
INJURIES IN INDIANA

2003-2006

A Report on Injury-Related Deaths and Hospitalizations



Indiana State Department of Health

Judith A. Monroe, MD
State Health Commissioner

Injury Prevention Program
July 2009

**Injuries in Indiana
2003-2006
A Report on Injury-Related Deaths and Hospitalizations**

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June 30, 2009

Dear Colleague,

We are pleased to provide you with the Injuries in Indiana Report for 2003-2006.

Physical and psychological consequences of injury often have a profound effect on both the quality and length of life. According to the Centers for Disease Control and Prevention (CDC), in 2006, injury was the fifth leading cause of death in the United States and the leading cause of death for children and young adults between 1 and 44 years of age. In 2004, the CDC reported more than 167,000 injury-related deaths, with injuries responsible for more premature loss of years of life before age 65 than any other cause of death.

Non-fatal injuries also have long-term physical consequences such as chronic pain and disability. The psychological impacts of injury, including posttraumatic stress disorder and depression, can be severe and lifelong.

In addition, injury imposes an enormous economic burden on our society. The National Safety Council estimates the cost of one motor vehicle related death, including insurance and lost wages, exceeds a million dollars. This cost does not account for the value of the lost life.

As injury prevention advocates in your communities, many of you provide valuable injury prevention services on a regular basis.

- Child safety seat distribution yields a total benefit to society* of \$1,900 for an average cost of only \$46 per seat (Children's Safety Network, 2005).
- Physician injury prevention counseling for children ages 0-4 yields a total benefit to society of \$86 for a cost of \$10 per child (Children's Safety Network, 2005).
- Fall prevention interventions for high-risk elderly produce a total benefit to society of \$10,800 for a cost of \$1,250 per person (Children's Safety Network, 2005).
- A motorcycle helmet yields a total benefit to society of \$4,300 for an average cost of \$240 per helmet (Children's Safety Network, 2005).

This report is intended to help you identify the causes of injury in your population so you can develop and implement appropriate interventions to reduce the burden of this public health epidemic on patients, families, and communities.

Thank you for your ongoing efforts to prevent injuries in Indiana.

Sincerely,

Joan Duwve, M.D., M.P.H.

* Total Benefit to Society- Amount interventions saved by preventing injuries- including medical costs, other resource costs (police, fire services, property damage, etc.), work loss, and quality of life costs. These estimates are in 2004 dollars.

Table of Contents

Executive Summary.....	5-6
Introduction	7-8
National Data and the Public Health Impact of Fatal and Nonfatal Injuries.....	9-10
Value and Use of this Report.....	10
Data Sources and Limitations.....	11-12
Injury in Indiana Highlights.....	13
Index of Figures and Tables (Injuries in Indiana).....	14-15
Overview of Injuries in Indiana	
Mortality Data.....	16-28
Morbidity: Inpatient Hospital Discharge Data.....	29-42
Injuries Throughout the Ages.....	43-46
Conclusion.....	47
References.....	48
Selected Unintentional and Intentional Injury Topics.....	49
Motor Vehicle Crashes in Indiana.....	50-81
Falls in Indiana.....	82-109
Poisoning in Indiana.....	110-138
Fire/Burn-Related Injuries in Indiana.....	139-165
Suicide in Indiana.....	166-196
Homicide/Assault in Indiana.....	197-223
Appendix A- Glossary of Terms.....	224-225
Appendix B- Guidelines for Hospital Discharge Data.....	226-227
Appendix C- STIPDA Recommendations for Presenting Hospital Discharge Data....	228-230

Executive Summary

The Injury Prevention Program at the Indiana State Department of Health (ISDH) is pleased to provide the 2nd edition of this report on injury-related deaths and hospitalizations in Indiana, covering the years 2003-2006. This report is intended to help community leaders and medical providers identify the major causes of injury in Indiana and develop and implement interventions that reduce the burden of this public health epidemic on individuals, families, and communities.

Data Sources

This report draws primarily upon data from the Indiana State Department of Health mortality reports and Indiana hospital discharge data. 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 Web-based Injury Statistics Query and Reporting System (WISQARS) were also consulted during preparation of this report.

The Public Health Impact of Fatal and Nonfatal Injuries

According to the Centers for Disease Control and Prevention (CDC), injury was the fifth leading cause of death in the United States and the leading cause of death for children and young adults between 1 and 44 years of age in 2006. In 2004, the CDC reported more than 167,000 injury-related deaths, with injuries responsible for more premature loss of years of life before age 65 than any other cause of death.

Non-fatal injuries are also a significant public health problem, resulting in long-term physical consequences such as chronic pain and disability. The psychological impacts of injury, including posttraumatic stress disorder and depression, can also be severe and lifelong. Physical and psychological consequences of injury often have a profound effect on both the quality and length of life.

Injury and Financial Burden

The financial burden of injuries is staggering. The CDC estimates that injury death and disability costs for the year 2000 were \$80 billion for lifetime medical care treatment and another \$326 billion for lost productivity. These costs accounted for 10% of total medical expenditures, placing injury with obesity and smoking as top public health concerns.

Intentional vs. Unintentional Injuries

Looking at injury data by “intent to cause harm” is an approach that can provide insight into the cause and mechanisms for prevention of serious and fatal injuries. Intentional injuries include suicide or self-inflicted events with intent to harm, and homicide or assault. Unintentional injuries such as falls or motor vehicle accidents are often considered “accidental.” The epidemiologic study of injury has shown that events leading up to injuries follow distinct, predictable patterns. This means that injuries are often preventable.

Injury-related Mortality in Indiana

Injury is the 5th leading cause of death overall in Indiana. During 2003-2006, 6.6% of all deaths in Indiana were caused by injury. Indiana's death rate for all injuries was 58.1 per 100,000, claiming 14,646 lives. The majority of these injuries were unintentional. Males were 2.2 times as likely as females to be fatally injured and blacks were 1.3 times as likely as whites to be fatally injured.

Injuries Affect All Hoosiers

Injuries are the leading cause of death in Indiana among children, adolescents, and adults ages 1 - 34, but injury fatality rates and hospitalization rates are highest among persons over the age of 75.

In Indiana, the leading cause of unintentional death under age 1 was suffocation. Motor vehicle injuries were the leading cause of unintentional fatality between the ages of 1 and 74. In the over 75 population, falls were the leading cause of unintentional death.

Injury fatalities caused by intentional acts, such as homicide or suicide were among the top four causes of death in Indiana in all age groups from 5 to 54.

Injury is a Public Health Problem

The data in this report make clear that injury is a public health problem with a large societal and financial impact. Fortunately, as injury data have become more robust, the evidence they present suggests that most injuries are predictable and preventable. Analysis of effective injury prevention programs is also positive, showing that they are not only cost-effective, but provide cost-savings of thousands of dollars in total benefits to society. The data is organized into sections on specific causes of injury, with easy to reference one-page fact sheets. We hope this 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

In Indiana and the United States, unintentional injury is the leading cause of death among persons 1 to 34 years of age and the 5th leading cause of death overall following heart disease, cancer, stroke (cerebrovascular disease), and chronic lower respiratory disease.^(1,2) 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.³ Injuries are often called “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 scars. Besides the tremendous burden of grief on families, injuries cause a significant burden on state resources in terms of cost, lost productivity, and long-term disability.

Injuries may either be unintentional or intentional. For example, injuries to children who fall from a bicycle are unintentional, while assaults to a child or self-inflicted injuries are intentional. Unintentional injury accounts for the vast majority of injury deaths and can be defined as injuries or poisoning involving unpremeditated measures.⁽⁴⁾ Intentional injuries are violence-related and include homicide and suicide. 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.

Whether unintentional or intentional, injury has emerged as a public health issue and ranks among the ten leading causes of death in each age grouping (See table 1). According to the Indiana State Department of Health Mortality Records, during 2003-2006, injury accounted for 6.6% (14,646/221,049) of all deaths among Indiana residents. The majority of these injuries are unintentional (9,443), ranking as the 5th leading cause of death.

Table 1 Ten Leading Causes of Death, Indiana 2003-2006

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 436	Unintentional Injury 140	Unintentional Injury 71	Unintentional Injury 102	Unintentional Injury 1,052	Unintentional Injury 799	Malignant Neoplasms 1,045	Malignant Neoplasms 3,368	Malignant Neoplasms 6,793	Heart Disease 35,835	Heart Disease 44,645
2	Short Gestation 393	Homicide 41	Malignant Neoplasms 33	Malignant Neoplasms 26	Homicide 296	Suicide 404	Heart Disease 998	Heart Disease 2,869	Heart Disease 4,507	Malignant Neoplasms 26,655	Malignant Neoplasms 38,281
3	SIDS 134	Congenital Anomalies 40	Congenital Anomalies 14	Suicide 19	Suicide 274	Heart Disease 274	Unintentional Injury 918	Unintentional Injury 955	Chronic Low. Respiratory Disease 1,032	Cerebro-vascular 9,064	Cerebro-vascular 10,377
4	Unintentional Injury 128	Malignant Neoplasms 24	Homicide 12	Homicide 16	Malignant Neoplasms 106	Homicide 259	Suicide 479	Suicide 449	Diabetes Mellitus 715	Chronic Low. Respiratory Disease 8,393	Chronic Low. Respiratory Disease 9,880
5	Maternal Pregnancy Comp. 124	Heart Disease 10	Heart Disease 10	Heart Disease 13	Heart Disease 102	Malignant Neoplasms 224	Cerebro-vascular 176	Liver Disease 413	Cerebro-vascular 662	Alzheimer's Disease 4,683	Unintentional Injury 7,071
6	Placenta Cord Membranes 80	Septicemia 9	Chronic Low. Respiratory Disease 7	Chronic Low. Respiratory Disease 6	Congenital Anomalies 26	Cerebro-vascular 39	Homicide 160	Cerebro-vascular 400	Unintentional Injury 581	Diabetes Mellitus 3,919	Diabetes Mellitus 5,123
7	Bacterial Sepsis 63	Influenza & Pneumonia 8	Septicemia 4	Congenital Anomalies 3	Chronic Low. Respiratory Disease 22	Diabetes Mellitus 37	Liver Disease 138	Diabetes Mellitus 339	Liver Disease 348	Influenza & Pneumonia 3,359	Alzheimer's Disease 4,718
8	Respiratory Distress 51	Benign Neoplasms 6	Cerebro-vascular 3	Influenza & Pneumonia 3	Influenza & Pneumonia 17	HIV 34	HIV 135	Chronic Low. Respiratory Disease 318	Septicemia 329	Nephritis 3,248	Influenza & Pneumonia 3,818
9	Intrauterine Hypoxia 44	Cerebro-vascular 6	Three Tied 2	Septicemia 3	Septicemia 17	Congenital Anomalies 28	Diabetes Mellitus 102	Septicemia 162	Nephritis 288	Unintentional Injury 2,324	Nephritis 3,763
10	Necrotizing Enterocolitis 41	Two Tied 5	Three Tied 2	Three Tied 2	Cerebro-vascular 13	Liver Disease 25	Chronic Low. Respiratory Disease 73	Nephritis 141	Suicide 270	Septicemia 1,882	Septicemia 2,497

Adapted from the Centers for Disease Control and Prevention, WISQARS Database
Numbers within each box indicate number of deaths

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

Nationally, injuries (unintentional and intentional) are the 5th leading cause of death for all ages, killing more than 150,000 Americans annually.⁽⁵⁾ Each year, an estimated 50 million persons in the United States experience injuries that require medical attention.⁽⁵⁾ In 2004, injuries in the United States resulted in an estimated 167,000 deaths, 1.9 million injury-related discharges from short stay hospitals, and 31 million initial emergency department (ED) visits. These injuries, which represent 7% of deaths from all causes, 6% of hospitalizations, and 32% of ED visits, constitute a substantial public health burden.⁽⁶⁾

Unintentional injuries continue to be the fifth leading cause of death in the United States and accounted for two-thirds of all injury deaths from 1999-2004. At every age, the majority of injury deaths are unintentional, but the risk of death from unintentional injury rises dramatically for those over 70 years of age. There are many mechanisms associated with the occurrence of injuries. Among them, motor vehicle crashes (26%), firearms (18%), poisonings (18%), falls (11%), and suffocation (8%) are the five leading causes; combined they account for 82% of all injury deaths (2003-2004 national data).⁽⁶⁾

Based on national data, males are at increased risk for motor vehicle crashes, falls, drowning, and homicides. Men over the age of 65 years have the highest suicide rate. They may be less likely to ask for help, putting them at an increased risk for depression, a risk factor in suicide. Women are often physically or sexually assaulted by an intimate partner and are also frequently hospitalized for suicide attempts. Among older women (aged 65 years and older), there is an increased risk of falling and sustaining a hip fracture, with osteoporosis being a major contributor to this type of injury.

The circumstances surrounding an injury do not always result in death but can be severe enough to warrant admission to a healthcare facility. In fact, nonfatal injuries occur much more frequently than fatalities. In 2004, there were 1.9 million hospitalizations, 31 million initial visits to emergency departments, and 35 million initial visits to physicians' offices and outpatient clinics in the United States attributable to injury compared to 167,000 injury deaths.⁽⁶⁾ The injury pyramid, Figure 2 below, provides a visualization of the reality that injury-related deaths represent a small percentage of the injury spectrum. In 2005, one in nine people in the United States sought medical attention for an injury.⁽⁶⁾

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 Centers for Disease Control and Prevention (CDC) estimate injury death and disability that occurred in 2000 cost \$80 billion in lifetime medical care treatment costs for physical injuries and another \$326 billion in lifetime lost productivity, totaling more than \$400 billion for the combined economic burden of medical treatment and lost productivity.⁽⁶⁾ Results from a CDC analysis in 2000 showed injury-attributable medical expenditures accounted for 10% of total medical expenditures, a figure similar to percentages of other leading public health concerns, such as obesity and smoking.⁽³⁾

Table 2. The Injury Pyramid



Adapted from State and Territorial Injury Prevention Directors Association (STIPDA): Safe States, 2003 Edition

Value and Use of this Report

This report provides data on fatal and nonfatal injuries in Indiana. The data presented is representative of injury-related deaths from 2003-2006 and nonfatal injury-related hospital discharges and outpatient/emergency department visits for 2003-2006. The objective of this report was to take the initial step of the public health approach: to define the problem, both in the U.S. and in Indiana. Hopefully, the current report will help community leaders begin to identify the causes of injuries, develop and implement interventions, and ultimately evaluate the interventions. The target audiences for this report are individuals and organizations in Indiana 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. Included in the sections are one-page fact 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

Unintentional and intentional injury death data for this report was extracted from the Indiana State Department of Health (ISDH) mortality reports.⁽²⁾ The numbers differ slightly from the nationally based reporting system, the National Center for Health Statistics (NCHS). The number of Indiana deaths reported by the ISDH is lower than the numbers from NCHS because the ISDH does not always receive death certificates for Indiana residents who died out of state. However, these deaths are likely to be reported to NCHS from those (out-of-state) health departments, and NCHS would usually be able to assign state of residence, making the nationally based data more complete than the health department data. In addition, completeness of mortality data is dependent upon how thoroughly the death certificate is completed, which affects how a death is categorized. Another limitation is that race/ethnicity data are not accurate. Race/ethnicity is provided at the discretion of the person completing the death certificate and may not reflect how individuals would define their 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.⁽²⁾

Hospital Discharge Data

Hospital discharge data give an indication of the number of unintentional and intentional injuries in Indiana, although the data have limitations. The International Classification of Disease Revision 9 Clinical Modification (ICD-9CM) coding scheme includes external causes of injury codes or E-codes that indicate the source or cause of the injury and can also provide injury-related cost data. However, E-codes are not mandated by law in Indiana, and it is estimated that only 62% of the discharge records contain them. Therefore, the total number of injuries in this report is a gross underestimation of the proportion of number of injuries that actually occurred.⁽⁷⁾

E-codes specific to injury and poisoning include ICD-9-CM codes 800-999. The hospital data base does not contain a patient-specific unique identifier, meaning that it does not distinguish whether one person had five visits or whether five people visited once. Therefore, statistics only reflect visits and not specific numbers of people. Also, race/ethnicity data is not very accurate because race/ethnicity is at the discretion of the person reporting the data and may not reflect how the individuals would define themselves. In some cases, the information is not provided at all.⁽⁷⁾

A final limitation of the hospital discharge data is that the Indiana law only requires hospital discharge data submission by acute care hospitals. Therefore, a few psychiatric and behavioral health hospitals do not submit data. All acute care hospitals are submitting inpatient data. However, one of the three Level 1 Trauma center hospitals has not submitted outpatient/emergency department data yet. As a result, the total number of injuries for the outpatient/emergency department data is an underestimation of the actual number of injuries and should be used with caution.⁽⁷⁾

Other Sources of Data

Other resources such as the Youth Risk Behavior Survey (YRBS), the Behavioral Risk Factor Surveillance System (BFRSS), the Indiana Criminal Justice Institute, the ISDH Epidemiology Resource Center, Web-based Injury Statistics Query and Reporting System (WISQARS) and various published articles were used to complement the data collected.

Injury in Indiana Highlights

Mortality, 2003-2006⁽²⁾

- Indiana's death rate for all injuries was 58.1 per 100,000 from 2003 to 2006 claiming 14,646 lives.
- Between 2003 and 2006, 9,443 injury deaths were unintentional, 4,396 injury deaths were intentional, and 807 deaths were of undetermined intent.
- Males accounted for 68.6% of all injury deaths and were 2.2 times as likely as females to be fatally injured (81.5 per 100,000 versus 36.2 per 100,000 respectively).
- Blacks are 1.3 times as likely as whites to be fatally injured
- Injury rates of death were highest among the 75-year and older age groups (119.8 per 100,000 among persons 75 to 84 years and 315.4 per 100,000 among persons 85 years and older).
- The leading cause of unintentional injury death for both genders during 2003-2006 was motor vehicle traffic crashes.
- Intentional injury deaths are also a problem. Suicide was the 11th leading cause of death and homicide was the 16th leading cause of death for the four-year time period.

Inpatient Admissions, 2003-2006⁽³⁾

- Based on data with valid E-codes, injuries accounted for approximately 2.7% (86,799/3,167,075) of all hospital inpatient admissions with an overall injury rate of 343.4 per 100,000.
- Of all injuries, 72,204 were unintentional, 12,357 were intentional, and 2,238 were of undetermined/other intent.
- The majority of unintentional injuries were due to falls (41,097/72,204, 56.9%), followed by motor vehicle crashes (12,938/72,204, 17.9%) and poisoning (4,358/72,204, 6.0%).
- Of the intentional injuries, 3,205 were from homicide and 9,152 were from suicide.
- Overall, males were slightly more likely than females to be admitted to the hospital due to an injury (345.1 per 100,000 compared to 325.9 per 100,000).
- The rate of injury hospitalization is lower for whites compared to blacks (306.9 per 100,000 versus 348.5 per 100,000).
- Black males were almost 1.5 times more likely to be hospitalized due to an injury (443.0 per 100,000) compared to white males (298.1 per 100,000).
- Injury rates of hospitalizations were highest among the 75 year and older age groups (1,297.2 per 100,000 among persons 75-84 years and 2,895.9 per 100,000 among persons 85 years and older).
- For 2003-2006, the total charges for all ages injured and admitted to the hospital were \$1.6 billion. The median total charges for all ages due to injury were \$13,601 respectively, with a range of \$0-\$1,198,642.
- Of those admitted to the hospital, 21.2% (18,421/86,799) had commercial insurance. (See Figure 25).
- The average length of stay was 4.2 days (SD +/-5.9 days), and the median length of stay was 3.0 days (range 1-1,149 days).

Index of Figures and Tables (Injuries in Indiana)

- Figure 1: Injury Death Rates, United States, Midwest and Indiana Comparison, 2003-2006
Figure 2: Injuries by Intent, Indiana, 2003-2006
Figure 3: Top Causes of Unintentional Injury, Indiana, 2003-2006
Figure 4: Intentional Injury by Type, Indiana, 2003-2006
Figure 5: Injury Death Rates, Males versus Females, Indiana, 2003-2006
Figure 6a: Injury Death Rates, United States, Midwest and Indiana Comparison, By Intent, Males, 2003-2006,
Figure 6b: Injury Death Rates, United States, Midwest and Indiana Comparison, By Intent, Females 2003-2006
Figure 7: Injury Death Rates in Indiana by Gender and Age, Indiana, 2003-2006
Figure 8: Injury Death Rates in Indiana by Race, Age-Adjusted, Indiana, 2003-2006
Figure 9: Injury Death Rates in Indiana by Race and Gender, Age-Adjusted, 2003-2006
Figure 10: Inpatient Injury Admission Rates, Age-adjusted, Indiana, 2003-2006
Figure 11: Top Causes of Unintentional Injury, Indiana, 2003-2006
Figure 12: Intentional Injury by Type, Indiana, 2003-2006
Figure 13: Inpatient Injury Admission Rates by Gender, Age-Adjusted, Indiana, 2003-2006
Figure 14: Inpatient Injury Admission Rates, Males versus Females, Indiana, 2003-2006
Figure 15: Inpatient Injury Admissions by Race, Indiana, 2003-2006
Figure 16: Inpatient Injury Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006
Figure 17: Overall Inpatient Injury Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 18: Inpatient Injury Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 19: Inpatient Injury Admissions by Age, Indiana, 2003-2006
Figure 20: Inpatient Injury Admission Rates, Age-Specific, Indiana, 2003-2006
Figure 21: Inpatient Injury Admission Rates by Gender and Age, Age-Specific, Indiana, 2003-2006
Figure 22: Inpatient Injury Admissions by Discharge Status, Indiana, 2003-2006
Figure 23: Inpatient Injury Admissions by Type, Indiana, 2003-2006
Figure 24: Inpatient Injury Admissions by Source, Age-Adjusted, Indiana, 2003-2006
Figure 25: Inpatient Injury Admissions by Payor, Indiana, 2003-2006
- Table 1: Ten Leading Causes of Death, Indiana, 2003-2005
Table 2: Injury Pyramid
Table 3: Leading Causes and Percents of Injury Deaths by Intent, Indiana, 2003-2006
Table 4: Summary of Injury Deaths by Mechanism and Cause, Indiana, 2003-2006
Table 5: Unintentional Injury Deaths by Mechanism, Indiana, 2003-2006
Table 6: Rates and Percents of Fatal Injuries by Age and Sex, Indiana, 2003-2006
Table 7: Five Leading Causes of Deaths by Age, Indiana, 2003-2006
Table 8: Rates and Percents of Fatal Injuries by Age and Intent, Indiana, 2003-2006
Table 9: Leading Causes and Percents of Inpatient Injury Admissions by Intent, Indiana, 2003-2006

Table 10: Summary of Inpatient Injury Admissions by Mechanism and Cause, Indiana, 2003-2006

Table 11: Inpatient Injury Admissions and Rates, Age-Specific, Indiana, 2003-2006

Table 12: Rates and Percents of Inpatient Injury Admissions by Age and Sex, Indiana, 2003-2006

Table 13: Five Leading Causes of Inpatient Injury Admissions by Age, Indiana, 2003-2006

Mortality

Indiana's death rate for all injuries was 58.1 per 100,000 from 2003 to 2006. During 2003-2006, Indiana's death rate for all injuries was 58.1 which was higher than the United States' rate of 57.2 per 100,000 and the Midwest rate (54.6 per 100,000). (See Figure 1). Indiana's suicide and legal intervention rates were also higher than the United States rates. Indiana's unintentional injury, homicide, legal intervention, and suicide death rates were also higher than the Midwest rates. Indiana's injury death rate in comparison to other states ranks 28th for all intents, 33rd for unintentional injuries, and 29th for intentional injuries.

Between 2003 and 2006 in Indiana, 14,646 people died because of injuries. Of these injury deaths, 9,443 were unintentional; 4,396 were intentional; and 807 were undetermined. (See Figure 2.) Table 3 gives a summary of the leading causes of injury deaths by intent for Indiana during 2003-2006, and table 4 provides a summary of all injury deaths by mechanism and cause. The majority of unintentional injury deaths were due to motor vehicle crashes followed by poisoning (Figure 3). Thirty-four percent of the motor vehicle traffic incidents were occupant fatalities, 9.9% involved motorcyclists, 10.2 % were pedestrian fatalities, and 1.4 % involved pedal cyclists. Of the intentional deaths, 1,419 were from homicide and 2,977 were from suicide (Figure 4). Overall, suicide was the 11th leading cause of death and homicide was the 16th leading cause of death for the four-year time period. The leading cause of intentional death was death by firearm (2,633/4,391 or 63.2%) followed by suffocation (727/4,391 or 16.6%), poisoning (544/4,391 or 12.4%) and cutting/piercing (127/4,391 or 2.9%).

The census population of Indiana is almost equally distributed by gender, with females accounting for 50.7% (based on Indiana 2006 census population at www.census.gov).⁹ During 2003-2006, males accounted for 68.6% of all injury deaths and were 2.2 times as likely as females to be fatally injured (81.5 per 100,000 versus 36.2 per 100,000 respectively). Figure 5 shows injury rates for males versus females for 2003-2006. The data on Figure 6a indicate that Indiana's suicide death rate for males was higher than both the United States and the Midwest rates. Figure 6b shows injury rates for females and the comparison between the United States, Midwest, and Indiana. Indiana females had the highest rate for all injuries and homicide as compared to both the US and Midwest female rates.

The leading cause of unintentional injury death for both genders during 2003-2006 was motor vehicle traffic crashes. The motor vehicle traffic crashes accounted for 43.9% of the deaths in males and 34.0% of the deaths in females. Other leading causes of unintentional injury deaths in males included poisoning (15.0%) and suffocation (5.7%). As for females, who accounted for 31.4% of all injury deaths, other leading causes of unintentional injury deaths include poisoning (14.9%), suffocation (8.5%), and fire/burns (4.1%). Table 5 shows every unintentional injury death by mechanism and rate of death for all residents of Indiana.

Intentional injuries are also a problem in Indiana. Suicide was the 7th leading cause of death for males during 2003-2006, and homicide/assault was the 13th leading cause of death. As for females, suicide was the 18th leading cause of death for females during 2003-2006, and homicide was the 20th leading cause of death. There were 2,633 total intentional firearm deaths with an age-adjusted rate of 10.5 per 100,000 persons. Of all intentional firearm deaths, 62.4% were sui-

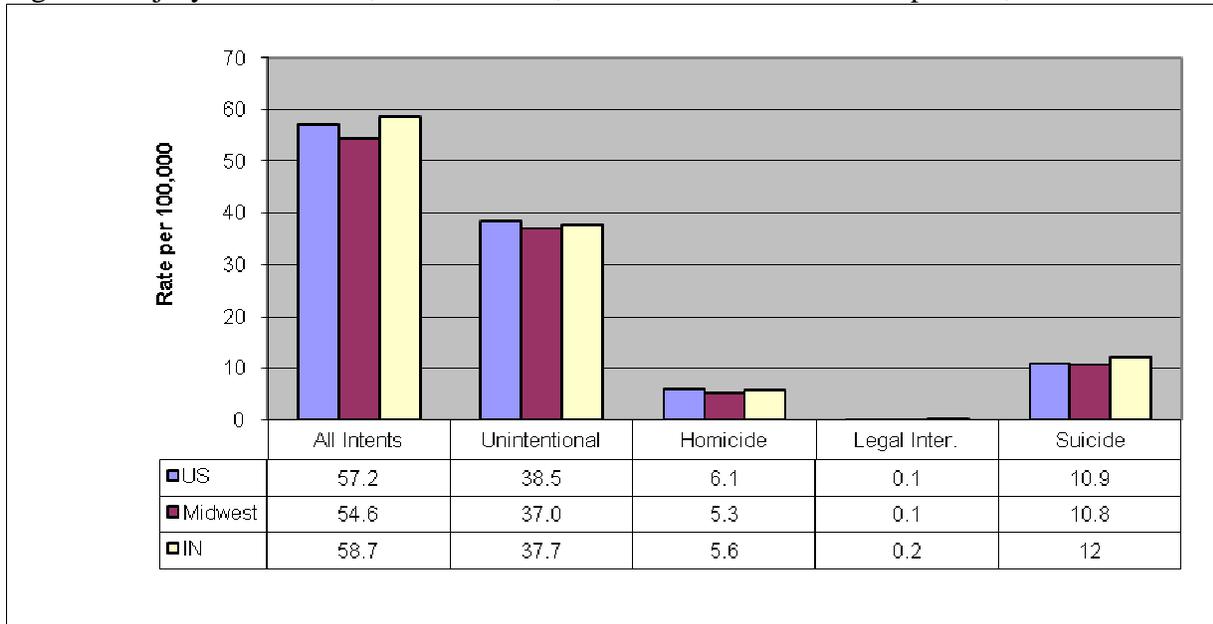
cide deaths, and 37.6% were homicide/assault deaths. The second leading cause of intentional injury death for 2003-2006 was suffocation (727 deaths, 3.0 per 100,000). Of all suffocation deaths, 90.7% were as a result of self-inflicted/suicide, and 9.4% were due to assault/homicide.

The distribution of the leading causes of injury-related deaths varied by age groups. Injury rates of death were highest among the 75-year and older age groups (119.8 per 100,000 among persons 75 to 84 years and 315.4 per 100,000 among persons 85 years and older). See Figure 7. Table 6 provides the number and rate of death for each age category. Following these age groups, rates were high among persons aged 20 to 24 years (75.7 per 100,000). The lowest rates of injury death were among persons aged 5 to 9 (6.9 per 100,000). Males, aged 85+, had the highest rate of injury death (448.7 per 100,000) and females, aged 85+, had the second highest rate of injury (260.0 per 100,000). Figure 7 also demonstrates that males have higher injury death rates than females for all age groups. Table 7 provides the top five causes of injury deaths for all age groups, and Table 8 shows rates and percent of fatal injuries by age and intent.

Indiana is predominately populated by whites, which make up 86.0% of the total population. Blacks comprise 8.7%. Other races, such as American Indians and Alaska Natives, Asians, and Native Hawaiians and other Pacific Islanders, are also included in Indiana's population. However, these groups make up small percentages, and injury rates among them are not stable due to small numbers.⁽¹⁰⁾

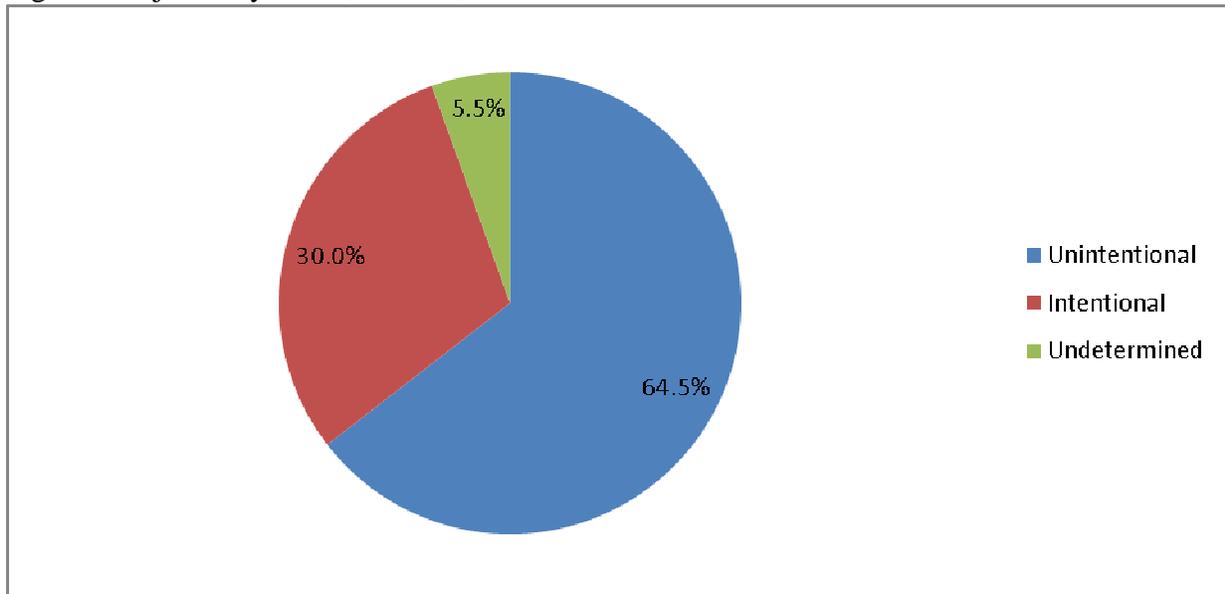
Since whites make up the majority of Indiana's population, unsurprisingly, they accounted for the majority (88.2%) of all injury deaths in Indiana during 2003-2006. Blacks accounted for 10.9% and as stated above only account for 8.7% of the population. However, the rate of injury death is higher among blacks. Figure 8 shows that blacks are 1.3 times as likely as whites to be fatally injured. Black males are 1.4 times as likely to die due to injury compared to white males (115.2 per 100,000 versus 79.8 per 100,000 respectively). Injury rates among females in these two race groups are fairly similar, 37.5 per 100,000 among whites and 33.2 per 100,000 among blacks (Figure 9).

Figure 1: Injury Death Rates, United States, Midwest and Indiana Comparison, 2003-2006



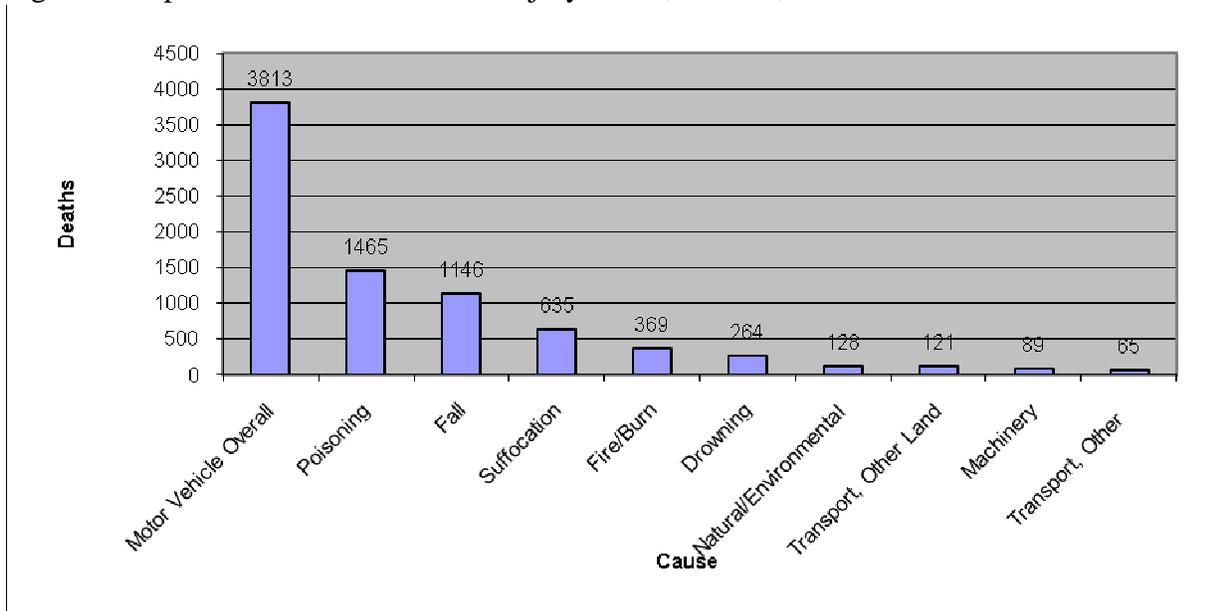
Source: CDC, WISQARS

Figure 2: Injuries by Intent, Indiana, 2003-2006



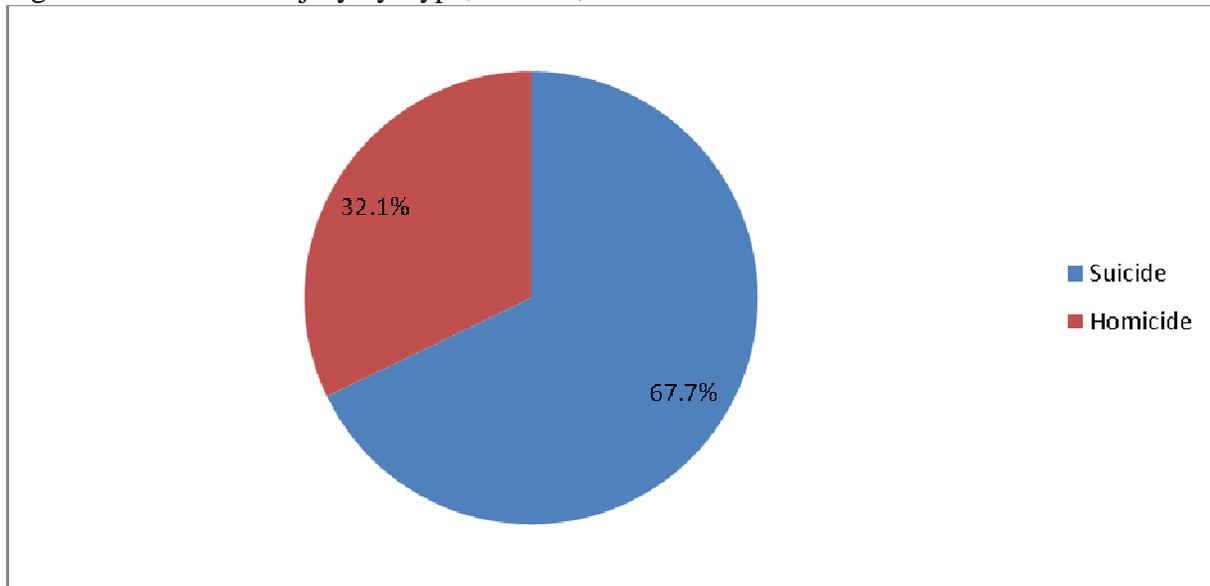
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 3: Top Causes of Unintentional Injury Death, Indiana, 2003-2006



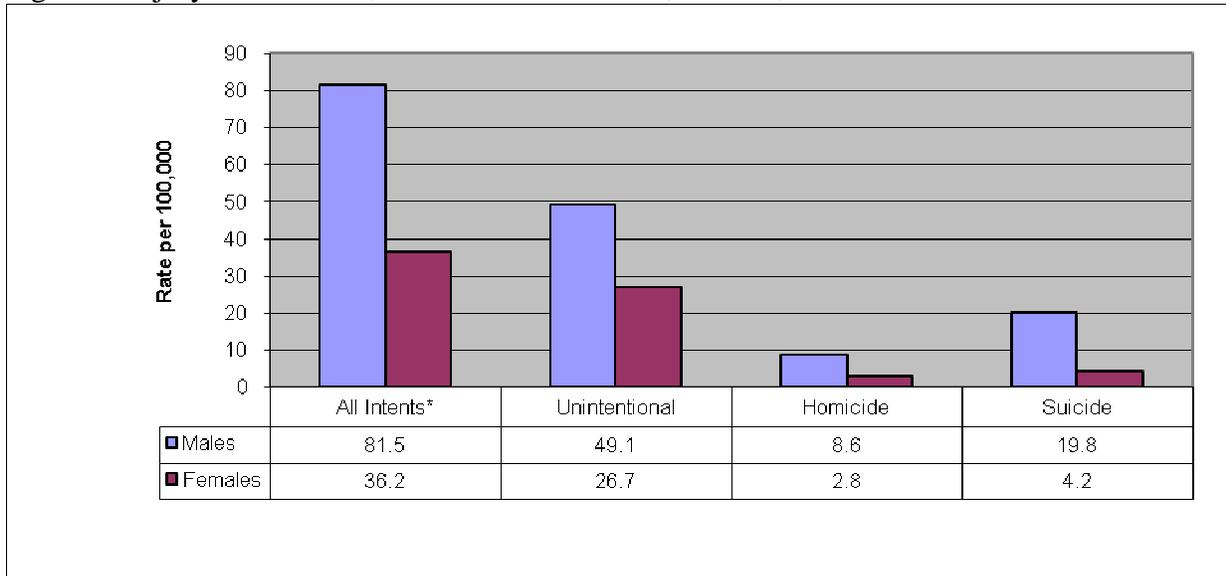
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 4: Intentional Injury by Type, Indiana, 2003-2006



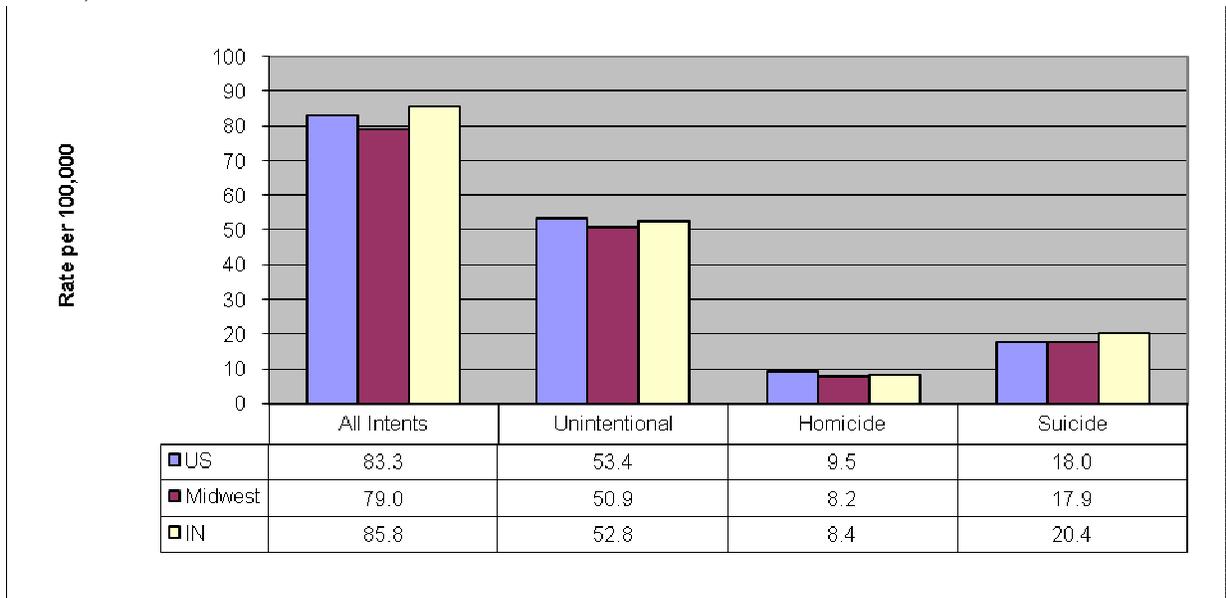
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 5: Injury Death Rates, Males versus Females, Indiana, 2003-2006



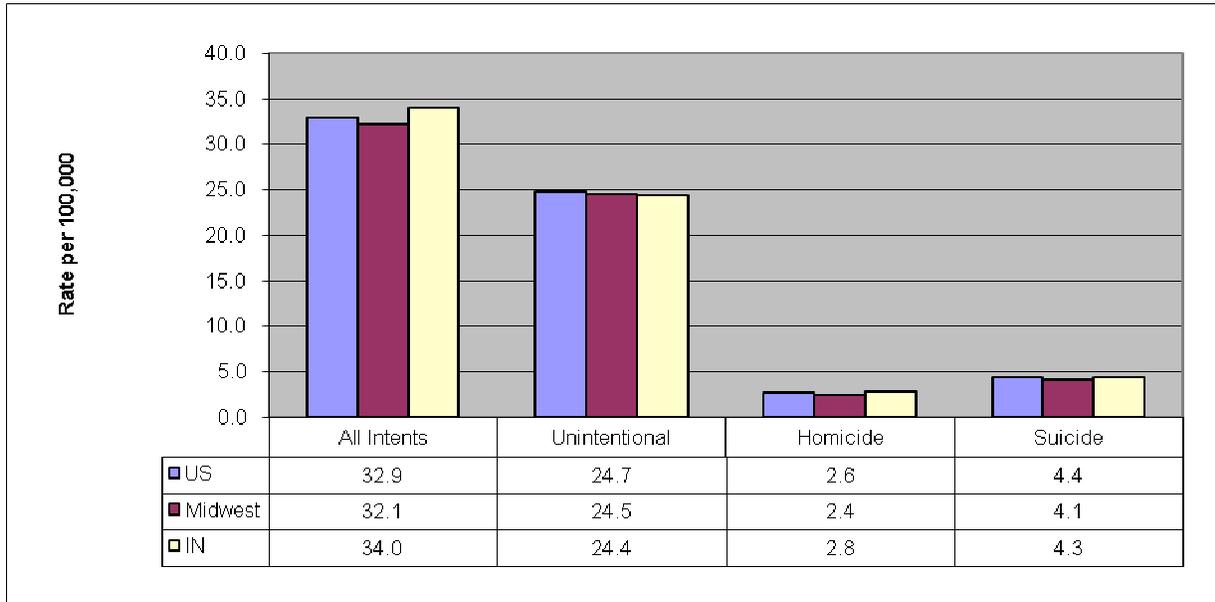
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 6a: Injury Death Rates, United States, Midwest and Indiana Comparison, By Intent, Males, 2003-2006



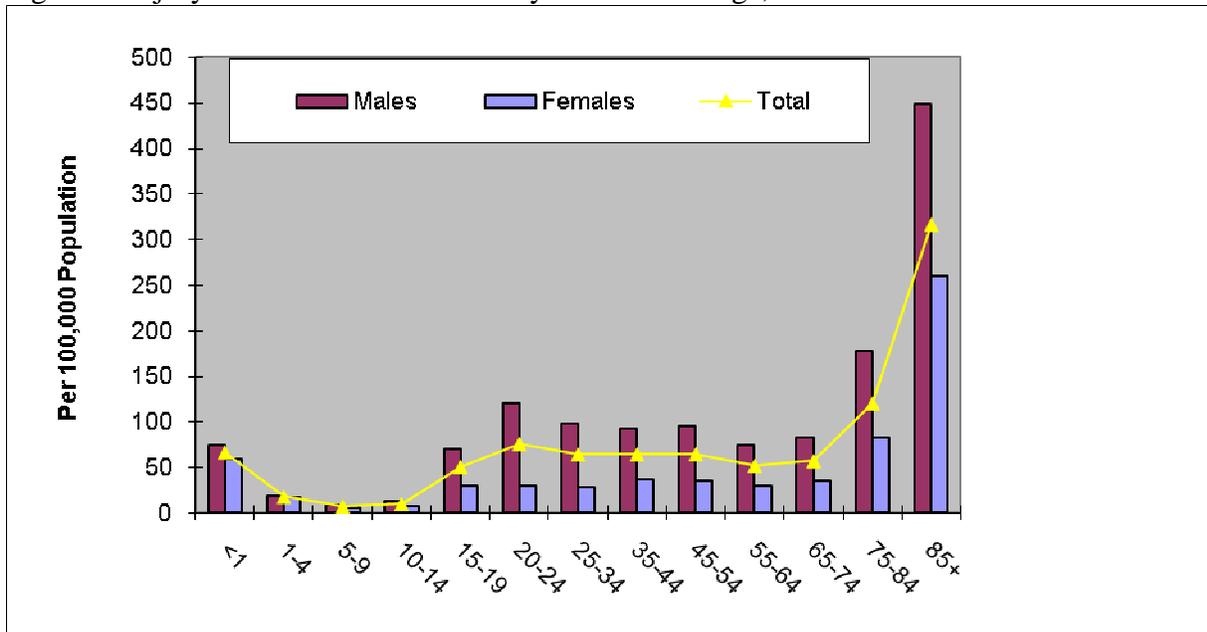
Source: CDC, WISQARS

Figure 6b: Injury Death Rates, United States, Midwest and Indiana Comparison, By Intent, Females, 2003-2006



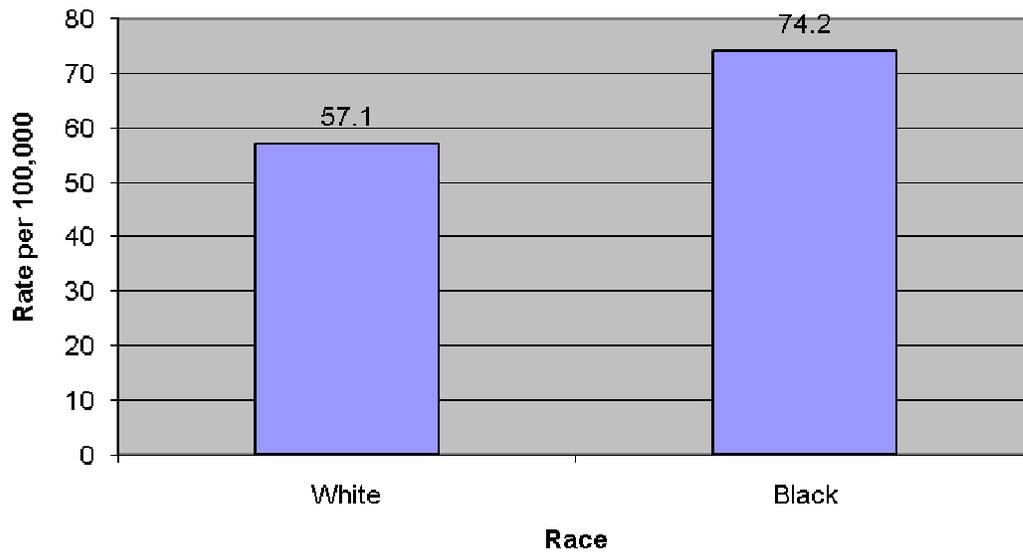
Source: CDC, WISQARS

Figure 7: Injury Death Rates in Indiana by Gender and Age, 2003-2006



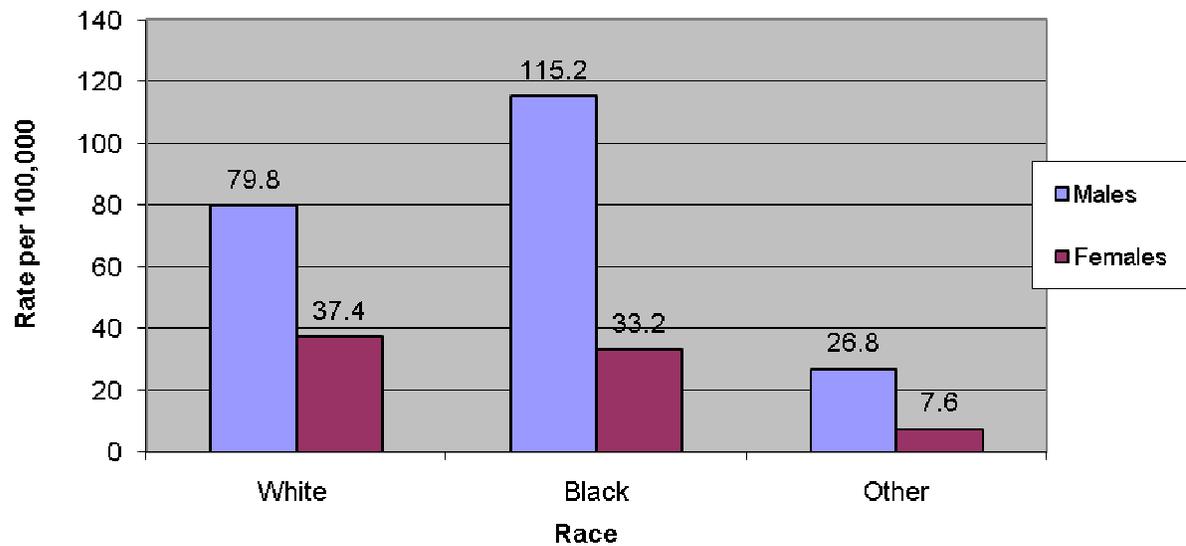
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 8: Injury Death Rates in Indiana by Race, Age-Adjusted, 2003-2006



Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 9: Injury Death Rates in Indiana by Race and Gender, Age-Adjusted, 2003-2006



Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 3: Leading Causes and Percents of Injury Deaths by Intent, Indiana 2003-2006.

Unintentional			Self-Inflicted			Homicide		
Cause	No.	%	Cause	No.	%	Cause	No.	%
MV Traffic	3812	40.4	Firearm	1,644	55.3	Firearm	989	69.7
Poisoning	1465	15.5	Suffocation	659	22.2	Cut/Pierce	93	6.6
Fall	1146	12.1	Poisoning	536	18.0	Suffocation	68	4.8
Suffocation	635	6.7	Cut/Pierce	34	1.1	Struck by/Against	64	4.5
Fire/Burn	368	3.9	Drowning	18	0.6	Fire/Burn	16	1.1
All Others	2017	21.4	All Others	86	2.8	All Others	189	13.3
Total	9443	100.0	Total	2977	100.0	Total	1419	100.0

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Chart produced by Injury Prevention Program

Table 4: Summary of Injury Deaths by Mechanism and Cause, Indiana 2003-2006

Mechanism/Cause	Un-intentional	Self-Inflicted	Assault	Un-determined	Total	*Rate	Percent
Cut/Pierce	14	34	93	2	143	0.6	1.0
Drowning/Submersion	264	18	4	23	309	1.2	2.1
Fall	1146	16	2	4	1168	4.5	8.0
Firearm	68	1644	989	31	2732	10.9	18.7
Fire/Burn	368	14	16	15	413	1.6	2.8
Fire/Flame	365	14	16	14	409	1.6	3.0
Hot Object/ Substance	3	0	0	1	4	0.02	0.03
Machinery	89				89	0.4	0.6
Motor Vehicle Traffic	3812	8	2	0	3822	15.1	26.1
Motorcyclist	380				380	1.5	2.6
Occupant	1292				1292	5.1	8.8
Pedal Cyclist	55				55	0.2	0.4
Pedestrian	391				391	1.6	2.7
Pedal Cyclist, Other	2				2	0.0	0.01
Pedestrian, Other	59				59	0.2	0.4
Transport, Other Land	44				44	0.2	0.3
Transport, Other	65				65	0.3	0.4
Natural/Environment	128				128	0.5	0.9
Overexertion	0				0	0	0
Poisoning	1465	536	10	618	2629	10.6	18.0
Struck by/Against	53		64	3	120	0.5	0.8
Suffocation	635	659	68	17	1379	5.5	9.4
Terrorism	0	0	0	0	0	0	0
Other Specified, Classifi- able	79	22	18	3	122	0.5	0.8
Other Specified, Not Elsewhere Classifiable	66	8	24	15	113	0.4	0.8
Unspecified	1086	18	129	76	1309	5.0	8.9
All Injury	9443	2977	1419	807	14,646	58.1	100

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Chart produced by Injury Prevention Program

- Rates are age-adjusted per 100,000 population and rounded to the nearest tenth percent.
- Rates based on frequencies of 20 or less are unstable and should be interpreted with caution.

Table 5: Unintentional Injury Deaths by Mechanism, Indiana 2003-2006.

Mechanism	Fatalities	Rates*
MV Traffic	3812	15.1
Poisoning	1465	5.9
Fall	1146	4.5
Unspecified	1086	4.2
Suffocation	635	2.5
Fire/Burn	368	1.5
Drowning	264	1.1
Natural/Environment	128	5.9
Machinery	89	0.4
Other Specified, Classifiable	79	0.3
Firearm	68	0.3
Other Specified, Not Elsewhere Classified	66	0.3
Other Transport	65	0.3
Pedestrian, Other	59	0.2
Struck by or Against	53	0.2
Other Land Transport	44	0.2
Cut/Pierce	14	0.1
Pedal cyclist, Other	2	0.0
Overexertion	0	0
Total	9443	

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Chart produced by Injury Prevention Program

- Rates are age-adjusted per 100,000 population and rounded to the nearest tenth percent.
- Rates based on frequencies of 20 or less are unstable and should be interpreted with caution.

Table 6: Rates* and Percents of Fatal Injuries by Age and Sex, Indiana 2003-2006

Age Groups	Total		Males		Females	
	No.	Rate	No.	Rate	No.	Rate
<1	227	66.2	129	73.5	98	58.4
1-4	241	17.5	131	18.6	110	16.3
5-9	121	6.9	72	8.1	49	5.8
10-14	178	9.7	119	12.7	59	6.6
15-19	902	50.4	642	70.1	260	29.8
20-24	1,367	75.7	1,108	120.0	259	29.4
25-34	2,133	64.1	1,665	98.4	468	28.6
35-44	2,316	64.1	1,684	91.9	652	36.1
45-54	2,306	64.4	1,664	94.9	622	34.4
55-64	1,294	51.6	906	74.5	388	30.0
65-74	884	56.6	582	82.2	302	35.4
75-84	1,329	119.8	774	176.7	555	82.7
85+	1,343	315.5	561	448.7	782	260.0
Total	14,641	58.5	10,037	81.5	4,604	36.2

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Chart produced by Injury Prevention Program

- Rates are age-adjusted per 100,000 population and rounded to the nearest tenth percent.
- There were 5 deaths of unknown sex and age, thus the difference from the total.

Table 7: Five Leading Causes of Deaths by Age, Indiana 2003-2006

<1 Year			1 to 4 Years			5 to 14 Years		
Cause	Number	Percent	Cause	Number	Percent	Cause	Number	Percent
Unintentional Suffocation	138	60.8	Unintentional Motor Vehicle Overall	58	24.1	Unintentional Motor Vehicle Overall	122	40.8
Undetermined Suffocation	11	4.8	Unintentional Drowning	41	17.0	Unintentional Fire/Burn	28	9.4
Unintentional Motor Vehicle, Overall	10	4.4	Unintentional Fire/Burn	40	16.6	Unintentional Drowning	24	8.0
Unintentional Fire/Burn	8	3.5	Unintentional Suffocation	20	8.3	Assault Firearm	19	6.4
Unintentional Drowning*	6	2.6	Unintentional Natural/Environmental	7	2.9	Self-Inflicted Suffocation	18	6.0
15-24 Years			25-34 Years			35-44 Years		
Cause	Number	Percent	Cause	Number	Percent	Cause	Number	Percent
Unintentional Motor Vehicle Overall	987	43.5	Unintentional Motor Vehicle Overall	560	26.3	Unintentional Motor Vehicle Overall	560	24.2
Assault firearm	364	16.0	Unintentional Poisoning	309	14.5	Unintentional Poisoning	400	17.3
Unintentional Poisoning	204	9.0	Self-inflicted Suffocation	156	7.3	Self-inflicted Suffocation	182	7.9
Self-inflicted firearm	189	8.3	Undetermined Poisoning	138	6.5	Undetermined Poisoning	178	7.7
Self-inflicted suffocation	123	5.4	Self-Inflicted Poisoning	93	4.4	Self-inflicted Poisoning	142	6.1
45-54 Years			55- 64 Years			65- 74 Years		
Cause	Number	Percent	Cause	Number	Percent	Cause	Number	Percent
Unintentional Motor Vehicle Overall	540	23.4	Unintentional Motor Vehicle Overall	379	29.3	Unintentional Motor Vehicle Overall	235	26.6
Unintentional Poisoning	387	16.8	Self-inflicted firearm	222	17.2	Unintentional Fall	145	16.4
Self-inflicted firearm	363	15.7	Unintentional Poisoning	100	7.7	Self-inflicted firearm	137	15.5
Self-inflicted Suffocation	169	7.3	Unintentional fall	85	6.6	Unintentional Suffocation	53	6.0
Undetermined Poisoning	162	7.0	Self-inflicted poisoning	74	5.7	Unintentional fire/burn	38	4.3
75-84 Years			85+ Years					
Cause	Number	Percent	Cause	Number	Percent			
Unintentional Fall	337	25.4	Unintentional Fall	391	29.1			
Self-inflicted firearm	138	10.4	Unintentional Motor Vehicle Overall	118	8.8			
Unintentional suffocation	106	8.0	Unintentional fire/burn	45	3.4			
Unintentional Poisoning	19	1.4	Unintentional Natural/Environmental	19	1.4			
Self-inflicted firearm	138	10.4	Unintentional Motor Vehicle Overall	118	8.8			

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

Chart produced by Injury Prevention Program

*For < 1 years of age, there were also 6 deaths for Assault Suffocation and Assault by/Against **For ages 1-4, there were also 7 deaths from assault struck by/against

***All percents out of total number of injury deaths for each age group

Table 8: Rates* and Percents of Fatal Injuries by Age and Intent, Indiana 2003-2006

Age Groups	Unintentional	Rate	Self-Inflicted	Rate	Assault	Rate	Undetermined	Rate
<1	169	49.2	0	0.0	40	11.7	18	5.2
1-4	185	13.4	0	0.0	48	3.5	8	0.6
5-14	225	6.3	26	0.7	41	1.1	7	0.2
15-24	1,395	38.1	362	10.0	404	11.2	108	3.0
25-34	1,098	33.0	533	16.0	351	10.5	151	4.5
35-44	1,244	34.4	643	17.8	225	6.2	204	5.6
45-54	1,281	35.8	659	18.4	178	5.0	188	5.3
55-64	811	32.4	358	14.2	69	2.7	56	2.2
65-74	658	42.1	172	11.0	33	2.1	21	1.3
75-84	1,126	101.5	159	14.3	19	1.7	25	2.3
85+	1,250	293.6	65	15.3	7	1.6	21	4.9
Total	9,442	37.8	2,977	11.9	1,415	5.7	807	3.2

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Chart produced by Injury Prevention Program

- Rates are age-adjusted per 100,000 population and rounded to the nearest tenth percent.
- There was one unintentional death of unknown age, and 4 self-inflicted deaths with unknown age, thus the difference in the total

Inpatient Hospitalizations

From 2003 to 2006, there were 86,799 inpatient hospitalizations with a primary diagnosis of injury or poisoning. Based on the data with valid E-codes, injuries accounted for approximately 2.7% (86,799/3,167,075) of all hospital inpatient admissions with an injury rate (combined 2003-2006 rate) of 343.4 per 100,000. There were 21,202 injuries in 2003, 22,059 injuries in 2004, 22,205 injuries in 2005, and 21,333 injuries in 2006. Figure 10 shows the age-adjusted rates for the four-year period. The highest injury rate was in 2004 with 350.5 per 100,000, and the lowest rate was 2006 with 332.4 per 100,000.

Of all injuries, 72,204 were unintentional, 12,357 were intentional, and 2,238 were of undetermined/other intent. Table 9 gives a summary of the leading causes of injury deaths by intent for Indiana during 2003-2006, and table 10 provides a summary of all injury deaths by mechanism and cause. The majority of unintentional injuries were due to falls (41,097/72,204 or 56.9%) followed by motor vehicle crashes (12,938/72,204 or 17.9%) and poisoning (4,358/72,204 or 6.0%). See Figure 11. Of the intentional injuries, 3,205 were from homicide, and 9,152 were from suicide (Figure 12). The leading mechanism of intentional injury hospitalization for suicide was by poisoning (8,564/9,152 or 93.6%). The leading mechanism of assault/homicide injury hospitalization was being struck (1,084/3,205 or 33.8%), followed by injury by firearm (747/3,205 or 23.3%).

The census population of Indiana is almost equally distributed by gender, with females accounting for 50.7% (based on Indiana 2006 census population at www.census.gov).⁽⁹⁾ Of those admitted to the hospital during 2003-2006, 46.6% (40,443/86,799) were male and 53.3% (46,348/86,799) were female (eight with gender and age unknown). Overall, males were slightly more likely than females to be admitted to the hospital due to an injury (345.1 per 100,000 compared to 325.9 per 100,000). Figure 13 shows the rates by gender/sex for each year. However, males were 4.7 times more likely to be admitted to the hospital due to an assault compared to females. Figure 14 shows the injury rates by intent and gender.

The leading cause of unintentional injury inpatient hospitalization for both genders during 2003-2006 was falls. Falls accounted for 33.8% of the injuries in males and 59.3% of the injuries in females. Other leading causes of unintentional injury deaths in males included motor vehicle crashes (7,871/40,444 or 19.5%) and poisoning (6,409/40,444 or 15.9%). Other leading causes of unintentional injuries for females include poisoning (8,353/46,351 or 18.0%) and motor vehicle crashes (5,101/46,351 or 11.0%).

Indiana is predominately populated by whites, which make up 86.0% of the total population. Blacks comprise 8.7%. Other races, such as American Indians and Alaska Natives, Asians, and Native Hawaiians and other Pacific Islanders, are also included in Indiana's population. However, these groups make up small percentages, and injury rates among them are not stable due to small numbers. In addition, Indiana's Hispanic or Latino population is growing but is still a small proportion (4.7%) of the total population.⁽⁹⁾

Since whites make up the majority of Indiana's population, unsurprisingly, they accounted for the majority (81.1%) of all injury inpatient hospitalizations in Indiana during 2003-2006. Blacks

accounted for 8.2%. See Figure 15. However, the rate of injury is lower for whites compared to blacks (306.9 per 100,000 versus 348.5 per 100,000). The inpatient hospitalization rate was highest in 2003 for blacks (373.8 per 100,000) and was at the lowest rate in 2006 (278.8 per 100,000). The rate of injury for whites was highest in 2004 (315.6 per 100,000) and like blacks, at the lowest rate in 2006 (297.9 per 100,000). Figure 16 shows the hospitalization rates by year.

With 31,215 inpatient hospital admissions, white males had the highest number of injuries compared to all other race/ethnicity and gender/sex categories. However, black males were almost 1.5 times more likely to be hospitalized due to an injury (443.0 per 100,000) compared to white males (298.1 per 100,000). See Figure 17. White females had a slightly higher age-adjusted rate of hospital admission when compared to black females (300.6 per 100,000 and 259.2 per 100,000, respectively). Black males had a higher inpatient hospital admission rate for all four years compared to all other gender categories. The highest rate was in 2003 with a rate of 482.3 per 100,000. Figure 18 shows the inpatient hospitalization rate for each category broken out by year.

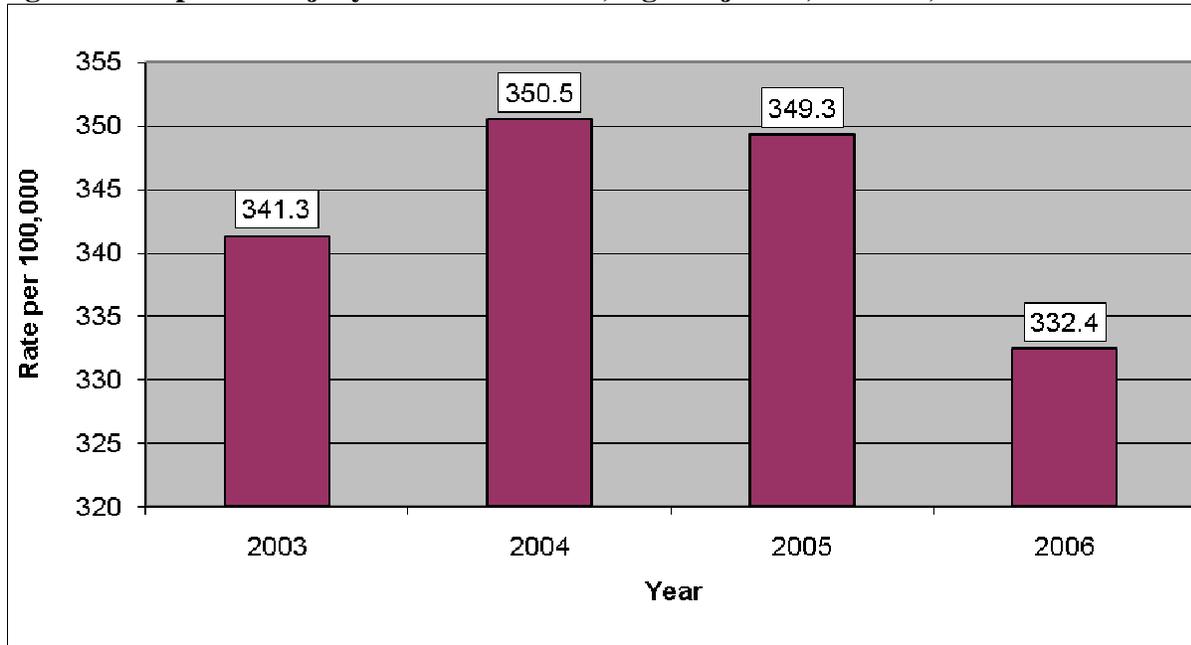
The distribution of injury-related hospitalizations varied by age groups. Figure 19 shows the actual number of admissions by age group, while Figure 20 shows the age-specific rate for each age group. Injury rates of death were highest among the 75 year and older age groups (1,297.2 per 100,000 among persons 75 to 84 years and 2,895.9 per 100,000 among persons 85 years and older). The lowest age-specific rates of injury hospitalization were among persons aged 5 to 9 (76.8 per 100,000). See Figure 20. Table 11 provides the number and rate of injury for each age category.

There were also differences between males and females within age groups. Males had higher rates of injuries for all age groups up to the age of 54. Starting at age 55, females had higher rates of injuries. Females, aged 75-84, were 1.7 times more likely to be injured than males and females, aged 85+, were 1.6 times more likely to be injured than males (Figure 21.) Table 12 provides the numbers and rates of inpatient hospital admissions by age and sex. Table 13 provides the top 5 leading causes of inpatient injury admissions by age group.

Between 2003 and 2006, 2.2% (1,883/86,799) of all patients admitted to the hospital due to an injury died. Almost a quarter of all inpatients were discharged to a skilled nursing facility (19,107/86,799 or 22.0%), See Figure 22. The majority (70.6%) of patients was admitted to the hospital as an urgent case, and 73.7% were admitted after receiving care at an outpatient center or in the ED (Figure 23 and Figure 24.).

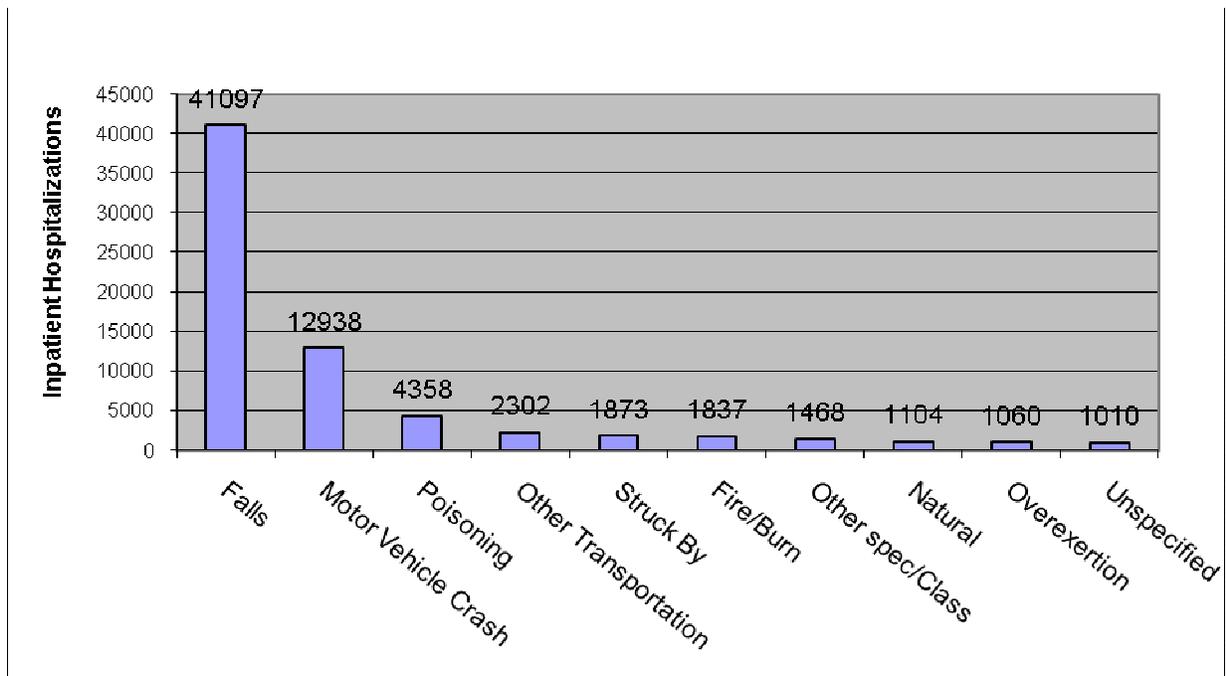
For 2003-2006, the total charges for all ages injured and admitted to the hospital were \$1.6 billion. The median total charges for all ages due to injury were \$13,601 respectively with a range of \$0-\$1,198,642. Of those admitted to the hospital, 21.2% (18,421/86,799) had commercial insurance (Figure 25). The average length of stay was 4.2 days (SD +/-5.9 days), and the median length of stay was 3.0 days (range 1-1,149 days).

Figure 10: Inpatient Injury Admission Rates, Age-Adjusted, Indiana, 2003-2006



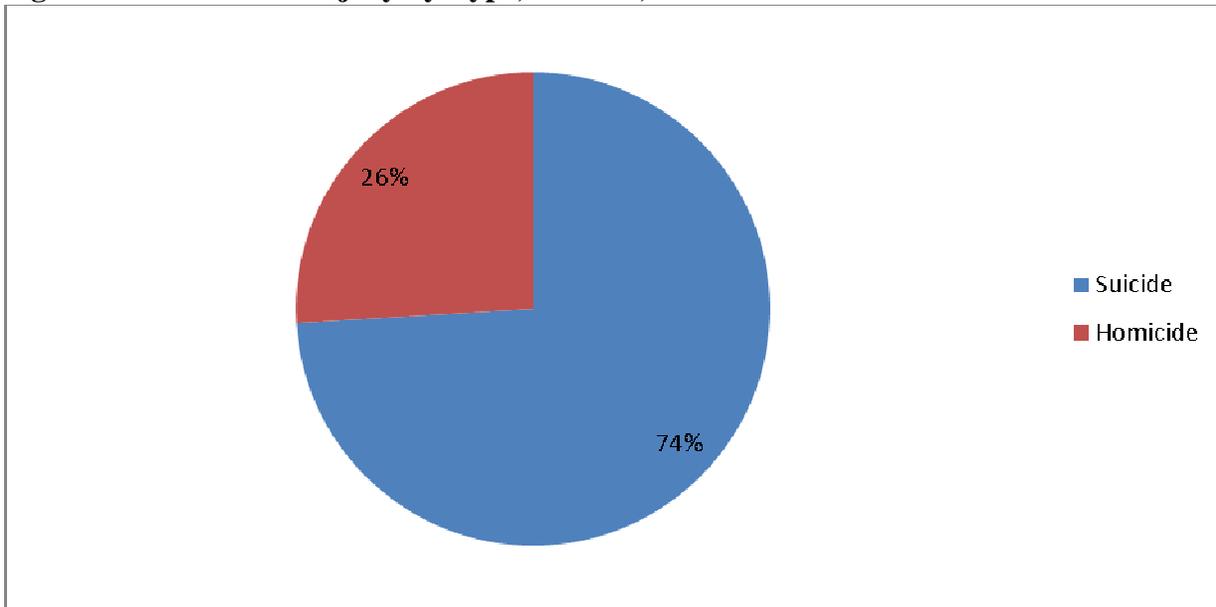
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 11: Top Causes of Unintentional Injury, Indiana, 2003-2006



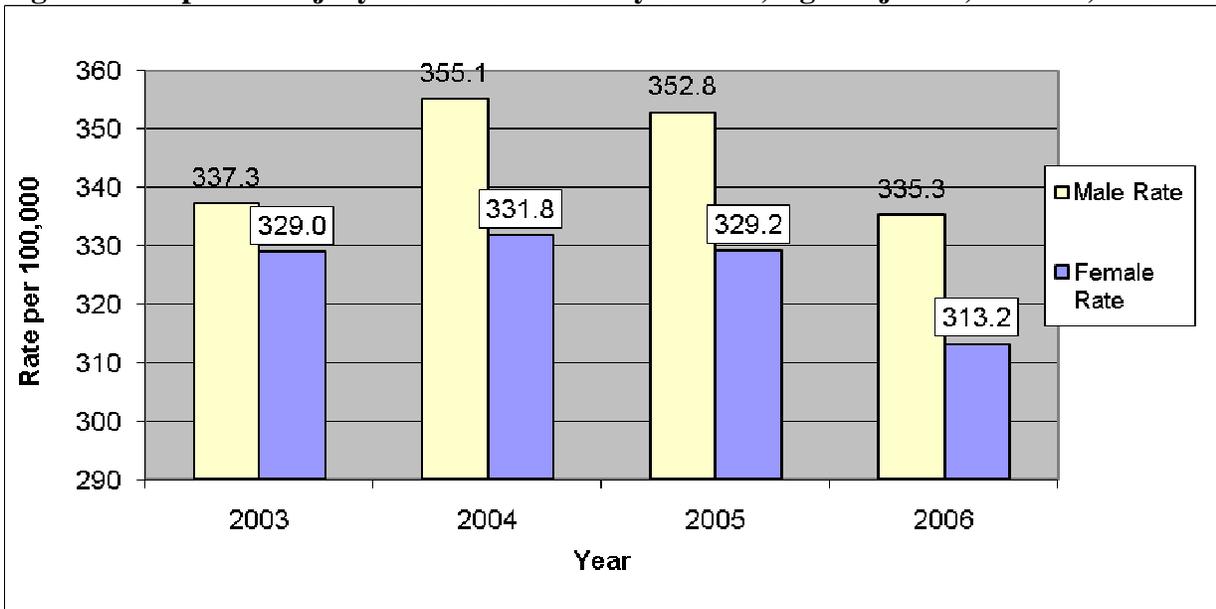
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 12: Intentional Injury by Type, Indiana, 2003-2006



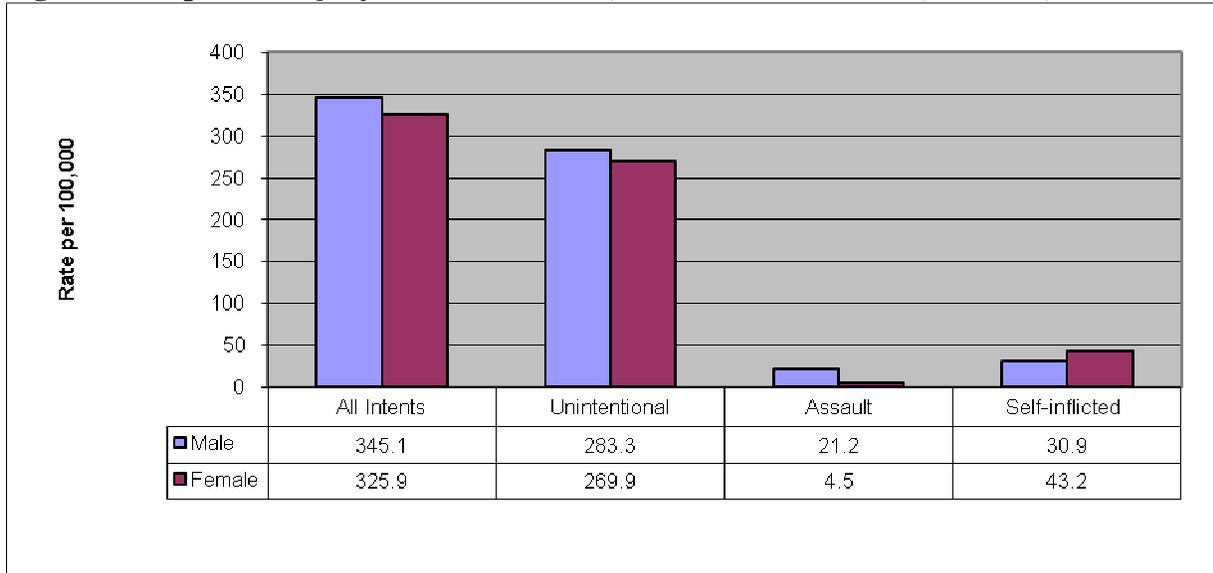
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 13: Inpatient Injury Admission Rates by Gender, Age-Adjusted, Indiana, 2003-2006



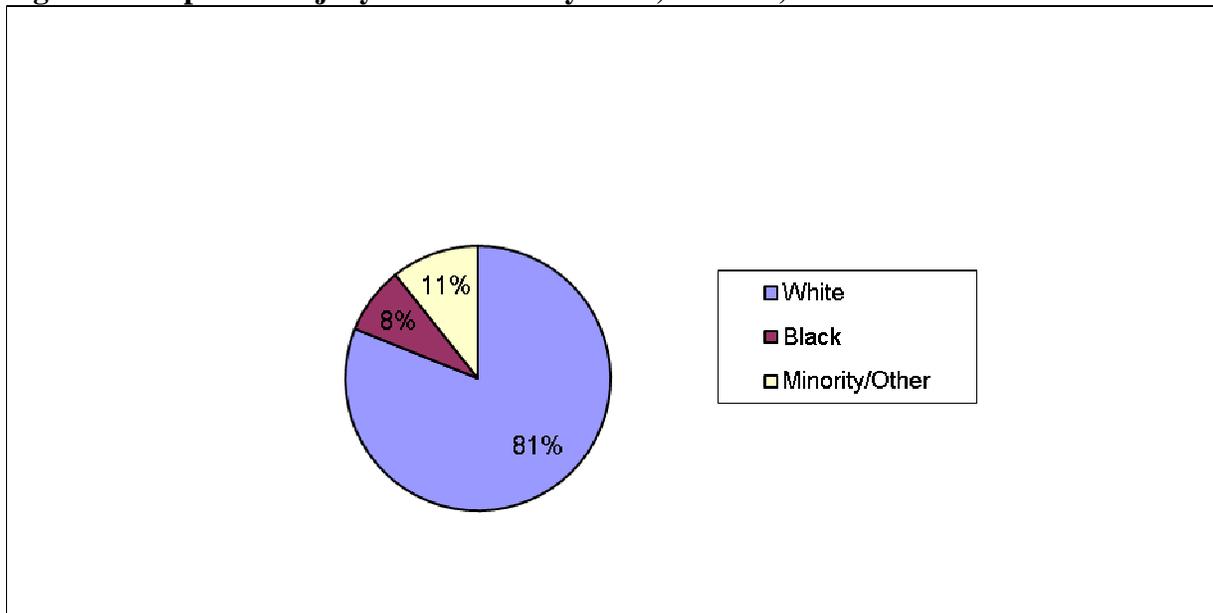
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 14: Inpatient Injury Admission Rates, Males versus Females, Indiana, 2003-2006



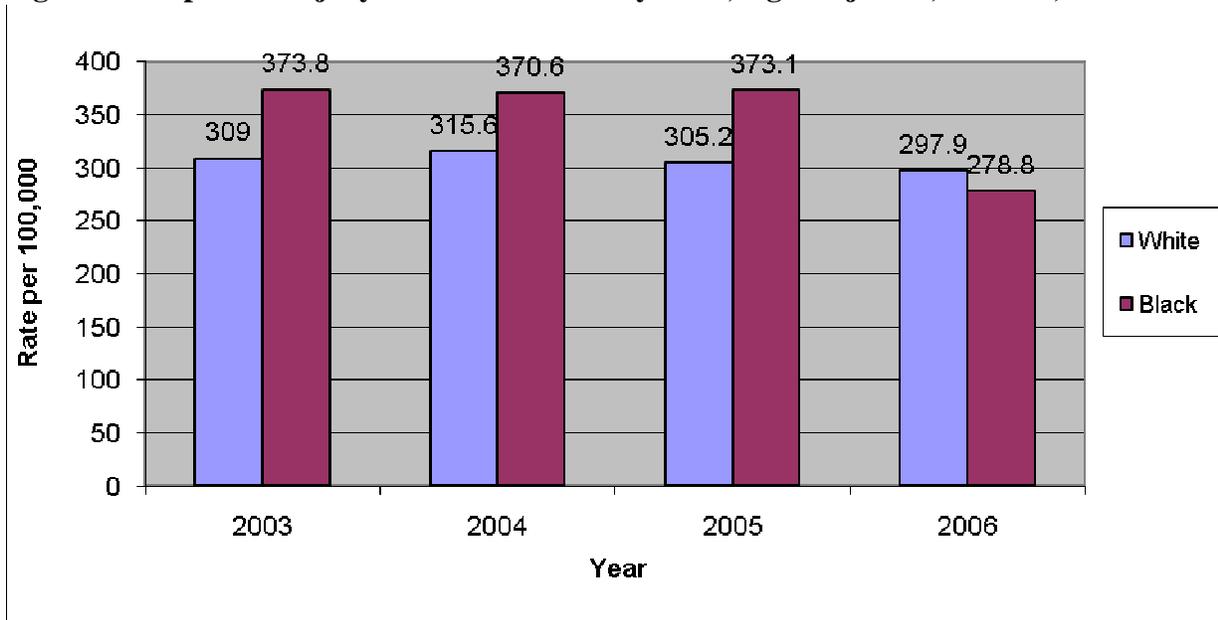
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 15: Inpatient Injury Admissions by Race, Indiana, 2003-2006



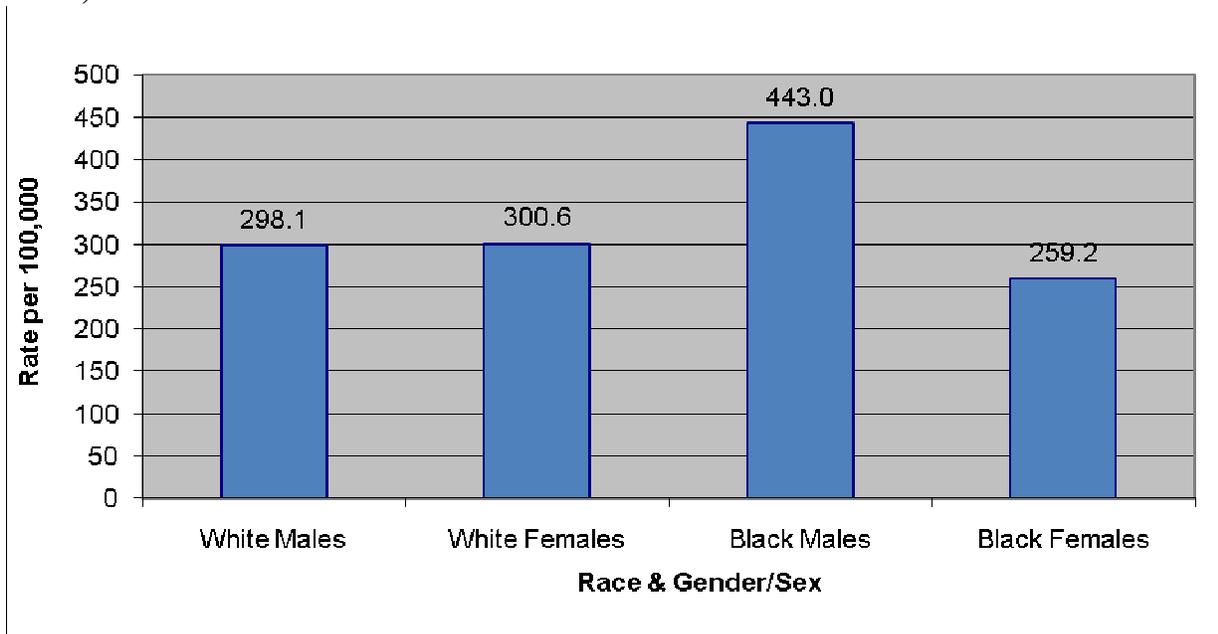
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 16: Inpatient Injury Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006



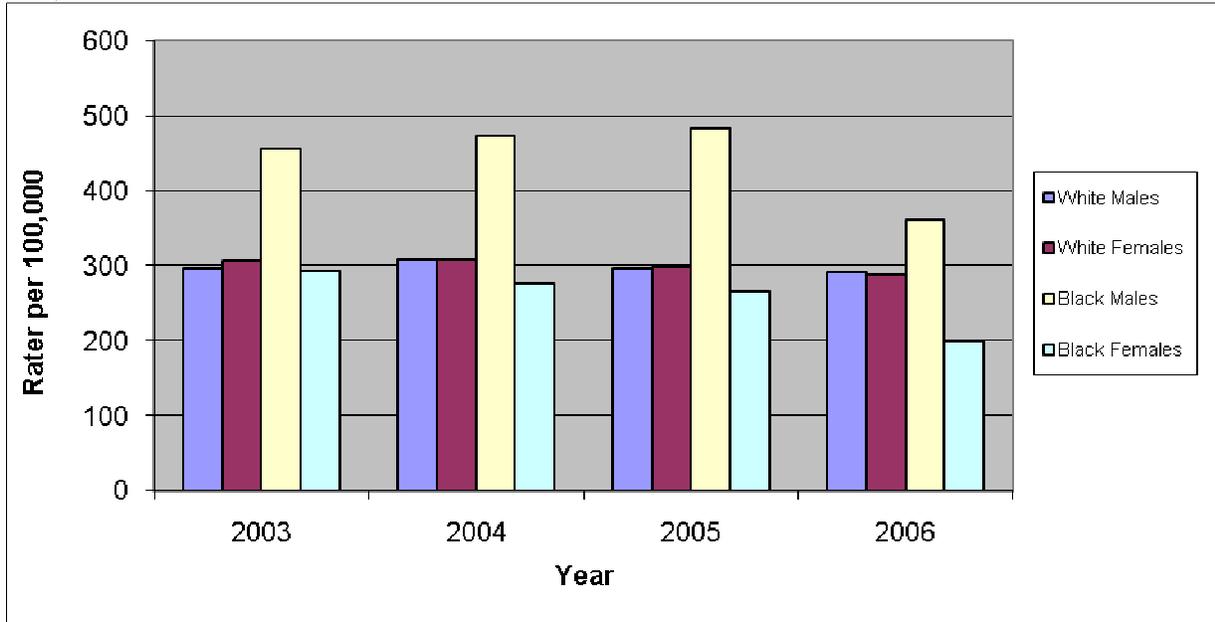
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 17: Inpatient Injury Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



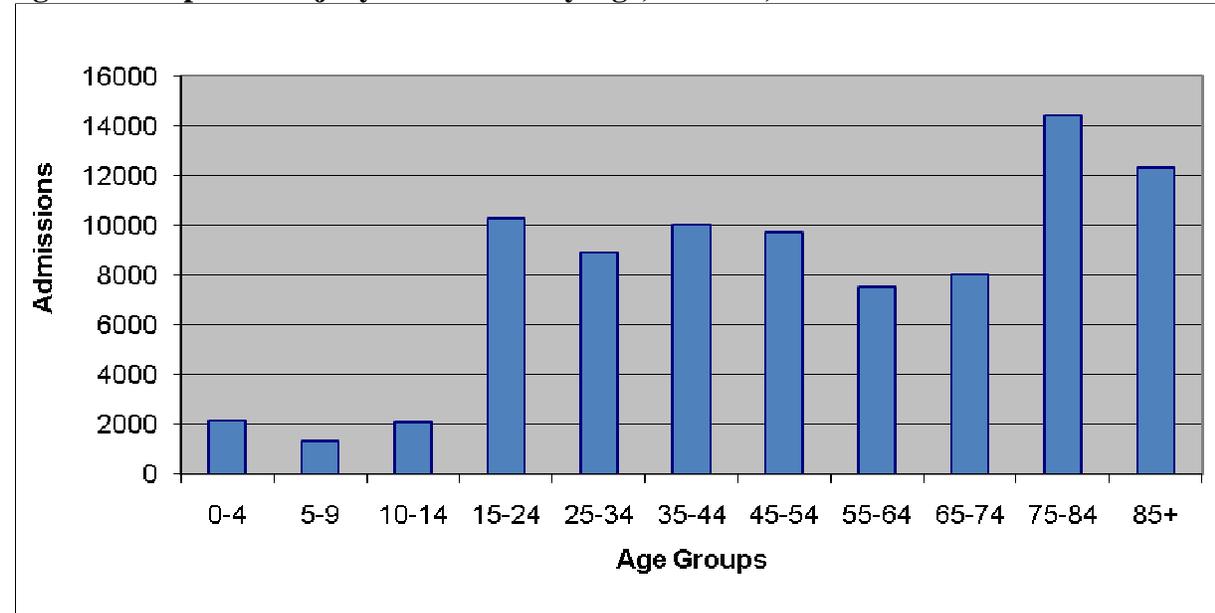
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 18: Inpatient Injury Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



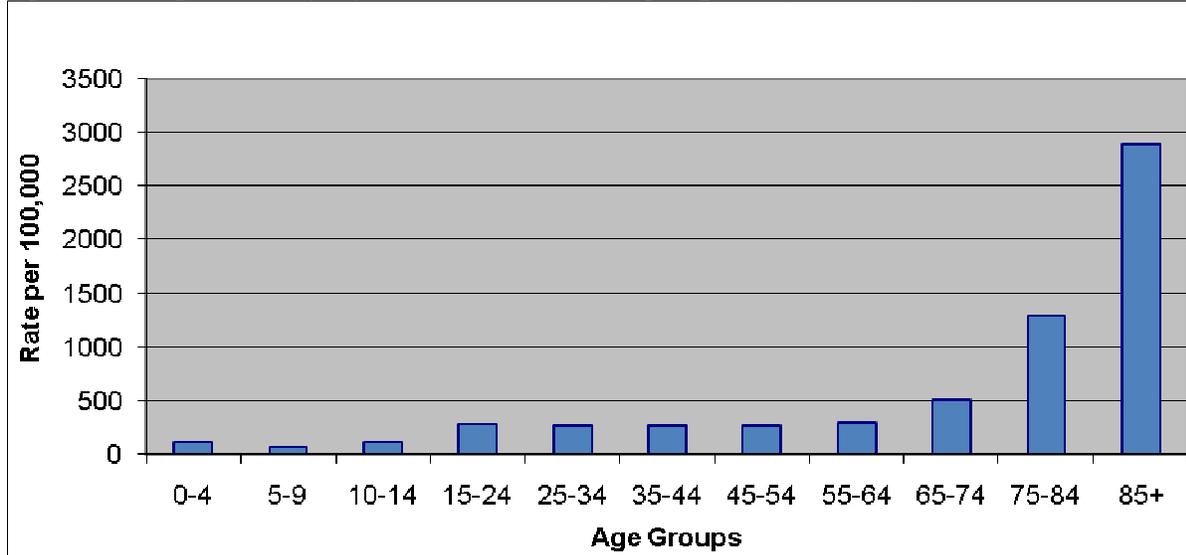
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 19: Inpatient Injury Admissions by Age, Indiana, 2003-2006



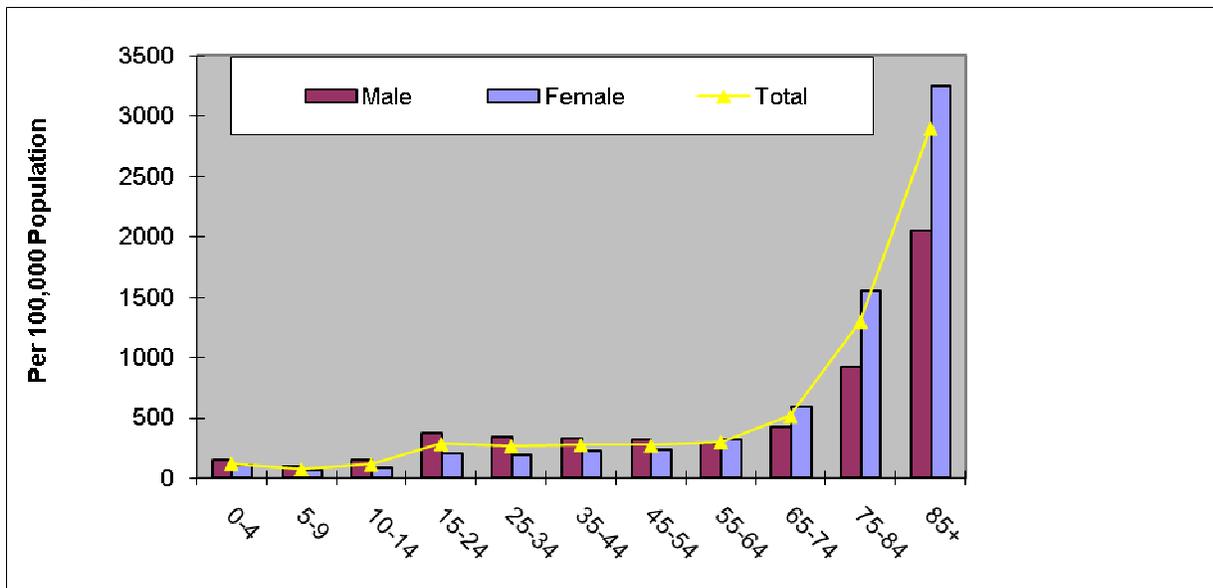
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 20: Inpatient Injury Admission Rates, Age-Specific, Indiana, 2003-2006



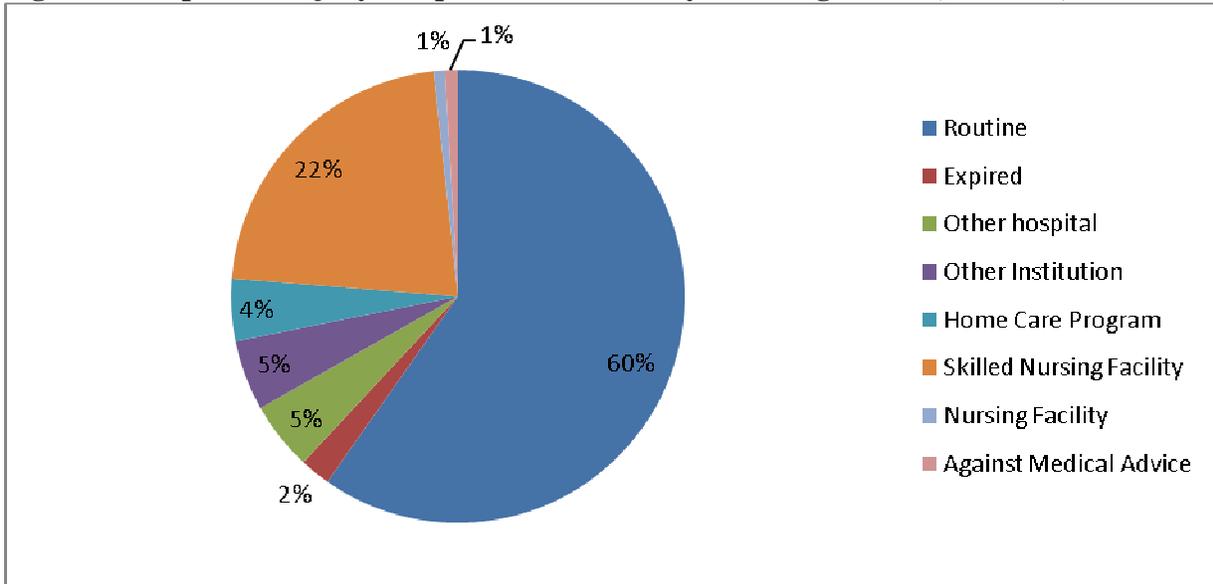
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 21: Inpatient Injury Admission Rates by Gender and Age, Age-Specific, Indiana 2003-2006



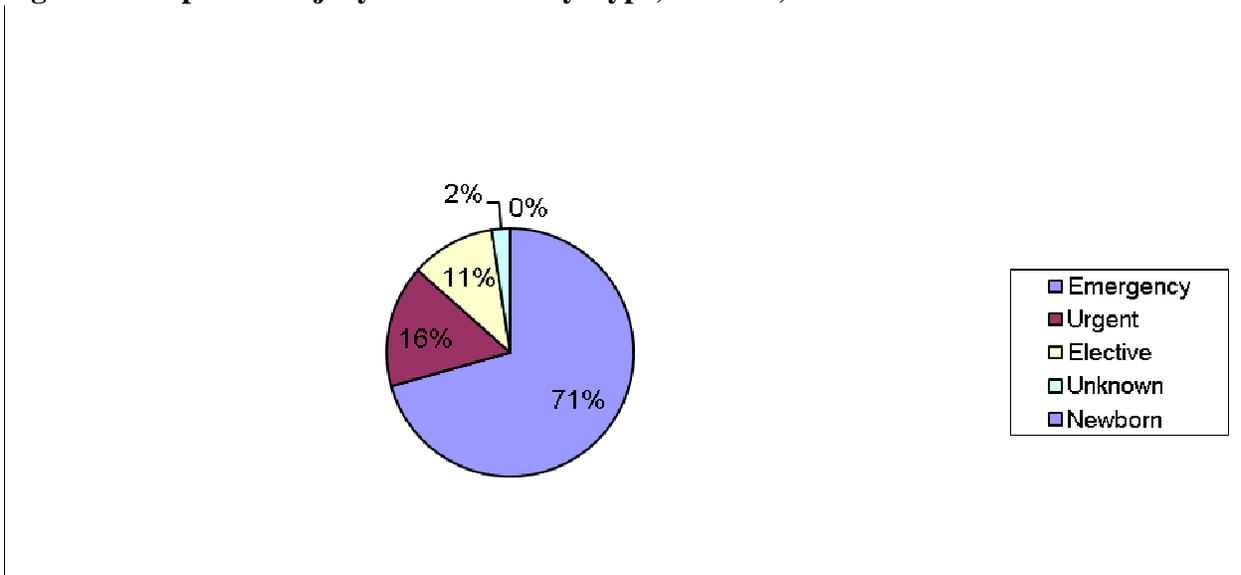
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 22: Inpatient Injury Hospital Admissions by Discharge Status, Indiana, 2003-2006



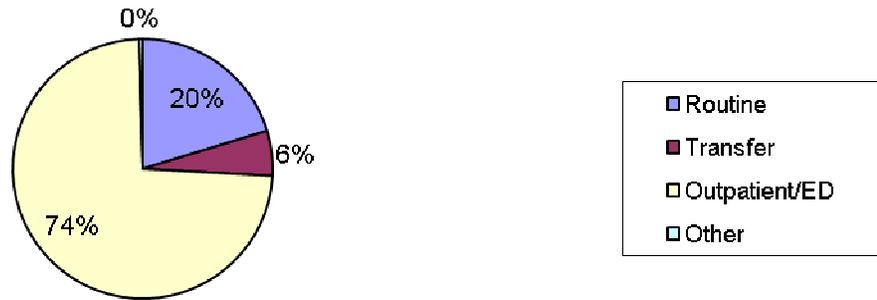
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 23: Inpatient Injury Admissions by Type, Indiana, 2003-2006



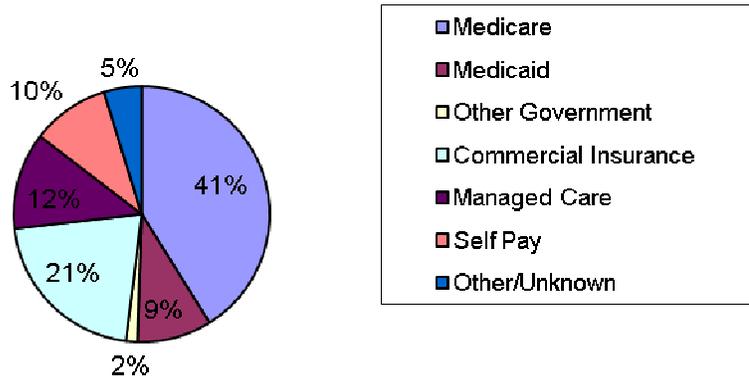
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 24: Inpatient Injury Admissions by Source, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 25: Inpatient Injury Admissions by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 9: Leading Causes and Percents of Inpatient Injury Admissions by Intent, Indiana, 2003-2006.

Unintentional			Intentional-Self-Inflicted			Intentional-Homicide/Assault		
Cause	No.	%	Cause	No.	%	Cause	No.	%
Falls	41,097	56.9	Poisoning	8,564	93.6	Struck By	1,084	33.8
MV Traffic	12,938	17.9	Cut	254	2.8	Firearm	747	23.3
Poisoning	4,358	6.0	Firearm	139	1.5	Cut	560	17.5
Other Transport	2,302	3.2	Suffocation	55	0.6	Unspecified	310	9.7
Struck By	1,873	2.6	Other Specified/NEC	29	0.3	Other Spec/Class	258	8.0
All Others	9,636	13.3	All Others	111	1.2	All Others	246	7.7
Total	72,204	100	Total	9,152	100	Total	3,205	100

Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 10 : Summary of Inpatient Injury Admissions by Mechanism and Cause, Indiana 2003-2006

Mechanism/Cause	Un-intentional	Self-Inflicted	Assault	Undetermined/Other	Total	*Rate	Percent
Cut/Pierce	586	254	560	12	1,412	5.7	1.6
Drowning/Submersion	79	4	0	1	84	0.3	0.1
Fall	41,097	24	6	30	41,157	160.6	47.4
Firearm	433	139	747	202	1,521	6.1	1.8
Fire/Burn	1,837	28	30	38	1,933	7.8	2.2
Machinery	633				633	2.5	0.7
Motor Vehicle Traffic**	12,938	19	12	4	12,973	51.7	14.9
Motorcyclist	1,960						
Occupant	9,233						
Pedal Cyclist	286						
Pedestrian	908						
Unspecified	551						
Pedal Cyclist, Other	751				751	3.0	0.9
Pedestrian, Other	139				139	0.6	0.2
Transport, Other Land	2,302				2,302	9.2	2.7
Natural/Environment	1,104	2		3	1,109	4.4	1.3
Overexertion	1,060				1,060	4.2	1.2
Poisoning	4,358	8,564	8	1,832	14,762	59.4	17.0
Struck by/Against	1,873		1,084	19	2,976	12.0	3.4
Suffocation	224	55	6	2	287	1.1	0.3
Other Specified, Classifiable	1,468	27	258	9	1,762	7.1	2.0
Other Specified, Not Elsewhere Classifiable	310	29	184	15	538	2.2	0.6
Unspecified	1,012	7	310	71	1,400	5.5	1.6
All Injury	72,204	9,152	3,205	2,238	86,799	343.4	100

Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

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

Table 11: Inpatient Injury Admissions and Rates, Age-Specific, Indiana, 2003-2006

Age Groups	2003		2004		2005		2006	
	Injuries	Age-Specific Rates						
0-4	583	135.5	536	124.5	506	117.6	506	117.4
5-9	359	81.4	367	83.9	332	75.8	281	65.7
10-14	554	119.2	630	136.2	490	107.0	425	96.1
15-24	2,596	287.7	2,644	293.1	2,561	285.2	2,468	276.6
25-34	2,200	269.5	2,254	272.8	2,326	278.6	2,125	250.1
35-44	2,507	273.5	2,612	287.8	2,506	279.1	2,401	268.5
45-54	2,259	259.5	2,500	282.3	2,471	274.4	2,506	271.3
55-64	1,653	279.7	1,914	312.0	1,996	313.5	1,959	293.1
65-74	1,960	507.2	2,035	524.9	2,084	535.9	1,969	493.9
75-84	3,590	1302.8	3,546	1269.0	3,708	1324.5	3,546	1292.4
85+	2940	2908.6	3,018	2877.8	3,225	2968.7	3,147	2830.3
Total	21,201	341.3	22,056	350.5	22,205	349.3	21,333	332.4

Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 12: Rates* and Percents of Inpatient Injury Admissions by Age and Sex, Indiana 2004-2006

Age Groups	No.	Total		Males		Females	
		No.	Rate	No.	Rate	No.	Rate
0-4	2,131	123.7	1259	142.9	871	103.5	
5-9	1,339	76.8	823	92.2	516	60.6	
10-14	2,099	114.8	1,341	142.8	758	85.3	
15-24	10,269	285.7	6,697	364.0	3,572	203.5	
25-34	8,905	267.6	5,791	342.3	3,114	190.4	
35-44	10,026	277.3	5,976	330.2	4,050	224.3	
45-54	9,736	271.9	5,529	311.7	4,207	232.9	
55-64	7,522	299.7	3,479	286.2	4,042	312.3	
65-74	8,048	515.3	2,989	421.9	5,059	592.9	
75-84	14,390	1297.2	4,001	913.5	10,388	1547.3	
85+	12,330	2895.9	2,558	2045.9	9,771	3248.9	
Total	86,795	343.4	40,443	345.1	46,348	325.9	

Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

- Rates are age-adjusted per 100,000 population and rounded to the nearest tenth percent.
- All totals do not add up to 86,799 due to four peoples' genders being unknown and four peoples' ages unknown.

Table 13: Five Leading Causes of Inpatient Injury Admissions by Age, Indiana 2003-2006

<1 Year			1 to 4 Years			5 to 14 Years		
Cause*	Number	Percent	Cause**	Number	Percent	Cause	Number	Percent
Falls	139	25.6	Falls	369	23.2	Falls	809	13.5
Fire/Burn	61	11.2	Fire/Burns	328	20.7	Motor Vehicle Crash	737	12.3
Suffocation	34	6.3	Poisoning	264	16.6	Poisoning	346	5.8
Poisoning	26	4.8	Motor Vehicle Crash	142	8.9	Struck By	340	5.7
Struck by	19	3.5	Struck by	72	4.5	Other Transportation	268	4.5
15-24 Years			25-34 Years			35-44 Years		
Cause	Number	Percent	Cause	Number	Percent	Cause	Number	Percent
Motor Vehicle Crash	3311	32.2	Poisoning	2933	33.0	Poisoning	3361	33.5
Poisoning	2962	28.8	Motor Vehicle Crash	2032	22.8	Motor Vehicle Crash	2049	20.4
Falls	835	8.1	Falls	1116	12.5	Falls	1800	18.0
Struck By	645	6.3	Struck By	468	5.3	Struck By	528	5.3
Firearm	627	6.1	Firearm	434	4.9	Other Transportation	374	3.7
45-54 Years			55- 64 Years			65- 74 Years		
Cause	Number	Percent	Cause	Number	Percent	Cause	Number	Percent
Falls	3006	30.9	Falls	3928	52.2	Falls	5809	72.2
Poisoning	2562	26.3	Poisoning	1101	14.6	Motor Vehicle Crash	720	8.9
Motor Vehicle Crash	1864	19.2	Motor Vehicle Crash	1094	14.5	Poisoning	558	6.9
Struck by	381	3.9	Struck by	182	2.4	Struck By	129	1.6
Other Transportation	313	3.2	Other Transportation	180	2.4	Overexertion	125	1.6
75-84 Years			85+ Years					
Cause***	Number	Percent	Cause****	Number	Percent			
Falls	12113	84.2	Falls	11230	91.1			
Motor Vehicle Crash	741	5.1	Motor Vehicle Crash	266	2.2			
Poisoning	473	3.3	Poisoning	176	1.4			
Overexertion	149	1.0	Overexertion	109	0.9			
Struck By	133	0.9	Struck By	79	0.6			

Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

*For < 1 years of age, the second and third top causes were other/specified classifiable (N=138, 25.4%) and unspecified (N=72, 13.3%)

**For ages 1-4, the fifth leading cause of injury was other/specified classifiable (N=102, 6.4%)

***For ages 75-84, the fifth leading cause of injury was unspecified (N=223, 1.6%)

****For ages 85+, the third leading cause of injury was unspecified (N=179, 1.5%)

*****All percents out of total number of injury deaths for each age group

Injuries throughout the ages

This section of the report summarizes the varying roles injuries play related to ages and to the developmental stages of life. Since traditional public health statistical age groupings do not always synchronize well with developmental life stages, this information attempts to provide some understanding of the changing contribution of injuries to fatalities and to hospitalizations in Indiana as people get older and move through childhood to being adults.

Infants (less than one year of age) – Infants are at greater risk for many injuries. With limited cognitive ability and physical coordination, infants are less capable of identifying and avoiding unsafe environments. Babies are also dependent on others for everything and cannot express themselves well verbally. Therefore, they may be at higher risk for abuse or neglect.

From 2003 to 2006 in Indiana, 227 infants died due to unintentional and intentional injuries. More than two-thirds of all injury deaths (68.3% or 155/227) were due to suffocation. Of the suffocation deaths, 89.0% (138/155) were unintentional. The rate of injury death for black infants during 2003-2006 was 175.7 per 100,000, which is more than three times higher compared to white infants (53.4 per 100,000). The primary cause of hospital admissions for infants was falls and accounted for 25.6% of all hospitalizations (139/543). The Indiana data corroborates what is seen nationally.

Children- Preschool age children (age 1-4): From 2003 to 2006, the leading cause of injury death in Indiana for preschool aged children was unintentional injuries with 185 deaths. Young children are also at greater risk for injuries due to many factors, such as being curious and exploring their environment. Preschool aged children also have limited physical coordination, which can lead to falls from bicycles and playground equipment. Preschool aged children received more than half of the fatal injuries from motor vehicle traffic-related incidents and drowning (58 deaths and 41 deaths respectively). The rate of death for males was 18.6 per 100,000, while the female rate of death was slightly less at 16.3 per 100,000. The top three causes of hospital admissions for 1-4 year olds were falls, fire and poisoning. Each cause accounted for 23.2% (369/1,592); 20.6% (328/1,592); and 16.6% (263/1,592), respectively of all hospitalizations.

Children - Elementary school age children (aged 5 to 9 years): Children are more susceptible to motor vehicle crashes, bicycle crashes, pedestrian injuries, and dog bites. Children in this age group are often unable to judge if an environment is safe and are also more likely to demonstrate risky behaviors stimulated by impulse.⁽⁸⁾

From 2003 to 2006, there were 121 injury deaths for elementary school aged children. Children aged 5-9 had the lowest age-specific rate of death compared to all other age groups. Males aged 5-9 had an age-specific death rate of 8.1 per 100,000, and females had an age-specific death rate of 5.8 per 100,000. The leading cause of death was unintentional injuries with 100 deaths. Elementary school aged children received more fatal injuries from motor vehicle traffic-related incidents, which accounted for 25.9% of all unintentional injury deaths (48/185). Fall-related injuries within this age group accounted for approximately one-third (27.9% or 375/1,345) of hospitalizations, but this injury mechanism is not among the top five leading causes of death. Motor

vehicle crash (MVC) injuries were the 2nd leading cause of inpatient hospitalization and accounted for 21.0% of all injuries in this age group (282/1,345). Children ages 5-9 have higher rates of emergency department visits for playground injuries than any other age group, according to the CDC.

Adolescents - (aged 10 to 19 years): The “pre-teen” and adolescent age groups demonstrate an expanded list of injury prevention concerns to consider. The leading causes of death among teens and young adults are motor vehicle crashes, drowning, suicide and homicide. Consequently, teens are involved in violence more than any other age group.⁽⁸⁾ Safe driving skills only improve with experience in operating a motor vehicle. Experimentation with or involvement in illegal drugs or alcohol are also important risk factors for injuries.

In Indiana, motor vehicle traffic incidents were by far the leading cause of injury and death among children and teens (aged 10 to 19 years). From 2003 to 2006, there were 538 deaths due to unintentional motor vehicle crash injuries, which were 75.4% of all unintentional injury deaths. Among hospital admissions, motor vehicle crashes accounted for 30.8% of all hospital admissions (2,216/7,196). While driving a car becomes a common “rite of passage” for 16-year-olds in Indiana, their driving skills only improve with experience in operating a motor vehicle. Impulsive, risk-taking behavior continues with this age group, which may include experimentation with or involvement in alcohol and substance abuse. While poisoning (24.0% or 1728/7196) and falls (11.4% or 821/7,196) are the second and third leading cause for unintentional injury hospital admission in this age group, poisoning (7.85%) and drowning (3.8%) are the next leading causes of unintentional injury deaths. Suicide and suicide attempts are also important causes of injuries. The second leading cause of death for adolescents was suicide with 147 deaths (68 self-inflicted firearm deaths, 64 self-inflicted suffocation deaths, and 15 self-inflicted poisoning deaths). The third leading cause of death was assault/homicide by firearm with 146 deaths.

The Youth Risk Behavior Survey a useful tool to determine information about injuries relating to violence and suicide for students in grades 9-12. According to the Indiana Youth Risk Behavior Survey from 2007, the percentage of students in grades 9-12 who carried a gun during the past thirty days was 9.1% compared to 5.8% during 2005 (statistically significant). More than 9.5% of students indicated they had been threatened or injured with a weapon such as a gun, knife, or club on school property one or more times during the past 12 months, which is higher and statistically more significant than 8.8% in 2005. Suicide attempts and planning attempts went down during 2007 compared to 2005 and were statistically significant. More than eleven percent (11.7%) of students (compared to 14.8% in 2005) made a plan about how they would attempt suicide. More than 7% of students actually attempted suicide one or more times, compared to 9.6% of students in 2005. There were 2.9% of the students who indicated that they had made a suicide attempt that resulted in an injury, poisoning or overdose and had to be treated by a doctor or nurse (compared to 3.5% during 2005).

Adults (20-64 years of age) – The role of unsafe driving practices, failure to wear a seatbelt, or driving while intoxicated continue to be contributing factors to the toll of deaths and injuries related to motor vehicle crashes. Suicide continues to be a leading cause of death. Homicide as a cause of death predominates in the 15-34 year old age group.

Unintentional injuries were the third leading cause of death among adults in Indiana from 2003 to 2006. Of the 5,237 deaths, almost half (48.9%) were due to motor vehicle crashes and approximately one-fourth (25.8%) were the result of poisoning. Falls are also of concern, and according to the most recent CDC data from 2002-2005, are the sixth leading cause of unintentional death beginning at aged 35 years, then becoming the 3rd leading cause at aged 45 years. Unintentional falls are the 3rd leading cause of hospital admissions for persons aged 20 to 44 years (13.9% or 3,364/24,240). The second leading cause of inpatient hospitalization injury for the 20-44 year olds was due to poisoning (32.3% or 7,825/24,240). Beginning at age 45, falls are the primary reason for hospitalization, ranging from 30.6% of unintentional injury related hospitalizations for persons aged 45 to 54 years to 51.4% for persons aged 55 to 64 years. Suicide was the fourth leading cause of death with 2,421 deaths, and homicide was the ninth leading cause of death with 1,082 for the four-year time period. For 20-34 year olds though, homicide was the third leading cause of death. Suicide by firearm and homicide by firearm, among the leading contributors for intentional injuries for persons aged 20 to 64 years, accounted for 54.4% of all intentional injury suicide deaths and 74% of all intentional injury homicide deaths in this age group. Suicide by suffocation and poisoning are also of concern in the 20 to 64 year age groupings, and were the 6th and 7th leading causes of injury deaths. Although most adults are experienced motor vehicle drivers, the role of unsafe driving practices, failure to wear a seat belt, or driving while intoxicated continue to be contributing factors to the toll of death and injuries related to motor vehicle crashes.

Since falls are the primary cause of hospital admission for unintentional injuries for 45 to 64 year olds, the behavioral risk factor surveillance survey (BRFSS, 2006 survey) asked questions about recent falls and injuries related to falls. Among 45-54 year olds, 14.9% indicated that they had fallen 1-4 times within the past three months and of those who had fallen, 38.8% said the fall caused an injury. Among 55-64 year olds, 15.6% answered they had fallen 1-4 times within the past three months and of those who had fallen, 31.1% indicated that the fall caused an injury.

Elderly people - (aged 65 years and older): Both physical and cognitive changes play a role in older Americans' susceptibility to motor vehicle-related injuries, falls, and suicide. As people age, their bones become more fragile, they experience problems with vision, their reflexes become slower, and some are cognitively impaired. Although Americans are living healthier and longer lives, facing the reality of poor vision, limited mobility, the loss of loved ones, and/or the development of chronic illnesses can have devastating emotional effects. Feelings of isolation and adjusting to a less active lifestyle increase the risk of suicide.

The rates of death due to injury for the elderly population are between two and four times higher than for all other age groups. Elderly males aged 75-84 had an injury death rate of 176.7, which is 1.5 times higher than the next highest age group of 20 to 24 year olds (120.0 per 100,000), and the 85+ year old males have almost a fourfold higher death rate (448.7 per 100,000) compared to the 20-24 year old males. Females aged 75-84 also had a high injury death rate of 82.7 per 100,000, and 85+ year old females had an injury death rate of 260.0. In Indiana, falls, motor vehicle traffic incidents, and poisoning continue to be the leading causes of unintentional injury hospitalizations for elderly citizens. Among this age group, falls accounted for 54.0% of all unintentional injury hospitalizations. From 2003-2006, unintentional injuries were the 9th leading cause of death in the elderly with 3,034 deaths. The top three causes of injury death for the eld-

erly were unintentional fall deaths (873 deaths), unintentional motor vehicle crash deaths (596 deaths) and suicide by firearm (320 deaths).

Conclusion

Injury is a public health problem with a large societal and financial impact. Fortunately, most injuries are predictable and preventable. Between 2003 and 2006, injuries were the fifth leading cause of death for Indiana residents, claiming 14,646 lives with an age-adjusted rate of 58.1 per 100,000 population. The leading cause of unintentional injury death for children under 1 was suffocation. Motor vehicle traffic injuries were the leading cause of unintentional fatality between the ages of 1 and 74. For people aged 75 and over, falls were the leading cause of unintentional injury death. Intentional injury deaths are also a problem; suicide was the 11th leading cause of death and homicide was the 16th leading cause of death in Indiana for the four year time period.

Non-fatal injuries also have long-term consequences such as disability. Based on hospital discharge data with valid E-codes during 2003-2006, injuries accounted for approximately 2.7% of all inpatient hospitalizations (86,799/3,167,075) with an overall injury rate of 343.4 per 100,000. The economic burden of injuries is also enormous. The total charges during 2003 to 2006 for inpatient hospitalizations were \$1.6 billion. The medical costs alone do not even 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.

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Selected Unintentional and Intentional Injury Topics

- 1) Motor Vehicle Crashes in Indiana
- 2) Falls in Indiana
- 3) Poisoning in Indiana
- 4) Fire/Burn-Related Injuries in Indiana
- 5) Suicides in Indiana
- 6) Homicide/Assault in Indiana

MOTOR VEHICLE CRASHES IN INDIANA

Table of Contents

Index of Figures and Tables.....	51-52
Highlights.....	53
Introduction.....	54
Motor Vehicle Crash Deaths in Indiana.....	54-59
Motor Vehicle Crash Injuries in Indiana.....	60-75
Risk Behavior and Prevention.....	75-79
Conclusion.....	80
References.....	81

Index of Figures and Tables

- Figure 1: Motor Vehicle Crash Death Rates, Age-Adjusted, Indiana, 2003-2006
- Figure 2: Motor Vehicle Crash Death Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 3: Mean Motor Vehicle Crash Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006
- Figure 4: Motor Vehicle Crash Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006
- Figure 5: Mean Motor Vehicle Crash Death Rates by Race and Gender/Sex, Age-Adjusted, 2003-2006
- Figure 6: Motor Vehicle Crash Death Rates by Race/Ethnicity and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 7: Motor Vehicle Crash Death Rates, Age-Specific, Indiana, 2003-2006
- Figure 8: Motor Vehicle Crash Inpatient Hospital Admission Rates, Indiana, 2003-2006
- Figure 9: Motor Vehicle Crash Inpatient Hospital Admission Rates by Gender, Indiana, 2003-2006
- Figure 10: Motor Vehicle Crash Inpatient Hospital Admissions by Race, Indiana, 2003-2006
- Figure 11: Motor Vehicle Crash Inpatient Hospital Admission Rates by Race, Indiana, 2003-2006
- Figure 12: Mean Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 13: Motor Vehicle Crash Inpatient Hospital Admission Rates by Race and Gender, Indiana, 2003-2006
- Figure 14: Motor Vehicle Crash Inpatient Hospital Admissions by Age, Indiana, 2003-2006
- Figure 15: Motor Vehicle Crash Inpatient Hospital Admission Rates, Age-Specific, Indiana, 2003-2006
- Figure 16: Motor Vehicle Crash Inpatient Hospital Admissions by Type, Indiana, 2003-2006
- Figure 17: Motor Vehicle Crash Inpatient Hospital Admissions by Source, Indiana, 2003-2006
- Figure 18: Motor Vehicle Crash Inpatient Hospital Admissions by Payor, Indiana, 2003-2006
- Figure 19: Motor Vehicle Crash Outpatient/ED Visit Rates, Age-Adjusted, Indiana, 2003-2006
- Figure 20: Motor Vehicle Crash Outpatient/ED Visit Rates by Gender, Age-Adjusted, Indiana, 2003-2006
- Figure 21: Motor Vehicle Crash Outpatient/ED Visits by Race, Indiana, 2003-2006
- Figure 22: Motor Vehicle Crash Outpatient/ED Visit Rates by Race, Age-Adjusted, Indiana, 2003-2006
- Figure 23: Mean Motor Vehicle Crash Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 24: Motor Vehicle Crash Outpatient/ED Visit Rates by Race and Gender, Age-Adjusted, Indiana, 2003-2006
- Figure 25: Motor Vehicle Crash Outpatient/ED Visits by Age-Group, Indiana, 2003-2006
- Figure 26: Motor Vehicle Crash Outpatient/ED Visit Rates, Age-Specific, Indiana, 2003-2006
- Figure 27: Motor Vehicle Crash Outpatient/ED Visits by Payor, Indiana, 2003-2006
- Figure 28a: Students Who Rode One or More Times in a Vehicle Driven by Someone Who had been Drinking Alcohol During the Past Month, Indiana

Figure 28b: Students Who Drove One or More Times When They had been Drinking Alcohol in the Past Month, Indiana

Figure 28c: Students Who Never or Rarely Wore a Seat Belt When Riding in a Car Driven by Someone Else, Indiana

Table 1: Motor Vehicle Crash Deaths by Gender/Sex, Indiana, 2003-2006

Table 2: Motor Vehicle Crash Deaths by Race/Ethnicity, Indiana, 2003-2006

Table 3: Motor Vehicle Crash Deaths and Rates, Age-Specific, Indiana, 2003-2006

Table 4: Motor Vehicle Crash Deaths by Gender/Sex, Inpatient Admissions, Indiana, 2003-2006

Table 5: Motor Vehicle Crash Inpatient Hospital Admissions by Race, Indiana, 2003-2006

Table 6: Motor Vehicle Crash Inpatient Hospital Admissions and Rates, Age-Specific, Indiana, 2003-2006

Table 7: Motor Vehicle Crash Outpatient Visits by Gender/Sex, Indiana, 2003-2006

Table 8: Motor Vehicle Crash Outpatient/ED Visits by Race, Indiana, 2003-2006

Table 9: Persons Killed in Motor Vehicle Crashes by Highest Blood Alcohol Concentration (BAC), Indiana, 2003-2006

Table 10: Restraint Use of Drivers Killed in Motor Vehicle Crashes, Indiana, 2003-2006

Table 11: Restraint Use of Occupants Killed in Motor Vehicle Crashes, Indiana, 2003-2006

Motor Vehicle Crash Highlights

Mortality, 2003-2006⁽²⁾

- Motor vehicle crashes (MVC) were the leading cause of unintentional injury death for Indiana residents, claiming 3,812 lives.
- Males were 2.4 times more likely to die in a MVC than females (21.8 per 100,000 vs. 8.9 per 100,000).
- Between 2003 and 2006, white males had the highest rate of death due to MVCs (22.4 per 100,000) than all other race/gender categories.
- Young adults (15-24 year olds) had the highest age-adjusted MVC death rate (24.7 per 100,000) of all ages.

Inpatient Admissions for Motor Vehicle Crashes, 2003-2006⁽³⁾

- MVCs accounted for approximately 14.9% (12,973 admissions) of all hospital inpatient admissions, with a overall rate of 51.7 per 100,000.
- Males were 1.6 times more likely to be admitted to the hospital following a MVC than females (63.9 per 100,000 compared to 39.6 per 100,000).
- Blacks were admitted to the hospital due to MVCs more than whites (52.0 per 100,000 versus 46.5 per 100,000).
- The age group with the highest hospital admission rate due to MVCs was 15-19 year olds (92.1 per 100,000).

Outpatient/Emergency Department (ED) Visits for Motor Vehicle Crashes, 2003-2006⁽³⁾

- MVCs accounted for approximately 10.7% (146,576 visits) of all hospital outpatient/ED visits.
- Females were 1.1 times more likely to be seen in an outpatient/ED facility following a MVC than males (622.0 per 100,000 compared to 550.0 per 100,000).
- Blacks were more likely to visit the outpatient/ED than whites (765.1 per 100,000 versus 502.4 per 100,000).
- Those 15-24 years of age had the highest rate of outpatient/ED visits due to MVCs compared to all other age groups (853.7 per 100,000).

Risk Behavior⁽⁸⁾

- In 2007, 11.9% of high school students reported driving one or more times in the previous 30 days while they were under the influence of alcohol.
- 9.2% of high school students (2007), 8.2% (2005), and 10.6% (2003) reported that they never or rarely wore a seat belt when riding in a car driven by someone else.

Introduction

Motor vehicle crash (MVC) injuries kill more children and young adults than any other single cause in the United States. They are the leading cause of unintentional injury for individuals one to 64 years of age and cause a heavy burden on society in terms of deaths, life-long disability, and economic costs. Each year in the United States, more than 41,000 people die in MVCs and about 500,000 hospitalizations and 4,000,000 emergency department (ED) visits occur due to MVC injuries.⁽¹⁾

A new study reports patients 20 years and younger accounted for more than 62,000 hospitalizations and more than 304,000 days of hospitalization in the United States during a one-year study period. When compared to all other injury types, children and adolescents sustain more extensive and severe injuries due to MVCs. According to the Centers for Disease Control and Prevention (CDC), the economic burden of MVC deaths and injuries is enormous, costing the United States more than \$150 billion each year.⁽¹⁾

Motor Vehicle Crash Deaths in Indiana

Motor vehicle crash (MVC) death data for this report was extracted from the Indiana State Department of Health (ISDH) mortality reports and are based off of ICD-10 codes specific to motor vehicle crashes (V02-V04, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V79, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V88.8, V89.0, V89.2). The numbers of deaths differ slightly from the nationally based reporting system, the National Center for Health Statistics (NCHS). The number of Indiana deaths reported by the ISDH is lower than the numbers from NCHS, because the ISDH does not always receive death certificates for Indiana residents that died out of state. However, these deaths are likely to be reported to NCHS from those out-of-state health departments, and NCHS would usually be able to assign state of residence, making the nationally based data more complete than the health department data. In addition, completeness of mortality data is dependent upon how thoroughly the death certificate is completed, which affects how a death is categorized. Another limitation is that race/ethnicity data is not accurate. Race/ethnicity is provided at the discretion of the person completing the death certificate and may not reflect how individuals would define their own race or ethnicity.⁽²⁾

In Indiana between 2003 and 2006, motor vehicle crashes were the leading cause of unintentional injury death, with a total of 3,812 individuals dying (average of 953.3 deaths per year) for a rate of 15.13 per 100,000 population. There were 922 motor vehicle crash deaths in 2003; 999 deaths in 2004; 960 deaths in 2005; and 931 deaths in 2006. Figure 1 shows the motor vehicle age-adjusted rates for the four-year period. The highest death rate was in 2004 with 15.9 per 100,000, and the lowest rate was 2003 with 14.8 per 100,000.

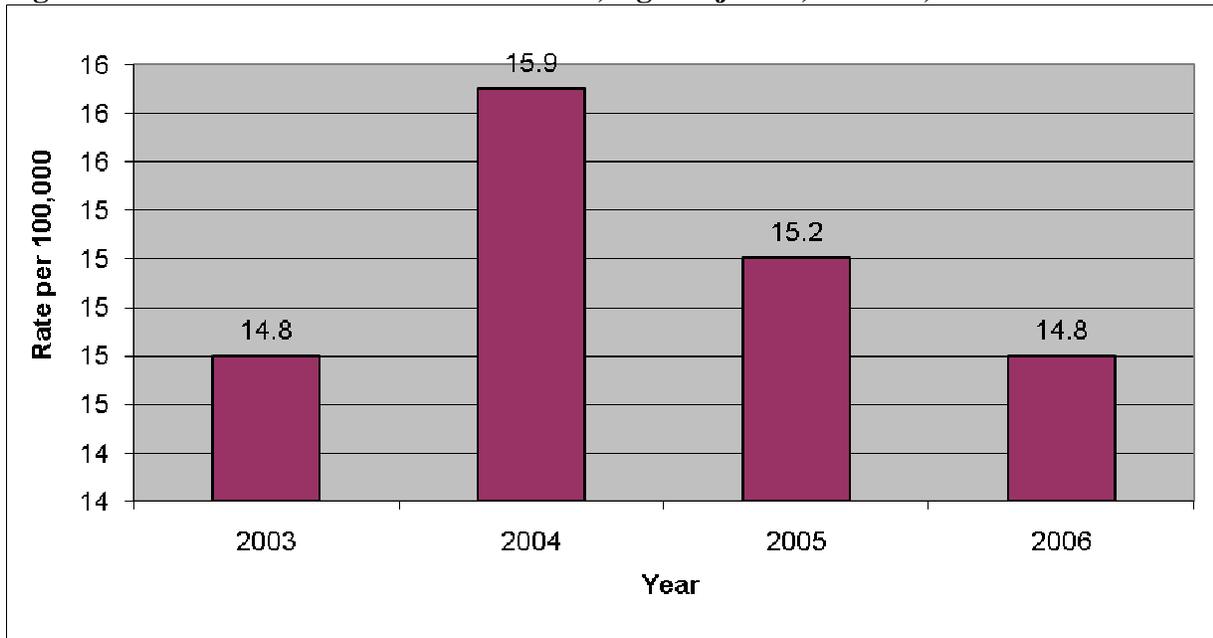
The majority of motor vehicle crash deaths (70% or 2,657/3,813) were in males, with females accounting for 30% (1,155/3,812). When comparing death rates, males (21.8 per 100,000) died 2.4 times more than females (8.9 per 100,000). Table 1 shows the number of deaths by gender/sex for each year, and Figure 2 shows the rates by gender/sex for each year.

More whites (88.9% or 3521/3,962) died from motor vehicle crashes than blacks (6.3% or 248/3,962), and individuals defined as “other” (1.1% or 43/3,962) or Hispanic (3.8% or 149/3,962) between 2003 and 2006. Whites had the highest average death rate due to motor vehicle crashes (15.7 per 100,000) and Hispanics had a higher death rate than blacks (12.2 per 100,000 versus 11.6 per 100,000). Figure 3 shows the average overall death rates for 2003-2006 by race. The motor vehicle crash death rate was highest for whites in 2004 (16.4 per 100,000), in 2005 for blacks (13.0 per 100,000) and in 2003 for Hispanics (15.4 per 100,000). The death rates for those categorized by “other” were unstable for all four years. Table 2 shows the total number of deaths by race, and Figure 4 shows the death rates by year.

With 2442 deaths and an average death rate of 22.4 per 100,000, white males had the highest number and death rate from motor vehicle crashes compared to all other race/ethnicity and gender/sex categories (Figure 5). White males were nearly 2.5 times more likely to die than white females, 1.2 times more likely than black males and more than 3.7 times more likely than black females. White females had the highest motor vehicle crash death rates compared to black and Hispanic females. Figure 6 shows the motor vehicle death rate for each category broken out by year.

Individuals between 15-24 and 65+ years of age had the highest motor vehicle age-specific death rates (24.7 per 100,000 and 22.1 per 100,000). See Figure 7. Adolescents and children (under age 14) had the lowest rates. The overall rate of death for all ages was 20.4 per 100,000. Table 3 shows the number of motor vehicle deaths in each age group for each year as well as the age-specific death rate.

Figure 1: Motor Vehicle Crash Death Rates, Age-Adjusted, Indiana, 2003-2006



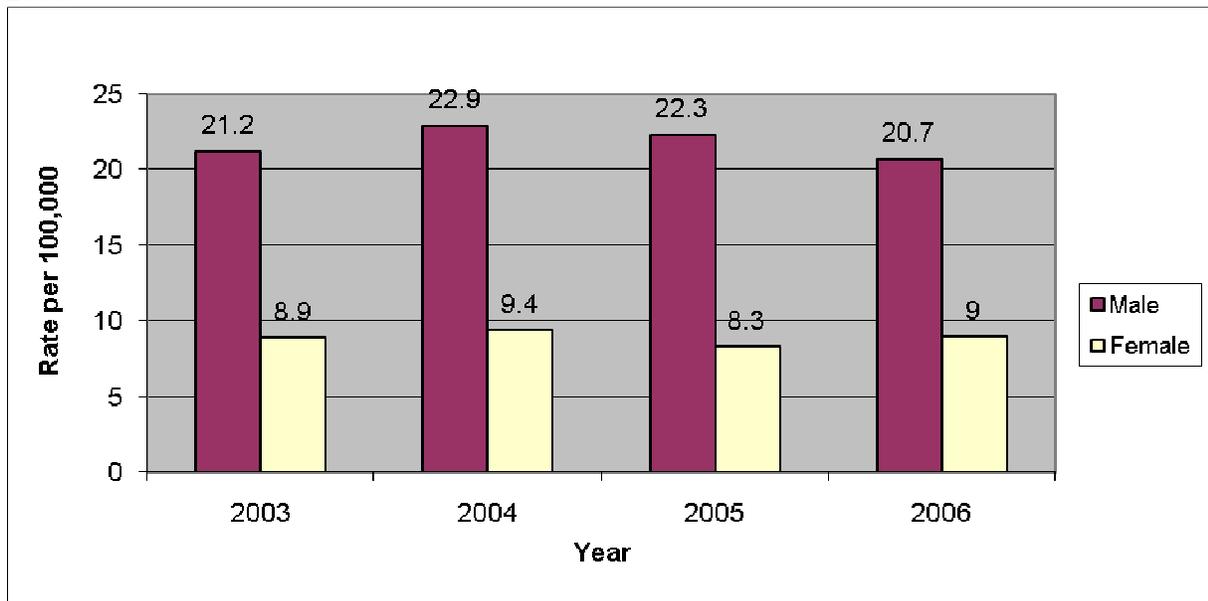
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 1: Motor Vehicle Crash Deaths by Gender/Sex, Indiana, 2003-2006

Year	Female	Male
2003	286	636
2004	305	694
2005	271	689
2006	293	638
Total	1,155	2,657

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Chart produced by Injury Prevention Program

Figure 2: Motor Vehicle Crash Death Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Graph produced by Injury Prevention Program

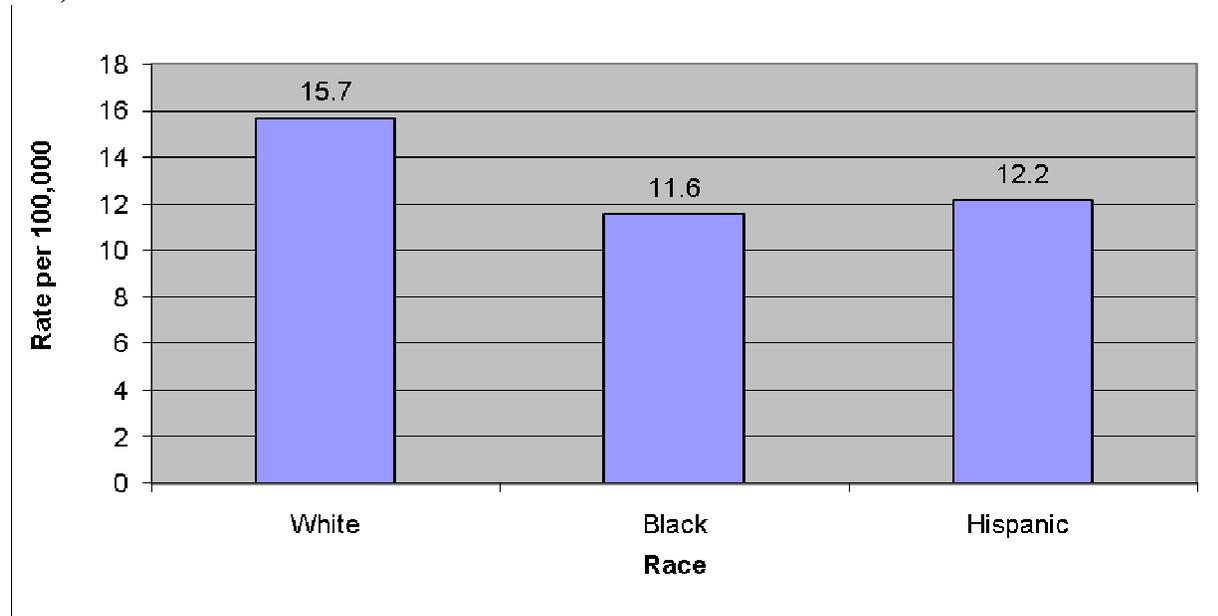
Table 2: Motor Vehicle Crash Deaths by Race/Ethnicity, Indiana, 2003-2006

Year	White	Black	Other	Hispanic
2003	852	59	11	39
2004	919	65	15	37
2005	878	71	11	38
2006	872	53	6	35
Total	3,521	248	43	149

Source:

Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

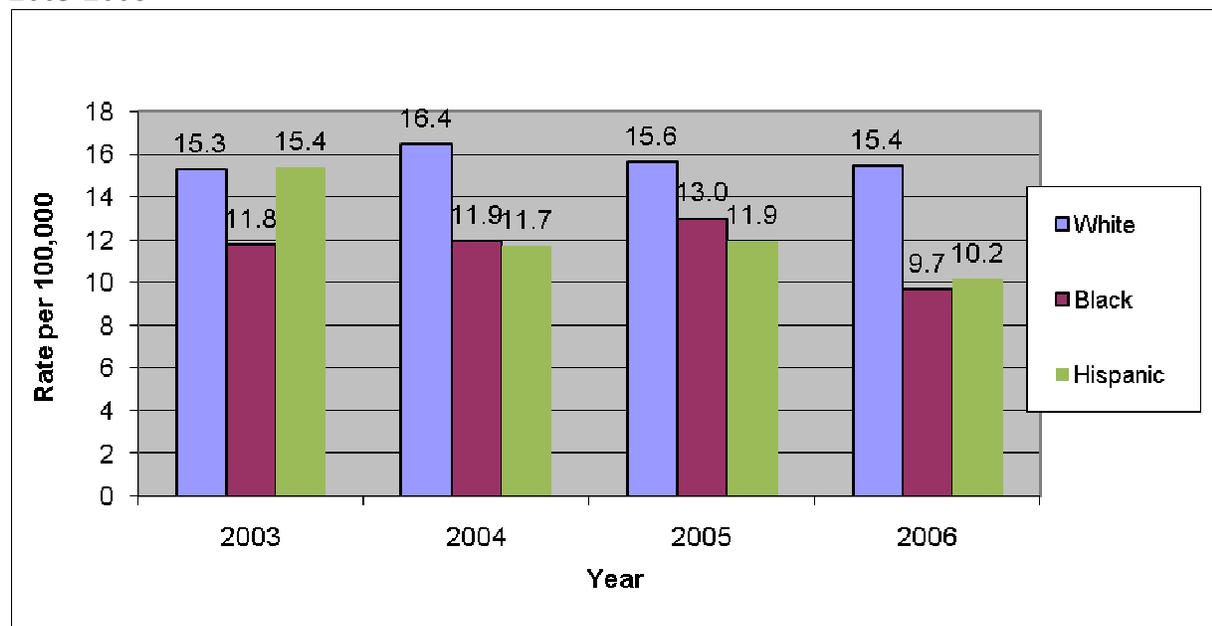
Figure 3: Mean Motor Vehicle Crash Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006



Note: Whites and blacks are both non-Hispanic.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

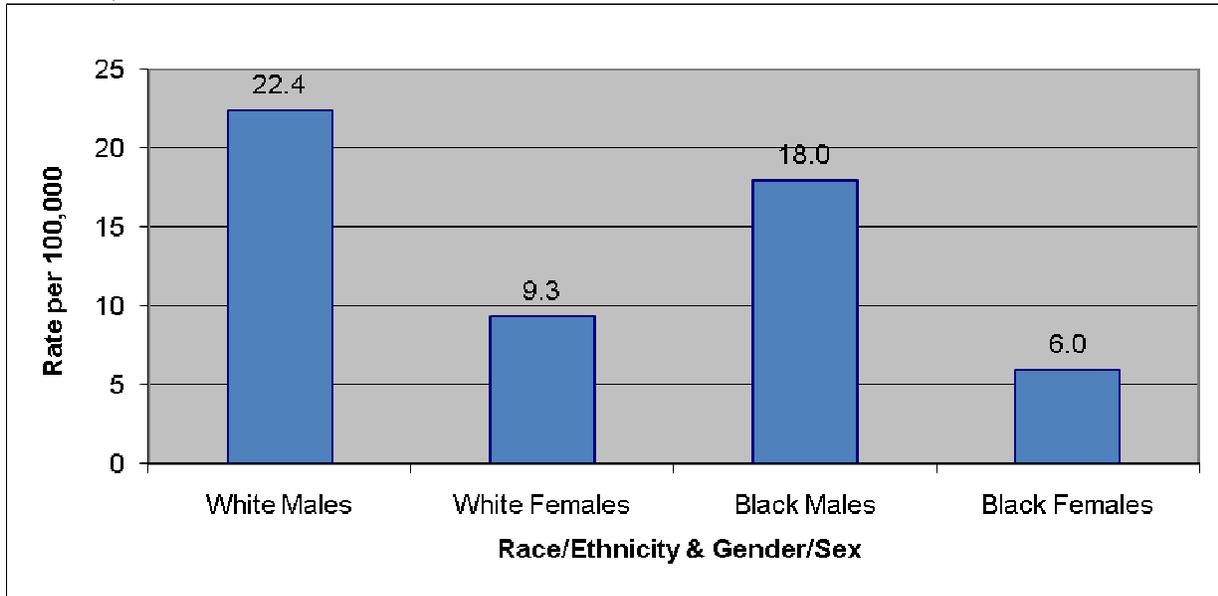
Figure 4: Motor Vehicle Crash Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006



Note: Whites and blacks are both non-Hispanic.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Graph produced by Injury Prevention Program

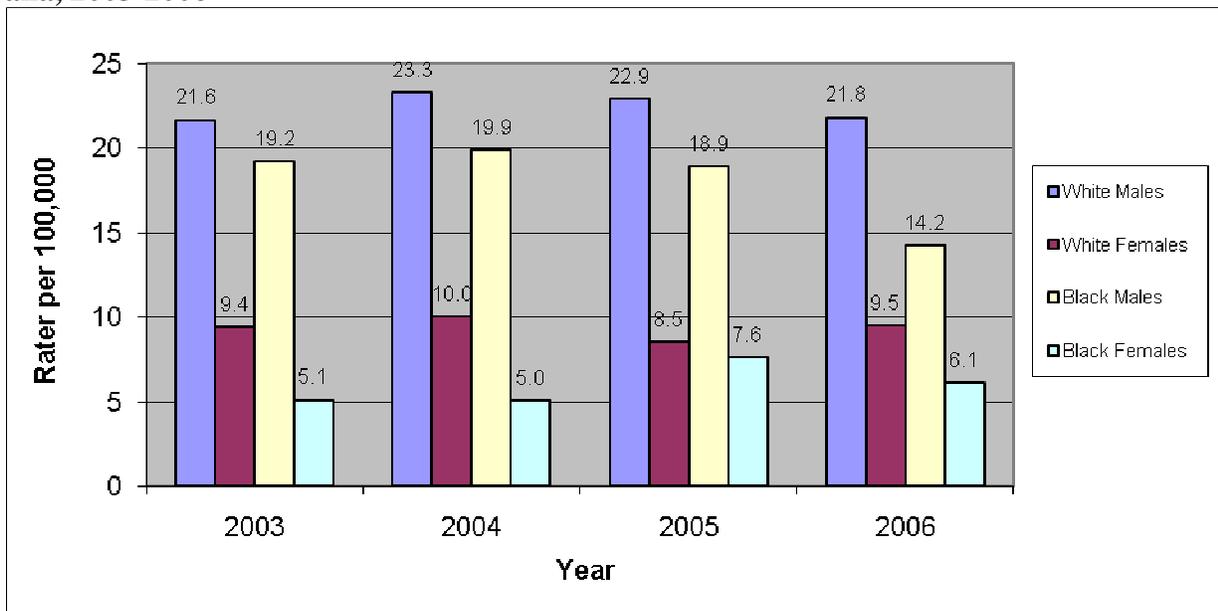
Figure 5: Mean Motor Vehicle Crash Death Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Note: Whites and blacks are both non-Hispanic.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Graph produced by Injury Prevention Program

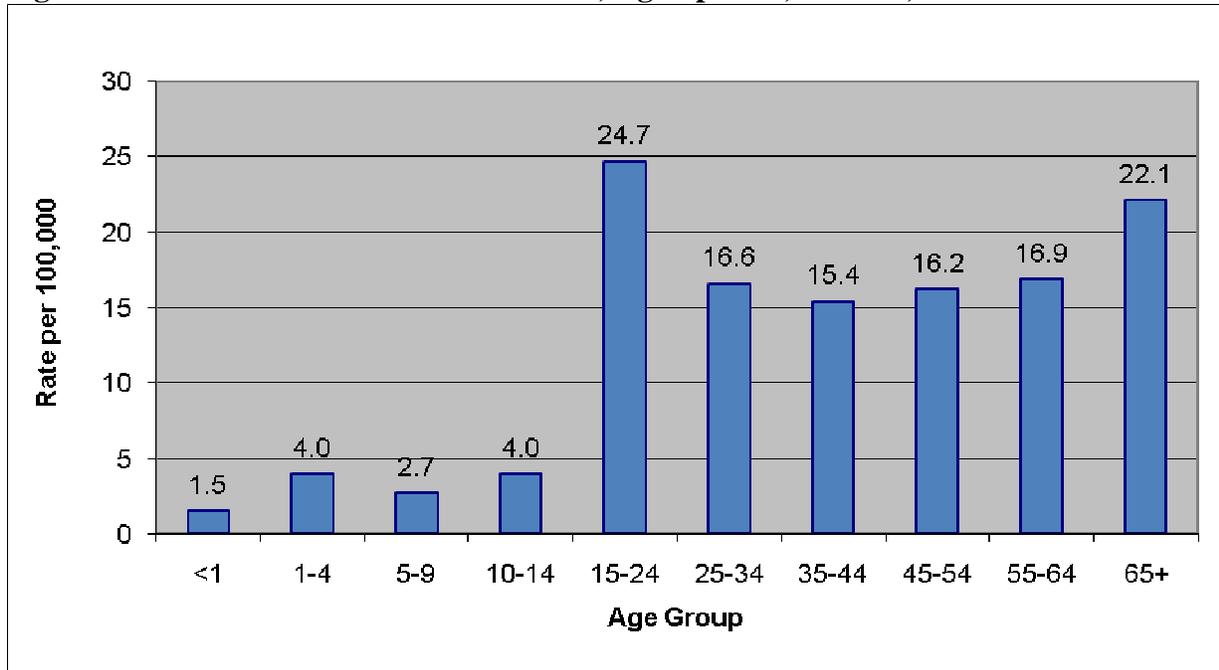
Figure 6: Motor Vehicle Crash Death Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Note: Whites and blacks are both non-Hispanic.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Graph produced by Injury Prevention Program
 Note: Death rates for Black Females are all unstable except for 2005 and should be used with caution

Figure 7: Motor Vehicle Crash Death Rates, Age-Specific, Indiana, 2003-2006



Note: The death rate for those <1 years of age was unstable and should be used with caution

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Graph produced by Injury Prevention Program

Table 3: Motor Vehicle Crash Deaths and Rates, Age-Specific, Indiana, 2003-2006

Age Groups	2003		2004		2005		2006	
	Deaths	Age-Specific Rates						
<1	1	U	3	U	4	U	2	U
1-4	16	U	17	U	13	U	12	U
5-9	8	U	12	U	12	U	16	U
10-14	18	U	25	5.4	15	U	16	U
15-24	252	27.9	269	29.8	235	26.2	230	17.9
25-34	126	15.4	151	18.3	147	17.6	136	15.2
35-44	135	14.7	137	15.1	141	15.7	147	15.9
45-54	120	13.8	139	15.7	148	16.4	133	19.9
55-64	92	15.6	82	13.4	105	16.5	100	25.1
65+	154	20.2	164	21.2	140	18.0	138	35.8
Unknown	0	---	0	---	0	---	1	---
Total	922	14.9	999	16.0	960	15.3	931	14.8

Note: 'U' signifies that the rates are unstable due to less than 20 deaths.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
 Chart produced by Injury Prevention Program

Motor Vehicle Crash Injuries in Indiana

Hospital discharge data give an indication of the number of unintentional and intentional injuries in Indiana, although the data have limitations. The International Classification of Disease Revision 9 Clinical Modification (ICD-9CM) coding scheme includes external causes of injury codes or E-codes that indicate the source or cause of the injury and can also provide injury-related cost data. However, E-codes are not mandated by law in Indiana, and it is estimated that only 62% of the discharge records contain them. Therefore, the total number of injuries in this report is a gross underestimation.⁽³⁾

E-codes specific to injury and poisoning include ICD-9-CM codes 800-999. E-codes specific to motor vehicle crash injuries include E810-E819, E958.5, E968.5, and E988.5. The hospital data base does not contain a patient-specific unique identifier, meaning that it does not distinguish whether one person had five visits or whether five people visited once. Therefore, statistics only reflect visits and not specific numbers of people. Also, race/ethnicity data is not very accurate because race/ethnicity is at the discretion of the person reporting the data and may not reflect how the individuals would define themselves. In some cases, race/ethnicity information is not provided at all.⁽³⁾

A final limitation of the hospital discharge data is that the Indiana law only requires hospital discharge data submission by acute care hospitals. Therefore, a few psychiatric and behavioral health hospitals do not submit data. All acute care hospitals are submitting inpatient data. However, one of the three Level 1 Trauma center hospitals has not submitted outpatient/emergency department data yet. As a result, the total number of injuries for the outpatient/emergency department data is an underestimation of the actual number of injuries and should be used with caution.⁽³⁾

Hospital Inpatient Data

From 2003 to 2006, there were 86,799 inpatient hospitalizations with a primary diagnosis of injury or poisoning. Based on the data with valid E-codes, motor vehicle crash (MVC) injuries accounted for approximately 14.9% (12,973 admissions) of all injury/poisoning hospital inpatient admissions with an injury rate (combined 2003-2006 rate) of 51.7 per 100,000. There were 3,270 MVC injuries in 2003; 3,258 injuries in 2004; 3,331 injuries in 2005; and 3,114 injuries in 2006. Figure 8 shows the MVC age-adjusted rates for the four-year period. The highest injury rate was in 2005 with 53.0 per 100,000, and the lowest rate was 2006 with 49.2 per 100,000.

Of those admitted to the hospital, 60.7% (7,871/12,973) were male and 39.3% (5,101/12,973) were female (one person's gender was unknown). When comparing rates, males were 1.6 times more likely to be admitted to the hospital due to a MVC than females (63.9 per 100,000 compared to 39.6 per 100,000). Table 4 shows the number of hospital admissions by gender/sex for each year, and Figure 9 shows the rates by gender/sex for each year.

The majority (80.0% or 10,382/12,973) of the hospital admissions were white Indiana residents (Figure 10). However, the age-adjusted rate for hospital admissions was higher in blacks com-

pared to whites (52.0 per 100,000 versus 46.5 per 100,000). The MVC hospitalization rate was highest in 2005 for blacks (59.5 per 100,000) and had been higher than whites until 2006. In 2006, the MVC hospitalization rate for blacks was lower than whites (40.5 per 100,000 versus 44.7 per 100,000 respectively). Table 5 shows the total number of hospitalizations by race, and Figure 11 shows the hospitalization rates by year.

With 6,250 inpatient hospital admissions, white males had the highest number of injuries from MVC compared to all other race/ethnicity and gender/sex categories. However, black males had a higher average age-adjusted rate (74.8 per 100,000) compared to white males (57.0 per 100,000). See Figure 12. Black females also had a higher age-adjusted rate of hospital admission when compared to white females (38.5 per 100,000 and 36.2 per 100,000). Figure 13 shows the MVC hospitalization rate for each gender/sex category broken out by year. Black males had a higher inpatient hospital admission rate for all four years compared to all other gender categories. The highest rate was in 2003, with a rate of 98.8 per 100,000 that was 1.7 times higher than the next highest rate (white males, 57.4 per 100,000). The MVC rate for black males has been dropping since 2003, and was at the lowest rate in 2006 (55.9 per 100,000). Figure 13 shows the MVC death rate for each category broken out by year.

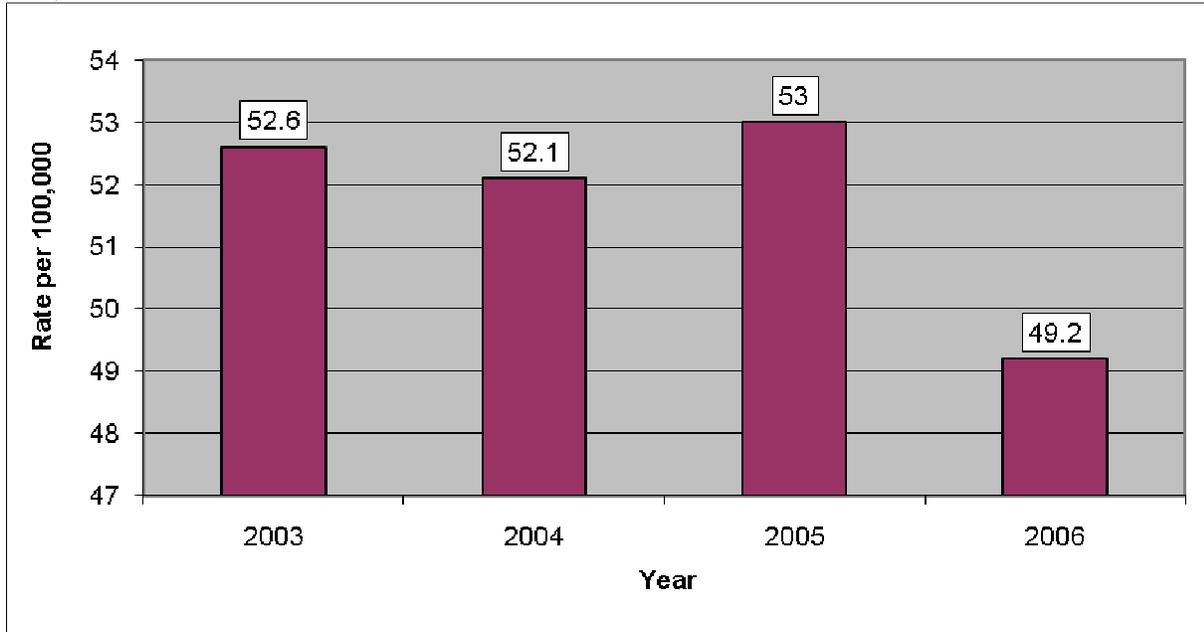
During 2003-2006, the highest age-specific rate of hospital admissions due to MVCs (92.1 per 100,000) was among 15-24 year olds. The lowest age-specific rate of hospital admissions due to MVCs was for those less than one year of age (9.2 per 100,000). Figure 14 shows the actual number of hospital admissions for each age group, while Figure 15 shows the age-specific rate for each age group. Table 6 shows the number of MVC in each age group for each year as well as the age-specific death rate.

Most MVCs are unintentional, however there were 19 hospitalizations during 2003-2006 in which the E-code was either a suicide or self-inflicted poisoning by motor vehicle exhaust gas, a suicide or self-inflicted injury by crashing a motor vehicle, or poisoning by motor vehicle exhaust gas either accidentally or purposely. There were also 12 hospitalizations in which the E-code was an assault by transport vehicle (e.g. purposely struck by, pushed in front of, thrown from, dragged). Of all unintentional MVCs, occupants of motor vehicle accounted for 71% (9,233/12,938) of all hospital admissions. Other unintentional MVCs included MVCs involving collisions with other types of vehicles (train, bus, etc) 15.1% (1,960/12,973), MVCs involving bicycles 2.2% (286/12,973), and MVCs involving pedestrians 7.0% (908/12,973).

Between 2003 and 2006, 2.8% (359/12,973) of all patients admitted to the hospital due to MVC's died. The majority (77%) of patients was admitted to the hospital as an urgent case, and 80.0% were admitted after receiving care at an outpatient center or in the ED (Figure 16 and Figure 17).

For 2003-2006, the total charges for all ages injured due to MVC and admitted to the hospital were \$369 million. The median total charges for all ages due to MVC were \$18,519 respectively with a range of \$566-\$656,371. Of those admitted to the hospital, 49.4% (6,408/12,973) had commercial insurance (Figure 18). The average length of stay was 5.1 days (range 1-120 days), and the median length of stay was 3.0 days (range 1-120 days).

Figure 8: Motor Vehicle Crash Inpatient Hospital Admission Rates, Age-Adjusted, Indiana, 2003-2006



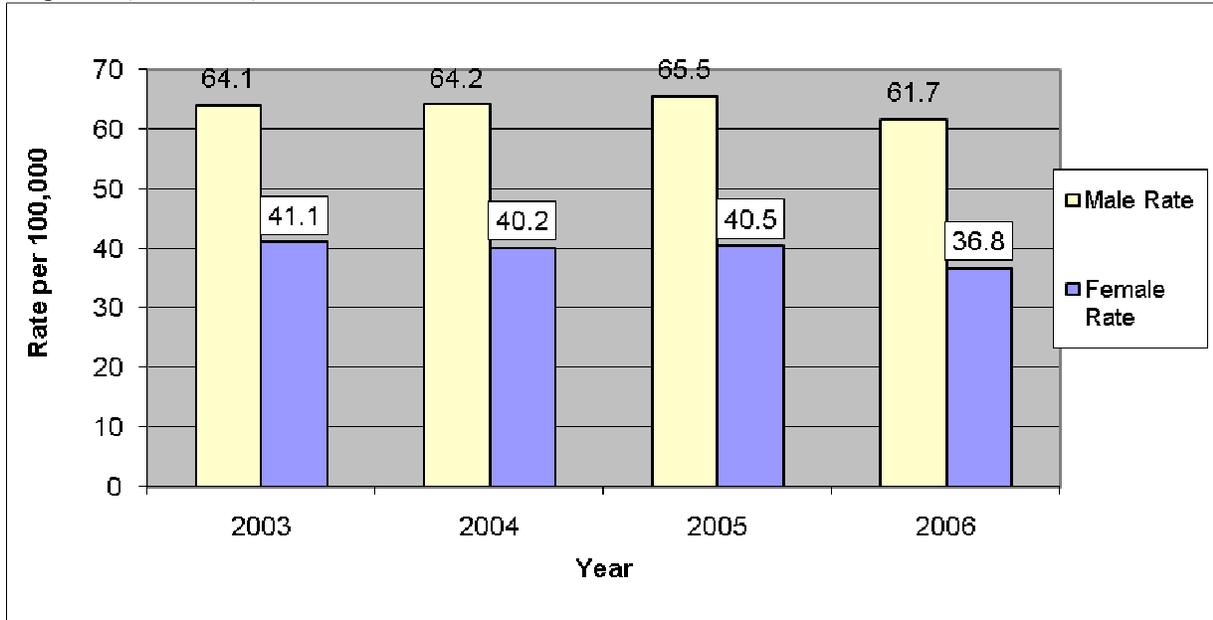
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 4: Motor Vehicle Crash Inpatient Hospital Admissions by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	1,960	1,310
2004	1,969	1,289
2005	2,021	1,309
2006	1,921	1,193
Total	7,871	5,101

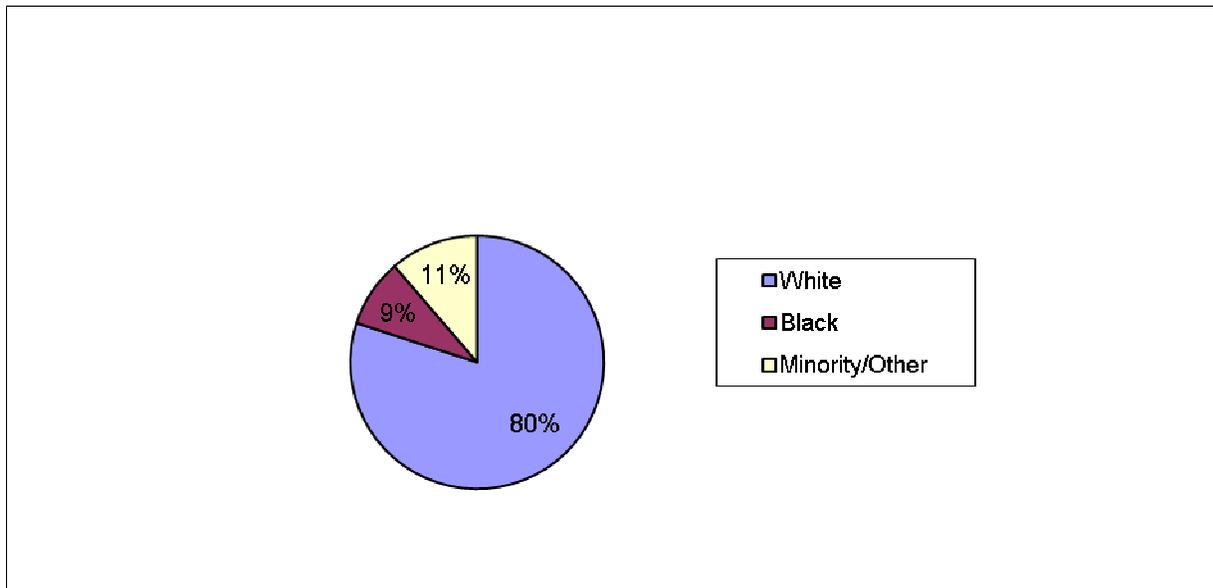
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 9: Motor Vehicle Crash Inpatient Hospital Admission Rates by Gender, Age-Adjusted, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 10: Motor Vehicle Crash Inpatient Hospital Admissions by Race, Indiana, 2003-2006



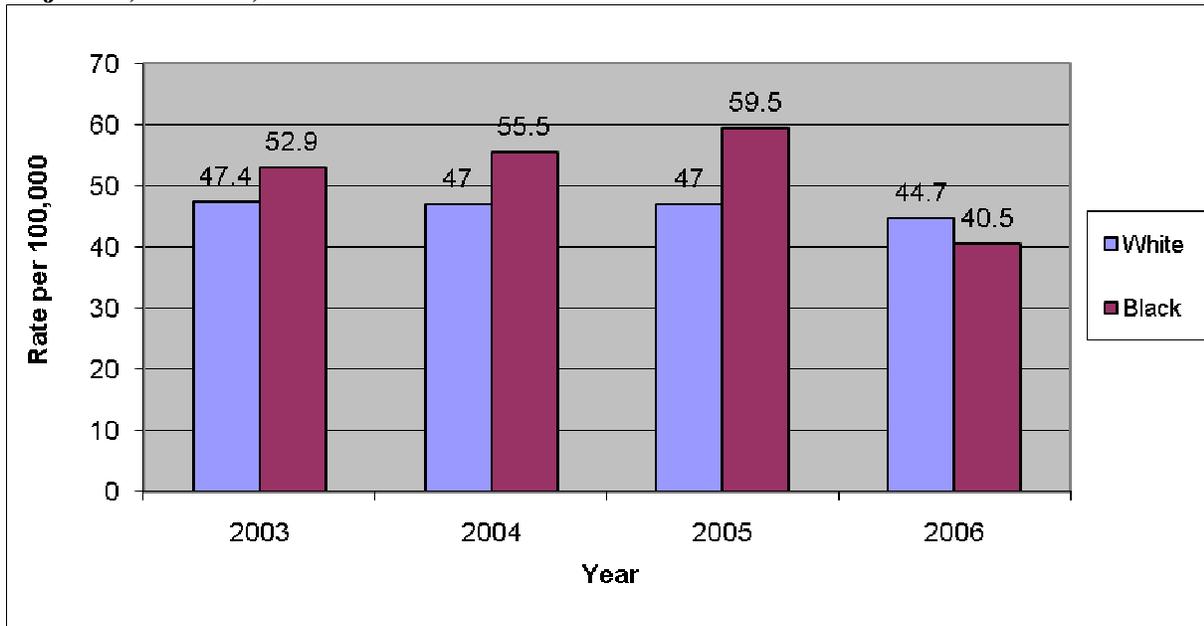
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 5: Motor Vehicle Crash Inpatient Hospital Admissions by Race, Indiana, 2003-2006

Year	White	Black
2003	2,630	277
2004	2,618	302
2005	2,625	327
2006	2,509	222
Total	10,382	1,128

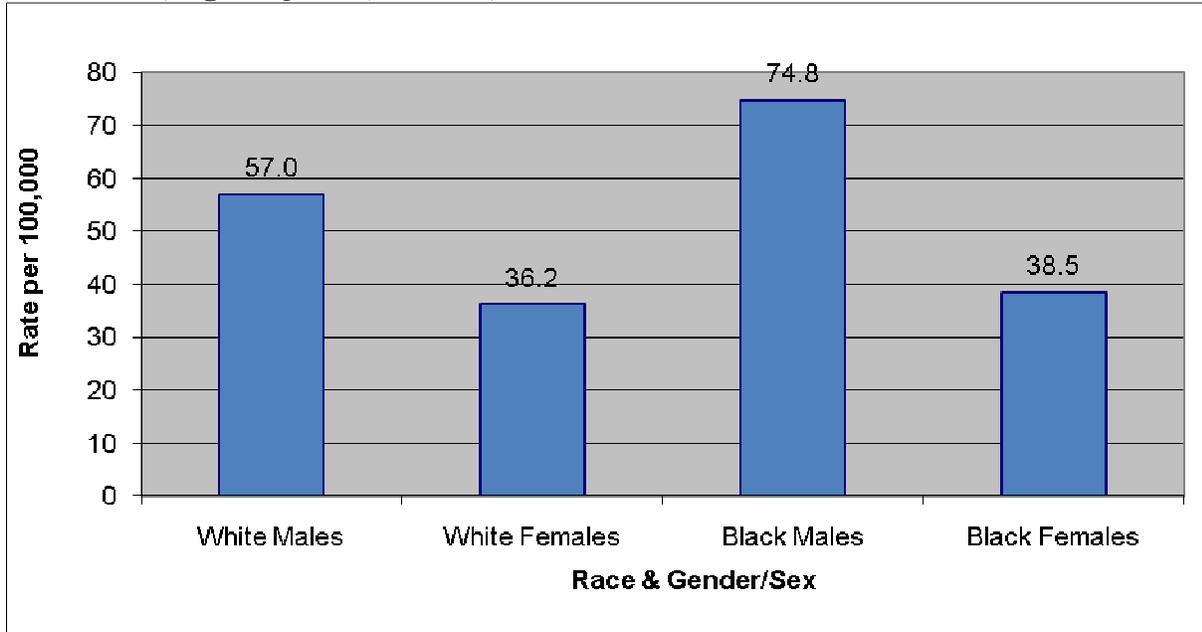
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 11: Motor Vehicle Crash Inpatient Hospital Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006



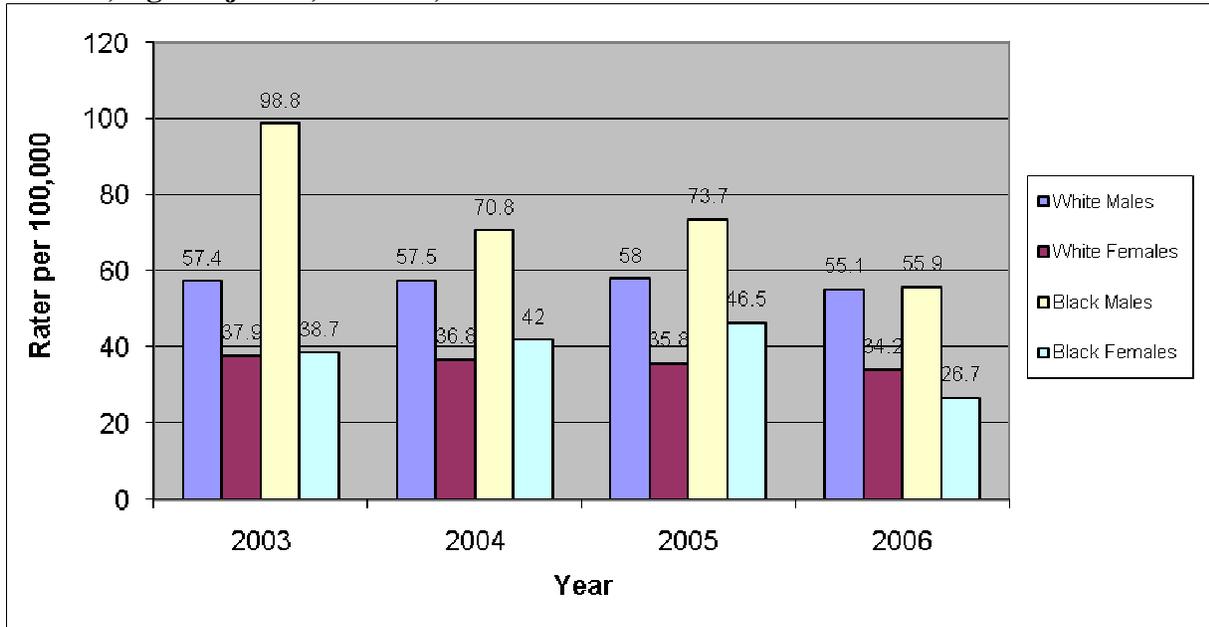
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 12: Mean Motor Vehicle Crash Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



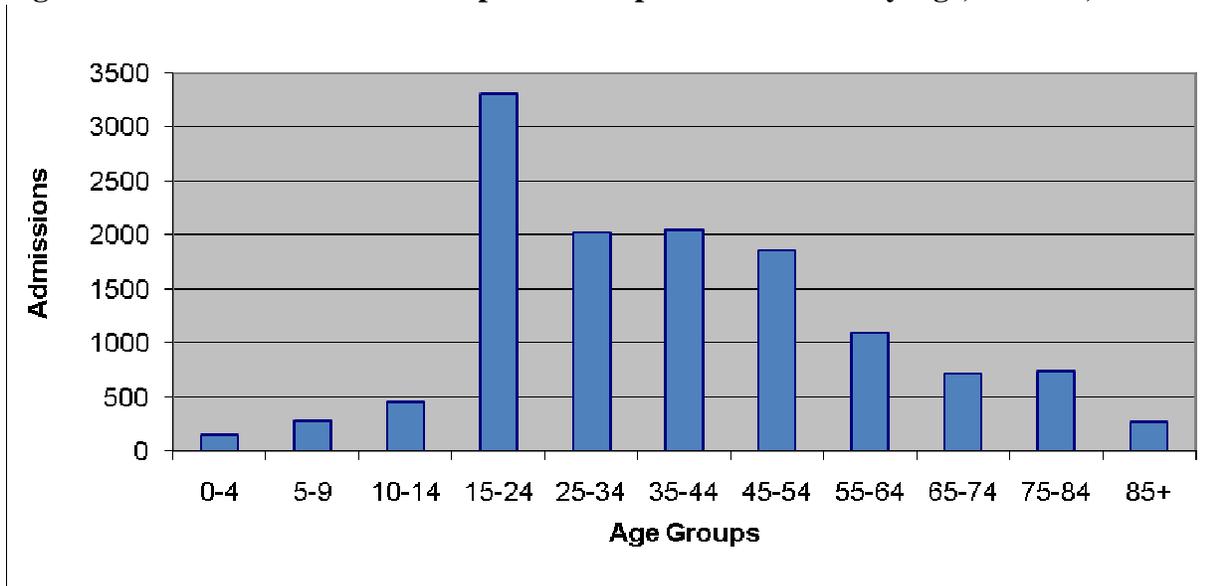
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 13: Motor Vehicle Crash Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



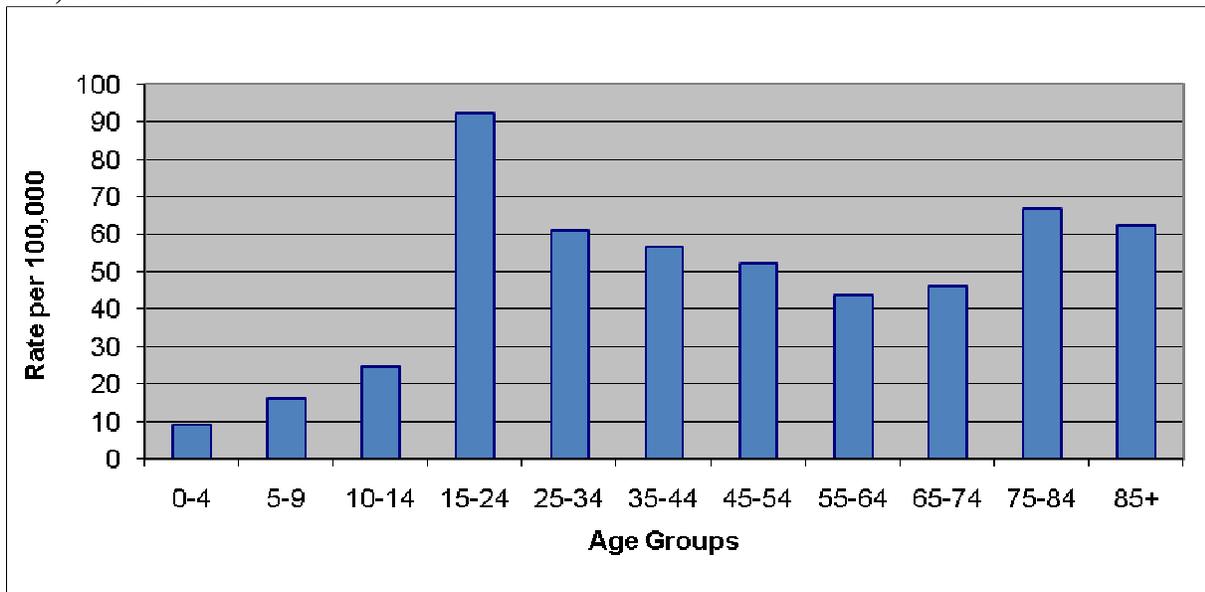
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 14: Motor Vehicle Crash Inpatient Hospital Admissions by Age, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 15: Motor Vehicle Crash Inpatient Hospital Admission Rates, Age-Specific, Indiana, 2003-2006



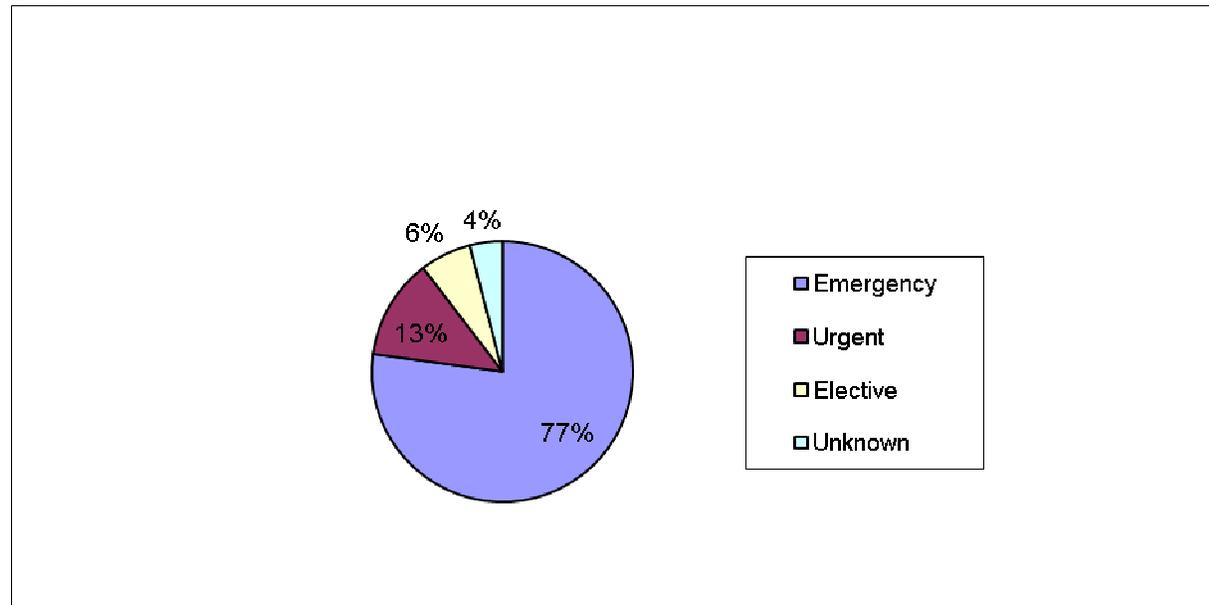
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 6: Motor Vehicle Crash Inpatient Hospital Admissions and Rates, Age-Specific, 2003-2006

Age Groups	2003		2004		2005		2006	
	Injuries	Age-Specific Rates						
0-4	49	11.4	37	8.6	36	8.4	37	8.6
5-9	87	19.7	70	16.0	72	16.4	53	12.4
10-14	120	25.8	134	29.0	110	24.0	91	20.6
15-24	886	98.2	839	93.0	834	92.9	752	84.3
25-34	504	61.7	495	59.9	548	65.6	485	57.1
35-44	501	54.7	535	59.0	504	56.1	509	56.9
45-54	460	52.8	458	51.7	462	51.3	484	52.4
55-64	253	42.8	259	42.2	298	46.8	284	42.5
65-74	161	41.7	170	43.8	202	51.9	187	46.9
75-84	187	67.9	183	65.5	203	72.5	168	61.2
85+	62	61.3	78	74.4	62	57.1	64	57.6
Total	3,270	52.6	3,258	52.1	3,331	53.0	3,114	49.2

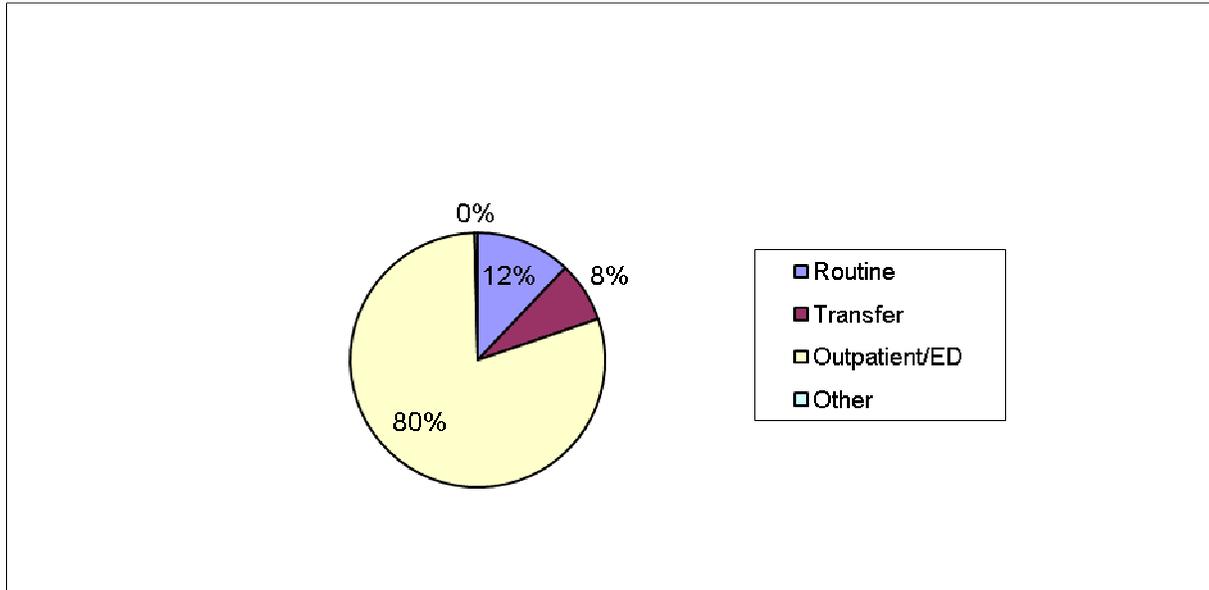
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 16: Motor Vehicle Crash Inpatient Hospital Admissions by Type, Indiana, 2003-2006



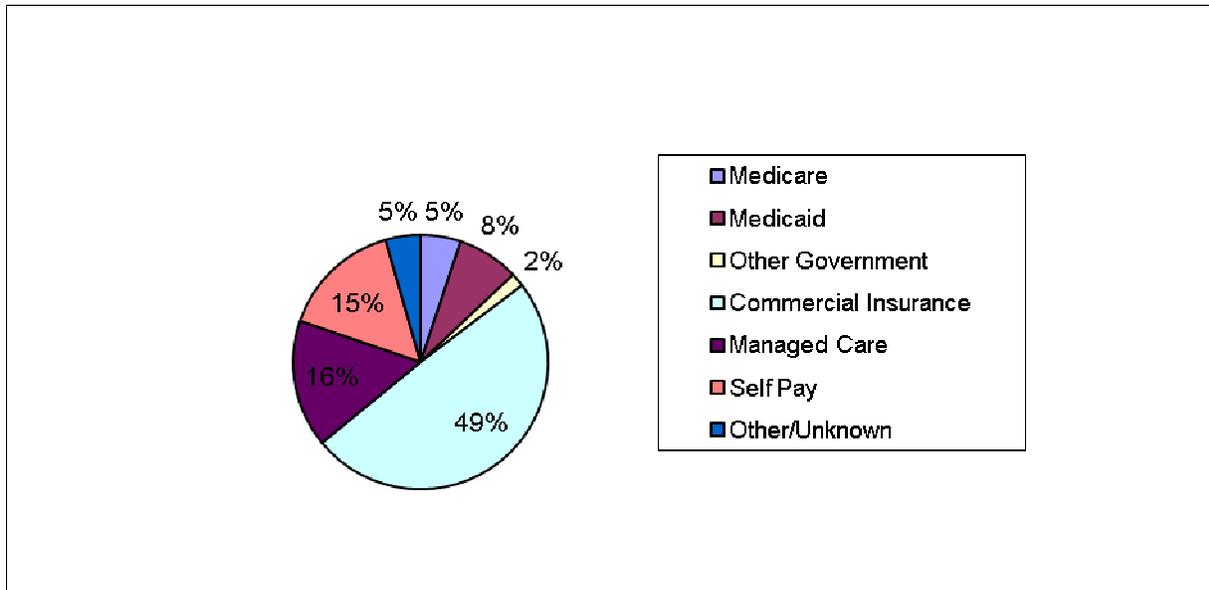
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 17: Motor Vehicle Crash Inpatient Hospital Admissions by Source, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 18: Motor Vehicle Crash Inpatient Hospital Admissions by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Hospital Outpatient/Emergency Department Data

During 2003 and 2006, there were 1,375,552 outpatient/emergency department (ED) visits with a primary diagnosis for injury or poisoning (ICD-9CM codes 800-999). Based on the data with valid E-codes, motor vehicle crashes accounted for approximately 10.7% (146,576 visits) of injury/poisoning outpatient/ED visits with an injury rate (combined 2003-2006 rate) of 585.3 per 100,000. There were 30,858 motor vehicle crash (MVC) injuries in 2003; 35,246 injuries in 2004; 40,743 injuries in 2005; and 39,727 injuries in 2006. Figure 19 shows the MVC age-adjusted rates for the four-year period. The highest injury rate was in 2005 with 650.3 per 100,000, and the lowest rate was 2006 with 496.3 per 100,000.

Of those who visited an outpatient/ED, 46.9% (68,803/146,576) were male and 53.1% (77,770/146,576) were female (three with unknown gender). When comparing rates, females were 1.1 times more likely to be visiting the ED due to a MVC than males (622.0 per 100,000 compared to 550.0 per 100,000). Table 7 shows the number of hospital outpatient/ED visits by gender/sex for each year, and Figure 20 shows the rates by gender/sex for each year.

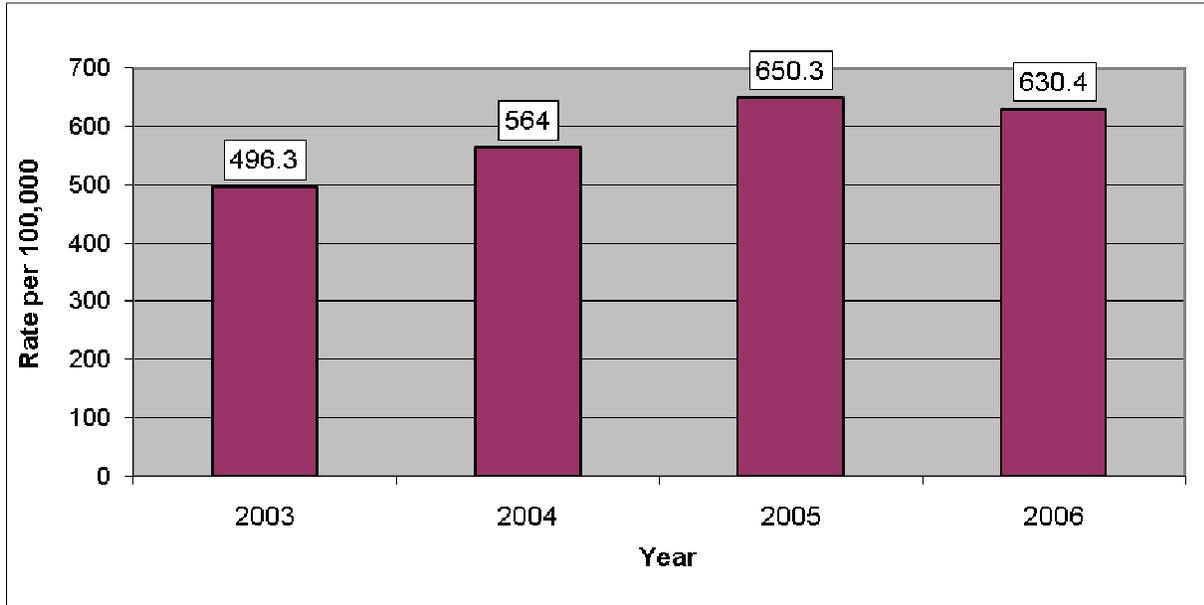
The majority (75.7% or 110,941/146,576) of the hospital outpatient/ED visits were white Indiana residents (Figure 21). However, the age-adjusted rate for hospital outpatient/ED visits was higher in blacks compared to whites (765.1 per 100,000 versus 502.4 per 100,000). The MVC hospital outpatient/ED visit rate was highest in 2006 for whites (547.1 per 100,000) and has been increasing since 2003. The highest MVC outpatient/ED visit rate for blacks was in 2005 (811.1 per 100,000). During 2006 there was a decline in MVC for blacks (684.2 per 100,000), and this was the lowest rate for all years examined. Table 8 shows the total number of hospital outpatient/ED visits by race and year, and Figure 22 shows the hospital outpatient/ED visit rates by year.

Black females accounted for 7.4% (9,481/128,006) of all hospital outpatient/ED visits by black and white Indiana residents. However, with 9,481 deaths and an average death rate of 819.1 per 100,000, black females had the highest rate from MVC compared to all other race/ethnicity and gender/sex categories (Figure 23). Black males who comprised only 5.9% (7,586/128,006) of all black and white Indiana residents, had the second highest MVC outpatient/ED rate (707.8 per 100,000). Figure 24 shows the MVC hospital outpatient/ED visit rate for each category broken out by year.

During 2003-2006, the highest age-specific rate of hospital admissions due to MVCs (853.7 per 100,000) was among 15-24 year olds. The lowest age-specific rate of hospital admissions due to MVCs was for those less than one to four years of age (157.9 per 100,000). Figure 25 shows the actual number of hospital admissions for each age group, while Figure 26 shows the age-specific rate for each age group.

Between 2003 and 2006, 0.1% (135/146,576) of all patients who visited an outpatient/ED facility due to MVCs died. The total charges for all ages injured due to MVC and seen in the outpatient/ED were \$212 million. The median total charges for all ages due to MVC were \$736 with a range of \$0-\$95,524. Of those who visited and outpatient/ED facility, 53% (76,458/146,576) had commercial insurance (Figure 27).

Figure 19: Motor Vehicle Crash Outpatient/ED Visit Rates, Age-Adjusted, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

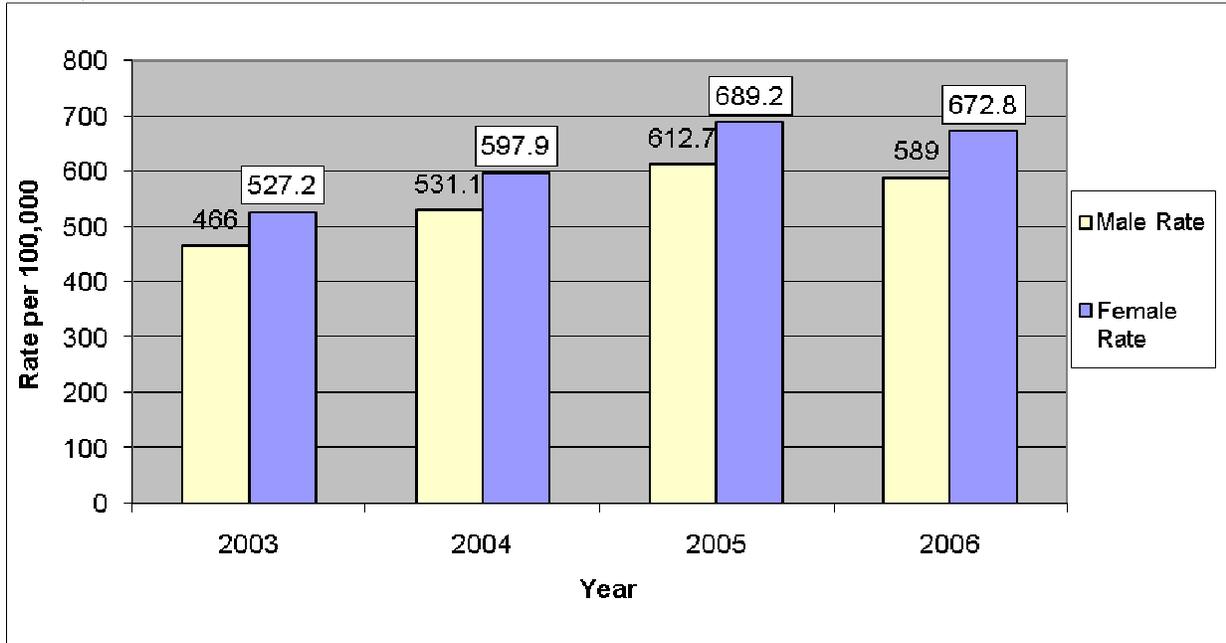
Table 7: Motor Vehicle Crash Outpatient/ED Visits by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	14,469	16,389
2004	16,567	18,680
2005	19,184	21,557
2006	18,583	21,144
Total	68,803	77,770

Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

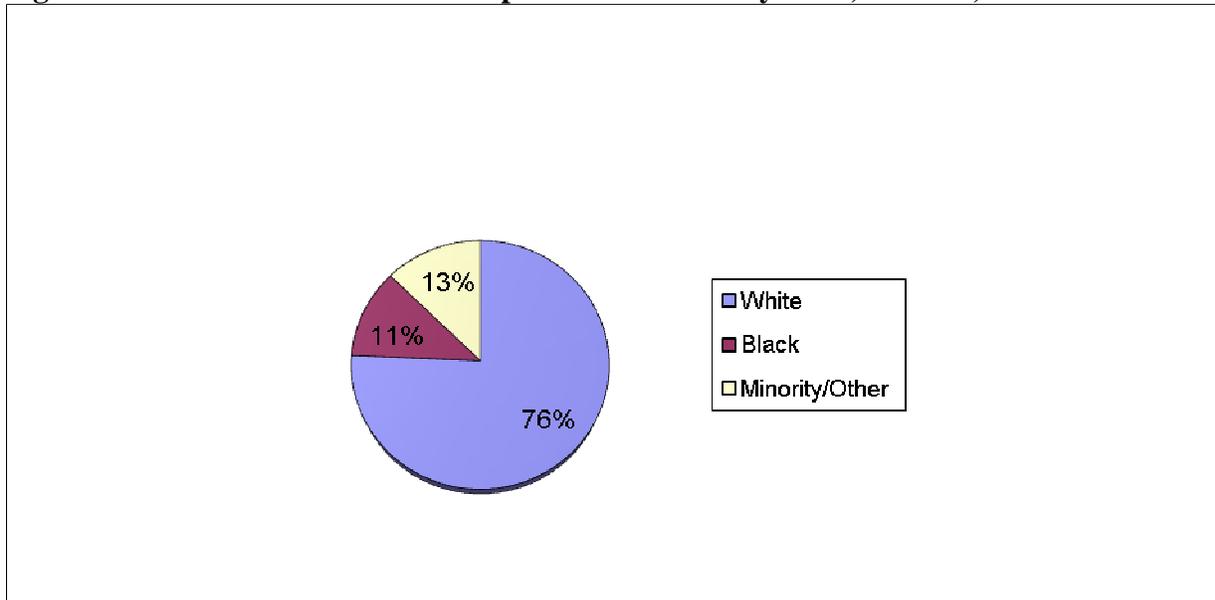
*3 peoples gender was unknown

Figure 20: Motor Vehicle Crash Outpatient/ED Visit Rates by Gender, Age-Adjusted, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 21: Motor Vehicle Crash Outpatient/ED Visits by Race, Indiana, 2003-2006



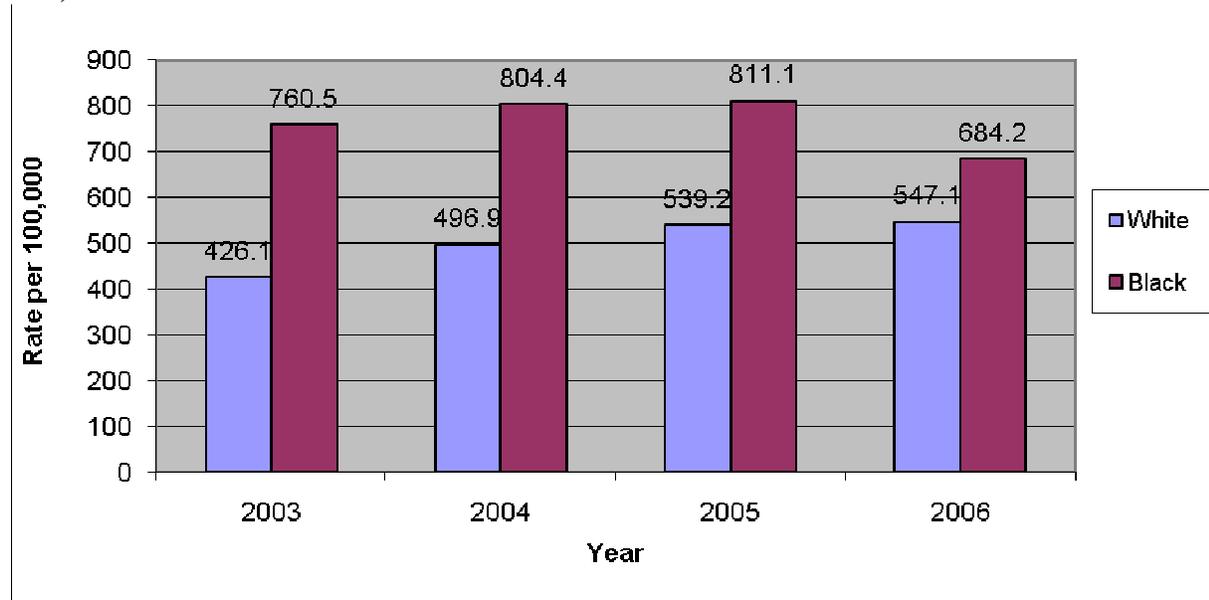
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Table 8: Motor Vehicle Crash Outpatient/ED Visits by Race, Indiana, 2003-2006

Year	White	Black
2003	23,465	4,061
2004	27,411	4,466
2005	29,773	4,579
2006	30,291	3,962
Total	110,940	17,068

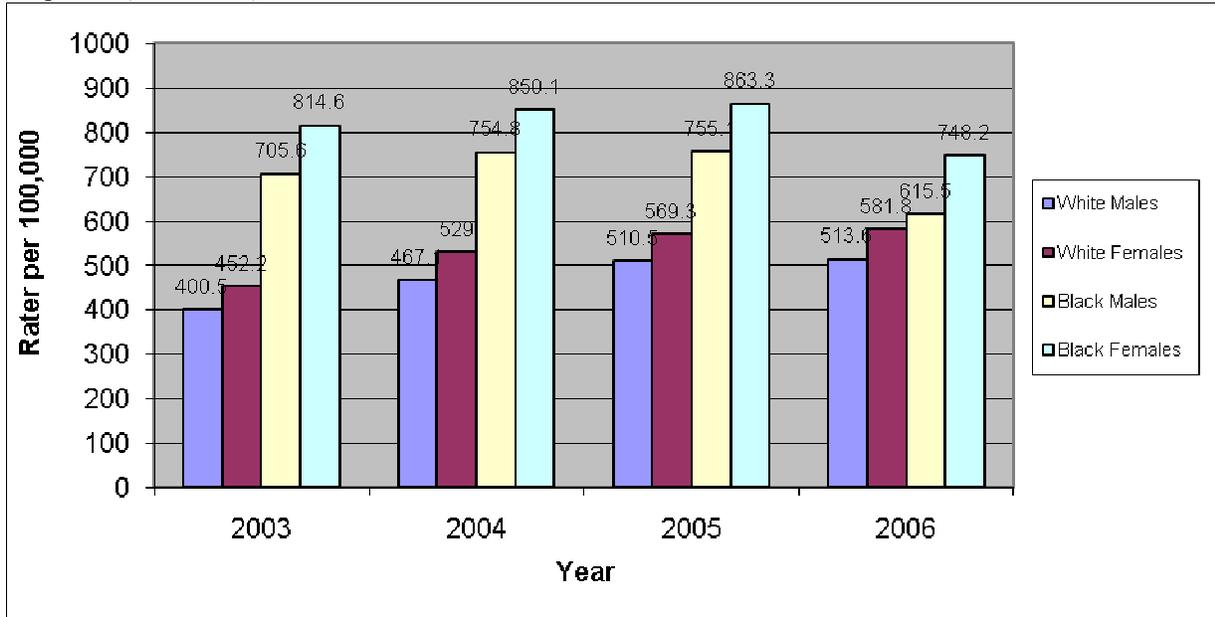
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 22: Motor Vehicle Crash Outpatient/ED Visit Rates by Race, Age-Adjusted Indiana, 2003-2006



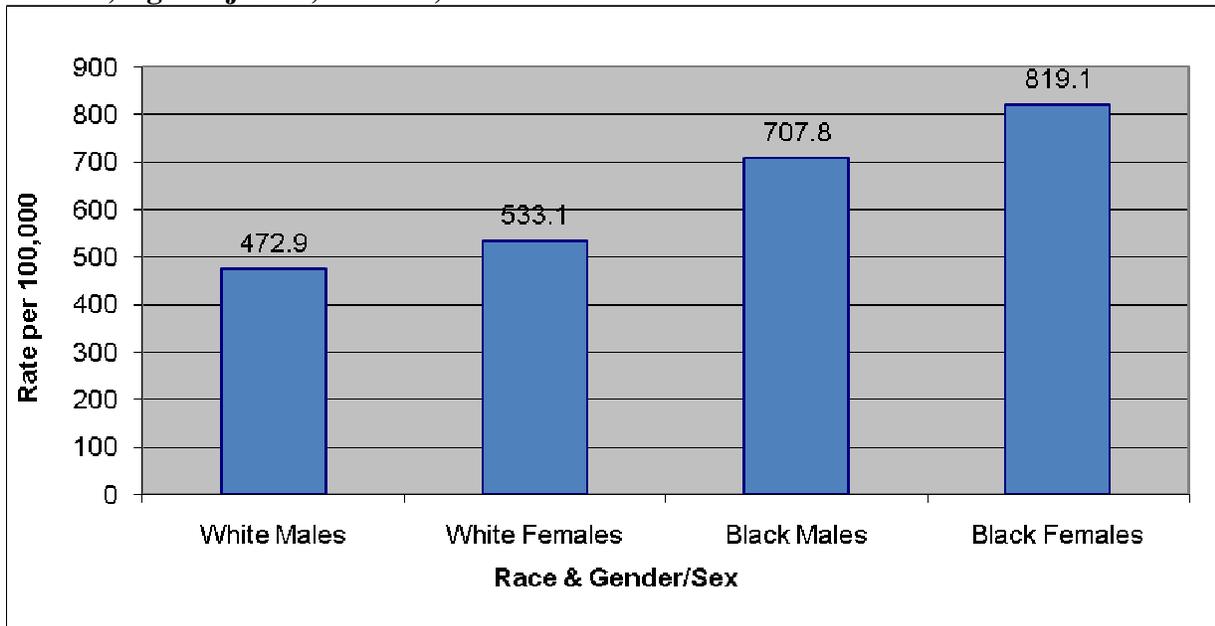
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 23: Motor Vehicle Crash Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



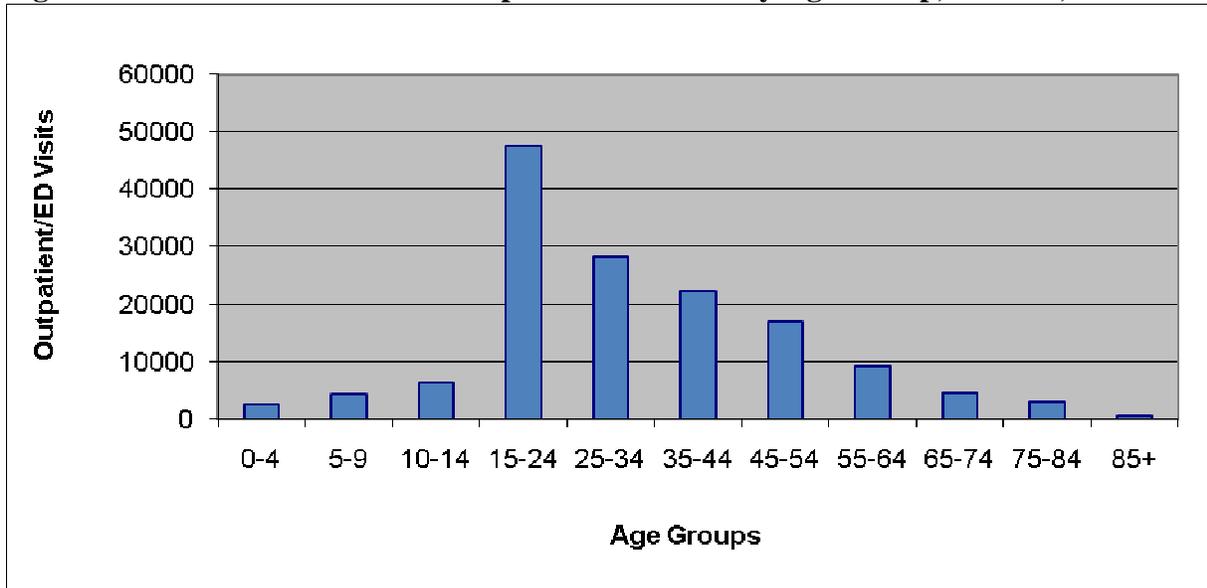
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 24: Mean Motor Vehicle Crash Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



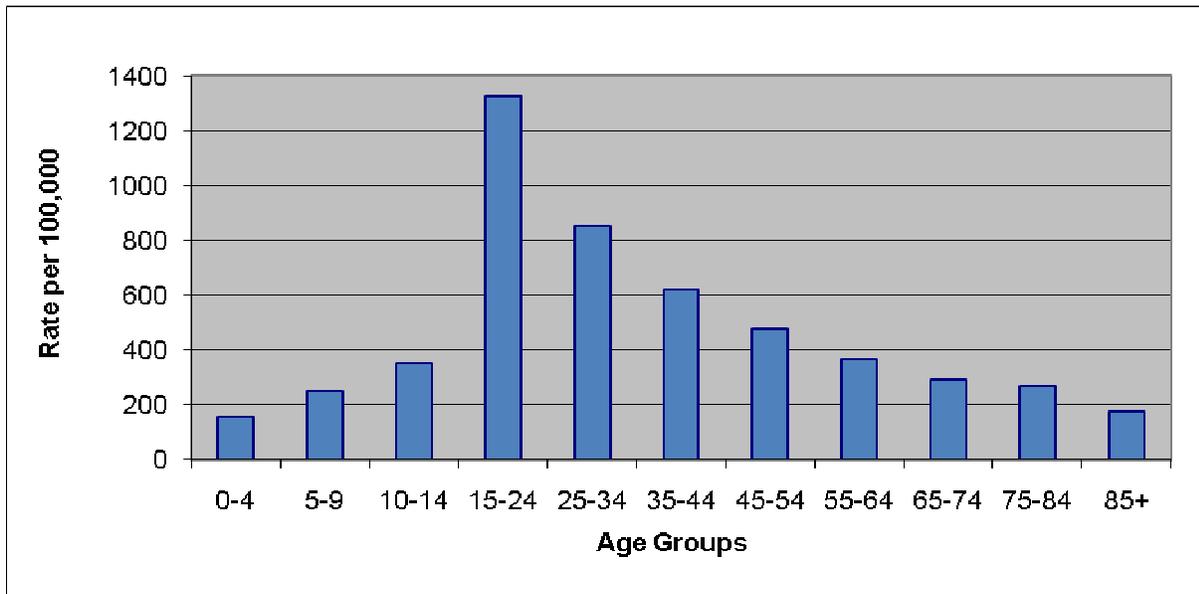
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 25: Motor Vehicle Crash Outpatient/ED Visits by Age-Group, Indiana, 2003-2006



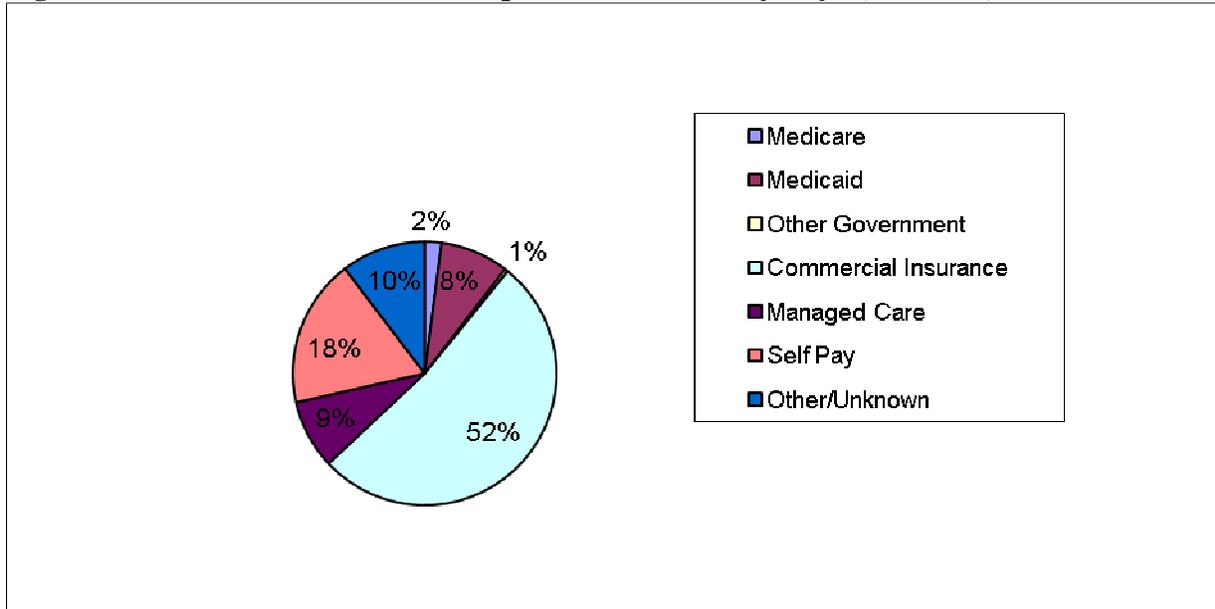
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 26: Motor Vehicle Crash Outpatient/ED Visit Rates, Age-Specific, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 27: Motor Vehicle Crash Outpatient/ED Visits by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Risk Behaviors and Prevention

Motor vehicle crash (MVC) injuries and fatalities are tragic and unnecessary because they are preventable. The Guide to Community Prevention Services recommends focusing on prevention efforts related to alcohol use, safety belt use, and proper use of child safety seats to reduce the burden of MVCs. These areas were chosen because nationally 41% of MVC deaths are alcohol related, 55% of deaths are among occupants who were unrestrained by seat belts or child safety seats, and belt use among drivers is below the national goals.⁽⁴⁾

Alcohol

Driving while under the influence of alcohol greatly increases the likelihood of an accident. According to National Highway Traffic Safety Association (NHTSA), a MVC is considered to be alcohol-related if at least one driver or non-occupant (such as a pedestrian or pedalcyclist) involved in the crash is determined to have had a blood alcohol concentration (BAC) of 0.01 gram per deciliter (g/dL) or higher. Thus, any fatality that occurs in an alcohol-related crash is considered an alcohol-related fatality.⁽⁵⁾ According to the Indiana Criminal Justice Institute, Indiana's legal BAC is 0.08%. Indiana law changed the legal BAC from 0.10% to 0.08% on July 1, 2001.⁶

When comparing 2003 to 2006 for the number of alcohol-related fatalities where at least one person had a BAC greater than 0.08 in Indiana, the percentage of fatalities remained at 27% of total fatalities (Table 1). During 2006, there were 291 Hoosier drivers who were involved in a fatal MVC who had any level of BAC, and 245 drivers had a BAC over 0.08%.⁽⁷⁾

Per mile driven, teen drivers ages 16-19 years (high school students) are four times more likely than older drivers to crash.⁽⁴⁾ Even though drinking or possessing alcohol is illegal for persons under 21, according to the 2007 Youth Behavior Risk Survey, 26.4% of high school students reported riding in a car with a driver under the influence of alcohol in the previous 30 days, which was an increase from 2005 (24.6%). See Figure 26. However, the change was not statistically significant. When comparing grade levels among the years, no pattern exists. During all three years, males were more likely to ride in a car with someone under than influence of alcohol than females. Between 2005 (27.1%) and 2007 (21.6%), a statistically significant decrease occurred among females who rode in a car with someone who had been drinking.⁽⁸⁾

In 2007, 11.9% of high school students reported driving one or more times in the previous 30 days while they were under the influence of alcohol, a slight increase from 2005 (11.2%). See Figure 27. However, the change was not statistically significant. Grade twelve had the highest percentage of driving while under the influence for all three years. Males were more likely (15.0% in 2007, 15.0% in 2005, and 14.1% in 2003) to drive while drinking than females (8.6% in 2007, 7.3% in 2005, and 10.8% in 2003).⁽⁸⁾

Prevention measures that are recommended by the Task Force on Community Preventative Services and that have strong evidence supporting their effectiveness include: 0.08% BAC laws; minimum legal drinking age laws; sobriety checkpoints; and mass media campaigns to reduce alcohol-impaired driving.⁽⁴⁾

Seat Belts

Seat belt use is the single most effective way to reduce fatal and nonfatal injuries in MVCs. Studies show that in all types of MVCs, lap-shoulder safety belts were about 45% effective in reducing deaths in passenger cars and 60% effective in light trucks. Safety belt use reduces the risk of serious injury to the head, chest, and extremities by 50-83%.⁽⁴⁾ During 2003-2006, 29.9% (1,251/4,179) of all fatal crashes in Indiana occurred when the driver of a passenger car or light truck was not wearing a seat belt (Table 2). Out of 2,731 occupants who were killed while riding in a passenger car or light truck, 46.2% (1,261/2,731) were not wearing a seatbelt (Table 3).⁽⁷⁾

According to the Indiana Youth Behavior Risk Survey, 9.2% of high school students in 2007 and 8.2% in 2005 reported never or rarely wearing a seat belt (Figure 28). The change is not statistically significant. Students in twelfth grade wore their seat belts less than the other three grades for all three years. Males were more likely to not wear their seat belt (12.8% in 2007, 12.5% in 2005, and 15% in 2003) when compared to females (5.6% in 2007, 3.8% in 2005, and 6.1% in 2003).⁽⁸⁾

Children are particularly vulnerable to MVCs. The CDC reported that in 2002, of the 459 children ages four years and younger who were killed in MVCs, 50% were completely unrestrained. According to the Fatality Analysis Reporting System (FARS) data during 2003-2005 in Indiana, 23.4% (11/47) of motor vehicle occupants under the age of five who were involved in a fatal crash were not using a restraint of some nature.⁽⁷⁾

Prevention measures that are recommended by the Task Force on Community Preventative Services and that have strong evidence supporting their effectiveness include: safety belt use laws; primary enforcement laws; and enhancement programs.⁽⁴⁾

Child Safety Seats

Nearly 30% of children less than four years of age do not ride in a proper child restraint. Correctly installed safety seats reduce motor vehicle crash (MVC) hospitalization by 69% and deaths by 47-54% in children one to four years of age. Infant's risk of death is reduced by 70%. If all children up to age four rode in safety seats, 138 lives could be spared and 20,000 injuries prevented in the United States each year.⁽⁴⁾ Unfortunately, state-level data on child safety seat use in Indiana are not available.

Prevention measures that are recommended by the Task Force on Community Preventative Services and that have strong evidence supporting their effectiveness include: child safety seat use laws and distribution of safety seats coupled with education programs on how to effectively use them.⁽⁴⁾

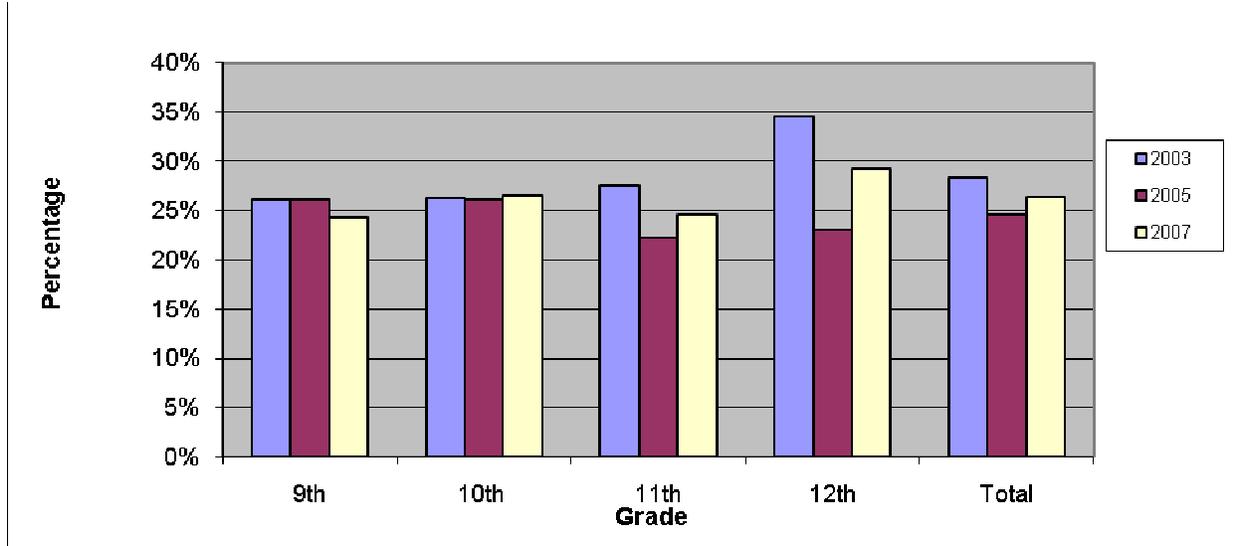
Table 9: Persons Killed in Motor Vehicle Crashes by Highest Blood Alcohol Concentration (BAC), Indiana, 2003-2006

	Total Fatalities	BAC = 0.00 No Alcohol Involved		BAC = 0.01-0.07		BAC = 0.08+	
		Number	Percent	Number	Percent	Number	Percent
2003	834	573	69	38	5	223	27
2004	947	643	68	47	5	257	27
2005	938	618	66	47	5	273	29
2006	902	608	67	46	5	245	27

Source: Fatality Analysis Reporting System Data, 2003-2006

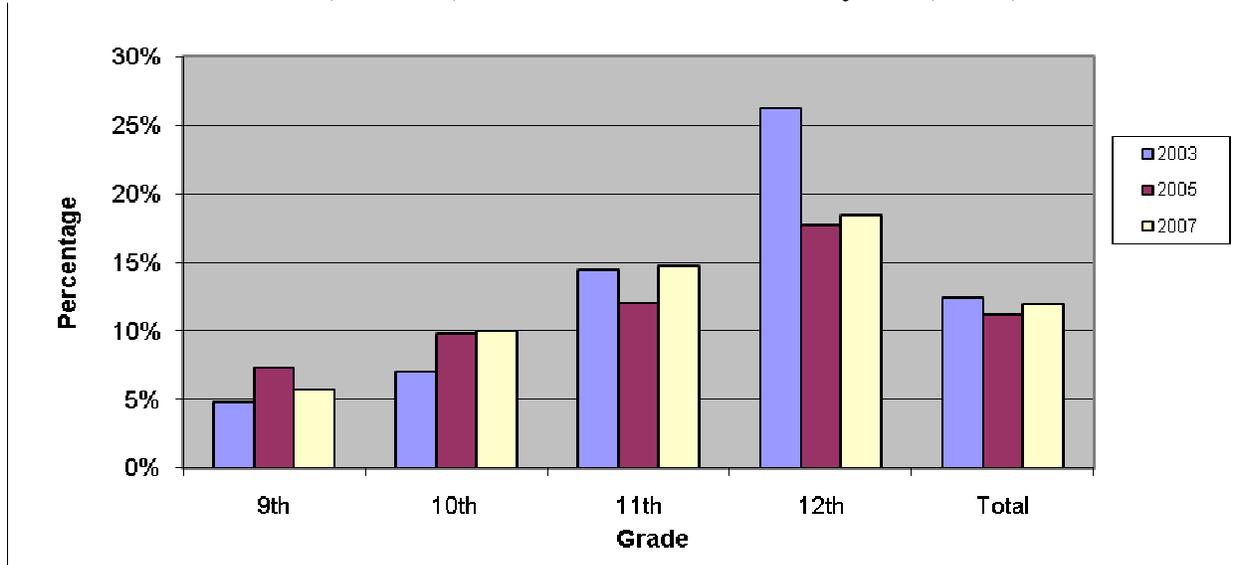
- All Percentages may not add up to 100% due to rounding.

Figure 28a: Students Who Rode One or More Times in a Vehicle Driven by Someone Who had been Drinking Alcohol During the Past Month, Indiana, Youth Risk Behavior Survey Data, 2003,2005 & 2007



Source: Indiana State Department of Health, Youth Risk Behavior Survey Data, 2003, 2005, and 2007

Figure 28b: Students Who Drove One or More Times When They had been Drinking Alcohol in the Past Month, Indiana, Youth Risk Behavior Survey Data, 2003,2005 & 2007



Source: Indiana State Department of Health, Youth Risk Behavior Survey Data, 2003, 2005, and 2007

Table 10: Restraint Use of Drivers Killed in Motor Vehicle Crashes, Indiana, 2003-2006

	Total Fatalities	Restraint Used		No Restraint Used		Restraint Use Unknown	
		Number	Percent	Number	Percent	Number	Percent
2003	961	572	60	286	30	103	11
2004	1,047	611	58	321	31	115	11
2005	1,034	589	57	325	31	120	12
2006	1,137	678	60	319	28	140	12
Total	4,179	2,450	59	1,251	30	478	11

Source: Fatality Analysis Reporting System Data, 2003-2006

- All Percentages may not add up to 100% due to rounding.

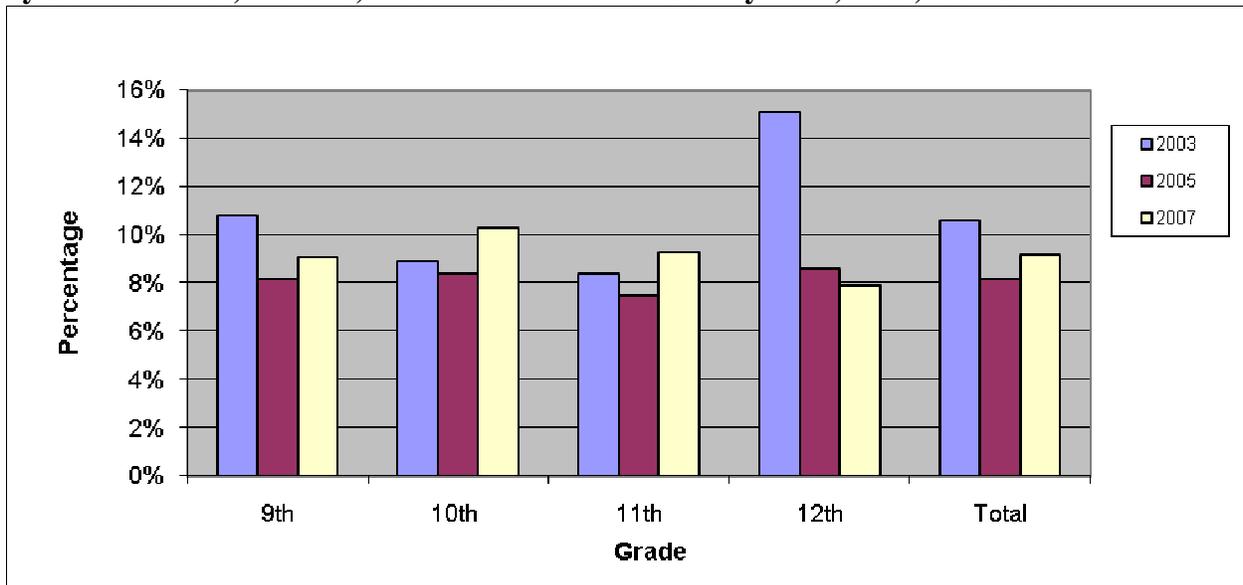
Table 11: Restraint Use of Occupants Killed in Motor Vehicle Crashes, Indiana, 2003-2006

	Total Fatalities	Restraint Use		No Restraint Use		Restraint Use Unknown	
		Number	Percent	Number	Percent	Number	Percent
2003	644	287	45	295	46	62	10
2004	712	290	41	324	46	98	14
2005	711	295	42	333	47	83	12
2006	664	263	40	309	46	92	14
Total	2,731	1135	42	1261	46	335	12

Source: Fatality Analysis Reporting System Data, 2003-2006

- All Percentages may not add up to 100% due to rounding.

Figure 28c: Students Who Never Or Rarely Wore a Seat Belt When Riding in a Car Driven by Someone Else, Indiana, Youth Risk Behavior Survey Data, 2003, 2005 & 2007



Source: Indiana State Department of Health, Youth Risk Behavior Survey Data, 2003, 2005, and 2007

Conclusion

Injuries and deaths caused by motor vehicle crashes (MVCs) remain a serious public health problem. Between 2003 and 2006, MVCs were the leading cause of injury-related death for Indiana residents, claiming 3,813 lives with an age-adjusted rate of 15.13 per 100,000 population.⁽²⁾ Based on hospital discharge data for the four-year period, MVCs accounted for approximately 14.8% of all inpatient hospitalizations and 10.7% all outpatient/ED visits. The economic burden of MVCs injuries is also enormous. The total charges during 2003 to 2006 for inpatient hospitalizations and outpatient/ED visits was \$581 million.⁽³⁾ The medical costs alone do not even 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 specific groups, such as teenage drivers and older drivers over 65, in order to reduce the burden on Indiana residents and the state's economy. Prevention should promote that the single most effective occupant protection device in vehicles is the use of safety belts for adults and adolescents. Promotion of appropriate child restraint use should also be encouraged.

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FALLS IN INDIANA

Table of Contents

Index of Figures and Tables.....	83-84
Highlights.....	85
Introduction.....	86
Fall Deaths in Indiana.....	86-91
Fall Injuries in Indiana.....	92-107
Risk Behavior and Prevention.....	107-108
Conclusion.....	108
References.....	109

Index of Figures and Tables

- Figure 1: Fall Death Rates, Age-Adjusted, Indiana, 2003-2006
Figure 2: Fall Death Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 3: Mean Fall Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006
Figure 4: Fall Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006
Figure 5: Mean Fall Death Rates by Race and Gender/Sex, Age-Adjusted, 2003-2006
Figure 6: Fall Death Rates by Race/Ethnicity and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 7: Fall Death Rates, Age-Specific, Indiana, 2003-2006
Figure 8: Fall Inpatient Hospital Admission Rates, Age-Adjusted, Indiana, 2003-2006
Figure 9: Fall Inpatient Hospital Admission Rates by Gender, Age-Adjusted, Indiana, 2003-2006
Figure 10: Fall Inpatient Hospital Admissions by Race, Indiana, 2003-2006
Figure 11: Fall Inpatient Hospital Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006
Figure 12: Fall Inpatient Hospital Admission Rates by Race and Gender, Age-Adjusted, Indiana, 2003-2006
Figure 13: Mean Fall Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 14: Fall Inpatient Hospital Admissions by Age, Indiana, 2003-2006
Figure 15: Fall Inpatient Hospital Admission Rates, Age-Specific, Indiana, 2003-2006
Figure 16: Fall Inpatient Hospital Admissions by Type, Indiana, 2003-2006
Figure 17: Fall Inpatient Hospital Admissions by Source, Indiana, 2003-2006
Figure 18: Fall Inpatient Hospital Admissions by Payor, Indiana, 2003-2006
Figure 19: Fall Outpatient/ED Visit Rates, Age-Adjusted, Indiana, 2003-2006
Figure 20: Fall Outpatient/ED Visit Rates by Gender, Age-Adjusted, Indiana, 2003-2006
Figure 21: Fall Outpatient/ED Visits by Race, Indiana, 2003-2006
Figure 22: Fall Outpatient/ED Visit Rates by Race, Age-Adjusted, Indiana, 2003-2006
Figure 23: Fall Outpatient/ED Visit Rates by Race and Gender, Age-Adjusted, Indiana, 2003-2006
Figure 24: Mean Fall Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 25: Fall Outpatient/ED Visits by Age-Group, Indiana, 2003-2006
Figure 26: Fall Outpatient/ED Visit Rates, Age-Specific, Indiana, 2003-2006
Figure 27: Fall Outpatient/ED Visits by Payor, Indiana, 2003-2006

Table 1: Fall Deaths by Gender/Sex, Indiana, 2003-2006
Table 2: Fall Deaths by Race/Ethnicity, Indiana, 2003-2006
Table 3: Fall Deaths and Rates, Age-Specific, Indiana, 2003-2006
Table 4: Fall Deaths by Gender/Sex, Inpatient Admissions, Indiana, 2003-2006
Table 5: Falls Inpatient Hospital Admissions and Rates, Age-Specific, Indiana,

2003-2006

Table 6: Fall Outpatient/ED Visits by Gender/Sex, Indiana, 2003-2006

Table 7: Fall Outpatient/ED Visits by Race, Indiana, 2003-2006

Falls Highlights

Mortality, 2003-2006⁽²⁾

- Falls were the third leading cause of unintentional injury death for Indiana residents, claiming 1,467 lives.
- Males were 2.2 times more likely to die due to falls than females (6.5 per 100,000 vs. 3.0 per 100,000).
- Between 2003 and 2006, white males had the highest rate of death due to falls (6.7 per 100,000) than all other race/gender categories.
- Individuals 65+ of age had the highest age-adjusted fall death rate (32.4 per 100,000) of all ages.

Inpatient Admissions for Falls, 2003-2006⁽³⁾

- Falls accounted for approximately 46.8% (41,157 admissions) of all hospital inpatient admissions with a overall rate of 160.6 per 100,000.
- Females were 1.4 times more likely to be admitted to the hospital following a fall than males (178.7 per 100,000 compared to 127.3 per 100,000).
- Whites were admitted to the hospital due to falls more than blacks (149.9 per 100,000 versus 106.6 per 100,000).
- The age group with the highest hospital admission rate due to falls was 85+ year olds (2,637.6 per 100,000).

Outpatient/Emergency Department (ED) Visits for Falls, 2003-2006⁽³⁾

- Falls accounted for approximately 28.4% (391,282 visits) of all hospital outpatient/ED visits due to injuries/poisonings.
- Females were 1.1 times more likely to be seen in an outpatient/ED facility following a fall than males (1,646.7 per 100,000 compared to 1,446.1 per 100,000).
- Whites were slightly more likely to visit the outpatient/ED than blacks (1,458.5 per 100,000 versus 1,190.7 per 100,000).
- White females had the highest number and rate from falls compared to all other race and gender categories (1,550.1 per 100,000).
- Those 85+ years of age had the highest rate of outpatient/ED visits due to falls compared to all other age groups (5,199.4 per 100,000).

Introduction

Fall deaths and injuries represent an enormous burden to society and the health care system. Unintentional falls are a threat to the lives, independence and health of adults ages 65 and older. Every 18 seconds, an older adult is treated in an emergency department for a fall, and every 35 minutes someone in this population dies as a result of their injuries.⁽¹⁾ Falls are the leading cause of injury deaths among adults age 65 and older and according to the CDC, one in three older adults falls each year. Older adults are hospitalized for fall-related injuries five times more often than they are for injuries from other causes.

In 2000, the total direct cost of all fall injuries for people 65 and older exceeded \$19 billion.⁽¹⁾ The financial toll for older adult falls is expected to increase as the population ages, and may reach \$54.9 billion by 2020 (adjusted to 2007 dollars). Hospitalizations accounted for nearly two thirds of the costs of nonfatal fall injuries, and emergency department treatment accounted for 20%.⁽¹⁾ On average, the hospitalization cost for a fall injury was \$17,500.⁽¹⁾

Fall Deaths in Indiana

Fall death data for this report was extracted from the Indiana State Department of Health (ISDH) mortality reports and are based off of ICD-10 codes specific to falls (W00-W199). The numbers differ slightly from the nationally based reporting system, the National Center for Health Statistics (NCHS). The number of Indiana deaths reported by the ISDH is lower than the numbers from NCHS, because the ISDH does not always receive death certificates for Indiana residents that died out of state. However, these deaths are likely to be reported to NCHS from those out-of-state health departments, and NCHS would usually be able to assign state of residence, making the nationally based data more complete than the health department data. In addition, completeness of mortality data is dependent upon how thoroughly the death certificate is completed, which affects how a death is categorized. Another limitation is that race/ethnicity data is not accurate. Race/ethnicity is provided at the discretion of the person completing the death certificate and may not reflect how individuals would define their own race or ethnicity.⁽²⁾

In Indiana between 2003 and 2006, falls were the 3rd leading cause of unintentional injury death, with a total of 1,146 individuals dying (average of 286.5 deaths per year) for a rate of 4.5 per 100,000 population. There were 257 fall deaths in 2003, 270 deaths in 2004, 302 deaths in 2005, and 317 deaths in 2006. Figure 1 shows the fall age-adjusted rates for the four-year period. The highest death rate was in 2006 with 4.8 per 100,000, and the lowest rate was 2003 with 4.1 per 100,000.

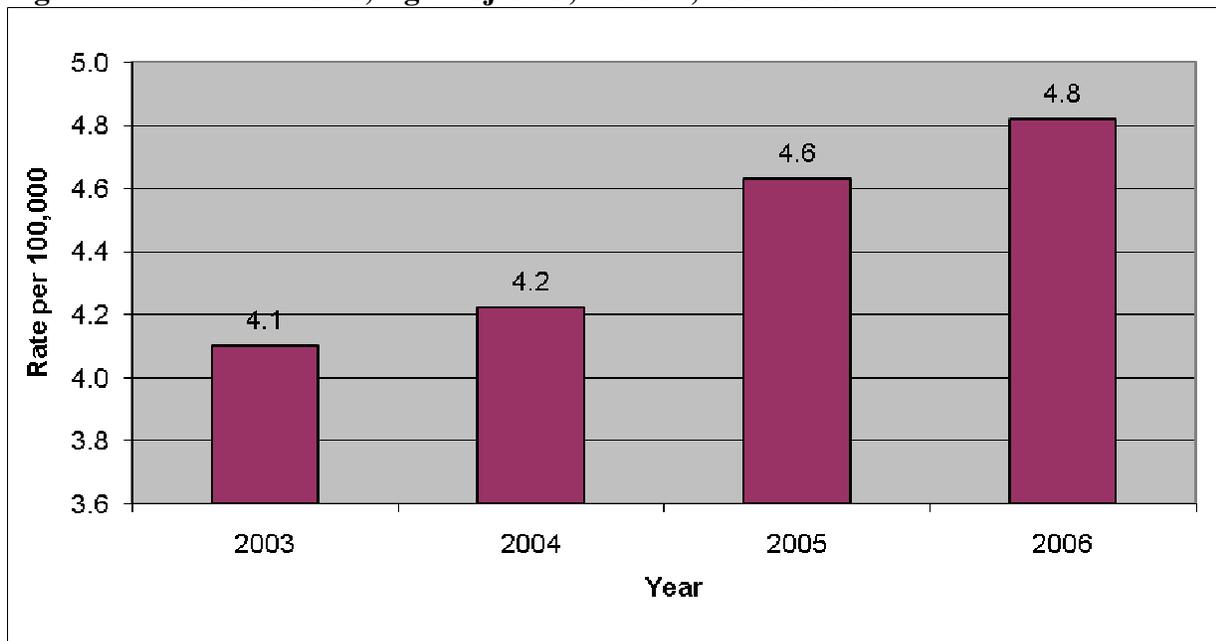
Almost two-thirds of the fall deaths (58% or 660/1,146) were in males with females making up 42% (486/1,146) of deaths. When comparing death rates, males (6.5 per 100,000) died 2.2 times more than females (3.0 per 100,000). Table 1 shows the number of deaths by gender/sex for each year, and Figure 2 shows the rates by gender/sex for each year.

More whites (94.3% or 1,101/1,168) died than blacks (3.4% or 40/1,168) and individuals defined as “other” (0.4% or 5/1,168) or Hispanic (1.9% or 22/1,168) between 2003 and 2006. Whites had the highest death rate due to falls (4.6 per 100,000) for the entire time period and the overall death rate for Hispanics (3.8 per 100,000) was higher than blacks (2.5 per 100,000). Figure 3 shows the average death rates by race for 2003-2006. The fall death rate was highest in 2006 for whites (5.0 per 100,000) and has been increasing since 2003. The death rates for those categorized by black, Hispanic, or “other” were unstable for individual years. Table 2 shows the total number of deaths by race, and Figure 4 shows the death rates by year.

With 631 deaths and an average death rate of 6.7 per 100,000, white males had the highest number and death rate from falls compared to all other race/ethnicity and gender/sex categories (Figure 5). White males were 2.2 times more likely to die than white females, 1.9 times more likely than black males and 4.2 times likely than black females. White females had a higher fall death rates compared to black females. Figure 6 shows the fall death rate for each category broken out by year.

Individuals 65+ years of age had the highest age-adjusted fall death rates (32.4 per 100,000). See Figure 7. The lowest stable rates were seen in 25-34 year olds. The overall rate of death for all ages was 6.1 per 100,000. Table 3 shows the number of fall deaths in each age group for each year as well as the age-specific death rate.

Figure 1: Fall Death Rates, Age-Adjusted, Indiana, 2003-2006



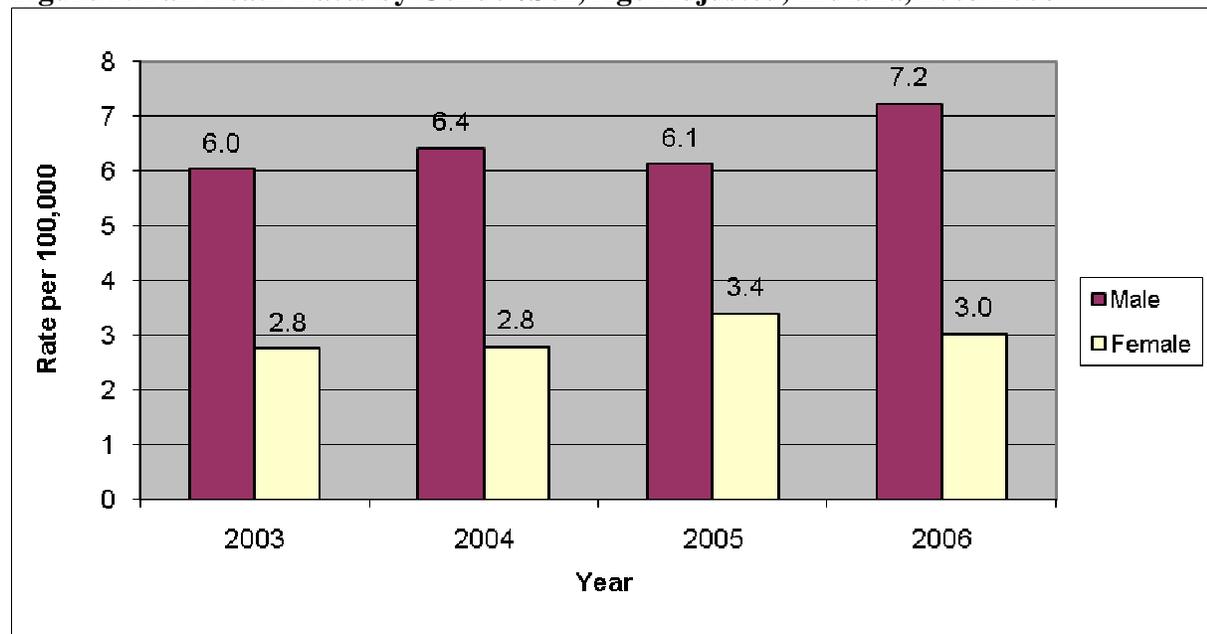
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 1: Fall Deaths by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	149	108
2004	159	111
2005	160	142
2006	192	125
Total	660	486

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Chart produced by Injury Prevention Program

Figure 2: Fall Death Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



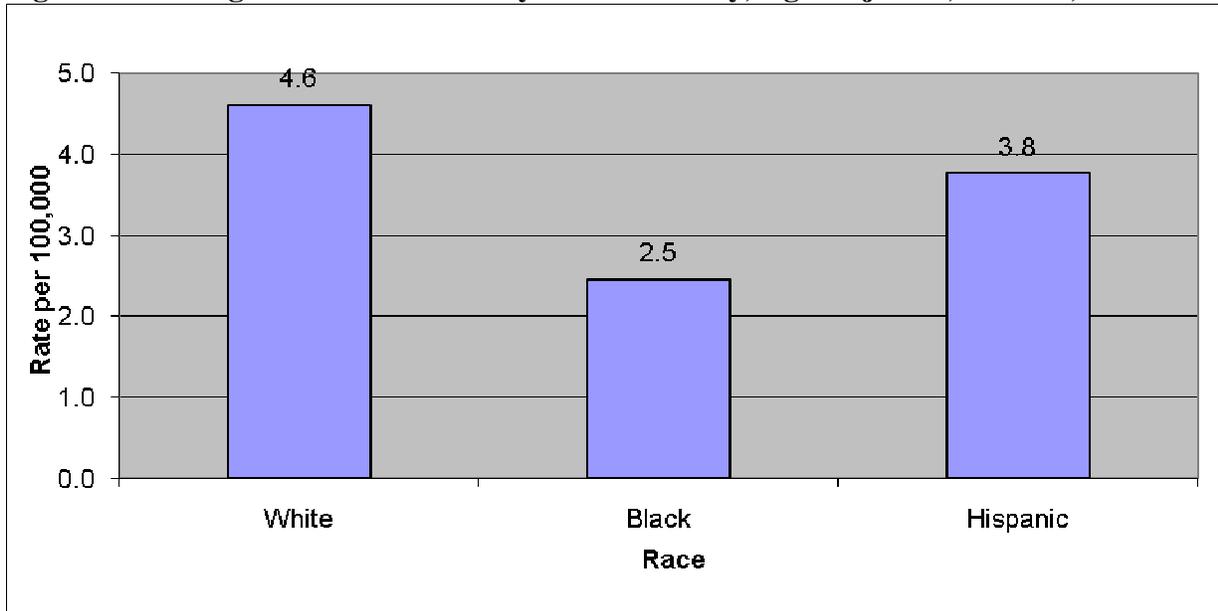
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Graph produced by Injury Prevention Program

Table 2: Fall Deaths by Race/Ethnicity, Indiana, 2003-2006

Year	White	Black	Other	Hispanic
2003	248	8	1	4
2004	259	9	2	5
2005	290	11	1	5
2006	304	12	1	8
Total	1,101	40	5	22

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Chart produced by Injury Prevention Program

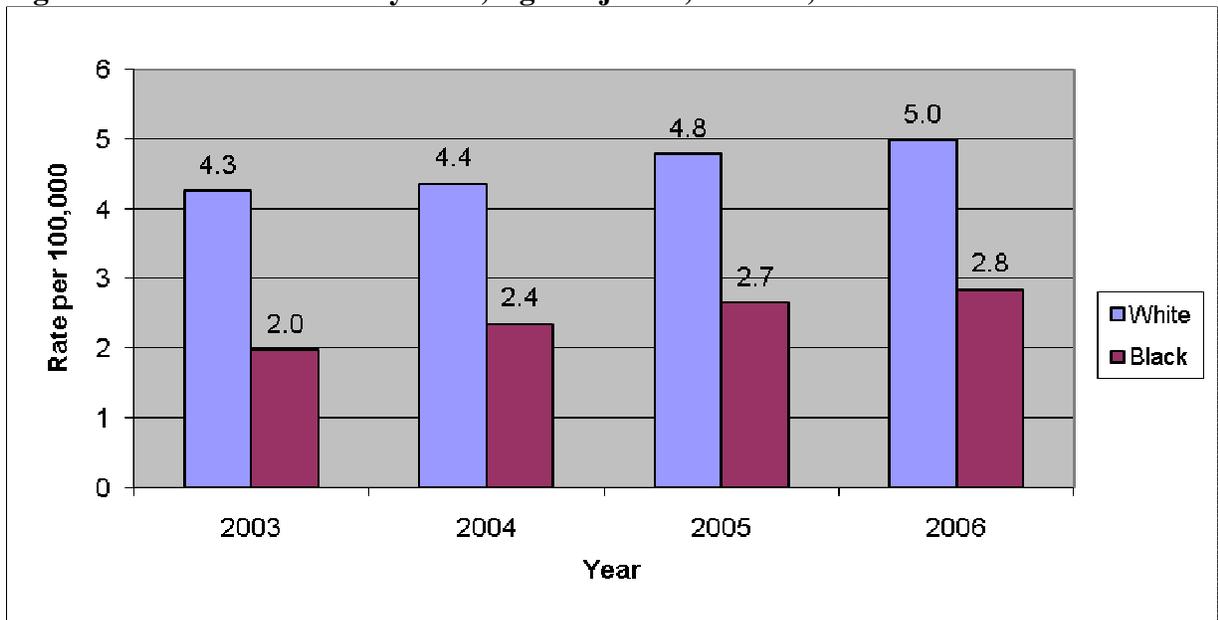
Figure 3: Average Fall Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006



Note: Whites and blacks are both non-Hispanic.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Graph produced by Injury Prevention Program

Figure 4: Fall Death Rates by Race, Age-Adjusted, Indiana, 2003-2006

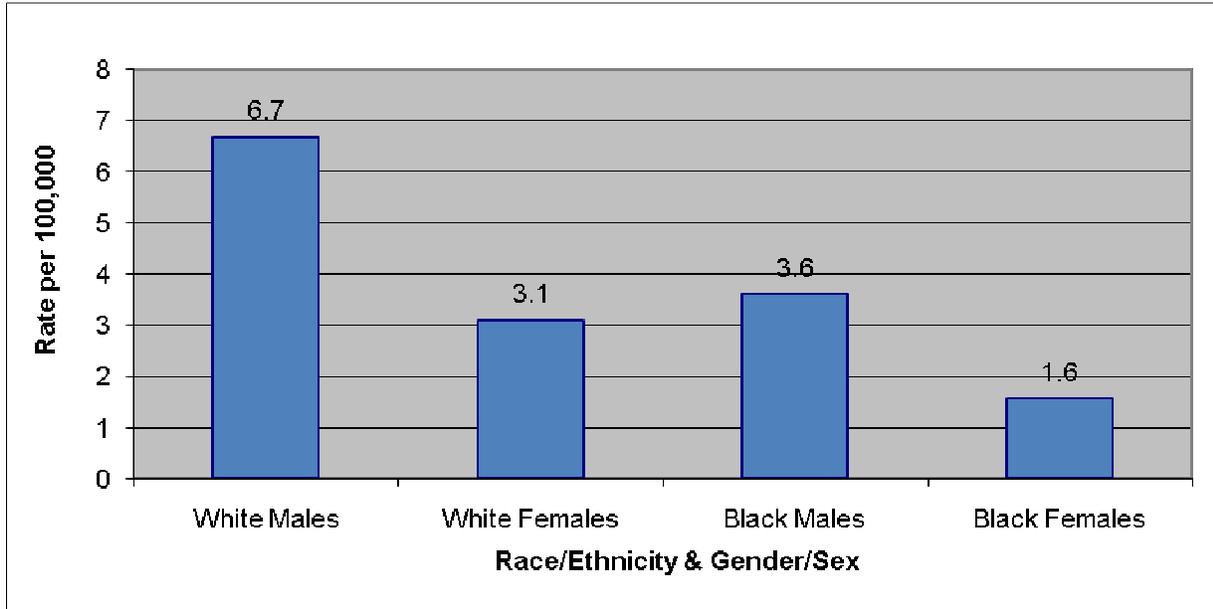


Note: Whites and blacks are both non-Hispanic.

Note: Rates for blacks are unstable and should be used with caution.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team.
Graph produced by Injury Prevention Program

Figure 5: Mean Fall Death Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



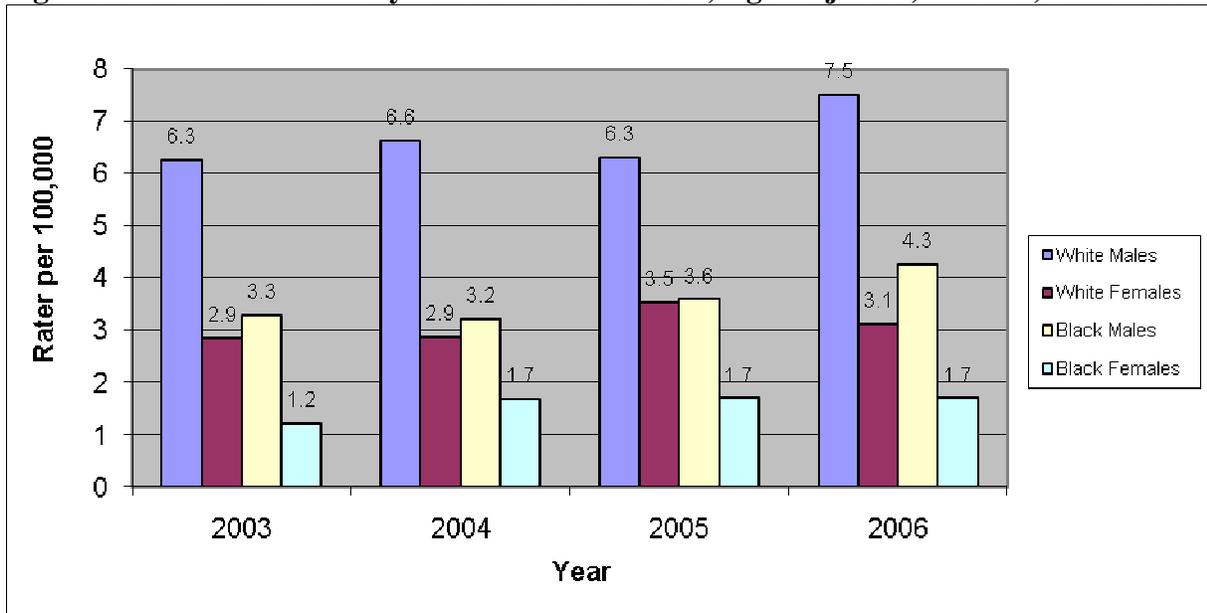
Note: Whites and blacks are both non-Hispanic.

Note: Rates for black females are unstable and should be used with caution.

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

Graph produced by Injury Prevention Program

Figure 6: Fall Death Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



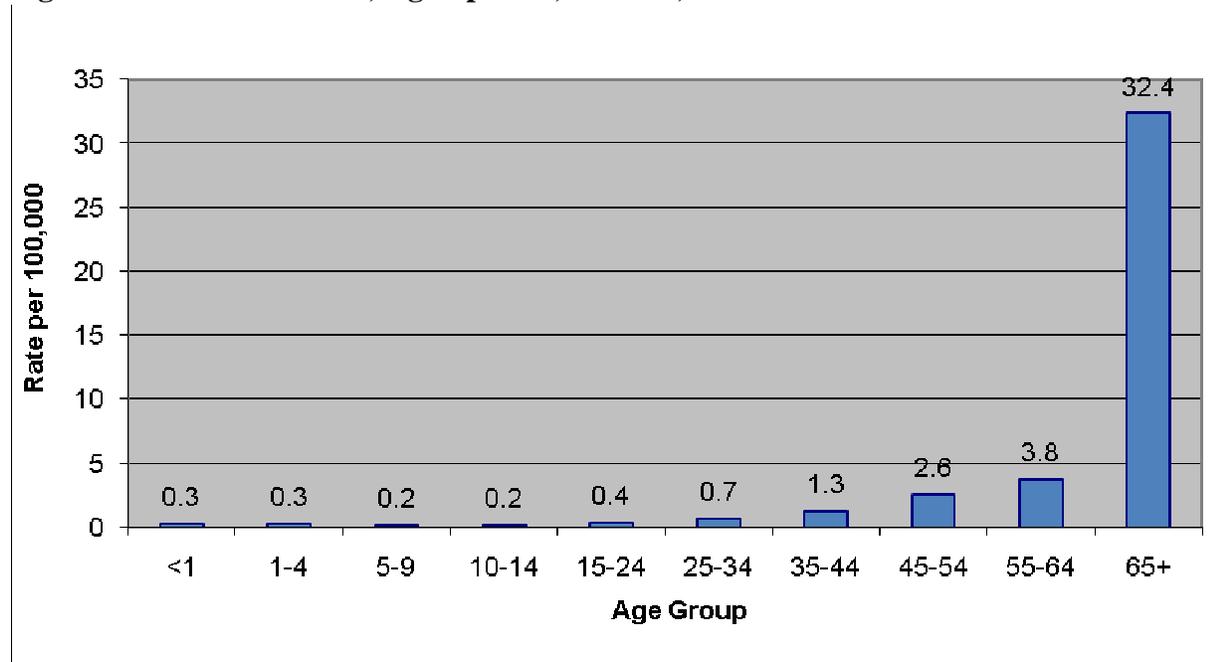
Note: Whites and blacks are both non-Hispanic.

Note: Rates for black males and black females are unstable and should be used with caution.

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

Graph produced by Injury Prevention Program

Figure 7: Fall Death Rates, Age-Specific, Indiana, 2003-2006



Note: Rates for 24 years of age and younger are unstable and should be used with caution.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 3: Fall Deaths and Rates, Age-Specific, Indiana, 2003-2006

Age Groups	2003		2004		2005		2006	
	Deaths	Age-Specific Rates						
<1	1	U	1	U	0	U	0	U
1-4	3	U	2	U	0	U	0	U
5-9	0	U	1	U	1	U	1	U
10-14	0	U	2	U	0	U	2	U
15-24	4	U	7	U	5	U	1	U
25-34	7	U	4	U	7	U	7	U
35-44	9	U	5	U	13	U	20	2.2
45-54	18	U	20	2.3	22	2.4	25	3.7
55-64	19	U	15	U	23	3.6	28	7.0
65+	196	25.7	213	27.6	231	29.7	233	60.4
Unknown	0	---	0	---	0	---	0	---
Total	257	4.1	270	4.3	302	4.8	317	5.0

Note: 'U' signifies that the rates are unstable due to less than 20 deaths.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

Fall Injuries in the Indiana

Hospital discharge data give an indication of the number of unintentional and intentional injuries in Indiana, although the data have limitations. The International Classification of Disease Revision 9 Clinical Modification (ICD-9CM) coding scheme includes external causes of injury codes or E-codes that indicate the source or cause of the injury and can also provide injury-related cost data. However, E-codes are not mandated by law in Indiana, and it is estimated that only 62% of the discharge records contain them. Therefore, the total number of injuries in this report is a gross underestimation of the proportion of number of injuries that actually occurred.⁽³⁾

E-codes specific to injury and poisoning include ICD-9-CM codes 800-999. E-codes specific to fall injuries include E880-E886, E888, E957, E968.1 and E987. The hospital data base does not contain a patient-specific unique identifier, meaning that it does not distinguish whether one person had five visits or whether five people visited once. Therefore, statistics only reflect visits and not specific numbers of people. Also, race/ethnicity data is not accurate because race/ethnicity is at the discretion of the person reporting the data and may not reflect how the individuals would define themselves. In some cases, race/ethnicity information is not provided at all.⁽³⁾

A final limitation of the hospital discharge data is that the Indiana law only requires hospital discharge data submission by acute care hospitals. Therefore, a few psychiatric and behavioral health hospitals do not submit data. All acute care hospitals are submitting inpatient data. However, one of the three Level 1 Trauma center hospitals has not submitted outpatient/emergency department data yet. As a result, the total number of injuries for the outpatient/emergency department data is an underestimation of the actual number of injuries and should be used with caution.⁽³⁾

Hospital Inpatient Data

From 2003 to 2006, there were 87,871 inpatient hospitalizations with a primary diagnosis of injury or poisoning. Based on the data with valid E-codes, fall injuries accounted for approximately 46.8% (41,157 admissions) of all injury/poisoning hospital inpatient admissions with an injury rate (combined 2003-2006 rate) of 160.6 per 100,000. There were 10,089 fall injuries in 2003; 10,345 injuries in 2004; 10,581 injuries in 2005; and 10,142 injuries in 2006. Figure 8 shows the fall age-adjusted rates for the four-year period. The highest injury rate was in 2005 with 163.5 per 100,000, and the lowest rate was 2006 with 155.3 per 100,000.

Of those admitted to the hospital 33.2% (13,654/41,157) were male and 66.8% (27,497/41,157) were female (seven people's gender was unknown). When comparing age-adjusted rates, females were 1.4 times more likely to be admitted to the hospital due to a fall than males (178.7 per 100,000 compared to 127.3 per 100,000). Table 4 shows the number of hospital admissions by gender/sex for each year, and Figure 9 shows the rates by gender/sex for each year.

The majority (86.4% or 35,545/41,157) of the hospital admissions were white Indiana residents (Figure 10). Whites had a slightly higher hospitalization rate due to falls for the entire time period compared to blacks. The age-adjusted rate for hospital admissions was 1.4 times higher in whites compared to blacks (149.9 per 100,000 versus 106.6 per 100,000). The fall hospitalization rate was highest in 2004 for whites (153.5 per 100,000) and decreased during 2005 and 2006. The black hospitalization rate due to falls was highest in 2003 and has decreased each year to a low of 84.8 per 100,000 during 2006. Figure 11 shows the hospitalization rates by year.

With 24,083 hospitalizations and an average inpatient fall rate of 168.2 per 100,000, white females had the highest number and injury rate from falls compared to all other race/ethnicity and gender/sex categories (Figure 12). White females accounted for 67.8% (24,083/35,541) of all hospital admissions by white Indiana residents. There were no major differences between white males, black males and black females. Black males had the lowest overall rate for inpatient hospitalizations due to falls (97.7 per 100,000). Figure 13 shows the average fall hospitalization rate for each gender and sex category.

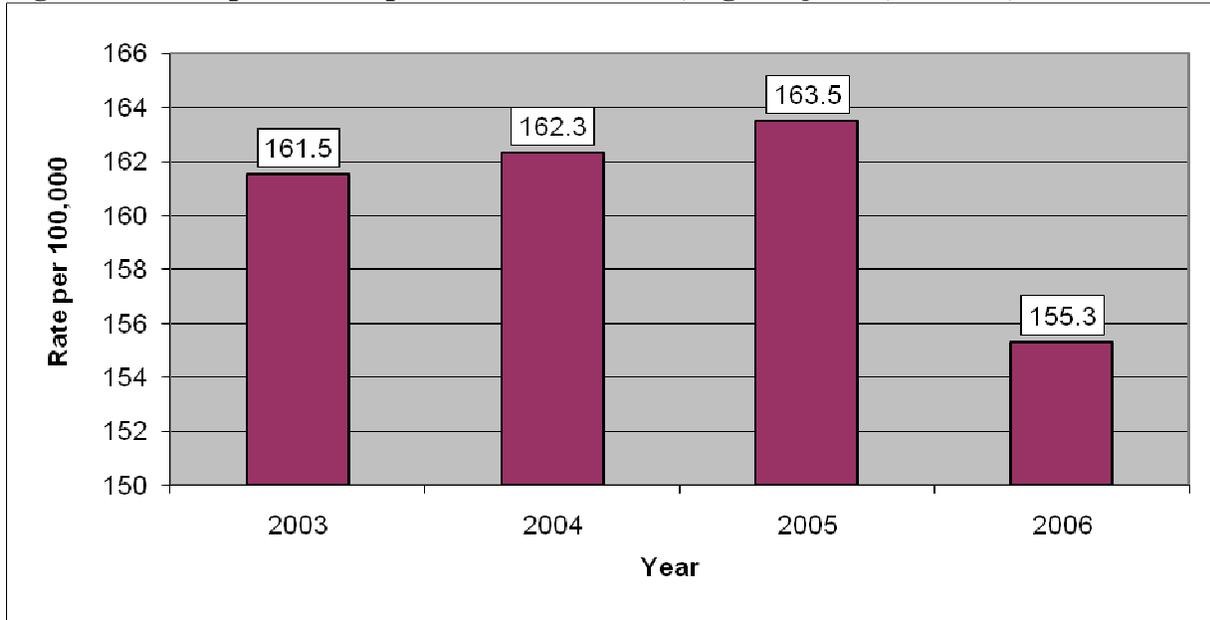
During 2003-2006, 85+ year olds had the highest age-specific rate of hospital admissions due to falls (2,637.6 per 100,000). The lowest age-specific rate of hospital admissions due to falls was for those 5-9 years of age (21.5 per 100,000). Figure 14 shows the actual number of hospital admissions for each age group, while Figure 15 shows the age-specific rate for each age group. Table 5 shows the number of falls in each age group for each year as well as the age-specific injury rate.

Most falls are unintentional; however there were 30 hospitalizations during 2003-2006 in which the E-code was either a suicide, or a self-inflicted fall, or assault.

Between 2003 and 2006, 2.4% (982/41,157) of all patients admitted to the hospital due to falls died. More than half (67%) of all patients were admitted to the hospital as an emergency, and 72.4% were admitted after receiving care at an outpatient center or in the ED (Figure 16 and Figure 17).

For 2003-2006, the total charges for all ages injured due to falls and admitted to the hospital were \$780 million. The mean and median total charges for all ages due to falls were \$18,963.70 and \$15,956.00 with a range of \$2-\$831,817. Of those admitted to the hospital, 10.1% (4,173/41,157) of those admitted to the hospital had commercial insurance while 70.9% (29,190/41,157) had Medicare insurance (Figure 18). The average length of stay was 4.6 days (range 1-1,149 days), and the median length of stay was 4.0 days.

Figure 8: Fall Inpatient Hospital Admission Rates, Age-Adjusted, Indiana, 2003-2006



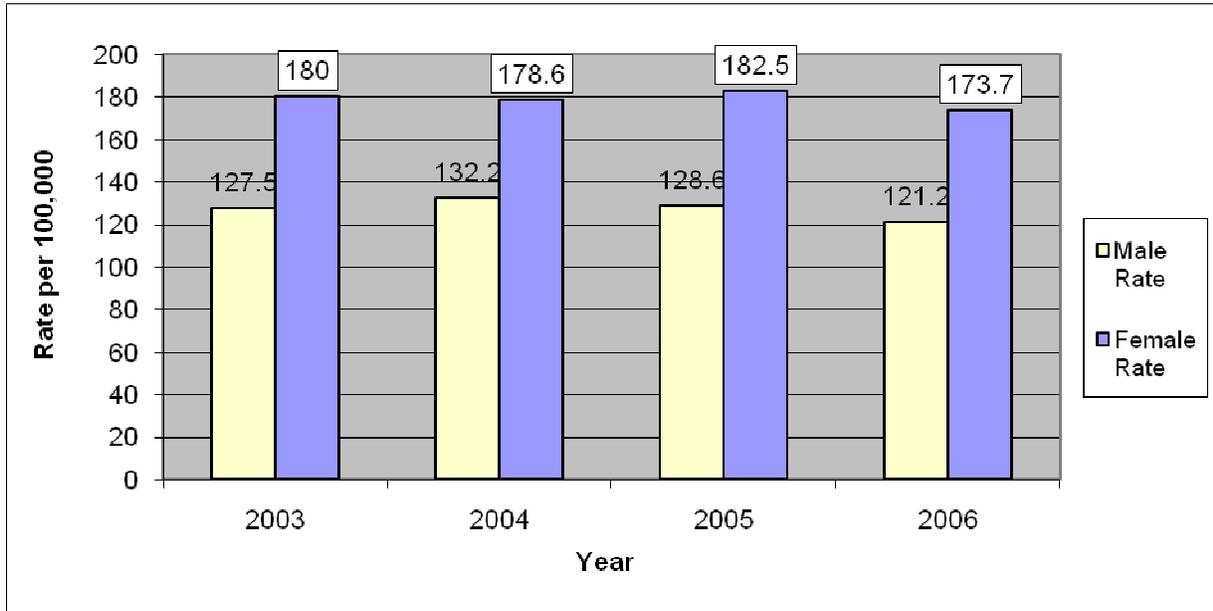
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 4: Inpatient Hospital Falls Admissions by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	3,330	6,757
2004	3,526	6,816
2005	3,479	7,102
2006	3,319	6,822
Total	13,654	27,497

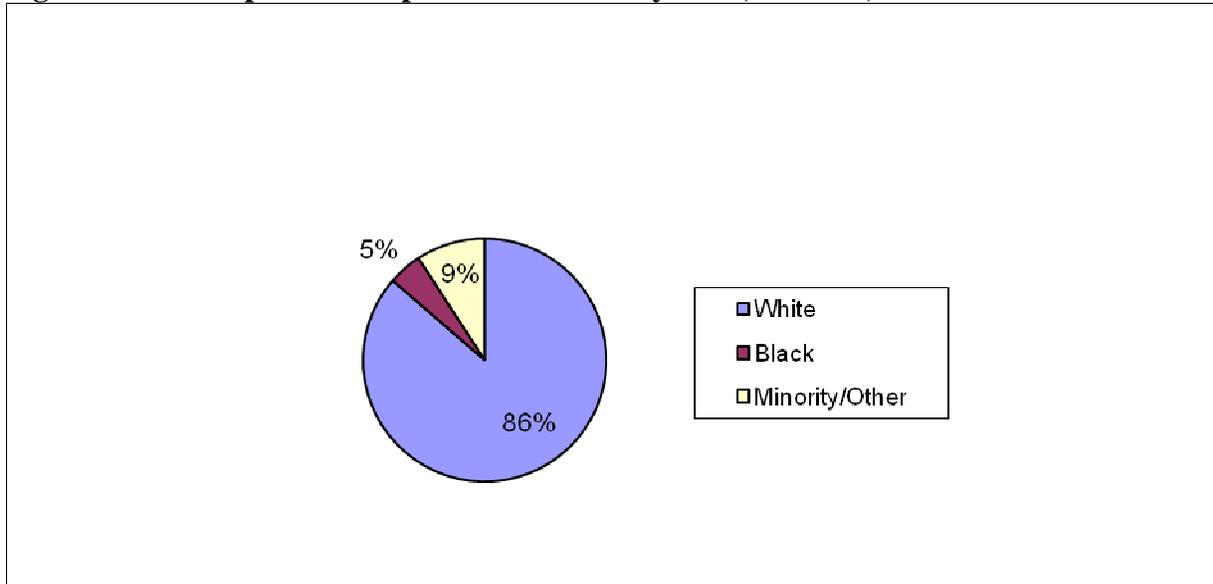
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 9: Fall Inpatient Hospital Admission Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



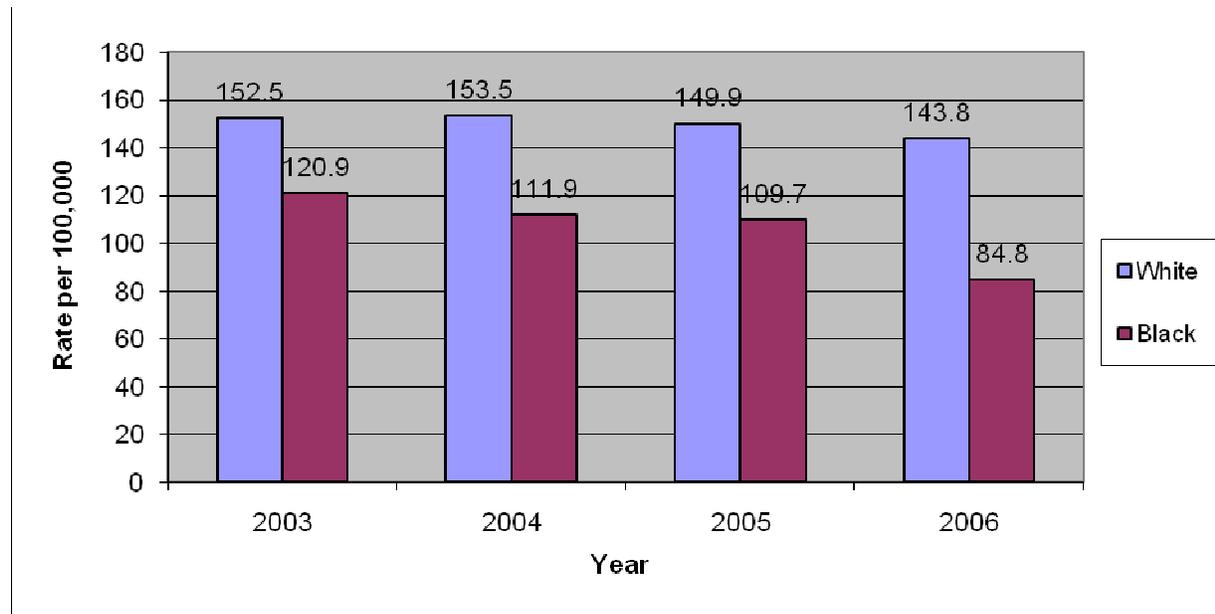
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 10: Fall Inpatient Hospital Admissions by Race, Indiana, 2003-2006



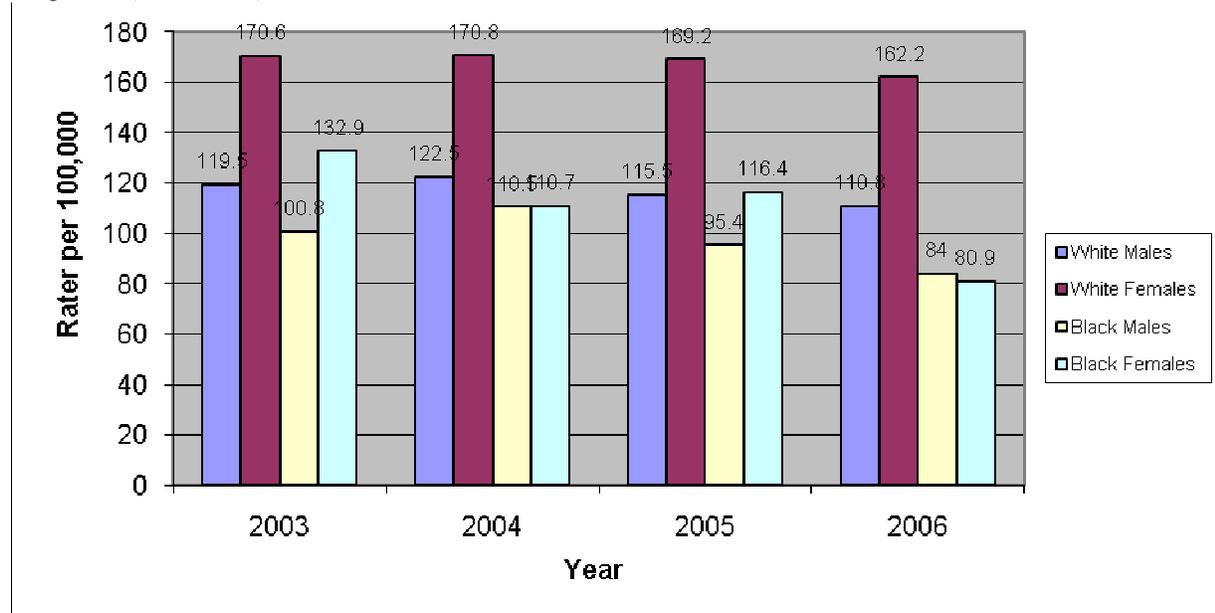
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 11: Fall Inpatient Hospital Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006



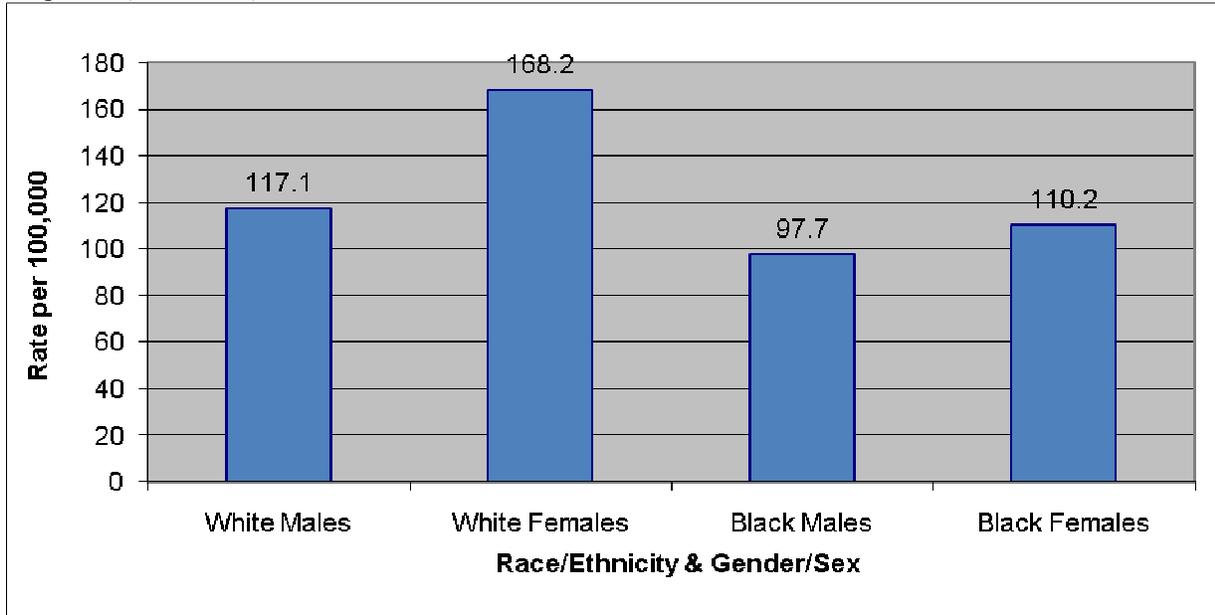
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 12: Fall Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



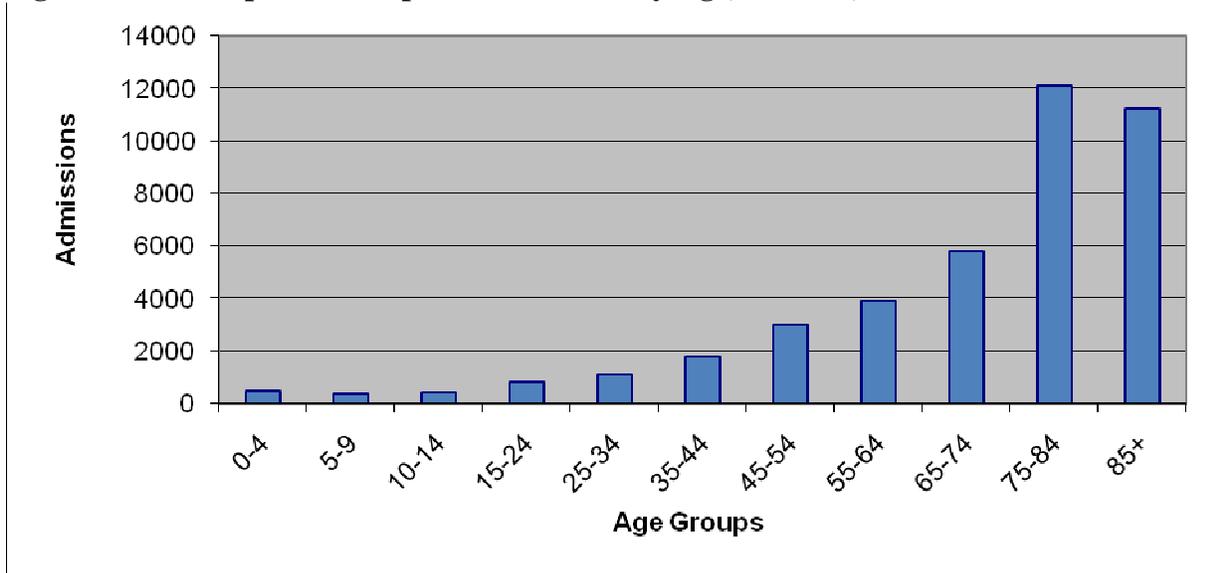
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 13: Mean Fall Inpatient Hospital Admission Rates by Race and Gender, Age-Adjusted, Indiana, 2003-2006



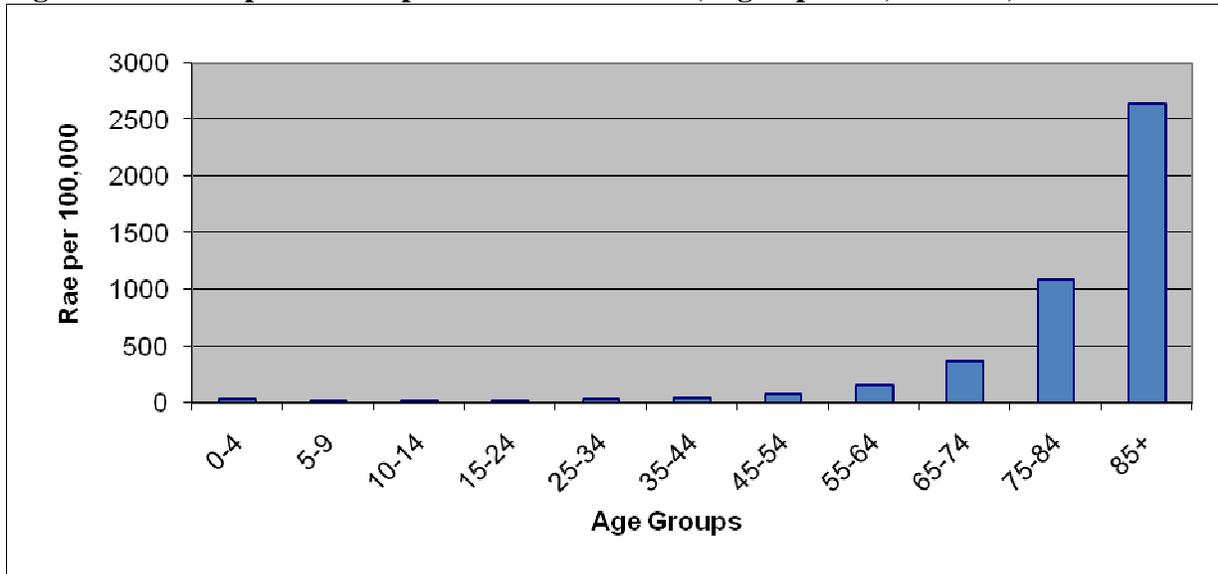
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 14: Fall Inpatient Hospital Admissions by Age, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 15: Fall Inpatient Hospital Admission Rates, Age-Specific, Indiana, 2003-2006



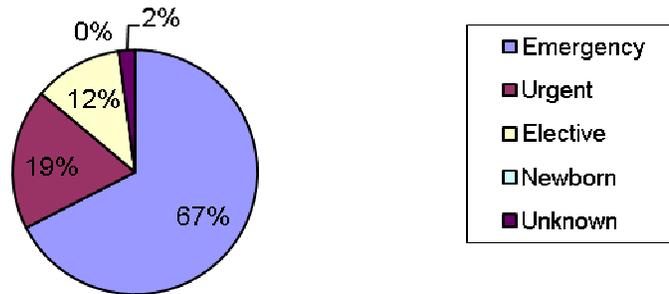
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 5: Falls & Inpatient Hospital Admissions and Rates Age-Specific, 2003-2006

Age Groups	2003		2004		2005		2006	
	Injuries	Age-Specific Rates						
0-4	133	30.9	140	32.5	114	26.5	121	28.1
5-9	101	22.9	97	22.2	96	21.9	81	18.9
10-14	131	28.2	136	29.4	74	16.2	93	21.0
15-24	209	23.2	219	24.3	207	23.1	200	22.4
25-34	295	36.1	286	34.6	294	35.2	241	28.4
35-44	462	50.4	475	52.3	441	49.1	422	47.2
45-54	755	86.7	800	90.3	751	83.4	700	75.8
55-64	872	147.6	1,023	166.7	1,048	164.6	985	147.4
65-74	1,443	373.4	1,467	378.4	1,495	384.4	1,404	352.2
75-84	3,010	1,092.3	2,973	1,063.9	3,115	1,112.6	3,015	1,098.9
85+	2,677	2,648.4	2,727	2,600.3	2,946	2,711.8	2,880	2,590.2
Total	10,088		10,343		10,581		10,142	

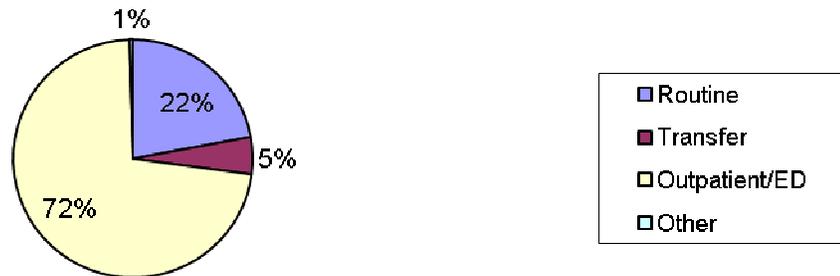
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 16: Fall Inpatient Hospital Admissions by Type, Indiana, 2003-2006



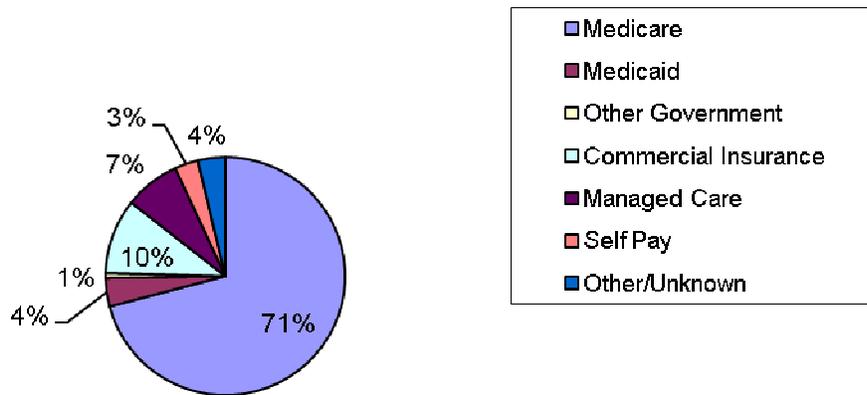
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 17: Fall Inpatient Hospital Admissions by Source, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 18: Fall Inpatient Hospital Admissions by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Hospital Outpatient/Emergency Department Data

During 2003 and 2006, there were 1,375,552 outpatient/emergency department (ED) visits with a primary diagnosis for injury or poisoning (ICD-9CM codes 800-999). Based on the data with valid E-codes, falls accounted for approximately 28.4% (391,282 visits) of injury/poisoning outpatient/ED visits with an injury rate (combined 2003-2006 rate) of 1,562.5 per 100,000. There were 80,454 fall injuries in 2003; 93,691 injuries in 2004; 109,392 injuries in 2005; and 107,745 injuries in 2006. Figure 19 shows the fall age-adjusted rates for the four-year period. The highest injury rate was in 2005 with 1740.9 per 100,000, and the lowest rate was 2003 with 1296.7 per 100,000.

Of those who visited an outpatient/ED, 44.9% (175,764/391,282) were male and 55.1% (215,509/391,282) were female (nine with unknown gender). When comparing rates, females were 1.1 times more likely to be visiting the ED due to a MVC than males (1,646.7 per 100,000 compared to 1,446.1 per 100,000). Table 6 shows the number of hospital outpatient/ED visits by gender/sex for each year, and Figure 20 shows the rates by gender/sex for each year.

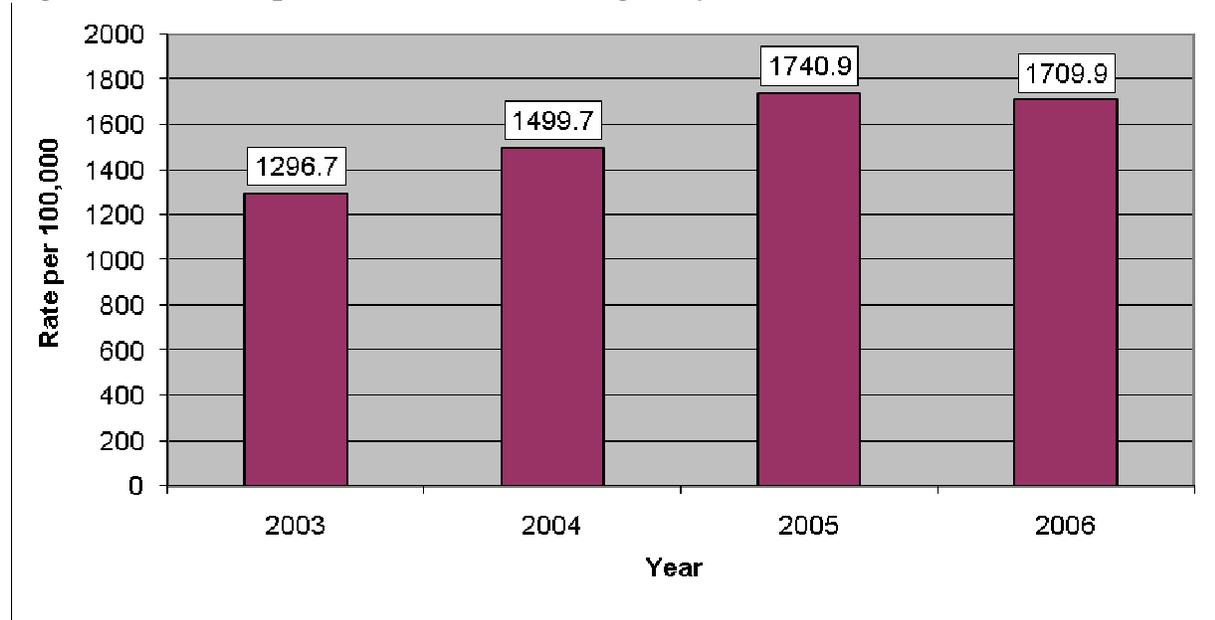
The majority (82.7% or 232,658/391,282) of the hospital outpatient/ED visits were white Indiana residents (Figure 21). However, the age-adjusted rate for hospital outpatient/ED visits was only 1.2 times higher in whites compared to blacks (1,458.5 per 100,000 versus 1,190.7 per 100,000). The fall outpatient/ED visit rate was highest in 2006 for whites (1606.7 per 100,000) and has been increasing since 2003. The fall outpatient/ED rate for blacks increased each year from 2003-2005, but decreased to the lowest level in 2006 (1,049.0 per 100,000). Table 7 shows the total number of hospital outpatient/ED visits by race, and Figure 22 shows the hospital outpatient/ED visit rates by year.

With 180,605 outpatient/ED visits and an average outpatient/ED rate of 1,550.1 per 100,000, white females had the highest number and rate from falls compared to all other race/ethnicity and gender/sex categories (Figure 23). White males also had a higher rate of fall injury and visits to the ED compared to black males and females (1,336.9 per 100,000; 1,116.9 per 100,000; and 1,232.3 per 100,000 respectively). White females accounted for 55.8% (180,605/323,630) of all hospital outpatient/ED visits by white Indiana residents and the outpatient/ED visit rate has been increasing since 2003. While fall rates have been increasing for white males and females since 2003, the rate for black males and black females has been decreasing since 2004 and was at the lowest level in 2006. Figure 24 shows the fall outpatient/ED visit rate for each category broken out by year.

During 2003-2006, 85+ year olds had the highest age-specific rate of hospital admissions due to falls (5,199.4 per 100,000). The lowest age-specific rate of hospital outpatient/ED visits due to falls was for those 45-54 years of age (1,057.9 per 100,000). Figure 25 shows the actual number of hospital admissions for each age group while Figure 26 shows the age-specific rate for each age group.

Between 2003 and 2006, less than 0.1% (44/391,282) of all patients who visited an outpatient/ED facility due to falls died. The total charges for all ages injured due to falls and seen in the outpatient/ED were \$429 million. The mean and median total charges for all ages due to falls were \$1,099 and \$614 with a range of \$0-\$109,941. Of those who visited an outpatient/ED facility, 27% (110,419/391,282) had commercial insurance (Figure 27).

Figure 19: Fall Outpatient/ED Visit Rates, Age-Adjusted, Indiana, 2003-2006



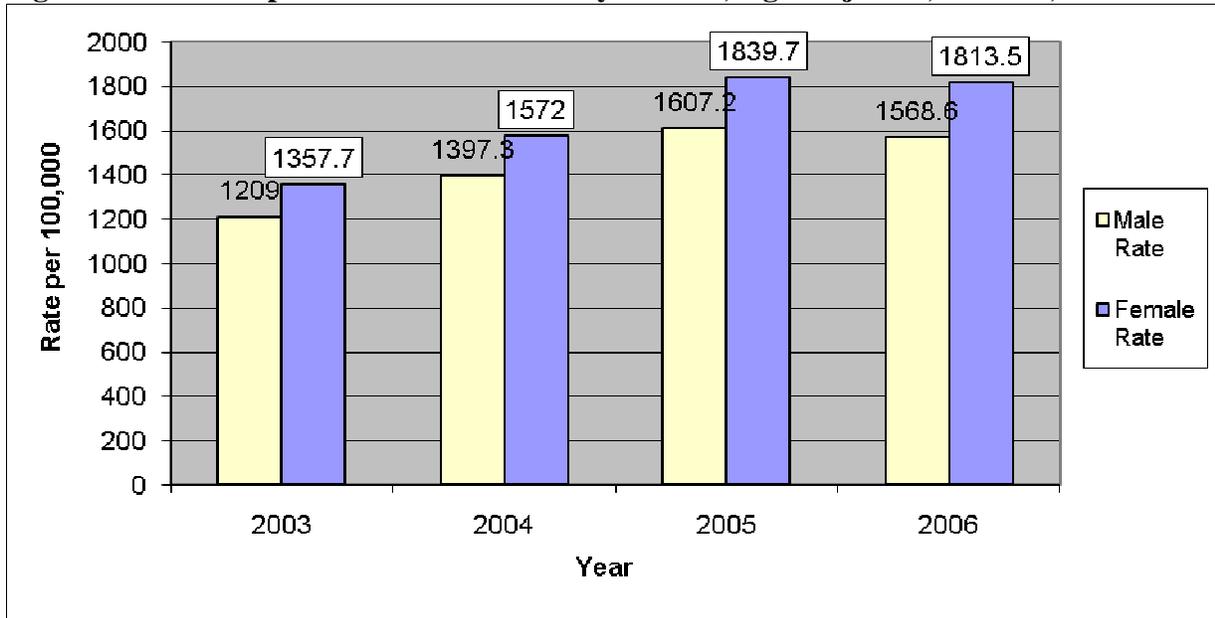
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Table 5: Fall Outpatient/ED Visits by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	36,546	43,900
2004	42,434	51,234
2005	48,965	60,424
2006	47,813	59,930
Total	175,758	215,488

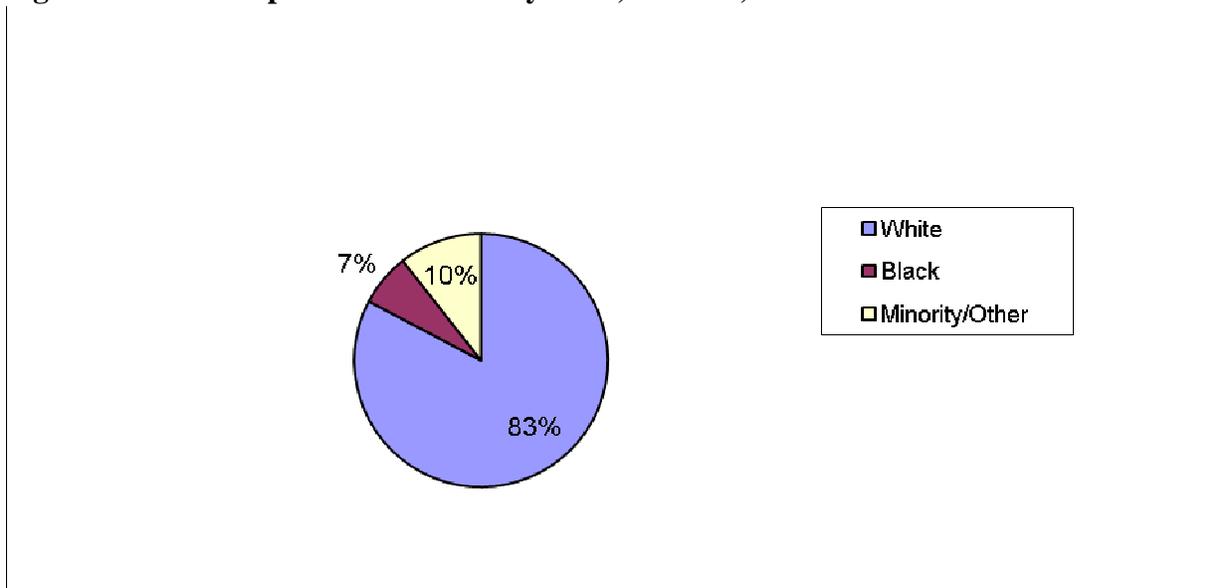
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 20: Fall Outpatient/ED Visit Rates by Gender, Age-Adjusted, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 21: Fall Outpatient/ED Visits by Race, Indiana, 2003-2006



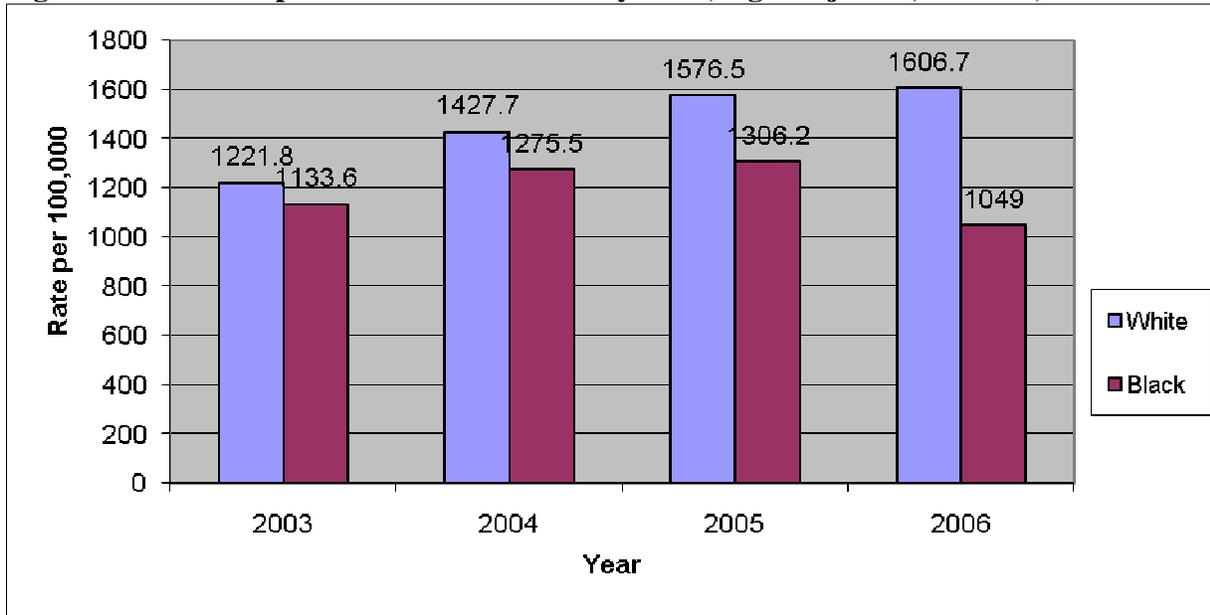
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Table 6: Fall Outpatient/ED Visits by Race, Indiana, 2003-2006

Year	White	Black
2003	67,343	6,012
2004	79,056	7,011
2005	87,809	7,231
2006	89,429	5,962
Total	325,637	26,216

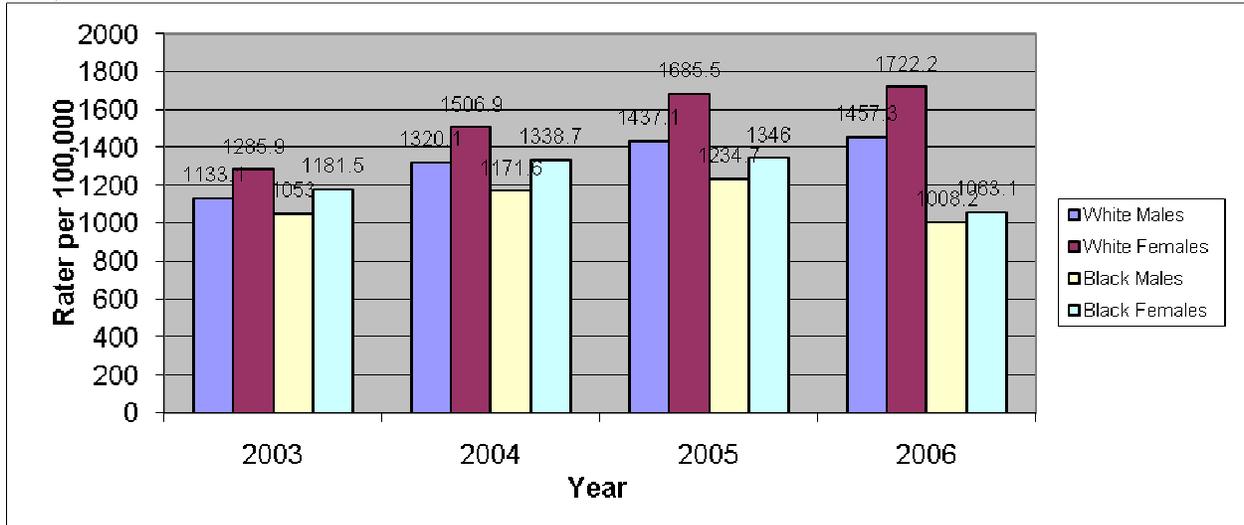
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 22: Fall Outpatient/ED Visits Rates by Race, Age-Adjusted, Indiana, 2003-2006



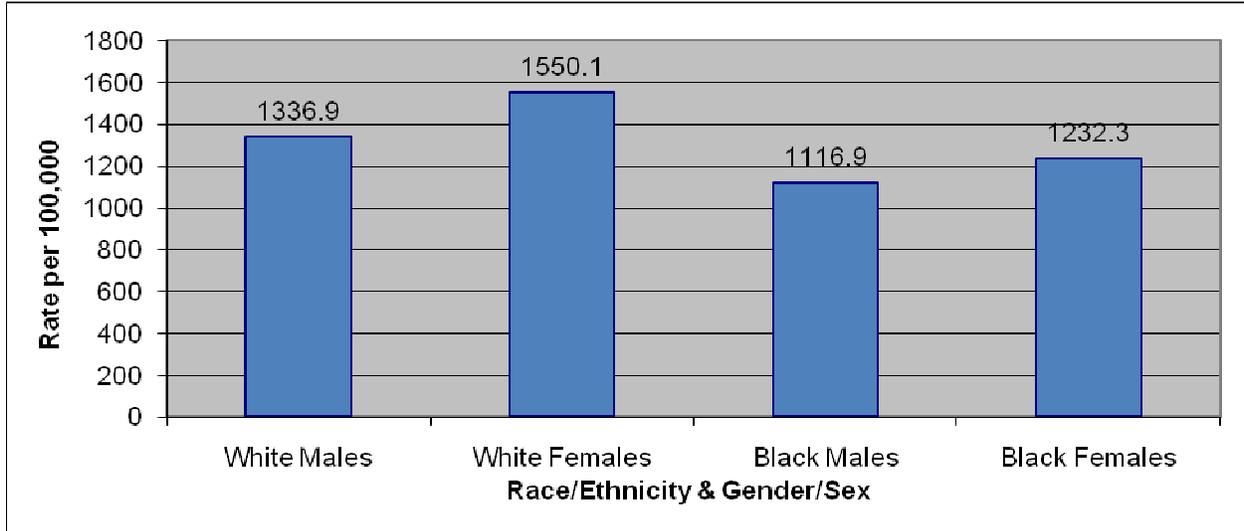
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 23: Fall Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



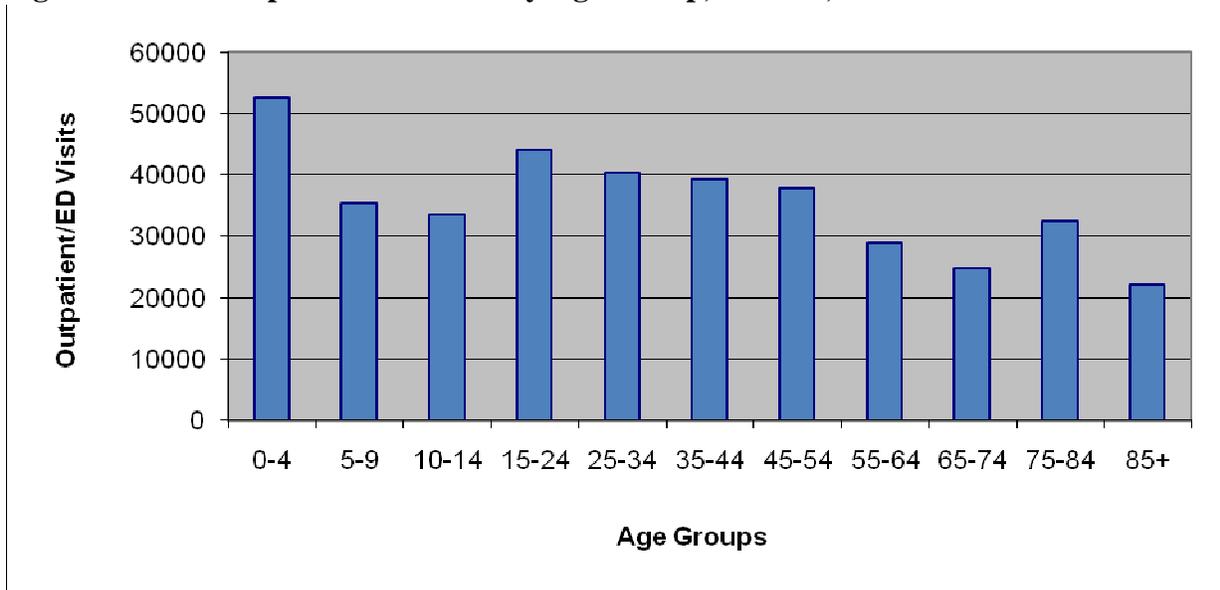
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 24: Mean Fall Outpatient/ED Visit Rates by Race and Gender, Age-Adjusted, Indiana, 2003-2006



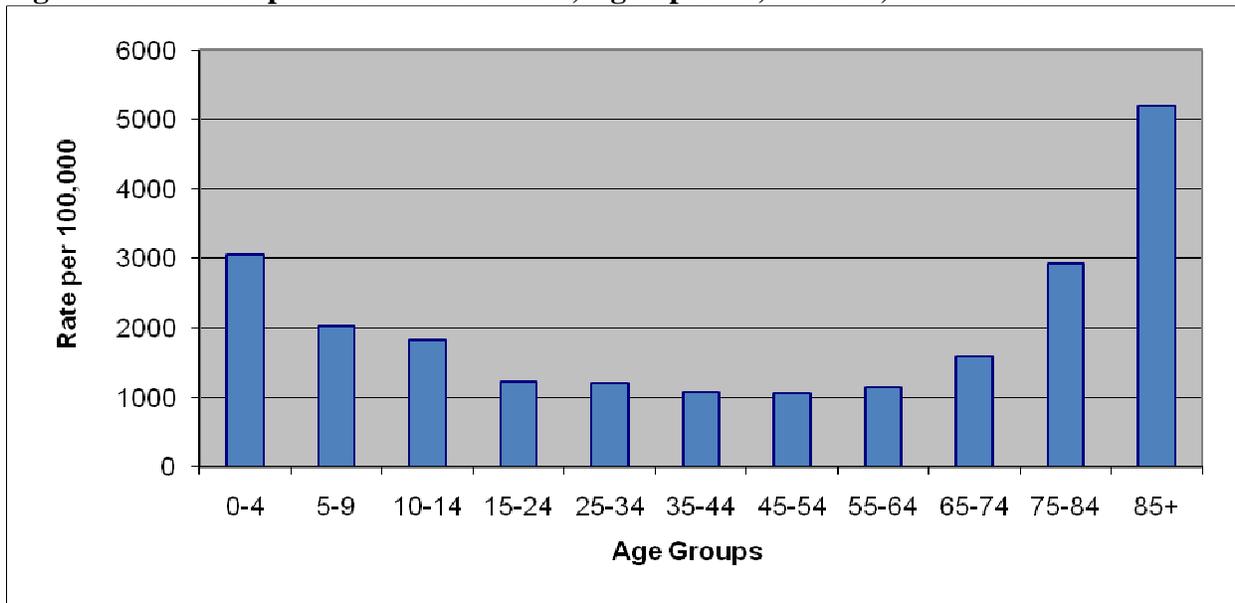
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 25: Fall Outpatient/ED Visits by Age-Group, Indiana, 2003-2006



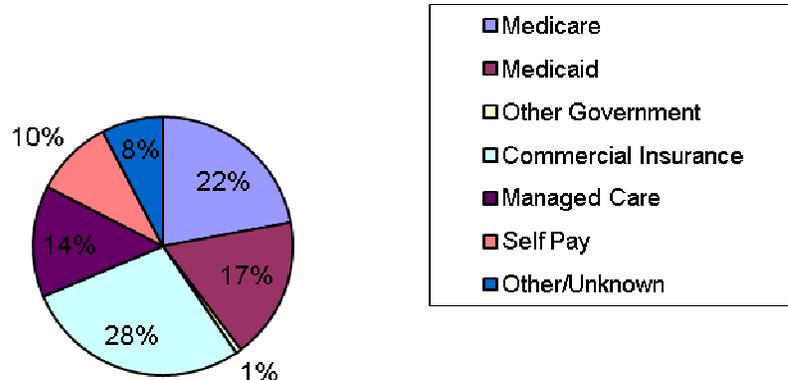
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 26: Fall Outpatient/ED Visit Rates, Age-Specific, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 27: Outpatient/ED Fall Visits by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Risk Behaviors and Prevention

Older Adults

Fall injuries and fatalities are tragic and unnecessary because they are preventable. However, more than one-third of people aged 65 and older fall each year, and those who fall once are two to three times more likely to fall again.⁽¹⁾ Fall injuries are responsible for significant disability, reduced physical function, and loss of independence.

The national data show that men are more likely to die from a fall and women are more likely to have a nonfatal injury from a fall. Since falls are a health risk factor nationally and locally, two questions about falls are asked on the Indiana Behavioral Risk Factor Surveillance System.⁽⁴⁾ The first question asks “how many times have you fallen within the past three months?” The results of the survey indicate that 14.9% of people age 45-54, 15.6% of people age 55-64, 12.3% of people age 65-74, and 16.8% of people age 75 and older had fallen 1-4 times. The percentages of women and men who fell during the preceding 3 months were similar (14.2% versus 15.4%, respectively), but women reported significantly more fall-related injuries than men (40.4% versus 26.6%, respectively). The effect these injuries have on the quality of life of older adults and on the U.S. health-care system reinforces the need for broader use of scientifically proven fall-prevention interventions.

Although one in three older adults falls each year in the United States, falls do not have to be an inevitable part of aging. There are proven strategies that can reduce falls and help older adults live better and longer.

According to the CDC, several steps can be taken to reduce the risk of falling⁽¹⁾:

- Exercise regularly to increase strength and improve balance.
- Ask a physician to review medications to reduce the risk of harmful side effects.
- Have a vision check at least once a year.
- Improve lighting in the home.
- Reduce hazards in the home that can lead to falls.

Young Children:

- Use safety gates if young children are in the house.
- Do not place chairs and furniture near windows.
- Place window guards on all windows beginning at the second story of a residence.
- Do not use baby walkers.
- Supervise young children, especially when they are climbing on furniture or playing in areas of the house or yard where falls are possible.
- Make sure infants are securely (strapped) when on a changing table.
- Visit playgrounds that have surfaces that can absorb the shock of falls. This includes materials such as wood chips, shredded rubber or sand.

Conclusion

Injuries and deaths caused by falls remain a serious public health problem. Between 2003 and 2006, falls were the third leading cause of unintentional injury death for Indiana residents, claiming 1,146 lives with an age-adjusted rate of 4.5 per 100,000 population. Falls are also the most common cause of nonfatal injuries and hospital admissions. Based on hospital discharge data for the four-year period, falls accounted for approximately 46.8% of all inpatient hospitalizations and 28.4% all outpatient/ED visits. The economic burden of fall injuries is also enormous. The total charges during 2003 to 2006 for inpatient hospitalizations and outpatient/ED visits were \$1.2 billion. The medical costs alone do not even 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 specific groups, such as older adults over age 65, in order to reduce the burden on Indiana residents and the state's economy.

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POISONING IN INDIANA

Table of Contents

Index of Figures and Tables.....	111-112
Highlights.....	113
Introduction.....	114
Poisoning Deaths in Indiana.....	114-119
Poisoning Injuries in Indiana.....	120-135
Risk Behaviors and Prevention.....	135-137
Conclusion.....	137
References.....	138

Index of Figures and Tables

- Figure 1: Poisoning Death Rates, Age-Adjusted, Indiana, 2003-2006
- Figure 2: Poisoning Death Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 3: Mean Poisoning Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006
- Figure 4: Poisoning Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006
- Figure 5: Mean Poisoning Death Rates by Race and Gender/Sex, Age-Adjusted, 2003-2006
- Figure 6: Poisoning Death Rates by Race/Ethnicity and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 7: Poisoning Death Rates, Age-Specific, Indiana, 2003-2006
- Figure 8: Poisoning Inpatient Hospital Admission Rates, Age-Adjusted, Indiana, 2003-2006
- Figure 9: Poisoning Inpatient Hospital Admission Rates by Gender, Age-Adjusted, Indiana, 2003-2006
- Figure 10: Poisoning Inpatient Hospital Admissions by Race, Indiana, 2003-2006
- Figure 11: Poisoning Inpatient Hospital Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006
- Figure 12: Mean Poisoning Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 13: Poisoning Inpatient Hospital Admission Rates by Race and Gender, Age-Adjusted, Indiana, 2003-2006
- Figure 14: Poisoning Inpatient Hospital Admissions by Age, Indiana, 2003-2006
- Figure 15: Poisoning Inpatient Hospital Admission Rates, Age-Specific, Indiana, 2003-2006
- Figure 16: Poisoning Inpatient Hospital Admissions by Type, Indiana, 2003-2006
- Figure 17: Poisoning Inpatient Hospital Admissions by Source, Indiana, 2003-2006
- Figure 18: Poisoning Inpatient Hospital Admissions by Payor, Indiana, 2003-2006
- Figure 19: Poisoning Outpatient/ED Visit Rates, Age-Adjusted, Indiana, 2003-2006
- Figure 20: Poisoning Outpatient/ED Visit Rates by Gender, Age-Adjusted, Indiana, 2003-2006
- Figure 21: Poisoning Outpatient/ED Visits by Race, Indiana, 2003-2006
- Figure 22: Poisoning Outpatient/ED Visit Rates by Race, Age-Adjusted, Indiana, 2003-2006
- Figure 23: Mean Poisoning Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 24: Poisoning Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 25: Poisoning Outpatient/ED Visits by Age-Group, Indiana, 2003-2006
- Figure 26: Poisoning Outpatient/ED Visit Rates, Age-Specific, Indiana, 2003-2006
- Figure 27: Poisoning Outpatient/ED Visits by Payor, Indiana, 2003-2006
- Table 1: Poisoning Deaths by Gender/Sex, Indiana, 2003-2006
- Table 2: Poisoning Deaths by Race/Ethnicity, Indiana, 2003-2006
- Table 3: Poisoning Deaths and Rates, Age-Specific, Indiana, 2003-2006
- Table 4: Poisoning Inpatient Hospital Admissions by Gender/Sex, Indiana, 2003-2006
- Table 5: Poisoning Inpatient Hospital Admissions by Race, Indiana, 2003-2006

Table 6: Poisoning Inpatient Hospital Admissions and Rates, Age-Specific, Indiana, 2003-2006
Table 7: Poisoning Outpatient/ED Visits by Gender/Sex, Indiana, 2003-2006
Table 8: Poisoning Outpatient/ED Visits by Race, Indiana, 2003-2006

Highlights for Poisonings

Mortality, 2003-2006⁽³⁾

- Poisonings were the 2nd leading cause of unintentional injury death for Indiana residents, claiming 1,465 lives.
- Males were 2.0 times more likely to die due to a poisoning than females (7.8 per 100,000 vs. 4.0 per 100,000).
- Between 2003 and 2006, white males had the highest rate of death due to poisoning (8.1 per 100,000) than all other race/gender categories.
- Adults (45-54 year olds) had the highest age-adjusted poisoning death rate (11.7 per 100,000) of all ages.

Inpatient Admissions for Poisonings, 2003-2006⁽⁴⁾

- Poisoning accounted for approximately 17.0% (14,762 admissions) of all injury/poisoning inpatient hospital admissions with an overall rate of 59.4 per 100,000.
- Females were 1.3 times more likely to be admitted to the hospital following a poisoning than males (66.7 per 100,000 compared to 52.2 per 100,000).
- Blacks were admitted to the hospital due to poisonings more than whites (59.0 per 100,000 versus 53.5 per 100,000).
- The age group with the highest hospital admission rate due to poisonings was 35-44 year olds (93.0 per 100,000).

Outpatient/Emergency Department (ED) Visits for Poisonings, 2003-2006⁽⁴⁾

- Poisonings accounted for approximately 2.0% (27,308 visits) of all hospital outpatient/ED visits.
- Females were 1.2 times more likely to be seen in an outpatient/ED facility following a poisoning than males (121.6 per 100,000 compared to 98.0 per 100,000).
- Blacks and whites had similar outpatient/ED visit rates (99.2 per 100,000 versus 98.6 per 100,000).
- Those four years old and younger had the highest rate of outpatient/ED visits due to poisonings compared to all other age groups (287.0 per 100,000).

Introduction

Poisoning injuries and deaths can either be considered unintentional or intentional. Unintentional poisoning death rates have been rising steadily since 1992. In 2005, unintentional poisoning was second only to motor vehicle crashes as a cause of unintentional injury death.⁽¹⁾ Among people 35-54 years old, unintentional poisoning caused more deaths than motor vehicle crashes. For intentional poisonings, self-harm poisoning was the second-leading cause of ED visits for intentional injury in 2006.⁽¹⁾

In 2000, poisonings led to \$26 billion in medical expenses and made up 6% of the economic costs of all injuries in the United States. Males accounted for 75% of the total costs of poisoning injuries (\$19 billion). Females accounted for 25% of the total costs of poisoning injuries (almost \$7 billion).⁽²⁾

Poisoning Deaths in Indiana

Poisoning death data for this report was extracted from the Indiana State Department of Health (ISDH) mortality reports and are based off of ICD-10 codes specific to poisoning (X40-X499). The numbers differ slightly from the nationally based reporting system, the National Center for Health Statistics (NCHS). The number of Indiana deaths reported by the ISDH is lower than the numbers from NCHS, because ISDH does not always receive death certificates for Indiana residents that died out of state. However, these deaths are likely to be reported to NCHS from those out-of-state health departments, and NCHS would usually be able to assign state of residence, making the nationally based data more complete than the health department data. In addition, completeness of mortality data is dependent upon how thoroughly the death certificate is completed, which affects how a death is categorized. Another limitation is that race/ethnicity data is not accurate. Race/ethnicity is provided at the discretion of the person completing the death certificate and may not reflect how individuals would define their own race or ethnicity.⁽³⁾

In Indiana between 2003 and 2006, poisonings were the 2nd leading cause of unintentional injury death, with a total of 1,465 individuals dying (average of 366.8 deaths per year) for a rate of 5.9 per 100,000 population. There were 267 poisoning deaths in 2003, 334 deaths in 2004, 394 deaths in 2005, and 470 deaths in 2006. Figure 1 shows the fall age-adjusted rates for the four-year period. The highest death rate was in 2006 with 7.5 per 100,000, and the lowest rate was in 2003 with 4.4 per 100,000.

Two-thirds of the poisoning deaths (66% or 959/1,465) were in males with females only making up 35% (507/1,465). When comparing death rates, males (7.8 per 100,000) died 2.0 times more than females (4.0 per 100,000). Table 1 shows the number of deaths by gender/sex for each year, and Figure 2 shows the rates by gender/sex for each year.

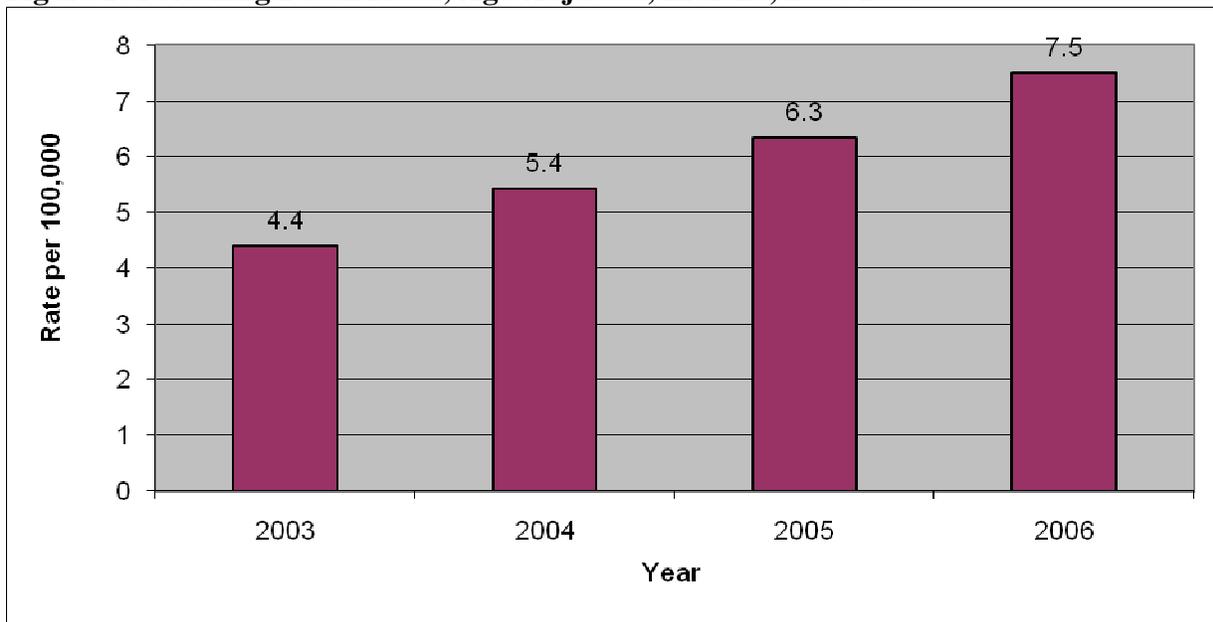
More whites (93.9% or 1,375/1,465) died than blacks (5.9% or 86/1465) and individuals defined as "other" (0.3% or 4/1,465) between 2003 and 2006. Whites had the highest death rate due to poisoning (6.3 per 100,000) for the entire time period. The overall death rate for blacks was 4.3 per 100,000 and the Hispanics death rate was unstable. Figure 3 shows the average death rates

by race for 2003-2006. The poisoning death rate was highest in 2006 for whites (8.0 per 100,000) and has been increasing since 2003. Blacks had the highest death rate in 2006 (5.2 per 100,000). The death rates for those categorized by Hispanic or “other” were unstable for individual years. Table 2 shows the total number of deaths by race, and Figure 4 shows the death rates by year.

With 890 deaths and an average death rate of 8.1 per 100,000, white males had the highest number and death rate from falls compared to all other race/ethnicity and gender/sex categories (Figure 5). White males were 1.8 times more likely to die than white females, 1.1 times more likely than black males and 4.3 times more likely than black females. White females had the higher poisoning death rate compared to black females. Figure 6 shows the poisoning death rate for each category broken out by year.

Individuals 45-54 years of age had the highest poisoning death rate (11.7 per 100,000). See Figure 7. The lowest stable rates were seen in 65+ year olds. The overall rate of death for all ages was 5.9 per 100,000. Table 3 shows the number of poisoning deaths in each age group for each year as well as the age-specific death rate.

Figure 1: Poisoning Death Rates, Age-Adjusted, Indiana, 2003-2006



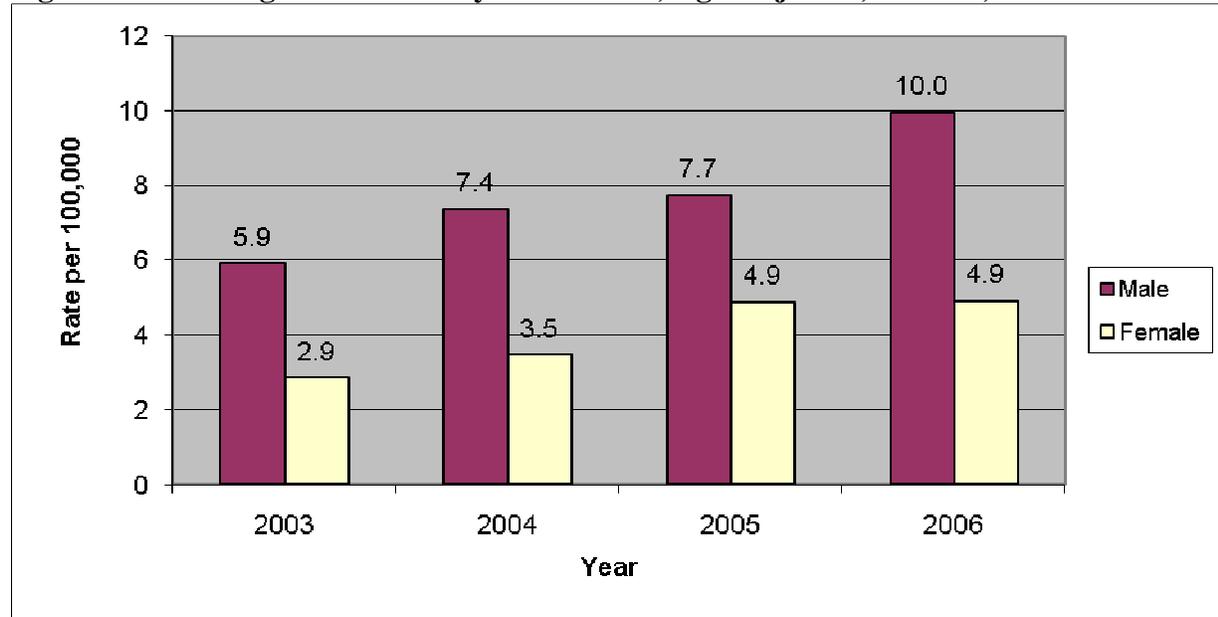
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 1: Poisoning Deaths by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	179	88
2004	226	108
2005	241	153
2006	313	157
Total	959	506

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

Figure 2: Poisoning Death Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



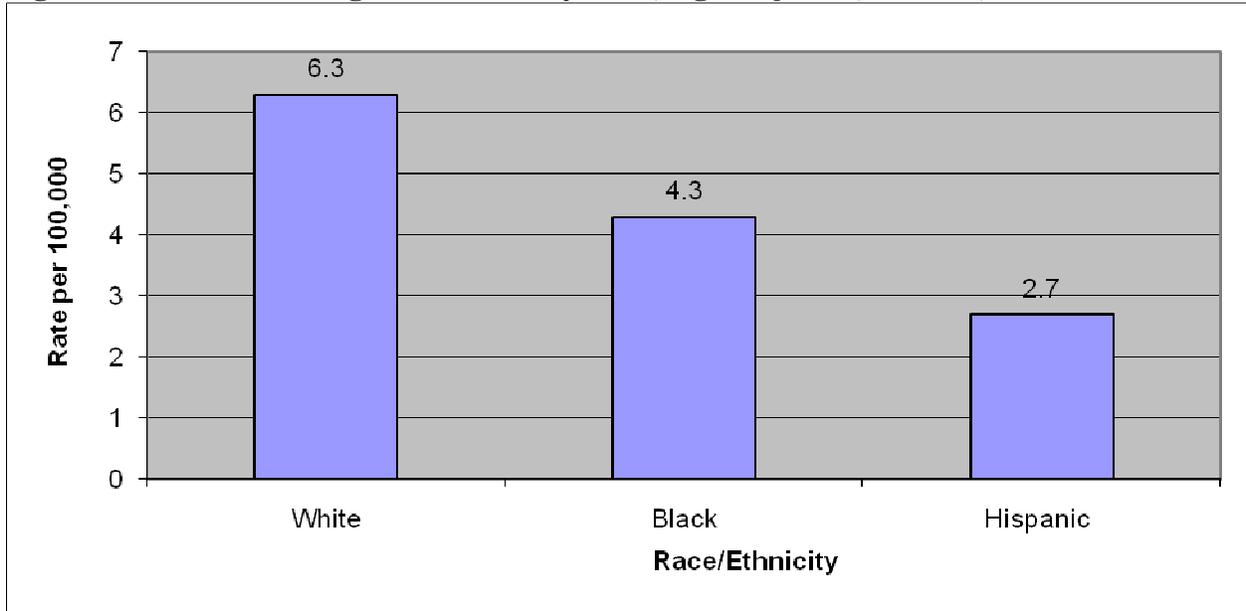
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 2: Poisoning Deaths by Race/Ethnicity, Indiana, 2003-2006

Year	White	Black	Other
2003	254	12	1
2004	310	23	1
2005	369	23	2
2006	442	28	0
Total	1,375	86	4

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

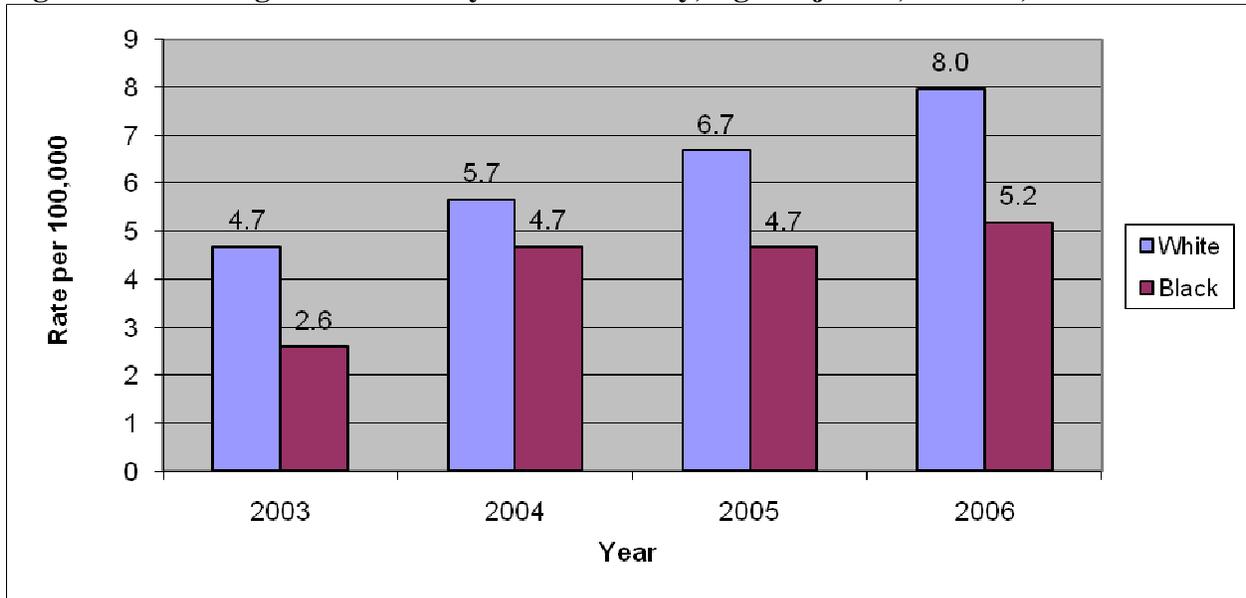
Figure 3: Mean Poisoning Death Rates by Race, Age-Adjusted, Indiana, 2003-2006



Note: Whites and blacks are both non-Hispanic.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 4: Poisoning Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006

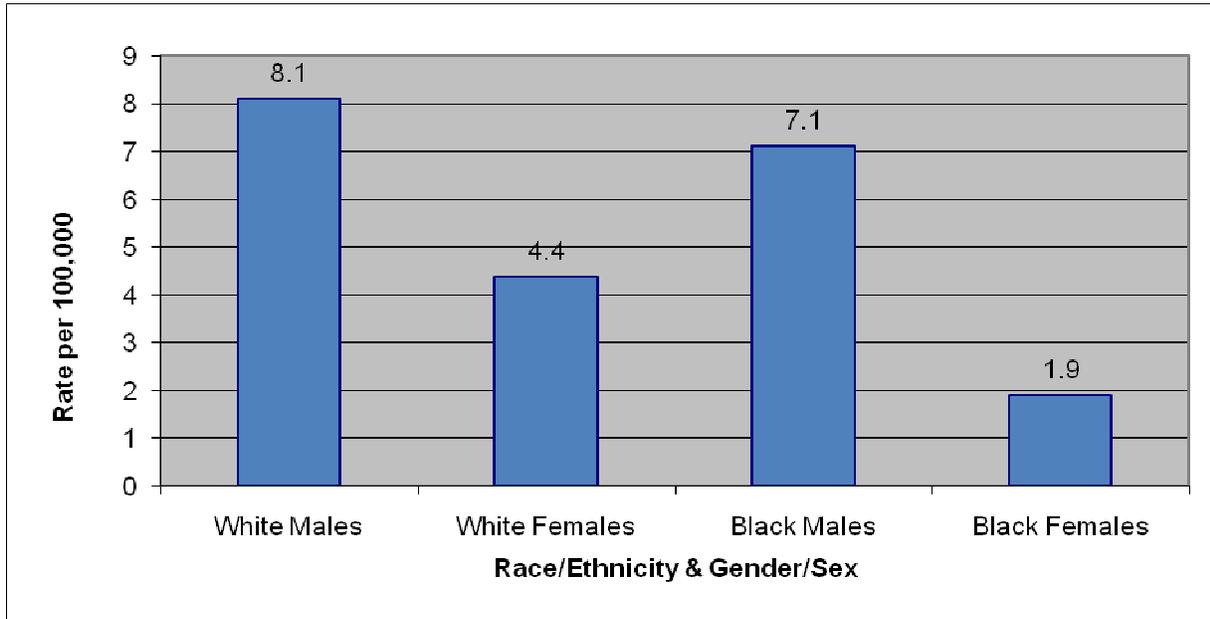


Note: Whites and blacks are both non-Hispanic.

Note: The 2003 rate for blacks is unstable and should be used with caution.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

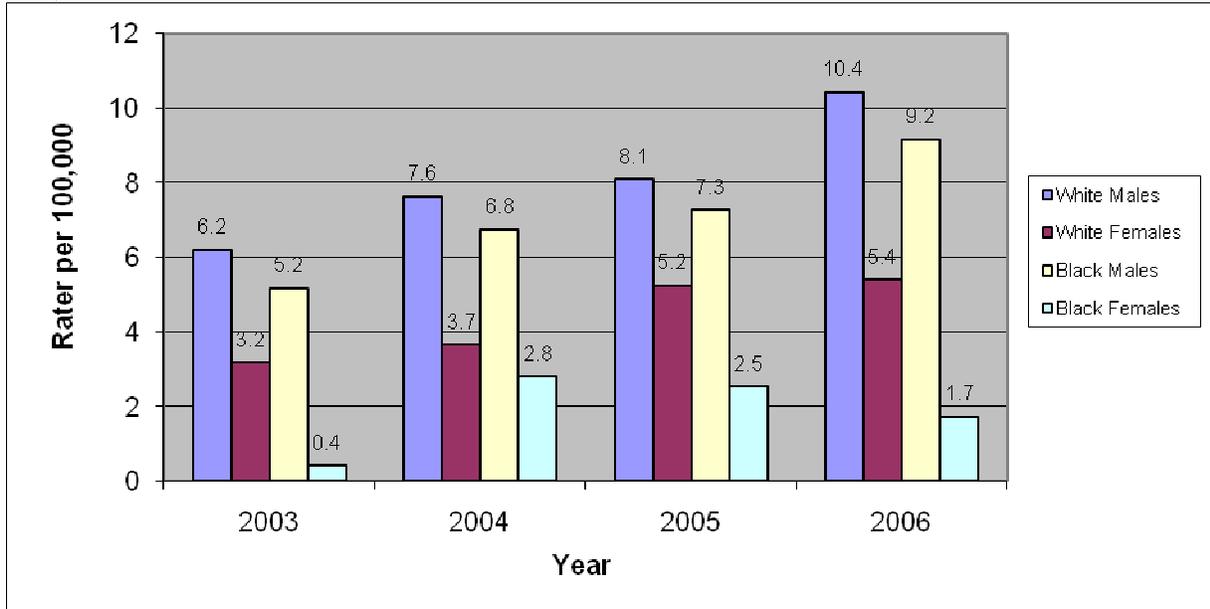
Figure 5: Mean Poisoning Death Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Note: Whites and blacks are both non-Hispanic.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

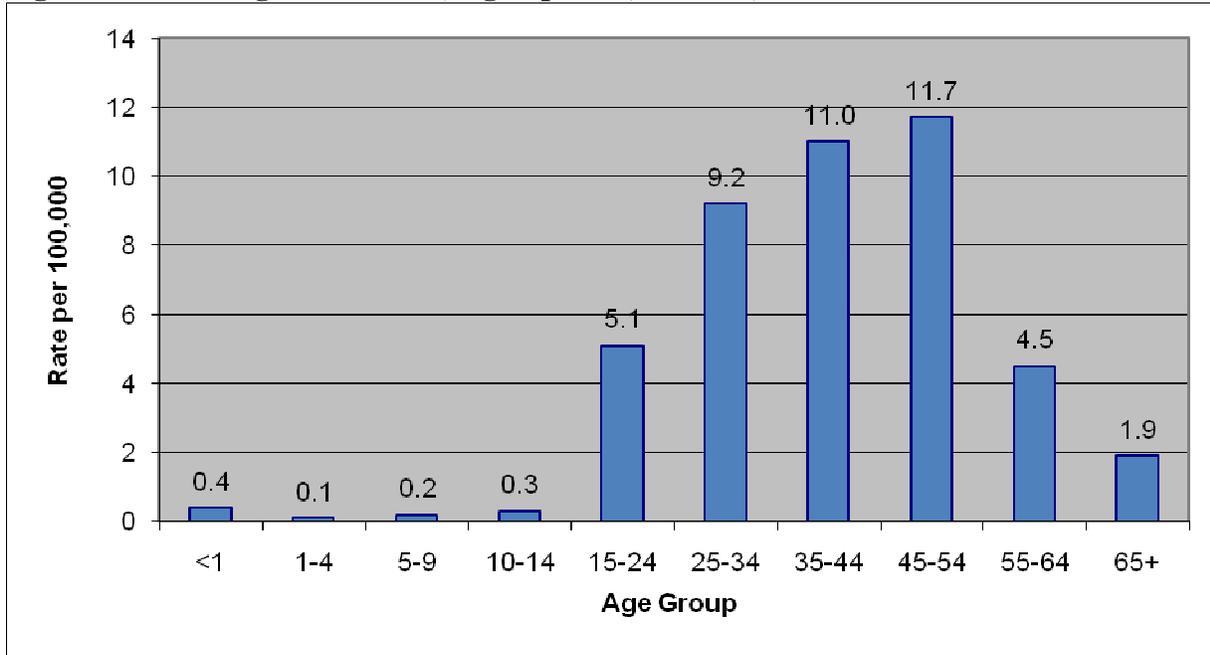
Figure 6: Poisoning Death Rates by Race/Ethnicity and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Note: Death rates for black males and females are unstable and should be used with caution.

Note: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 7: Poisoning Death Rates, Age-Specific, Indiana, 2003-2006



Note: Rates for 14 years of age and younger are unstable and should be used with caution

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 3: Poisoning Deaths and Rates, Age-Specific, Indiana, 2003-2006

Age Groups	2003		2004		2005		2006	
	Deaths	Age-Specific Rates						
<1	0	U	0	U	0	U	3	U
1-4	1	U	0	U	0	U	1	U
5-9	1	U	0	U	1	U	1	U
10-14	1	U	2	U	1	U	2	U
15-24	38	4.2	40	4.4	55	6.1	71	5.5
25-34	53	6.5	62	7.5	93	11.1	101	11.3
35-44	86	9.4	100	11.0	98	10.9	116	12.6
45-54	55	6.3	101	11.4	103	11.4	128	19.3
55-64	19	U	17	U	32	5.0	31	8.0
65+	13	U	12	U	11	U	16	U
Unknown	0	---	0	--	0	---	0	---
Total	267	4.3	334	5.4	394	6.3	470	7.4

Note: 'U' signifies that the rates are unstable due to less than 20 deaths.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

Poisoning Injuries in Indiana

Hospital discharge data give an indication of the number of unintentional and intentional injuries in Indiana, although the data have limitations. The International Classification of Disease Revision 9 Clinical Modification (ICD-9CM) coding scheme includes external causes of injury codes or E-codes that indicate the source or cause of the injury and can also provide injury-related cost data. However, E-codes are not mandated by law in Indiana, and it is estimated that only 62% of the discharge records contain them. Therefore, the total number of injuries in this report is a gross underestimation of the proportion of number of injuries that actually occurred.

E-codes specific to injury and poisoning include ICD-9-CM codes 800-999. E-codes specific to poisoning injuries include E850-E858, E860-E869, E950, E951, E952, E962, E972, E980, E981 and E982. The hospital data base does not contain a patient-specific unique identifier, meaning that it does not distinguish whether one person had five visits or whether five people visited once. Therefore, statistics only reflect visits and not specific numbers of people. Also, race/ethnicity data is not very accurate because race/ethnicity is at the discretion of the person reporting the data and may not reflect how the individuals would define themselves. In some cases, race/ethnicity information is not provided at all.⁽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, a few psychiatric and behavioral health hospitals do not submit data. All acute care hospitals are submitting inpatient data. However, one of the three Level 1 Trauma center hospitals has not submitted outpatient/emergency department data yet. As a result, the total number of injuries for the outpatient/emergency department data is an underestimation of the actual number of injuries and should be used with caution.⁽⁴⁾

Hospital Inpatient Data

From 2003 to 2006, there were 86,799 inpatient hospitalizations with a primary diagnosis of injury or poisoning. Based on the data with valid E-codes, poisoning injuries accounted for approximately 17% (14,762 admissions) of all injury/poisoning hospital inpatient admissions with an injury rate (combined 2003-2006 rate) of 59.4 per 100,000. There were 3,460 poisoning injuries in 2003, 3,766 injuries in 2004, 3,732 injuries in 2005, and 3,804 injuries in 2006. Figure 8 shows the poisoning age-adjusted rates for the four-year period. The highest injury rate was in 2004 with 60.8 per 100,000 and the lowest rate was 2003 with 56.4 per 100,000.

Of those admitted to the hospital 43.4% (6,409/14,762) were male and 56.6% (8,353/14,762) were female. When comparing rates, females were 1.3 times more likely to be admitted to the hospital due to a poisoning than males (66.7 per 100,000 versus 52.2 per 100,000) Table 4 shows the number of hospital admissions by gender/sex for each year, and Figure 9 shows the rates by gender/sex for each year.

The majority (79.7% or 11,790/14,762) of the hospital admissions were white Indiana residents (Figure 10). However, the age-adjusted rate for hospital admissions was higher in blacks compared to whites (59.0 per 100,000 versus 53.5 per 100,000). The poisoning hospitalization rate was highest in 2004 for blacks (68.1 per 100,000) and highest for whites in 2006 (55.4 per 100,000). Table 5 shows the total number of hospitalizations by race, and Figure 11 shows the hospitalization rates by year.

White females and black males had almost identical poisoning injury rates (61.3 per 100,000 versus 62.3 per 100,000 respectively). See Figure 12. White males had the lowest average injury age-adjusted rate (45.7 per 100,000) compared to all other groups. The results show that the poisoning injury rates varied from year to year between the different race and gender groups. Figure 13 shows the poisoning hospitalization rates for each category broken out by year.

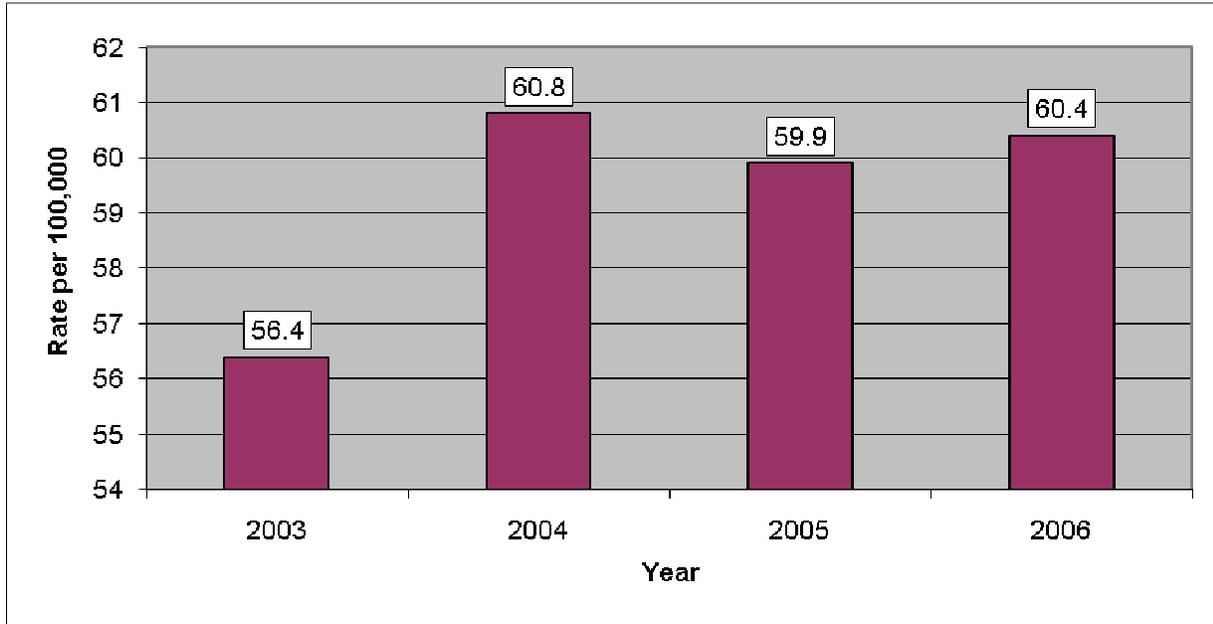
During 2003-2006, 35-44 year olds had the highest age-specific rate of hospital admissions due to poisoning (93.0 per 100,000). The lowest age-specific rate of hospital admissions due to poisoning was for those 5-9 years of age (2.8 per 100,000). Figure 14 shows the actual number of hospital admissions for each age group, while Figure 15 shows the age-specific rate for each age group. Table 6 shows the number of poisonings in each age group for each year as well as the age-specific injury rate.

During 2003-2006, more than half (58%) of poisoning hospitalizations were due to self-inflicted injuries (8,564/14,762). Unintentional poisoning hospitalizations accounted for 29.5% of inpatient admissions.

Between 2003 and 2006, 1.1% (164/14,762) of all patients admitted to the hospital due to poisonings died. More than three-fourths (76%) of all patients were admitted to the hospital as an emergency (Figure 16), and 78.6% were admitted after receiving care at an outpatient center or in the ED (Figure 17).

For 2003-2006, the total charges for all ages injured due to poisoning and admitted to the hospital were \$129 million. The mean and median total charges for all ages due to poisoning were \$8,798 and \$5,865 with a range of \$0-\$434,797. Of those admitted to the hospital, 22.7% (3,357/14,762) had commercial insurance while 40.1% (5,930/14,762) had either Medicare or Medicaid insurance (Figure 18). The average length of stay was 2.4 days (range 1-71 days), and the median length of stay was 2.0 days.

Figure 8: Poisoning Inpatient Hospital Admissions Rates, Age-Adjusted, Indiana, 2003-2006



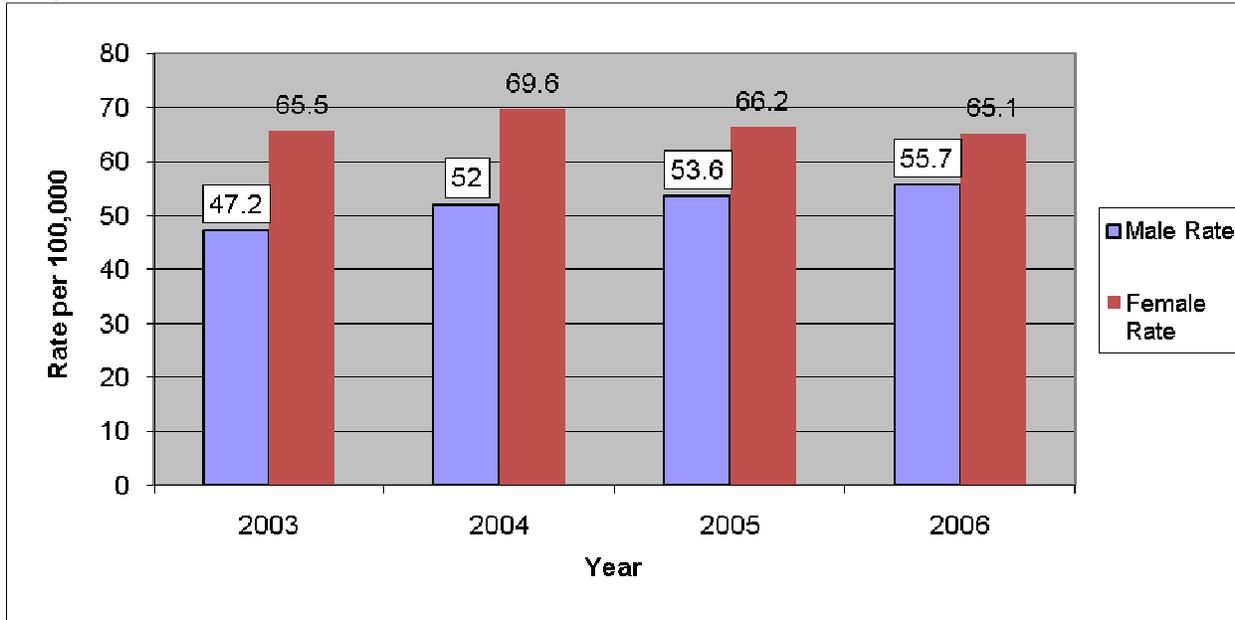
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 4: Poisoning Inpatient Hospital Admissions by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	1,427	2,033
2004	1,592	2,174
2005	1,657	2,075
2006	1,733	2,071
Total	6,409	8,353

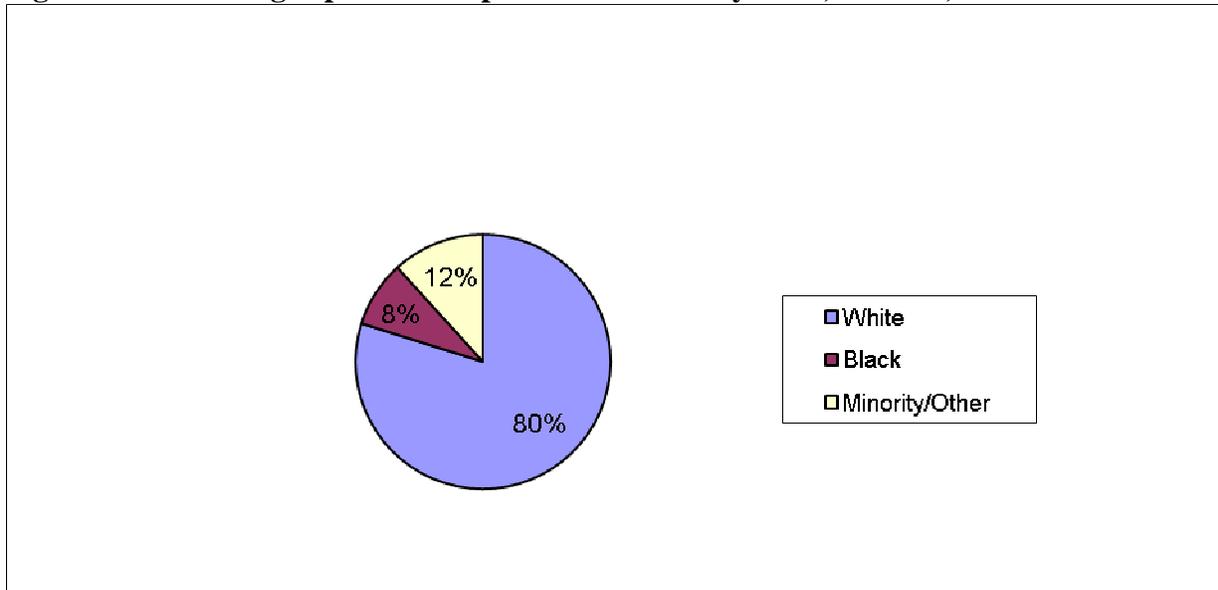
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 9: Poisoning Inpatient Hospital Admission Rates by Gender, Age-Adjusted, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 10: Poisoning Inpatient Hospital Admissions by Race, Indiana, 2003-2006



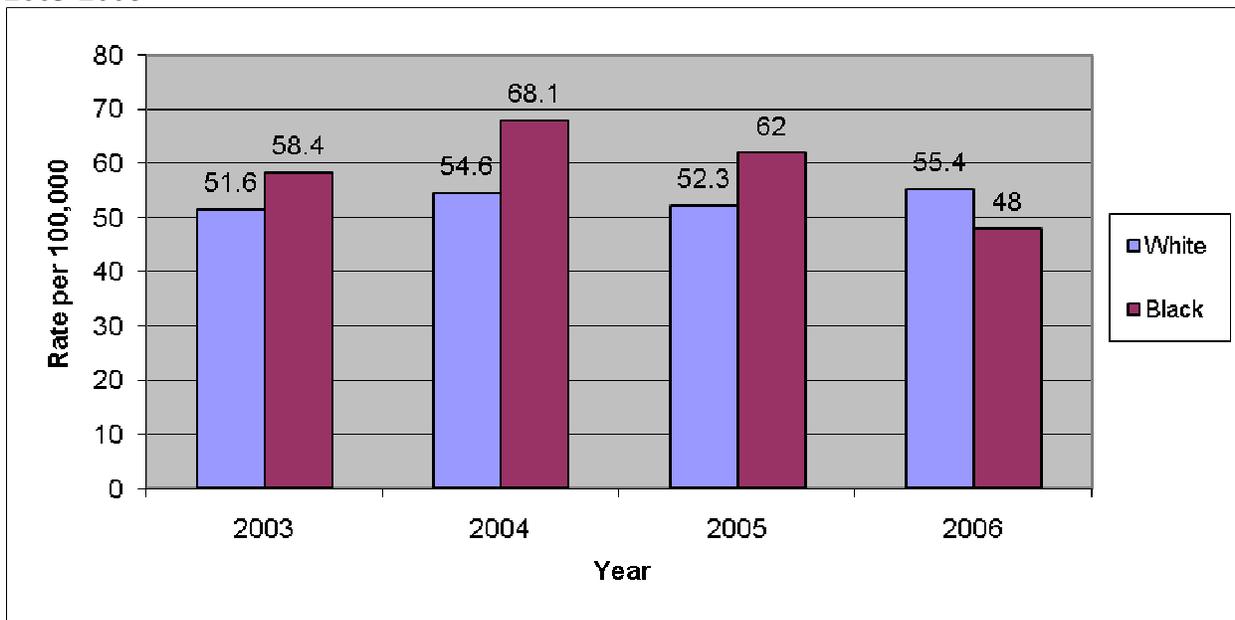
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 5: Poisoning Hospital Admissions by Race, Indiana, 2003-2006

Year	White	Black
2003	2,818	297
2004	3,000	358
2005	2,887	332
2006	3,085	256
Total	11,790	1,243

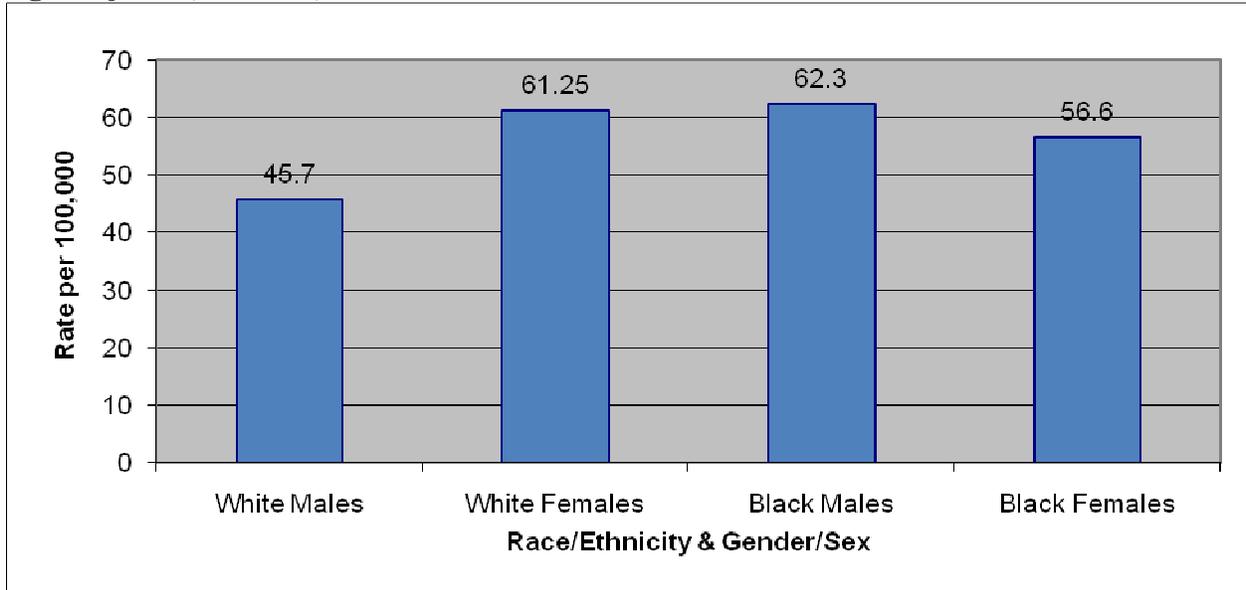
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 11: Poisoning Inpatient Hospital Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006



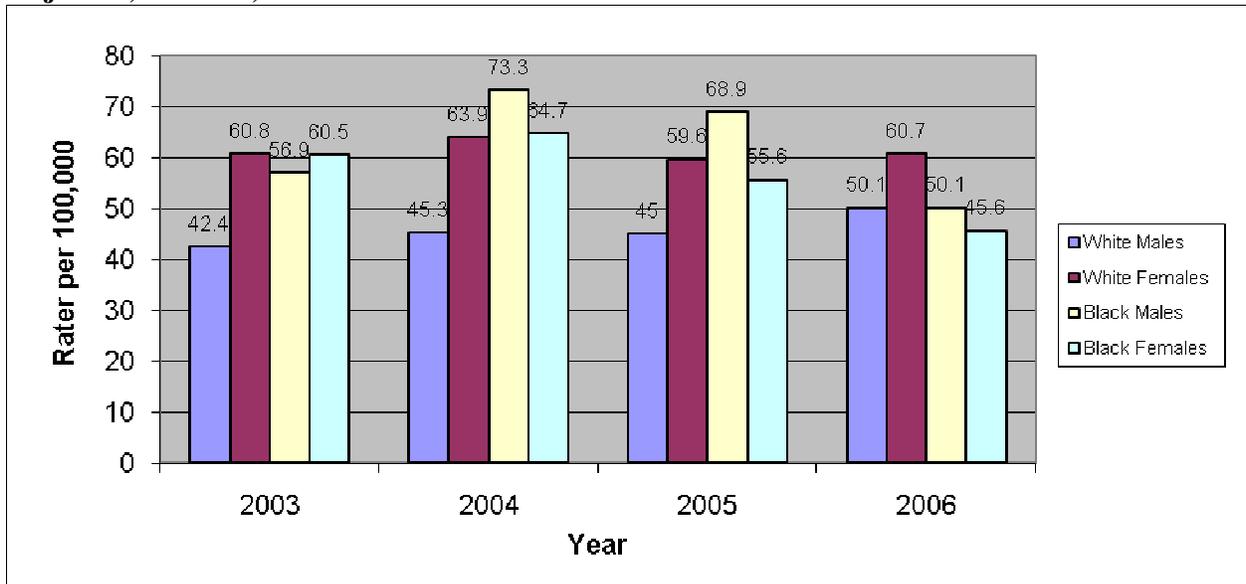
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 12: Mean Poisoning Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



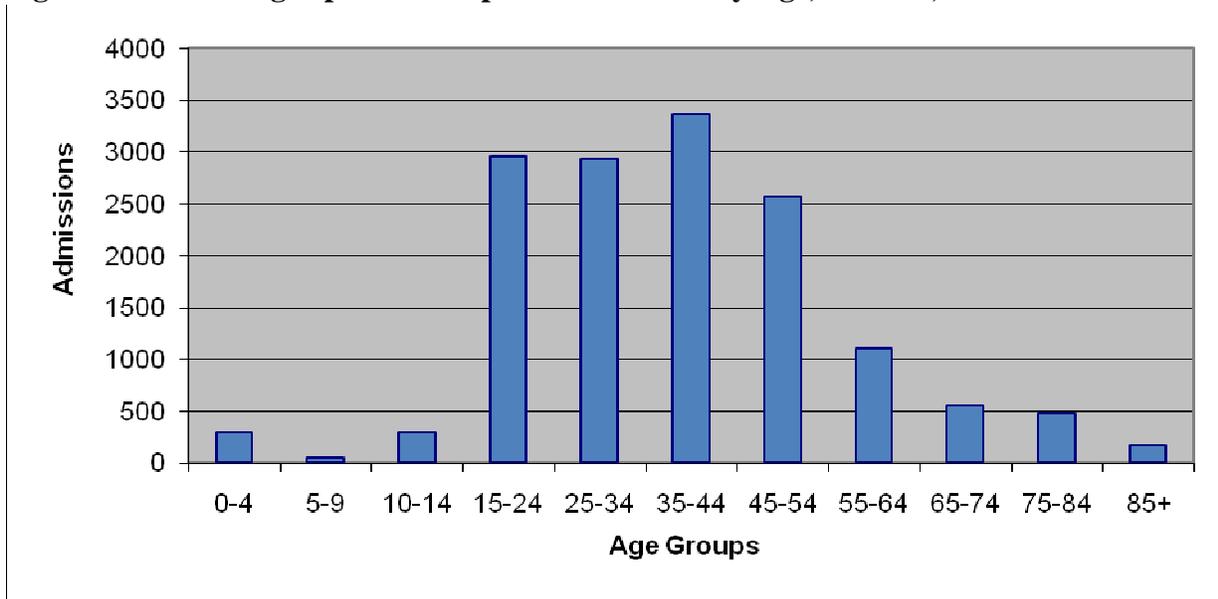
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 13: Poisoning Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



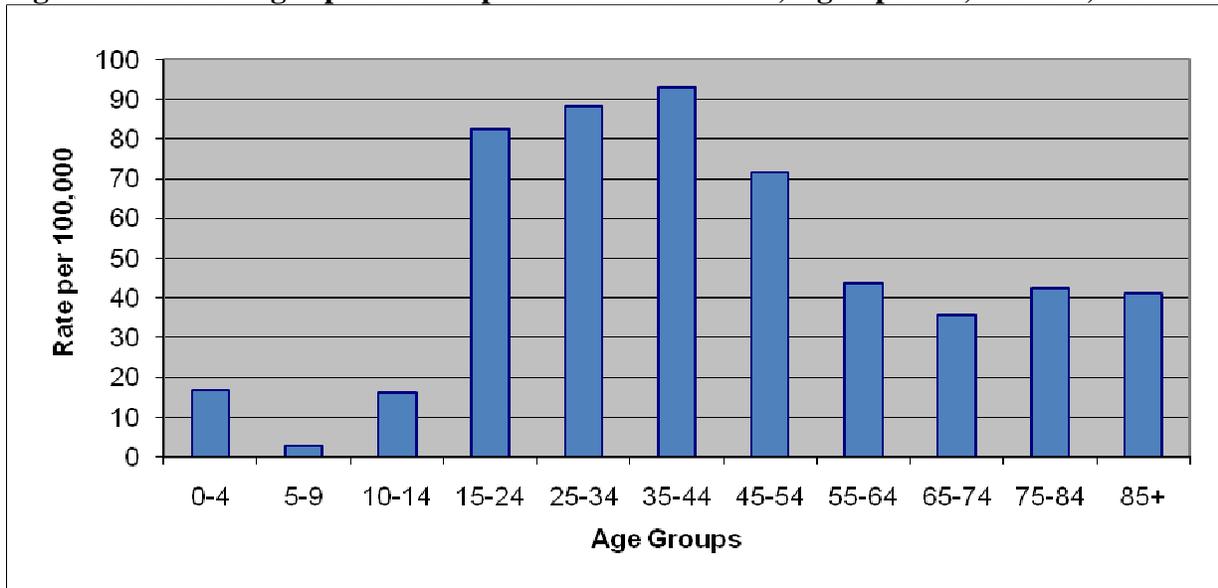
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 14: Poisoning Inpatient Hospital Admissions by Age, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 15: Poisoning Inpatient Hospital Admission Rates, Age-Specific, Indiana, 2003-2006



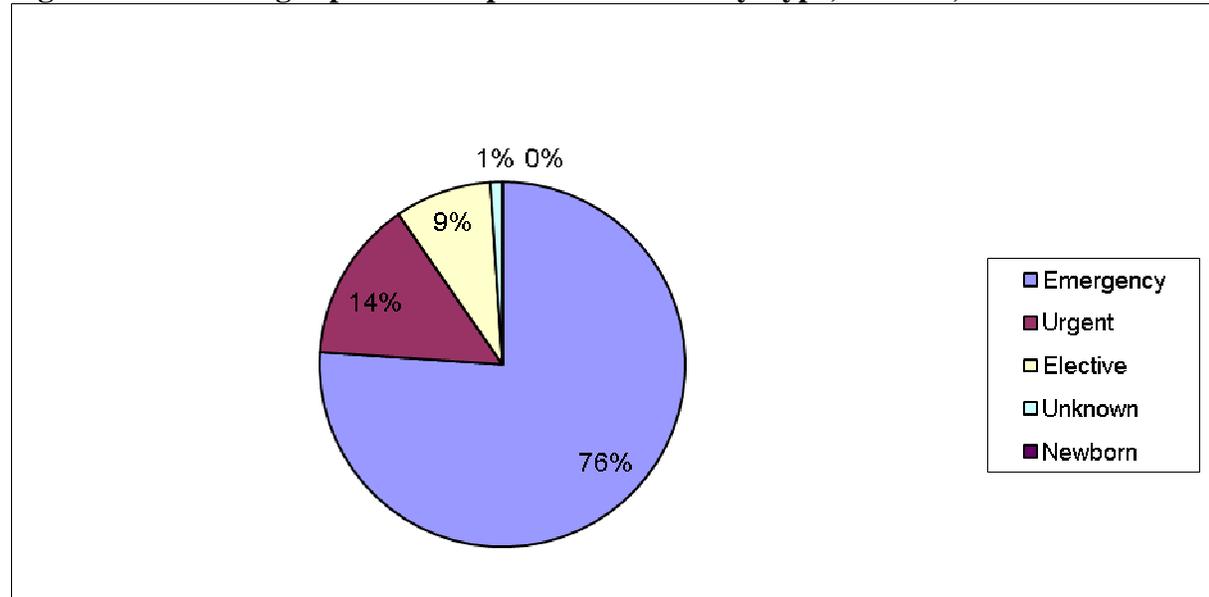
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 6: Poisoning Inpatient Hospital Admissions and Rates, Age-Specific, Indiana, 2003-2006

Age Groups	2003		2004		2005		2006	
	Injuries	Age-Specific Rates						
0-4	90	20.9	68	15.8	70	16.3	62	14.4
5-9	15	U	18	U	9	2.1	7	1.6
10-14	70	15.1	92	19.9	89	19.4	46	10.4
15-24	721	79.9	785	87.0	732	81.5	724	81.1
25-34	697	85.4	716	86.7	753	90.2	767	90.3
35-44	829	90.5	855	94.2	831	92.6	846	94.6
45-54	541	62.1	634	71.6	670	74.4	717	77.6
55-64	202	34.2	274	44.7	294	46.2	331	49.5
65-74	130	33.6	156	40.2	128	32.9	144	36.1
75-84	122	44.3	118	42.2	117	41.8	116	42.3
85+	43	42.5	50	47.4	39	35.9	44	39.6
Total	3,460		3,766		3,732		3,804	

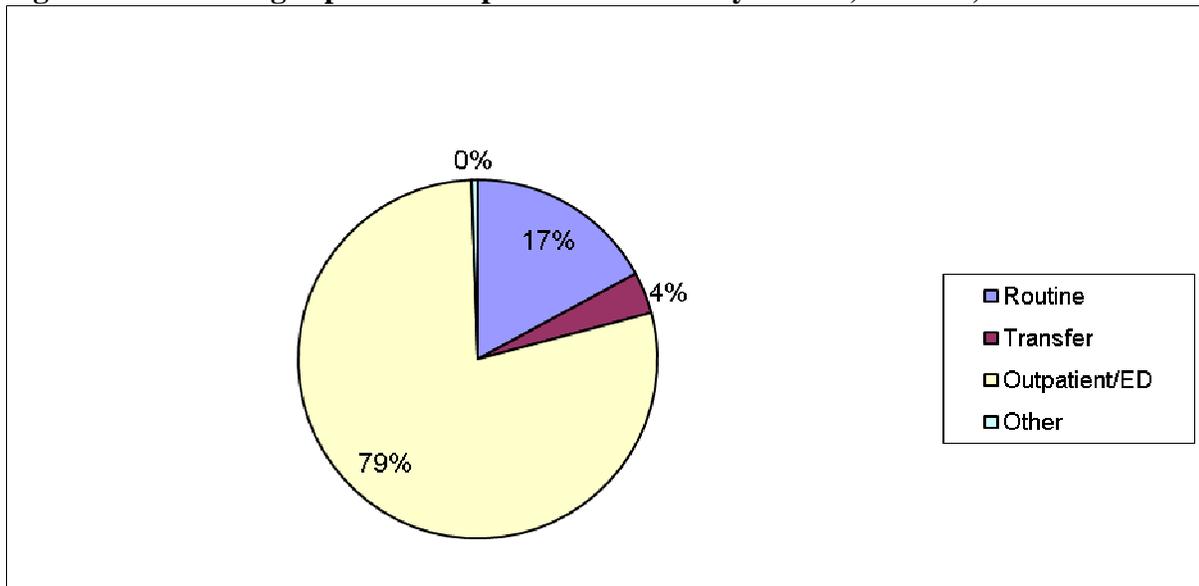
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 16: Poisoning Inpatient Hospital Admissions by Type, Indiana, 2003-2006



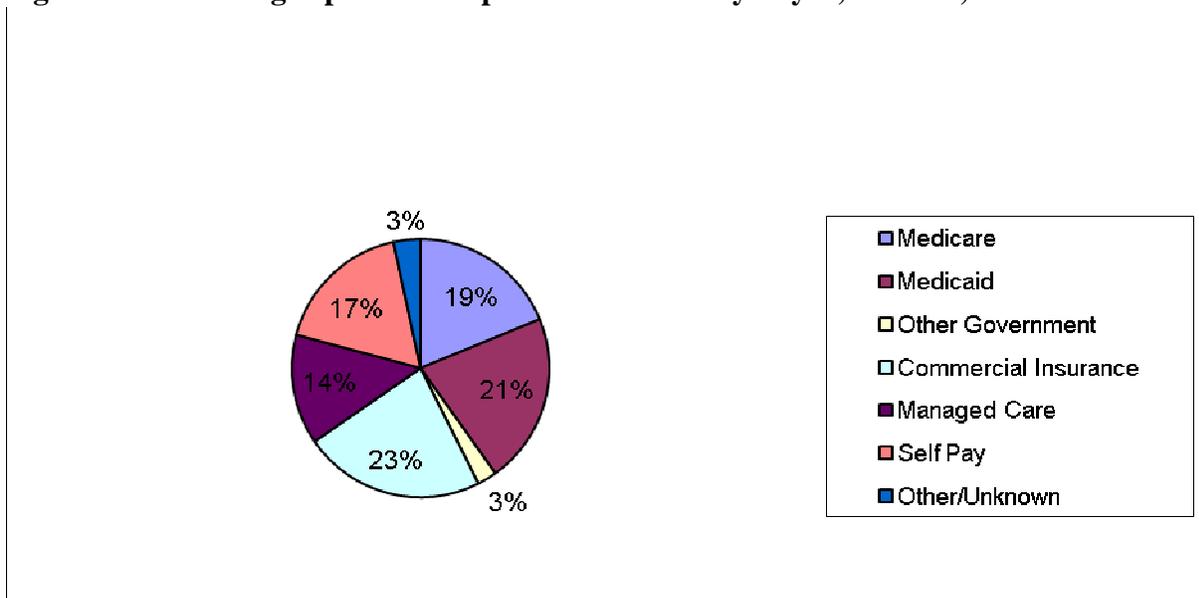
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 17: Poisoning Inpatient Hospital Admissions by Source, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 18: Poisoning Inpatient Hospital Admissions by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Hospital Outpatient/Emergency Department Data

During 2003 and 2006, there were 1,375,552 outpatient/emergency department (ED) visits with a primary diagnosis for injury or poisoning (ICD-9CM codes 800-999). Based on the data with valid E-codes, poisonings accounted for approximately 2.0% (27,308 visits) of injury/poisoning outpatient/ED visits with an injury rate (combined 2003-2006 rate) of 109.6 per 100,000. There were 5,377 poisoning injuries in 2003, 6,522 injuries in 2004, 7,635 injuries in 2005, and 7,774 injuries in 2006. Figure 19 shows the poisoning age-adjusted rates for the four-year period. The highest injury rate was in 2006 with 124.1 per 100,000, and the lowest rate was 2003 with 86.7 per 100,000.

Of those who visited an outpatient/ED, 44.8% (12,232/27,308) were male and 55.2% (15,076/27,308) were female. When comparing rates, females were 1.2 times more likely to be visiting the ED due to a poisoning than males (121.6 per 100,000 compared to 98.0 per 100,000). Table 7 shows the number of hospital outpatient/ED visits by gender/sex for each year, and Figure 20 shows the rates by gender/sex for each year.

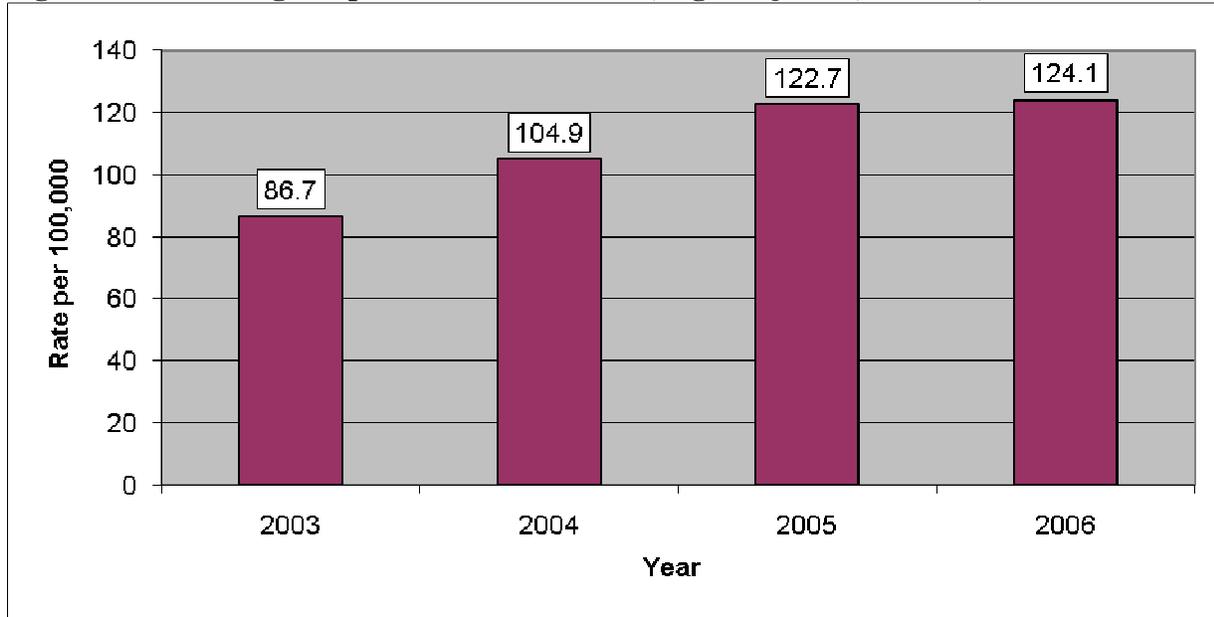
The majority (78.7% or 21,502/27,308) of the hospital outpatient/ED visits were white Indiana residents (Figure 21). However, the age-adjusted rates for hospital outpatient/ED visits were similar when comparing whites and blacks (98.6 per 100,000 versus 99.2 per 100,000). The poisoning outpatient/ED visit rate was highest for whites in 2006 for whites (113.3 per 100,000) and has been increasing since 2003. The poisoning outpatient/ED rate for blacks has also been increasing each year since 2003 and was at the highest level in 2005 (109.5 per 100,000). However, in 2006, the rate decreased to 102.2 per 100,000. Table 8 shows the total number of hospital outpatient/ED visits by race, and Figure 22 shows the hospital outpatient/ED visit rates by year.

With 11,963 outpatient/ED visits and an average outpatient/ED rate of 110.3 per 100,000, white females had the highest number and rate from poisonings compared to all other race/ethnicity and gender/sex categories (Figure 23). Black females had the second highest age-adjusted rate for poisonings (105.4 per 100,000). Black males had a higher age-adjusted rate compared to white males (92.5 per 100,000 and 87.0 per 100,000 respectively). Figure 24 shows the poisoning outpatient/ED visit rate for each category broken out by year.

During 2003-2006, four year olds and younger had the highest age-specific rate for outpatient/ED visits due to poisonings (287.0 per 100,000) even though the 15-24 year olds had a higher number of poisonings. The lowest age-specific rate of hospital outpatient/ED visits due to poisonings was for those 5-9 years of age (37.6 per 100,000). Figure 25 shows the actual number of hospital admissions for each age group, while Figure 26 shows the age-specific rate for each age group.

Between 2003 and 2006, less than 0.1% (24/27,308) of all patients who visited an outpatient/ED facility due to poisonings died. The total charges for all ages injured due to falls and seen in the outpatient/ED were \$46 million. The mean and median total charges for all ages due to poisonings were \$1700.62 and \$1270.00 with a range of \$0-\$48,774. Of those who visited an outpatient/ED facility, 28% (7,634/27,308) had commercial insurance (Figure 27).

Figure 19: Poisoning Outpatient/ED Visit Rates, Age-Adjusted, Indiana, 2003-2006



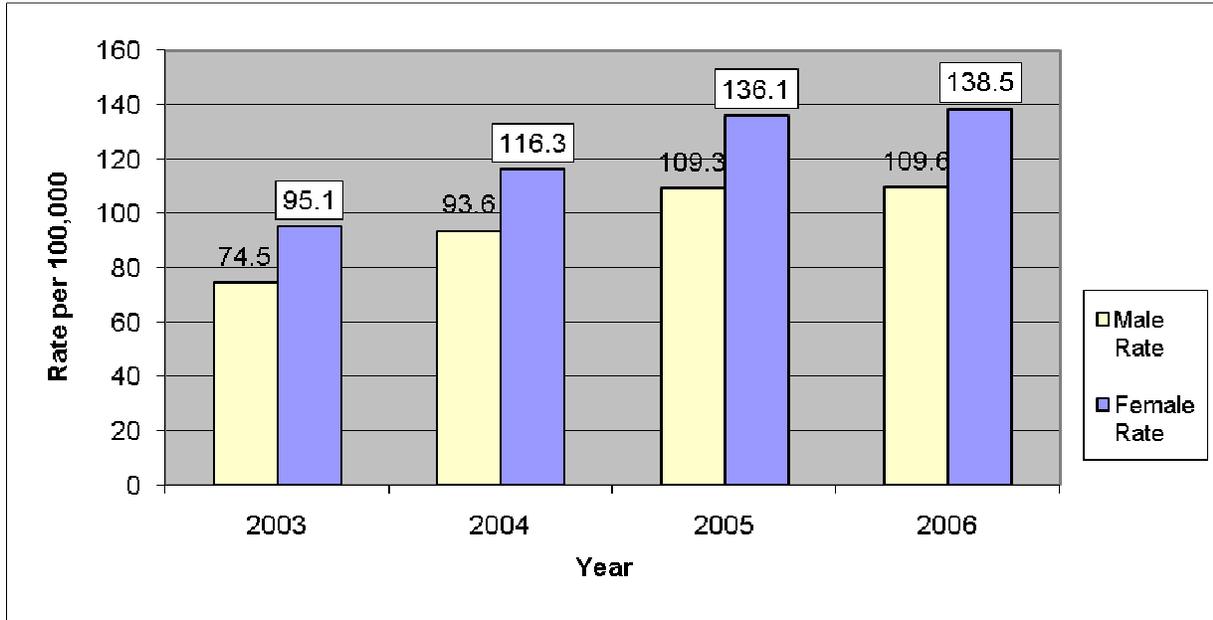
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Table 7: Poisoning Outpatient/ED Visits by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	2,439	2,938
2004	2,918	3,606
2005	3,416	4,219
2006	3,458	4,316
Total	12,231	15,076

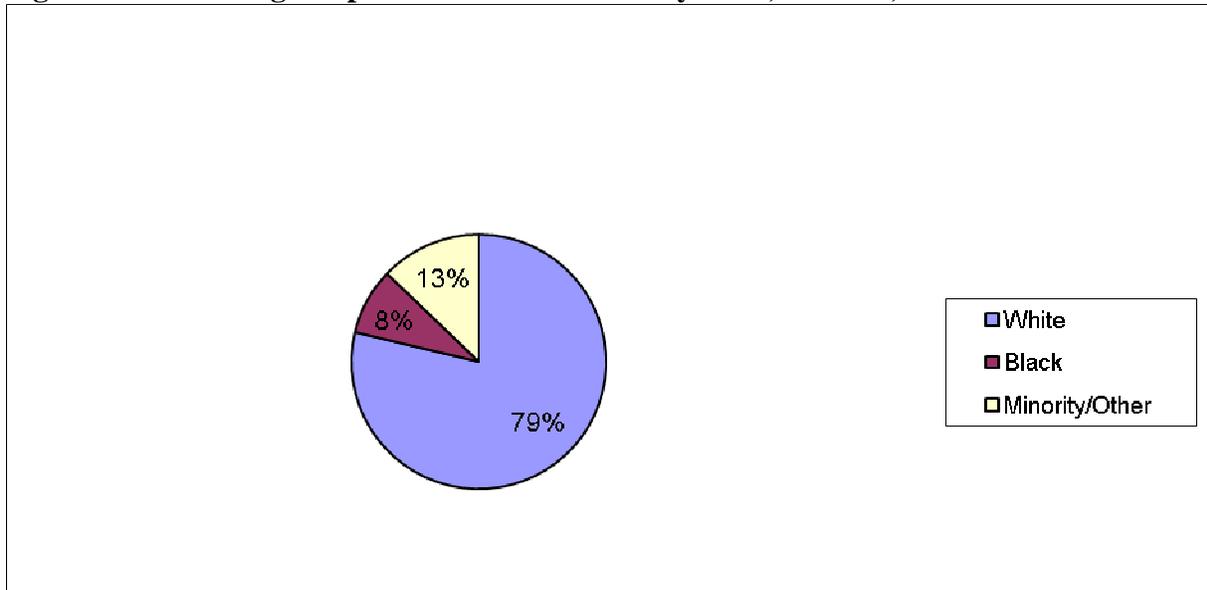
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 20: Poisoning Outpatient/ED Visit Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 21: Poisoning Outpatient/ED Visit Rates by Race, Indiana, 2003-2006



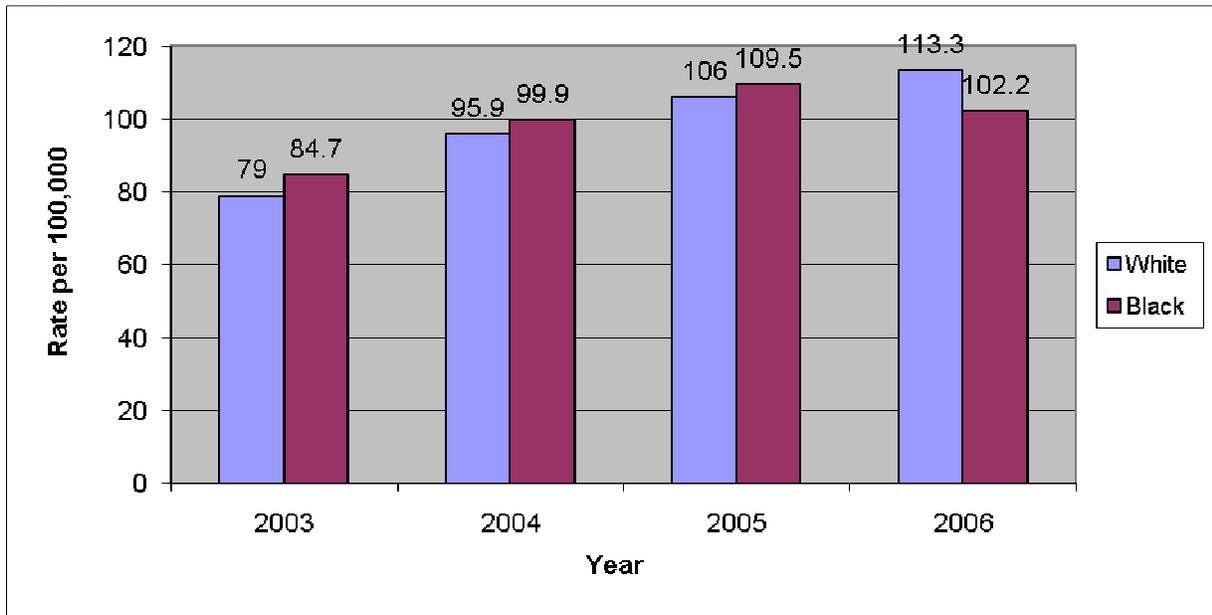
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Table 8: Poisoning Outpatient/ED Visits by Race, Indiana, 2003-2006

Year	White	Black
2003	4,301	479
2004	5,226	573
2005	5,784	642
2006	6,191	613
Total	21,502	2,307

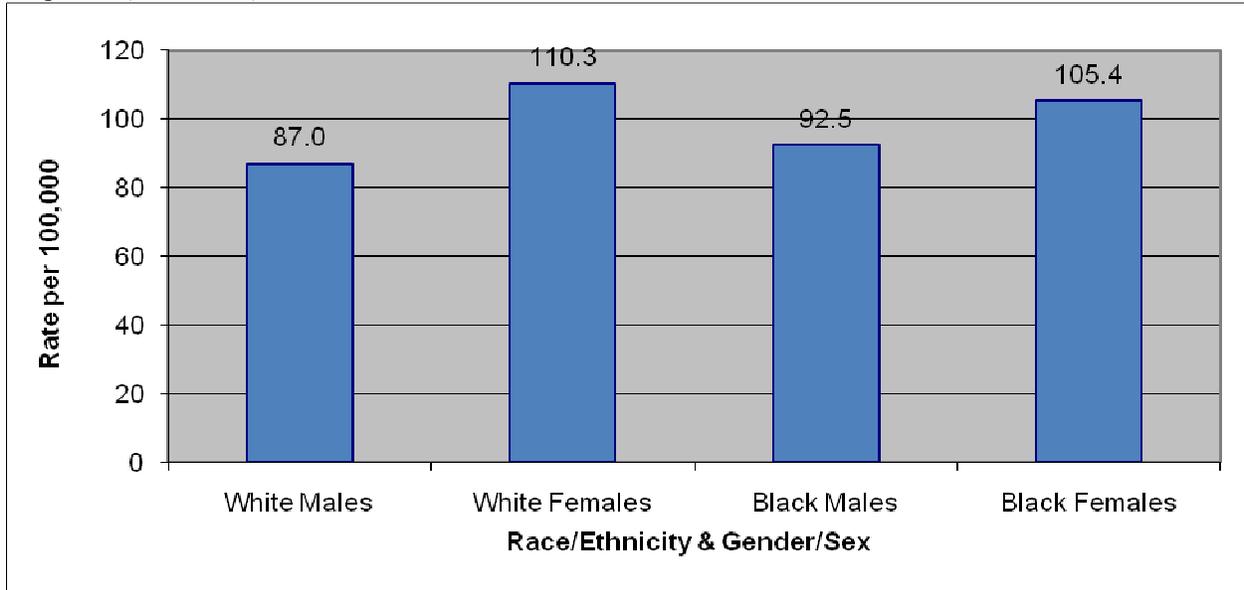
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 22: Poisoning Outpatient/ED Visit Rates by Race, Age-Adjusted, Indiana, 2003-2006



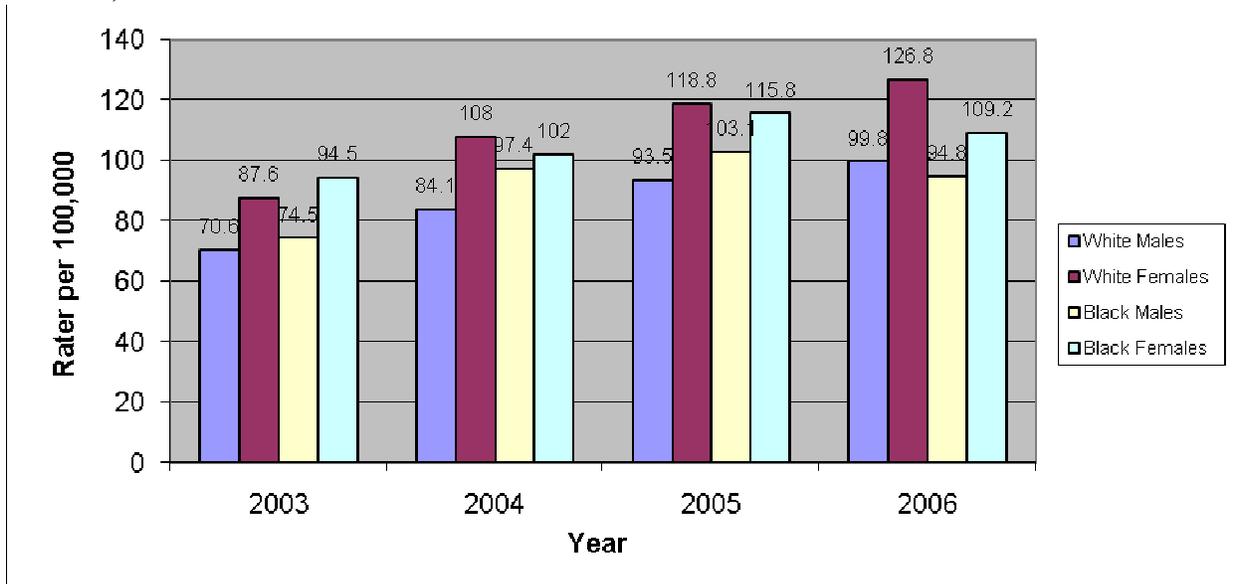
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 23: Mean Poisoning Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



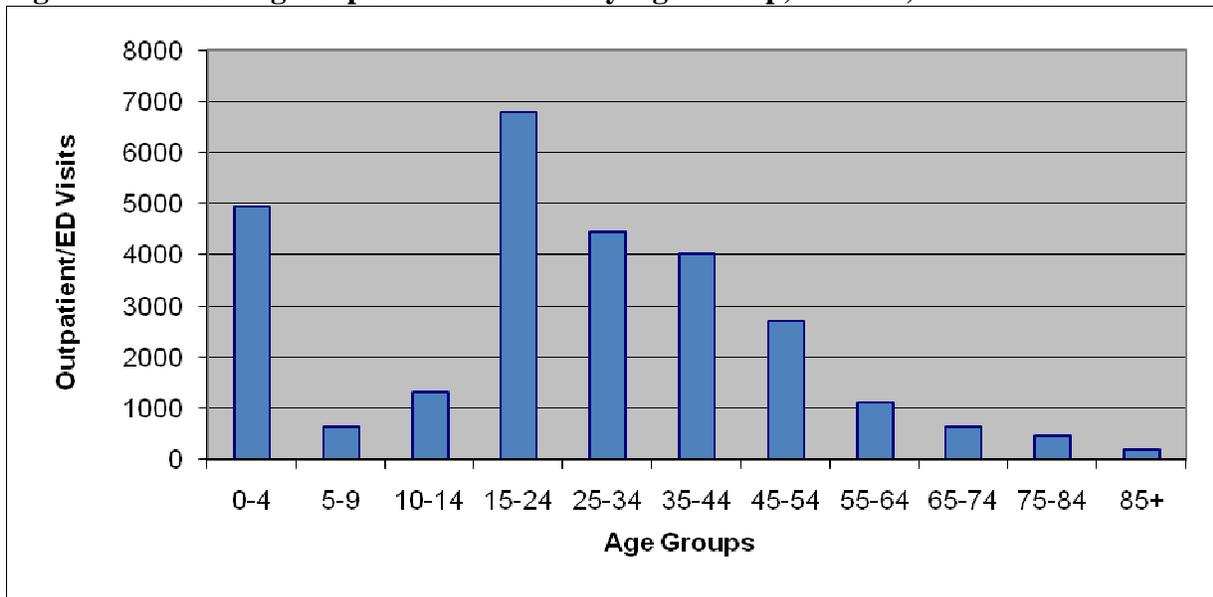
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 24: Poisoning Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



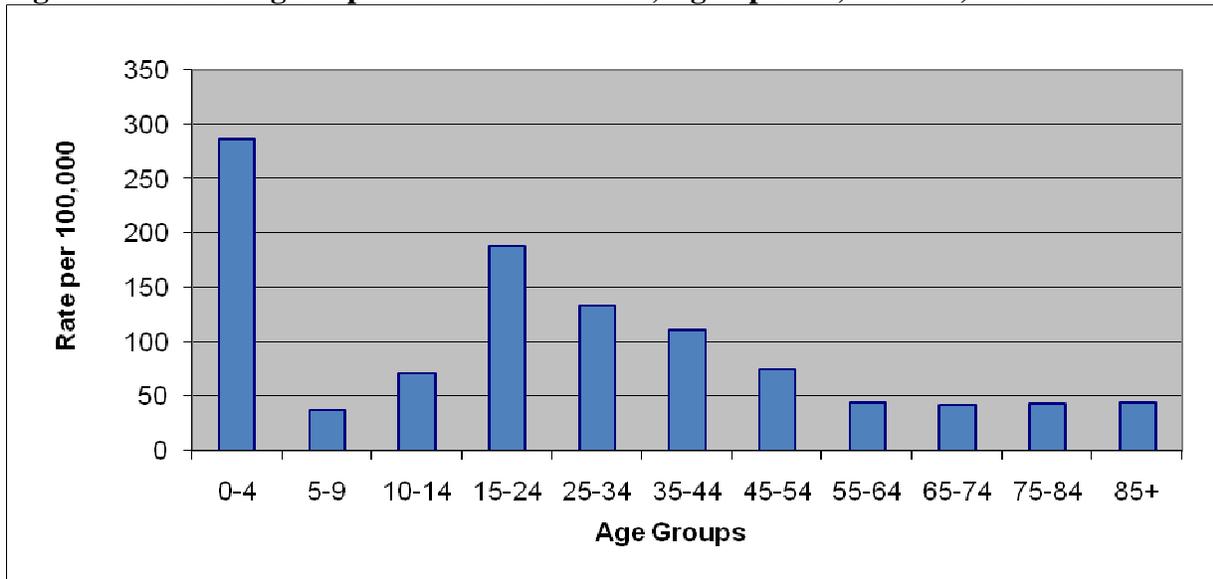
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 25: Poisoning Outpatient/ED Visits by Age-Group, Indiana, 2003-2006



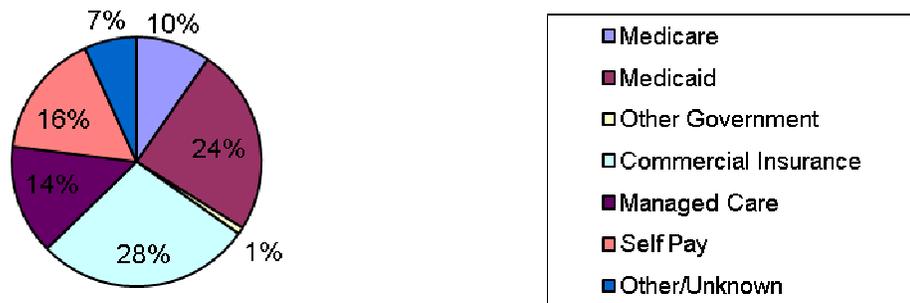
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 26: Poisoning Outpatient/ED Visit Rates, Age-Specific, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 27: Poisoning Outpatient/ED Visits by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Risk Behaviors and Prevention

Risks

Poisoning injuries and fatalities are tragic and unnecessary because they are preventable. However, many poisoning deaths and injuries occur. According to the CDC, 95% of unintentional and undetermined poisoning deaths in 2004 were caused by drugs.⁽⁵⁾ Opioid pain medications were most commonly involved, followed by cocaine and heroin. SAMHSA has also published that most (93%) nonfatal, poison-related suicide attempts involved pharmaceuticals. Among the 132,582 drug-related suicide attempts in the United States in 2005, sedatives and hypnotics, pain medications, and antidepressants were the most common drugs taken. Among pain medications, opioids were the most widely used, while benzodiazepines were the most common sedatives.⁽⁶⁾

Unintentional and intentional poisoning deaths are most common in persons aged 45-54, while intentional poisonings with people who survived are most common in persons aged 15-19. Whites and blacks have comparable rates for unintentional poisonings. However, according to the CDC, whites were 3.6 times more likely to commit suicide by poisoning than blacks⁽⁵⁾.

Prevention

The American Association of Poison Control provides the following information for preventing poisoning in children, teens, and adults.⁽⁷⁾

Drugs and Medicines

- Follow directions on the label when you give or take medicines. Read all warning labels. Some medicines cannot be taken safely when you take other medicines or drink alcohol.
- Turn on a light when you give or take medicines at night so that you know you have the correct amount of the right medicine.
- Keep medicines in their original bottles or containers.
- Never share or sell your prescription drugs.
- Keep opioid pain medications, such as methadone, hydrocodone, and oxycodone, in a safe place that can only be reached by people who take or give them.
- Monitor the use of medicines prescribed for children and teenagers, such as medicines for attention deficit disorder, or ADD.
- Dispose of unused, unneeded, or expired prescription drugs, following federal guidelines (found online at: www.whitehousedrugpolicy.gov/publications/pdf/prescrip_disposal.pdf).

Household Chemicals and Carbon Monoxide

- Always read the label before using a product that may be poisonous.
- Keep chemical products in their original bottles or containers. Do not use food containers such as cups, bottles, or jars to store chemical products such as cleaning solutions or beauty products.
- Never mix household products together. For example, mixing bleach and ammonia can result in toxic gases.
- Wear protective clothing (gloves, long sleeves, long pants, socks, shoes) if you spray pesticides or other chemicals.
- Turn on the fan and open windows when using chemical products such as household cleaners.

Keep Young Children Safe from Poisoning

- Put the poison control number, 1-800-222-1222, on or near every home telephone and save it on your cell phone. The line is open 24 hours a day, 7 days a week.
- Keep all drugs in medicine cabinets or other childproof cabinets that young children cannot reach.
- Avoid taking medicine in front of children because they often copy adults.
- Do not call medicine “candy.”
- Be aware of any legal or illegal drugs that guests may bring into your home. Do not let guests leave drugs where children can find them, for example, in a pillbox, purse, backpack, or coat pocket.
- When you take medicines yourself, do not put your next dose on the counter or table where children can reach them.
- Never leave children alone with household products or drugs. If you are using chemical products or taking medicine and you have to do something else, such as answer the phone, take any young children with you.

Keep Young Children Safe from Poisoning (cont....)

- Do not leave household products out after using them. Return the products to a childproof cabinet as soon as you are done with them.
- Identify poisonous plants in your house and yard and place them out of reach of children or remove them.

Conclusion

Injuries and deaths caused by poisoning remain a serious public health problem. Between 2003 and 2006, poisoning was the second leading cause of death for Indiana residents, claiming 1,467 lives with an age-adjusted rate of 5.9 per 100,000 population. Based on hospital discharge data for the four-year period, poisoning accounted for approximately 16.8% of all inpatient hospitalizations and 2.0% all outpatient/ED visits. The economic burden of poisoning injuries is also enormous. The total charges during 2003 to 2006 for inpatient hospitalizations and outpatient/ED visits were \$175 million. The medical costs alone do not even 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.

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FIRE/BURN-RELATED INJURIES IN INDIANA

Table of Contents

Index of Figures and Tables.....	140
Highlights.....	141
Introduction.....	143
Fire/Burn Deaths in Indiana.....	143-148
Fire/Burn Injuries in Indiana.....	148-163
Risk Behavior and Prevention.....	163-164
Conclusion.....	164
References.....	165

Index of Figures and Tables

- Figure 1: Fire/Burn Death Rates, Age-Adjusted, Indiana, 2003-2006
- Figure 2: Fire/Burn Death Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 3: Mean Fire/Burn Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006
- Figure 4: Fire/Burn Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006
- Figure 5: Mean Fire/Burn Death Rates by Race and Gender/Sex, Age-Adjusted, 2003-2006
- Figure 6: Fire/Burn Death Rates, Age-Specific, Indiana, 2003-2006
- Figure 7: Fire/Burn Inpatient Hospital Admission Rates, Age-Adjusted, Indiana, 2003-2006
- Figure 8: Fire/Burn Inpatient Hospital Admission Rates by Gender, Age-Adjusted, Indiana, 2003-2006
- Figure 9: Fire/Burn Inpatient Hospital Admissions by Race, Indiana, 2003-2006
- Figure 10: Fire/Burn Inpatient Hospital Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006
- Figure 11: Mean Fire/Burn Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 12: Fire/Burn Inpatient Hospital Admission Rates by Race and Gender, Age-Adjusted, Indiana, 2003-2006
- Figure 13: Fire/Burn Inpatient Hospital Admissions by Age, Indiana, 2003-2006
- Figure 14: Fire/Burn Inpatient Hospital Admission Rates, Age-Specific, Indiana, 2003-2006
- Figure 15: Fire/Burn Inpatient Hospital Admissions by Type, Indiana, 2003-2006
- Figure 16: Fire/Burn Inpatient Hospital Admissions by Source, Indiana, 2003-2006
- Figure 17: Fire/Burn Inpatient Hospital Admissions by Payor, Indiana, 2003-2006
- Figure 18: Fire/Burn Outpatient/ED Visit Rates, Age-Adjusted, Indiana, 2003-2006
- Figure 19: Fire/Burn Outpatient/ED Visit Rates by Gender, Age-Adjusted, Indiana, 2003-2006
- Figure 20: Fire/Burn Outpatient/ED Visits by Race, Indiana, 2003-2006
- Figure 21: Fire/Burn Outpatient/ED Visit Rates by Race, Age-Adjusted, Indiana, 2003-2006
- Figure 22: Mean Fire/Burn Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 23: Fire/Burn Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
- Figure 24: Fire/Burn Outpatient/ED Visits by Age-Group, Indiana, 2003-2006
- Figure 25: Fire/Burn Outpatient/ED Visit Rates, Age-Specific, Indiana, 2003-2006
- Figure 26: Fire/Burn Outpatient/ED Visits by Payor, Indiana, 2003-2006
- Table 1: Fire/Burn Deaths by Gender/Sex, Indiana, 2003-2006
- Table 2: Fire/Burn Deaths by Race/Ethnicity, Indiana, 2003-2006
- Table 3: Fire/Burn Deaths and Rates, Age-Specific, Indiana, 2003-2006
- Table 4: Fire/Burn Inpatient Hospital Admissions by Gender/Sex, Indiana, 2003-2006
- Table 5: Fire/Burn Inpatient Hospital Admissions by Race, Indiana, 2003-2006
- Table 6: Fire/Burn Inpatient Hospital Admissions and Rates, Age-Specific, Indiana, 2003-2006
- Table 7: Fire/Burn Outpatient/ED Visits by Gender/Sex, Indiana, 2003-2006
- Table 8: Fire/Burn Outpatient/ED Visits by Race, Indiana, 2003-2006

Highlights for Fire/Burn-Related Injuries

Mortality, 2003-2006⁽⁴⁾

- Fire/burn-related injuries were the 6th leading cause of unintentional injury death for Indiana residents, claiming 368 lives.
- Males were 1.7 times more likely to die in from fire/burn-related injuries than females (1.9 per 100,000 vs. 1.1 per 100,000).
- Between 2003 and 2006, black males had the highest rate of death due to fire/burn-related injuries (3.2 per 100,000) than all other race/gender categories.
- Individuals 65+ year of age had the highest age-adjusted fire/burn-related injuries death rate (3.5 per 100,000) of all ages.

Inpatient Admissions for Fire/Burn-Related Injury Deaths, 2003-2006⁽⁵⁾

- Fire/burn-related injuries accounted for approximately 2.2% (1,933 admissions) of all hospital inpatient admissions with an overall rate of 7.8 per 100,000.
- Males were 2.1 times more likely to be admitted to the hospital following a fire/burn-related injuries than females (10.7 per 100,000 compared to 5.0 per 100,000).
- Blacks were admitted to the hospital due to fire/burn-related injuries 2.5 times more than whites (13.5 per 100,000 versus 5.4 per 100,000).
- The age group with the highest hospital admission rate due to fire/burn-related injuries was 0-4 year olds (22.6 per 100,000).

Outpatient/Emergency Department (ED) Visits for Fire/Burn-Related Injury Deaths, 2003-2006⁽⁵⁾

- Fire/burn-related injuries accounted for approximately 1.8% (24,236 visits) of all hospital outpatient/ED visits.
- Males were 1.3 times more likely to be seen in an outpatient/ED facility following a fire/burn-related injuries than females (109.2 per 100,000 compared to 85.5 per 100,000).
- Blacks were more likely to visit the outpatient/ED than whites (101.6 per 100,000 versus 81.4 per 100,000).
- Those 0-4 years of age had the highest rate of outpatient/ED visits due to fire/burn-related injuries compared to all other age groups (229.6 per 100,000).

Introduction

According to the CDC, the number of fatalities and injuries caused by residential fires has declined gradually over the past several decades, but many residential fire-related deaths remain preventable and continue to pose a significant public health problem. Deaths from fires and burns are the fifth most common cause of unintentional injury deaths in the United States and the third leading cause of fatal home injury.^(1,2) The United State's mortality rate from fires ranks sixth among the 25 developed countries for which statistics are available.⁽³⁾ The CDC reports that residential fires caused nearly \$7 Billion dollars of property damage in 2005. The cost of injury in the United States is estimated to be \$7.5 Billion annually.⁽¹⁾

Fire/Burn Deaths in Indiana

Injury fire/burn death data for this report was extracted from the Indiana State Department of Health (ISDH) mortality reports and are based off of ICD-10 codes specific to accidental exposure to smoke, fire & flames (X00-X099). The numbers differ slightly from the nationally based reporting system, the National Center for Health Statistics (NCHS). The number of Indiana deaths reported by the ISDH is lower than the numbers from NCHS, because ISDH does not always receive death certificates for Indiana residents that died out of state. However, these deaths are likely to be reported to NCHS from those out-of-state health departments, and NCHS would usually be able to assign state of residence, making the nationally based data more complete than the health department data. In addition, completeness of mortality data is dependent upon how thoroughly the death certificate is completed, which affects how a death is categorized. Another limitation is that race/ethnicity data is not very accurate. Race/ethnicity is provided at the discretion of the person completing the death certificate and may not reflect how individuals would define their own race or ethnicity.⁽⁴⁾

In Indiana between 2003 and 2006, fires/burns were the 6th leading cause of unintentional injury death (excluding hot objects/substances), with a total of 364 individuals dying (average of 91.3 deaths per year) for a rate of 1.45 per 100,000 population. There were 93 fire/burn deaths in 2003, 99 deaths in 2004, 80 deaths in 2005, and 93 deaths in 2006. Figure 1 shows the fire/burn age-adjusted rates for the four-year period. The highest death rate was in 2006 with 1.47 per 100,000, and the lowest rate was 2005 with 1.27 per 100,000.

Almost two-thirds of the fire/burn deaths (62.4% or 227/364) were in males. When comparing death rates, males (1.9 per 100,000) died almost 2 times more than females (1.1 per 100,000). Table 1 shows the number of deaths by gender/sex for each year, and Figure 2 shows the rates by gender/sex for each year.

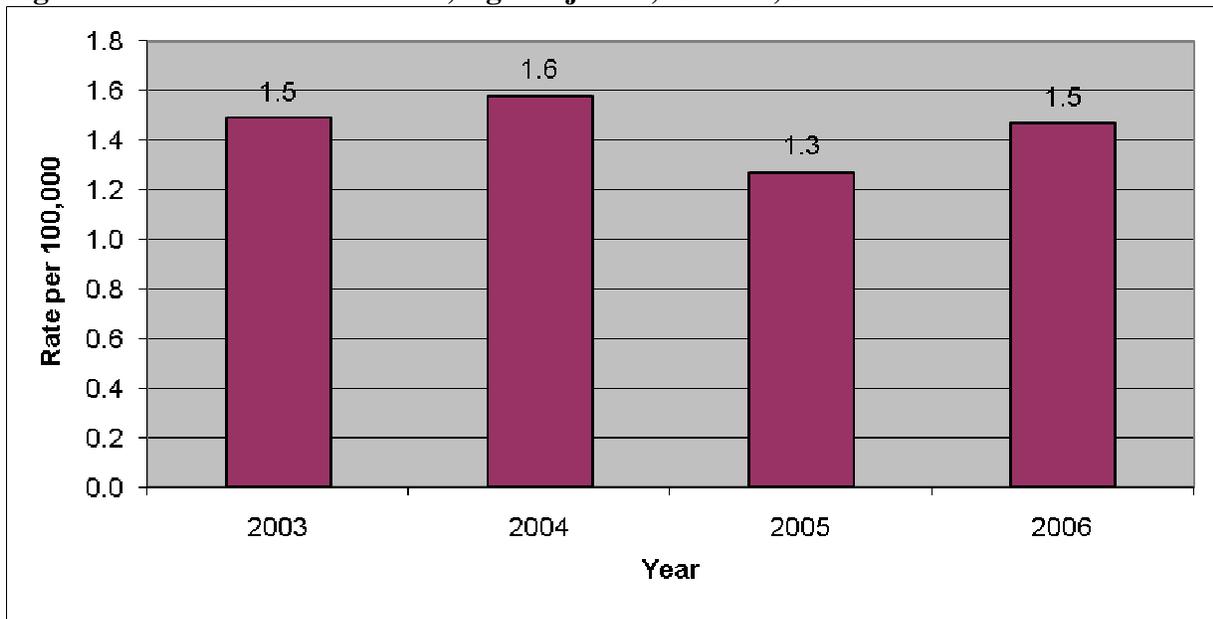
More whites (84.6% or 308/364) died than blacks (15.1% or 55/364) and individuals defined as "other" (1.1% or 4/364) between 2003 and 2006. Blacks had the highest death rate due to fire/burns (2.8 per 100,000) for the entire time period while whites had a rate of 1.8 per 100,000. The overall death rate for Hispanics and Other was unstable due to a low number of deaths. Figure 3 shows the average death rates by race for 2003-2006.

The fire death rate was highest in 2006 for whites (1.5 per 100,000) and was at the lowest rate in 2005 (1.1 per 100,000). The death rates for those categorized by black, Hispanic, or “other” were unstable for individual years. Table 2 shows the total number of deaths by race, and Figure 4 shows the death rates by year.

With 26 deaths and an average death rate of 3.2 per 100,000, black males had the highest death rate from fire/burns compared to all other race/ethnicity and gender/sex categories (Figure 5). Black males were 1.7 times more likely to die than white males, 3.6 times more likely than white females and 1.2 times more likely than black females. Black females had a higher fire/burn death rate compared to white females.

Individuals 65+ years of age had the highest fire/burn death rate (3.5 per 100,000) followed by 1-4 year olds (2.7 per 100,000). See Figure 6. The lowest stable rate was seen in 15-24 year olds (0.7 per 100,000). The overall rate of death for all ages was 2.0 per 100,000. Table 3 shows the number of fire/burn deaths in each age group for each year as well as the age-specific death rate if the rate was stable.

Figure 1: Fire/Burn Death Rates, Age-Adjusted, Indiana, 2003-2006



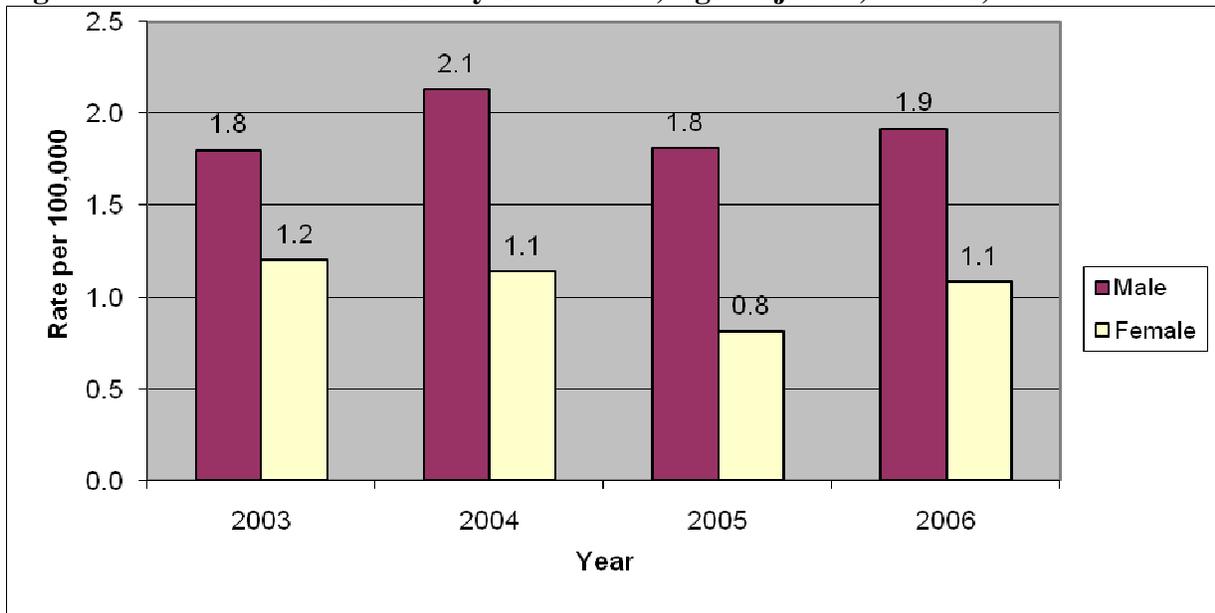
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 1: Fire/Burn Deaths by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	53	40
2004	62	37
2005	54	26
2006	57	35
Total	226	138

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

Figure 2: Fire/Burn Death Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



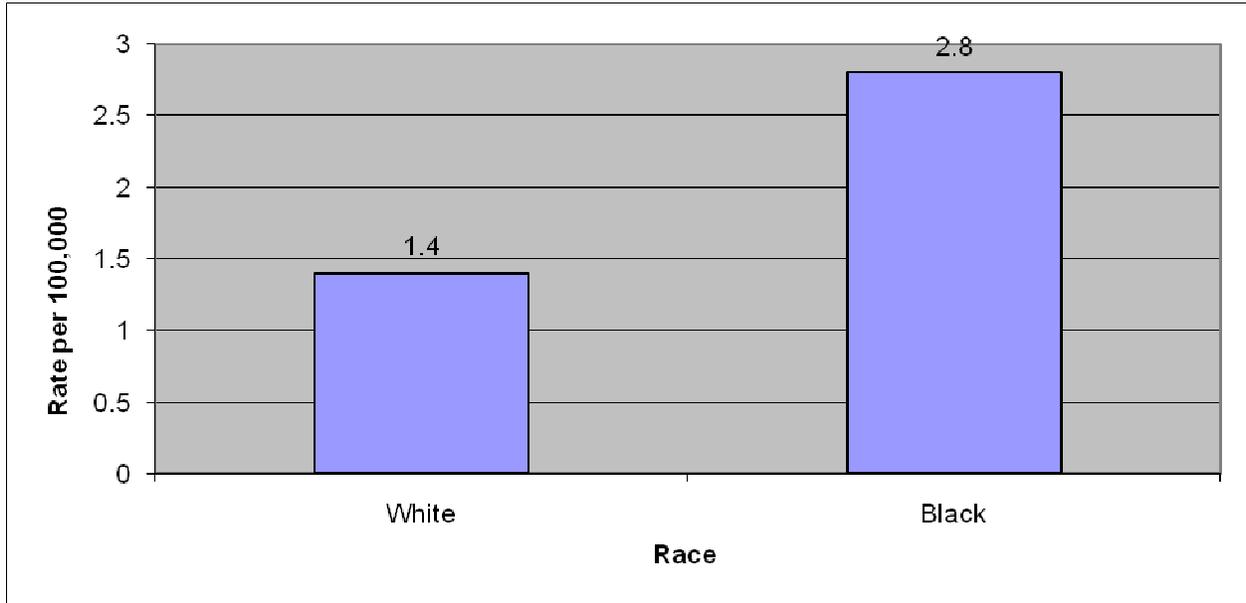
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 2: Fire/Burn Deaths by Race/Ethnicity, Indiana, 2003-2006

Year	White	Black	Other
2003	76	16	1
2004	83	14	2
2005	61	18	1
2006	85	7	0
Total	305	55	4

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

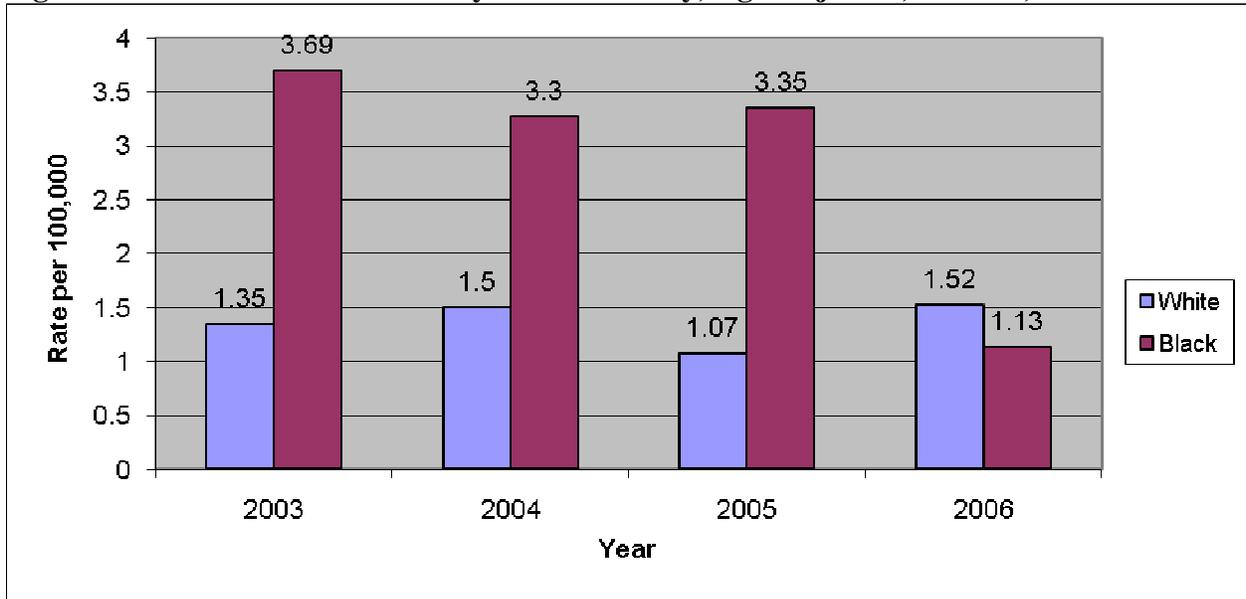
Figure 3: Mean Fire/Burn Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006



Note: Whites and blacks are both non-Hispanic.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 4: Fire/Burn Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006

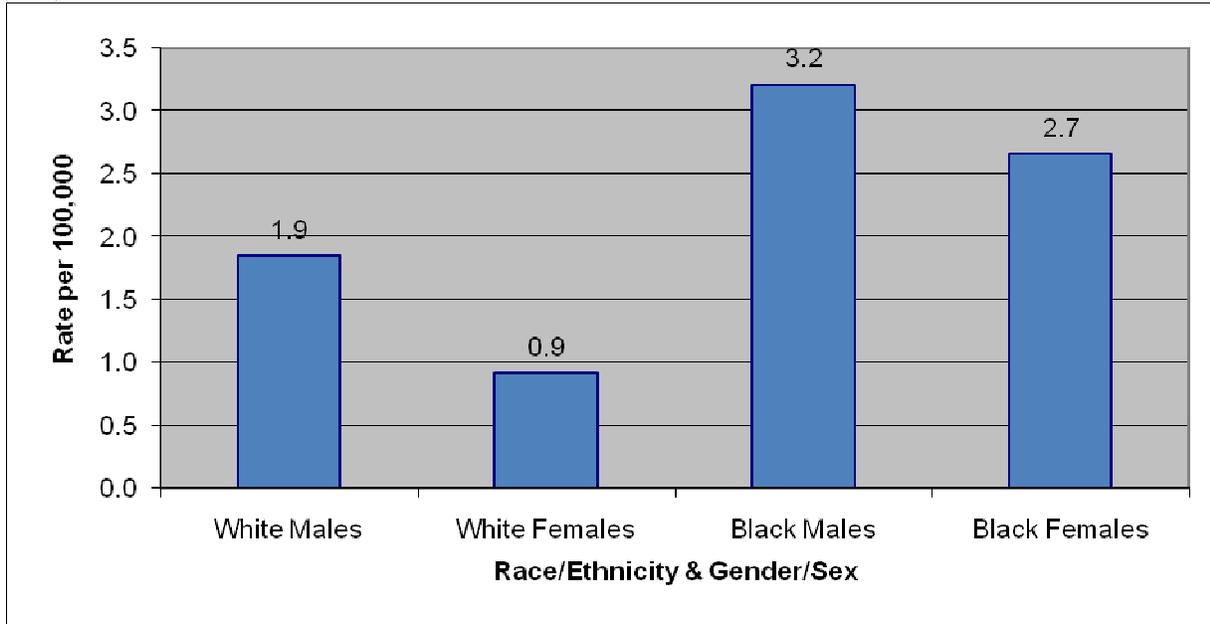


Note: Whites and blacks are both non-Hispanic.

Note: Rates for blacks are unstable and should be used with caution

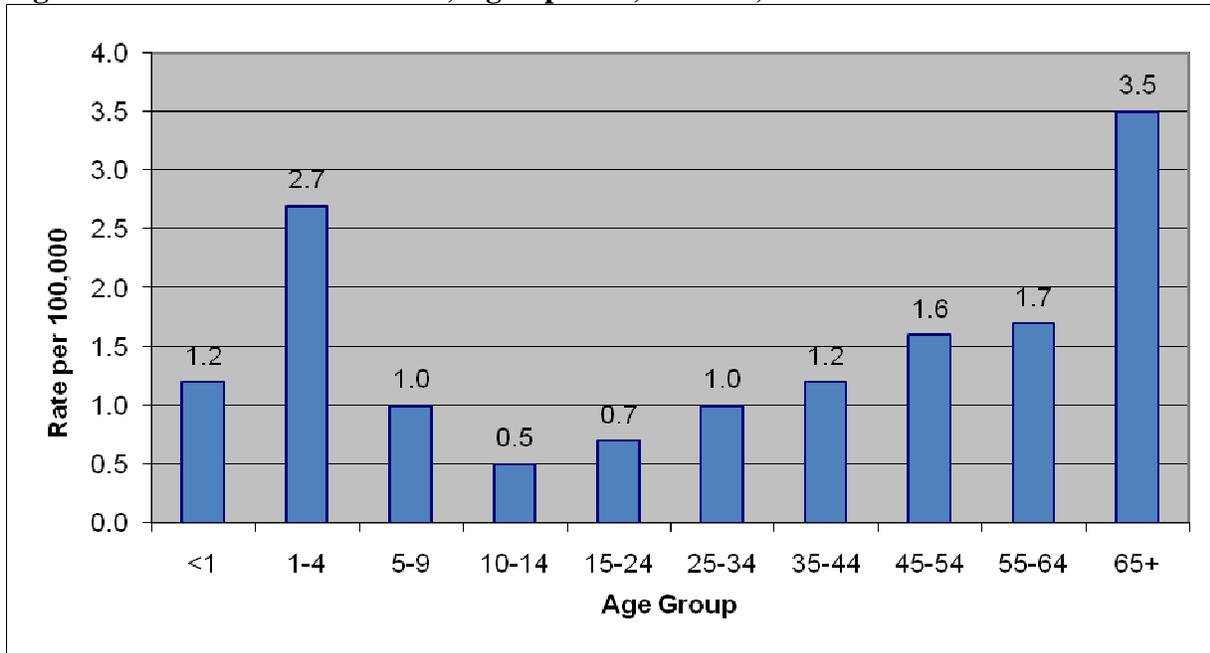
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 5: Average Fire/Burn Death Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 6: Fire/Burn Death Rates, Age-Specific, Indiana, 2003-2006



Note: Rates for <1 years of age, 5-9 years of age, and 10-14 years of age are unstable and should be used with caution.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 3: Fire/Burn Deaths and Rates, Age-Specific, Indiana, 2003-2006

Age Groups	2003		2004		2005		2006	
	Deaths	Age-Specific Rates						
<1	3	U	3	U	1	U	1	U
1-4	9	U	14	U	10	U	6	U
5-9	3	U	6	U	4	U	5	U
10-14	0	U	2	U	7	U	1	U
15-24	4	U	9	U	6	U	9	U
25-34	7	U	11	U	3	U	13	U
35-44	8	U	13	U	9	U	12	U
45-54	18	U	12	U	12	U	10	U
55-64	13	U	8	U	9	U	9	U
65+	28	3.7	21	2.7	19	U	26	6.7
Unknown	0	---	0	---	0	---	0	---
Total	93	1.5	99	1.6	80	1.3	92	1.5

Note: 'U' signifies that the rates are unstable due to less than 20 deaths.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

Fire/Burn-related Injuries in Indiana

Hospital discharge data give an indication of the number of unintentional and intentional injuries in Indiana, although the data have limitations. The International Classification of Disease Revision 9 Clinical Modification (ICD-9CM) coding scheme includes external causes of injury codes or E-codes that indicate the source or cause of the injury and can also provide injury-related cost data. However, E-codes are not mandated by law in Indiana, and it is estimated that only 62% of the discharge records contain them. Therefore, the total number of injuries in this report is a gross underestimation of the proportion of number of injuries that actually occurred.⁽⁵⁾

E-codes specific to injury and poisoning include ICD-9-CM codes 800-999. E-codes specific to fire/burn injuries include E890-E899, E924, E958 (.1, .2, .7), E961, E968 (.0,.3) and E988 (.1,.2,.7). The hospital data base does not contain a patient-specific unique identifier, meaning that it does not distinguish whether one person had five visits or whether five people visited once. Therefore, statistics only reflect visits and not specific numbers of people. Also, race/ethnicity data is not very accurate because race/ethnicity is at the discretion of the person reporting the data and may not reflect how the individuals would define themselves. In some cases, race/ethnicity information is not provided at all.⁽⁵⁾

A final limitation of the hospital discharge data is that the Indiana law only requires hospital discharge data submission by acute care hospitals. Therefore, a few psychiatric and behavioral health hospitals do not submit data. All acute care hospitals are submitting inpatient data. However, one of the three Level 1 Trauma center hospitals has not submitted outpatient/emergency department data yet. As a result, the total number of injuries for the outpatient/emergency de-

partment data is an underestimation of the actual number of injuries and should be used with caution.⁽⁵⁾

Hospital Inpatient Data

From 2003 to 2006, there were 86,799 inpatient hospitalizations with a primary diagnosis of injury or poisoning. Based on the data with valid E-codes, fire/burn injuries accounted for approximately 2.2% (1,933 admissions) of all injury/poisoning hospital inpatient admissions with an injury rate (combined 2003-2006 rate) of 7.8 per 100,000. There were 465 fire/burn injuries in 2003, 508 injuries in 2004, 492 injuries in 2005, and 468 injuries in 2006. Figure 7 shows the fire/burn age-adjusted rates for the four-year period. The highest injury rate was in 2005 with 8.2 per 100,000, and the lowest rates were in 2003 and 2006 with 7.5 per 100,000.

Of those admitted to the hospital 67.3% (1,301/1,933) were male and 32.7% (632/1,933) were female. Males were 2.1 times more likely to be admitted to the hospital due to a fire/burn injury than females (10.7 per 100,000 compared to 5.0 per 100,000) Table 4 shows the number of hospital admissions by gender/sex for each year, and Figure 8 shows the rates by gender/sex for each year.

More than half (61.0% or 35,545/41,157) of the hospital admissions were white Indiana residents (Figure 9). However, the age-adjusted rate for hospital admissions was 2.5 times higher in blacks compared to whites (13.5 per 100,000 versus 5.4 per 100,000). The fire/burn hospitalization rate was highest in 2006 for blacks (14.7 per 100,000) and in highest for whites in 2004 and 2005 (5.5 per 100,000). Table 5 shows the total number of hospitalizations by race, and Figure 10 shows the hospitalization rates by year.

With 162 deaths and an average death rate of 15.8 per 100,000, black males had the highest injury rate from fire/burn compared to all other race/ethnicity and gender/sex categories (Figure 11). Black females also had a higher age-adjusted rate of hospital admission when compared to white females and white males (11.6 per 100,000 vs. 3.2 per 100,000 and 7.6 per 100,000 respectively). Figure 12 shows the fire/burn hospitalization rate for each category broken out by year.

During 2003-2006, 0-4 year olds had the highest age-specific rate of hospital admissions due to fire/burns (22.6 per 100,000). The lowest age-specific rate of hospital admissions due to fire/burns was for those 10-14 years of age (4.7 per 100,000). Figure 13 shows the actual number of hospital admissions for each age group, while Figure 14 shows the age-specific rate for each age group. Table 6 shows the number of fire/burn hospitalizations in each age group for each year as well as the age-specific death rate.

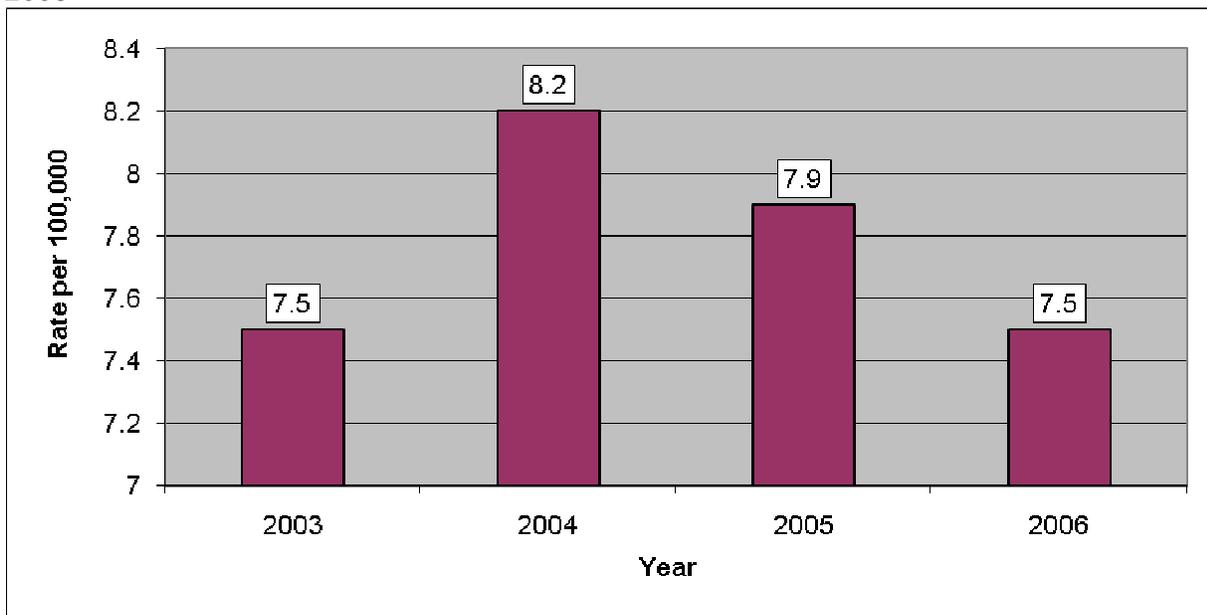
Most fire/burn injuries are unintentional, but there were 58 hospitalizations during 2003-2006 in which the E-code was a suicide by fire/burn, a self-inflicted fire/burn, or assault by fire/burn.

Between 2003 and 2006, 1.8% (35/1,933) of all patients admitted to the hospital due to fire/burns died. More than half (60%) of all patients were admitted to the hospital as an emergency, and

54% were admitted after receiving care at an outpatient center or in the ED (Figure 15 and Figure 16).

For 2003-2006, the total charges for all ages injured due to fire/burns and admitted to the hospital were \$57 million. The mean and median total charges for all ages due to fire/burn were \$29,496 and \$15,505 with a range of \$496–\$1,198,642. Of those admitted to the hospital, 20.0% (386/1,933) had commercial insurance while 22.9% (442/1,933) had Medicare insurance (Figure 17). The average length of stay was 6.9 days (range 1-108 days), and the median length of stay was 5.0 days.

Figure 7: Fire/Burn Inpatient Hospital Admissions Rates, Age-Adjusted, Indiana, 2003-2006



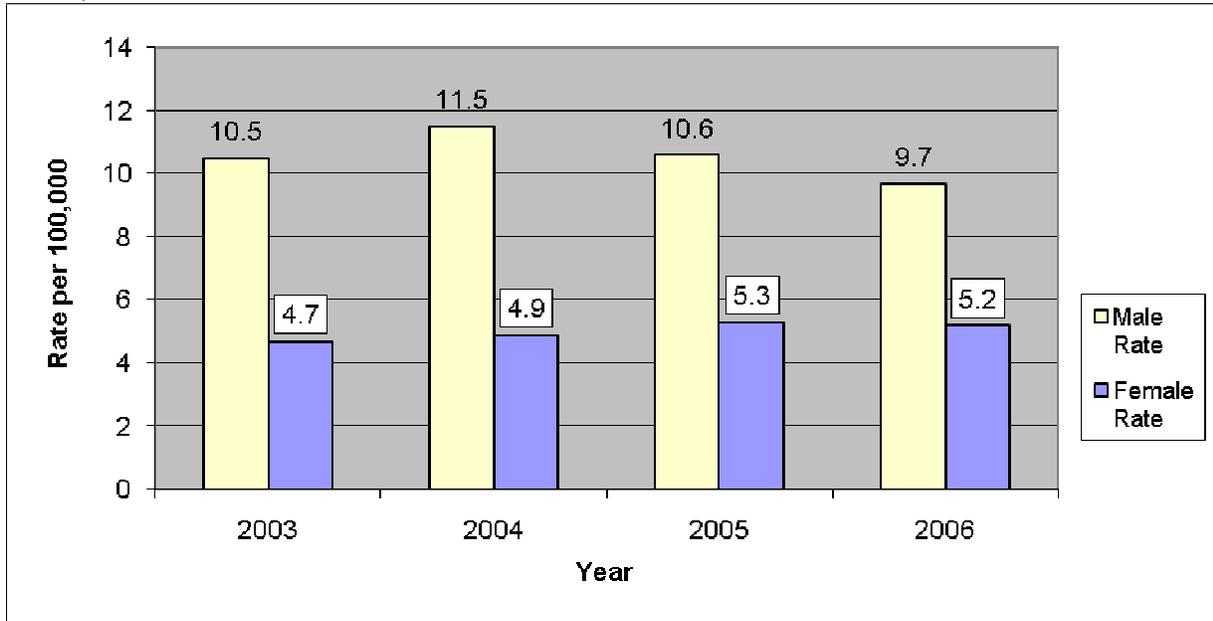
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 4: Fire/Burn Inpatient Admissions by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	317	148
2004	354	154
2005	326	166
2006	304	164
Total	1,301	632

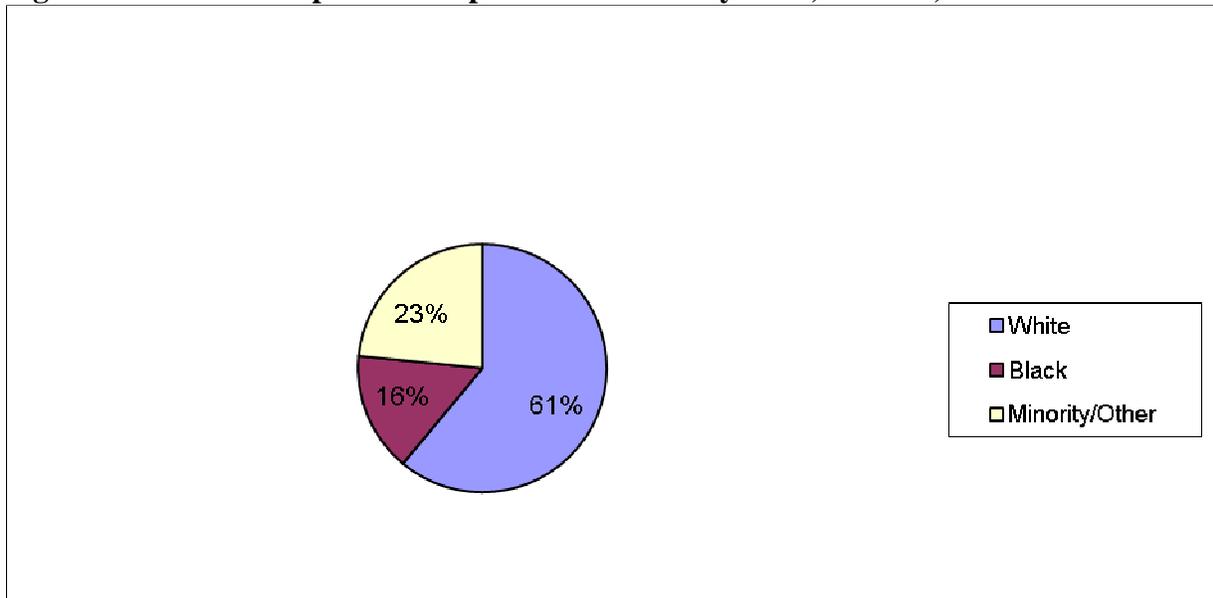
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 8: Fire/Burn Inpatient Hospital Admission Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 9: Fire/Burn Inpatient Hospital Admissions by Race, Indiana, 2003-2006



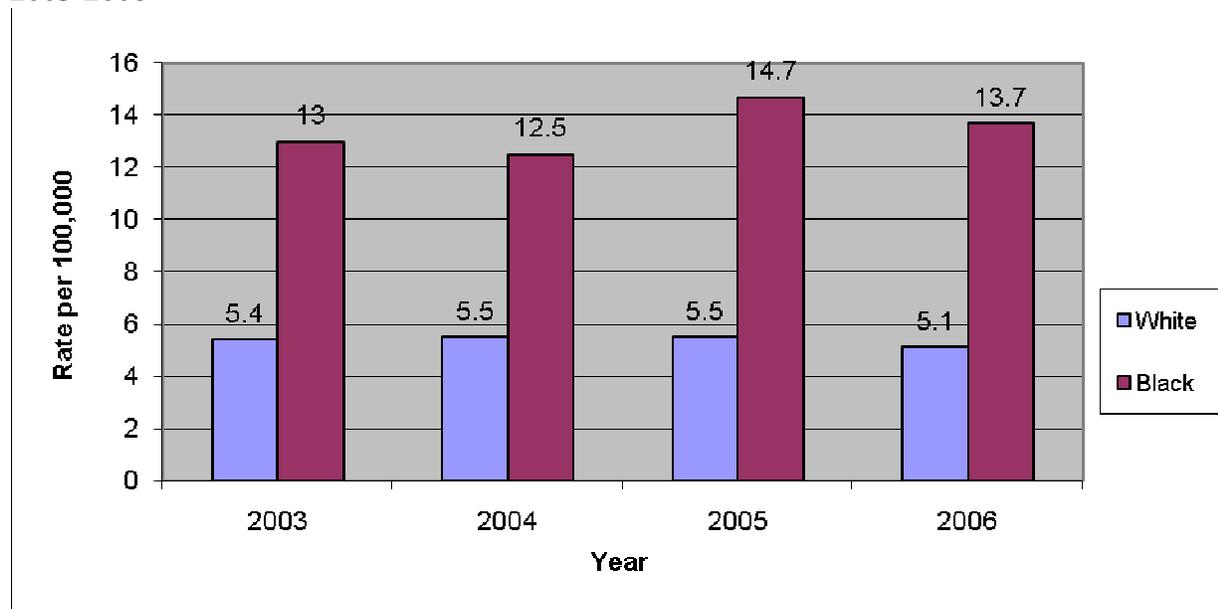
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 5: Fire/Burn Inpatient Hospital Admissions by Race, Indiana, 2003-2006

Year	White	Black
2003	294	70
2004	300	68
2005	304	83
2006	282	79
Total	1,180	300

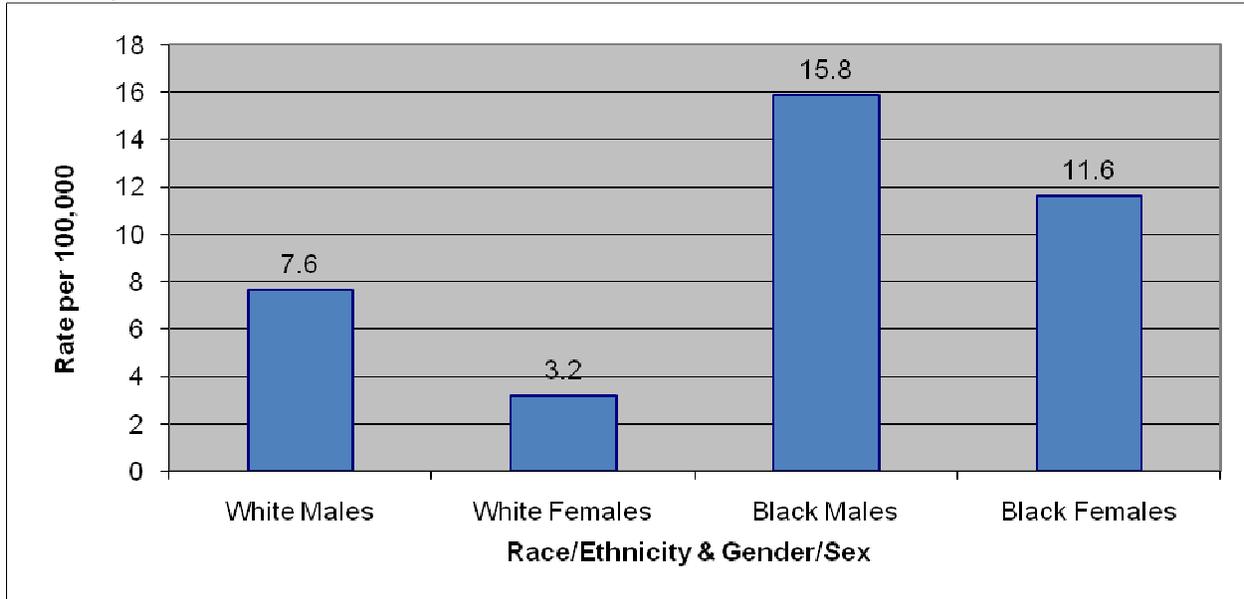
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 10: Fire/Burn Inpatient Hospital Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006



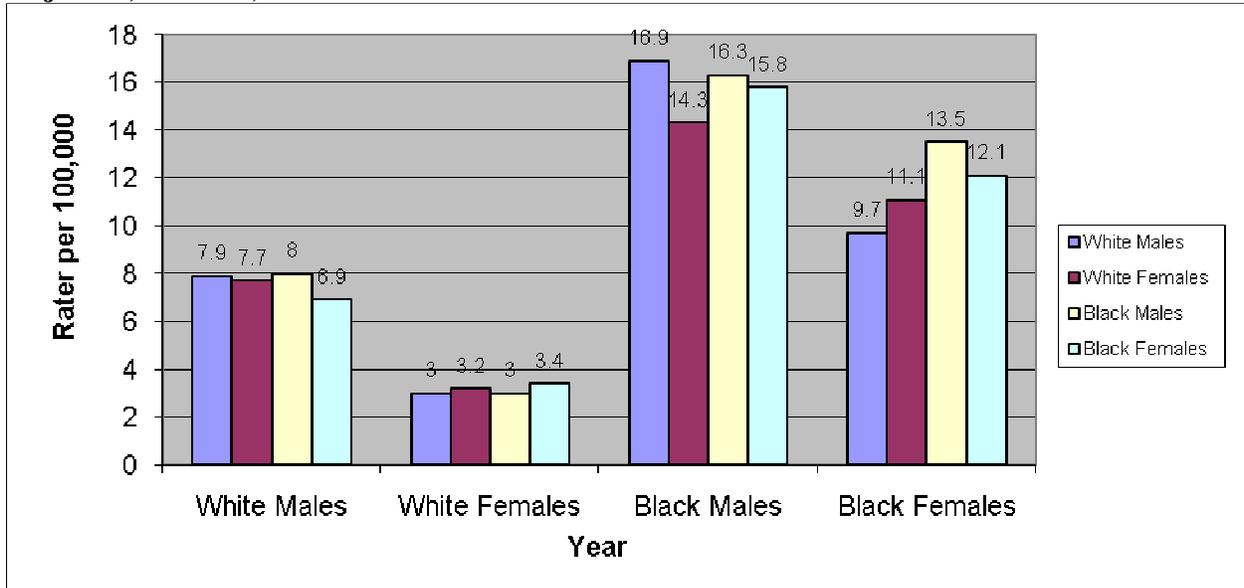
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 11: Mean Fire/Burn Inpatient Hospital Admission Rates by Race and Gender/Sex, Indiana, 2003-2006



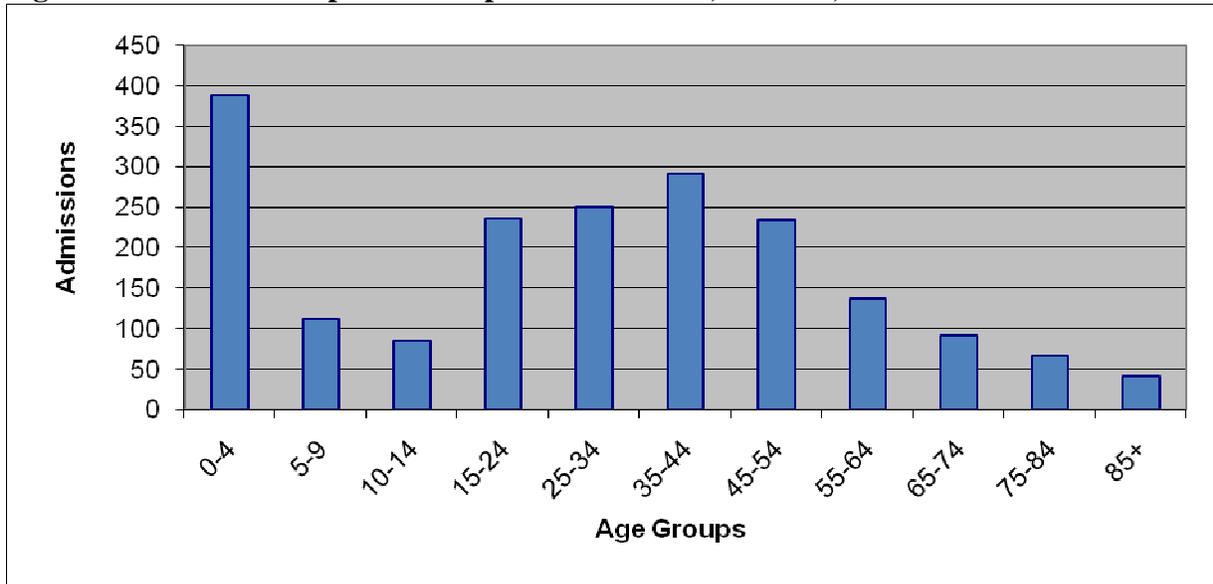
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 12: Fire/Burn Inpatient Hospital Admission Rates by Race and Gender, Age-Adjusted, Indiana, 2003-2006



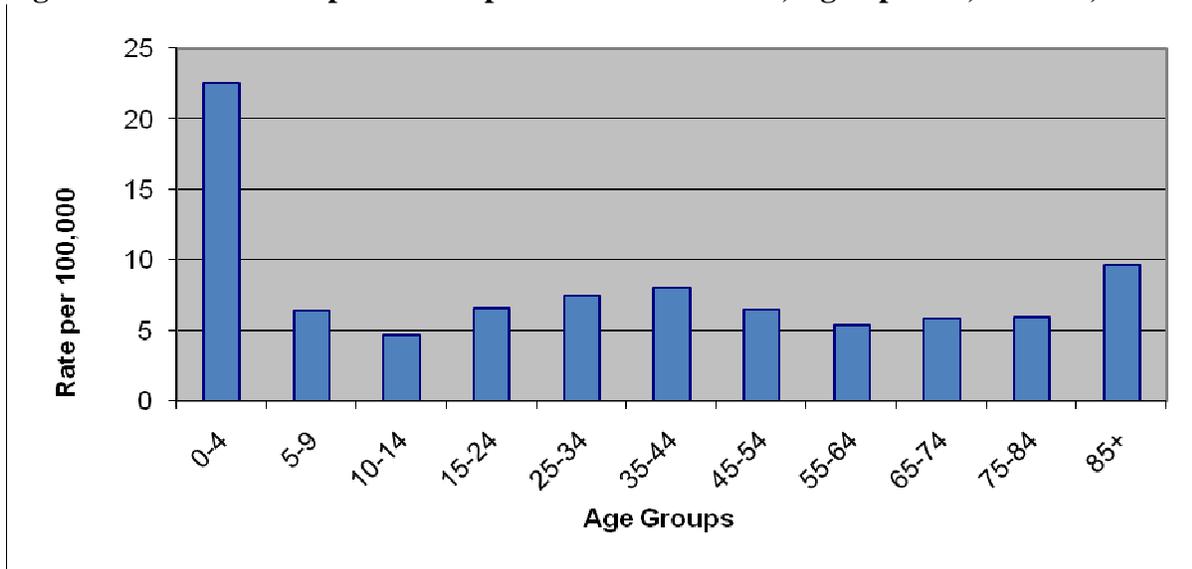
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 13: Fire/Burn Inpatient Hospital Admissions, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 14: Fire/Burn Inpatient Hospital Admission Rates, Age-Specific, Indiana, 2003-2006



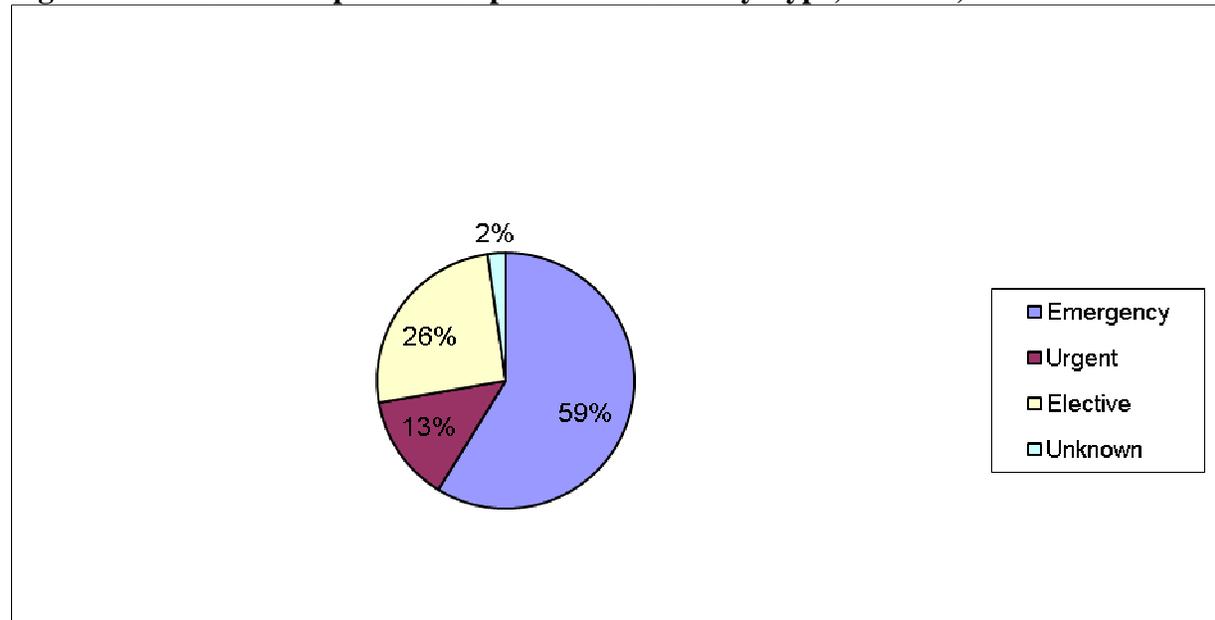
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 6: Fire/Burn Inpatient Hospital Admissions and Rates, Age-Specific, Indiana 2003-2006

Age Groups	2003		2004		2005		2006	
	Injuries	Age-Specific Rates						
0-4	95	22.1	85	19.7	107	24.9	102	23.7
5-9	26	5.9	40	9.1	25	5.7	21	4.9
10-14	19	U	25	5.4	21	4.6	20	4.5
15-24	64	7.1	64	7.1	45	5.0	63	7.1
25-34	58	7.1	61	7.4	71	8.5	60	7.1
35-44	69	7.5	90	9.9	66	7.4	66	7.4
45-54	56	6.4	64	7.2	55	6.1	59	6.4
55-64	26	4.4	37	6.0	41	6.4	33	4.9
65-74	23	6.0	22	5.7	25	6.4	22	5.5
75-84	18	U	11	U	22	7.9	15	U
85+	11	U	9	U	14	U	7	U
Total	465		508		492		468	

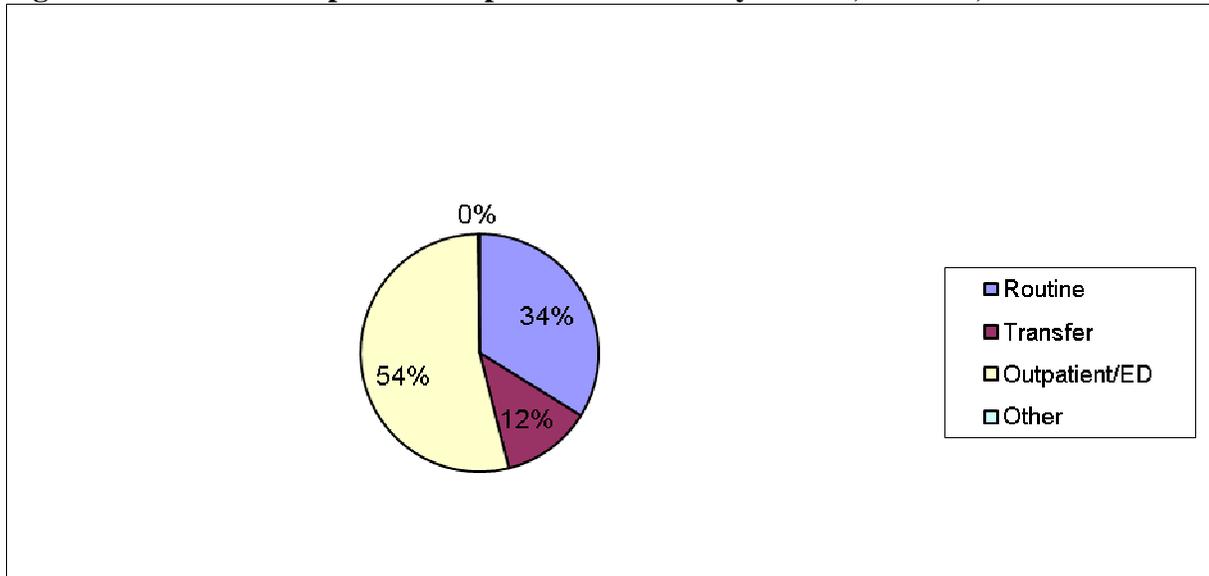
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 15: Fire/Burn Inpatient Hospital Admissions by Type, Indiana, 2003-2006



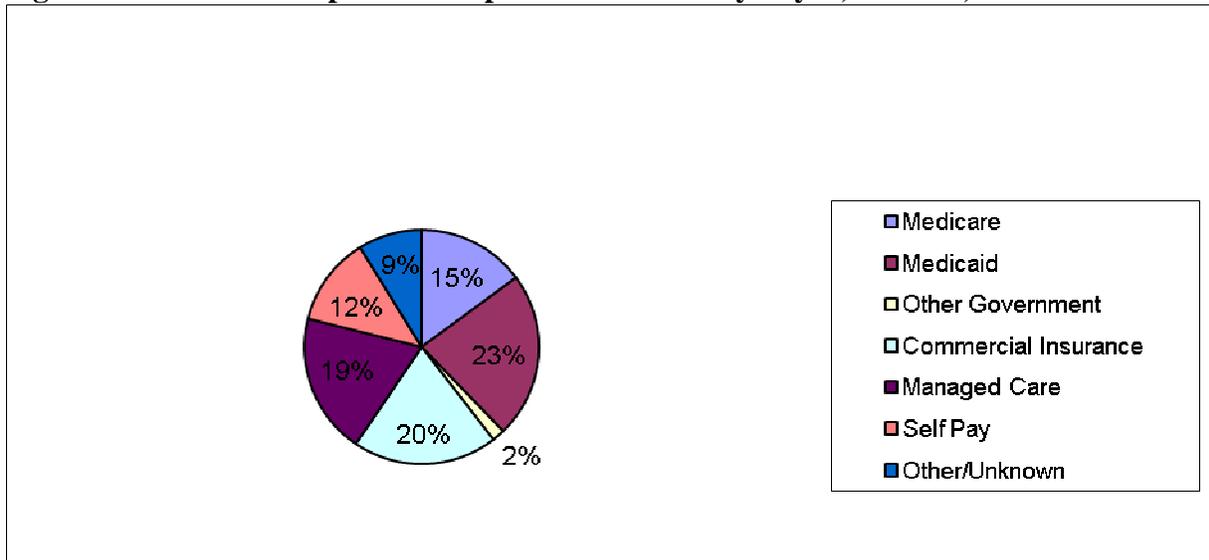
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 16: Fire/Burn Inpatient Hospital Admissions by Source, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 17: Fire/Burn Inpatient Hospital Admissions by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Hospital Outpatient/Emergency Department Data

During 2003 and 2006, there were 1,375,552 outpatient/emergency department (ED) visits with a primary diagnosis for injury or poisoning (ICD-9CM codes 800-999). Based on the data with valid E-codes, fires/burns accounted for approximately 1.8% (24,236 visits) of injury/poisoning outpatient/ED visits with an injury rate (combined 2003-2006 rate) of 97.5 per 100,000. There were 5,341 fire/burn injuries in 2003, 5,920 injuries in 2004, 6,573 injuries in 2005, and 6,402 injuries in 2006. Figure 18 shows the fire/burn age-adjusted rates for the four-year period. The highest injury rate was in 2005 with 105.5 per 100,000, and the lowest rate was 2003 with 86.4 per 100,000.

Of those who visited an outpatient/ED, 56.3% (13,654/24,236) were male and 43.7% (10,582/24,236) were female. Males were 1.3 times more likely to be visiting the ED due to a fire/burn than females (109.2 per 100,000 compared to 85.5 per 100,000). Table 7 shows the number of hospital outpatient/ED visits by gender/sex for each year, and Figure 19 shows the rates by gender/sex for each year.

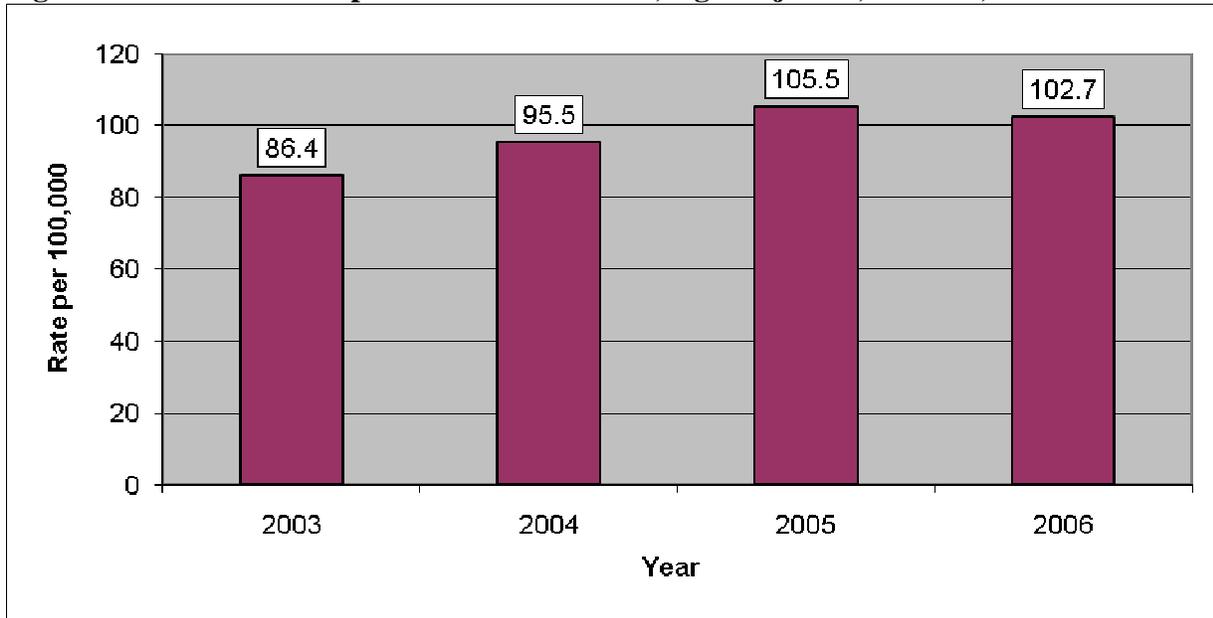
The majority (73.1% or 17,721/24,236) of the hospital outpatient/ED visits were white Indiana residents (Figure 20). However, the age-adjusted rate for hospital outpatient/ED visits was 1.2 times higher in blacks compared to whites (101.6 per 100,000 versus 81.4 per 100,000). The fire/burn outpatient/ED visit rate was highest in 2005 for blacks (115.8 per 100,000), but decreased in 2006 to 87.2 per 100,000. Whites had the highest outpatient/ED rate due to fire/burn in 2006 (88.5 per 100,000). Table 8 shows the total number of hospital outpatient/ED visits by race, and Figure 21 shows the hospital outpatient/ED visit rates by year.

Black males had the highest overall outpatient/ED rate for fire/burn (102.3 per 100,000). However, black females had almost an identical rate for fire/burn at 101.2 per 100,000. Figure 22 shows the average fire/burn age-adjusted rates by gender and sex. White females had the lowest rate for fire/burn outpatient/ED visits overall as well as for each year (Figure 22 and Figure 23). White males had lower age-adjusted rates during 2003-2005 compared to black males and black females. However, in 2006, white males had the highest age-adjusted rate for fire/burns (100.5 per 100,000). Figure 23 shows the fire/burn outpatient/ED visit rate for each category broken out by year.

During 2003-2006, 0-4 year olds had the highest age-specific rate of hospital admissions due to fire/burns (229.6 per 100,000). The lowest age-specific rate of hospital outpatient/ED visits due to fire/burns was for those 85+ years of age (18.6 per 100,000). Figure 24 shows the actual number of hospital admissions for each age group, while Figure 25 shows the age-specific rate for each age group.

Between 2003 and 2006, less than 0.1% (13/24,236) of all patients who visited an outpatient/ED facility due to fire/burns died. The total charges for all ages injured due to fire/burns and seen in the outpatient/ED were \$14 million. The mean and median total charges for all ages due to fire/burns were \$599.69 and \$390.00 with a range of \$0-\$24,412. Of those who visited an outpatient/ED facility, 28.7% (6,944/24,236) had commercial insurance (Figure 26).

Figure 18: Fire/Burn Outpatient/ED Visit Rates, Age-Adjusted, Indiana, 2003-2006



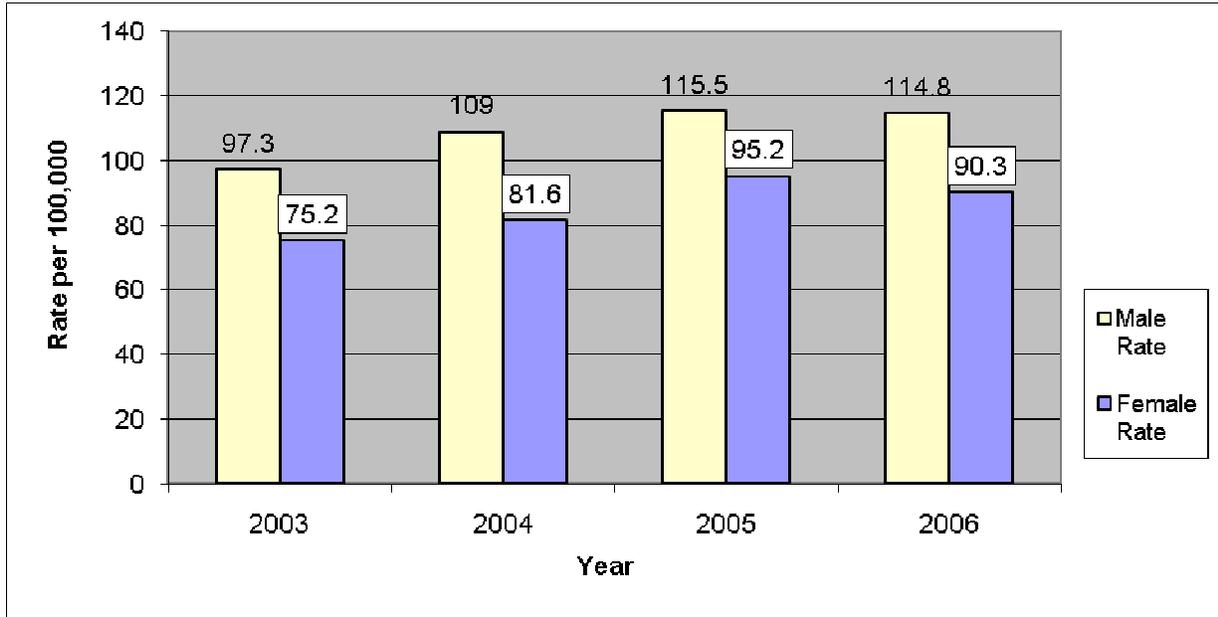
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Table 7: Fire/Burn Outpatient Admissions by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	3,022	2,318
2004	3,402	2,518
2005	3,619	2,954
2006	3,611	2,791
Total	13,654	10,581

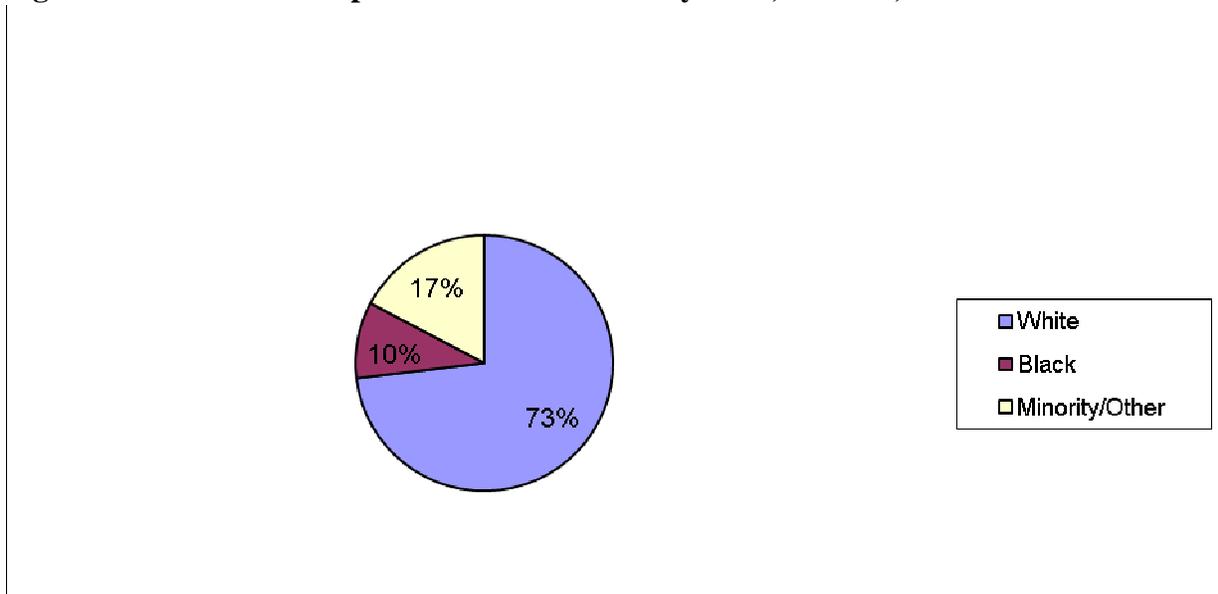
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 19: Fire/Burn Outpatient/ED Visit Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 20: Fire/Burn Outpatient/ED Visit Rates by Race, Indiana, 2003-2006



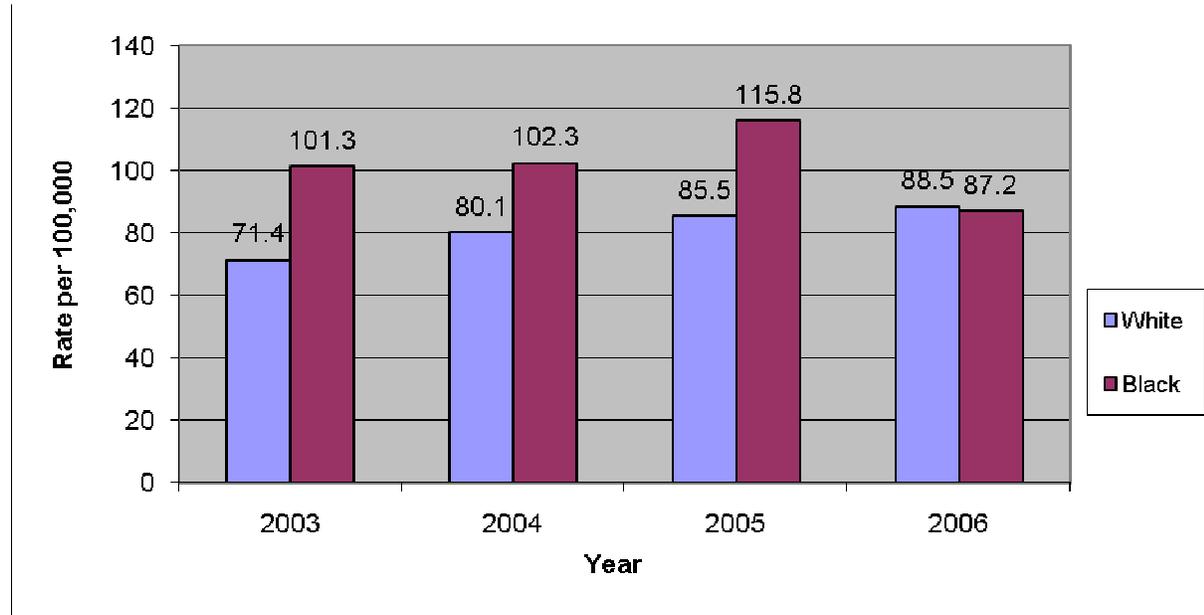
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Table 8: Fire/Burn Outpatient Admissions by Race, Indiana, 2003-2006

Year	White	Black
2003	3,883	561
2004	4,353	580
2005	4,670	669
2006	4,814	517
Total	17,720	2,327

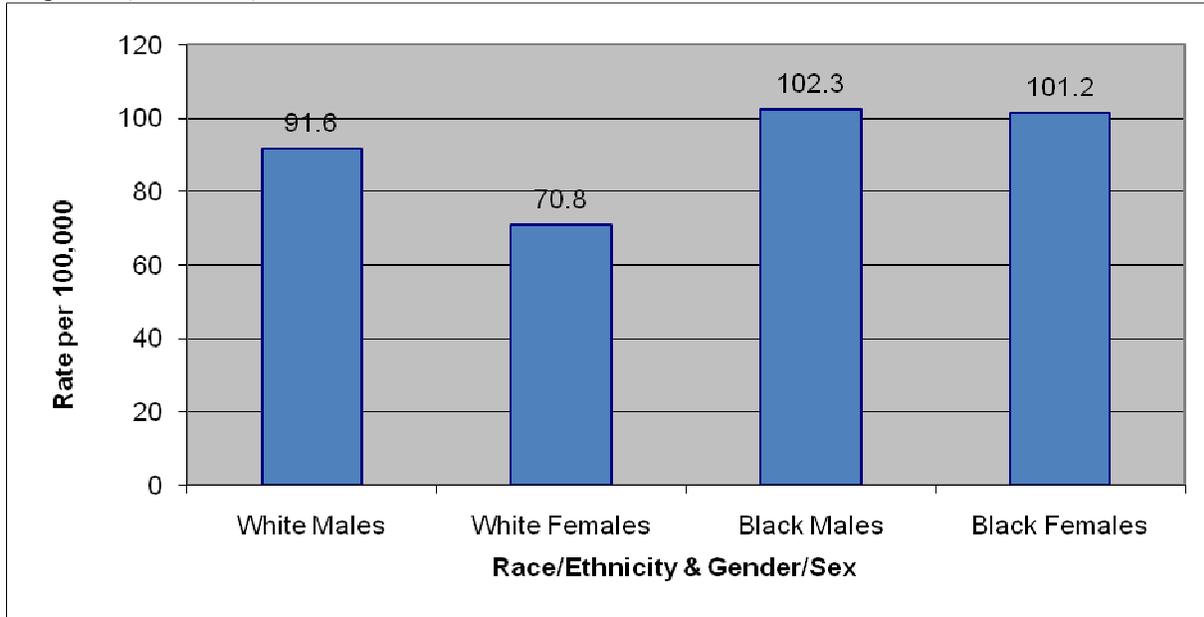
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 21: Fire/Burn Outpatient/ED Visit Rates by Race, Age-Adjusted, Indiana, 2003-2006



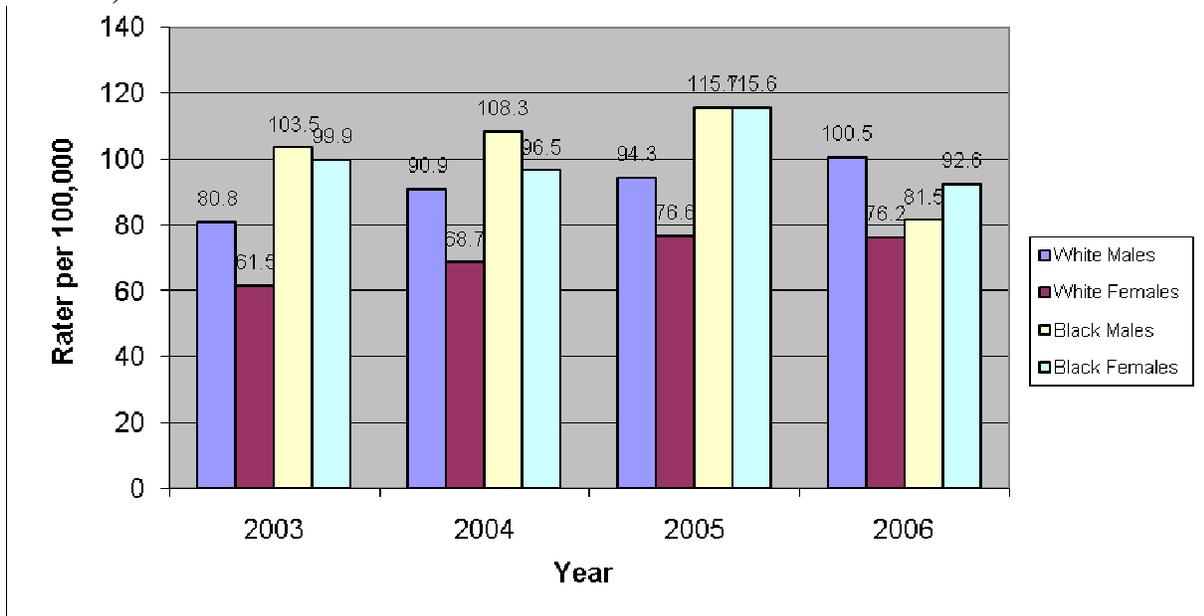
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 22: Mean Fire/Burn Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



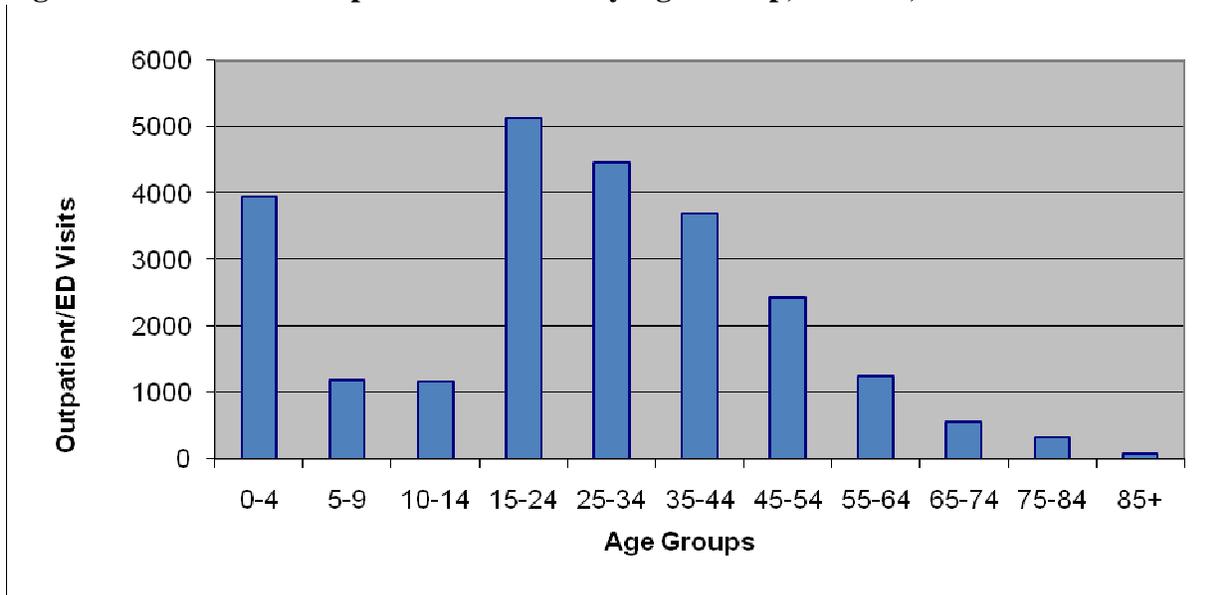
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 23: Fire/Burn Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



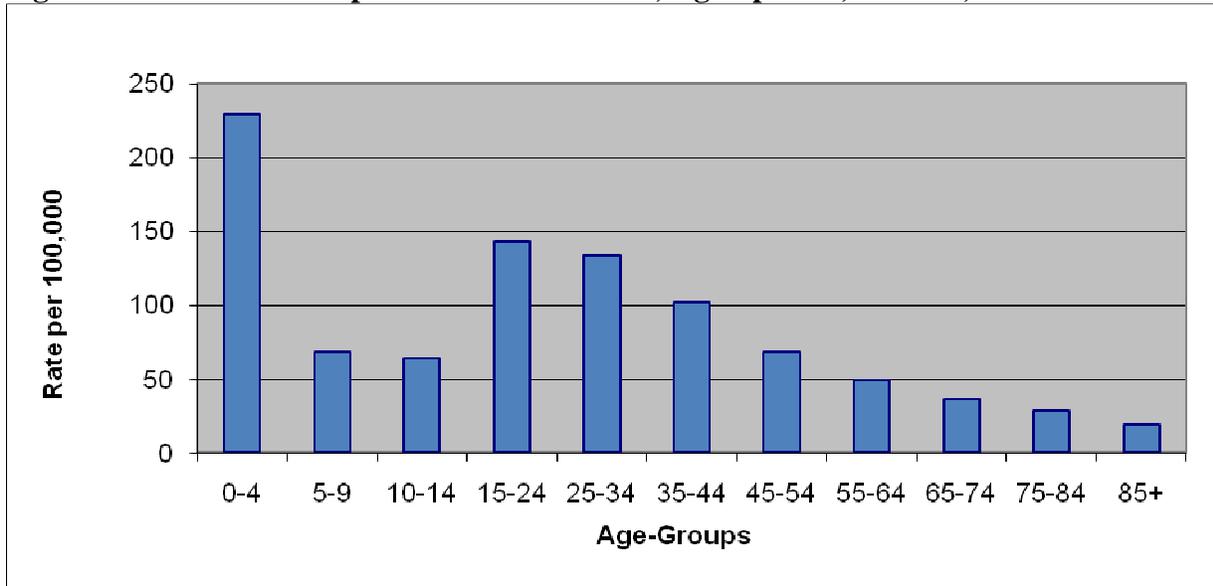
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 24: Fire/Burn Outpatient/ED Visits by Age-Group, Indiana, 2003-2006



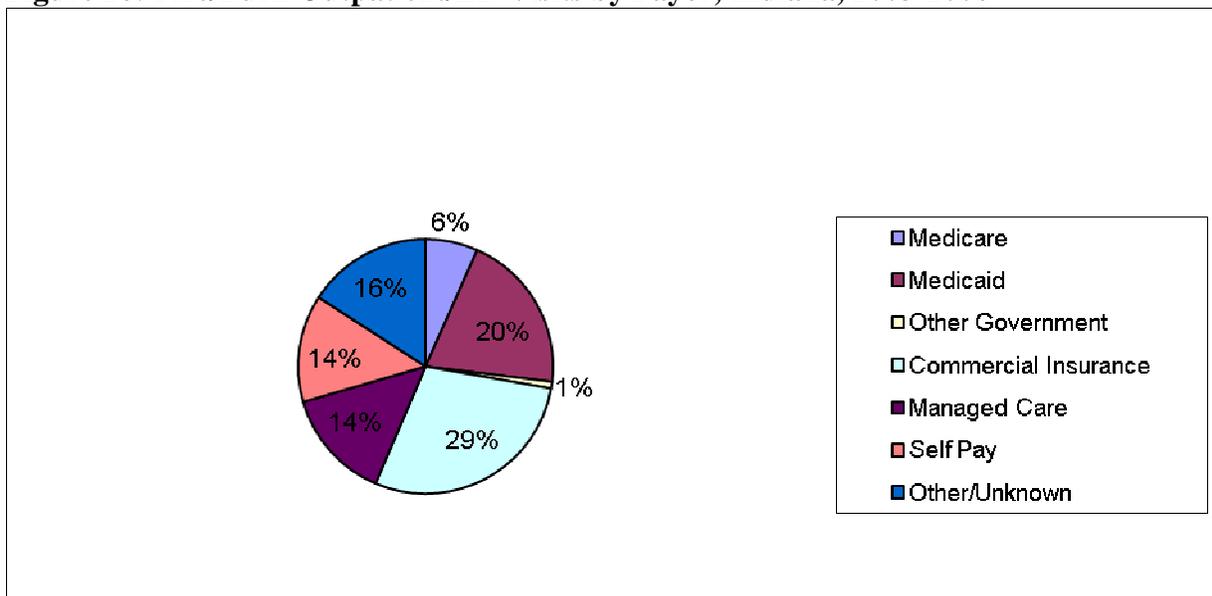
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 25: Fire/Burn Outpatient/ED Visit Rates, Age-Specific, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 26: Fire/Burn Outpatient/ED Visits by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Risk Behaviors and Prevention

Risk Behaviors

A CDC report from 2004 showed that residential fires accounted for 76% of fire-related injuries and 79% of fire-related deaths in 2002; in this year alone, more than 401,000 home fires in the United States claimed the lives of 2,670 people and injured another 14,050.⁽⁶⁾ Cooking is the primary cause for residential fires.

Groups at risk for residential fires and those at greatest risk of sustaining fire-related injuries are adults age 65 years and older and children ages five years and younger; African Americans, American Indian/Alaska Natives; rural dwellers; and persons living in substandard housing or manufactured homes.⁽¹⁾ The CDC also has data showing that most residential fires occur in the winter months, and that approximately half of fire deaths occur in homes without smoke alarms.

Prevention

Fire/Burn-related injuries and fatalities are tragic and unnecessary because they are preventable. The Consumer Product Safety Commission, the U.S. Fire Administration, the National Fire Protection Agency, and CDC recommend the following ways to prevent fires:

- Keep cooking areas free of flammable objects (such as, potholders and towels).
- Never leave food unattended on a stove.
- Avoid wearing clothes with long, loose-fitting sleeves when cooking.
- Never smoke in bed or leave burning cigarettes unattended.

- Do not empty smoldering ashes in a trash can, and keep ashtrays away from upholstered furniture and curtains.
- Never place portable space heaters near flammable materials (such as, drapery).
- Keep all matches and lighters out of reach of children. Store them up high, preferably in a locked cabinet.
- Install smoke alarms on every floor of the home, including the basement, and particularly near rooms in which people sleep.
- Use long-life smoke alarms with lithium-powered batteries and hush buttons, which allow persons to stop false alarms quickly. If long-life alarms are not available, use regular alarms, and replace the batteries annually.
- Test all smoke alarms every month to ensure they work properly.
- Devise a family fire escape plan and practice it every 6 months. In the plan, describe at least two different ways each family member can escape every room, and designate a safe place in front of the home for family members to meet after escaping a fire.
- If possible, install or retrofit fire sprinklers into home.

Conclusion

Injuries and deaths caused by fires and burns remain a serious public health problem. Between 2003 and 2006, fire/burn-related injuries were the 5th leading cause of death for Indiana residents, claiming 369 lives with an age-adjusted rate of 1.47 per 100,000 population. Based on hospital discharge data for the four-year period, fire/burn-related injuries accounted for approximately 2.2% of all inpatient hospitalizations and 1.8% all outpatient/ED visits. The economic burden of fire/burn-related injuries is also enormous. The total charges during 2003 to 2006 for inpatient hospitalizations and outpatient/ED visits were \$71 million. The medical costs alone do not even 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 specific groups, such as people over the age of 65 and children ages five years and younger in order to reduce the burden on Indiana residents and the state's economy.

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SUICIDE IN INDIANA

Index of Figures and Tables.....	166-167
Highlights.....	168
Introduction.....	169
Suicide Deaths in Indiana.....	169-174
Suicide/Self-Inflicted Injuries in Indiana.....	175-189
Risk Behaviors and Prevention.....	190-193
Conclusion.....	194
References.....	195

Index of Figures and Tables

- Figure 1: Suicide Death Rates, Age-Adjusted, Indiana, 2003-2006
Figure 2: Suicide Death Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 3: Mean Suicide Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006
Figure 4: Suicide Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006
Figure 5: Mean Suicide Death Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 6: Suicide Death Rates by Race/Ethnicity and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 7: Suicide Death Rates, Age-Specific, Indiana, 2003-2006
Figure 8: Self-Inflicted/Suicide Inpatient Hospital Admission Rates, Age-Adjusted, Indiana, 2003-2006
Figure 9: Self-Inflicted/Suicide Inpatient Hospital Admission Rates by Gender, Age-Adjusted, Indiana, 2003-2006
Figure 10: Self-Inflicted/Suicide Inpatient Hospital Admissions by Race, Indiana, 2003-2006
Figure 11: Self-Inflicted/Suicide Inpatient Hospital Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006
Figure 12: Mean Self-Inflicted/Suicide Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 13: Self-Inflicted/Suicide Inpatient Hospital Admission Rates by Race and Gender, Age-Adjusted, Indiana, 2003-2006
Figure 14: Self-Inflicted/Suicide Inpatient Hospital Admissions by Age, Indiana, 2003-2006
Figure 15: Self-Inflicted/Suicide Inpatient Hospital Admission Rates, Age-Specific, Indiana, 2003-2006
Figure 16: Self-Inflicted/Suicide Inpatient Hospital Admissions by Type, Indiana, 2003-2006
Figure 17: Self-Inflicted/Suicide Inpatient Hospital Admissions by Source, Indiana, 2003-2006
Figure 18: Self-Inflicted/Suicide Inpatient Hospital Admissions by Payor, Indiana, 2003-2006
Figure 19: Self-Inflicted/Suicide Outpatient/ED Visit Rates, Age-Adjusted, Indiana, 2003-2006
Figure 20: Self-Inflicted/Suicide Outpatient/ED Visit Rates by Gender, Age-Adjusted, Indiana, 2003-2006
Figure 21: Self-Inflicted/Suicide Outpatient/ED Visits by Race, Indiana, 2003-2006
Figure 22: Self-Inflicted/Suicide Outpatient/ED Visit Rates by Race, Age-Adjusted, Indiana, 2003-2006
Figure 23: Self-Inflicted/Suicide Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 24: Mean Self-Inflicted/Suicide Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 25: Self-Inflicted/Suicide Outpatient/ED Visits by Age-Group, Indiana, 2003-2006
Figure 26: Self-Inflicted/Suicide Outpatient/ED Visit Rates, Age-Specific, Indiana, 2003-2006
Figure 27: Self-Inflicted/Suicide Outpatient/ED Visits by Payor, Indiana, 2003-2006

Table 1: Suicide Deaths by Gender/Sex, Indiana, 2003-2006
Table 2: Suicide Deaths by Race/Ethnicity, Indiana, 2003-2006
Table 3: Suicide Deaths and Rates, Age-Specific, Indiana, 2003-2006

Table 4: Self-Inflicted/Suicide Inpatient Hospital Admissions by Gender/Sex, Indiana, 2003-2006

Table 5: Self-Inflicted/Suicide Inpatient Hospital Admissions by Race, Indiana, 2003-2006

Table 6: Self-Inflicted/Suicide Inpatient Hospital Admissions and Rates, Age-Specific, Indiana, 2003-2006

Table 7: Self-Inflicted/Suicide Outpatient/ED Visits by Gender/Sex, Indiana, 2003-2006

Table 8: Self-Inflicted/Suicide Outpatient/ED Visits by Race, Indiana, 2003-2006

Highlights for Suicide

Mortality, 2003-2006⁽³⁾

- Suicide was the 7th leading cause of death for males and the 18th leading cause of death for females for Indiana residents, claiming a total of 2,977 lives.
- Males were 4.7 times more likely to die by suicide than females (20.2 per 100,000 vs. 4.3 per 100,000).
- Between 2003 and 2006, white males had the highest rate of death by suicide (21.1 per 100,000) than all other race/gender categories.
- Individuals 45-54 years of age had the highest age-adjusted suicide death rate (19.8 per 100,000) of all ages.

Inpatient Admissions for Self-Inflicted/Suicide Injuries, 2003-2006⁽⁴⁾

- Self-Inflicted injuries/suicide accounted for approximately 10.5% (9,152 admissions) of all hospital inpatient admissions with an overall rate of 37.0 per 100,000.
- Females were 1.4 times more likely to be admitted to the hospital following a self-inflicted injury/suicide than males (43.2 per 100,000 compared to 41.8 per 100,000).
- Whites and blacks had similar hospital admission rates due to self-inflicted injury/suicide (33.9 per 100,000 versus 31.7 per 100,000).
- The age group with the highest hospital admission rate due to self-inflicted injury/suicide was 45-54 year olds (44.4 per 100,000).

Outpatient/Emergency Department (ED) Visits for Self-Inflicted/Suicide Injuries, 2003-2006⁽⁴⁾

- Self-Inflicted/Suicide attempts accounted for approximately 0.9% (12,776 visits) of all hospital outpatient/ED visits.
- Females were 1.5 times more likely to be seen in an outpatient/ED facility following a self-inflicted injury/suicide attempt than males (62.1 per 100,000 compared to 41.0 per 100,000).
- Whites were more likely than blacks to visit the outpatient/ED (48.1 per 100,000 versus 31.0 per 100,000).
- Those 15-24 years of age had the highest rate of outpatient/ED visits due to self-inflicted/suicide attempts compared to all other age groups (135.4 per 100,000).

Risk Behavior

- In 2007, 27.5% of high school students reported feeling sad or hopeless one or more times during the past 12 months.
- 7.2% of Indiana high school students reported that they attempted suicide in the previous 12 months.
- 15.8% of 9th through 12th grade Hoosiers seriously considered attempting suicide during the past 12 months.
- 11.7% of students had a plan for how they would attempt suicide.

Introduction

Suicide is an important public health issue because most suicides are preventable. Suicide occurs across all economic, racial/ethnic, age, and social boundaries. Suicide accounts for approximately 30,000 lives lost in the United States each year or approximately 89 suicides a day.⁽¹⁾ In 2004, 535,000 Americans were seen in hospital emergency departments for self-inflicted injuries, commonly termed suicide attempts.⁽²⁾ Still, many suicides or suicide attempts go unreported, making the magnitude of the problem far greater than what current statistics demonstrate. An average of one person dies by suicide in the U.S. every 16 minutes. For Hoosiers, 1 out of 5 injury related deaths (more than 700 deaths annually) occur from suicide. Many people are not aware that suicide takes almost twice as many lives as homicide, and it is estimated that a minimum of six people are directly affected as suicide survivors for each suicide death.

Suicide Deaths in Indiana

Suicide death data for this report was extracted from the Indiana State Department of Health (ISDH) mortality reports and are based off of ICD-10 codes specific to suicide (X60-X84, Y87.0). The numbers of deaths differ slightly from the nationally based reporting system, the National Center for Health Statistics (NCHS). The number of Indiana deaths reported by the ISDH is lower than the numbers from NCHS, because ISDH does not always receive death certificates for Indiana residents that died out of state. However, these deaths are likely to be reported to NCHS from those out-of-state health departments, and NCHS would usually be able to assign state of residence, making the nationally based data more complete than the health department data. In addition, completeness of mortality data is dependent upon how thoroughly the death certificate is completed, which affects how a death is categorized. Another limitation is that race/ethnicity data is not accurate. Race/ethnicity is provided at the discretion of the person completing the death certificate and may not reflect how individuals would define their own race or ethnicity.⁽³⁾

In Indiana between 2003 and 2006, suicide was the 11th leading cause of death, with a total of 2,977 individuals dying (average of 743 deaths per year) for a rate of 11.9 per 100,000 population. There were 725 suicide deaths in 2003, 702 deaths in 2004, 735 deaths in 2005, and 815 deaths in 2006. Figure 1 shows the suicide age-adjusted rates for the four-year period. The highest death rate was in 2006 with 12.8 per 100,000, and the lowest rate was 2004 with 11.3 per 100,000.

More than 80% of the suicide deaths (82.0% or 2436/2972) were in males. When comparing death rates, males (20.2 per 100,000) died 4.7 times more than females (4.3 per 100,000). Table 1 shows the number of deaths by gender/sex for each year, and Figure 2 shows the rates by gender/sex for each year.

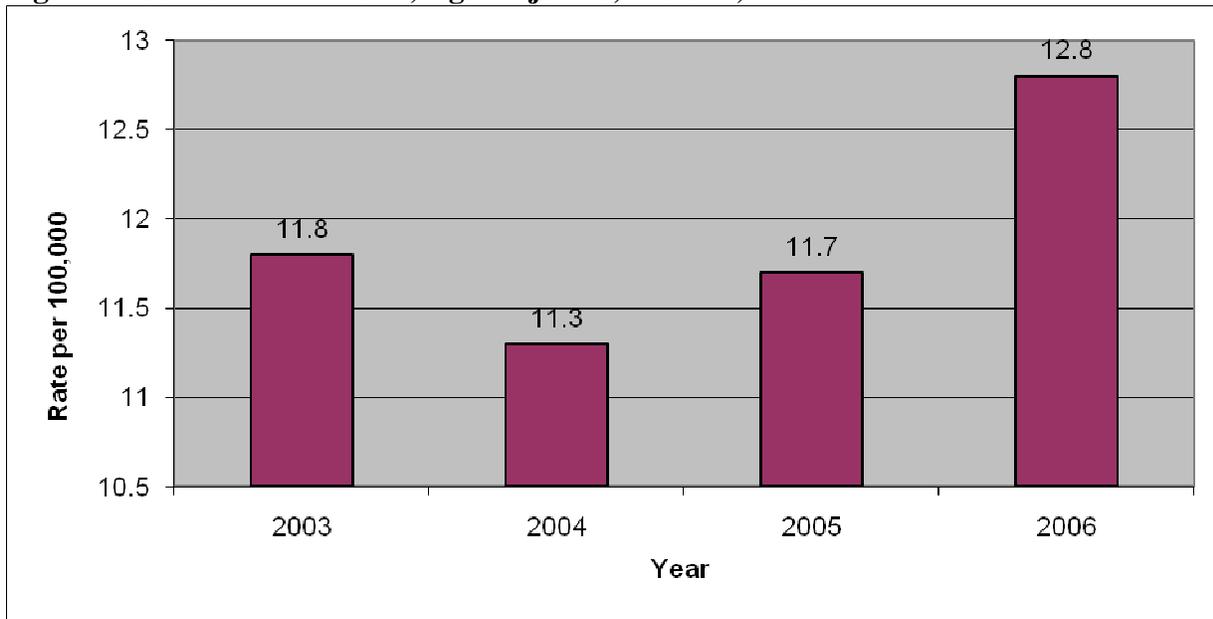
More whites (94.4% or 2,807/2,972) died than blacks (4.8% or 143/2,972) and individuals defined as "other" (0.9% or 27/2,972) or Hispanic (1.4% or 43/2,972) between 2003 and 2006. Whites had the highest death rate due to suicide (12.5 per 100,000) for the entire time period and were 1.9 times more likely than blacks (6.6 per 100,000), 3.0 times more likely than "other" (4.2 per 100,000) and 2.9 times more likely than Hispanics (4.3 per 100,000). Figure 3 shows the av-

average death rates by race for 2003-2006. The suicide death rate was highest in 2006 for whites (13.6 per 100,000) and has been increasing since 2004. The suicide death rate in 2003 was slightly higher (12.2 per 100,000) compared to 2004 and almost equal to 2005. The death rate for blacks was highest in 2003 (7.9 per 100,000) and steadily decreased to 5.5 per 100,000 in 2005. However, the rate started increasing in 2006 (6.2 per 100,000). The death rates for those categorized by Hispanic, or “other” were unstable for individual years. Table 2 shows the total number of deaths by race, and Figure 4 shows the death rates by year.

With 2,292 deaths and an average death rate of 21.1 per 100,000, white males had the highest number and death rate from suicide compared to all other race/ethnicity and gender/sex categories (Figure 5). White males were 4.6 times more likely to die than white females, 1.8 times more likely than black males and 10.6 times more likely than black females. White females had the higher suicide death rates compared to black females. Figure 6 shows the suicide death rate for each category broken out by year.

Individuals 45-54 years of age had the highest suicide death rates (19.8 per 100,000). See Figure 7. The lowest stable rates were seen in 15-24 year olds. The overall rate of death for all ages was 15.9 per 100,000. Table 3 shows the number of fall deaths in each age group for each year as well as the age-specific death rate.

Figure 1: Suicide Death Rates, Age-Adjusted, Indiana, 2003-2006



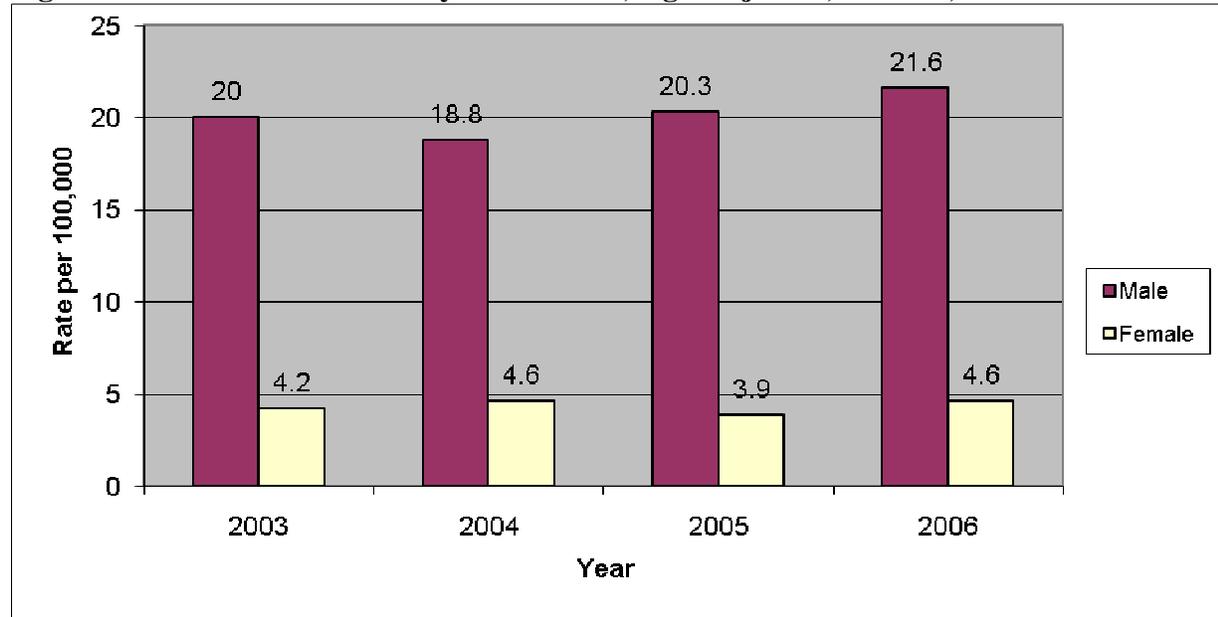
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 1: Suicide Deaths by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	595	130
2004	559	143
2005	615	120
2006	667	148
Total	2,436	541

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

Figure 2: Suicide Death Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



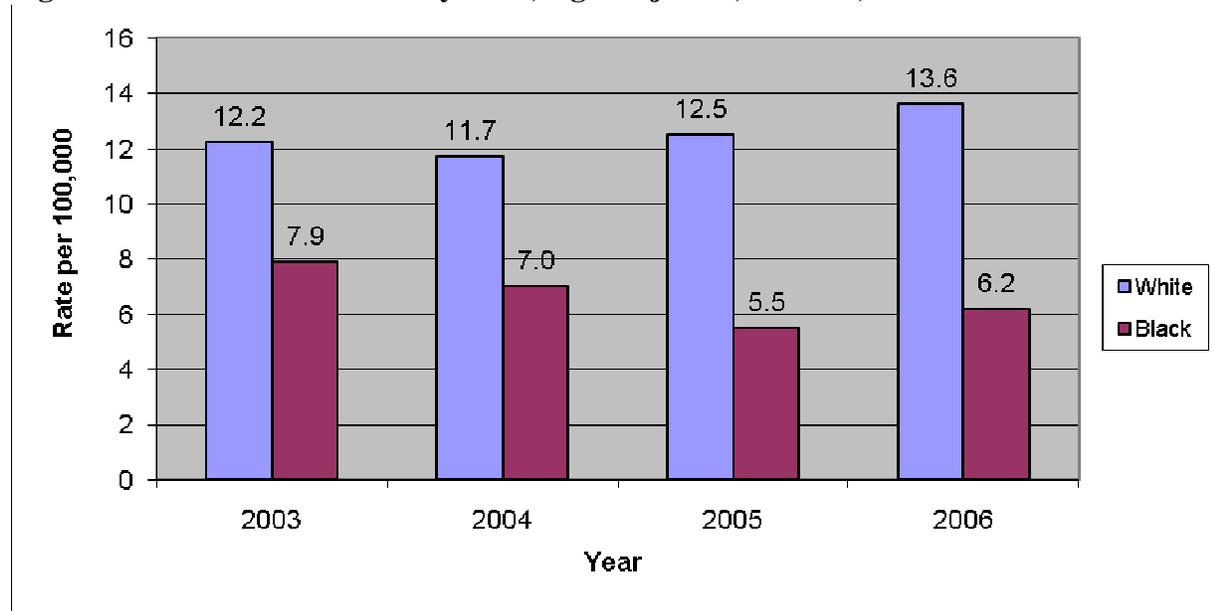
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 2: Suicide Deaths by Race/Ethnicity, Indiana, 2003-2006

Year	White	Black	Other	Hispanic
2003	677	41	7	8
2004	652	38	12	12
2005	701	31	3	9
2006	777	33	5	14
Total	2,807	143	27	43

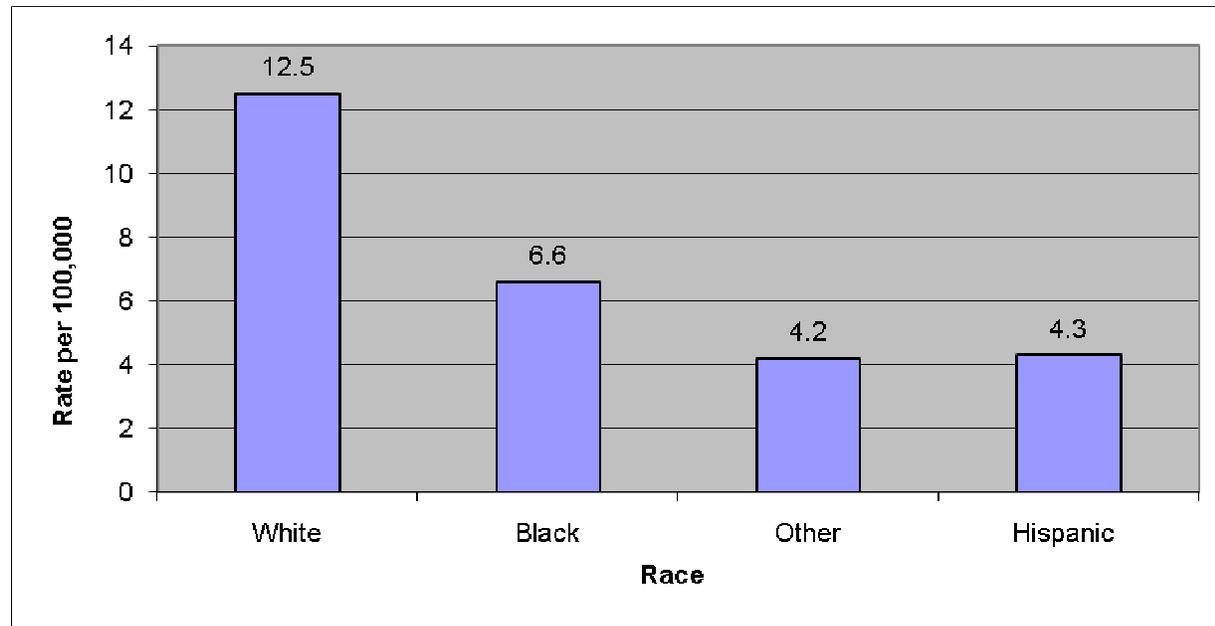
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

Figure 3: Suicide Death Rates by Race, Age-Adjusted, Indiana, 2003-2006



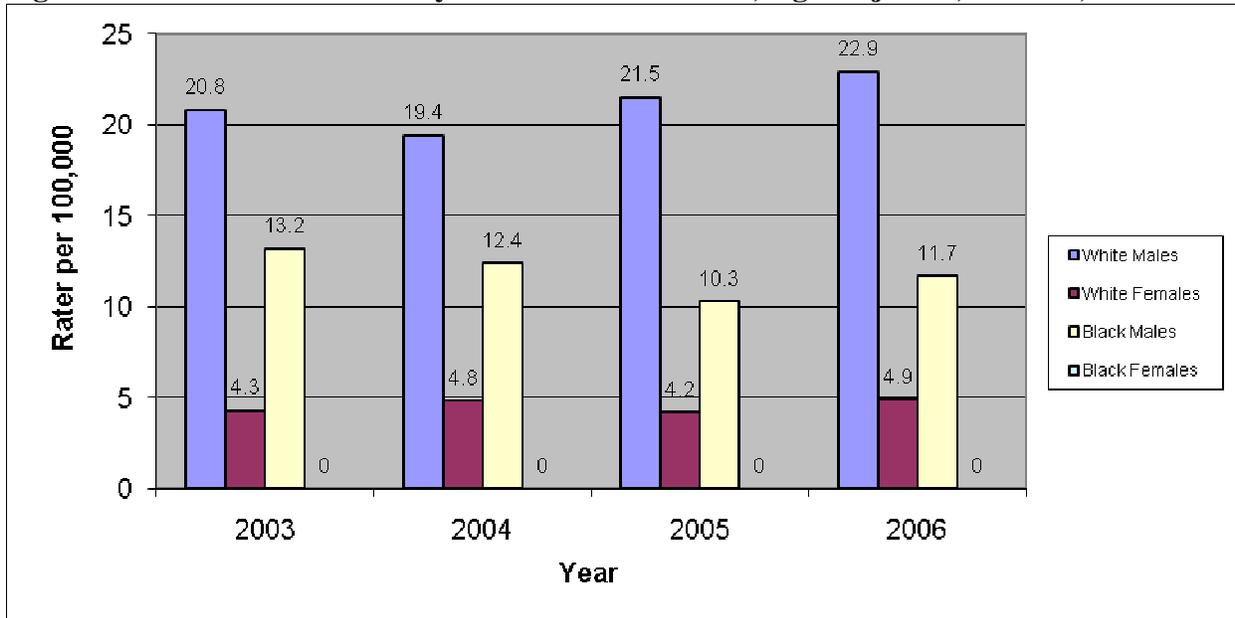
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 4: Mean Suicide Death Rates by Race/Ethnicity, Age-Adjusted, Indiana, 2003-2006



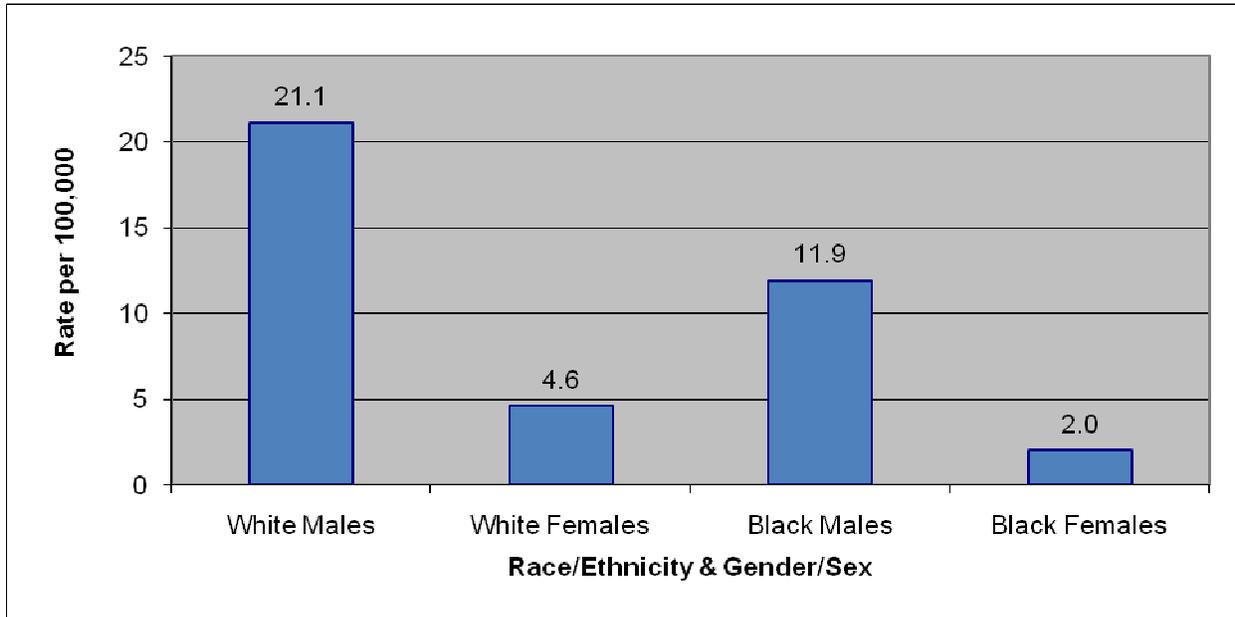
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 5: Suicide Death Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



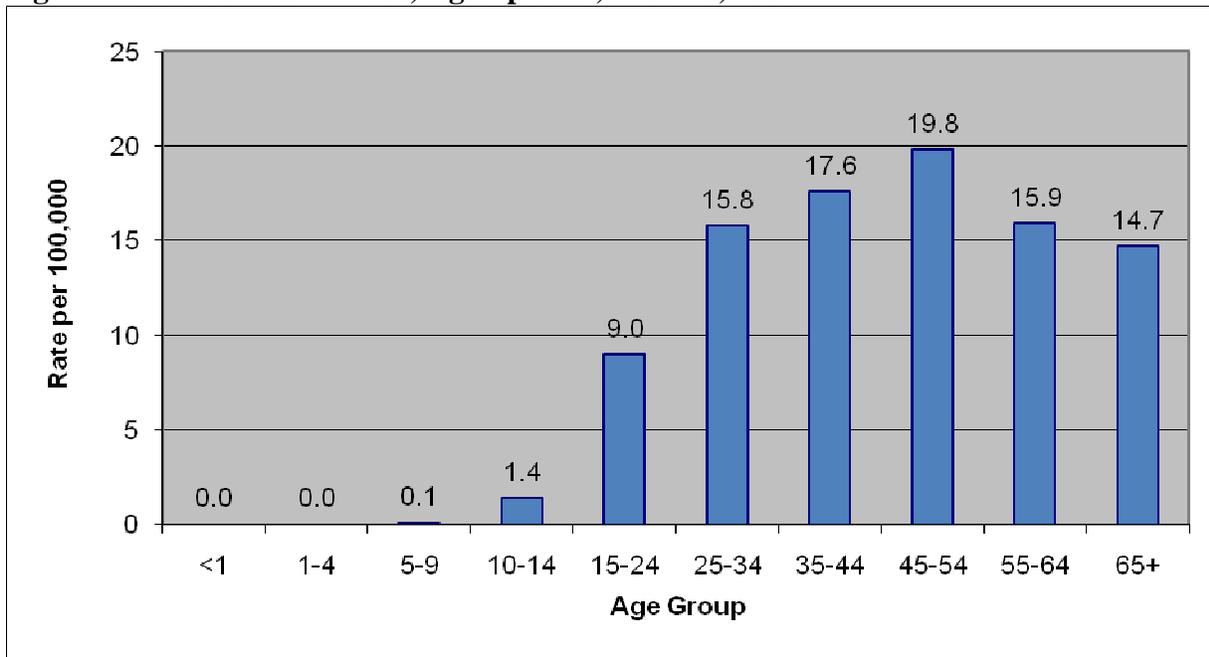
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 6: Mean Suicide Death Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 7: Suicide Death Rates, Age-Specific, Indiana, 2003-2006



Note: The death rate for those <1-9 years of age was unstable and should be used with caution.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 3: Suicide Deaths and Rates, Age-Specific, Indiana, 2003-2006

Age Groups	2003		2004		2005		2006	
	Deaths	Rates	Deaths	Rates	Deaths	Rates	Deaths	Rates
<1	0	U	0	U	0	U	0	U
1-4	0	U	0	U	0	U	0	U
5-9	1	U	0	U	0	U	0	U
10-14	1	U	9	U	9	U	6	U
15-24	79	8.8	89	9.9	103	11.5	91	10.2
25-34	152	18.6	126	15.2	117	14.0	138	16.2
35-44	158	17.2	168	18.5	147	16.4	170	19.0
45-54	167	19.2	119	13.4	162	18.0	211	22.8
55-64	85	14.4	93	15.2	87	13.7	93	13.9
65+	82	10.7	98	12.7	110	14.1	106	13.5
Unknown	0	--	0	--	0	--	0	--
Total	725	11.7	702	11.3	735	11.7	815	12.8

Note: 'U' signifies that the rates are unstable due to less than 20 deaths.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

Suicide/Self-Inflicted Injuries in Indiana

Hospital discharge data give an indication of the number of unintentional and intentional injuries in Indiana, although the data have limitations. The International Classification of Disease Revision 9 Clinical Modification (ICD-9CM) coding scheme includes external causes of injury codes or E-codes that indicate the source or cause of the injury and can also provide injury-related cost data. However, E-codes are not mandated by law in Indiana, and it is estimated that only 62% of the discharge records contain them. Therefore, the total number of injuries in this report is a gross underestimation of the proportion of number of injuries that actually occurred.⁽⁴⁾

E-codes specific to injury and poisoning include ICD-9-CM codes 800-999. E-codes specific to self-inflicted and suicide injuries include E956, E954, E957, E958 (.1,.2,.7), E955 (.0-.4), E958.5, E950, E951, E952, E953, E955 (.5,.6,.9), and E958(.8-.9). The hospital data base does not contain a patient-specific unique identifier, meaning that it does not distinguish whether one person had five visits or whether five people visited once. Therefore, statistics only reflect visits and not specific numbers of people. Also, race/ethnicity data is not very accurate because race/ethnicity is at the discretion of the person reporting the data and may not reflect how the individuals would define themselves. In some cases, race/ethnicity information is not provided at all.⁽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, a few psychiatric and behavioral health hospitals do not submit data. All acute care hospitals are submitting inpatient data. However, one of the three Level 1 Trauma center hospitals has not submitted outpatient/emergency department data yet. As a result, the total number of injuries for the outpatient/emergency department data is an underestimation of the actual number of injuries and should be used with caution.⁽⁴⁾

Hospital Inpatient Data

From 2003 to 2006, there were 86,799 inpatient hospitalizations with a primary diagnosis of injury or poisoning. Based on the data with valid E-codes, suicide/self-inflicted injuries accounted for approximately 10.5% (9,152 admissions) of all injury/poisoning hospital inpatient admissions with an injury rate (combined 2003-2006 rate) of 37.0 per 100,000. There were 2,197 self-inflicted/suicide injuries in 2003; 2,370 injuries in 2004; 2,327 injuries in 2005; and 2,258 injuries in 2006. Figure 8 shows the suicide/self-inflicted age-adjusted rates for the four-year period. The highest injury rate was in 2004 with 38.4 per 100,000, and the lowest rate was 2003 and 2006 with 36.0 per 100,000.

The main causes of self-inflicted/suicide injury inpatient hospitalization was poisoning,. Approximately 94% of all hospitalizations were due to poisoning (8,564/9,152). Cuts and firearms were the 2nd and 3rd causes of hospitalizations with 2.8% (254/9,152) and 1.5% (139/9,152) respectively.

Of those admitted to the hospital 41.8% (3,824/9,152) were male and 58.2% (5,328/9,152) were female. When comparing rates, females were 1.4 times more likely to be admitted to the hospital due to a suicide/self-inflicted injury than males (43.2 per 100,000 versus 41.8 per 100,000) Table 4 shows the number of hospital admissions by gender/sex for each year, and Figure 9 shows the rates by gender/sex for each year.

More than half of the hospital admissions were white Indiana residents (81% or 7,411/9,152). See Figure 10. However, the overall age-adjusted rate for hospital admissions was similar for whites and blacks during 2003-2006 (33.9 per 100,000 versus 31.7 per 100,000). However, the self-inflicted/suicide hospitalization rate was higher in 2004 for blacks versus whites (39.5 per 100,000 and 34.8 per 100,000 respectively). The self-inflicted/suicide rate for blacks was the lowest in 2006 with a rate of 22.5 per 100,000. Table 5 shows the total number of hospitalizations by race, and Figure 11 shows the hospitalization rates by year.

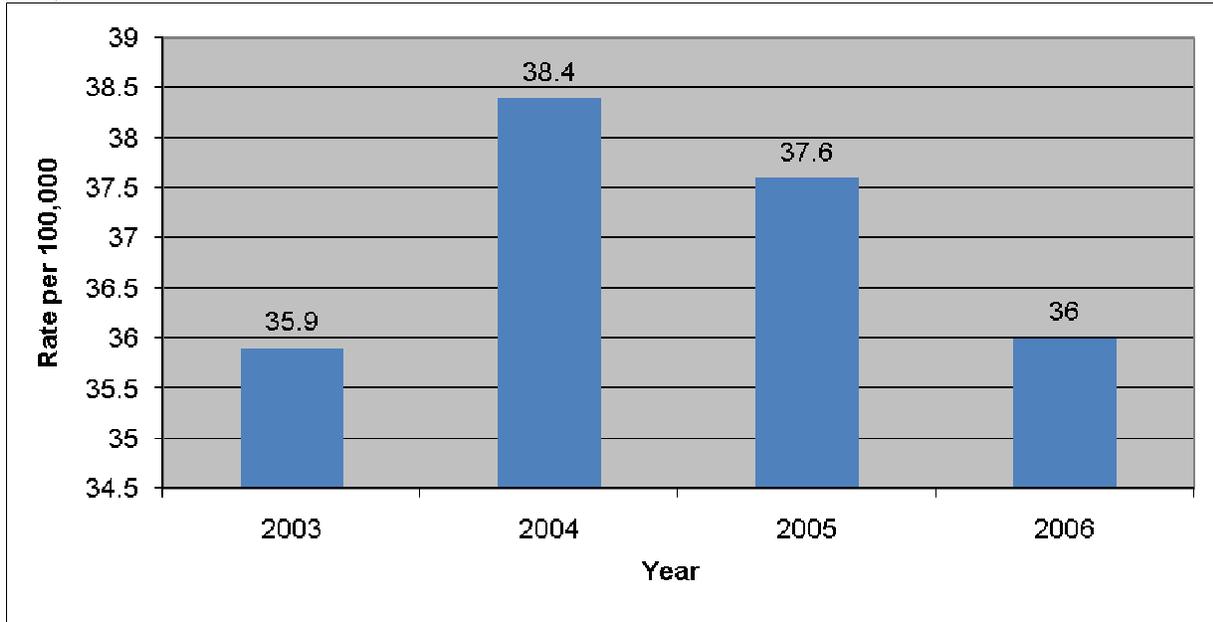
With 4,370 hospitalizations and an average injury rate of 40.3 per 100,000, white females had the highest number and death rate from self-inflicted/suicide compared to all other race/ethnicity and gender/sex categories (Figure 12). White males had the lowest average hospitalization rate compared to all other categories (27.7 per 100,000). Figure 13 shows the self-inflicted/suicide hospitalization rate for each category broken out by year.

During 2003-2006, 45-54 year olds had the highest age-specific rate of hospital admissions due to suicide/self-inflicted injury (44.4 per 100,000). The lowest age-specific rate of hospital admissions due to self-inflicted/suicide was for those 10-14 years of age (12.3 per 100,000). Figure 14 shows the actual number of hospital admissions for each age group, while Figure 15 shows the age-specific rate for each age group. Table 6 shows the number of self-inflicted/suicide hospitalizations in each age group for each year as well as the age-specific death rate.

Between 2003 and 2006, 1.6% (142/9,152) of all patients admitted to the hospital due to suicide/self-inflicted injury died. More than three-fourths (78%) of all patients were admitted to the hospital as an emergency, and 80% were admitted after receiving care at an outpatient center or in the ED (Figure 16 and Figure 17).

For 2003-2006, the total charges for all ages injured due to suicide/self-inflicted injury and admitted to the hospital were \$82 million. The mean and median total charges for all ages due to suicide/self-inflicted injury were \$9,011.74 and \$5,743.00 with a range of \$0-\$434,797. Of those admitted to the hospital, 25.3% (2,315/9,152) had commercial insurance while 22.0% (2,010/9,152) had Medicaid insurance (Figure 18). The average length of stay was 2.3 days (range 1-71 days), and the median length of stay was 1.0 days.

Figure 8: Self-Inflicted/Suicide Inpatient Hospital Admissions Rates, Age-Adjusted, Indiana, 2003-2006



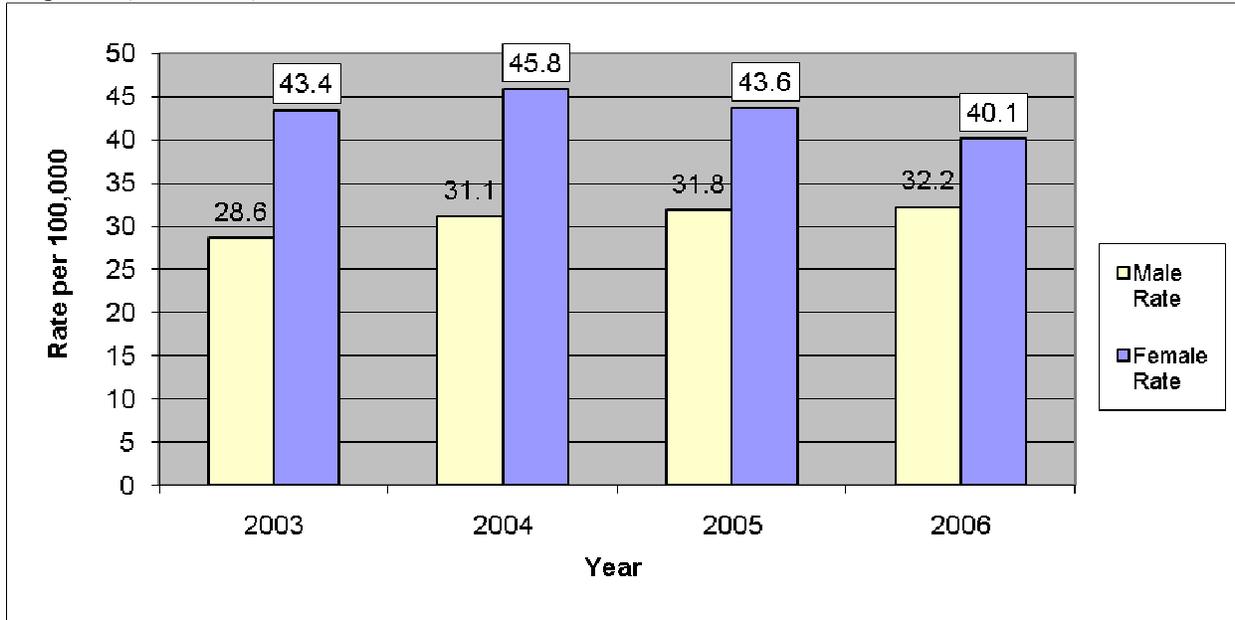
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 4: Self-Inflicted/Suicide Inpatient Admissions by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	871	1,326
2004	962	1,408
2005	986	1,341
2006	1,005	1,253
Total	3,824	5,328

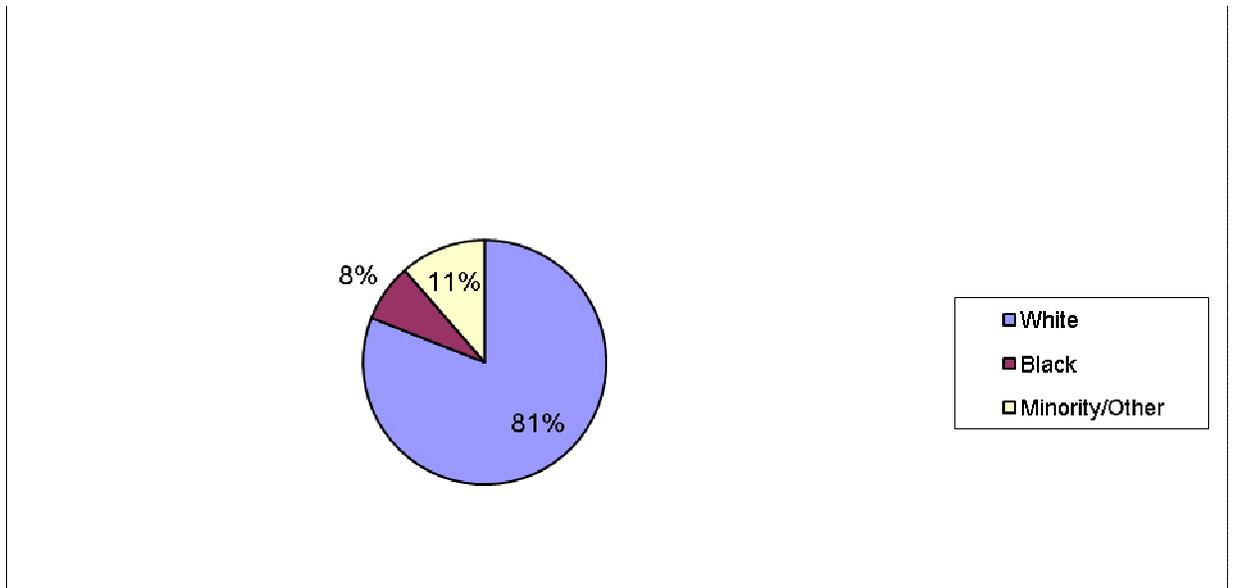
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 9: Self-Inflicted/Suicide Inpatient Hospital Admission Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 10: Self-Inflicted/Suicide Inpatient Hospital Admissions by Race/Ethnicity, Indiana, 2003-2006



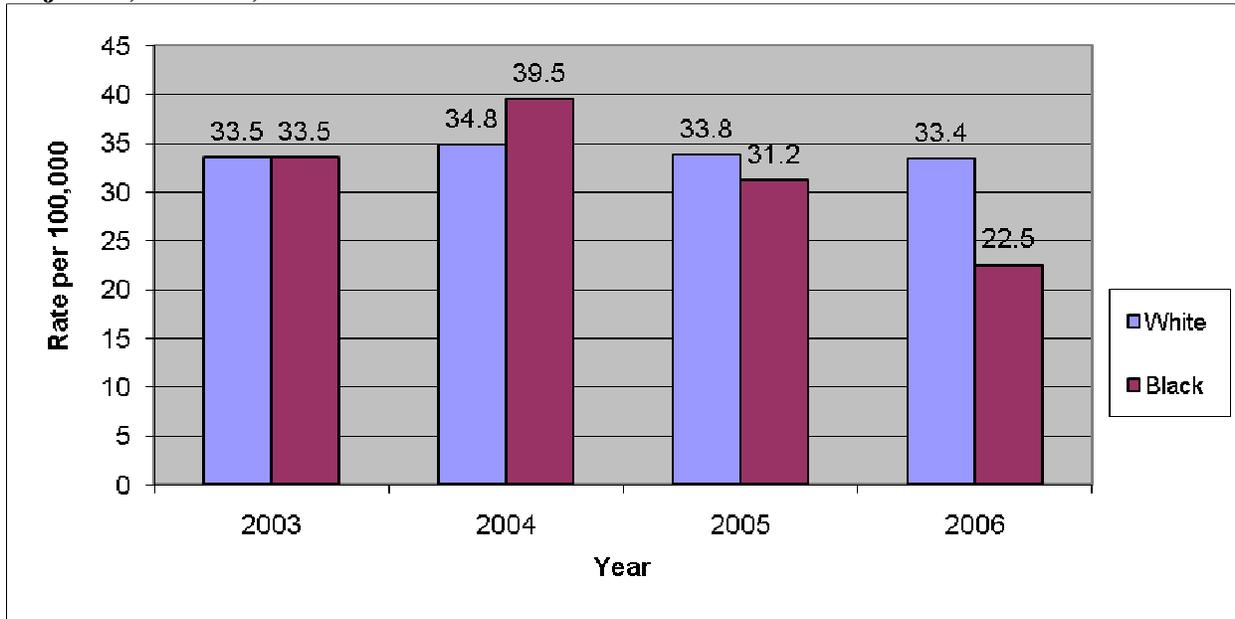
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 5: Self-Inflicted/Suicide Hospital Admissions by Race, Indiana, 2003-2006

Year	White	Black
2003	1,818	178
2004	1,899	219
2005	1,844	177
2006	1,850	126
Total	7,411	700

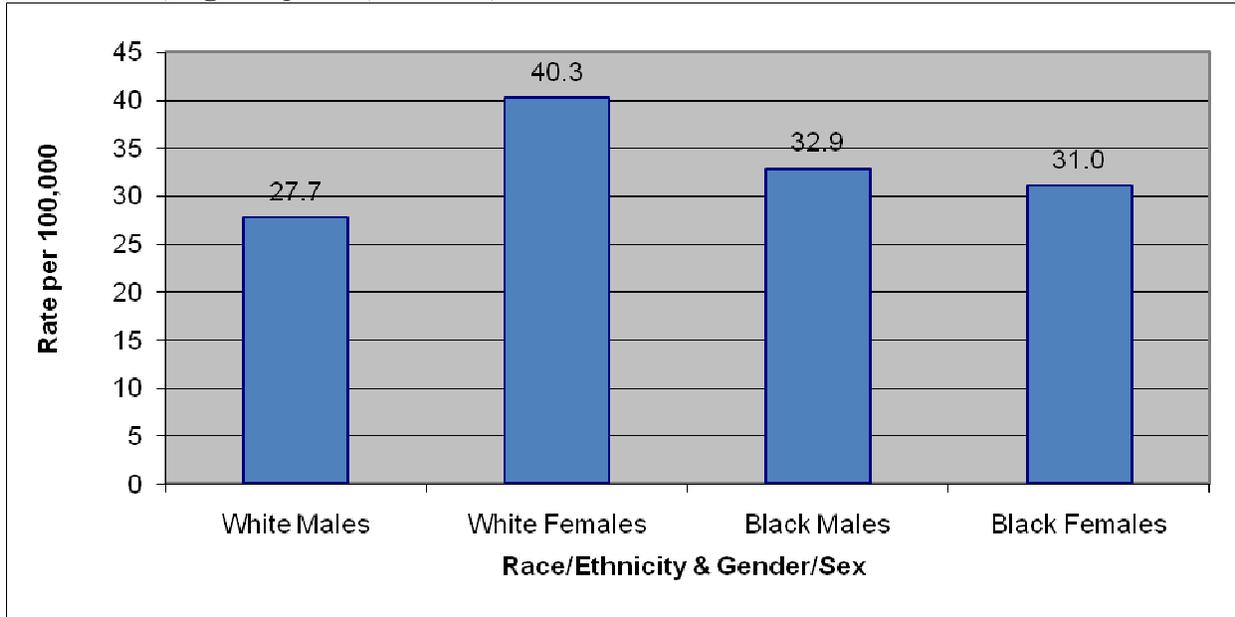
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 11: Self-Inflicted/Suicide Inpatient Hospital Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006



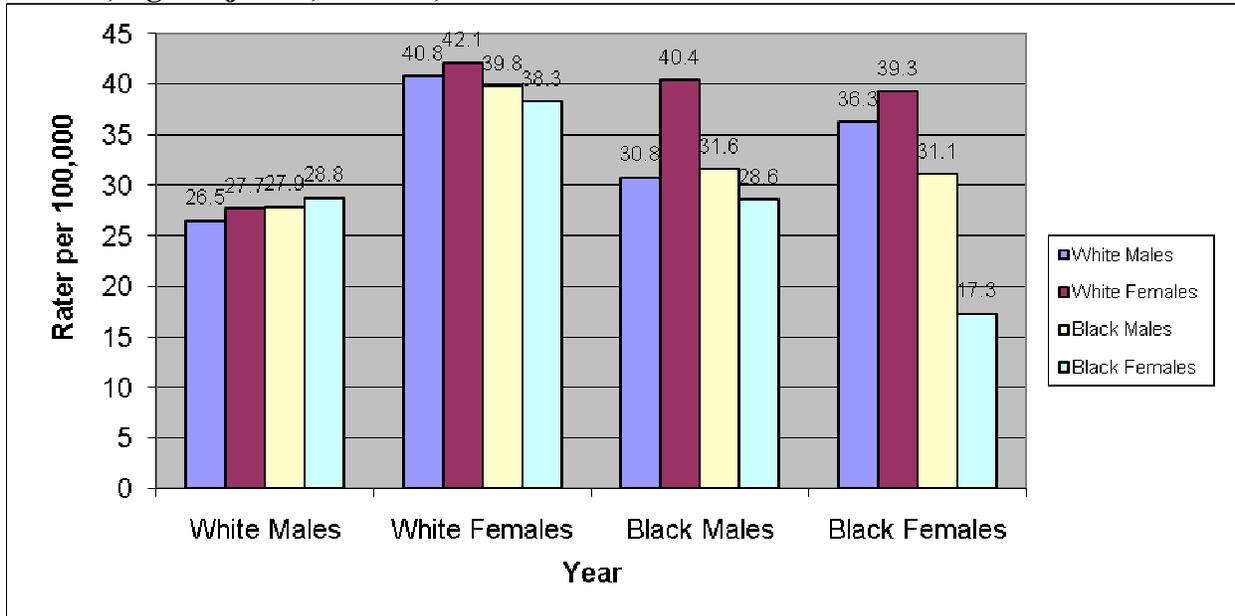
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 12: Mean Self-Inflicted/Suicide Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



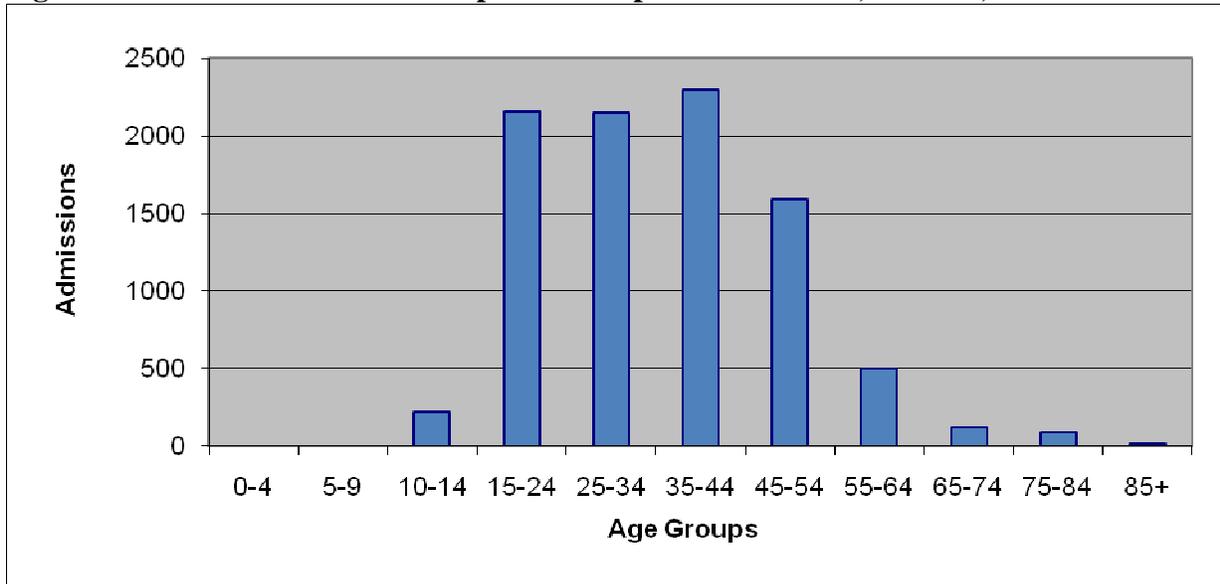
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 13: Self-Inflicted/Suicide Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



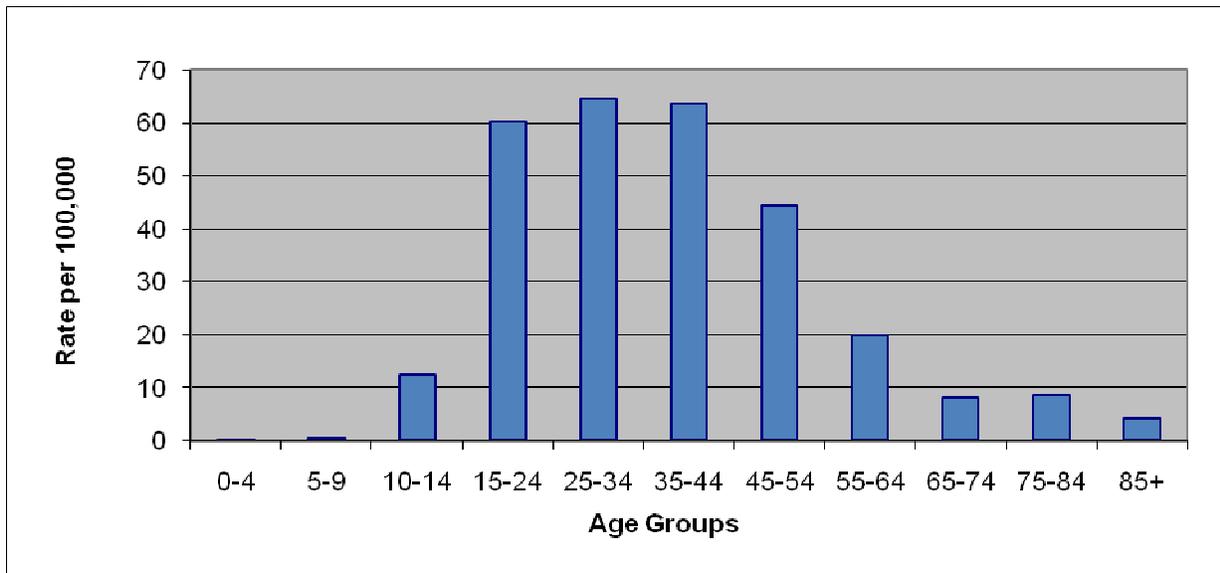
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 14: Self-Inflicted/Suicide Inpatient Hospital Admissions, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 15: Self-Inflicted/Suicide Inpatient Hospital Admission Rates, Age-Specific, Indiana, 2003-2006



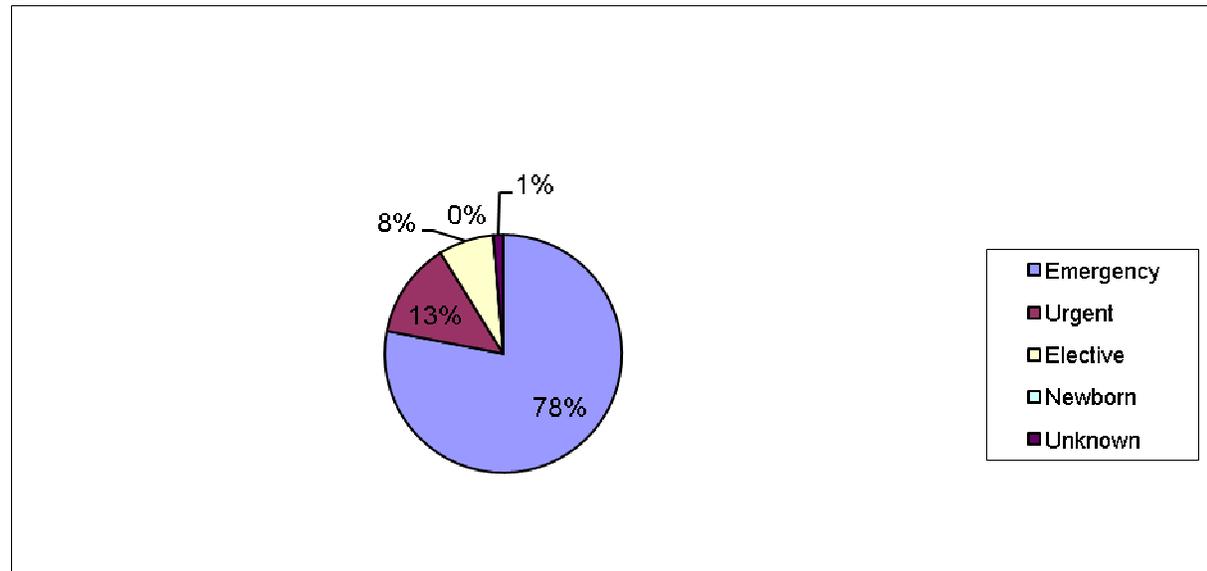
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 5: Self-Inflicted/Suicide Inpatient Hospital Admissions and Rates Age-Specific, Indiana, 2003-2006

Age Groups	2003		2004		2005		2006	
	Injuries	Age-Specific Rates						
0-4	1	U	0	U	1	U	0	U
5-9	1	U	5	U	0	U	0	U
10-14	54	11.6	72	15.6	69	15.1	29	6.6
15-24	550	60.9	578	64.1	535	59.6	496	55.6
25-34	523	64.1	528	63.9	555	66.5	539	63.4
35-44	572	62.4	596	65.7	584	65.0	541	60.5
45-54	340	39.1	398	44.9	406	45.1	445	48.2
55-64	93	15.7	141	23.0	116	18.2	148	22.1
65-74	38	9.8	25	6.4	28	7.2	33	8.3
75-84	21	7.6	22	7.9	28	10.0	23	8.4
85+	4	U	5	U	5	U	4	U
Total	2,197		2,370		2,327		2,258	

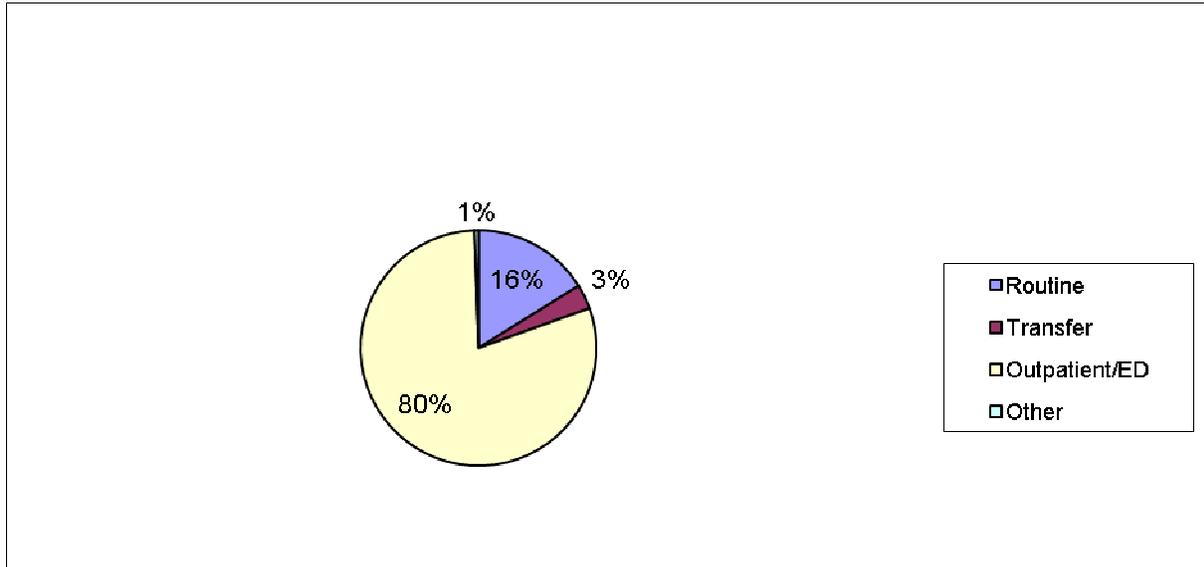
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 16: Self-Inflicted/Suicide Inpatient Hospital Admissions by Type, Indiana, 2003-2006



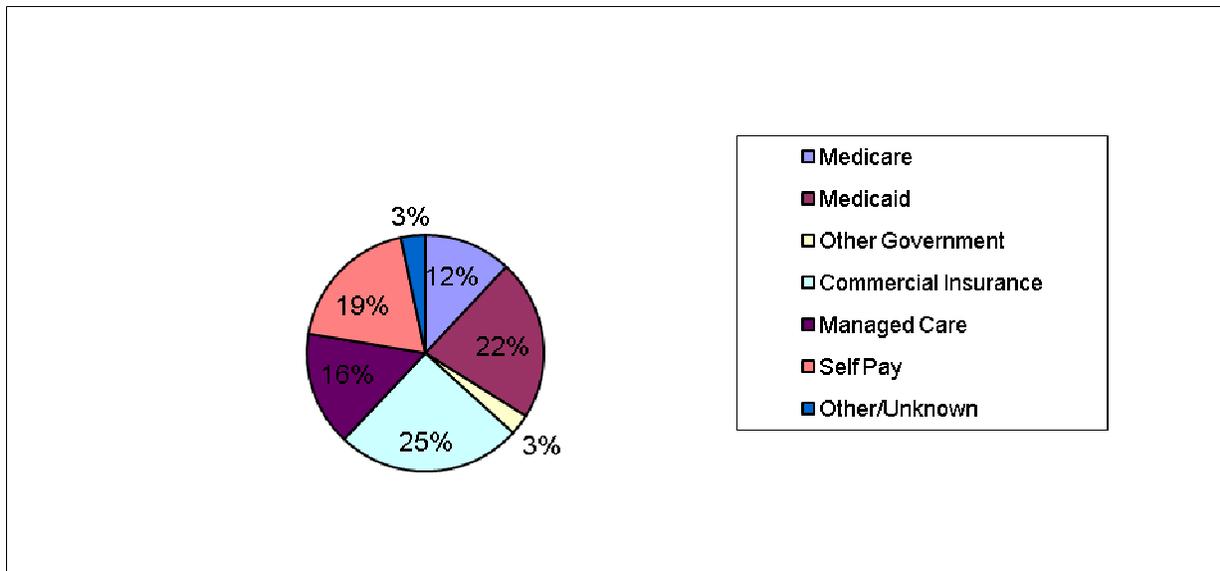
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 17: Self-Inflicted/Suicide Inpatient Hospital Admissions by Source, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 18: Self-Inflicted/Suicide Inpatient Hospital Admissions by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Hospital Outpatient/Emergency Department Data

During 2003 and 2006, there were 1,375,552 outpatient/emergency department (ED) visits with a primary diagnosis for injury or poisoning (ICD-9CM codes 800-999). Based on the data with valid E-codes, suicide/self-inflicted injury accounted for approximately 0.9% (12,776 visits) of total outpatient of injury/poisoning outpatient/ED visits with an injury rate (combined 2003-2006 rate) of 51.4 per 100,000. There were 2,375 suicide/self-inflicted injuries in 2003, 2,981 injuries in 2004, 3,686 injuries in 2005, and 3,734 injuries in 2006. Figure 19 shows the suicide/self-inflicted age-adjusted rates for the four-year period. The highest injury rate was in 2006 with 59.8 per 100,000, and the lowest rate was 2003 with 38.4 per 100,000.

The main causes of self-inflicted injury/suicide visits to the outpatient/ED were poisoning and cuts. Poisoning accounted for 69.3% of all outpatient/ED visits (8,860/12,776) and cuts accounted for 23.4% of all visits (2,994/12,776).

Of those who visited an outpatient/ED, 40.2% (5,140/12,776) were male and 62.1% (7,636/12,776) were female. When comparing rates, females were 1.5 times more likely to be visiting the ED due to a suicide/self-inflicted injury than males (62.1 per 100,000 compared to 41.0 per 100,000) Table 7 shows the number of hospital outpatient/ED visits by gender/sex for each year, and Figure 20 shows the rates by gender/sex for each year.

The majority (82.0% or 10,482/12,776) of the hospital outpatient/ED visits were white Indiana residents (Figure 21). Whites had the highest hospital outpatient/ED visit rates due to self-inflicted injuries (48.1 per 100,000) for the entire time period. Comparatively, the overall injury rate for Blacks was 31.0 per 100,000. The self-inflicted outpatient/ED visit rate was highest in 2006 for whites (54.9 per 100,000) and has been increasing since 2003. The death rates for blacks has also been increasing since 2003 and the highest rate was in 2006 (37.1 per 100,000). Table 8 shows the total number of hospital outpatient/ED visits by race, and Figure 22 shows the hospital outpatient/ED visit rates by year.

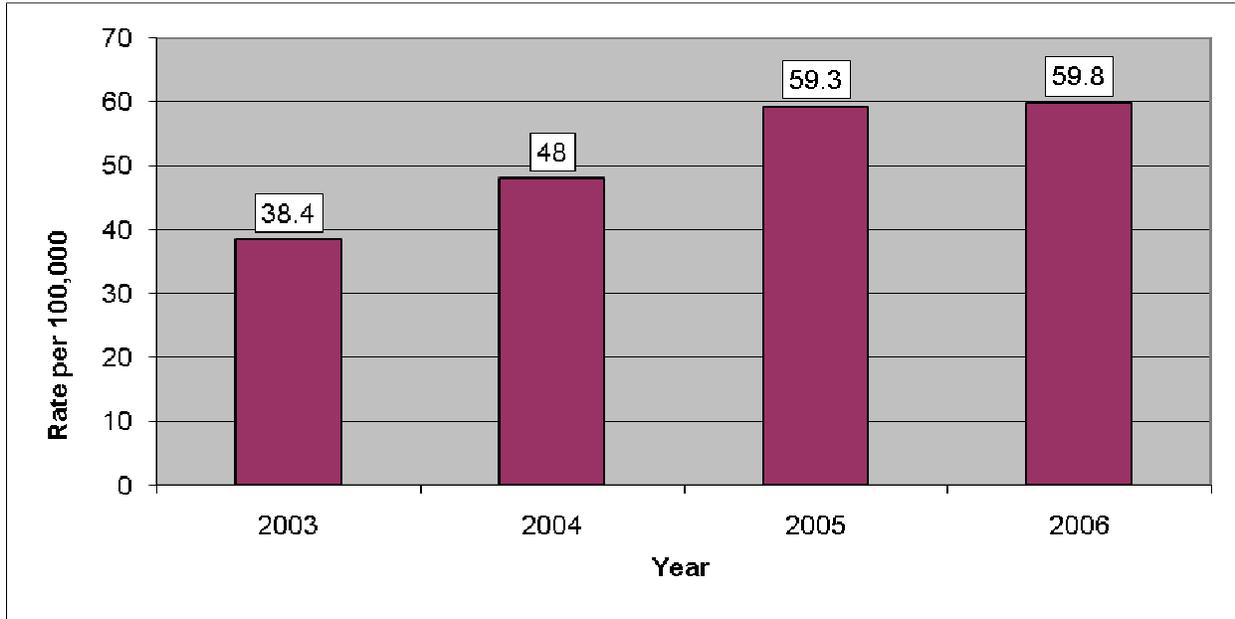
With 6251 self-inflicted injuries and an average injury rate of 58.3 per 100,000, white females had the highest number and rate from self-inflicted injury/suicide compared to all other race/ethnicity and gender/sex categories (Figure 23). White males had the second highest age-adjusted rate (38.4 per 100,000). All groups had increases in the age-adjusted rates from year to year. The only exception was seen in black males where there was a decrease from 2005-2006. Figure 24 shows the self-inflicted outpatient/ED visit rate for each category broken out by year.

During 2003-2006, 15-24 year olds had the highest age-specific rate of outpatient/ED visits due to suicide/self-inflicted injury (135.4 per 100,000). The lowest stable age-specific rate of hospital outpatient/ED visits due to suicide/self-inflicted injury was for those 5-9 years of age (0.8 per 100,000). Figure 25 shows the actual number of hospital admissions for each age group, while Figure 26 shows the age-specific rate for each age group.

Between 2003 and 2006, approximately 0.1% (66/12,776) of all patients who visited an outpatient/ED facility due to suicide/self-inflicted injury died. The total charges for all ages injured due to assault and seen in the outpatient/ED were \$26 million. The mean and median total

charges for all ages due to suicide/self-inflicted injury were \$2,030.57 and \$1,597.00 with a range of \$0–\$48,774.00. Of those who visited an outpatient/ED facility, 28.2% (3,599/12,776) had commercial insurance (Figure 27).

Figure 19: Self-Inflicted/Suicide Outpatient/ED Visit Rates, Age-Adjusted, Indiana, 2003-2006



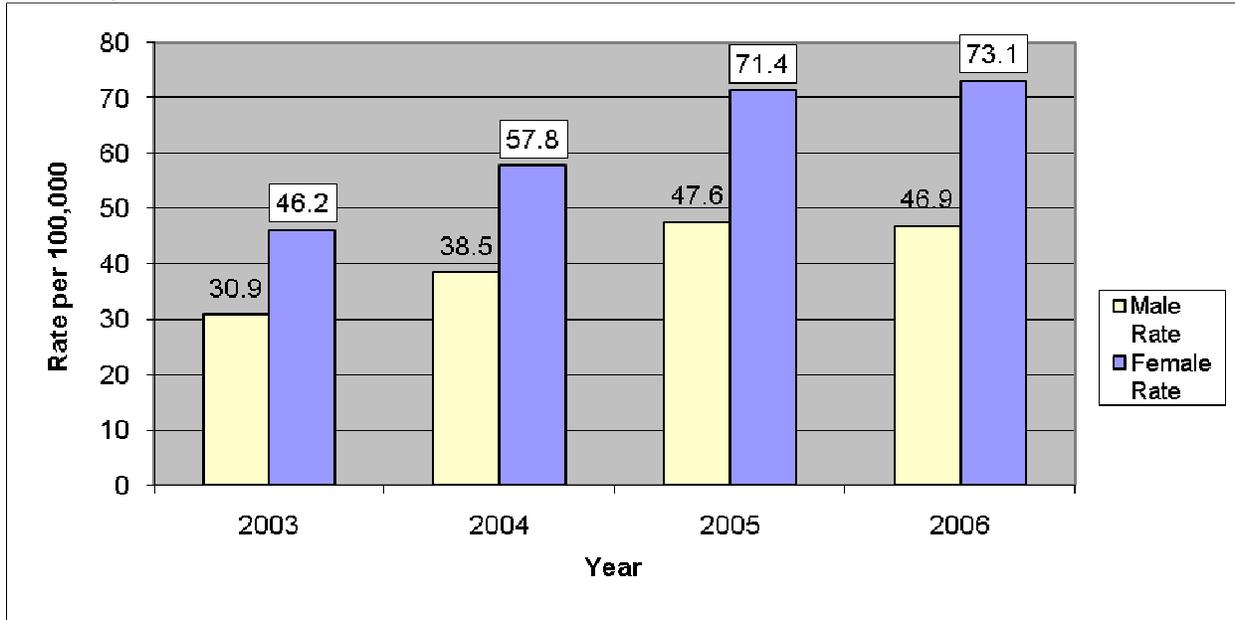
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Table 7: Self-Inflicted/Suicide Outpatient/ED Visits by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	960	1,415
2004	1,201	1,780
2005	1,495	2,191
2006	1,484	2,250
Total	5,140	7,636

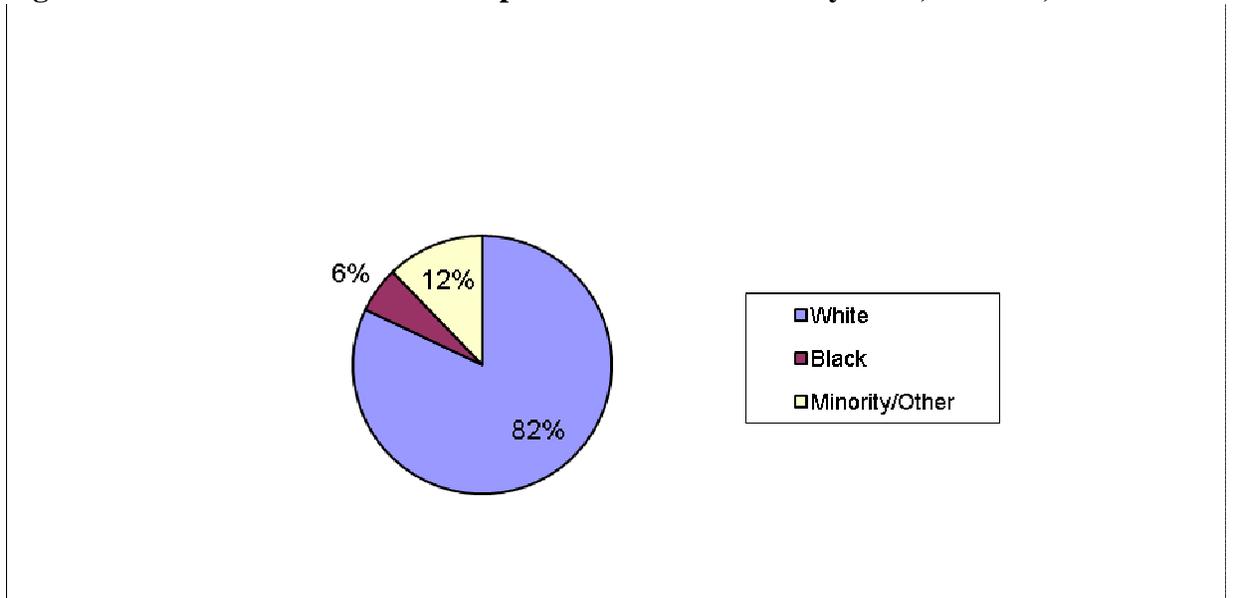
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 20: Self-Inflicted/Suicide Outpatient/ED Visit Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 21: Self-Inflicted/Suicide Outpatient/ED Visit Rates by Race, Indiana, 2003-2006



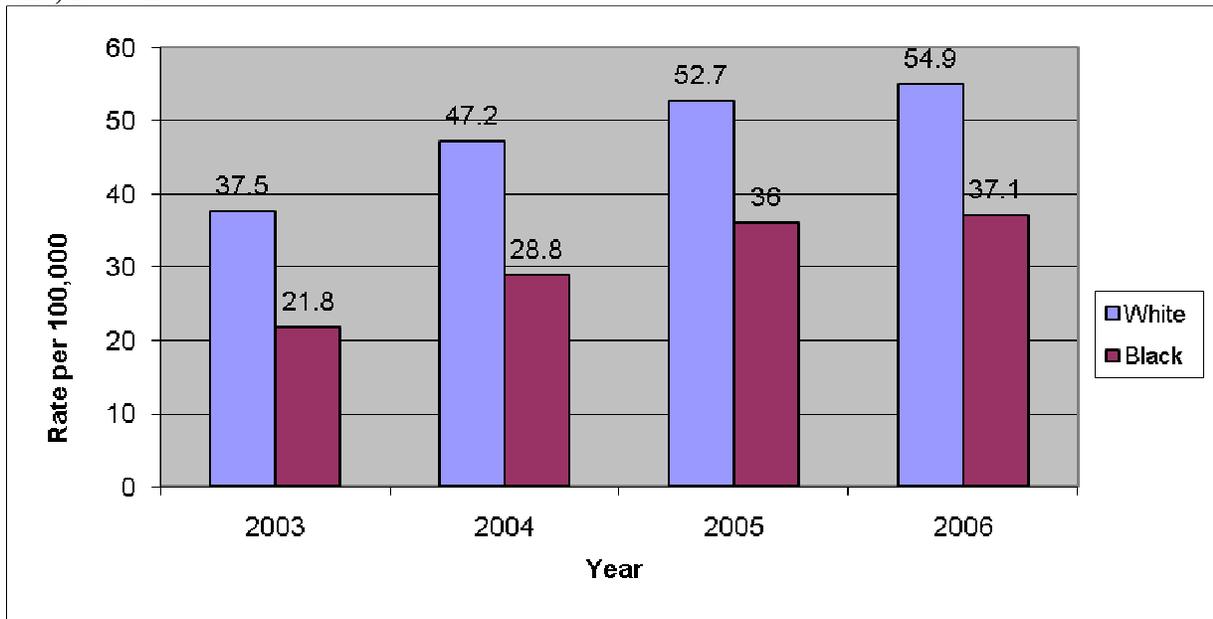
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Table 8: Self-Inflicted/Suicide Outpatient/ED Visits by Race, Indiana, 2003-2006

Year	White	Black
2003	2,043	125
2004	2,575	169
2005	2,869	216
2006	2,995	225
Total	10,482	735

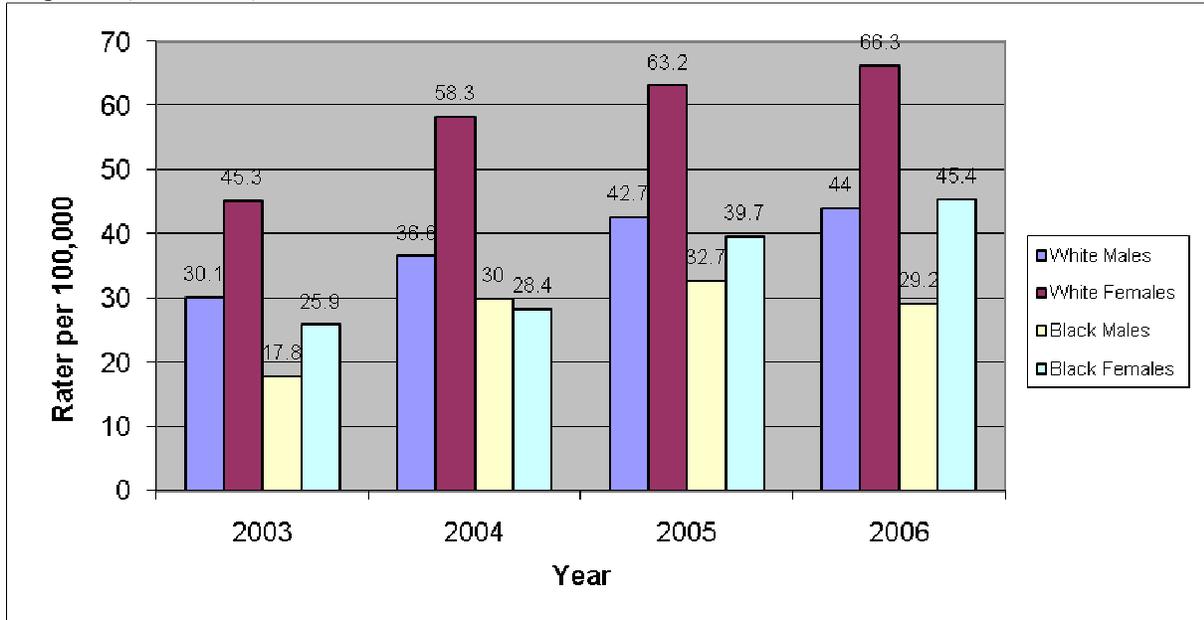
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 22: Self-Inflicted/Suicide Outpatient/ED Visit Rates by Race, Age-Adjusted, Indiana, 2003-2006



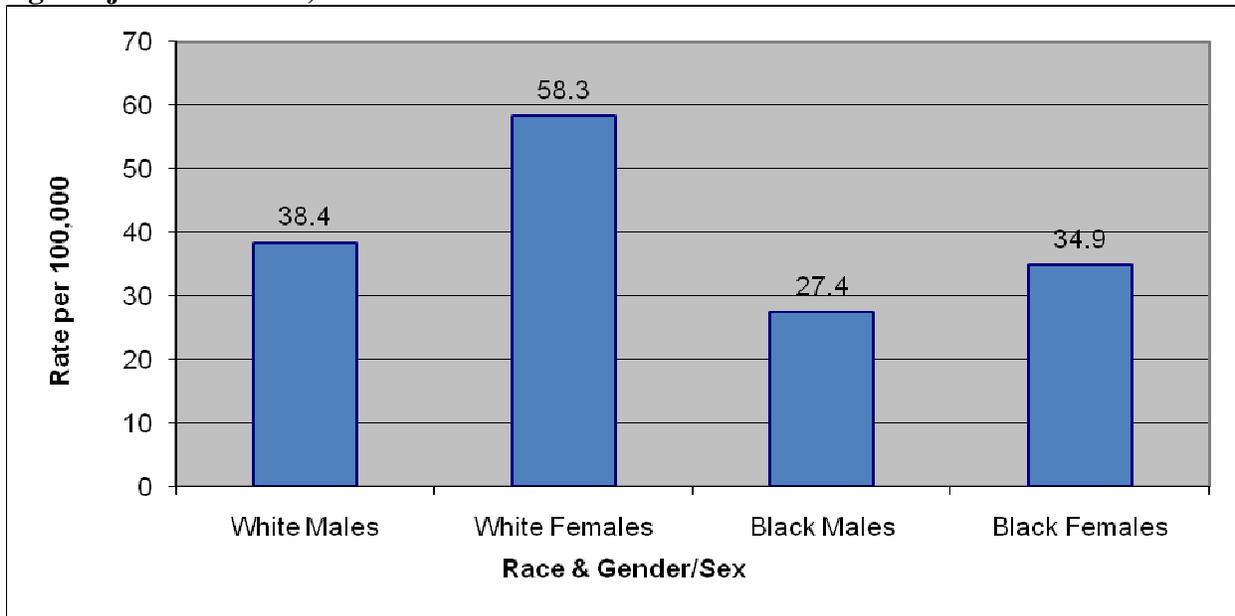
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 23: Self-Inflicted/Suicide Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



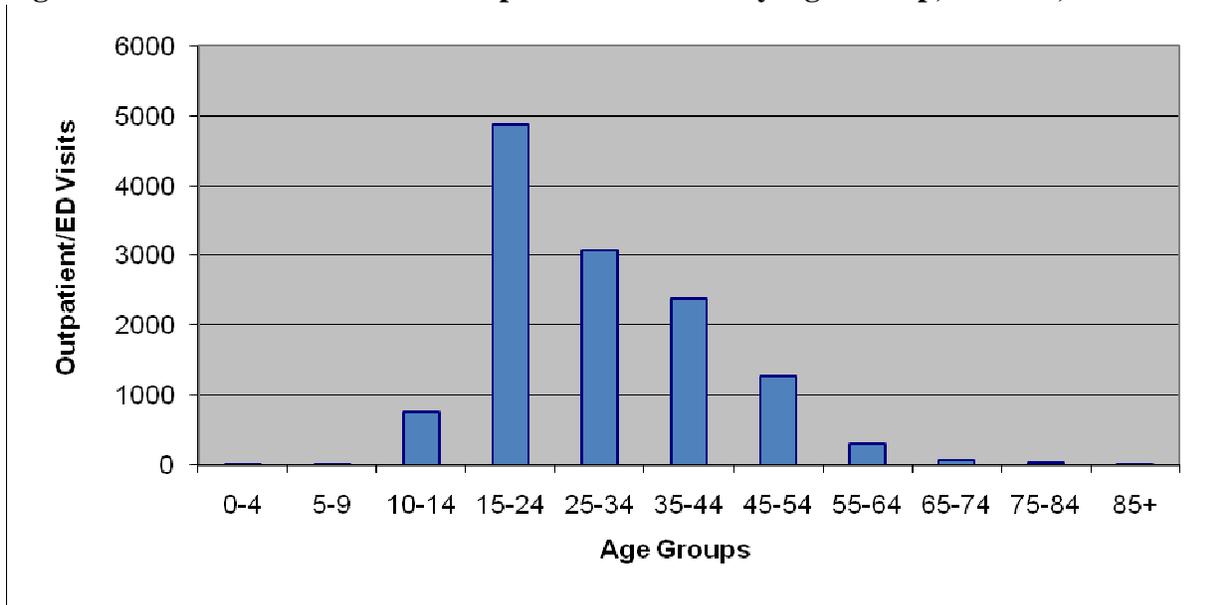
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 24: Mean Self-Inflicted/Suicide Outpatient/ED Visit Rates by Race and Gender, Age-Adjusted Indiana, 2003-2006



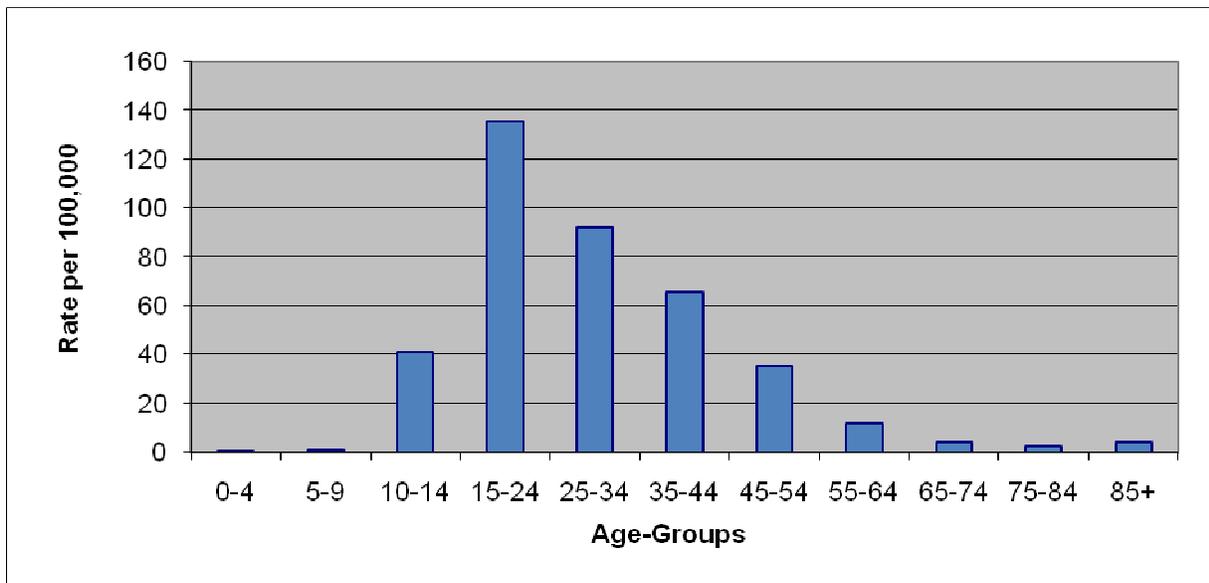
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 25: Self-Inflicted/Suicide Outpatient/ED Visits by Age-Group, Indiana, 2003-2006



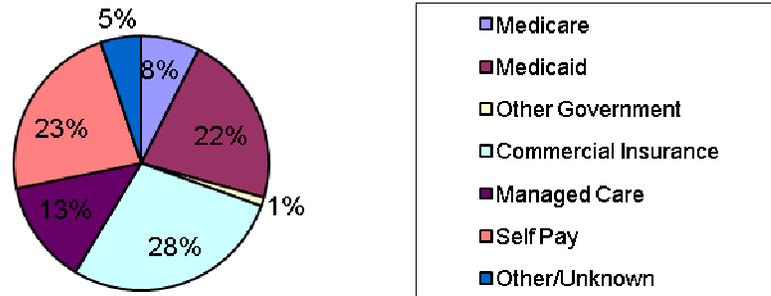
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 26: Self-Inflicted/Suicide Outpatient/ED Visit Rates, Age-Specific, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 27: Self-Inflicted/Suicide Outpatient/ED Visits by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Risk Behaviors and Prevention

Risk Factors

Risk and protective factors and their interactions form the empirical base for suicide prevention. Variations in suicide rates between age, gender, ethnicity, and culture provide opportunities to understand the different factors that affect these groups. Risk factors involve genetic, neurobiological, psychological, social, and cultural characteristics and environmental factors.⁽⁵⁾

No single factor has gained acceptance as a universal cause of suicide. Some risk factors associated with a higher incidence of suicide include, but are not limited to, depression, mental illness, schizophrenia, drug and/or chemical dependency, conduct disorders (in adolescence), and chronic disease. Research findings from the American Association of Suicidology indicate mental health diagnoses are generally associated with a higher rate of suicide. Psychological autopsy studies reflect that more than 90% of completed suicides had one or more mental health disorders including substance abuse.⁽⁶⁾

Adults

The risk of suicide is increased by more than 50% in depressed individuals, and aggregated research shows that about 60% of suicides were completed by depressed individuals.⁽⁶⁾ The Behavioral Risk Factor Surveillance System (BRFSS) is the world's largest, on-going telephone health survey system, tracking health conditions and risk behaviors for individuals 18 and older

in the U.S. The BRFSS has been conducted yearly since 1984. The 2006 Indiana BRFSS Anxiety and Depression module showed that 18.5% of Hoosiers felt down, depressed or hopeless for 1-3 days in the past two weeks, 4.7% felt that way for 4-6 days, 3.3% for 7-10 days, and 3.5% for 11-14 days. However, the majority (70%) indicated that they did not feel down, depressed, or hopeless at all in the past two weeks.⁽⁷⁾

When asked “Over the last two weeks, how many days have you felt bad about yourself or that you were a failure or had let yourself or your family down?,” 11.8% reported between 1-3 days, 2.6% reported between 4-6 days, 2.9% reported between 7-10 days, and 3.3% reported 11-14 days. The majority (79.3%) of the population said they did not feel that way about themselves. Of the surveyed population, 13.8% indicated that a doctor/healthcare provider told them they had an anxiety disorder (including acute stress disorder, anxiety, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, phobia, posttraumatic stress disorder, or social anxiety disorder), and 19.8% had a doctor/healthcare provider tell them they had a depressive disorder, including depression, major depression, dysthymia, or minor depression.⁽⁷⁾

According to the 2006 Indiana BRFSS, 36.9% of individuals reported poor mental health, meaning they identified themselves as having stress, depression, and/or problems with emotions, for at least one day in the past 30 days. Females (56.2%) reported having more days of poor mental health than males (43.8%). Thirty-five percent of white respondents said they experienced poor mental health, 34.5% of blacks reported as such, 35.3% of those identified as “other” reported poor mental health, 58.1% of those considering themselves Multiracial (reporting two or more races) reported as such, and 27% of Hispanics reported poor mental health. Of respondents, 5.8% (44.8% males and 55.2% females) said they experienced poor mental health every day.⁽⁸⁾ The elderly are particularly vulnerable to depression (22.5% of those 65 years and older reported having poor mental health)⁽⁷⁾, accounting for one of the leading causes of suicide among that population.⁽⁶⁾ Most elderly suicide victims are seen by their primary care provider a few weeks prior to their suicide attempt or completion but are not screened for depression.⁽¹⁾

A relationship between alcohol and suicide exists such that the risk of suicide in alcoholics is 50-70% higher than for the general population. According to the 2006 Indiana BRFSS survey, 21% of males and 9.8% of females reported that they engage in binge drinking. Binge drinking is defined for males as having five or more drinks on one occasion in the past 30 days and for females it is having four or more drinks on one occasion in the past 30 days. Also, 5.8% of males reported heavy alcohol consumption (more than two drinks per day), and 4% of females reported heavy alcohol use. Although the above statistics are not a measure of alcoholism, they do describe alcohol use in general among Hoosiers.⁽⁷⁾

Other risk factors for suicide include social isolation, being divorced, separated, or widowed and suffering from a physical illness.⁽⁶⁾ When asked how often people get the social and emotional support they need, 47% responded “always,” 33.5% responded “usually,” 11.7% responded “sometimes,” 3.5% responded “rarely,” and 4.3% said “never.” The elderly are especially susceptible to depression due to deteriorating physical health and loss of friends and/or spouse. Of those aged 65-74, 15.8% did not have good physical health 1-6 days in the previous month, 11.1% did not have good physical health 7-29 days of the previous month, and 7.8% did not have good physical health every day. Statistics were similar for those 75 years and older (19.6%,

12.8%, and 12.4%). Of adults 65-74, 19.9% reported their general health as fair, and 7.5% reported it as poor. Twenty-four percent of adults over 75 years of age reported their general health as fair, and 9.7% reported it as poor.⁽⁷⁾

Youth

Youth risk factors include family history of suicide, suicide attempts, or mental illness, male gender, history of physical or sexual abuse, personal mental health problems and gay or bisexual orientation.⁽⁹⁾ Also, feelings of hopelessness are found to be predictive of suicide.⁽⁶⁾ The 2007 Indiana Youth Risk Behavior Survey (YRBS) indicates that 27.5% of high school students reported feeling sad or hopeless one or more times during the past 12 months. A prior suicide attempt is also a risk factor for eventual suicide completion. According to the YRBS, 7.2% of Indiana high school students reported that they attempted suicide in the previous 12 months which is down and statistically significant from 9.6% in 2005. More than 15% of 9th through 12th grade Hoosiers seriously considered attempting suicide during the past 12 months, and 2007 data shows that 11.7% of the students had a plan for how they would attempt suicide (as compared to 14.8% in 2005 (a significant decrease)). Also, 36.2% of females reported feeling sad or hopeless almost every day for two weeks or more.⁽⁸⁾

Protective Factors

Protective factors play an important role in understanding and preventing suicide. Protective factors can include an individual's genetic or neurobiological makeup, attitudinal and behavior characteristics, and environmental factors. Understanding the measures or factors that safeguard against suicide is essential to preventing suicide. Such factors include effective and appropriate clinical care for mental, physical, and substance abuse disorders, easy access to a variety of clinical interventions and support for seeking help, restricted access to highly lethal methods of suicide, and supportive family and community. Other protective factors include support from ongoing medical and mental health care relationships, skills in problem solving, conflict resolution, and nonviolent handling of disputes, and cultural/religious beliefs that discourage suicide and value life

Prevention

Prevention starts with parents and caregivers. Below are a few strategies to help prevent a child, teenager, or friend attempting suicide.⁽¹⁾

- Know the warning signs of suicide. Warning signs include:
 - A previous suicide attempt.
 - Current talk of suicide or making a plan.
 - A strong wish to die or a preoccupation with death.
 - Giving away prized possessions.
 - Signs of depression (such as moodiness, hopelessness, or withdrawal).

- Warning signs (cont....)
 - Increased alcohol and/or other drug use.
 - Hinting at not being around in the future.
- Know what to do if you observe a warning sign.
 - Show you care.
 - Ask the question, "Are you thinking about suicide?"
 - Get help by contacting someone with professional skills to provide the help.
 - Remove any firearms from the home.
- Talk to children about suicide and depression. Chances are teens will talk to their friends before talking to a parent or caregiver about their feelings. Teens should know how to respond.
- If a child is exhibiting warning signs of suicide, make sure that they do not have access to firearms.

Prevention can also occur at the community level. Some examples of strategies are as follows:

- Educate all youth and caregivers about suicide risk, and how to respond.
- Create community coalitions to identify and support children at risk of suicide and their families.
- Promote broad distribution of information about factors related to youth suicide and depression.
- Educate teens about the handling of disputes in a nonviolent manner, conflict resolution, and problem solving.
- Promote awareness of suicide intervention resources, such as mental health centers, counseling centers, and hotlines.
- Promote screening for depression of children and adolescents in a variety of settings.
- Develop and use programs that support children and adolescents after school.
- Train gatekeepers in screening, crisis intervention, and referral services.
- Create community coalitions that bring together law enforcement, public health, child protective services, survivor advocates, parent groups, firearm owners, and others to develop, implement, and monitor a local plan to reduce access to guns.
- Ensure accessible and effective clinical care for mental, physical, and substance abuse disorders.
- Educate media about suicide prevention and use the media to educate a broader audience.
- Develop a plan for what should be done after a suicide occurs to decrease the chances of additional suicides.
- Support bullying prevention efforts.

Conclusion

Injuries and deaths caused by suicide remain a serious public health problem. Suicide continues to be a serious public health issue for the nation and for Indiana. Suicide took the lives of 735 Hoosiers at a rate of 11.9 per 100,000 population during 2003-2006. Between 2003 and 2006, suicide was the 11th leading cause of death for Indiana residents, claiming 2,972 lives with an age-adjusted rate of 11.9 per 100,000 population. Based on hospital discharge data for the four-year period, suicide accounted for approximately 10.5% of all inpatient hospitalizations and 0.9% of all outpatient/ED visits. The economic burden of suicide injuries is also enormous. The total charges during 2003-2006 for inpatient hospitalizations and outpatient/ED visits were \$108 million. The medical costs alone do not even 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 specific groups, such as youth in order to reduce the burden on Indiana residents and the state's economy.

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HOMICIDE/ASSAULT IN INDIANA

Table of Contents

Index of Figures and Tables.....	197-198
Highlights.....	199
Introduction.....	200
Homicide/Assault Deaths in Indiana.....	200-206
Homicide/Assault Injuries in Indiana.....	206-221
Risk Behaviors and Prevention.....	221-222
Conclusion.....	222
References.....	223

Index of Figures and Tables

- Figure 1: Homicide Death Rates, Age-Adjusted, Indiana, 2003-2006
Figure 2: Homicide Death Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 3: Homicide Death Rates by Race, Age-Adjusted, Indiana, 2003-2006
Figure 4: Homicide Death Rates by Ethnicity, Age-Adjusted, Indiana, 2003-2006
Figure 5: Homicide Death Rates by Race/Ethnicity and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 6: Mean Homicide Death Rates by Race/Ethnicity and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 7: Homicide Death Rates, Age-Specific, Indiana, 2003-2006

Figure 8: Homicide/Assault Inpatient Hospital Admission Rates, Age-Adjusted, Indiana, 2003-2006
Figure 9: Homicide/Assault Inpatient Hospital Admission Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 10: Homicide/Assault Inpatient Hospital Admissions by Race, Indiana, 2003-2006
Figure 11: Homicide/Assault Inpatient Hospital Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006
Figure 12: Mean Homicide/Assault Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 13: Homicide/Assault Inpatient Hospital Admission Rates by Race and Gender, Age-Adjusted, Indiana, 2003-2006
Figure 14: Homicide/Assault Inpatient Hospital Admissions by Age, Indiana, 2003-2006
Figure 15: Homicide/Assault Inpatient Hospital Admission Rates, Age-Specific, Indiana, 2003-2006
Figure 16: Homicide/Assault Inpatient Hospital Admissions by Type, Indiana, 2003-2006
Figure 17: Homicide/Assault Inpatient Hospital Admissions by Source, Indiana, 2003-2006
Figure 18: Homicide/Assault Inpatient Hospital Admissions by Payor, Indiana, 2003-2006
Figure 19: Homicide/Assault Outpatient/ED Visit Rates, Age-Adjusted, Indiana, 2003-2006
Figure 20: Homicide/Assault Outpatient/ED Visit Rates by Gender, Age-Adjusted, Indiana, 2003-2006
Figure 21: Homicide/Assault Outpatient/ED Visits by Race, Indiana, 2003-2006
Figure 22: Homicide/Assault Outpatient/ED Visit Rates by Race, Age-Adjusted, Indiana, 2003-2006
Figure 23: Homicide/Assault Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 24: Mean Homicide/Assault Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006
Figure 25: Homicide/Assault Outpatient/ED Visits by Age-Group, Indiana, 2003-2006
Figure 26: Homicide/Assault Outpatient/ED Visit Rates, Age-Specific, Indiana, 2003-2006
Figure 27: Homicide/Assault Outpatient/ED Visits by Payor, Indiana, 2003-2006

Table 1: Homicide Deaths by Gender/Sex, Indiana, 2003-2006
Table 2: Homicide Deaths by Race/Ethnicity, Indiana, 2003-2006

Table 3: Homicide Deaths by Race/Ethnicity and Gender/Sex, Indiana, 2003-2006

Table 4: Homicide Deaths and Rates, Age-Specific, Indiana, 2003-2006

Table 5: Homicide/Assault Inpatient Hospital Admissions by Gender/Sex, Indiana, 2003-2006

Table 6: Homicide/Assault Inpatient Hospital Admissions by Race, Indiana, 2003-2006

Table 7: Homicide/Assault Inpatient Hospital Admissions and Rates, Age-Specific, Indiana, 2003-2006

Table 8: Homicide/Assault Outpatient/ED Visits by Gender/Sex, Indiana, 2003-2006

Table 9: Homicide/Assault Outpatient/ED Visits by Race, Indiana, 2003-2006

Highlights for Homicide/Assault

Mortality, 2003-2006⁽²⁾

- Homicide was the 13th leading cause of death for males and the 20th leading cause of death for females for Indiana residents, claiming a total of 1,419 lives.
- Males were 2.9 times more likely to die from homicide than females (8.5 per 100,000 vs. 2.9 per 100,000).
- Between 2003 and 2006, black males had the highest rate of death due to homicide (55.0 per 100,000) than all other race/gender categories.
- Black males were nearly 14 times more likely to die than white males from homicide.
- Individuals 15-24 and 25-34 years of age had the highest age-adjusted homicide rate (10.1 per 100,000 and 10.4 per 100,000) of all ages.

Inpatient Admissions for Assault Injuries, 2003-2006⁽³⁾

- Assault accounted for approximately 3.7% (3,205 admissions) of all injury/poisoning hospital inpatient admissions with an overall rate of 12.9 per 100,000.
- Males were 4.7 times more likely to be admitted to the hospital following an assault than females (21.2 per 100,000 compared to 4.5 per 100,000).
- Blacks were 8.7 times more likely than whites to be admitted to the hospital due to assault (59.3 per 100,000 versus 6.9 per 100,000).
- The age group with the highest hospital admission rate due to assault was 15-24 year olds (25.7 per 100,000).

Outpatient/Emergency Department (ED) Visits for Assault, 2003-2006⁽³⁾

- Assault accounted for approximately 3.8% (51,994 visits) of all hospital outpatient/ED visits.
- Males were 1.5 times more likely to be seen in an outpatient/ED facility following an assault than females (247.6 per 100,000 compared to 169.9 per 100,000).
- Blacks were more likely than whites to visit the outpatient/ED (471.0 per 100,000 versus 161.2 per 100,000).
- Those 15-24 years of age had the highest rate of outpatient/ED visits due to an assault compared to all other age groups (549.6 per 100,000).

Risk Behavior and Youth⁽⁴⁾

- In 2007, 6.9% of high school students reported having carried a weapon on school property within the previous 30 days.
- 9.6% of Indiana high school students were threatened or injured with a weapon on school property one or more times during the past 12 months.
- The percentage of females that were hit, slapped or physically hurt by their boy-friends/girlfriends during the past 12 months decreased from 13.5% in 2005 to 10.8% in 2007.
- The percentage of students who carried a gun on one or more of the past 30 days increased from 5.8% in 2005 to 9.1% in 2007 (statistically significant).

Introduction

Violence is a significant problem in the United States (U.S.). From infants to the elderly, it affects people in all stages of life. In 2005, there were 18,124 people who died as a result of homicide and 32,637 took their own life.⁽¹⁾ The number of violent deaths tells only part of the story. Many more survive violence and are left with permanent physical and emotional scars. Violence also erodes communities by reducing productivity, decreasing property values, and disrupting social services.

Homicide/Assault Deaths in Indiana

Homicide/Assault death data for this report was extracted from the Indiana State Department of Health (ISDH) mortality reports and are based off of ICD-10 codes specific to homicide/assault (X85-X09, Y87.1). The numbers of deaths differ slightly from the nationally based reporting system, the National Center for Health Statistics (NCHS). The number of Indiana deaths reported by the ISDH is lower than the numbers from NCHS, because ISDH does not always receive death certificates for Indiana residents that died out of state. However, these deaths are likely to be reported to NCHS from those out-of-state health departments, and NCHS would usually be able to assign state of residence, making the nationally based data more complete than the health department data. In addition, completeness of mortality data is dependent upon how thoroughly the death certificate is completed, which affects how a death is categorized. Another limitation is that race/ethnicity data is not accurate. Race/ethnicity is provided at the discretion of the person completing the death certificate and may not reflect how individuals would define their own race or ethnicity.⁽²⁾

In Indiana between 2003 and 2006, homicide/assault was the 13th leading cause of death for males and the 20th leading cause of death for females, with a total of 1,419 individuals dying (average of 354.8 deaths per year) for a rate of 5.7 per 100,000 population. Overall, homicide was the 16th leading cause of death during 2003-2006. There were 345 homicide/assault deaths in 2003; 330 deaths in 2004; 369 deaths in 2005; and 375 deaths in 2006. Figure 1 shows the homicide/assault age-adjusted rates for the four-year period. The highest death rate was in 2006 with 6.0 per 100,000, and the lowest rate was in 2004 with 5.3 per 100,000.

The majority of homicide/assault deaths (75.1% or 1,065/1,419) were in males. When comparing death rates, males (8.5 per 100,000) died almost three times more than females (2.9 per 100,000). Table 1 shows the number of deaths by gender/sex for each year, and Figure 2 shows the rates by gender/sex for each year.

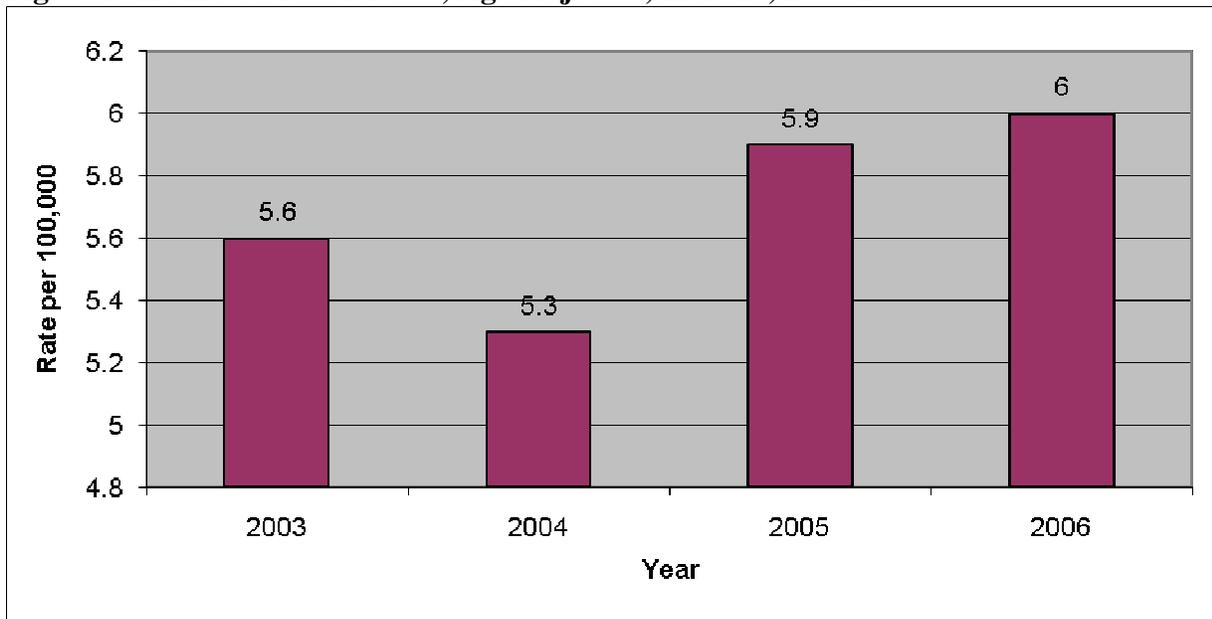
More blacks (51.7% or 734/1,419) died than whites (47.2% or 620/1,419) and individuals defined as "other" (1.1% or 15/1,419) between 2003 and 2006. The homicide/assault death rate for blacks was more than 10 times higher (31.9 per 100,000) when compared to whites (3.0 per 100,000) and more than 3 times higher compared to Hispanics (9.6 per 100,000). Table 2 shows the total deaths by race, and Figure 3 shows the death rates by year. The death rates for those categorized by "other" were unstable for all four years. When looking at ethnicity, Hispanics

had a higher death rate (9.5 per 100,000) than non-Hispanics (5.7 per 100,000). Figure 4 shows the death rates by year.

With 616 deaths and an average death rate of 55.0 per 1000,000, black males had the highest number and death rate from homicide/assault compared to all other race/ethnicity and gender/sex categories (Table 3 and Figure 5). Black males were nearly 14 times more likely to die than white males and four times more likely to die than Hispanic males. Black females had the highest homicide/assault death rates compared to white and Hispanic females. Figure 6 shows the homicide/assault death rate for each category broken out by year.

Individuals between 15-24 and 25-34 years of age had the highest homicide/assault age-specific death rates (10.1 per 100,000 and 10.4 per 100,000). See Figure 7. Children and adolescents between 5-14 years of age had the lowest rates (1.0 per 100,000 and 1.3 per 100,000). The fourth highest rate occurred in infants under 1 (5.8 per 100,000). Table 4 shows the number of homicides/assaults in each age group for each year as well as the age-specific death rate.

Figure 1: Homicide Death Rates, Age-Adjusted, Indiana, 2003-2006



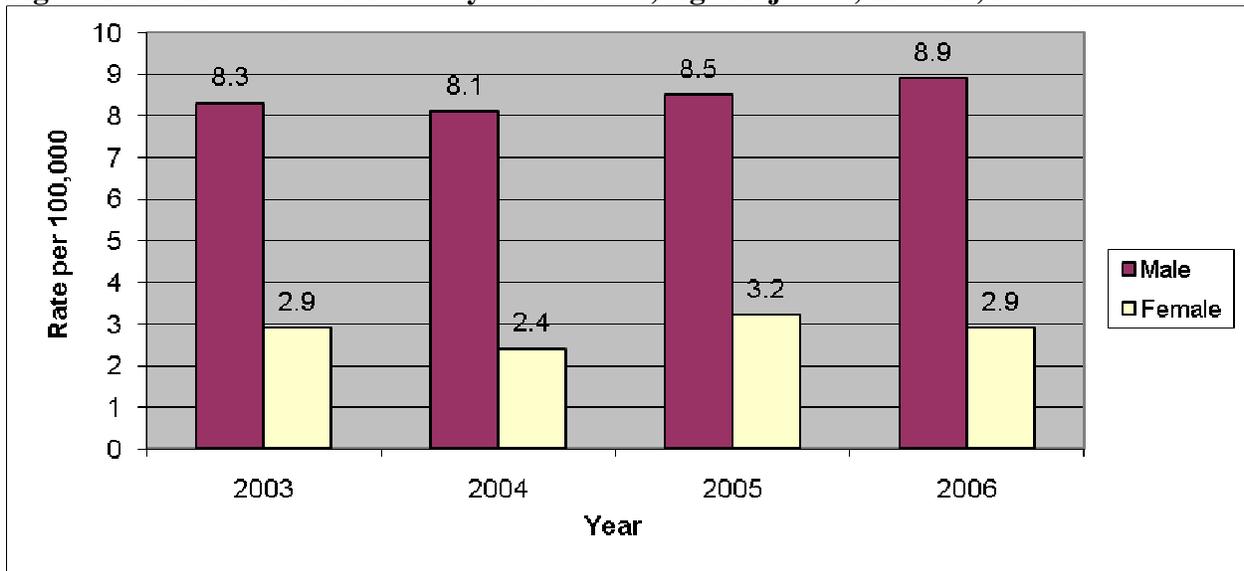
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 1: Homicide Deaths by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	257	88
2004	255	75
2005	270	99
2006	283	92
Total	1,065	354

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

Figure 2: Homicide Death Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



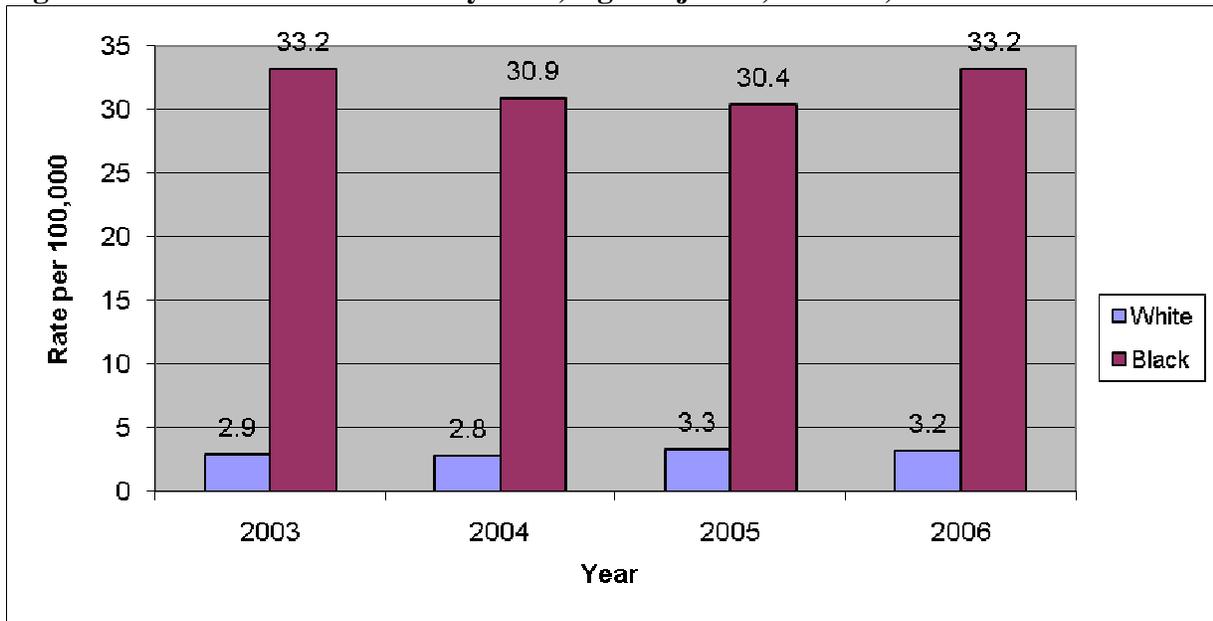
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 2: Homicide Deaths by Race/Ethnicity, Indiana, 2003-2006

Year	White	Black	Other	Hispanic	Non-Hispanic
2003	159	183	3	30	314
2004	154	175	1	23	306
2005	181	180	8	32	335
2006	176	196	3	33	342
Total	670	734	15	118	1,297

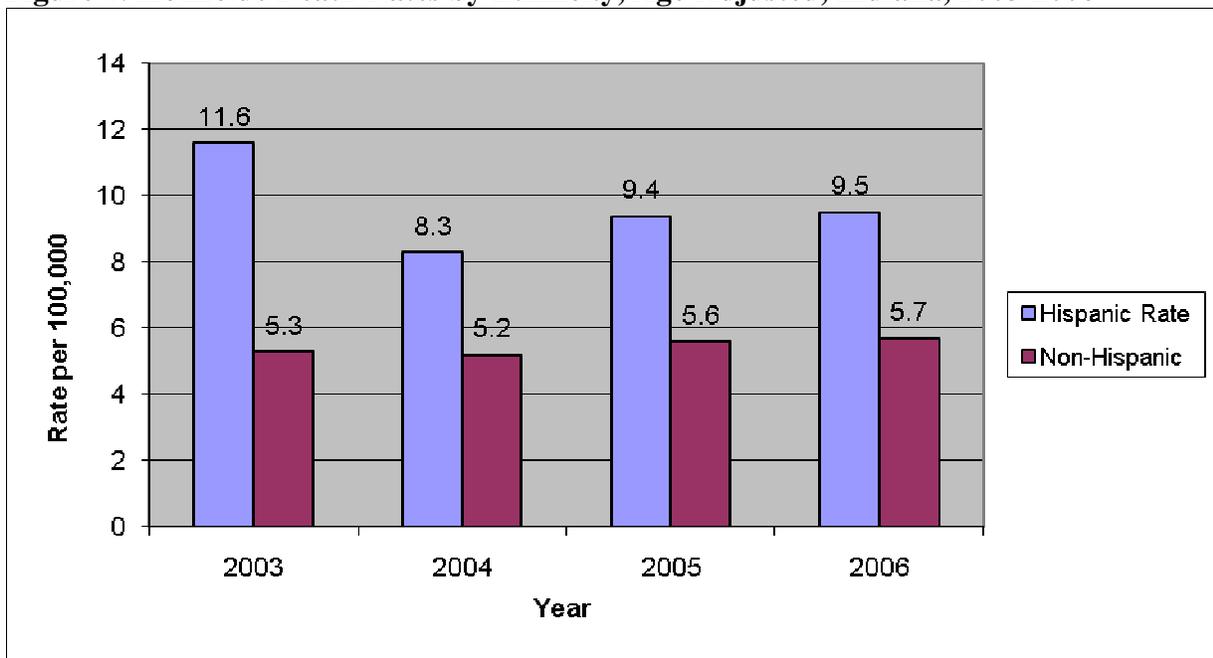
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

Figure 3: Homicide Death Rates by Race, Age-Adjusted, Indiana, 2003-2006



Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 4: Homicide Death Rates by Ethnicity, Age-Adjusted, Indiana, 2003-2006



Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

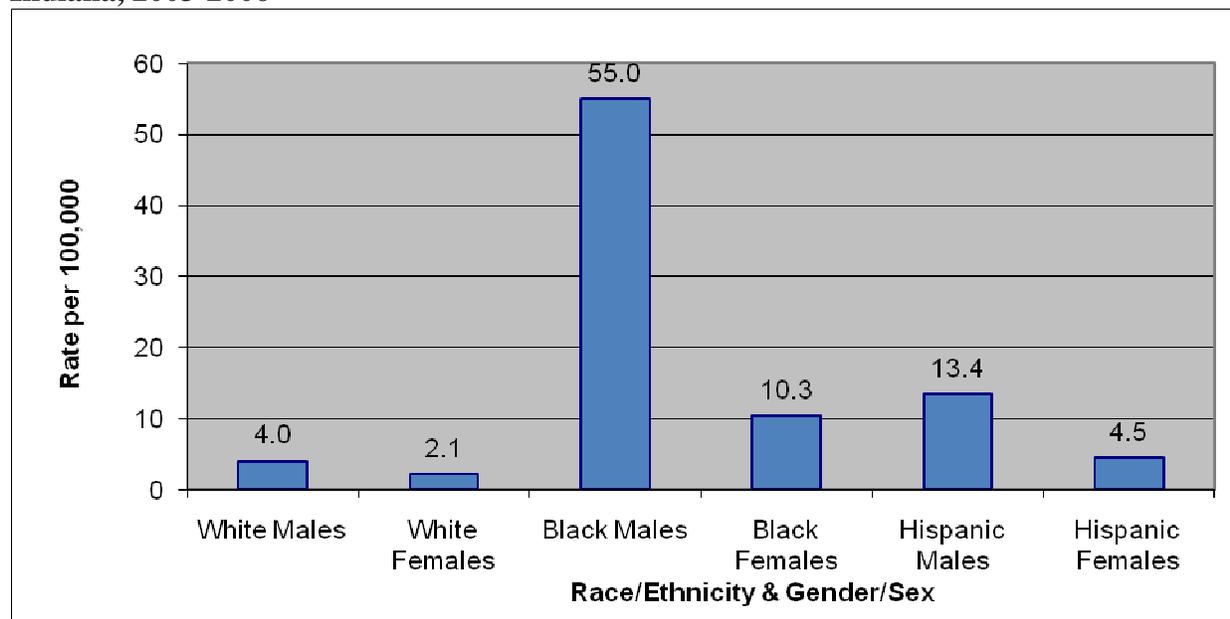
Table 3: Homicide Deaths by Race/Ethnicity and Gender/Sex, Indiana, 2003-2006

Year	White Males	White Females	Black Males	Black Females	Hispanic Males	Hispanic Females
2003	103	56	151	32	21	9
2004	104	50	151	24	20	3
2005	112	69	151	29	26	6
2006	117	59	163	33	27	6
Total	436	234	616	118	94	24

Note: The total adds up to greater than 1,419, because “Hispanic” is not a mutually exclusive category.

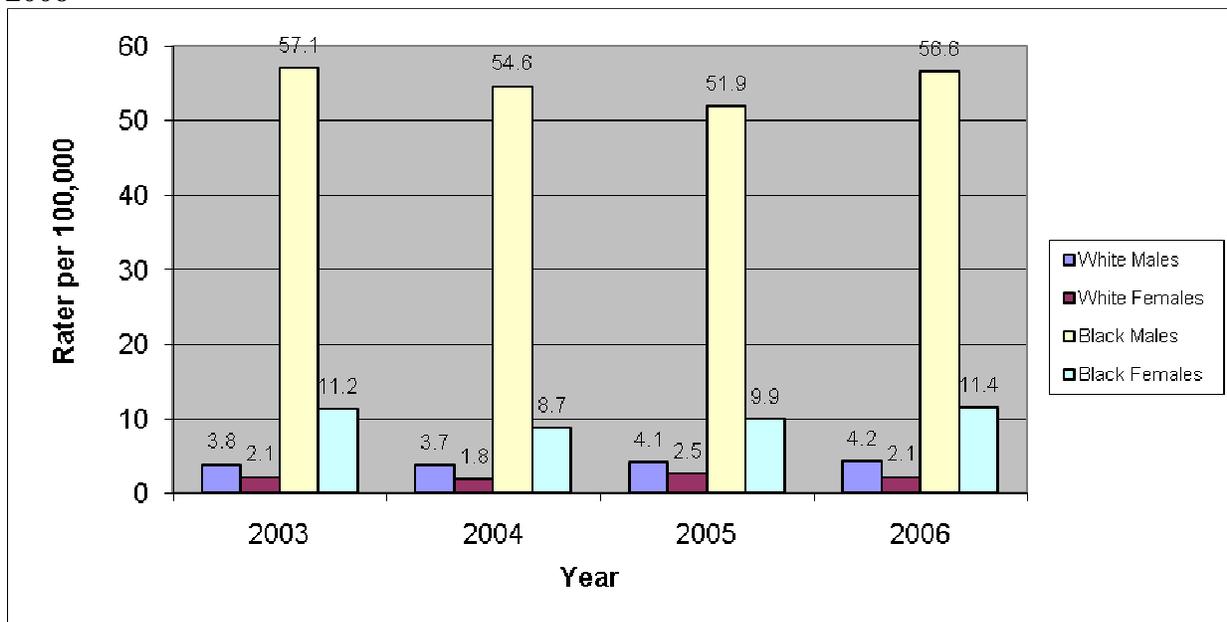
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

Figure 5: Mean Homicide Death Rates by Race/Ethnicity and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



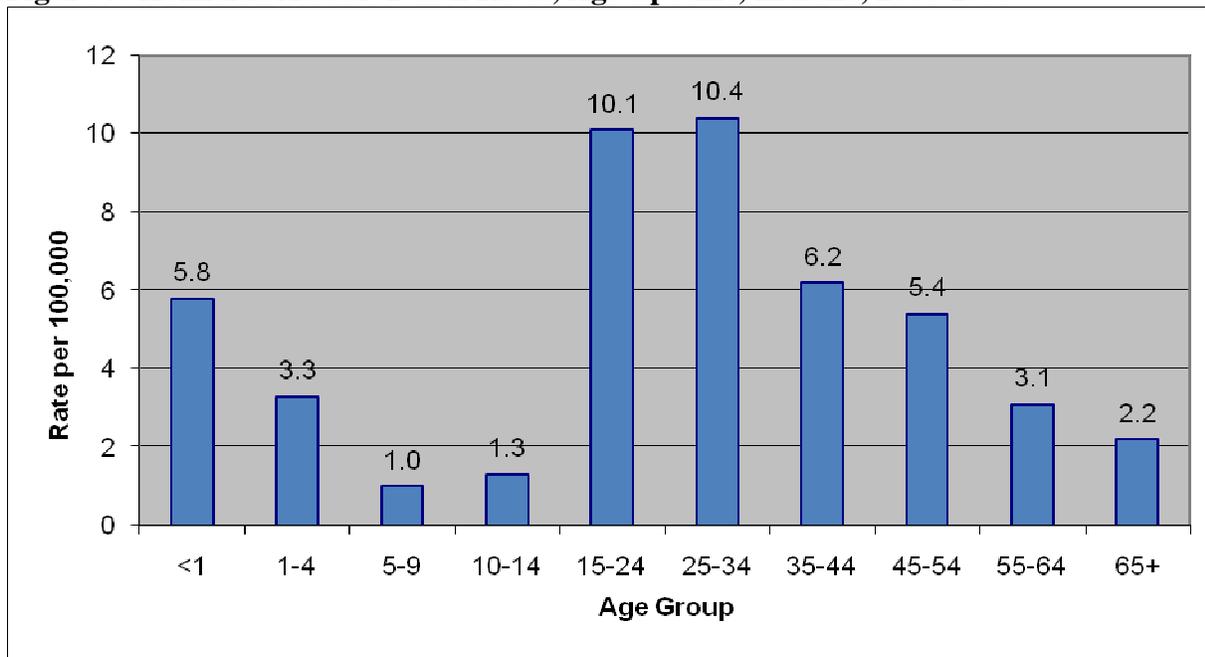
Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 6: Homicide Death Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Figure 7: Homicide/Assault Death Rates, Age-Specific, Indiana, 2003-2006



Note: The death rate for those 5-9 years of age was unstable and should be used with caution.
 Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Graph produced by Injury Prevention Program

Table 4: Homicide/Assault Deaths and Rates, Age-Specific, Indiana, 2003-2006

Age Groups	2003		2004		2005		2006	
	Deaths	Age-Specific Rates						
<1	14	U	8	U	11	U	7	U
1-4	10	U	13	U	18	U	7	U
5-9	4	U	2	U	6	U	6	U
10-14	1	U	8	U	6	U	8	U
15-24	96	10.6	91	10.1	110	12.3	107	8.3
25-34	102	12.5	78	9.4	78	9.3	93	10.4
35-44	54	5.9	54	6.0	53	5.9	64	6.9
45-54	37	4.2	43	4.9	51	5.7	47	7.0
55-64	11	U	16	U	19	U	23	5.8
65+	15	2.0	16	U	16	U	12	U
Unknown	1	---	1	---	1	---	1	---
Total	345	5.6	330	5.3	369	5.9	375	5.9

Note: 'U' signifies that the rates are unstable due to less than 20 deaths.

Source: Original Data from Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team. Chart produced by Injury Prevention Program

Homicide/Assault Injuries in Indiana

Hospital discharge data give an indication of the number of unintentional and intentional injuries in Indiana, although the data have limitations. The International Classification of Disease Revision 9 Clinical Modification (ICD-9CM) coding scheme includes external causes of injury codes or E-codes that indicate the source or cause of the injury and can also provide injury-related cost data. However, E-codes are not mandated by law in Indiana, and it is estimated that only 62% of the discharge records contain them. Therefore, the total number of injuries in this report is a gross underestimation of the proportion of number of injuries that actually occurred.⁽³⁾

E-codes specific to injury and poisoning include ICD-9-CM codes 800-999. E-codes specific to assault injuries include E966, E964, E968.1, E961, E968 (.0-.3), E965 (.0-.4), E968.5, E963, E965 (.5-.9), E968 (.4, .6, .7), E968 (.8, .9) and E962. The hospital data base does not contain a patient-specific unique identifier, meaning that it does not distinguish whether one person had five visits or whether five people visited once. Therefore, statistics only reflect visits and not specific numbers of people. Also, race/ethnicity data is not very accurate because race/ethnicity is at the discretion of the person reporting the data and may not reflect how the individuals would define themselves. In some cases, race/ethnicity information is not provided at all.⁽³⁾

A final limitation of the hospital discharge data is that the Indiana law only requires hospital discharge data submission by acute care hospitals. Therefore, a few psychiatric and behavioral health hospitals do not submit data. All acute care hospitals are submitting inpatient data. However, one of the three Level 1 Trauma center hospitals has not submitted outpatient/emergency department data yet. As a result, the total number of injuries for the outpatient/emergency de-

partment data is an underestimation of the actual number of injuries and should be used with caution.⁽³⁾

Hospital Inpatient Data

From 2003 to 2006, there were 86,799 inpatient hospitalizations with a primary diagnosis of injury or poisoning. Based on the data with valid E-codes, assault/homicide injuries accounted for approximately 3.7% (3,205 admissions) of all injury/poisoning hospital inpatient admissions with an injury rate (combined 2003-2006 rate) of 12.9 per 100,000. There were 771 assault injuries in 2003; 808 injuries in 2004; 851 injuries in 2005; and 775 injuries in 2006. Figure 8 shows the assault age-adjusted rates for the four-year period. The highest injury rate was in 2005 with 13.7 per 100,000, and the lowest rate was 2006 with 12.4 per 100,000.

The top three causes of assault injury inpatient hospitalization were struck by (33.8% or 1,084/3,205), firearm (23.3% or 747/1,084) and cut (17.5% or 560/1,084).

Of those admitted to the hospital 82.6% (2,648/3,205) were male and 17.4% (557/3,205) were female. When comparing rates, males were 4.7 times more likely to be admitted to the hospital due to an assault injury than females (21.2 per 100,000 compared to 4.5 per 100,000). Table 5 shows the number of hospital admissions by gender/sex for each year, and Figure 9 shows the rates by gender/sex for each year.

There were approximately equal admissions of white and black Indiana residents 46.5% (1,489/3,205) versus 41.7% (1,336/3,205), respectively. See Figure 10. However, the age-adjusted rate for hospital admissions was 8.7 times higher in blacks compared to whites (59.3 per 100,000 versus 6.9 per 100,000). The assault rate was highest in 2005 for blacks (68.4 per 100,000) but dropped to the lowest level in 2006 since 2002 (46 per 100,000). Table 6 shows the total number of hospitalizations by race, and Figure 11 shows the hospitalization rates by year.

With 1,150 assault injuries and an average assault injury rate of 105.9 per 100,000, black males had the highest number and death rate from assault/homicides compared to all other race/ethnicity and gender/sex categories (Figure 12). Black males (105.9 per 100,000) were 9.8 times more likely to be admitted to the hospital compared to white males (10.7 per 100,000). Black females also had a higher age-adjusted rate of hospital admission when compared to white females and white males (16.2 per 100,000, 2.9 per 100,000 and 10.7 per 100,000 respectively). Figure 13 shows the assault hospitalization rate for each category broken out by year.

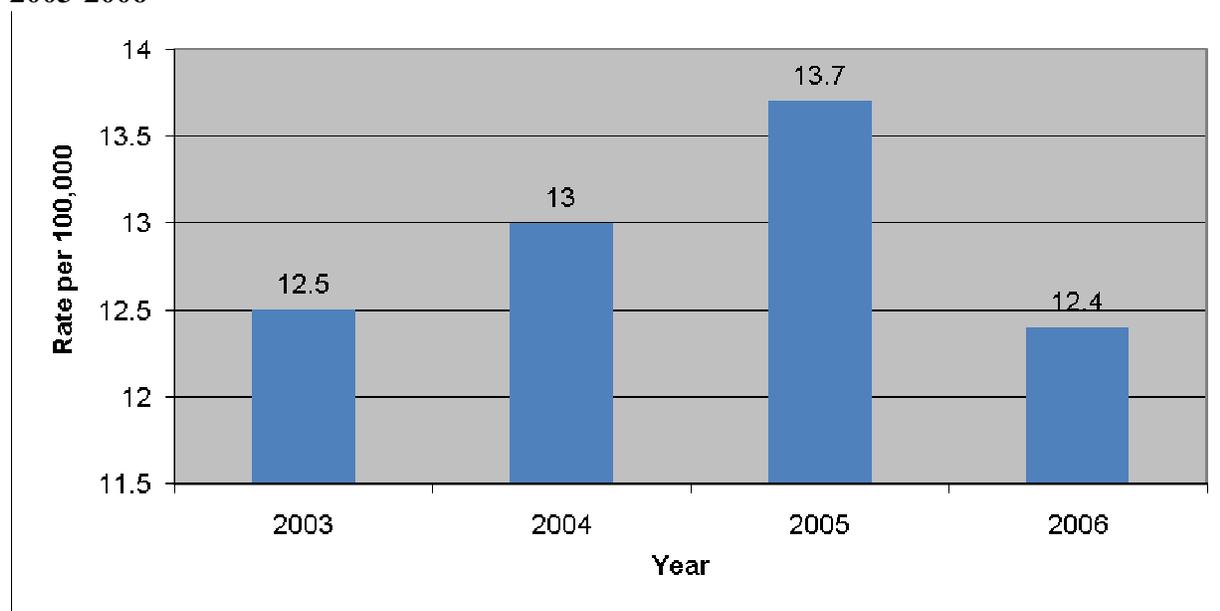
During 2003-2006, 15-24 year olds had the highest age-specific rate of hospital admissions due to assault (25.7 per 100,000). The lowest age-specific rate of hospital admissions due to assault was for those 5-9 years of age (1.1 per 100,000). Figure 14 shows the actual number of hospital admissions for each age group, while Figure 15 shows the age-specific rate for each age group. Table 7 shows the number of assault hospitalizations in each age group for each year as well as the age-specific death rate.

Between 2003 and 2006, 2.1% (68/3,205) of all patients admitted to the hospital due to assault died. More than three-fourths (80%) of all patients were admitted to the hospital as an emer-

gency, and 80.7% were admitted after receiving care at an outpatient center or in the ED (Figure 16 and Figure 17).

For 2003-2006, the total charges for all ages injured due to assault and admitted to the hospital were \$68 million. The mean and median total charges for all ages due to assault were \$21,195.70 and \$13,693.00 with a range of \$148–\$370,838. Of those admitted to the hospital, 29.0% (930/3,205) had commercial insurance while 18.2% (584/3,205) had Medicaid insurance (Figure 18). The average length of stay was 4.4 days (range 1-61 days), and the median length of stay was 3.0 days.

Figure 8: Homicide/Assault Inpatient Hospital Admissions Rates, Age-Adjusted, Indiana, 2003-2006



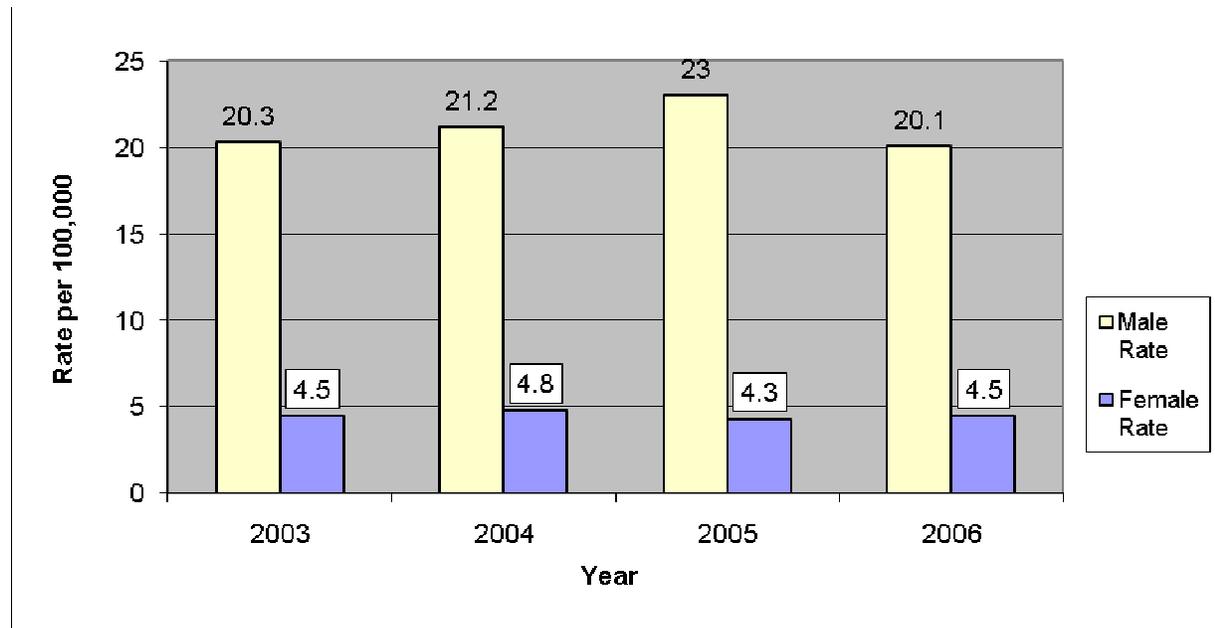
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 5: Homicide/Assault Inpatient Hospital Admissions by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	631	140
2004	661	147
2005	720	131
2006	636	139
Total	2,648	557

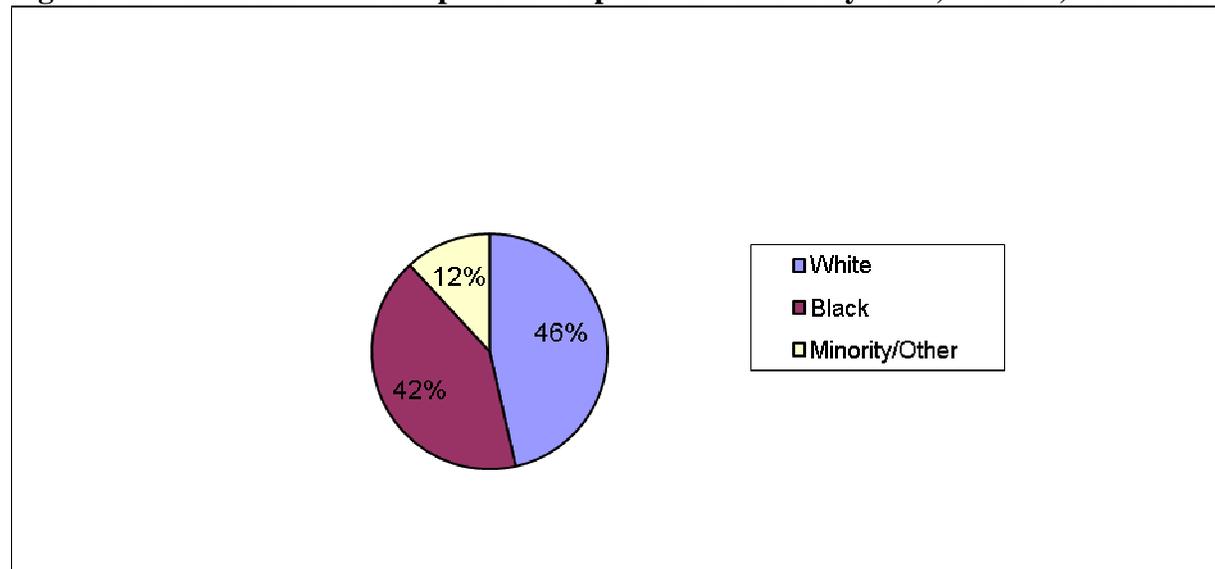
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 9: Homicide/Assault Inpatient Hospital Admission Rates by Gender/Sex, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 10: Homicide/Assault Inpatient Hospital Admissions by Race, Indiana, 2003-2006



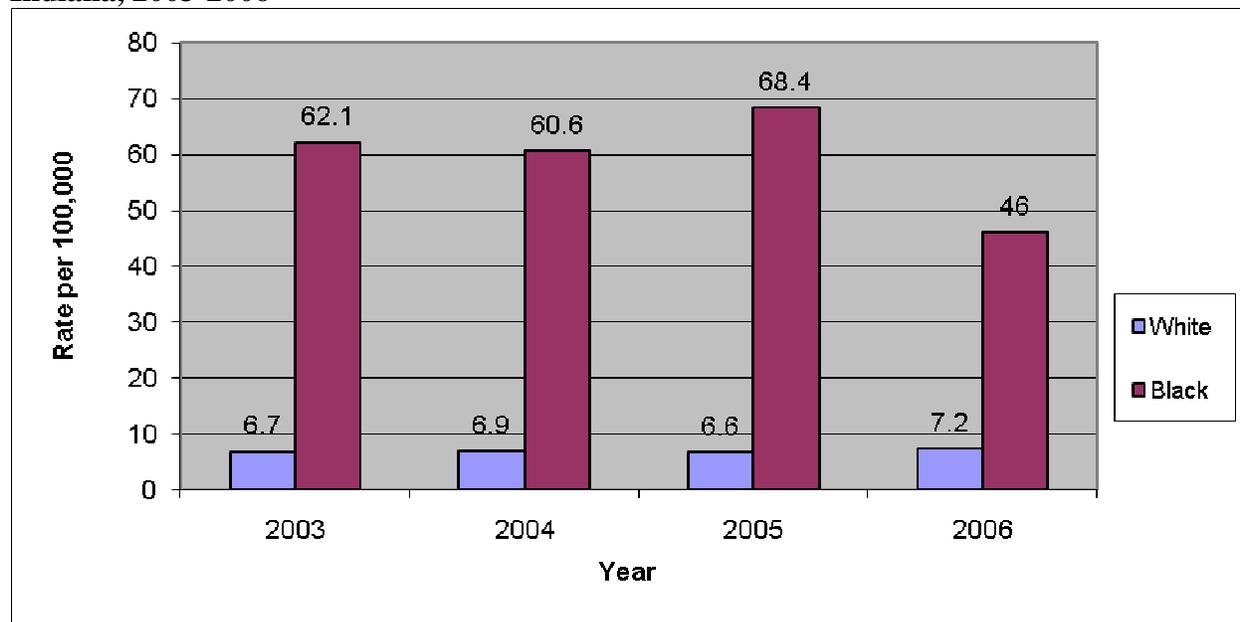
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 6: Homicide/Assault Hospital Admissions by Race, Indiana, 2003-2006

Year	White	Black
2003	361	336
2004	376	339
2005	355	391
2006	397	270
Total	1,489	1,336

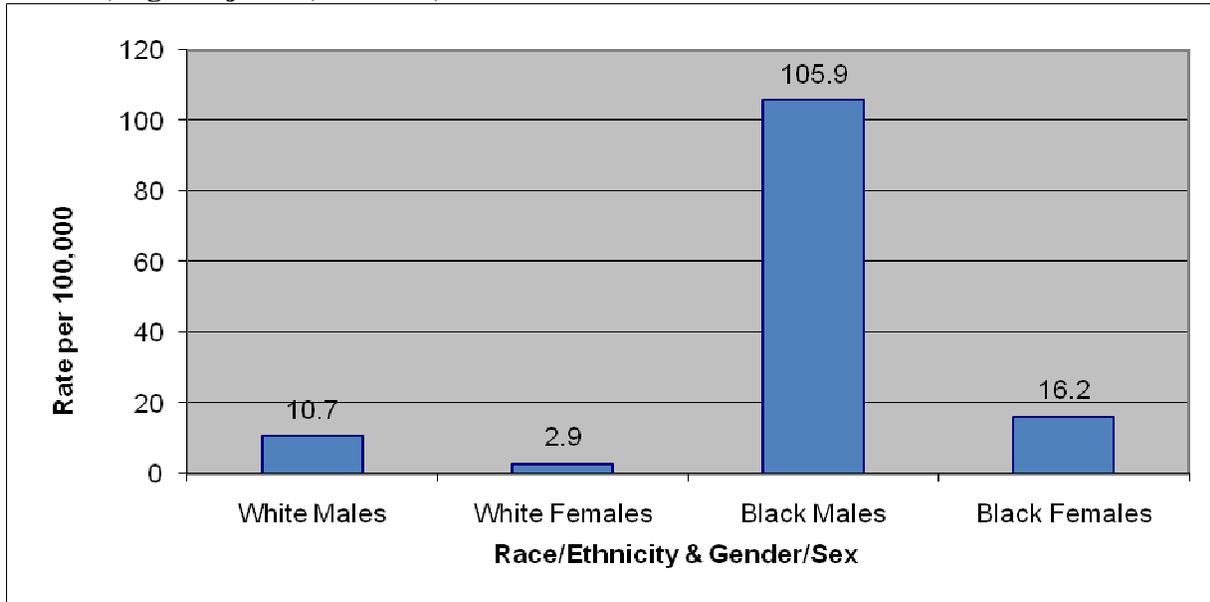
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 11: Homicide/Assault Inpatient Hospital Admission Rates by Race, Age-Adjusted, Indiana, 2003-2006



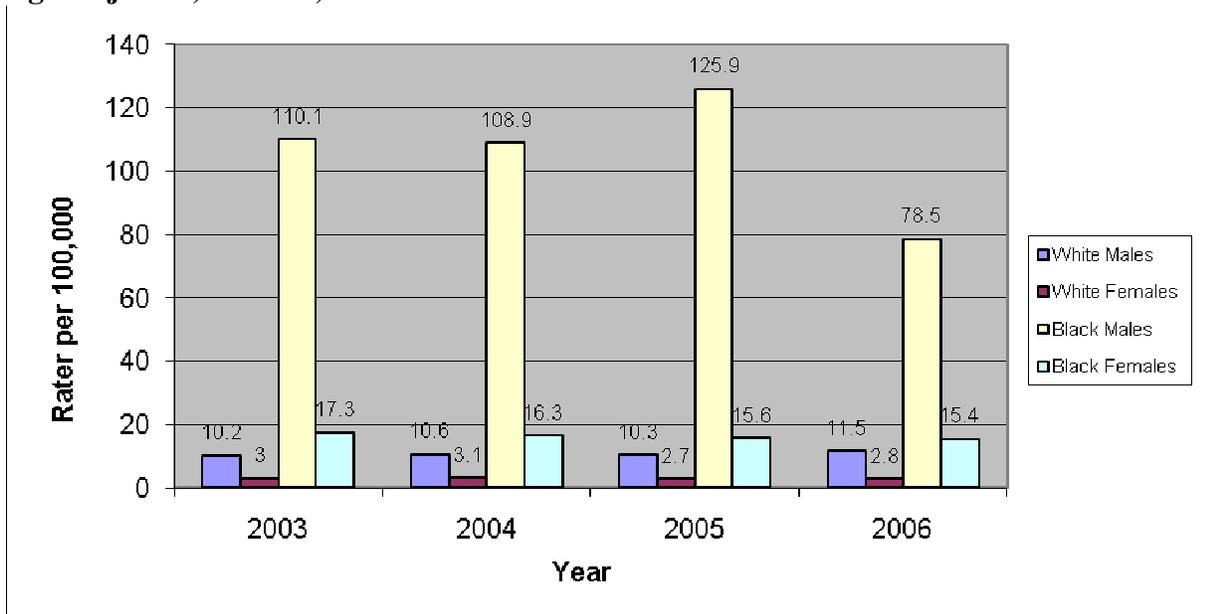
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 12: Mean Homicide/Assault Inpatient Hospital Admissions by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



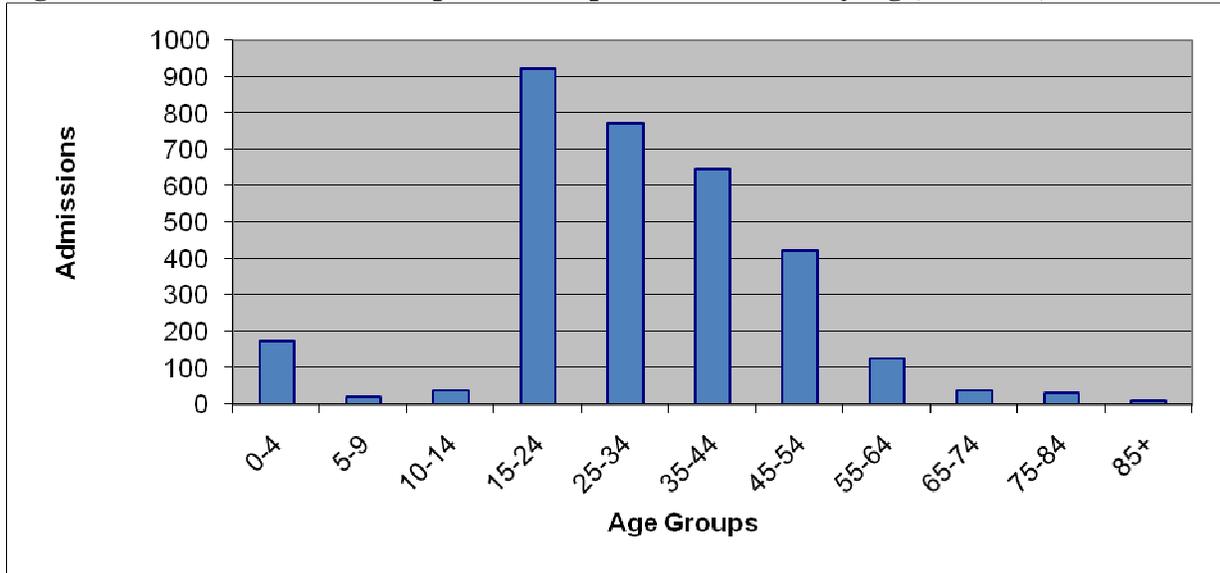
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 13: Homicide/Assault Inpatient Hospital Admission Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



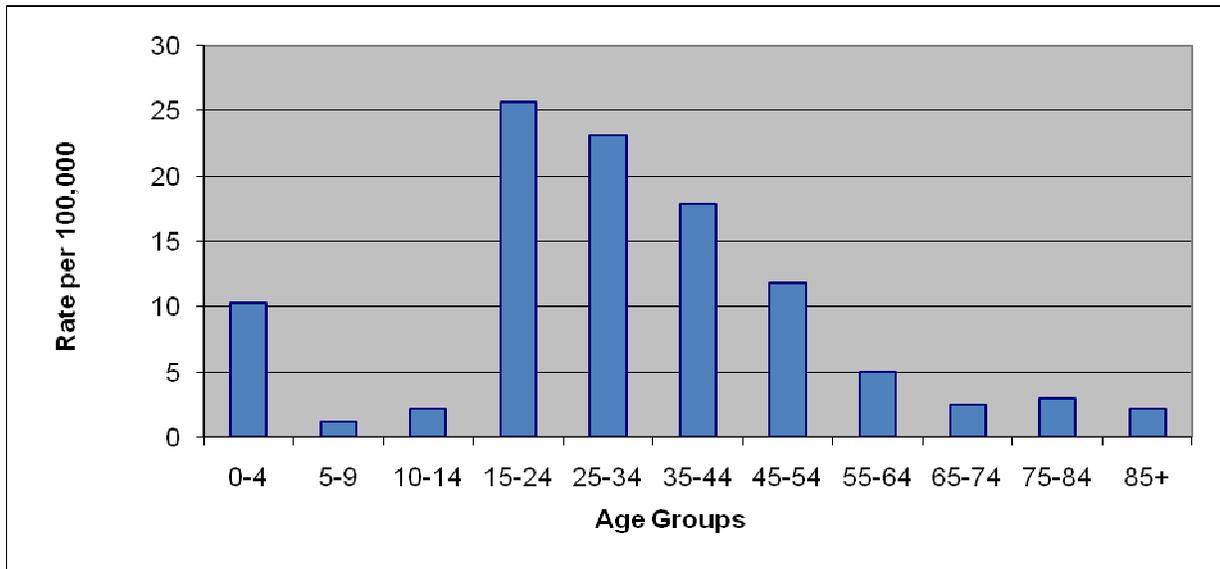
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 14: Homicide/Assault Inpatient Hospital Admissions by Age, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 15: Homicide/Assault Inpatient Hospital Admission Rates, Age-Specific, Indiana, 2003-2006



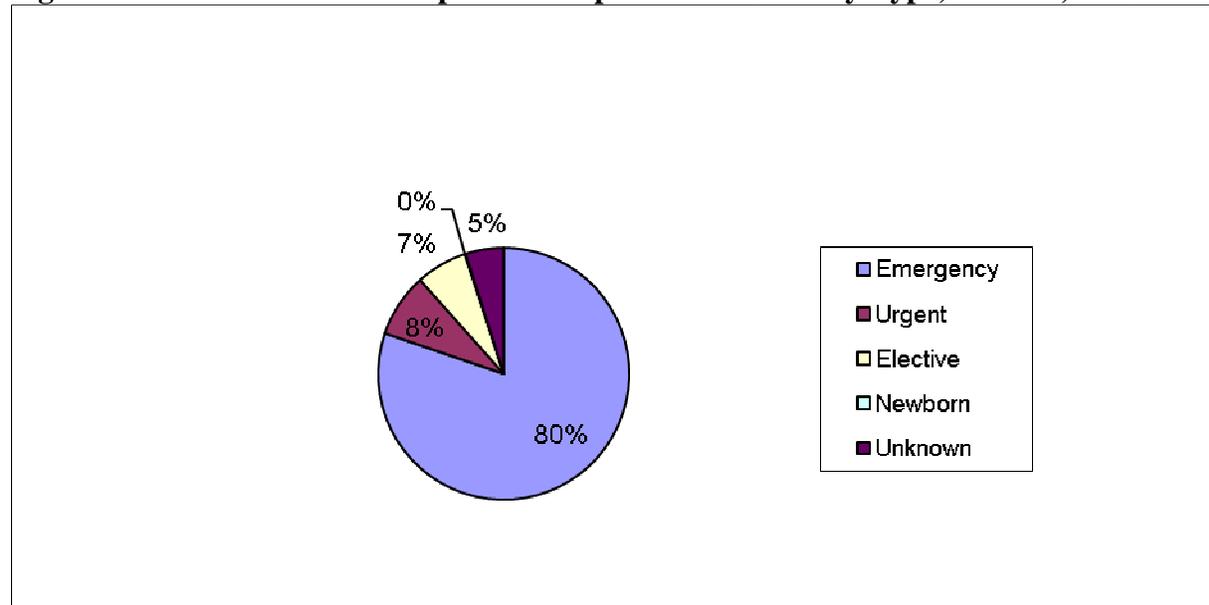
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Table 7: Homicide/Assault Inpatient Hospital Admissions and Rates, Age-Specific, 2003-2006

Age Groups	2003		2004		2005		2006	
	Injuries	Age-Specific Rates						
0-4	44	10.2	53	12.3	41	9.5	38	8.8
5-9	5	U	7	U	3	U	5	U
10-14	12	U	8	U	13	U	6	U
15-24	235	26.0	223	24.7	241	26.8	225	25.2
25-34	176	21.6	203	24.6	214	25.6	179	21.1
35-44	160	17.5	158	17.4	175	19.5	155	17.3
45-54	90	10.3	100	11.3	113	12.5	119	12.9
55-64	28	4.7	37	6.0	27	4.2	33	4.9
65-74	10	U	9	U	12	U	7	U
75-84	9	U	8	U	9	U	6	U
85+	2	U	2	U	3	U	2	U
Total	771		808		851		775	

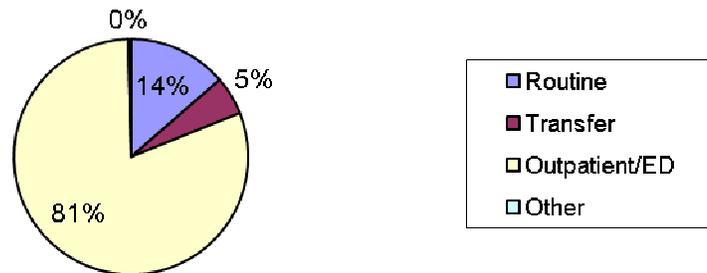
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 16: Homicide/Assault Inpatient Hospital Admissions by Type, Indiana, 2003-2006



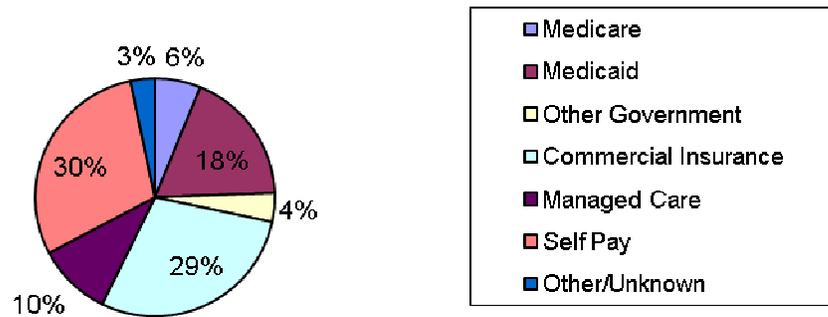
Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 17: Assault Inpatient Hospital Admissions by Source, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Figure 18: Homicide/Assault Inpatient Hospital Admissions by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Inpatient Hospital Discharge Data, 2003-2006

Hospital Outpatient/Emergency Department Data

During 2003 and 2006, there were 1,375,552 outpatient/emergency department (ED) visits with a primary diagnosis for injury or poisoning (ICD-9CM codes 800-999). Based on the data with valid E-codes, assault accounted for approximately 3.8% (51,994 visits) of injury/poisoning outpatient/ED visits with an injury rate (combined 2003-2006 rate) of 209.3 per 100,000. There were 10,749 assault injuries in 2003; 12,249 injuries in 2004; 14,602 injuries in 2005; and 14,394 injuries in 2006. Figure 19 shows the assault age-adjusted rates for the four-year period. The highest injury rate was in 2005 with 235.0 per 100,000, and the lowest rate was 2003 with 173.9 per 100,000.

Of those who visited an outpatient/ED, 60.1% (31,244/51,994) were male and 39.9% (20,749/51,994) were female. When comparing rates, males were 1.5 times more likely to be visiting the ED due to an assault than females (247.6 per 100,000 compared to 169.9 per 100,000). Table 8 shows the number of hospital outpatient/ED visits by gender/sex for each year, and Figure 20 shows the rates by gender/sex for each year.

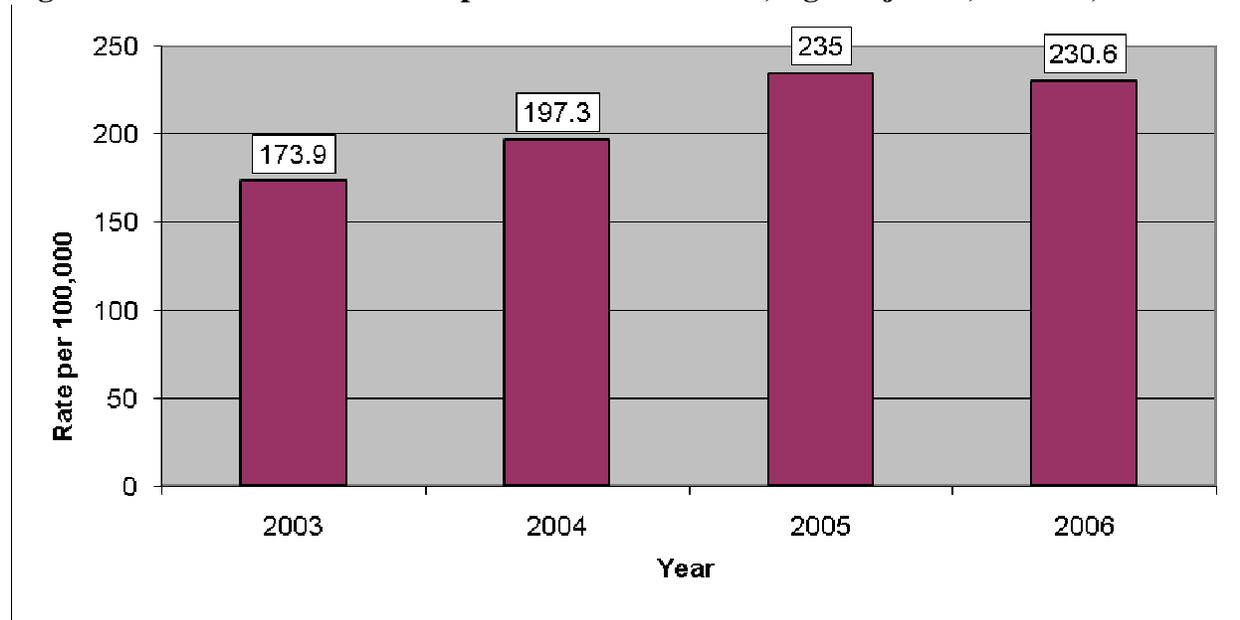
The majority (67.4% or 35,045/51,994) of the hospital outpatient/ED visits were white Indiana residents (Figure 21). However, the age-adjusted rate for hospital outpatient/ED visits was 2.9 times higher in blacks compared to whites (471.0 per 100,000 versus 161.2 per 100,000). The assault hospital outpatient/ED visit rate was highest in 2005 for blacks (505.5 per 100,000) but decreased in 2006 to a low of 405.7 per 100,000. Table 9 shows the total number of hospital outpatient/ED visits by race, and Figure 22 shows the hospital outpatient/ED visit rates by year.

With an average death rate of 564.9 per 100,000, black males had the highest age-adjusted rate from assault compared to all other race/ethnicity and gender/sex categories (Figure 23). Black males were 3.0 times more likely to be seen at an outpatient/ED for assault compared to white males (564.9 per 100,000 versus 188.4 per 100,000). Black females were 2.9 times as likely to be seen at an outpatient/ED for assault compared to white females (385.4 per 100,000 versus 132.9 per 100,000 respectively). Black males had the highest age-adjusted rate during 2005 (613.5 per 100,000) and the lowest rate during 2006 (491.1 per 100,000). Figure 24 shows the assault/homicide outpatient/ED visit rate for each category broken out by year.

During 2003-2006, 15-24 year olds had the highest age-specific rate of hospital admissions due to assault (549.6 per 100,000) followed closely behind by 25-34 year olds (411.7 per 100,000). The lowest age-specific rate of hospital outpatient/ED visits due to assault/homicide was for those 75-84 years of age (11.1 per 100,000). Figure 25 shows the actual number of hospital admissions for each age group, while Figure 26 shows the age-specific rate for each age group.

Between 2003 and 2006, approximately 0.1% (68/51,994) of all patients who visited an outpatient/ED facility due to assault died. The total charges for all ages injured due to assault and seen in the outpatient/ED were \$69 million. The mean and median total charges for all ages due to assault were \$1,333.51 and \$758.00 with a range of \$0-\$99,976. Of those who visited an outpatient/ED, 27.2% (14,126/51,994) had commercial insurance (Figure 27).

Figure 19: Homicide/Assault Outpatient/ED Visit Rates, Age-Adjusted, Indiana, 2003-2006



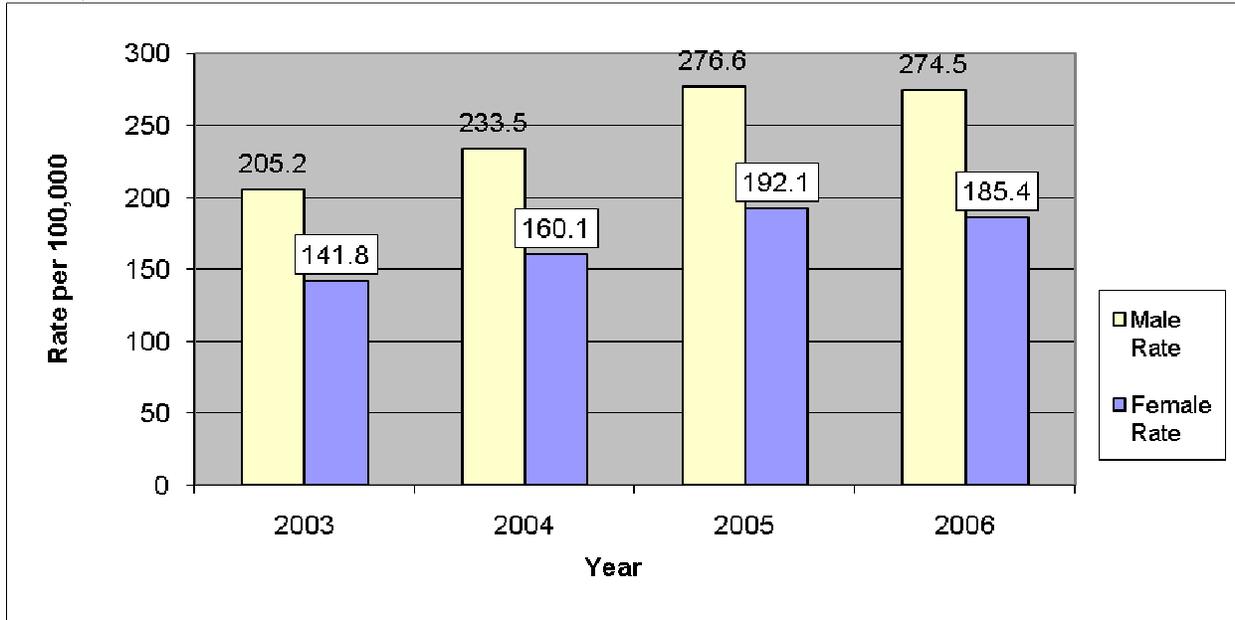
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Table 8: Homicide/Assault Outpatient Admissions by Gender/Sex, Indiana, 2003-2006

Year	Male	Female
2003	6,441	4,308
2004	7,357	4,891
2005	8,731	5,871
2006	8,715	5,679
Total	31,244	20,749

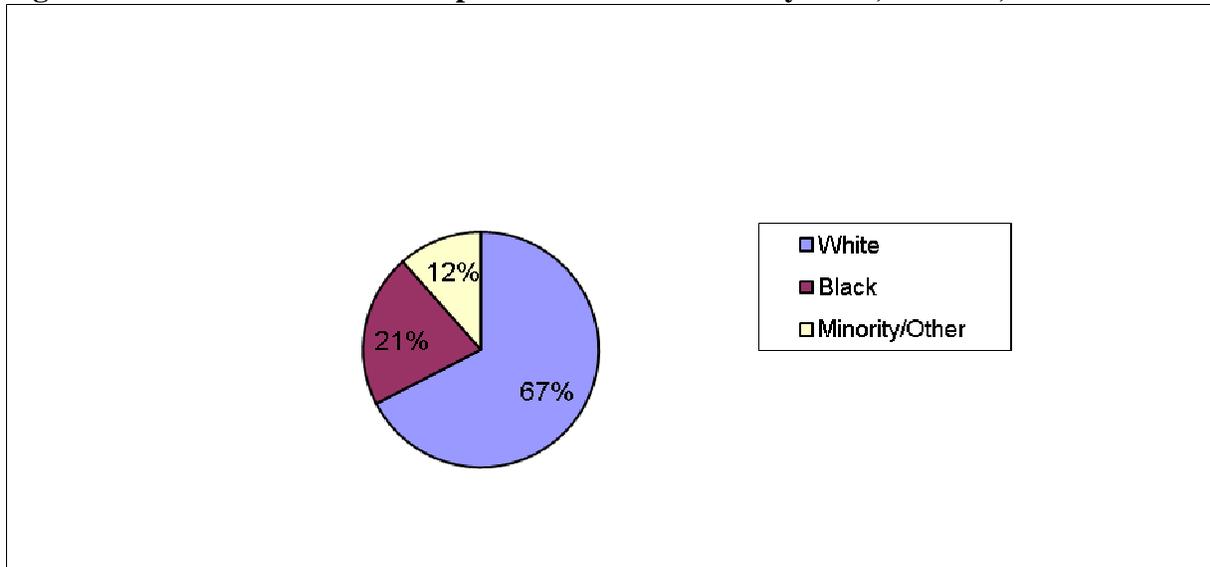
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 20: Homicide/Assault Outpatient/ED Visit Rates by Gender/Sex, Age-Adjusted, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 21: Homicide/Assault Outpatient/ED Visit Rates by Race, Indiana, 2003-2006



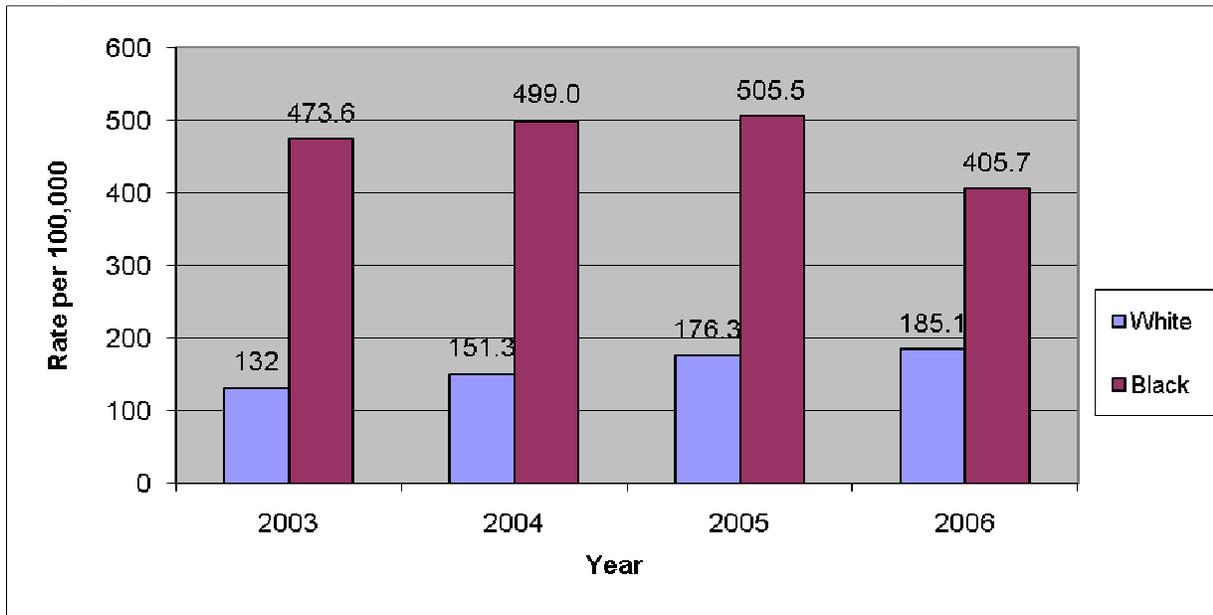
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Table 9: Homicide/Assault Outpatient Admissions by Race, Indiana, 2003-2006

Year	White	Black
2003	7,183	2,637
2004	8,223	2,906
2005	9,572	2,988
2006	10,067	2,419
Total	35,045	10,950

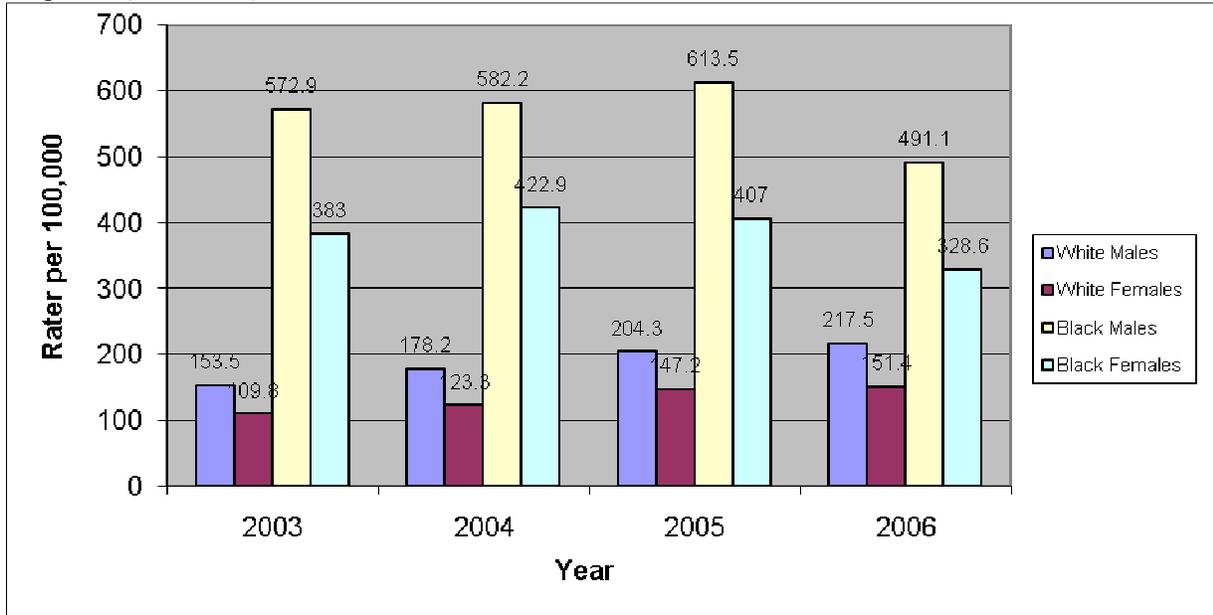
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 22: Homicide/Assault Outpatient/ED Visit Rates by Race, Age-Adjusted, Indiana, 2003-2006



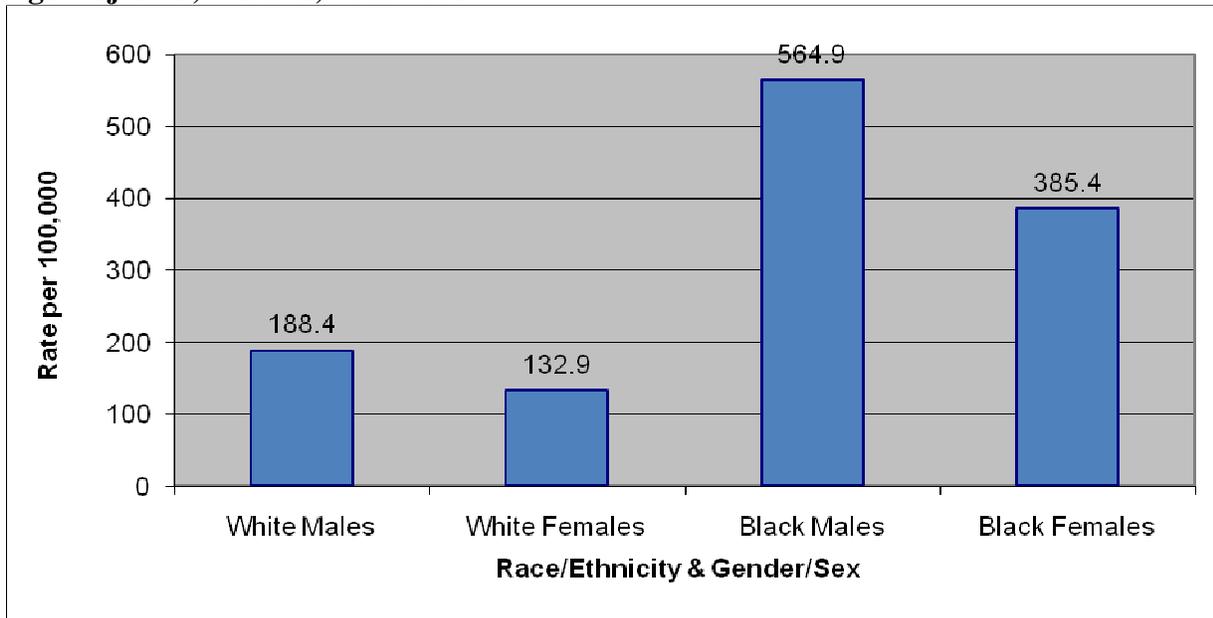
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 23: Homicide/Assault Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



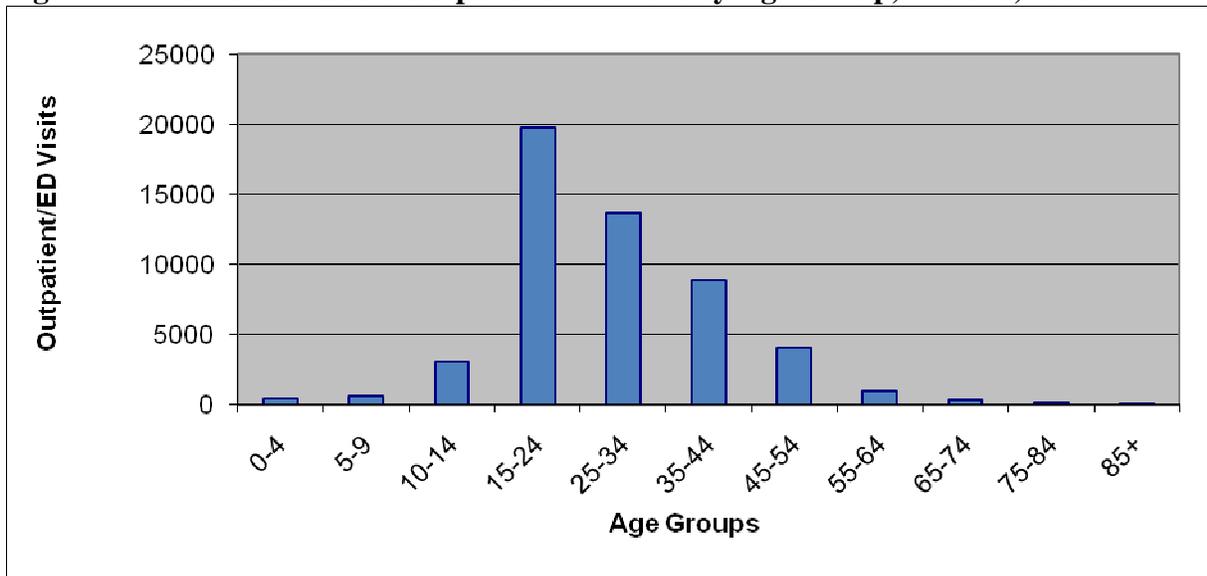
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 24: Mean Homicide/Assault Outpatient/ED Visit Rates by Race and Gender/Sex, Age-Adjusted, Indiana, 2003-2006



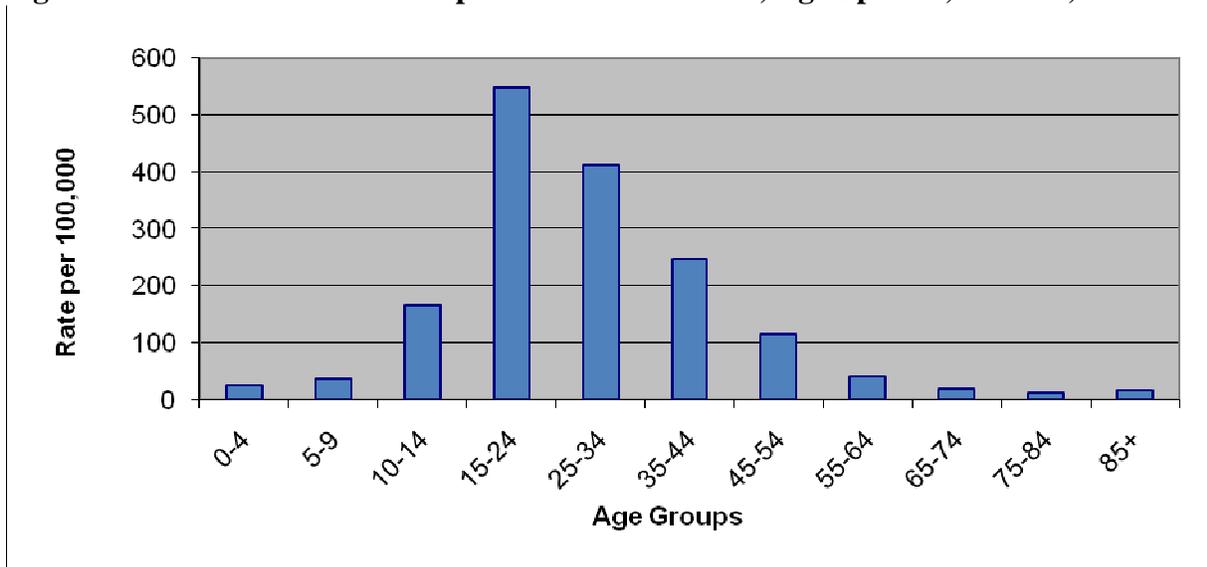
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 25: Homicide/Assault Outpatient/ED Visits by Age-Group, Indiana, 2003-2006



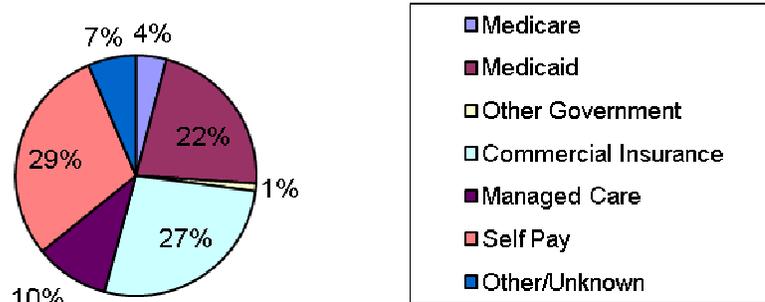
Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 26: Homicide/Assault Outpatient/ED Visit Rates, Age-Specific, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Figure 27: Homicide/Assault Outpatient/ED Visits by Payor, Indiana, 2003-2006



Source: Indiana State Department of Health, Injury Prevention Program, Outpatient Hospital Discharge Data, 2003-2006

Risk Behaviors and Prevention

Homicide/Assault injuries and fatalities are tragic and unnecessary because they are preventable. In the U.S., homicide is the second leading cause of death for people in the 15 to 24 year-old age group. In 2005, there were 5,549 young people in that group who were homicide victims, an average of 15 youth homicide victims daily. Homicide is the second leading cause of death for Hispanics aged 15 to 24 years-old, and the number one cause of death for African Americans. Among Native Americans in this same age group, homicide ranks third as cause of death.

Nonfatal violence is substantially higher among people ages 15 to 24 years old than for any other age group.⁽¹⁾

The 2007 Indiana Youth Risk Behavior Survey data shows that 6.9% of students reported having carried a weapon on school property within the previous 30 days, 9.6% of the students were threatened or injured with a weapon on school property one or more times during the past 12 months (which is higher than 8.8% in 2005), and 5.9% of students felt too unsafe to go to school on one or more times during the past 30 days. The percentage of females that were hit, slapped or physically hurt by their boyfriends/girlfriends during the past 12 months decreased significantly from 13.5% in 2005 to 10.8% in 2007.⁽⁴⁾ The percentage of students who carried a gun on one or more of the past 30 days increased from 5.8% in 2005 to 9.1% in 2007 (statistically significant).

Prevention

Violence is a multifaceted problem with biological, psychological, social and environmental roots. There is no simple or single solution to the problem; rather, violence must be addressed on multiple levels and in multiple sectors of society simultaneously. Based on the perspective provided by the ecological model, violence prevention programs and policies can be targeted at individuals, relationships, communities and whole societies, and delivered in collaboration with

different sectors of society in schools, workplaces, other institutions such as the criminal justice systems. A few examples of prevention strategies include:

- Encourage and support prenatal and early infancy home visitation programs by trained nurses for at-risk families.
- Increase the availability and accessibility of youth activities and supportive programs for after school and during the summers.
- Expand education curricula from elementary to high school to teach children how to manage conflict, hostility, and aggression with nonviolent means.
- Promote peer counseling and conflict resolution.
- Expand parent education classes to parents with children of all ages and include violence prevention strategies.
- Promote job training and employment opportunities for youth and families.
- Expand programs to identify and treat children who have been abused.
- Expand programs that prevent and treat domestic violence.
- Encourage schools to create a safe learning environment for all students, including interventions targeting bullying and the presence of weapons on campus.
- Improve identification, referral, and treatment of children and families at high risk of violent behavior because of chronic use of alcohol and/or other drugs.
- Improve the community's social service and healthcare system's ability to identify and treat of victims and perpetrators of violence.

Conclusion

Injuries and deaths caused by homicide/assault remain a serious public health problem. Between 2003 and 2006, homicide/assault was the 16th leading cause of death for Indiana residents, claiming 1,419 lives with an age-adjusted rate of 5.7 per 100,000 population. Based on hospital discharge data for the four-year period, homicide/assaults accounted for approximately 3.7% of all inpatient hospitalizations and 3.8% all outpatient/ED visits. The economic burden of homicide/assault injuries is also enormous. The total charges during 2003 to 2006 for inpatient hospitalizations and outpatient/ED visits were \$137 million. The medical costs alone do not even 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 specific groups, such as people aged 20-24, in order to reduce the burden on Indiana residents and the state's economy.

References

1. Centers for Disease Control and Prevention. Web-based Violence Prevention Fact Sheet [Online], (2004). National Center for Injury Prevention and Control, Center for Disease Control and Prevention (producer). Available from URL: <http://www.cdc.gov/ViolencePrevention/index.html>
2. Indiana State Department of Health, Mortality Data, 2003-2006.
3. Indiana State Department of Health Injury Prevention Program. Indiana Hospital Discharge Data, 2003–2006.
4. Indiana State Department of Health, Youth Risk Behavior System Data, 2005 and 2007.

Appendix A

Glossary of Terms

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

Cut/Pierce- includes injury caused by cutting and piercing instruments, such as knives, power hand tools, and household appliances.

Drowning/Submersion- includes injury from drowning and submersion with and without involvement of watercraft. Examples include boats, rivers, pools, and bathtubs.

Falls- 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- includes injury from fire and flames and from hot objects and substances. Examples include smoke inhalation, structural fires, clothing ignition, burns caused by hot liquids and steam, caustics and corrosives.

Firearms- although E codes permit differentiation among firearms such as handguns, shotguns, hunting rifles, a large percent of the type of firearm is not specified.

Machinery- includes injuries associated with machinery used in various industrial and occupational activities.

Motor Vehicle Traffic- includes injury resulting automobiles, vans, trucks, motorcycles, and other motorized cycles known or assumed to be traveling on public roads or highways.

Motor Vehicle Traffic (occupant) - injured person identified as a driver or passenger of an automobile.

Motor Vehicle Traffic (motorcyclist) - injured person identifies as a driver or passenger of a motorcycle.

Motor Vehicle Traffic (pedal cyclist) - injury resulting from a collision between a pedal cyclist and a motor vehicle in traffic.

Motor Vehicle Traffic (pedestrian) – injury resulting from a person being hit by a motor vehicle on a public road or highway.

Pedal Cyclist (other) - includes injury among pedal cyclists not involving motor-vehicle 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) – involves pedestrians hit by a train, by a motor vehicle where the collision did not occur on a public road or highway or by other means of transportation.

Transport (other) - includes injury associated with various other means of transportation such as railway, off-road and other motor vehicles not in traffic, water, and aircraft.

Natural/Environmental- includes injury from environmental conditions such as being exposed to excessive heat or cold temperatures.

Poisoning- involves injury or death due to the ingestion of drugs, other medicinal substances and gases such as alcohol, disinfectants, cleansers, paints, insecticides, corrosives, and caustics.

Struck By/Against- includes injuries resulting from being struck by or striking against objects or persons. 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.

Suffocation- represents 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).

Appendix B

Guidelines for Hospital Discharge Data Indiana Hospital Discharge Data

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, 2003 to December 31, 2006 totaled 3,167,075 inpatient hospitalizations. Among these, 12.9% (407,747) had an injury-related diagnosis code (ICD-9 CM 800-999) in one of the 15 diagnosis fields. However, based on recommendations from the Injury Surveillance Workgroup for the State and Territorial Injury Prevention Directors Association (STIPDA), only the primary diagnosis field is used to determine if a patient record is defined as an injury hospitalization. Therefore, there are 141,401 patient records (4.5%) with an injury-related diagnosis code. However, only 62% (87,871) had a least one supplemental External Cause of Injury Code (E code). This E coded portion of the hospital discharge data was then standardized for analysis using the SAS System, Version 9.1, based on recommendations from the Injury Surveillance Workgroup of the State and Territorial Injury Prevention Directors Association (STIPDA). After adverse medications and reactions were taken out for analysis, there were a total of 87,871 records that were analyzed by the ISDH Injury Prevention Program. 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 STIPDA. 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. STIPDA's 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.

Outpatient/Emergency Department Visit data was also utilized in this report. The same procedures from STIPDA were followed for inclusion and exclusion of injury related data.

Injury-related hospital discharge data for January 1, 2003 to December 31, 2006 totaled 11,467,839 outpatient/ED visit discharges. Among these, 26.5% (3,038,919) had an injury-related diagnosis code (ICD-9 CM 800-999) in one of the 15 diagnosis fields. However, based on recommendations from the Injury Surveillance Workgroup for the State and Territorial Injury Prevention Directors Association (STIPDA), only the primary diagnosis field is used to determine if a patient record is defined as an injury hospitalization. Therefore, there are 2,147,680 patient records (18.7%) with an injury-related diagnosis code. However, only 64% (1,376,682) had a least one supplemental External Cause of Injury Code (E code). This E coded portion of the hospital discharge data was then standardized for analysis using the SAS System, Version 9.1, based on recommendations from the Injury Surveillance Workgroup of the State and Territorial Injury Prevention Directors Association (STIPDA). After adverse medications and reactions were taken out for analysis, there were a total of 1,375,552 records that were analyzed by the ISDH Injury Prevention Program. 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.

STIPDA Recommendations for Presenting Hospital Discharge Data

Table C-1: Criteria for Selecting Nature of Injury Codes in Principal Diagnosis Fields for Injury Hospitalizations

Inclusions	Descriptions
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	Descriptions
<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; 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.

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

Mechanism/Cause	Manner/Intent				
	Unintentional	Suicide/Self Inflicted	Homicide/Assault	Undetermined	Legal Intervention/Other
Cut/Pierce	E920.0 –.9	E956	E966	E986	E974
Drown- ing/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	E96835	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) E826.2 –.8 E827 – E829 (.2 - .9) E831.0 - .9, E833 – E845.9	E958.6		E988.6	
Natu- ral/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	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 – E959	E960 – E969	E980 – E989	E970 – E978 E990 – E999
Adverse Effects					E870 – E879, E930.0 – E949.9