Improving ICD-10-CM Coding for Firearm Injuries: *Clinical Significance*

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for:

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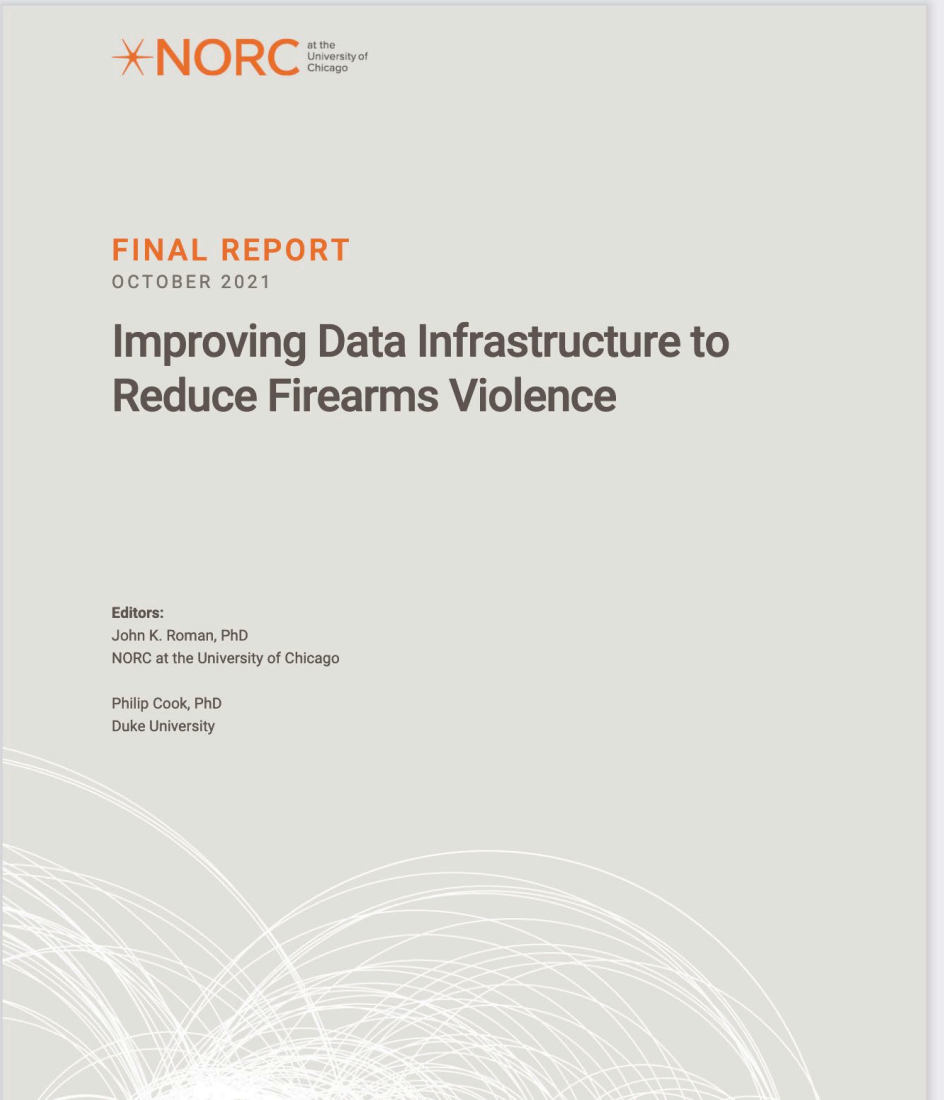
2021 NORC Report

- **Hospital discharge data** are the only data system capable of supplying state, local, and national estimates of nonfatal GSWs by intent (accident, assault, etc.).
- One major drawback...
- **Currently too many assaultive GSW injuries are coded as accidents.**



NORC at the University of Chicago

FINAL REPORT

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Improving Data Infrastructure to Reduce Firearms Violence

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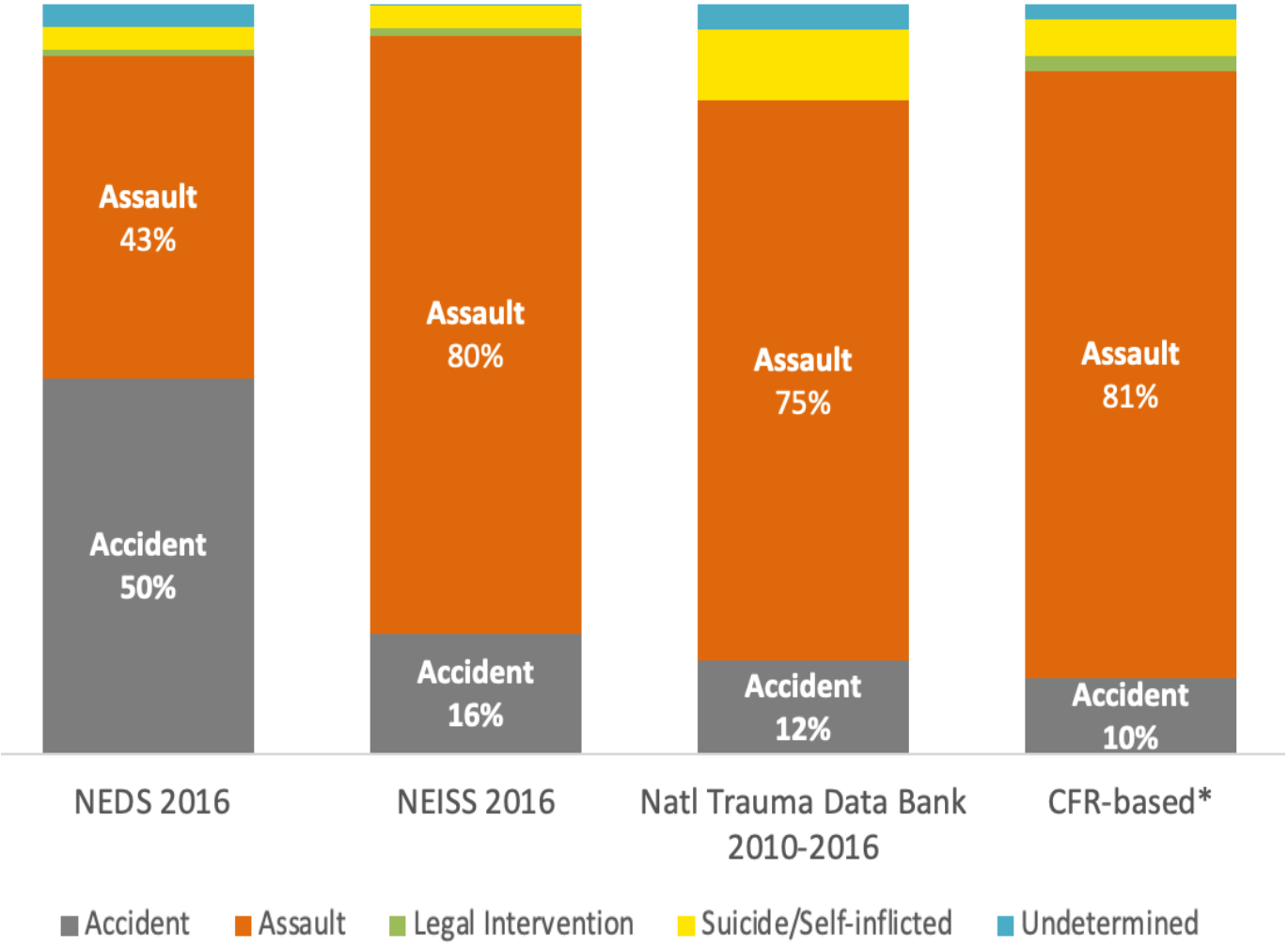
How Do We Know?



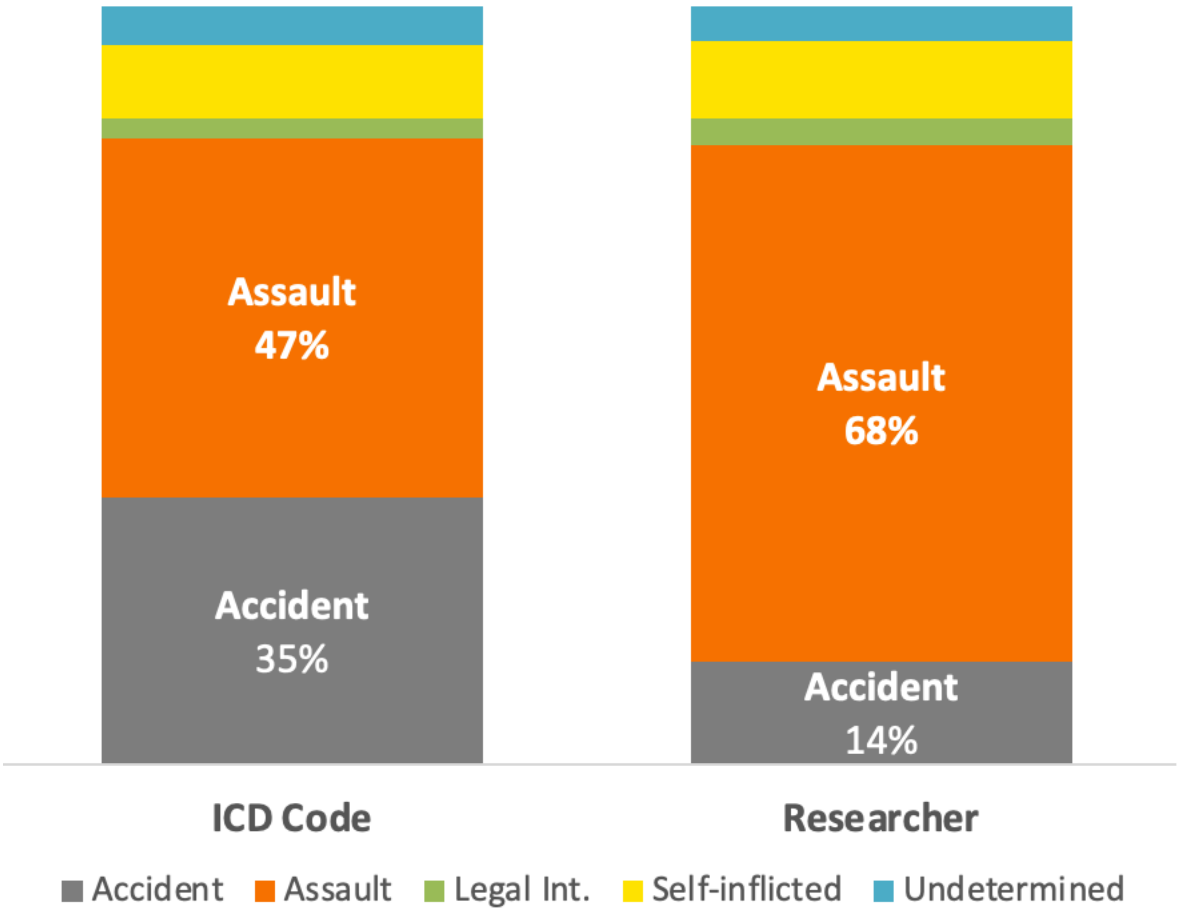
The Nationwide ED Sample (NEDS) uses ICD-10-CM coded discharge data. It reports 50% of nonfatal GSWs are accidents and 43% are assaults. Injury-focused databases like National Electronic Surveillance System (NEISS) report 10-16% are accidents and 75-81% are assaults.

SOURCE: Barber, Cook, Parker. *Prev Med* 2022; 165(Pt A):107129. NOTE: NEISS is National Electronic Injury Surveillance System. "CFR-based" – Is an estimate based on applying intent-specific case fatality rates to 2016 fatal firearm injuries. Nat'l Trauma Data Bank study combined Assaults and Legal Intervention.

How Do We Know?(cont'd)

Chart Review Study

- Compared intent per researcher review vs. hospital-assigned ICD-10-CM code for 1,227 GSWs in 3 large EDs.
- Distribution of intent per researcher was similar to NEISS/Trauma Registry/CFR-based.
- Sensitivity for assaults: 66%; PPV for accidents: 34%.
- Many assaults were coded as accidents. For half of these, information was sparse, but **for half the chart clearly indicated assault.**



Source: Miller et al. *JAMA Netw Open*. 2022; 5(12):e2246429.

ICD-10-CM Code Selection is Consequential

- Prominent medical journals and state health departments use discharge data to describe firearm injury by intent and describe accidents as the leading type.
- Current coding can be misleading for epidemiologic studies.
- Those seeking to prevent firearm injuries need accurate data.

Current Indexing Policy

- The Alphabetic Index of look-up terms for diagnoses and external cause codes identifies default codes to be used when information is unclear.
- Per the ICD-10-CM Official Coding Guidelines, a default code "represents that condition that is **most commonly associated** with the main term or is the **unspecified code** for the condition."
- Currently, default codes **assume accidental intent for all injury mechanisms** (not just firearms).

Nonfatal Injuries by Mechanism & Intent, NEISS 2019

Injury Cause	*Accident/Und*	*Assault/Leg*	*Self-Inflicted*
Machinery	100.0%	0.0%	0.0%
Motorcyclist	99.9%	0.1%	0.0%
Oth transport	99.8%	0.2%	0.1%
Pedal cyclist	99.7%	0.2%	0.0%
Natural, environ.	99.7%	0.1%	0.2%
MV-occupant	99.6%	0.3%	0.1%
Overexertion	99.3%	0.7%	0.0%
Foreign body	98.5%	0.2%	1.3%
Unk/unspec	98.3%	1.5%	0.3%
Dog bite	98.2%	1.8%	0.0%
Fall	97.9%	2.0%	0.1%
Near drowning	97.6%	0.8%	1.6%
Other specified	96.0%	0.4%	3.6%
Fire/burn	96.0%	3.3%	0.7%
Oth bite/sting	95.6%	4.4%	0.0%
Pedestrian	95.5%	4.0%	0.4%
Poisoning	88.6%	0.2%	11.2%
Cut/pierce	84.1%	7.2%	8.7%
Suffocation	82.7%	7.3%	10.0%
Struck by/against	77.4%	22.0%	0.6%
BB/pellet GSW	74.2%	25.3%	0.6%
Firearm GSW	15.9%	**80.8%**	3.3%

- Accident is the most common condition for each of the other major injury mechanisms.
- **Firearm injuries are the lone exception.** 81% were assaults or legal intervention in 2019.

SOURCE: NEISS-All Injury Program. Unweighted data downloaded from ICPSR.mich.edu. NOTE: NEISS-AIP does not differentiate accidents from undetermined. Per NEISS-Firearm Injury Surveillance System, undetermined comprises small %.

Proposed Indexing Change

- Change default code listed in Alphabetic Index for each category of firearm injury from accident to assault (e.g., from **"W34, accident by unspecified firearm"** to "**X95.9, assault by unspecified firearm**.")
- Default remains "accident" for all other injury mechanisms (falls, motor vehicle, BB guns, etc.) based on NEISS data.
- Coders retain ability to code for another intent (accident, assault, self-harm, legal intervention, undetermined) if indicated by the documentation.
- If approved, the ICD-10-CM Official Coding Guidelines will require updating.

Why Not “Undetermined” or “Unspecified”

- Proposed policy applies a uniform policy across mechanisms: when intent is unclear, default injury intent to most common intent for that mechanism (“accident” for all other mechanisms, “assault” for firearm, based on NEISS).
- Proposing to default all other mechanisms to “accident” and only firearms to “undetermined” is not driven by empirical data. We don’t know that undetermined intent is a greater issue for firearms than for other mechanisms, like drug overdoses or sharp instrument wounds. NEISS does not differentiate accident and unknown.

Questions?

Thank you.