1982.
5. Brody J. Prospects for an aging population. *Nature* 315(6019):463–6. 1985.
6. Curb D, Miles T, White L. Research implications of changes in 1989 revision of the U.S. Standard Certificate of Death in the aging population. In *Proceedings of the National Center for Health Statistics Conference' Data for an Aging Population Issues in Health, Research, and Public Policy Now and Into the 21st Century.* (DHHS Pub No (PHS) 88–1214). Washington. 1987.
7. Uemura K. International trends in cardiovascular diseases in the elderly. *European Heart J* 9(Suppl D):1–8. 1988.
8. Uemura K, Pisa Z. Trends in cardiovascular disease mortality in industrialized countries since 1950. *World Health Stat Q* 41:155–78. 1988.
9. Percy C, Muir C. The international comparability of cancer mortality data: Results of an International Death Certificate Study. *Am J Epi* 129(5):934–46. 1989.

**Table 1. Average expected remaining years of life for persons 65, 75, and 85 years of age, by sex: Selected countries, selected years**

Country	Year <sup>1</sup>	Male			Female		
		65 years	75 years	85 years	65 years	75 years	85 years
Expected remaining years of life							
Australia.....	1986	14.6	8.8	4.8	18.5	11.3	5.9
Belgium.....	1979-82	13.0	7.6	4.2	16.9	9.8	5.0
Canada.....	1984-86	14.9	9.2	5.2	19.2	12.1	6.7
Denmark.....	1986-87	14.1	8.5	4.8	17.9	11.0	5.8
England and Wales.....	1983-85	13.4	8.0	4.7	17.5	10.7	6.0
Federal Republic of Germany.....	1985-87	13.8	8.1	4.5	17.6	10.3	5.3
France.....	1987	15.0	9.0	4.8	19.4	11.7	5.9
Greece.....	1980	14.6	8.8	5.0	16.7	10.0	5.5
Hong Kong.....	1987	15.0	9.0	4.8	18.5	11.2	5.9
Israel.....	1985	15.1	9.0	4.8	16.5	9.7	4.9
Italy.....	1983	13.6	7.9	4.2	17.4	10.1	5.2
Japan.....	1987	16.1	9.4	5.0	19.7	11.8	5.9
Netherlands.....	1985-86	13.9	8.3	4.6	18.6	11.2	5.7
Norway.....	1987	14.4	8.6	4.7	18.5	11.1	5.7
Sweden.....	1987	15.0	8.8	4.6	18.9	11.4	5.8
Switzerland.....	1986-87	15.2	9.2	5.0	19.3	11.6	5.9
United States.....	1986	14.7	9.1	5.2	18.6	11.7	6.4

<sup>1</sup>Data closest to the 1986 reference period are presented.

SOURCES: United Nations: *Demographic Yearbook, 1988*. Pub. No. ST/ESA/STAT/SER.R/18. New York, 1990; U.S. data from National Center for Health Statistics: Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service, 1988.



**Table 2. Percent of population 65 years of age and over and deaths of persons 65 years of age and over as a percent of all deaths: Selected countries, selected years**

Country	Percent of population 65 years and over				Deaths of persons 65 years and over as a percent of all deaths			
	1972-76 <sup>1</sup>		1983-86 <sup>2</sup>		1976 <sup>3</sup>		1981-86 <sup>3</sup>	
	Year	Percent	Year	Percent	Year	Percent	Year	Percent
Australia.....	1974	8.5	1983	10.0	1976	65.5	1984	70.2
Belgium.....	1974	13.8	1983	13.8	1976	75.8	1984	75.9
Canada.....	1975	8.5	1986	10.7	1976	64.2	1984	69.6
Denmark.....	1973	12.9	1985	15.3	1976	73.9	1984	76.4
England and Wales.....	1975	14.2	1985	15.3	1976	75.5	1984	77.8
Federal Republic of Germany... .	1975	14.5	1985	14.8	1976	75.9	1984	77.3
France.....	1972	13.6	1986	13.1	1976	74.5	1983	75.0
Greece.....	1975	12.2	1983	13.3	1976	73.5	1983	77.7
Hong Kong.....	1976	5.7	1986	7.6	1976	49.4	1984	59.3
Israel.....	1975	7.8	1985	8.8	1976	62.5	1984	70.9
Italy.....	1974	11.8	1984	12.8	1976	72.3	1981	75.4
Japan.....	1975	7.9	1985	10.3	1976	66.5	1984	70.4
Netherlands.....	1975	10.8	1985	12.1	1976	73.9	1984	76.5
Norway.....	1975	13.7	1984	15.6	1976	76.0	1984	79.9
Sweden.....	1975	15.1	1986	18.1	1976	77.8	1984	81.2
Switzerland.....	1976	12.7	1985	14.6	1976	75.2	1984	77.3
United States.....	1976	10.7	1986	12.1	1976	65.2	<sup>4</sup> 1986	70.7

<sup>1</sup>SOURCE: United Nations: *Demographic Yearbook, 1976*. Pub. No. ST/ESA/STAT/SER.R/4. New York. 1977.

<sup>2</sup>SOURCE: United Nations: *Demographic Yearbook, 1986*. Pub. No. ST/ESA/STAT/SER.R/16. New York. 1988.

<sup>3</sup>SOURCE: United Nations: *Demographic Yearbook, 1985*. Pub. No. ST/ESA/STAT/SER.R/15. New York. 1987.

<sup>4</sup>SOURCE: National Center for Health Statistics: *Vital statistics of the United States, vol II, mortality, part A*. Washington: Public Health Service. 1986.

**Table 3. Mortality rates per 1,000 population for selected age groups, by sex: Selected countries, selected years**

Country	Year <sup>1</sup>	Male			Female		
		65-69 years	75-79 years	85 years and over	65-69 years	75-79 years	85 years and over
Australia.....	1983	30.8	77.2	<sup>2</sup> 144.8	15.1	42.6	<sup>2</sup> 108.7
Belgium.....	1983	34.8	90.7	237.8	17.1	53.1	190.3
Canada.....	1985	29.1	68.1	195.6	14.6	38.6	141.6
Denmark.....	1985	33.5	80.0	212.8	16.5	44.4	171.9
England and Wales.....	1985	34.2	87.9	223.1	18.3	49.7	178.0
Federal Republic of Germany.....	1985	31.7	86.7	216.7	15.0	49.4	181.9
France.....	1985	32.3	73.2	244.1	12.9	38.0	186.6
Greece.....	1984	24.7	65.6	195.7	14.6	48.9	185.2
Hong Kong.....	1985	25.8	56.6	93.0	15.5	34.1	92.3
Israel.....	1985	25.0	69.4	208.7	20.2	59.4	199.5
Italy.....	1982	29.0	81.3	<sup>2</sup> 162.8	13.6	48.2	<sup>2</sup> 127.1
Japan.....	1985	21.5	64.5	190.6	11.0	37.7	152.9
Netherlands.....	1985	31.3	80.4	212.8	13.2	40.8	159.2
Norway.....	1984	29.2	72.0	200.2	12.8	40.8	159.4
Sweden.....	1985	26.2	69.0	193.9	12.7	41.2	153.5
Switzerland.....	1985	26.8	65.7	183.9	11.9	37.2	142.1
United States.....	1986	29.8	70.1	181.9	16.7	40.5	143.0

<sup>1</sup>Data closest to the 1984 reference period are presented.

<sup>2</sup>Provisional data.

SOURCES: United Nations: *Demographic Yearbook, 1986*. Pub. No. ST/ESA/STAT/SER.R/16. New York. 1988; U.S. data from National Center for Health Statistics: *Vital statistics of the United States, vol II, mortality, part A*. Washington: Public Health Service. 1988.

**Table 4. Percent of deaths from diseases of the heart, cerebrovascular disease, cancer, and all other causes among persons 65 years of age and over: Selected countries, selected years**

Country	Year <sup>1</sup>	Cause of death			
		Diseases of the heart	Cerebro-vascular disease	Cancer	All other causes
Australia.....	1983	43.3	14.3	20.8	21.6
Belgium.....	1984	34.3	13.1	21.8	30.8
Canada.....	1984	41.6	9.9	23.2	25.3
Denmark.....	1984	36.6	10.7	23.8	28.9
England and Wales.....	1983	38.1	13.4	20.2	28.3
Federal Republic of Germany...	1984	40.9	15.9	20.6	22.7
France.....	1983	28.1	13.9	20.2	37.8
Greece.....	1983	28.2	22.9	16.2	32.7
Hong Kong.....	1984	19.5	15.4	23.1	42.0
Israel.....	1983	35.7	13.5	17.1	33.7
Italy.....	1981	37.6	16.1	19.3	27.0
Japan.....	1984	24.4	22.1	21.0	32.5
Netherlands.....	1984	36.9	11.9	24.9	26.3
Norway.....	1984	33.3	15.0	20.2	31.5
Sweden.....	1984	42.2	11.7	19.7	26.4
Switzerland.....	1984	36.6	12.6	25.0	25.8
United States.....	1986	41.5	8.7	21.0	28.8

<sup>1</sup>Data closest to the 1984 reference period are presented.

SOURCES: United Nations: *Demographic Yearbook, 1985*. Pub. No. ST/ESA/STAT/SER.R/15. New York, 1987; U.S. data from National Center for Health Statistics: Vital statistics of the United States, vol II, mortality, part A. Washington: Public Health Service, 1988.

# **Part V**

## **Appendixes**

# Appendix

## Contents

I. Technical notes on methods.....	301
Population.....	301
Statistical considerations.....	301
II. How to order PC Lotus Diskette of tables.....	307
III. Guide to tables.....	309

## Appendix table

Table I. Number and percent distribution of resident population 55 years of age and over by age, according to race and sex: United States, selected years 1980-90.....	304
--	-----

# Appendix I

## Technical notes on methods

### Population

The total resident population in the United States was estimated to be 249 million in 1990 (table 1). At the beginning of the 20th century, the population of the United States was 76 million—39 million males and 37 million females (1). The population 65 years of age and over comprised 12.5 percent (31 million) of the total population in 1990. This represents a threefold increase since the turn of the century.

The most revealing aspect of the population change in the 20th century is the dramatic shift in the age composition. In particular, the segment of the population 65 years and over has increased steadily over time, with the greatest increases occurring between 1950 and 1980. The growth rate for this segment of the population was more than twice that of the total population (2,3). The average annual growth rate for the decade of the 1980's was 2.2 percent, still more than twice the corresponding rate for the total population.

Included in the expansion of the older population is a disproportionate increase in the oldest-old, those 85 years of age and over. During the decade of the 1980's, the average annual growth rate of this group was 3.5 percent. Within the 65-and-over category, the rates of increase have been greatest in the oldest age groups. Since the turn of the century, the percent of the 65-and-over population that is 85 years of age or over has increased from 4 percent to almost 10 percent.

The aging of the population is projected to continue well into the 21st century. Projected growth for the 21st century is staggering. Although the population 65 years of age and over will equal 36 million, or 13 percent of the total population, in the year 2000, middle series projections from the U.S. Bureau of the Census indicate that the older population will number 87 million, 23 percent of the total population (4,5). Projections for the oldest-old population indicate that there will be 5 million persons 85 years and over in the year 2000 and 13 million in the year 2040 (6,7). The U.S. Bureau of the Census projects that the 85-and-over population will comprise slightly more than 5 percent of the total population in the year 2050.

### Statistical considerations

#### Reliability of the survey estimates

Because many of the estimates in this report are based on a sample survey, they may differ somewhat from the figures that would have been obtained if a complete census had been taken using the same survey and processing procedures. There are two types of error possible in an estimate based on a sample survey: sampling and nonsampling errors. To the extent possible, these types of errors are kept to a minimum by methods built into the survey procedures. See relevant chapters for references to survey documentation.

## Rounding of numbers

In published tables, the figures are rounded to the nearest thousand. Derived statistics, such as rates and percent distributions, are computed before the estimates on which these are based have been rounded to the nearest thousand.

## Estimation of standard errors

The standard error is primarily a measure of sampling error, that is, the variations that might occur by chance because only a sample of the population is surveyed. The chances are about 68 in 100 that an estimate from the sample would differ from a complete census by less than the standard error. The chances are about 95 in 100 that the difference would be less than twice the standard error, and about 99 in 100 that it would be less than 2½ times as large.

Standard errors for the computed statistics on data from the National Health Interview Survey (NHIS), the NHIS Supplement on Aging, and the Longitudinal Study on Aging, used in chapters 1–3, 5, and 7–10, and the National Long Term Care Survey (NLTC), chapter 6, were estimated by use of two of the procedures from the statistical software developed by the Research Triangle Institute (8). These procedures, which can only be accessed through the Statistical Analysis System (SAS), were SESUDAAN and RTIFREQS (8). SESUDAAN was used for estimating the standard errors of means or proportions, and RTIFREQS was used to produce the estimates of standard errors for sample counts (8). These procedures use linearization methods, first-order Taylor series approximation, to obtain estimates of variances (8,9).

Standard errors for the computed statistics on data from the National Ambulatory Medical Care Survey (NAMCS), used in chapters 5, 7–9, the National Nursing Home Survey (NNHS), chapter 6, 8, and 9, and the National Hospital Discharge Surveys (NHDS), chapters 5, 8, and 9, were derived from the figures of approximate

relative standard errors in the particular survey's documentation. See corresponding chapters for references. These standard errors are provided for a wide variety of estimates rather than for a particular statistic.

The data presented in chapter 4 are the actual population figures, not estimates.

## Relative standard errors

As in other National Center for Health Statistics (NCHS) documents, a particular estimate is considered statistically unreliable, and is so indicated by an asterisk to the left of the estimate, if the relative standard error (RSE) is greater than 30 percent. The RSE of an estimate is obtained by dividing the standard error (SE) of the estimate by the estimate itself (10). The RSE is expressed as a percent of the estimate:

$$RSE = 100 \frac{SE(x)}{x}$$

## Tests of significance

In this report, terms relating to differences, such as “higher” and “less,” indicate that the differences are statistically significant (at 0.05 level of significance). Terms such as “similar” or “no difference” mean that no statistically significant difference exists between the estimates being compared. A lack of comment on the difference between any two estimates does not mean that the difference was tested and found not to be significant.

## Statistical statement form

The validity of all statistical statements made in this document was evaluated according to protocols developed at NCHS (11). Statistical statements encountered herein are either descriptive or comparative (12). A descriptive statement is one in which only estimates of parameters are presented, and a comparative statement examines the relationship between parameters (12).

Many of the statistical comparisons made in this document are single comparison statements that do not specify the magnitude of the difference between the two parameters, e.g., males 65 years of age and over have a higher death rate from ischemic heart disease than females 65 years of age and over (12). The statistical tests performed were two-tailed tests unless the authors had an a priori one-tailed hypothesis. All statistical comparisons were tested at the 5-percent level of significance.

The format of the two-tailed statistical test is as follows:

$$Z = \left| \frac{X_m - X_f}{\sqrt{S_{x_m}^2 + S_{x_f}^2}} \right| > 1.96$$

where  $X_m$  = death rate from ischemic heart disease for males

$X_f$  = death rate from ischemic heart disease for females

$S_{x_m}^2$  = standard error of  $X_m$

$S_{x_f}^2$  = standard error of  $X_f$

If a one-tailed test was applicable, then the critical value used was 1.645.

Other statistical comparisons were multiple comparison statements that do not specify the magnitudes of the differences between the pairs of parameters, e.g., the days-of-care rate is higher for widowed persons than for married persons (12). The format of the statistical test is the same as above, however, the critical value, which depends on the number of possible pairwise comparisons, differs from the 1.96. Using the above example, there are five subdomains of marital status (married, single, widowed, divorced, or separated), two of which are being compared. Although the statement makes only 1 comparison, there are 10 possible pairwise comparisons for the marital status subdomains, and the appropriate critical value for a two-sided test

would be 2.81 (12). Tables with the appropriate critical value for a particular combination of comparisons are available in other NCHS documents (12).

## References

1. Linder FE, Grove RD. Vital statistics rates in the United States, 1900–1940. Washington: U.S. Government Printing Office. 1947.
2. Torrey BB, Kinsella K, Taeuber CM. An aging world. *International Population Reports*; series P-95, no 78. Washington: U.S. Bureau of the Census. 1987.
3. Verbrugge LM. The dynamics of population aging and health. In Lewis SJ, ed. *Aging and health: Linking research and public policy*. Chelsea, Michigan: Lewis Publishers Inc. 1989.
4. Manton KG, Soldo BJ. Dynamics of health changes in the oldest old: New perspectives and evidence. *Milbank Q* 63(2). 1985.
5. Spencer G. Projections of the population of the United States, by age, sex, and race: 1988 to 2080. *Current Population Reports*; series P-25, no 1018. Washington: U.S. Government Printing Office. 1989.
6. Taeuber CM. America in transition: An aging society. *Current Population Reports*; series P-23, no 128. Washington: U.S. Government Printing Office. 1983.
7. Cornoni-Huntley JC, Foley DJ, White LR, et al. Epidemiology of disability in the oldest old: Methodologic issues and preliminary findings. *Milbank Q* 63(2). 1985.
8. Shah BV. Software for survey data analysis. *The American Statistician* 38(1). 1984.
9. Levy PS, Lemeshow S. *Sampling of populations: Methods and applications*. New York: John Wiley & Sons, Inc. 1991.
10. Adams PF, Benson V. Current estimates from the National Health Interview Survey, 1989. *Vital Health Stat* 10(176). Washington: National Center for Health Statistics. 1990.
11. Levy PS, Sirken MG. Quality control of statistical reports. *Proceedings of the American Statistical Association: Social Science Section*, pp. 356. 1972.
12. Sirken MG, Shimizu BI, French DK, Brock DB. *Manual on standards and procedures for reviewing statistical reports*. National Center for Health Statistics, Administrative Document.



**Table I. Number and percent distribution of resident population 55 years of age and over by age, according to race and sex: United States, selected years 1980-90**

<i>Race, sex, and age</i>	1980	1984	1986	1990 <sup>1</sup>	1980	1984	1986	1990 <sup>1</sup>
Total <sup>2</sup>	Number in thousands				Percent distribution			
All ages . . . . .	226,546	236,495	241,078	248,710	100.0	100.0	100.0	100.0
55-59 years. . . . .	11,615	11,442	11,268	10,487	5.1	4.8	4.7	4.2
60-64 years. . . . .	10,088	10,872	10,962	10,625	4.5	4.6	4.5	4.3
65-69 years. . . . .	8,782	9,284	9,661	10,066	3.9	3.9	4.0	4.1
70-74 years. . . . .	6,798	7,449	7,664	7,980	3.0	3.1	3.2	3.2
75-79 years. . . . .	4,794	5,363	5,629	6,103	2.1	2.3	2.3	2.5
80-84 years. . . . .	2,935	3,246	3,422	3,909	1.3	1.4	1.4	1.6
65 years and over. . . . .	25,549	27,967	29,173	31,079	11.2	11.8	12.1	12.5
75 years and over. . . . .	9,969	11,234	11,847	13,033	4.4	4.8	4.9	5.2
85 years and over. . . . .	2,240	2,625	2,796	3,021	0.9	1.1	1.2	1.2
White male								
All ages . . . . .	94,976	98,253	99,808	102,143	100.0	100.0	100.0	100.0
55-59 years. . . . .	4,929	4,812	4,742	4,404	5.1	4.9	4.8	4.3
60-64 years. . . . .	4,221	4,543	4,549	4,409	4.4	4.6	4.6	4.3
65-69 years. . . . .	3,517	3,752	3,928	4,048	3.7	3.8	3.9	4.0
70-74 years. . . . .	2,578	2,847	2,946	3,080	2.7	2.9	3.0	3.0
75-79 years. . . . .	1,668	1,873	1,980	2,165	1.7	1.9	2.0	2.1
80-84 years. . . . .	932	1,024	1,083	1,232	0.9	1.0	1.1	1.2
65 years and over. . . . .	9,317	10,177	10,648	11,284	9.8	10.4	10.7	11.1
75 years and over. . . . .	3,221	3,578	3,775	4,157	3.3	3.6	3.8	4.1
85 years and over. . . . .	621	681	712	760	0.6	0.7	0.7	0.7
Black male								
All ages . . . . .	12,585	13,480	13,892	14,420	100.0	100.0	100.0	100.0
55-59 years. . . . .	468	497	504	460	3.7	3.7	3.6	3.2
60-64 years. . . . .	386	430	447	418	3.1	3.2	3.2	2.9
65-69 years. . . . .	332	353	370	361	2.6	2.6	2.7	2.5
70-74 years. . . . .	235	255	262	253	1.9	1.9	1.9	1.8
75-79 years. . . . .	153	168	175	179	1.2	1.2	1.3	1.2
80-84 years. . . . .	75	83	86	98	0.6	0.6	0.6	0.7
65 years and over. . . . .	848	922	961	957	6.7	6.8	6.9	6.6
75 years and over. . . . .	281	314	328	343	2.2	2.3	2.4	2.4
85 years and over. . . . .	53	63	67	66	0.4	0.5	0.5	0.5

White female								
All ages . . . . .	99,835	103,047	104,493	106,561	100.0	100.0	100.0	100.0
55-59 years. . . . .	5,467	5,302	5,159	4,726	5.5	5.1	4.9	4.4
60-64 years. . . . .	4,858	5,169	5,190	4,972	4.9	5.0	5.0	4.7
65-69 years. . . . .	4,376	4,564	4,707	4,936	4.4	4.4	4.5	4.6
70-74 years. . . . .	3,576	3,866	3,947	4,111	3.6	3.8	3.8	3.9
75-79 years. . . . .	2,683	2,979	3,105	3,353	2.7	2.9	3.0	3.2
80-84 years. . . . .	1,774	1,954	2,053	2,334	1.8	1.9	2.0	2.2
65 years and over. . . . .	13,848	15,082	15,649	16,736	13.9	14.6	15.0	15.7
75 years and over. . . . .	5,897	6,652	6,995	7,689	5.9	6.5	6.7	7.2
85 years and over. . . . .	1,440	1,719	1,837	2,001	1.4	1.7	1.8	1.9
Black female								
All ages . . . . .	14,046	14,991	15,414	16,063	100.0	100.0	100.0	100.0
55-59 years. . . . .	572	598	604	581	4.1	4.0	3.9	3.6
60-64 years. . . . .	487	533	550	554	3.5	3.6	3.6	3.5
65-69 years. . . . .	446	465	481	499	3.2	3.1	3.1	3.1
70-74 years. . . . .	330	368	377	385	2.3	2.5	2.4	2.4
75-79 years. . . . .	235	263	277	305	1.7	1.8	1.8	1.9
80-84 years. . . . .	125	145	153	190	0.9	1.0	1.0	1.2
65 years and over. . . . .	1,242	1,374	1,434	1,535	8.8	9.2	9.3	9.6
75 years and over. . . . .	466	541	576	651	3.3	3.6	3.7	4.1
85 years and over. . . . .	106	133	146	156	0.8	0.9	0.9	1.0

<sup>1</sup>Data for 1990 are from the Census Bureau CPH-L-74 Modified Age-Race-Sex count files.

<sup>2</sup>Includes races other than white and black.

NOTE: 1980 population enumerated as of April 1; 1984 and 1986 are estimated as of July 1.

SOURCES: U.S. Bureau of the Census. Current population reports; series P-25, nos 929, 949, 965, 985, and 1000. Washington: U.S. Department of Commerce. U.S. Bureau of the Census: unpublished data.

## Appendix II

### How to order PC Lotus diskette of tables

#### Health Data on older Americans, United States: 1992 tables available on diskette

The 170 detailed and text tables from Health Data on Older Americans, United States: 1992 are available on diskette from the Government Printing Office (GPO) and National Technical Information Service (NTIS) for use with IBM-compatible personal computers. The tables are in Lotus 1-2-3 worksheet files. Lotus 1-2-3 version 2 or higher, or any program that can read WK1 files (e.g., Lotus Symphony and Microsoft Excel) is required to use these spreadsheets. The files have been compressed. To install these tables on your computer requires a minimum of 70 kilobytes of free memory, PC-DOS or MS-DOS version 2.0 or higher, and approximately 2 megabytes of hard disk space. Directions for decompression and copying the tables to your hard disk will be provided with the diskette(s).

To order the tables on diskette from GPO's electronic media order desk, call (202) 512-1530. The tables are available in the following formats:

- 3.5" high-density diskette, cost: \$21.00

- 5.25" two double-density diskettes, cost for set of two: \$30.00
- 5.25" high-density diskette, cost: \$15.00

To order the tables on diskette from NTIS, call (703) 487-4650. The tables are available in the following formats:

- 3.5" high-density diskette, PB93-500627
- 5.25" two double-density diskettes, PB93-500601
- 5.25" high-density diskette, PB93-500619

A guide to the tables in spreadsheet format, is included on the diskette(s).

Questions about the diskette(s) or their contents should be directed to:

National Center for Health Statistics  
Scientific and Technical Information Branch  
6525 Belcrest Road  
Hyattsville, MD 29782  
Telephone (301) 436-8500

Lotus 1-2-3 and Symphony are registered trademarks of the Lotus Development Corporation. Microsoft Excel is a registered trademark of the Microsoft Corporation.

# Appendix III

## Guide to Tables

	<i>Sex</i>	<i>Race</i>	<i>Oldest-old, 85 +</i>	<i>ADL, IADL</i>	<i>Medicare medicaid</i>	<i>Nursing homes</i>
Chapter 1 . . . . .	1,2,3,4,5,6	1,4,5	1,2,3,4,5	2,3		
Chapter 2 . . . . .	A,B,1,2,3,4, 5,6,7,8,9,10, 11	1,2,3,4, 5,6,7	B,1,2,3,4,5, 6,7	A,B,1,2,3,4,5, 6,7,8,9,10,11		
Chapter 3 . . . . .	A,B,1,4,5,6,7, 8,9,10,11,12, 13,14,15		1	A,B,2,3,4,5, 6,7,8,9,10 11,12,13,14 15		1,2,3,4,5, 6,7,8,9,10,11 12,13,14,15
Chapter 4 . . . . .	A,B,C,D,E,F, G,H,J,K,L,M, N,O,1,2,3,5,6, 7,8,9,10,11,12	A,B,C,D,E,F, G,H,J,K,L,M N,O,1,2, 3, 5,6,7,8,9,10, 11,12	A,C,E,G,J,L, N,O,1,2,3,4, 5,6,7,8, 9,10,11,12			
Chapter 5 . . . . .	1,2,3,4,5,6, 7,8,9,10, 11,12,13,14	1	1,2,3,4,5,6, 7,8,9,10,11, 12,13,14			14
Chapter 6 . . . . .	A,F,J,1,2,3, 4,5,13,14,15	A,E,J,1,2,3, 4,5,13,14,15	A,D,G,J,1,2, 3,4,5,6,7,8, 9,10,11,12, 13,14,15	J,6,7,13,14 15	10	A,C,D,E,F,G, H,1,2,3,4,5, 6,7,8,9,10, 11,12
Chapter 7 . . . . .	1,7,8	1,7	7,8			
Chapter 8 . . . . .	1,2,3,4,5,6, 7,8,9,10	2	2,6,7,8,11		1,2,4,5,6,7, 8,9,10,11	8,11
Chapter 9 . . . . .	B,C,E,G,1,2, 3,4,5,6,7,8,9, 10,11,12,13,14 15,16,17,18,19, 20,25,26,27,28, 29,30	A,B,C,D,E, F,G,21,22 23	A,6,7,8,11,12, 13,14,15,19 20	B,C,2,3,6,7, 9,10	27,28	G,9,10,20,21 22,23
Chapter 10 . . . . .	1,2,3,4,5,6	1,2,3,4,5,6	3,4,5,6	5,6		
Chapter 11 . . . . .	1,3		1,3			

  

	<i>Heart disease</i>	<i>Cancer</i>	<i>Stroke</i>	<i>Pneumonia</i>	<i>Diabetes</i>	<i>HIP fractures</i>
Chapter 1 . . . . .	6			6		
Chapter 2 . . . . .						
Chapter 3 . . . . .						
Chapter 4 . . . . .	E,F,4,5,12	G,H,J,K,4,6 7,12	L,M,4,8,12	4,10,12	N,4,9,12	
Chapter 5 . . . . .	4,6,7	4,6,7	6,7	6,7,12	2,4	6,7,13
Chapter 6 . . . . .						
Chapter 7 . . . . .	B,4	4		4		
Chapter 8 . . . . .						
Chapter 9 . . . . .	D,E,4,14,16 18,30	D,E,14,18,30	D,E,14,18,30	F,14,18	4,14,16,18,30	
Chapter 10 . . . . .	4	4	4		4	
Chapter 11 . . . . .	4	4	4			

# Vital and Health Statistics series descriptions

- SERIES 1. Programs and Collection Procedures**—These reports describe the data collection programs of the National Center for Health Statistics. They include descriptions of the methods used to collect and process the data, definitions, and other material necessary for understanding the data.
- SERIES 2. Data Evaluation and Methods Research**—These reports are studies of new statistical methods and include analytical techniques, objective evaluations of reliability of collected data, and contributions to statistical theory. These studies also include experimental tests of new survey methods and comparisons of U.S. methodology with those of other countries.
- SERIES 3. Analytical and Epidemiological Studies**—These reports present analytical or interpretive studies based on vital and health statistics. These reports carry the analyses further than the expository types of reports in the other series.
- SERIES 4. Documents and Committee Reports**—These are final reports of major committees concerned with vital and health statistics and documents such as recommended model vital registration laws and revised birth and death certificates.
- SERIES 5. International Vital and Health Statistics Reports**—These reports are analytical or descriptive reports that compare U.S. vital and health statistics with those of other countries or present other international data of relevance to the health statistics system of the United States.
- SERIES 6. Cognition and Survey Measurement**—These reports are from the National Laboratory for Collaborative Research in Cognition and Survey Measurement. They use methods of cognitive science to design, evaluate, and test survey instruments.
- SERIES 10. Data From the National Health Interview Survey**—These reports contain statistics on illness; unintentional injuries; disability; use of hospital, medical, and other health services; and a wide range of special current health topics covering many aspects of health behaviors, health status, and health care utilization. They are based on data collected in a continuing national household interview survey.
- SERIES 11. Data From the National Health Examination Survey, the National Health and Nutrition Examination Surveys, and the Hispanic Health and Nutrition Examination Survey**—Data from direct examination, testing, and measurement on representative samples of the civilian noninstitutionalized population provide the basis for (1) medically defined total prevalence of specific diseases or conditions in the United States and the distributions of the population with respect to physical, physiological, and psychological characteristics, and (2) analyses of trends and relationships among various measurements and between survey periods.
- SERIES 12. Data From the Institutionalized Population Surveys**—Discontinued in 1975. Reports from these surveys are included in Series 13.
- SERIES 13. Data From the National Health Care Survey**—These reports contain statistics on health resources and the public's use of health care resources including ambulatory, hospital, and long-term care services based on data collected directly from health care providers and provider records.
- SERIES 14. Data on Health Resources: Manpower and Facilities**—Discontinued in 1990. Reports on the numbers, geographic distribution, and characteristics of health resources are now included in Series 13.
- SERIES 15. Data From Special Surveys**—These reports contain statistics on health and health-related topics collected in special surveys that are not part of the continuing data systems of the National Center for Health Statistics.
- SERIES 16. Compilations of Advance Data From Vital and Health Statistics**—Advance Data Reports provide early release of information from the National Center for Health Statistics' health and demographic surveys. They are compiled in the order in which they are published. Some of these releases may be followed by detailed reports in Series 10–13.
- SERIES 20. Data on Mortality**—These reports contain statistics on mortality that are not included in regular, annual, or monthly reports. Special analyses by cause of death, age, other demographic variables, and geographic and trend analyses are included.
- SERIES 21. Data on Natality, Marriage, and Divorce**—These reports contain statistics on natality, marriage, and divorce that are not included in regular, annual, or monthly reports. Special analyses by health and demographic variables and geographic and trend analyses are included.
- SERIES 22. Data From the National Mortality and Natality Surveys**—Discontinued in 1975. Reports from these sample surveys, based on vital records, are now published in Series 20 or 21.
- SERIES 23. Data From the National Survey of Family Growth**—These reports contain statistics on factors that affect birth rates, including contraception, infertility, cohabitation, marriage, divorce, and remarriage; adoption; use of medical care for family planning and infertility; and related maternal and infant health topics. These statistics are based on national surveys of childbearing age.
- SERIES 24. Compilations of Data on Natality, Mortality, Marriage, Divorce, and Induced Terminations of Pregnancy**—These include advance reports of births, deaths, marriages, and divorces based on final data from the National Vital Statistics System that were published as supplements to the *Monthly Vital Statistics Report (MVSR)*. These reports provide highlights and summaries of detailed data subsequently published in *Vital Statistics of the United States*. Other supplements to the MVSR published here provide selected findings based on final data from the National Vital Statistics System and may be followed by detailed reports in Series 20 or 21.

For answers to questions about this report or for a list of reports published in these series, contact:

Scientific and Technical Information Branch  
National Center for Health Statistics  
Centers for Disease Control and Prevention  
Public Health Service  
6525 Belcrest Road, Room 1064  
Hyattsville, MD 20782  
(301) 436-8500

**DEPARTMENT OF  
HEALTH & HUMAN SERVICES**

Public Health Service  
Centers for Disease Control and Prevention  
National Center for Health Statistics  
6525 Belcrest Road  
Hyattsville, Maryland 20782

---

PRESORTED  
SPECIAL FOURTH-CLASS RATE  
POSTAGE & FEES PAID  
PHS/NCHS  
PERMIT NO. G-281

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300