WISQARS Cost of Injury Reports

Lee Annest, PhD, Director,
Office of Statistics and Programming

Progress Through Partnerships
(Safe States Alliance, SAVIR, CDC)
April 7, 2011
Fatal and Nonfatal Injuries in the United States

WISQARS-Cost of Injury Reports

Available to the public
February 24, 2011
Outline

• Data Sources
• Overview of Cost of Injury Reports module
• User-interface, options, & output
• Glimpse at Cost module - Part II (use own data)
• Brief examples of graphic presentations
  - Cost of fatal/nonfatal transportation injuries
  - Cost of fatal fall injuries for persons 65+ years
  - Cost of suicide by sex and mechanism of injury
Data Sources

• Deaths - NCHS’ National Vital Statistics System
  • Underlying Cause data for Intent X Mechanism
  • Multiple Cause data for Body Region X Diagnosis

• Nonfatal Injuries – National Electronic Injury Surveillance System – All Injury Program

• Unit lifetime medical and work loss cost estimates produced by Dr. Ted Miller and colleagues at the Pacific Institute for Research and Evaluation (PIRE), Calverton, MD
Overview of Cost Module

Measures of Cost

• 2005 Lifetime Medical Costs (treatment & rehab)
• 2005 Lifetime Work Loss Costs (lost wages, fringe benefits, and lost household work)
• 2005 Lifetime Combined (Medical + Work Loss) Costs

(NOTE: Cost estimates do not include property damage, pain/suffering, loss quality of life, litigation, and other costs. For injury-related deaths, lifetime medical costs refer to the medical costs associated with the fatal injury event.)
Overview of Cost Module

Injury Outcomes

• Deaths
• Nonfatal Hospitalizations
• Nonfatal Emergency Department Visits – Treated and Released

(Note: For nonfatal hospitalizations, cost estimates are limited to injured persons initially treated in the ED.)
Overview of Cost Module
Injury/Demographic Reporting Options

• Intent X Mechanism of Injury (E-code matrix)
• Body Region X Nature of Injury (Diagnosis/Barell matrix)
• Geographic location
  • U.S., Region, State for injury deaths
  • U.S. only for nonfatal injury hospitalizations/ED visits T & R
• Sex
• All Ages, 5-year Age Groups, Custom Age Range

(Note: Race/Ethnicity is not offered as an option in the module.)
Overview of Cost Module

Cost Statistics

• Total Costs for 2005 in year 2005 prices for all injuries covered in the report
• Average Costs per injury for 2005 in year 2005 prices

(Note: we plan to update the module with more current data and pricing in the future.)
Overview of Cost Module

Pricing

• 2005 U.S. Prices (Deaths/Hospitalizations/ED-T&R)
• 2005 Regional Prices (Deaths only)
• 2005 State Prices (Deaths only)

(Note: Medical price adjusters (indices) were derived from the ACCRA 2007 Cost of Living Index (Council for Community and Economic Research) and population statistics from the U.S. Census Bureau; wage adjusters were computed using wage information from the U.S. Bureau of Economic Analysis, *Survey of Current Business*, 2008)
Overview of Cost Module
Cost of Injury Computations

• Each injury death, hospitalization, ED visit –T&R) was assigned a unit medical cost and a unit work loss cost
• Total costs = ∑ unit costs of selected incidents
• Average costs = Total costs ÷ total # of selected incidents (i.e., injury deaths or nonfatal injuries).
• Table provides # of incidents, average costs, total costs.

(Note: Some factors considered in assigning unit costs: mechanism, intent, nature of injury, body region, place of death, sex and age. (See help file/methods report for details)
Medical and Work Loss Cost Estimation Methods for the WISQARS Cost of Injury Module

Bruce A. Lawrence, Ph.D.
Soma Bhattacharya, Ph.D.
Eduard Zaloshnja, Ph.D.
Paul Jones, Ph.D.
Ted R. Miller, Ph.D.
Pacific Institute for Research & Evaluation

Phaedra S. Corso, Ph.D.
Department of Health Policy and Management
College of Public Health
University of Georgia

Claudia A. Steiner, M.D., M.P.H.
Agency for Healthcare Research and Quality

September 4, 2009
Welcome to WISQARS™

WISQARS™ (Web-based Injury Statistics Query and Reporting System) is an interactive database system that provides customized reports of injury-related data. Learn more about WISQARS™ >>

Fatal Injury Data
Death certificate data from the National Vital Statistics System — deaths, death rates, and years of potential life lost (a measure of premature death) by specific causes of injury mortality and common causes of death.
Learn More and Query Fatal Data >>

Nonfatal Injury Data
National estimates of injuries treated in U.S. hospital emergency departments from the National Electronic Injury Surveillance System - All Injury Program (NEISS-AIP) — nonfatal injuries and nonfatal injury rates.
Learn More and Query Nonfatal Data >>

Violent Deaths (NVDRS)
Data from the National Violent Death Reporting System (NVDRS) — violent incidents and deaths, death rates, and causes of injury mortality. Data provided for 16 states and are not nationally representative.
Learn More and Query NVDRS >>

New! Cost of Injury Reports
WISQARS™ provides cost estimates for injury deaths (including violent deaths) and nonfatal injuries where the patient was treated and released from a hospital or ED.
Generate Cost of Injury Reports using Fatal or Nonfatal Data >>
Learn More About the Reports >>
Learn About the Costs of Violent Deaths >>

Motor Vehicle Traffic Deaths and Estimated Lifetime Medical Costs, by Sex, 2005

<table>
<thead>
<tr>
<th>Sex</th>
<th>Deaths</th>
<th>Medical Cost</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>30,291</td>
<td>$285,992,000</td>
<td>$316,283,000</td>
</tr>
<tr>
<td>Female</td>
<td>--</td>
<td>$13,376</td>
<td>$13,376</td>
</tr>
<tr>
<td>Total</td>
<td>--</td>
<td>$309,368,000</td>
<td>$319,659,000</td>
</tr>
</tbody>
</table>

Motor vehicle, Traffic
Injury Prevention & Control: Data & Statistics (WISQARS™)

Fatal Injury Data

Reports, Charts, and Maps

- Cost of Injury Reports 2005
- Fatal Injury Maps 2000-2006
- Fatal Injury Reports 1999-2007
- Years of Potential Life Lost (YPLL) 1999-2007
- Years of Potential Life Lost (YPLL) 1981-1998

Note: The coding of mortality data changed significantly in 1999, so you may not be able to compare number of deaths and death rates from 1998 and before with data from 1999 and after. Also, cause-of-injury groupings were updated in 2003, which may affect some WISQARS mortality reports. Learn more >>

Help, Tutorial, FAQs, and More

- Help
- Tutorial
- Frequently Asked Questions
- Coding of Data
- Availability of New Data
- Ten Leading Causes of Death and Injury Charts

Contact Us:
Centers for Disease Control and Prevention
National Center for Injury Prevention and Control (NCIPC)
4770 Buford Hwy, NE
MS F-63
Atlanta, GA 30341-3717

800-CDC-INFO
(800-232-4636)
TTY: (888) 232-6346
24 Hours/Every Day
Cost Module User Interface
Welcome to the Cost of Injury Reports application! Here you will find cost of injury estimates for fatal or nonfatal injuries classified either by intent and mechanism or by body region and nature of injury. Learn more >>

Select from the report options provided below and on the next two screens. Click on the title (in blue) at the top of each section for details. Reports will be generated and returned to you on the screen. You will also have the option to save the data in a spreadsheet or print the results.

Select Type of Injury Outcome

What was the Injury Outcome? (select only one radio button):
- Death
- Hospitalization
- ED Treated and Released

Select Injury Classification Scheme

How are Injuries to be Classified? (select only one radio button):
- Intent by Mechanism
- Body Region by Nature of Injury

Go to Next Screen >
Intent X Mechanism: Deaths

WISQARS Home > Fatal Injury Queries

Help

< Back Go to Next Screen > Reset Screen

Screen 2 of 3

Mechanism Level

Indicate level of detail for Mechanism (select only one radio button):
- Mechanism Level 1 (All Mechanisms combined)
- Mechanism Level 2 (e.g., 'Fall', 'Motor Vehicle Traffic')
- Mechanism Level 3 (e.g., 'Fire/Flame', 'Motor Vehicle Traffic Occupant')
- Mechanism Level 4 (Residential Fire/Flame)

Intent

- All Intents
- Unintentional

 Violence-related

- Homicide
- Legal Intervention
- Suicide
- Undetermined

Mechanism

- All Mechanisms of Injury

- Cut/Pierce
- Drowning/Submersion
- Fall
- Fire/Burn
  - Fire/Flame
  - Residential Fire/Flame
- Hot Object/Substance

- Firearm
- Machinery
- Natural/Environmental
- Overexertion
- Poisoning
- Struck By/Against
- Suffocation

Transportation

- Motor/Vehicle, Traffic
- Motorcyclist
- Occupant
Intent X Mechanism: Hospitalization, ED visit

Intent
- All Intents
  - Unintentional
  - Violence-related
    - Assault
      - Assault-Other
      - Assault-Sexual
    - Legal Intervention
    - Self-Harm

Mechanism
- All Mechanisms of Injury
  - Cut/Pierce
  - Drowning/Submersion
  - Fall
  - Fire/Burn
  - Gunshot
    - Firearm
    - BB/Pellet
    - Foreign body
    - Machinery
    - Natural/Environmental
    - Bite/Sting
      - Dog Bite
      - Other Bite/Sting
    - Overexertion
    - Poisoning
    - Struck by/against
    - Suffocation
  - Transportation
    - Motor Vehicle Occupant
      - MV Traffic Occupant
    - Motorcyclist
    - Pedal Cyclist
    - Pedestrian
    - Other Transport
    - Other Specified
    - Unknown/Unspecified
Body Region X Nature of Injury: Hospitalization, ED visit

<table>
<thead>
<tr>
<th>Body Region</th>
<th>Nature Of Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Body Regions</td>
<td>All Nature of Injury</td>
</tr>
<tr>
<td>Head &amp; Neck</td>
<td>Fracture</td>
</tr>
<tr>
<td></td>
<td>Dislocation</td>
</tr>
<tr>
<td>Traumatic Brain Injury</td>
<td>Strain/Strain</td>
</tr>
<tr>
<td>Traumatic Brain Injury</td>
<td>Internal</td>
</tr>
<tr>
<td>Other Head &amp; Neck</td>
<td>Open Wound</td>
</tr>
<tr>
<td>Other Head</td>
<td>Amputation</td>
</tr>
<tr>
<td>Face</td>
<td>Blood Vessel</td>
</tr>
<tr>
<td>Eye</td>
<td>Superficial &amp; Contusion</td>
</tr>
<tr>
<td>Neck</td>
<td>Crushing</td>
</tr>
<tr>
<td>Head/Neck, Unspecified</td>
<td>Burn</td>
</tr>
<tr>
<td>Torso</td>
<td>Nerve Damage</td>
</tr>
<tr>
<td>Torso</td>
<td>Other Specified</td>
</tr>
<tr>
<td>Extremeties</td>
<td></td>
</tr>
<tr>
<td>Upper Extremity</td>
<td></td>
</tr>
<tr>
<td>Shoulder/Upper Arm</td>
<td>Fracture</td>
</tr>
<tr>
<td>Forearm/Elbow</td>
<td>Dislocation</td>
</tr>
<tr>
<td>Wrist/Hand/Finger</td>
<td>Strain/Strain</td>
</tr>
<tr>
<td>Upper Extremity Unspecified</td>
<td>Internal</td>
</tr>
<tr>
<td>Lower Extremity</td>
<td>Open Wound</td>
</tr>
<tr>
<td>Upper Leg/Thigh</td>
<td>Amputation</td>
</tr>
<tr>
<td>Knee</td>
<td>Blood Vessel</td>
</tr>
<tr>
<td>Lower Leg/Ankle</td>
<td>Superficial &amp; Contusion</td>
</tr>
<tr>
<td>Foot &amp; Toes</td>
<td>Crushing</td>
</tr>
<tr>
<td>Lower Extremity Unspecified</td>
<td>Burn</td>
</tr>
<tr>
<td>Unclassified by Site</td>
<td>Nerve Damage</td>
</tr>
<tr>
<td>Other and Unspecified</td>
<td>Other Specified</td>
</tr>
<tr>
<td>System-wide</td>
<td></td>
</tr>
</tbody>
</table>

- Traumatic Brain Injury
- Other Head & Neck
- Other Head
- Face
- Neck
- Head/Neck, Unspecified
- Torso
- Torso
- Extremities
- Upper Extremity
- Shoulder/Upper Arm
- Forearm/Elbow
- Wrist/Hand/Finger
- Upper Extremity Unspecified
- Lower Extremity
- Upper Leg/Thigh
- Knee
- Lower Leg/Ankle
- Foot & Toes
- Lower Extremity Unspecified
- Unclassified by Site
- Other and Unspecified
- Other Multiple Sites
- Unspecified Site
- System-wide
- System-wide
Fatal Injuries, Both Sexes, All Ages, Georgia, 2005
Intent: Unintentional
Mechanism: Motor vehicle, Traffic

Number of Deaths and Estimated Lifetime Costs Classified by Mechanism and Intent
Costs Expressed in Year 2005 State-Specific Prices

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Deaths</th>
<th>Type of Cost</th>
<th>Intent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Vehicle - Traffic</td>
<td>--</td>
<td></td>
<td>Unintentional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medical Cost</td>
<td>$10,407</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>$17,015,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Work Loss Cost</td>
<td>$812,115</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>$1,327,809,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Combined Cost</td>
<td>$822,522</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>$1,344,824,000</td>
</tr>
</tbody>
</table>

Injury Classification Scheme: Mechanism by Intent of Injury

Reports for All Ages include those of unknown age.

* Cost estimates based on 20 or fewer deaths may be unstable. Interpret with caution.

Note: For injury-related deaths, lifetime medical costs refer to the medical costs associated with the fatal injury event.

Produced by: Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC

Data Source: NCHS Vital Statistics System for numbers of deaths. NEISS All Injury Program operated by the U.S. Consumer Product Safety Commission (CPSC) for numbers of nonfatal injuries. Pacific Institute for Research and Evaluation (PIRE), Calverton, MD for unit cost estimates.
Fatal Injuries, Both Sexes, All Ages, Georgia, 2005

Intent: Unintentional
Mechanism: Motor vehicle, Traffic

Number of Deaths and Estimated Lifetime Costs
Classified by Mechanism and Intent
Costs Expressed in Year 2005 State-Specific Prices

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Deaths and Type of Cost</th>
<th>Intent Unintentional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Vehicle - Traffic</td>
<td>Deaths</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Medical Cost</td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Work Loss Cost</td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Combined Cost</td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

Injury Classification Scheme: Mechanism by Intent of Injury
Reports for All Ages include those of unknown age.
* Cost estimates based on 20 or fewer deaths may be unstable. Interpret with caution.
Note: For injury-related deaths, lifetime medical costs refer to the medical costs associated with the fatal injury event.
Produced by: Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC
Data Source: NHIS Vital Statistics System for numbers of deaths. NEISS All Injury Program operated by the U.S. Consumer Product Safety Commission (CPSC) for numbers of nonfatal injuries. Pacific Institute for Research and Evaluation (PIRE), Calverton, MD for unit cost estimates.
### Costs of Motor Vehicle Traffic Deaths, Georgia, 2005

#### Data Table

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Intent</th>
<th>State of Res</th>
<th>Number of Deaths</th>
<th>Avg Medical Cost</th>
<th>Medical Cost</th>
<th>Avg Work Loss Cost</th>
<th>Work Loss Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Vehicle</td>
<td>Unintentional</td>
<td>Georgia</td>
<td>1,635</td>
<td>$10,407.01</td>
<td>$17,015,461.61</td>
<td>$812,115.43</td>
<td>$1,327,808,734.96</td>
</tr>
<tr>
<td>Motor Vehicle</td>
<td>Total</td>
<td>Georgia</td>
<td>1,635</td>
<td>$10,407.01</td>
<td>$17,015,461.61</td>
<td>$812,115.43</td>
<td>$1,327,808,734.96</td>
</tr>
<tr>
<td>Total</td>
<td>Unintentional</td>
<td>Georgia</td>
<td>1,635</td>
<td>$10,407.01</td>
<td>$17,015,461.61</td>
<td>$812,115.43</td>
<td>$1,327,808,734.96</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>Georgia</td>
<td>1,635</td>
<td>$10,407.01</td>
<td>$17,015,461.61</td>
<td>$812,115.43</td>
<td>$1,327,808,734.96</td>
</tr>
</tbody>
</table>

Notes:
- Intent: Unintentional
- Mechanism: Motor vehicle, Traffic
- Number of Deaths and Estimated Lifetime Costs Classified by Mechanism and Intent
- Costs Expressed in Year 2005 State-Specific Prices

Subset: (where=(years contains('2005') and( intent contains('1')) and( mech2 in(12)))) (For Regional/State Price runs, Region/State appears in a separate column)
Data & Statistics (WISQARS™): Cost of Injury Reports

- Generate a report with our data
- Generate a report with your own data
Total Combined Lifetime Medical and Work Loss Costs of Transportation-Related Deaths and Nonfatal Injuries* for All Ages by Sex, United States, 2005

*Deaths include motor vehicle traffic, other pedal cyclist, and other pedestrian deaths. Nonfatal injuries include nonfatal hospitalizations and emergency department visits - treated and released for motor vehicle occupant, motorcyclist, pedal cyclist, and pedestrian injuries.
Total Lifetime Medical Costs of Unintentional Fatal Fall-Related Injuries* for People 65 Years and Older By Sex and Age, United States, 2005

* Lifetime medical costs refer to the medical costs (treatment and rehabilitation) associated with the fatal injury event.
Total Combined Medical and Work Loss Cost of Suicide for Persons Aged 10 Years and Older, US 2005

Data Source: WISQARS Cost of Injury Reports
Overview of Cost Module
Data Uses with other WISQARS modules

• **Show** the size of the public health and **the economic impact** of the injury problem

• Describe, compare, and monitor trends in unintentional and violence-related injuries

• Describe the geographic patterns of fatal injury rates

• Identify new or developing injury problems

• Identify persons at risk of injury

• Provide reliable surveillance data for program planning and policy decisions
Summary

• WISQARS Cost of Injury Reports module is a useful, user-friendly tool for exploring the patterns of the economic costs of injury deaths hospitalizations, and ED visits – treated and released by intent & mechanism of injury and by body region & nature of injury

• This Cost module provides medical and work loss cost information on fatal and nonfatal injuries useful for
  - injury surveillance and research
  - injury prevention program planning and evaluation
  - educating policy makers and the public about injury as a public health concern in their states and communities
Questions?
Thank you

J. Lee Annest, Ph.D., M.S.
Iannest@cdc.gov

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov Web: www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.