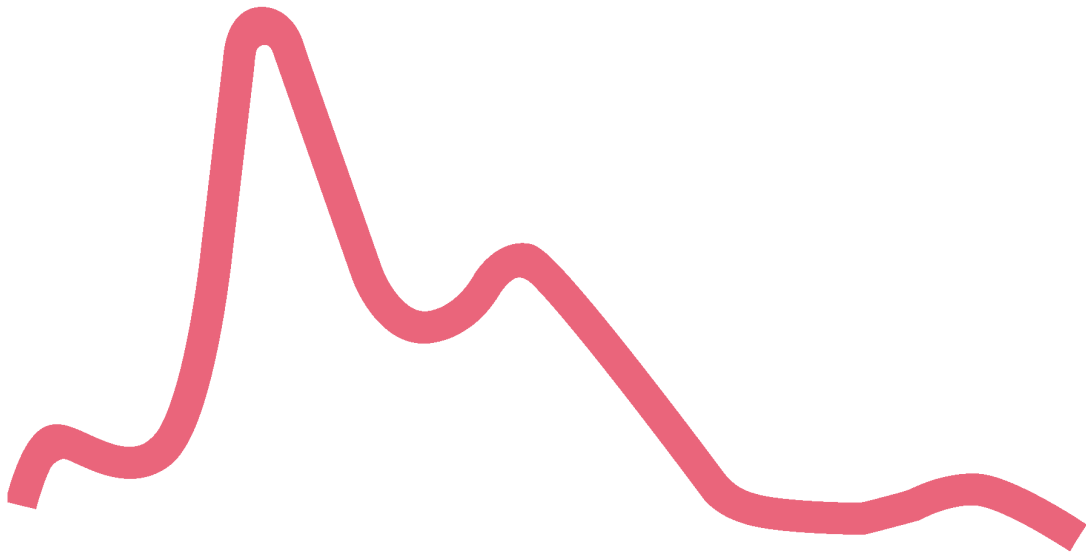


# NATIONAL TRAUMA DATA BANK REPORT 2004



**NTDB**<sup>TM</sup>  
NATIONAL TRAUMA DATA BANK



Dataset Version 4.0

**NTDB Annual Report 2004**

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## ***Acknowledgements***

*The American College of Surgeons Committee on Trauma wishes to thank the Health Resources and Services Administration (HRSA) and the National Highway Traffic Safety Administration (NHTSA) for their support of the NTDB.*

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## FOREWORD

This has been a milestone year for the American College of Surgeons' National Trauma Data Bank (NTDB). In 2002, the NTDB was challenged to expand the data bank and make information more accessible to users. The NTDB has met and exceeded these goals by accruing over 1.1 million records to date, with almost 400,000 new records this year.

In addition, NTDB now provides information in several formats for online users, tailored to their needs and levels of knowledge. Perhaps most exciting is the new online analytic processing feature that allows users to make their own tables and graphs for use in presentations.

Since its inception in 1989, the National Trauma Data Bank has been a vital and dynamic component of the American College of Surgeons' approach to improving care for the surgical patient through data gathering and research. As we support the surgeons of the 21<sup>st</sup> century, the College must provide opportunities for their active participation in the improvement of patient care. We will continue to turn to the wealth of information contained in NTDB in our quest to find ways to deliver better surgical care. Many researchers have used the NTDB to explore important issues and to help answer questions about surgical trauma care. Hospitals count on NTDB benchmarking reports as they continually evaluate and improve performance.

The American College of Surgeons is dedicated to improving the care of the surgical patient and to safeguarding standards of care in an optimal and ethical practice environment. We are pleased to offer the NTDB as a tool for surgeons and the health care community as we work together toward the goal of optimal patient care.

Thomas R. Russell, MD, FACS  
Executive Director  
American College of Surgeons

# FOREWORD

The Department of Health and Human Services (DHHS) is committed to the collection of trauma care data that will increase the quality of health care delivery in the United States. The long-term strategy of the Health Resources and Services Administration's (HRSA's) Trauma-Emergency Medical Services (EMS) Systems Program is to (1) promote national standardization of key trauma data elements and definitions and (2) enhance States' collection and use of meaningful trauma data to improve trauma care outcomes.

The American College of Surgeons (ACS) is to be commended for the development of and dedication to the National Trauma Data Bank's (NTDB's) efforts to collect and report trauma care data. The Trauma-EMS Systems Program, along with its Federal partners, the Centers for Disease Control and Prevention (CDC) and the National Highway Traffic Safety Administration (NHTSA), continue to promote the NTDB and the State Trauma System Managers in their efforts to contribute valuable trauma care data.

Quality data will allow health care providers, policymakers, researchers, and both community and professional organizations to further establish a coordinated approach to trauma care and injury prevention. Trauma data will provide important information at the local, State, and national levels to achieve the following goals:

- Evaluate and improve the timeliness, appropriateness, and quality of patient care.
- Provide a system for comparing patient outcomes across service areas and provider groups.
- Identify environments in which individuals are at high risk for traumatic injuries.
- Prioritize and evaluate public health interventions related to injury prevention.
- Provide data for trauma care and systems benchmarking.
- Support the improvement of processes in health care delivery.

Ultimately, the information from both the NTDB and State Trauma Registries can lead to actions that reduce morbidity and mortality from traumatic injuries through a comprehensive process. This process will encourage the cooperation and coordination of all health care providers.

Congratulations to the ACS Committee on Trauma for its vision, leadership, and cooperation in this most critical component of our Nation's health care system, the collection of national trauma care data through the NTDB.

Cheryl A. Anderson, Director  
Trauma-EMS Systems Program  
Division of Health Care Emergency Preparedness  
Office of Special Programs  
Health Resources and Services Administration  
Department of Health and Human Services

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## Editor's Note

The Annual Report of the National Trauma Data Bank (NTDB), Version 4.0 is an updated analysis of the largest aggregation of trauma registry data that has ever been assembled. The NTDB currently contains over 1.1 million records from 405 trauma centers in the 43 states, territories, and the District of Columbia. This represents an increase of 394,414 records from the 2003 report.

The Annual Report Version 4.0 is based on 633,435 records from the years 1999 – 2003. Prior to analysis, NTDB data are subjected to a quality screening for consistency and validity on such fields as age, gender, and length of stay.

The NTDB is committed to being the non-proprietary national repository for trauma center registry data. It is estimated that 55% of Level I and 37% of Level II centers in the United States contribute data to the NTDB. Our goal is to receive data on every patient treated in every trauma center in the United States.

The purpose of this report is to inform the medical community, the public, and decision makers about a wide variety of issues that characterize the current state of care for injured persons in our country. It has implications in many areas including epidemiology, injury control, research, education, acute care, and resource allocation. This effort is in keeping with the mission of the American College of Surgeons (ACS) Committee on Trauma (COT) which is "To improve the care of the injured through systematic efforts in prevention, care, and rehabilitation".

This report marks our complete transition to the use of the mechanisms of injury and the external cause of injury code groupings that were developed by the international injury prevention community and published by the Center for Disease Control (CDC) in MMWR 1997, 46(RR14): 1-30. The CDC and international partners developed this framework to create a uniform reporting language for injury mortality and morbidity.

The NTDB is an exciting program that has the potential to significantly improve the care of injured patients in our country. The NTDB committee would like to thank all the trauma centers that contributed data and hope that this report will attract new participants. The full National Trauma Data Bank Report Version 4.0 is available on the ACS website as a PDF file and a PowerPoint presentation at <http://www.ntdb.org>.

John Fildes, MD, FACS  
Chair, National Trauma Data Bank Ad Hoc Committee



## List of research projects

As the NTDB welcomes new participants and continues to maintain a large group of loyal hospitals, the database is growing and becoming the most comprehensive reflection of trauma care in the United States. Investigators who are able to probe this information in the most effective ways will answer questions concerning the best methods of trauma care. The table below shows a listing of all NTDB research projects, to date.

Please visit our website at [WWW.NTDB.ORG](http://WWW.NTDB.ORG) to access our online application for NTDB data.

<b>Project Title</b>
A Comparison of 2002 Trauma I Level Patients by Hospital Type
A Need for Trauma System Reorganization in the Changing Surgical Educational Environment
A New Measure of Injury Severity Based on ICD-9 Injury and Pre-Existing Condition Codes
A Phase II/III Randomized, Controlled and Open-Labelled Trial of a 2nd Generation HBOC for the Pre-Hospital Resuscitation of Hemorrhagic Shock Patients
Age-Related Gender Differences in Patient Outcomes Following Trauma
Application for 2003 Malcolm Balridge National Quality Award for Health Care
Assessment of Potential Usage of Hemostatic Bandage in Non-Military Trauma Setting
ATV Injuries
Base Deficit in the Pediatric Population: A Predictor of Outcomes?
Baseline Query for Hypertonic Saline Study
Benchmarking for Deaconess Hospital Trauma Services Program
Benchmarking Mortality
Benchmarking of Mortality to that of NTDB
Benchmarking of Trauma Average ISS and Trauma Mortality Rate for Baptist Health Care Pensacola
Benchmarking, Withdrawal of Care, Variability in Diagnosis & Management and Research into Evaluating, Improving, and Auditing the NTDB
Blunt Traumatic Aortic Injury
Burn Patient Mortality National Trends
Characteristics of Near Fatal Suicide
Comparative Trauma Data Analysis & Benchmarking for Wishard Hospital
Compare NTDB Outcomes for Patients with Trauma Brain Injury to Christiana Hospital
Comparing Morbidity and Mortality Rates for TLCI and TLCIII
Comparison of St. Vincent Hospital Trauma Data to National Data
Comparison of Theda Clark Regional Medical Center with other Trauma Centers
Coordination, Communication, Expertise, and Information Technology Use in a Dynamic Environment.
Current Screening Criteria for Blunt Cerebrovascular Injury (BCVI) May be Inadequate
Data Visualization to Identify Trauma Patients at Risk for Medical Error
Determining the Cost of Trauma
Distal Radius Fractures in Elderly Patients
Does ICP Monitoring Effect Outcome In Severely Brain Injured Patients?

<b>Project Title</b>
Do TRISS, ICISS and ASCOT Agree on the Identity of Quality Outliers?
Effect of AAST Injury Scale on Outcome in Pediatric Splenic Trauma
Effects of Ultrasound FAST Exam in Decreasing Time to OR in Patients with Hemoperitoneum Due to Blunt Trauma Injury
EMS Promptness Analysis
Evaluating Pedestrian Trauma
Evaluation of Kentucky Trauma System Using National Trauma Data Bank Data
Evaluation of NTDB as Reference Database for Trauma Center Outcome Studies
Examination of Injury Severity and Hospital Charges by Mechanism of Injury in Pediatric Patients
Feasibility of Developing an Older Adult Trauma Triage
Functional Outcome of Trauma Patients Admitted to Higher Versus Lower Level or Undesignated Centers
Functional Status Following Blunt and Penetrating Carotid Artery Injuries.
Gender Differences in Outcomes in Pediatric Trauma
Head Injury Mortality
Head Trauma Research
Hospital Length of Stay After Serious Injury
ICD-9 Procedure List Validation and Recommendations
Identifying Quality Outliers using Severity-Adjusted Mortality Rates or Functional Discharge Status: Does It Make a Difference?
Impact of Obesity on Outcome of Trauma Patients
Incidence of Burn Injuries in Pediatric Population
Incidence of VAP caused by Gram-Negative Bacilli in Trauma ICU patients
Infections Complications in Trauma Patients - Does Hypothermia Increase The Risk?
Injury Severity Measures: Comparison of Methodologies
Injury Severity Scoring Method Using CART
Intra-Abdominal Peritoneal Lavage Study Following Abdominal Trauma
ISS and Mortality Patients 8 Years Old and Under. To Compare with our Data.
Length of Stay and Discharge Status
Massachusetts General Hospital Trauma Outcomes
Morbidity and Mortality Associated with Airbag Deployment in Children
Mortality After Pelvic Fracture: The Effects of Hemodynamic Shock and the Use of External Fixation
National Assessment of Alcohol-related Injury: Do We Have An Estimate of the Impact?
National Trauma Data Bank Annual Report 2002 Filtered for Level I and ACS Verified Facilities
National Variability in Prehospital Care for Trauma
Neural Network Decision Algorithm for Pre-Hospital Injury Severity Risk Assessment
Never Too Old: National Survey of Intentional Injury in the Elderly using the NTDB
Noscomial Pneumonia Review
Outcome data by ISS
Partnership for Development and Dissemination of Outcomes Measures for Injured Children

<b>Project Title</b>
Patterns of Injury Sustained by Rear Seat Passengers
Patterns of Trauma in Middle Aged Motorcyclists
Pediatric Mortality after MVA
Potential Patient and System Factors that Influence Discharge from Acute Care to Inpatient Rehabilitation
Predicting Financial Outcomes In Trauma
Predictive Value of Early Hospital Assessment on Outcome in Pediatric Trauma.
Presence of Emergency Medicine Residency Programs at Level I Trauma Centers: Is There an Effect on Trauma Patient Outcome?
Prognostic Indicators Predictive of Mortality in Geriatric Patients: When is Resuscitation Futile?
Quality Trauma Care Can Be Delivered by General Surgeons in Practice at a Level II Trauma Center
Rapid Infusion
Rate of Operation for Liver/Splenic Trauma in Children
Re-Calculation of TRISS Survival Statistic Co-Efficients Utilizing the NTDB Data Set
Request for NTDB Data Points
Risk Assessment in Blunt Thoracic Trauma
Role of Pre-Hospital ALS Interventions in Trauma
San Joaquin County Trauma Planning - TRISS Study
Simplifying the TRISS Methodology
Spinal Cord Injury
The Burden of Suicide on Trauma Centers
The Combinations of Race and Ethnicity on Rates and Results of Drug and Alcohol Screening in Trauma Patients
The Effect of Payment Source and Race on Resource Utilization and Outcomes Following Major Trauma
The Effect of Pulmonary Artery Catheter use on Mortality in Critically Injured Patients
The Effect of Vena Cava Filters on the Survival of Trauma Patients at High Risk for Venous Thromboembolism.
The Impact of Volume on Geriatric Trauma Outcome.
The Sonography Outcomes Assessment Program
The Use of A1 Pre-Hospital Triage of Injured Children
The Use of Pre-Hospital Data for Mortality Prediction: A Comparison of Neural Networks with Revised Trauma Score
Thrombotic Complications Following Trauma: Incidence and Risk Factors
Tracheobronchial Injuries Following Blunt Trauma
Trauma
Trauma and Pregnancies Risk Factors and Outcomes
Trauma Report Card
Trauma Services: Benchmarking
Traumatic Hip fracture surgery outcomes and complications
Ureteral Trauma in Childhood
Use of Double Contrast CT scan in Blunt Abdominal Trauma
Variation in Rates of Tracheostomy in Trauma Patients with Acute Respiratory Failure

<b>Project Title</b>
Violence Prevention in Pediatric Population
Volume-Outcome Relationship in Trauma Centers: Is It a Function of Patient Risk?

**National Trauma Data Bank  
Annual Report 2004  
Dataset Version 4.0**

## **Executive Summary**

The National Trauma Data Bank (NTDB) is the largest aggregation of trauma registry data ever assembled. It contains over one million records from 405 U.S. trauma centers. The 2004 Annual Report reviews the combined data set for the period 1999 – 2003, containing 633,435 records. The goal of NTDB is to inform the medical community, the public, and decision makers about a wide variety of issues that characterize the current state of care for injured persons in our country. It has implications in many areas including epidemiology, injury control, research, education, acute care, and resource allocation.

This effort is in keeping with the mission of the American College of Surgeons (ACS) Committee on Trauma (COT) which is “To improve the care of the injured through systematic efforts in prevention, care, and rehabilitation”.

### NTDB Hospitals

- 405 hospitals submitted data.
- 105 are verified as Level I, representing 55% of Level I centers.
- 97 are verified as Level II, representing 37% of Level II centers.
- 38 are verified as Level III, representing 15% of Level III centers.
- 50 are verified as Level IV and Level V, representing 11% of Level IV and V centers.

### Patient Characteristics

- NTDB has accrued a total of 1,126,238 records, with 633,435 cases submitted for the period 1999 to 2003.
- The age distribution of patients in NTDB peaks from ages 17 to 24, representing patients injured in Motor Vehicle Traffic related incidents and by Firearm.
- There is a second peak between ages 35 and 44, including Motor Vehicle Traffic related injuries.
- A third smaller peak occurs between ages 72 and 85, consisting of Motor Vehicle Traffic related injuries and Falls.
- Up to age 70, men predominate and after age 70 most patients are women.
- 1.37% of patients died in the ED.
- 58% of patients are admitted to medical-surgical wards.
- 17% are taken directly to the operating room (OR).
- 19% are admitted to the intensive care unit (ICU).

### Mechanism of Injury

- Motor Vehicle Traffic related injuries account for 48.5% of cases in the NTDB
  - There is a dramatic rise in these injuries beginning at age 14 and peaking around age 19.
  - These injuries are associated with the largest number of hospital and ICU days utilized.
  - These injuries accounted for 49% of mortalities.
- Falls account for 16.7% of cases in the NTDB.
  - The incidence of Falls peaks around 82 years of age.
  - Falls are associated with the second largest number of hospital and ICU days utilized.
  - Falls account for 14% of mortalities.

- Transport, Other and Struck By, Against are the next most frequent categories, representing 9.8% and 6.4% of injuries, respectively. Transport, Other includes injuries from snow vehicles, off road vehicles, animal drawn vehicles, and water transport. The category Struck By, Against includes injuries from falling objects, building collapse, etc. See Appendix D for details on these injury categories.
- Firearms account for 5.4% of injuries in NTDB.
  - Firearm injuries peak at 19 years of age, earlier than Motor Vehicle Traffic related injuries, and then steadily decrease after age 21.
  - Firearm injuries accounted for 19% of mortalities.
- Unintentional injuries accounted for 87% of hospital days, while intentional injuries accounted for 12% and a small percentage were undetermined.

### Injury Severity Score

The Injury Severity Score (ISS) is a system for numerically stratifying injury severity. The ISS system has a practical range of 1-75 and risk of death increases with a higher score. NTDB categorizes ISS from 1 – 9 as Minor; 10 – 15 as Moderate; 16 – 24 as Severe; and greater than 24 as Very Severe.

- Nearly two thirds (64.95%) of patients suffer Minor injuries, and the remaining third are distributed nearly equally among Moderate, Severe, and Very Severe injuries.
- Average length of stay (LOS) increases by approximately three days for each consecutive severity grouping.
- The largest group (ISS 1-9) had the shortest average LOS (3.33 days), yet accounted for almost half (42.15%) of the total hospital days due to its size.
- The Moderate group (ISS 10-15) had an average ICU length of stay 1.57 days, accounting for 11% of all ICU days.
- The Severe group (ISS 16-24) had an average ICU length of stay 3.7 days, accounting for 26.87% of all ICU days.
- The Very Severe group (ISS > 24) had an average ICU length of stay 7.32 days, accounting for 44.31% of all ICU days.

### Payment

- Self-Pay is the largest single payment category at 20.59%.
- Managed Care accounts for 14.3%.
- Medicare is third at 13.48%.
- Commercial Insurance accounts for 11.62%.
- Medicaid accounts for 11.2%.

### Mortality

- The largest number of deaths is caused by Motor Vehicle Traffic related injuries, followed by Firearm and Fall.
- Motor Vehicle Traffic related deaths occur in 4.75% of cases, remain relatively stable until 75 years after which they decline.
- Falls result in death in 3.9% of cases.
- Firearms are associated with death in 16.5% of cases, the highest percentage of any penetrating injury.
- Pedestrian injuries are associated with death in 5.53% of cases, the highest percentage for all blunt injuries.
- Fire/Burn is associated with death in 5.24% of cases.
- The percentage of death was highest in the group aged 65 to 89 years.
- Deaths by age has a bimodal distribution that peaks around ages 20 and 80 years.
  - Motor Vehicle Traffic and Firearms account for the first peak.
  - Deaths by Fall and Motor Vehicle Traffic cause the second peak.

- Firearm deaths rise dramatically from 12 to 20 years, and then decline steadily.
- Women fare better than men with regard to mortality in all severity groupings beginning in early adulthood.
- Deaths due to Fall increase gradually up to the 80 – 89 years age range.

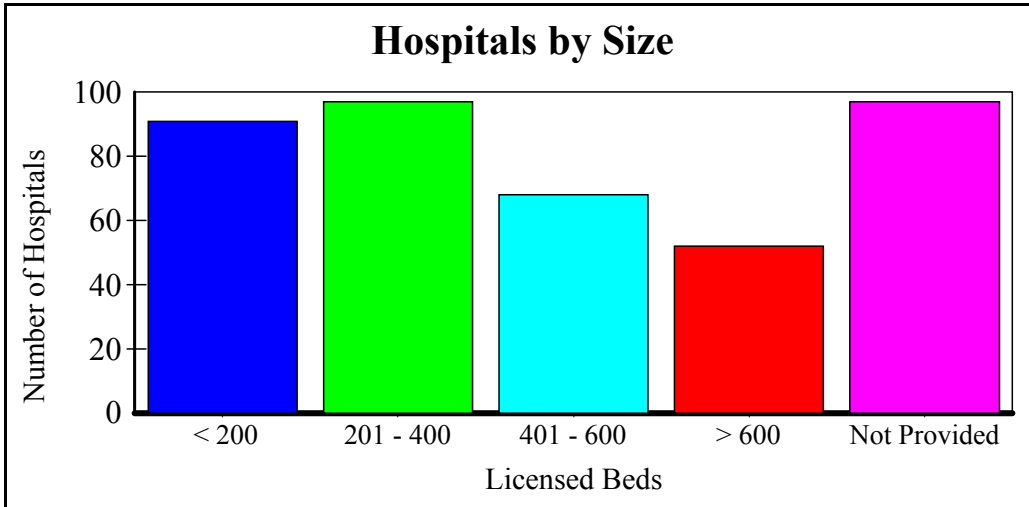
#### Comments

We hope that this document has expanded your understanding of who is admitted to trauma centers in the United States, and why. We further hope that your opinions will be informed by this data, and that you will find ways to share this data with other audiences. Finally, we hope this report has piqued your interest to look more deeply at specific problems in the field of injury using the NTDB as a resource.

The full National Trauma Data Bank Report 2004 is available on the ACS website as a PDF file and a PowerPoint presentation at <http://www.ntdb.org>.







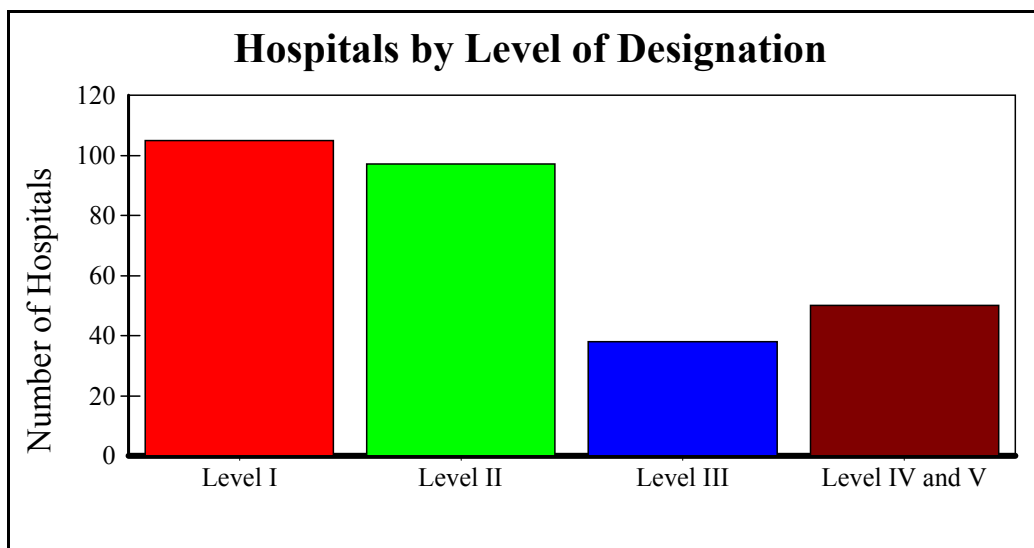
**Figure 2A**

Size of hospitals submitting data to the NTDB as indicated by number of licensed beds. Total N = 405.

Bed size	Number of Hospitals by Size	% of Total Hospitals by Size
< 200	91	22.47%
201 - 400	97	23.95%
401 - 600	68	16.79%
> 600	52	12.84%
Not Provided	97	23.95%
<b>Totals</b>	<b>405</b>	

**Figure 2B**

Hospitals by size. (Percentage of total hospitals by size = number of hospitals by bed size divided by the total number of hospitals X 100).

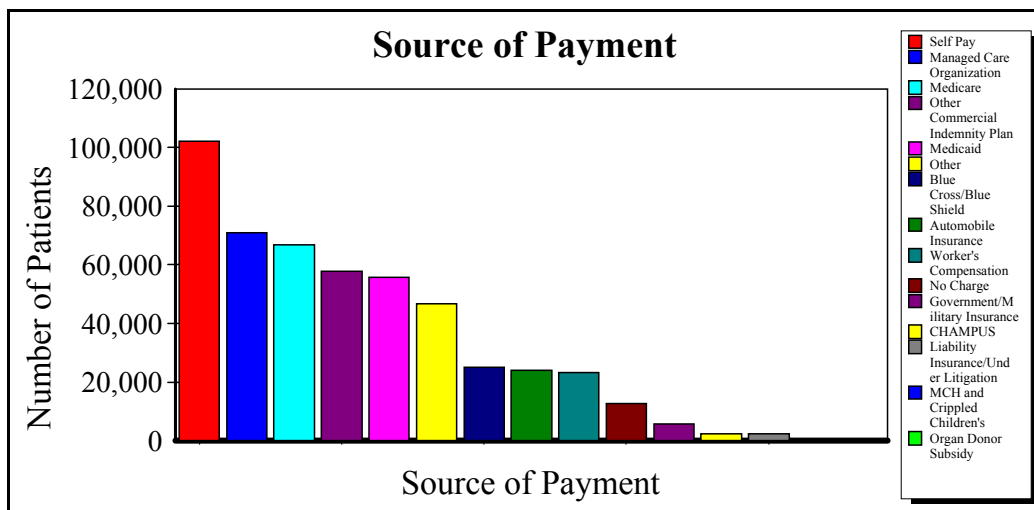


**Figure 3A**  
 Number of hospitals submitting to the NTDB ranked by level of designation. Total N = 405.

Level of Designation	Number of Hospitals Submitting to the NTDB	Number of All Trauma Centers in the U.S.*	Percentage of Submitting Hospitals
I	105	190	55.00%
II	97	263	37.00%
III	38	251	15.00%
IV and V	50	450	11.00%
Level not designated	21	0	
Level not provided	94	0	
<b>Totals</b>	<b>405</b>	<b>1154</b>	

**Figure 3B**  
 Percentage of submitting hospitals for each level of designation. (Percentage of submitting hospitals = number of hospitals submitting to the NTDB divided by the number of all trauma centers X 100 by level of designation).

\* Number of all trauma centers in the U.S. were generated from JAMA, March 26,2003-Vol 289, No.12 authored by Ellen J. MacKenzie, PhD, David B. Hoyt, MD, John C. Sacra, MD, Gregory J. Jurkovich, MD, Anthony R. Carlini, MS, Sandra D. Teitelbaum, MLS, Harry Teter, Jr, LLB.



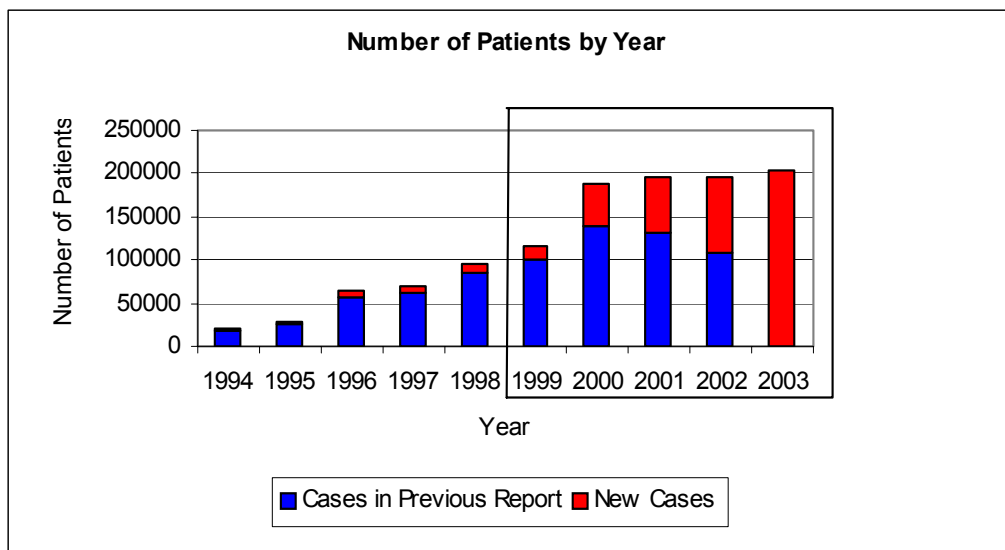
**Figure 4A**

Source of payment for hospital charges. Total patients with known source of payment = 496,198.

Source of Payment	Number of Patients	% of Total Patients
Self Pay	102,163	20.59%
Managed Care Organization	70,958	14.30%
Medicare	66,890	13.48%
Other Commercial Indemnity Plan	57,679	11.62%
Medicaid	55,796	11.24%
Other	46,606	9.39%
Blue Cross/Blue Shield	25,174	5.07%
Automobile Insurance	24,005	4.84%
Worker's Compensation	23,365	4.71%
No Charge	12,756	2.57%
Government/Military Insurance	5,582	1.12%
CHAMPUS	2,378	0.48%
Liability Insurance/Under Litigation	2,354	0.47%
MCH and Crippled Children's	485	0.10%
Organ Donor Subsidy	7	0.00%
<b>Totals</b>	<b>496,198</b>	

**Figure 4B**

Percentage of patients by source of payment. (Percentage of patients = number of patients by source of payment divided by the number of patients X 100).



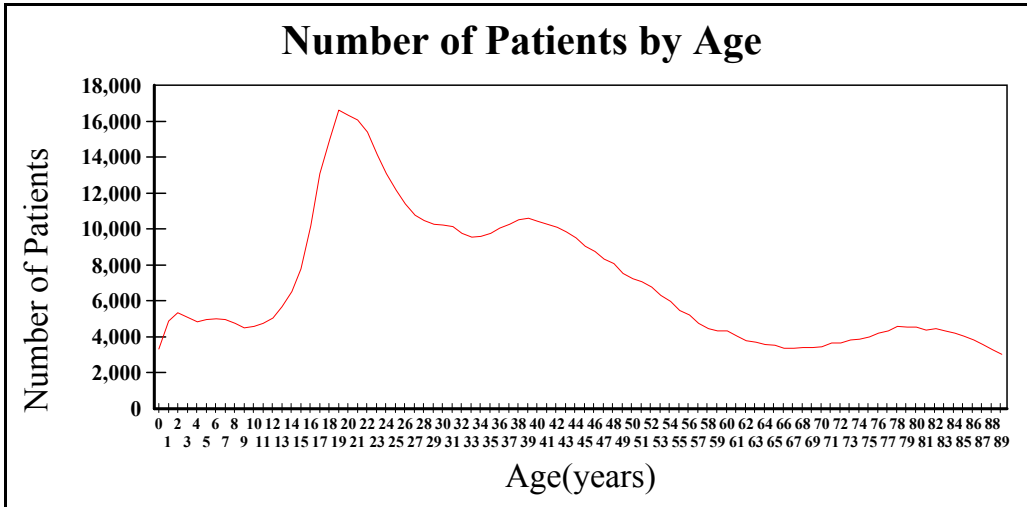
**Figure 5A**

Yearly comparison of all patients in the NTDB. The NTDB currently contains 1,126,238 records. The 2004 Annual Report reviews the combined data set for the period 1999 - 2003 that contains 633,435 records, highlighted in the box. Total N = 633,435.

Year	Total Number of Patients for Year 1993 - 2003	Number of Patients for 2004 Report
1993	1,532	0
1994	18,939	0
1995	25,235	0
1996	57,938	0
1997	62,056	0
1998	84,674	0
1999	101,746	*88,230
2000	188,372	*152,342
2001	193,546	*159,997
2002	188,859	*145,546
2003	203,341	*87,320
<b>Totals</b>	<b>1,126,238</b>	<b>633,435</b>

**Figure 5B**

\* Some records were filtered from the analysis for this report due to inconsistencies or missing data, based on the filters shown in Appendix C.



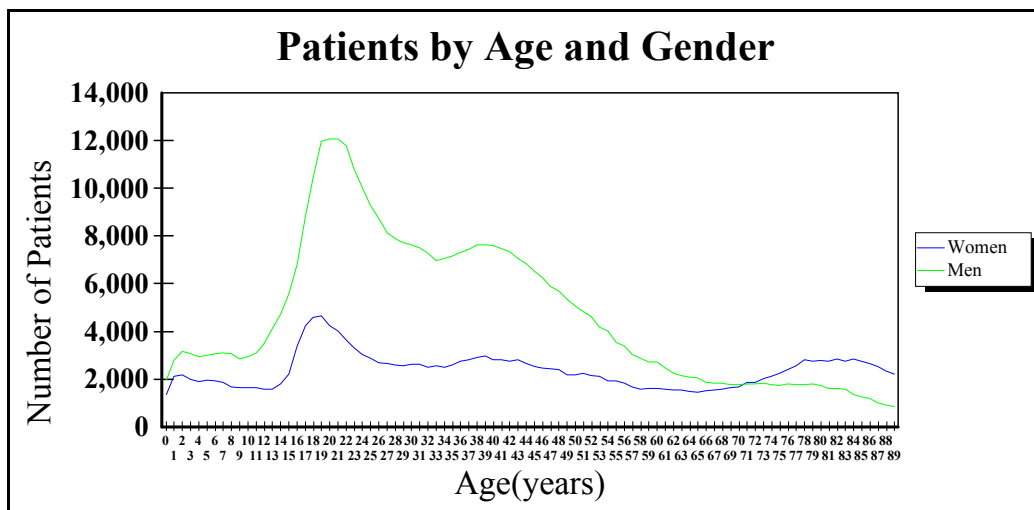
**Figure 6A**

Number of patients at each age from 0 to 89. Total N = 633,435.

Age Range	Number of Patients	% of All Patients
< 1	3,319	0.52%
1-4	20,168	3.18%
5-9	24,137	3.81%
10-14	26,597	4.20%
15-19	62,689	9.90%
20-24	75,067	11.85%
25-34	104,355	16.47%
35-44	101,366	16.00%
45-54	75,116	11.86%
55-64	43,722	6.90%
65-74	35,570	5.62%
75-84	43,581	6.88%
85-89	17,748	2.80%
<b>Totals</b>	<b>633,435</b>	

**Figure 6B**

Percentage of all patients = number of patients by age range divided by total number of patients X 100.



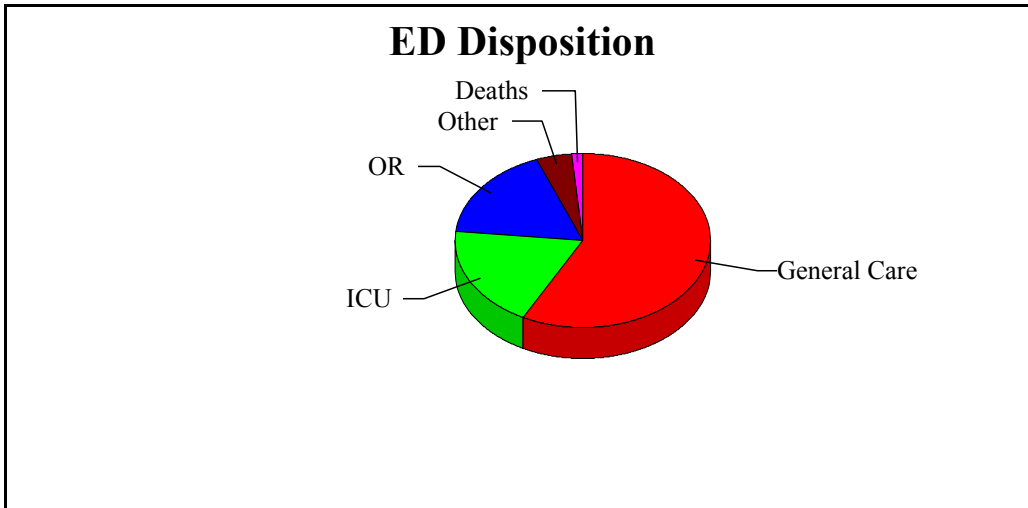
**Figure 7A**

Number of men and women at each age from 0 to 89. Total N = 633,435.

Age Range	Number of Patients	Number of Patients Men	% of Age Group Men	Number of Patients Women	% of Age Group Women
< 1	3,319	1,959	59.02%	1,360	40.98%
1-4	20,168	11,975	59.38%	8,193	40.62%
5-9	24,137	15,094	62.53%	9,043	37.47%
10-14	26,597	18,365	69.05%	8,232	30.95%
15-19	62,689	43,597	69.54%	19,092	30.46%
20-24	75,067	56,779	75.64%	18,288	24.36%
25-34	104,355	78,171	74.91%	26,184	25.09%
35-44	101,366	73,450	72.46%	27,916	27.54%
45-54	75,116	52,457	69.83%	22,659	30.17%
55-64	43,722	27,283	62.40%	16,439	37.60%
65-74	35,570	18,317	51.50%	17,253	48.50%
75-84	43,581	16,785	38.51%	26,796	61.49%
85-89	17,748	5,266	29.67%	12,482	70.33%
<b>Totals</b>	<b>633,435</b>	<b>419,498</b>		<b>213,937</b>	

**Figure 7B**

Percentage of patients for men and women at each age range from 0 to 89. (Percentage of patients by gender = number of patients by gender divided by the number of patients X 100 by age range).



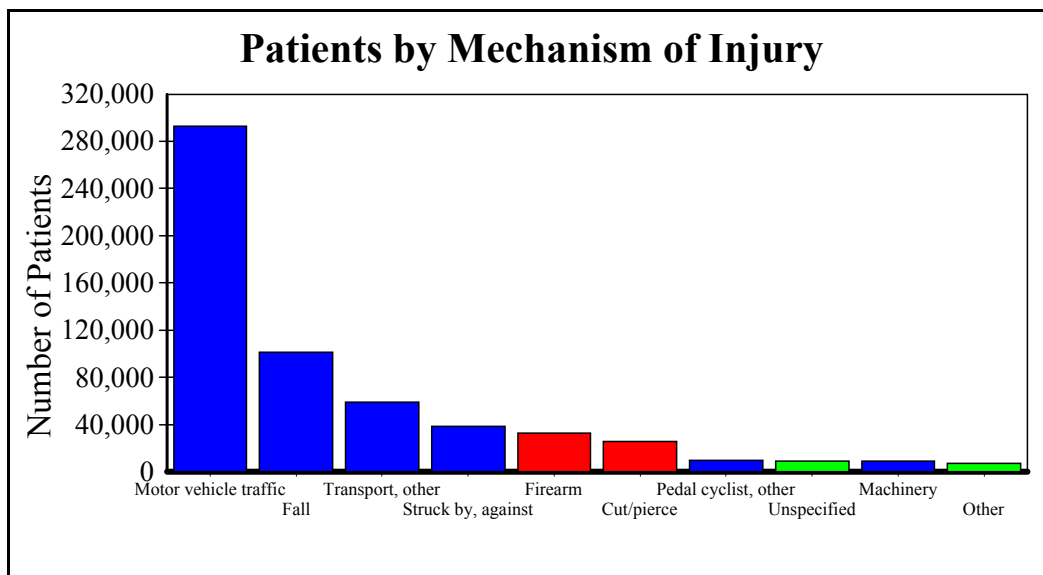
**Figure 8A**

Proportional distribution of 576,247 patients treated in the emergency department before admission or death. General care was defined for the following ED dispositions: burn, ED observation, floor, and telemetry. Other was defined for the following ED dispositions: discharged SNF, unable to complete treatment. Total N = 576,247.

ED Disposition	Number of Patients	Percentage of ED Disposition Patients
General Care	332,928	57.78%
ICU	109,080	18.93%
OR	100,050	17.36%
Other	26,311	4.57%
Deaths	7,878	1.37%
<b>Totals</b>	<b>576,247</b>	

**Figure 8B**

Percentage of ED disposition = number of patients by ED disposition divided by total number of patients X 100.



**Figure 9A**

Proportional distribution of patients, grouped by mechanism of injury. Total N = 604,266.

Mechanism of injury was defined in Appendix D.

Other was defined for other specified and classifiable mechanism.

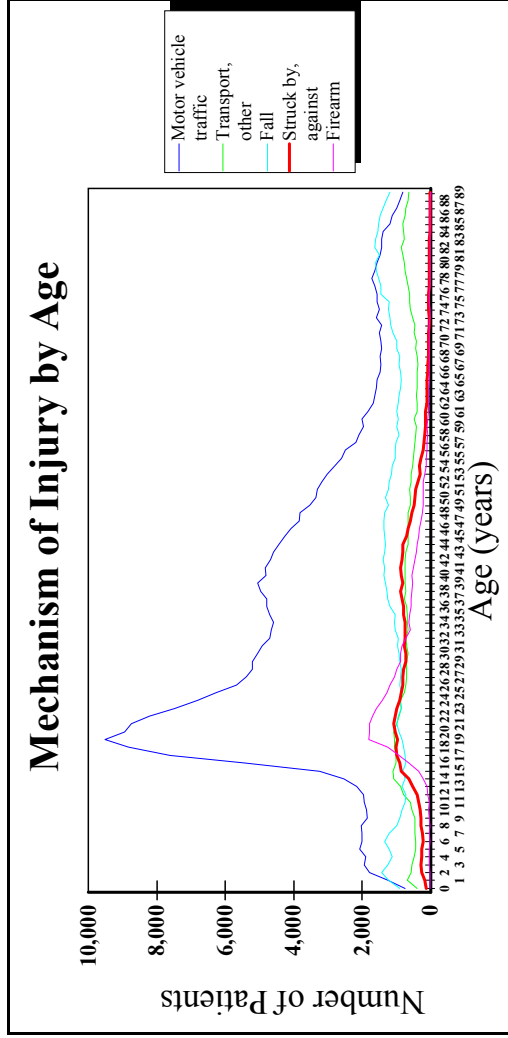
Blue bars represent blunt mechanisms of injury. Red bars represent penetrating mechanisms of injury. Green bars represent unspecified and other mechanisms.

Mechanism of Injury	Number of Patients	% of Total Patients by Mechanism of Injury
Motor vehicle traffic	293,082	48.50%
Fall	101,111	16.73%
Transport, other	59,176	9.79%
Struck by, against	38,414	6.36%
Firearm	32,533	5.38%
Cut/pierce	25,883	4.28%
Pedal cyclist, other	9,889	1.64%
Unspecified	8,911	1.47%
Machinery	8,800	1.46%
Other specified and classifiable	7,294	1.21%
Natural/environmental	4,349	0.72%
Fire/burn	4,063	0.67%
Pedestrian, other	3,653	0.60%
Other specified, not elsewhere classifiable	1,789	0.30%
Overexertion	1,451	0.24%
Drowning/submersion	1,047	0.17%
Suffocation	955	0.16%
Poisoning	879	0.15%
Other specified, not elsewhere	713	0.12%
Adverse effects	274	0.05%
<b>Totals</b>	<b>604,266</b>	

**Figure 9B**

Percentage of total patients by mechanism of injury = number of patients by mechanism of injury divided by total number of patients X 100.





**Figure 10A**

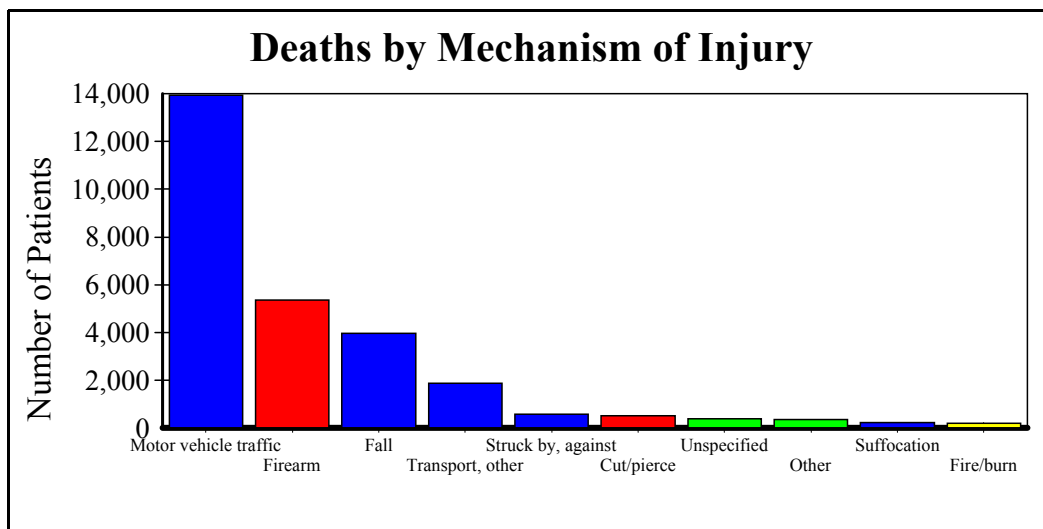
Number of patients injured by the most common mechanism of injury categories at each age from 0 to 89. Total N = 524,316.

Mechanism of injury was defined in Appendix D.

**Figure 10B**

Percentage of patients due to the most common mechanism of injury categories at each age range from 0 to 89. (Percentage of patients by mechanisms of injury = number of patients divided by the number of patients X 100 by mechanisms of injury and age range)

Age Range	Number of Patients	Number of Patients Motor vehicle traffic	% of Patients Motor vehicle traffic	Number of Patients Transport, other	% of Patients Transport, other	Number of Patients Fall	% of Patients Fall	Number of Patients Struck by, against	% of Patients Struck by, against	Number of Patients Firearm	% of Patients Firearm
< 1	2,224	758	34.08%	390	17.54%	914	41.10%	133	5.98%	29	1.30%
1-4	15,384	6,896	44.83%	2,295	14.92%	5,073	32.98%	1,002	6.51%	118	0.77%
5-9	19,384	9,973	51.45%	2,256	11.64%	5,679	29.30%	1,302	6.72%	174	0.90%
10-14	21,044	10,475	49.78%	3,898	18.52%	3,896	18.51%	2,228	10.59%	547	2.60%
15-19	53,612	34,666	64.66%	5,255	9.80%	3,938	7.35%	4,754	8.87%	4,999	9.32%
20-24	62,934	40,203	63.88%	4,750	7.55%	4,630	7.36%	5,052	8.03%	8,299	13.19%
25-34	85,011	51,705	60.82%	7,031	8.27%	9,388	11.04%	7,783	9.16%	9,104	10.71%
35-44	81,340	47,658	58.59%	7,297	8.97%	12,843	15.79%	8,322	10.23%	5,220	6.42%
45-54	61,388	35,229	57.39%	6,140	10.00%	12,709	20.70%	4,897	7.98%	2,413	3.93%
55-64	36,743	20,101	54.71%	4,415	12.02%	9,704	26.41%	1,643	4.47%	880	2.40%
65-74	30,829	14,929	48.43%	4,480	14.53%	10,293	33.39%	712	2.31%	415	1.35%
75-84	38,696	15,446	39.92%	7,375	19.06%	15,128	39.09%	467	1.21%	280	0.72%
85-89	15,727	5,043	32.07%	3,594	22.85%	6,916	43.98%	119	0.76%	55	0.35%
<b>Totals</b>	<b>524,316</b>	<b>293,082</b>		<b>59,176</b>		<b>101,111</b>		<b>38,414</b>		<b>32,533</b>	



**Figure 11A**

Number of deaths in each category of injury mechanism. Total N = 28,263.

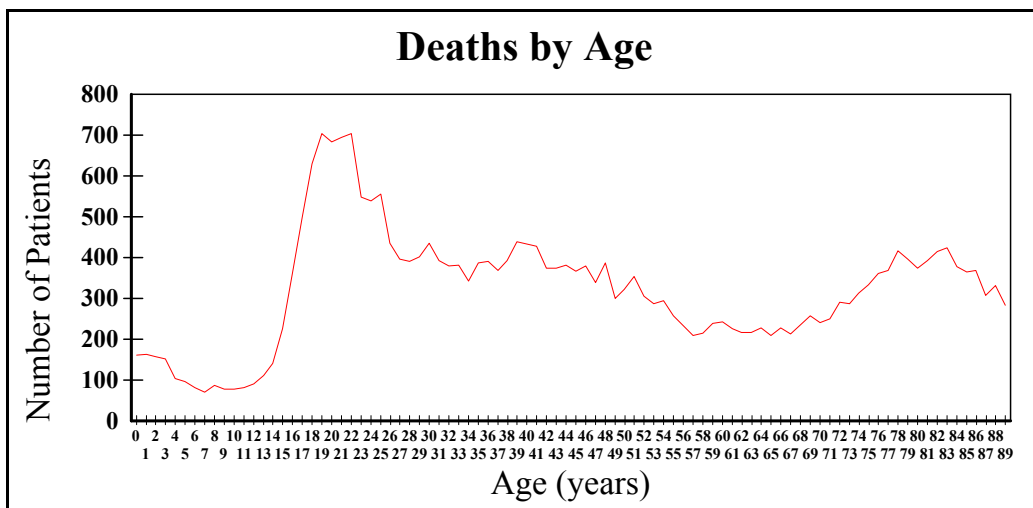
Mechanism of injury was defined in Appendix D.

Other was defined for other specified and classifiable mechanism.

Blue bars represent blunt mechanisms of injury. Red bars represent penetrating mechanisms of injury. Yellow bar represents burn mechanism. Green bars represent unspecified and other mechanisms.

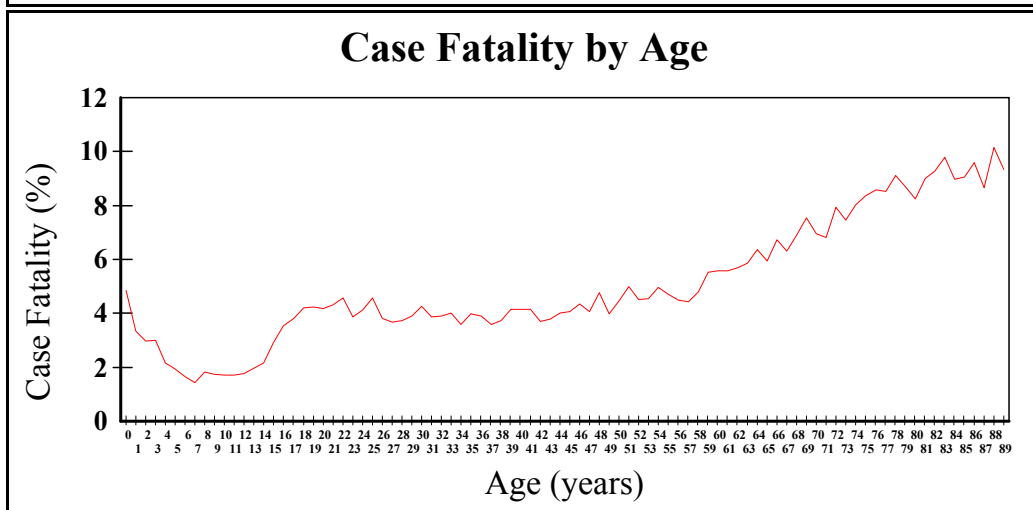
Mechanism of Injury	Number of Patients	Number of Patients Died	Case Fatality Mechanism of Injury
Motor vehicle traffic	293,082	13,922	4.75%
Firearm	32,533	5,360	16.48%
Fall	101,111	3,974	3.93%
Transport, other	59,176	1,870	3.16%
Struck by, against	38,414	591	1.54%
Cut/pierce	25,883	515	1.99%
Unspecified	8,911	399	4.48%
Other specified and classifiable	7,294	366	5.02%
Suffocation	955	228	23.87%
Fire/burn	4,063	213	5.24%
Pedestrian, other	3,653	202	5.53%
Drowning/submersion	1,047	184	17.57%
Machinery	8,800	157	1.78%
Pedal cyclist, other	9,889	137	1.39%
Natural/environmental	4,349	51	1.17%
Other specified, not elsewhere classifiable	1,789	35	1.96%
Poisoning	879	26	2.96%
Adverse effects	274	18	6.57%
Other specified, not elsewhere	713	12	1.68%
Overexertion	1,451	3	0.21%
<b>Totals</b>	<b>604,266</b>	<b>28,263</b>	

**Figure 11B**



**Figure 12A**

Number of deaths at each age from 0 to 89. Total N = 28,968.

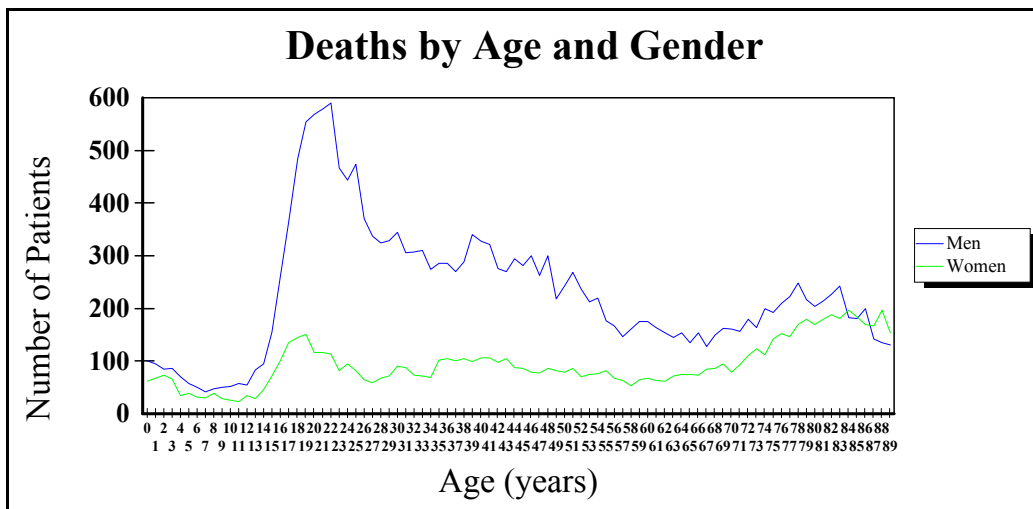


**Figure 12B**

Case fatality at each age from 0 to 89 (Case Fatality = number of deaths divided by the number of patients X 100 by age).

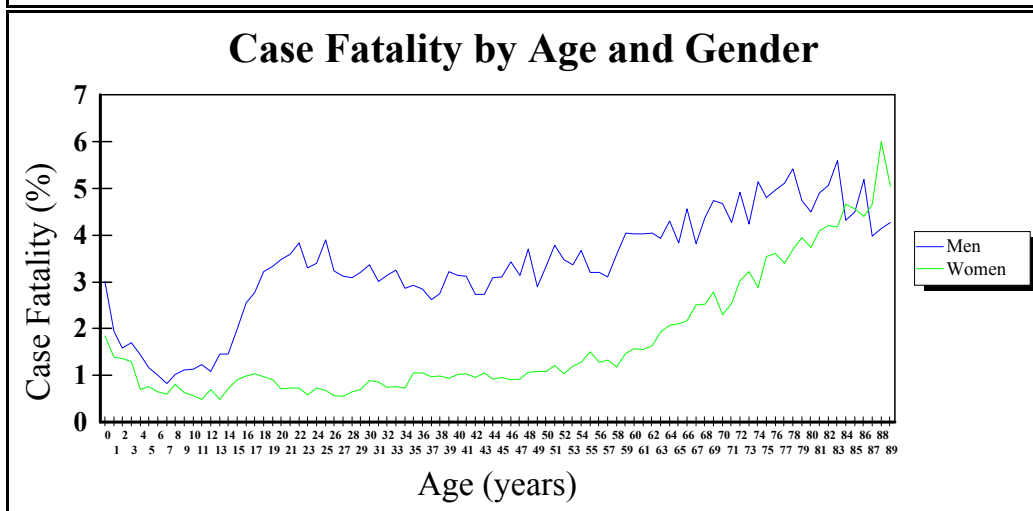
Age Range	Number of Patients	Number of Patients Died	Case Fatality by Age Range
< 1	3,319	161	4.85%
1-4	20,168	577	2.86%
5-9	24,137	413	1.71%
10-14	26,597	501	1.88%
15-19	62,689	2,418	3.86%
20-24	75,067	3,167	4.22%
25-34	104,355	4,111	3.94%
35-44	101,366	3,967	3.91%
45-54	75,116	3,335	4.44%
55-64	43,722	2,284	5.22%
65-74	35,570	2,519	7.08%
75-84	43,581	3,858	8.85%
85-89	17,748	1,657	9.34%
<b>Totals</b>	<b>633,435</b>	<b>28,968</b>	

**Figure 12C**



**Figure 13A**

Number of men and women who died at each age from 0 to 89. Total N = 28,968.



**Figure 13B**

Case fatality for men and women at each age from 0 to 89. (Case fatality = number of deaths divided by the number of patients X 100 by age and gender).

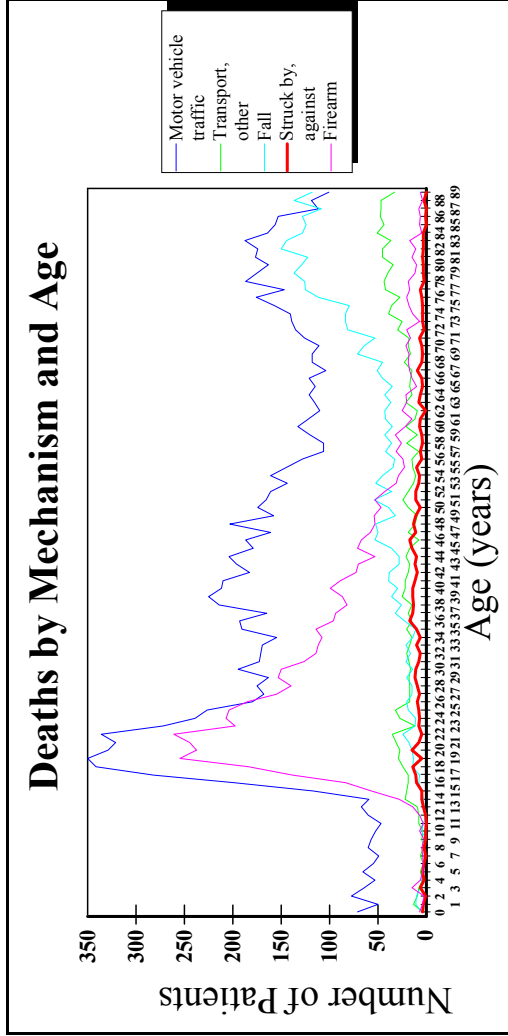
Age Range	Number of Patients Died	Number of Women	Number of Women Died	Case Fatality Women	Number of Men	Number of Men Died	Case Fatality Men
< 1	161	1,360	61	4.49%	1,959	100	5.10%
1-4	577	8,193	241	2.94%	11,975	336	2.81%
5-9	413	9,043	166	1.84%	15,094	247	1.64%
10-14	501	8,232	158	1.92%	18,365	343	1.87%
15-19	2,418	19,092	602	3.15%	43,597	1,816	4.17%
20-24	3,167	18,288	521	2.85%	56,779	2,646	4.66%
25-34	4,111	26,184	737	2.81%	78,171	3,374	4.32%
35-44	3,967	27,916	1,010	3.62%	73,450	2,957	4.03%
45-54	3,335	22,659	796	3.51%	52,457	2,539	4.84%
55-64	2,284	16,439	667	4.06%	27,283	1,617	5.93%
65-74	2,519	17,253	931	5.40%	18,317	1,588	8.67%
75-84	3,858	26,796	1,703	6.36%	16,785	2,155	12.84%
85-89	1,657	12,482	869	6.96%	5,266	788	14.96%
<b>Totals</b>	<b>28,968</b>	<b>213,937</b>	<b>8,462</b>		<b>419,498</b>	<b>20,506</b>	

**Figure 13C**

**Figure 14A**

Number of deaths due to injuries from the most common mechanism of injury categories at each age from 0 to 89. Total N = 25,717.

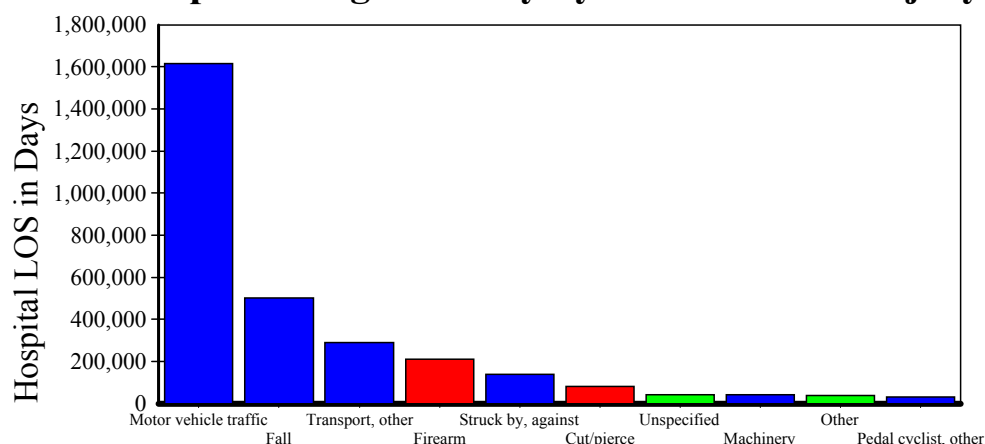
Mechanism of injury was defined in Appendix D.



**Figure 14B**

Case fatality due to the most common mechanism of injury categories at each age range from 0 to 89. (Case fatality = number of deaths divided by the number of patients X 100 by mechanism of injury and age range).

Age Range	Number of Patients Motor vehicle traffic	Number of Patients Died Motor vehicle traffic	Case Fatality Motor vehicle traffic	Number of Patients Transport, other	Number of Patients Died Transport, other	Case Fatality Transport, other	Number of Patients Fall	Number of Patients Died Fall	Case Fatality Fall	Number of Patients Struck by, against	Number of Patients Died Struck by, against	Case Fatality Struck by, against	Number of Patients Firearm	Number of Patients Died Firearm	Case Fatality Firearm
< 1	758	71	9.37%	390	4	1.03%	914	5	0.55%	133	4	3.01%	29	7	24.14%
1-4	6,896	244	3.54%	2,295	34	1.48%	5,073	32	0.63%	1,002	12	1.20%	118	27	22.88%
5-9	9,973	287	2.88%	2,256	23	1.02%	5,679	10	0.18%	1,302	10	0.77%	174	18	10.34%
10-14	10,475	285	2.72%	3,898	51	1.31%	3,896	13	0.33%	2,228	10	0.45%	547	59	10.79%
15-19	34,666	1,290	3.72%	5,255	111	2.11%	3,938	47	1.19%	4,754	45	0.95%	4,999	718	14.36%
20-24	40,203	1,497	3.72%	4,750	132	2.78%	4,630	80	1.73%	5,052	43	0.85%	8,299	1,149	13.85%
25-34	51,705	1,777	3.44%	7,031	187	2.66%	9,388	175	1.86%	7,783	86	1.10%	9,104	1,448	15.91%
35-44	47,658	1,993	4.18%	7,297	195	2.67%	12,843	291	2.27%	8,322	125	1.50%	5,220	857	16.42%
45-54	35,229	1,694	4.81%	6,140	151	2.46%	12,709	449	3.53%	4,897	110	2.25%	2,413	506	20.97%
55-64	20,101	1,207	6.00%	4,415	144	3.26%	9,704	388	4.00%	1,643	58	3.53%	880	239	27.16%
65-74	14,929	1,228	8.23%	4,480	218	4.87%	10,293	613	5.96%	712	49	6.88%	415	157	37.83%
75-84	15,446	1,708	11.06%	7,375	401	5.44%	15,128	1,255	8.30%	467	36	7.71%	280	144	51.43%
85-89	5,043	641	12.71%	3,594	219	6.09%	6,916	616	8.91%	119	3	2.52%	55	31	56.36%
<b>Totals</b>	<b>293,082</b>	<b>13,922</b>		<b>59,176</b>	<b>1,870</b>		<b>101,111</b>	<b>3,974</b>		<b>38,414</b>	<b>591</b>		<b>32,533</b>	<b>5,360</b>	

**Total Hospital Length of Stay by Mechanism of Injury****Figure 15A**

Proportional distribution of total hospital length of stay, grouped by mechanism of injury. Total N = 604,266. Total hospital length of stay = 3,091,764 days.

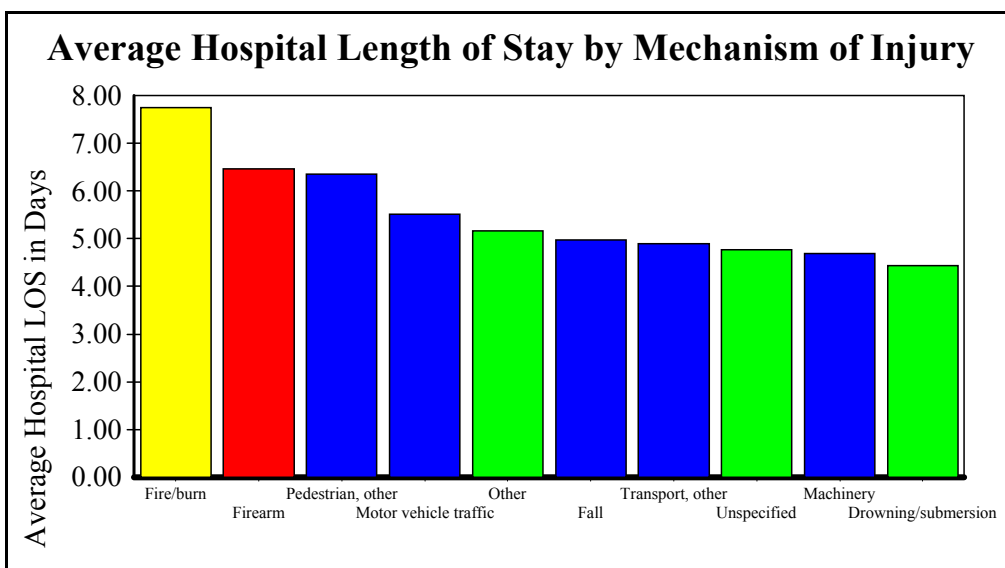
Mechanism of injury was defined in Appendix D.

Other was defined for other specified and classifiable mechanism.

Blue bars represent blunt mechanisms of injury. Red bars represent penetrating mechanisms of injury. Green bars represent unspecified and other mechanisms.

**Figure 15B**

Mechanism of Injury	Number of Patients	% of Total Patients	Total of Hospital LOS in Days	% of Hospital LOS in Days	Average of Hospital LOS in Days
Motor vehicle traffic	293,082	48.50%	1,614,910	52.23%	5.51
Fall	101,111	16.73%	502,101	16.24%	4.97
Transport, other	59,176	9.79%	289,478	9.36%	4.89
Firearm	32,533	5.38%	210,309	6.80%	6.46
Struck by, against	38,414	6.36%	139,002	4.50%	3.62
Cut/pierce	25,883	4.28%	83,662	2.71%	3.23
Unspecified	8,911	1.47%	42,533	1.38%	4.77
Machinery	8,800	1.46%	41,212	1.33%	4.68
Other specified and classifiable	7,294	1.21%	37,693	1.22%	5.17
Pedal cyclist, other	9,889	1.64%	33,382	1.08%	3.38
Fire/burn	4,063	0.67%	31,467	1.02%	7.74
Pedestrian, other	3,653	0.60%	23,183	0.75%	6.35
Natural/environmental	4,349	0.72%	15,548	0.50%	3.58
Other specified, not elsewhere classifiable	1,789	0.30%	7,111	0.23%	3.97
Drowning/submersion	1,047	0.17%	4,642	0.15%	4.43
Suffocation	955	0.16%	4,078	0.13%	4.27
Overexertion	1,451	0.24%	3,525	0.11%	2.43
Poisoning	879	0.15%	2,988	0.10%	3.40
Adverse effects	274	0.05%	2,476	0.08%	9.04
Other specified, not elsewhere	713	0.12%	2,464	0.08%	3.46
<b>Totals</b>	<b>604,266</b>		<b>3,091,764</b>		



**Figure 16A**

Average hospital length of stay grouped by mechanism of injury (Average hospital length of stay = total hospital length of stay divided by the number of patients by mechanisms of injury). Total N = 603,992.

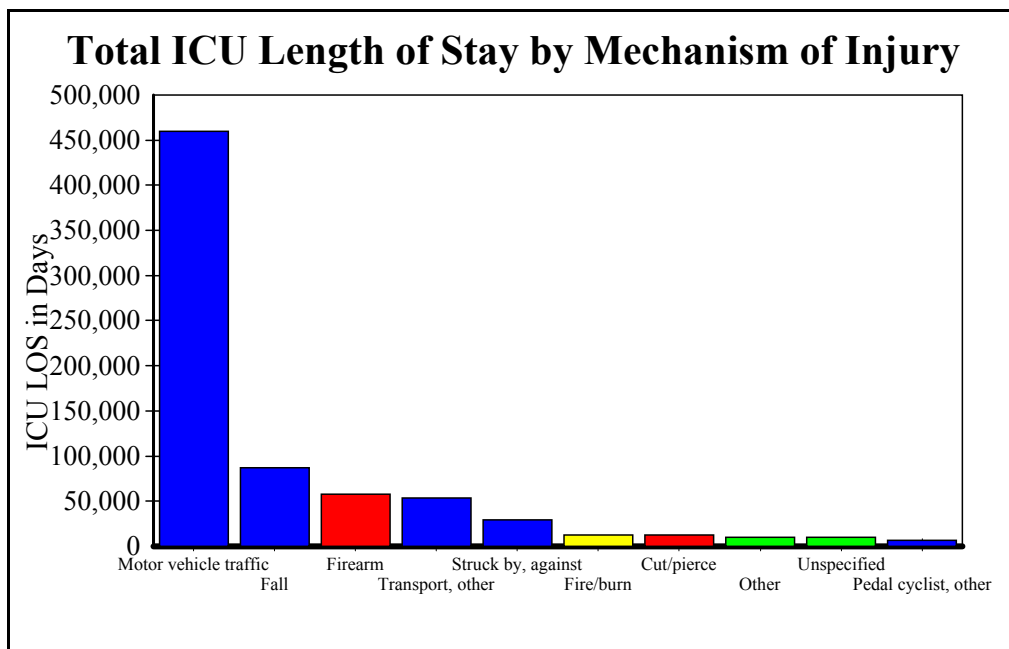
Mechanism of injury was defined in Appendix D.

Other was defined for other specified and classifiable mechanism.

Blue bars represent blunt mechanisms of injury. Red bars represent penetrating mechanisms of injury. Yellow bar represents burn mechanism of injury. Green bars represent unspecified and other mechanisms.

Mechanism of Injury	Number of Patients	% of Total Patients	Average of Hospital LOS in Days
Fire/burn	4,063	0.67%	7.74
Firearm	32,533	5.39%	6.46
Pedestrian, other	3,653	0.60%	6.35
Motor vehicle traffic	293,082	48.52%	5.51
Other specified and classifiable	7,294	1.21%	5.17
Fall	101,111	16.74%	4.97
Transport, other	59,176	9.80%	4.89
Unspecified	8,911	1.48%	4.77
Machinery	8,800	1.46%	4.68
Drowning/submersion	1,047	0.17%	4.43
Suffocation	955	0.16%	4.27
Other specified, not elsewhere classifiable	1,789	0.30%	3.97
Struck by, against	38,414	6.36%	3.62
Natural/environmental	4,349	0.72%	3.58
Other specified, not elsewhere	713	0.12%	3.46
Poisoning	879	0.15%	3.40
Pedal cyclist, other	9,889	1.64%	3.38
Cut/pierce	25,883	4.29%	3.23
Overexertion	1,451	0.24%	2.43
<b>Totals</b>	<b>603,992</b>		

**Figure 16B**



**Figure 17A**

Proportional distribution of total days of ICU care grouped by mechanism of injury. Total N = 444,787. Total ICU length of stay = 759,492 days.

Mechanism of injury was defined in Appendix D.

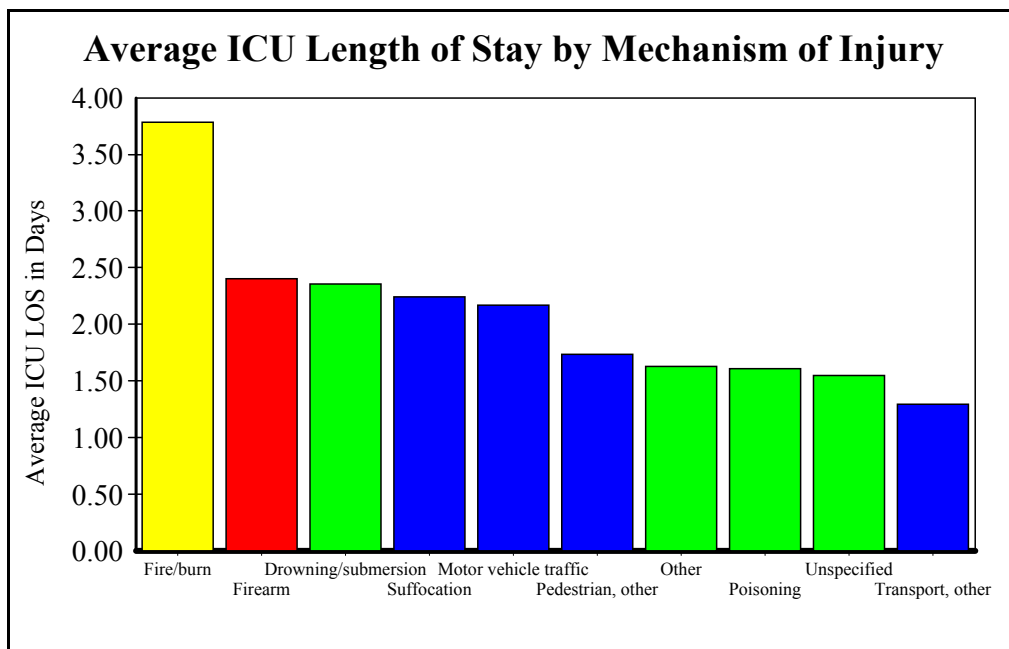
Other was defined for other specified and classifiable mechanism.

Blue bars represent blunt mechanisms of injury. Red bars represent penetrating mechanisms of injury. Yellow bar represents burn mechanism of injury. Green bars represent unspecified and other mechanisms.

**Figure 17B**

Mechanism of Injury	Number of Patients	% of Total Patients	Total of ICU LOS in Days	% of ICU LOS in Days
Motor vehicle traffic	212,188	47.71%	459,846	60.55%
Fall	77,760	17.48%	87,457	11.52%
Firearm	23,866	5.37%	57,350	7.55%
Transport, other	41,762	9.39%	53,959	7.10%
Struck by, against	28,752	6.46%	29,639	3.90%
Fire/burn	3,344	0.75%	12,662	1.67%
Cut/pierce	19,547	4.39%	12,127	1.60%
Other specified and classifiable	6,013	1.35%	9,802	1.29%
Unspecified	6,273	1.41%	9,696	1.28%
Pedal cyclist, other	6,868	1.54%	6,410	0.84%
Machinery	6,857	1.54%	6,402	0.84%
Pedestrian, other	2,665	0.60%	4,624	0.61%
Natural/environmental	3,226	0.73%	2,295	0.30%
Drowning/submersion	879	0.20%	2,072	0.27%
Suffocation	791	0.18%	1,774	0.23%
Other specified, not elsewhere classifiable	1,360	0.31%	1,374	0.18%
Poisoning	663	0.15%	1,068	0.14%
Adverse effects	210	0.05%	524	0.07%
Other specified, not elsewhere	493	0.11%	309	0.04%
Overexertion	1,270	0.29%	102	0.01%
<b>Totals</b>	<b>444,787</b>		<b>759,492</b>	





**Figure 18A**

Average ICU length of stay grouped by mechanism of injury. Total N = 444,577.

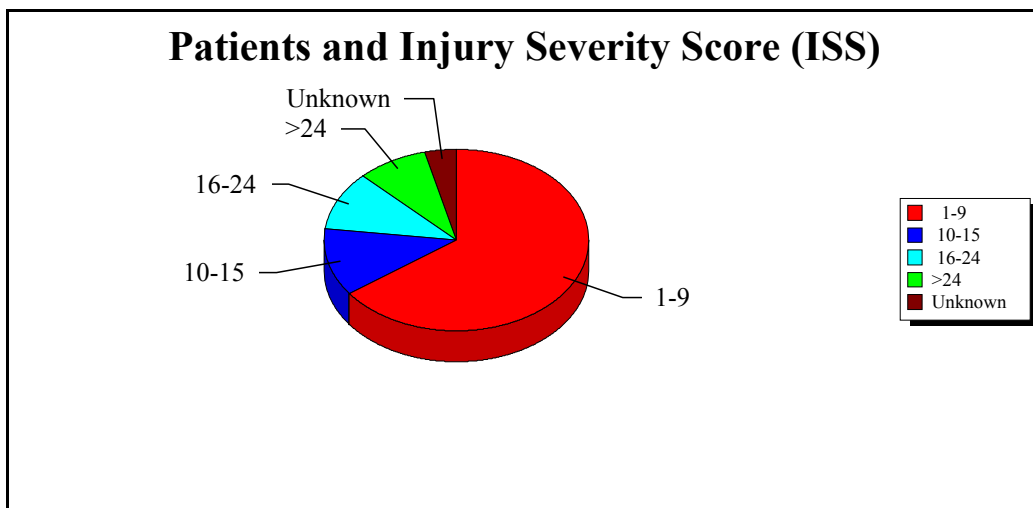
Mechanism of injury was defined in Appendix D.

Other was defined for other specified and classifiable mechanism.

Blue bars represent blunt mechanisms of injury. Red bars represent penetrating mechanisms of injury. Yellow bar represents burn mechanism of injury. Green bars represent unspecified and other mechanisms.

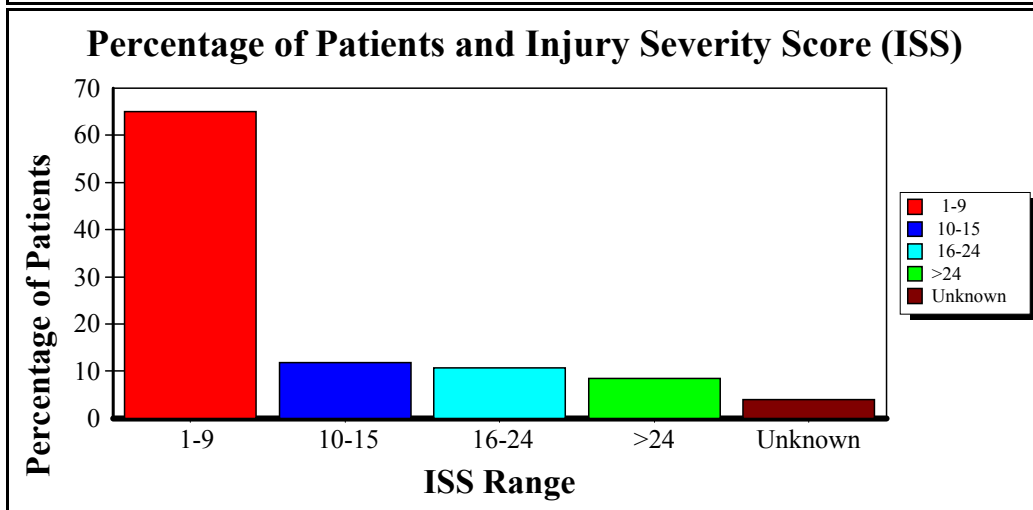
Mechanism of Injury	Number of Patients	% of Total Patients	Average of ICU LOS in Days
Fire/burn	3,344	0.75%	3.79
Firearm	23,866	5.37%	2.40
Drowning/submersion	879	0.20%	2.36
Suffocation	791	0.18%	2.24
Motor vehicle traffic	212,188	47.73%	2.17
Pedestrian, other	2,665	0.60%	1.74
Other specified and classifiable	6,013	1.35%	1.63
Poisoning	663	0.15%	1.61
Unspecified	6,273	1.41%	1.55
Transport, other	41,762	9.39%	1.29
Fall	77,760	17.49%	1.12
Struck by, against	28,752	6.47%	1.03
Other specified, not elsewhere classifiable	1,360	0.31%	1.01
Machinery	6,857	1.54%	0.93
Pedal cyclist, other	6,868	1.54%	0.93
Natural/environmental	3,226	0.73%	0.71
Other specified, not elsewhere	493	0.11%	0.63
Cut/pierce	19,547	4.40%	0.62
Overexertion	1,270	0.29%	0.08
<b>Totals</b>	<b>444,577</b>		

**Figure 18B**



**Figure 19A**

Proportional distribution of patients grouped by categories of the Injury Severity Score (ISS) range. Total N = 633,435.

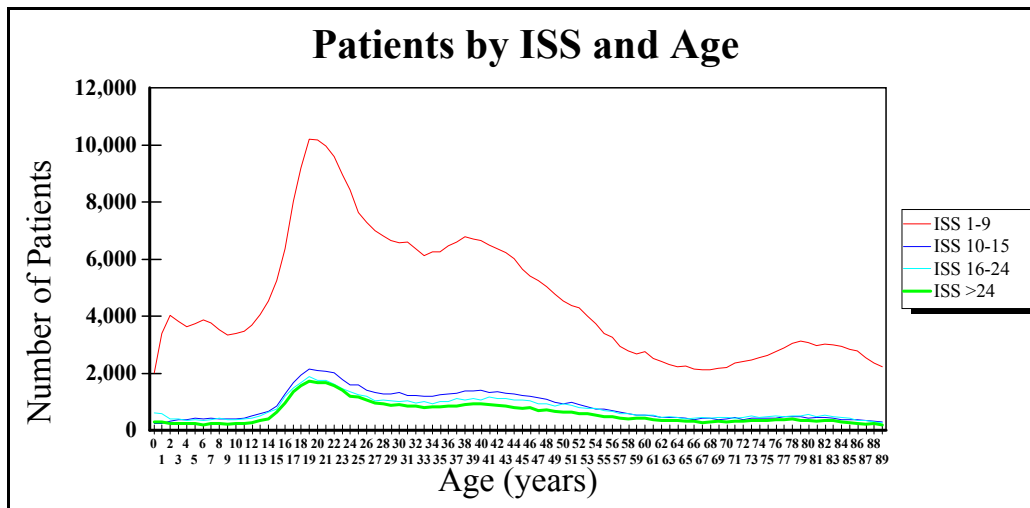


**Figure 19B**

Percentage of patients by Injury Severity Score (ISS) range. (Percentage of patients = number of patients for each ISS range divided by the total number of patients X 100).

ISS Range	Number of Patients	% of Total Patients
1-9	411,420	64.95%
10-15	75,295	11.89%
16-24	68,143	10.76%
>24	53,738	8.48%
Unknown	24,839	3.92%
<b>Totals</b>	<b>633,435</b>	

**Figure 19C**



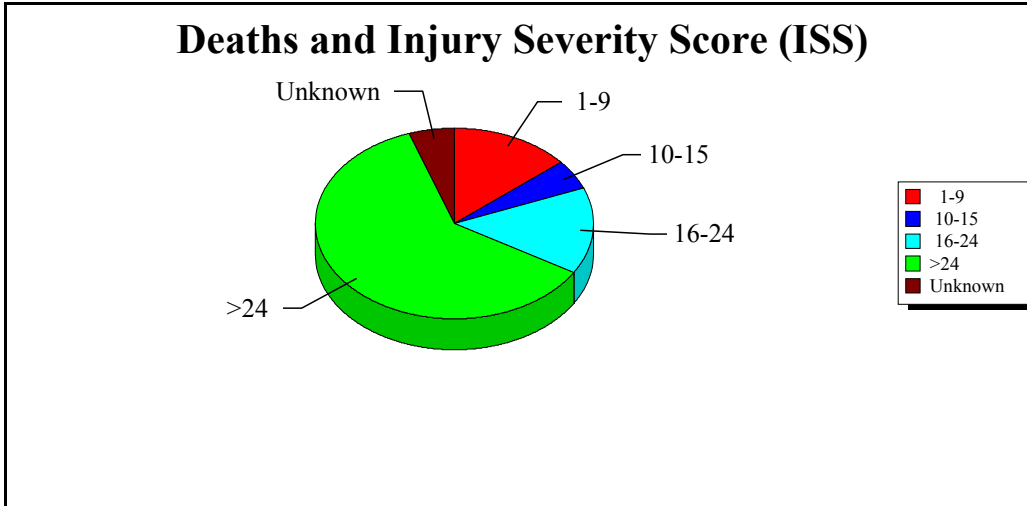
**Figure 20A**

Number of injured patients grouped by Injury Severity Score (ISS) range, at each age from 0 to 89. Total N = 608,596.

**Figure 20B**

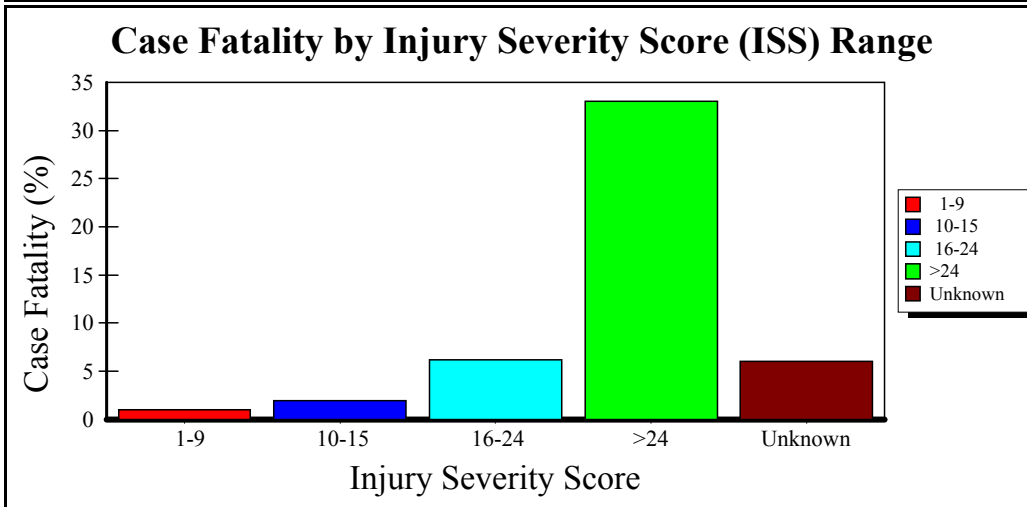
Percentage of patients by Injury Severity Score (ISS) range at each age range from 0 to 89. (Percentage of patients by ISS range = number of patients by ISS range divided by the number of patients X 100 by age range).

Age Range	Number of Patients	% of Patients	Number of Patients ISS 1-9	% of Patients ISS 1-9	Number of Patients ISS 10-15	% of Patients ISS 10-15	Number of Patients ISS 16-24	% of Patients ISS 16-24	Number of Patients ISS >24	% of Patients ISS >24
< 1	3,136	0.52%	2,003	63.87%	239	7.62%	602	19.20%	292	9.31%
1-4	18,897	3.11%	14,867	78.67%	1,334	7.06%	1,691	8.95%	1,005	5.32%
5-9	23,204	3.81%	18,190	78.39%	2,029	8.74%	1,887	8.13%	1,098	4.73%
10-14	25,511	4.19%	19,166	75.13%	2,533	9.93%	2,346	9.20%	1,466	5.75%
15-19	60,088	9.87%	39,058	65.00%	7,846	13.06%	6,951	11.57%	6,233	10.37%
20-24	72,025	11.83%	47,127	65.43%	9,503	13.19%	7,876	10.94%	7,519	10.44%
25-34	99,978	16.43%	67,285	67.30%	13,012	13.01%	10,506	10.51%	9,175	9.18%
35-44	97,212	15.97%	64,549	66.40%	13,169	13.55%	10,825	11.14%	8,669	8.92%
45-54	72,436	11.90%	47,016	64.91%	9,943	13.73%	8,923	12.32%	6,554	9.05%
55-64	42,273	6.95%	27,259	64.48%	5,550	13.13%	5,465	12.93%	3,999	9.46%
65-74	34,401	5.65%	22,788	66.24%	4,067	11.82%	4,444	12.92%	3,102	9.02%
75-84	42,235	6.94%	29,387	69.58%	4,398	10.41%	4,965	11.76%	3,485	8.25%
85-89	17,200	2.83%	12,725	73.98%	1,672	9.72%	1,662	9.66%	1,141	6.63%
<b>Totals</b>	<b>608,596</b>		<b>411,420</b>		<b>75,295</b>		<b>68,143</b>		<b>53,738</b>	



**Figure 21A**

Proportional distribution of deaths grouped by categories of Injury Severity Score (ISS) range. Total N = 28,968.

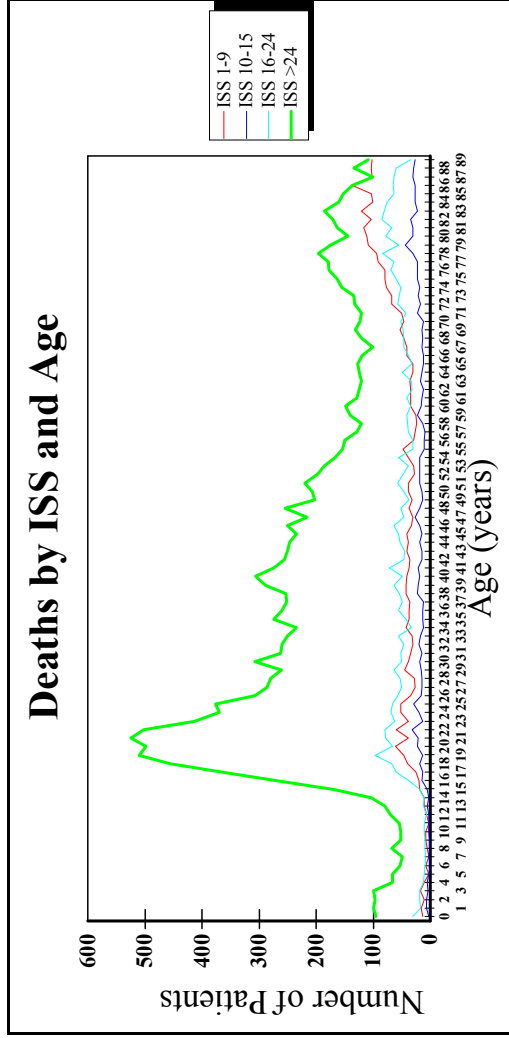


**Figure 21B**

Case fatality grouped by Injury Severity Score (ISS) range. (Case fatality = number of deaths divided by the number of patients X 100 by ISS range).

ISS Range	Number of Patients	Number of Patients Died	Case Fatality ISS Range
1-9	411,420	4,021	0.98%
10-15	75,295	1,463	1.94%
16-24	68,143	4,229	6.21%
>24	53,738	17,759	33.05%
Unknown	24,839	1,496	6.02%
<b>Totals</b>	<b>633,435</b>	<b>28,968</b>	

**Figure 21C**



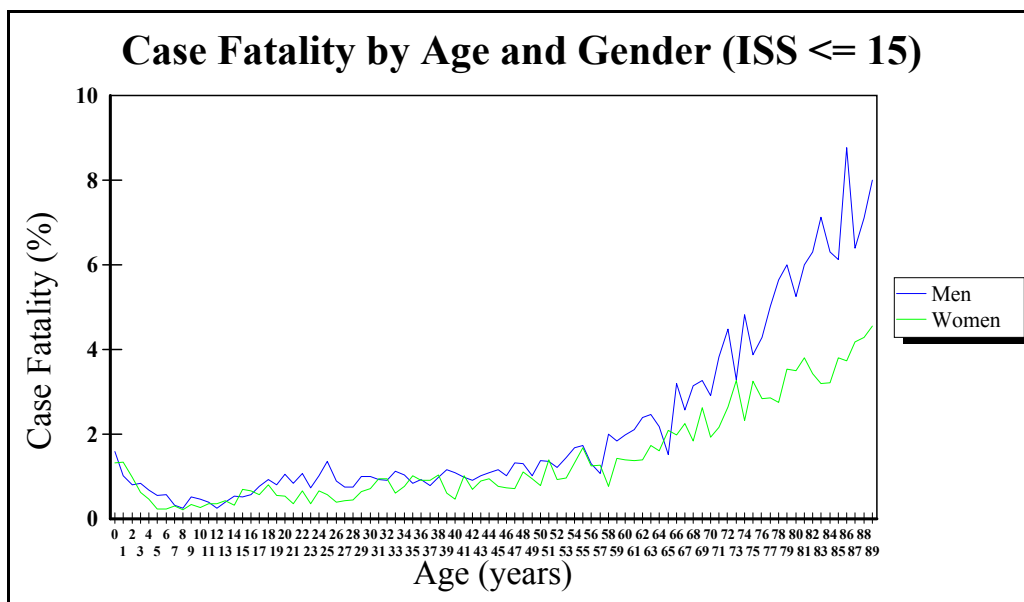
**Figure 22A**

Number of deaths grouped by Injury Severity Score (ISS) range at each age 0 to 89. Total N = 27,472.

**Figure 22B**

Case fatality by ISS range at each age range from 0 to 89. (Case fatality by ISS range = number of deaths by ISS range divided by the number of patients X 100 by age range).

Age Range	Number of Patients	Number of Patients Died	Case Fatality ISS Range	Number of Patients ISS 1-9	Number of Patients Died ISS 1-9	Case Fatality ISS 1-9	Number of Patients ISS 10-15	Number of Patients Died ISS 10-15	Case Fatality ISS 10-15	Number of Patients ISS 16-24	Number of Patients Died ISS 16-24	Case Fatality ISS 16-24	Number of Patients ISS >24	Number of Patients Died ISS >24	Case Fatality ISS >24
< 1	3,136	140	4.46%	2,003	13	0.65%	239	2	0.84%	602	30	4.98%	292	95	32.53%
1-4	18,897	504	2.67%	14,867	54	0.36%	1,334	22	1.65%	1,691	66	3.90%	1,005	362	36.02%
5-9	23,204	366	1.58%	18,190	27	0.15%	2,029	7	0.34%	1,887	46	2.44%	1,098	286	26.05%
10-14	25,511	463	1.81%	19,166	39	0.20%	2,533	15	0.59%	2,346	52	2.22%	1,466	357	24.35%
15-19	60,088	2,271	3.78%	39,058	149	0.38%	7,846	65	0.83%	6,951	282	4.06%	6,233	1,775	28.48%
20-24	72,025	3,025	4.20%	47,127	251	0.53%	9,503	109	1.15%	7,876	355	4.51%	7,519	2,310	30.72%
25-34	99,978	3,884	3.88%	67,285	364	0.54%	13,012	171	1.31%	10,506	524	4.99%	9,175	2,825	30.79%
35-44	97,212	3,748	3.86%	64,549	388	0.60%	13,169	169	1.28%	10,825	529	4.89%	8,669	2,662	30.71%
45-54	72,436	3,156	4.36%	47,016	344	0.73%	9,943	179	1.80%	8,923	499	5.59%	6,554	2,134	32.56%
55-64	42,273	2,174	5.14%	27,259	322	1.18%	5,550	141	2.54%	5,465	370	6.77%	3,999	1,341	33.53%
65-74	34,401	2,411	7.01%	22,788	520	2.28%	4,067	156	3.84%	4,444	471	10.60%	3,102	1,264	40.75%
75-84	42,235	3,726	8.82%	29,387	1,003	3.41%	4,398	289	6.57%	4,965	719	14.48%	3,485	1,715	49.21%
85-89	17,200	1,604	9.33%	12,725	547	4.30%	1,672	138	8.25%	1,662	286	17.21%	1,141	633	55.48%
<b>Totals</b>	<b>608,596</b>	<b>27,472</b>		<b>411,420</b>	<b>4,021</b>		<b>75,295</b>	<b>1,463</b>		<b>68,143</b>	<b>4,229</b>		<b>53,738</b>	<b>17,759</b>	

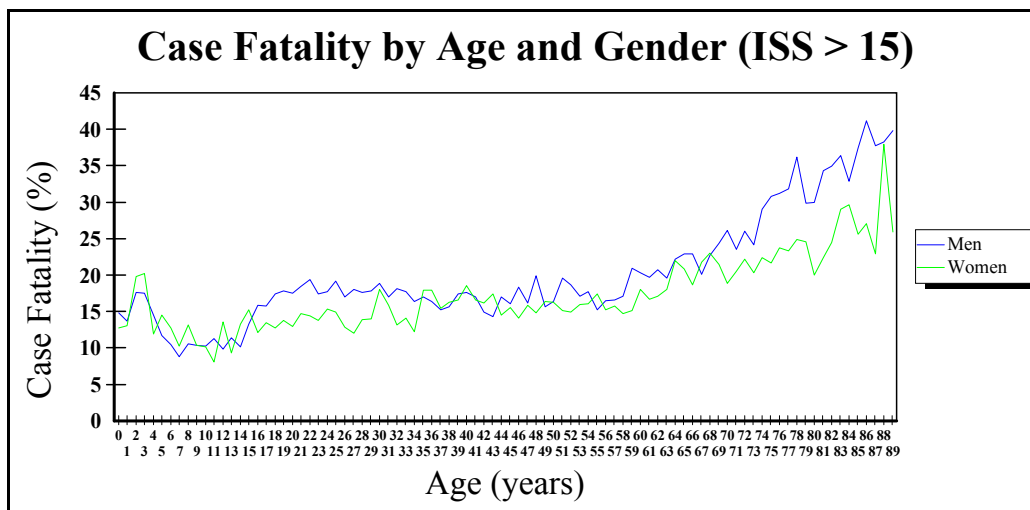


**Figure 23A**

Case fatality for patients with ISS <= 15 for men and women at each age from 0 to 89. (Case fatality = number of deaths divided by the number of patients X 100 by age and gender). Total N = 6,980.

**Figure 23B**

Age Range	Number of Patients ISS <= 15	Number of Patients Died ISS <= 15	Case Fatality ISS <= 15	Number of Patients Men	Number of Patients Died Men	Case Fatality Men	Number of Patients Women	Number of Patients Died Women	Case Fatality Women
< 1	2,425	36	1.48%	1,441	23	1.60%	984	13	1.32%
1-4	17,472	149	0.85%	10,380	87	0.84%	7,092	62	0.87%
5-9	21,152	81	0.38%	13,292	60	0.45%	7,860	21	0.27%
10-14	22,785	92	0.40%	15,760	67	0.43%	7,025	25	0.36%
15-19	49,505	361	0.73%	34,171	259	0.76%	15,334	102	0.67%
20-24	59,672	502	0.84%	44,512	424	0.95%	15,160	78	0.51%
25-34	84,674	762	0.90%	62,705	619	0.99%	21,969	143	0.65%
35-44	81,872	776	0.95%	58,814	579	0.98%	23,058	197	0.85%
45-54	59,639	702	1.18%	40,962	522	1.27%	18,677	180	0.96%
55-64	34,258	573	1.67%	20,641	383	1.86%	13,617	190	1.40%
65-74	28,024	784	2.80%	13,587	445	3.28%	14,437	339	2.35%
75-84	35,131	1,424	4.05%	12,288	681	5.54%	22,843	743	3.25%
85-89	14,945	738	4.94%	3,981	289	7.26%	10,964	449	4.10%
<b>Totals</b>	511,554	6,980		332,534	4,438		179,020	2,542	

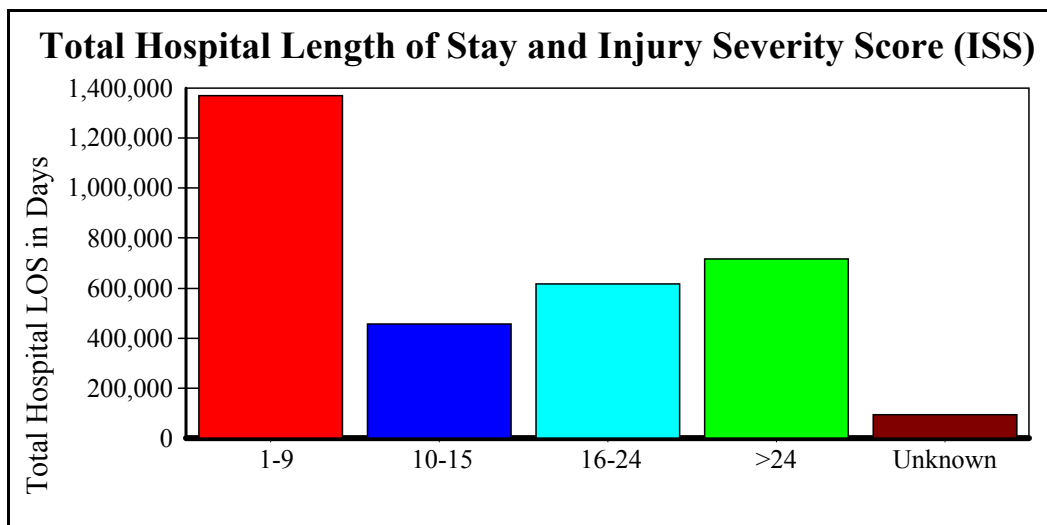


**Figure 24A**

Case fatality for patients with ISS > 15 for men and women at each age from 0 to 89. (Case fatality = number of deaths divided by the number of patients X 100 by age and gender). Total N = 21,988.

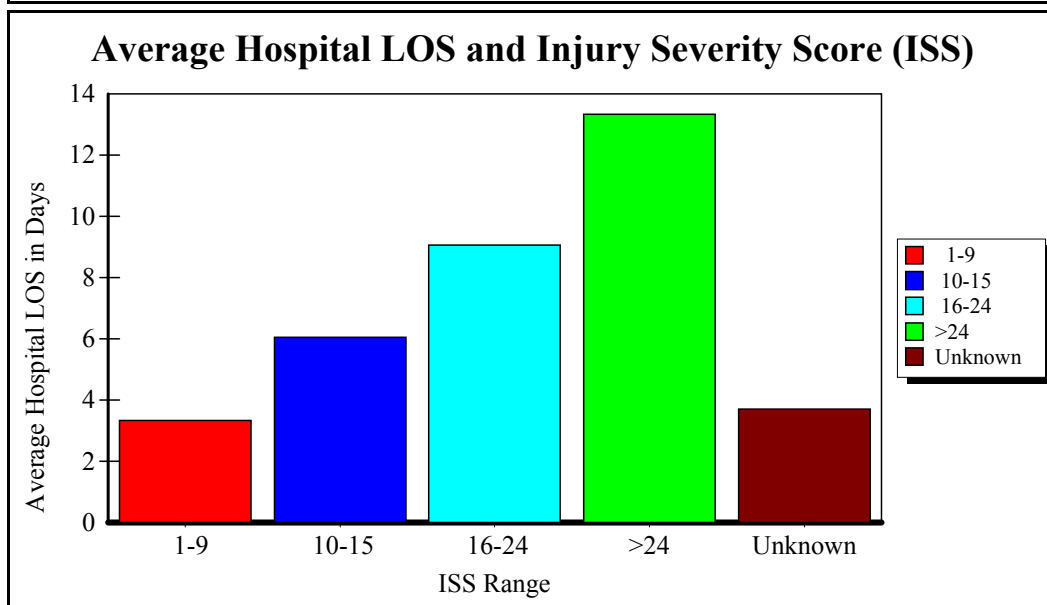
**Figure 24B**

Age Range	Number of Patients ISS > 15	Number of Patients Died ISS > 15	Case Fatality ISS > 15	Number of Patients Men	Number of Patients Died Men	Case Fatality Men	Number of Patients Women	Number of Patients Died Women	Case Fatality Women
< 1	894	125	13.98%	518	77	14.86%	376	48	12.77%
1-4	2,696	428	15.88%	1,595	249	15.61%	1,101	179	16.26%
5-9	2,985	332	11.12%	1,802	187	10.38%	1,183	145	12.26%
10-14	3,812	409	10.73%	2,605	276	10.60%	1,207	133	11.02%
15-19	13,184	2,057	15.60%	9,426	1,557	16.52%	3,758	500	13.30%
20-24	15,395	2,665	17.31%	12,267	2,222	18.11%	3,128	443	14.16%
25-34	19,681	3,349	17.02%	15,466	2,755	17.81%	4,215	594	14.09%
35-44	19,494	3,191	16.37%	14,636	2,378	16.25%	4,858	813	16.74%
45-54	15,477	2,633	17.01%	11,495	2,017	17.55%	3,982	616	15.47%
55-64	9,464	1,711	18.08%	6,642	1,234	18.58%	2,822	477	16.90%
65-74	7,546	1,735	22.99%	4,730	1,143	24.16%	2,816	592	21.02%
75-84	8,450	2,434	28.80%	4,497	1,474	32.78%	3,953	960	24.29%
85-89	2,803	919	32.79%	1,285	499	38.83%	1,518	420	27.67%
<b>Totals</b>	<b>121,881</b>	<b>21,988</b>		<b>86,964</b>	<b>16,068</b>		<b>34,917</b>	<b>5,920</b>	



**Figure 25A**

Proportional distribution of total hospital length of stay for patients, grouped by Injury Severity Score (ISS) range. Total N = 633,435. Total hospital length of stay = 3,253,018 days.



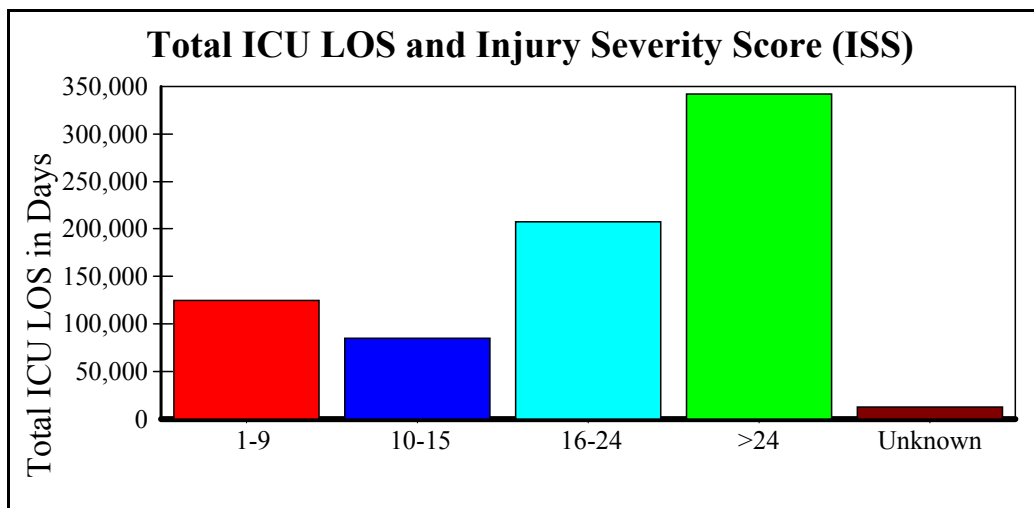
**Figure 25B**

Average hospital length of stay for each category of Injury Severity Score (ISS) range. (Average hospital length of stay = total hospital length of stay for each ISS range divided by the total number of patients).

ISS Range	Number of Patients	% of Total Patients	Total of Hospital LOS in Days	% of Hospital LOS in Days	Average of Hospital LOS in Days
1-9	411,420	64.95%	1,371,148	42.15%	3.33
10-15	75,295	11.89%	455,390	14.00%	6.05
16-24	68,143	10.76%	617,340	18.98%	9.06
>24	53,738	8.48%	716,956	22.04%	13.34
Unknown	24,839	3.92%	92,184	2.83%	3.71
<b>Totals</b>	<b>633,435</b>		<b>3,253,018</b>		

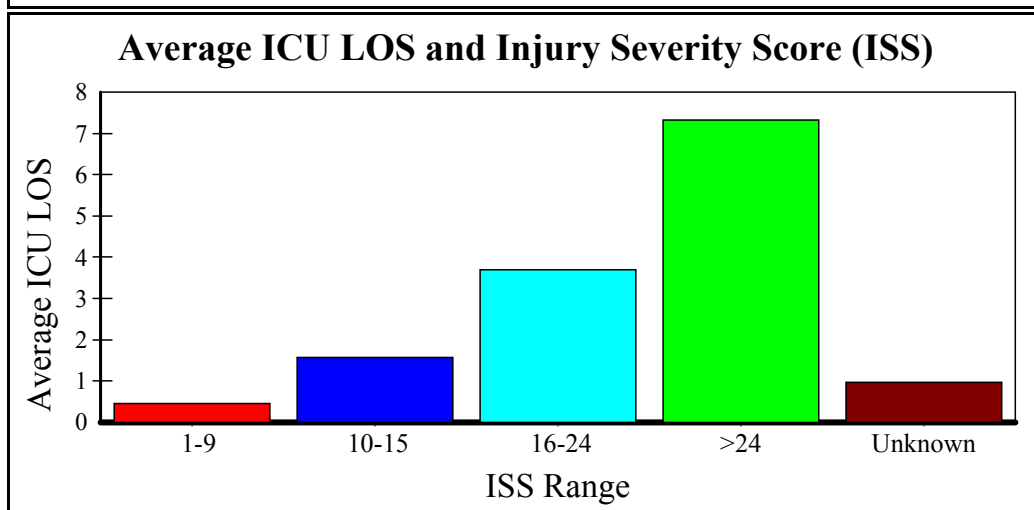
**Figure 25C**





**Figure 26A**

Proportional distribution of total ICU length of stay for patients, grouped by Injury Severity Score (ISS) range. Total N = 447,995. Total ICU length of stay = 771,316 days.



**Figure 26B**

Average ICU length of stay by Injury Severity Score (ISS) range. (Average ICU length of stay = total ICU length of stay for each ISS range divided by the total number of patients).

ISS Range	Number of Patients	% of Total Patients	Total of ICU LOS in Days	% of ICU LOS in Days	Average of ICU LOS in Days
1-9	278,191	62.10%	124,858	16.19%	0.45
10-15	54,078	12.07%	84,836	11.00%	1.57
16-24	55,964	12.49%	207,220	26.87%	3.70
>24	46,694	10.42%	341,774	44.31%	7.32
Unknown	13,068	2.92%	12,628	1.64%	0.97
<b>Totals</b>	<b>447,995</b>		<b>771,316</b>		

**Figure 26C**

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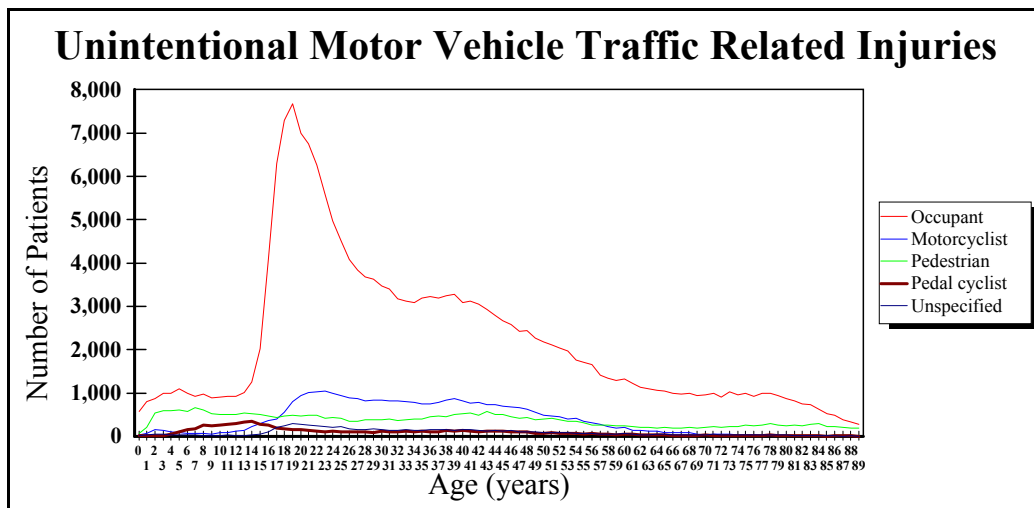
**Special Section: Unintentional Motor Vehicle Traffic Related Injuries**

Figures 27 through 32 provide detailed information on unintentional motor vehicle traffic related injuries. This grouping of injuries is based on the CDC's recommended framework of E-code grouping for presenting injury mortality and morbidity. This grouping replaces what we have called Motor Vehicle Crashes in previous NTDB annual reports.

This category includes E810 – E819 (.0-.9), described in Appendix D:

<b>Mechanism/Cause</b>	<b>Unintentional</b>
Motor vehicle traffic <sup>2,3</sup>	E810-E819 (.0-.9)
Occupant	E810-E819 (.0,.1)
Motorcyclist	E810-E819 (.2,.3)
Pedal cyclist	E810-E819 (.6)
Pedestrian	E810-E819 (.7)
Unspecified	E810-E819 (.9)

Detailed descriptions for E-codes can be found in the International Classification of Diseases, 9<sup>th</sup> Revision, Clinical Modification, Fifth Edition, Volume One. DHHS Publication No. (PHS) 94-1260, U.S. Department of Health and Human Services, October 1994 (<http://cedr.lbl.gov/icd9.html>).



**Figure 27A**

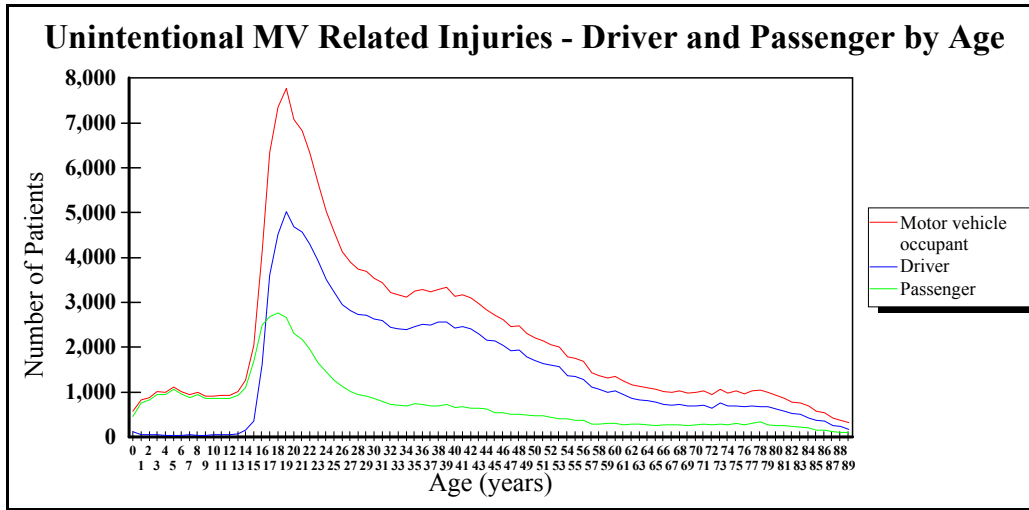
Unintentional motor vehicle traffic related injuries (UMVTRI) are classified from ICD-9-CM ECode E810 to E819.

Number of patients injured in UMVTRI, number who were occupant, motorcyclist, pedal cyclist, pedestrian and unspecified at each age from 0 to 89. Total N = 278,216.

**Figure 27B**

Percentage of patients for UMVTRI at each age range from 0 to 89. (Percentage of patients by UMVTRI = number of patients by UMVTRI divided by the number of patients X 100 by age range).

Age Range	Total Number of Patients	Number of Patients Occupant	% of Occupant	Number of Patients Motorcyclist	% of Motorcyclist	Number of Patients Pedestrian	% of Pedestrian	Number of Patients Pedal Cyclist	% of Pedal Cyclist	Number of Patients Unspecified	% of Unspecified
< 1	703	566	80.51%	37	5.26%	62	8.82%	14	1.99%	24	3.41%
1-4	6,331	3,650	57.65%	458	7.23%	1,944	30.71%	106	1.67%	173	2.73%
5-9	9,328	4,883	52.35%	348	3.73%	2,999	32.15%	954	10.23%	144	1.54%
10-14	9,830	5,000	50.86%	644	6.55%	2,569	26.13%	1,500	15.26%	117	1.19%
15-19	34,105	27,392	80.32%	2,422	7.10%	2,341	6.86%	1,043	3.06%	907	2.66%
20-24	39,735	30,564	76.92%	5,023	12.64%	2,295	5.78%	640	1.61%	1,213	3.05%
25-34	50,843	35,959	70.73%	8,424	16.57%	3,822	7.52%	1,042	2.05%	1,596	3.14%
35-44	46,479	31,123	66.96%	7,803	16.79%	4,901	10.54%	1,195	2.57%	1,457	3.13%
45-54	33,847	22,436	66.29%	5,467	16.15%	4,061	12.00%	888	2.62%	995	2.94%
55-64	18,759	13,258	70.68%	2,079	11.08%	2,422	12.91%	448	2.39%	552	2.94%
65-74	13,100	9,807	74.86%	598	4.56%	2,099	16.02%	205	1.56%	391	2.98%
75-84	11,965	8,669	72.45%	217	1.81%	2,657	22.21%	155	1.30%	267	2.23%
85-89	3,191	2,008	62.93%	31	0.97%	1,052	32.97%	37	1.16%	63	1.97%
<b>Totals</b>	<b>278,216</b>	<b>195,315</b>		<b>33,551</b>		<b>33,224</b>		<b>8,227</b>		<b>7,899</b>	



**Figure 28A**

Unintentional motor vehicle traffic related injuries (UMVTRI) sustained by occupants are classified from ICD-9-CM Ecode E810-E819(.0,.1).

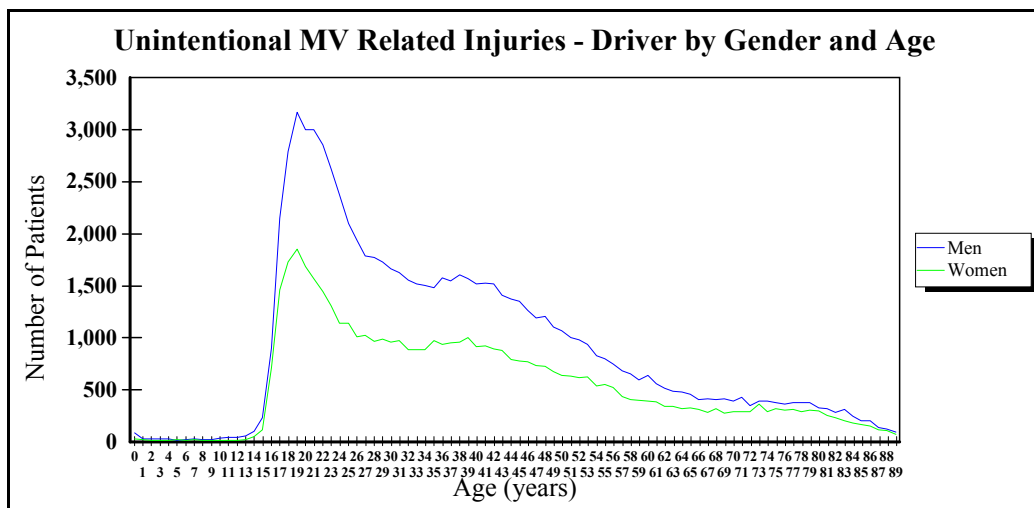
Number of patients injured in UMVTRI, number who were drivers, and number who were passengers at each age from 0 to 89. Total N = 195,315.

Age Range	Number of Patients Motor vehicle occupant	Number of Patients Driver	% of Driver	Number of Patients Passenger	% of Passenger
< 1	566	*114	20.14%	452	79.86%
1-4	3,650	*189	5.18%	3,461	94.82%
5-9	4,883	*182	3.73%	4,701	96.27%
10-14	5,000	*381	7.62%	4,619	92.38%
15-19	27,392	15,101	55.13%	12,291	44.87%
20-24	30,564	21,003	68.72%	9,561	31.28%
25-34	35,959	26,925	74.88%	9,034	25.12%
35-44	31,123	24,340	78.21%	6,783	21.79%
45-54	22,436	17,675	78.78%	4,761	21.22%
55-64	13,258	10,245	77.27%	3,013	22.73%
65-74	9,807	7,098	72.38%	2,709	27.62%
75-84	8,669	6,050	69.79%	2,619	30.21%
85-89	2,008	1,375	68.48%	633	31.52%
<b>Totals</b>	195,315	130,678		64,637	

**Figure 28B**

Percentage of patients for UMVTRI occupant - driver and passenger at each age range from 0 to 89. (Percentage of patients by UMVTRI occupant = number of patients by UMVTRI occupant divided by the number of patients X 100 by age range).

\* These records were submitted with external cause of injury codes for Motor vehicle drivers. The circumstances of these injuries are not known.



**Figure 29A**

Unintentional motor vehicle traffic related injuries (UMVTRI) sustained by occupants are classified from ICD-9-CM Ecode E810-E819(.0,.1).

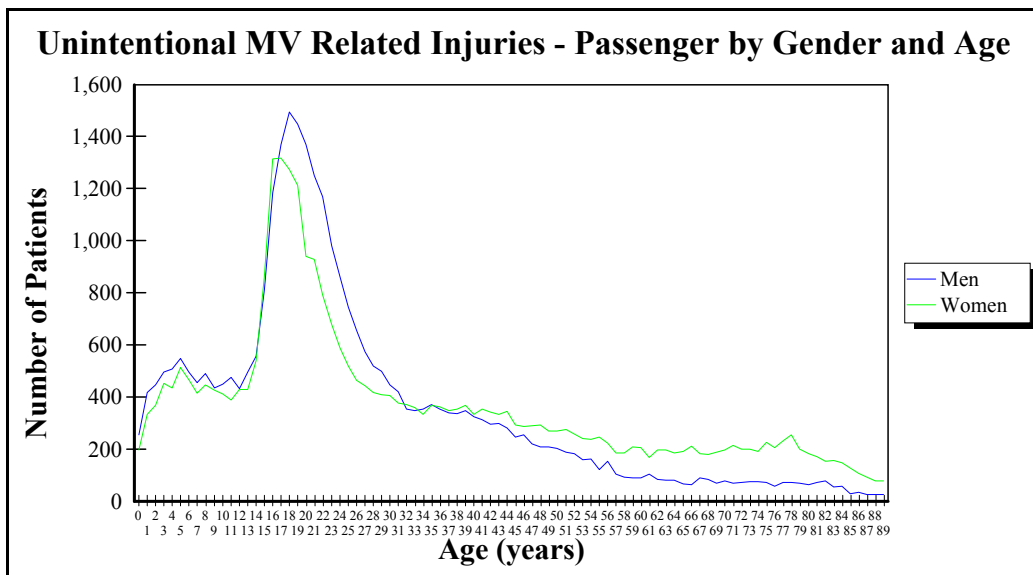
Number of patients injured in UMVTRI who were drivers for both men and women at each age from 0 to 89. Total N = 130,678.

Age Range	Number of Patients Driver	Number of Patients Driver - Men	% of Driver - Men	Number of Patients Driver - Women	% of Driver - Women
< 1	*114	85	74.56%	29	25.44%
1-4	*189	122	64.55%	67	35.45%
5-9	*182	107	58.79%	75	41.21%
10-14	*381	268	70.34%	113	29.66%
15-19	15,101	9,238	61.17%	5,863	38.83%
20-24	21,003	13,858	65.98%	7,145	34.02%
25-34	26,925	17,200	63.88%	9,725	36.12%
35-44	24,340	15,129	62.16%	9,211	37.84%
45-54	17,675	10,945	61.92%	6,730	38.08%
55-64	10,245	6,159	60.12%	4,086	39.88%
65-74	7,098	4,061	57.21%	3,037	42.79%
75-84	6,050	3,356	55.47%	2,694	44.53%
85-89	1,375	767	55.78%	608	44.22%
<b>Totals</b>	130,678	81,295		49,383	

**Figure 29B**

Percentage of drivers for men and women at each age range from 0 to 89. (Percentage of drivers by gender = number of drivers by gender divided by the number of drivers X 100 by age range).

\* These records were submitted with external cause of injury codes for MVC drivers. The circumstances of these injuries are not known.



**Figure 30A**

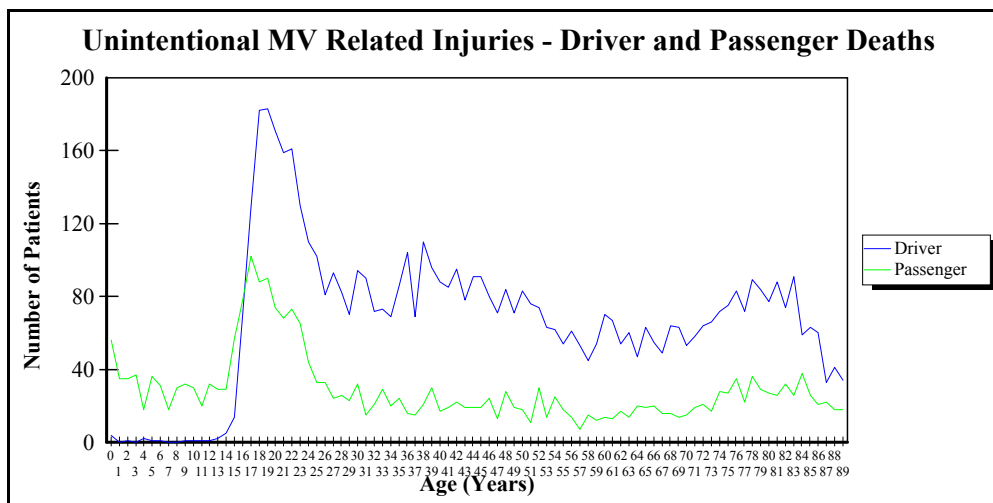
Unintentional motor vehicle traffic related injuries (UMVTRI) sustained by occupants are classified from ICD-9-CM Ecode E810-E819(.0,.1).

Number of all patients injured in UMVTRI who were passengers for both men and women at each age from 0 to 89. Total N = 64,637.

Age Range	Number of Patients Passenger	Number of Patients Passenger-Men	% of Passenger-Men	Number of Patients Passenger-Women	% of Passenger-Women
< 1	452	255	56.42%	197	43.58%
1-4	3,461	1,869	54.00%	1,592	46.00%
5-9	4,701	2,430	51.69%	2,271	48.31%
10-14	4,619	2,415	52.28%	2,204	47.72%
15-19	12,291	6,309	51.33%	5,982	48.67%
20-24	9,561	5,631	58.90%	3,930	41.10%
25-34	9,034	4,921	54.47%	4,113	45.53%
35-44	6,783	3,271	48.22%	3,512	51.78%
45-54	4,761	2,042	42.89%	2,719	57.11%
55-64	3,013	1,006	33.39%	2,007	66.61%
65-74	2,709	749	27.65%	1,960	72.35%
75-84	2,619	678	25.89%	1,941	74.11%
85-89	633	147	23.22%	486	76.78%
<b>Totals</b>	<b>64,637</b>	<b>31,723</b>		<b>32,914</b>	

**Figure 30B**

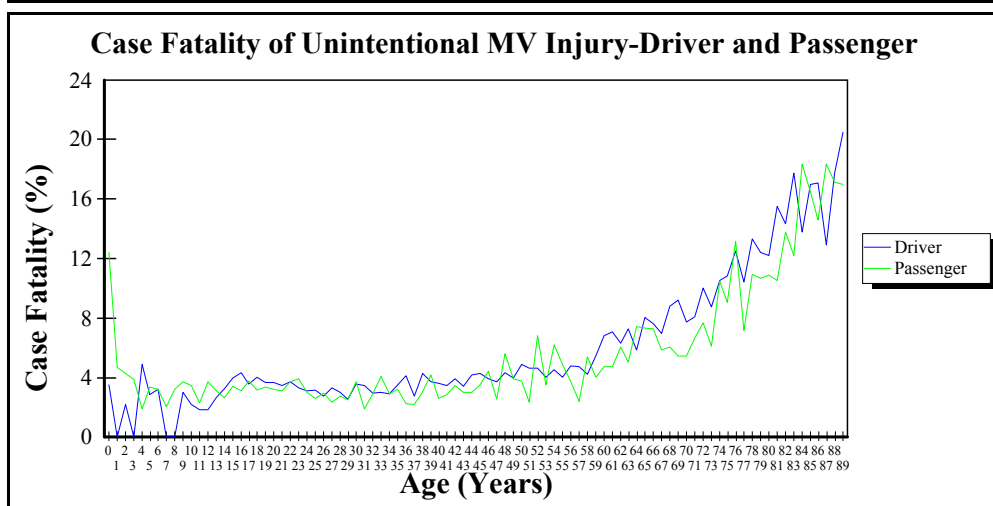
Percentage of passengers for men and women at each age range from 0 to 89. (Percentage of passengers by gender = number of passengers by gender divided by the number of passengers X 100 by age range).



**Figure 31A**

Unintentional motor vehicle traffic related injuries (UMVTRI) sustained by occupants are classified from ICD-9-CM Ecode E810-E819(.0,.1).

Number of deaths due to UMVTRI, number of deaths of drivers, and number of deaths of passengers at each age from 0 to 89. Total N = 8,605.



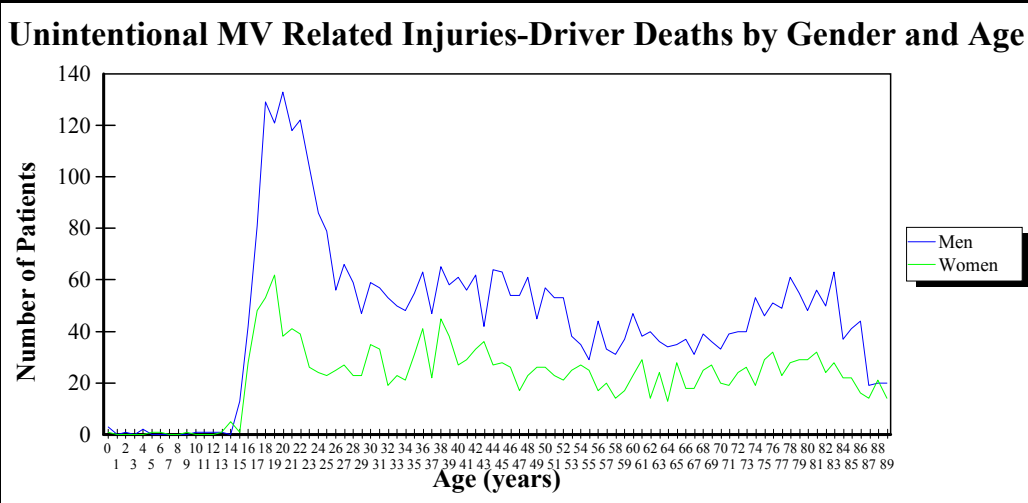
**Figure 31B**

Case fatality due to UMVTRI for drivers and passengers at each age from 0 to 89. (Case fatality = number of deaths divided by the number of patients X 100 by Motor vehicle occupant at each age).

Age Range	Number of Patients Died MVC	Number of Patients Driver	Number of Patients Died Driver	Case Fatality Driver	Number of Patients Passenger	Number of Patients Died Passenger	Case Fatality Passenger
< 1	60	*114	4	3.51%	452	56	12.39%
1-4	128	*189	3	1.59%	3,461	125	3.61%
5-9	150	*182	3	1.65%	4,701	147	3.13%
10-14	150	*381	10	2.62%	4,619	140	3.03%
15-19	993	15,101	578	3.83%	12,291	415	3.38%
20-24	1,055	21,003	731	3.48%	9,561	324	3.39%
25-34	1,082	26,925	826	3.07%	9,034	256	2.83%
35-44	1,104	24,340	902	3.71%	6,783	202	2.98%
45-54	956	17,675	755	4.27%	4,761	201	4.22%
55-64	709	10,245	565	5.51%	3,013	144	4.78%
65-74	792	7,098	607	8.55%	2,709	185	6.83%
75-84	1,090	6,050	792	13.09%	2,619	298	11.38%
85-89	336	1,375	231	16.80%	633	105	16.59%
<b>Totals</b>	<b>8,605</b>	<b>130,678</b>	<b>6,007</b>		<b>64,637</b>	<b>2,598</b>	

**Figure 31C**

\* These records were submitted with external cause of injury codes for MVC drivers. The circumstances of these injuries are not known.



**Figure 32A**

Unintentional motor vehicle traffic related injuries (UMVTRI) sustained by occupants are classified from ICD-9-CM Ecode E810-E819(.0,.1).

Number of driver deaths due to UMVTRI for both men and women at each age from 0 to 89. Total N = 6,007.

**Figure 32B**

Age Range	Total Number of Drivers	Number of Patients Driver - Men	Number of Patients Died Driver - Men	Case Fatality Driver - Men	Number of Patients Driver - Women	Number of Patients Died Driver - Women	Case Fatality Driver - Women
< 1	*114	85	3	3.53%	29	1	3.45%
1-4	*189	122	3	2.46%	67	0	0.00%
5-9	*182	107	0	0.00%	75	3	4.00%
10-14	*381	268	4	1.49%	113	6	5.31%
15-19	15,101	9,238	386	4.18%	5,863	192	3.27%
20-24	21,003	13,858	563	4.06%	7,145	168	2.35%
25-34	26,925	17,200	574	3.34%	9,725	252	2.59%
35-44	24,340	15,129	573	3.79%	9,211	329	3.57%
45-54	17,675	10,945	513	4.69%	6,730	242	3.60%
55-64	10,245	6,159	369	5.99%	4,086	196	4.80%
65-74	7,098	4,061	383	9.43%	3,037	224	7.38%
75-84	6,050	3,356	516	15.38%	2,694	276	10.24%
85-89	1,375	767	144	18.77%	608	87	14.31%
<b>Totals</b>	130,678	81,295	4,031		49,383	1,976	

\* These records were submitted with external cause of injury codes for MVC drivers. The circumstances of these injuries are not known.

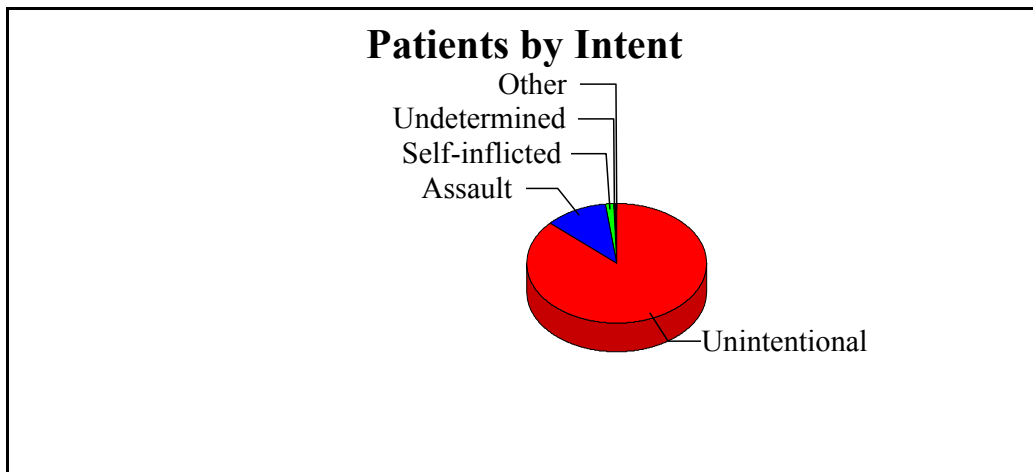


**National Trauma Data Bank Version 4.0  
Annual Report 2004****Special Section: Intentionality**

In August 1997, the CDC published an MMWR article titled “Recommended Framework for Presenting Injury Mortality Data”, 46(RR14): 1-30 (<http://www.cdc.gov/mmwr/preview/mmwrhtml/00049162.htm>). The framework is a matrix table of standard groupings of ICD-9 codes that are used to present injury mortality and morbidity data. The ICD-9 codes are categorized as intentional and unintentional. The intentional group is further divided into assault and self-inflicted categories.

The CDC’s purpose in developing a framework of external injury code groupings was to improve the usefulness of external cause of injury data for research, surveillance, and prevention activities. Common definitions of external cause categories and uniform presentation of data help to provide a better understanding of the scope of the injury problem in the United States and internationally and allow for comparisons of injury rates among states and communities.

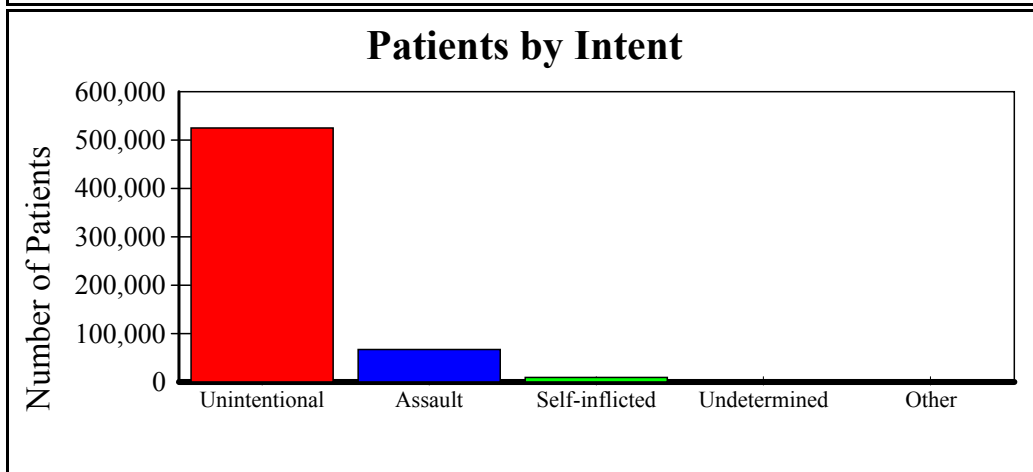
In the interest of providing useful information to the trauma community and encouraging standardization of data, NTDB has adopted the new external injury code framework in this Annual Report 2004. This approach to intentionality is seen in Figures 33 – 42.



**Figure 33A**

Proportional distribution of patients, grouped by intent. Total N = 604,266.

Intent was defined in Appendix D.



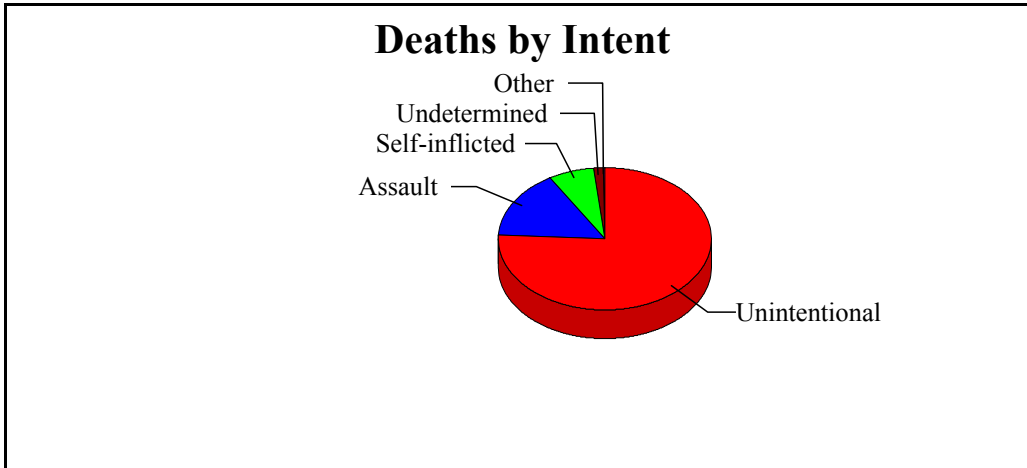
**Figure 33B**

Number of patients in each category of intent.

Intent	Number of Patients	% of Total Patients Intent
Unintentional	524,319	86.77%
Assault	67,382	11.15%
Self-inflicted	8,781	1.45%
Undetermined	2,915	0.48%
Other	869	0.14%
<b>Totals</b>	<b>604,266</b>	

**Figure 33C**

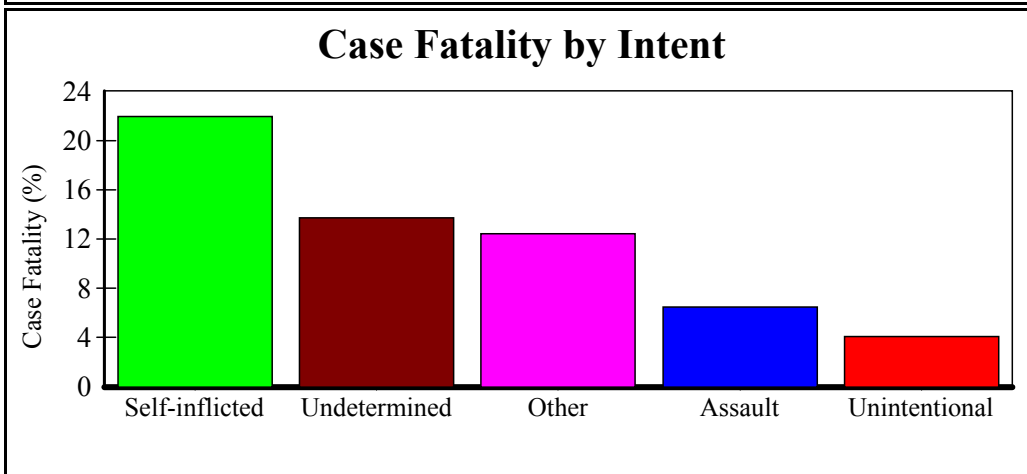
Percentage of patients by intent. (Percentage of patients = number of patients by intent divided by the number of patients X 100).



**Figure 34A**

Proportional distribution of deaths, grouped by intent. Total N = 28,263.

Intent was defined in Appendix D.

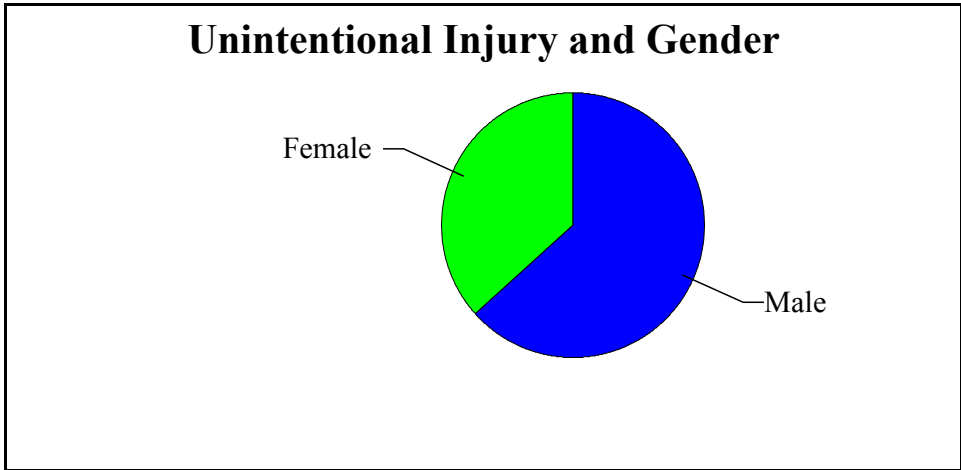


**Figure 34B**

Case fatality for each intent (Case fatality = number of deaths divided by the number of patients X 100 by intent).

Intent	Number of Patients	Number of Patients Died	Case Fatality Intent
Self-inflicted	8,781	1,925	21.92%
Undetermined	2,915	399	13.69%
Other	869	108	12.43%
Assault	67,382	4,360	6.47%
Unintentional	524,319	21,471	4.10%
<b>Totals</b>	<b>604,266</b>	<b>28,263</b>	

**Figure 34C**



**Figure 35A**

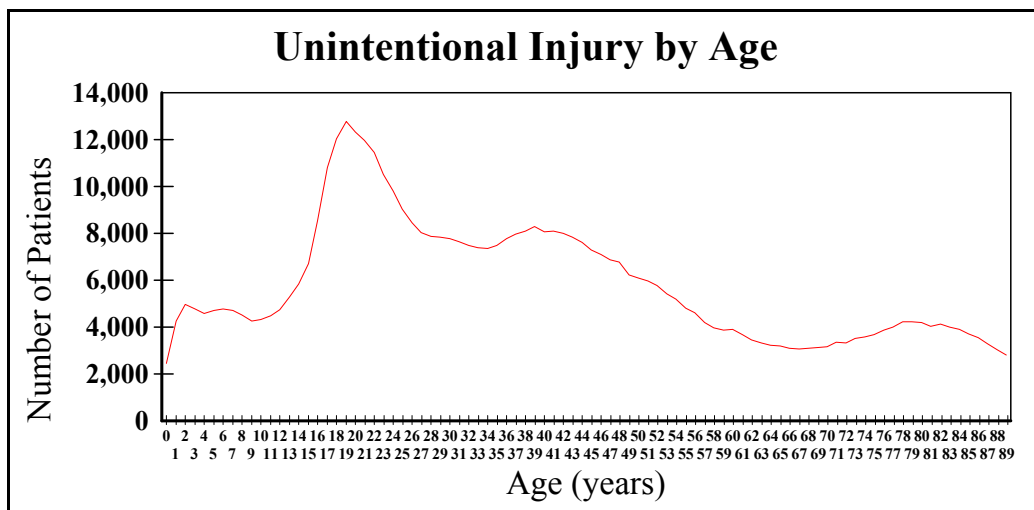
Proportional distribution of unintentional injury, grouped by gender. Total N = 524,319.

Unintentional injury was defined in Appendix D.

Gender	Number of Patients	% of Total Patients Gender
Male	332,601	63.43%
Female	191,718	36.57%
<b>Totals</b>	<b>524,319</b>	

**Figure 35B**

Percentage of patients for unintentional injury by gender. (Percentage of patients = number of patients by gender divided by the number of patients X 100).



**Figure 36A**

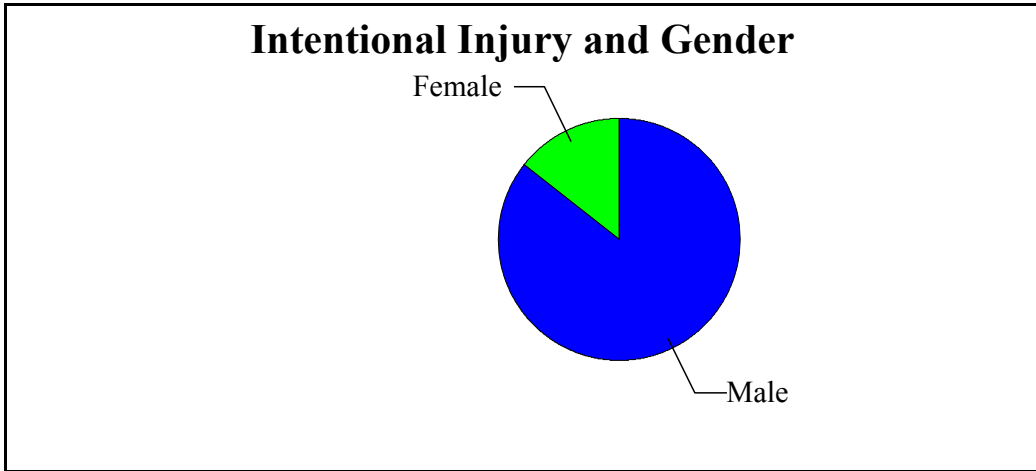
Number of patients injured unintentionally at each age from 0 to 89. Total N = 524,319.

Unintentional injury was defined in Appendix D.

Age Range	Number of Patients	% of Total Patients
< 1	2,450	0.47%
1-4	18,569	3.54%
5-9	22,961	4.38%
10-14	24,679	4.71%
15-19	50,825	9.69%
20-24	56,015	10.68%
25-34	78,830	15.03%
35-44	79,209	15.11%
45-54	62,705	11.96%
55-64	38,987	7.44%
65-74	32,475	6.19%
75-84	40,247	7.68%
85-89	16,367	3.12%
<b>Totals</b>	<b>524,319</b>	

**Figure 36B**

Percentage of patients injured unintentionally by age range. (Percentage of patients by age range = number of patients by age range divided by the number of patients X 100 by age range).



**Figure 37A**

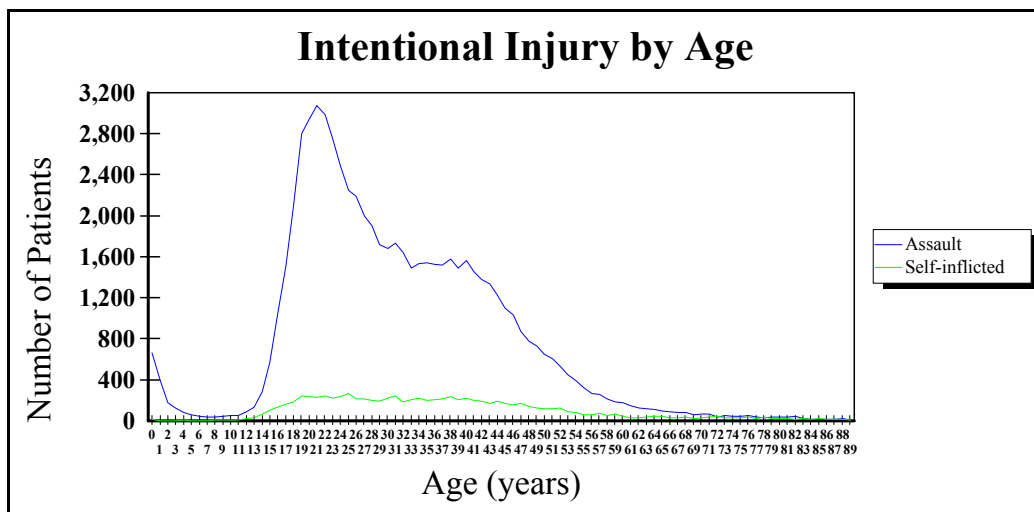
Proportional distribution of intentional injury, grouped by gender. Total N = 76,163.

Intentional injury was defined in Appendix D.

Gender	Number of Patients	% of Total Patients Gender
Female	11,044	14.50%
Male	65,119	85.50%
<b>Totals</b>	<b>76,163</b>	

**Figure 37B**

Percentage of patients for intentional injury by gender. (Percentage of patients = number of patients by gender divided by the number of patients X 100).



**Figure 38A**

Number of patients injured intentionally, for both assault and self-inflicted at each age from 0 to 89. Total N = 76,163.

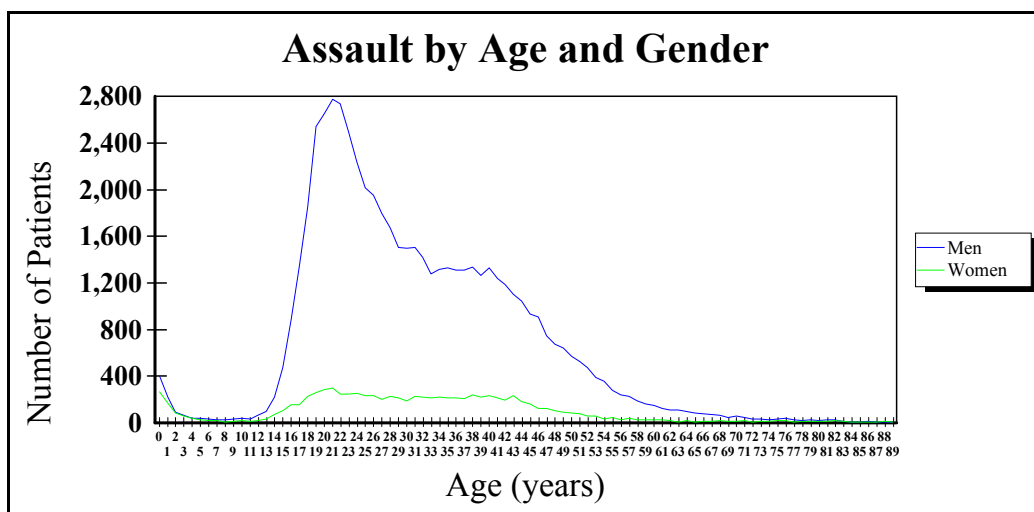
Intentional injury was defined in Appendix D.

**Figure 38B**

Percentage of patients injured intentionally. (Percentage of patients by intent = number of patients by intent divided by the number of patients X 100 by age range).

Age Range	Number of Patients	Number of Patients Assault	% of Patients Assault	Number of Patients Self-inflicted	% of Patients Self-inflicted
< 1	677	665	98.23%	*12	1.77%
1-4	775	764	98.58%	*11	1.42%
5-9	244	223	91.39%	*21	8.61%
10-14	744	610	81.99%	134	18.01%
15-19	8,827	8,001	90.64%	826	9.36%
20-24	15,391	14,235	92.49%	1,156	7.51%
25-34	20,303	18,140	89.35%	2,163	10.65%
35-44	16,634	14,607	87.81%	2,027	12.19%
45-54	8,420	7,126	84.63%	1,294	15.37%
55-64	2,417	1,925	79.64%	492	20.36%
65-74	992	664	66.94%	328	33.06%
75-84	607	356	58.65%	251	41.35%
85-89	132	66	50.00%	66	50.00%
<b>Totals</b>	76,163	67,382		8,781	

\* These records were submitted with external cause of injury codes for self-inflicted. The circumstances of these injuries are not known.



**Figure 39A**

Number of patients injured intentionally, for assault at each age from 0 to 89. Total N = 67,382.

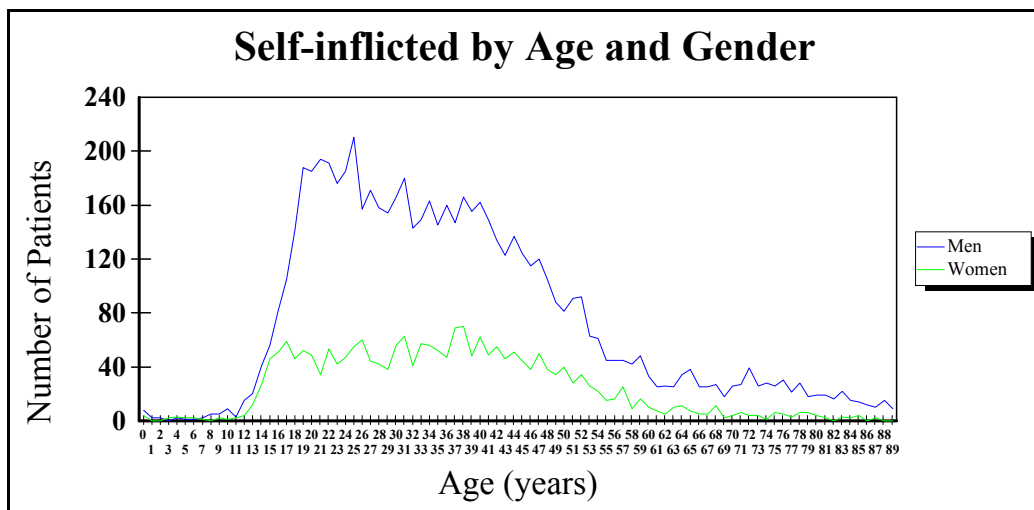
Intentional injury was defined in Appendix D.

Age Range	Number of Patients	Number of Patients Assault	% of Patients Assault
< 1	3,319	665	20.04%
1-4	20,168	764	3.79%
5-9	24,137	223	0.92%
10-14	26,597	610	2.29%
15-19	62,689	8,001	12.76%
20-24	75,067	14,235	18.96%
25-34	104,355	18,140	17.38%
35-44	101,366	14,607	14.41%
45-54	75,116	7,126	9.49%
55-64	43,722	1,925	4.40%
65-74	35,570	664	1.87%
75-84	43,581	356	0.82%
85-89	17,748	66	0.37%
<b>Totals</b>	<b>633,435</b>	<b>67,382</b>	

**Figure 39B**

Percentage of patients injured intentionally by age range. (Percentage of patients by age range = number of patients by assault divided by the number of patients X 100 by age range).





**Figure 40A**

Number of patients injured intentionally, for self-inflicted at each age from 0 to 89. Total N = 8,781.

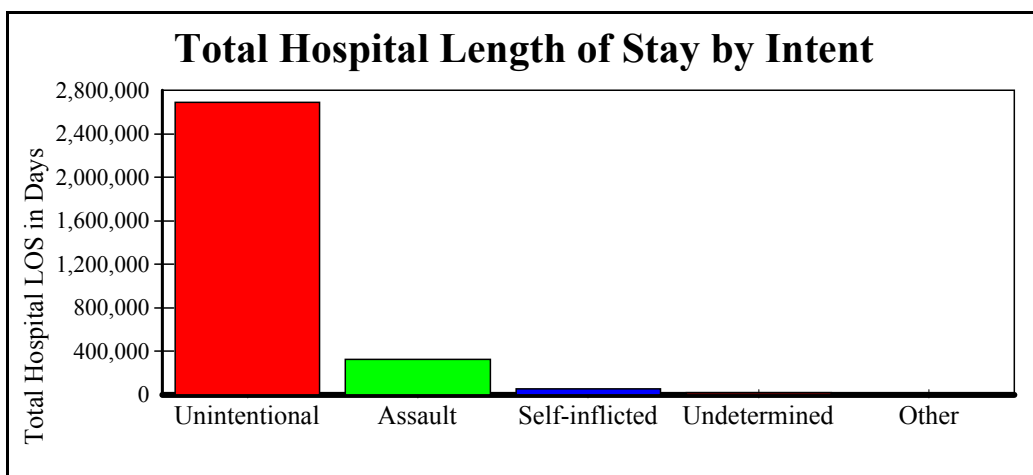
Intentional injury was defined in Appendix D.

Age Range	Number of Patients	Number of Patients Self-inflicted	% of Patients Self-inflicted
< 1	3,319	*12	0.36%
1-4	20,168	*11	0.05%
5-9	24,137	21	0.09%
10-14	26,597	134	0.50%
15-19	62,689	826	1.32%
20-24	75,067	1,156	1.54%
25-34	104,355	2,163	2.07%
35-44	101,366	2,027	2.00%
45-54	75,116	1,294	1.72%
55-64	43,722	492	1.13%
65-74	35,570	328	0.92%
75-84	43,581	251	0.58%
85-89	17,748	66	0.37%
<b>Totals</b>	<b>633,435</b>	<b>8,781</b>	

**Figure 40B**

Percentage of patients injured intentionally by age range. (Percentage of patients by age range = number of patients by self-inflicted divided by the number of patients X 100 by age range).

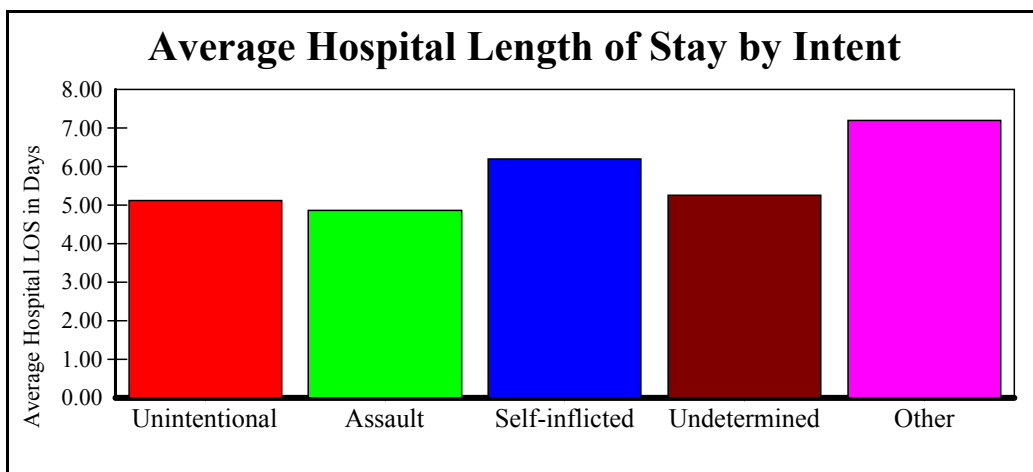
\* These records were submitted with external cause of injury codes for self-inflicted. The circumstances of these injuries are not known.



**Figure 41A**

Proportional distribution of total hospital length of stay, grouped by intent. Total N = 604,266. Total hospital length of stay = 3,091,764 days.

Intent was defined in Appendix D.



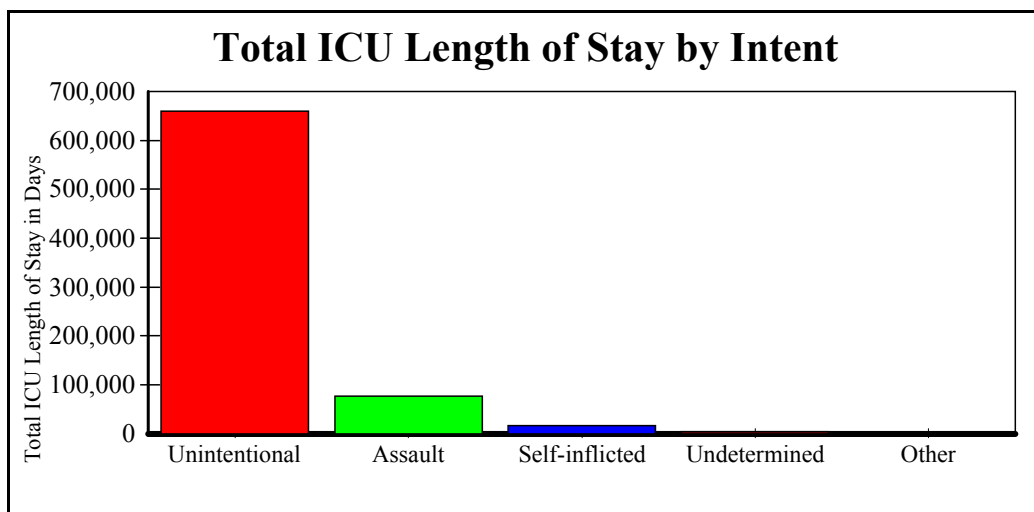
**Figure 41B**

Average hospital length of stay for patients, grouped by intent. (Average hospital length of stay = total hospital length of stay divided by the number of patients by intent)

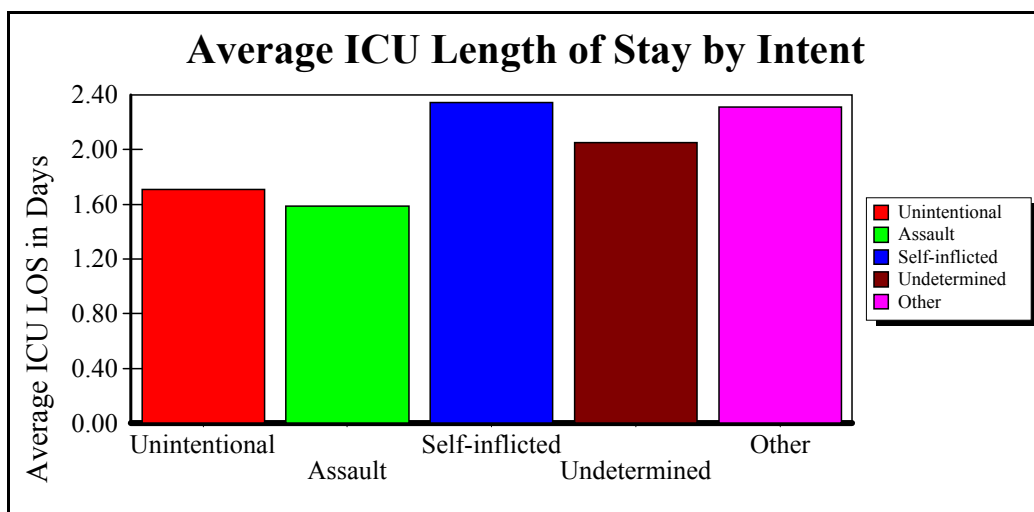
Intent	Number of Patients	% of Total Patients	Total of Hospital LOS in Days	% of Hospital LOS in Days	Average of Hospital LOS in Days
Unintentional	524,319	86.77%	2,688,075	86.94%	5.13
Assault	67,382	11.15%	327,649	10.60%	4.86
Self-inflicted	8,781	1.45%	54,460	1.76%	6.20
Undetermined	2,915	0.48%	15,327	0.50%	5.26
Other	869	0.14%	6,253	0.20%	7.20
<b>Totals</b>	<b>604,266</b>		<b>3,091,764</b>		

**Figure 41C**

Percentage of hospital length of stay by intent. (Percentage of hospital length of stay in days = total hospital length of stay by intent divided by the number of patients X 100).



**Figure 42A**  
 Proportional distribution of total hospital length of stay, grouped by intent . Total N = 444,787. Total hospital length of stay = 759,492 days.  
 Intent was defined in Appendix D.



**Figure 42B**  
 Average ICU length of stay grouped by intent. (Average ICU length of stay = total ICU length of stay divided by the number of patients by intent).

Intent	Number of Patients	% of Total Patients	Total of ICU LOS in Days	% of ICU LOS in Days	Average of ICU LOS in Days
Unintentional	385,894	86.76%	658,921	86.76%	1.71
Assault	48,788	10.97%	77,500	10.20%	1.59
Self-inflicted	7,376	1.66%	17,289	2.28%	2.34
Undetermined	2,005	0.45%	4,108	0.54%	2.05
Other	724	0.16%	1,674	0.22%	2.31
<b>Totals</b>	<b>444,787</b>		<b>759,492</b>		

**Figure 42C**  
 Percentage of ICU length of stay by intent. (Percentage of ICU length of stay in days = total ICU length of stay by intent divided by the total ICU length of stay X 100).

## Appendix A

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### ***DEFINITION OF TRAUMA PATIENT ADOPTED BY NATIONAL TRAUMA DATA BANK (NTDB)\****

- Any patient with ICD-9-CM discharge diagnosis 800.00 – 959.9
  - Excluding 905-909 (late effects of injury)
  - Excluding 910-924 (blisters, contusions, abrasion, and insect bites)
  - Excluding 930-939 (foreign bodies)
  
- All trauma-related hospital admissions
  
- All injury-related deaths in ED or after admission logistic information, coordination of daily data processing, and monitoring of the effectiveness of interaction of all involved services, including case management and resource utilization.

## Appendix B

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The following is a listing of NTDB data elements. For more detailed field information, please see the NTDB Data Submission File Format, located on the NTDB website at [www.ntdb.org](http://www.ntdb.org).

### FACILITY PROFILE RECORD

ACS Verification Level  
State Designation  
Number of Adult Hospital Beds  
Number of Pediatric Hospital Beds  
Number of Burn Hospital Beds  
Number of ICU Beds Available for Trauma Patients  
Number of ICU Beds Available for Burn Patients  
Hospital Teaching Status  
Hospital Type

### INCIDENT COMPLICATION RECORD

Complication Code  
Complication Description

### INCIDENT DEMOGRAPHICS RECORD

Date of Birth  
Age  
Gender  
Race/Ethnicity  
Principal Payment Source

### INCIDENT DIAGNOSIS RECORD

ICD-9-CM Code of Diagnosis  
Description of ICD-9-CM Code of Diagnosis  
ICD-9-CM Effective Date  
AIS Full Code of Diagnosis  
Description of AIS Code of Diagnosis  
AIS Effective Year  
AIS Severity Score  
AIS Revision

### INCIDENT DIAGNOSIS STATISTICS RECORD

Total Injury Severity Score  
TRISS Survival Probability

### INCIDENT EMERGENCY DEPARTMENT RECORD

First Recorded Date of Patient's Arrival at Reporting Hospital ED

First Recorded Time of Patient's Arrival at Reporting Hospital ED  
Was Trauma Surgeon Arrival in ED Timely?  
First Systolic Blood Pressure in ED  
First Unassisted Respiratory Rate in ED  
Respiratory Rate Assessment Qualifier in ED  
First Temperature in ED  
Temperature Scale  
Head CT Results  
Abdominal Evaluation  
Abdominal Evaluation Type  
Base Deficit/Excess in ED  
Lowest Glasgow Eye Component in ED  
Lowest Glasgow Verbal Component in ED  
Lowest Glasgow Motor Component in ED  
GCS Assessment Qualifier in ED  
Glasgow Coma Scale Total in ED  
Revised Trauma Score in ED  
Alcohol Present in Blood?  
Drugs Present?  
Admitting Service  
Emergency Department Disposition

INCIDENT INTER-HOSPITAL TRANSFER RECORD

Inter-Hospital Transfer

INCIDENT INTUBATION RECORD

Intubation Location Indicator  
Intubation Type

INCIDENT OUTCOME RECORD

Length of Stay in Hospital  
Days of Total Stay in ICU  
Ventilator Support Days  
FIM Self-Feeding Score at Discharge  
Status of FIM Self-Feeding Score  
FIM Locomotion Score at Discharge  
Status of FIM Locomotion Score  
FIM Expression Score at Discharge  
Status of FIM Expression Score  
Total FIM Score  
Date of Discharge or Death  
Discharge Disposition  
Billed Hospital Charges  
Discharge Status

---

INCIDENT PRE-EXISTING COMORBIDITY FACTORS RECORD

Comorbidity Factor Code  
Comorbidity Description

INCIDENT PREHOSPITAL PROCEDURES RECORD

Prehospital Procedure

INCIDENT PROCEDURE RECORD

ICD-9-CM Code of Procedure  
Description of ICD-9-CM Code of Procedure  
ICD-9-CM Effective Date  
CPT-4 Code of Procedure  
Description of CPT-4 Code of Procedure  
CPT-4 Effective Year  
Date on Which Procedure Occurred  
Time at Which Procedure Occurred  
Number of Days After Arrival Procedure Was Done  
Number of Hours After Arrival Procedure Was Done  
Number of Minutes After Arrival Procedure Was Done

INCIDENT SAFETY EQUIPMENT RECORD

Safety Equipment Used

INCIDENT SCENE RECORD

Site at Which Injury Occurred  
Work Relatedness of Injury  
E-Code  
E-Code Description  
Lowest Glasgow Eye Component at the Scene  
Lowest Glasgow Verbal Component at the Scene  
Lowest Glasgow Motor Component at the Scene  
GCS Assessment Qualifier at the Scene  
Glasgow Coma Scale Total at the Scene  
Date on Which Injury Occurred  
Days Between Injury and Admission  
Country in Which Injury Occurred  
Injury Type

## **Appendix C**

### **Criteria for Inconsistent and Irrelevant Data**

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The NTDB Committee Data Quality Work Group has developed the National Trauma Data Bank Reference Manual. This manual is a resource for researchers as they use the database, helping them to evaluate the NTDB as a tool for research and providing information on the current limitations of the NTDB. The manual is available on the ACS website at [www.ntdb.org](http://www.ntdb.org).

Records were excluded from analysis if they met one or more of the following criteria:

- Age  $\leq$  0.0
- Age  $>$  89
- LOS  $<$  0
- LOS  $>$  300
- LOS  $<$  ICU days
- Gender = Unknown
- Discrepancy between discharge status and disposition (that is, alive or dead)
- Admitted before year 1999 except Figure 2 - Figure 3, Figure 5.
- Admitted after year 2003 except Figure 2 - Figure 3, Figure 5.



## Appendix D

## Recommended framework of E-code groupings for presenting injury mortality and morbidity data

Mechanism/Cause	Manner/Intent				
	Unintentional	Self-inflicted	Assault	Undetermined	Other <sup>1</sup>
Cut/pierce	E920.0-.9	E956	E966	E986	E974
Drowning/submersion	E830.0-.9, E832.0-.9 E910.0-.9	E954	E964	E984	
Fall	E880.0-E886.9, E888	E957.0-.9	E968.1	E987.0-.9	
Fire/burn	E890.0-E899, E924.0-.9	E958.1,.2,.7	E961, E968.0,.3	E988.1,.2,.7	
Fire/flame	E890.0-E899	E958.1	E968.0	E988.1	
Hot object/substance	E924.0-.9	E958.2,.7	E961, E968.3	E988.2,.7	
Firearm	E922.0-.3,.8, .9	E955.0-.4	E965.0-.4	E985.0-.4	E970
Machinery	E919 (.0-.9)				
Motor vehicle traffic <sup>2,3</sup>	E810-E819 (.0-.9)	E958.5	E968.5	E988.5	
Occupant	E810-E819 (.0,.1)				
Motorcyclist	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	E800-807(.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, E833.0-E845.9	E958.6		E988.6	
Natural/environmental	E900.0-E909, E928.0-.2	E958.3		E988.3	
Bites and stings <sup>3</sup>	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 <sup>4</sup>	E846-E848, E914-E915 E918, E921.0-.9, E922.4,5 E923.0-.9, E925.0-E926.9 E928.3, E929.0-.5	E955.5,.6,.7,.9 E958.0,.4	E960.1, E965.5-.9 E967.0-.9, E968.4,.6, .7 E979.0-.9	E985.5,.6,.7 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

Mechanism/Cause					
	Unintentional	Self-inflicted	Assault	Undetermined	Other <sup>1</sup>
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, E979	E980-E989	E970-E978, E990-E999
Adverse effects					E870-E879 E930.0-E949.9
Medical care					E870-E879
Drugs					E930.0-E949.9
All external causes					E800-E999

<sup>1</sup>Includes legal intervention (E970-E978) and operations of war (E990-E999).

<sup>2</sup>Three 4th-digit codes (.4 [occupant of streetcar], .5 [rider of animal], .8 [other specified person]) are not presented separately because of small numbers. However, because they are included in the overall motor vehicle traffic category, the sum of these categories can be derived by subtraction.

<sup>3</sup>E968.5 (assault by transport vehicle), E906.5 (bite from unspecified animal), E922.4 (unintentional injury [gunshot wound] with BB/pellet), E955.6 (suicide attempt/intentionally self-inflicted injury [gunshot wound] with BB/pellet gun), E968.6 (assault [gunshot wound] with BB/pellet gun), E985.6 (undetermined intent injury [gunshot wound] with BB/pellet gun), E928.3 (unintentional human bite), and E968.7 (assault by human bite), are specific to the *ICD-9-CM* and, therefore, only apply to morbidity coding.

<sup>4</sup>E849 (place of occurrence) has been excluded from the matrix. For mortality coding, an *ICD-9* E849 code does not exist. For morbidity coding, an *ICD-9-CM* E849 code should never be first-listed E code and should only appear as an additional code to specify the place of occurrence of the injury incident.

**Note:** ICD-9 E codes for coding underlying cause of death apply to injury-related death data from 1979 through 1998. Then there is a new ICD-10 external cause of injury matrix that applies to death data from 1999 and after. This can be found on the [National Center for Health Statistics website](#).  
5/15/2003

## Appendix E

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The following is a listing of states and hospitals that have contributed to NTDB in any year. Some state agencies do not provide the names of contributing hospitals, so the individual hospitals are not listed below their respective states. Also, some data were received after the NTDB data collection deadline and are not included in the analysis for this report.

### State Agencies

Alabama Department of Public Health, Alabama  
 Alaska State Dept of Health, Alaska  
 LA-County Department, California  
 Delaware State, Delaware  
 Georgia State, Georgia  
 Iowa Department of Public Health, Iowa  
 Kansas State Department of Health, Kansas  
 State of Minnesota, Minnesota  
 Missouri Department of Health, Missouri  
 State of Nevada, Nevada  
 State of North Carolina, North Carolina  
 Central Ohio, Ohio  
 State of Washington, Washington

### Alabama

Childrens Hospital of AL  
 Crestwood Medical Center  
 DCH Regional Medical Center  
 Huntsville Hospital  
 Northeast Alabama Regional Medical Center  
 Northport Medical Center  
 University of Alabama School of Medicine  
 University of South Alabama Medical Center  
 Walker Baptist Medical Center

### Alaska

Alaska Native Medical Center  
 Flagstaff Medical Center  
 John C. Lincoln Hospital, North Mountain  
 Maricopa Integrated Health Systems

### Arizona

Scottsdale Healthcare – Osborn  
 St. Joseph's Hospital and Medical Center

### Arkansas

Arkansas Childrens Hospital

UAMS Medical Center

White River Medical Center

**California**

Arrowhead Regional Medical Center

Cedars-Sinai Medical Center

Children's Hospital Los Angeles

Harbor/UCLA Medical Center

Henry Mayo Newhall Memorial Hospital

Huntington Memorial Hospital

LAC+USC Medical Center

Loma Linda University Medical Center

Long Beach Memorial Medical Center

Martin Luther King / Drew Medical Center

Memorial Medical Center

Mercy San Juan Hospital

Northridge Hospital Medical Center

Palomar Medical Center

Providence Holy Cross Medical Center

Saint Francis Medical Center

Saint Mary Medical Center

San Francisco General Hospital

San Jose Medical Center

Santa Barbara Cottage Hospital

Santa Clara Valley Medical Center

Scripps Memorial Hospital

Sharp Memorial Hospital

Stanford Hospital & Clinics

UCLA Medical Center

UCSD Medical Center

University Medical Center

University of California Irvine Medical Center

Western Medical Center- SA

**Colorado**

Poudre Valley Hospital

**Connecticut**

Hospital of Saint Raphael

**Delaware**

Alfred I. DuPont Hospital for Children

Bayhealth Medical Center - Kent Campus

Beebe Medical Center

Christiana Hospital

Milford Memorial Hospital

Nanticoke Memorial Hospital

Wilmington Hospital

**District of Columbia**

George Washington University Medical Center  
Howard University Hospital  
Washington Hospital Center

**Florida**

All Children's Hospital  
Baptist Hospital  
Broward General Medical Center  
Halifax Medical Center  
Holmes Regional Trauma Center  
Lakeland Regional Medical Center  
Memorial Regional Hospital  
North Broward Medical Center  
Orlando Regional Healthcare  
Sacred Heart Health Systems  
Shands Jacksonville Medical Center  
Tampa General Hospital

**Georgia**

Atlanta Medical Center  
Children's Healthcare of Atlanta at Egleston  
Children's Healthcare of Atlanta of Scottish  
Floyd Medical Center  
Grady Memorial Health  
Gwinnett Medical Center  
Hamilton Medical Center  
Medical Center of Central Georgia  
Medical College of Georgia  
Memorial Hlth University Medical Center  
Morehouse  
North Fulton Regional Hospital  
Southern Regional Medical Center  
The Medical Center

**Hawaii**

The Queen's Medical Center

**Idaho**

Bonner General Hospital  
Eastern Idaho Regional Medical Center  
Magic Valley RMC  
Portneuf Medical Center  
Saint Alphonsus Regional Med Center

**Illinois**

Loyola University Medical Center

**Indiana**

Athens Regional Med Ctr  
Kwanis-Riley Regional Pediatric Trauma Center  
Memorial Hospital of South Bend

Parkview Hospital  
Saint Joseph's Regional Medical Center  
Wishard Memorial Hospital

**Kansas**

Columbia Wesley Medical Center  
Overland Park Regional Medical Center  
Stormont – Vail Health Care  
University of Kansas Medical Center

**Kentucky**

Kosair Childrens Hospital  
Regional Medical Center – Madisonville  
University of Kentucky  
University of Louisville Hospital

**Louisiana**

East Jefferson General Hospital  
Medical Center of Louisiana

**Maine**

Eastern Maine Medical Center  
Maine Medical Center

**Massachusetts**

Berkshire Medical Center  
Beth Israel Deaconess Medical Center  
Beverly Hospital  
Brigham and Women's Hospital  
Falmouth Hospital  
Lahey Clinic  
Lawrence General Hospital  
Massachusetts General Hospital  
North Shore Medical Center

**Michigan**

Borgess Medical Center  
Detroit Receiving Hospital  
Genesys Regional Medical Center  
Hackley Hospital  
Henry Ford Hospitals  
Hurley Medical Center  
McLaren Regional Medical Center  
Saint Mary's Mercy Medical Center  
Sparrow Health System  
Spectrum Health  
St. Joseph Mercy Hospital  
University of Michigan Trauma Burn Center  
William Beaumont Hospital

**Minnesota**

Hennepin County Medical Center  
Mercy Hospital  
North Memorial Medical Center  
Regions Hospital  
Saint Cloud Hospital  
Saint Luke's Hospital -  
Saint Mary's / Duluth Clinic Health System  
Unity Hospital

**Missouri**

Freeman Health System  
Independence Regional Health Center  
New Liberty Hospital District  
Research Medical Center  
Saint Luke's Hospital of Kansas City  
St. John's Health System  
St. John's Mercy Medical Center  
St. Louis University Hospital

**Nebraska**

BryanLGH Medical Center West  
Creighton University Medical Center  
Good Samaritan Hospital  
Great Plains Regional Medical Center  
Lincoln General Hospital  
Nebraska Health System University Hospital  
Regional West Medical Center  
Saint Francis Medical Center  
The Nebraska Methodist Hospital

**Nevada**

University Medical Center  
Washoe Medical Center

**New Jersey**

Atlantic City Medical Center - City  
Morristown Memorial Hospital  
NJ Trauma Center  
Robert Wood Johnson University Hospital

**New Mexico**

University Of New Mexico Hospital

**New York**

Bellevue Hospital  
North Shore University Hospital  
University Hospital Stony Brook

**North Carolina**

Carolinas Medical Center  
Cleveland Regional Medical Center

University Health Systems-East Carolina - Pitt  
Wake Forest University Baptist Medical Center

**North Dakota**

St. Luke's Hospital - North Dakota

**Ohio**

Akron City Hospital  
Miami Valley Hospital  
St. Vincent Mercy/Mercy Children's Hosp  
The University Hospital

**Oklahoma**

OU Medical Center  
St. John Medical Center

**Puerto Rico**

Puerto Rico Trauma Center

**Rhode Island**

Rhode Island Hospital

**South Carolina**

Medical University of SC  
Palmetto Health  
Regional Medical Center of Orangeburg and Cal  
Spartanburg Regional Healthcare System

**South Dakota**

Avera McKennan Hospital  
Sioux Valley Hospital USD Medical Center

**Tennessee**

Baptist Memorial Hospital  
Blount Memorial Hospital  
Bradley Memorial Hospital  
Bristol Regional Medical Center  
East TN Children's Hospital  
Erlanger Medical Center  
Johnson City Medical Center  
Le Bonheur Children's Medical Center  
Methodist Healthcare Central  
Regional Medical Center  
University of Tennessee Medical Center  
Vanderbilt University Medical Center

**Texas**

Baylor University Medical Center  
Brackenridge Hospital  
Children's Medical Center of Dallas  
Cook Children's Medical Center  
Covenant Medical Center  
Darnall Army Community Hospital



Methodist Dallas Medical Center  
Nacogdoches Medical Center  
Parkland Health & Hospital System  
University Medical Center

**Vermont**

Fletcher Allen Health Care

**Virginia**

Inova Fairfax Hospital  
Medical College of Virginia Hospitals  
Riverside Regional Medical Center  
Sentara Norfolk General Hospital

**Wisconsin**

Aurora Baycare Medical Center  
Froedtert Memorial Lutheran Hospital  
Gunderson Lutheran Hospital  
Saint Joseph's Hospital  
St. Vincent Hospital  
Theda Clark Medical Center  
University of Wisconsin



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