

# VI AL & HEALTH STATISTICS

## **TRANSAX: The NCHS System for Producing Multiple Cause-of-Death Statistics**

**1968-78**

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### **Programs and Collection Procedures Series 1, No. 20**

This report describes the characteristics of the TRANSAX (for TRANslation of AXis) computer software developed by staff of the National Center for Health Statistics to translate multiple cause-of-death data contained on death certificates from a condition (entity) axis of classification to a person (record) axis of classification. This conversion is an essential step in the development of data for meaningful tabulation and analysis. System development, implementation, benefits, features, and applications are discussed.

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### 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
-

# **TRANSAX: The NCHS System for Producing Multiple Cause-of-Death Statistics 1968-78**

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## **Introduction**

This document describes the methodology employed in TRANSAX (for TRANSlation of AXis), a key part of the multiple cause-of-death statistical program at the National Center for Health Statistics (NCHS). TRANSAX is a computer system designed to convert or translate coded medical conditions and diseases reported on death certificates into a form amenable to the analysis of multiple causes of death.

The components of TRANSAX are presented in this report from the perspective of statistical function rather than of com-

puter systems organization. The objective is to convey the contribution of TRANSAX to the process of classifying multiple-cause data in a form useful for research and analysis.

This report discusses developmental and implementation activities associated with the Center's annual mortality data files for the years 1968-78. The report also includes background information on the Center's multiple cause-of-death program.

# Background

For many years, cause-of-death statistics have been based on the underlying cause of death, which is defined as “the disease or injury which initiated the train of morbid events leading directly or indirectly to death or the circumstances of the accident or violence which produced the fatal injury.”<sup>1</sup>

For a given death, the underlying cause is selected from the condition or conditions recorded by the certifier in the cause-of-death section of the death certificate. NCHS is bound by international agreement to make the selection through use of the classification structure and selection and modification rules contained in the latest revision of the *International Classification of Diseases (ICD)*, as promulgated by the World Health Organization (WHO).<sup>2,3</sup>

The selection rules take into account the certifier’s ordering of conditions and their causal relationships and guide the coder in systematically identifying the underlying cause of death. The intent of the modification rules is to improve the usefulness of mortality statistics by giving preference to certain classification categories over others and consolidating two or more conditions on the certificate into a single classification category.

As a statistical datum, the underlying cause of death is simple and one dimensional. It is conceptually easy to understand and is a well-accepted measure of mortality. The initiating cause of death is identified and thereby made more useful to public health officials in developing measures to prevent or delay the chain of events leading to death.

The Sixth Revision of the ICD introduced the present concept for coding underlying causes of death as a means of (a) giving medical practitioners basic responsibility for identifying the underlying cause of death and (b) standardizing classifications that contribute to uniform, descriptive, and meaningful mortality medical statistics among countries.<sup>4</sup>

Yet, despite the many advantages of the underlying cause of death as a statistical tool, researchers and administrators in the health field have recognized certain limitations of the underlying cause as a statistical basis for conveying comprehensive mortality medical statistics in the United States.

First, when multiple chains of diseases exist and each has its own initiating condition, only one disease is selected as the underlying cause of death unless the structure of ICD and related coding rules permit the diseases to be combined for coding purposes. Second, when the morbid disease process is not well defined, selection of the underlying cause of death may in fact be somewhat arbitrary. Third, the underlying cause-of-death statistic, by definition, excludes information

pertaining to the immediate cause of death, contributory causes, and those causes that intervene between the underlying and immediate causes of death. Fourth, the underlying cause identified through application of the selection and modification rules can differ from the condition stated by the certifier to be the underlying cause of death. And fifth, the selection and modification rules include no provision for classifying the nature of injury as the underlying cause. Instead, the underlying cause is restricted to the external cause of injury.

The significance of the above limitations becomes more apparent in light of the changing health profile of the U.S. population over the last few decades. As a modern industrialized nation, we have passed through what Abdel Omran described as the epidemiological transition that usually accompanies socioeconomic modernization.<sup>5,6</sup> A major aspect of that transition is the increasing prevalence of mortality from chronic diseases, in contrast with an earlier era when acute and infectious diseases dominated our mortality profile. We would expect to find increasing proportions of deaths due to chronic causes, characterized by the existence of a number of conditions at time of death.<sup>7</sup>

The limitations of the underlying-cause concept and the pressing need for more comprehensive medical data in epidemiological and morbidity research suggested that despite the costs and analytical problems, there should be a coding and tabulation of all causes listed on the death certificate on an ongoing basis. It was evident that such a multiple cause-of-death program would be invaluable in (a) portraying the number of deaths in which a given disease is a significant factor and (b) deciphering the interaction of diseases.<sup>8</sup>

By 1968, conditions other than the underlying (or principal) cause of death had been coded five times since 1900 at the national level. The underlying (or principal) cause of death and one associated cause were coded in 1917, 1925, 1936, and 1940. In 1955, up to five conditions were coded.<sup>9-13</sup>

Analysis and publication of the pre-1955 data were limited. Selective papers were presented at meetings such as the American Public Health Association’s annual meeting in 1923. The annual vital statistics publications devoted one table each to the 1917, 1925, and 1940 data that showed cross tabulation of the underlying cause of death and contributory causes. Two separate reports on the 1936 data were published, but they were limited to abbreviated cause lists rather than to detailed sets of tables.

The 1955 study, prepared under the supervision of Iwao M. Moriyama, represented a landmark achievement in the

multiple cause-of-death field and remains the most comprehensive body of published national multiple cause-of-death data available. It was the first time that multiple-cause statistics had been published in a separate volume. They were published as a supplement on multiple causes of death to the *Vital Statistics of the United States, 1955*.<sup>13</sup> The 1955 publication represented a time-consuming effort complicated by the limited capability of the data-processing equipment of that era. The basis for the study was a 50-percent sample reduced to a 20-percent sample for parts of the report.

Concurrent with national efforts in the multiple-cause field, State and private groups, including Metropolitan Life Insurance Company and the health departments of California, Tennessee, Illinois, and New York City,<sup>13-15</sup> carried out a number of parallel efforts.

Despite the limited nature of work in the multiple cause-of-death field over 7 decades, the cumulative literature in the field resulting from these diverse efforts was sufficiently important to provide both the incentive and some basic guideposts to initiate an ongoing national multiple cause-of-death program in the late 1960's. By that time, the advanced state of computer technology provided the capability to conduct a multiple cause-of-death program at the national level.

A most important factor contributing to implementation of a full-scale multiple cause-of-death statistics program in the United States was modernization of the mortality statistics data system in 1968. The principal element of this change was the shift from coding only the underlying cause of death to coding all conditions on the death certificate and the related introduction of an automated system for determining the underlying cause of death from the coded conditions. This new system was called ACME for Automated Classification of Medical Entities.<sup>16</sup>

From 1968 forward, NCHS has coded all conditions reported on death certificates. Using the 1968 data, NCHS prepared experimental multiple cause-of-death tabulations. Robert A. Israel and Robert Armstrong reported preliminary results of this work to an international conference in 1973.<sup>17</sup> Except for this, until 1977, NCHS principally limited its use of the ACME data to automated assignment of the underlying cause of death.

Exploratory work began in 1975, and in 1977-78 the Center assigned resources to develop analytical and data retrieval methodology complementary to the multiple cause-of-

death data base generation activities of the late 1960's. Leading to this development, NCHS sponsored a conference in 1976 to examine approaches to making available national multiple cause-of-death statistics from the ACME data.<sup>18</sup> Organized by the Center for Demographic Studies at Duke University, approximately 60 persons representing national, State, and international vital statistics programs; the health research community; public health environmental research agencies; and academic interests attended the conference. After that, the NCHS effort focused primarily on ascertaining the most appropriate form and manner in which to tabulate, analyze, and disseminate multiple cause-of-death data. By late 1978, three basic principles were agreed upon.<sup>7,19-20</sup>

- Multiple-cause data should be viewed as a major dimension of the ongoing annual mortality medical statistics program. It should not replace the underlying-cause data; this traditional measure of mortality is essential for trend statistics and comparability with other countries and is most useful as a one-dimensional indicator of the condition that initiated the events leading to death.
- Two broad kinds of multiple-cause data utilization should be provided for:
  - a. Utilization oriented toward examination of etiological relationships among conditions that require a faithful and exact recording of each condition and its placement within the cause-of-death statement.
  - b. Utilization oriented toward the number of death certificates on which a condition is mentioned, irrespective of whether it is the underlying cause of death.
- There should be access to the richness of detail contained in the multiple-cause data (and geographic and demographic control variables) in forms that promote analysis of the data in a cost-effective manner with minimal restrictions in terms of predefined variables.

Operating within the framework of these general principles, NCHS undertook several initiatives. One such initiative was to implement a public-use-tape release program to disseminate multiple-cause data for the entire 1968-78 period, the years for which all causes had been coded for use with ACME. To generate this data base, the Center developed and implemented the TRANSAX system, the subject of this report. The following sections discuss this system in detail.



# The need for TRANSAX

## The classification problem

Despite the general consensus that there was a need to produce statistics on multiple causes of death, the question of how to code medical conditions on death certificates to best present the array of reported diseases and conditions has been a complicated, difficult issue surrounding most multiple cause-of-death studies. As late as 1972, Israel, Templeton, and Evans<sup>16</sup> identified this as a major unresolved problem in successfully implementing an ongoing multiple cause-of-death statistical program.

It has been recognized that the *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death (ICD-9)* or its predecessor, the *International Classification of Diseases, Adapted for Use in the United States (ICDA-8)*—joint references hereafter referred to as the “ICD”—should be used as the classification system and structure. However, approaches have differed in the manner and extent to which combination categories contained in the ICD are to be applied.

In their 1955 multiple-cause study, Moriyama, Guralnick, and others<sup>13</sup> used combination categories as specified by the ICD only to the extent that no significant detail was lost.

The World Health Organization in 1969, and again in 1974, considered the problem and recommended for both morbidity and mortality multiple-condition coding that combination categories be employed, thus accepting the loss of detail accompanying this method. They noted that the French had taken this approach also.

In a special evaluation project carried out for NCHS, researchers at Duke University recommended that the components of conditions (for example, arteriosclerosis and nephritis for the condition arteriosclerotic nephritis) be identified wherever possible, even if the ICD provides for combination of the categories into one code.<sup>18</sup>

When NCHS began coding multiple causes of death in 1968, conditions were generally coded as reported, using combination categories only if the term was reported in that manner (for example, emphysematous bronchitis).<sup>21</sup> However, for a select list of conditions of special interest for statistical analysis (like arteriosclerotic cerebrovascular disease), the combination category as well as components of the conditions were coded. NCHS later abandoned coding of components of conditions reported as a combined entity (see below).

The issues in classifying multiple cause-of-death data are complex, and the course of action chosen has extensive ramifications for the value, character, standardization, and level

of specificity of multiple-cause data. In considering how to prepare its multiple-cause data for release, NCHS considered three alternatives. These are contrasted in the following examples, using codes from the Eighth Revision of the International Classification of Diseases, Adapted.

- *Alternative 1: Use of combination categories where provided in ICD*—Under this approach, if both “cardiac edema” and “hypertension” are reported on a certificate, then combination code No. 402 (Hypertensive heart disease) is assigned instead of separately coding No. 427.0 (Congestive heart failure) and No. 401 (Essential benign hypertension).<sup>a</sup>

If “hypertension” and “acute myocardial infarction” are reported on the same certificate, then No. 410.0 (Acute myocardial infarction with hypertensive disease) is coded instead of No. 401 (Essential benign hypertension) and No. 410.9 (Acute myocardial infarction without mention of hypertensive disease).

If “chronic bronchitis” is reported due to “emphysema,” then only No. 491 (Chronic bronchitis) is coded instead of No. 491 (Chronic bronchitis) and No. 492 (Emphysema).

- *Alternative 2: Code components of conditions*—Using this approach, the code for “arteriosclerotic nephritis” is No. 440.9 (Arteriosclerosis, generalized and unspecified) and No. 583 (Nephritis, unqualified), thereby identifying each component of the entity (arteriosclerosis and nephritis). The code is not No. 403 (Hypertensive renal disease), the category to which arteriosclerotic nephritis is indexed. This, of course, creates an apparent contradiction between codes concerning the presence of nephritis related to arteriosclerosis.

“Diabetic coma” is coded to No. 250.9 (Diabetes mellitus without mention of acidosis or coma) and No. 780.0 (Coma and stupor) instead of No. 250.0 (Diabetes mellitus with mention of acidosis or coma). As in the previous example, this produces a contradiction between codes concerning the presence of coma related to diabetes.

- *Alternative 3: Code conditions as reported*—An alternative to the above extremes is to code the information, entity by entity, based on the way it is reported. For example, if the certificate shows “influenzal pneumonia” as a cause

<sup>a</sup>According to convention, decimal points are used in ICDA-8 to separate the third and fourth digits of a 4-digit code. No decimal point is used with a 3-digit code.

of death, then this may be treated as an entity and assigned the code for the combination category No. 471 (Influenza with pneumonia). If the certificate shows the terms separately ("influenza" and "pneumonia"), then they may be treated as two entities and assigned separate codes, No. 470 (Influenza, unspecified) and No. 486 (Pneumonia, unspecified).

Likewise, if the certificate shows "arteriosclerotic cerebrovascular disease" as a cause of death, then code No. 437.9 (Generalized ischemic cerebrovascular disease without mention of hypertension) may be assigned. If the certificate shows "cerebrovascular disease" due to "arteriosclerosis," then separate codes, No. 438.9 (Other and ill-defined cerebrovascular disease without mention of hypertension) and No. 440.9 (Arteriosclerosis, generalized and unspecified) may be assigned, despite the fact that ICD treats both reportings as arteriosclerotic cerebrovascular disease (No. 437.9).

The first approach is true to the basic intent of the ICD but sacrifices some specificity in the coding and confounds application of the WHO rules to select the underlying cause of death. The second approach exploits the ICD code structure to extract the maximum coded detail out of each condition. However, under this approach, certain ICD titles are not literally correct and occasionally contradictions appear among codes on a record. The third approach is easy to use but it may create a different set of codes for a combination of terms that are regarded as equivalent in ICD. These considerations and a desire to meet a wide variety of user needs led to the following actions:

- For purposes of research into etiological relationships among diseases, for evaluation of the certification process and rules for underlying-cause coding, and for accurate automated selection of the underlying cause of death, each entity and its placement is coded without being combined with other conditions (entities) and, in fact, with only the minimum regard to other reported conditions necessary to reflect the intent of the certifier. In the multiple cause-of-death data system, the name for this set of multiple-cause codes is *entity axis multiple-cause data*. This action reflects the decision to implement above alternative 3.
- For tabulations of person-based, multiple-cause data, a set of multiple-cause codes is created for each death, employing combination categories. The name for this set of multiple-cause codes is *record axis multiple-cause data*. The record axis provides multiple-cause data comparable to the underlying-cause data, with maximum practical adherence to WHO recommendations. At the same time, the record axis yields the most accurate, standardized set of codes reflecting the cause-of-death statement. This action reflects the decision to implement alternative 1.
- Codes in ICDA-8 for components of entities are not available either for tabulation by NCHS or on public use tapes; moreover, NCHS is not coding components of entities under ICD-9. This is because the coding of components of entities in a manner that attempts to "wring" the utmost detail out of the cause-of-death statement is

inconsistent with the basic structure of the ICD and the classification principles by which terms are indexed. Furthermore, based on NCHS experience to date, an all-inclusive list of terms for which components are coded is difficult to define and even more difficult to follow in coding, rendering it marginally useful. To the limited extent that entity components were coded in ICDA-8, they have proven to be unwieldy in counting conditions and in interpreting data. This action reflects the decision not to implement above alternative 2.

The entity axis data are obtained by reformatting and editing the data originally coded as input to the ACME system. The record axis data could be generated either through alternative manual coding procedures, which are costly and unwieldy, or by converting the entity data by computer. NCHS chose the computerized approach by developing the TRANSAX system, which translates the multiple-cause codes assigned for input to the ACME system from an entity axis of classification to a record axis of classification.

System background, development, application, and benefits are discussed in the following sections. They provide detailed information on the logic employed in the translation, the nature of relationships included in the system, and the system's performance statistics.

## Characteristics of entity coding

The condition codes assigned for input to ACME utilize what is called an entity axis of classification. That is, each condition (entity) and its placement in the certification are coded with minimum regard to other conditions on the certification. Essentially, this means that entity coding does not employ the linkage provisions of the ICD. However, selecting the code for each entity that best reflects the intent of the certifier takes into account the entire certification.

For example, under ICDA-8, "starvation" is coded to No. N994.2 (Effects of hunger). However, when reported due to an internal injury such as a crushed abdomen, it is coded to No. 269.9 (Other nutritional deficiency, other and unspecified), which includes malnutrition. Similarly, "thrombosis" when reported due to "trauma" is coded to No. N995.3 (Certain early complications of trauma, Traumatic aneurysm and arterial injury) rather than to No. 453 (Other venous embolism and thrombosis).

The purpose of entity coding is twofold. First, it is essential for accurate, automated selection of the underlying cause of death from the condition codes; and second, entity codes capture the most comprehensive coded representation of the cause-of-death certification including statement and placement of conditions.

Entity coding is not suitable for routine tabulation and analysis of multiple-cause, person-based data. As suggested earlier, in some categories, entity-based data may contain contradictions and inaccuracies when one views the conditions within the context of the certification as a whole. For example, entity coding of the condition "acute myocardial infarction" yields ICDA-8 code No. 410.9 (Acute myocardial infarction

without mention of hypertensive disease). Yet, the same certificate (possibly on another line) may contain "hypertension," for which the code is No. 401 (Essential benign hypertension). Within the framework of entity coding, the interpretation of code No. 410.9 is that the *codable entity* itself contained no mention of hypertensive disease rather than that the certificate does not anywhere mention hypertensive disease. From the perspective of the certificate as a whole, a preferable code is No. 410.0 (Acute myocardial infarction with hypertensive disease) when hypertension is present on the record, and No. 410.9 (Acute myocardial infarction without mention of hypertensive disease) when hypertension is not present on the record.

Similarly, under ICDA-8 the entity code for "meningitis" stated due to "tuberculosis" is No. 320.9 (Meningitis with no organism specified as cause) and No. 011.9 (Pulmonary tuberculosis NOS). A preferable code for tabulation purposes would be No. 013.0 (Tuberculous meningitis), based on the traditional assumption that the "due to" statement indicates the individual had tuberculosis of the meninges instead of the lungs.

In addition to problems that are created by the failure to use combination categories, there are two other serious limitations to the use of entity axis data for person-based tabulation of multiple cause-of-death data. First, a more accu-

rate code can often be assigned to a condition if it takes other conditions on the certificate into account. For example, if the certificate reports "endocarditis" due to "rheumatic heart disease," the entity axis code would be No. 394.9 (Diseases of mitral valve not specified as rheumatic) and No. 398 (Other heart disease, specified as rheumatic), respectively. For person-based tabulation, it is more appropriate to *modify* code No. 394.9 to No. 394.0 (Diseases of mitral valve specified as rheumatic). This acknowledges the obvious rheumatic presence in the endocarditis despite the fact that the physician failed to specifically state so.

Secondly, the set of entity axis codes for a certificate may contain two or more codes for essentially the same condition—some of which may be more specific than others. For example, if the certificate shows both "cancer" and "cancer of the brain," the entity axis codes would be No. 199.1 (Malignant neoplasm without specification of site, other) and No. 191 (Malignant neoplasm of the brain), respectively. For person-based tabulation, the less specific code (No. 199.1) would be *deleted* from the record.

Though the entity data are invaluable in their intended applications, these few examples illustrate that recoding of the entity data prior to tabulation and analysis is essential to the creation of harmonious multiple-cause data for person-based analysis.

# TRANSAX system design

## Axis translation table

As suggested in the preceding section, NCHS designed TRANSAX to identify three types of relationships or linkages<sup>b</sup> between each pair of entity axis codes on a record:

- *Combinations*—The two ICD codes should be combined to eliminate contradictions and to standardize data into an ICD combination category.
- *Modifications*—One of the ICD codes should be modified to a more accurate code based on information contained in the other code.
- *Deletions*—One of the ICD codes should be deleted because it is less specific than or contradicts the other code.

Key components of the design of TRANSAX were the collection and tabulation of all possible pairs of ICD codes appropriate to each of the above relationships. Fortunately, ICDA-8 and the documentation of the ACME system contained most of this body of knowledge. However, because the rationale for many relationships was not explicitly documented and was rarely encountered in coding, nosologists had to search the available medical literature to make an informal decision on the relevance of a given pair of codes to TRANSAX. Nosologists found some code pairs to be relevant to the ACME system but not to TRANSAX. They identified others through research to be missing from and not relevant to ACME but necessary for the TRANSAX system.

The result was a table containing approximately 7,000 pairs of entries (each linking a pair of codes in ICDA-8), which can be categorized into one of three distinct types of relationships based on the character of the action being taken. Again, combinations, the first type, identify pairs where both codes combine into a third code. Modifications identify pairs where one code remains intact but effects conversion of the other code into a third code. Deletions identify pairs where only one code of the pair is retained.

Within the first two types, there is a further division of the table entries into those which are applicable only if the codes are in a specified “due to” relationship and those which are applicable regardless of location in the cause-of-death statement. These are called “due to” and “mention of” relationships, respectively. This distinction is necessary to reflect the intent of the certifier and to follow the conventions of ICDA-8 and the rules for underlying-cause coding.

<sup>b</sup>As used herein, “linkage” is not totally synonymous with its use in underlying-cause coding.

In creating table entries, codes are grouped together in spans where possible. This approach reduces the overall number of final table entries by approximately 45 percent. The table with spans contains a total of approximately 4,000 entries, of which 79 percent are combination entries, 8 percent are modification entries, and 14 percent are deletion entries. “Due to” entries number approximately 900, and there are approximately 3,000 “mention of” entries.

Appendix A contains the axis translation table applied to 1968-78 data.<sup>c</sup> The definitions of terms and labels used in appendix A are as follows:

*Entry number*—This is the line number of the entry in the tables, given in sequential order; it allows one to relate specific entries to information given in appendixes B and C.

*Anchor code (A)*—The code that is being combined, modified, or deleted.

*Subanchor code (S)*—The code (or span of codes) that can invoke combination, modification, or deletion of the anchor code.

*Recode*—The new code resulting from the relationship, if any (see below).

*Ambivalent flag*—Flags “1” to “5” in this column indicate that the particular relationship is ambivalent (*AMB*) in nature. In other words, the application of the relationship cannot be determined on the basis of the code numbers alone. Application is valid only for certain specified terms in ICDA-8 that are assignable to the codes, and this can be determined only by reference to the original source document, the death certificate. The system contains special provisions to handle these entries without such costly reference to source documents. The specific rules are as follows:

- a. If the underlying cause of death is the same as the recode for combination- and modification-type relationships or the same as the subanchor for deletion-type relationships, the relationship is invoked on the basis that the underlying-cause modification process originally invoked that same relationship.
- b. If the underlying cause of death is the same as either the anchor code or subanchor code for combination- and modification-type relationships or the same as the anchor code for a deletion-type entry, the relationship is not invoked on the basis that the underlying-cause modification process did not invoke the relationship.

<sup>c</sup>ICDA-8 codes in appendixes A through E have been printed without decimals. All 4-digit codes should be read with a decimal point between the third and fourth digits; for example, 4409 means 440.9.

c. If neither of the above situations exist, then the relationship is invoked with a given probability, depending on the value of the *AMB* flag:

<i>AMB</i> flag	Probability of invoking relationship	Invoke when sequence number ends in—
1 . . . . .	0.10	5
2 . . . . .	0.40	1, 3, 6, 7
3 . . . . .	0.60	0, 1, 3, 4, 5, 7
4 . . . . .	0.90	0, 1, 2, 3, 5, 6, 7, 8, 9

*AMB* flag “5” is used in situations where (1) an anchor and subanchor are repeated in a given table, (2) this anchor and subanchor link to different recodes, and (3) one of the recodes must be selected. Flag “5” forces the system to use the most likely recode if the aforementioned rules a and b fail.

The basis for rules a and b exists in the fact that in processing a record, the ACME system uses at least some of the code relationships employed by TRANSAX.<sup>16</sup> However, ACME rejects those that are ambivalent and leaves them for a nosologist to review with the source record and to assign an underlying cause of death. Thus, because the final underlying cause of death reflects source record review, TRANSAX can use this as a basis for deciding whether to invoke some of the ambivalent relationships.

The remainder of the cases are governed by rule c wherein the ambivalent flag reflects a “best guess” based on the opinion of expert nosologists as to the relative frequency with which a given relationship would typically be invoked. There are 1,200 ambivalent entries in the tables.

*Type*—The following abbreviations describe the character of the particular relationship.

- **COM**—DUE TO: Anchor code and subanchor code are *combined* into a third code based on “*due to*” positional relationship where *anchor code* is *due to subanchor code*.
- **COM**—MENTION OF: Anchor code and subanchor code are *combined* into third code based on “*mention of*” relationship.
- **MOD**—S DUE TO A: Anchor code is *modified* by subanchor code based on “*due to*” relationship where *subanchor code* is *due to anchor code*.
- **MOD**—A DUE TO S: Anchor code is *modified* by subanchor code based on “*due to*” relationship where *anchor code* is *due to subanchor code*.
- **MOD**—MENTION OF: Anchor code is modified by subanchor code based on “*mention of*” relationship.
- **DELETION**: Anchor code is deleted and subanchor code is retained to preserve specificity or to eliminate a contradiction.

The entries given in appendix A are perhaps most useful in relation to appendixes B (Record axis multiple-cause codes which may have been generated by axis translation and the table entries in which they are located) and C (Entity axis multiple-cause codes which may be changed by axis translation and the table entries in which they are located). In appendix B one can determine the *potential* entity axis components of a given record axis code, that is, linkages that may have given rise to the code. Conversely, in appendix C one can

assess the potential impact of axis translation on a given entity-axis code, that is, linkages that may modify it.

### Axis translation logic

The axis translation table provides the action to be taken on each pair of codes but not the logic for creating pairs. The latter is a central, critical issue because a death record can contain many disease conditions (up to 14 codes are allowed, so 91 pairs of codes are theoretically possible) and the medical practitioner may not comply with the format in the cause-of-death section. Thus, relationships can chain together in sequence (for example, two codes combine into a third code which then relates to another code), creating secondary, tertiary, and higher level relationships. Yet, at the same time, contradictions among codes must be avoided in the process of translating the axis of classification.

The examination of all codes on the record is the basis of the logic of TRANSAX. This examination treats each code as an anchor code, deciding whether it is influenced or modified by any other code on the record. An ordering algorithm controls the order of selection of anchor codes and the sequence of searching for codes to modify it. This algorithm also defines “due to” and “mention of” criteria and the approach for sequential relationships that chain together.

In carrying out axis translation on a particular death record, the program software successively examines each code on the record and determines whether it (the anchor code) should be combined with or modified by any other code (subanchor code) on the record. The examination process starts with the code furthest left on the highest used line of the certificate. That code is successively paired with other codes *in a predefined priority order* until a combination or modification is made. Once a combination or modification is made, the new code (recode) is substituted for the original anchor code, and this recode is similarly paired with other codes on the record.

The process continues until all possible combination and modification relationships with the original anchor or its substitute are exhausted. Then the process is repeated using the remaining codes in the record as anchor codes until all of the original codes have been utilized. At the conclusion of all combination and modification relationships, deletion relationships are invoked whereby an anchor code may be deleted and a subanchor code retained. Repetitive codes are also deleted. Each record axis code is then written to the output tape file.

Though the specific order of application of the rules is sometimes arbitrary and seldom makes a difference in the translation, the logic is standardized with a given order of rule application. This ordering is designed to be consistent with the cause-of-death certification, in which the immediate cause is given above intervening causes, and these are placed above the underlying cause of death. Within a given line, the assumption is that the certifier has placed the more significant condition at the beginning of the line. In applying the table entries, combinations have priority over modifications, which are more important than deletions.

Within each of these types, “due to” relationships have priority over “mention of” relationships because they are

synonymous with adjectival modifiers. Anchor codes are selected in the priority order of the first listed on the record (line 1, code 1) to the last listed on the record (line 5, code 14).<sup>d</sup>

Other codes on the record are paired with the anchor code as a subanchor in the following priority order:

- To the right on same line as anchor.
- Next lower line and across it, left to right.
- And so forth—to part II (line 5).
- Then back to line 1, 2, and so forth, until anchor code is again reached.

When a subanchor code combines with an anchor code, that recode cannot serve as a future subanchor code. This rule eliminates generation of superfluous relationships involving the same set of codes.

A basic consideration in axis translation is the definition of “due to” relationships. Axis translation in TRANSAX employs a slightly different definition than the one used in ICD for underlying cause-of-death classification. Axis translation considers every code on a given line in part I of the certification in a “due to” relationship to every code on the next lower line of part I.

- I(a) 7, 5, 6
- (b) 4, 3, 9
- (c) 11, 15

In the above example, illustrative codes 7, 5, 6 are all in a “due to” relationship to code 4. They are also in a “due to” relationship to codes 3 and 9. Codes 4, 3, 9 are all in a “due to” relationship to both codes 11 and 15.

Axis translation and underlying cause use the same “due to” definition up to this point. However, underlying cause-of-death coding goes a step further. If there is only one code on the lowest used line in part I, every code on every line above it is in a “due to” relationship to the code on the lowest used line. This is a deliberate effort to accept the physician’s stated underlying cause as the “selected underlying cause of death.” Axis translation cannot maintain this as a parallel principle, because axis translation is applied selectively to remove “noise” from entity axis data. If this part of the general rule on “due to” relationships were applied, conditions on line a would be modified by the single condition on line c even if the intervening condition on line b were contradictory.

For example, consider the following hypothetical ICDA-8 certification:

- I(a) Hemiplegia . . . . . 344.1
- (b) Cerebral hemorrhage . . . . . 431.9
- (c) Arteriosclerosis . . . . . 440.9

It is inappropriate to consider, for axis translation, that the arteriosclerosis caused the hemiplegia when the certifier said that the hemiplegia was caused by the cerebral hemor-

rhage. The consequences may be even more profound when multiple-condition codes appear successively on single lines of the record.

A “mention of” relationship refers to the combination of a pair of codes or to the modification or deletion of one member of a pair of codes, based on joint presence of the codes on the record (part I and/or part II) irrespective of location within the cause-of-death statement.

To summarize, a given relationship involves either (1) *combination* of both codes in a pair into a new code, (2) *modification* of one code of a pair by the other, or (3) *deletion* of one code of a pair. As an additional constraint, certain relationships, by definition, are valid only if one code is in a “due to” positional relationship (that is, they appear on different but adjacent lines of the certificate) to the other code. Other relationships are valid regardless of their positional relationships. The following examples illustrate each type of relationship in the process.

- *Type 1: Combining two codes into one code*—If ICDA-8 No. 410.9 (Acute myocardial infarction without mention of hypertensive disease) is *mentioned with* No. 401 (Essential benign hypertension), replace codes 410.9 and 401 with code 410.0 (Acute myocardial infarction with hypertensive disease).

If No. 320.0 (H. influenzae meningitis) is reported *due to* No. 011.9 (Pulmonary tuberculosis NOS), replace codes 320.0 and 011.9 with 013.0 (Tuberculous meningitis).

- *Type 2: Modifying one code based on the presence of another*—If No. 394.9 (Diseases of mitral valve not specified as rheumatic) is mentioned with No. 398 (Other heart disease, specified as rheumatic), modify code 394.9 to 394.0 (Diseases of mitral valve specified as rheumatic) and keep code 398.

If No. 192.9 (Malignant neoplasm of other parts of the nervous system, site unspecified) is reported *due to* No. 431.9 (Cerebral hemorrhage without mention of hypertension), modify code 192.9 to 191 (Malignant neoplasm of brain) and keep code 431.9.

- *Type 3: Deleting one code based on the presence of another*—If No. 410.9 (Acute myocardial infarction without mention of hypertensive disease) is *mentioned with* No. 410.0 (Acute myocardial infarction with hypertensive disease), delete code 410.9.

If No. 507 (Hay fever) is *mentioned with* No. 493 (Asthma), delete code 507.

If No. 090.9 (Congenital syphilis, unspecified) is *mentioned with* No. 090.0 (Early congenital syphilis, symptomatic), delete code 090.9.

If No. 151.9 (Malignant neoplasm of stomach, part unspecified) is *mentioned with* No. 151.9 (Malignant neoplasm of stomach, part unspecified), delete one of the 151.9 codes.

Putting these procedures together in sorting a record, the text figure illustrates the character of the overall process with specification of each logic step used by TRANSAX in arriving at the record axis code set.

<sup>d</sup>The coding rules provide for four lines in Part I of the medical certification and one line in Part II. The extra line in Part I allows for cases where the physician “writes in” an extra line in the medical certification. On a line, up to 14 codes may be assigned; however, the total overall lines are also restricted to 14 codes. When there are more than 14 entities to be coded, the least important entities are ignored.

Figure

ENTITY AX.:		10141090	20143390	20243490	20341230	501401	0
ANCHOR CODE	QUERY	RESULTS					
#	L# C#	CODE	L#	C#			
1	4109 1 01	IN DUE TO COMBINATION TABLE-1					YES
		4339 2 01	IN SAME TABLE WITH ANCHOR CODE				NO
		4349 2 02	IN SAME TABLE WITH ANCHOR CODE				NO
		4123 2 03	IN SAME TABLE WITH ANCHOR CODE				NO
		IN MENTION OF COMBINATION TABLE-2					YES
		4339 2 01	IN SAME TABLE WITH ANCHOR CODE				NO
		4349 2 02	IN SAME TABLE WITH ANCHOR CODE				NO
		4123 2 03	IN SAME TABLE WITH ANCHOR CODE				NO
		401 5 01	IN SAME TABLE WITH ANCHOR CODE				YES, RECODE= 4100
	REV. CODES:	1014109N	20143390	20243490	20341230	501401	N
2	4100	IS NOT AN ANCHOR CODE IN TABLES 1-5					
3	4339 2 01	IN DUE TO COMBINATION TABLE-1					TABLE NOT APPLICABLE
		IN MENTION OF COMBINATION TABLE-2					YES
		4349 2 02	IN SAME TABLE WITH ANCHOR CODE				NO
		4123 2 03	IN SAME TABLE WITH ANCHOR CODE				NO
		401 5 01	IN SAME TABLE WITH ANCHOR CODE				YES, RECODE= 4330
	REV. CODES:	1014109D	2014339N	20243490	20341230	501401	N
4	4330	IN DUE TO COMBINATION TABLE-1					TABLE NOT APPLICABLE
		IN MENTION OF COMBINATION TABLE-2					YES
		4349 2 02	IN SAME TABLE WITH ANCHOR CODE				NO
		4123 2 03	IN SAME TABLE WITH ANCHOR CODE				NO
		4109 1 01	IN SAME TABLE WITH ANCHOR CODE				NO
		IN DUE TO MODIFICATION TABLE-4					TABLE NOT APPLICABLE
		IN REVERSE DUE TO MODIFICATION TABLE-3					NO
		IN MENTION OF MODIFICATION TABLE-5					NO
5	4349 2 02	IN DUE TO COMBINATION TABLE-1					TABLE NOT APPLICABLE
		IN MENTION OF COMBINATION TABLE-2					YES
		4123 2 03	IN SAME TABLE WITH ANCHOR CODE				NO
		401 5 01	IN SAME TABLE WITH ANCHOR CODE				YES, RECODE= 4340
	REV. CODES:	1014109D	2014339D	2024349N	20341230	501401	N
6	4340	IN DUE TO COMBINATION TABLE-1					TABLE NOT APPLICABLE
		IN MENTION OF COMBINATION TABLE-2					YES
		4123 2 03	IN SAME TABLE WITH ANCHOR CODE				NO
		4109 1 01	IN SAME TABLE WITH ANCHOR CODE				NO
		4339 2 01	IN SAME TABLE WITH ANCHOR CODE				NO
		IN DUE TO MODIFICATION TABLE-4					TABLE NOT APPLICABLE
		IN REVERSE DUE TO MODIFICATION TABLE-3					NO
		IN MENTION OF MODIFICATION TABLE-5					NO
7	4123 2 03	IN DUE TO COMBINATION TABLE-1					TABLE NOT APPLICABLE
		IN MENTION OF COMBINATION TABLE-2					YES
		401 5 01	IN SAME TABLE WITH ANCHOR CODE				YES, RECODE= 4121
	REV. CODES:	1014109D	2014339D	2024349D	2034123N	501401	N
8	4121	IS NOT AN ANCHOR CODE IN TABLES 1-5					
	TEM R/A CD:	401 D	4100R	4109D	4121R	4123D	4330R 4339D 4340R 4349D
9	4100	IN DELETION TABLE-6					
10	4121	IN DELETION TABLE-6					
11	4330	IN DELETION TABLE-6					
12	4340	IN DELETION TABLE-6					
	RECORD AX.:	41000	41210	43300	43400		

## **Imputation of external cause (E) codes to which nature of injury (N) codes relate**

Under entity axis coding rules for ICDA-8, when one-term entities are given that state or imply cause (E code for external cause of injury) and effect (N code for nature of injury), an N code and an E code are both assigned only for predefined terms given in the instruction manual (see part 2b of the Vital Statistics Instruction Manual series for more information). Otherwise, the comparable E code is not coded in the entity axis field unless the external cause is specifically stated elsewhere on the record. Thus, the E code would be lost unless, by the underlying-cause coding rules, it is imputed to be the underlying cause of death. The lack of such E codes creates problems in analyzing nature of injury and external cause data on a comparable basis.

To overcome these limitations, the axis translation process extends beyond the basic concept described above, generating in the record axis data field the E code to which an N code or group of N codes relate. This is accomplished by the following steps, applied in order:

- If the underlying cause of death is an E code and is not in the record axis field, it is inserted in the record axis field.

- If there is an N code(s) but no E code in the record-axis field, the appropriate E code is inserted according to appendix D. When multiple N codes convert to different E codes, only No. E929 (“Other and unspecified accidents”) is inserted.
- If there are E codes in the categories E930.0–E931.9 or E947, and there are N codes in the categories N820–N959, N980.0–N989.9, or N991.0–N996.9, and no other E code is on the record, then the appropriate E code from appendix D is assigned as above.
- If there are E codes in the categories E911–E912, and there are N codes in the categories N829–N931, N936–N959, N980.0–N989.9 or N991.0–N996.9, and no other E code is on the record, then an E code from appendix D is assigned as above.

These four actions do not completely eliminate the problem, because a maximum of only one E code may be added to the file. However, it does reduce the problem to an acceptable level without having to examine each source record. The need for multiple E codes is estimated to be infrequent, and automatic generation of these codes could produce incompatible E codes within the record axis field.



# System development

The axis translation concept, methodology, and system software represent the culmination of approximately one and a half years of research and development. Because the concept is new, the only external standard available to date is the criterion that the resultant person-based multiple cause data must be true to the principles of ICDA-8 and not contradictory to underlying cause-of-death classification. During testing, a small group of hypothetical cases, a 7,000 record control file of all table entries, and approximately 20,000 actual data records from across the ICDA-8 range of codes were used at each stage of review and revision to measure the impact of changes in rules.

In addition, the specifications for systems design included a number of evaluation tables to permit tabular assessment of system performance in both test mode and in ongoing operation. The project team of statisticians, nosologists, and

a computer systems analyst reviewed each problem as it was identified to determine whether basic concepts, nosology rules, or programming was the source of the problem.

Initially, during the system's infancy, the hypothetical cases were sufficient to detect problems because they were of a gross nature. As the system was refined, greater reliance was placed on the control file and actual data records stratified to represent a maximum of the combinations of source data.

The results of the final test of system acceptance were reviewed by appropriate NCHS staff prior to implementation. This included samples of records processed, evaluation tables, and special control total tables designed to compare frequency counts by ICDA-8 category among the underlying cause-of-death, entity axis, and record axis multiple cause-of-death variables. The system was approved for implementation in September 1980.

# Performance statistics

The system was first implemented on the 1976 mortality data file. This section reports some performance statistics that resulted from processing that file.

The results given in table 1 indicate that approximately 15 percent of the records in the 1976 annual mortality file were modified to some degree by the axis translation process. On 9 percent of the records, one or more code relationships were invoked. On 6 percent of the records, no code relationships were invoked, but repetitive codes were eliminated.

The "mention of, combination" type entries (see table 2) invoked by far the largest number of code relationships (178,375). The deletion entries and the "mention of, modification" entries were the second and third most frequently used, with 50,429 and 16,457 applications, respectively. The "due to" entries were rarely used. On the average, a translated record was created using 1.43 code relationships (based on a total of 253,363 code relationships invoked out of a total of 177,060 records).

In terms of the ambivalent table entries (see table 3), 39,347 were encountered on 25,037 records. Out of this total, 24,728 (63 percent) were actually invoked as "yes" based on computation of the ambivalent algorithm as described in the discussion of the axis translation tables. This percent varied from 53 to 88 percent among the five types of entries. Of the total ambivalent entries encountered, 59 percent were resolved according to the underlying cause-of-death code and 41 percent were resolved according to the ambivalent code in the TRANSAX tables (see "Axis translation table" section).

As shown in table 4, most of the translated records invoked only one (70 percent) or two (21 percent) of the table entries during processing. Only about 1 percent invoked five or more entries. When multiple entries were employed, they frequently invoked chains of entries where the recode of the first entry related to another code on the record, and the resultant recode also related to a third code, or subsequent codes.

Table 5 depicts the extent to which the TRANSAX process produced a change in the number of codes on a record. A reduction would be expected to the extent that combination and deletion entries were utilized extensively by TRANSAX. By definition, the modification table entries did not produce a reduction in the number of codes on the record. In table 5, each combination of number of entity axis codes and number of record axis codes is also tabulated according to whether a code relationship was invoked.

The tabulation shows that the typical translated record had three codes which, through code combination and deletion,

were reduced to two codes. By definition, records containing only one code cannot invoke a table entry. For records containing two or more original codes, the percent of records with one or more table entries invoked varied from 5 percent on records with 2 codes to approximately 42 percent on records with 10 or more codes. On 22 percent of the records invoking a table entry, the number of codes was reduced by at least half the original number; but, 73 percent of the records with a linkage had a reduction of only one code. Eight percent represented no reduction of codes.

There are 1,610 ICDA-8 categories involved in the translation process as an anchor code, recode, or subanchor code in one or more table entries. The remaining 1,618 categories are not used in the axis translation tables, and their frequency counts are not affected except through elimination of repetitive codes. Appendix E lists those categories that are used along with a comparison of their entity axis and record axis frequencies.

Tables 6-8 summarize appendix E and the effect of axis translation on ICDA-8 category counts. These tables contrast entity axis and record axis frequency counts along several major dimensions. First, table 6 indicates that 78 percent of the record axis category counts were within 1 percent of their corresponding entity axis counts (exclusive of repetitive code elimination). Most of these involved very few records relative to the number in the total file.

Two hundred nineteen category counts (14 percent) differed by as much as 10 percent, with 84 categories (5 percent) differing more than 70 percent. Table 7 lists the 50 categories which had an entity axis or record axis frequency greater than 5,000 records and a percent change greater than 5 percent. Almost all categories were in the circulatory and digestive chapters of ICDA-8.

When tabulating multiple cause-of-death data at various aggregate levels of classification (that is, conventional groups of 281 causes, 69 causes, and 34 causes), the differences between entity axis and record axis frequencies were usually substantially reduced; yet substantial differences remained in several categories.

For example, in table 8, which is based on the conventional "69 selected causes" tabulated for U.S. residents in *Vital Statistics of the United States* (exclusive of external cause and nature of injury codes), the extremely large difference in category 410.0, shown previously in table 7, was totally eliminated. Because the TRANSAX table entries convert code No. 410.9 to 410.0 in the presence of No. 401, record axis

and entity axis differences were subsumed by upcoding to the 410 level.

Likewise, the 50-percent decrease in category No. 470 between entity axis and record axis counts was totally subsumed in the 470-474 code grouping. On the other hand, major differences did remain for some code groupings. These included groups 402 (+ 12.39 percent); 404 (+ 12.42 percent); 424, 428 (- 22.36 percent); 420-423, 425-427, 429 (- 5.63 percent); 400, 401, 403 (- 83.72 percent); and 441-448 (- 5.61 percent).

The N- to E-code conversion algorithm, which is carried out separate from and after the translation process, was employed on 19,538 records (see table 9). The purpose of this algorithm is to assure that a comparable E code exists on every record having one or more N codes. Of 1,911,907 records in the 1976 data file, 207,080 records (1 percent) originally had an N code present. Of this group, 5,091 records had an E code but needed an additional one, and 14,447 records had no E code. In 4,640 cases, the appropriate E code was obtained by moving the underlying cause of

death into the record axis field. In the remaining 14,898 records, the E code was added using an N- to E-code conversion table (appendix D). Where a direct one-to-one conversion is possible, this conversion table indicates the appropriate external cause for each nature-of-injury code.

As shown in table 10, there was no difference in the entity axis and record axis frequencies for nature-of-injury code categories. They are neither included in appendix A nor are they affected by the N to E algorithm. This algorithm, however, solely affected the E code frequencies. Although not shown in table 10, the major contribution to the + 20.44-percent change for group "E800-E807, E825-E949" (All other accidents) is from category E887. Use of the conversion table caused this category to be added to more than 14,000 records. The remaining categories in the table were therefore seldom used.

In 245 cases, the residual category E929 was added in order to resolve a conflict between multiple N codes or to impute an E code where direct conversion is not possible.

## Software and other data processing characteristics

As shown in appendix F, TRANSAX is part of a larger system of programs for processing NCHS multiple cause-of-death data. Preceding TRANSAX in the system flow are reformat and edit programs, which prepare the data for input to TRANSAX. Also, because multiple-cause processing is on a delayed basis, independent of main-file processing, the source of data to the system is the annual master mortality file containing ACME, geographic, and demographic data variables.

The TRANSAX software is written in PL/1 programming language and contains 1,356 executable statements. Under the optimizing compiler for PL/1, TRANSAX processes approximately 1,500 records per central processing unit minute on the NCHS IBM 370/158 computer. The region size required is 400K. Hardware requirements include a tape drive and

disk drive. The NCHS computer utilizes 6,250 bytes-per-inch tapes along with IBM 3350 disk drives, with TRANSAX using 120 tracks of space on a disk. The space requirement is largely due to the size of the translation tables, which the computer stores in memory during program execution. The tables are stored and read sequentially; however, they are partitioned to facilitate quick access to the needed table entry. Moreover, the program logic is written to minimize unnecessary search time.

The output record created by TRANSAX and subsequently reformatted for release is given in appendix G. This record file serves as the annual NCHS master multiple cause-of-death file for input to tabulation, public use tape, and data retrieval software.

# System benefits

In contrast to entity axis data, the record axis data created by TRANSAX have seven major benefits in the tabulation and analysis of person-based multiple cause-of-death data.

*1. Provide a common, standardized level of classification*—In entity coding, the assignment of one code versus another to a given condition entity may be determined on the basis of the phraseology the certifier employed in describing a disease or diseases. For example, the entity codes for the terms “renal sclerosis” and “hypertension” given on a certificate would be ICDA-8 No. 584 (Renal sclerosis, unqualified) and No. 401 (Essential benign hypertension), respectively. However, the code for the statement “hypertensive renal sclerosis” would be No. 403 (Hypertensive renal disease). From the perspective of ICDA-8 and traditional rules for mortality coding, these two deaths result from essentially the same classifiable disease or disease process and the record axis code for both is No. 403.

Similar arguments can be made that the code for “bronchitis, unqualified” (No. 490) when reported with “emphysema” (No. 492) should be the same as for “chronic bronchitis” (No. 491), and that the codes for “chronic alcoholism” (No. 303.2) and “cirrhosis of the liver” (No. 571.9) should be the same as for “alcoholic cirrhosis of the liver” (No. 571.0).

Through literal application of ICD combination categories, the rules for record axis coding are designed to achieve a common, standardized level of classification despite wide differences in reporting terminology and format.

*2. Provide comparability with underlying cause classification*—One aspect of entity coding that tends to cause problems in data interpretation is that sometimes (5.79 percent of the time in 1976) the underlying-cause code cannot be found as an entity code. Although this is inevitable because linkages are not used in entity coding, it does render joint analysis of multiple- and underlying-cause data troublesome. Record axis coding overcomes this limitation by invoking the same assumptions, rules, and category definitions that underlying-cause coding employs. The only exception is preference rules, which are not relevant for axis translation.

In almost all cases (99.92 percent in 1976), the underlying cause is a record axis code. Parallelism between the underlying-cause modification tables, the axis-translation tables, and the logic employed in their application promotes the creation of data bases that are analytically compatible. Cases where the code for the underlying cause is not on the record axis represent situations where errors in the coded data make it impossible

to reconstruct a completely harmonious record without contradiction of previously published underlying cause-of-death statistics. Application of TRANSAX does not include reference to the source microfilm.

*3. Provide comparability with other data bases*—Most coding schemes that employ the ICD literally apply the index and combination categories, assigning codes within the context of the record as a whole, as WHO recommended. Although morbidity classification rules may have a few exceptions and qualifications, they generally adhere to the provisions of the ICD.

Converting the multiple-cause data from an entity axis of classification to a record axis of classification, which embodies combination categories, promotes comparability between the cause-of-death data base and other medical (for example, morbidity) data bases.

*4. Promote additivity of the data*—In general, person-based prevalence counts for two or more multiple-cause codes cannot be added, because more than one code can be assigned to the same individual. Record axis coding, by creating mutually exclusive categories, allows additivity over the fourth digits of certain categories.

For example, ICDA-8 code No. 410.0 (Acute myocardial infarction with hypertensive disease) and code No. 410.9 (Acute myocardial infarction without mention of hypertensive disease) are additive. One can add the number of deaths with mention of No. 410.0 to the number of deaths with mention of 410.9 to obtain the number of deaths with mention of No. 410. Likewise, No. 250.0 (Diabetes mellitus with mention of acidosis or coma) and No. 250.9 (Diabetes mellitus without mention of acidosis or coma) are additive under record axis coding.

*5. Improve accuracy and precision of tabulated data*—The translation process improves the accuracy and precision of the coding by removing repetitive codes, resolving contradictions, clearing up ambiguities, making the coding more concise, and by providing person-based codes that are more meaningful for tabulation and analysis.

Examples from ICDA-8 include the translation of entity codes No. 402 (Hypertensive heart disease) and No. 403 (Hypertensive renal disease) to the more concise No. 404 (Hypertensive heart and renal disease); No. 250.9 (Diabetes mellitus without mention of acidosis or coma) and No. 780.0 (Coma and stupor) to a more accurate, noncontradictory code No. 250.0 (Diabetes mellitus with mention of acidosis or coma); No. 303.1 (Alcoholism, habitual excessive drinking)

and No. 571.9 (Cirrhosis of liver unspecified) to a more accurate No. 571.0 (Alcoholic cirrhosis of liver); and No. 011.9 (Pulmonary tuberculosis NOS) causing No. 320.9 (Meningitis with no organism specified as cause) to a presumed No. 013.0 (Tuberculous meningitis).

6. *Facilitate interpretation of the data*—Because record axis coding minimizes the number of exceptions to the classification, interpretation of the data is more manageable. In contrast, accurate interpretation of entity coding generally requires some familiarity with the 200-page NCHS instruction manual.

For example, under ICDA-8 record axis coding, the code for “cystitis” reported due to “tuberculosis” would be

No. 016.1 (Tuberculosis of other urinary organs) as specified in the classification. Under entity coding, the code for the term “cystitis” would be No. 595 (Cystitis) and for “tuberculosis” would be No. 011.9 (Pulmonary tuberculosis, NOS), which is the closest code for the term when entity axis codes are applied without linkage.

7. *Reflect basic WHO recommendations for multiple-cause coding*—In 1969 and 1974, WHO recommended the “linking” method (as employed in TRANSAX) for use in multiple-cause coding. WHO notes that this method is also employed by the French and that the rules are suitable for both morbidity and mortality coding.

## System limitations

The major limitation of multiple-cause record axis data in contrast to entity axis data is the loss of detail embodied in the application of certain linkages in the ICD. For example, using ICDA-8, "cerebral hemorrhage" reported with "malignant hypertension" is coded on the record axis to Malignant hypertension with cerebrovascular involvement (No. 400.2).

Loss of detail is unfortunate. And, in fact, the 1955 multiple-cause study utilized a coding scheme that restricted the use of combination categories to those not losing detail. That approach has not been taken in TRANSAX for several reasons. The linkages in the ICD should be viewed as a

whole and either applied or not applied, because the classification was presumably designed with the needs of users in mind. Standardization and comparability with other data sets are compromised when linkages are employed on a selective basis. Finally, the required detail is available in the entity data for applications where loss of detail is a problem.

A secondary limitation of multiple-cause record axis data is that information on location of the codes within the cause-of-death statement is lost. The use of linkages invalidates the placement and order because conditions are combined and modified over all lines of the medical certification.

## **Application summary**

Following comprehensive review, the TRANSAX system was implemented on 1976 data and was used to process the remaining years (1968–78) of mortality data based on ICDA–8. Conversion of the system to ICD–9 was implemented with 1979 data.

NCHS annual multiple cause-of-death data tabulations employ record axis data. However, NCHS tapes and public use tapes contain entity and record axis data and the underlying cause of death and are supported by extensive documentation to assist the user in their processing, tabulation, and interpretation.

Based on the documentation, the user is able to determine which entity axis codes TRANSAX may have modified and conversely which record axis codes TRANSAX may have created. Analytical reports and other in-depth research may utilize entity axis and record axis multiple-cause data and underlying-cause data either in combination or independent of one another as best meets the need of a given research application.



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**Table 1. Number and percent distribution of records processed by category of action taken**

<i>Action taken</i>	<i>Number of records<sup>1</sup></i>	<i>Percent distribution</i>
Total . . . . .	1,911,907	100.00
1 or more entries used . . . . .	177,060	9.26
No entry used, but duplicate codes deleted . . . . .	112,662	5.89
No entry used, and no codes deleted . . . . .	1,622,185	84.85

<sup>1</sup>Based on processing all deaths occurring in the United States in 1976.

**Table 2. Number and percent distribution of entries used (ambivalent and nonambivalent) by type of entry**

<i>Type of entry</i>	<i>Number<sup>1</sup></i>	<i>Percent distribution of subtotal</i>	<i>Percent distribution of total</i>
All entries . . . . .	253,363	...	100.00
Total combined entries . . . . .	181,787	100.00	71.75
Due to . . . . .	3,412	1.88	1.35
Mention of . . . . .	178,375	98.12	70.40
Total modified entries . . . . .	21,147	100.00	8.35
Due to . . . . .	4,690	22.18	1.85
Mention of . . . . .	16,457	77.82	6.50
Deletions . . . . .	50,429	...	19.90

<sup>1</sup>Based on processing all deaths occurring in the United States in 1976.

NOTE: Tabulation is based on the number of entries with multiple entries possible on a record as opposed to the number of records with an entry used.

**Table 3. Number and percent of ambivalent entries encountered by type of entry and whether or not used**

<i>Type of entry</i>	<i>Number encountered<sup>1</sup></i>	<i>Number used</i>	<i>Percent used</i>
Total . . . . .	39,347	24,728	62.85
Combination . . . . .	25,412	13,592	53.49
Due to . . . . .	1,959	1,277	65.19
Mention of . . . . .	23,453	12,315	52.51
Modification . . . . .	3,743	2,217	59.23
Due to . . . . .	3,444	2,069	60.08
Mention of . . . . .	299	148	49.50
Deletion . . . . .	10,192	8,919	87.51

<sup>1</sup>Based on processing all deaths occurring in the United States in 1976.

NOTE: Tabulation is based on the number of entries with multiple entries possible on a record as opposed to the number of records with an entry used.

**Table 4. Number and percent of records processed through the TRANSAX system and percent of entries used, by number of table entries used per record**

	<i>Number of entries used</i>	<i>Number of records<sup>1</sup></i>	<i>Percent of records</i>	<i>Percent of entries used</i>
Total . . . . .		1,911,907	100.00	...
0 . . . . .		1,734,847	90.74	...
1 or more . . . . .		177,060	9.26	100.00
1 . . . . .		124,297	6.50	70.20
2 . . . . .		37,436	1.96	21.14
3 . . . . .		10,029	0.52	5.66
4 . . . . .		3,424	0.18	1.93
5 . . . . .		1,183	0.06	0.67
6 . . . . .		475	0.02	0.27
7 or more . . . . .		216	0.01	0.12

<sup>1</sup>Based on processing all deaths occurring in the United States in 1976.

**Table 5. Effect of axis translation on the number of distinct codes per record**

	<i>Entity axis codes per record</i>	<i>Record axis codes per record</i>	<i>All records<sup>1</sup></i>	<i>Records where a code relationship is invoked</i>	<i>Records where no code relationship is invoked</i>
Total . . . . .		...	1,911,907	177,060	1,734,847
01 . . . . .		01	319,229	—	319,229
02 . . . . .		01	30,431	21,087	9,344
02 . . . . .		02	505,435	3,479	501,956
03 . . . . .		01	5,053	4,743	310
03 . . . . .		02	79,042	41,104	37,938
03 . . . . .		03	431,991	4,387	427,604
04 . . . . .		01	832	826	6
04 . . . . .		02	12,399	8,357	4,042
04 . . . . .		03	60,190	33,574	26,616
04 . . . . .		04	227,856	3,196	224,660
05 . . . . .		01	107	107	—
05 . . . . .		02	1,561	1,439	122
05 . . . . .		03	9,707	7,259	2,448
05 . . . . .		04	35,065	19,128	15,937
05 . . . . .		05	97,331	1,828	95,503
06 . . . . .		01	20	20	—
06 . . . . .		02	236	235	1
06 . . . . .		03	1,366	1,254	114
06 . . . . .		04	5,354	4,054	1,300
06 . . . . .		05	16,150	8,617	7,533
06 . . . . .		06	35,667	800	34,867
07 . . . . .		01	—	—	—
07 . . . . .		02	23	23	—
07 . . . . .		03	200	196	4
07 . . . . .		04	895	736	159
07 . . . . .		05	2,629	1,922	707
07 . . . . .		06	6,532	3,408	3,124
07 . . . . .		07	12,382	318	12,064
08 . . . . .		01	—	—	—
08 . . . . .		02	5	5	—
08 . . . . .		03	51	49	2
08 . . . . .		04	158	149	9
08 . . . . .		05	468	380	88
08 . . . . .		06	1,186	820	366
08 . . . . .		07	2,553	1,308	1,245
08 . . . . .		08	4,199	113	4,086
09 . . . . .		01	—	—	—
09 . . . . .		02	3	3	—
09 . . . . .		03	4	4	—
09 . . . . .		04	27	27	—
09 . . . . .		05	108	89	19
09 . . . . .		06	252	199	53
09 . . . . .		07	562	390	172
09 . . . . .		08	1,034	485	549
09 . . . . .		09	1,466	48	1,418
10 or more codes per record . . . . .		...	2,146	894	1,252

<sup>1</sup>Based on processing all deaths occurring in the United States in 1976.

**Table 6. Number and percent distribution of ICDA-8 categories by absolute value of percent of change between entity and record axis frequencies and number of records in category on which entity axis code is mentioned**

<i>Number of records on which entity axis code is mentioned</i>	<i>Absolute value of percent of change between entity and record axis frequencies<sup>1</sup></i>						
	<i>Total</i>	<i>Less than or equal to 1 percent</i>	<i>2-5 percent</i>	<i>6-9 percent</i>	<i>10-39 percent</i>	<i>40-69 percent</i>	<i>70 percent or more</i>
Number . . . . .	1,610	1,250	91	50	107	28	84
Percent distribution . . . . .	100.00	77.64	5.65	3.11	6.65	1.74	5.22
Less than or equal to 1,000 . . . . .	1,362	1,122	47	33	64	16	80
1,001-2,000 . . . . .	62	39	12	1	6	3	1
2,001-3,000 . . . . .	36	21	7	2	5	-	1
3,001-4,000 . . . . .	25	12	6	-	7	-	-
4,001-5,000 . . . . .	16	10	-	1	4	1	-
5,001-10,000 . . . . .	37	15	8	3	8	2	1
10,001-20,000 . . . . .	35	16	3	5	5	6	-
20,001-30,000 . . . . .	6	4	-	-	2	-	-
30,001-40,000 . . . . .	10	6	-	2	2	-	-
40,001-50,000 . . . . .	3	2	1	-	-	-	-
50,001-100,000 . . . . .	8	2	3	1	1	-	1
100,001 or more . . . . .	10	1	4	2	3	-	-

<sup>1</sup>Based on processing all deaths occurring in the United States in 1976.

NOTES: TRANSAX table categories are the sole basis for the categories shown in this table.

ICDA-8 = *Eighth Revision International Classification of Diseases, Adapted for Use in the United States.*

**Table 7. List of ICDA-8 categories with an entity or record axis frequency of at least 5,000 and percent of change between the entity and record axis frequencies greater than plus or minus 5 percent**

<i>ICDA-8 category</i>	<i>Entity axis frequency<sup>1</sup></i>	<i>Record axis frequency<sup>1</sup></i>	<i>Plus or minus percent change</i>	
Malignant neoplasm without specification of site				
Other . . . . .	199.1	5,569	2,950	-47.0
Diabetes mellitus				
With mention of acidosis or coma . . . . .	250.0	2,596	5,941	+128.9
Alcoholism				
Alcoholic addiction . . . . .	303.2	11,389	5,882	-48.4
Other and unspecified alcoholism . . . . .	303.9	11,171	7,696	-31.1
Other cerebral paralyses				
Hemiplegia . . . . .	344.1	17,707	16,191	-8.6
Diseases of mitral valve				
Not specified as rheumatic . . . . .	394.9	6,314	4,041	-36.0
Diseases of aortic valve				
Not specified as rheumatic . . . . .	395.9	8,921	7,963	-10.7
Essential benign hypertension . . . . .	401	73,322	7,113	-90.3
Hypertensive heart disease . . . . .	402	10,825	12,174	+12.5
Hypertensive renal disease . . . . .	403	12,663	6,088	-51.9
Acute myocardial infarction				
With hypertensive disease . . . . .	410.0	82	33,139	+40,313.4
Without mention of hypertensive disease . . . . .	410.9	343,983	310,912	-9.6
Other acute and subacute forms of ischemic heart disease				
Without mention of hypertensive disease . . . . .	411.9	16,663	15,126	-9.2
Chronic ischemic heart disease				
Chronic ischemic heart disease with or without cardiovascular disease with hypertensive disease . . . . .	412.1	6,649	42,011	+531.8
Chronic ischemic heart disease with or without cardiovascular disease without mention of hypertensive disease . . . . .	412.3	468,394	435,126	-7.1
Cardiovascular disease without mention of chronic ischemic disease without mention of hypertensive disease . . . . .	412.4	105,087	92,222	-12.2
Symptomatic heart disease				
Congestive heart failure . . . . .	427.0	168,550	158,251	-6.1
Cardiac arrest not otherwise specified . . . . .	427.2	203,649	192,798	-5.3
Other heart block . . . . .	427.3	9,082	8,480	-6.6
Atrial fibrillation or flutter . . . . .	427.4	18,521	17,066	-7.9
Ventricular fibrillation or flutter . . . . .	427.6	18,452	17,238	-6.6
Other and unspecified disorders of heart rhythm . . . . .	427.9	32,540	30,384	-6.6
Other myocardial insufficiency . . . . .	428	16,738	12,585	-24.8
Ill-defined heart diseases				
Cardiac enlargement and hypertrophy . . . . .	429.0	8,620	7,326	-15.0
Other and unspecified heart disease . . . . .	429.9	34,880	32,203	-7.7
Subarachnoid hemorrhage				
Without mention of hypertension . . . . .	430.9	9,162	8,167	-10.9
Cerebral hemorrhage				
With hypertension (benign) . . . . .	431.0	27	8,507	+31,407.4
Without mention of hypertension . . . . .	431.9	36,791	27,463	-25.4
Cerebral thrombosis				
Without mention of hypertension . . . . .	433.9	63,968	59,176	-7.5
Acute but ill-defined cerebrovascular disease				
With hypertension (benign) . . . . .	436.0	427	16,084	+3,666.7
Without mention of hypertension . . . . .	436.9	150,866	134,884	-10.6
Aortic aneurysm (nonsyphilitic)				
Unspecified aortic aneurysm . . . . .	441.9	5,189	4,849	-6.6
Gangrene not elsewhere classifiable . . . . .	445.9	10,318	4,412	-57.2
Influenza, unqualified . . . . .	470	10,419	5,218	-49.9
Influenza with pneumonia . . . . .	471	441	5,292	+1,100.0
Chronic bronchitis . . . . .	491	7,332	8,869	+21.0
Other diseases of respiratory system				
Acute edema of lung . . . . .	519.1	11,603	10,670	-8.0
Other diseases of lung . . . . .	519.2	13,626	7,453	-45.3
Chronic obstructive lung disease without mention of asthma, bronchitis, or emphysema . . . . .	519.3	53,384	48,226	-9.7
Ulcer of stomach				
Other and unspecified . . . . .	531.9	5,630	2,754	-51.1
Intestinal obstructions without mention of hernia				
Other and unspecified . . . . .	560.9	11,941	10,775	-9.8
Peritonitis				
Unspecified . . . . .	567.9	9,324	8,546	-8.3
Other diseases of intestines and peritoneum				
Other . . . . .	569.9	31,791	26,927	-15.3

See footnotes at end of table.

**Table 7. List of ICDA-8 categories with an entity or record axis frequency of at least 5,000 and percent of change between the entity and record axis frequencies greater than plus or minus 5 percent—Con.**

<i>ICDA-8 category</i>		<i>Entity axis frequency<sup>1</sup></i>	<i>Record axis frequency<sup>1</sup></i>	<i>Plus or minus percent change</i>
Cirrhosis of liver				
Alcoholic . . . . .	571.0	10,011	16,452	+ 64.3
Other specified . . . . .	571.8	9,085	7,256	- 20.1
Unspecified . . . . .	571.9	27,988	22,388	- 20.0
Cholecystitis and cholangitis, without mention of calculus . . . . .	575	5,546	3,850	- 30.6
Anoxic and hypoxic conditions not elsewhere classifiable				
Asphyxia of newborn, unspecified . . . . .	776.9	10,004	6,966	- 30.4
Certain symptoms referable to nervous system and special senses				
Coma and stupor . . . . .	780.0	6,481	5,579	- 13.9
Other general symptoms				
Electrolyte disorders . . . . .	788.0	25,404	22,599	- 11.0

<sup>1</sup>Based on processing all deaths occurring in the United States in 1976.

NOTES: ICDA-8 = *Eighth Revision International Classification of Diseases, Adapted for Use in the United States.*

Percent of change excludes effect of N to E algorithm.

**Table 8. Number of deaths of U.S. residents, by mention of selected entity axis and record axis multiple causes of death, and percent of change**

<i>ICDA-8 Category<sup>1</sup></i>	<i>Entity axis<sup>2</sup></i>	<i>Record axis<sup>2</sup></i>	<i>Percent of change</i>	
Bacillary dysentery and amebiasis . . . . .	004, 006	71	71	-
Enteritis and other diarrheal diseases . . . . .	008, 009	4,148	4,099	- 1.18
Tuberculosis, all forms . . . . .	010-019	10,428	10,428	-
Tuberculosis of respiratory system . . . . .	010-012	8,962	8,946	-.18
Tuberculosis, other forms . . . . .	013-019	1,582	1,595	+.82
Whooping cough . . . . .	033	10	10	-
Streptococcal sore throat and scarlet fever . . . . .	034	20	20	-
Meningococcal infections . . . . .	036	350	350	-
Septicemia . . . . .	038	42,623	42,599	-.06
Acute poliomyelitis . . . . .	040-043	110	110	-
Measles . . . . .	055	19	19	-
Syphilis and its sequelae . . . . .	090-097	819	819	-
Other infective and parasitic diseases . . . . .	Remainder of 000-136	13,959	13,918	-.29
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues . . . . .	140-209	429,194	429,194	-
Malignant neoplasms of buccal cavity and pharynx . . . . .	140-149	9,829	9,829	-
Malignant neoplasms of digestive organs and peritoneum . . . . .	150-159	114,641	114,936	+.26
Malignant neoplasms of respiratory system . . . . .	160-163	99,935	99,935	-
Malignant neoplasm of breast . . . . .	174	39,203	39,203	-
Malignant neoplasms of genital organs . . . . .	180-187	56,372	56,372	-
Malignant neoplasms of urinary organs . . . . .	188-189	21,113	21,113	-
Malignant neoplasms of all other and unspecified sites . . . . .	170-173, 190-199	203,658	202,687	-.48
Leukemia . . . . .	204-207	18,993	18,993	-
Other neoplasms of lymphatic and hematopoietic tissues . . . . .	200-203, 208, 209	25,675	25,675	-
Benign neoplasms and neoplasms of unspecified nature . . . . .	210-239	8,725	8,712	-.15
Diabetes mellitus . . . . .	250	134,505	134,505	-
Avitaminoses and other nutritional deficiencies . . . . .	260-269	29,959	29,874	-.28
Anemias . . . . .	280-285	27,934	27,934	-
Meningitis . . . . .	320	3,251	3,196	-1.69
Major cardiovascular diseases . . . . .	390-448	1,232,757	1,232,360	-.03
Diseases of heart . . . . .	390-398,402,404,410-429	988,228	988,582	+.04
Active rheumatic fever and chronic rheumatic heart disease . . . . .	390-398	24,121	24,119	-.01
Hypertensive heart disease . . . . .	402	10,814	12,154	+ 12.39
Hypertensive heart and renal disease . . . . .	404	4,285	4,817	+12.42
Ischemic heart disease . . . . .	410-413	768,815	770,816	+.26
Acute myocardial infarction . . . . .	410	343,601	343,601	-
Other acute and subacute forms of ischemic heart disease . . . . .	411	16,596	16,596	-
Chronic ischemic heart disease . . . . .	412	601,902	604,203	+.38
Angina pectoris . . . . .	413	3,802	3,802	-
Chronic disease of endocardium and other myocardial insufficiency . . . . .	424,428	20,513	15,926	-22.36
All other forms of heart disease . . . . .	420-423,425-427,429	454,138	428,586	-5.63
Hypertension . . . . .	400,401,403	85,828	13,971	-83.72
Cerebrovascular diseases . . . . .	430-438	305,673	305,460	-.07
Cerebral hemorrhage . . . . .	431	36,759	35,918	-2.29
Cerebral thrombosis . . . . .	433	63,934	63,895	-.06
Cerebral embolism . . . . .	434	3,685	3,684	-.03
All other cardiovascular diseases . . . . .	430,432,435-438	233,183	234,223	+.45
Arteriosclerosis . . . . .	440	215,030	207,587	-3.46
Other diseases of arteries, arterioles, and capillaries . . . . .	441-448	55,392	52,286	-5.61
Acute bronchitis and bronchiolitis . . . . .	466	2,924	2,843	-2.77
Influenza and pneumonia . . . . .	470-474,480-486	195,701	195,701	-
Influenza . . . . .	470-474	10,960	10,960	-
Pneumonia . . . . .	480-486	189,469	184,758	-2.49
Bronchitis, emphysema, and asthma . . . . .	490-493	62,626	62,395	-.37
Chronic and unqualified bronchitis . . . . .	490,491	11,407	11,193	-1.88
Emphysema . . . . .	492	50,307	50,062	-.49
Asthma . . . . .	493	7,096	7,034	-.87
Peptic ulcer . . . . .	531-533	17,512	17,391	-.69
Appendicitis . . . . .	540-543	1,282	1,282	-
Hernia and intestinal obstruction . . . . .	550-553,560	20,553	20,553	-
Cirrhosis of liver . . . . .	571	45,851	46,049	+.43
Cholelithiasis, cholecystitis, and cholangitis . . . . .	574,575	8,498	8,479	-.22
Nephritis and nephrosis . . . . .	580-584	26,509	26,193	-1.19
Active nephritis and nephrotic syndrome . . . . .	580-581	10,109	10,147	+.38
Chronic and unqualified nephritis and renal sclerosis . . . . .	582-584	17,323	16,954	-2.13
Infections of kidney . . . . .	590	11,811	11,484	-2.77
Hyperplasia of prostate . . . . .	600	5,276	5,276	-
Complications of pregnancy, childbirth, and the puerperium . . . . .	630-678	450	450	-
Abortion . . . . .	640-645	30	30	-
Other complications of pregnancy, childbirth, and the puerperium . . . . .	630-639,650-678	426	426	-
Congenital anomalies . . . . .	740-759	18,319	18,154	-.90

See footnotes at end of table.



**Table 8. Number of deaths of U.S. residents, by mention of selected entity axis and record axis multiple causes of death, and percent of change—Con.**

ICDA-8 Category <sup>1</sup>	Entity axis <sup>2</sup>	Record axis <sup>2</sup>	Percent of change	
Certain causes of mortality in early infancy . . . . .	760-772,774-778	31,663	31,663	-
Birth injury, difficult labor, and other anoxic and hypoxic conditions . . . . .	764-768,772,776	19,377	19,377	-
Other causes of mortality in early infancy . . . . .	Remainder of 760-778	28,405	28,405	-
Symptoms and ill-defined conditions . . . . .	780-796	386,443	380,798	-1.46
All other diseases . . . . .	Residual	507,976	489,298	-3.68

<sup>1</sup>Categories are comparable to those used in table 1-13 of *Vital Statistics of the United States, Volume 1, 1976* exclusive of external cause and nature of injury category.  
<sup>2</sup>Causes of death based on processing deaths of U.S. residents in 1976.

**Table 9. Effect of E-code addition to the TRANSAX file**

Processing category	Number of records <sup>1</sup>	Percent total file	Percent total records with N code
Total file . . . . .	1,911,907	100.00	...
No N-codes on record . . . . .	1,704,827	89.17	...
One or more N-codes present . . . . .	207,080	10.83	100.00
Both E-code and N-code present and no additional code required . . . . .	187,564	9.81	90.58
Additional E-code needed . . . . .	19,538	1.02	9.44
N-code present but no E-code present . . . . .	14,447	0.76	6.98
Underlying cause is used as E-code . . . . .	23	0.00	0.01
E-code is obtained from conversion table . . . . .	14,424	0.75	6.97
Both E-code and N-code present but an additional E-code is required . . . . .	5,091	0.27	2.46
Underlying cause is used as the additional E-code . . . . .	4,617	0.24	2.23
Second E-code is obtained from conversion table . . . . .	474	0.02	0.23

<sup>1</sup>Based on processing all deaths occurring in the United States in 1976.

**Table 10. Number of deaths of U.S. residents by mention of selected nature-of-injury and external-cause multiple causes of death**

Cause	Entity axis <sup>1</sup>	Record axis <sup>1</sup>	Percent change	
Accidents . . . . .	E800-E949	138,821	157,444	13.42
Motor vehicle accidents . . . . .	E810-E823	48,239	48,239	-
All other accidents . . . . .	E800-E807, E825-E949	91,098	109,722	20.44
Suicide . . . . .	E950-E959	26,983	26,983	-
Homicide . . . . .	E960-E978	19,742	19,743	.01
Other external causes . . . . .	E980-E999	5,149	5,151	.04
All natures of injury . . . . .	N800-N999	206,434	206,434	-
Fractures, sprains, strains, and dislocations . . . . .	N800-N848	52,101	52,101	-
Intracranial injuries . . . . .	N850-N854	46,523	46,523	-
Internal injuries . . . . .	N860-N869	30,498	30,498	-
Lacerations and open wounds . . . . .	N870-N907	30,651	30,651	-
Superficial injuries and contusions . . . . .	N910-N929	2,307	2,307	-
Effects of foreign body, entering through orifice . . . . .	N930-N939	11,679	11,679	-
Burns . . . . .	N940-N949	6,982	6,982	-
Injury to nerves and spinal cord . . . . .	N950-N959	2,595	2,595	-
All other injuries . . . . .	N960-N999	92,469	92,469	-

<sup>1</sup>Based on processing deaths of U.S. residents in 1976.

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## APPENDIX A

## AXIS TRANSLATION LINKAGES BEING EMPLOYED ON ICDA-8 DATA (1968 - 1978)

ANCHOR CODE (A)	AMB	SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.	ANCHOR CODE (A)	AMB	SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.
3969		0989	0988	COM-A DUE TO S	1117	4002		4124	4122	COM-MENTION OF	1210
3969	1	390	3911	COM-MENTION OF	1118	4002		4130		DELETION	1211
3969	5	390	3960	COM-MENTION OF	1119	4002		4139	4130	COM-MENTION OF	1212
3969	1	3910	3919	COM-MENTION OF	1120	4002		427 -4299	4009	COM-MENTION OF	1213
3969	1	3911	3919	COM-MENTION OF	1121	4002		580 -584	4009	COM-MENTION OF	1214
3969	1	3912	3919	COM-MENTION OF	1122	4002		5932	4009	COM-MENTION OF	1215
3969		3919		DELETION	1123	4002		792	4009	COM-MENTION OF	1216
3969		3940	3960	COM-MENTION OF	1124	4003		4001	4009	COM-MENTION OF	1217
3969		3950	3960	COM-MENTION OF	1125	4003		4002	4009	COM-MENTION OF	1218
3969		3960		DELETION	1126	4003		402	4009	COM-MENTION OF	1219
3969	4	3970	3960	MOD-MENTION OF	1127	4003		403	4003	COM-MENTION OF	1220
3969		3979	3960	MOD-MENTION OF	1128	4003		404	4009	COM-MENTION OF	1221
3969		398	3960	MOD-MENTION OF	1129	4003		4100		DELETION	1222
3969		4401	4240	MOD-A DUE TO S	1130	4003		4109	4100	COM-MENTION OF	1223
3969		4402	4240	MOD-A DUE TO S	1131	4003		4110		DELETION	1224
3969		4403	4240	MOD-A DUE TO S	1132	4003		4119	4110	COM-MENTION OF	1225
3970	1	390	3911	COM-MENTION OF	1133	4003		4121		DELETION	1226
3970	5	390	3970	COM-MENTION OF	1134	4003		4122		DELETION	1227
3970	1	3910	3919	COM-MENTION OF	1135	4003		4123	4121	COM-MENTION OF	1228
3970	1	3911	3919	COM-MENTION OF	1136	4003		4124	4122	COM-MENTION OF	1229
3970	1	3912	3919	COM-MENTION OF	1137	4003		4130		DELETION	1230
3970		3919		DELETION	1138	4003		4139	4130	COM-MENTION OF	1231
3970	2	401	4249	MOD-A DUE TO S	1139	4003		427 -4389	4009	COM-MENTION OF	1232
3970	2	4400	4249	MOD-A DUE TO S	1140	4009		403	4009	COM-MENTION OF	1233
3970	2	4401	4249	MOD-A DUE TO S	1141	4009		404	4009	COM-MENTION OF	1234
3970	2	4402	4249	MOD-A DUE TO S	1142	4009		4100		DELETION	1235
3970	2	4403	4249	MOD-A DUE TO S	1143	4009		4109	4100	COM-MENTION OF	1236
3970	2	4409	4249	MOD-A DUE TO S	1144	4009		4110		DELETION	1237
3979	1	390	3911	COM-MENTION OF	1145	4009		4119	4110	COM-MENTION OF	1238
3979	5	390	3979	COM-MENTION OF	1146	4009		4121		DELETION	1239
3979	1	3910	3919	COM-MENTION OF	1147	4009		4122		DELETION	1240
3979	1	3911	3919	COM-MENTION OF	1148	4009		4123	4121	COM-MENTION OF	1241
3979	1	3912	3919	COM-MENTION OF	1149	4009		4124	4122	COM-MENTION OF	1242
3979		3919		DELETION	1150	4009		4130		DELETION	1243
3979		3970		DELETION	1151	4009		4139	4130	COM-MENTION OF	1244
398	1	390	3912	COM-MENTION OF	1152	401		401		DELETION	1245
398	1	390	3919	COM-MENTION OF	1153	401		402 -4100		DELETION	1246
398	5	390	398	COM-MENTION OF	1154	401		4109	4100	COM-MENTION OF	1247
398	1	3910	3919	COM-MENTION OF	1155	401		4110		DELETION	1248
398	1	3911	3919	COM-MENTION OF	1156	401		4119	4110	COM-MENTION OF	1249
398	1	3912	3919	COM-MENTION OF	1157	401		4121		DELETION	1250
398		3919		DELETION	1158	401		4122		DELETION	1251
398	1	422	3912	COM-MENTION OF	1159	401		4123	4121	COM-MENTION OF	1252
398	5	422	3919	COM-MENTION OF	1160	401		4124	4122	COM-MENTION OF	1253
4000		4001-4009		DELETION	1161	401		4130		DELETION	1254
4000		402	4001	COM-MENTION OF	1162	401		4139	4130	COM-MENTION OF	1255
4000		403	4003	COM-MENTION OF	1163	401		427 -4299	402	COM-MENTION OF	1256
4000		404	4009	COM-MENTION OF	1164	401		4300		DELETION	1257
4000		4100		DELETION	1165	401		4309	4300	COM-MENTION OF	1258
4000		4109	4100	COM-MENTION OF	1166	401		4310		DELETION	1259
4000		4110		DELETION	1167	401		4319	4310	COM-MENTION OF	1260
4000		4119	4110	COM-MENTION OF	1168	401		4320		DELETION	1261
4000		4121-4122		DELETION	1169	401		4329	4320	COM-MENTION OF	1262
4000		4123	4121	COM-MENTION OF	1170	401		4330		DELETION	1263
4000		4124	4122	COM-MENTION OF	1171	401		4339	4330	COM-MENTION OF	1264
4000		4130		DELETION	1172	401		4340		DELETION	1265
4000		4139	4130	COM-MENTION OF	1173	401		4349	4340	COM-MENTION OF	1266
4000		427 -4299	4001	COM-MENTION OF	1174	401		4350		DELETION	1267
4000		430 -4389	4002	COM-MENTION OF	1175	401		4359	4350	COM-MENTION OF	1268
4000		580 -584	4003	COM-MENTION OF	1176	401		4360		DELETION	1269
4000		5932	4003	COM-MENTION OF	1177	401		4369	4360	COM-MENTION OF	1270
4000		792	4003	COM-MENTION OF	1178	401		4370		DELETION	1271
4001		4002	4009	COM-MENTION OF	1179	401		4379	4370	COM-MENTION OF	1272
4001		4003	4009	COM-MENTION OF	1180	401		4380		DELETION	1273
4001		403	4009	COM-MENTION OF	1181	401		4389	4380	COM-MENTION OF	1274
4001		404	4009	COM-MENTION OF	1182	401		584	403	COM-MENTION OF	1275
4001		4100		DELETION	1183	401	2	5932	403	COM-MENTION OF	1276
4001		4109	4100	COM-MENTION OF	1184	401	4	6400	6402	COM-MENTION OF	1277
4001		4110		DELETION	1185	401	4	6409	6401	COM-MENTION OF	1278
4001		4119	4110	COM-MENTION OF	1186	401	4	6410	6412	COM-MENTION OF	1279
4001		4121		DELETION	1187	401	4	6419	6411	COM-MENTION OF	1280
4001		4122		DELETION	1188	401	4	6430	6432	COM-MENTION OF	1281
4001		4123	4121	COM-MENTION OF	1189	401	4	6439	6431	COM-MENTION OF	1282
4001		4124	4122	COM-MENTION OF	1190	401	4	6440	6442	COM-MENTION OF	1283
4001		4130		DELETION	1191	401	4	6449	6441	COM-MENTION OF	1284
4001		4139	4130	COM-MENTION OF	1192	401	4	6450	6452	COM-MENTION OF	1285
4001		427	4001	COM-MENTION OF	1193	401	4	6459	6451	COM-MENTION OF	1286
4001		428	4001	COM-MENTION OF	1194	402		4000	4001	COM-MENTION OF	1287
4001		429	4001	COM-MENTION OF	1195	402		4002-4003	4009	COM-MENTION OF	1288
4001		430 -4389	4009	COM-MENTION OF	1196	402		403	404	COM-MENTION OF	1289
4001		580 -584	4009	COM-MENTION OF	1197	402		404		DELETION	1290
4001		5932	4009	COM-MENTION OF	1198	402		4100		DELETION	1291
4001		792	4009	COM-MENTION OF	1199	402		4109	4100	COM-MENTION OF	1292
4002		4001	4009	COM-MENTION OF	1200	402		4110		DELETION	1293
4002		4003	4009	COM-MENTION OF	1201	402		4119	4110	COM-MENTION OF	1294
4002		402 -404	4009	COM-MENTION OF	1202	402		4121-4122		DELETION	1295
4002		4100		DELETION	1203	402		4123	4121	COM-MENTION OF	1296
4002		4109	4100	COM-MENTION OF	1204	402		4124	4122	COM-MENTION OF	1297
4002		4110		DELETION	1205	402		4130		DELETION	1298
4002		4119	4110	COM-MENTION OF	1206	402		4139	4130	COM-MENTION OF	1299
4002		4121		DELETION	1207	402		584	404	COM-MENTION OF	1300
4002		4122		DELETION	1208	403		4000	4003	COM-MENTION OF	1301
4002		4123	4121	COM-MENTION OF	1209	403		4001-4002	4009	COM-MENTION OF	1302

NOTE: SEE TEXT FOR EXPLANATION OF COLUMN LABELS AND CONTENT



APPENDIX A

AXIS TRANSLATION LINKAGES BEING EMPLOYED ON ICDA-8 DATA (1968 - 1978)

ANCHOR CODE (A)	AMB	SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.	ANCHOR CODE (A)	AMB	SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.
4271		401	402	COM-MENTION OF	1489	428		404		DELETION	1582
4271		402		DELETION	1490	428		440		COM-MENTION OF	1583
4271		403	404	COM-MENTION OF	1491	4290	4	0869	0860	COM-MENTION OF	1584
4271		404		DELETION	1492	4290		0970	0939	COM-A DUE TO S	1585
4271		735	426	COM-MENTION OF	1493	4290		0979	0939	COM-A DUE TO S	1586
4272	4	0869	0860	COM-MENTION OF	1494	4290		0989	0988	COM-A DUE TO S	1587
4272		0970	0939	COM-A DUE TO S	1495	4290	1	390	3919	COM-MENTION OF	1588
4272		0979		COM-A DUE TO S	1496	4290	5	390	398	COM-MENTION OF	1589
4272		4000	4001	COM-MENTION OF	1497	4290	4	3910	393	COM-MENTION OF	1590
4272		4001	4001	COM-MENTION OF	1498	4290	4	3910	398	COM-MENTION OF	1591
4272		4002	4009	COM-MENTION OF	1499	4290	5	3910	3919	COM-MENTION OF	1592
4272		4003	4009	COM-MENTION OF	1500	4290	4	3911	393	COM-MENTION OF	1593
4272		401	402	COM-MENTION OF	1501	4290	5	3911	3919	COM-MENTION OF	1594
4272		402		DELETION	1502	4290	4	3912	393	COM-MENTION OF	1595
4272		403	404	COM-MENTION OF	1503	4290	4	3912	398	COM-MENTION OF	1596
4272		404		DELETION	1504	4290	5	3912	3919	COM-MENTION OF	1597
4273	4	0869	0860	COM-MENTION OF	1505	4290	1	3929	3920	COM-MENTION OF	1598
4273		0970	0939	COM-A DUE TO S	1506	4290		4000	4001	COM-MENTION OF	1599
4273		0979	0939	COM-A DUE TO S	1507	4290		4001	4001	COM-MENTION OF	1600
4273		4000	4001	COM-MENTION OF	1508	4290		4002	4009	COM-MENTION OF	1601
4273		4001	4001	COM-MENTION OF	1509	4290		4003	4009	COM-MENTION OF	1602
4273		4002	4009	COM-MENTION OF	1510	4290		401	402	COM-MENTION OF	1603
4273		4003	4009	COM-MENTION OF	1511	4290		402		DELETION	1604
4273		401	402	COM-MENTION OF	1512	4290		403	404	COM-MENTION OF	1605
4273		402		DELETION	1513	4290		404		DELETION	1606
4273		403	404	COM-MENTION OF	1514	4290		5191	4271	COM-MENTION OF	1607
4273		404		DELETION	1515	4290		735	426	COM-MENTION OF	1608
4274	4	0869	0860	COM-MENTION OF	1516	4299	4	0869	0860	COM-MENTION OF	1609
4274		0970	0939	COM-A DUE TO S	1517	4299		0970	0939	COM-A DUE TO S	1610
4274		0979	0939	COM-A DUE TO S	1518	4299		0979	0939	COM-A DUE TO S	1611
4274		4000	4001	COM-MENTION OF	1519	4299		0989	0988	COM-A DUE TO S	1612
4274		4001	4001	COM-MENTION OF	1520	4299	1	390	3919	COM-MENTION OF	1613
4274		4002	4009	COM-MENTION OF	1521	4299	5	390	398	COM-MENTION OF	1614
4274		4003	4009	COM-MENTION OF	1522	4299	4	3910	393	COM-MENTION OF	1615
4274		401	402	COM-MENTION OF	1523	4299	4	3910	398	COM-MENTION OF	1616
4274		402		DELETION	1524	4299	5	3910	3919	COM-MENTION OF	1617
4274		403	404	COM-MENTION OF	1525	4299	4	3911	393	COM-MENTION OF	1618
4274		404		DELETION	1526	4299	5	3911	3919	COM-MENTION OF	1619
4275	4	0869	0860	COM-MENTION OF	1527	4299	4	3912	393	COM-MENTION OF	1620
4275		0970	0939	COM-A DUE TO S	1528	4299	4	3912	398	COM-MENTION OF	1621
4275		0979	0939	COM-A DUE TO S	1529	4299	5	3912	3919	COM-MENTION OF	1622
4275		4000	4001	COM-MENTION OF	1530	4299	1	3929	3920	COM-MENTION OF	1623
4275		4001	4001	COM-MENTION OF	1531	4299		4000	4001	COM-MENTION OF	1624
4275		4002	4009	COM-MENTION OF	1532	4299		4001	4001	COM-MENTION OF	1625
4275		4003	4009	COM-MENTION OF	1533	4299		4002	4009	COM-MENTION OF	1626
4275		401	402	COM-MENTION OF	1534	4299		4003	4009	COM-MENTION OF	1627
4275		402		DELETION	1535	4299		401	402	COM-MENTION OF	1628
4275		403	404	COM-MENTION OF	1536	4299		402		DELETION	1629
4275		404		DELETION	1537	4299		403	404	COM-MENTION OF	1630
4276	4	0869	0860	COM-MENTION OF	1538	4299		404		DELETION	1631
4276		0970	0939	COM-A DUE TO S	1539	4299		5191	4271	COM-MENTION OF	1632
4276		0979	0939	COM-A DUE TO S	1540	4299		735	426	COM-MENTION OF	1633
4276		4000	4001	COM-MENTION OF	1541	4299	1	7824	4270	COM-MENTION OF	1634
4276		4001	4001	COM-MENTION OF	1542	4299	4	794	428	COM-A DUE TO S	1635
4276		4002	4009	COM-MENTION OF	1543	4300		4000	4002	COM-MENTION OF	1636
4276		4003	4009	COM-MENTION OF	1544	4300		4001	4009	COM-MENTION OF	1637
4276		401	402	COM-MENTION OF	1545	4300		4003	4009	COM-MENTION OF	1638
4276		402		DELETION	1546	4300	4	650	674	COM-MENTION OF	1639
4276		403	404	COM-MENTION OF	1547	4309	4	0970	0949	COM-A DUE TO S	1640
4276		404		DELETION	1548	4309	4	0979	0949	COM-A DUE TO S	1641
4279	4	0869	0860	COM-MENTION OF	1549	4309		4000	4002	COM-MENTION OF	1642
4279		0970	0939	COM-A DUE TO S	1550	4309		4001	4009	COM-MENTION OF	1643
4279		0979	0939	COM-A DUE TO S	1551	4309		4003	4009	COM-MENTION OF	1644
4279		4000	4001	COM-MENTION OF	1552	4309		401	4300	COM-MENTION OF	1645
4279		4001	4001	COM-MENTION OF	1553	4309		4300		DELETION	1646
4279		4002	4009	COM-MENTION OF	1554	4309		4310	4300	MOD-MENTION OF	1647
4279		4003	4009	COM-MENTION OF	1555	4309		4320	4300	MOD-MENTION OF	1648
4279		401	402	COM-MENTION OF	1556	4309		4330	4300	MOD-MENTION OF	1649
4279		402		DELETION	1557	4309		4340	4300	MOD-MENTION OF	1650
4279		403	404	COM-MENTION OF	1558	4309		4350	4300	MOD-MENTION OF	1651
4279		404		DELETION	1559	4309		4360	4300	MOD-MENTION OF	1652
428	4	0869	0860	COM-MENTION OF	1560	4309		4370	4300	MOD-MENTION OF	1653
428	4	0970	0939	COM-A DUE TO S	1561	4309		4380	4300	MOD-MENTION OF	1654
428	4	0979	0939	COM-A DUE TO S	1562	4309		442	4309	COM-A DUE TO S	1655
428	1	390	3912	COM-MENTION OF	1563	4309	4	650	674	COM-MENTION OF	1656
428	5	390	398	COM-MENTION OF	1564	4310		4000	4002	COM-MENTION OF	1657
428	1	3910	398	COM-MENTION OF	1565	4310		4001	4009	COM-MENTION OF	1658
428	4	3910	3919	COM-MENTION OF	1566	4310		4003	4009	COM-MENTION OF	1659
428	4	3910	393	COM-MENTION OF	1567	4310	4	650	674	COM-MENTION OF	1660
428	5	3910	3912	COM-MENTION OF	1568	4319		0970	0949	COM-A DUE TO S	1661
428	1	3911	3919	COM-MENTION OF	1569	4319		0979	0949	COM-A DUE TO S	1662
428	4	3911	393	COM-MENTION OF	1570	4319		4000	4002	COM-MENTION OF	1663
428	4	3911	398	COM-MENTION OF	1571	4319		4001	4009	COM-MENTION OF	1664
428	5	3911	3912	COM-MENTION OF	1572	4319		4003	4009	COM-MENTION OF	1665
428	1	3929	3920	COM-MENTION OF	1573	4319		401	4310	COM-MENTION OF	1666
428		398		DELETION	1574	4319	1	4210	4309	MOD-MENTION OF	1667
428		4000	4001	COM-MENTION OF	1575	4319		4300	4310	MOD-MENTION OF	1668
428		4001	4001	COM-MENTION OF	1576	4319		4310		DELETION	1669
428		4002	4009	COM-MENTION OF	1577	4319		4320	4310	MOD-MENTION OF	1670
428		4003	4009	COM-MENTION OF	1578	4319		4330	4310	MOD-MENTION OF	1671
428		401	402	COM-MENTION OF	1579	4319		4340	4310	MOD-MENTION OF	1672
428		402		DELETION	1580	4319		4350	4310	MOD-MENTION OF	1673
428		403	404	COM-MENTION OF	1581	4319		4360	4310	MOD-MENTION OF	1674

NOTE: SEE TEXT FOR EXPLANATION OF COLUMN LABELS AND CONTENT



## APPENDIX A

## AXIS TRANSLATION LINKAGES BEING EMPLOYED ON ICDA-8 DATA (1968 - 1978)

ANCHOR CODE (A)	AMB	SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.	ANCHOR CODE (A)	AMB	SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.
442	1	4400	4379	MOD-A DUE TO S	1861	4449		6421	6422	COM-MENTION OF	1954
442	1	4401	4379	MOD-A DUE TO S	1862	4449	1	6429	6420	COM-MENTION OF	1955
442	1	4402	4379	MOD-A DUE TO S	1863	4449		6431	6432	COM-MENTION OF	1956
442	1	4403	4379	MOD-A DUE TO S	1864	4449	1	6439	6430	COM-MENTION OF	1957
4439		4430-4438		DELETION	1865	4449		6441	6442	COM-MENTION OF	1958
4440		6314	6310	COM-MENTION OF	1866	4449	1	6449	6440	COM-MENTION OF	1959
4440		6315	6311	COM-MENTION OF	1867	4449		6451	6452	COM-MENTION OF	1960
4440		6316	6312	COM-MENTION OF	1868	4449	1	6459	6450	COM-MENTION OF	1961
4440		6319	6313	COM-MENTION OF	1869	4459		250		DELETION	1962
4440		6401	6402	COM-MENTION OF	1870	4459		440	4450	COM-MENTION OF	1963
4440	1	6409	6400	COM-MENTION OF	1871	4459		4450		DELETION	1964
4440		6411	6412	COM-MENTION OF	1872	4459	4	550	552	COM-MENTION OF	1965
4440	1	6419	6410	COM-MENTION OF	1873	4459	4	5510	5530	COM-MENTION OF	1966
4440		6421	6422	COM-MENTION OF	1874	4459	4	5511	5531	COM-MENTION OF	1967
4440	1	6429	6420	COM-MENTION OF	1875	4459	4	5512	5532	COM-MENTION OF	1968
4440		6431	6432	COM-MENTION OF	1876	4459	4	5513	5533	COM-MENTION OF	1969
4440	1	6439	6430	COM-MENTION OF	1877	4459	4	5518	5538	COM-MENTION OF	1970
4440		6441	6442	COM-MENTION OF	1878	4459	4	5519	5539	COM-MENTION OF	1971
4440	1	6449	6440	COM-MENTION OF	1879	4469	4	0970	0939	COM-A DUE TO S	1972
4440		6451	6452	COM-MENTION OF	1880	4469	4	0979	0939	COM-A DUE TO S	1973
4440	1	6459	6450	COM-MENTION OF	1881	447	4	0970	0949	COM-A DUE TO S	1974
4441		6314	6310	COM-MENTION OF	1882	447	5	0970	0939	COM-A DUE TO S	1975
4441		6315	6311	COM-MENTION OF	1883	447	4	0979	0949	COM-A DUE TO S	1976
4441		6316	6312	COM-MENTION OF	1884	447	5	0979	0939	COM-A DUE TO S	1977
4441		6319	6313	COM-MENTION OF	1885	450		6314	6310	COM-MENTION OF	1978
4441		6401	6402	COM-MENTION OF	1886	450		6315	6311	COM-MENTION OF	1979
4441	1	6409	6400	COM-MENTION OF	1887	450		6316	6312	COM-MENTION OF	1980
4441		6411	6412	COM-MENTION OF	1888	450		6319	6313	COM-MENTION OF	1981
4441	1	6419	6410	COM-MENTION OF	1889	450		6401	6402	COM-MENTION OF	1982
4441		6421	6422	COM-MENTION OF	1890	450	3	6409	6400	COM-MENTION OF	1983
4441	1	6429	6420	COM-MENTION OF	1891	450		6411	6412	COM-MENTION OF	1984
4441		6431	6432	COM-MENTION OF	1892	450	3	6419	6410	COM-MENTION OF	1985
4441	1	6439	6430	COM-MENTION OF	1893	450		6421	6422	COM-MENTION OF	1986
4441		6441	6442	COM-MENTION OF	1894	450	3	6429	6420	COM-MENTION OF	1987
4441	1	6449	6440	COM-MENTION OF	1895	450		6431	6432	COM-MENTION OF	1988
4441		6451	6452	COM-MENTION OF	1896	450	3	6439	6430	COM-MENTION OF	1989
4441	1	6459	6450	COM-MENTION OF	1897	450		6441	6442	COM-MENTION OF	1990
4442		6314	6310	COM-MENTION OF	1898	450	3	6449	6440	COM-MENTION OF	1991
4442		6315	6311	COM-MENTION OF	1899	450		6451	6452	COM-MENTION OF	1992
4442		6316	6312	COM-MENTION OF	1900	450	4	6459	6450	COM-MENTION OF	1993
4442		6319	6313	COM-MENTION OF	1901	4510		0970	0939	COM-A DUE TO S	1994
4442		6401	6402	COM-MENTION OF	1902	4510		0979	0939	COM-A DUE TO S	1995
4442	1	6409	6400	COM-MENTION OF	1903	4510		6314	6310	COM-MENTION OF	1996
4442		6411	6412	COM-MENTION OF	1904	4510		6315	6311	COM-MENTION OF	1997
4442	1	6419	6410	COM-MENTION OF	1905	4510		6316	6312	COM-MENTION OF	1998
4442		6421	6422	COM-MENTION OF	1906	4510		6319	6313	COM-MENTION OF	1999
4442	1	6429	6420	COM-MENTION OF	1907	4510		6401	6402	COM-MENTION OF	2000
4442		6431	6432	COM-MENTION OF	1908	4510	3	6409	6400	COM-MENTION OF	2001
4442	1	6439	6430	COM-MENTION OF	1909	4510		6411	6412	COM-MENTION OF	2002
4442		6441	6442	COM-MENTION OF	1910	4510	3	6419	6410	COM-MENTION OF	2003
4442	1	6449	6440	COM-MENTION OF	1911	4510		6421	6422	COM-MENTION OF	2004
4442		6451	6452	COM-MENTION OF	1912	4510	3	6429	6420	COM-MENTION OF	2005
4442	1	6459	6450	COM-MENTION OF	1913	4510		6431	6432	COM-MENTION OF	2006
4443		6314	6310	COM-MENTION OF	1914	4510	3	6439	6430	COM-MENTION OF	2007
4443		6315	6311	COM-MENTION OF	1915	4510		6441	6442	COM-MENTION OF	2008
4443		6316	6312	COM-MENTION OF	1916	4510	3	6449	6440	COM-MENTION OF	2009
4443		6319	6313	COM-MENTION OF	1917	4510		6451	6452	COM-MENTION OF	2010
4443		6401	6402	COM-MENTION OF	1918	4510	4	6459	6450	COM-MENTION OF	2011
4443	1	6409	6400	COM-MENTION OF	1919	4519		0970	0939	COM-A DUE TO S	2012
4443		6411	6412	COM-MENTION OF	1920	4519		0979	0939	COM-A DUE TO S	2013
4443	1	6419	6410	COM-MENTION OF	1921	4519		6314	6310	COM-MENTION OF	2014
4443		6421	6422	COM-MENTION OF	1922	4519		6315	6311	COM-MENTION OF	2015
4443	1	6429	6420	COM-MENTION OF	1923	4519		6316	6312	COM-MENTION OF	2016
4443		6431	6432	COM-MENTION OF	1924	4519		6319	6313	COM-MENTION OF	2017
4443	1	6439	6430	COM-MENTION OF	1925	4519		6401	6402	COM-MENTION OF	2018
4443		6441	6442	COM-MENTION OF	1926	4519	3	6409	6400	COM-MENTION OF	2019
4443	1	6449	6440	COM-MENTION OF	1927	4519		6411	6412	COM-MENTION OF	2020
4443		6451	6452	COM-MENTION OF	1928	4519	3	6419	6410	COM-MENTION OF	2021
4443	1	6459	6450	COM-MENTION OF	1929	4519		6421	6422	COM-MENTION OF	2022
4444		6314	6310	COM-MENTION OF	1930	4519	3	6429	6420	COM-MENTION OF	2023
4444		6315	6311	COM-MENTION OF	1931	4519		6431	6432	COM-MENTION OF	2024
4444		6316	6312	COM-MENTION OF	1932	4519	3	6439	6430	COM-MENTION OF	2025
4444		6319	6313	COM-MENTION OF	1933	4519		6441	6442	COM-MENTION OF	2026
4444		6401	6402	COM-MENTION OF	1934	4519	3	6449	6440	COM-MENTION OF	2027
4444	1	6409	6400	COM-MENTION OF	1935	4519		6451	6452	COM-MENTION OF	2028
4444		6411	6412	COM-MENTION OF	1936	4519	4	6459	6450	COM-MENTION OF	2029
4444	1	6419	6410	COM-MENTION OF	1937	452		0970	0939	COM-A DUE TO S	2030
4444		6421	6422	COM-MENTION OF	1938	452		0979	0939	COM-A DUE TO S	2031
4444	1	6429	6420	COM-MENTION OF	1939	453		6314	6310	COM-MENTION OF	2032
4444		6431	6432	COM-MENTION OF	1940	453		6315	6311	COM-MENTION OF	2033
4444	1	6439	6430	COM-MENTION OF	1941	453		6316	6312	COM-MENTION OF	2034
4444		6441	6442	COM-MENTION OF	1942	453		6319	6313	COM-MENTION OF	2035
4444	1	6449	6440	COM-MENTION OF	1943	453	2	6401	6402	COM-MENTION OF	2036
4444		6451	6452	COM-MENTION OF	1944	453	2	6409	6400	COM-MENTION OF	2037
4444	1	6459	6450	COM-MENTION OF	1945	453	2	6411	6412	COM-MENTION OF	2038
4449		6314	6310	COM-MENTION OF	1946	453	2	6419	6410	COM-MENTION OF	2039
4449		6315	6311	COM-MENTION OF	1947	453	2	6421	6412	COM-MENTION OF	2040
4449		6316	6312	COM-MENTION OF	1948	453	2	6429	6420	COM-MENTION OF	2041
4449		6319	6313	COM-MENTION OF	1949	453	2	6429	6420	COM-MENTION OF	2042
4449		6401	6402	COM-MENTION OF	1950	453	2	6429	6420	COM-MENTION OF	2043
4449	1	6409	6400	COM-MENTION OF	1951	453	2	6431	6432	COM-MENTION OF	2044
4449		6411	6412	COM-MENTION OF	1952	453	2	6439	6430	COM-MENTION OF	2045
4449	1	6419	6410	COM-MENTION OF	1953	453	2	6441	6442	COM-MENTION OF	2046

NOTE: SEE TEXT FOR EXPLANATION OF COLUMN LABELS AND CONTENT

APPENDIX A

AXIS TRANSLATION LINKAGES BEING EMPLOYED ON ICDA-8 DATA (1968 - 1978)

ANCHOR CODE (A)	AMB	SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.	ANCHOR CODE (A)	AMB	SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.
453	2	6449	6440	COM-MENTION OF	2047	483		470	471	COM-MENTION OF	2140
453		6450	6452	COM-MENTION OF	2048	483		472 -474	471	MOD-MENTION OF	2141
453		6451	6452	COM-MENTION OF	2049	484		470	471	COM-MENTION OF	2142
453	2	6459	6450	COM-MENTION OF	2050	484		472 -474	471	MOD-MENTION OF	2143
4541		7071-7079	4540	COM-MENTION OF	2051	485		470	471	COM-MENTION OF	2144
4549		4541		DELETION	2052	485		472 -474	471	MOD-MENTION OF	2145
4549		7071-7079	4540	COM-MENTION OF	2053	486		0382	481	COM-MENTION OF	2146
457		681		DELETION	2054	486		470	471	COM-MENTION OF	2147
457	4	682		DELETION	2055	486		472 -474	471	MOD-MENTION OF	2148
4589	2	0970	0939	COM-A DUE TO S	2056	486		480 -485		DELETION	2149
4589	4	0979	0939	COM-A DUE TO S	2057	490	2	464	466	COM-MENTION OF	2150
4589	3	5311	5312	COM-MENTION OF	2058	490		470	472	COM-MENTION OF	2151
4589	3	5319	5310	COM-MENTION OF	2059	490		473 -474	472	MOD-MENTION OF	2152
4589	3	5321	5322	COM-MENTION OF	2060	490		492	491	COM-A DUE TO S	2153
4589	3	5329	5320	COM-MENTION OF	2061	490		492	491	MOD-MENTION OF	2154
4589	3	5341	5340	COM-MENTION OF	2062	490		5193	491	MOD-MENTION OF	2155
4589	3	5341	5342	COM-MENTION OF	2063	491		492	491	COM-A DUE TO S	2156
4589	3	5349	5340	COM-MENTION OF	2064	491	1	506		DELETION	2157
4589	4	6779	6772	COM-MENTION OF	2065	493		466		DELETION	2158
4589	4	7079	5339	COM-MENTION OF	2066	500		0970	095	COM-A DUE TO S	2159
4589	1	7833	7831	COM-MENTION OF	2067	500		0979	095	COM-A DUE TO S	2160
460	4	0799	460	COM-A DUE TO S	2068	5020		0119	0129	COM-A DUE TO S	2161
460	4	0909	0900	COM-A DUE TO S	2069	5021		0970	095	COM-A DUE TO S	2162
460		0970	095	COM-A DUE TO S	2070	5021		0979	095	COM-A DUE TO S	2163
460		0979	095	COM-A DUE TO S	2071	5021	1	462	460	COM-MENTION OF	2164
460		470	472	COM-MENTION OF	2072	5021	1	507		DELETION	2165
460		473 -474	472	MOD-MENTION OF	2073	5030	4	0119	0129	COM-A DUE TO S	2166
4610	1	0119	0129	COM-A DUE TO S	2074	5030	1	470	472	COM-MENTION OF	2167
4610		470	472	COM-MENTION OF	2075	5030		473 -474	472	MOD-MENTION OF	2168
4610		473 -474	472	MOD-MENTION OF	2076	5031	4	0119	0129	COM-A DUE TO S	2169
4611	1	0119	0129	COM-A DUE TO S	2077	5031	1	470	472	COM-MENTION OF	2170
4611		470	472	COM-MENTION OF	2078	5031		473 -474	472	MOD-MENTION OF	2171
4611		473 -474	472	MOD-MENTION OF	2079	5039	4	0119	0129	COM-A DUE TO S	2172
4619	1	0119	0129	COM-A DUE TO S	2080	5039		0970	095	COM-A DUE TO S	2173
4619		470	472	COM-MENTION OF	2081	5039		0979	095	COM-A DUE TO S	2174
4619		473 -474	472	MOD-MENTION OF	2082	5039	1	470	472	COM-MENTION OF	2175
462	1	0119	0129	COM-A DUE TO S	2083	5039		473 -474	472	MOD-MENTION OF	2176
462	4	0799	462	COM-A DUE TO S	2084	507		493		DELETION	2177
462		470	472	COM-MENTION OF	2085	5080		0970	095	COM-A DUE TO S	2178
462		473 -474	472	MOD-MENTION OF	2086	5080		0979	095	COM-A DUE TO S	2179
462	1	5021	460	COM-MENTION OF	2087	5083		0970	095	COM-A DUE TO S	2180
463	1	0119	0129	COM-A DUE TO S	2088	5083		0979	095	COM-A DUE TO S	2181
463	4	0799	463	COM-A DUE TO S	2089	5089		0970	095	COM-A DUE TO S	2182
463		470	472	COM-MENTION OF	2090	5089		0979	095	COM-A DUE TO S	2183
463		473 -474	472	MOD-MENTION OF	2091	510		0119	0121	COM-A DUE TO S	2184
464	1	0119	0129	COM-A DUE TO S	2092	5110	4	011	0121	COM-MENTION OF	2185
464	5	0119	0123	COM-A DUE TO S	2093	5110		0970	095	COM-A DUE TO S	2186
464	4	0799	464	COM-A DUE TO S	2094	5110		0979	095	COM-A DUE TO S	2187
464		0970	095	COM-A DUE TO S	2095	5110		470	472	COM-MENTION OF	2188
464		0979	095	COM-A DUE TO S	2096	5110		473 -474	472	MOD-MENTION OF	2189
464	2	466		DELETION	2097	5112		0119	0121	COM-A DUE TO S	2190
464		470	472	COM-MENTION OF	2098	514	1	470	471	COM-MENTION OF	2191
464		473 -474	472	MOD-MENTION OF	2099	514		472 -474	471	MOD-MENTION OF	2192
464	2	490	466	COM-MENTION OF	2100	5150		011 -0129	010	COM-MENTION OF	2193
464	5	490		DELETION	2101	5151		011 -0129	010	COM-MENTION OF	2194
464	2	491		DELETION	2102	5152		011 -0129	010	COM-MENTION OF	2195
464	2	506		DELETION	2103	5159		011 -0129	010	COM-MENTION OF	2196
465	4	0799	465	COM-A DUE TO S	2104	517		011		DELETION	2197
465		470	472	COM-MENTION OF	2105	5191		429	4271	COM-MENTION OF	2198
465		473 -474	472	MOD-MENTION OF	2106	5191	1	470	472	COM-MENTION OF	2199
466	4	0799	466	COM-A DUE TO S	2107	5191	1	472 -474	472	MOD-MENTION OF	2200
466		470	472	COM-MENTION OF	2108	5191		7824	4271	COM-MENTION OF	2201
466		473 -474	472	MOD-MENTION OF	2109	5192	4	010 -0119		DELETION	2202
470	4	0089	473	COM-MENTION OF	2110	5192	4	0190		DELETION	2203
470		009	473	COM-MENTION OF	2111	5192	4	0201		DELETION	2204
470	4	3209	474	COM-MENTION OF	2112	5192	4	0310		DELETION	2205
470	2	323	474	COM-MENTION OF	2113	5192		0970	095	COM-A DUE TO S	2206
470		460 -466	472	COM-MENTION OF	2114	5192		0979	095	COM-A DUE TO S	2207
470		471		DELETION	2115	5192	4	1212		DELETION	2208
470		480 -486	471	COM-MENTION OF	2116	5192	4	1221		DELETION	2209
470		490	472	COM-MENTION OF	2117	5192	4	1621		DELETION	2210
470	1	503	472	COM-MENTION OF	2118	5192	4	1970		DELETION	2211
470		5110	472	COM-MENTION OF	2119	5192	4	2123		DELETION	2212
470	1	514	471	COM-MENTION OF	2120	5192	4	2313		DELETION	2213
470		5191	472	COM-MENTION OF	2121	5192	4	450		DELETION	2214
470		5192	471	COM-MENTION OF	2122	5192	4	466		DELETION	2215
470		561	473	COM-MENTION OF	2123	5192	4	470	471	COM-MENTION OF	2216
470		7831	472	COM-MENTION OF	2124	5192	4	471		DELETION	2217
470		7833	472	COM-MENTION OF	2125	5192	4	480 -493		DELETION	2218
480		470	471	COM-MENTION OF	2126	5192	4	510 -5112		DELETION	2219
480		472 -474	471	MOD-MENTION OF	2127	5192	4	512 -513		DELETION	2220
481		470	471	COM-MENTION OF	2128	5192	4	515 -518		DELETION	2221
481		472 -474	471	MOD-MENTION OF	2129	5192	4	5193		DELETION	2222
4820		470	471	COM-MENTION OF	2130	5192	4	7486		DELETION	2223
4820		472 -474	471	MOD-MENTION OF	2131	5193		491		DELETION	2224
4821		470	471	COM-MENTION OF	2132	5193		492		DELETION	2225
4821		472 -474	471	MOD-MENTION OF	2133	5193		493		DELETION	2226
4822		470	471	COM-MENTION OF	2134	5199	2	010 -0129		DELETION	2227
4822		472 -474	471	MOD-MENTION OF	2135	5199	2	0190		DELETION	2228
4823		470	471	COM-MENTION OF	2136	5199	2	0310		DELETION	2229
4823		472 -474	471	MOD-MENTION OF	2137	5199	2	033 -0341		DELETION	2230
4829		470	471	COM-MENTION OF	2138	5199		0970	095	COM-A DUE TO S	2231
4829		472 -474	471	MOD-MENTION OF	2139	5199		0979	095	COM-A DUE TO S	2232

NOTE: SEE TEXT FOR EXPLANATION OF COLUMN LABELS AND CONTENT

## APPENDIX A

## AXIS TRANSLATION LINKAGES BEING EMPLOYED ON ICDA-8 DATA (1968 - 1978)

ANCHOR CODE (A)	AMB	SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.	ANCHOR CODE (A)	AMB	SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.
5199	2	1212		DELETION	2233	543		0119	014	COM-A DUE TO S	2326
5199	2	1221		DELETION	2234	550	4	4459	552	COM-MENTION OF	2327
5199	2	146 -1489		DELETION	2235	550		560	552	COM-MENTION OF	2328
5199	2	160 -1639		DELETION	2236	550	3	5699	552	COM-MENTION OF	2329
5199	2	1961		DELETION	2237	5510	4	4459	5530	COM-MENTION OF	2330
5199	2	1970-1973		DELETION	2238	5510		560	5530	COM-MENTION OF	2331
5199	2	2105-2109		DELETION	2239	5510	2	5699	5530	COM-MENTION OF	2332
5199	2	212		DELETION	2240	5511	4	4459	5531	COM-MENTION OF	2333
5199	2	231		DELETION	2241	5511		560	5531	COM-MENTION OF	2334
5199	2	450		DELETION	2242	5511	2	5699	5531	COM-MENTION OF	2335
5199	2	461 -464		DELETION	2243	5512	4	4459	5532	COM-MENTION OF	2336
5199	2	466		DELETION	2244	5512		560	5532	COM-MENTION OF	2337
5199	5	470	472	COM-A DUE TO S	2245	5512	2	5699	5532	COM-MENTION OF	2338
5199	2	470 -513		DELETION	2246	5512	1	7568	5513	COM-MENTION OF	2339
5199	2	515 -518		DELETION	2247	5513	4	4459	5533	COM-MENTION OF	2340
5199	2	5193		DELETION	2248	5513		560	5533	COM-MENTION OF	2341
5200		5243		DELETION	2249	5513	2	5699	5533	COM-MENTION OF	2342
5201		5243		DELETION	2250	5518	4	4459	5538	COM-MENTION OF	2343
5206		5243		DELETION	2251	5518		560	5538	COM-MENTION OF	2344
5225		5227		DELETION	2252	5518	2	5699	5538	COM-MENTION OF	2345
5244		5243		DELETION	2253	5519	4	4459	5539	COM-MENTION OF	2346
5250		5243		DELETION	2254	5519		550		DELETION	2347
5269		0970	095	COM-A DUE TO S	2255	5519		5510-5518		DELETION	2348
5269		0979	095	COM-A DUE TO S	2256	5519		552 -5539		DELETION	2349
5280		7882	0749	COM-MENTION OF	2257	5519		560	5539	COM-MENTION OF	2350
5285		0970	095	COM-A DUE TO S	2258	5519	2	5699	5539	COM-MENTION OF	2351
5285		0979	095	COM-A DUE TO S	2259	5519	1	7568	5513	COM-MENTION OF	2352
5285	1	262		DELETION	2260	5600		550	552	COM-MENTION OF	2353
5289		0970	095	COM-A DUE TO S	2261	5600		5510	5530	COM-MENTION OF	2354
5289		0979	095	COM-A DUE TO S	2262	5600		5511	5531	COM-MENTION OF	2355
5299		0970	095	COM-A DUE TO S	2263	5600		5512	5532	COM-MENTION OF	2356
5299		0979	095	COM-A DUE TO S	2264	5600		5513	5533	COM-MENTION OF	2357
5301		0970	095	COM-A DUE TO S	2265	5600		5518	5538	COM-MENTION OF	2358
5301		0979	095	COM-A DUE TO S	2266	5600		5519	5539	COM-MENTION OF	2359
5303		0970	095	COM-A DUE TO S	2267	5600		552 -5539		DELETION	2360
5303		0979	095	COM-A DUE TO S	2268	5601		550	552	COM-MENTION OF	2361
5309		0970	095	COM-A DUE TO S	2269	5601		5510	5530	COM-MENTION OF	2362
5309		0979	095	COM-A DUE TO S	2270	5601		5511	5531	COM-MENTION OF	2363
5310		5311	5312	COM-MENTION OF	2271	5601		5512	5532	COM-MENTION OF	2364
5310		5321	5322	COM-MENTION OF	2272	5601		5513	5533	COM-MENTION OF	2365
5311		0970	095	COM-A DUE TO S	2273	5601		5518	5538	COM-MENTION OF	2366
5311		0979	095	COM-A DUE TO S	2274	5601		5519	5539	COM-MENTION OF	2367
5311	3	4589	5312	COM-MENTION OF	2275	5601		552 -5539		DELETION	2368
5311		5310	5312	COM-MENTION OF	2276	5601		5749	5603	COM-A DUE TO S	2369
5311	4	5699	5312	COM-MENTION OF	2277	5602		550	552	COM-MENTION OF	2370
5311		7845	5312	COM-MENTION OF	2278	5602		5510	5530	COM-MENTION OF	2371
5319	3	4589	5310	COM-MENTION OF	2279	5602		5511	5531	COM-MENTION OF	2372
5319	4	5379	5319	COM-MENTION OF	2280	5602		5512	5532	COM-MENTION OF	2373
5319	4	5699	5310	COM-MENTION OF	2281	5602		5513	5533	COM-MENTION OF	2374
5319		7845	5310	COM-MENTION OF	2282	5602		5518	5538	COM-MENTION OF	2375
5320		5321	5322	COM-MENTION OF	2283	5602		5519	5539	COM-MENTION OF	2376
5321		0970	095	COM-A DUE TO S	2284	5602		552 -5539		DELETION	2377
5321		0979	095	COM-A DUE TO S	2285	5603		550	552	COM-MENTION OF	2378
5321	3	4589	5322	COM-MENTION OF	2286	5603		5510	5530	COM-MENTION OF	2379
5321		5310	5322	COM-MENTION OF	2287	5603		5511	5531	COM-MENTION OF	2380
5321		5320	5322	COM-MENTION OF	2288	5603		5512	5532	COM-MENTION OF	2381
5321	4	5379	5322	COM-MENTION OF	2289	5603		5513	5533	COM-MENTION OF	2382
5321	4	5699	5322	COM-MENTION OF	2290	5603		5518	5538	COM-MENTION OF	2383
5329	3	4589	5320	COM-MENTION OF	2291	5603		5519	5539	COM-MENTION OF	2384
5329	4	5330	5321	COM-MENTION OF	2292	5603		552 -5539		DELETION	2385
5329	3	5379	5320	COM-MENTION OF	2293	5604		550	552	COM-MENTION OF	2386
5329	3	5699	5320	COM-MENTION OF	2294	5604		5510	5530	COM-MENTION OF	2387
5329	4	5699	5322	COM-MENTION OF	2295	5604		5511	5531	COM-MENTION OF	2388
5329	4	7845	5320	COM-MENTION OF	2296	5604		5512	5532	COM-MENTION OF	2389
5330		0970	095	COM-A DUE TO S	2297	5604		5513	5533	COM-MENTION OF	2390
5330		0979	095	COM-A DUE TO S	2298	5604		5518	5538	COM-MENTION OF	2391
5330		5329	5321	COM-MENTION OF	2299	5604		5519	5539	COM-MENTION OF	2392
5339	4	5699	5340	COM-MENTION OF	2300	5604		552 -5539		DELETION	2393
5340		5341	5342	COM-MENTION OF	2301	5609		550	552	COM-MENTION OF	2394
5341		0970	095	COM-A DUE TO S	2302	5609		5510	5530	COM-MENTION OF	2395
5341		0979	095	COM-A DUE TO S	2303	5609		5511	5531	COM-MENTION OF	2396
5341	3	4589	5340	COM-MENTION OF	2304	5609		5512	5532	COM-MENTION OF	2397
5341	3	4589	5342	COM-MENTION OF	2305	5609		5513	5533	COM-MENTION OF	2398
5341		5340	5342	COM-MENTION OF	2306	5609		5518	5538	COM-MENTION OF	2399
5341	3	5699	5342	COM-MENTION OF	2307	5609		5519	5539	COM-MENTION OF	2400
5349	3	4589	5340	COM-MENTION OF	2308	5609		552 -5539		DELETION	2401
5349	3	5699	5340	COM-MENTION OF	2309	5609		568	5604	COM-MENTION OF	2402
5349	4	5699	5342	COM-MENTION OF	2310	5609	1	5749	5603	COM-MENTION OF	2403
5349	4	7845	5340	COM-MENTION OF	2311	561		0119	014	COM-A DUE TO S	2404
535	1	0119	0179	COM-A DUE TO S	2312	561		470	473	COM-MENTION OF	2405
5379		0970	095	COM-A DUE TO S	2313	566		0119	014	COM-A DUE TO S	2406
5379		0979	095	COM-A DUE TO S	2314	5670		0119	014	COM-A DUE TO S	2407
5379	4	5319	5319	COM-MENTION OF	2315	5670		0970	095	COM-A DUE TO S	2408
5379	4	5321	5322	COM-MENTION OF	2316	5670		0979	095	COM-A DUE TO S	2409
5379	3	5329	5320	COM-MENTION OF	2317	5670	4	0989	0988	COM-A DUE TO S	2410
5400		0119	014	COM-A DUE TO S	2318	5670		5400		DELETION	2411
5409		0119	014	COM-A DUE TO S	2319	5670		5409-541	5400	COM-MENTION OF	2412
5409		5400		DELETION	2320	5670		6314	6310	COM-MENTION OF	2413
5409		567	5400	COM-MENTION OF	2321	5670		6315	6311	COM-MENTION OF	2414
541		0119	014	COM-A DUE TO S	2322	5670		6316	6312	COM-MENTION OF	2415
541		540		DELETION	2323	5670		6319	6313	COM-MENTION OF	2416
541		567	5400	COM-MENTION OF	2324	5670		6401	6402	COM-MENTION OF	2417
542		0119	014	COM-A DUE TO S	2325	5670		6409	6400	COM-MENTION OF	2418

NOTE: SEE TEXT FOR EXPLANATION OF COLUMN LABELS AND CONTENT

APPENDIX A

AXIS TRANSLATION LINKAGES BEING EMPLOYED ON ICDA-8 DATA (1968 - 1978)

ANCHOR CODE (A)	AMB SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.	ANCHOR CODE (A)	AMB SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.
5670	6411	6412	COM-MENTION OF	2419	5730	3031	5710	COM-A DUE TO S	2512
5670	6419	6410	COM-MENTION OF	2420	5730	3032	5710	COM-A DUE TO S	2513
5670	6421	6422	COM-MENTION OF	2421	5730	3039	5710	COM-A DUE TO S	2514
5670	6429	6420	COM-MENTION OF	2422	5739	1 0119	014	COM-A DUE TO S	2515
5670	6431	6432	COM-MENTION OF	2423	5739	0970	095	COM-A DUE TO S	2516
5670	6439	6430	COM-MENTION OF	2424	5739	0979	095	COM-A DUE TO S	2517
5670	6441	6442	COM-MENTION OF	2425	5739	1 3032	5710	COM-A DUE TO S	2518
5670	6449	6440	COM-MENTION OF	2426	5739	1 3039	5710	COM-A DUE TO S	2519
5670	6451	6452	COM-MENTION OF	2427	5739	4 650	6779	COM-MENTION OF	2520
5670	6459	6450	COM-MENTION OF	2428	5749	1 5609	5603	COM-MENTION OF	2521
5679	0119	014	COM-A DUE TO S	2429	5749	1 575	5740	COM-MENTION OF	2522
5679	0970	095	COM-A DUE TO S	2430	5749	5 575	5741	COM-MENTION OF	2523
5679	0979	095	COM-A DUE TO S	2431	575	5740-5741	DELETION	2524	
5679	0989	0988	COM-A DUE TO S	2432	575	1 5749	5740	COM-MENTION OF	2525
5679	4 5400	5400	DELETION	2433	575	5 5749	5741	COM-MENTION OF	2526
5679	5409-541	5400	COM-MENTION OF	2434	5760	5749	DELETION	2527	
5679	5670	5604	DELETION	2435	5761	5749	DELETION	2528	
5679	6314	6310	COM-MENTION OF	2436	5769	0970	095	COM-A DUE TO S	2529
5679	6315	6311	COM-MENTION OF	2437	5769	0979	095	COM-A DUE TO S	2530
5679	6316	6312	COM-MENTION OF	2438	5769	5749	DELETION	2531	
5679	6319	6313	COM-MENTION OF	2439	5770	0970	095	COM-A DUE TO S	2532
5679	6401	6402	COM-MENTION OF	2440	5770	0979	095	COM-A DUE TO S	2533
5679	6409	6400	COM-MENTION OF	2441	580	0970	095	COM-A DUE TO S	2534
5679	6411	6412	COM-MENTION OF	2442	580	0979	095	COM-A DUE TO S	2535
5679	6419	6410	COM-MENTION OF	2443	580	3 0989	0981	COM-A DUE TO S	2536
5679	6421	6422	COM-MENTION OF	2444	580	5 0989	0980	COM-A DUE TO S	2537
5679	6429	6420	COM-MENTION OF	2445	580	4000	4003	COM-MENTION OF	2538
5679	6431	6432	COM-MENTION OF	2446	580	4001-4002	4009	COM-MENTION OF	2539
5679	6439	6430	COM-MENTION OF	2447	580	4003	DELETION	2540	
5679	6441	6442	COM-MENTION OF	2448	580	6400	6402	COM-MENTION OF	2541
5679	6449	6440	COM-MENTION OF	2449	580	6409	6401	COM-MENTION OF	2542
5679	6451	6452	COM-MENTION OF	2450	580	6410	6412	COM-MENTION OF	2543
5679	6459	6450	COM-MENTION OF	2451	580	6419	6411	COM-MENTION OF	2544
568	5602	5604	DELETION	2452	580	6430	6432	COM-MENTION OF	2545
568	5604	5604	DELETION	2453	580	6439	6431	COM-MENTION OF	2546
568	5609	5604	COM-MENTION OF	2454	580	6440	6442	COM-MENTION OF	2547
5690	1 0119	014	COM-A DUE TO S	2455	580	6449	6441	COM-MENTION OF	2548
5690	0989	0988	COM-A DUE TO S	2456	580	6450	6452	COM-MENTION OF	2549
5691	1 0119	014	COM-A DUE TO S	2457	580	6459	6451	COM-MENTION OF	2550
5692	1 0119	014	COM-A DUE TO S	2458	580	4 6954	7341	COM-A DUE TO S	2551
5692	0970	095	COM-A DUE TO S	2459	581	0970	095	COM-A DUE TO S	2552
5692	0979	095	COM-A DUE TO S	2460	581	0979	095	COM-A DUE TO S	2553
5692	4 0989	0988	COM-A DUE TO S	2461	581	4000	4003	COM-MENTION OF	2554
5693	1 0119	014	COM-A DUE TO S	2462	581	4001-4002	4009	COM-MENTION OF	2555
5694	1 0119	014	COM-A DUE TO S	2463	581	4003	DELETION	2556	
5694	0970	095	COM-A DUE TO S	2464	581	6400	6402	COM-MENTION OF	2557
5694	0979	095	COM-A DUE TO S	2465	581	6409	6401	COM-MENTION OF	2558
5699	1 0119	014	COM-A DUE TO S	2466	581	6410	6412	COM-MENTION OF	2559
5699	0970	095	COM-A DUE TO S	2467	581	6419	6411	COM-MENTION OF	2560
5699	0979	095	COM-A DUE TO S	2468	581	6430	6432	COM-MENTION OF	2561
5699	3 4442	DELETION	2469	581	6439	6431	COM-MENTION OF	2562	
5699	4 5311	5312	COM-MENTION OF	2470	581	6440	6442	COM-MENTION OF	2563
5699	4 5319	5310	COM-MENTION OF	2471	581	6449	6441	COM-MENTION OF	2564
5699	4 5321	5322	COM-MENTION OF	2472	581	6450	6452	COM-MENTION OF	2565
5699	3 5329	5320	COM-MENTION OF	2473	581	6459	6451	COM-MENTION OF	2566
5699	4 5329	5322	COM-MENTION OF	2474	581	4 6954	7341	COM-A DUE TO S	2567
5699	4 5339	5340	COM-MENTION OF	2475	582	0970	095	COM-A DUE TO S	2568
5699	3 5341	5342	COM-MENTION OF	2476	582	0979	095	COM-A DUE TO S	2569
5699	3 5349	5340	COM-MENTION OF	2477	582	3 0989	0981	COM-A DUE TO S	2570
5699	3 5349	5342	COM-MENTION OF	2478	582	5 0989	0980	COM-A DUE TO S	2571
5699	3 550	552	COM-MENTION OF	2479	582	4000	4003	COM-MENTION OF	2572
5699	2 5510	5530	COM-MENTION OF	2480	582	4001	4009	COM-MENTION OF	2573
5699	2 5511	5531	COM-MENTION OF	2481	582	4002	4009	COM-MENTION OF	2574
5699	2 5512	5532	COM-MENTION OF	2482	582	4003	DELETION	2575	
5699	2 5513	5533	COM-MENTION OF	2483	582	2 4400	403	MOD-A DUE TO S	2576
5699	2 5518	5538	COM-MENTION OF	2484	582	2 4401	403	MOD-A DUE TO S	2577
5699	2 5519	5539	COM-MENTION OF	2485	582	2 4402	403	MOD-A DUE TO S	2578
570	6400	6402	COM-MENTION OF	2486	582	2 4403	403	MOD-A DUE TO S	2579
570	6409	6401	COM-MENTION OF	2487	582	2 4409	403	MOD-A DUE TO S	2580
570	6410	6412	COM-MENTION OF	2488	582	4 6954	7341	COM-A DUE TO S	2581
570	6419	6411	COM-MENTION OF	2489	583	2 0119	0160	COM-A DUE TO S	2582
570	6430	6432	COM-MENTION OF	2490	583	0970	095	COM-A DUE TO S	2583
570	6439	6431	COM-MENTION OF	2491	583	0979	095	COM-A DUE TO S	2584
570	6440	6442	COM-MENTION OF	2492	583	3 0989	0981	COM-A DUE TO S	2585
570	6449	6441	COM-MENTION OF	2493	583	5 0989	0980	COM-A DUE TO S	2586
570	6450	6452	COM-MENTION OF	2494	583	4000	4003	COM-MENTION OF	2587
570	6459	6451	COM-MENTION OF	2495	583	4001	4009	COM-MENTION OF	2588
5718	2910	5710	MOD-MENTION OF	2496	583	4002	4009	COM-MENTION OF	2589
5718	303	5710	COM-MENTION OF	2497	583	4003	DELETION	2590	
5718	5710	DELETION	2498	583	2 4400	403	MOD-A DUE TO S	2591	
5719	0970	095	COM-A DUE TO S	2499	583	2 4401	403	MOD-A DUE TO S	2592
5719	0979	095	COM-A DUE TO S	2500	583	2 4402	403	MOD-A DUE TO S	2593
5719	4 2699	5718	MOD-A DUE TO S	2501	583	2 4403	403	MOD-A DUE TO S	2594
5719	2910	5710	MOD-MENTION OF	2502	583	2 4409	403	MOD-A DUE TO S	2595
5719	303	5710	COM-MENTION OF	2503	583	582	DELETION	2596	
5719	5710	DELETION	2504	583	6400	6402	COM-MENTION OF	2597	
5719	5718	DELETION	2505	583	6409	6401	COM-MENTION OF	2598	
572	0069	0060	COM-MENTION OF	2506	583	6410	6412	COM-MENTION OF	2599
5730	4 0909	0900	COM-A DUE TO S	2507	583	6419	6411	COM-MENTION OF	2600
5730	0970	095	COM-A DUE TO S	2508	583	6430	6432	COM-MENTION OF	2601
5730	0979	095	COM-A DUE TO S	2509	583	6439	6431	COM-MENTION OF	2602
5730	0989	0988	COM-A DUE TO S	2510	583	6440	6442	COM-MENTION OF	2603
5730	3030	5710	COM-A DUE TO S	2511	583	6449	6441	COM-MENTION OF	2604

NOTE: SEE TEXT FOR EXPLANATION OF COLUMN LABELS AND CONTENT













APPENDIX A

AXIS TRANSLATION LINKAGES BEING EMPLOYED ON ICDA-8 DATA (1968 - 1978)

ANCHOR CODE (A)	AMB	SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.	ANCHOR CODE (A)	AMB	SUBANCHOR CODE (S)	RECODE	TYPE	ENTRY NO.
7315		0970	095	COM-A DUE TO S	3535			7568			3628
7315		0979	095	COM-A DUE TO S	3536			7569			3629
7315	3	0989	0983	COM-A DUE TO S	3537			7572			3630
7316	1	0119	0159	COM-A DUE TO S	3538			7579			3631
7316	4	0909	0900	COM-A DUE TO S	3539			7589			3632
7316		0970	095	COM-A DUE TO S	3540			7598			3633
7316		0979	095	COM-A DUE TO S	3541			7599			3634
7316	3	0989	0983	COM-A DUE TO S	3542			7599			3635
7317	1	0119	0159	COM-A DUE TO S	3543			7599			3636
7317	4	0909	0900	COM-A DUE TO S	3544			7599			3637
7317		0970	095	COM-A DUE TO S	3545			7599			3638
7317		0979	095	COM-A DUE TO S	3546			7599			3639
7317	3	0989	0983	COM-A DUE TO S	3547			7599			3640
7318	1	0119	0159	COM-A DUE TO S	3548			7599			3641
7318	4	0909	0900	COM-A DUE TO S	3549			7599			3642
7318		0970	095	COM-A DUE TO S	3550			7644			3643
7318		0979	095	COM-A DUE TO S	3551			7644			3644
7318	3	0989	0983	COM-A DUE TO S	3552			7644			3645
7319	1	0119	0159	COM-A DUE TO S	3553			7649			3646
7319	4	0909	0900	COM-A DUE TO S	3554			7649			3647
7319		0970	095	COM-A DUE TO S	3555			7649			3648
7319		0979	095	COM-A DUE TO S	3556			7649			3649
7319	3	0989	0983	COM-A DUE TO S	3557			7649			3650
7331		0970	095	COM-A DUE TO S	3558			7654			3651
7331		0979	095	COM-A DUE TO S	3559			7654			3652
7339		0970	095	COM-A DUE TO S	3560			7654			3653
7339		0979	095	COM-A DUE TO S	3561			7654			3654
7350		4270	426	COM-MENTION OF	3562			7659			3655
7350		4271	426	COM-MENTION OF	3563			7659			3656
7350		429	426	COM-MENTION OF	3564			7659			3657
7350		7824	426	COM-MENTION OF	3565			7659			3658
7351		4270	426	COM-MENTION OF	3566			7659			3659
7351		4271	426	COM-MENTION OF	3567			7660			3660
7351		429	426	COM-MENTION OF	3568			7661			3661
7351		7824	426	COM-MENTION OF	3569			7662			3662
7352		4270	426	COM-MENTION OF	3570			7663			3663
7352		4271	426	COM-MENTION OF	3571			7664			3664
7352		429	426	COM-MENTION OF	3572			7664			3665
7352		7824	426	COM-MENTION OF	3573			7664			3666
7359		4270	426	COM-MENTION OF	3574			7664			3667
7359		4271	426	COM-MENTION OF	3575			7664			3668
7359		429	426	COM-MENTION OF	3576			7669			3669
7359		7824	426	COM-MENTION OF	3577			7669			3670
7389		735 - 7388		DELETION	3578			7669			3671
7419	1	0970	0949	COM-A DUE TO S	3579			7669			3672
7419	1	0979	0949	COM-A DUE TO S	3580			7669			3673
7419	2	3479	7410	COM-MENTION OF	3581			7669			3674
7419		7410		DELETION	3582			7674			3675
7419		742	7410	COM-MENTION OF	3583			7674			3676
742		7410		DELETION	3584			7674			3677
742		7419	7410	COM-MENTION OF	3585			7674			3678
7430	1	0970	0949	COM-A DUE TO S	3586			7679			3679
7430	1	0979	0949	COM-A DUE TO S	3587			7679			3680
7439		740 - 7438		DELETION	3588			7679			3681
7449		7440-7448		DELETION	3589			7679			3682
7452		3890	7450	COM-MENTION OF	3590			7679			3683
7452		3891	7450	COM-MENTION OF	3591			7680			3684
7452		3892	7450	COM-MENTION OF	3592			7681			3685
7452		3899	7450	COM-MENTION OF	3593			7682			3686
7453		3890	7450	COM-MENTION OF	3594			7683			3687
7453		3891	7450	COM-MENTION OF	3595			7684			3688
7453		3892	7450	COM-MENTION OF	3596			7684			3689
7453		3899	7450	COM-MENTION OF	3597			7684			3690
7453		7450-7452		DELETION	3598			7684			3691
7459		7450-7458		DELETION	3599			7684			3692
7463		7462		DELETION	3600			7689			3693
7469		7460-7468		DELETION	3601			7689			3694
7469		7470-7474		DELETION	3602			7689			3695
7472	2	7462		DELETION	3603			7689			3696
7473		7462		DELETION	3604			7689			3697
7476	2	4309		DELETION	3605			7689			3698
7476	2	4319	4309	COM-MENTION OF	3606			7711			3699
7478	2	4309		DELETION	3607			7720			3700
7478	2	4319	4309	COM-MENTION OF	3608			7720			3701
7479		746 - 7478		DELETION	3609			7720			3702
7489		7480-7488		DELETION	3610			7720			3703
7490		7491	7492	COM-MENTION OF	3611			7720			3704
7491		7490	7492	COM-MENTION OF	3612			7720			3705
7509		749 - 7508		DELETION	3613			7720			3706
7516	1	0909	0900	COM-A DUE TO S	3614			7720			3707
7519		7510-7518		DELETION	3615			7720			3708
7527	1	2559	2736	COM-MENTION OF	3616			7720			3709
7527	1	2579		DELETION	3617			7720			3710
7527		2736		DELETION	3618			7720			3711
7529		7520-7528		DELETION	3619			7721			3712
7539		7530-7538		DELETION	3620			7721			3713
7549		7540-7548		DELETION	3621			7721			3714
7554		7552-7553		DELETION	3622			7721			3715
7560	1	0909	0900	COM-A DUE TO S	3623			7721			3716
7560	2	3479	742	COM-MENTION OF	3624			7721			3717
7560	1	740		DELETION	3625			7721			3718
7560	1	742 - 7439		DELETION	3626			7721			3719
7568	1	5512	5513	COM-MENTION OF	3627			7721			3720

NOTE: SEE TEXT FOR EXPLANATION OF COLUMN LABELS AND CONTENT

APPENDIX A

AXIS TRANSLATION LINKAGES BEING EMPLOYED ON ICDA-8 DATA (1968 - 1978)

ANCHOR CODE (A)	AMB CODE (S)	SUBANCHOR RECODE	TYPE	ENTRY NO.	ANCHOR CODE (A)	AMB CODE (S)	SUBANCHOR RECODE	TYPE	ENTRY NO.	
7721	7689	7681	COM-MENTION OF	3721	7826	2	583	581	COM-MENTION OF	3814
7722	7644	7642	COM-MENTION OF	3722	7826	2	5932	581	COM-MENTION OF	3815
7722	7649	7642	COM-MENTION OF	3723	7828	4	0909	0900	COM-A DUE TO S	3816
7722	7654	7652	COM-MENTION OF	3724	7828		0970	095	COM-A DUE TO S	3817
7722	7659	7652	COM-MENTION OF	3725	7828		0979	095	COM-A DUE TO S	3818
7722	7664	7662	COM-MENTION OF	3726	7831		470	472	COM-MENTION OF	3819
7722	7669	7662	COM-MENTION OF	3727	7831		473 -474	472	MOD-MENTION OF	3820
7722	7674	7672	COM-MENTION OF	3728	7833	1	4589	7831	COM-MENTION OF	3821
7722	7679	7672	COM-MENTION OF	3729	7833		470	472	COM-MENTION OF	3822
7722	7684	7682	COM-MENTION OF	3730	7845		5311	5312	COM-MENTION OF	3823
7722	7689	7682	COM-MENTION OF	3731	7845		5319	5310	COM-MENTION OF	3824
7729	2	3499	7721	COM-MENTION OF	7845	4	5329	5320	COM-MENTION OF	3825
7729	350	7722	COM-MENTION OF	3733	7845		5330	5312	COM-A DUE TO S	3826
7729	2	3570	7722	COM-MENTION OF	7845		5339	5310	COM-A DUE TO S	3827
7729	2	3579	7722	COM-MENTION OF	7845	4	5349	5340	COM-MENTION OF	3828
7729	7644	7643	COM-MENTION OF	3736	7845	1	7079	5339	COM-MENTION OF	3829
7729	7649	7643	COM-MENTION OF	3737	7853		0970	095	COM-A DUE TO S	3830
7729	7654	7653	COM-MENTION OF	3738	7853		0979	095	COM-A DUE TO S	3831
7729	7659	7653	COM-MENTION OF	3739	7857	1	7079	5339	COM-MENTION OF	3832
7729	7664	7663	COM-MENTION OF	3740	7880	4	2500		DELETION	3833
7729	7669	7663	COM-MENTION OF	3741	7880	4	2509	2500	COM-MENTION OF	3834
7729	7674	7673	COM-MENTION OF	3742	7882		5280	0749	COM-MENTION OF	3835
7729	7679	7673	COM-MENTION OF	3743	7890		6400	6402	COM-MENTION OF	3836
7729	7684	7683	COM-MENTION OF	3744	7890		6409	6401	COM-MENTION OF	3837
7729	7689	7683	COM-MENTION OF	3745	7890		6410	6412	COM-MENTION OF	3838
7749	7740-7742		DELETION	3746	7890		6419	6411	COM-MENTION OF	3839
7749	7750	7740	COM-MENTION OF	3747	7890		6430	6432	COM-MENTION OF	3840
7749	7751	7741	COM-MENTION OF	3748	7890		6439	6431	COM-MENTION OF	3841
7749	7752	7742	COM-MENTION OF	3749	7890		6440	6442	COM-MENTION OF	3842
7750	7740		DELETION	3750	7890		6449	6441	COM-MENTION OF	3843
7750	7749	7740	COM-MENTION OF	3751	7890		6450	6452	COM-MENTION OF	3844
7751	7749	7741	COM-MENTION OF	3752	7890		6459	6451	COM-MENTION OF	3845
7752	7749	7742	COM-MENTION OF	3753	792		4000	4003	COM-MENTION OF	3846
7759	7749		DELETION	3754	792		4001	4009	COM-MENTION OF	3847
7759	7750-7752		DELETION	3755	792		4002	4009	COM-MENTION OF	3848
7760	7649	7644	COM-MENTION OF	3756	792		4003		DELETION	3849
7760	7659	7654	COM-MENTION OF	3757	792		401	403	MOD-A DUE TO S	3850
7760	7669	7664	COM-MENTION OF	3758	792		6400	6402	COM-MENTION OF	3851
7760	7679	7674	COM-MENTION OF	3759	792		6409	6401	COM-MENTION OF	3852
7760	7689	7684	COM-MENTION OF	3760	792		6410	6412	COM-MENTION OF	3853
7761	7649	7644	COM-MENTION OF	3761	792		6419	6411	COM-MENTION OF	3854
7761	7659	7654	COM-MENTION OF	3762	792		6430	6432	COM-MENTION OF	3855
7761	7669	7664	COM-MENTION OF	3763	792		6439	6431	COM-MENTION OF	3856
7761	7679	7674	COM-MENTION OF	3764	792		6440	6442	COM-MENTION OF	3857
7761	7689	7684	COM-MENTION OF	3765	792		6449	6441	COM-MENTION OF	3858
7762	7649	7644	COM-MENTION OF	3766	792		6450	6452	COM-MENTION OF	3859
7762	7659	7654	COM-MENTION OF	3767	792		6459	6451	COM-MENTION OF	3860
7762	7669	7664	COM-MENTION OF	3768	794	2	2949	2900	COM-MENTION OF	3861
7762	7679	7674	COM-MENTION OF	3769	794		299	2900	COM-MENTION OF	3862
7762	7689	7684	COM-MENTION OF	3770						
7763	7649	7644	COM-MENTION OF	3771						
7763	7659	7654	COM-MENTION OF	3772						
7763	7669	7664	COM-MENTION OF	3773						
7763	7679	7674	COM-MENTION OF	3774						
7763	7689	7684	COM-MENTION OF	3775						
7764	7649	7644	COM-MENTION OF	3776						
7764	7659	7654	COM-MENTION OF	3777						
7764	7669	7664	COM-MENTION OF	3778						
7764	7679	7674	COM-MENTION OF	3779						
7764	7689	7684	COM-MENTION OF	3780						
7769	7649	7644	COM-MENTION OF	3781						
7769	7659	7654	COM-MENTION OF	3782						
7769	7669	7664	COM-MENTION OF	3783						
7769	7679	7674	COM-MENTION OF	3784						
7769	7689	7684	COM-MENTION OF	3785						
7769	7760-7764		DELETION	3786						
7789	1	0909	0900	COM-A DUE TO S	3787					
7800		2509	2500	COM-MENTION OF	3788					
7804		0949	0940	COM-MENTION OF	3789					
7810		0970	095	COM-A DUE TO S	3790					
7810		0979	095	COM-A DUE TO S	3791					
7811	1	2422	2420	COM-MENTION OF	3792					
7815		0970	0949	COM-A DUE TO S	3793					
7815		0979	0949	COM-A DUE TO S	3794					
7816		0970	0949	COM-A DUE TO S	3795					
7816		0979	0949	COM-A DUE TO S	3796					
7817		401	4360	COM-A DUE TO S	3797					
7817		4400	4379	MOD-A DUE TO S	3798					
7817		4401	4379	MOD-A DUE TO S	3799					
7817		4402	4379	MOD-A DUE TO S	3800					
7817		4403	4379	MOD-A DUE TO S	3801					
7817		4409	4379	MOD-A DUE TO S	3802					
7824		0970	0939	COM-A DUE TO S	3803					
7824		0979	0939	COM-A DUE TO S	3804					
7824	1	390	3919	COM-MENTION OF	3805					
7824	4	390	398	COM-MENTION OF	3806					
7824		4000	4001	COM-A DUE TO S	3807					
7824		4002	4009	COM-A DUE TO S	3808					
7824		4003	4009	COM-A DUE TO S	3809					
7824		401	402	MOD-A DUE TO S	3810					
7824	1	4299	4270	COM-MENTION OF	3811					
7824		5191	4271	COM-MENTION OF	3812					
7824		735	426	COM-MENTION OF	3813					

NOTE: SEE TEXT FOR EXPLANATION OF COLUMN LABELS AND CONTENT









APPENDIX B

RECORD AXIS MULTIPLE CAUSE CODES WHICH MAY HAVE BEEN GENERATED BY AXIS TRANSLATION AND THE TABLE ENTRIES IN WHICH THEY ARE LOCATED

ENTRY CODE	ENTRY NO.	ENTRY CODE	ENTRY NO.	ENTRY CODE	ENTRY NO.	ENTRY CODE	ENTRY NO.	ENTRY CODE	ENTRY NO.	ENTRY CODE	ENTRY NO.	ENTRY CODE	ENTRY NO.	ENTRY CODE	ENTRY NO.
6432	3235	6441	3858	6450	2702	6452	3337	6808	3410	7661	3716				
6432	3236	6442	0061	6450	2757	6452	3338	6808	3411	7661	3717				
6432	3237	6442	0081	6450	2787	6452	3339	6960	3454	7662	3667				
6432	3238	6442	0097	6450	2842	6452	3340	7130	3456	7662	3672				
6432	3239	6442	0113	6450	2863	6452	3341	7341	0686	7662	3726				
6432	3240	6442	0130	6450	2885	6452	3342	7341	2551	7662	3727				
6432	3241	6442	0146	6450	2910	6452	3343	7341	2567	7663	3668				
6432	3242	6442	0163	6450	2939	6452	3344	7341	2581	7663	3673				
6432	3243	6442	0179	6450	2969	6452	3345	7341	2607	7663	3740				
6432	3244	6442	1283	6450	2992	6452	3346	7410	0770	7663	3741				
6432	3245	6442	1878	6450	3013	6452	3347	7410	3581	7664	3674				
6432	3246	6442	1894	6450	3361	6452	3348	7410	3583	7664	3758				
6432	3247	6442	1910	6450	3362	6452	3349	7410	3585	7664	3763				
6432	3248	6442	1926	6450	3365	6452	3350	742	0771	7664	3768				
6432	3249	6442	1942	6450	3366	6452	3351	742	3624	7664	3773				
6432	3250	6442	1958	6450	3367	6452	3352	7450	0920	7664	3778				
6432	3251	6442	1990	6450	3368	6452	3353	7450	0921	7664	3783				
6432	3252	6442	2008	6450	3373	6452	3354	7450	0922	7670	3675				
6432	3253	6442	2026	6450	3374	6452	3355	7450	0923	7670	3679				
6432	3254	6442	2046	6450	3377	6452	3356	7450	3590	7670	3708				
6432	3255	6442	2425	6450	3378	6452	3357	7450	3591	7670	3709				
6432	3840	6442	2448	6450	3379	6452	3358	7450	3592	7671	3676				
6432	3855	6442	2492	6450	3380	6452	3359	7450	3593	7671	3680				
6440	0062	6442	2547	6450	3381	6452	3360	7450	3594	7671	3718				
6440	0082	6442	2563	6450	3382	6452	3844	7450	3595	7671	3719				
6440	0098	6442	2603	6450	3383	6452	3859	7450	3596	7672	3677				
6440	0114	6442	2642	6451	0790	653	0546	7450	3597	7672	3681				
6440	0131	6442	2665	6451	0796	653	0547	7492	3611	7672	3728				
6440	0147	6442	2682	6451	0804	653	0551	7492	3612	7672	3729				
6440	0164	6442	2699	6451	1286	653	0552	7640	3642	7673	3678				
6440	0180	6442	2714	6451	2495	653	0556	7640	3646	7673	3682				
6440	1879	6442	2730	6451	2550	653	0557	7640	3702	7673	3742				
6440	1895	6442	2754	6451	2566	653	0561	7640	3703	7673	3743				
6440	1911	6442	2784	6451	2606	653	0562	7641	3643	7674	3683				
6440	1927	6442	2839	6451	2717	653	0566	7641	3647	7674	3759				
6440	1943	6442	2860	6451	2733	653	0567	7641	3712	7674	3764				
6440	1959	6442	2882	6451	3363	653	0571	7641	3713	7674	3769				
6440	1991	6442	2907	6451	3364	653	0572	7642	3644	7674	3774				
6440	2009	6442	2936	6451	3369	653	3386	7642	3648	7674	3779				
6440	2027	6442	2966	6451	3370	653	3395	7642	3722	7674	3784				
6440	2047	6442	2989	6451	3371	674	0674	7642	3723	7680	3689				
6440	2426	6442	3010	6451	3372	674	1639	7643	3645	7680	3694				
6440	2449	6442	3282	6451	3375	674	1656	7643	3649	7680	3710				
6440	2643	6442	3283	6451	3376	674	1660	7643	3735	7680	3715				
6440	2666	6442	3284	6451	3384	674	1678	7643	3737	7681	3690				
6440	2683	6442	3285	6451	3385	674	1684	7644	3650	7681	3695				
6440	2700	6442	3286	6451	3845	674	1700	7644	3756	7681	3720				
6440	2755	6442	3287	6451	3860	674	1704	7644	3761	7681	3721				
6440	2785	6442	3288	6452	0063	674	1720	7644	3766	7682	3691				
6440	2840	6442	3289	6452	0083	674	1724	7644	3771	7682	3696				
6440	2861	6442	3290	6452	0099	674	1738	7644	3776	7682	3730				
6440	2883	6442	3291	6452	0115	674	1759	7644	3781	7682	3731				
6440	2908	6442	3292	6452	0132	674	1775	7650	3651	7683	3692				
6440	2937	6442	3293	6452	0148	674	1779	7650	3655	7683	3697				
6440	2967	6442	3294	6452	0165	674	1794	7650	3660	7683	3744				
6440	2990	6442	3295	6452	0181	674	1800	7650	3684	7683	3745				
6440	3011	6442	3296	6452	1285	674	1821	7650	3704	7684	3698				
6440	3308	6442	3297	6452	1880	674	3387	7650	3705	7684	3760				
6440	3309	6442	3298	6452	1896	674	3388	7651	3652	7684	3765				
6440	3312	6442	3299	6452	1912	674	3389	7651	3656	7684	3770				
6440	3313	6442	3300	6452	1928	675	0584	7651	3661	7684	3775				
6440	3314	6442	3301	6452	1944	675	3403	7651	3685	7684	3780				
6440	3315	6442	3302	6452	1960	676	0541	7651	3714	7684	3785				
6440	3320	6442	3303	6452	1992	676	0542	7651	3715	7721	0781				
6440	3321	6442	3304	6452	2010	676	0548	7652	3653	7721	3732				
6440	3324	6442	3305	6452	2028	676	0549	7652	3657	7722	0784				
6440	3325	6442	3306	6452	2048	676	0553	7652	3686	7722	0805				
6440	3326	6442	3307	6452	2049	676	0554	7652	3724	7722	0809				
6440	3327	6442	3842	6452	2427	676	0558	7652	3725	7722	3733				
6440	3328	6442	3857	6452	2450	676	0559	7653	3654	7722	3734				
6440	3329	6450	0064	6452	2494	676	0563	7653	3658	7722	3735				
6440	3330	6450	0084	6452	2549	676	0564	7653	3662	7740	3747				
6441	0789	6450	0100	6452	2565	676	0568	7653	3663	7740	3751				
6441	0795	6450	0116	6452	2605	676	0569	7653	3687	7741	3748				
6441	0803	6450	0133	6452	2644	676	0573	7653	3738	7741	3752				
6441	1284	6450	0149	6452	2667	676	0574	7653	3739	7742	3749				
6441	2493	6450	0166	6452	2684	676	0581	7654	3659	7742	3753				
6441	2548	6450	0182	6452	2701	676	0582	7654	3664	7831	2067				
6441	2564	6450	1881	6452	2716	676	3397	7654	3688	7831	3821				
6441	2604	6450	1897	6452	2732	676	3398	7654	3757	794	0532				
6441	2715	6450	1913	6452	2756	676	3399	7654	3762						
6441	2731	6450	1929	6452	2786	676	3400	7654	3767						
6441	3310	6450	1945	6452	2841	676	3401	7654	3772						
6441	3311	6450	1961	6452	2862	676	3402	7654	3777						
6441	3316	6450	1993	6452	2884	6772	2065	7654	3782						
6441	3317	6450	2011	6452	2909	6772	3404	7659	3669						
6441	3318	6450	2029	6452	2938	6779	2520	7659	3693						
6441	3319	6450	2050	6452	2968	6779	3390	7660	3665						
6441	3322	6450	2428	6452	2991	6808	3405	7660	3670						
6441	3323	6450	2451	6452	3012	6808	3406	7660	3706						
6441	3332	6450	2645	6452	3334	6808	3407	7660	3707						
6441	3333	6450	2668	6452	3335	6808	3408	7661	3666						
6441	3843	6450	2685	6452	3336	6808	3409	7661	3671						

USING ENTRY NO., SEE APPENDIX A FOR TABLE ENTRY







APPENDIX C

ENTITY AXIS MULTIPLE CAUSE CODES WHICH MAY BE CHANGED BY AXIS TRANSLATION AND THE TABLE ENTRIES IN WHICH THEY ARE LOCATED

CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.		
4003	1331	401	1282	403	1331	4124	1229	4240	1406	4270	1458	4273	1513	428	1560	4299	1256	4319	1677
4003	1337	401	1283	403	1337	4124	1242	4240	1407	4270	1459	4273	1514	428	1561	4299	1317	4319	1678
4003	1347	401	1284	403	1347	4124	1253	4240	1408	4270	1460	4273	1515	428	1562	4299	1609	4319	1679
4003	1354	401	1285	403	1354	4124	1297	4240	1409	4270	1461	4274	0230	428	1563	4299	1610	4319	1680
4003	1359	401	1286	403	1359	4124	1314	4240	1410	4270	1462	4274	1174	428	1564	4299	1611	4319	3388
4003	1467	401	1331	403	1470	4124	1326	4241	0230	4270	1463	4274	1193	428	1565	4299	1612	4319	3606
4003	1488	401	1337	403	1491	4124	1353	4241	0952	4270	1464	4274	1213	428	1566	4299	1613	4319	3608
4003	1500	401	1347	403	1503	4124	1354	4241	0953	4270	1465	4274	1232	428	1567	4299	1614	4320	1175
4003	1511	401	1354	403	1514	4124	1355	4241	0974	4270	1466	4274	1256	428	1568	4299	1615	4320	1196
4003	1522	401	1359	403	1525	4124	1356	4241	0975	4270	1467	4274	1317	428	1569	4299	1616	4320	1232
4003	1533	401	1410	403	1536	4124	1357	4241	1000	4270	1468	4274	1516	428	1570	4299	1617	4320	1681
4003	1544	401	1426	403	1547	4124	1358	4241	1001	4270	1469	4274	1517	428	1571	4299	1618	4320	1682
4003	1555	401	1447	403	1558	4139	1173	4241	1023	4270	1470	4274	1518	428	1572	4299	1619	4320	1683
4003	1578	401	1468	403	1581	4139	1192	4241	1024	4270	1471	4274	1519	428	1573	4299	1620	4320	1684
4003	1602	401	1489	403	1605	4139	1212	4241	1039	4270	1472	4274	1520	428	1574	4299	1621	4320	3388
4003	1627	401	1501	403	1630	4139	1231	4241	1040	4270	3562	4274	1521	428	1575	4299	1622	4329	1175
4003	1638	401	1512	404	1164	4139	1244	4241	1411	4270	3566	4274	1522	428	1576	4299	1623	4329	1196
4003	1644	401	1523	404	1182	4139	1255	4241	1412	4270	3570	4274	1523	428	1577	4299	1624	4329	1232
4003	1659	401	1534	404	1202	4139	1299	4241	1413	4270	3574	4274	1524	428	1578	4299	1625	4329	1262
4003	1665	401	1545	404	1221	4139	1316	4241	1414	4271	0230	4274	1525	428	1579	4299	1626	4329	1685
4003	1683	401	1556	404	1234	4139	1328	4241	1415	4271	0959	4274	1526	428	1580	4299	1627	4329	1686
4003	1689	401	1579	404	1318	4139	1359	4241	1416	4271	0960	4275	0230	428	1581	4299	1628	4329	1687
4003	1703	401	1603	404	1319	4139	1360	4241	1417	4271	0981	4275	1174	428	1582	4299	1629	4329	1688
4003	1709	401	1628	404	1320	4139	1361	4241	1418	4271	0982	4275	1193	428	1583	4299	1630	4329	1689
4003	1723	401	1645	404	1321	4139	1362	4241	1419	4271	1007	4275	1213	428	1822	4299	1631	4329	1690
4003	1727	401	1666	404	1322	4139	1363	4241	1420	4271	1008	4275	1232	428	1827	4299	1632	4329	1691
4003	1741	401	1690	404	1323	4139	1364	4241	1421	4271	1028	4275	1256	428	1832	4299	1633	4329	1692
4003	1746	401	1710	404	1324	420	0230	4241	1422	4271	1029	4275	1317	428	1837	4299	1634	4329	1693
4003	1758	401	1728	404	1325	420	1365	4241	1423	4271	1046	4275	1527	428	1842	4299	1635	4329	1694
4003	1764	401	1747	404	1326	4210	0230	4241	1424	4271	1174	4275	1528	4290	0230	4299	2198	4329	1695
4003	1778	401	1765	404	1327	4210	1366	4241	1425	4271	1193	4275	1529	4290	0962	4299	3564	4329	1696
4003	1784	401	1785	404	1328	4210	1367	4241	1426	4271	1213	4275	1530	4290	0963	4299	3568	4329	1697
4003	1797	401	1806	404	1331	4219	0230	4249	0230	4271	1232	4275	1531	4290	0987	4299	3572	4329	1698
4003	1805	401	2615	404	1337	4219	0946	4249	0954	4271	1256	4275	1532	4290	0988	4299	3576	4329	1699
4003	3809	401	2723	404	1347	4219	1368	4249	0955	4271	1317	4275	1533	4290	0989	4299	3811	4329	1710
4009	1233	401	3090	404	1354	4219	1369	4249	0956	4271	1473	4275	1534	4290	1013	4300	1175	4329	3388
4009	1234	401	3119	404	1359	4219	1370	4249	0976	4271	1474	4275	1535	4290	1014	4300	1196	4330	1175
4009	1235	401	3143	4109	1166	4219	1371	4249	0977	4271	1475	4275	1536	4290	1030	4300	1232	4330	1196
4009	1236	401	3172	4109	1184	4219	1372	4249	0978	4271	1476	4275	1537	4290	1031	4300	1636	4330	1212
4009	1237	401	3230	4109	1204	4219	1373	4249	1002	4271	1477	4276	0230	4290	1032	4300	1637	4330	1701
4009	1238	401	3259	4109	1223	4219	1374	4249	1003	4271	1478	4276	1174	4290	1048	4300	1638	4330	1702
4009	1239	401	3282	4109	1236	4219	1375	4249	1004	4271	1479	4276	1193	4290	1174	4300	1639	4330	1703
4009	1240	401	3311	4109	1247	4219	1376	4249	1025	4271	1480	4276	1213	4290	1195	4300	3388	4330	1704
4009	1241	401	3334	4109	1292	4219	1377	4249	1041	4271	1481	4276	1232	4290	1213	4309	1175	4330	3388
4009	1242	401	3364	4109	1309	4219	1378	4249	1427	4271	1482	4276	1256	4290	1232	4309	1196	4339	1175
4009	1243	401	3797	4109	1321	4219	1379	4249	1428	4271	1483	4276	1317	4290	1256	4309	1232	4339	1196
4009	1244	402	1162	4109	1329	422	0230	4249	1429	4271	1484	4276	1538	4290	1317	4309	1258	4339	1212
4009	1305	402	1202	4109	1330	422	0947	4249	1430	4271	1485	4276	1539	4290	1584	4309	1640	4339	1244
4009	1319	402	1219	4109	1331	422	0970	4249	1431	4271	1486	4276	1540	4290	1585	4309	1641	4339	1705
4009	1331	402	1287	4109	1332	422	0997	4249	1432	4271	1487	4276	1541	4290	1586	4309	1642	4339	1706
4009	1337	402	1288	4109	1333	422	1159	4249	1433	4271	1488	4276	1542	4290	1587	4309	1643	4339	1707
4009	1347	402	1289	4109	1334	422	1160	4249	1434	4271	1489	4276	1543	4290	1588	4309	1644	4339	1708
4009	1354	402	1290	4109	1335	422	1380	4249	1435	4271	1490	4276	1544	4290	1589	4309	1645	4339	1709
4009	1359	402	1291	4109	1336	422	1381	4249	1436	4271	1491	4276	1545	4290	1590	4309	1646	4339	1710
401	0718	402	1292	4119	1168	422	1382	4249	1437	4271	1492	4276	1546	4290	1591	4309	1647	4339	1711
401	0739	402	1293	4119	1186	422	1383	4249	1438	4271	1493	4276	1547	4290	1592	4309	1648	4339	1712
401	1245	402	1294	4119	1206	422	1384	4249	1439	4271	3563	4276	1548	4290	1593	4309	1649	4339	1713
401	1246	402	1295	4119	1225	422	1385	4249	1440	4271	3567	4279	0230	4290	1594	4309	1650	4339	1714
401	1247	402	1296	4119	1238	422	1386	4249	1441	4271	3571	4279	1174	4290	1595	4309	1651	4339	1715
401	1248	402	1297	4119	1249	422	1387	4249	1442	4271	3575	4279	1193	4290	1596	4309	1652	4339	1716
401	1249	402	1298	4119	1294	423	0230	4249	1443	4272	0230	4279	1213	4290	1597	4309	1653	4339	1717
401	1250	402	1299	4119	1311	423	0948	4249	1444	4272	1174	4279	1232	4290	1598	4309	1654	4339	1718
401	1251	402	1300	4119	1323	423	0949	4249	1445	4272	1193	4279	1256	4290	1599	4309	1655	4339	1719
401	1252	402	1306	4119	1337	423	0971	4249	1446	4272	1213	4279	1317	4290	1600	4309	1656	4339	1720
401	1253	402	1331	4119	1338	423	1388	4249	1447	4272	1232	4279	1549	4290	1601	4309	3388	4339	3388
401	1254	402	1337	4119	1339	423	1389	425	0230	4272	1256	4279	1550	4290	1602	4310	1175	4340	1175
401	1255	402	1347	4119															





APPENDIX C

ENTITY AXIS MULTIPLE CAUSE CODES WHICH MAY BE CHANGED BY AXIS TRANSLATION AND THE TABLE ENTRIES IN WHICH THEY ARE LOCATED

ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	ENTRY NO.	
5321	2285	5511	2333	5602	2331	5670	3058	5699	2473	580	2537	583	2601	5901	2660	5931	2705	595	3300
5321	2286	5511	2334	5602	2334	5670	3074	5699	2474	580	2538	583	2602	5901	2661	5931	2706	595	3324
5321	2287	5511	2335	5602	2337	5670	3105	5699	2475	580	2539	583	2603	5901	2662	5931	2707	595	3353
5321	2288	5511	2335	5602	2341	5670	3123	5699	2476	580	2540	583	2604	5901	2663	5931	2708	595	3377
5321	2289	5511	2363	5602	2344	5670	3158	5699	2477	580	2541	583	2605	5901	2664	5931	2709	595	3402
5321	2290	5511	2372	5602	2350	5670	3176	5699	2478	580	2542	583	2606	5901	2665	5931	2710	595	3427
5321	2316	5511	2380	5602	2370	5670	3202	5699	2479	580	2543	583	2607	5901	2666	5931	2711	597	2760
5321	2472	5511	2388	5602	2371	5670	3219	5699	2480	580	2544	583	2608	5901	2667	5931	2712	597	2761
5329	2061	5511	2396	5602	2372	5670	3245	5699	2481	580	2545	583	3094	5901	2668	5931	2713	597	2762
5329	2291	5511	2481	5602	2373	5670	3263	5699	2482	580	2546	583	3127	5901	3028	5931	2714	598	2763
5329	2292	5512	1968	5602	2374	5670	3297	5699	2483	580	2547	583	3147	5901	3044	5931	2715	598	2764
5329	2293	5512	2336	5602	2375	5670	3315	5699	2484	580	2548	583	3180	5901	3060	5931	2716	598	2765
5329	2294	5512	2337	5602	2376	5670	3350	5699	2485	580	2549	583	3234	5901	3076	5931	2717	598	2766
5329	2295	5512	2338	5602	2377	5670	3368	570	2486	580	2550	583	3267	5901	3107	5931	3029	5990	2767
5329	2296	5512	2339	5603	2328	5679	3221	570	2487	580	2551	583	3286	5901	3129	5931	3045	5990	2768
5329	2299	5512	2356	5603	2331	5679	3234	570	2488	580	3092	583	3319	5901	3160	5931	3061	5990	2769
5329	2317	5512	2364	5603	2334	5679	2429	570	2489	580	3125	583	3339	5901	3182	5931	3095	5990	2770
5329	2473	5512	2373	5603	2337	5679	2430	570	2490	580	3145	583	3372	5901	3204	5931	3130	5990	2771
5329	2474	5512	2381	5603	2341	5679	2431	570	2491	580	3178	583	3814	5901	3221	5931	3148	5990	2772
5329	3825	5512	2389	5603	2344	5679	2432	570	2492	580	3232	584	1176	5901	3247	5931	3183	5990	2773
5330	2292	5512	2397	5603	2350	5679	2433	570	2493	580	3265	584	1197	5901	3269	5931	3235	5990	2774
5330	2297	5512	2482	5603	2378	5679	2434	570	2494	580	3284	584	1214	5901	3299	5931	3270	5990	2775
5330	2298	5512	3627	5603	2379	5679	2435	570	2495	580	3317	584	1275	5901	3321	5931	3287	5990	2776
5330	2299	5513	1969	5603	2380	5679	2436	570	3091	580	3337	584	1300	5901	3352	5931	3322	5990	2777
5330	3826	5513	2340	5603	2381	5679	2437	570	3124	580	3370	584	2609	5901	3374	5931	3340	5990	2778
5339	2300	5513	2341	5603	2382	5679	2438	570	3144	581	1176	584	2610	5902	2669	5931	3375	5990	2779
5339	2475	5513	2342	5603	2383	5679	2439	570	3177	581	1197	584	2611	5902	2670	5932	1177	5990	2780
5339	3827	5513	2357	5603	2384	5679	2440	570	3231	581	1214	584	2612	5902	2671	5932	1198	5990	2781
5340	2301	5513	2365	5603	2385	5679	2441	570	3264	581	2552	584	2613	5902	2672	5932	1215	5990	2782
5340	2306	5513	2374	5604	2328	5679	2442	570	3283	581	2553	584	2614	5902	2673	5932	1276	5990	2783
5341	2062	5513	2382	5604	2331	5679	2443	570	3316	581	2554	584	2615	5902	2674	5932	2718	5990	2784
5341	2063	5513	2390	5604	2334	5679	2444	570	3336	581	2555	584	2616	5902	2675	5932	2719	5990	2785
5341	2301	5513	2398	5604	2337	5679	2445	570	3369	581	2556	584	2617	5902	2676	5932	2720	5990	2786
5341	2302	5513	2483	5604	2341	5679	2446	5718	0623	581	2557	584	2618	5902	2677	5932	2721	5990	2787
5341	2303	5518	1970	5604	2344	5679	2447	5718	0630	581	2558	584	2619	5902	2678	5932	2722	5990	3031
5341	2304	5518	2343	5604	2350	5679	2448	5718	0641	581	2559	584	2620	5902	2679	5932	2723	5990	3047
5341	2305	5518	2344	5604	2386	5679	2449	5718	0648	581	2560	584	2621	5902	2680	5932	2724	5990	3063
5341	2306	5518	2345	5604	2387	5679	2450	5718	2496	581	2561	584	2622	5902	2681	5932	2725	5990	3078
5341	2307	5518	2358	5604	2388	5679	2451	5718	2497	581	2562	584	2623	5902	2682	5932	2726	5990	3109
5341	2476	5518	2366	5604	2389	5679	3026	5718	2498	581	2563	584	2651	5902	2683	5932	2727	5990	3133
5349	2064	5518	2375	5604	2390	5679	3042	5719	0624	581	2564	5900	2624	5902	2684	5932	2728	5990	3162
5349	2308	5518	2383	5604	2391	5679	3058	5719	0631	581	2565	5900	2625	5902	2685	5932	2729	5990	3166
5349	2309	5518	2391	5604	2392	5679	3074	5719	0642	581	2566	5900	2626	5902	2686	5932	2730	5990	3206
5349	2310	5518	2399	5604	2393	5679	3105	5719	0649	581	2567	5900	2627	5902	3044	5932	2731	5990	3223
5349	2311	5518	2484	5609	2328	5679	3123	5719	2499	581	3093	5900	2628	5902	3060	5932	2732	5990	3249
5349	2477	5519	1971	5609	2331	5679	3158	5719	2500	581	3126	5900	2629	5902	3076	5932	2733	5990	3273
5349	2478	5519	2346	5609	2334	5679	3176	5719	2501	581	3146	5900	2630	5902	3107	5932	2734	5990	3311
5349	3828	5519	2347	5609	2337	5679	3202	5719	2502	581	3179	5900	2631	5902	3129	5932	3096	5990	3315
535	2312	5519	2348	5609	2341	5679	3219	5719	2503	581	3233	5900	2632	5902	3160	5932	3131	5990	3314
5379	2280	5519	2349	5609	2344	5679	3245	5719	2504	581	3266	5900	2633	5902	3182	5932	3149	5990	3378
5379	2289	5519	2350	5609	2350	5679	3263	5719	2505	581	3285	5900	2634	5902	3204	5932	3184	5991	2718
5379	2293	5519	2351	5609	2394	5679	3297	572	0009	581	3318	5900	2635	5902	3221	5932	3236	5991	2719
5379	2313	5519	2352	5609	2395	5679	3315	572	2506	581	3338	5900	2636	5902	3247	5932	3271	5991	2700
5379	2314	5519	2359	5609	2396	5679	3350	5730	2507	581	3371	5900	2637	5902	3269	5932	3288	5992	2751
5379	2315	5519	2367	5609	2397	5679	3368	5730	2508	582	1176	5900	2638	5902	3299	5932	3323	5992	2752
5379	2316	5519	2376	5609	2398	568	2402	5730	2509	582	1197	5900	2639	5902	3321	5932	3341	5999	2713
5379	2317	5519	2384	5609	2399	568	2452	5730	2510	582	1214	5900	2640	5902	3352	5932	3376	5999	2704
5409	2318	5519	2392	5609	2400	568	2453	5730	2511	582	2568	5900	2641	5902	3374	5932	3815	5999	2715
5409	2319	5519	2400	5609	2401	568	2454	5730	2512	582	2569	5900	2642	5909	2686	5935	2735	5999	2706
5409	2320	5519	2485	5609	2402	5690	2455	5730	2513	582	2570	5900	2643	5909	2687	5935	2736	5999	2717
5409	2321	5519	3628	5609	2403	5690	2456	5730	2514	582	2571	5900	2644	5909	2688	595	2737	601	2708
5409	2412	5600	2328	5609	2454	5691	2457	5739	2515	582	2572	5900	2645	5909	2689	595	2738	601	2709
5409	2434	5600	2331	5609	2521	5692	2458	5739	2516	582	2573	5900	3027	5909	2690	595	2739	601	2810
541	2322	5600	2334	561	2123	5692	2459	5739	2517	582	2574	5900	3043	5909	2691	595	2740	602	2811
541	2323	5600	2337	561	2404	5692	2460	5739	2518	582	2575	5900	3059	5909	2692	595	2741	602	2812
541	2324	5600	2341	561	2405	5692	2461	5739	2519	582	2576	5900	3075	5909	2693	595	2742	604	2813
541	2412	5600																	

APPENDIX C

ENTITY AXIS MULTIPLE CAUSE CODES WHICH MAY BE CHANGED BY AXIS TRANSLATION AND THE TABLE ENTRIES IN WHICH THEY ARE LOCATED

CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.
612	2831	614	3163	6209	3328	6294	2996	6315	0070	6316	3061	6401	0089	6409	3116	6411	3159	6421	1890
612	2832	614	3187	6209	3357	6294	2997	6315	0086	6316	3062	6401	0105	6409	3117	6411	3160	6421	1906
612	2833	614	3207	6209	3381	6294	2998	6315	0102	6316	3063	6401	0122	6409	3118	6411	3161	6421	1922
612	2834	614	3224	6210	2940	6294	2999	6315	0119	6316	3064	6401	0138	6409	3119	6411	3162	6421	1938
612	2835	614	3250	6211	2941	6294	3000	6315	0135	6316	3065	6401	0155	6409	3120	6411	3163	6421	1954
612	2836	614	3274	6212	2942	6294	3001	6315	0152	6316	3066	6401	0171	6409	3121	6411	3164	6421	1986
612	2837	614	3302	6213	2943	6294	3002	6315	0168	6316	3067	6401	1870	6409	3122	6411	3165	6421	2004
612	2838	614	3326	6214	2944	6294	3003	6315	1867	6316	3068	6401	1886	6409	3123	6411	3166	6421	2022
612	2839	614	3355	6215	2945	6294	3004	6315	1883	6319	0052	6401	1902	6409	3124	6411	3167	6421	2040
612	2840	614	3379	6216	2946	6294	3005	6315	1899	6319	0072	6401	1918	6409	3125	6411	3168	6421	2041
612	2841	6150	2886	6216	2947	6294	3006	6315	1915	6319	0088	6401	1934	6409	3126	6419	0056	6421	2421
612	2842	6151	2887	6219	2948	6294	3007	6315	1931	6319	0104	6401	1950	6409	3127	6419	0076	6421	2444
612	3032	6152	2888	6219	2949	6294	3008	6315	1947	6319	0121	6401	1982	6409	3128	6419	0092	6421	2638
612	3048	6159	2889	6219	2950	6294	3009	6315	1979	6319	0137	6401	2000	6409	3129	6419	0108	6421	2661
612	3064	6159	2890	6220	2951	6294	3010	6315	1997	6319	0154	6401	2018	6409	3130	6419	0125	6421	2678
612	3079	6159	2891	6220	2952	6294	3011	6315	2015	6319	0170	6401	2036	6409	3131	6419	0141	6421	2695
612	3110	6159	2892	6220	2953	6294	3012	6315	2033	6319	1869	6401	2417	6409	3132	6419	0158	6421	2750
612	3134	6159	2893	6220	2954	6294	3013	6315	2414	6319	1885	6401	2440	6409	3133	6419	0174	6421	2780
612	3163	6160	2894	6220	2955	6294	3036	6315	2437	6319	1901	6401	2634	6409	3134	6419	0787	6421	2835
612	3187	6160	2895	6220	2956	6294	3052	6315	2631	6319	1917	6401	2657	6409	3135	6419	0793	6421	2856
612	3207	6160	2896	6220	2957	6294	3068	6315	2654	6319	1933	6401	2674	6409	3136	6419	0801	6421	2878
612	3224	6160	2897	6220	2958	6294	3083	6315	2671	6319	1949	6401	2691	6409	3137	6419	1280	6421	2903
612	3250	6160	2898	6220	2959	6294	3114	6315	2688	6319	1981	6401	2746	6409	3138	6419	1873	6421	2932
612	3274	6160	2899	6220	2960	6294	3138	6315	2706	6319	1999	6401	2776	6409	3139	6419	1889	6421	2962
612	3302	6160	2900	6220	2961	6294	3167	6315	2743	6319	2017	6401	2831	6409	3140	6419	1905	6421	2985
612	3326	6160	2901	6220	2962	6294	3191	6315	2773	6319	2035	6401	2852	6409	3141	6419	1921	6421	3006
612	3355	6160	2902	6220	2963	6294	3211	6315	2828	6319	2416	6401	2874	6409	3837	6419	1937	6421	3195
612	3379	6160	2903	6220	2964	6294	3228	6315	2849	6319	2439	6401	2899	6409	3852	6419	1953	6421	3196
613	2843	6160	2904	6220	2965	6294	3254	6315	2871	6319	2633	6401	2928	6410	0786	6419	1985	6421	3197
613	2844	6160	2905	6220	2966	6294	3278	6315	2896	6319	2656	6401	2958	6410	0792	6419	2003	6421	3198
613	2845	6160	2906	6220	2967	6294	3306	6315	2925	6319	2673	6401	2981	6410	0800	6419	2021	6421	3199
613	2846	6160	2907	6220	2968	6294	3330	6315	2955	6319	2690	6401	3002	6410	1279	6419	2039	6421	3200
613	2847	6160	2908	6220	2969	6294	3359	6315	2978	6319	2745	6401	3097	6410	2488	6419	2420	6421	3201
613	2848	6160	2909	6220	3035	6294	3383	6315	2999	6319	2775	6401	3100	6410	2543	6419	2443	6421	3202
613	2849	6160	2910	6220	3051	6297	3014	6315	3037	6319	2830	6401	3101	6410	2559	6419	2489	6421	3203
613	2850	6160	3033	6220	3067	6297	3015	6315	3038	6319	2851	6401	3102	6410	2599	6419	2544	6421	3204
613	2851	6160	3049	6220	3082	6299	3016	6315	3039	6319	2873	6401	3103	6410	2710	6419	2560	6421	3205
613	2852	6160	3065	6220	3113	6299	3017	6315	3040	6319	2898	6401	3104	6410	2726	6419	2600	6421	3206
613	2853	6160	3080	6220	3137	6299	3018	6315	3041	6319	2927	6401	3105	6410	3142	6419	2637	6421	3207
613	2854	6160	3111	6220	3166	6299	3019	6315	3042	6319	2957	6401	3106	6410	3143	6419	2660	6421	3208
613	2855	6160	3135	6220	3190	6313	3020	6315	3043	6319	2980	6401	3107	6410	3144	6419	2677	6421	3209
613	2856	6160	3164	6220	3210	6314	0049	6315	3044	6319	3001	6401	3108	6410	3145	6419	2694	6421	3210
613	2857	6160	3188	6220	3227	6314	0069	6315	3045	6319	3069	6401	3109	6410	3146	6419	2711	6421	3211
613	2858	6160	3208	6220	3253	6314	0085	6315	3046	6319	3070	6401	3110	6410	3147	6419	2727	6421	3212
613	2859	6160	3225	6220	3277	6314	0101	6315	3047	6319	3071	6401	3111	6410	3148	6419	2749	6429	0058
613	2860	6160	3251	6220	3305	6314	0118	6315	3048	6319	3072	6401	3112	6410	3149	6419	2779	6429	0078
613	2861	6160	3275	6220	3329	6314	0134	6315	3049	6319	3073	6401	3113	6410	3150	6419	2834	6429	0094
613	2862	6160	3303	6220	3358	6314	0151	6315	3050	6319	3074	6401	3114	6410	3151	6419	2855	6429	0110
613	2863	6160	3327	6220	3382	6314	0167	6315	3051	6319	3075	6401	3115	6410	3152	6419	2877	6429	0127
613	3032	6160	3356	6221	2970	6314	1866	6315	3052	6319	3076	6409	0054	6410	3168	6419	2902	6429	0143
613	3048	6160	3380	6221	2971	6314	1882	6316	0051	6319	3077	6409	0074	6410	3838	6419	2931	6429	0160
613	3064	6161	2911	6221	2972	6314	1898	6316	0071	6319	3078	6409	0090	6410	3853	6419	2961	6429	0176
613	3079	6162	2912	6221	2973	6314	1914	6316	0087	6319	3079	6409	0106	6411	0055	6419	2984	6429	1875
613	3110	6169	2913	6221	2974	6314	1930	6316	0103	6319	3080	6409	0123	6411	0075	6419	3005	6429	1891
613	3134	6200	2914	6221	2975	6314	1946	6316	0120	6319	3081	6409	0139	6411	0091	6419	3169	6429	1907
613	3163	6200	2915	6221	2976	6314	1978	6316	0136	6319	3082	6409	0156	6411	0107	6419	3170	6429	1923
613	3187	6200	2916	6221	2977	6314	1996	6316	0153	6319	3083	6409	0172	6411	0124	6419	3171	6429	1939
613	3207	6200	2917	6221	2978	6314	2014	6316	0169	6329	3084	6409	0785	6411	0140	6419	3172	6429	1955
613	3224	6200	2918	6221	2979	6314	2032	6316	1868	6349	0540	6409	0791	6411	0157	6419	3173	6429	1987
613	3250	6209	2919	6221	2980	6314	2413	6316	1884	6349	0545	6409	0799	6411	0173	6419	3174	6429	2005
613	3274	6209	2920	6221	2981	6314	2436	6316	1900	6349	0550	6409	1278	6411	1872	6419	3175	6429	2023
613	3302	6209	2921	6221	2982	6314	2630	6316	1916	6349	0555	6409	1871	6411	1888	6419	3176	6429	2042
613	3326	6209	2922	6221	2983	6314	2653	6316	1932	6349	0560	6409	1887	6411	1904	6419	3177	6429	2043
613	3355	6209	2923	6221	2984	6314	2670	6316	1948	6349	0565	6409	1903	6411	1920	6419	3178	6429	2422
613	3379	6209	2924	6221	2985	6314	2687	6316	1980	6349	0570	6409	1919	6411	1936	6419	3179	6429	2445
614	2864	6209	2925	6221	2986	6314	2705	6316	1998	6349	0580	6409	1935</						

APPENDIX C

ENTITY AXIS MULTIPLE CAUSE CODES WHICH MAY BE CHANGED BY AXIS TRANSLATION AND THE TABLE ENTRIES IN WHICH THEY ARE LOCATED

CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.		
6429	3227	6439	2007	6441	2642	6449	3326	6459	0804	6589	3394	6820	3414	7292	3492	7352	3571	7568	2339
6429	3228	6439	2025	6441	2665	6449	3327	6459	1286	6619	0547	6821	3415	7293	3493	7352	3572	7568	2352
6429	3229	6439	2045	6441	2682	6449	3328	6459	1881	6619	0552	6822	3416	7293	3494	7352	3573	7568	3627
6430	1281	6439	2424	6441	2699	6449	3329	6459	1897	6619	0557	6823	3417	7294	3495	7352	3813	7568	3628
6430	2490	6439	2447	6441	2754	6449	3330	6459	1913	6619	0562	6824	3418	7294	3496	7359	1472	7569	3629
6430	2545	6439	2491	6441	2784	6449	3331	6459	1929	6619	0567	6825	3419	7295	3497	7359	1493	7572	3630
6430	2561	6439	2546	6441	2839	6449	3332	6459	1945	6619	0572	6829	3420	7295	3498	7359	1608	7579	3631
6430	2601	6439	2562	6441	2860	6449	3333	6459	1961	6619	3395	683	3421	7296	3499	7359	1633	7589	3632
6430	2712	6439	2602	6441	2882	6449	3843	6459	1993	6619	3396	6869	3422	7296	3500	7359	3574	7598	3633
6430	2728	6439	2641	6441	2907	6449	3858	6459	2011	6770	0541	6869	3423	7297	3501	7359	3575	7599	3634
6430	3230	6439	2664	6441	2936	6450	1285	6459	2029	6770	0548	694	3424	7297	3502	7359	3576	7599	3635
6430	3231	6439	2681	6441	2966	6450	2048	6459	2050	6770	0553	6954	0686	7298	3503	7359	3577	7599	3636
6430	3232	6439	2698	6441	2989	6450	2494	6459	2428	6770	0558	6954	2551	7298	3504	7359	3813	7599	3637
6430	3233	6439	2713	6441	3010	6450	2549	6459	2451	6770	0563	6954	2567	7299	3505	7389	3578	7599	3638
6430	3234	6439	2729	6441	3289	6450	2565	6459	2495	6770	0568	6954	2581	7299	3506	7419	0770	7599	3639
6430	3235	6439	2753	6441	3292	6450	2605	6459	2550	6770	0573	6954	2607	7299	3507	7419	3579	7599	3640
5430	3236	6439	2783	6441	3293	6450	2716	6459	2566	6770	0581	6961	3454	7310	3508	7419	3580	7599	3641
6430	3237	6439	2838	6441	3294	6450	2732	6459	2606	6770	3397	7011	3425	7310	3509	7419	3581	7644	3642
6430	3238	6439	2859	6441	3295	6450	3334	6459	2645	6770	3398	7012	3426	7310	3510	7419	3582	7644	3643
6430	3239	6439	2881	6441	3296	6450	3335	6459	2668	6770	3399	7012	3427	7310	3511	7419	3583	7644	3644
6430	3255	6439	2906	6441	3297	6450	3336	6459	2685	6779	0542	702	3428	7310	3512	7419	3585	7644	3645
6430	3840	6439	2935	6441	3298	6450	3337	6459	2702	6779	0549	702	3429	7311	3513	742	3583	7644	3702
6430	3855	6439	2965	6441	3299	6450	3338	6459	2717	6779	0554	7039	0583	7311	3514	742	3584	7644	3712
6431	0059	6439	2988	6441	3300	6450	3339	6459	2733	6779	0559	7039	3430	7311	3515	742	3585	7644	3722
6431	0079	6439	3009	6441	3301	6450	3340	6459	2757	6779	0564	704	3431	7311	3516	742	3660	7644	3736
6431	0095	6439	3256	6441	3302	6450	3341	6459	2787	6779	0569	704	3432	7311	3517	742	3661	7649	3646
6431	0111	6439	3257	6441	3303	6450	3342	6459	2842	6779	0574	7070	3433	7312	3518	742	3662	7649	3647
6431	0128	6439	3258	6441	3304	6450	3343	6459	2863	6779	0582	7071	2051	7312	3519	742	3663	7649	3648
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6431	1876	6439	3262	6449	0062	6450	3859	6459	2969	6779	3401	7079	0823	7313	3523	742	3685	7649	3713
6431	1892	6439	3263	6449	0082	6451	0063	6459	2992	6779	3402	7079	2051	7313	3524	742	3686	7649	3723
6431	1908	6439	3264	6449	0098	6451	0083	6459	3013	6779	3403	7079	2053	7313	3525	742	3687	7649	3737
6431	1924	6439	3265	6449	0114	6451	0099	6459	3361	6779	3404	7079	2066	7313	3526	742	3688	7649	3756
6431	1940	6439	3266	6449	0131	6451	0115	6459	3362	6800	3405	7079	2066	7313	3527	742	3693	7649	3761
6431	1956	6439	3267	6449	0147	6451	0132	6459	3363	6800	3405	7079	3437	7314	3528	7430	3586	7649	3766
6431	1988	6439	3268	6449	0164	6451	0148	6459	3364	6800	3406	7079	3438	7314	3529	7430	3587	7649	3771
6431	2006	6439	3269	6449	0180	6451	0165	6459	3365	6800	3407	7079	3439	7314	3530	7439	3588	7649	3776
6431	2024	6439	3270	6449	0789	6451	0181	6459	3366	6800	3408	7079	3440	7314	3531	7449	3589	7649	3781
6431	2044	6439	3271	6449	0795	6451	1880	6459	3367	6800	3409	7079	3441	7314	3532	7452	0920	7654	3651
6431	2423	6439	3272	6449	0803	6451	1896	6459	3368	6800	3410	7079	3442	7315	3533	7452	0921	7654	3652
6431	2446	6439	3273	6449	1284	6451	1912	6459	3369	6800	3411	7079	3443	7315	3534	7452	0922	7654	3653
6431	2640	6439	3274	6449	1879	6451	1928	6459	3370	6801	3405	7079	3444	7315	3535	7452	0923	7654	3654
6431	2663	6439	3275	6449	1895	6451	1944	6459	3371	6801	3406	7079	3829	7315	3536	7452	3590	7654	3704
6431	2680	6439	3276	6449	1911	6451	1960	6459	3372	6801	3406	7079	3832	7315	3537	7452	3591	7654	3714
6431	2697	6439	3277	6449	1927	6451	1992	6459	3373	6801	3407	7099	3445	7316	3538	7452	3592	7654	3724
6431	2752	6439	3278	6449	1943	6451	2010	6459	3374	6801	3408	7099	3446	7316	3539	7452	3593	7654	3738
6431	2782	6439	3279	6449	1959	6451	2028	6459	3375	6801	3409	7099	3447	7316	3540	7453	0920	7659	3655
6431	2837	6439	3280	6449	1991	6451	2049	6459	3376	6801	3410	7131	3448	7316	3541	7453	0921	7659	3656
6431	2858	6439	3281	6449	2009	6451	2427	6459	3377	6801	3411	7131	3449	7316	3542	7453	0922	7659	3657
6431	2880	6439	3841	6449	2027	6451	2450	6459	3378	6802	3405	7131	3450	7317	3543	7453	0923	7659	3658
6431	2905	6439	3856	6449	2047	6451	2644	6459	3379	6802	3406	715	3451	7317	3544	7453	3594	7659	3659
6431	2934	6440	1283	6449	2426	6451	2667	6459	3380	6802	3407	715	3452	7317	3545	7453	3595	7659	3705
6431	2964	6440	2492	6449	2449	6451	2684	6459	3381	6802	3407	715	3453	7317	3546	7453	3596	7659	3715
6431	2987	6440	2547	6449	2493	6451	2701	6459	3382	6802	3408	715	3454	7317	3547	7453	3597	7659	3725
6431	3008	6440	2563	6449	2548	6451	2756	6459	3383	6802	3409	715	3455	7318	3548	7453	3598	7659	3739
6431	3237	6440	2603	6449	2564	6451	2786	6459	3384	6802	3410	715	3456	7318	3549	7459	3599	7659	3757
6431	3240	6440	2714	6449	2604	6451	2841	6459	3385	6802	3411	7179	3457	7318	3550	7463	3600	7659	3762
6431	3241	6440	2730	6449	2643	6451	2862	6459	3385	6803	3405	718	3458	7318	3551	7469	3601	7659	3767
6431	3242	6440	3282	6449	2666	6451	2884	6459	3386	6803	3406	718	3459	7318	3552	7469	3602	7659	3772
6431	3243	6440	3283	6449	2683	6451	2909	650	0546	6803	3407	7200	3460	7319	3553	7472	3603	7659	3777
6431	3244	6440	3284	6449	2700	6451	2938	650	0551	6803	3408	7200	3461	7319	3554	7473	3604	7659	3782
6431	3245	6440	3285	6449	2715	6451	2968	650	0556	6803	3408	7200	3462	7319	3555	7476	1679	7660	3660
6431	3246	6440	3286	6449	2731	6451	2991	650	0561	6803	3409	7201	3463	7319	3556	7476	3605	7661	3661
6431	3247	6440	3287	6449	2755	6451	3012	650	0566	6803	3410	7201							

## APPENDIX C

ENTITY AXIS MULTIPLE CAUSE CODES WHICH MAY BE CHANGED BY AXIS TRANSLATION AND  
THE TABLE ENTRIES IN WHICH THEY ARE LOCATED

CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.	CODE	ENTRY NO.
7674	3676	7721	3720	7762	3768	7845	3825										
7674	3677	7721	3721	7762	3769	7845	3826										
7674	3678	7722	3644	7762	3770	7845	3827										
7674	3708	7722	3648	7763	3650	7845	3828										
7674	3718	7722	3653	7763	3659	7845	3829										
7674	3728	7722	3657	7763	3674	7853	3830										
7674	3742	7722	3667	7763	3683	7853	3831										
7679	3679	7722	3672	7763	3698	7857	3444										
7679	3680	7722	3677	7763	3771	7857	3832										
7679	3681	7722	3681	7763	3772	7880	0507										
7679	3682	7722	3691	7763	3773	7880	3833										
7679	3683	7722	3696	7763	3774	7880	3834										
7679	3709	7722	3722	7763	3775	7882	2257										
7679	3719	7722	3723	7764	3650	7882	3835										
7679	3729	7722	3724	7764	3659	7890	3098										
7679	3743	7722	3725	7764	3674	7890	3140										
7679	3759	7722	3726	7764	3683	7890	3151										
7679	3764	7722	3727	7764	3698	7890	3193										
7679	3769	7722	3728	7764	3776	7890	3238										
7679	3774	7722	3729	7764	3777	7890	3280										
7679	3779	7722	3730	7764	3778	7890	3290										
7679	3784	7722	3731	7764	3779	7890	3332										
7680	3684	7729	0781	7764	3780	7890	3343										
7681	3685	7729	0784	7769	3650	7890	3384										
7682	3686	7729	0805	7769	3659	7890	3836										
7683	3687	7729	0809	7769	3674	7890	3837										
7684	3688	7729	3645	7769	3683	7890	3838										
7684	3689	7729	3649	7769	3698	7890	3839										
7684	3690	7729	3654	7769	3781	7890	3840										
7684	3691	7729	3658	7769	3782	7890	3841										
7684	3692	7729	3668	7769	3783	7890	3842										
7684	3710	7729	3673	7769	3784	7890	3843										
7684	3720	7729	3678	7769	3785	7890	3844										
7684	3730	7729	3682	7769	3786	7890	3845										
7684	3744	7729	3692	7789	3787	792	1178										
7689	3693	7729	3697	7800	0506	792	1199										
7689	3694	7729	3732	7800	3788	792	1216										
7689	3695	7729	3733	7804	0254	792	1395										
7689	3696	7729	3734	7804	3789	792	3099										
7689	3697	7729	3735	7810	3790	792	3141										
7689	3698	7729	3736	7810	3791	792	3152										
7689	3711	7729	3737	7811	0497	792	3194										
7689	3721	7729	3738	7811	3792	792	3239										
7689	3731	7729	3739	7815	3793	792	3281										
7689	3745	7729	3740	7815	3794	792	3291										
7689	3760	7729	3741	7816	3795	792	3333										
7689	3765	7729	3742	7816	3796	792	3344										
7689	3770	7729	3743	7817	3797	792	3385										
7689	3775	7729	3744	7817	3798	792	3846										
7689	3780	7729	3745	7817	3799	792	3847										
7689	3785	7749	3746	7817	3800	792	3848										
7711	3699	7749	3747	7817	3801	792	3849										
7720	0703	7749	3748	7817	3802	792	3850										
7720	3642	7749	3749	7824	0964	792	3851										
7720	3646	7749	3751	7824	0965	792	3852										
7720	3651	7749	3752	7824	1634	792	3853										
7720	3655	7749	3753	7824	2201	792	3854										
7720	3665	7750	3747	7824	3565	792	3855										
7720	3670	7750	3750	7824	3569	792	3856										
7720	3675	7750	3751	7824	3573	792	3857										
7720	3679	7751	3748	7824	3577	792	3858										
7720	3689	7751	3752	7824	3803	792	3859										
7720	3694	7752	3749	7824	3804	792	3860										
7720	3700	7752	3753	7824	3805	794	0532										
7720	3701	7759	3754	7824	3806	794	0604										
7720	3702	7759	3755	7824	3807	794	0614										
7720	3703	7760	3650	7824	3808	794	1635										
7720	3704	7760	3659	7824	3809	794	3456										
7720	3705	7760	3674	7824	3810	794	3861										
7720	3706	7760	3683	7824	3811	794	3862										
7720	3707	7760	3698	7824	3812												
7720	3708	7760	3756	7824	3813												
7720	3709	7760	3757	7826	2608												
7720	3710	7760	3758	7826	2734												
7720	3711	7760	3759	7826	3814												
7721	3643	7760	3760	7826	3815												
7721	3647	7761	3650	7828	3816												
7721	3652	7761	3659	7828	3817												
7721	3656	7761	3674	7828	3818												
7721	3666	7761	3683	7831	2124												
7721	3671	7761	3698	7831	3819												
7721	3676	7761	3761	7831	3820												
7721	3680	7761	3762	7833	2067												
7721	3690	7761	3763	7833	2125												
7721	3695	7761	3764	7833	3821												
7721	3712	7761	3765	7833	3822												
7721	3713	7762	3650	7845	2278												
7721	3714	7762	3659	7845	2282												
7721	3715	7762	3674	7845	2296												
7721	3716	7762	3683	7845	2311												
7721	3717	7762	3698	7845	3443												
7721	3718	7762	3766	7845	3823												
7721	3719	7762	3767	7845	3824												

USING THE ENTRY NO., SEE APPENDIX A FOR TABLE ENTRY

APPENDIX D

CONVERSION OF NATURE OF INJURY CODES (N-CODES) TO EXTERNAL CAUSE OF INJURY CODES (E-CODES)  
ICDA-8 DATA (1968 - 1978)

N-CODE	E-CODE	N-CODE	E-CODE	N-CODE	E-CODE	N-CODE	E-CODE
N800	E887	N904	E929	N9655	E8535	N9882	E868
N801	E887	N905	E929	N9659	E8539	N9889	E868
N802	E887	N906	E929	N9660	E8560	N9890	E869
N803	E887	N907	E929	N9661	E8560	N9891	E865
N804	E887	N910	E929	N9669	E8560	N9892	E865
N805	E887	N911	E929	N9670	E8540	N9893	E865
N806	E887	N912	E929	N9671	E8541	N9894	E905
N807	E887	N913	E929	N9672	E8542	N9895	E861
N808	E887	N914	E929	N9673	E8543	N9899	E869
N809	E887	N915	E929	N9679	E8549	N9900	E9310
N810	E887	N916	E929	N9680	E8561	N9901	E9310
N811	E887	N917	E929	N9681	E8562	N9902	E9310
N812	E887	N918	E929	N9689	E9301	N9903	E9310
N813	E887	N920	E929	N969	E9301	N9904	E9310
N814	E887	N921	E929	N9700	E8550	N9905	E9310
N815	E887	N922	E929	N9701	E8551	N9906	E9310
N816	E887	N923	E929	N9709	E8552	N9909	E9310
N817	E887	N924	E929	N971	E8569	N9910	E901
N818	E887	N925	E929	N9720	E8553	N9911	E901
N819	E887	N926	E929	N9721	E8554	N9912	E901
N820	E887	N927	E929	N9722	E8555	N9913	E901
N821	E887	N928	E929	N9723	E8556	N9914	E901
N822	E887	N929	E929	N9729	E8559	N9919	E901
N823	E887	N930	E914	N9730	E8570	N9920	E900
N824	E887	N931	E915	N9731	E8571	N9921	E900
N825	E887	N932	E912	N9732	E8572	N9922	E900
N826	E887	N933	E912	N9733	E8573	N9923	E900
N827	E887	N934	E912	N9734	E8574	N9924	E900
N828	E887	N935	E915	N9735	E8575	N9925	E900
N829	E887	N936	E915	N9736	E8576	N9926	E900
N830	E929	N937	E915	N9739	E8579	N9927	E900
N831	E929	N938	E915	N9740	E8580	N9929	E900
N832	E929	N939	E915	N9741	E8581	N9930	E902
N833	E929	N940	E899	N9742	E8582	N9931	E902
N834	E929	N941	E899	N9743	E8583	N9932	E902
N835	E929	N942	E899	N9744	E8584	N9933	E902
N836	E929	N943	E899	N9745	E8585	N9940	E907
N837	E929	N944	E899	N9746	E8586	N9941	E9109
N838	E929	N945	E899	N9749	E8589	N9942	E904
N839	E929	N946	E899	N9750	E8591	N9943	E904
N840	E929	N947	E899	N9751	E8592	N9944	E904
N841	E929	N948	E899	N9752	E8593	N9945	E919
N842	E929	N949	E899	N9753	E8593	N9946	E903
N843	E929	N950	E929	N9759	E8593	N9947	E9139
N844	E929	N951	E929	N9760	E8594	N9948	E9239
N845	E929	N952	E929	N9761	E8594	N9949	E904
N846	E929	N953	E929	N9762	E8594	N9950	E902
N847	E929	N954	E929	N9769	E8594	N9951	E929
N848	E929	N955	E929	N9770	E8597	N9952	E929
N850	E929	N956	E929	N9771	E8598	N9953	E929
N851	E929	N957	E929	N9772	E9323	N9954	E929
N852	E929	N958	E929	N9778	E8598	N9955	E929
N853	E929	N959	E929	N9779	E8599	N9956	E929
N854	E929	N9600	E8500	N9780	E8599	N9957	E929
N860	E929	N9601	E8501	N9781	E8599	N9959	E929
N861	E929	N9602	E8502	N9782	E8599	N9960	E929
N862	E929	N9603	E8503	N9783	E8599	N9961	E929
N863	E929	N9604	E8503	N9784	E8599	N9962	E929
N864	E929	N9605	E8503	N9790	E869	N9963	E929
N865	E929	N9609	E8504	N9791	E869	N9964	E929
N866	E929	N9610	E8505	N9792	E869	N9965	E929
N867	E929	N9611	E8506	N9793	E869	N9966	E929
N868	E929	N9612	E8507	N9794	E869	N9967	E929
N869	E929	N9613	E8508	N9800	E860	N9968	E929
N870	E929	N9619	E8509	N9801	E860	N9969	E929
N871	E929	N9620	E8510	N9802	E860	N9970	E9300
N872	E929	N9621	E8511	N9809	E860	N9971	E9300
N873	E929	N9622	E8512	N9810	E864	N9972	E9300
N874	E929	N9623	E8513	N9811	E864	N9973	E9300
N875	E929	N9624	E8514	N9812	E864	N9974	E9328
N876	E929	N9625	E8515	N9819	E864	N9975	E9300
N877	E929	N9626	E8516	N9820	E864	N9976	E9300
N878	E929	N9627	E8517	N9821	E861	N9977	E9300
N879	E929	N9628	E8518	N9822	E864	N9978	E9328
N880	E929	N9629	E8519	N9829	E864	N9979	E9300
N881	E929	N9630	E8520	N9830	E867	N9980	E9300
N882	E929	N9631	E8521	N9831	E867	N9981	E9300
N883	E929	N9632	E8522	N9832	E867	N9982	E9300
N884	E929	N9633	E8522	N9839	E867	N9983	E9300
N885	E929	N9634	E8522	N984	E866	N9984	E9300
N886	E929	N9635	E8524	N9850	E866	N9985	E9300
N887	E929	N9636	E8523	N9851	E866	N9986	E9300
N890	E929	N9639	E8524	N9852	E866	N9987	E9300
N891	E929	N9640	E8525	N9853	E869	N9989	E9300
N892	E929	N9641	E8529	N9859	E866	N9990	E9340
N893	E929	N9642	E8526	N986	E875	N9991	E9349
N894	E929	N9643	E8527	N9870	E870	N9992	E9312
N895	E929	N9644	E8528	N9871	E876	N9993	E9319
N896	E929	N9649	E8529	N9872	E876	N9994	E9319
N897	E929	N9650	E8530	N9873	E876	N9995	E9319
N900	E929	N9651	E8531	N9874	E876	N9996	E9312
N901	E929	N9652	E8532	N9879	E876	N9997	E9312
N902	E929	N9653	E8533	N9880	E868	N9998	E9312
N903	E929	N9654	E8534	N9881	E868	N9999	E9319

APPENDIX E

EFFECT OF AXIS TRANSLATION ON THE FREQUENCY OF OCCURRENCE OF EACH ICDA CATEGORY USED AS AN ADDRESS, SUBADDRESS, OR RECODE (1976 DATA)

ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE	ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE
	ENTITY AXIS CODE	RECORD AXIS CODE			ENTITY AXIS CODE	RECORD AXIS CODE	
0020	-	-	-	041	1	12	1100.0
0021	-	-	-	042	1	1	-
0022	-	-	-	043	103	91	-11.7
0029	-	-	-	0450	-	-	-
0030	-	-	-	0451	-	-	-
0039	124	124	-	0459	68	68	-
0040	-	-	-	046	47	47	-
0041	1	1	-	0500	-	-	-
0042	-	-	-	0501	-	-	-
0043	-	-	-	0509	-	-	-
0044	-	-	-	051	-	-	-
0048	-	-	-	052	141	141	-
0049	26	26	-	0530	16	16	-
0050	1	1	-	0531	22	22	-
0051	5	5	-	0532	3	3	-
0052	-	-	-	0539	618	618	-
0058	-	-	-	054	227	227	-
0059	15	14	-6.7	055	19	19	-
0060	12	15	25.0	056	18	18	-
0069	35	31	-11.4	0570	-	-	-
0070	-	-	-	0571	-	-	-
0071	3	3	-	0578	2	2	-
0072	-	-	-	0579	-	-	-
0079	-	-	-	0600	-	-	-
0080	3	3	-	0601	-	-	-
0081	1	1	-	0609	-	-	-
0082	15	15	-	0620	-	-	-
0083	13	13	-	0621	-	-	-
0088	2	2	-	0622	1	1	-
0089	326	318	-2.5	0623	29	29	-
0090	9	9	-	0624	-	-	-
0091	489	479	-2.0	0629	1	1	-
0092	3345	3313	-1.0	0630	-	-	-
0099	2	2	-	0631	-	-	-
010	61	165	170.5	0632	-	-	-
0110	4	4	-	0639	-	-	-
0111	19	17	-10.5	064	-	-	-
0112	197	194	-1.5	065	277	277	-
0113	515	507	-1.6	0670	-	-	-
0114	36	35	-2.8	0671	-	-	-
0115	-	-	-	0672	-	-	-
0119	3860	3719	-3.7	0673	-	-	-
0120	2	2	-	0689	-	-	-
0121	22	44	100.0	070	11	11	-
0122	4310	4297	-0.3	0749	704	704	-
0123	5	5	-	0780	-	-	-
0129	4	4	-	0781	-	-	-
0130	89	97	9.0	0782	-	-	-
0139	10	12	20.0	0788	-	-	-
014	44	47	6.8	0789	-	-	-
0150	103	103	-	0792	4	4	-
0151	5	5	-	0799	1066	1024	-3.9
0152	4	4	-	080	-	-	-
0158	2	2	-	0810	1	1	-
0159	14	13	-7.1	0811	-	-	-
0160	54	54	-	0812	-	-	-
0161	6	6	-	0819	-	-	-
0162	9	9	-	0820	46	46	-
0169	3	3	-	0821	-	-	-
0170	64	64	-	0822	-	-	-
0171	14	14	-	0829	-	-	-
0172	-	-	-	0830	-	-	-
0173	-	-	-	0831	-	-	-
0179	32	35	9.4	0832	-	-	-
0190	883	883	-	0838	-	-	-
0200	-	-	-	0839	4	3	-25.0
0201	1	1	-	0840	4	4	-
0209	3	3	-	0841	-	-	-
0230	-	-	-	0842	-	-	-
0231	1	1	-	0843	-	-	-
0232	-	-	-	0844	-	-	-
0239	4	4	-	0845	-	-	-
0260	-	-	-	0848	-	-	-
0261	-	-	-	0849	8	8	-
0269	-	-	-	0850	-	-	-
0310	96	96	-	0851	-	-	-
0319	22	22	-	0852	-	-	-
0330	-	-	-	0859	-	-	-
0331	-	-	-	0860	-	-	-
0339	10	10	-	0868	-	-	-
0340	17	17	-	0869	1	1	-
0341	3	3	-	0870	-	-	-
035	21	21	-	0871	-	-	-
0360	136	149	9.6	0878	2	2	-
0361	236	198	-16.1	0879	-	-	-
0368	-	1	-	0880	-	-	-
0369	5	3	-40.0	0881	-	-	-
037	54	54	-	0889	-	-	-
0380	464	464	-	0900	2	2	-
0381	1261	1261	-	0902	1	1	-
0382	226	206	-8.8	0903	2	2	-
0388	2176	2176	-	0904	6	7	16.7
0389	38729	38614	-0.3	0905	-	-	-
0390	202	202	-	0907	2	2	-
040	5	6	20.0	0909	18	17	-5.6

APPENDIX E

EFFECT OF AXIS TRANSLATION ON THE FREQUENCY OF OCCURRENCE OF EACH ICDA CATEGORY USED AS AN ADDRESS, SUBADDRESS, OR RECODE (1976 DATA)

ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE	ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE
	ENTITY AXIS CODE	RECORD AXIS CODE			ENTITY AXIS CODE	RECORD AXIS CODE	
0910	-	-	-	1261	-	-	-
0911	-	-	-	1268	-	-	-
0912	3	3	-	1269	-	-	-
0913	-	-	-	1270	4	4	-
0918	-	-	-	1271	2	2	-
0919	-	-	-	1272	1	1	-
0930	11	22	100.0	1273	1	1	-
0939	157	175	11.5	1274	-	-	-
0940	72	76	5.6	1275	-	-	-
0941	53	52	-1.9	1279	1	1	-
0949	201	206	2.5	1280	-	-	-
095	5	8	60.0	1288	-	-	-
0970	125	100	-20.0	1289	1	1	-
0979	198	166	-16.2	129	1	1	-
0980	2	2	-	1300	-	-	-
0981	2	2	-	1301	11	11	-
0982	1	1	-	1302	2	2	-
0983	-	-	-	1309	12	12	-
0988	3	3	-	1400	9	9	-
0989	1	1	-	1401	46	46	-
0999	8	8	-	1402	2	2	-
1000	-	-	-	1409	153	153	-
1008	-	-	-	1410	291	291	-
1009	13	13	-	1411	-	-	-
1020	-	-	-	1412	2	2	-
1021	-	-	-	1413	-	-	-
1022	-	-	-	1419	2139	2138	-0.0
1023	-	-	-	1420	557	557	-
1024	-	-	-	1428	84	84	-
1025	-	-	-	1429	97	96	-1.0
1026	-	-	-	1430	6	6	-
1027	-	-	-	1431	31	31	-
1029	1	1	-	1439	134	134	-
1030	-	-	-	144	670	670	-
1031	-	-	-	1450	125	125	-
1032	-	-	-	1451	458	458	-
1033	-	-	-	1458	29	29	-
1039	-	-	-	1459	1012	972	-4.0
1100	-	-	-	1460	905	905	-
1101	1	1	-	1468	42	42	-
1109	4	4	-	1469	330	325	-1.5
1110	1	1	-	147	708	708	-
1111	-	-	-	1480	2	2	-
1112	-	-	-	1481	270	270	-
1118	-	-	-	1488	-	-	-
1119	4	4	-	1489	455	451	-0.9
112	504	504	-	149	1760	1721	-2.2
113	19	19	-	150	8123	8123	-
114	113	113	-	1510	343	343	-
115	116	116	-	1511	23	23	-
1160	202	202	-	1518	72	72	-
1161	1	1	-	1519	15919	15912	-0.0
1162	1	1	-	1520	301	301	-
1169	28	28	-	1521	101	101	-
1170	-	-	-	1522	102	95	-6.9
1171	6	6	-	1529	335	333	-0.6
1172	-	-	-	1530	4728	4728	-
1173	146	146	-	1531	1175	1175	-
1174	6	6	-	1532	997	997	-
1178	50	50	-	1533	4348	4302	-1.1
1179	137	135	-1.5	1538	35379	35152	-0.6
1200	-	-	-	1539	2160	2545	17.8
1201	-	-	-	1540	1402	1592	13.6
1202	-	-	-	1541	9945	9744	-2.0
1203	-	-	-	1542	59	70	18.6
1208	-	-	-	1550	2578	2589	0.4
1209	-	-	-	1551	341	341	-
1210	11	11	-	1560	2615	2615	-
1211	-	-	-	1561	1356	1356	-
1212	-	-	-	1562	343	343	-
1213	-	-	-	1569	411	400	-2.7
1214	-	-	-	1570	1925	1925	-
1219	1	1	-	1578	344	344	-
1220	2	2	-	1579	18998	18983	-0.1
1221	-	-	-	1580	575	575	-
1228	1	1	-	1589	410	410	-
1229	4	3	-25.0	159	857	829	-3.3
1230	-	-	-	1600	247	247	-
1231	8	8	-	1601	28	28	-
1232	-	-	-	1602	343	343	-
1233	-	-	-	1608	82	82	-
1234	-	-	-	1609	91	90	-1.1
1235	-	-	-	1610	110	110	-
1236	-	-	-	1618	235	235	-
1239	-	-	-	1619	4156	4145	-0.3
124	2	2	-	1620	197	197	-
1250	-	-	-	1621	93887	93887	-
1251	-	-	-	1630	446	446	-
1252	-	-	-	1631	411	411	-
1253	-	-	-	1639	224	214	-4.5
1254	-	-	-	1700	393	393	-
1255	-	-	-	1701	266	266	-
1258	-	-	-	1702	346	346	-
1259	2	2	-	1703	128	128	-
1260	-	-	-	1704	81	81	-

## APPENDIX E

EFFECT OF AXIS TRANSLATION ON THE FREQUENCY OF OCCURRENCE OF EACH  
ICDA CATEGORY USED AS AN ADDRESS, SUBADDRESS, OR RECCODE (1976 DATA)

ICDA CATEGORY	NO. OF RECCRS ON WHICH MENTIONED AS		+/-% CHANGE	ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE
	ENTITY AXIS CODE	RECORD AXIS CODE			ENTITY AXIS CODE	RECORD AXIS CODE	
1705	3	3	-	1985	11662	11662	-
1706	163	163	-	1989	13806	13806	-
1707	209	209	-	1990	111713	110905	-0.7
1708	9	9	-	1991	5569	2950	-47.0
1709	948	940	-0.8	2040	1577	1577	-
1710	58	58	-	2041	4154	4154	-
1711	291	291	-	2049	794	788	-0.8
1712	56	56	-	2050	5241	5241	-
1713	253	253	-	2051	2304	2304	-
1719	1101	1095	-0.5	2059	549	546	-0.5
1720	3	3	-	2060	343	343	-
1721	3	3	-	2061	25	25	-
1722	26	26	-	2069	145	145	-
1723	96	96	-	2070	1878	1878	-
1724	80	80	-	2071	238	238	-
1725	-	-	-	2072	277	277	-
1726	303	303	-	2079	2039	1810	-11.2
1727	157	157	-	2105	-	-	-
1728	231	231	-	2106	2	2	-
1729	3686	3658	-0.8	2107	1	1	-
1730	28	28	-	2108	1	1	-
1731	24	24	-	2109	1	1	-
1732	153	153	-	2110	5	5	-
1733	1014	1014	-	2111	90	90	-
1734	460	460	-	2112	32	32	-
1735	18	18	-	2113	336	336	-
1736	327	316	-3.4	2114	110	110	-
1737	71	71	-	2115	21	21	-
1738	77	77	-	2116	22	22	-
1739	476	469	-1.5	2117	7	7	-
174	39231	39231	-	2119	18	18	-
180	6348	6348	-	2120	2	2	-
181	40	40	-	2121	10	10	-
1820	3137	3137	-	2122	4	4	-
1829	3893	3806	-2.2	2123	106	106	-
1830	11514	11514	-	2124	4	4	-
1831	168	168	-	2125	8	8	-
1839	5	5	-	2129	27	26	-3.7
1840	499	499	-	2130	8	8	-
1841	676	676	-	2160	-	-	-
1848	4	4	-	2161	-	-	-
1849	86	85	-1.2	2162	3	3	-
185	29189	29189	-	2168	33	33	-
186	811	811	-	2169	4	4	-
1870	308	308	-	218	166	166	-
1878	18	18	-	2190	10	10	-
1879	24	23	-4.2	2191	4	4	-
188	12631	12631	-	2199	7	7	-
1890	7935	7935	-	2200	10	10	-
1891	118	118	-	2201	125	125	-
1892	369	369	-	2202	3	3	-
1899	255	255	-	2209	35	35	-
190	470	470	-	2210	2	2	-
191	7367	7483	1.6	2211	1	1	-
1920	24	24	-	2212	1	1	-
1921	44	44	-	2218	-	-	-
1922	150	150	-	2219	3	3	-
1923	2	2	-	2220	1	1	-
1924	169	169	-	2221	-	-	-
1925	286	286	-	2228	1	1	-
1929	1977	1838	-7.0	2229	-	-	-
193	1231	1231	-	2230	27	27	-
1940	354	354	-	2231	2	2	-
1941	15	15	-	2232	2	2	-
1942	94	94	-	2233	25	25	-
1943	41	41	-	2238	3	3	-
1944	15	15	-	2239	2	2	-
1948	21	21	-	224	2	2	-
1949	5	5	-	2250	174	174	-
1950	2158	2158	-	2251	115	115	-
1951	547	547	-	2252	530	532	0.4
1959	1564	1564	-	2253	7	7	-
1960	472	421	-10.8	2254	16	16	-
1961	314	252	-19.7	2255	41	41	-
1962	230	192	-16.5	2256	2	2	-
1963	101	80	-20.8	2259	358	352	-1.7
1964	59	41	-30.5	2260	84	84	-
1967	217	185	-14.7	2261	23	23	-
1968	7	109	1457.1	2262	234	234	-
1969	1890	1890	-	2263	17	17	-
1970	17250	17250	-	2264	3	3	-
1971	977	977	-	2268	7	7	-
1972	1750	2081	18.9	2269	2	2	-
1973	846	846	-	228	218	218	-
1974	289	289	-	2300	32	32	-
1975	1631	1655	1.5	2301	76	76	-
1976	2549	2549	-	2302	19	19	-
1977	24477	24477	-	2303	198	198	-
1978	3503	3492	-0.3	2304	31	31	-
1979	1659	1659	-	2305	121	121	-
1980	664	664	-	2306	86	86	-
1981	839	839	-	2307	41	41	-
1982	848	848	-	2309	46	45	-2.2
1983	15951	15951	-	2310	6	6	-
1984	1147	1147	-	2311	24	24	-



APPENDIX E

EFFECT OF AXIS TRANSLATION ON THE FREQUENCY OF OCCURRENCE OF EACH ICDA CATEGORY USED AS AN ADDRESS, SUBADDRESS, OR RECODE (1976 DATA)

ICDA CATEGORY	NO. OF REGRDS ON WHICH MENTIONED AS		+/-% CHANGE	ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE
	ENTITY AXIS CODE	RECORD AXIS CODE			ENTITY AXIS CODE	RECORD AXIS CODE	
2312	5	5	-	2819	462	514	11.3
2313	627	625	-0.3	284	2757	2752	-0.2
2314	7	7	-	2850	239	244	2.1
2315	96	96	-	2859	19849	19717	-0.7
2319	36	33	-8.3	2869	3320	3320	-
235	51	51	-	2871	2900	2900	-
2360	-	-	-	2891	3	3	-
2361	3	3	-	2892	42	42	-
2362	1	1	-	2893	42	42	-
2368	-	-	-	2894	188	188	-
2369	3	3	-	2895	740	740	-
2373	162	162	-	2899	971	971	-
2380	5	5	-	2900	3981	4144	4.1
2381	2376	2364	-0.5	2901	991	997	0.6
2382	3	3	-	2910	634	634	-
2384	54	54	-	2911	133	133	-
2391	103	102	-1.0	2912	1	1	-
2400	-	-	-	2913	1	1	-
2401	-	-	-	2919	34	109	220.6
2409	290	279	-3.8	2949	44	435	888.6
2410	-	-	-	2950	29	29	-
2411	-	-	-	2951	132	132	-
2419	204	197	-3.4	2952	186	186	-
2420	70	81	15.7	2953	550	550	-
2421	30	37	23.3	2954	10	10	-
2422	829	811	-2.2	2955	3	3	-
2450	7	7	-	2956	6	6	-
2451	27	27	-	2957	14	14	-
2459	23	22	-4.3	2958	536	536	-
246	136	136	-	2959	945	939	-0.6
2500	2596	5941	128.9	2960	126	126	-
2509	133071	128663	-3.3	2961	32	32	-
2539	522	522	-	2962	292	292	-
254	44	44	-	2963	6	6	-
2550	37	37	-	2968	2	2	-
2551	441	440	-0.2	2969	139	139	-
2559	1103	1101	-0.2	2970	30	30	-
2560	9	9	-	2971	34	34	-
2579	1	1	-	2979	40	40	-
2589	539	536	-0.6	2980	17	17	-
2600	-	-	-	2981	3	3	-
2601	1	1	-	2982	350	350	-
2608	-	-	-	2983	-	-	-
2609	-	-	-	2989	2	2	-
261	17	17	-	299	3251	2541	-21.8
262	19	19	-	3000	271	271	-
2630	1	1	-	3001	26	26	-
2631	-	-	-	3002	3	3	-
2638	38	38	-	3003	4	4	-
2639	68	67	-1.5	3004	1501	1501	-
264	16	16	-	3005	10	10	-
2650	8	8	-	3006	-	-	-
2651	-	-	-	3007	6	6	-
2652	40	40	-	3008	4	4	-
2659	-	-	-	3009	426	408	-4.2
2660	1	1	-	3010	9	9	-
2668	-	-	-	3011	1	1	-
2669	53	52	-1.9	3012	6	6	-
268	10869	10763	-1.0	3013	4	4	-
2699	19743	19743	-	3014	2	2	-
2700	6	6	-	3015	-	-	-
2701	1	1	-	3016	1	1	-
2702	9	9	-	3017	6	6	-
2703	12	12	-	3018	5	5	-
2704	4	4	-	3019	31	31	-
2705	3	3	-	3020	-	-	-
2706	6	6	-	3021	-	-	-
2708	59	59	-	3022	-	-	-
2709	3	3	-	3023	1	1	-
2710	5	5	-	3024	-	-	-
2711	36	36	-	3025	-	-	-
2712	1	1	-	3026	1	1	-
2713	-	-	-	3027	1	1	-
2718	11	11	-	3028	-	-	-
2719	-	-	-	3029	5	5	-
2720	236	236	-	3030	3	2	-33.3
2721	1	1	-	3031	8	4	-50.0
2722	72	72	-	3032	11389	5882	-48.4
2729	8	8	-	3039	11171	7696	-31.1
2730	587	587	-	3040	198	198	-
2731	52	52	-	3041	12	12	-
2732	224	219	-2.2	3042	17	17	-
2733	18	18	-	3043	16	16	-
2734	7	7	-	3044	5	5	-
2735	11	11	-	3045	-	-	-
2736	8	8	-	3046	6	6	-
2738	221	221	-	3047	-	-	-
2739	13	12	-7.7	3048	48	48	-
274	3025	3025	-	3049	1364	1353	-0.8
280	1508	1588	5.3	3099	27590	27184	-1.5
2810	1736	1736	-	3100	-	-	-
2811	6	6	-	3108	-	-	-
2812	140	140	-	3109	5	5	-
2813	1	1	-	3110	-	-	-
2814	1	1	-	3118	-	-	-

APPENDIX E

EFFECT OF AXIS TRANSLATION ON THE FREQUENCY OF OCCURRENCE OF EACH ICDA CATEGORY USED AS AN ADDRESS, SUBADDRESS, OR RECODE (1976 DATA)

ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE	ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE
	ENTITY AXIS	RECORD AXIS			ENTITY AXIS	RECORD AXIS	
3119	37	37	-	3899	577	577	-
3120	-	-	-	390	540	112	-79.3
3128	-	-	-	3910	221	179	-19.0
3129	69	69	-	3911	8	13	62.5
3130	-	-	-	3912	2	3	50.0
3138	-	-	-	3919	9	72	700.0
3139	473	473	-	3920	-	-	-
3140	-	-	-	3929	27	26	-3.7
3148	-	-	-	393	164	166	1.2
3149	285	285	-	3940	417	2525	505.5
3150	-	-	-	3949	6314	4041	-36.0
3158	-	-	-	3950	141	938	565.2
3159	1989	1981	-0.4	3959	8921	7963	-10.7
3200	276	276	-	3960	108	838	675.9
3201	445	445	-	3969	1480	864	-41.6
3208	351	351	-	3970	309	331	7.1
3209	2197	2134	-2.9	3979	844	1015	20.3
321	88	88	-	398	8961	9156	2.2
322	580	580	-	4000	972	61	-93.7
323	677	655	-3.2	4001	3	48	1500.0
3339	161	158	-1.9	4002	-	325	...
341	95	95	-	4003	43	129	200.0
342	12593	12593	-	4009	5	219	4280.0
3430	48	48	-	401	73322	7113	-90.3
3431	414	410	-1.0	402	10825	12174	12.5
3432	3	2	-33.3	403	12663	6088	-51.9
3439	1106	1110	0.4	404	4285	4821	12.5
3440	14	14	-	4100	82	33139	40313.4
3441	17707	16191	-8.6	4109	343983	310912	-9.6
3442	1412	1403	-0.6	4110	4	1541	38425.0
3443	927	924	-0.3	4119	16663	15126	-9.2
3449	2946	2854	-3.1	4121	6649	42011	531.8
3450	37	37	-	4122	35888	35502	-1.1
3451	900	900	-	4123	468394	435126	-7.1
3452	762	762	-	4124	105087	92222	-12.2
3453	9	9	-	4130	3	690	22900.0
3454	-	-	-	4139	3802	3115	-18.1
3455	38	38	-	420	199	199	-
3459	2340	2340	-	4210	1978	1978	-
3470	16	16	-	4219	39	34	-12.8
3471	1917	1917	-	422	761	747	-1.8
3479	18575	18355	-1.2	423	4803	4765	-0.8
3481	251	251	-	4240	475	468	-1.5
3499	323	323	-	4241	1015	1008	-0.7
350	132	131	-0.8	4249	2583	2115	-18.1
3550	4	4	-	425	5810	5810	-
3551	12	12	-	426	11668	11925	2.2
3559	115	115	-	4270	168550	158251	-6.1
3570	8	8	-	4271	4104	4634	12.9
3579	803	801	-0.2	4272	203649	192798	-5.3
360	24	24	-	4273	9082	8480	-6.6
361	4	4	-	4274	18521	17066	-7.9
3630	4	4	-	4275	266	245	-7.9
3639	8	8	-	4276	18452	17238	-6.6
364	7	7	-	4279	32540	30384	-6.6
365	2	2	-	428	16738	12585	-24.8
366	21	21	-	4290	8620	7326	-15.0
367	34	34	-	4299	34880	32203	-7.7
368	1	1	-	4300	2	1526	76200.0
3699	5	5	-	4309	9162	8167	-10.9
3739	20	20	-	4310	27	8507	31407.4
3750	12	12	-	4319	36791	27463	-25.4
3751	9	9	-	4320	2	426	21200.0
3752	-	-	-	4329	4493	4067	-9.5
3759	893	893	-	4330	2	4755	237650.0
376	31	31	-	4339	63968	59176	-7.5
3770	35	35	-	4340	-	184	...
3771	46	46	-	4349	3687	3502	-5.0
3772	19	19	-	4350	-	29	...
3773	-	-	-	4359	411	381	-7.3
3774	7	7	-	4360	427	16084	3666.7
3775	5	5	-	4369	150866	134884	-10.6
3776	129	129	-	4370	216	4795	2119.9
3779	2	2	-	4379	80659	77116	-4.4
3782	8	8	-	4380	474	1806	281.0
3783	1	1	-	4389	14729	14083	-4.4
3784	12	12	-	4400	1176	1138	-3.2
3786	9	9	-	4401	180	176	-2.2
3788	1	1	-	4402	2059	1642	-20.3
3789	57	57	-	4403	215	194	-9.8
3810	9	9	-	4409	212142	204592	-3.6
3811	32	29	-9.4	4410	3049	3046	-0.1
3819	149	144	-3.4	4411	1893	1889	-0.2
3820	1	2	100.0	4412	10332	10331	-
3821	-	4	...	4419	5189	4849	-6.6
3829	-	3	...	442	4072	2637	-35.2
3830	7	6	-14.3	4430	79	79	-
3831	13	11	-15.4	4431	120	120	-
3839	34	29	-14.7	4432	-	-	-
3840	22	22	-	4438	3	3	-
3849	1	1	-	4439	5477	5473	-0.1
3879	11	11	-	4440	496	496	-
3890	28	28	-	4441	576	576	-
3891	-	-	-	4442	6316	6316	-
3892	-	-	-	4443	442	442	-

APPENDIX E

EFFECT OF AXIS TRANSLATION ON THE FREQUENCY OF OCCURRENCE OF EACH ICDA CATEGORY USED AS AN ADDRESS, SUBADDRESS, OR RECODE (1976 DATA)

ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE	ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE
	ENTITY AXIS CODE	RECORD AXIS CODE			ENTITY AXIS CODE	RECORD AXIS CODE	
4444	3090	3090	-	5301	963	963	-
4449	4460	4460	-	5303	1278	1278	-
4450	492	4405	795.3	5309	2616	2616	-
4459	10318	4412	-57.2	5310	896	3710	314.1
4469	127	127	-	5311	1340	1164	-13.1
447	2799	2799	-	5312	19	195	926.3
450	43707	43704	-	5319	5630	2754	-51.1
4510	2198	2198	-	5320	1110	2204	98.6
4519	2616	2616	-	5321	1793	1538	-14.2
452	222	222	-	5322	37	682	1743.2
453	4306	4305	-0.0	5329	3971	2411	-39.3
4540	309	336	8.7	5330	762	754	-1.0
4541	104	89	-14.4	5339	2755	2609	-5.3
4549	462	442	-4.3	5340	69	754	992.8
457	212	206	-2.8	5341	69	52	-24.6
4589	9813	9596	-2.2	5342	-	287	...
460	104	99	-4.8	5349	885	87	-90.2
4610	2	2	-	535	2335	2335	-
4611	-	-	-	5379	2344	1780	-24.1
4619	6	6	-	5400	954	1023	7.2
462	106	100	-5.7	5409	192	115	-40.1
463	34	34	-	541	205	130	-36.6
464	201	170	-15.4	542	3	3	-
465	1497	1448	-3.3	543	15	15	-
466	2927	2846	-2.8	550	878	816	-7.1
470	10419	5218	-49.9	5510	50	31	-38.0
471	441	5292	1100.0	5511	313	293	-6.4
472	103	477	363.1	5512	596	487	-18.3
473	31	93	200.0	5513	3189	3053	-4.3
474	8	32	300.0	5518	99	51	-48.5
480	2815	2588	-8.1	5519	368	295	-19.8
481	12392	12173	-1.8	552	412	473	14.8
4820	900	889	-1.2	5530	183	200	9.3
4821	67	64	-4.5	5531	121	140	15.7
4822	208	199	-4.3	5532	185	290	56.8
4823	1223	1171	-4.3	5533	71	207	191.5
4829	2537	2494	-1.7	5538	38	86	126.3
483	125	115	-8.0	5539	366	414	13.1
484	930	902	-3.0	5600	70	70	-
485	65879	64584	-2.0	5601	1387	1358	-2.1
486	103509	100128	-3.3	5602	1268	1203	-5.1
490	4115	2352	-42.8	5603	306	322	5.2
491	7332	8869	21.0	5604	5	661	13120.0
492	50333	50088	-0.5	5609	11941	10775	-9.8
493	7103	7041	-0.9	561	617	604	-2.1
500	49	49	-	5639	235	235	-
501	21	21	-	5641	139	139	-
5020	-	-	-	5649	124	124	-
5021	12	12	-	566	370	370	-
5030	12	12	-	5670	1759	1705	-3.1
5031	7	7	-	5679	9324	8546	-8.3
5039	108	107	-0.9	568	1122	384	-65.8
504	2	2	-	5690	37	37	-
505	6	6	-	5691	91	91	-
506	12	12	-	5692	951	951	-
507	21	17	-19.0	5693	1258	1257	-0.1
5080	132	132	-	5694	2657	2656	-0.0
5081	6	6	-	5699	31791	26927	-15.3
5082	171	171	-	570	1072	1071	-0.1
5083	380	380	-	5710	10011	16452	64.3
5084	13	13	-	5718	9085	7256	-20.1
5089	293	293	-	5719	27988	22388	-20.0
510	1889	1882	-0.4	572	473	469	-0.8
5110	658	648	-1.5	5730	1982	1940	-2.1
5111	6	6	-	5739	32394	32003	-1.2
5112	3819	3812	-0.2	5740	2	218	10800.0
512	2341	2341	-	5741	8	1487	18487.5
513	3117	3117	-	5749	4652	2938	-36.8
514	37333	37221	-0.3	575	5546	3850	-30.6
5150	544	508	-6.6	5760	3105	2777	-10.6
5151	2521	2484	-1.5	5761	125	95	-24.0
5152	147	143	-2.7	5769	2126	1984	-6.7
5159	1230	1201	-2.4	5770	5423	5423	-
5160	13	13	-	580	9282	9254	-0.3
5161	19	19	-	581	869	935	7.6
5162	2	2	-	582	15658	15449	-1.3
517	8799	8628	-1.9	583	1240	1088	-12.3
518	2029	2029	-	584	592	475	-19.8
5191	11603	10670	-8.0	5900	5485	5331	-2.8
5192	13626	7453	-45.3	5901	6149	5945	-3.3
5193	53384	48226	-9.7	5902	425	425	-
5199	3988	2481	-37.8	5909	339	339	-
5200	-	-	-	591	973	973	-
5201	-	-	-	592	1454	1454	-
5206	1	1	-	5931	1464	1464	-
5225	14	14	-	5932	43466	42209	-2.9
5227	-	-	-	5935	95	95	-
5243	-	-	-	595	2095	2095	-
5244	-	-	-	5960	573	573	-
5250	5	5	-	5961	30	30	-
5269	2	2	-	5969	1161	1161	-
5280	24	24	-	597	32	32	-
5285	2	2	-	598	383	383	-
5289	75	75	-	5990	15372	15372	-
5299	32	32	-	5991	49	49	-

APPENDIX E

EFFECT OF AXIS TRANSLATION ON THE FREQUENCY OF OCCURRENCE OF EACH ICDA CATEGORY USED AS AN ADDRESS, SUBADDRESS, OR RECODE (1976 DATA)

ICDA CATEGORY	NO. OF REGRDS ON WHICH MENTIONED AS		+/-% CHANGE	ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE
	ENTITY AXIS CODE	RECORD AXIS CODE			ENTITY AXIS CODE	RECORD AXIS CODE	
5992	3	3	-	653	41	41	-
5999	1439	1439	-	6540	-	-	-
601	411	411	-	6541	-	-	-
602	935	935	-	6542	-	-	-
604	72	72	-	6543	-	-	-
6073	5	5	-	6549	1	1	-
6074	1	1	-	655	4	4	-
6075	139	139	-	6560	3	3	-
6079	396	396	-	6561	-	-	-
6119	231	231	-	6562	-	-	-
612	-	-	-	6563	-	-	-
613	3	3	-	6564	1	1	-
614	56	56	-	6568	1	1	-
6150	3	3	-	6569	-	-	-
6151	1	1	-	6570	2	2	-
6152	3	3	-	6571	4	4	-
6159	55	55	-	6572	1	1	-
6160	417	417	-	6579	1	1	-
6161	9	9	-	6580	-	-	-
6162	5	5	-	6581	-	-	-
6169	57	57	-	6582	-	-	-
6200	6	6	-	6589	-	-	-
6209	7	7	-	659	5	5	-
6210	-	-	-	6600	-	-	-
6211	-	-	-	6601	2	2	-
6212	-	-	-	6609	2	2	-
6213	1	1	-	6610	8	8	-
6214	-	-	-	6611	-	-	-
6215	1	1	-	6612	1	1	-
6216	-	-	-	6613	-	-	-
6219	62	62	-	6618	14	14	-
6220	47	46	-2.1	6619	55	44	-20.0
6221	66	66	-	662	3	3	-
6240	-	-	-	670	27	27	-
6241	-	-	-	6710	-	-	-
6249	-	-	-	6719	4	4	-
627	6	6	-	672	-	-	-
6294	332	332	-	6730	3	3	-
6297	2	2	-	6731	38	38	-
6299	110	110	-	6739	35	35	-
6310	-	-	-	674	36	36	-
6311	-	-	-	675	25	25	-
6312	-	-	-	676	-	-	-
6313	-	1	...	6770	-	-	-
6314	-	-	-	6771	2	2	-
6315	14	14	-	6772	-	-	-
6316	-	-	-	6779	21	21	-
6319	32	31	-3.1	678	-	-	-
6324	9	9	-	6800	1	1	-
6329	33	33	-	6801	3	3	-
6330	-	-	-	6802	2	2	-
6331	-	-	-	6803	-	-	-
6339	2	2	-	6804	-	-	-
6349	42	42	-	6805	2	2	-
6350	2	2	-	6806	1	1	-
6351	-	-	-	6808	-	-	-
6359	-	-	-	6809	9	9	-
636	15	15	-	681	14	14	-
6370	32	32	-	6820	119	119	-
6371	52	52	-	6821	636	636	-
6379	38	36	-5.3	6822	114	114	-
6380	-	-	-	6823	18	18	-
6389	-	-	-	6824	659	659	-
6390	9	9	-	6825	156	156	-
6399	2	2	-	6829	664	664	-
6400	-	-	-	683	8	8	-
6401	-	-	-	6869	653	653	-
6402	-	-	-	6929	305	305	-
6409	3	3	-	694	350	350	-
6410	-	-	-	6954	534	531	-0.6
6411	-	-	-	6960	26	26	-
6412	-	-	-	6961	358	358	-
6419	-	-	-	7011	15	15	-
6420	-	-	-	7012	1	1	-
6421	-	-	-	702	17	17	-
6422	-	-	-	7039	-	-	-
6423	-	-	-	704	5	5	-
6429	2	2	-	7070	9674	9395	-2.9
6430	-	4	...	7071	814	741	-9.0
6431	-	2	...	7079	780	727	-6.8
6432	-	-	-	7099	57	57	-
6439	10	4	-60.0	7100	1	1	-
6440	3	5	66.7	7101	5	5	-
6441	-	2	...	7102	12	12	-
6442	-	1	...	7103	25	25	-
6449	12	7	-41.7	7109	75	75	-
6450	-	1	...	711	-	-	-
6451	-	-	-	7120	12	12	-
6452	-	-	-	7121	110	110	-
6459	1	-	-100.0	7122	-	-	-
650	9	6	-33.3	7123	8465	8465	-
6510	6	6	-	7124	287	287	-
6511	22	22	-	7125	-	-	-
6519	3	3	-	7130	8672	8681	0.1
652	9	9	-	7131	585	585	-

APPENDIX E

EFFECT OF AXIS TRANSLATION ON THE FREQUENCY OF OCCURRENCE OF EACH  
ICDA CATEGORY USED AS AN ADDRESS, SUBADDRESS, OR RECODE (1976 DATA)

ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE	ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE
	ENTITY AXIS CODE	RECORD AXIS CODE			ENTITY AXIS CODE	RECORD AXIS CODE	
7132	2	2	-	7458	4	4	-
7140	9	9	-	7459	15	12	-20.0
7149	49	49	-	7460	169	169	-
715	4751	4690	-1.3	7461	439	439	-
7179	180	180	-	7462	413	413	-
718	33	33	-	7463	1060	1045	-1.4
7200	24	24	-	7464	582	582	-
7201	154	154	-	7465	151	151	-
7202	557	556	-0.2	7466	1157	1157	-
7203	5	4	-20.0	7467	160	160	-
7229	4	4	-	7468	739	739	-
7230	3077	3077	-	7469	3509	2442	-30.4
7239	342	342	-	7470	755	755	-
7250	34	34	-	7471	318	318	-
7251	64	64	-	7472	141	138	-2.1
7258	7	7	-	7473	282	265	-6.0
7259	116	116	-	7474	128	128	-
7270	28	28	-	7475	13	13	-
7271	-	-	-	7476	425	368	-13.4
7272	-	-	-	7478	358	271	-24.3
7273	1	1	-	7479	148	136	-8.1
7274	-	-	-	7480	18	18	-
7275	13	13	-	7481	11	11	-
7276	9	9	-	7482	1	1	-
7277	1	1	-	7483	420	420	-
7278	9	9	-	7484	91	91	-
7279	38	38	-	7485	54	54	-
7289	78	78	-	7486	1079	1079	-
7290	1	1	-	7488	3	3	-
7291	18	18	-	7489	28	28	-
7292	2	2	-	7490	169	89	-47.3
7293	2	2	-	7491	86	6	-93.0
7294	1	1	-	7492	4	84	2000.0
7295	548	548	-	7500	6	6	-
7296	1	1	-	7501	9	9	-
7297	-	-	-	7502	62	62	-
7298	65	65	-	7503	86	86	-
7299	129	129	-	7508	135	135	-
7310	-	-	-	7509	17	16	-5.9
7311	12	12	-	7510	62	62	-
7312	5	5	-	7511	61	61	-
7313	-	-	-	7512	65	65	-
7314	1	1	-	7513	105	105	-
7315	5	5	-	7514	172	172	-
7316	6	6	-	7515	159	159	-
7317	-	-	-	7516	100	100	-
7318	1	1	-	7517	15	15	-
7319	28	28	-	7518	6	6	-
7331	91	91	-	7519	14	13	-7.1
7339	326	326	-	7520	6	6	-
7341	1252	1255	0.2	7521	14	14	-
7350	192	151	-21.4	7522	14	14	-
7351	272	179	-34.2	7523	1	1	-
7352	533	387	-27.4	7524	2	2	-
7359	26	19	-26.9	7525	15	15	-
736	-	-	-	7526	9	9	-
7370	3	3	-	7527	4	4	-
7371	1	1	-	7528	20	20	-
7380	-	-	-	7529	29	29	-
7381	3	3	-	7530	452	452	-
7382	14	14	-	7531	1163	1163	-
7383	4	4	-	7532	65	65	-
7384	6	6	-	7533	88	88	-
7385	156	156	-	7534	21	21	-
7386	7	7	-	7535	14	14	-
7387	4	4	-	7536	24	24	-
7388	118	118	-	7538	35	35	-
7389	202	201	-0.5	7539	111	95	-14.4
740	814	814	-	7540	1	1	-
7410	57	365	540.4	7541	11	11	-
7419	581	251	-56.8	7542	-	-	-
742	1078	757	-29.8	7548	2	2	-
7430	141	141	-	7549	57	57	-
7431	375	375	-	7550	19	19	-
7432	142	142	-	7551	11	11	-
7433	18	18	-	7552	15	15	-
7434	213	213	-	7553	11	11	-
7438	19	19	-	7554	8	8	-
7439	350	271	-22.6	7555	41	41	-
7440	16	16	-	7556	27	27	-
7441	14	14	-	7557	55	55	-
7442	3	3	-	7558	18	18	-
7443	6	6	-	7559	15	15	-
7444	3	3	-	7560	113	97	-14.2
7445	-	-	-	7561	30	30	-
7446	14	14	-	7562	135	135	-
7447	2	2	-	7563	-	-	-
7448	4	4	-	7564	77	77	-
7449	7	6	-14.3	7565	102	102	-
7450	6	6	-	7566	87	87	-
7451	-	-	-	7567	59	59	-
7452	9	9	-	7568	142	141	-0.7
7453	15	15	-	7569	53	44	-17.0
7454	4	4	-	7570	6	6	-
7455	4	4	-	7571	8	8	-

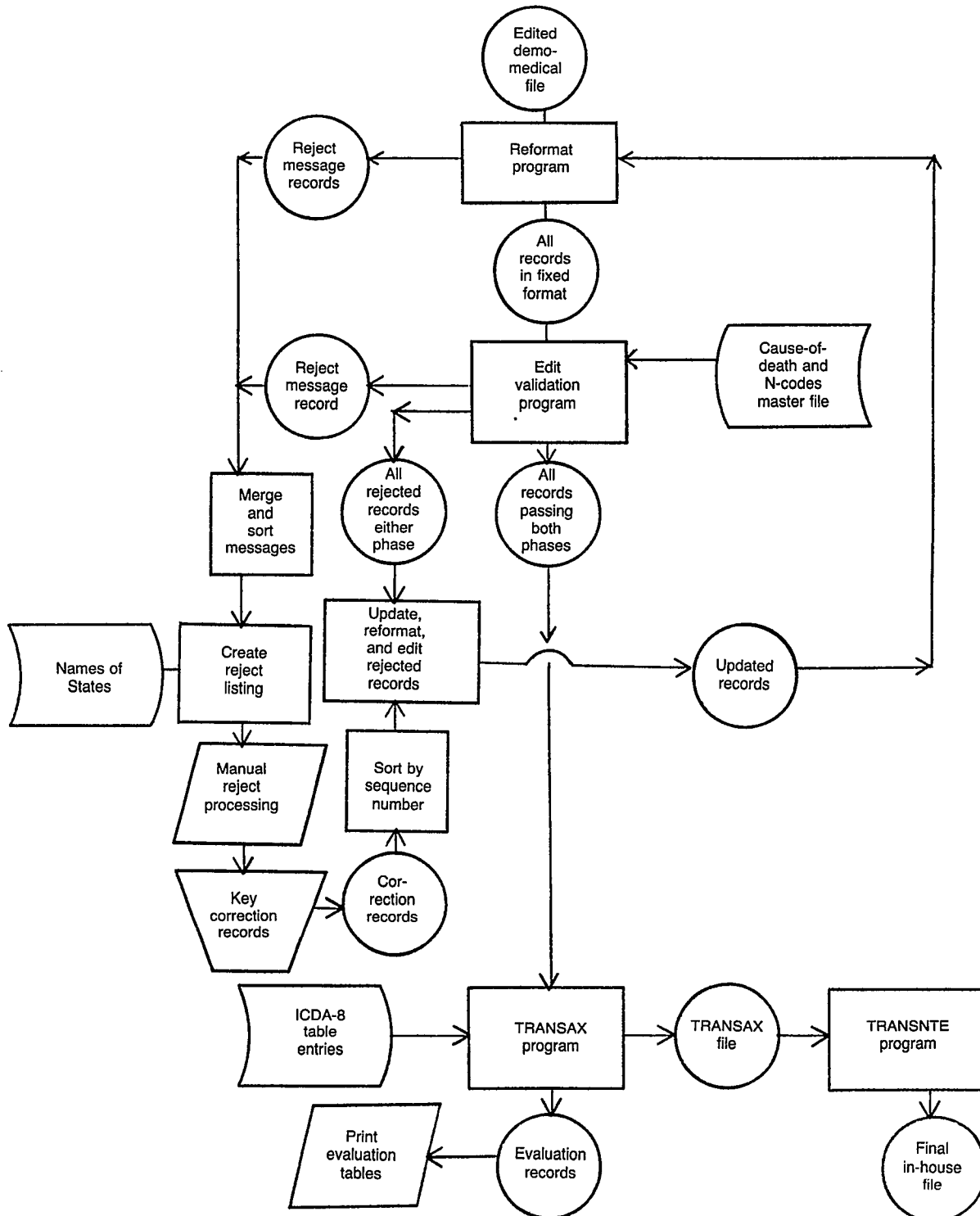
APPENDIX E

EFFECT OF AXIS TRANSLATION ON THE FREQUENCY OF OCCURRENCE OF EACH  
ICDA CATEGORY USED AS AN ADDRESS, SUBADDRESS, OR RECODE (1976 DATA)

ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE	ICDA CATEGORY	NO. OF RECORDS ON WHICH MENTIONED AS		+/-% CHANGE
	ENTITY AXIS CODE	RECORD AXIS CODE			ENTITY AXIS CODE	RECORD AXIS CODE	
7572	78	78	-				
7573	1	1	-				
7574	-	-	-				
7579	3	3	-				
7580	47	47	-				
7581	46	46	-				
7582	7	7	-				
7583	28	28	-				
7588	142	142	-				
7589	378	199	-47.4				
7590	29	29	-				
7591	34	34	-				
7592	53	53	-				
7593	995	995	-				
7594	546	546	-				
7595	48	48	-				
7596	47	47	-				
7598	234	234	-				
7599	1773	970	-45.3				
7640	-	1	...				
7641	-	-	-				
7642	-	-	-				
7643	-	-	-				
7644	-	11	...				
7649	21	9	-57.1				
7650	-	5	...				
7651	-	-	-				
7652	-	-	-				
7653	-	5	...				
7654	-	13	...				
7659	26	4	-84.6				
7660	-	30	...				
7661	-	2	...				
7662	-	3	...				
7663	-	10	...				
7664	-	119	...				
7669	218	59	-72.9				
7670	-	10	...				
7671	-	-	-				
7672	-	-	-				
7673	-	1	...				
7674	-	14	...				
7679	38	13	-65.8				
7680	-	19	...				
7681	-	-	-				
7682	-	1	...				
7683	-	1	...				
7684	-	49	...				
7689	89	20	-77.5				
7710	40	40	-				
7711	137	137	-				
7720	2629	2568	-2.3				
7721	9	7	-22.2				
7722	31	27	-12.9				
7729	234	217	-7.3				
7740	1	1	-				
7741	-	1	...				
7742	-	-	-				
7749	25	24	-4.0				
7750	62	62	-				
7751	13	12	-7.7				
7752	6	6	-				
7759	374	324	-13.4				
7760	763	754	-1.2				
7761	4466	4437	-0.6				
7762	6355	6311	-0.7				
7763	182	167	-8.2				
7764	127	124	-2.4				
7769	10004	6966	-30.4				
7789	9669	9669	-				
7800	6481	5579	-13.9				
7804	138	138	-				
7810	11	11	-				
7811	10	10	-				
7815	1773	1773	-				
7816	18	18	-				
7817	2149	2080	-3.2				
7824	83507	81845	-2.0				
7826	3492	3424	-1.9				
7828	343	343	-				
7831	3799	3796	-0.1				
7833	69	66	-4.3				
7845	3184	1986	-37.6				
7853	5311	5310	-0.0				
7857	110	109	-0.9				
7880	25404	22599	-11.0				
7882	24	24	-				
7890	21	21	-				
792	40652	40185	-1.1				
794	29071	28747	-1.1				

# Appendix F

## Mortality data system flow chart from ICDA-8



# Appendix G

## ICDA–8 multiple cause-of-death public use tape format for data years 1968–78

<i>Tape location</i>	<i>Size of field</i>	<i>Item and code outline</i>
1	1	Last digit of data year 8...1968 or 1978 9...1969 0...1970 1...1971 2...1972 3...1973 4...1974 5...1975 6...1976 7...1977
2–3	2	Shipment number Shipments from each reporting area are numbered consecutively beginning with 01.
4	1	Reporting area The following codes, when used with the State-of-occurrence codes, tape locations 26–27, identify separate reporting areas. 1...Bronx Borough 2...Brooklyn Borough 3...Manhattan Borough 4...Queens Borough 5...Richmond Borough 6...Chicago 0...All other areas
5–10	6	Certificate number These positions are blank.
11	1	Record type (computer generated) 1...Residents State and county of occurrence and residence are the same. 2...Nonresidents State and/or county of occurrence and residence are different.
12	1	Resident status (computer generated) 1...Residents State and county of occurrence and residence are the same. 2...Intrastate nonresidents State of occurrence and residence are the same but county is different. 3...Interstate nonresidents State of occurrence and residence are different but both are in the United States. 4...Foreign residents (Not applicable to 1968–69 data.) State of occurrence is one of the 50 States or the District of Columbia, but place of residence is outside the United States.
13–25	13	Place of residence 1968–69 data Refer to the <i>Vital Statistics Instruction Manual, Geographic Reference Manual: Codes Used in Computer Operations Effective With 1962 Data</i> for a complete list of areas with codes. 1970–78 data Refer to the <i>Geographic Code Manual: Codes Used in Computer Processing Effective With 1970 Data</i> for a complete list of areas and codes. Foreign residents were not uniquely identified in 1968 or 1969. The place of residence was allocated to the place of occurrence (State and county).



<i>Tape location</i>	<i>Size of field</i>	<i>Item and code outline</i>
13-14	2	<p>State</p> <p>01-51...Each State and the District of Columbia are numbered alphabetically.</p> <p>Foreign residents (Not applicable to 1968-69)</p> <p>52...Puerto Rico</p> <p>53...Virgin Islands</p> <p>54...Guam</p> <p>55...Canada</p> <p>56...Cuba</p> <p>57...Mexico</p> <p>58...Other western hemisphere</p> <p>59...Remainder of the world</p> <p>Code 58 was deleted in 1978.</p>
15-17	3	<p>County</p> <p>001-nnn...Counties and county equivalents are numbered alphabetically within each State.</p> <p>ZZZ...Foreign residents (not applicable to 1968-69)</p>
18-20	3	<p>City</p> <p>001-nnn...Cities are numbered alphabetically within each State and identify each city with a population of 250,000 or more.</p> <p>999...Balance of county</p> <p>ZZZ...Foreign residents (not applicable to 1968-69)</p> <p>1968-69 data</p> <p>Population is based on the 1960 Census.</p> <p>1970-78 data</p> <p>Population is based on the 1970 Census.</p>
21	1	<p>Population size of city of residence</p> <p>0 . . 1,000,000 or more</p> <p>1 . . . . 500,000 to 1,000,000</p> <p>2 . . . . 250,000 to 500,000</p> <p>3 . . . . 100,000 to 250,000</p> <p>4 . . . . 50,000 to 100,000</p> <p>5 . . . . 25,000 to 50,000</p> <p>6 . . . . 10,000 to 25,000</p> <p>9 . . All other areas in the United States</p> <p>Z . . Foreign residents (not applicable to 1968-69)</p>
22-24	3	<p>Standard metropolitan statistical areas (SMSA)</p> <p>1968-78 data</p> <p>000... Nonmetropolitan counties except those coded &amp;&amp;&amp;</p> <p>&amp;&amp;&amp;...Nonmetropolitan counties included in the standard consolidated areas</p> <p>1968-69 data</p> <p>001-201...The 201 SMSA's established in 1960</p> <p>1970-78 data</p> <p>001-229...The 229 SMSA's established in 1970</p> <p>ZZZ...Foreign residents</p>
25	1	<p>Metropolitan-nonmetropolitan county of residence</p> <p>1...Metropolitan county</p> <p>2...Nonmetropolitan county</p> <p>Z...Foreign residents (not applicable to 1968-69)</p>
26-30	5	<p>Place of occurrence</p> <p>1968-69 data</p> <p>Refer to the <i>Vital Statistics Instruction Manual, Geographic Reference Manual: Codes Used in Computer Operations Effective With 1962 Data</i> for a complete list of areas and codes.</p> <p>1970-78 data</p> <p>Refer to the <i>Geographic Code Manual: Codes Used in Computer Processing Effective With 1970 Data</i> for a complete list of areas and codes.</p>
26-27	2	<p>State</p> <p>01-51...Each State and the District of Columbia are numbered alphabetically.</p>

<i>Tape location</i>	<i>Size of field</i>	<i>Item and code outline</i>
28-30	3	County 001-nnn...Counties and county equivalents are numbered alphabetically within each State.
31-34	4	Date of death <sup>a</sup>
31-32	2	Month of death 01...January 02...February 03...March 04...April 05...May 06...June 07...July 08...August 09...September 10...October 11...November 12...December
33-34	2	Day of death 01-31...As applicable to month of death 99...Day of death not stated  For 1968-71 data, day of death was not coded.
35	1	Sex 1...Male 2...Female
36-38	3	Race
36	1	Detail race 0...Guamian 1...White 2...Black 3...Indian (includes Aleuts and Eskimos) 4...Chinese 5...Japanese 6...Hawaiian (includes part-Hawaiian) 7...All other races 8...Filipino  Codes 0 and 8 are not used for 1968 data. For 1978 data, code 0 is defined as "Other Asian or Pacific Islander."
37	1	Race recode 2 (computer generated) 1...White 2...All other races
38	1	Race recode 3 (computer generated) 1...White 2...Black 3...Other races
39-47	9	Age at death

<sup>a</sup>Year of death is identified in tape location 1.

<i>Tape location</i>	<i>Size of field</i>	<i>Item and code outline</i>																											
39-41	3	Detail age Three positions are used to code detail age. Location 39 identifies age in years, months, weeks, days, hours, or minutes. Locations 40-41 are the number of years, months, weeks, days, hours, or minutes.																											
		<table border="0"> <thead> <tr> <th style="text-align: center;"><i>Location 39</i></th> <th></th> <th style="text-align: center;"><i>Locations 40-41<sup>f</sup></i></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td> <td>Years under 100</td> <td style="text-align: center;">01-99</td> </tr> <tr> <td style="text-align: center;">1</td> <td>Years 100 and over</td> <td style="text-align: center;">01-99</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Months</td> <td style="text-align: center;">01-11, 99</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Weeks</td> <td style="text-align: center;">01-03, 99</td> </tr> <tr> <td style="text-align: center;">4</td> <td>Days</td> <td style="text-align: center;">01-27, 99</td> </tr> <tr> <td style="text-align: center;">5</td> <td>Hours</td> <td style="text-align: center;">01-23, 99</td> </tr> <tr> <td style="text-align: center;">6</td> <td>Minutes</td> <td style="text-align: center;">01-59, 99</td> </tr> <tr> <td style="text-align: center;">9</td> <td>Age not stated</td> <td style="text-align: center;">99</td> </tr> </tbody> </table>	<i>Location 39</i>		<i>Locations 40-41<sup>f</sup></i>	0	Years under 100	01-99	1	Years 100 and over	01-99	2	Months	01-11, 99	3	Weeks	01-03, 99	4	Days	01-27, 99	5	Hours	01-23, 99	6	Minutes	01-59, 99	9	Age not stated	99
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3	Weeks	01-03, 99																											
4	Days	01-27, 99																											
5	Hours	01-23, 99																											
6	Minutes	01-59, 99																											
9	Age not stated	99																											
42-43	2	Age recode 12 01...Under 1 year 02...1-4 years 03...5-14 years 04...15-24 years 05...25-34 years 06...35-44 years 07...45-54 years 08...55-64 years 09...65-74 years 10...75-84 years 11...85 years and over 12...Age not stated																											
44-45	2	Age recode 27 01...Under 1 month 02...1 month-11 months 03...1 year 04...2 years 05...3 years 06...4 years 07...5-9 years 08...10-14 years 09...15-19 years 10...20-24 years 11...25-29 years 12...30-34 years 13...35-39 years 14...40-44 years 15...45-49 years 16...50-54 years 17...55-59 years 18...60-64 years 19...65-69 years 20...70-74 years 21...75-79 years 22...80-84 years 23...85-89 years 24...90-94 years 25...95-99 years 26...100 years and over 27...Age not stated																											

<sup>f</sup>Unknown in infant age are recoded:

<i>Code and meaning</i>	<i>Tape locations</i>		
	<i>42-43</i>	<i>44-45</i>	<i>46-47</i>
299-Months	01	02	12
399-Weeks	01	01	09
499-Days	01	01	03
599-Hours	01	01	01
699-Minutes	01	01	01

Tape  
location

Size of  
field

Item and code outline

46-47            2            Infant age recode 22  
  
Blank...Age 1 year and over or not stated  
01...Under 1 hour  
02...1-23 hours  
03...1 day  
04...2 days  
05...3 days  
06...4 days  
07...5 days  
08...6 days  
09...7-13 days  
10...14-20 days  
11...21-27 days  
12...1 month  
13...2 months  
14...3 months  
15...4 months  
16...5 months  
17...6 months  
18...7 months  
19...8 months  
20...9 months  
21...10 months  
22...11 months

48-49            2            Division and State subcode of residence  
  
States are coded within Division. The code structure is designed to sequence the States as they appear in NCHS publications.  
Location 48 identifies the Division, and location 49 identifies States within that Division.  
00...Foreign residents (not applicable to 1968-69)

Location 48	Location 49
1 . . . . .	New England 1...Maine 2...New Hampshire 3...Vermont 4...Massachusetts 5...Rhode Island 6...Connecticut
2 . . . . .	Middle Atlantic 1...New York 2...New Jersey 3...Pennsylvania
3 . . . . .	East North Central 1...Ohio 2...Indiana 3...Illinois 4...Michigan 5...Wisconsin
4 . . . . .	West North Central 1...Minnesota 2...Iowa 3...Missouri 4...North Dakota 5...South Dakota 6...Nebraska 7...Kansas
5 . . . . .	South Atlantic 1...Delaware 2...Maryland 3...District of Columbia 4...Virginia 5...West Virginia 6...North Carolina 7...South Carolina 8...Georgia 9...Florida

- |             |                    |
|-------------|--------------------|
| 6 . . . . . | East South Central |
|             | 1...Kentucky       |
|             | 2...Tennessee      |
|             | 3...Alabama        |
|             | 4...Mississippi    |
| 7 . . . . . | West South Central |
|             | 1...Arkansas       |
|             | 2...Louisiana      |
|             | 3...Oklahoma       |
|             | 4...Texas          |
| 8 . . . . . | Mountain           |
|             | 1...Montana        |
|             | 2...Idaho          |
|             | 3...Wyoming        |
|             | 4...Colorado       |
|             | 5...New Mexico     |
|             | 6...Arizona        |
|             | 7...Utah           |
|             | 8...Nevada         |
| 9 . . . . . | Pacific            |
|             | 1...Washington     |
|             | 2...Oregon         |
|             | 3...California     |
|             | 4...Alaska         |
|             | 5...Hawaii         |

50-51

2

**Division and State subcode of occurrence**

States are coded within Divisions. The code structure is designed to sequence the States as they appear in NCHS publications. Location 50 identifies the Division, and location 51 identifies States within that Division

Location 50	Location 51
1 . . . . .	New England
	1...Maine
	2...New Hampshire
	3...Vermont
	4...Massachusetts
	5...Rhode Island
	6...Connecticut
2 . . . . .	Middle Atlantic
	1...New York
	2...New Jersey
	3...Pennsylvania
3 . . . . .	East North Central
	1...Ohio
	2...Indiana
	3...Illinois
	4...Michigan
	5...Wisconsin
4 . . . . .	West North Central
	1...Minnesota
	2...Iowa
	3...Missouri
	4...North Dakota
	5...South Dakota
	6...Nebraska
	7...Kansas
5 . . . . .	South Atlantic
	1...Delaware
	2...Maryland
	3...District of Columbia
	4...Virginia
	5...West Virginia
	6...North Carolina
	7...South Carolina
	8...Georgia
	9...Florida

<i>Tape location</i>	<i>Size of field</i>	<i>Item and code outline</i>
	6 . . . . .	East South Central 1...Kentucky 2...Tennessee 3...Alabama 4...Mississippi
	7 . . . . .	West South Central 1...Arkansas 2...Louisiana 3...Oklahoma 4...Texas
	8 . . . . .	Mountain 1...Montana 2...Idaho 3...Wyoming 4...Colorado 5...New Mexico 6...Arizona 7...Utah 8...Nevada
	9 . . . . .	Pacific 1...Washington 2...Oregon 3...California 4...Alaska 5...Hawaii
52	1	Autopsy performed 1...Yes 2...No 8...Item not on certificate 9...Not stated  Item was not coded for 1968–71 data.
53	1	Finding used 1...Yes 2...No 8...Item not on certificate 9...Not stated  Item was not coded for 1968–71 data.
54–57	4	Used for internal processing.
58–59	2	Used for internal processing.
60–63	4	Underlying cause of death  See the <i>Eighth Revision International Classification of Diseases</i> , Vol. 1, adapted for use in the United States. For accidents, poisonings and violence, the external cause of injury (E800–E999) is coded. The nature of injury (800–999) is not coded. These positions do not include the letter E for the external cause of injury. For those underlying causes that do not have a 4th digit, location 63 is blank (Hex 40).
64–68	5	281 cause recode  A recode of the underlying cause into 281 groups for NCHS publications. 00200–33800...Code range (not inclusive)
69–71	3	69 cause recode  A recode of the underlying cause into 69 groups for NCHS publications. 010–810...Code range (not inclusive)
72–74	3	65 infant cause recode  A recode of the underlying cause into 65 groups for NCHS publications. 010–710...Code range (not inclusive)
75–77	3	34 cause recode  A recode of the underlying cause into 34 groups for NCHS publications. 010–370...Code range (not inclusive)
78–90	13	Used for internal processing.

<i>Tape location</i>	<i>Size of field</i>	<i>Item and code outline</i>
91	1	Place of accident code for causes E850–E929 Blank...Causes other than E850–E929 0...Home 1...Farm 2...Mine and quarry 3...Industrial place and premises 4...Place of recreation and sport 5...Street and highway 6...Public building 7...Resident institution 8...Other specified places 9...Place not specified  Item was not coded for 1968 data.
92–98	7	Sequence number (computer generated) 0000001–nnnnnnn...Each record in a data year is assigned a unique number.
99–100	2	Number of entity axis codes 01–14...Code range
101–212	112	Entity axis condition codes  Space has been provided for a maximum of 14 condition codes. Each code is eight digits. Records that do not have 14 condition codes are padded with blanks.  Digit 1 Part and line number 1...Part I, line 1 (a) 2...Part I, line 2 (b) 3...Part I, line 3 (c) 4...Part I, line 4 (d) 5...Part II  Digits 2–3 Sequence of condition code within part/line Digits 4–7 Condition code  See the <i>Eighth Revision, International Classification of Diseases</i> , Vol. 1, adapted for use in the United States.  Digit 8 Nature-of-injury flag 1...The code in digits 4–7 is a nature-of-injury code. 0...All other codes
101–108	8	1st 8-digit code
109–116	8	2nd 8-digit code
117–124	8	3rd 8-digit code
125–132	8	4th 8-digit code
133–140	8	5th 8-digit code
141–148	8	6th 8-digit code
149–156	8	7th 8-digit code
157–164	8	8th 8-digit code
165–172	8	9th 8-digit code
173–180	8	10th 8-digit code
181–188	8	11th 8-digit code
189–196	8	12th 8-digit code
197–204	8	13th 8-digit code
205–212	8	14th 8-digit code
213–214	2	Number of record axis condition codes 01–14...Code range

<i>Tape location</i>	<i>Size of field</i>	<i>Item and code outline</i>
215-284	70	Record axis condition codes <p>Space has been provided for a maximum of 14 condition codes. Each code is five digits. Records that do not have 14 condition codes are padded with blanks.</p> <p>Digits 1-4 Condition code  See the <i>Eighth Revision, International Classification of Diseases, Adapted</i>, Vol. 1, adapted for use in the United States.</p> <p>Digit 5 Nature-of-injury flag  1...The code in digits 1-4 is a nature-of-injury code  0...All other codes</p>
215-219	5	1st 5-digit code
220-224	5	2nd 5-digit code
225-229	5	3rd 5-digit code
230-234	5	4th 5-digit code
235-239	5	5th 5-digit code
240-244	5	6th 5-digit code
245-249	5	7th 5-digit code
250-254	5	8th 5-digit code
255-259	5	9th 5-digit code
260-264	5	10th 5-digit code
265-269	5	11th 5-digit code
270-274	5	12th 5-digit code
275-279	5	13th 5-digit code
280-284	5	14th 5-digit code
285	1	Used for internal processing only.

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