

Wisconsin CODES
Crash *O*utcomes *D*ata *E*valuation System

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What Is CODES?

- Combines vehicle crash data with health outcomes data to provide more and better information than is available in crash data alone.
- Utilizes Probabilistic Linkage to match together records from multiple data sources which apply to the same person/event.
- Does not require personal identifiers such as name, address, SSN to match records.

What is the Goal of CODES

- To provide information on the health outcomes associated with motor vehicle crashes.
- To evaluate the impact of a variety of factors on health outcomes associated with motor vehicle crashes:
 - ✓ Driver Behavior – Speeding, Alcohol Use
 - ✓ Safety Equipment – Seat Belts, Helmets, Child Safety Seats
 - ✓ Vehicle Factors – Model, Weight, Year
 - ✓ Crash Configuration – Manner of Collision, Object Struck, Speed Limit, Urban/Rural

What is the Goal of CODES

- To provide information on the crashes and health outcomes associated with crashes over time, by demographic groups, for communities, counties and Wisconsin as a whole.

CODES – A Brief History

- 1990: Trudy Karlson attempts to link crash and hospital data together utilizing exact linkage techniques.
- 1992: NHTSA issues RFP for states to develop linked data using probabilistic linkage. Wisconsin becomes one of first 7 CODES states.
- 1996: Wisconsin becomes one of 5 states to win a demonstration grant to evaluate serious lower leg injuries.
- 1997: Wisconsin CODES becomes one of 4-5 states to win contract to become part of a CODES Peer to Peer Group.

CODES – A Brief History

- 1999: Wisconsin CODES wins demonstration grant to evaluate the impact of raising speed limits from 55 to 65mph on selected state highways.
- 2000: Wisconsin CODES wins grant to become part of CODES Data Network.

What is Probabilistic Linkage?

Exact Linkage

	Data 1	Data2
Name	Bigelow	Bigelow
DOB	040453	040453
Date of "Event"	011301	011301
Sex	Male	Male

RECORDS MATCHED!!!

What is Probabilistic Linkage

- But what if the name was Biglo vs Bigelow?
- Or the Date of Birth was off by one year?
- Or one set of data had no names?

NO MATCH!!

General Problem

- Linking records between two data sets when one or both do not have person level identifiers
- Linking records when there is incorrect or missing data for person level identifiers.
- However, some information, such as sex, age/birthdate, county, etc. is available.
- Problem is common to a wide range of research:
Outcomes, epidemiologic, quality assurance, financial

Probabilistic Record Linkage

- Links records between 2 data sets through the calculation of linkage likelihood or probability weights, adjusting for incomplete and missing data.
- Likelihood/probability weights are estimated given all observed agreements and disagreements on all data elements used for linking records together.
- Probabilistic Linkage incorporates variable levels of discriminatory power and reliability within specific linkage elements.
- Software we use is called CODES2000.

What Activities Does CODES Do?

LINK DATA

- Are currently linking hospital and death certificate data to crash data.
- Will link Emergency Department and EMS data when that data becomes available.
- Will consider linking Trauma Registry Data when that becomes available.

Provide Special Information and Reports To WisDOT

- Deer related crashes
- Crash related charges by payer group
- Seat belt use and effectiveness
- Traffic Safety Reporter Magazine
- Motorcycle Crashes in Wisconsin
 - Presentation to training seminars in Madison and Wausau

What Activities Does CODES Do?

MAKE PRESENTATIONS:

- Transportation Research Board
- Safe Communities/Kids Groups
- Educational Seminars put on by BOTS/DOT
- Public Health Association Conferences
- Association for Health Services Research
- International Traffic Records Forum
- Gerontological Society Meetings
- International Injury Conferences

What Activities Does CODES Do?

What Presentations

- Injury Related Hospitalizations in Wisconsin, 1994-1999
- Helmet Use and Traumatic Brain Injury Associated with Motorcycle Crashes in Wisconsin, 1991-1997
- Motorcycle Crashes in Wisconsin, 1994-1998
- Using Probabilistic Linkage to Merge Multiple Data Sources for Monitoring Population Health
- Serious Lower Extremity Injuries in Motor Vehicle Crashes 1990-1994
- The Impact of Driver Age on Crash Rates and Outcomes, Wisconsin, 1991-1995
- Injuries and Costs from Motor Vehicle Crashes into Fixed Objects
- Crash and Behavioral Characteristics, and Health Outcomes, Associated with Vehicular Crashes by Tourists in Wisconsin, 1992-1996
- Incidence, Causes and Outcomes of Injury Related Traumatic Brain Injury, Wisconsin, 1996

What Activities Does CODES Do?

DEVELOP/PRODUCE REPORTS

- **Community Crash Reports**
- **Crash Level and Injury Outcome Management Reports**
- **Safe Kids Coalition Reports**
- **Hospital E-Code Reports (Safe Communities Reports)**
- **Motorcycle: Crash Level and Injury Outcome Management Reports**
- **Wisconsin Crash/Outcomes FACTSHEETS**

Disseminate Information

- Maintain state level reports, presentations and FACTSHEETS on our website.
- Update the website with new information.
- Provide Community Crash, Safe Kids and Safe Communities Reports directly to regional and county organizations.