

# State Injury Indicators Report

Instructions for Preparing  
2007–2009 Data



Centers for Disease  
Control and Prevention  
National Center for Injury  
Prevention and Control





# **State Injury Indicators Report:** Instructions for Preparing 2007–2009 Data

**U.S. Department of Health and Human Services**

Centers for Disease Control and Prevention  
National Center for Injury Prevention and Control  
Division of Injury Response

Atlanta, Georgia  
March 2012

*State Injury Indicators Report: Instructions for Preparing 2007–2009 Data* is a publication of the National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

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### **Suggested citation:**

Thomas KE, Johnson RL. State injury indicators report: instructions for preparing 2007–2009 data. Atlanta (GA): Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2012.

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## **Acknowledgements**

The editors thank the Safe States Alliance, the Council of State and Territorial Epidemiologists, and their respective members. These partnerships have facilitated the ongoing advancement and success of the development of the injury indicators. The editors also thank Kevin Webb and Bob Thomas, Office of Statistics and Programming, and Angela Marr and Kelly Sarmiento, Division of Injury Response, all with the National Center for Injury Prevention and Control, for their consultation and guidance.

## FOREWORD AND UPDATES

The Centers for Disease Control and Prevention's (CDC) National Center for Injury Prevention and Control (NCIPC) is pleased to provide this document to guide you in preparing the 2007, 2008, and 2009 state injury indicators.

Under CDC Program Announcement 05027, 30 states have been funded to collect and submit state injury indicator data; however, all states and U.S. territories are eligible to voluntarily submit data for inclusion in the multistate *State Injury Indicators Report*. As more states and U.S. territories voluntarily participate in this surveillance effort, a broader picture of the burden of injuries can be presented and priorities for prevention can be targeted. During the 2006 data collection cycle, 36 states participated by submitting data for inclusion in the multistate report. We look forward to continuing our work together to advance and improve injury surveillance.

The methods outlined in this document are consistent with those used in previous cycles of injury indicator data collection. These methods are based on recommendations presented in the "Consensus Recommendations for Using Hospital Discharge Data for Injury Surveillance" and in the National Public Health Surveillance System (NPHSS) indicators developed by the State and Territorial Injury Prevention Directors Association (STIPDA; now known as the Safe States Alliance) and the Council of State and Territorial Epidemiologists (CSTE). With partner feedback, CDC continuously modifies and updates the instructions and methodologies outlined in this document.

### **Changes for the 2007–2009 data collection cycles include:**

- Provision of instructions for the creation of injury indicators from emergency department (ED) data for the first time. Individual pages for the ED indicators are also provided. The submission of ED data is voluntary, but it contributes to a more complete picture of the injury burden.
- This document provides the instructions for three data collection cycles because the basic methodology for death, hospital discharge, and ED data is the same for these three years.
- Indicator data from the additional sources (i.e., Behavioral Risk Factor Surveillance System and Youth Risk Behavior Survey) are not available for all three years. The year the particular indicator data are available is noted in the title. If no year is stated, the indicator data should be available for all three years.

## ABBREVIATIONS

<b>BAC</b>	Blood alcohol concentration
<b>BRFSS</b>	Behavioral Risk Factor Surveillance System
<b>CDC</b>	Centers for Disease Control and Prevention
<b>CSTE</b>	Council of State and Territorial Epidemiologists
<b>FARS</b>	Fatality Analysis Reporting System
<b>HDD</b>	Hospital discharge data
<b>ICD-10</b>	International Classification of Diseases– Tenth Revision
<b>ICD-9-CM</b>	International Classification of Diseases– Ninth Revision– Clinical Modification
<b>MVC</b>	Motor vehicle crash
<b>NCCDPHP</b>	National Center for Chronic Disease Prevention and Health Promotion
<b>NCHS</b>	National Center for Health Statistics
<b>NCIPC</b>	National Center for Injury Prevention and Control
<b>NHTSA</b>	National Highway Traffic Safety Administration
<b>NPHSS</b>	National Public Health Surveillance System
<b>OSELS</b>	Office of Surveillance, Epidemiology, and Laboratory Services
<b>SAVIR</b>	Society for Advancement of Violence and Injury Research
<b>STIPDA</b>	State and Territorial Injury Prevention Directors Association (currently Safe States Alliance)
<b>TBI</b>	Traumatic brain injury
<b>VA</b>	Veterans Affairs
<b>WHO</b>	World Health Organization
<b>WISQARS</b>	Web-based Injury Statistics Query and Reporting System
<b>YRBS</b>	Youth Risk Behavior Survey





# CONTENTS

<b>Foreword and Updates</b> . . . . .	<b>.iv</b>
<b>Abbreviations</b> . . . . .	<b>v</b>
<b>Introduction</b> . . . . .	<b>1</b>
<b>Background and Purpose</b> . . . . .	<b>3</b>
<b>Preparing the Data Sets</b> . . . . .	<b>5</b>
<b>Additional Resources</b> . . . . .	<b>11</b>
<b>Injury Indicators</b> . . . . .	<b>13</b>
All-Injury Indicator 1: Injury Fatalities . . . . .	.15
All-Injury Indicator 2: Hospitalizations for All Injuries . . . . .	.16
All-Injury Indicator 3: Emergency Department Visits for All Injuries . . . . .	.17
Drowning Indicator 1: Unintentional Drowning Fatalities . . . . .	.18
Drowning Indicator 2: Drowning-Related Hospitalizations . . . . .	.19
Drowning Indicator 3: Drowning-Related Emergency Department Visits . . . . .	.20
Fall Indicator 1: Unintentional Fall-Related Fatalities . . . . .	.21
Fall Indicator 2: Unintentional Fall-Related Hospitalizations . . . . .	.22
Fall Indicator 3: Unintentional Fall-Related Emergency Department Visits . . . . .	.23
Fall Indicator 4: Hip Fracture Hospitalizations in Persons Aged 65 Years and Older . . . . .	.24
Fall Indicator 5: Hip Fracture Emergency Department Visits in Persons Aged 65 Years and Older . . . . .	.25
Fall Indicator 6: Falls in Adults Aged 45 Years or Older (2008) . . . . .	.26
Fall Indicator 7: Falls in Adults Aged 45 Years or Older that Caused an Injury (2008) . . . . .	.27
Fire-Related Indicator 1: Unintentional Fire-Related Fatalities . . . . .	.28
Fire-Related Indicator 2: Unintentional Fire-Related Hospitalizations. . . . .	.29
Fire-Related Indicator 3: Unintentional Fire-Related Emergency Department Visits . . . . .	.30
Firearm-Related Indicator 1: Firearm-Related Fatalities . . . . .	.31
Firearm-Related Indicator 2: Firearm-Related Hospitalizations . . . . .	.32
Firearm-Related Indicator 3: Firearm-Related Emergency Department Visits . . . . .	.33
Homicide/Assault Indicator 1: Homicides . . . . .	.34
Homicide/Assault Indicator 2: Assault-Related Hospitalizations . . . . .	.35

Homicide/Assault Indicator 3: Assault-Related Emergency Department Visits . . . . .	.36
Homicide/Assault Indicator 4: High School Students Who Were in a Physical Fight (2007, 2009) . . . . .	.37
Homicide/Assault Indicator 5: High School Students Who Were in a Physical Fight That Required Medical Attention (2007, 2009) . . . . .	.38
Motor Vehicle Indicator 1: Motor Vehicle Traffic Fatalities. . . . .	.39
Motor Vehicle Indicator 2: Motor Vehicle Traffic Hospitalizations . . . . .	.40
Motor Vehicle Indicator 3: Motor Vehicle Traffic Emergency Department Visits . . . . .	.41
Motor Vehicle Indicator 4: Seat Belt Use in High School Students (2007, 2009) . . . . .	.42
Motor Vehicle Indicator 5: Seat Belt Use (2008) . . . . .	.43
Motor Vehicle Indicator 6: Drinking and Driving in High School Students (2007, 2009) . . . . .	.44
Motor Vehicle Indicator 7: High School Students Riding with Someone Drinking and Driving (2007, 2009) . . . . .	.45
Motor Vehicle Indicator 8: Drinking and Driving (2008) . . . . .	.46
Motor Vehicle Indicator 9: Alcohol-Related Crash Deaths . . . . .	.47
Poisoning Indicator 1: Poisoning Fatalities . . . . .	.48
Poisoning Indicator 2: Poisoning Hospitalizations. . . . .	.49
Poisoning Indicator 3: Poisoning Emergency Department Visits . . . . .	.50
Suicide/Suicide Attempt Indicator 1: Suicides. . . . .	.51
Suicide /Suicide Attempt Indicator 2: Suicide Attempt Hospitalizations . . . . .	.52
Suicide /Suicide Attempt Indicator 3: Suicide Attempt Emergency Department Visits . . . . .	.53
Suicide/Suicide Attempt Indicator 4: Suicide Attempts in High School Students (2007, 2009) . . . . .	.54
Suicide/Suicide Attempt Indicator 5: Suicide Attempts in High School Students That Required Medical Attention (2007, 2009) . . . . .	.55
Traumatic Brain Injury Indicator 1: Traumatic Brain Injury Fatalities . . . . .	.56
Traumatic Brain Injury Indicator 2: Traumatic Brain Injury Hospitalizations. . . . .	.57
Traumatic Brain Injury Indicator 3: Traumatic Brain Injury Emergency Department Visits . . . . .	.58
Traumatic Brain Injury Indicator 4: Bicycle Helmet Use Among High School Students (2007, 2009). . . . .	.59
<b>Calculating and Submitting Rates . . . . .</b>	<b>61</b>
<b>References . . . . .</b>	<b>63</b>

## What is an Injury Indicator?

*An injury indicator describes a health outcome of an injury, such as hospitalization or death, or a factor known to be associated with an injury, such as a risk or protective factor among a specified population.*

## INTRODUCTION

Injury surveillance is one of the most important and basic elements of injury prevention and control. It helps determine the magnitude of injury morbidity and mortality, the leading causes of injury, and the population groups and behaviors associated with the greatest risk of injury. Surveillance data are also fundamental to determining program and prevention priorities. Furthermore, these data are crucial for evaluating the effectiveness of program activities and for identifying problems that need further investigation.

Injury continues to be the leading cause of death and disability among children and young adults.<sup>1</sup> In 2006, more than 179,000 people died from injuries in the U.S. Among them: 25% died from motor-vehicle crashes; 19% died from suicide; and 10% died from homicide.<sup>1</sup> Additionally, in 2006, more than 29 million people were treated for injuries in U.S. emergency departments.<sup>1</sup> The economic cost of injuries is also significant. The total cost of the 50 million medically treated injuries sustained in 2000 is estimated to be \$406 billion in medical expenses and productivity losses.<sup>2</sup>

The mission of public health includes prevention, mitigation, assurance that the injured have access to treatment, and the reduction of injury-related disability and death.<sup>3</sup> The scope of public health encompasses injuries involving any mechanism (e.g., firearm, motor vehicle, or burn) and includes both violence and unintentional injuries. An important part of the public health mission is to emphasize that injuries are preventable and to dispel the misconception that injuries are unavoidable.

Recognizing the need for more comprehensive injury surveillance data, the State and Territorial Injury Prevention Directors Association (STIPDA) produced *Consensus Recommendations for Injury Surveillance in State Health Departments* in 1999. These recommendations were developed by a working group representing STIPDA; the Council of State and Territorial Epidemiologists (CSTE); the Centers for Disease Control and Prevention (CDC) and its National Center for Injury Prevention and Control (NCIPC); the Society for Advancement of Violence and Injury Research (SAVIR); and individual state partners.

The *State Health Department Consensus Recommendations* identifies specific injuries and injury risk factors to be placed under surveillance by all states and data sets to monitor these injuries and risk factors. The goal is to improve state-based injury surveillance to better support injury prevention programs and policies. By enhancing and standardizing injury surveillance at the state level, its integration with overall public health surveillance as part of the National Public Health Surveillance System (NPHSS) will be much easier.<sup>4</sup> In tandem with the *State Health Department Consensus Recommendations*, CSTE and STIPDA developed injury indicators that were formally adopted for inclusion in NPHSS.<sup>5,6</sup> The NPHSS injury indicators add to other indicators developed by CSTE for chronic diseases and other areas.<sup>5</sup>

The *Consensus Recommendations for Using Hospital Discharge Data for Injury Surveillance*, published in 2003, provides clear and specific recommendations about the evaluation and use of hospital discharge data.<sup>7</sup> It presents important considerations for the evaluation of data quality and outlines the methodology for developing an injury hospitalization data set.

Collection and dissemination of injury indicators is built upon the foundation laid by the publication of these Safe States Alliance (formerly known as STIPDA) and CSTE documents.

## BACKGROUND AND PURPOSE

This manual was created to guide states and U.S. territories in collecting, preparing, and submitting their injury surveillance data. All states and U.S. territories are eligible to voluntarily submit data for this report.

Information obtained from participants will be reviewed and assembled for inclusion in the State Injury Indicators Report. This process provides state and U.S. territory injury programs with a standardized method for evaluating injury data and for producing an injury indicator data product that is comparable across states and U.S. territories.

This manual provides straightforward information to encourage participation of all states and U.S. territories regardless of their epidemiologic infrastructure and capabilities. Participation in this report should not be seen as limiting by states of higher capacity, but rather as a place of commonality and a starting point for developing more sophisticated analysis.

The process of preparing indicators is simplified in that it doesn't include the merging and unduplicating of cases found in multiple data sets. It is important to keep in mind that the quality of the injury indicators is dependant on the completeness and accuracy of external cause coding found on individual state and U.S. territory data sets.

Centralized electronic vital statistics, hospital discharge, and emergency department data are used to calculate the indicators prepared and submitted by states and U.S. territories. Injuries resulting in or occurring from the following are currently included in the *State Injury Indicators*: all injury, drowning, fall-related injury, fire-related injury, firearm-related injury, homicide/assault, motor vehicle-related injury, poisoning, suicide/suicide attempt, and traumatic brain injury (TBI). Overlap exists among these indicators. For example, a firearm-related homicide would be included in both the firearm-related death indicator and the homicide indicator.



# PREPARING THE DATA SETS

## Background on State Vital Records

Death registration is the responsibility of individual states. The funeral director and the physician who certify the cause of death are usually responsible for the personal and medical information recorded on the death certificate. The cause-of-death section on the certificate is generally the same in all states and is organized according to World Health Organization (WHO) guidelines and coded with ICD-10.<sup>8</sup> Local registrars assure that deaths in their jurisdictions are registered and that required information is on death certificates before submitting to the state registrar. State registrars number and file the death certificates; certificates of nonresidents are sent to their states of residence. All states send death certificate data to the National Vital Statistics System, managed by CDC's National Center for Health Statistics (NCHS).<sup>9</sup>

Data are limited to information reported on death certificates. The degree of detail in reporting varies among jurisdictions. In general, death certificate data provide limited information about circumstances of injury incidents or contributing factors. The number and type of cause-of-death fields to which states have access also vary, and deaths associated with some injuries, especially suicide, may be underreported. States without access to multiple contributing cause-of-death fields cannot calculate fatality rates for TBI because the diagnostic codes that make up that case definition reside in the contributing cause-of-death fields.

## Instructions for Using Vital Statistics Data

Vital statistics data do not require specific preparation for analysis. With the exception of the fatal TBI indicator, all fatal indicators should be calculated by searching the underlying-cause-of-death field only. For the fatal TBI indicator, search all fields in the multiple cause of death file. Specific code ranges are identified in the individual indicator specification sheets (see pages 15–59).

## Background on State Hospital Discharge Data

At least 90% of all states maintain electronic databases of hospital discharge records for nonfederal, acute care hospitals located within their borders.<sup>10</sup> The information collected varies from state to state. Many states use the standard uniform billing form (UB-04) as the basis for their hospital discharge database. Others use only a subset of variables from the UB-04 for their databases, and a few collect additional variables.

The UB-04, developed by the National Uniform Billing Committee, includes the following data elements:<sup>11</sup>

- patient's age,
- sex,
- zip code,
- admission date,
- length of stay,
- total charges,
- principal diagnosis, and
- up to seventeen additional diagnoses.

For diagnoses resulting from injuries, an external cause of injury (E-code) is also coded. E-codes, listed in ICD-9-CM, describe several aspects of an injury: intentionality; mechanism; and, for unintentional causes of injury, location of occurrence.<sup>12</sup> Completeness of e-coding varies by state.

### **Instructions for Creating and Using the Injury Hospitalizations Subset of a State Hospital Discharge Data Set**

To calculate Injury Hospitalization Indicators, first you need to create an injury subset of hospital discharge records. Create this subset using the following specifications:

- Include only nonfederal, acute care, or inpatient facilities in your hospital discharge data (HDD) injury subset. This excludes Veterans Affairs (VA) and other federal hospitals, rehabilitation centers, and psychiatric hospitals.
- Include readmissions, transfers, and deaths occurring in the hospital.
- Include hospitalizations of state residents only.
- If the data are available, out-of-state hospitalizations of state residents should be included.
- Based on the principal diagnosis field, the subset you create will be injury hospitalizations, defined as follows:
  - Select injury cases by searching only the principal diagnostic code field for the included diagnosis codes. Exclude all other records from the injury hospitalization subset, as shown in the chart below:<sup>7</sup>

INCLUDE	EXCLUDE
800–909.2, 909.4, 909.9	< 800 909.3, 909.5
910–994.9	995.0–995.4
995.5–995.59	995.6–995.7
995.80–995.85	995.86, 995.89 995.90–995.94 996–999

Once the injury hospitalization subset has been created, calculate the injury indicators case counts as defined on the individual indicator pages. Search for E-codes in the following manner:

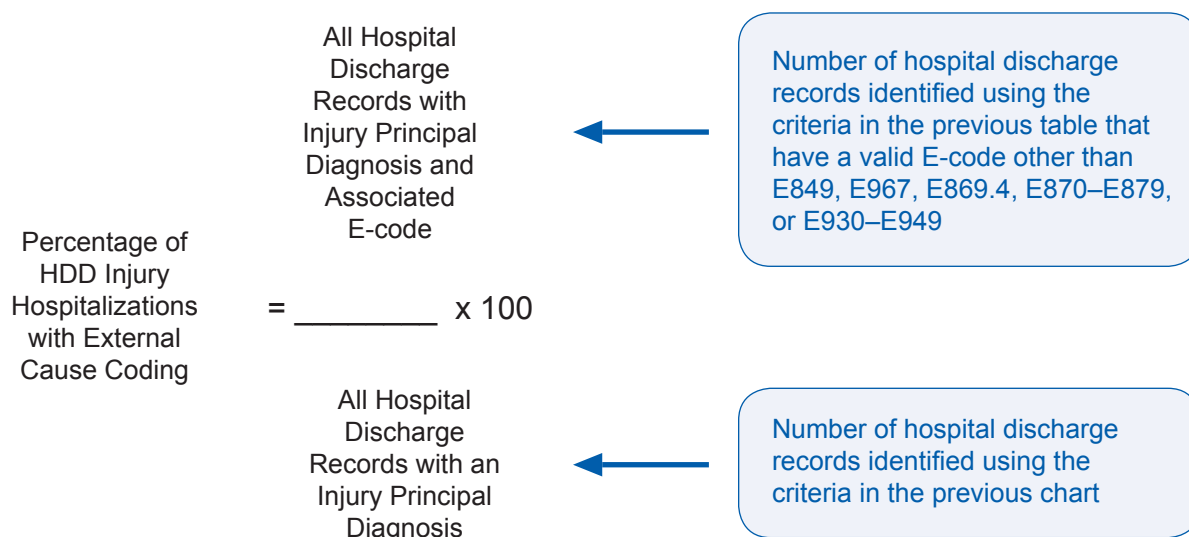
- Search all diagnosis fields.
- If a designated E-code field is in your data set, start with the designated E-code field.
- Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code fields and all diagnostic fields and use the next listed valid E-code. If a case has multiple valid E-codes, then only the first one should be used in the analysis.
- Hospitalizations (except for hip fracture hospitalizations in persons aged 65 years and older) should be age-adjusted to the 2000 standard using the NCHS population distribution (Table 1, page 62).



**Assess the completeness and quality measures of the HDD for the following components:**

- Percentage of HDD injury records with external cause coding (Figure 1, below).
- Completeness of hospitals participating in the HDD system.
- Inclusion of readmissions and transfers within the data set used for analysis.
- A subjective assessment by health department staff if a substantial proportion of state residents injured in-state are actually hospitalized in a neighboring state.

**FIGURE 1.**



**Background on State Emergency Department Data**

The availability of statewide emergency department (ED) datasets is increasing. In 2009 about 45% of the states reported having access to ED data.<sup>13</sup> Many of these datasets are standardized around administrative or billing data. Since many injuries are seen only in the emergency department this is a dataset of emerging importance for injury surveillance.

The Injury Surveillance Workgroup 5 convened by STIPDA recommended that the ICD-9-CM code-based definition to be used with administrative ED data to identify an injury visit be broadened from the definition that is used to identify cases from HDD. For ED data, the injury subset should include any initial visit where the first-listed diagnosis reflects an injury based on the Barell matrix definition of an injury,<sup>14</sup> regardless of any mention of an external cause-of-injury code, or a valid external cause-of-injury code based on the recommended framework for external causes of injury.<sup>15</sup> Similar to the current HDD methodology, complications of care and adverse effects should be excluded from both the diagnosis and external cause of injury codes. For the rationale behind this recommendation, please refer to pages 23–4 of the ISW5 Report.<sup>16</sup>

## Instructions for Creating and Using the Injury Subset of a State Emergency Department Data Set

To calculate State Emergency Department Indicators, first you need to create an injury subset of emergency department records. This creation of this subset varies from the creation of the HD subset in that ED injury cases may be identified not only by an injury primary diagnosis code but also by the presence of a valid external cause of injury code. Create the ED subset using the following specifications:

- Include only data from nonfederal, acute care-affiliated facilities in your ED injury subset. This excludes Veterans Affairs (VA) and other federal hospitals, rehabilitation centers, and psychiatric hospitals.
- Include ED visits for state residents only.
- If the data are available, out-of-state ED visits of state residents should be included.
- Create the ED injury subset by searching the principal diagnosis field for injury diagnostic codes and all fields for valid external-cause-of-injury codes.
  - Select injury cases by searching the principal diagnosis field for the included ICD-9-CM diagnosis codes.

INCLUDE	EXCLUDE
800–909.2, 909.4, 909.9 910–994.9 995.5–995.59 995.80–995.85	< 800 909.3, 909.5 995.0–995.4 995.6–995.7 995.86, 995.89 995.90–995.94 996–999

- Select additional cases by searching all fields for the included external-cause-of-injury codes.

INCLUDE ECODES	EXCLUDE ECODES
E800-E869 E880-E929 E950-E999	E870-E879 E930.0-E949.9

- Exclude all other records from the injury ED subset.

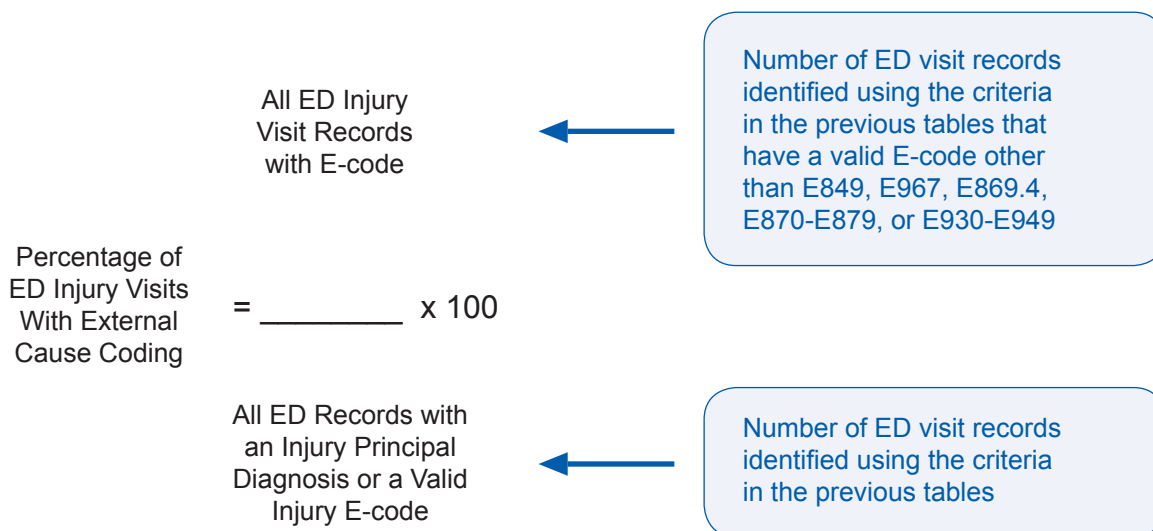
Once the injury ED subset has been created, calculate the injury indicators case counts as defined on the individual indicator pages. Search for E-codes in the following manner:

- Search all diagnosis fields.
- If a designated E-code field is in the data set, start with the designated E-code field.
- Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code fields and all diagnostic fields and use the next listed valid E-code. If a case has multiple valid E-codes, then only the first one should be used in the analysis.
- ED visits (except for hip fracture hospitalizations in persons aged 65 years and older) should be age-adjusted to the 2000 standard using the NCHS population distribution (Table 1, page 62).

**Assess the completeness and quality measures of the ED data for the following components:**

- Percentage of ED injury records with external cause coding (Figure 2, below).
- Completeness of hospitals participating in the ED system.
- Inclusion of follow up visits and transfers from other EDs
- A subjective assessment by health department staff if a substantial proportion of state residents injured in-state are actually treated in EDs in a neighboring state.

**FIGURE 2.**





## ADDITIONAL RESOURCES

### Other Recommended Data Systems

Indicators based on the Behavioral Risk Factor Surveillance System (BRFSS), the Youth Risk Behavior Survey (YRBS), and the Fatality Analysis Reporting System (FARS) will be calculated at CDC. The data available from YRBS and BRFSS will be examined annually to determine which survey questions should be included.

### Behavioral Risk Factor Surveillance System (BRFSS)

CDC's Office of Surveillance, Epidemiology, and Laboratory Services (OSELS) currently manages the BRFSS. (It was previously housed in the National Center for Chronic Disease Prevention and Health Promotion.) This is a broad ongoing survey that is a state-based, random-digit-dialed telephone survey of the noninstitutionalized U.S. population over age 17. BRFSS monitors risk behaviors associated with the leading causes of disease, injury, and death.<sup>17</sup>

Because BRFSS is telephone-based, population subgroups less likely to have telephones, such as persons of low socioeconomic status, may be underrepresented. In addition, data are self-reported and may be biased. For risk-reduction factors such as self-reported use or testing of smoke alarms, these data may not uniformly represent safe and effective use.<sup>17</sup>

Additionally, not all BRFSS questions are asked every year. Questions asked during the year for which a current Injury Indicator Report is being prepared will be reviewed and appropriate questions included in the report. Results will be reported as a percentage of respondents. For 2007 and 2009, there are no injury- or violence-related questions to be reported. For 2008, there are four injury-related BRFSS questions that will be reported.

### Youth Risk Behavior Survey (YRBS)

The Youth Risk Behavior Survey (YRBS), is managed by the National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) at CDC. The YRBS monitors risk behaviors associated with the leading causes of injury and death among teenagers.<sup>18</sup> State and local departments of education and health conduct the survey biennially in many locations throughout the country. The school-based survey is administered to 9th through 12th graders and the data is analyzed by CDC. YRBS data apply only to youth who attend school. The extent of underreporting or overreporting of behaviors cannot be determined, although the survey questions demonstrate good test–retest reliability. Interstate comparisons must be interpreted cautiously because the methods used to collect YRBS data may vary.<sup>18</sup>

Among the 30 funded states, 22 conducted YRBS in 2007 with overall participation rates of at least 60%.<sup>19</sup> CDC requires a minimum overall participation rate of 60% to generalize the results to the state's population. States with YRBS data meeting this criterion will be included. Results will be reported as a percentage of respondents. No age adjustment will be applied. For 2007 and 2009, there are eight injury- or violence-related questions that will be reported. The YRBS was not administered in 2008.

## **Fatality Analysis Reporting System (FARS)**

FARS, coordinated by the National Highway Traffic Safety Administration (NHTSA), contains data on all fatal traffic crashes that occur in the 50 states, the District of Columbia, and Puerto Rico. For inclusion in FARS, a crash must involve a motor vehicle traveling on a public roadway and result in the death of a person (either a vehicle occupant or a non-motorist) within 30 days of the crash. The FARS file contains a description of each fatal crash reported. More than 100 coded data elements characterize each crash, the vehicles, and the people involved.<sup>20</sup>

FARS does not include non-traffic crashes such as those occurring on driveways and other private property. It also does not include deaths occurring more than 30 days after the motor vehicle crash.<sup>20</sup>

## **INJURY INDICATORS**

The following pages contain specific case definitions for each of the individual injury indicators. These case definitions should be applied when determining case counts. Once the case counts are determined, they should be entered into the provided spreadsheets for rate calculation and submission to CDC.





# ALL-INJURY INDICATOR 1:

## Injury Fatalities

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Deaths with any of the following ICD-10 codes as an underlying cause of death.

### Injury Fatality ICD-10 Codes

V01–Y36, Y85–Y87, Y89, *U01–*U03	Injury and poisoning
----------------------------------	----------------------

**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009— RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of deaths. Annual mortality rate— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>21</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** Death certificate data from vital statistics agencies (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** Injuries are the leading cause of death for people 1 to 44 years of age and the third leading cause of death overall.<sup>1</sup> Over 179,000 people died from injuries in 2006.<sup>1</sup>

**LIMITATIONS OF INDICATOR** Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying-cause-of-death field.

**HEALTHY PEOPLE 2010 OBJECTIVES** 15-13: Reduce deaths caused by unintentional injuries  
15-32: Reduce homicides

## ALL-INJURY INDICATOR 2: Hospitalizations for All Injuries

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Hospitalizations with any of the following ICD-9-CM diagnostic codes. These should be identified by searching for diagnosis codes only in the principal diagnostic field of the injury hospital discharge subset (see methods on page 6 for developing the injury hospital discharge subset). The case count for injury hospitalizations should equal the number of records in your injury hospitalization subset.

### Hospitalizations for All Injuries ICD-9-CM Codes

**Diagnosis codes**

800–909.2, 909.4, 909.9–994.9, 995.5–995.59, 995.80–995.85	Injury and poisoning
---	----------------------

<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of hospitalizations. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State hospital discharge data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	Injury is the leading cause of death and disability among children and young adults in the United States. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in a hospital admission represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-12: Reduce hospital emergency department visits caused by injuries 15-14: (Developmental) Reduce nonfatal unintentional injuries

## ALL-INJURY INDICATOR 3: Emergency Department Visits for All Injuries

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	ED visits with any of the following ICD-9-CM diagnostic or cause of injury codes. These should be identified by searching for diagnosis codes only in the principal diagnostic field of the ED data set or searching all fields for the first valid external cause of injury code (see methods on page 8 for developing the injury emergency department visit subset). The case count for injury ED visits should equal the number of records in your injury ED visit subset.

### Emergency Department Visits for All Injuries ICD-9-CM Codes

<b>Diagnosis codes and/or</b>	
800–909.2, 909.4, 909.9–994.9, 995.5–995.59, 995.80–995.85	Injury and poisoning
<b>External cause of injury codes</b>	
E800-E869, E880-E929, E950-E999	Injury and poisoning

<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of emergency department visits. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State emergency department data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 2006, over 29 million people were treated in U.S. emergency departments for injuries with 2 million of them hospitalized or transferred to another facility. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in emergency department visits represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in emergency department data is limited by the completeness and quality of coding.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-12: Reduce hospital emergency department visits caused by injuries 15-14: (Developmental) Reduce nonfatal unintentional injuries

# DROWNING INDICATOR 1: Unintentional Drowning Fatalities

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Deaths with any of the following ICD-10 codes as an underlying cause of death.

### Unintentional Drowning Fatality ICD-10 Codes

W65–W74	Accidental drowning and submersion
V90	Accident to watercraft causing drowning and submersion
V92	Water-transport-related drowning and submersion without accident to watercraft

**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of deaths. Annual mortality rate— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>21</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** Death certificate data from vital statistics agencies (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** Drowning is one of the 10 leading causes of injury death for persons under age 55 years. In the United States, drowning rates are highest among children under five years of age.<sup>1</sup>

**LIMITATIONS OF INDICATOR** Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying-cause-of-death field.

**HEALTHY PEOPLE 2010 OBJECTIVES** 15-29: Reduce drownings

## DROWNING INDICATOR 2: Drowning-Related Hospitalizations

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Hospitalizations with any of the following ICD-9-CM diagnostic or E-codes identified from the injury hospital discharge subset (see methods on page 6 for developing the injury hospital discharge subset). These should be identified by searching for diagnosis codes in all diagnostic fields and by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Drowning-Related Hospitalization ICD-9-CM Codes

**Diagnosis code and/or**

994.1 Drowning and nonfatal submersion

**External cause of injury codes**

E830 Accident to watercraft causing submersion  
 E832 Other accidental submersion or drowning in water transport accident  
 E910 Accidental drowning or submersion  
 E954 Suicide and self-inflicted injury by submersion (drowning)  
 E964 Assault by submersion (drowning)  
 E984 Submersion (drowning), undetermined whether accidentally or purposefully inflicted

**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of hospitalizations. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>21</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** State hospital discharge data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** Drowning-related hospitalizations can result in lifelong disability. Among adolescents and adults, risk factors for drowning include drinking alcohol, swimming alone, and not wearing a personal flotation device while engaged in water sports or recreation. For children under age 5, unexpected access to water or brief lapses in adult supervision are implicated in most drowning incidents.<sup>22</sup>

**LIMITATIONS OF INDICATOR** Injuries that result in a hospital admission represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.

## DROWNING INDICATOR 3: Drowning-Related Emergency Department Visits

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Emergency department visits with any of the following ICD-9-CM diagnostic or E-codes identified from the injury emergency department visit subset (see methods on page 8 for developing the injury emergency department visit subset). These should be identified by searching for diagnosis codes in all diagnostic fields and by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Drowning-Related Emergency Department Visit ICD-9-CM Codes

**Diagnosis code and/or**

994.1            Drowning and nonfatal submersion

**External cause of injury codes**

E830            Accident to watercraft causing submersion

E832            Other accidental submersion or drowning in water transport accident

E910            Accidental drowning or submersion

E954            Suicide and self-inflicted injury by submersion (drowning)

E964            Assault by submersion (drowning)

E984            Submersion (drowning), undetermined whether accidentally or purposefully inflicted

<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of emergency department visits. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State emergency department data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	From 2002–2006, there were an average of 4,600 emergency department visits annually for unintentional nonfatal drowning-related injuries. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in emergency department visits represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in emergency department data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.

# FALL INDICATOR 1:

## Unintentional Fall-Related Fatalities

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Deaths with any of the following ICD-10 codes as an underlying cause of death.

### Unintentional Fall-Related Fatality ICD-10 Codes

W00–W19	Falls
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**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009— RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of deaths. Annual mortality rate— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>21</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** Death certificate data from vital statistics agencies (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** Unintentional falls are the third leading cause of injury death overall and the leading cause of injury death in people 65 years and older.<sup>1</sup> In 2006, there were 20,823 unintentional fall-related deaths.<sup>1</sup>

**LIMITATIONS OF INDICATOR** Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying-cause-of-death field.

**HEALTHY PEOPLE 2010 OBJECTIVES** 15-27: Reduce deaths from falls

## FALL INDICATOR 2: Unintentional Fall-Related Hospitalizations

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Hospitalizations identified from the injury hospital discharge subset (see methods on page 6 for developing the injury hospital discharge subset) by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Unintentional Fall-Related Hospitalization ICD-9-CM Codes

E880–E886, E888	Accidental falls
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<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009— RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of hospitalizations. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State hospital discharge data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	More than one third of adults 65 and older fall each year. <sup>23, 24</sup> Of those who fall, 20% to 30% suffer moderate to severe injuries that make it hard to get around or live alone and increase the chance of early death. <sup>25</sup> The total direct cost of nonfatal fall injuries for people 65 and older in 2000 was \$19 billion. <sup>26</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in a hospital admission represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	No objective



## FALL INDICATOR 3: Unintentional Fall-Related Emergency Department Visits

<b>DEMOGRAPHIC GROUP</b>	Resident persons aged 65 years or older
<b>NUMERATOR</b>	Emergency department visits identified from the injury emergency department visit subset (see methods on page 8 for developing the injury emergency department visit subset) by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Unintentional Fall-Related Emergency Department Visit ICD-9-CM Codes

**Diagnosis code**

E880–E886, E888      Accidental falls

<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009— RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of emergency department visits. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State emergency department data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 2006, there were over 7.9 million emergency department visits for unintentional fall-related injuries, with almost 727,000 resulting in hospitalization or transfer to another facility. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in emergency department visits represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in emergency department data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	No objective

## FALL INDICATOR 4:

### Hip Fracture Hospitalizations in Persons Aged 65 Years and Older

**DEMOGRAPHIC GROUP** Resident persons aged 65 years or older

**NUMERATOR** Hospitalizations with the following ICD-9-CM diagnostic code. These should be identified by searching all diagnostic fields of the injury hospital discharge subset (see methods on page 6 for developing the injury hospital discharge subset).

#### Hip Fracture Hospitalization ICD-9-CM Code

**Diagnosis code**

820	Fracture of neck of femur
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**DENOMINATOR** Midyear population of those 65 years and older for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009— RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of hospitalizations. Annual incidence— crude. Rates should be calculated for age and sex.

**DATA RESOURCES** State hospital discharge data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** In 2004, there were an estimated 289,000 hospital admissions for hip fractures in people 65 years and older.<sup>27</sup> Up to 25% of adults who lived independently before their hip fracture have to stay in a nursing home for at least a year after their injury<sup>28</sup> and as many as 20% of hip fracture patients die within a year of their injury.<sup>29</sup>

**LIMITATIONS OF INDICATOR** Injuries that result in a hospital admission represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding.

**HEALTHY PEOPLE 2010 OBJECTIVES** 15-28: Reduce hip fractures among older adults

## FALL INDICATOR 5:

### Hip Fracture Emergency Department Visits in Persons Aged 65 Years and Older

<b>DEMOGRAPHIC GROUP</b>	Resident persons aged 65 years or older				
<b>NUMERATOR</b>	Emergency department visits with the following ICD-9-CM diagnostic code. These should be identified by searching all diagnostic fields of the injury emergency department visit subset (see methods on page 8 for developing the injury emergency department visit subset).				
<b>Hip Fracture Emergency Department Visit ICD-9-CM Code</b>					
<table border="1"><thead><tr><th colspan="2">Diagnosis code</th></tr></thead><tbody><tr><td>820</td><td>Fracture of neck of femur</td></tr></tbody></table>		Diagnosis code		820	Fracture of neck of femur
Diagnosis code					
820	Fracture of neck of femur				
<b>DENOMINATOR</b>	Midyear population of those 65 years and older for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009— RESIDENT” (see instructions on page 60).				
<b>MEASURES OF FREQUENCY</b>	Annual number of emergency department visits. Annual incidence— crude. Rates should be calculated for age and sex.				
<b>DATA RESOURCES</b>	State emergency department data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).				
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.				
<b>BACKGROUND</b>	In 2004, there were an estimated 289,000 hospital admissions for hip fractures in people 65 years and older. <sup>27</sup> Up to 25% of adults who lived independently before their hip fracture have to stay in a nursing home for at least a year after their injury <sup>28</sup> and as many as 20% of hip fracture patients die within a year of their injury. <sup>29</sup>				
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in emergency department visits represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.				
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in emergency department data is limited by the completeness and quality of coding.				
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-28: Reduce hip fractures among older adults				

## **FALL INDICATOR 6:** **Falls in Adults Aged 45 Years or Older (2008)**

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	Resident persons aged 45 years or older.
<b>NUMERATOR</b>	Those respondents who experienced a fall.
<b>DENOMINATOR</b>	Respondents aged 45 years or older.
<b>MEASURES OF FREQUENCY</b>	Annual prevalence— crude.
<b>DATA RESOURCES</b>	Data from the Behavioral Risk Factor Surveillance System (BRFSS). <sup>17</sup>
<b>PERIOD FOR CASE DEFINITION</b>	Past 3 months.
<b>BACKGROUND</b>	More than one third of adults aged 65 years or older fall each year in the United States. <sup>23, 24</sup> Many people who fall, even those who are not injured, develop a fear of falling. This fear may cause them to limit their activities, leading to reduced mobility and physical fitness and increasing their actual risk of falling. <sup>30</sup>
<b>LIMITATIONS OF INDICATOR</b>	Self-reported data only represent a small portion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of all injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	As with all self-reported sample surveys, BRFSS data might be subject to systematic error resulting from noncoverage (e.g., lower telephone coverage among populations of low socioeconomic status), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias).
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	No objective

## **FALL INDICATOR 7:** **Falls in Adults Aged 45 Years or Older that Caused an Injury (2008)**

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	Resident persons aged 45 years or older.
<b>NUMERATOR</b>	Those respondents who experienced a fall that caused them to limit their regular activities for at least a day or to go see a doctor.
<b>DENOMINATOR</b>	Respondents aged 45 years or older who experienced a fall.
<b>MEASURES OF FREQUENCY</b>	Annual prevalence— crude.
<b>DATA RESOURCES</b>	Data from the Behavioral Risk Factor Surveillance System (BRFSS). <sup>17</sup>
<b>PERIOD FOR CASE DEFINITION</b>	Past 3 months.
<b>BACKGROUND</b>	More than 3.2 million people aged 45 years or older were treated in emergency departments in 2006 for injuries related to unintentional falls. <sup>1</sup> This statistic does not include those people who sought care in other settings such as outpatient clinics or doctor's offices.
<b>LIMITATIONS OF INDICATOR</b>	Self-reported data only represent a small portion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of all injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	As with all self-reported sample surveys, BRFSS data might be subject to systematic error resulting from noncoverage (e.g., lower telephone coverage among populations of low socioeconomic status), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias).
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	No objective

## FIRE-RELATED INDICATOR 1: Unintentional Fire-Related Fatalities

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Deaths with any of the following ICD-10 codes as an underlying cause of death.

### Unintentional Fire-Related Fatality ICD-10 Codes

X00–X09	Exposure to smoke, fire, and flames
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**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of deaths. Annual mortality rate— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>21</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** Death certificate data from vital statistics agencies (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** The United States mortality rate from fires ranks sixth among the 25 developed countries for which statistics are available.<sup>31</sup> Four out of five deaths in 2005 occurred in homes<sup>32</sup> and approximately half of home fire deaths occurred in homes without fire alarms.<sup>33</sup>

**LIMITATIONS OF INDICATOR** Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that cases of injury death must contain an injury code in the underlying-cause-of-death field.

**HEALTHY PEOPLE 2010 OBJECTIVES** 15-25: Reduce residential fire deaths

## FIRE-RELATED INDICATOR 2: Unintentional Fire-Related Hospitalizations

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Hospitalizations identified from the injury hospital discharge subset (see methods on page 6 for developing the injury hospital discharge subset) by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Unintentional Fire-Related Hospitalization ICD-9-CM Codes

E890–E899      Accident caused by fire and flames
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<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of hospitalizations. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State hospital discharge data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 2005, fire departments responded to 396,000 home fires in the U.S., which claimed the lives of 3,030 people (not including firefighters) and injured another 13,825 (not including firefighters). <sup>32</sup> Residential fires disproportionately affect young children, older adults, African Americans, and Native Americans. <sup>34</sup> Working smoke alarms reduce the chance of dying in a house fire by 40% to 50%; however, about 25% of U.S. households lack working smoke alarms. <sup>35, 36</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in a hospital admission represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	No objective

## FIRE-RELATED INDICATOR 3: Unintentional Fire-Related Emergency Department Visits

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Emergency department visits identified from the injury emergency department visit subset (see methods on page 8 for developing the injury emergency department visit subset) by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Unintentional Fire-Related Emergency Department Visit ICD-9-CM Codes

E890–E899      Accident caused by fire and flames
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<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of emergency department visits. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State emergency department data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 2006, there were over 400,000 emergency department visits for unintentional fire-related injuries, with 15,600 resulting in hospitalization or transfer to a higher level of care. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in emergency department visits represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in emergency department data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	No objective



# FIREARM-RELATED INDICATOR 1:

## Firearm-Related Fatalities

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Deaths with any of the following ICD-10 codes as an underlying cause of death.

### Firearm-Related Fatality ICD-10 Codes

W32–W34	Exposure to inanimate mechanical forces– firearm discharge
X72–X74	Intentional self-harm by firearm discharge
X93–X95	Assault by firearm discharge
Y22–Y24	Firearm discharge of undetermined intent
Y35.0	Legal intervention involving firearm discharge
*U01.4	Terrorism involving firearms

**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of deaths. Annual mortality rate— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>21</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** Death certificate data from vital statistics agencies (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** Firearm-related injuries were the second leading cause of injury-related death in the United States, accounting for about 30,900 deaths in 2006.<sup>1</sup> Nationally, the firearm-related death rate for males is almost seven times higher than that of females.<sup>37</sup>

**LIMITATIONS OF INDICATOR** Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying-cause-of-death field.

**HEALTHY PEOPLE 2010 OBJECTIVES** 15-3: Reduce firearm-related deaths

## FIREARM-RELATED INDICATOR 2: Firearm-Related Hospitalizations

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Hospitalizations identified from the injury hospital discharge subset (see methods on page 6 for developing the injury hospital discharge subset) by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949, in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Firearm-Related Hospitalization ICD-9-CM Codes

E922.0–E922.3, E922.8, E922.9	Accident caused by firearm missile
E955.0–E955.4	Suicide and self-inflicted injury by firearms
E965.0–E965.4	Assault by firearms
E985.0–E985.4	Injury by firearms, undetermined whether accidentally, or purposely inflicted
E970	Injury due to legal intervention by firearms
E979.4	Terrorism involving firearms

**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2006–RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of hospitalizations. Annual incidence rate— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>21</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** State hospital discharge data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** Nonfatal firearm-related injury rates are highest among persons ages 15 to 24 years. About one fifth of nonfatal firearm-related injuries treated in U.S. hospital emergency departments are unintentional.<sup>37</sup>

**LIMITATIONS OF INDICATOR** Injuries that result in a hospital admission represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.

**HEALTHY PEOPLE 2010 OBJECTIVES** 15-5: Reduce nonfatal firearm-related injuries

## FIREARM-RELATED INDICATOR 3: Firearm-Related Emergency Department Visits

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Emergency department visits identified from the injury emergency department visit subset (see methods on page 8 for developing the injury emergency department visit subset) by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949, in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Firearm-Related Emergency Department Visit ICD-9-CM Codes

E922.0–E922.3, E922.8, E922.9	Accident caused by firearm missile
E955.0–E955.4	Suicide and self-inflicted injury by firearms
E965.0–E965.4	Assault by firearms
E985.0–E985.4	Injury by firearms, undetermined whether accidentally, or purposely inflicted
E970	Injury due to legal intervention by firearms
E979.4	Terrorism involving firearms

<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of emergency department visits. Annual incidence rate— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State emergency department data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 2006, there were over 71,000 emergency department visits for nonfatal firearm-related injuries. Males comprised 88.7% of these visits. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in emergency department visits represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in emergency department data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-5: Reduce nonfatal firearm-related injuries

# HOMICIDE/ASSAULT INDICATOR 1:

## Homicides

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Deaths with any of the following ICD-10 codes as an underlying cause of death.

### Homicide ICD-10 Codes

X85–Y09	Assault
Y87.1	Sequelae of assault
*U01	Terrorism-assault
*U02	Sequelae of terrorism-assault

**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of deaths. Annual mortality rate— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>21</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** Death certificate data from vital statistics agencies (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** Homicide is the fifteenth leading cause of death in the United States; it is the second most common cause of death among persons ages 15 to 24 years.<sup>1</sup>

**LIMITATIONS OF INDICATOR** Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying-cause-of-death field.

**HEALTHY PEOPLE 2010 OBJECTIVES** 15-32: Reduce homicides  
26-7: (Developmental) Reduce intentional injuries resulting from alcohol- and illicit drug-related violence

## HOMICIDE/ASSAULT INDICATOR 2: Assault-Related Hospitalizations

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Hospitalizations identified from the injury hospital discharge subset (see methods on page 6 for developing the injury hospital discharge subset) by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Assault-Related Hospitalization ICD-9-CM Codes

E960–E969	Injury purposely inflicted by other persons
E979	Terrorism
E999.1	Late effect of injury due to terrorism

**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009— RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of persons hospitalized. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>16</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** State hospital discharge data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** In 2006, over 1.6 million people were treated in U.S. emergency departments for assault-related injuries with over 128,000 of them hospitalized or transferred for a higher level of care.<sup>1</sup>

**LIMITATIONS OF INDICATOR** Injuries that result in a hospital admission represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.

**HEALTHY PEOPLE 2010 OBJECTIVES**  
 15-34: Reduce the rate of physical assault by current or former intimate partners  
 15-37: Reduce physical assaults  
 15-38: Reduce physical fighting among adolescents  
 26-7: (Developmental) Reduce intentional injuries resulting from alcohol- and illicit drug-related violence

## HOMICIDE/ASSAULT INDICATOR 3: Assault-Related Emergency Department Visits

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Emergency department visits identified from the injury emergency department visit subset (see methods on page 8 for developing the injury emergency department visit subset) by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Assault-Related Emergency Department Visit ICD-9-CM Codes

E960–E969	Injury purposely inflicted by other persons
E979	Terrorism
E999.1	Late effect of injury due to terrorism

<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009— RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of emergency department visits. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State emergency department data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 2006, over 1.6 million people were treated in U.S. emergency departments for assault-related injuries with over 128,000 of them hospitalized or transferred to another facility. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in emergency department visits represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in emergency department data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.
<b>HEALTHY PEOPLE OBJECTIVES</b>	15-34: Reduce the rate of physical assault by current or former intimate partners 15-37: Reduce physical assaults 15-38: Reduce physical fighting among adolescents 26-7: (Developmental) Reduce intentional injuries resulting from alcohol- and illicit drug-related violence

## **HOMICIDE/ASSAULT INDICATOR 4:** **High School Students Who Were in a Physical Fight (2007, 2009)**

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	Respondents in grades 9–12 who reported being in a physical fight one or more times in the past 12 months.
<b>NUMERATOR</b>	Total respondents in grades 9–12.
<b>DENOMINATOR</b>	Annual prevalence— crude.
<b>MEASURES OF FREQUENCY</b>	Data from the Youth Risk Behavior Survey (YRBS). <sup>18</sup>
<b>DATA RESOURCES</b>	State emergency department data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Previous 12 months.
<b>BACKGROUND</b>	Homicide is the second leading cause of death in young adults aged 15–19, with 2,291 deaths in 2006. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Self-reported data only represents a small portion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of all injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	As with all self-reported sample surveys, YRBS data might be subject to systematic error resulting from noncoverage (e.g., no participation by certain schools), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias).
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-37: Reduce physical assaults 15-38: Reduce physical fighting among adolescents

## **HOMICIDE/ASSAULT INDICATOR 5:** **High School Students Who Were in a Physical Fight That Required Medical Attention (2007, 2009)**

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	Students in grades 9–12.
<b>NUMERATOR</b>	Respondents in grades 9–12 who reported being in a physical fight in the past 12 months in which they were injured and had to be treated by a doctor or nurse.
<b>DENOMINATOR</b>	Total respondents in grades 9–12.
<b>MEASURES OF FREQUENCY</b>	Annual prevalence— crude.
<b>DATA RESOURCES</b>	Data from the Youth Risk Behavior Survey (YRBS). <sup>18</sup>
<b>PERIOD FOR CASE DEFINITION</b>	Previous 12 months.
<b>BACKGROUND</b>	In 2006, there were an estimated 293,000 assault-related injuries treated in U.S. emergency departments for 15–19 year olds, over 19,000 of which required hospitalization or transfer to another facility. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Self-reported data only represents a small portion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of all injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	As with all self-reported sample surveys, YRBS data might be subject to systematic error resulting from noncoverage (e.g., no participation by certain schools), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias).
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-37: Reduce physical assaults 15-38: Reduce physical fighting among adolescents



# MOTOR VEHICLE INDICATOR 1:

## Motor Vehicle Traffic Fatalities

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Deaths with any of the following ICD-10 codes as an underlying cause of death.

### Motor Vehicle Traffic Fatality ICD-10 Codes

V02–V04 (.1, .9), V09.2	Pedestrian injured in transport accident
V12–V14 (.3–.9), V19 (.4–.6)	Pedal cyclist injured in transport accident
V20–V28 (.3–.9), V29 (.4–.9)	Motorcycle rider injured in transport accident
V30–V39 (.4–.9)	Occupant of three-wheeled motor vehicle injured in transport accident
V40–V49 (.4–.9)	Car occupant injured in transport accident
V50–V59 (.4–.9)	Occupant of pick-up truck or van injured in transport accident
V60–V69 (.4–.9)	Occupant of heavy transport vehicle injured in transport accident
V70–V79 (.4–.9)	Bus occupant injured in transport accident
V80 (.3–.5), V81.1, V82.1, V83–V86 (.0–.3), V87 (.0–.8), V89.2	Other land transport accidents

**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of deaths. Annual mortality rate— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>21</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** Death certificate data from vital statistics agencies (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** Motor vehicle crashes are the leading cause of injury death in the United States. They are also the leading injury cause for years of potential life lost.<sup>1</sup>

**LIMITATIONS OF INDICATOR** Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that all cases of injury death must contain an injury code in the underlying-cause-of-death field.

**HEALTHY PEOPLE 2010 OBJECTIVES**

- 15-15: Reduce deaths caused by motor vehicle crashes
- 15-16: Reduce pedestrian deaths on public roads
- 26-1: Reduce deaths and injuries caused by alcohol- and drug-related motor vehicle crashes

## MOTOR VEHICLE INDICATOR 2: Motor Vehicle Traffic Hospitalizations

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Hospitalizations identified from the injury hospital discharge subset (see methods on page 6 for developing the injury hospital discharge subset) by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Motor Vehicle Traffic Hospitalization ICD-9-CM Codes

E810–E819      Motor vehicle traffic accidents
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<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007 , 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of hospitalizations. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State hospital discharge data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 2006, motor vehicle crashes were the cause of over 4.2 million emergency department visits in the United States. <sup>1</sup> It is estimated that front seat occupants who use lap/shoulder belts reduce their risk for fatal injury by about 45% and for moderate to critical injury by 45% to 50%. <sup>38</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in a hospital admission represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-17: Reduce nonfatal injuries caused by motor vehicle crashes 15-18: Reduce nonfatal pedestrian injuries on public roads 26-1: Reduce deaths and injuries caused by alcohol- and drug-related motor vehicle crashes

## MOTOR VEHICLE INDICATOR 3: Motor Vehicle Traffic Emergency Department Visits

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Emergency department visits identified from the injury emergency department visit subset (see methods on page 8 for developing the injury emergency department visit subset) by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Motor Vehicle Traffic Emergency Department Visit ICD-9-CM Codes

E810–E819	Motor vehicle traffic accidents
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<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of emergency department visits. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State emergency department data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 2006, motor vehicle crashes were the cause of over 4.2 million emergency department visits in the United States. <sup>1</sup> It is estimated that front seat occupants who use lap/shoulder belts reduce their risk for fatal injury by about 45% and for moderate to critical injury by 45% to 50%. <sup>38</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in emergency department visits represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in emergency department data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-17: Reduce nonfatal injuries caused by motor vehicle crashes 15-18: Reduce nonfatal pedestrian injuries on public roads 26-1: Reduce deaths and injuries caused by alcohol- and drug-related motor vehicle crashes

## **MOTOR VEHICLE INDICATOR 4:** **Seat Belt Use in High School Students (2007, 2009)**

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	Students in grades 9–12.
<b>NUMERATOR</b>	Respondents in grades 9–12 who reported never or rarely wearing a seat belt when riding in a car driven by someone else.
<b>DENOMINATOR</b>	Total respondents in grades 9–12.
<b>MEASURES OF FREQUENCY</b>	Annual prevalence— crude.
<b>DATA RESOURCES</b>	Data from the Youth Risk Behavior Survey (YRBS). <sup>18</sup>
<b>PERIOD FOR CASE DEFINITION</b>	No time frame.
<b>BACKGROUND</b>	Safety belts are 45%–60% effective in reducing deaths and 50%–65% effective in reducing moderate-to-critical injuries. <sup>33</sup>
<b>LIMITATIONS OF INDICATOR</b>	Self-reported data only represent a small portion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of all injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	As with all self-reported sample surveys, YRBS data might be subject to systematic error resulting from noncoverage (e.g., no participation by certain schools), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias).
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-9: Increase use of safety belts

## MOTOR VEHICLE INDICATOR 5: Seat Belt Use (2008)

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	Resident persons aged 18 years or older.
<b>NUMERATOR</b>	Those respondents reporting wearing their seatbelt “always” or “almost always” when driving or riding in a car.
<b>DENOMINATOR</b>	Respondents aged 18 years or older.
<b>MEASURES OF FREQUENCY</b>	Annual prevalence— crude.
<b>DATA RESOURCES</b>	Data from the Behavioral Risk Factor Surveillance System (BRFSS). <sup>17</sup>
<b>PERIOD FOR CASE DEFINITION</b>	No time frame.
<b>BACKGROUND</b>	It is estimated that front seat occupants who use lap/shoulder belts reduce their risk for fatal injury by about 45% and for moderate to critical injury by 45% to 50%. <sup>38</sup>
<b>LIMITATIONS OF INDICATOR</b>	Self-reported data only represent a small portion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of all injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	As with all self-reported sample surveys, BRFSS data might be subject to systematic error resulting from noncoverage (e.g., lower telephone coverage among populations of low socioeconomic status), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias).
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-9: Increase use of safety belts

## **MOTOR VEHICLE INDICATOR 6:** **Drinking and Driving in High School Students (2007, 2009)**

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	Students in grades 9–12.
<b>NUMERATOR</b>	Respondents in grades 9–12 who reported driving a car or other vehicle when drinking alcohol in the past 30 days.
<b>DENOMINATOR</b>	Total respondents in grades 9–12.
<b>MEASURES OF FREQUENCY</b>	Annual prevalence— crude.
<b>DATA RESOURCES</b>	Data from the Youth Risk Behavior Survey (YRBS). <sup>18</sup>
<b>PERIOD FOR CASE DEFINITION</b>	Previous 30 days.
<b>BACKGROUND</b>	At all levels of blood alcohol concentration, the risk of being involved in a crash is greater for young people than for older people. <sup>39</sup> In 2005, 16% of drivers ages 16 to 20 who died in motor vehicle crashes had been drinking alcohol. <sup>40</sup>
<b>LIMITATIONS OF INDICATOR</b>	Self-reported data only represent a small portion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of all injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	As with all self-reported sample surveys, YRBS data might be subject to systematic error resulting from noncoverage (e.g., no participation by certain schools), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias).
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-15: Reduce deaths caused by motor vehicle crashes 15-16: Reduce pedestrian deaths on public roads 26-1: Reduce deaths and injuries caused by alcohol- and drug-related motor vehicle crashes

## MOTOR VEHICLE INDICATOR 7:

### High School Students Riding with Someone Drinking and Driving (2007, 2009)

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	Students in grades 9–12.
<b>NUMERATOR</b>	Respondents in grades 9–12 who reported riding in a car or other vehicle driven by someone who had been drinking alcohol in the past 30 days.
<b>DENOMINATOR</b>	Total respondents in grades 9–12.
<b>MEASURES OF FREQUENCY</b>	Annual prevalence— crude.
<b>DATA RESOURCES</b>	Data from the Youth Risk Behavior Survey (YRBS). <sup>18</sup>
<b>PERIOD FOR CASE DEFINITION</b>	Previous 30 days.
<b>BACKGROUND</b>	At all levels of blood alcohol concentration, the risk of being involved in a crash is greater for young people than for older people. <sup>39</sup> In 2005, 16% of drivers ages 16 to 20 who died in motor vehicle crashes had been drinking alcohol. <sup>40</sup>
<b>LIMITATIONS OF INDICATOR</b>	Self-reported data only represent a small portion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of all injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	As with all self-reported sample surveys, YRBS data might be subject to systematic error resulting from noncoverage (e.g., no participation by certain schools), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias).
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-15: Reduce deaths caused by motor vehicle crashes 15-16: Reduce pedestrian deaths on public roads 26-1: Reduce deaths and injuries caused by alcohol- and drug-related motor vehicle crashes 26-6: Reduce the proportion of adolescents who report that they rode, during the previous 30 days, with a driver who had been drinking alcohol.

## MOTOR VEHICLE INDICATOR 8: Drinking and Driving (2008)

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	Resident persons aged 18 years or older reporting drinking at least one alcoholic beverage in the past 30 days.
<b>NUMERATOR</b>	Those respondents reporting driving one or more times after perhaps having too much to drink in the past 30 days.
<b>DENOMINATOR</b>	Respondents aged 18 years or older reporting having a specific number of drinks on one occasion during the previous month (including unknowns and refusals).
<b>MEASURES OF FREQUENCY</b>	Annual prevalence— crude.
<b>DATA RESOURCES</b>	Data from the Behavioral Risk Factor Surveillance System (BRFSS). <sup>17</sup>
<b>PERIOD FOR CASE DEFINITION</b>	Previous month.
<b>BACKGROUND</b>	In 2005, nearly 1.4 million drivers were arrested for driving under the influence of alcohol or narcotics. <sup>41</sup> This statistic is less than 1% of the 159 million self-reported episodes of alcohol-impaired driving among U.S. adults each year. <sup>42</sup>
<b>LIMITATIONS OF INDICATOR</b>	Self-reported data only represent a small portion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of all injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	As with all self-reported sample surveys, BRFSS data might be subject to systematic error resulting from noncoverage (e.g., lower telephone coverage among populations of low socioeconomic status), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias).
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	26-1: Reduce deaths and injuries caused by alcohol- and drug-related motor vehicle crashes



## MOTOR VEHICLE INDICATOR 9: Alcohol-Related Crash Deaths

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Alcohol-related death of a person involved in crash of a motor vehicle traveling on a public roadway and occurring within 30 days of the crash. Deaths are considered alcohol related if either a driver or nonoccupant (e.g., pedestrian or bicyclist) had a blood alcohol concentration (BAC) greater than or equal to 0.01 g/dL. <sup>20</sup>
<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance.
<b>MEASURES OF FREQUENCY</b>	Annual number of deaths. Annual mortality rate— crude.
<b>DATA RESOURCES</b>	Fatality Analysis Reporting System (FARS) coordinated by the National Highway Traffic Safety Administration (NHTSA) (numerator) <sup>20</sup> and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 2006, 13,470 people died in alcohol-impaired driving crashes, accounting for nearly one third (32%) of all traffic-related deaths in the United States. Half of the 306 child passengers aged 14 years and younger who died in alcohol-related crashes in 2006 were riding with drivers who had a BAC level of 0.08 g/dL or higher. <sup>43</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	FARS does not include nontraffic crashes such as those occurring on driveways and other private property. In addition, it does not include deaths that occur more than 30 days after the motor vehicle crash. Because blood alcohol levels are not available on all fatalities, the estimates are based on a discriminant analysis of information from all cases where BAC data are available.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-15: Reduce deaths caused by motor vehicle crashes 15-16: Reduce pedestrian deaths on public roads 26-1: Reduce deaths and injuries caused by alcohol- and drug-related motor vehicle crashes

# POISONING INDICATOR 1:

## Poisoning Fatalities

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Deaths with any of the following ICD-10 codes as an underlying cause of death.

### Poisoning Fatality ICD-10 Codes

X40–X49	Accidental poisoning by and exposure to noxious substances
X60–X69	Intentional self-poisoning
X85–X90	Assault by poisoning
Y10–Y19	Poisoning of undetermined intent
Y35.2	Legal intervention involving gas
*U01 (.6–.7)	Terrorism involving biological or chemical weapons

**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of deaths. Annual mortality rate— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>21</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** Death certificate data from vital statistics agencies (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** Poisoning is the result of the damaging effect of exposure to a broad range of chemicals (e.g., gases, pesticides, heavy metals, drugs, and common household substances such as bleach and ammonia). In 2006, over 37,000 people in the United States died from poisoning.<sup>1</sup>

**LIMITATIONS OF INDICATOR** Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that cases of injury death must contain an injury code in the underlying-cause-of-death field.

**HEALTHY PEOPLE 2010 OBJECTIVES** 15-8: Reduce deaths caused by poisonings  
26-3: Reduce drug-induced deaths

## POISONING INDICATOR 2: Poisoning Hospitalizations

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Hospitalizations identified from the injury hospital discharge subset (see methods on page 6 for developing the injury hospital discharge subset) by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Poisoning Hospitalization ICD-9-CM Codes

E850–E858	Accidental poisoning by drugs, medicinal substances, and biologicals
E860–E869	Accidental poisonings by other solid and liquid substances, gases, and vapors
E950–E952	Suicide and self-inflicted poisoning
E962	Assault by poisoning
E972	Injury due to legal intervention by gas
E980–E982	Poisoning undetermined whether accidentally or purposefully inflicted
E979 (.6–.7)	Terrorism involving biological or chemical weapons

<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of hospitalizations. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State hospital discharge data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 1999, 21 states reported that hospitalization rates were 4 to 15 times higher than death rates for poisoning-related injuries. <sup>44</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in a hospital admission represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-7: Reduce nonfatal poisonings

## POISONING INDICATOR 3: Poisoning Emergency Department Visits

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Emergency department visits identified from the injury emergency department visit subset (see methods on page 8 for developing the injury emergency department visit subset) by searching for E-codes in the following manner: Search all diagnosis fields. If a designated E-code field is in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and use the next listed valid E-code.

### Poisoning Emergency Department Visit ICD-9-CM Codes

E850–E858	Accidental poisoning by drugs, medicinal substances, and biologicals
E860–E869	Accidental poisonings by other solid and liquid substances, gases, and vapors
E950–E952	Suicide and self-inflicted poisoning
E962	Assault by poisoning
E972	Injury due to legal intervention by gas
E980–E982	Poisoning undetermined whether accidentally or purposefully inflicted
E979 (.6–.7)	Terrorism involving biological or chemical weapons

<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of emergency department visits. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State emergency department data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 2006 there were almost 925,000 poisoning-related emergency department visits, of which 36% resulted in hospitalization or transfer to another facility. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in emergency department visits represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in emergency department data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-7: Reduce nonfatal poisonings 26-4: Reduce drug-related hospital emergency department visits

# SUICIDE/SUICIDE ATTEMPT INDICATOR 1:

## Suicides

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Deaths with any of the following ICD-10 codes as an underlying cause of death.

### Suicide ICD-10 Codes

X60–X84	Intentional self-harm
Y87.0	Sequelae of intentional self-harm
*U03	Terrorism-intentional self-harm

**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of deaths. Annual mortality rate— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>21</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** Death certificate data from vital statistics agencies (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** In 2006, suicide was the second leading cause of death among adults ages 25 to 34 years and the third leading cause of death for adolescents and young adults ages 15 to 24 years.<sup>1</sup>

**LIMITATIONS OF INDICATOR** Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding. The overall completeness of external cause coding on death data is uniformly high. Coding criteria specify that cases of injury death must contain an injury code in the underlying-cause-of-death field.

**HEALTHY PEOPLE 2010 OBJECTIVES** 18-1: Reduce the suicide rate

## SUICIDE /SUICIDE ATTEMPT INDICATOR 2: Suicide Attempt Hospitalizations

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Hospitalizations identified from the injury hospital discharge subset (see methods on page 6 for developing the injury hospital discharge subset) by searching for E-codes in the following manner: Search all diagnosis fields. If there is a designated E-code field in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and then use the next listed valid E-code.

### Suicide Attempt Hospitalization ICD-9-CM Codes

E950–E959	Suicide and self-inflicted injury
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<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of hospitalizations. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State hospital discharge data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 2006, there were an estimated 395,000 hospital emergency department visits for suicide attempts in the United States. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in a hospital admission represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	18-2: Reduce the rate of suicide attempts by adolescents

## SUICIDE /SUICIDE ATTEMPT INDICATOR 3: Suicide Attempt Emergency Department Visits

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Emergency department visits identified from the injury emergency department visit subset (see methods on page 8 for developing the injury emergency department visit subset) by searching for E-codes in the following manner: Search all diagnosis fields. If there is a designated E-code field in your data set, start with the designated E-code field. Count the first-listed valid E-code, unless it is E849, E967, E869.4, E870–E879, or E930–E949; in which case, search additional E-code and diagnostic fields and then use the next listed valid E-code.

### Suicide Attempt Emergency Department Visit ICD-9-CM Codes

E950–E959	Suicide and self-inflicted injury
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<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of emergency department visits. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State emergency department data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	In 2006, there were an estimated 395,000 hospital emergency department visits for suicide attempts in the United States. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in emergency department visits represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in emergency department data is limited by the completeness and quality of coding. The overall completeness of e-coding is of particular concern and should be reviewed in conjunction with the indicator.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	18-2: Reduce the rate of suicide attempts by adolescents

## **SUICIDE/SUICIDE ATTEMPT INDICATOR 4:** **Suicide Attempts in High School Students (2007, 2009)**

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	Students in grades 9–12.
<b>NUMERATOR</b>	Respondents in grades 9–12 who reported attempting suicide one or more times in the past 12 months.
<b>DENOMINATOR</b>	Total respondents in grades 9–12.
<b>MEASURES OF FREQUENCY</b>	Annual prevalence— crude.
<b>DATA RESOURCES</b>	Data from the Youth Risk Behavior Survey (YRBS). <sup>18</sup>
<b>PERIOD FOR CASE DEFINITION</b>	Previous 12 months.
<b>BACKGROUND</b>	Suicide is the third leading cause of death in young adults aged 15–24. <sup>1</sup> For every death in this age group, there are 100–200 suicide attempts. <sup>45</sup>
<b>LIMITATIONS OF INDICATOR</b>	Self-reported data only represent a small portion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of all injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	As with all self-reported sample surveys, YRBS data might be subject to systematic error resulting from noncoverage (e.g., no participation by certain schools), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias).
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	18-2: Reduce the rate of suicide attempts by adolescents



## **SUICIDE/SUICIDE ATTEMPT INDICATOR 5:**

### **Suicide Attempts in High School Students That Required Medical Attention (2007, 2009)**

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	Students in grades 9–12.
<b>NUMERATOR</b>	Respondents in grades 9–12 who reported making a suicide attempt that resulted in an injury, poisoning, or an overdose that had to be treated by a doctor or nurse in the past 12 months.
<b>DENOMINATOR</b>	Total respondents in grades 9–12.
<b>MEASURES OF FREQUENCY</b>	Annual prevalence— crude.
<b>DATA RESOURCES</b>	Data from the Youth Risk Behavior Survey (YRBS). <sup>18</sup>
<b>PERIOD FOR CASE DEFINITION</b>	Previous 12 months.
<b>BACKGROUND</b>	Suicide is the third leading cause of death in young adults aged 15–19, with 1,555 deaths in 2006. <sup>1</sup> In this age group, there were also over 71,000 emergency department visits resulting from suicide attempts in 2006, over 39,000 of which were hospitalized or transferred to another facility. <sup>1</sup>
<b>LIMITATIONS OF INDICATOR</b>	Self-reported data only represent a small portion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of all injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	As with all self-reported sample surveys, YRBS data might be subject to systematic error resulting from noncoverage (e.g., no participation by certain schools), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias).
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	18-2: Reduce the rate of suicide attempts by adolescents

# TRAUMATIC BRAIN INJURY INDICATOR 1:

## Traumatic Brain Injury Fatalities

**DEMOGRAPHIC GROUP** All residents.

**NUMERATOR** Deaths with any of the following ICD-10 codes in any field of the multiple cause of death file.

### Traumatic Brain Injury Fatality ICD-10 Codes

S01.0–S01.9	Open wound of head
S02.0, S02.1, S02.3, S02.7–S02.9	Fracture of skull and facial bones
S04.0	Injury of optic nerve and pathways
S06.0–S06.9	Intracranial injury
S07.0, S07.1, S07.8, S07.9	Crushing injury of head
S09.7–S09.9	Other and unspecified injuries of head
T01.0*	Open wounds involving head with neck
T02.0*	Fractures involving head with neck
T04.0*	Crushing injuries involving head with neck
T06.0*	Injuries of brain and cranial nerves with injuries of nerves and spinal cord at neck level
T90.1, T90.2, T90.4, T90.5, T90.8, T90.9	Sequelae of injuries of head

\* These codes are not considered valid in the U.S.

**DENOMINATOR** Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).

**MEASURES OF FREQUENCY** Annual number of deaths. Annual mortality rate— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).<sup>21</sup> Rates should be calculated for age and sex.

**DATA RESOURCES** Death certificate data from vital statistics agencies (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).

**PERIOD FOR CASE DEFINITION** Calendar year.

**BACKGROUND** Of the approximately 1.7 million people who sustained a TBI in the United States each year, an estimated 52,000 died; 275,000 were hospitalized; and 1.365 million were treated and released from an emergency department.<sup>46</sup>

**LIMITATIONS OF INDICATOR** Injuries severe enough to result in death represent only a small proportion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of the causes of less-severe injuries.

**LIMITATIONS OF DATA RESOURCES** The accuracy of indicators based on codes found in vital statistics data is limited by the completeness and quality of coding.

**HEALTHY PEOPLE 2010 OBJECTIVES** No objective

## TRAUMATIC BRAIN INJURY INDICATOR 2: Traumatic Brain Injury Hospitalizations

<b>DEMOGRAPHIC GROUP</b>	All residents.
<b>NUMERATOR</b>	Hospitalizations with any of the following ICD-9-CM diagnostic codes. These should be identified by searching all diagnostic fields of the injury hospital discharge subset (see methods on page 6 for developing the injury hospital discharge subset).

### Traumatic Brain Injury Hospitalization ICD-9-CM Codes

#### Diagnosis codes

800.00–801.99	Fracture of the vault or base of the skull
803.00–804.99	Other and unqualified or multiple fractures of the skull
850.0–850.9	Concussion
851.00–854.19	Intracranial injury, including contusion, laceration, and hemorrhage
950.1–950.3	Injury to the optic chiasm, optic pathways, or visual cortex
959.01	Head injury, unspecified
995.55	Shaken infant syndrome

<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).
<b>MEASURES OF FREQUENCY</b>	Annual number of hospitalizations. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.
<b>DATA RESOURCES</b>	State hospital discharge data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.
<b>BACKGROUND</b>	An estimated 5.3 million Americans live with a TBI-related disability. According to one study, about 40% of those hospitalized with a TBI had at least one unmet need for services one year after their injury. <sup>47, 48</sup>
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in a hospital admission represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in hospital discharge data is limited by the completeness and quality of coding.
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-1: Reduce hospitalization for nonfatal head injuries

## TRAUMATIC BRAIN INJURY INDICATOR 3: Traumatic Brain Injury Emergency Department Visits

<b>DEMOGRAPHIC GROUP</b>	All residents.																
<b>NUMERATOR</b>	Emergency department visits with any of the following ICD-9-CM diagnostic codes. These should be identified by searching all diagnostic fields of the injury emergency department visit subset (see methods on page 8 for developing the injury emergency department visit subset).																
<b>Traumatic Brain Injury Emergency Department Visit ICD-9-CM Codes</b>																	
<table border="0"> <tr> <td colspan="2"><b>Diagnosis codes</b></td> </tr> <tr> <td>800.00–801.99</td> <td>Fracture of the vault or base of the skull</td> </tr> <tr> <td>803.00–804.99</td> <td>Other and unqualified or multiple fractures of the skull</td> </tr> <tr> <td>850.0–850.9</td> <td>Concussion</td> </tr> <tr> <td>851.00–854.19</td> <td>Intracranial injury, including contusion, laceration, and hemorrhage</td> </tr> <tr> <td>950.1–950.3</td> <td>Injury to the optic chiasm, optic pathways, or visual cortex</td> </tr> <tr> <td>959.01</td> <td>Head injury, unspecified</td> </tr> <tr> <td>995.55</td> <td>Shaken infant syndrome</td> </tr> </table>		<b>Diagnosis codes</b>		800.00–801.99	Fracture of the vault or base of the skull	803.00–804.99	Other and unqualified or multiple fractures of the skull	850.0–850.9	Concussion	851.00–854.19	Intracranial injury, including contusion, laceration, and hemorrhage	950.1–950.3	Injury to the optic chiasm, optic pathways, or visual cortex	959.01	Head injury, unspecified	995.55	Shaken infant syndrome
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995.55	Shaken infant syndrome																
<b>DENOMINATOR</b>	Midyear population for the calendar year under surveillance. To obtain population estimates by age and sex for your state, use U.S. Census Bureau population tables titled “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT” (see instructions on page 60).																
<b>MEASURES OF FREQUENCY</b>	Annual number of emergency department visits. Annual incidence— crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population). <sup>21</sup> Rates should be calculated for age and sex.																
<b>DATA RESOURCES</b>	State emergency department data (numerator) and population estimates from the U.S. Census Bureau or suitable alternative (denominator).																
<b>PERIOD FOR CASE DEFINITION</b>	Calendar year.																
<b>BACKGROUND</b>	Of the 1.365 million emergency department visits for TBI annually, almost half a million (473,947 or 34.7% of all TBI emergency department visits) are by children aged 0 to 14 years. <sup>46</sup>																
<b>LIMITATIONS OF INDICATOR</b>	Injuries that result in emergency department visits represent only a portion of the overall burden of injury. Evaluations of these injuries should be considered in the context of both less- and more-severe injuries.																
<b>LIMITATIONS OF DATA RESOURCES</b>	The accuracy of indicators based on codes found in emergency department data is limited by the completeness and quality of coding.																
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	No objective																

## **TRAUMATIC BRAIN INJURY INDICATOR 4:** **Bicycle Helmet Use Among High School Students (2007, 2009)**

*This indicator will be calculated at CDC.*

<b>DEMOGRAPHIC GROUP</b>	Students in grades 9–12.
<b>NUMERATOR</b>	Respondents in grades 9–12 who reported never or rarely wearing a helmet when riding a bicycle in the past 12 months.
<b>DENOMINATOR</b>	Respondents in grades 9–12 who reported riding a bicycle in the past 12 months.
<b>MEASURES OF FREQUENCY</b>	Annual prevalence— crude.
<b>DATA RESOURCES</b>	Data from the Youth Risk Behavior Survey (YRBS). <sup>18</sup>
<b>PERIOD FOR CASE DEFINITION</b>	Previous 12 months.
<b>BACKGROUND</b>	Bicycle helmets provide a 63–88% reduction in head, brain, and severe brain injury and provide equal protection for crashes involving motor vehicle and other causes. <sup>49</sup>
<b>LIMITATIONS OF INDICATOR</b>	Self-reported data only represent a small portion of the overall burden of injury. An evaluation of only these injuries may not present an accurate picture of all injuries.
<b>LIMITATIONS OF DATA RESOURCES</b>	As with all self-reported sample surveys, YRBS data might be subject to systematic error resulting from noncoverage (e.g., no participation by certain schools), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias).
<b>HEALTHY PEOPLE 2010 OBJECTIVES</b>	15-23: (Developmental) Increase use of helmets by bicyclists 15-24: Increase the number of States and the District of Columbia with laws requiring bicycle helmets for bicycle riders



# CALCULATING AND SUBMITTING RATES

## Calculation Formula and Instructions

Preformatted rate calculation spreadsheets have been prepared for the hospital discharge, emergency department, and vital records-based indicators. These spreadsheets can be obtained from Karen Thomas at [KThomas@cdc.gov](mailto:KThomas@cdc.gov). Completion of the spreadsheet requires:

- Answering a few data background questions;
- Inserting state population data;
- Entering case counts for individual indicators; and
- Renaming the spreadsheets to reflect state and submission number.

Rate calculations include several types of rates (i.e., age-specific crude rates and age-adjusted rates). The following rate calculation specifications have been preprogrammed into the spreadsheet. If you are preparing these data independent of the spreadsheet, please be sure to follow the same specifications.

- Use the estimated population for the year of the data. This information may be obtained from several sources:
  - [www.census.gov/popest/datasets.html](http://www.census.gov/popest/datasets.html) (preferred)
    - Scroll to “State population datasets”
    - Continue scrolling to “State Estimates by Demographic Characteristics– Age, Sex, Race, and Hispanic Origin”
    - Continue scrolling to “State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2007, 2008, or 2009– RESIDENT”
    - Download File layout
    - Download CSV File
  - your state’s demographic center
- Compute rates per 100,000 population.
- For each indicator, except hip fracture hospitalizations, report age-adjusted rates stratified by sex (female and male), and report the overall age-adjusted rate for the state.
- Report age-specific rates for each indicator in the following age categories:

<b>Under 1</b>	
1–4	45–54
5–14	55–64
15–24	65–74
25–34	75–84
35–44	85+

*It is possible to obtain the anomalous looking overall age-adjusted rate which does not fall between the two gender-specific age-adjusted rates. Such outcomes are mathematically possible and should be included.*

Calculate age-adjusted rates using the age-specific U.S. standard population weights from Table 1.

**TABLE 1. AGE ADJUSTMENT TABLE: ALL AGES—ELEVEN AGE GROUPS**

<b>Age</b>	<b>U.S. 2000 Standard Population (1,000's)</b>	<b>Adjustment Weights</b>
All ages	274,634	1.000000
Under 1	3,795	0.013818
1–4	15,192	0.055317
5–14	39,977	0.145565
15–24	38,077	0.138646
25–34	37,233	0.135573
35–44	44,659	0.162613
45–54	37,030	0.134834
55–64	23,961	0.087247
65–74	18,136	0.066037
75–84	12,315	0.044842
85+	4,259	0.015508



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