

INJURIES IN INDIANA

2007 – 2010

MAY 2014



Indiana State
Department of Health



Epidemiology Resource Center and
Division of Trauma and Injury Prevention

Injuries in Indiana

Indiana State Department of Health

William C. VanNess II, MD

State Health Commissioner

Arthur L. Logsdon, JD

*Assistant Commissioner
Health and Human Services*

Pam Pontones, MA

*State Epidemiologist
Epidemiology Resource Center*

Katie Gatz, BS

*Director, Division of
Trauma and Injury Prevention*

REPORT PREPARED and REVIEWED BY:

Jessica Skiba, MPH

*Injury Prevention Epidemiologist
Division of Trauma and Injury Prevention*

ACKNOWLEDGEMENTS:

EPIDEMIOLOGY RESOURCE CENTER

Gary Ordway, MS

Susan Dorrell, BS

Linda Stemnock, BSPH

CHRONIC DISEASE EPIDEMIOLOGY

Champ Thomaskutty, MPH

**DIVISION OF TRAUMA AND INJURY
PREVENTION**

Katie Gatz, BS



Michael R. Pence
Governor

William C. VanNess II, MD
State Health Commissioner

Dear Colleague:

It is a great pleasure to introduce the third edition of the Injuries in Indiana Report for 2007-2010.

The information contained in this report helps us to better understand the impact of fatal and nonfatal injuries, including the physical, psychological and financial consequences of injury, and the profound effect on the quality and length of life.

Injury is an important public health issue. According to the Centers for Disease Control and Prevention, violence and injuries kill nearly 180,000 people each year, which is about one person every three minutes. Injuries kill more people, from ages 1 to 44, in the U.S. than any other cause, and it is the fifth leading cause of death. Unintentional injury contributes to more premature loss of years of life before age 65 than any other cause of death, including heart disease or malignant neoplasms (cancer).

Injuries can be prevented and their consequences lessened through simple and effective interventions such as using seat belts and age-and size-appropriate child safety seats in vehicles, participating in exercise to reduce the risk of falls, and properly disposing of unused, unneeded or expired medications to avoid unintentional poisoning.

This report is intended to help you identify the major causes of injury in your population to inform the development and implementation of appropriate injury-related interventions.

It also aims to inform community leaders and medical providers of the major causes and burden of injuries in Indiana for the purposes of developing and implementing interventions to address the ever growing epidemic.

Go Out and Make a Difference,

WILLIAM C. VANNESS II, MD
STATE HEALTH COMMISSIONER

Table of Contents

	Page(s)
Executive Summary.....	5–6
Introduction	7–8
National Data and the Public Health Impact of Fatal and Nonfatal Injuries	9
Value and Use of this Report	10
Data Sources and Limitations	11–12
Injury in Indiana Highlights	13–14
Index of Figures and Tables (Injuries in Indiana)	15–16
Overview of Injuries in Indiana	
Mortality Data.....	17–35
Morbidity: Inpatient Hospital Discharge Data	36–54
Morbidity: Outpatient/Emergency Department Discharge Data	55–72
Injuries by Age and Life Stages	73–75
Conclusion.....	80
References	81
Appendix A- Glossary of Terms and Acronyms.....	82
Appendix B- Guidelines for Vital Statistics and Hospital Discharge Data	86
Appendix C-Criteria for Selecting Injury Morbidity and Mortality Data.....	88

Executive Summary

The Division of Trauma and Injury Prevention at the Indiana State Department of Health (ISDH) is pleased to provide the third edition of the Injuries in Indiana report on injury-related deaths, hospitalizations, and emergency department visits in Indiana, from the years 2007–2010. This report aims to inform community leaders and medical providers of the major causes and burden of injuries in Indiana for the purposes of developing and implementing interventions to address the ever growing epidemic.

Injury Data Sources

This report utilizes several data sources, including the ISDH Mortality Reports and Indiana Hospital Discharge data. Additionally, data from the Youth Risk Behavior Survey (YRBS), the Behavioral Risk Factor Surveillance System (BRFSS), the Indiana Criminal Justice Institute, the ISDH Epidemiology Resource Center, and the Center for Disease Control and Prevention (CDC) Web-based Injury Statistics Query and Reporting System (WISQARS) were utilized during the preparation of this report. While not every type of injury could be included in this report, the data presented represent the majority of injury-related deaths and hospitalizations in Indiana and the priorities for the Division of Trauma and Injury Prevention at ISDH.

Injury: Mechanism and Intentions

Injuries are caused by acute exposure to physical agents, such as mechanical force or energy, heat, electricity, chemicals, and ionizing radiation, in amounts or at rates that cause bodily harm. The mechanism of injury, or how the individual sustained the injury, can be the underlying cause, or what started the chain of events that lead to the injury, or also the direct cause of injury. Injuries can also be distinguished by the intentions behind the injury, such as unintentional injuries not inflicted by deliberate means, or by intentional self-harm or assault. Injuries are often wrongly identified as “accidents,” suggesting that they are unpredictable and unavoidable. However, research shows that the vast majority of injuries can be prevented. Injuries can lead to death or lifelong physical and emotional pain and illness. In addition to the tremendous burden of grief on families impacted by injury, the consequences of injury cause a significant burden on resources in terms of medical cost, lost productivity, and long-term disability.

The Public Health Impact of Fatal and Nonfatal Injuries

The CDC reports that more than 721,000 Americans died from injuries from 2007–2010, making injury the fifth leading cause of death in the United States in 2010. Unintentional injury was the leading cause of death for Americans between the ages of 1 and 44 years in 2010, and contributes to more premature loss of years of life before age 65 than any other cause of death, including heart disease or malignant neoplasms (cancer).

However, injury-related deaths are only a subset of the real burden of injury. While it should be noted injury deaths are significant, non-fatal injuries occur more frequently and may generate a larger burden on the healthcare system and society compared to fatal injuries. Non-fatal injuries may result in long-

term physical consequences such as chronic pain and disability, and psychological consequences such as posttraumatic stress disorder (PTSD), depression, and avoidance of certain behaviors. The consequences of injury may have a profound impact on the quality and length of life.

Injury and Financial Burden

The financial consequences from injuries are extensive. The CDC estimates that the lifetime medical costs were more than \$1.6 billion and work loss costs totaled more than \$170 billion for the 173,753 fatal injuries in the U.S. in 2005. For the two million nonfatal injuries resulting in hospitalizations in 2005, combined lifetime medical costs and lost productivity totaled more than \$132 billion. These totals do not include other costs such as impacts on the quality of life.

Injury-related Morbidity and Mortality in Indiana

Injuries are the leading cause of death in Indiana among children, adolescents, and adults ages 1-44. Injury continues to be the fifth leading causing of death in Indiana. From 2007–2010, nearly 15,500 Hoosiers died from injuries. While the majority of these injuries were unintentional, nearly 30% of injury deaths were determined to be intentional. Males were 2.4 times more likely to die from injuries compared to females, and blacks were 1.2 times more likely to die from injuries compared to whites.

Injury is a Public Health Problem

Injuries pose a significant public health problem with a severe impact on the lives of Hoosiers through societal and financial burdens. This report aims to bring attention to the public health problem of injury. With robust injury data, the evidence presented in this report suggests that most injuries are predictable and preventable. Analysis of effective injury prevention programs indicates that best practices are cost-effective and provide cost-saving benefits. The data in this report are organized into sections on specific causes or mechanisms of injury, with easy to reference one-page fact sheets. The authors hope that this report will be a useful and relevant tool for injury prevention advocates in communities across Indiana, as they strive to reduce the burden of injury in Indiana.

Introduction

Unintentional injuries continue to be the leading cause of death among persons 1 to 44 years of age and the fifth leading cause of death overall in Indiana, following heart disease, malignant neoplasms (cancer), chronic lower respiratory disease, and stroke (Table 1).^{1,2} An injury is harm to the body resulting from severe exposure to an external force or substance, such as mechanical, thermal, electrical, chemical, or radiant, or a submersion.¹ The mechanism of injury, or how the individual sustained the injury, is known as the underlying cause. The underlying cause starts the chain of events that lead to the injury, which may be due to another instance, known as the direct cause of injury. For example, if an individual is injured by striking a table during a fall, the contact with the table would be the direct cause of the injury, but the fall is what caused the injury in the first place. If the underlying cause can be identified and subsequently prevented, the injury can be stopped from occurring. Continuing with the previous example, if safety measures such as removing throw rugs on the floor or improving lighting in the home are implemented, the fall can be prevented. It is considered a best practice to identify and report the underlying causes, which are presented in this report.¹

Injuries may either be unintentional or intentional. For example, injuries to a child who fell from a bicycle are unintentional in nature, while assault of another person or a self-inflicted injury is intentional. Unintentional injury can be defined as injuries or poisoning not inflicted by deliberate means.¹ These injuries account for the vast majority of injury deaths in the U.S. and Indiana.^{1,2} Unintentional injuries include motor vehicle collisions, cuts, and falls; and such injuries are often incorrectly referred to as “accidents.”^{1,3} Research from the CDC has shown that many injuries are “predictable, preventable, and controllable.” The term “accident” implies these injuries may not be prevented, yet there are distinct, predictable patterns leading up to most injuries. By identifying these patterns and implementing preventive measures, these injuries can be prevented and controlled.³ Intentional injuries are violence-related and inflicted by deliberate means. Violence-related injury can be defined as the intentional use of physical force or power against oneself or another person that results in or has a high likelihood of injury or death. Intentional injuries include homicide (assault) and suicide (self-inflicted). It is an important component of the public health mission to emphasize that injury, whether intentional or not, is preventable and can be avoided.⁴

Regardless of intention, injury has emerged as a public health issue and ranks among the ten leading causes of death in each age group. According to the ISDH mortality records, the proportionate mortality from injury in Indiana from 2007 to 2010 was 6.9% (15,494/222,995), indicating injury contributed to nearly seven percent of all deaths among Indiana residents. The majority of these injury deaths are unintentional, ranking as the 5th leading cause of death for this four-year period.²

A glossary of terms and acronyms can be found in Appendix A.

Table 1. Ten Leading Causes of Death, Indiana, 2007–2010

Rank	Age Groups										All
	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	
1	Congenital Anomalies 546	Unintentional Injury 127	Unintentional Injury 89	Unintentional Injury 118	Unintentional Injury 1,230	Unintentional Injury 1,292	Unintentional Injury 1,348	Malignant Neoplasms 4,689	Malignant Neoplasms 9,920	Heart Disease 42,651	Heart Disease 54,242
2	Short Gestation 481	Congenital Anomalies 52	Malignant Neoplasms 46	Malignant Neoplasms 30	Suicide 398	Suicide 516	Heart Disease 1,168	Heart Disease 3,632	Heart Disease 6,270	Malignant Neoplasms 35,863	Malignant Neoplasms 52,172
3	Unintentional Injury 184	Homicide 48	Congenital Anomalies 22	Suicide 22	Homicide 348	Homicide 380	Malignant Neoplasms 1,144	Unintentional Injury 1,625	Chronic Low. Respiratory Disease 1,591	Chronic Low. Respiratory Disease 12,325	Chronic Low. Respiratory Disease 14,644
4	SIDS 182	Malignant Neoplasms 31	Homicide 11	Homicide 15	Malignant Neoplasms 134	Heart Disease 339	Suicide 631	Suicide 758	Diabetes Mellitus 1,090	Cerebro-vascular 10,530	Cerebro-vascular 12,283
5	Maternal Pregnancy Comp. 139	Influenza & Pneumonia 17	Chronic Low. Respiratory Disease ---	Congenital Anomalies 12	Heart Disease 106	Malignant Neoplasms 304	Homicide 209	Liver Disease 638	Unintentional Injury 1,022	Alzheimer's Disease 7,376	Unintentional Injury 10,168
6	Placenta Cord Membranes 79	Heart Disease 15	Benign Neoplasms ---	Heart Disease 12	Congenital Anomalies 27	HIV 53	Diabetes Mellitus 175	Chronic Low. Respiratory Disease 547	Cerebro-vascular 959	Nephritis 4,745	Alzheimer's Disease 7,458
7	Bacterial Sepsis 66	Chronic Low. Respiratory Disease 11	Heart Disease ---	Influenza & Pneumonia 12	Influenza & Pneumonia 25	Cerebro-vascular 49	Liver Disease 170	Diabetes Mellitus 538	Liver Disease 625	Diabetes Mellitus 4,621	Diabetes Mellitus 6,480
8	Circulatory System Disease 63	Septicemia 11	Cerebro-vascular ---	Chronic Low. Respiratory Disease ---	Chronic Low. Respiratory Disease 21	Influenza & Pneumonia 47	Cerebro-vascular 169	Cerebro-vascular 536	Nephritis 505	Influenza & Pneumonia 4,014	Nephritis 5,614
9	Respiratory Distress 63	Anemias ---	Diabetes Mellitus ---	Cerebro-vascular ---	Cerebro-vascular 16	Diabetes Mellitus 39	HIV 137	Septicemia 247	Suicide 487	Unintentional Injury 3,132	Influenza & Pneumonia 4,782
10	Necrotizing Enterocolitis 60	Perinatal Period ---	<u>Five Tied</u> ---	Diabetes Mellitus ---	Septicemia 12	Congenital Anomalies 35	Chronic Low. Respiratory Disease 96	Nephritis 229	Septicemia 444	Septicemia 2,498	Septicemia 3,351

Source: National Center for Injury Prevention and Control CDC, National Center for Health Statistics Vital Statistics System, WISQARS, 2014

Numbers within each box indicate number of deaths. Counts fewer than 5 are suppressed.

National Data and the Public Health Impact of Fatal and Nonfatal Injuries

Each year, millions of people in the United States experience injuries that require medical attention. Injuries led to the death of more than 721,000 Americans from 2007–2010. Injuries continue to be the leading cause of death among persons age 1-44 and were the underlying cause of death for 50.1% of deaths in this age group (319,250/637,356).¹ Unintentional injuries continue to be the fifth leading cause of death in the United States and the number one killer of children, although they are preventable. At every age, the majority of injury deaths are unintentional, but the risk of death from unintentional injury rises dramatically with age. Additionally, there are many mechanisms associated with the occurrence of injuries. In the U.S. from 2007–2010, motor vehicle traffic (20.2%), unintentional poisonings (17.2%), unintentional falls (13.3%), and suicide by firearm (10.1%) were the four leading causes of injury death; combined they accounted for 60.8% of all injury deaths.¹ Sex is another important risk factor for injuries, with the rates among males and females differing by intent and mechanism. Males have higher rates of injury deaths compared to females, regardless of age group.

The circumstances surrounding an injury may not always result in death, but can be severe enough to warrant admission to a healthcare facility. While death is the most-severe outcome of injuries, less-severe outcomes represent a greater proportion of the overall burden of injury.⁴ In fact, nonfatal injuries occur much more frequently than fatal injuries. In 2010, injuries in the U.S. resulted in an estimated 31 million outpatient/emergency department (ED) visits, and 2.5 million hospitalizations, in comparison to 180,000 deaths.¹

Hospitalization and other medical care provided to injured persons produce a financial burden in terms of medical treatment, loss of productivity and wages, and rehabilitation for those severely injured. The CDC estimates that injury deaths in 2005 alone totaled \$172 billion in medical care costs and work loss costs. In the same year, nonfatal injuries treated and released in emergency departments and nonfatal injuries resulting in hospitalization totaled \$98 billion and \$132 billion, respectively, in combined medical costs and work loss costs. The cost of deaths due to violence in 2005 totaled \$47.2 billion, of which \$47 billion was in work loss costs and \$215 million in medical treatments.¹

Value and Use of this Report

This report provides a snapshot of the burden of injury and poisoning in Indiana from 2007 to 2010 in terms of morbidity and mortality. The data presented are representative of injury-related deaths from 2007–2010 and nonfatal injury-related hospital discharges and outpatient/emergency department visits for the same time period. The objective of this report is to take the initial step of the public health approach: to define the problem, both in the U.S. and in Indiana, in order to assist community leaders in identifying the causes of injuries in order to develop, implement, and evaluate interventions. By completing injury surveillance, it is possible to better clarify the magnitude of injury morbidity and mortality, the leading causes of injury, and those most at risk of injury.⁴

The target audiences for this report are individuals and organizations in Indiana who are interested in injury prevention, including health care providers, emergency medical service professionals, local health jurisdictions, injury prevention professionals and groups, and the media. This report includes an overview of injuries in Indiana as well as sections that focus on the specific causes of injury that are considered priorities to ISDH. Included in the sections are one-page summary sheets for easy reference as well as a small section detailing prevention of specific injuries at the individual and community level. As with other public health issues, efforts to reduce injuries require multiple strategies at the national, state, and community level.

Data Sources and Limitations

Mortality Data

Injury death data utilized in this report were extracted from the Indiana State Department of Health (ISDH) mortality reports.² The completeness of mortality data is dependent upon how thoroughly the death certificate is completed, which may affect how a death is categorized and what data is available to analyze. Additionally, the data are reliant upon the completeness and quality of coding, but typically the completeness of coding death data is uniformly high. Data from the Center for Disease Control and Prevention (CDC) Web-based Injury Statistics Query and Reporting System (WISQARS) will be utilized for national and regional comparisons. A limitation of both datasets is that race and ethnicity data may not be accurate because it is provided at the discretion of the person completing the death certificate, which may not reflect how the individual would define his own race or ethnicity. Customized reports from the ISDH were utilized to present all of the unintentional and intentional mortality data integrated into this report.^{1,2} Mortality data represent only a portion of the overall burden of injury, and may not accurately reflect less-severe injuries.⁴

Hospital Discharge Data and Outpatient/Emergency Department Data

Indiana's hospital discharge data give an indication of the burden of unintentional and intentional injuries within the state, representing visits to emergency departments and hospitalizations. The International Classification of Disease Revision 9 Clinical Modification (ICD-9-CM) coding scheme includes the classification of the external causes of injury codes known as E-codes to indicate the mechanism or cause of the injury. E-codes specific to injury and poisoning include ICD-9-CM codes 800-999 and can be subdivided by the manner or intent of the injury. Additionally, E-codes can provide injury-related cost data. However, E-codes are not present for every case. It is estimated that only 61% of the inpatient hospital discharge records and nearly 64% of the outpatient/emergency department discharge records with a principle diagnosis of injury or poisoning from 2007–2010 contain an E-code. Therefore, the total number of injuries in this report is a gross underestimation of the proportion of number of injuries that actually occurred.

Another limitation with the hospital discharge data is that the data do not contain a patient-specific unique identifier. This limitation cannot distinguish whether one individual had five hospital admissions or whether five individuals had one hospital admission each. Therefore, this report and its statistics only reflect visits to the outpatient/emergency department and number of hospitalizations and not specific numbers of individuals. Another limitation with the data is that the race and ethnicity data may vary because these demographic variables are at the discretion of the health care professional reporting the data and may not be reflective of how the individuals would define themselves. In some cases, the information is not provided at all. Hospital discharge data represent a portion of the overall burden of injury and may not present an accurate picture of injuries that are more or less severe. Evaluations of injuries from the hospital discharge data should be considered in the context of other levels of severity, including injuries severe enough to cause death, and less severe injuries requiring no medical attention.⁴

A final limitation of the hospital discharge data is that the Indiana law only requires hospital discharge data submission by acute care hospitals. Therefore, some hospitals, including psychiatric and behavioral health centers, do not submit data. As a result, the total number of injuries reported for the discharge data may be an underestimation of the actual number of injuries.

Other Sources of Data

Other resources such as the Youth Risk Behavior Survey (YRBS), the Behavioral Risk Factor Surveillance System (BRFSS), the Indiana Criminal Justice Institute, the ISDH Epidemiology Resource Center, and various published articles were used to complement the data collected. BRFSS is a state-based, random-digit dialing land line and cell phone survey. The survey monitors risk behaviors associated with leading causes of injury and death of non-institutionalized adults aged 18 years and older. YRBS is a school-based survey that monitors risk behaviors associated with leading causes of injury among teenagers in grades 9-12. Each of these sources of data has specific strengths and weaknesses, which will be addressed in this report.

Injuries in Indiana Highlights

Mortality, 2007–2010

- From 2007 to 2010, 15,494 Hoosiers died from injury, of which 10,085 (65.1%) injury deaths were unintentional, 4,625 (29.9%) injury deaths were intentional, and 757 (4.9%) deaths were of undetermined intent.
- Indiana's age-adjusted mortality rate for all injuries was 59.7 per 100,000 from 2007 to 2010.
- Males accounted for 67.7% of all injury deaths and were 2.4 times as likely as females to die from injury (age adjusted rates of 85.3 per 100,000 versus 35.6 per 100,000, respectively).
- Blacks were 1.2 times more likely to die from injuries compared to whites.
- Injury death rates were highest among the 75-year and older age groups (122.8 per 100,000 among persons 75 to 84 years and 284.8 per 100,000 among persons 85 years and older).
- The leading cause of unintentional injury death was unintentional motor vehicle traffic for males and unintentional poisoning for women.
- With respect to intentional injury deaths, suicide and homicide were the 11th and 16th leading cause of death, respectively.

Inpatient Admissions, 2007–2010

- There were 90,566 injury-related inpatient admissions. Based on data with valid E-codes, injuries accounted for approximately 2.98% (90,566/3,035,036) of all hospital admissions of Indiana residents, with an overall rate of 344.9 per 100,000.
- Of all injury-related inpatient admissions, 74,469 (82.2%) were unintentional, 13,277 (14.7%) were intentional, and 2,820 (3.1%) were of undetermined or other intent.
- The majority of unintentional injuries were due to falls (43,733/74,469; 58.7%), followed by motor vehicle crashes (11,469/74,469; 15.4%) and poisoning (5,626/74,469; 7.6%).
- Overall, males were slightly more likely than females to be admitted to the hospital due to an injury (351.1 per 100,000 compared to 325.6 per 100,000).
- The rate of injury hospitalization is higher for blacks compared to whites (350.4 per 100,000 versus 312.9 per 100,000).
- Black males were almost 1.4 times more likely to be hospitalized due to an injury (429.2 per 100,000) compared to white males (312.3 per 100,000).
- Injury-related hospital admission rates were highest among the 75 year and older age groups (1,290.4 per 100,000 among persons 75–84 years and 2,850.9 per 100,000 among persons 85 years and older).
- The total charges from admission to discharge for injury-related hospital admissions were \$2.6 billion. The average charge per hospital admission due to injury was \$28,416.79, with a range of \$0–\$3,610,480.
- Of those admitted to the hospital due to injury, 29.1% (26,319/90,566) had commercial insurance, while 41.2% (37,288/90,566) had Medicare insurance.
- The average length of stay was 4.1 days (\pm 4.4 days), and the median length of stay was 3.0 days (range 1-180 days).

Injuries in Indiana Highlights

Outpatient Admissions, 2007–2010

- There were 1,779,650 outpatient/emergency department (ED) visits with an external cause of injury code indicating injury or poisoning among Indiana residents from 2007 to 2010.
- Based on data with valid E-codes, injuries accounted for approximately 5.5% (1,779,650/32,386,127) of all ED visits of Indiana residents, with an overall rate of 7,033.9 per 100,000.
- Of all injuries, 1,675,221 (94.1%) were unintentional, 93,231 (5.2%) were intentional, and 11,198 (0.6%) were of undetermined or other intent.
- The majority of unintentional injuries were due to falls (575,011/1,675,221; 34.3%), followed by struck by/against or crushed (265,615/1,675,221; 15.9%), and overexertion (196,586/1,675,221; 11.7%).
- Overall, males were slightly more likely than females to visit the ED due to an injury (7,397.2 per 100,000 compared to 6,617.1 per 100,000).
- The rate ED visitation due to injury is higher for blacks compared to whites (7,842.6 per 100,000 versus 6,236.0 per 100,000).
- Black males were almost 1.3 times more likely to visit the ED for injury compared to white males (8,347.1 per 100,000 compared to 6,507.5 per 100,000).
- Injury-related outpatient/ED visitation rates were highest among the 15-24 year old age group, at a rate of 1,356.5 per 100,000.
- The total charges for injury-related outpatient/ED visits over the four years were \$2.53 billion. The average charge per ED visit due to injury was \$1,424.93, with a range of \$2.00–\$191,507.00.
- Of those admitted to the hospital due to injury, 39.6% (704,149/1,779,650) had commercial insurance, while 13.1% (233,787/1,779,650) had Medicare insurance.

Index of Figures and Tables

- Figure 1. Injury Death Rates by Year, Indiana, 2007–2010
- Figure 2. Injury Death Rates by Intent, United States, Midwest and Indiana Comparison, 2007–2010
- Figure 3. Injury Deaths by Intent, Indiana, 2007–2010
- Figure 4. Ten Leading Mechanisms of Injury in Injury Deaths, Indiana, 2007–2010
- Figure 5. Intentional Injury Deaths by Type, Indiana, 2007–2010
- Figure 6. Leading Mechanisms of Injury Death Rates by Year, Indiana, 2005-2010
- Figure 7. Leading Causes of Years of Potential Life Lost Before Age 65, Indiana, 2007–2010
- Figure 8. Leading Injury Causes of Years of Potential Life Lost Before Age 65, Indiana, 2007–2010
- Figure 9. Injury Death Rates by Gender and Intent, Indiana, 2007–2010
- Figure 10a. Injury Death Rates, United States, Midwest, and Indiana Comparison by Intent, Males, 2007–2010
- Figure 10b. Injury Death Rates, United States, Midwest, and Indiana Comparison by Intent, Females, 2007–2010
- Figure 11. Injury Deaths by Age Group, Indiana, 2007–2010
- Figure 12. Injury Deaths by Age Group and Gender, Indiana, 2007–2010
- Figure 13. Injury Deaths by Race, Indiana, 2007–2010
- Figure 14. Injury Death Rates by Race and Year, Indiana, 2007–2010
- Figure 15. Injury Death Rates by Race and Gender, Indiana, 2007–2010
- Figure 16. Injury Death Rates by Intent, Race, and Gender, Indiana, 2007–2010
- Figure 17. Injury-Related Inpatient Hospital Admission Rates by Year, Indiana, 2007–2010
- Figure 18. Injury-Related Inpatient Hospital Admissions by Intent, Indiana, 2007–2010
- Figure 19. Ten Leading Mechanisms of Injury in Injury-Related Inpatient Hospital Admissions, Indiana, 2007–2010
- Figure 20. Intentional Injury-Related Inpatient Hospital Admissions by Type, Indiana, 2007–2010
- Figure 21. Leading Mechanisms of Injury in Injury-Related Inpatient Hospital Admission Rates by Year, Indiana, 2007–2010
- Figure 22. Injury-Related Inpatient Hospital Admission Rates by Gender and Intent, Indiana, 2007–2010
- Figure 23. Injury-Related Inpatient Hospital Admissions by Age, Indiana, 2007–2010
- Figure 24. Injury-Related Inpatient Hospital Admissions by Age and Gender, Indiana, 2007–2010
- Figure 25. Injury-Related Inpatient Hospital Admissions by Race, Indiana, 2007–2010
- Figure 26. Injury-Related Inpatient Hospital Admission Rates by Race, Indiana, 2007–2010
- Figure 27. Injury-Related Inpatient Hospital Admission Rates by Race and Gender, Indiana, 2007–2010
- Figure 28. Injury-Related Inpatient Hospital Admission Rates by Race, Gender, and Year, Indiana, 2007–2010
- Figure 29. Injury-Related Inpatient Hospital Admissions by Discharge Status, Indiana, 2007–2010
- Figure 30. Injury-Related Inpatient Hospital Admissions by Admission Type, Indiana, 2007–2010
- Figure 31. Injury-Related Inpatient Hospital Admissions by Admission Source, Indiana, 2007–2010
- Figure 32. Injury-Related Inpatient Hospital Admissions by Special Care Unit, Indiana, 2007–2010
- Figure 33. Injury-Related Inpatient Hospital Admissions by Payer Source, Indiana, 2007–2010
- Figure 34. Injury-Related Outpatient/ ED Visit Rates by Year, Indiana, 2007–2010
- Figure 35. Injury-Related Outpatient/ ED Visits by Intent, Indiana, 2007–2010
- Figure 36. Ten Leading Mechanisms of Injury in Injury-Related Outpatient/ ED Visits, Indiana, 2007–2010
- Figure 37. Intentional Injury-Related Outpatient/ ED Visits by Type, Indiana, 2007–2010
- Figure 38. Leading Mechanisms of Injury in Injury-Related Outpatient/ ED Visit Rates by Year, Indiana, 2007–2010
- Figure 39. Injury-Related Outpatient/ ED Visit Rates by Gender and Intent, Indiana, 2007–2010
- Figure 40. Injury-Related Outpatient/ ED Visits by Age, Indiana, 2007–2010

Figure 41. Injury-Related Outpatient/ ED Visits by Age and Gender, Indiana, 2007–2010
Figure 42. Injury-Related Outpatient/ ED Visits by Race, Indiana, 2007–2010
Figure 43. Injury-Related Outpatient/ ED Visit Rates by Race, Indiana, 2007–2010
Figure 44. Injury-Related Outpatient/ ED Visit Rates by Race and Gender, Indiana, 2007–2010
Figure 45. Injury-Related Outpatient/ ED Visit Rates by Race, Gender, and Year, Indiana, 2007–2010
Figure 46. Injury-Related Outpatient/ ED Visits by Discharge Status, Indiana, 2007–2010
Figure 47. Injury-Related Outpatient/ ED Visits by Admission Type, Indiana, 2007–2010
Figure 48. Injury-Related Outpatient/ ED Visits by Admission Source, Indiana, 2007–2010
Figure 49. Injury-Related Outpatient/ ED Visits by Payer Source, Indiana, 2007–2010

Table 1. Ten Leading Causes of Death, Indiana, 2007–2010
Table 2. Leading Mechanisms of Injury Death by Intent, Indiana, 2007–2010
Table 3. Injury Deaths by Mechanism and Intent, Indiana, 2007–2010
Table 4. Unintentional Injury Deaths and Rates by Mechanism and Gender, Indiana, 2007–2010
Table 5. Injury Deaths and Rates by Year and Age Group, Indiana, 2007–2010
Table 6. Injury Deaths and Rates by Age and Gender, Indiana, 2007–2010
Table 7. Five Leading Mechanism of Injury Deaths by Age Group, Indiana, 2007–2010
Table 8. Rates of Injury Deaths by Age and Intent, Indiana, 2007–2010
Table 9. Leading Mechanisms of Injury in Injury-Related Inpatient Hospital Admissions by Intent, Indiana, 2007–2010
Table 10. Injury-Related Inpatient Hospital Admissions by Mechanism and Intent, Indiana, 2007–2010
Table 11. Leading Mechanism of Injury in Injury-Related Inpatient Hospital Admissions by Gender, Indiana, 2007–2010
Table 12. Injury-Related Inpatient Hospital Admission Rates by Year and Age Group, Indiana, 2007–2010
Table 13. Injury-Related Inpatient Hospital Admission Rates by Age and Gender, Indiana, 2007–2010
Table 14. Five Leading Mechanisms of Injury in Injury-Related Inpatient Hospital Admissions by Age, Indiana, 2007–2010
Table 15. Injury-Related Inpatient Hospital Admission Rates by Age and Intent, Indiana, 2007–2010
Table 16. Leading Mechanisms of Injury in Injury-Related Outpatient/ ED Visits by Intent, Indiana, 2007–2010
Table 17. Injury-Related Outpatient/ ED Visits by Mechanism and Intent, Indiana, 2007–2010
Table 18. Leading Mechanism of Injury in Injury-Related Outpatient/ ED Visits by Gender, Indiana, 2007–2010
Table 19. Injury-Related Outpatient/ ED Visit Rates by Year and Age Group, Indiana, 2007–2010
Table 20. Injury-Related Outpatient/ ED Visit Rates by Age and Gender, Indiana, 2007–2010
Table 21. Five Leading Mechanisms of Injury in Injury-Related Outpatient/ ED Visits by Age, Indiana, 2007–2010
Table 22. Injury-related Outpatient/ ED Visit Rates by Age and Intent, Indiana, 2007–2010

Mortality

Between 2007 and 2010, 15,494 Indiana residents died due to injuries. Indiana's age-adjusted mortality rate for all injuries during this period was 59.7 per 100,000. This rate was the lowest in 2010 at 58.6 per 100,000 and was the highest in 2008 at 61.0 per 100,000 (Figure 1). The mortality rate for all injuries was higher in Indiana compared to the United States' rate of 57.8 per 100,000 and the Midwest's rate of 56.7 per 100,000 for the same four years (Figure 2).¹ Indiana's suicide and unintentional injury rates were also higher compared to the rates for the United States and the Midwest. Indiana's rate of homicide was greater than that of the Midwest (5.4 per 100,000 vs. 5.2 per 100,000), but lower than the rate for the United States (5.7 per 100,000). The rate for legal intervention, defined as injuries inflicted by the police or law-enforcing agents in the course of arresting or attempting to arrest lawbreakers, or carrying out other legal actions, is consistent across Indiana, the Midwest, and the United States. Indiana's crude injury mortality rate ranks 22nd for all intents, 17th for unintentional injuries, and 26th for intentional injuries compared to other states in the United States.¹

Of the 15,494 injury deaths from 2007 to 2010, 10,085 were unintentional; 4,625 were intentional; and 757 were undetermined (Figure 3). The proportionate mortality from injury in Indiana from 2007 to 2010 was 6.9% (15,494/222,995), indicating injury contributed to nearly seven percent of all deaths among Indiana residents. The leading mechanism of all injury deaths was poisoning, followed by motor vehicle traffic (MVT), and firearms (Figure 4). MVT related-injuries were the leading cause of unintentional injury deaths followed by poisoning (Table 2).

Intentional injury fatalities continue to be a public health problem in Indiana. Of the intentional deaths, 3,281 were from suicide and 1,344 were from homicide (Figure 5, Table 2). Overall, suicide was the 11th leading cause of death and homicide was the 16th leading cause of death for the four-year time period.¹ The leading cause of intentional death was by firearm (1,757/3,281 or 53.6%) followed by suffocation (764/3,281 or 23.3%), poisoning (601/3,281 or 18.3%) and cutting/piercing (34/3,281 or 1.0%). Firearms constituted 53.6% of suicides and 70.6% of homicides, respectively, in 2007–2010 (Table 2). There were 2,706 total intentional firearm deaths with an age-adjusted rate of 10.5 per 100,000 persons. Of all intentional firearm deaths, 64.9% were suicide deaths (1,757/2,706) and 35.1% were homicide/assault deaths (949/2,706). The second leading cause of intentional injury death for 2007–2010 was suffocation (808 deaths, 3.2 per 100,000). Of all suffocation deaths, 51.4% (764/1,486) were due to self-inflicted means, and 3.0% (44/1,486) were due to homicide (Table 3).

An important epidemiological shift occurred in 2009 when unintentional poisonings surpassed unintentional MVT for leading cause of injury deaths. The two causes of injury deaths had the same rate in 2010, which then flatten out the peak. Unintentional poisoning deaths underwent a substantial increase from 2005 with a rate of 6.6 per 100,000 to a peak rate of 12.4 per 100,000 in 2009 and back down to 11.1 per 100,000 in 2010 (Figure 6). Poisoning constituted 26.1% of all unintentional injury deaths (Table 2). Unintentional MVT fatalities underwent a substantial decrease over the same period of time (Figure 6). MVT-related injuries constituted 30.6% of all unintentional injury deaths (Table 2). However, comparing overall age-adjusted rates for the four-year period indicates poisoning deaths occurred at a greater rate compared to MVT-related deaths (Table 3).

Years of potential life lost (YPLL) is an important mortality index, used to measure premature mortality or early death. This statistic recognizes that death at a younger age involves greater loss of future productive years compared to a death at an older age.⁵ Unintentional injury contributes to the greatest YPLL before age 65 in Indiana from 2007–2010, compared to other diseases and conditions such as malignant neoplasms (cancer), heart disease (Figure 7). Because injury is the leading cause of death from age 1 to 44 years, there is an apparent discrepancy between unintentional injury as the fifth leading cause of death, but as the leading cause of YPLL. Thus, unintentional injuries contribute to a large proportion of the years of potential life lost in Indiana. The leading injury cause of YPLL before age 65 in Indiana during the same period is unintentional MVT, followed by unintentional poisoning (Figure 8). It is important to note the causes of the high YPLL in order to guide injury prevention efforts and priorities among children and young adults.

The census population of Indiana is almost equally distributed by gender, with females accounting for 50.7% of the total population from 2007–2010.⁶ During 2007–2010, males accounted for 67.7% of all injury deaths and were 2.4 times as likely as females to die from injury (age-adjusted rate of 85.3 per 100,000 versus 35.6 per 100,000 respectively) (Figure 9). Seventy-four percent of all female injury deaths and 61% of all male injury deaths were unintentional in nature. Indiana’s suicide death rate for males was higher than both the Midwest and the United States rates, as was the age-adjusted death rate for injuries of all intentions and unintentional means (Figure 10a). The injury rates for Hoosier females were the highest across all intentions, unintentional injuries, and intentional suicides and homicides compared to the Midwest and the U.S. (Figure 10b). Suicide was the 8th leading cause of death for males during 2007–2010, and homicide/assault was the 14th leading cause of death. For females during the same time period, suicide was the 16th leading cause of death and homicide/assault was not within the top twenty causes of death.

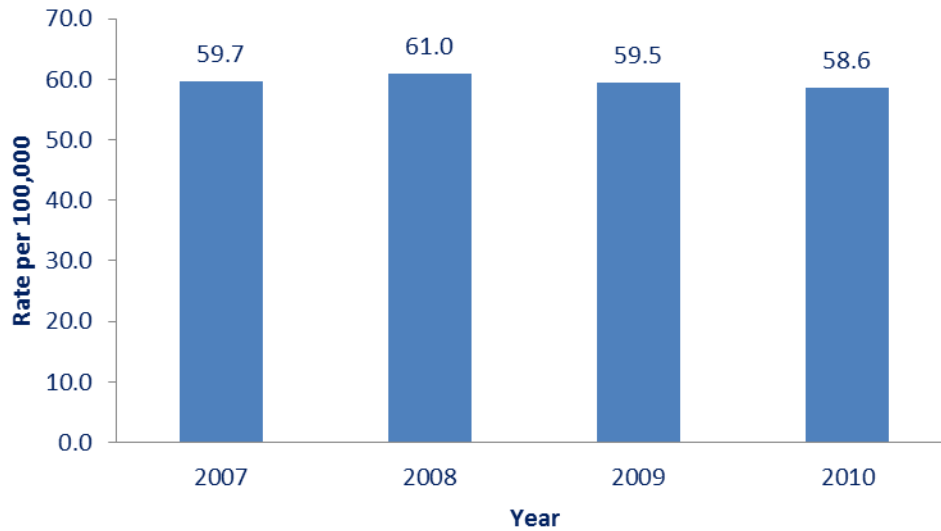
The leading cause of unintentional injury death in Indiana from 2007 to 2010 for males was MVT collisions; for females, it was poisoning. MVT accounted for 34.3% and poisoning accounted for 26.4% of unintentional injury deaths in males and females, respectively. Other leading causes of unintentional injury deaths in males included poisoning (25.9%) and falls (11.5%). Other leading causes of unintentional injury deaths in females include MVT collision (24.2%) and falls (17.0%) (Table 4).

The number of fatal injuries varied by age group, with the greatest number occurring among persons age 45-54 (Figure 11). Injury death rates were highest among the 75-year and older age groups (122.8 per 100,000 among persons 75 to 84 years and 284.8 per 100,000 among persons 85 years and older). The lowest rates of injury death were among persons aged 5 to 14 (7.4 per 100,000) (Table 5). There were more injury deaths among males than females for all age groups except 85 years and older (Figure 12). However, males, aged 85 years and older, had the highest rate of injury death (362.2 per 100,000) and females, aged 85 years and older, had the second highest rate of injury death (251.3 per 100,000). Males had higher injury mortality rates than females for all age groups (Table 6). The leading mechanism of injury death also varied by age group. Suffocation was the leading cause of injury death under the age of one, while falls were the leading cause of injury death among those 75 years and older (Table 7). Unintentional injuries were the leading type of intent of death across all age groups (Table 8).

Whites make up the majority of Indiana's population, accounting for 87.7% of the total population. Blacks comprise 9.1%. Other races, such as American Indians and Alaska Natives, Asians, and Native Hawaiians and other Pacific Islanders, are also included in Indiana's population, representing only 3.2%.⁶ However, because these races make up a small percentage of the total burden of injury, injury rates among them cannot be calculated due to instability.

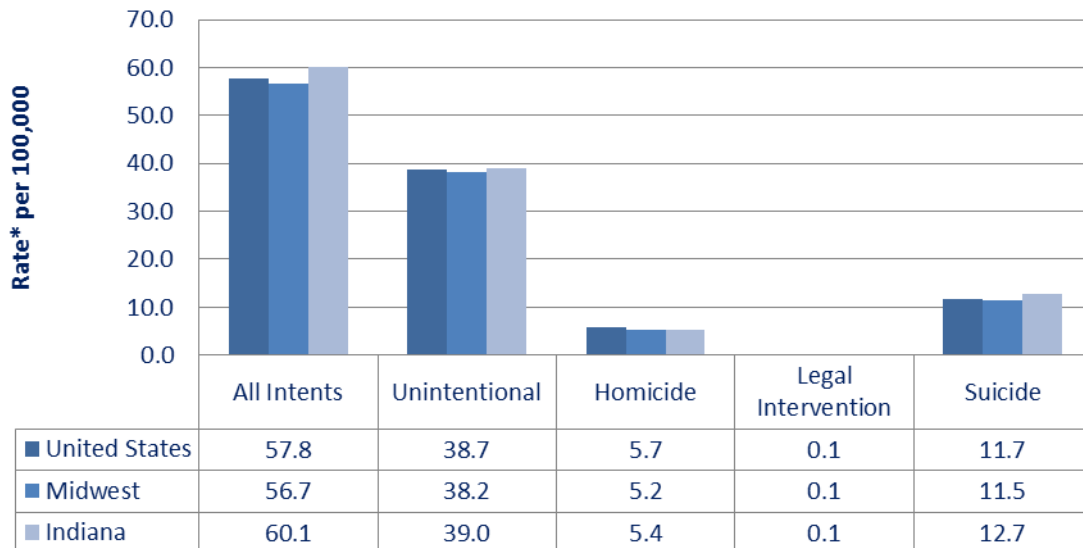
Whites accounted for the majority (87.7%) of all injury deaths in Indiana during 2007–2010. Blacks accounted for 10.3% of all injury deaths (Figure 13). The rate of injury death is higher among blacks, so much so that blacks are 1.2 times more likely than whites to die from injury (Figure 14). Black males are 1.3 times more likely to die from injury compared to white males (110.2 per 100,000 versus 82.6 per 100,000 respectively). Injury rates among females in these two race groups are fairly similar, 36.1 per 100,000 among whites and 32.5 per 100,000 among blacks (Figure 15). Conversely, white males are more likely to die from unintentional injuries compared to black males, and the overall age-adjusted rate for whites is larger than that of blacks (39.3 per 100,000 compared to 32.6 per 100,000). In terms of intentional injury deaths, black males had the highest age-adjusted homicide rate, with 50.0 per 100,000, which is nearly 14.7 times greater rate than for white males. Based on this rate, black males are more likely to die from homicide (assault) injuries compared to unintentional injuries. Black females had the lowest rate of injury death by suicide and white females had the lowest rate of injury death by homicide, both age-adjusted rates of 1.9 per 100,000 (Figure 16).

Figure 1: Injury Death Rates* by Year, Indiana, 2007–2010



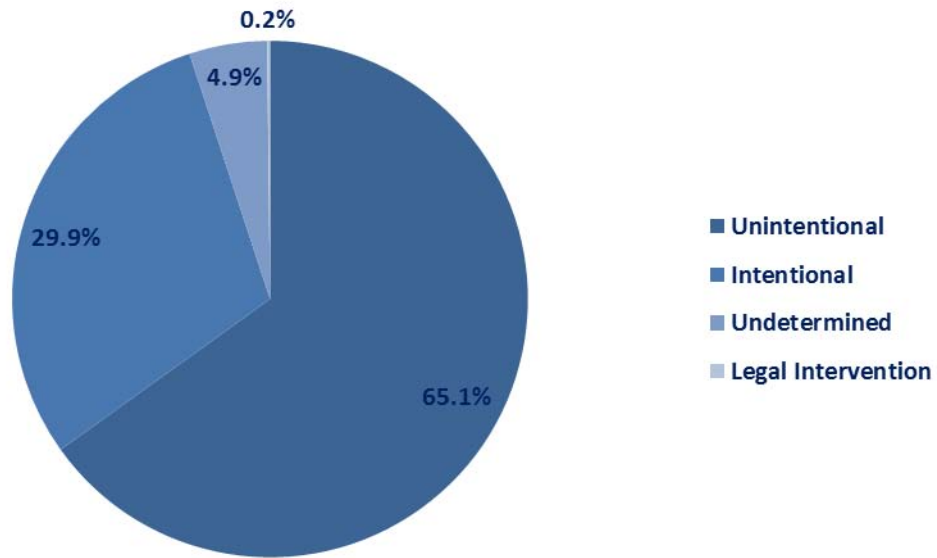
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention
 *Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 2: Injury Death Rates* by Intent, United States, Midwest and Indiana Comparison, 2007–2010**



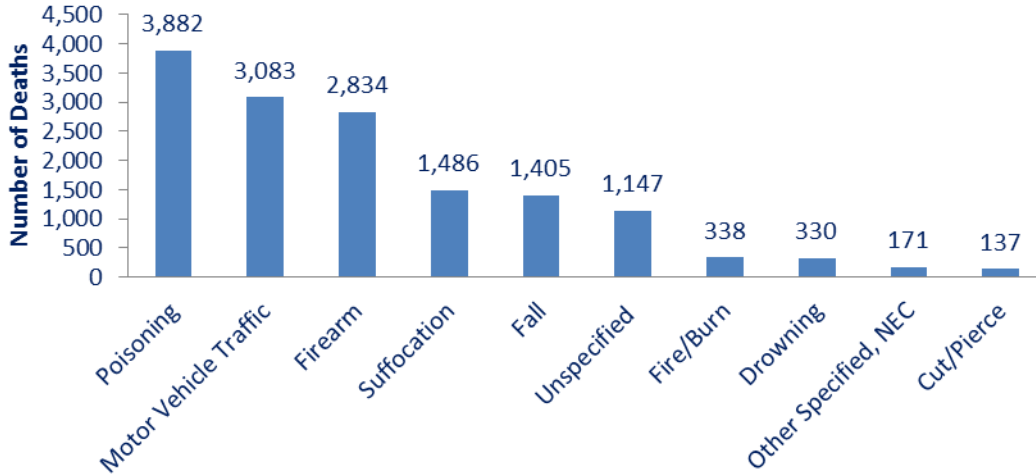
Source: National Center for Injury Prevention and Control CDC, National Center for Health Statistics Vital Statistics System, WISQARS
 *Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.
 ** Midwest includes IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, and WI

Figure 3: Injury Deaths by Intent, Indiana, 2007–2010



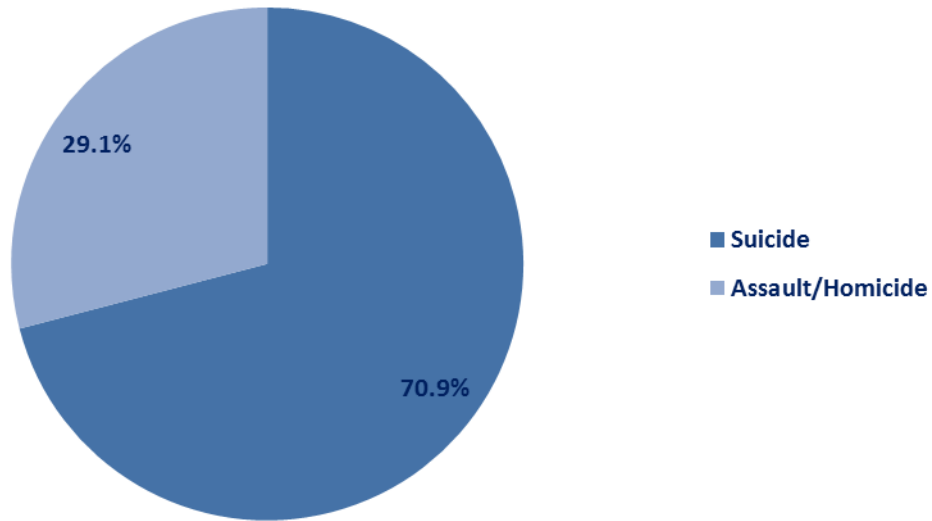
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 4: Ten Leading Mechanisms of Injury in Injury Deaths, Indiana, 2007–2010



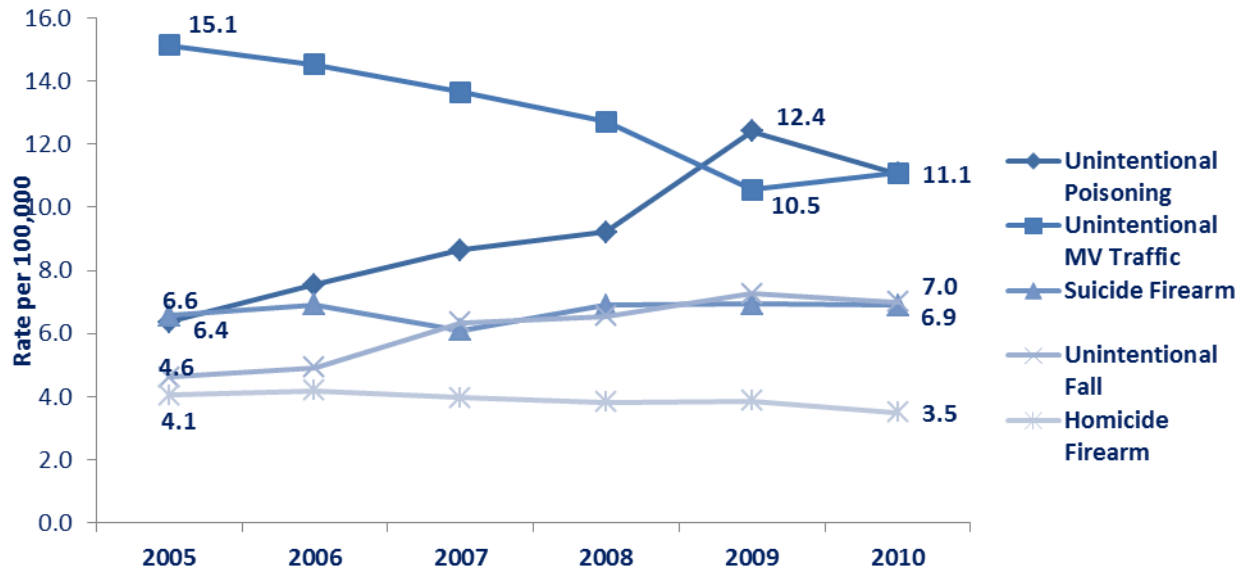
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention
Other Specified, NEC indicates: Other Specified, Not Elsewhere Classified

Figure 5: Intentional Injury Deaths by Type, Indiana, 2007–2010



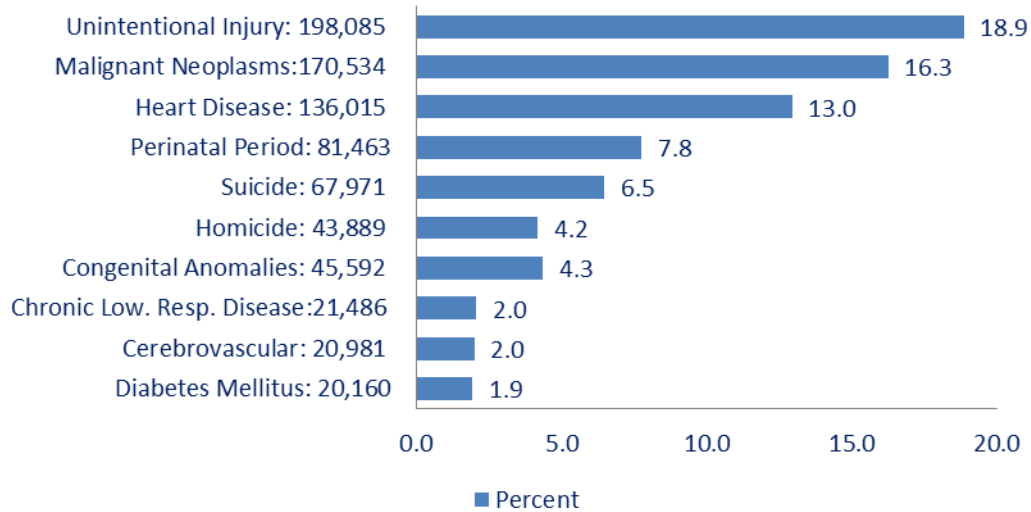
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 6. Leading Mechanisms of Injury Death Rates by Year, Indiana, 2005-2010



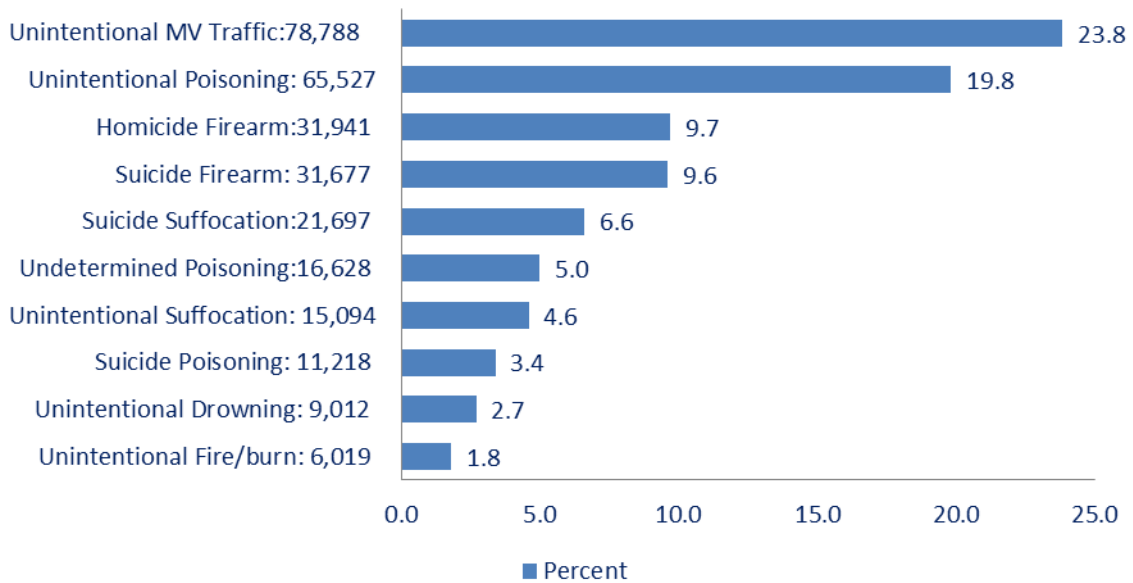
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 7: Leading Causes of Years of Potential Life Lost Before Age 65, Indiana, 2007–2010



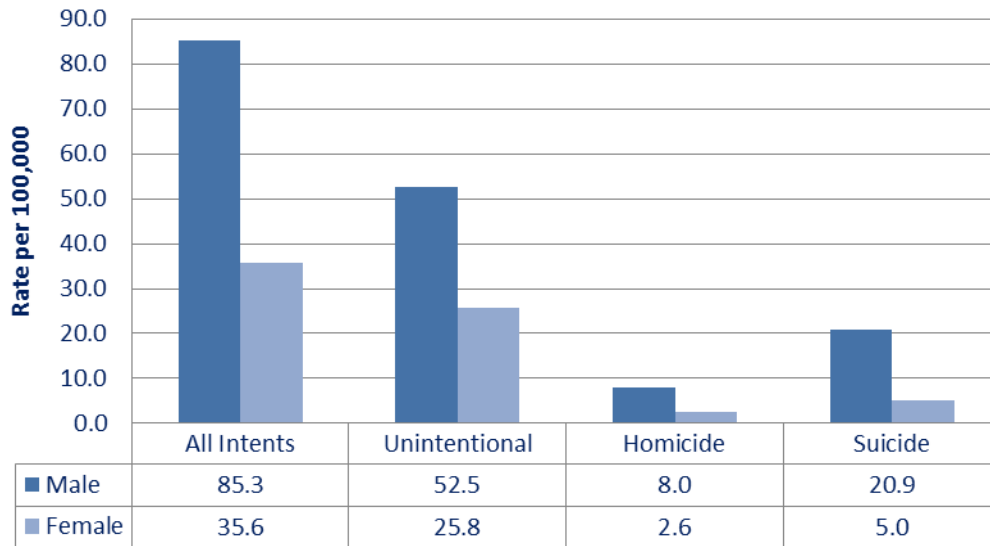
Source: National Center for Injury Prevention and Control CDC, National Center for Health Statistics Vital Statistics System, WISQARS

Figure 8: Leading Injury Causes of Years of Potential Life Lost Before Age 65, Indiana, 2007–2010



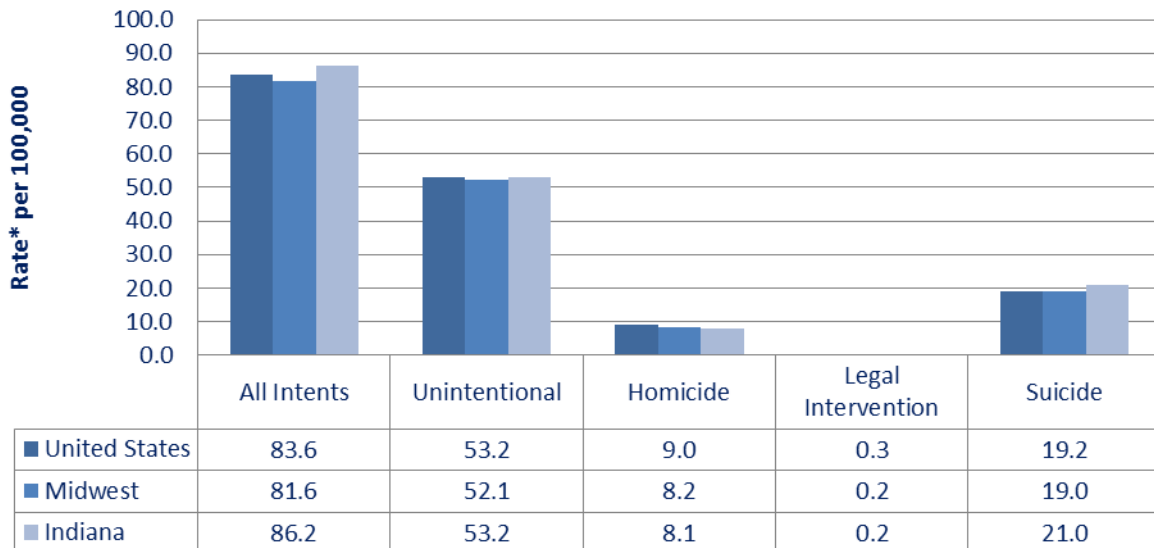
Source: National Center for Injury Prevention and Control CDC, National Center for Health Statistics Vital Statistics System, WISQARS

Figure 9: Injury Death Rates* by Gender and Intent, Indiana, 2007–2010



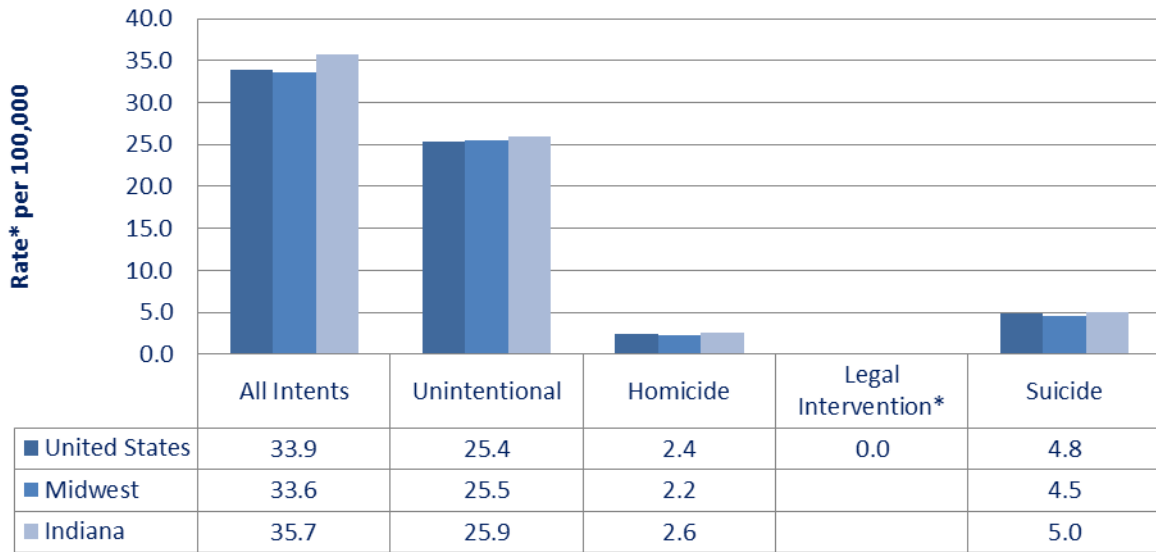
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention
 *Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 10a: Injury Death Rates, United States, Midwest, and Indiana Comparison by Intent, Males, 2007–2010



Source: National Center for Injury Prevention and Control CDC, National Center for Health Statistics Vital Statistics System, WISQARS
 *Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.
 ** Midwest includes IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, and WI

Figure 10b: Injury Death Rates*, United States, Midwest, and Indiana Comparison by Intent, Females, 2007–2010**



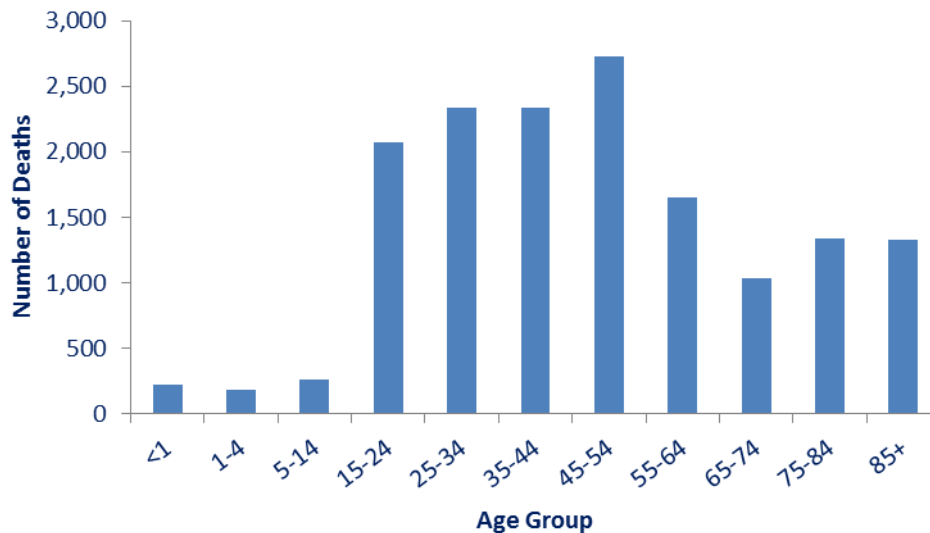
Source: National Center for Injury Prevention and Control CDC, National Center for Health Statistics Vital Statistics System, WISQARS

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: Rates not calculated for counts fewer than 20.

** Midwest includes IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, and WI

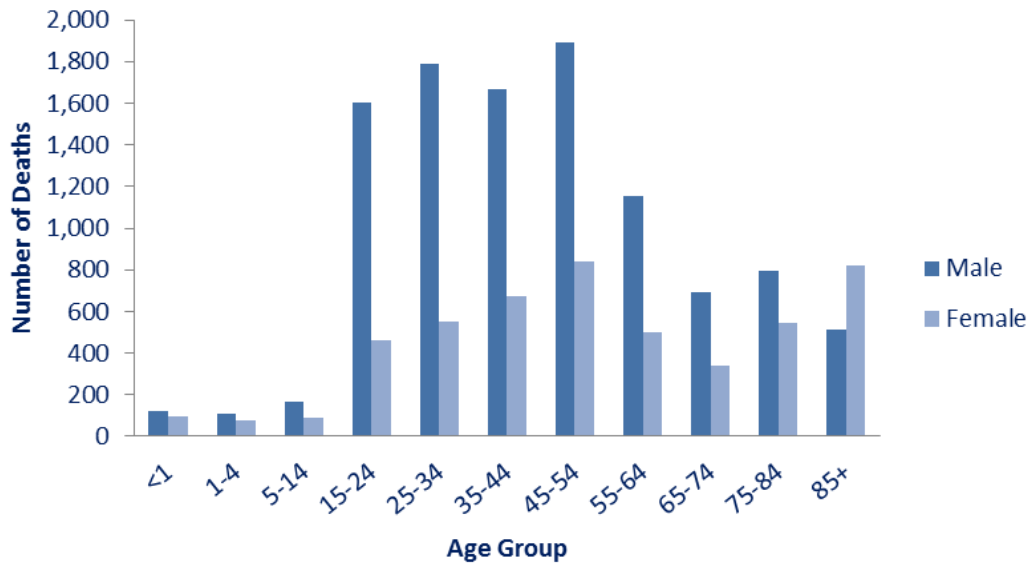
Figure 11: Injury Deaths by Age Group, Indiana, 2007–2010



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

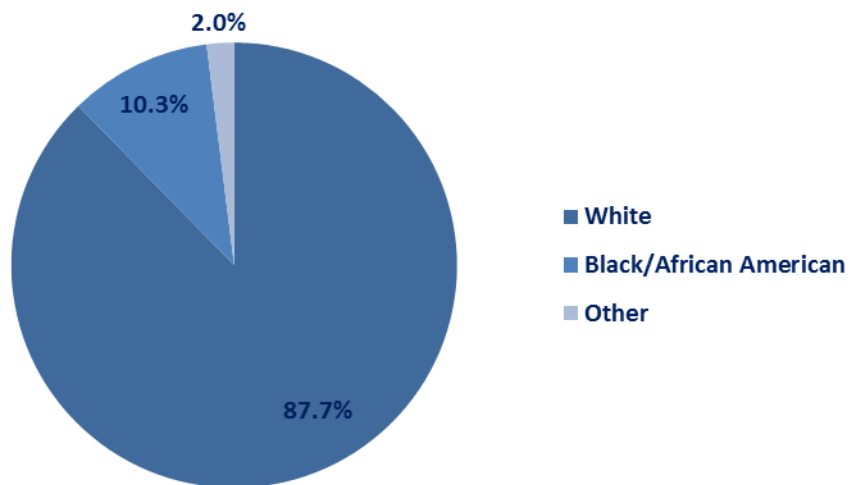
Figure produced by Division of Trauma and Injury Prevention

Figure 12: Injury Deaths by Age Group and Gender, Indiana, 2007–2010



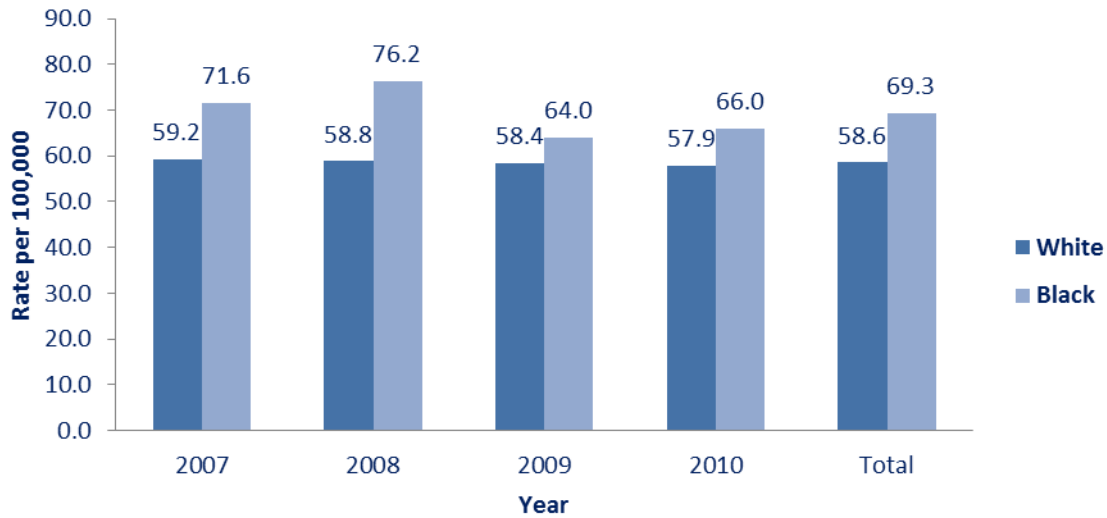
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 13: Injury Death by Race, Indiana, 2007–2010



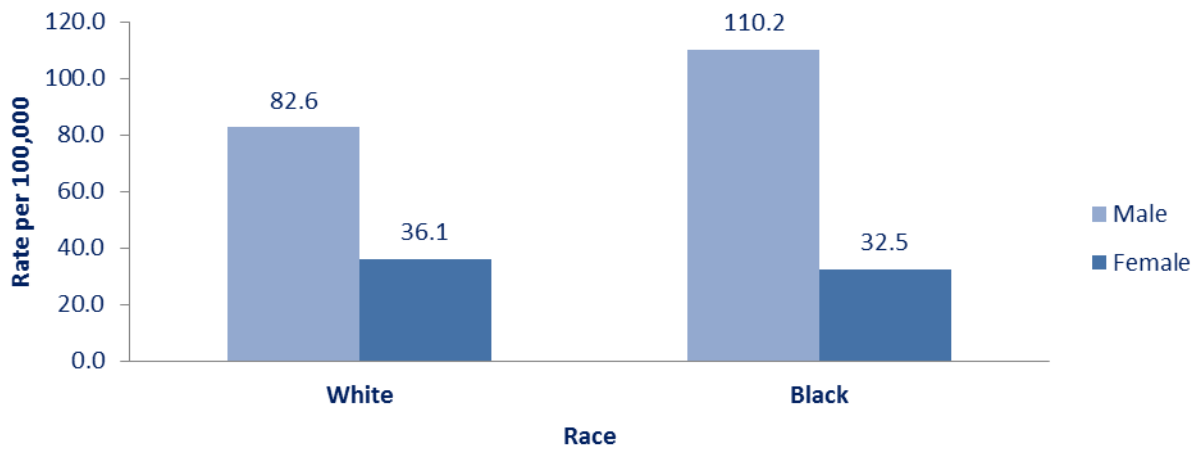
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 14: Injury Death Rates* by Race and Year, Indiana, 2007–2010



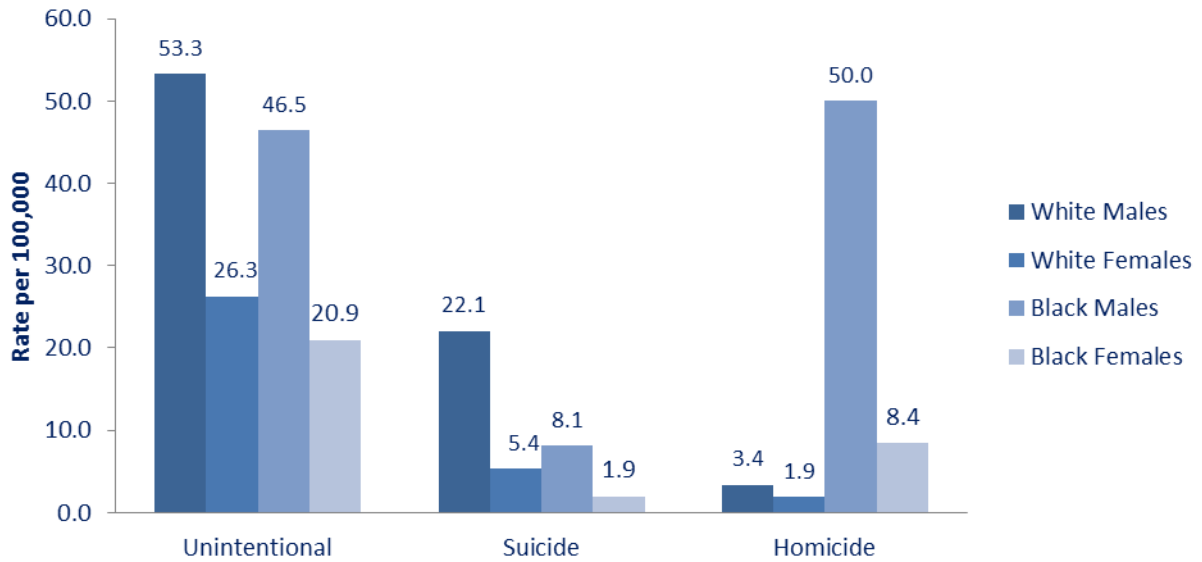
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention
 *Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 15: Injury Death Rates* by Race and Gender, Indiana, 2007–2010



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention
 *Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 16: Injury Death Rates* by Intent, Race, and Gender, Indiana, 2007–2010



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Figure produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Table 2: Leading Mechanisms of Injury Death by Intent, Indiana, 2007–2010

Unintentional				Suicide				Homicide			
Cause	Count	Percent	Rate*	Cause	Count	Percent	Rate*	Cause	Count	Percent	Rate*
MV Traffic	3,083	30.6	12.0	Firearm	1,757	53.6	6.7	Firearm	949	70.6	3.8
Poisoning	2,629	26.1	10.3	Suffocation	764	23.3	3.0	Unspecified	165	12.3	0.6
Fall	1,367	13.6	5.0	Poisoning	601	18.3	2.3	Cut/Pierce	91	6.8	0.3
Unspecified	929	9.2	3.4	Cut/Pierce	34	1.0	0.1	Suffocation	44	3.3	0.2
Suffocation	662	6.6	2.5	Falls	33	1.0	0.1	Struck By/Against	22	1.6	0.1
Fire/Burn	311	3.1	1.2	Drowning	25	0.8	0.1	Fire/Burn	11	0.8	0.0
Drowning	283	2.8	1.1	Fire	10	0.3	0.0	Poisoning	11	0.8	0.0
All Others	821	8.1		All Others	57	1.7		All Others	51	3.8	
Total	10,085	100.0	38.6	Total	3,281	100.0	12.7	Total	1,344	100.0	5.3

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: Rates based on frequencies of 20 or less are unstable and should be interpreted with caution.

Table 3: Injury Deaths by Mechanism and Intent, Indiana, 2007–2010

Mechanism/Cause	Un-intentional	Suicide	Homicide	Un-determined	Legal Intervention	Total	Rate*	Percent
Cut/Pierce	10	34	91	2	0	137	0.5	0.9
Drowning	283	25	2	20		330	1.3	2.1
Fall	1,367	33	1	4		1,405	5.2	9.1
Firearm	77	1,757	949	30	21	2,834	11.0	18.3
Fire/Burn	311	10	11	6	0	338	1.3	2.2
Machinery	96					96	0.4	0.6
Motor Vehicle Traffic	3,083					3,083	12.0	19.9
Motorcyclist	390							
Occupant	910							
Pedal Cyclist	42							
Pedestrian	220							
Other	1							
Unspecified	1,520							
Pedal Cyclist, Other	16					16	0.1	0.5
Pedestrian, Other	82					82	0.3	0.5
Transport, Other Land	125	8	4	0		137	1.0	0.9
Transport, Other	45				0	45	0.2	0.3
Natural / Environment	89					89	0.3	0.6
Overexertion	0					0	0.0	0.0
Poisoning	2,629	601	11	640	1	3,882	15.2	25.1
Struck by / Against	82	0	22	0	0	104	0.4	0.7
Suffocation	662	764	44	16	0	1,486	5.8	9.6
Terrorism	0	0	0	0	0	0	0.0	0.0
Other Specified, Classifiable	73	13	20	2	4	112	0.4	0.7
Other Specified, Not Elsewhere Classifiable	126	12	24	8	1	171	0.6	1.1
Unspecified	929	24	165	29	0	1,147	4.2	7.4
All Injury	10,085	3,281	1,344	757	27	15,494	59.7	100.0

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: Rates based on frequencies of 20 or less are unstable and should be interpreted with caution.

NOTE: Darkened cells in the table do not have E-Codes to match mechanism and intention.

Table 4: Unintentional Injury Deaths and Rates by Mechanism and Gender, Indiana, 2007–2010

Cause/Mechanism	Female			Male			Total
	Count	Percent of Unintentional injury deaths	Percent of all injury deaths	Count	Percent of Unintentional injury deaths	Percent of all injury deaths	Count
Motor Vehicle Traffic	900	24.2	18.0	2,183	34.3	20.8	3,083
Poisoning	979	26.4	19.6	1,650	25.9	15.7	2,629
Fall	632	17.0	12.6	735	11.5	7.0	1,367
Unspecified	529	14.2	10.6	400	6.3	3.8	929
Suffocation	287	7.7	5.7	375	5.9	3.6	662
Fire/Burn	131	3.5	2.6	180	2.8	1.7	311
Drowning	64	1.7	1.3	219	3.4	2.1	283
Other Specified, NEC	68	1.8	1.4	58	0.9	0.6	126
Transport, Other Land	24	0.6	0.5	101	1.6	1.0	125
Machinery	5	0.1	0.1	91	1.4	0.9	96
Natural/Environmental	32	0.9	0.6	57	0.9	0.5	89
Pedestrian, Other	20	0.5	0.4	62	1.0	0.6	82
Struck By/Against	10	0.3	0.2	72	1.1	0.7	82
Firearm	9	0.2	0.2	68	1.1	0.6	77
Other Specified, Classifiable	9	0.2	0.2	64	1.0	0.6	73
Transport, Other	9	0.2	0.2	36	0.6	0.3	45
Pedal Cyclist, Other	4	0.1	0.1	12	0.2	0.1	16
Cut/Pierce	1	0.0	0.0	9	0.1	0.1	10
Overexertion	0	0.0	0.0	0	0.0	0.0	0
Total	3,713	100%	74.3%	6,372	100%	60.7%	10,085

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Table produced by Division of Trauma and Injury Prevention

Table 5: Injury Deaths and Rates by Year and Age Group, Indiana, 2007–2010

Age Groups	2007		2008		2009		2010		Total 2007–2010	
	Deaths	Rates*	Deaths	Rates*	Deaths	Rates*	Deaths	Rates*	Deaths	Rates*
<1	60	68.1	62	69.1	52	58.6	44	52.3	218	62.2
1-4	44	12.6	59	16.7	49	13.7	33	9.5	185	13.1
5-14	74	8.5	69	7.9	58	6.6	58	6.5	259	7.4
15-24	551	62.5	537	61.1	476	52.1	505	54.3	2,069	57.4
25-34	610	71.6	612	71.7	549	65.4	565	68.0	2,336	69.2
35-44	580	65.6	622	71.4	602	70.8	532	63.5	2,335	67.9
45-54	635	68.2	637	67.9	736	78.4	723	76.5	2,731	72.7
55-64	375	54.3	405	57.1	420	57.3	452	58.3	1,652	56.8
65-74	255	62.5	263	62.1	245	56.1	271	59.6	1,034	60.0
75-84	329	120.5	346	127.3	324	118.1	342	125.1	1,341	122.8
85+	318	277.3	324	273.1	362	307.9	326	280.7	1,330	284.8
Total	3,833	60.4	3,936	61.7	3,874	60.3	3,851	59.3	15,494	60.4

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates for each age group are age-specific (crude rate) per 100,000 population and rounded to the nearest tenth.

Table 6: Injury Deaths and Rates by Age and Gender, Indiana, 2007–2010

Age Groups	Total		Males		Females	
	Deaths	Rate*	Deaths	Rate*	Deaths	Rate*
<1	218	62.2	120	66.9	98	57.2
1-4	185	13.1	111	15.4	74	10.8
5-14	259	7.4	168	9.4	91	5.3
15-24	2,069	57.4	1,605	87.1	464	26.4
25-34	2,336	69.2	1,786	104.5	550	33.0
35-44	2,335	67.8	1,664	96.1	671	39.2
45-54	2,731	72.7	1,889	101.4	842	44.5
55-64	1,652	56.8	1,151	81.5	501	33.5
65-74	1,034	60.0	693	87.2	341	36.8
75-84	1,341	122.8	796	181.5	545	83.4
85+	1,330	284.8	511	362.2	819	251.3
Total	15,494	59.7**	10,496	85.3**	4,997	35.6**

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates for each age group are age-specific (crude rate) per 100,000 population and rounded to the nearest tenth.

**Total rates presented are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: There were 3 deaths of unknown age included in the total.

Table 7: Five Leading Mechanism of Injury Deaths by Age Group, Indiana, 2007–2010

<1 Year			1-4 Years			5-14 Years		
Cause	Count	Percent	Cause	Count	Percent	Cause	Count	Percent
Unintentional Suffocation	159	72.9	Unintentional Drowning	44	23.8	Unintentional Motor Vehicle Traffic	92	35.5
Assault Unspecified	17	7.8	Unintentional Motor Vehicle Overall	26	14.1	Unintentional Fire/Burn	22	8.5
Unintentional Motor Vehicle Traffic	10	4.6	Assault Unspecified	24	13.0	Unintentional Drowning	18	6.9
Assault Other Spec., Classifiable	6	2.8	Unintentional Fire/Burn	16	8.6	Unintentional Other Land Transport	17	6.6
Tie: Unintentional Drowning; Undetermined Suffocation	4	1.8	Unintentional Suffocation	15	8.1	Self-Inflicted Suffocation	17	6.6
15-24 Years			25-34 Years			35-44 Years		
Cause	Count	Percent	Cause	Count	Percent	Cause	Count	Percent
Unintentional Motor Vehicle Traffic	689	33.3	Unintentional Poisoning	584	25.0	Unintentional Poisoning	611	26.6
Unintentional Poisoning	326	15.8	Unintentional Motor Vehicle Traffic	504	21.6	Unintentional Motor Vehicle Traffic	446	19.1
Assault Firearm	311	15.0	Assault Firearm	318	13.6	Self-Inflicted Firearm	279	11.9
Self-inflicted firearm	185	8.9	Self-Inflicted Firearm	225	9.6	Self-Inflicted Suffocation	184	7.9
Self-Inflicted Suffocation	165	8.0	Self-Inflicted Suffocation	166	7.1	Assault Firearm	146	6.3
45-54 Years			55- 64 Years			65- 74 Years		
Cause	Count	Percent	Cause	Count	Percent	Cause	Count	Percent
Unintentional Poisoning	724	26.5	Unintentional Motor Vehicle Traffic	319	19.3	Unintentional Motor Vehicle Traffic	223	21.6
Unintentional Motor Vehicle Traffic	473	17.3	Self-Inflicted Firearm	284	17.2	Unintentional Fall	178	17.2
Self-Inflicted Firearm	413	15.1	Unintentional Poisoning	272	16.5	Self-Inflicted Firearm	170	16.4
Self-Inflicted Poisoning	181	6.6	Unintentional Fall	133	8.1	Unintentional Suffocation	79	7.6
Undetermined Poisoning	176	6.4	Self-Inflicted Poisoning	116	7.0	Unintentional Fire/Burn	68	6.6
75-84 Years			85+ Years					
Cause	Count	Percent	Cause	Count	Percent			
Unintentional Fall	401	29.9	Unintentional Fall	495	37.2			
Unintentional Unspecified	229	17.1	Unintentional Unspecified	449	33.8			
Unintentional Motor Vehicle Traffic	220	16.4	Unintentional Suffocation	113	8.5			
Self-Inflicted Firearm	142	10.6	Unintentional Motor Vehicle Traffic	80	6.0			
Unintentional Suffocation	121	9.0	Unintentional Other Specified, Not Elsewhere Classified	49	3.7			

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

NOTE: All percentages represent the total percent of injury deaths for each age group.

Table 8: Injury Deaths and Rates by Age and Intent, Indiana, 2007–2010

Age Group	Unintentional		Self-Inflicted		Assault		Undetermined		Other	
	Deaths	Rate*	Deaths	Rate*	Deaths	Rate*	Deaths	Rate*	Deaths	Rate*
<1	183	0.7	0	0.0	29	0.1	6	0.0	0	0.0
1-4	128	0.5	0	0.0	46	0.2	11	0.0	0	0.0
5-14	203	0.8	22	0.1	26	0.1	8	0.0	0	0.0
15-24	1,209	4.7	396	1.5	344	1.3	114	0.4	6	0.0
25-34	1,276	5.1	509	2.0	379	1.5	165	0.7	7	0.0
35-44	1,335	6.3	625	3.0	207	1.0	161	0.8	8	0.0
45-54	1,608	5.8	762	2.7	165	0.6	192	0.7	4	0.0
55-64	1,014	3.0	488	1.5	76	0.2	73	0.2	1	0.0
65-74	741	2.8	243	0.9	34	0.1	15	0.1	1	0.0
75-84	1,124	4.6	181	0.7	27	0.1	9	0.0	0	0.0
85+	1,263	4.2	55	0.2	9	0.0	3	0.0	0	0.0
Total	10,085	38.6	3,281	12.7	1,344	5.3	757	3.0	27	0.1

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: There were three deaths of unknown age included in the total.

Inpatient Hospitalizations

In Indiana from 2007 to 2010, there were 129,729 inpatient hospitalizations of Indiana residents with a primary diagnosis of injury or poisoning. This injury hospitalization subset does not necessarily contain a valid external-cause-of-injury code (E-codes) per primary diagnosis of injury or poisoning because of varying levels of completeness of this coding. Of the data with valid E-codes, injuries accounted for approximately 2.98% (90,566/3,035,036) of all inpatient hospitalizations of Indiana residents. For the purposes of this report, the data containing valid E-codes will be analyzed due to the inclusion of the classification of the external cause of injury, including the intentionality, mechanism, and activity. The number of hospitalizations for injuries per year is as follows: 21,857 in 2007, 23,204 in 2008, 23,112 injuries in 2009, and 22,393 in 2010.⁷ The age-adjusted rate for the four-year period is 344.9 per 100,000. The highest injury rate was in 2008 with 354.6 per 100,000, and the lowest rate was 2010 with 337.2 per 100,000 (Figure 17).

Of the injuries resulting in hospitalizations, 74,469 were unintentional, 13,277 were intentional, and 2,820 were of undetermined or other intent (Table 9, Figure 18). Falls were the top mechanism of injury-related inpatient admissions followed by poisonings (Figure 19). Specific to unintentional injuries, the top mechanisms included falls (43,733/74,469; 58.7%), followed by Motor vehicle traffic (11,469/74,469; 15.4%), and poisoning (4,358/74,469; 7.6%) (Table 9). Of the 13,277 intentional injury-related hospital admissions, 10,235 (77.1%) were self-inflicted and 3,042 (22.9%) were from assault (Figure 20; Table 9). The leading mechanism of self-inflicted injury-related hospital admission was poisoning (9,534/10,235; 93.2%), followed by cut/pierce (310/10,235; 3.1%), and firearm (153/10,235; 1.5%). The leading mechanism of assault injury-related hospital admission was being struck by or against (925/3,042; 30.4%), followed by firearm (776/3,042; 25.5%), and cut/pierce (545/3,042; 17.9%) (Table 9). The leading causes of injury-related inpatient admission rates have remained stable during the four-year period (Figure 21). Table 10 presents number of injury-related inpatient admissions by mechanism of injury and injury intent.

The census population of Indiana is almost equally distributed by gender, with females accounting for 50.7% of the total population from 2007–2010.⁶ Of those admitted to the hospital due to injury during 2007–2010, 53.1% (48,065/90,566) were female and 46.9% (42,500/90,566) were male (one unknown gender). Overall, males were slightly more likely than females to be admitted to the hospital due to injury during the four-year period (351.1 per 100,000 compared to 325.6 per 100,000). Additionally, males were more likely than females to be admitted due to unintentional and intentional assault injuries, but not self-inflicted injuries. Females were 1.4 times more likely than males to be admitted to the hospital because of self-inflicted injuries (Figure 22).

The three leading mechanisms of injury-related inpatient hospitalizations were the same for males and females, which were falls, poisonings, and MVT (Table 11). The leading cause of unintentional injury-related inpatient hospitalizations from 2007–2010 for both genders was falls. Falls accounted for 44.4% and 70.8% of the unintentional injury-related hospital admissions in males and females, respectively. Other leading causes of unintentional injury-related hospital admissions included MVT (15.4% total unintentional injuries) and poisoning (7.6% of total unintentional injuries).

The distribution of injury-related hospital admissions varied by age groups. Injury-related hospital admission rates were highest among the 75 year and older age groups (1,290.4 per 100,000 among persons 75-84 years and 2,850.9 per 100,000 among persons 85 years and older) (Figure 23). The lowest age-specific rates of injury hospitalization were among persons aged 5 to 14 (83.49 per 100,000) and the highest age-specific rates were those age 85 and older (Table 12). There were also differences observed between genders within age groups. Males had higher rates of injury-related hospital admissions for all age groups up to the age of 54. Starting at age 55, females had higher rates of injuries (Figure 24). Females age 75-84 years were 1.6 times more likely to be hospitalized for injuries compared to males of the same age, and females age 85 years and older were 1.5 times more likely to be hospitalized for injuries than males of the same age (Table 13). Table 14 provides the top 5 leading causes of injury-related inpatient admissions by age group.

Whites make up the majority of Indiana's population (87.7%), and as expected, accounted for the majority (81.8%) of all injury-related inpatient hospital admissions in Indiana during 2007–2010, while blacks accounted for 8.3% (Figure 25). However, the rate of injury is lower for whites compared to blacks (312.9 per 100,000 versus 350.4 per 100,000). For blacks in Indiana from 2007–2010, the injury-related hospital admission rate was highest in 2007 (528.6 per 100,000) and the lowest in 2010 (278.3 per 100,000). For whites in Indiana in the same time period, the rate of injury was highest in 2009 (319.5 per 100,000) and like blacks, the lowest rate was in 2010 (306.1 per 100,000)(Figure 26).

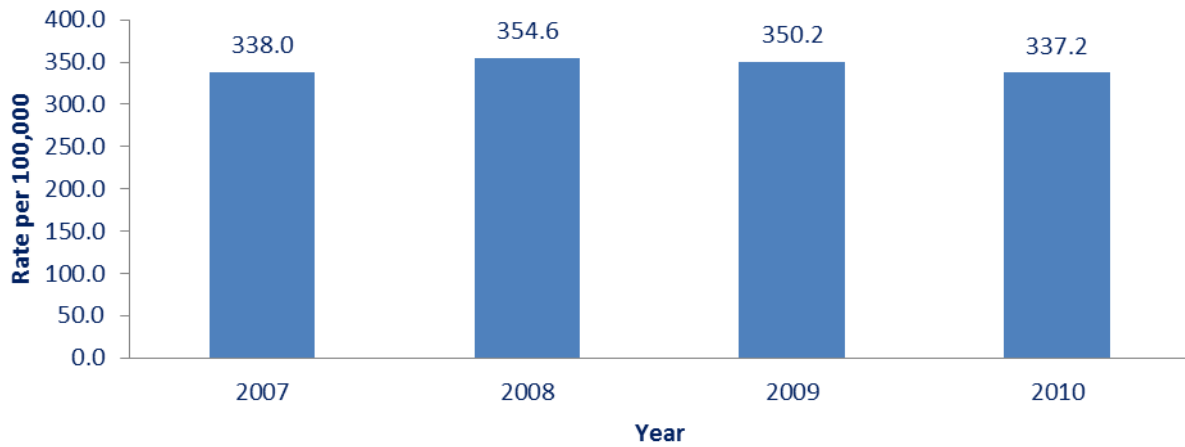
With 40,408 inpatient hospital admissions, white females had the highest number of injuries compared to all other race and gender categories, followed by white males with 33,681 admissions. However, black males were almost 1.4 times more likely to be hospitalized due to an injury (429.2 per 100,000) compared to white males (312.3 per 100,000) (Figure 27). White females had a higher age-adjusted rate of hospital admission when compared to black females (301.2 per 100,000 and 271.1 per 100,000, respectively). Black males had a higher inpatient hospital admission rate for all four years compared to all other gender categories, and the highest rate for black males was in 2007 with a rate of 614.9 per 100,000 (Figure 28).

From 2007 to 2010, 1.9% (1,706 /90,566) of all patients admitted to the hospital for injuries expired in the hospital. Twenty-one percent of all patients admitted to the hospital were discharged to a skilled nursing facility (19,126/90,566), while a majority (52.0%) had a routine discharge home (Figure 29). The most common type of admission was emergency (68,530/90,566), followed by urgent (11,137/90,566) (Figure 30). Of the patients that were admitted to the hospital, the most common source of admission was from an outpatient center or in the Emergency Department (ED) (58,291/90,566), followed by routine admission (20,926/90,566) (Figure 31). Nearly 60% of all injury-related inpatient admissions did not require admission into a special care unit, which provides specialized sub-acute care services, but a third of the cases were in the intensive care unit (ICU) (Figure 32).

For 2007–2010, the total charges for injury-related hospital admissions were \$2.57 billion. The average total charge for a hospital admission due to injury was \$28,416.79, with a range of \$16.00–\$3,610,480.00. Of those admitted to the hospital, 29.1% (26,319/90,566) had commercial insurance

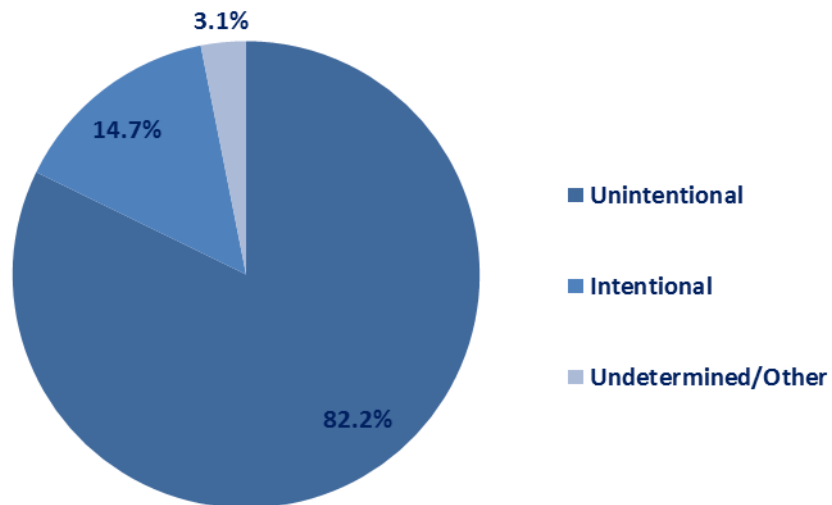
(Figure 33). The average length of stay was 4.1 days (\pm 4.4 days), and the median length of stay was 3.0 days (range 0-180 days).

Figure 17: Injury-Related Inpatient Hospital Admission Rates* by Year, Indiana, 2007–2010



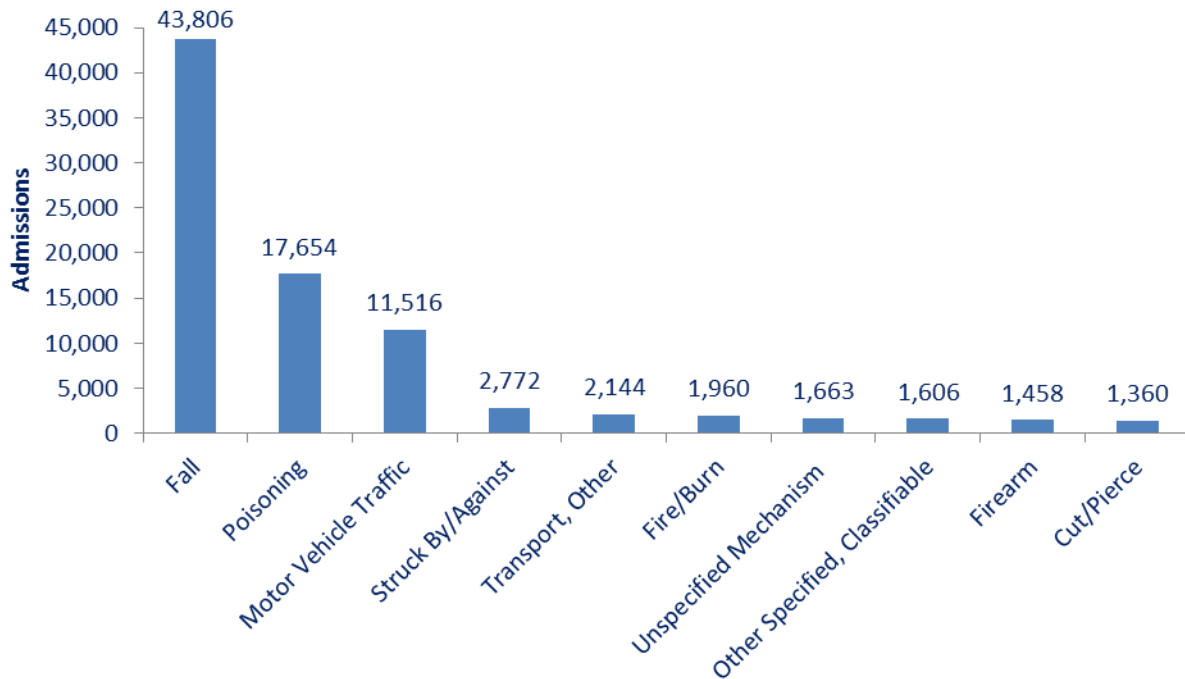
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention
*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 18: Injury-Related Inpatient Hospital Admissions by Intent, Indiana, 2007–2010



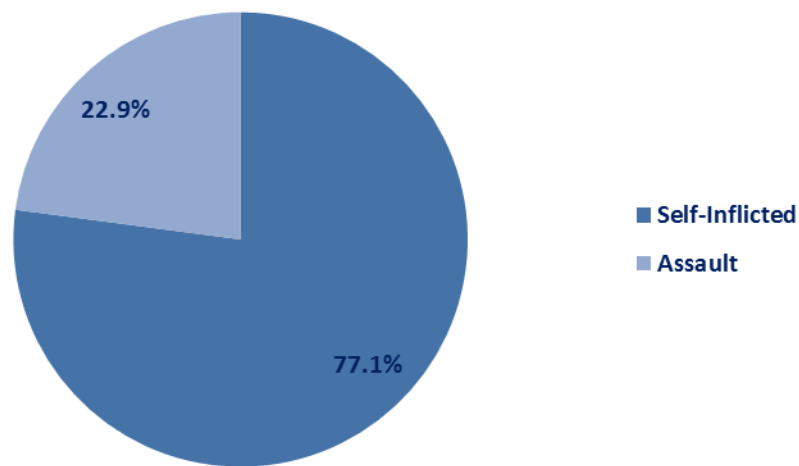
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 19: Ten Leading Mechanisms of Injury in Injury-Related Inpatient Hospital Admissions, Indiana, 2007–2010



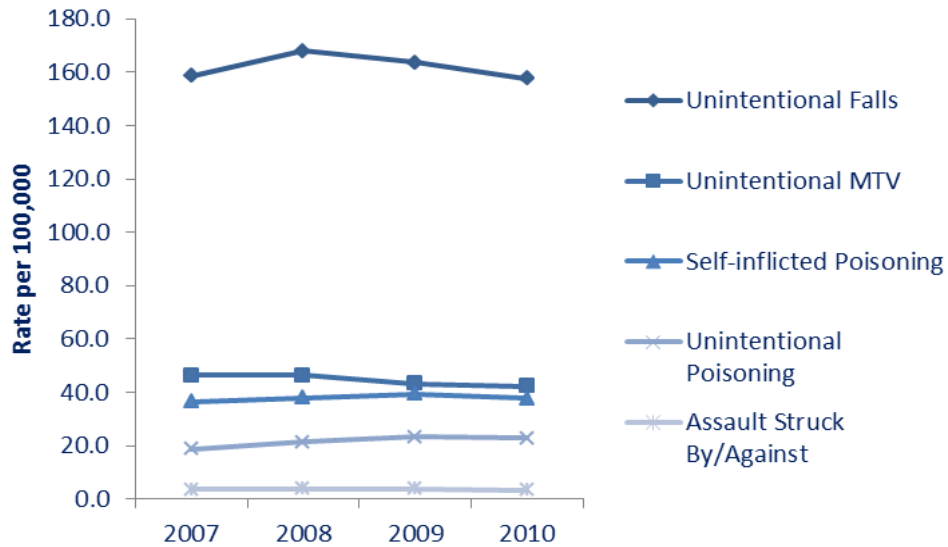
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 20: Intentional Injury-Related Inpatient Hospital Admissions by Type, Indiana, 2007–2010



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 21: Leading Mechanisms of Injury in Injury-Related Inpatient Hospital Admission Rates* by Year, Indiana, 2007–2010

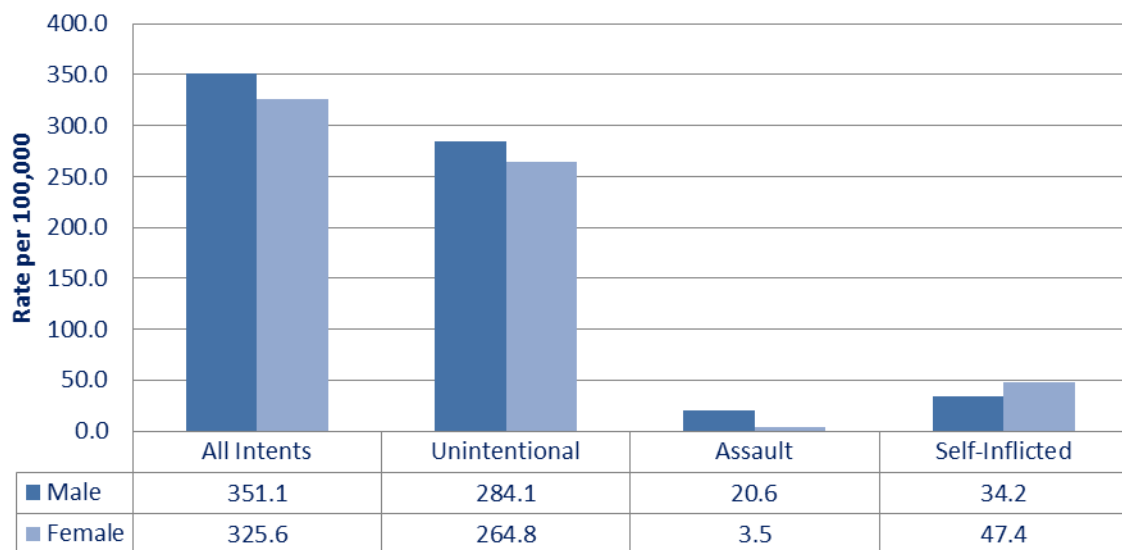


Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Figure produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 22: Injury-Related Inpatient Hospital Admission Rates* by Gender and Intent, Indiana, 2007–2010

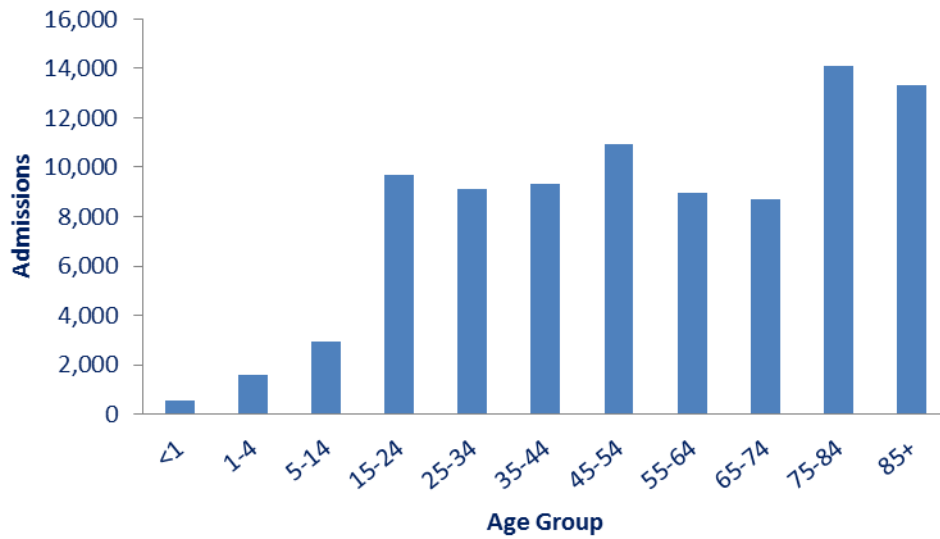


Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Figure produced by Division of Trauma and Injury Prevention

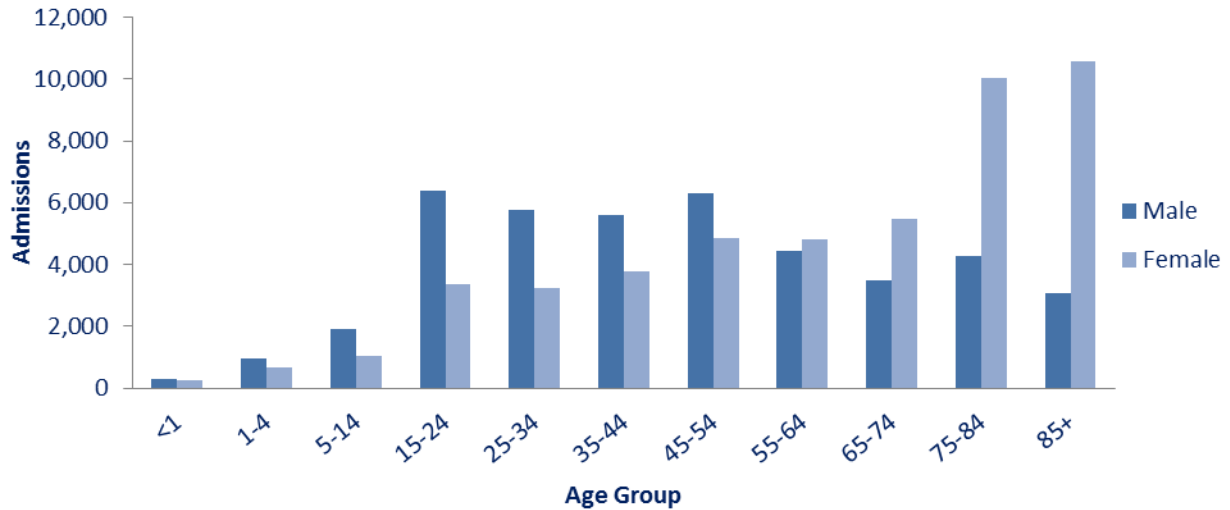
*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 23: Injury-Related Inpatient Hospital Admissions by Age, Indiana, 2007–2010



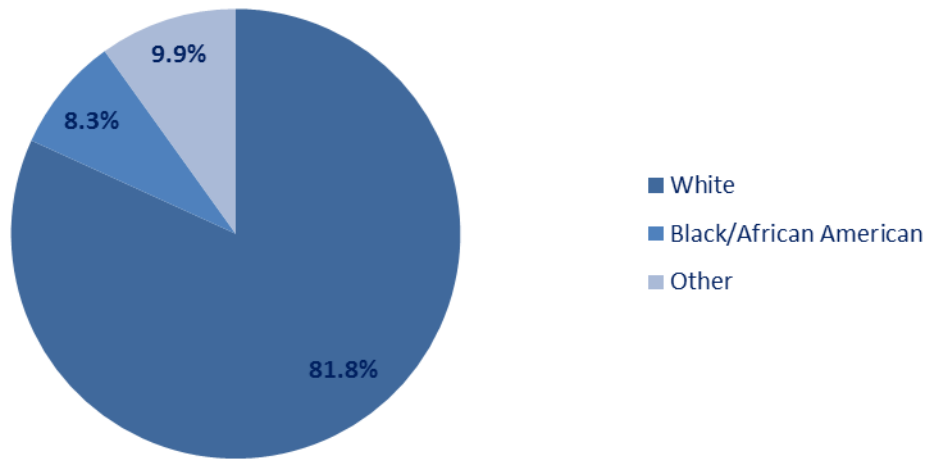
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 24: Injury-Related Inpatient Hospital Admissions by Age and Gender, Indiana, 2007–2010



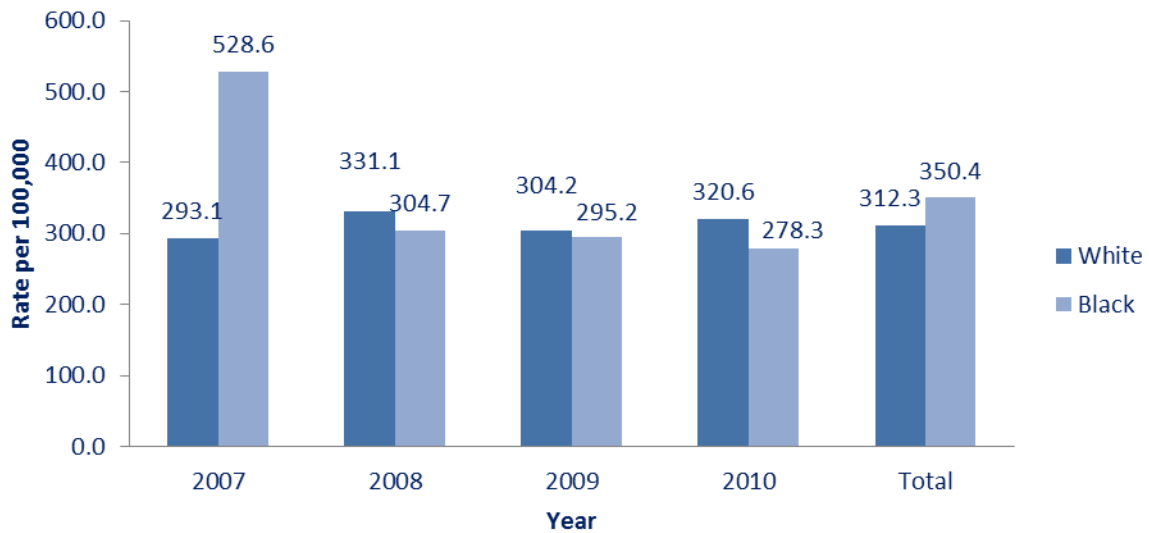
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 25: Injury-Related Inpatient Hospital Admissions by Race, Indiana, 2007–2010



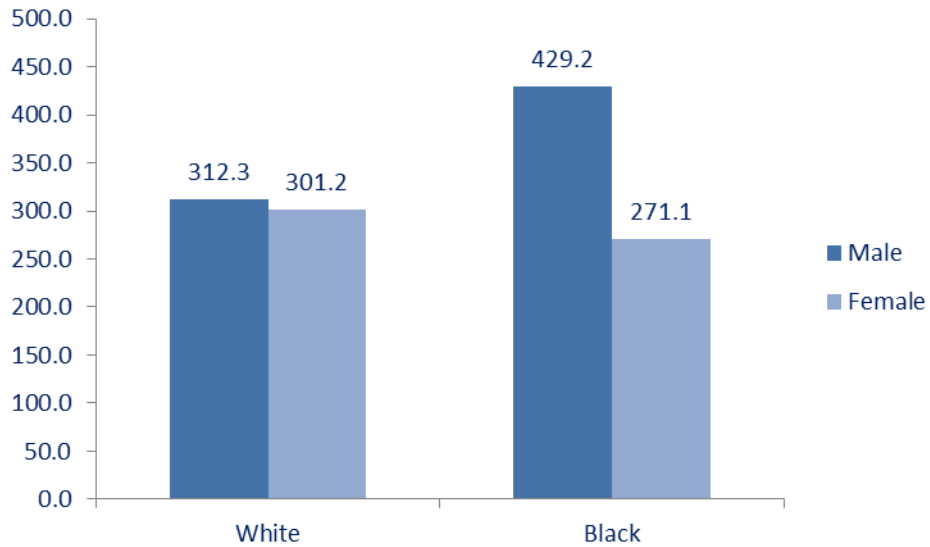
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 26: Injury-Related Inpatient Hospital Admission Rates* by Race, Indiana, 2007–2010



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention
*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 27: Injury-Related Inpatient Hospital Admission Rates* by Race and Gender, Indiana, 2007–2010

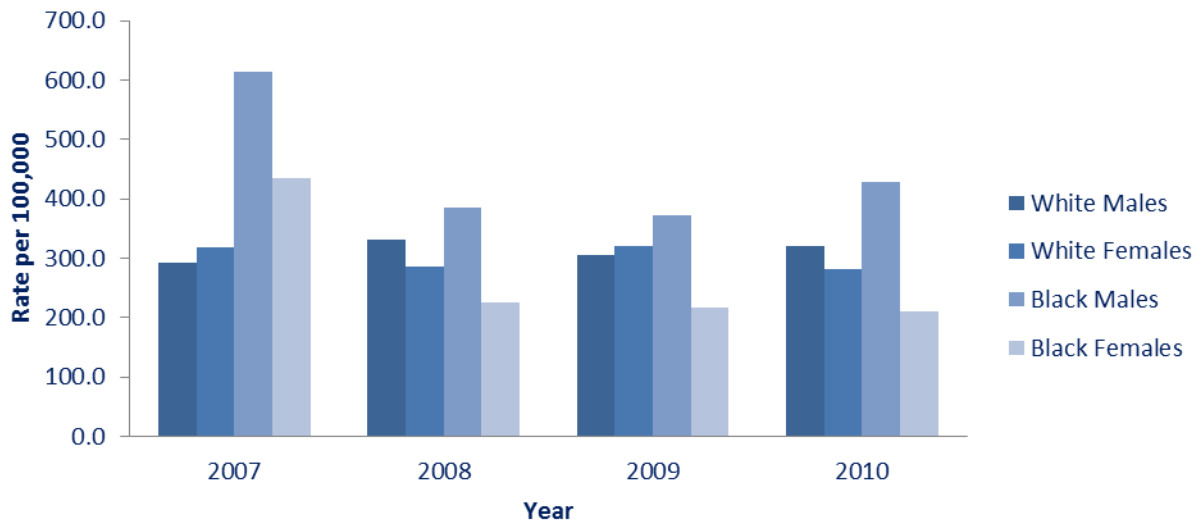


Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Figure produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 28: Injury-Related Inpatient Hospital Admission Rates* by Race, Gender, and Year, Indiana, 2007–2010

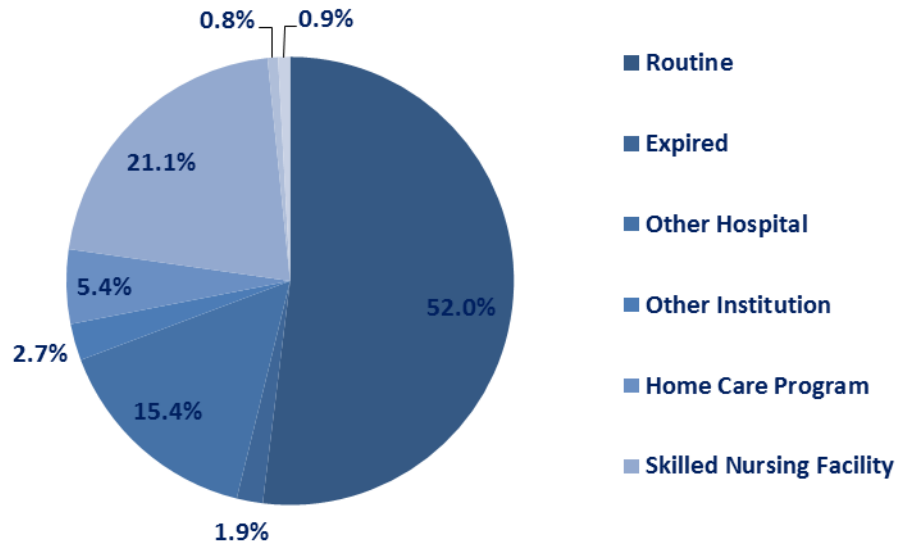


Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Figure produced by Division of Trauma and Injury Prevention

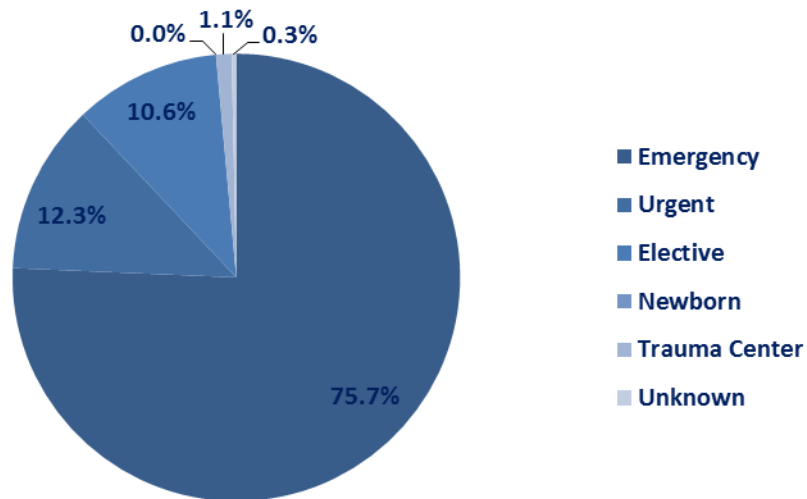
*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 29: Injury-Related Inpatient Hospital Admissions by Discharge Status, Indiana, 2007–2010



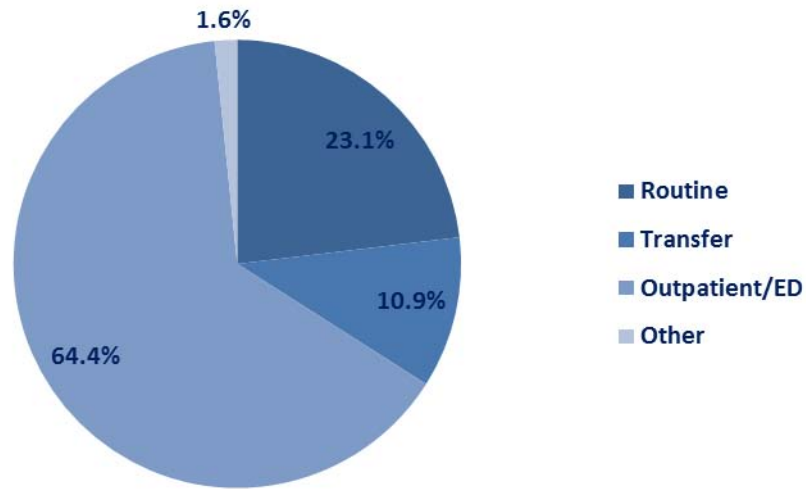
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention

Figure 30: Injury-Related Inpatient Hospital Admissions by Admission Type, Indiana, 2007–2010



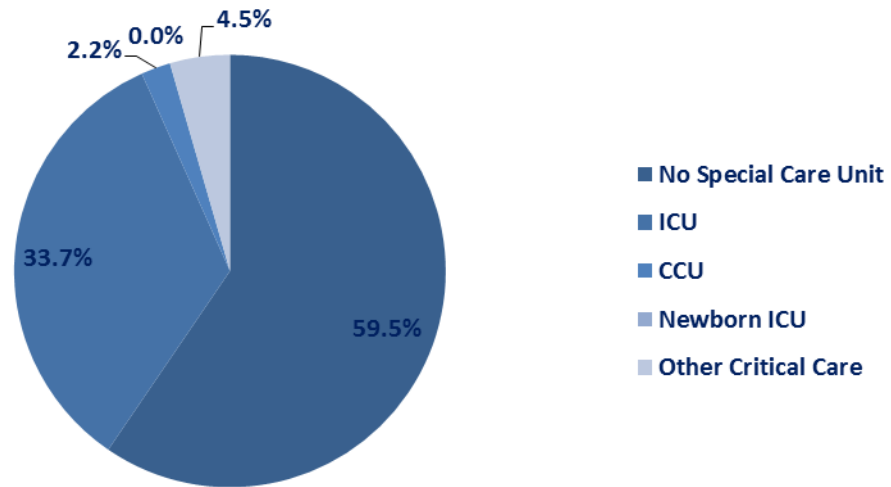
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention

Figure 31: Injury-Related Inpatient Hospital Admissions by Admission Source, Indiana, 2007–2010



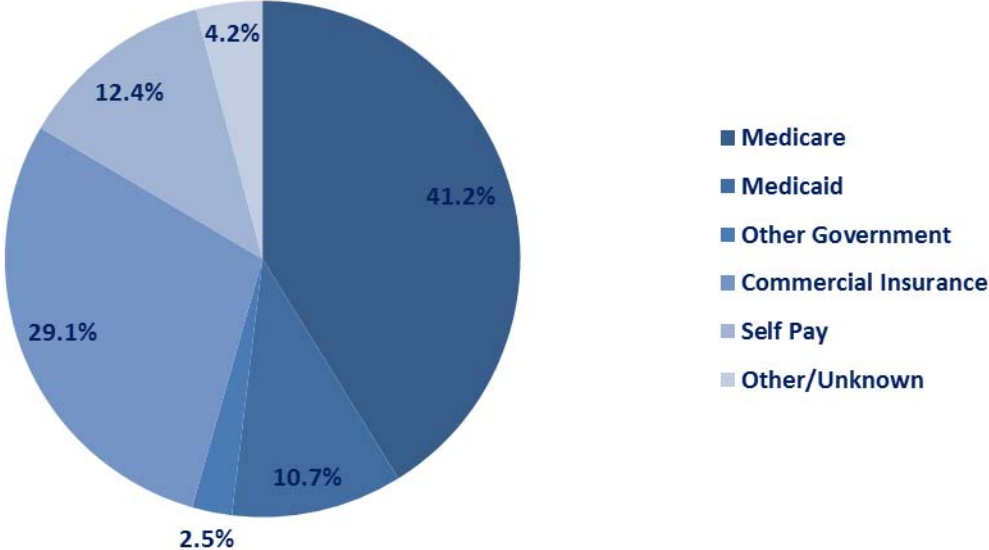
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 32: Injury-Related Inpatient Hospital Admissions by Special Care Unit, Indiana, 2007–2010



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 33: Injury-Related Inpatient Hospital Admissions by Payer Source, Indiana, 2007–2010



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Table 9: Leading Mechanisms of Injury in Injury-Related Inpatient Hospital Admissions by Intent, Indiana, 2007–2010

Unintentional				Self-Inflicted				Assault			
Cause	Count	%	Rate*	Cause	Count	%	Rate*	Cause	Count	%	Rate*
Fall	43,733	58.7	162.1	Poisoning	9,534	94.1	37.9	Struck By/ Against	925	30.4	3.7
MVT	11,469	15.4	44.75	Cut/Pierce	310	3.1	1.2	Firearm	776	25.5	3.1
Poisoning	5,626	7.6	21.6	Firearm	153	1.5	0.6	Cut/Pierce	545	17.9	2.2
Transport, Other	2,144	2.9	8.4	Suffocation	71	0.7	0.3	Unspecified	366	12.0	1.4
Fire/Burn	1,891	2.5	7.4	Fall	33	0.3	0.1	Fire/Burn	26	0.9	0.1
Struck By/Against	1,804	2.4	7.1	MVT	18	0.2	0.0	MVT	24	0.8	0.1
Unspecified	1,219	1.6	4.6	Fire/Burn	15	0.1	0.0	Fall	12	0.4	0.0
All Others	6,583	8.8		All Others	101	1.0		All Others	368	12.1	
Total	74,469	100	281.0	Total	10,235	100	40.7	Total	3,042	100	12.1

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: Rates based on frequencies of 20 or less are unstable and should be interpreted with caution.

Table 10: Injury-Related Inpatient Hospital Admissions by Mechanism and Intent, Indiana, 2007–2010

Mechanism/Cause	Un-intentional	Self-Inflicted	Assault	Un-determined	Other	Total	Rate*	Percent
Cut/Pierce	495	310	545	9	1	1,360	5.4	1.5
Drowning/Submersion	103	0	0	0	0	103	0.4	0.1
Fall	43,733	33	12	28		43,806	162.1	48.4
Fire/Burn	1,891	15	26	28		1,960	7.7	2.2
Firearm	408	153	776	99	22	1,458	5.8	1.6
Machinery	579					579	2.3	0.6
Motor Vehicle Traffic	11,469	18	24	5		11,516	44.8	12.7
Motorcyclist	2,210							
Occupant	7,614							
Pedal Cyclist	244							
Pedestrian	812							
Unspecified	509							
Other, Specified	80							
Pedal Cyclist, Other	785					785	3.0	0.9
Pedestrian, Other	145					145	0.6	0.2
Transport, Other	2,144	0		0		2,144	8.4	2.4
Natural/Environment	1,030	2		8		1,040	4.0	1.1
Overexertion	999					999	3.8	1.1
Poisoning	5,626	9,534	10	2,484	0	17,654	69.4	19.5
Struck by/Against	1,804	0	925	0	43	2,772	10.9	3.1
Suffocation	197	71	4	1	0	273	1.0	0.3
Other Specified, Classifiable	1,476	41	84	3	2	1,606	6.2	1.8
Other Specified, Not Elsewhere Classifiable	366	48	270	18	1	703	2.7	0.8
Unspecified	1,219	10	366	65	3	1,663	6.4	1.8
All Injury	74,469	10,235	3,042	2,748	72	90,566	344.9	100

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: Rates based on frequencies of 20 or less are unstable and should be interpreted with caution.

NOTE: Darkened cells in the table do not have E-Codes to match mechanism and intention.

Table 11: Leading Mechanisms of Injury in Injury-Related Inpatient Hospital Admissions by Gender, Indiana, 2007–2010

Male					Female			
Rank	Cause	Injuries	%	Rate*	Cause	Injuries	%	Rate*
1	Fall	15,149	35.6	133.7	Fall	28,657	59.6	177.8
2	Poisoning	7,818	18.4	62.1	Poisoning	9,835	20.5	76.5
3	MVT	7,215	17.0	56.9	MVT	4,301	8.9	32.5
4	Struck By/Against	2,193	5.2	17.4	Unspecified	735	1.5	5.0
5	Transport, Other	1,488	3.5	11.9	Transport, Other	656	1.4	5.0
6	Fire/Burn	1,327	3.1	10.6	Fire/Burn	633	1.3	4.9
7	Firearm	1,312	3.1	10.3	Struck By/ Against	579	1.2	4.3
8	Cut/Pierce	1,086	2.6	8.7	Other Specified and Classifiable	565	1.2	4.1
9	Other Specified and Classifiable	1,041	2.4	8.4	Overexertion	527	1.1	3.6
10	Unspecified	928	2.2	7.6	Natural/ Environmental	448	0.9	3.4
11	Pedal Cyclist, Other	600	1.4	4.7	Cut/Pierce	274	0.6	2.2
12	Natural/Environmental	592	1.4	4.7	Other Specified, Not Elsewhere Classified	247	0.5	1.8
13	Machinery	506	1.2	4.0	Pedal Cyclist, Other	185	0.4	1.4
14	Overexertion	472	1.1	3.9	Firearm	146	0.3	1.2
15	Other Specified, Not Elsewhere Classified	456	1.1	3.6	Suffocation	111	0.2	0.8
16	Suffocation	162	0.4	1.3	Machinery	73	0.2	0.6
17	Pedestrian, Other	87	0.2	0.7	Pedestrian, Other	58	0.1	0.4
18	Drowning	68	0.2	0.5	Drowning	35	0.1	0.3
	Total	42,500	100	351.1	Total	48,065	100	325.6

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: Rates based on frequencies of 20 or less are unstable and should be interpreted with caution.

Table 12: Injury-Related Inpatient Hospital Admission Rates by Year and Age Group, Indiana, 2007–2010

Age Groups	2007		2008		2009		2010		Total 2007–2010	
	Injuries	Rates*	Injuries	Rates*	Injuries	Rates*	Injuries	Rates*	Injuries	Rates*
<1	117	132.8	106	118.1	147	165.8	154	183.1	524	149.5
1-4	351	100.5	394	111.5	425	119.1	479	137.2	1,649	117.0
5-14	729	83.5	751	86.4	779	89.2	694	77.5	2,953	84.1
15-24	2,468	280.0	2,535	288.5	2,372	259.4	2,358	253.7	9,733	270.1
25-34	2,337	274.1	2,244	262.9	2,330	277.7	2,108	253.8	9,019	267.2
35-44	2,363	267.2	2,427	278.7	2,312	271.9	2,284	272.7	9,386	272.6
45-54	2,592	278.3	2,762	294.3	2,901	308.9	2,868	303.5	11,123	296.3
55-64	2,089	302.7	2,385	336.2	2,431	331.6	2,352	303.6	9,257	318.4
65-74	2,069	507.3	2,311	545.8	2,281	522.4	2,302	506.3	8,963	5,20.3
75-84	3,561	1,304.6	3,772	1,338.0	3,583	1,305.9	3,392	1,240.9	14,308	1,309.7
85+	3,181	2,774.2	3,517	2,964.2	3,551	3,020.6	3,401	2,928.5	13,650	2,922.9
Total	21,857	344.5	23,204	363.9	23,112	359.8	22,393	345.0	90,566	353.3

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-specific and rounded to the nearest tenth.

Table 13: Injury-Related Inpatient Hospital Admission Rates by Age and Gender, Indiana, 2007–2010

Age Groups	Total		Males		Females	
	Injuries	Rate*	Injuries	Rate*	Injuries	Rate*
<1	524	2.1	292	2.3	232	1.9
1-4	1,649	6.5	973	7.5	676	5.4
5-14	2,953	12.2	1,905	15.5	1,048	8.9
15-24	9,733	37.4	6,373	47.9	3,360	26.5
25-34	9,019	36.2	5,774	45.8	3,244	26.4
35-44	9,386	44.3	5,611	52.7	3,775	35.9
45-54	11,123	40.0	6,287	45.5	4,836	34.5
55-64	9,257	27.8	4,443	27.4	4,814	28.1
65-74	8,963	34.4	3,477	28.9	5,486	39.0
75-84	14,308	58.7	4,285	43.8	10,023	68.7
85+	13,650	45.3	3,080	33.9	10,570	50.3
Total	90,566	344.9	42,500	351.1	48,065	325.6

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: One gender and one female's age was unknown.

Table 14: Five Leading Mechanisms of Injury in Injury-Related Inpatient Hospital Admissions by Age, Indiana, 2007–2010

<1 Year			1-4 Years			5-14 Years		
Cause	Number	Percent	Cause	Number	Percent	Cause	Number	Percent
Fall	158	30.2	Fall	429	26.0	Fall	716	24.2
Unspecified	89	17.0	Fire/Burn	322	19.5	Motor Vehicle Traffic	510	17.3
Fire/Burn	77	14.7	Poisoning	306	18.6	Poisoning	314	10.6
Other Specified and Classifiable	63	12.0	Motor Vehicle Traffic	130	7.9	Struck By/ Against	287	9.7
Poisoning	31	5.9	Other Specified and Classifiable	90	5.5	Other Transportation	261	8.8
15-24 Years			25-34 Years			35-44 Years		
Cause	Number	Percent	Cause	Number	Percent	Cause	Number	Percent
Poisoning	3,222	33.1	Poisoning	3,453	38.3	Poisoning	3,542	37.7
Motor Vehicle Traffic	2,636	27.1	Motor Vehicle Traffic	1,862	20.6	Fall	1,693	18.0
Fall	841	8.6	Fall	1,068	11.8	Motor Vehicle Traffic	1,690	18.0
Struck By /Against	593	6.1	Struck By/ Against	436	4.8	Struck By/Against	437	4.7
Firearm	585	6.0	Firearm	391	4.3	Other Transportation	320	3.4
45-54 Years			55- 64 Years			65- 74 Years		
Cause	Number	Percent	Cause	Number	Percent	Cause	Number	Percent
Poisoning	3,540	31.8	Fall	4,702	50.8	Fall	6,349	70.8
Fall	3,213	28.9	Poisoning	1,732	18.7	Motor Vehicle Traffic	765	8.5
Motor Vehicle Traffic	1,880	16.9	Motor Vehicle Traffic	1,259	13.6	Poisoning	742	8.3
Struck by/Against	389	3.5	Struck by/Against	214	2.3	Struck By/Against	177	2.0
Other Transportation	322	2.9	Other Specified and Classifiable	186	2.0	Other Specified and Classifiable	136	1.5
75-84 Years			85+ Years					
Cause	Number	Percent	Cause	Number	Percent			
Fall	12,144	84.9	Fall	12,492	91.5			
Motor Vehicle Traffic	580	4.1	Poisoning	231	1.7			
Poisoning	518	3.6	Unspecified	209	1.5			
Unspecified	255	1.8	Motor Vehicle Traffic	203	1.5			
Overexertion	132	0.9	Other Specified and Classifiable	118	0.9			

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

NOTE: All percentages represent the total percent of injury-related hospital admissions for each age group.

Table 15: Injury-Related Inpatient Hospital Admission Rates by Age and Intent, Indiana, 2007–2010

Age Group	Unintentional		Self-Inflicted		Assault		Undetermined		Other	
	Injuries	Rate*	Injuries	Rate*	Injuries	Rate*	Injuries	Rate*	Injuries	Rate*
<1	413	1.6	0	0.0	54	0.2	57	0.2	0	0.0
1-4	1,562	6.1	0	0.0	37	0.1	50	0.2	0	0.0
5-14	2,671	11.1	192	0.8	36	0.1	54	0.2	0	0.0
15-24	6,115	23.5	2,288	8.8	842	3.2	470	1.8	18	0.1
25-34	5,321	21.4	2,286	9.2	790	3.2	600	2.4	22	0.1
35-44	5,917	27.9	2,331	11.0	590	2.8	533	2.5	15	0.1
45-54	8,028	28.8	2,034	7.3	461	1.7	588	2.1	12	0.0
55-64	8,099	24.3	753	2.3	141	0.4	260	0.8	4	0.0
65-74	8,626	33.1	205	0.8	50	0.2	82	0.3	0	0.0
75-84	14,132	58.0	113	0.5	28	0.1	35	0.1	0	0.0
85+	13,584	45.1	33	0.1	13	0.0	19	0.1	1	0.0
Total	74,469	281.0	10,235	40.7	3,042	12.1	2,748	10.8	72	0.3

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: Rates based on frequencies of 20 or less are unstable and should be interpreted with caution.

Outpatient/Emergency Department Visits

In Indiana from 2007 to 2010, there were 2,450,608 Outpatient/Emergency Department (ED) visits by Indiana residents with a primary diagnosis of injury or poisoning. A subset of this outpatient/ED subset does not necessarily contain a valid external-cause-of-injury code (E-codes) per primary diagnosis of injury or poisoning because of varying levels of completeness of this coding; however, of the data with valid E-codes, injuries accounted for approximately 5.5% (1,779,650/32,386,127) of all outpatient/ED visits by Indiana residents. For the purposes of this report, the data containing valid E-codes will be analyzed due to the inclusion of the classification of the external cause of injury, including the intentionality, mechanism, and activity. Because many injuries are only seen in the emergency department, the hospital outpatient/ED data is a valuable resource to injury surveillance.⁴ The number of outpatient/ED visits for injury per year is as follows: 436,399 in 2007, 453,508 in 2008, 447,060 injuries in 2009, and 442,683 in 2010. The age-adjusted rate for the four-year period is 7,033.9 per 100,000. The highest injury rate was in 2008 (7,201.4 per 100,000), and the lowest rate was 2010 (6,938.8 per 100,000) (Figure 34).

Of the injuries resulting in outpatient/ED visits, 1,675,221 were unintentional, 93,231 were intentional, and 11,198 were of undetermined or other intent (Table 16, Figure 35). Falls were the top mechanism of injury-related outpatient/ED visits followed by being struck by/against or crushed (Figure 36). Specific to unintentional injuries, the top mechanism include falls (575,011/1,675,221; 34.3%), followed by struck by/against or crushed (265,615/1,675,221; 15.9%), and overexertion (196,586/1,675,221; 11.7%) (Table 16). There were 93,231 intentional injury-related ED visits, 71,704 (76.9%) were from assault and 21,527 (23.1%) were self-infliction (Figure 37; Table 16). The leading mechanism of self-inflicted injury-related outpatient/ED visits was poisoning (13,551/21,527; 62.9%), followed by cut/pierce (5,683/21,527; 26.4%), and other specified, not elsewhere classified (981/21,527; 4.6%). The leading mechanism of assault injury-related outpatient/ED visits was being struck by/against or crushed (40,548 /71,704; 56.5%), followed by other specified, not elsewhere classified (12,804/71,704; 17.9%), and unspecified mechanism (9,763/71,704; 13.6%) (Table 16). The leading causes of injury-related outpatient/ED visits rates have remained somewhat unchanged during the four-year period (Figure 38). Table 17 presents injury-related outpatient/ED visits by mechanism of injury and injury intent.

The census population of Indiana is almost equally distributed by gender, with females accounting for 50.7% of the total population from 2007–2010.⁶ Of those seeking assistance at outpatient/ED because of injury during 2007–2010, 52.1% (926,921/1,779,650) were male and 47.9% (852,675/1,779,650) were female. Overall, males were more likely than females to visit the ED due to injury during the four-year period (7,397.2 per 100,000 compared to 6,617.1 per 100,000). Additionally, males were more likely than females to be visit the ED due to unintentional and intentional assault injuries, but not self-inflicted injuries. Females were 1.4 times more likely than males to visit the ED because of self-inflicted injuries compared to males (Figure 39).

The three leading causes of injury-related ED visits were the same for males and females, which were falls, struck by/against, and overexertion (Table 18). Unintentional injuries were the most common injury intention which led to seeking medical assistance in the ED among males and women. The leading

cause of unintentional injury-related outpatient/ED visits from 2007–2010 for both genders was falls. Falls accounted for 30.0% and 38.6% of the unintentional injury-related ED visits in males and females, respectively. Other leading causes of unintentional injury-related ED visits included being struck by or against (15.9% total unintentional injuries) and overexertion (11.8% of total unintentional injuries).

The distribution of injury-related outpatient/ED visits varied by age groups. The highest number of injury-related outpatient/ED visits were highest among Hoosiers age 15-24 (Figure 40). The lowest age-specific rates of injury-related outpatient/ED visits were among persons aged 55 to 64 (3,903.9 per 100,000) and the highest age-specific were those age 85 and older (10,101.1 per 100,000) (Table 19). There were also differences observed between genders within age groups. Males had higher rates of outpatient/ED visits for all age groups up to the age of 44. Starting at age 45, females had higher rates of outpatient/ED visits for injuries (Figure 41). Females age 75-84 years were 1.3 times more likely to visit the ED for injuries compared to males of the same age, and females age 85 years and older were 1.2 times more likely to visit outpatient/ED for injuries than males of the same age (Table 20). Table 21 provides the top 5 leading causes of injury-related outpatient/ED visits by age group.

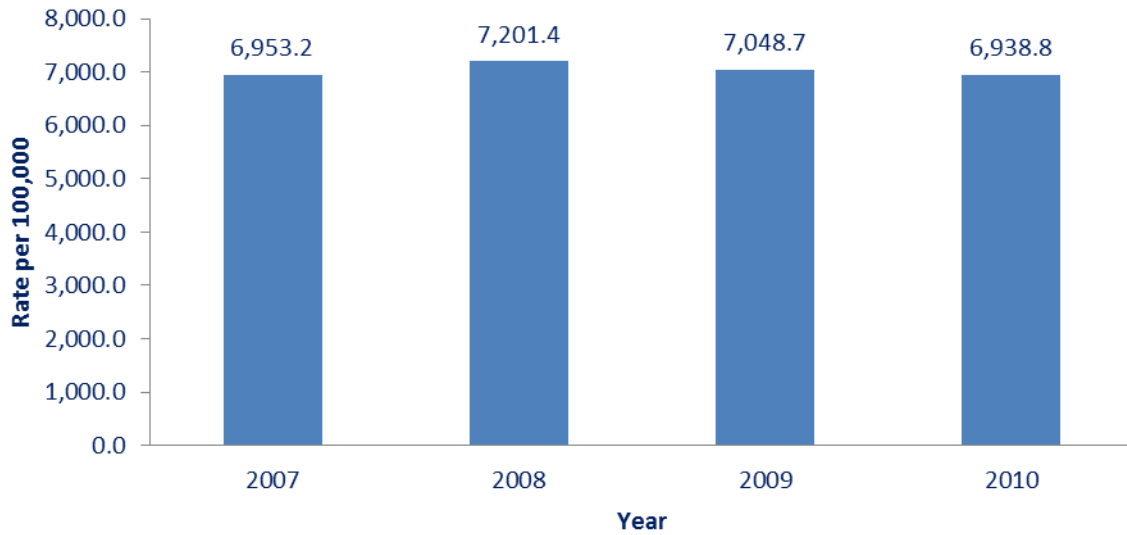
Like previously mentioned, whites make up the majority of Indiana's population (87.8%), and as expected, they accounted for the majority (77.5%) of all injury-related outpatient/ED visits in Indiana during 2007–2010, while blacks accounted for 10.7% (Figure 42). However, the rate of ED visitation due to injury is lower for whites compared to blacks (6,236.0 per 100,000 versus 7,842.6 per 100,000). Other races, including American Indian/Alaskan Native, Hawaiian or Pacific Islander, Asian, and unknown accounted for the remaining 11.9%. For blacks in Indiana from 2007–2010, the injury-related ED visitation rate was highest in 2007 (9,728.0 per 100,000) and the lowest in 2010 (6,688.4 per 100,000). For whites in Indiana in the same time period, the rate of injury was highest in 2008 (6,559.8 per 100,000) and like blacks, the lowest rate was in 2009 (5,997.9 per 100,000) (Figure 43).

With 708,645 outpatient/ED visits, white males had the highest number of injuries requiring medical assistance compared to all other race and gender categories, followed by white females with 665,805 visits. However, black males were nearly 1.3 times more likely to visit the ED for injury compared to white males (8,347.1 per 100,000 compared to 6,507.5 per 100,000) (Figure 44). Black females had a higher age-adjusted rate of ED visitation when compared to white females (7,299.5 per 100,000 and 5,916.7 per 100,000, respectively). Black males had a higher outpatient/ED visit rate for all four years compared to all other gender and gender categories, and the highest rate for black males was in 2007 with a rate of 10,468.7 per 100,000 (Figure 45).

From 2007 to 2010, 96% of all patients visiting the outpatient/ED for injuries had routine discharge in the ED. Only 2.8 percent of all patients visiting were admitted to the hospital or another institution (Figure 46). The most common type of admission was emergency (1,246,107/1,779,650), followed by urgent (35,878/1,779,650) (Figure 47). Of the patients in the ED, the most common source of admission was from an outpatient center or in the Emergency Department (73.0%), followed by the routine admission (23.8%) (Figure 48). For 2007–2010, the total charges for injury-related outpatient/ED visits were \$2.53 billion. The average total charge for an ED visit due to injury was \$1,424.93, with a range of

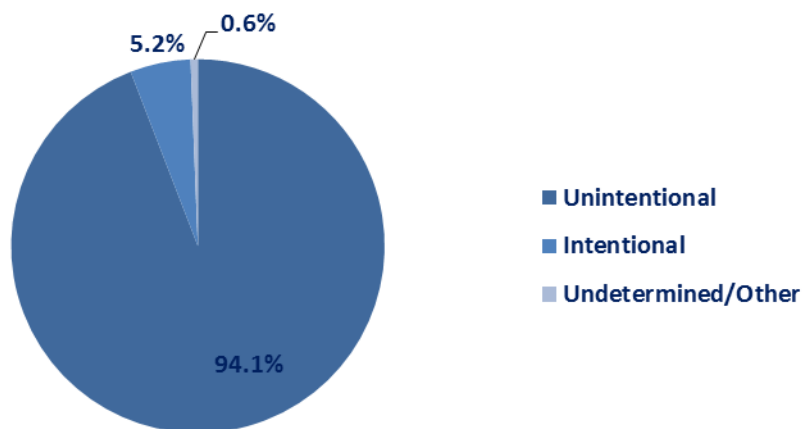
\$2.00–\$191,507.00. Of those visiting the outpatient/ED, 39.6% (704,149/1,779,650) had commercial insurance (Figure 49).

Figure 34: Injury-Related Outpatient/ ED Visit Rates* by Year, Indiana, 2007–2010



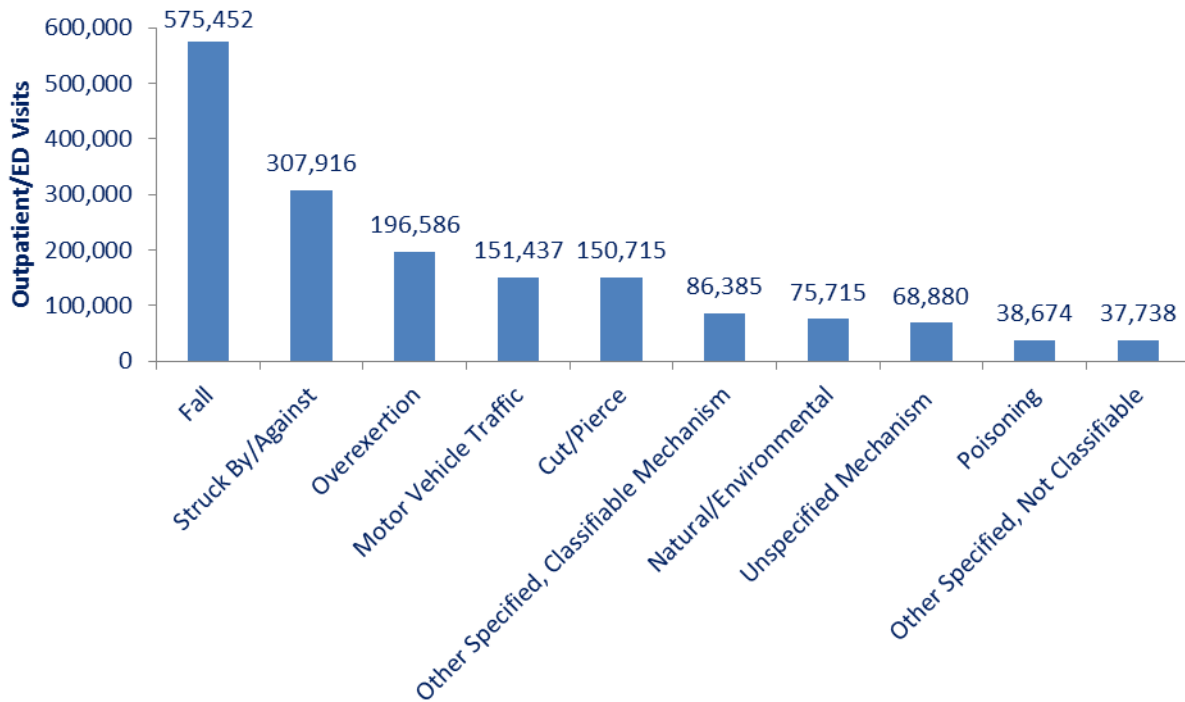
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention
*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 35: Injury-Related Outpatient/ ED Visits by Intent, Indiana, 2007–2010



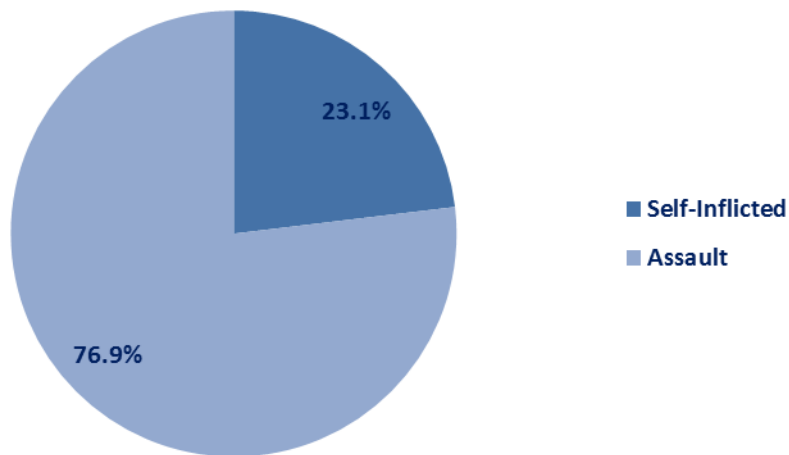
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 36: Ten Leading Mechanism of Injury in Injury-Related Outpatient/ ED Visits, Indiana, 2007–2010



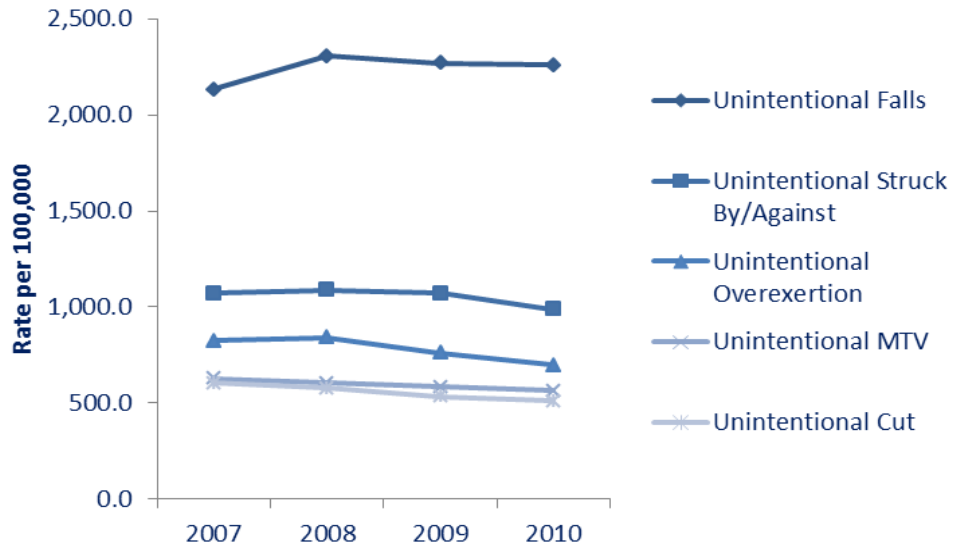
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention
 Other Specified, Not Classifiable indicates: Other Specified, Not Elsewhere Classified

Figure 37: Intentional Injury-Related Outpatient/ ED Visits by Type, Indiana, 2007–2010



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention

Figure 38: Leading Mechanisms of Injury in Injury-Related Outpatient/ ED Visit Rates* by Year, Indiana, 2007–2010

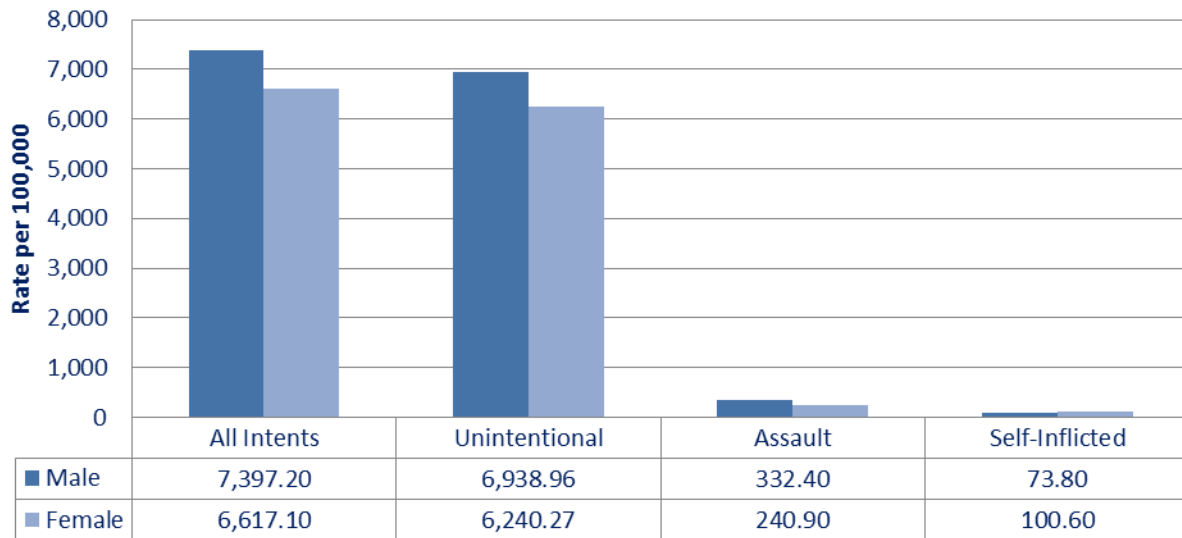


Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Figure produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 39: Injury-Related Outpatient/ ED Visit Rates* by Gender and Intent, Indiana, 2007–2010

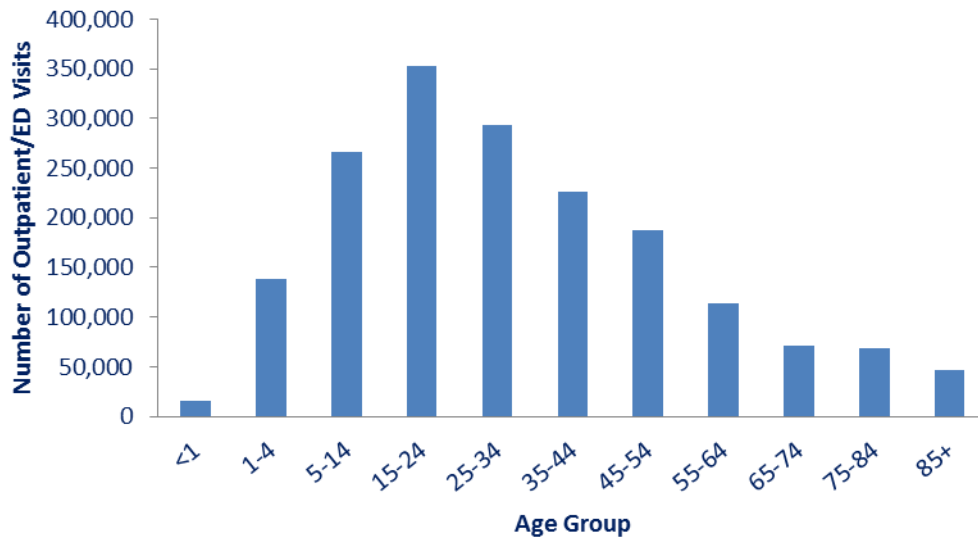


Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Figure produced by Division of Trauma and Injury Prevention

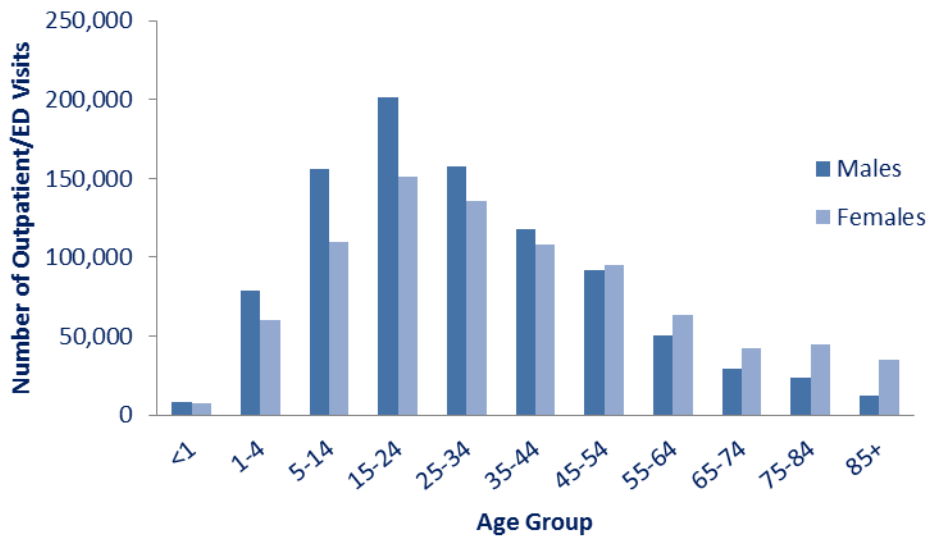
*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 40: Injury-Related Outpatient/ ED Visits by Age, Indiana, 2007–2010



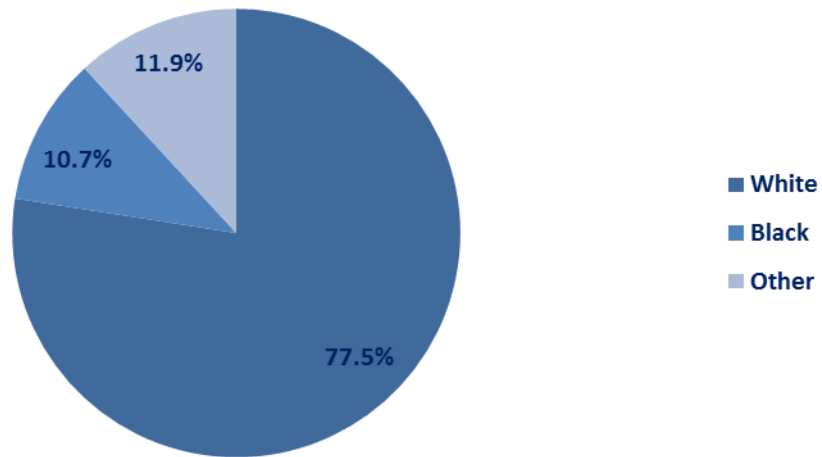
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 41: Injury-Related Outpatient/ ED Visits by Age and Gender, Indiana, 2007–2010



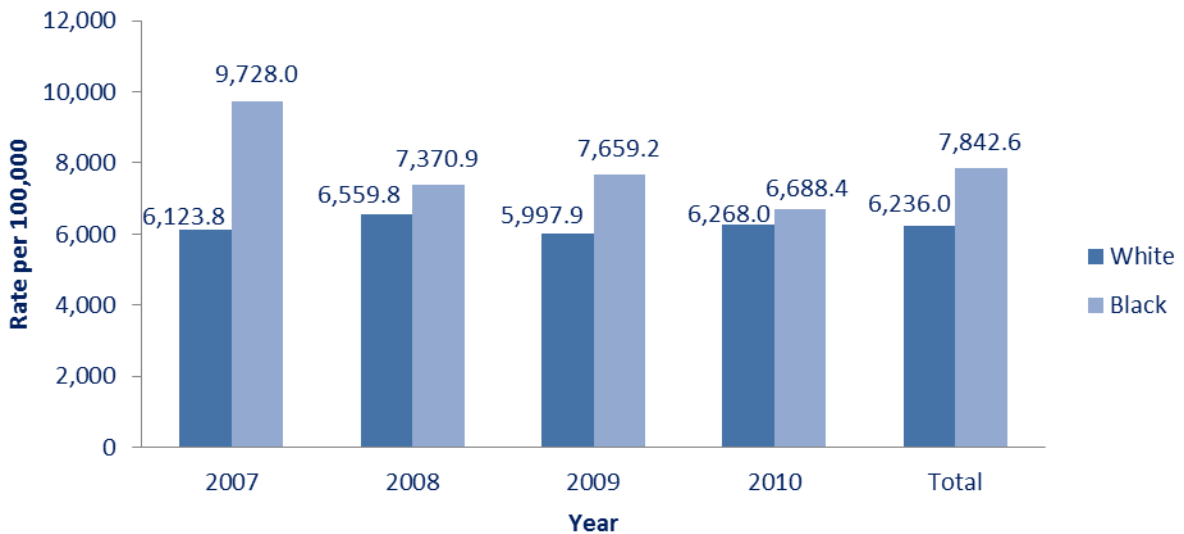
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

Figure 42: Injury-Related Outpatient/ ED Visits by Race, Indiana, 2007–2010



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

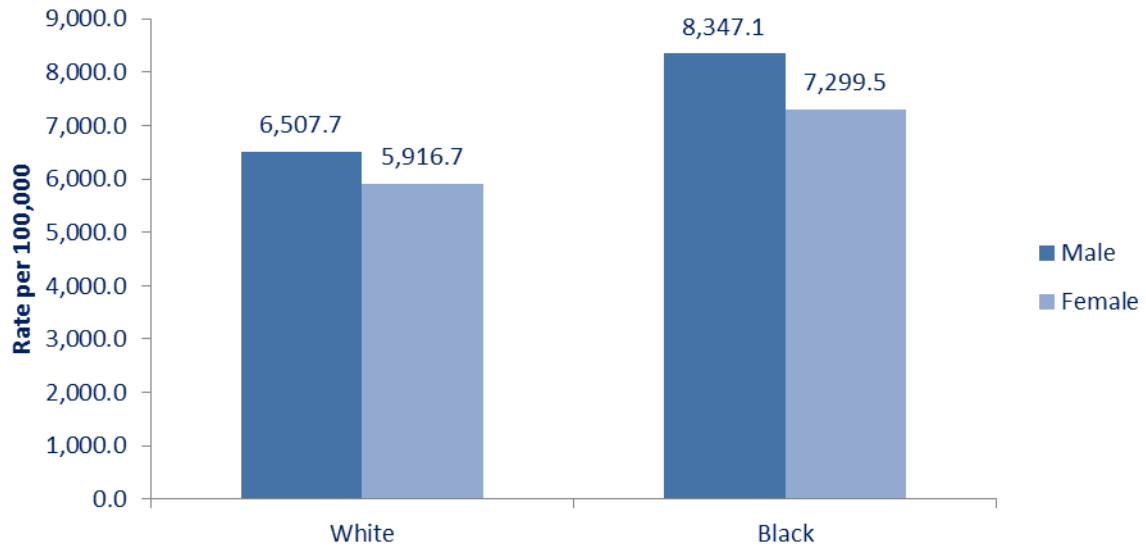
Figure 43: Injury-Related Outpatient/ ED Visit Rate* by Race, Indiana, 2007–2010



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Figure produced by Division of Trauma and Injury Prevention

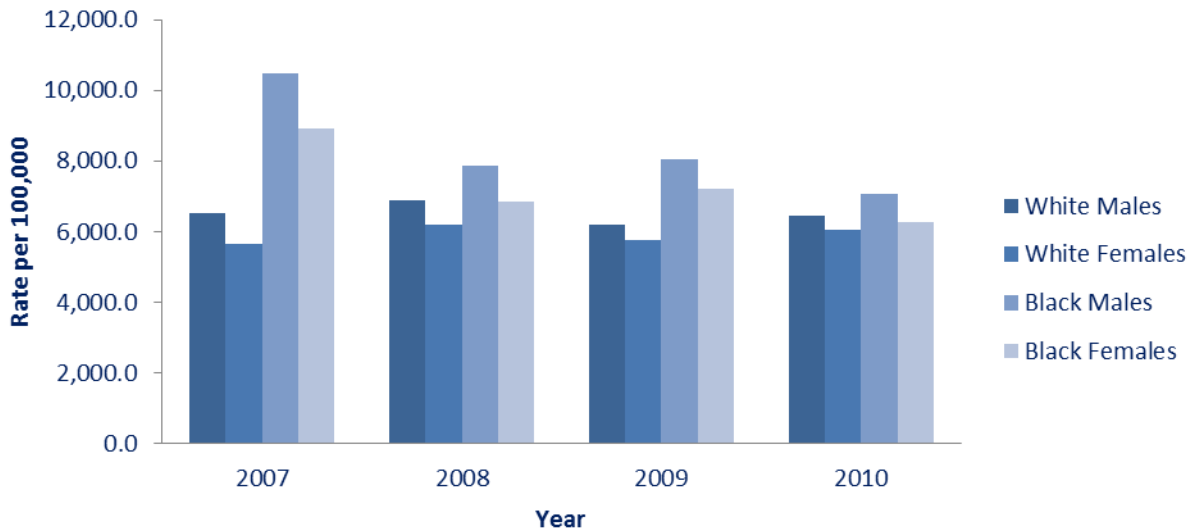
*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 44: Injury-Related Outpatient/ ED Visit Rates* by Race and Gender, Indiana, 2007–2010



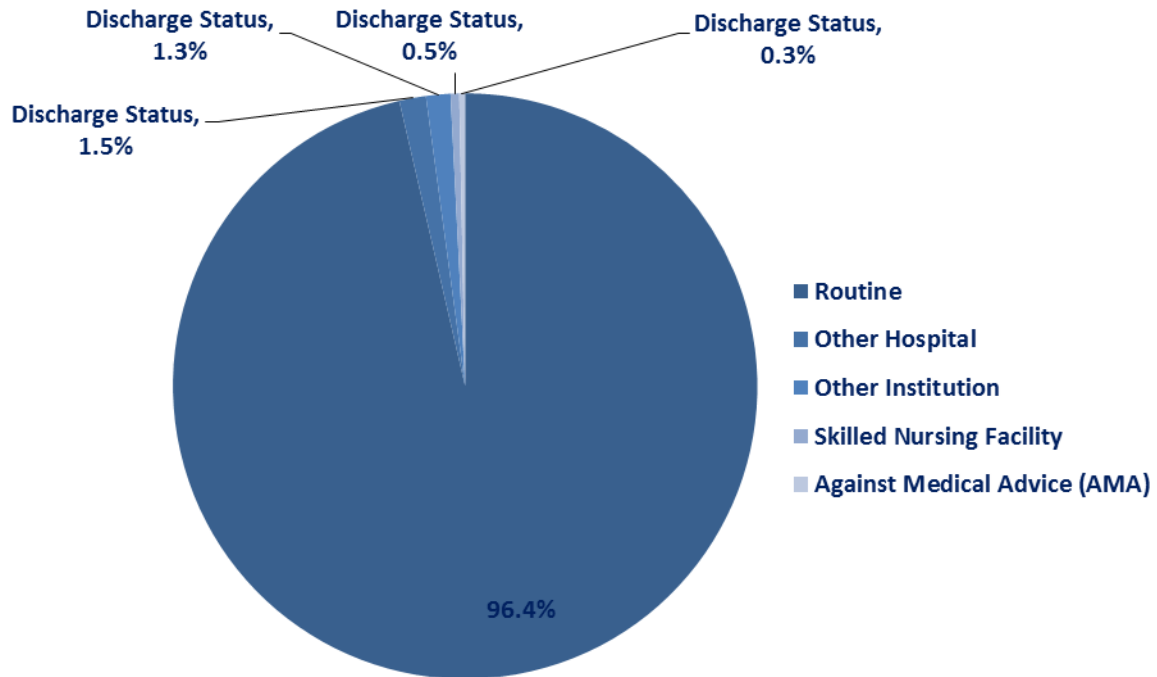
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention
 *Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 45: Injury-Related Outpatient/ ED Visit Rates* by Race, Gender, and Year, Indiana, 2007–2010



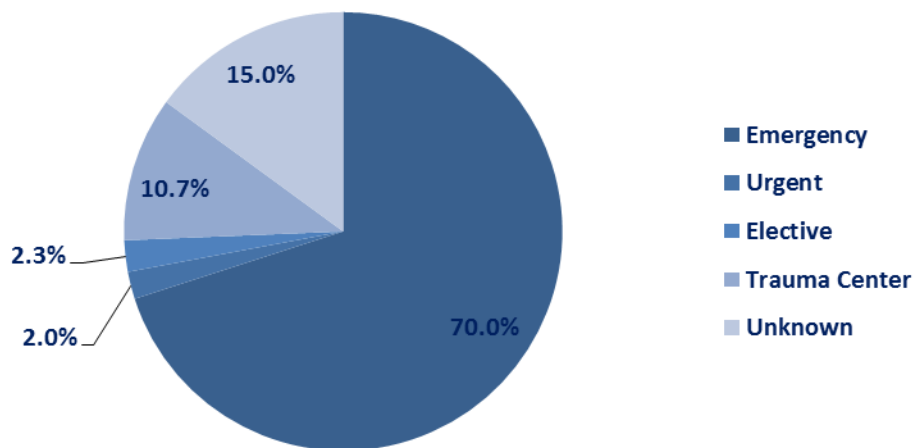
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention
 *Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Figure 46: Injury-Related Outpatient/ ED Visits by Discharge Status, Indiana, 2007–2010



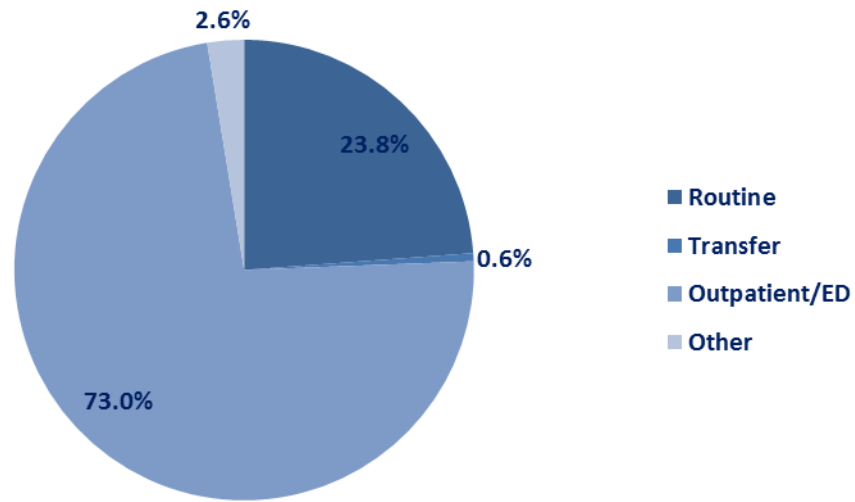
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention

Figure 47: Injury-Related Outpatient/ ED Visits by Admission Type, Indiana, 2007–2010



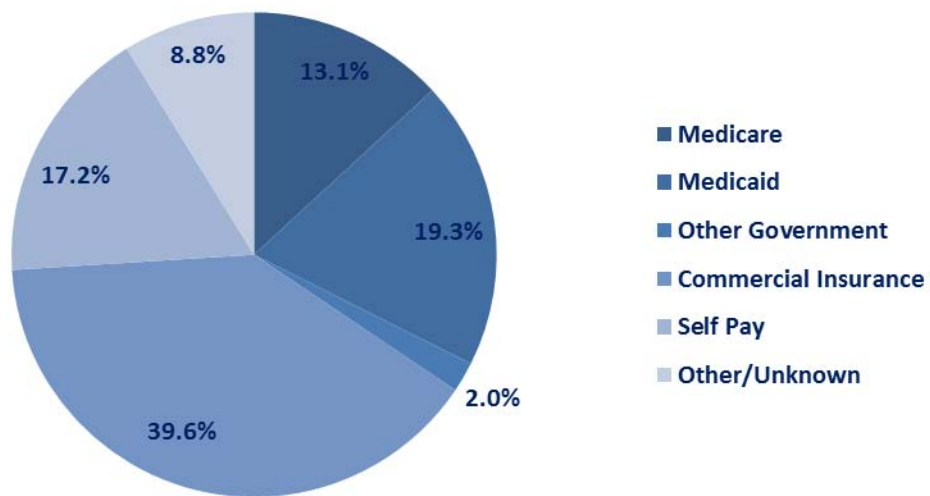
Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention

Figure 48: Injury-Related Outpatient/ ED Visits by Admission Source, Indiana, 2007–2010



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention

Figure 49: Injury-Related Outpatient/ ED Visits by Payer Source, Indiana, 2007–2010



Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Figure produced by Division of Trauma and Injury Prevention

Table 16: Leading Mechanisms of Injury in Injury-Related Outpatient/ ED Visits by Intent, Indiana, 2007–2010

Unintentional				Self-Inflicted				Assault			
Cause	Count	%	Rate*	Cause	Count	%	Rate*	Cause	Count	%	Rate*
Fall	575,011	34.3	2,239.9	Poisoning	13,551	62.9	54.3	Struck By/ Against	40,548	56.5	162.3
Struck By/ Against	265,615	15.9	1061.0	Cut/Pierce	5,683	26.4	22.7	Other Specified, NEC	12,804	17.9	51.3
Overexertion	196,586	11.7	786.9	Other Specified, NEC	981	4.6	3.9	Unspecified	9,763	13.6	39.1
MVT	151,244	9.0	596.4	Suffocate	541	2.5	2.2	Cut/Pierce	3,878	5.4	15.6
Cut/Pierce	140,957	8.4	558.5	Unspecified	267	1.2	1.1	Other Specified, Classifiable	3,071	4.3	12.3
Other Specified, Classifiable	83,117	5.0	330.6	Firearm	195	0.9	0.8	Firearm	942	1.3	3.7
Natural/ Environmental	75,676	4.5	299.8	Other Specified, Classifiable	99	0.5	0.4	Suffocate	231	0.3	0.9
All Others	187,015	11.2		All Others	210	1.0		All Others	467	0.7	
Total	1,675,221	100	6,616.0	Total	21,527	100	86.1	Total	71,704	100	287.1

Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: Rates based on frequencies of 20 or less are unstable and should be interpreted with caution.

Table 17: Injury-Related Outpatient/ ED Visits by Mechanism and Intent, Indiana, 2007–2010

Mechanism/Cause	Un-intentional	Self-Inflicted	Assault	Un-determined	Other	Total	Rate*	Percent
Cut/Pierce	140,957	5,683	3,878	163	34	150,715	597.7	8.5
Drowning	508	17	1	7	1	534	2.1	0.0
Fall	575,011	73	120	248		575,452	2,241.7	32.3
Fire/Burn	28,715	64	110	132		29,021	115.3	1.6
Firearm	1,346	195	942	475	37	2,995	11.9	0.2
Machinery	9,443					9,443	36.9	0.5
Motor Vehicle Traffic	151,244	48	127	18		151,437	597.2	8.5
Motorcyclist	9,896							
Occupant	119,916							
Pedal Cyclist	2,068							
Pedestrian	4,970							
Unspecified	13,149							
Other, Specified	1,245							
Pedal Cyclist, Other	24,780					24,780	99.9	1.4
Pedestrian, Other	1,166					1,166	4.7	0.1
Transport, Other Land	20,442	0		2		20,444	81.9	1.1
Natural/Environment	75,676	8		31		75,715	299.9	4.3
Overexertion	196,586					196,586	786.9	11.0
Poisoning	18,454	13,551	109	6491	69	38,674	153.2	2.2
Struck by/Against	265,615	0	40,548	0	1753	307,916	1,230.3	17.3
Suffocation	964	541	231	33	0	1,769	6.0	0.1
Other Specified, Classifiable	83,117	99	3,071	72	26	86,385	343.6	4.9
Other Specified, Not Elsewhere Classifiable	23,039	981	12,804	849	65	37,738	150.6	2.1
Unspecified	58,158	267	9,763	485	207	68,880	273.2	3.9
All Injury	1,675,221	21,527	71,704	9,006	2,192	1,779,650	7,033.9	100.0

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: Rates based on frequencies of 20 or less are unstable and should be interpreted with caution.

NOTE: Darkened cells in the table do not have E-Codes to match mechanism and intention.

Table 18: Leading Mechanism of Injury in Injury-Related Outpatient/ ED Visits by Gender, Indiana, 2007–2010

Male					Female			
Rank	Cause	Count	%	Rate*	Cause	Count	%	Rate*
1	Fall	248,312	26.8	2,012.5	Fall	327,129	38.4	2,432.8
2	Struck By/Against	192,239	20.7	1,522.5	Struck By/Against	115,666	13.6	927.2
3	Overexertion	100,179	10.8	800.3	Overexertion	96,398	11.3	770.8
4	Cut/Pierce	96,618	10.4	765.4	Motor Vehicle Traffic	80,521	9.4	635.6
5	Motor Vehicle Traffic	70,913	7.7	559.9	Cut/Pierce	54,091	6.3	429.7
6	Other Specified, Classifiable	50,274	5.4	399.9	Natural/ Environmental	37,881	4.4	299.4
7	Natural/ Environmental	37,832	4.1	300.1	Other Specified, Classifiable	36,109	4.2	287.5
8	Unspecified	34,925	3.8	278.8	Unspecified	33,953	4.0	266.5
9	Other Specified, NEC	19,725	2.1	156.7	Poisoning	21,248	2.5	169.1
10	Poisoning	17,424	1.9	137.5	Other Specified, NEC	18,012	2.1	144.3
11	Pedal Cyclist, Other	17,270	1.9	137.1	Fire/Burn	13,351	1.6	106.4
12	Fire/Burn	15,668	1.7	123.9	Pedal Cyclist, Other	7,509	0.9	61.6
13	Transport, Other	13,068	1.4	104.0	Transport, Other	7,374	0.9	59.4
14	Machinery	7,839	0.8	61.9	Machinery	1,604	0.2	12.6
15	Firearm	2,621	0.3	20.6	Suffocation	785	0.1	4.6
16	Suffocation	984	0.1	7.4	Pedestrian, Other	475	0.1	3.8
17	Pedestrian, Other	691	0.1	5.5	Firearm	374	0.0	3.0
18	Drowning	339	0.0	2.7	Drowning	195	0.0	1.6
	Total	926,921	100.0	7,397.2	Total	852,675	100.0	6,617.1

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

NOTE: Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

Table 19: Injury-Related Outpatient/ ED Visit Rates by Year and Age Group, Indiana, 2007–2010

Age Groups	2007		2008		2009		2010		Total 2007–2010	
	Injuries	Rates*	Injuries	Rates*	Injuries	Rates*	Injuries	Rates*	Injuries	Rates*
<1	3,715	4,218.0	3,969	4,422.0	3,969	4,834.7	3,973	4,723.7	15,944	4,547.5
1-4	33,542	9,599.4	34,688	9,817.4	34,688	10,038.9	34,797	9,965.9	138,859	9,856.2
5-14	66,761	7,648.7	67,334	7,750.0	67,334	7,634.5	65,017	7,258.4	265,786	7,570.7
15-24	88,992	10,097.6	89,748	10,214.5	89,748	9,661.5	85,516	9,199.9	352,596	9,783.9
25-34	72,013	8,447.4	75,173	8,805.6	75,173	8,736.0	72,808	8,767.6	293,276	8,688.5
35-44	56,985	6,444.3	58,226	6,686.3	58,226	6,494.2	55,377	6,611.3	225,799	6,558.5
45-54	44,946	4,826.0	48,521	5,170.1	48,521	4,972.5	46,824	4,954.4	186,991	4,981.0
55-64	26,305	3,811.7	28,548	4,024.3	28,548	3,914.2	29,953	3,865.9	113,498	3,903.9
65-74	16,301	3,997.1	18,185	4,294.8	18,185	4,219.0	18,814	4,138.0	71,723	4,163.7
75-84	16,248	5,952.7	17,371	6,391.9	17,371	6,249.5	17,223	6,300.6	67,988	6,223.5
85+	10,588	9,233.9	11,735	9,890.4	11,735	10,607.4	12,380	10,660.1	47,173	10,101.1
Total	436,399	6,877.5	453,508	7,111.9	447,060	6,960.2	442,683	6,820.3	1,779,650	6,942.0

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-specific and rounded to the nearest tenth.

NOTE: Age is unknown in 14 incidents.

Table 20: Injury-Related Outpatient/ ED Visit Rates by Age and Gender, Indiana, 2007–2010

Age Groups	Total		Males		Females	
	Count	Rate*	Count	Rate*	Count	Rate*
<1	15,944	62.8	8,469	65.3	7,474	60.3
1-4	138,859	545.2	79,069	606.8	59,788	480.7
5-14	265,786	1,102.0	155,712	1,263.1	110,071	933.6
15-24	352,596	1,356.5	201,538	1,515.6	151,046	1,189.7
25-34	293,279	1,177.9	157,766	1,252.0	135,500	1,101.9
35-44	225,799	1,066.5	117,651	1,105.0	108,140	1,027.5
45-54	186,991	671.6	91,797	664.6	95,188	678.5
55-64	113,498	340.6	50,236	310.3	63,257	369.3
65-74	71,723	275.0	29,258	243.1	42,464	302.3
75-84	67,988	279.1	23,202	237.2	44,785	307.1
85+	47,173	156.6	12,219	134.3	34,954	166.3
Total	1,779,650	7,033.9	926,917	7,397.2	852,667	6,617.1

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: Gender was not known for 52 individuals and the age was unknown for 14 individuals.

Table 21: Five Leading Mechanisms of Injury in Injury-Related Outpatient/ ED Visits by Age, Indiana, 2007–2010

<1 Year			1-4 Years			5-14 Years		
Cause	Number	Percent	Cause	Number	Percent	Cause	Number	Percent
Fall	8,351	52.4	Fall	58,049	41.8	Fall	81,998	30.9
Struck By/ Against	2,102	13.2	Struck By/ Against	24,513	17.7	Struck By/ Against	70,140	26.4
Other Specified, Classifiable	1,481	9.3	Other Specified, Classifiable	12,915	9.3	Cut/Pierce	20,241	7.6
Natural/ Environmental	803	5.0	Natural/ Environmental	11,102	8.0	Overexertion	20,042	7.5
Unspecified	708	4.4	Cut/Pierce	7,064	5.1	Natural/ Environmental	15,068	5.7
15-24 Years			25-34 Years			35-44 Years		
Cause	Number	Percent	Cause	Number	Percent	Cause	Number	Percent
Struck By/ Against	81,564	23.1	Fall	66,523	22.7	Fall	59,003	26.1
Fall	66,679	18.9	Struck By/ Against	50,721	17.3	Overexertion	35,619	15.8
Motor Vehicle Traffic	46,495	13.2	Overexertion	48,042	16.4	Struck By/Against	33,535	14.9
Overexertion	43,875	12.4	Motor Vehicle Traffic	30,673	10.5	Motor Vehicle Traffic	23,114	10.2
Cut/Pierce	34,135	9.7	Cut/Pierce	29,762	10.1	Cut/Pierce	22,085	9.8
45-54 Years			55- 64 Years			65- 74 Years		
Cause	Number	Percent	Cause	Number	Percent	Cause	Number	Percent
Fall	61,165	32.7	Fall	48,336	42.6	Fall	39,200	54.7
Overexertion	24,264	13.0	Motor Vehicle Traffic	11,005	9.7	Cut/Pierce	5,438	7.6
Struck by/Against	23,250	12.4	Struck by/Against	10,906	9.6	Struck By/Against	5,293	7.4
Motor Vehicle Traffic	19,082	10.2	Overexertion	10,685	9.4	Overexertion	4,978	6.9
Cut/Pierce	17,709	9.5	Cut/Pierce	10,328	9.1	Motor Vehicle Traffic	4,975	6.9
75-84 Years			85+ Years					
Cause	Number	Percent	Cause	Number	Percent			
Fall	47,745	70.2	Fall	38,399	81.4			
Struck by/Against	3,811	5.6	Struck by/Against	2,079	4.4			
Overexertion	2,961	4.4	Unspecified	1,404	3.0			
Motor Vehicle Traffic	2,887	4.2	Overexertion	1,053	2.2			
Cut/Pierce	2,574	3.8	Cut/Pierce	926	2.0			

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

NOTE: All percentages represent the total percent of injury-related outpatient/ED visits for each age group.

Table 22: Injury-related Outpatient/ ED Visit Rates by Age and Intent, Indiana, 2007–2010

Age Group	Unintentional		Self-Inflicted		Assault		Undetermined		Other	
	Count	Rate*	Count	Rate*	Count	Rate*	Count	Rate*	Count	Rate*
<1	15,811	62.3	1	0.0	59	0.2	72	0.3	1	0.0
1-4	138,189	542.6	18	0.1	257	1.0	394	1.5	1	0.0
5-14	260,040	1,078.2	1,126	4.7	3,964	16.4	605	2.5	51	0.2
15-24	314,382	1,209.5	8,094	31.1	26,626	102.4	2,772	10.7	722	2.8
25-34	265,965	1,068.2	5,108	20.5	19,612	78.8	1,990	8.0	604	2.4
35-44	208,623	985.4	3,789	17.9	11,521	54.4	1,408	6.7	458	2.2
45-54	176,005	632.2	2,449	8.8	7,208	25.9	1,063	3.8	266	1.0
55-64	110,495	331.6	676	2.0	1,824	5.5	436	1.3	67	0.2
65-74	71,006	272.2	159	0.6	398	1.5	148	0.6	12	0.0
75-84	67,657	277.87	75	0.3	166	0.7	83	0.3	7	0.0
85+	47,034	156.2	32	0.1	69	0.2	35	0.1	3	0.0
Total	1,675,221	6,616.0	21,527	86.1	71,704	287.1	9,006	35.8	2,192	8.8

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.

Table produced by Division of Trauma and Injury Prevention

*Rates are age-adjusted per 100,000 population and rounded to the nearest tenth.

NOTE: There were 14 unknown ages included in the unintentional category total.

Injuries by Age and Life Stages

Injuries affect all Hoosiers, regardless of age, sex or race. This section of the Injuries in Indiana report summarizes the occurrence of injury related to the ages and the developmental stages of life. Because traditional public health statistical age groups do not always synchronize well with developmental life stages, this section attempts to provide a better understanding of the changing contribution of injuries to morbidity and mortality in Indiana as residents' age, moving from infancy to adulthood.

Infants (less than one year of age): Infants are at a great risk for many injuries, both unintentional and intentional in nature. With limited cognitive abilities and physical coordination, infants are less capable of identifying and avoiding unsafe environments. Infants rely upon their parents and/or caretakers for everything related to their health and well-being, and are unable to express their needs verbally. Therefore, they may be at a higher risk for abuse or neglect. Infants rely upon others to ensure their environment is safe, such as being buckled properly into the appropriate rear-facing car seat during car trips, sleeping in cribs conducive to safe sleeping with minimal suffocation risk, and interacting in areas without risk of falling down stairs.

Unintentional injury was the third leading cause of death among infants under one year of age in Indiana from 2007 to 2010. There were 218 infant deaths due to injury during this time period, which occurred at an age-adjusted rate of 0.9 per 100,000 and an age-specific rate of 62.2 per 100,000. Infant deaths comprised 1.4% of all injury deaths. Unintentional suffocation was the leading cause, contributing to 72.9% of infant deaths, followed by unspecified assault contributing to 7.8%. Infants are more likely to suffocate while sleeping, according to the CDC. It is important to create a safe sleeping environment by placing infants on their backs on a firm surface when lying down for sleep. Infants are safest in a crib or bassinet and not the same bed as parents or caregivers. Other soft objects within the crib pose as a suffocation risk.⁸ The age-adjusted mortality rate for black infants was 2.1 per 100,000, which is 3 times greater than the age-adjusted mortality rate for white infants (0.7 per 100,000). More male infants died in the four years compared to female infants. Unintentional motor vehicle traffic collision was the third leading cause of death, and through the use of child safety seats, the risk of death to infants is reduced by as much as 71%.⁹

From 2007–2010, there were a total of 15,944 outpatient/ED visits for injuries in infants less than one year of age, of which 15,811 were for unintentional injuries and 132 were for intentional injuries. The overall age-adjusted rate was 62.8 per 100,000, and the age-specific rate was 4,547.5 per 100,000. Infants less than one year accounted for 0.9% of all outpatient/ED visits for injuries during the four-year period. The most common cause of an injury-related outpatient/ED visit was falls, which accounted for 52.4% of all ED visits for injury in this age group, followed by struck by/against, which accounted for 13.2% of all ED visits for injury in this age group.

There were 524 hospital admissions in Indiana due to injury among infants less than one year of age, of which 413 were due to unintentional injuries and 54 were due to assault injuries. The overall age-adjusted rate was 2.1 per 100,000, and an age-specific rate was 149.5 per 100,000. Infants less than one year accounted for 0.6% of all inpatient hospital admissions for injuries during the four-year period. The most common cause of an injury-related inpatient hospital admission was falls, which accounted for

30.2% of all ED visits for injury in this age group, followed by unspecified mechanism, which accounted for 17.0% of all ED visits for injury in this age group.

Children- Preschool age (1-4 years): Young children ages 1-4 years are busy exploring their environment, which increases the chances for injury if certain environmental precautions are not implemented. Preschool age children are still developing their physical coordination, from learning how to walk and run to playing and interacting on playground equipment. Children may begin to engage in sports such as soccer and swimming, which also pose injury risk.

Unintentional injury was the leading cause of death among preschool age children in Indiana from 2007 to 2010, followed by homicide as the third leading cause. There were 185 preschool age child deaths due to injury from 2007–2010, which occurred at an age-adjusted rate of 0.7 per 100,000 and an age-specific rate of 13.1 per 100,000. Preschool-aged deaths comprised 1.2% of all injury deaths.

Unintentional drowning was the leading cause of injury death, accounting for 23.8% of all preschool age deaths, followed by unintentional MVT collision at 14.1%. Black preschool age children died at a rate of 1.4 per 100,000 compared to a rate of 0.6 per 100,000 for white preschool age children. More male preschool age children died than female children of the same age. The unexpected access to water or brief lapses in adult supervision is common for most drowning incidents in children under the age of five.⁴ Additionally, through the use of child safety seats, the risk of death from MVT collision to toddlers is reduced by 54% in passenger vehicles.⁹

From 2007–2010, there were a total of 138,859 outpatient/ED visits for injuries by children ages 1-4 years, of which 138,189 were for unintentional injuries and 669 were for intentional injuries. The overall age-adjusted rate was 545.2 per 100,000, and an age-specific rate of 9,856.2 per 100,000. Preschool-aged children accounted for 7.8% of all outpatient/ED visits for injuries during the four-year period. The most common cause of an injury-related outpatient/ED visit was falls, which accounted for 41.8% of all ED visits for injury in this age group, followed struck by/against, which accounted for 17.7% of all ED visits for injury in this age group.

There were 1,649 hospital admissions in Indiana due to injury among preschool age children, of which 1,562 were due to unintentional injuries and 37 were due to assault injuries from 2007–2010. The overall age-adjusted rate was 6.5 per 100,000, and an age-specific rate of 117.0 per 100,000, and preschool-aged children accounted for 1.8% of all inpatient hospital admissions for injuries during the four-year period. The most common cause of an injury-related inpatient hospital admission was falls, which accounted for 26.0% in this age group, followed by fire/burn, which accounted for 19.5% of all injury-related inpatient hospital admissions in this age group.

Children-Elementary school age (5-9 years): Elementary school-aged children are at risk for different injuries because of the ability to participate in more activities and events. The potential of demonstrating risky behaviors stimulated by impulse increases during this time also, which may lead to injury. Children are more susceptible to MVT collisions, and restraint use among children has been found to be dependent upon adult driver's seat belt use. Additionally, booster seat use by children age 4-8 years reduces the risk for serious injury during a motor vehicle collision by 45%.⁹

There were 103 injury deaths among elementary age children in Indiana from 2007 to 2010, at an age-specific rate of 5.9 per 100,000. This category had the lowest age-adjusted rate of 0.4 per 100,000. Unintentional injury was the leading cause of death among elementary school age children contributing to 87 deaths, followed by homicide as the fourth leading cause with 11 deaths. Unintentional MVT collision was the leading cause of injury deaths, which accounted for 40.8% (42/103) of deaths in this age group, followed by fire/burn. Males represented 61.1% (63/103) of total injury fatalities for this age group. Motor vehicle traffic collision was the cause of 42.5% and 40.0% of female and male fatalities in this age group were due to MVT.

From 2007–2010, there were a total of 116,997 outpatient/ED visits for injuries in children age 5-9 years, of which 116,167 were for unintentional injuries and 645 were for intentional injuries. The overall age-adjusted rate was 971.8 per 100,000, the age-specific rate was 6,676.3 per 100,000, and children accounted for 6.6% of all outpatient/ED visits for injuries during the four-year period. The most common cause of an injury-related outpatient/ED visit was falls, which accounted for 35.3% of all ED visits for injury in this age group, followed by struck by/against, which accounted for 23.0% of all ED visits for injury in this age group. Nationally, the leading cause of nonfatal injury for elementary age children is unintentional falls, followed by unintentional struck by/against.¹

There were 1,231 hospital admissions in Indiana due to injury among elementary school-aged children, of which 1,203 were due to unintentional injuries from 2007–2010 in Indiana. The overall age-adjusted rate was 5.1 per 100,000, and an age-specific rate of 70.2 per 100,000, and elementary-aged children accounted for 1.4% of all inpatient hospital admissions for injuries during the four-year period. The most common cause of an injury-related inpatient hospital admission was falls, which accounted for 30.1% of all injury-related related inpatient hospital admissions in this age group, followed by MVT, which accounted for 19.3% of all injury-related related inpatient hospital admissions in this age group.

Adolescents (10-19 years): The adolescent age group demonstrates an expanded list of injury prevention concerns. The leading cause of death among “pre-teens” and teenagers are unintentional MVT, homicide by firearm, and suicide by suffocation. Consequently, teens are involved in more violence than any other age group. Additionally, this age group includes teenagers learning how to, and operating motor vehicles for the first time. Peer pressure at school and among friends increases the risk for this age group to experiment with drugs and alcohol, which is also a risk factor for injuries. There were an estimated 284,000 non-fatal assault related injuries treated in EDs among US teens age 15-19 in 2010, and more than 18,000 required hospitalizations or transfers to higher levels of care.⁴ Seat belt use among drivers and front-seat passengers reduces the risk of death by 45% and the risk of serious injury by 50%.^{4,9} Proper seat-belt use includes positioning the lap belt across the upper thigh, not the stomach, and the shoulder belt across the chest and shoulder, not across the neck or face.⁹

The Youth Risk Behavior Survey (YRBS) is a useful tool to determine information about injuries relating to violence and suicide for students in grades 9-12. In terms of violence and assault, according to the Indiana YRBS from 2007 and 2009, 20.9 and 18.1 percent of students responded have carried a weapon such as a gun, knife, or club on one or more of the past 30 days, respectively. Furthermore, 3.8 and 2.8 percent of students in 2007 and 2009 responded in the affirmative, having been in a physical fight one or

more times during the past 12 months in which they were injured and had to be treated by a doctor or nurse.¹⁰

In terms of self-harm and suicide, the 2007 and 2009 YRBS revealed that 27.5 and 28.1 percent of students felt sad or hopeless almost every day for two weeks or more in a row, so much so that they stopped doing some usual activities in the past 12 months, respectively. Additionally, 15.8 and 17.2 percent of students in the respective years had seriously considered attempting suicide during the past 12 months. The 2009 YRBS revealed that within the last 12 months from the survey administration, 13.5 percent of students had made a plan about how they would attempt suicide, and 9.3 percent attempted suicide one or more times, and 3.6 percent reported making a suicide attempt that resulted in injury, poisoning, or overdose that had to be treated by a doctor or nurse.¹⁰

The 2009 Indiana YRBS presented that 7.1 percent of students reported never or rarely wearing a seat belt when riding in a car driven by someone else, and that percentage increased to 12.7 when limiting the responder's age to 18 years or older. Nearly 10 percent of students self-reported driving a car or other vehicle one or more times during the past 30 days when they had been drinking alcohol.

There were 988 injury deaths among adolescents age 10-19 years in Indiana from 2007 to 2010. There were 832 deaths among adolescents age 15-19, which are typically the ages of high school students. Boys were disproportionately represented in injury deaths, with 74.0% of the deaths among boys in this category. The 10-19 years age group represented 6.4% of all injury deaths from 2007 to 2010. Unintentional injury, suicide, and homicide were the top three leading causes of death for adolescents. Motor vehicle traffic collisions resulted in 404 deaths at a rate of 1.6 per 100,000. Intentional self-harm resulted in 190 deaths at an age-specific rate of 5.0 per 100,000, and 158 suicide deaths occurred in adolescents 15-19 years of age. Homicide resulted in 137 deaths among adolescents at an age-specific rate of 3.8 per 100,000. Eighty-nine percent of homicides among all adolescents occurred among those 15-19 years old. Unintentional injury is the leading cause of years of potential life lost before age 65, of which adolescents contributed greatly and thus provide insight into injury prevention efforts and priorities among children and young adults.

From 2007–2010, there were a total of 331,696 outpatient/ED visits for injuries in adolescents age 10-19 years, of which 308,615 were for unintentional injuries and 20,847 were for intentional injuries. The overall age-adjusted rate was 1,278.4 per 100,000, the age-specific rate was 9,220.6 per 100,000, and adolescents accounted for 18.6% of all outpatient/ED visits for injuries during the four-year period. The most common cause of an injury-related outpatient/ED visit was struck by/against, which accounted for 27.5% of all ED visits for injury in this age group, followed by falls, which accounted for 22.1% of all ED visits for injury in this age group.

There were 6,507 hospital admissions in Indiana due to injury among adolescents age 10-19 years, of which 4,556 were due to unintentional injuries and 1,693 were due to assault injuries from 2007–2010. The overall age-adjusted rate was 26.3 per 100,000, and an age-specific rate of 180.9 per 100,000, and adolescents accounted for 7.2% of all inpatient hospital admissions for injuries during the four-year period. Among injury-related inpatient hospital admissions, the most common cause was poisoning,

which accounted for 27.8% of such admissions in this age group, followed by motor vehicle traffic, which accounted for 25.0% of such admissions in this age group.

Adults (20-64 years): The role of unsafe driving practices, such as failure to wear seatbelts or driving while intoxicated, continue to be contributing factors to the death toll and injuries related to MVT collisions in adults, even though adults are more experienced motor vehicle drivers. The rise in deaths and need for medical treatment from poisoning also increased among adults. Suicide continues to be a leading cause of death and homicide dominates as a leading cause of death among adults 25-34 year olds. Unintentional injury is the leading cause of death among Americans and Hoosiers age 1-44, but after age 45, other causes of death surpass unintentional injury as the leading cause of death.

The Behavioral Risk Factor Surveillance System (BRFSS) is the largest on-going telephone health survey system that tracks the health conditions and risk behaviors in individuals ages 18 years and older in the United States. According to the 2010 Indiana BRFSS Anxiety and Depression module, 14.9% of Hoosier adults felt depressed or hopeless for one to three days during the past two weeks. Additionally, the 2010 Indiana BRFSS indicates 15.9% of responders age 45-54 fell one to four times in the past 3 months, which increased to 16.1% in responders who are age 55-64 years. In terms of seatbelt usage in adults, the highest percent of reported “always” use was among adults ages 55-64 at 88.7%.¹¹

There were 10,292 deaths among adults age 20-64 years in Indiana from 2007 to 2010, with unintentional injury as the third leading cause of death, followed by suicide as the fourth leading cause, and homicide as the ninth leading cause of death. There were 2,622 suicides that occurred among adults ages 20-64, at an age-adjusted rate of 10.1 per 100,000. The highest number of deaths due to injury occurred at age 45-54, and the most number of suicide deaths among adults occurred from 45-54 years also. Suicide by firearm and suffocation were the two most common means of suicide among adults. Of the 10,292 deaths, 10.2% (1,049) were due to homicide, at an age-adjusted rate of 4.0 per 100,000. The highest number of deaths due to homicide occurred from ages 25-34. Motor vehicle traffic collisions claimed 2,077 adult lives (20.2% of adult injury deaths) during the four-year period at an age-adjusted rate of 8.0 per 100,000. For adults 25-54 years old, the leading cause of injury death was unintentional poisoning, but for adults ages 20-24 and 44-64, the leading cause of injury death was unintentional MVT collision. Seat belt use among drivers and front-seat passengers reduces the risk of death by 45% and the risk of serious injury by 50%.^{4,9} Proper seat-belt use includes positioning the lap belt across the upper thigh, not the stomach, and the shoulder belt across the chest and shoulder, not across the neck or face.⁹ Additionally, driving with distractions such as using cell phones for texting and calling may put adults at increased risk for MVT.

From 2007–2010, there were a total of 989,256 outpatient/ED visits for injuries in adults age 20-64 years, of which 910,728 were for unintentional injuries and 70,505 were for intentional injuries. The overall age-adjusted rate was 879.8 per 100,000, age-specific rate of 6,489.2 per 100,000, and adults accounted for 55.6% of all outpatient/ED visits for injuries during the four-year period. The most common cause of an injury-related outpatient/ED visit was falls, which accounted for 27.2% of all ED visits for injury in this age group, followed by struck by/against, which accounted for 15.4% of all ED visits for injury in this age group. Within the different age groups in this large category, falls were the

leading cause of ED visits, and struck by/against, overexertion, and motor vehicle traffic collision were the second leading cause depending on age breakdown.

There were 43,733 hospital admissions in Indiana due to injury among adults age 20-64, of which 30,392 were due to unintentional injuries and 2,506 were due to assault injuries from 2007–2010 in Indiana. In this large age group, the greatest number of hospital admissions was among those ages 45-54 years, however, the highest rate was among age 35-44 years. The overall age-adjusted rate was 168.3 per 100,000, and an age-specific rate of 286.9 per 100,000. Adults accounted for 48.2% of all inpatient hospital admissions for injuries during the four-year period. The most common cause of an injury-related inpatient hospital admission was poisoning, which accounted for 31.9% of all injury-related inpatient hospital admissions in this age group, followed by falls, which accounted for 25.4% of all injury-related inpatient hospital admissions in this age group. Among all traditional adult age groups, poisoning is the most common cause of hospital admissions up to age 54 when it shifts to falls. The second leading cause is MVT up to age 35 where it changes to falls from age 35 to 54 and then switches to poisoning.

Older adults (65 years and older): One third of older adults will fall each year in the U.S., which has great effect on their health and well-being. While falls may lead to broken bones and other health consequences, many older adults will also develop a fear of falling, which may cause them to limit their activities, leading to a reduction in their mobility and physical fitness, thus increasing their actual risk of falling.⁴ Both physical and cognitive changes play a role in older adults' susceptibility to falls, MVT collisions, and self-inflicted injuries. Although Americans are now living longer than previous generations, older adults must face the reality of poor vision, limited mobility, loss of loved ones, and the development of chronic illnesses, which can have devastating physical and emotional effects.

The risk of death from unintentional injury rises dramatically as Americans age. Unintentional injury was the ninth leading cause of death among older adults age 65 and older in Indiana from 2007 to 2010. There were 3,705 injury deaths, of which 479 were suicides, during the four-year period in adults 65 years and older. Suicides occurred at an age-specific rate of 14.6 per 100,000, and older adults constituted 14.6% of all suicide deaths. The age-adjusted mortality rate was 14.3 per 100,000 and the age-specific rate was 112.9 per 100,000. Nearly 24% of injury deaths occurred in people over the age of 65. Injury rates of death were highest among the 75-year and older age groups (122.8 per 100,000 among persons 75 to 84 years and 284.8 per 100,000 among persons 85 years and older). Males over the age 85 had the highest age-specific rate compared to all other age groups, at a rate of 362.2 per 100,000. For every age category up to age 85 years of age and older, more males died due to injury than women. The leading cause of injury death was falls, which contributed to 1,068 injury deaths. This supports the national data, in which unintentional falls is the leading cause of injury death in people 65 years and older. The total direct costs due to non-fatal fall injuries in older adults in the U.S. in 2000 was \$19 billion.⁴

From 2007–2010, there were a total of 186,884 outpatient/ED visits for injuries in older adults aged 65 years and older, of which 185,967 were for unintentional injuries and 899 were for intentional injuries. The overall age-adjusted rate was 719.7 per 100,000, the age-specific rate was 5,694.2 per 100,000, and

older adults accounted for 10.5% of all outpatient/ED visits for injuries during the four-year period. The most common cause of an injury-related outpatient/ED visit was falls, which accounted for 67.1% (125,344/186,884) of all ED visits for injury in this age group, followed by struck by/against, which accounted for 6.0% (11,183/186,884) of all ED visits for injury in this age group. The 2010 BRFSS revealed that among adults 75 years and older, 17.6% had fallen one to four times in the past three months. Of the responders that indicated falling in the past three months and were 75 years and older, 32.9% reported that the fall caused an injury which limited their regular activities for a day or caused them to see a doctor.¹¹

There were 36,921 hospital admissions in Indiana due to injury among older adults, of which 36,342 were due to unintentional injuries and 442 were due to intentional injuries from 2007–2010 in Indiana. The overall age-adjusted rate was 142.2 per 100,000, the age-specific rate was 1,124.9 per 100,000, and older adults accounted for 40.7% of all inpatient hospital admissions for injuries during the four-year period. The most common cause of an injury-related inpatient hospital admission was falls, which accounted for 83.9% (30,985/36,921) of all inpatient hospital admissions for injury in this age group, followed by MVT collision, which accounted for 4.1% (1,525/36,921) of all injury-related inpatient hospital admissions in this age group. There were 22,652 hip fracture hospitalizations in older adults, which occurred at an overall crude rate of 690.2 per 100,000. Females represented 73.3% of those affected by hip fractures and the majority of those females were over the age of 85 years.

Conclusion

Injury continues to be a significant public health problem with a large societal and financial impact; however, most injuries are predictable and preventable. Between 2007 and 2010, unintentional injuries were the fifth leading cause of death for Indiana residents, yet were the leading cause of years of potential life lost. Suffocation was the leading cause of unintentional injury death for children under one year of age. Unintentional poisonings were the leading cause of unintentional injury deaths for all ages, followed by unintentional motor vehicle traffic. For Hoosiers aged 75 and older, falls were the leading cause of unintentional injury death. Intentional injury deaths continue to be a problem; suicide and homicide were the 11th and 16th leading causes of death in Indiana for the four year time period.

Fatalities are just the beginning of the burden of injury in Indiana. Non-fatal injuries also have long-term consequences such as disability and chronic pain. Based on hospital discharge data with valid E-codes during 2007–2010, injuries accounted for approximately 3% of all inpatient hospitalizations (90,566/3,035,036) with an overall injury rate of 344.9 per 100,000. More than 1.7 million visits to Indiana’s EDs were made in the four year span, at an age-adjusted rate of 7,033.9 per 100,000. Falls, being struck by/against or crushed, and overexertion were the most common mechanism resulting in injuries requiring attention at the ED. Differences between genders and races were also apparent, as more white males visited the ED due to injuries, but black males had higher rates and were more likely to visit the ED due to injuries.

The economic burden due to injury is also quite substantial. The total charges during 2007 to 2010 for inpatient hospitalizations were \$2.6 billion and the charges for outpatient/ED visits totaled \$2.5 billion. The medical costs alone do not account for lost productivity, property damage, higher insurance premiums, and other financial costs to individuals, their families, their communities, and society as a whole. Data show the need to direct prevention efforts to all age groups, all genders, and all races in order to reduce the burden on Indiana residents and the state’s economy. Continued collection of injury data is vital to monitor trends in injury so that injury prevention efforts can be targeted to those at greatest risk.

References

1. Centers for Disease Control and Prevention. *Web-based Injury Statistics Query and Reporting System (WISQARS)* (Online) (2012). National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. Available from URL: <http://www.cdc.gov/injury/wisqars/index.html>. Retrieved October 18, 2013- March 1, 2014.
2. Indiana State Department of Health (2012). *Vital records: Mortality Data, 2007–2010*.
3. Borse NN, Gilchrist J, Dellinger AM, et al. *CDC Childhood Injury Report: Patterns of Unintentional Injuries among 0-19 Year Olds in the United States, 2000-2006*. Atlanta, (GA): Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2008.
4. Thomas KE, Johnson RL. *State injury indicators report: Instructions for Preparing 2011 Data*. Atlanta, GA: U. S. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2013.
5. Gordis L. *Epidemiology*. 4th edition. Philadelphia, PA: Elsevier Saunders, 2008.
6. United States Census Bureau, Population Division. 2007- 2010 Estimates.
7. Indiana State Department of Health (2011). *Indiana Hospital Discharge Data Files, 2007–2010*.
8. Centers for Disease Control and Prevention. *Protect the ones you love: Child injuries are preventable*. 2012. National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. Available at <http://www.cdc.gov/safechild/Suffocation>. Retrieved March 6, 2014.
9. Centers for Disease Control and Prevention. *Child passenger safety fact sheet*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Available at http://www.cdc.gov/motorvehiclesafety/child_passenger_safety/cps-factsheet.html. Retrieved February 27, 2014.
10. Indiana State Department of Health (2012). *Youth Risk Behavior Surveillance, 2007 and 2009*.
11. Indiana State Department of Health (2012). *Behavior Risk Factor Surveillance System, 2010*.

Appendix A

Glossary of Terms and Acronyms

The following list provides a general means to help with the interpretation of ICD-9 External Cause of injury codes (E-Codes). The definitions are not comprehensive.

Age-adjusted rate: Age-adjusted rates are a weighted average of the age-specific incidence or mortality rate from a targeted population with weights that are proportional to persons in corresponding age groups of a standard population (Year 2000 U.S. population), for purposes of making comparisons of rates over time or between populations.

Cause of injury/ Mechanism of injury: The circumstances or activities or way in which the person sustained the injury.

Crude rate: The number of deaths, hospitalizations, or ED visits over a specified time period divided by the total population (per 100,000).

Cut/Pierce: Injury from an incision, slash, perforation, or puncture by a pointed or sharp instrument, object, or weapon, such as injuries from knives, power hand tools, and household appliances. This does not include bite wounds or being stuck by or against a blunt object.

Drowning/Submersion: Suffocation (asphyxia) from drowning and submersion in water or another liquid. The injury may or may not involve a watercraft. Examples include drowning in rivers, swimming pools, and bathtubs.

Falls: Injury occurs when an individual descends abruptly because of the force of gravity and strikes a surface at the same or lower level. The unintentional falls category involves steps or stairs, ladders and scaffolds, and other falls from one level to another (including falls from a chair or bed. Falls by suicide are described as “jumping from high places” and homicide falls are described as “pushing from high places.”

Fire/Burn: Injury from severe exposure to flames, heat, or chemicals. This category can be further broken into injury from fire and flames, and from hot objects and substances. Examples include smoke inhalation to the upper and lower airways and lungs, structural fires, clothing ignition, burns caused by hot liquids and steam, caustics and corrosives.

Firearms: Force injury resulting from a bullet or projectile shot from a powder-charged gun. While E codes permit differentiation among firearms such as handguns, shotguns, hunting rifles, a large percent of the type of firearm is not specified.

Homicide: Injuries inflicted by another person with the intent to kill or injure. This broad category includes any means and excludes injuries due to legal interventions or operations of war.

Inhalation/ingestion/suffocation: Injury caused by the inhalation or ingestion of food or other objects that block respiration and by other mechanical means that hinder breathing (e.g., plastic bag over nose or mouth, suffocation by bedding, and unintentional or intentional hanging or strangulation).

Legal Intervention: Injuries inflicted by the police or other law-enforcing agents such as military on duty that occurred during the arresting or attempting to arrest law-breakers, suppress disturbances, maintain order, or other such legal actions. This category does not include injuries from civil insurrections.

Machinery: Injuries associated with operating machinery, such as machines in operation in various industrial and occupational activities. This category does not include injury involving machinery not in operation, falls involving moving sidewalks or escalators, or other powered hand tools and home appliances.

Midwest: For the purposes of this report, the Midwest includes the following states: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

Motor Vehicle Traffic: Injury resulting from any vehicle (automobiles, vans, trucks, motorcycles, and other motorized cycles) incident known or assumed to be traveling on public roads, streets, or highways.

Motor Vehicle Traffic (motorcyclist): Injured person identifies as a driver or passenger of a motorcycle involved in a collision, loss of control, crash or event involving another vehicle, an object, or pedestrian.

Motor Vehicle Traffic (occupant): Injury to a person identified as a driver or passenger of a motor vehicle involved in a collision, rollover, crash, or event involving another vehicle, an object, or pedestrian.

Motor Vehicle Traffic (pedal cyclist): Injury resulting from collision, loss of control, crash, or other event involving between a pedal cyclist and a motor vehicle or pedestrian on a public road or highway.

Motor Vehicle Traffic (pedestrian): Injury to a person struck by or against a vehicle such as a car, truck, van, buses, etc. where the person injured was not at the time of the collision riding in or on a motor vehicle, bicycle, motorcycle, or other vehicle being hit by a motor vehicle on a public road or highway.

Natural/Environmental: Injury from exposure to environmental conditions such as excessive hot or cold temperatures, lightning, and natural disasters as well as lack of food or water.

Overexertion: Injury from working the body or parts of the body too hard, resulting in damage to muscle, tendon, ligament, cartilage, joint, or peripheral nerve. This category represents the common causes of strains, sprains, and twisted ankles resulting from overexertion due to lifting, pushing, or pulling.

Pedal Cyclist (other): Injury among pedal cyclists not involving a motor vehicle or pedestrian traffic incidents, such as those being hit by a train, a motor vehicle while not in traffic, by other means of transport, or by a collision with another pedal cycle.

Pedestrian (other): Injury to a person involved in a collision, where the person was not riding in or on a motor vehicle, train, or other motor vehicle when the collision occurred.

Transport (other): Injury to an individual boarding, alighting, or riding in or on various other means of transportation such as railway, off-road and other motor vehicles not in traffic, and includes water, air, space, animal, ATVs, and other vehicles.

Poisoning: Injury or death due to the ingestion, inhalation, absorption through the skin, or injection of a drug, toxin, or other chemicals such as gases and corrosives. Examples of poisonings include harmful effects resulting from exposure to alcohol, disinfectants, cleansers, paints, insecticides, and caustics.

Struck By/Against: Injury resulting from being struck by (hit) or striking against (hitting) objects or persons. This category does not involve machinery or vehicles. Unintentional injuries specify being struck accidentally by a falling object and striking against or being struck accidentally by objects or persons. Homicide/assault include being struck by a blunt or thrown object and injuries sustained in an unarmed fight or brawl.

Years of Potential Life Lost (YPLL): A measure of premature mortality or early death. All deceased person's ages are subtracted from a standard age (e.g. 65 years) and totaled, the years lost, and then divided by the number of deceased persons in that cause category. This statistic excludes people who died at or older than the selected standard age.

Acronyms

BRFSS: Behavioral Risk Factor Surveillance System

CDC: Centers for Disease Control and Prevention

E-Codes: External-Cause of Injury Codes

ED visits: Emergency Department

HDD: Hospital Discharge Data

ICD-10: International Classification of Diseases-Tenth Revision

ICD-9: International Classification of Diseases- Ninth Revision

ISDH: Indiana State Department of Health

MVT: Motor Vehicle Traffic

Other Specified, NEC: Other Specified, Not Elsewhere Classifiable (Cause of Injury)

PTSD: Post-Traumatic Stress Disorder

TBI: Traumatic Brain Injury

WISQARS: Web-based Injury Statistics Query and Reporting System

YPLL: Years of potential life lost

YRBS: Youth Risk Behavior Survey

Appendix B

Guidelines for Vital Statistics and Hospital Discharge Data

Death data, representing a portion of the data presented in this report, is reliant upon the Indiana State Department of Health mortality reports, based on death registration and completion of vital records. The cause-of-death section of the death certificate is organized according to the World Health Organization (WHO) guidelines and coded with ICD-10. Death records data is collected from vital statistics and the vital statistics data do not require specific preparation for analysis. All fatal indicators were calculated by searching the underlying cause-of-death field only. The records included in this report have a date of death from January 1, 2007 to December 31, 2010, with a total of 15,494 injury deaths identified. The proportionate mortality from injury in Indiana for the four-year period was 6.9% (15,494/ 222,995). Injury and poisoning injury fatality ICD-10 codes utilized in this report span from V01-Y36; Y85-Y87; Y89; and *U01-*U03 (Appendix C: Tables 1 and 2). Coding criteria specify that all injury death cases must include an injury code in the underlying cause-of-death field.

The source agency for the collection of hospital discharge data is the Indiana Hospital Association (IHA), which collects hospital discharge data from Indiana hospitals. Beginning with year 2002, selected patient-level data has been sent to the ISDH Epidemiology Resource Center through a working agreement. Injury-related hospital discharge data for January 1, 2007 to December 31, 2010 was used for inpatient hospital admissions and outpatient/ Emergency Department visits to compute injury indicators. The injury and external cause of injury codes were classified according to the ICD-9-CM. After creating the injury hospitalization subset, there were 129,729 inpatient hospitalizations that had an injury-related diagnosis code (ICD-9 CM 800-999) in the primary diagnosis field. This criterion is based on the recommendations from the Safe States to be used to determine if a patient record is defined as an injury hospitalization. However, only 2.98% (90,566/3,035,036) of all inpatient hospitalizations of Indiana residents had a least one External Cause of Injury Code (E-code) not including adverse medication and reaction codes. This E-coded portion of the hospital discharge data was then standardized for analysis using the SAS System, Version 9.2, based on recommendations from the Safe States Alliance. After adverse medications and reactions were taken out for analysis, there were a total of 90,566 records that were analyzed by the ISDH Division of Trauma and Injury Prevention. These records can be characterized as patient-level hospital discharges whose principle reason for admission was the result of injury and whose record had at least one valid supplemental E-code.

Outpatient/Emergency Department visit data was also utilized in this report from the hospital discharge data. The same procedures from Safe States Alliance were followed for inclusion and exclusion of injury related data. The injury and external cause of injury codes were classified according to the ICD-9-CM. After creating the injury ED visits subset, there were 2,450,608 outpatient/ ED visits that had an injury-related diagnosis code (ICD-9 CM 800-999) in the primary diagnosis field. This criterion is based on the recommendations from the Safe States to be used to determine if a patient record is defined as an injury outpatient/ ED visit. However, only 5.5% (1,779,650/ 32,386,127) of all outpatient/ED visits by Indiana residents had a least one E-code not including adverse medication and reaction codes. This E-coded portion of the hospital discharge data was then standardized for analysis using the SAS System, Version 9.2, based on recommendations from the Safe States Alliance. After adverse medications and

reactions were taken out for analysis, there were a total of 1,779,650 records that were analyzed by the ISDH Division of Trauma and Injury Prevention. These records can be characterized as patient-level hospital discharges whose principle reason for admission was the result of injury and whose record had at least one valid supplemental E-code.

Hospital data records for analysis were limited to those with a principal diagnosis of injury and whose record met the ICD-9-CM and E-code exclusion criteria as recommended by Safe States. First, records were excluded if the primary ICD-9-CM diagnosis was due to certain adverse effects of therapeutic drug use, adverse effects of medical or surgical care and the late effects of these adverse complications. The Safe States recommendations are in Appendix C. Records were also chosen so that the final data set would be representative of Indiana residents hospitalized at non-federal, acute care, inpatient facilities, and include readmissions, transfers, and deaths. Secondly, because some medical records contain multiple E-codes, an algorithm was used to identify the first one that was considered valid. E-codes were excluded if they identified place of occurrence (E849), perpetrator of child or adult abuse (E967), accidental poisoning by second hand smoke (E869.4), late or adverse complications during surgical or medical care (E870-E879), or adverse or late effects of drugs during therapeutic use (E930-E949). However, if no other E-code was present (excluding the place of occurrence code), then E967, E869.4, E870-E879, or E930-E949) was selected as the valid code.

Appendix C

Criteria for Selecting Injury Morbidity and Mortality Data

Table 1: Criteria for Selecting Injury Fatality ICD-10 Codes for Mortality Data

Inclusion: ICD-10 Injury Fatality Codes	
V01-Y36	Transport accidents (pedestrian, pedal cyclist, motorcycle rider, occupant of three-wheeled motor vehicle, car occupant, occupant of pick-up truck or van, occupant of heavy transport vehicle, bus occupant); other land transport accidents; water transport accidents; other and unspecified transport accidents; falls; exposure to inanimate mechanical forces; exposure to animate mechanical forces; accidental drowning and submersion; other accidental threats to breathing; exposure to electric current, radiation and extreme ambient air temperature and pressure; exposure to smoke, fire and flames; contact with heat and hot substances; contact with venomous animals and plants; exposures to forces of nature; accidental poisoning by and exposure to noxious substances; overexertion, travel and privation; accidental exposure to other and unspecified factors; intentional self-harm; assault; event of undetermined intent; legal intervention and operations of war.
Y85-Y87	Sequelae of external causes of morbidity and mortality.
Y89.0-Y89.1 Y89.9	Sequelae of other external causes (legal intervention, war operations, unspecified external cause).
*U01-*U03	Terrorism cause added October, 2003.
Exclusion: ICD-10 Injury Fatality Codes	
Y40-Y59; Y88.0	Complications of medical and surgical care ; drugs, medicaments and biological substances causing adverse effect in therapeutic use; sequelae of adverse effects caused by drugs, medicaments and medical procedures (Y40-Y59).
Y60-Y84; Y88(.1-.3)	Misadventures to patients during surgical and medical care; medical devices associated with adverse incidents in diagnostic and therapeutic use; surgical and other medical procedures as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure; sequelae of misadventures to patients during surgical and medical procedures (Y60-Y69); sequelae of adverse incidents associated with medical devices in diagnostic and therapeutic use (Y70-Y82); sequelae of surgical and medical procedures as the cause of abnormal reaction of the patient, or later complication without mention of misadventure at the time of the procedure (Y83-Y84).

Table 2: Recommended Framework of E-code Groupings for Presenting Injury Mortality Data

Mechanism/Cause	Manner/Intent				
	Unintentional	Suicide	Homicide	Undetermined	Legal Intervention or war
Cut/Pierce	W25-W29; W45; W46	X78	X99	Y28	Y35.4
Drowning	W65-W74	X71	X92	Y21	
Fall	W00-W19	X80	Y01	Y30	
Fire/Burn	X00-X19	X76-X77	X97- X98; *U01.3	Y26-Y27	Y36.3
Fire/Flame	X00-X09	X76	X97; *U01.3	Y26	Y36.3
Hot Object/ Substance	X10-X19	X77	X98	Y27	
Firearm	W32-W34	X72-X74	X93-X95; *U01.4	Y22-Y24	Y35.0
Machinery	W24; W30-W31				
Motor Vehicle Traffic	V02-V04(.1,.9); V09.2; V12-V14(.3-.9); V19.4-V19.6; V20-V28(.3-.9); V29.4-V29.9; V30-V79(.4-.9); V80.3-V80.5; V81.1; V82.1; V83-V86(.0-.3); V87.0-V87.8; V89.2				
Occupant	V30-V79(.4-.9); V83-V86(.0-.3)				
Motorcycle	V20-V28(.3-.9); V29.4-V29.9				
Pedal Cyclist	V12-V14(.3-.9); V19.4-V19.6				
Pedestrian	V02-V04(.1,.9); V09.2				
Other	V80.3-V80.5; V81.1; V82.1				
Unspecified	V87.0-V87.8; V89.2				
Pedal Cyclist, Other	V10-V11; V12-V14(.0-.2); V15-V18; V19(.0-.3, .8, .9)				
Pedestrian, Other	V01; V02-V04(.0); V05; V06; V09(.0, .1, .3, .9)				
Other Land Transport	V20-V28(.0-.2); V29(.0-.3); V30-	X82	Y03	Y32	

	V39 (.0-.3); V40-V49 (.0-.3); V50-V59 (.0-.3); V60-V69 (.0-.3); V70-V79 (.0-.3); V80 (.0-.2, .6-.9); V81-V82 (.0, .2-.9); V83-V86 (.4-.9); V87.9, V88 (.0-.9); V89 (.0, .1, .3, .9)				
Other Transport	V90-V99		*U01.1		Y36.1
Natural/Environment	W42-W43; W53-W64; W92-W99; X20-X39; X51-X57				
Overexertion	X50				
Poisoning	X40-X49	X60-X69	X85-X90; *U01 (.6-.7)	Y10-Y19	Y35.2
Struck by/Against	W20-W22; W50-W52	X79	Y00; Y04	Y29	Y35.3
Suffocation	W75-W84	X70	X91	Y20	
Other Specified and Classifiable	W23; W35-W41; W44; W49; W85-W91; Y85	X75; X81; *U03.0	X96; Y02; Y05-Y07; *U01 (.0, .2, .5)	Y25; Y31	Y35 (.1, .5); Y36 (.0, .2, .4-.8)
Other Specified, Not Elsewhere Classifiable (NEC)	X58; Y86	X83; Y87.0	Y08; Y87.1; *U01.8; *U02	Y33; Y87.2	Y35.6; Y89 (.0, .1)
Unspecified	X59	X84; *U03.9	Y09; *U01.9	Y34; Y89.9	Y35.7; Y36.9
All Injury	V01-X59; Y85-Y86	X60-X84; Y87.0; *U03	X85-Y09; Y87.1; *U01- *U02	Y10-Y34; Y87.2; Y89.9	Y35-Y36; Y89 (.0-.1)

- ICD-10 External Cause of Injury Mortality Matrix
- *U01-*U03 codes for Terrorism
- W46 added in “unintentional, Cut or Pierce” 9/9/2011

Table 3: Criteria for Selecting Injury Codes in Principal Diagnosis Fields and E-Codes for Morbidity Data

Inclusions: Principal Diagnosis ICD-9 Codes	
800-909.2; 909.4; 909.9	Fractures; dislocations; sprains and strains; intracranial injury; internal injury of thorax, abdomen, and pelvis; open wound of the head, neck, trunk, upper limb, and lower limb; injury to blood vessels; late effects of injury, poisoning, toxic effects, and other external causes, excluding those of complications of surgical and medical care and drugs, medicinal or biological substances.
910-994.9	Superficial injury; contusion; crushing injury; effects of foreign body entering through orifice; burns; injury to nerves and spinal cord; traumatic complications and unspecified injuries; poisoning and toxic effects of substances; other and unspecified effects of external causes.
995.5-995.59	Child maltreatment syndrome.
995.80-995.85	Adult maltreatment, unspecified; adult physical abuse; adult emotional/psychological abuse; adult sexual abuse; adult neglect (nutritional); other adult abuse and neglect.
Exclusions: Principal Diagnosis ICD-9 Codes	
<800	Not related to injury.
909.3; 909.5	Late effects of complications of surgical and medical care; late effects of adverse effects of drug, medicinal, or biological substance.
995.0-995.4; 995.6-995.7; 995.86; 995.89	Other anaphylactic shock; angioneurotic edema; unspecified adverse effect of drug, medicinal and biological substance; allergy, unspecified; shock due to anesthesia; anaphylactic shock due to adverse food reaction; other adverse food reactions, not elsewhere classified; malignant hyperpyrexia or hypothermia due to anesthesia.
996-999	Complications due to certain specified procedures; complications affecting specified body systems, not elsewhere classified; other complications of procedures, not elsewhere classified; complications of medical care, not elsewhere classified.
Inclusion: ICD-9 E-Codes	
E800-E869	Transport accidents; motor vehicle traffic accidents; motor vehicle non-traffic accidents; other road vehicle accidents; water transport accidents; air and space transport accidents; accidental poisoning by drugs, medicinal substances, and biologics; accidental poisoning by other solid and liquid substances, gases, and vapors.
E880-E929	Accidental falls; accidents caused by fire and flames; accidents due to natural and environmental factors; accidents caused by submersion, suffocation, and foreign bodies; other accidents; late effects of accidental injury.
E950-E999	Suicide and self-inflicted injury; homicide and injury purposely inflicted by other persons; legal intervention; terrorism; injury undetermined whether accidentally or purposely inflicted; injury resulting from operations of war.
Exclusion: ICD-9 E-Codes*	
E000-E030; E849; E967; E869.4	External cause status; activity of person seeking healthcare for an injury or health condition; place of occurrence; perpetrator of child and adult abuse; accidental poisoning by second-hand tobacco smoke.
E870-E879	Misadventures to patients during surgical and medical care; surgical and medical procedures as the cause of abnormal reaction of patient or later complication, without mention of misadventure at the time of procedure.
E930-E949	Drugs, medicinal and biological substances causing adverse effects in therapeutic use.

- E967, E869.4, E870-E879, and E930-E949 were selected if no other E-code was present excluding the place of occurrence code (E849)

Table 4: Recommended Framework of E-code Groupings for Presenting Injury Morbidity Data

Mechanism/Cause	Manner/Intent				
	Unintentional	Self-Inflicted	Assault	Undetermined	Other
Cut/Pierce	E920.0 –.9	E956	E966	E986	E974
Drowning/ Submersion	E830.0 –.9; E832.0-.9; E910.0 –.9	E954	E964	E984	
Fall	E880.0 – E886.9; E888	E957.0 –.9	E968.1	E987.0 –.9	
Fire/Burn	E890.0 – E899; E924.0 - .9	E958.1,.2,.7	E961; E968.0,.3	E988.1,.2,.7	
Fire/Flame	E890.0 – E899	E958.1	E968.0	E988.1	
Hot Object/ Substance	E924.0 –.9	E958.2,.7	E961; E968.3	E988.2,.7	
Firearm	E922.0 –.3,.8, .9	E955.0 - .4	E965.0 - .4	E985.0 - .4	E970
Machinery	E909.0 - .9				
Motor Vehicle Traffic	E810 – E819 (.0 - .9)	E958.5	E968.35	E988.5	
Occupant	E810 – E819 (.0,.1)				
Motorcycle	E810 – E819 (.2,.3)				
Pedal Cyclist	E810 – E819 (.6)				
Pedestrian	E810 – E819 (.7)				
Unspecified	E810 – E819 (.9)				
Pedal Cyclist, Other	E800 – E807 (.3); E820 – E825 (.6); E826.1, .9; E827 – E829 (.1)				
Pedestrian, Other	E800 – E807 (.2); E820 – E825 (.7); E826 – E829 (.0)				
Transport Other	E800 – E807 (.0,.1,.8,.9); E820 – E825 (.0-.5,.8,.9);	E958.6		E988.6	

	E826.2 –.8; E827 – E829 (.2 - .9); E831.0 - .9; E833 – E845.9				
Natural/Environment	E900.0 – E909; E928.0 - .2	E958.3		E988.3	
Bites/Stings	E905.0 - .6,.9; E906.0 - .4,.5,.9				
Overexertion	E927				
Poisoning	E850.0 – E869.9	E950.0 – E952.9	E962.0 - .9	E980.0 – E982.9	E972
Struck by/Against	E916 – E917.9		E960.0; E968.2		E973; E975
Suffocation	E911 – E913.9	E953.0 - .9	E963	E983.0 - .9	
Other Specified and Classifiable	E846 – E848; E914 – E915; E918, E921.0 - .9; E922.4, E923.0 - .9; E925.0 – E926.9; E928.3; E929.0 - .5	E955.5,.6,.9; E958.0,.4	E960.1; E965.5 - .9; E967.0 - .9; E968.4,.6,.7	E985.5, .6; E988.0, .4	E971; E978; E990 – E994; E996; E997.0 - .2
Other Specified, Not Elsewhere Classifiable (NEC)	E928.8; E929.8	E958.8; E959	E968.8; E969	E988.8; E989	E977; E995; E997.8; E998, E999
Unspecified	E887; E928.9; E929.9	E958.9	E968.9	E988.9	E976; E997.9
All Injury	E800 – E869; E880 – E929	E950 – 959	E960 – E969	E980 – E989	E970 – E978; E990 – E999
Adverse Effects					E870 – E879; E930.0 – E949.9

- ICD-9 External Cause of Injury (E-Codes)