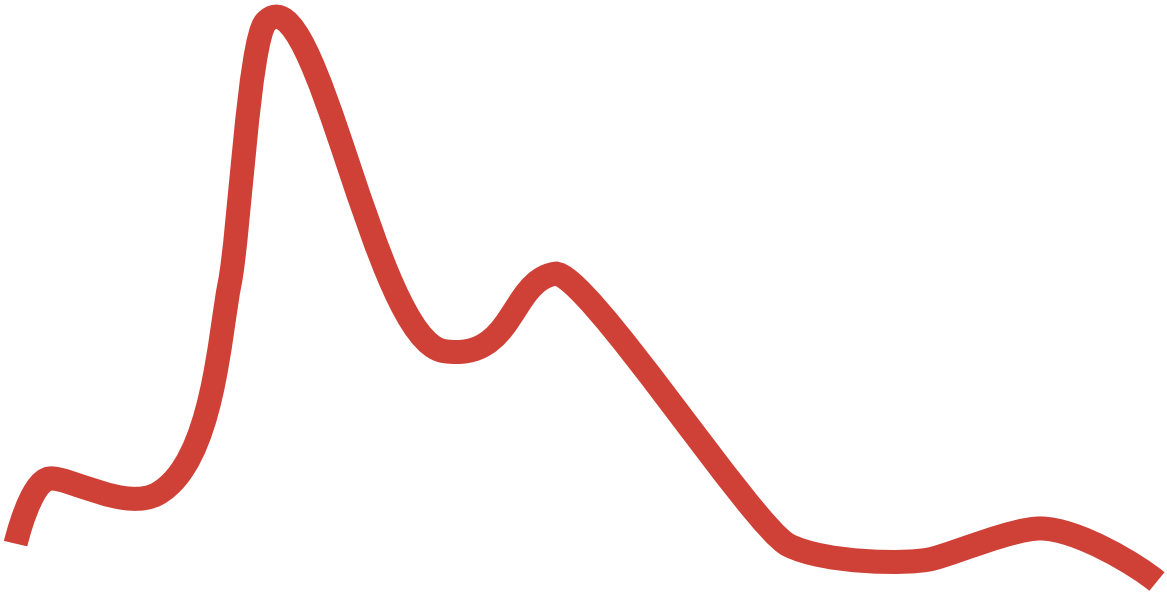
NATIONAL TRAUMA DATA BANK REPORT 2005



NTDB®
NATIONAL TRAUMA DATA BANK

AMERICAN COLLEGE OF SURGEONS
FOUNDED IN 1913
OMNIBVS PER ARTEM FIDEMQVE PRODESSE

Dataset Version 5.0

NTDB Annual Report 2005

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Acknowledgments

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

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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

Editor's Note

The Annual Report of the National Trauma Data Bank (NTDB), Version 5.0 is an updated analysis of the largest aggregation of trauma registry data that has ever been assembled. The NTDB currently contains a decade of data, almost 1.5 million records from 565 trauma centers in 45 states, Puerto Rico, and the District of Columbia. This total represents an increase of more than 370,000 records from the 2004 report.

The Annual Report Version 5.0 is based on 917,265 records from the years 2000-2004. NTDB has begun to use a rolling 5-year time frame for the annual analysis in order to focus on the most recent, highest quality data. Prior to analysis NTDB data are subjected to a quality screening for consistency and validity, per Appendix C.

The NTDB is committed to being the non-proprietary national repository for trauma center registry data. It is estimated that 70% of Level I and 53% of Level II trauma 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) to develop and implement meaningful programs for trauma care.

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 5.0 is available on the ACS web site as a PDF file and a PowerPoint presentation at http://www.ntdb.org.

John Fildes, MD, FACS
Chair, National Trauma Data Bank Sub 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 to access our online application for NTDB data.

Project Title
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-Labeled Trial of a 2nd Generation HBOC for the Pre-Hospital Resuscitation of Hemorrhagic Shock Patients
Abdominal Gunshot Wounds
Age-Related Gender Differences in Patient Outcomes Following Trauma
ANN for Trauma Registry
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
Bayesian Survival Risk Ratios
Bench Mark Data Based on ISS and Age
Benchmark Report for Sharp Memorial Hospital
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
Boating Injuries
Burn Patient Mortality National Trends
Calibration of the Abbreviated Injury Scale
Cervical Spine Injuries
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 Bilateral internal Iliac Embolization and Subselective Embolization in Unstable Pelvic Fractures
Comparing Morbidity and Mortality Rates for TLCI and TLCIII

Project Title
Comparison of Israeli Trauma Database with NTDB Database
Comparison of NTDB Data and Florida
Comparison of Patterns of Injury in ATV Helmeted and Undeleted Riders
Comparison of St. Vincent Hospital Trauma Data to National Data
Comparison of Theda Clark Regional Medical Center with Other Trauma Centers
Complication Benchmarks
Complication Comparison
Coordination, Communication, Expertise, and Information Technology Use in a Dynamic environment.
Correlation Between Number of Daily Admissions and Outcomes Among Trauma Patients
Correlation of Injury Location to Severity
Cost of Treatment of Elderly Trauma Patients vs. All Others with Same / Similar Mechanism of Injuries
CSI and NAT
CSI in NAT
Current Screening Criteria For Blunt Cerebrovascular Injury (BCVI) May Be Inadequate
Data Visualization to Identify Trauma Patients at Risk for Medical Error
Demographics and Outcome Following Heart, Lung and Heart and Lung Trauma in the US
Determining the Cost of Trauma
Development of a Revised Injury Severity Score (RISS)
Distal Radius Fractures in Elderly Patients
Do TRISS, ICISS and ASCOT Agree on the Identity of Quality Outliers?
Does ICP Monitoring Effect Outcome in Severely Brain Injured Patients?
Early Prediction of ICU Length of Stay in Blunt Trauma Patients
Economic Impact Of Motorcycle Helmets:
Effect of AAST Injury Scale on Outcome in Pediatric Splenic Trauma
Effect of Alcohol Use on Outcomes in Trauma
Effects of Ultrasound FAST Exam in Decreasing Time to OR in Patients with Hemoperitoneum Due to Blunt Trauma Injury
Elderly TBI
EMS Promptness Analysis
Endophthalmitis After Open Globe Injuries
Estimation of Intraclass Correlation Coefficient (ICC) of ED Shock and In Hospital Trauma Mortality for Multicenter Studies
Estimation of Tissue Oxygen Saturation in Trauma Resuscitation
Evaluating Pedestrian Trauma
Evaluation of Interhospital Trauma Transfers
Evaluation of Kentucky Trauma System Using National Trauma Data Bank Data
Evaluation of NTDB as Reference Database for Trauma Center Outcome Studies
Evaluation of Outcomes in Trauma Patients with ISS 25-75
Examination of Injury Severity and Hospital Charges by Mechanism of Injury in Pediatric Patients
Feasibility of Developing an Older Adult Trauma Triage Decision Rule
Fiscal Year Data From NTDB
Focused Hospital Units
Friday The 13th and Trauma Incidence and Severity

Project Title
Full Moon Effect on Trauma Outcomes
Functional Outcome Of Trauma Patients Admitted to Higher Versus Lower Level or Undesignated Centers
Functional Status Following Blunt and Penetrating Carotid Artery Injuries.
Further Evaluation of NED as a Reference Database for Trauma Center Outcome Studies
Gender Differences in Outcomes in Pediatric Trauma
Halo Vest Immobilization in the Elderly. A Death Sentence?
Head Injury Mortality
Head Trauma Research
Hispanic Injury Data
Hospital Length of Stay After Serious Injury
Human Subjective Scoring Versus Artificial Neural Networks for Predicting Mortality in Trauma Patients
ICD-9 Procedence List Validation and Recommendations
Identifying Quality Outliers using Severity-Adjusted Mortality Rates or Functional Discharge Status: Does It Make A Difference?
Impact of Diabetes on Trauma Outcome
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?
Injured Children in Missouri
Injuries in the Home
Injury Patterns in Elderly Motor Vehicle Drivers
Injury Prevention Priority Scoring of Gunshot Wounds
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.
Ladder Falls
Legal Research
Length of Stay and Discharge Status
Length of Stay for Trauma Patients Versus Milliman and Robertson
Mandible Fracture and Carotid Trauma
Mass Casualty Disaster Simulation - Patient Research
Massachusetts General Hospital Trauma Outcomes
Mechanism of Injury vs. ICD-9
Medical College of Virginia Trauma Data
Morbidity and Mortality Associated with Airbag Deployment in Children
Mortality After Pelvic Fracture: The Effects of Hemodynamic Shock and the Use of External Fixation
Mortality Associated with Surgical Intensive Care Unit Admission on Weekends
Multilevel Modeling of Trauma Outcomes
National Comparables for Mechanism of Injury
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

Project Title
National Trauma Registry for Children
National Trends In The Management And Outcomes Of Severe Splenic Injuries
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
Non-Operative Management of Splenic Injuries, LOS
Noscomial Pneumonia Review
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Optimal Timing of Spinal Fixation of Traumatic Spinal Injuries
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PA Trauma Foundation vs. National TRACS ISS 16
Parkland's Trauma Program Benchmark Review
Partnership for Development and Dissemination of Outcomes Measures for Injured Children
Patterns of injury sustained by rear seat passengers
Patterns of Injury with Seatbelt Use
Patterns of Trauma in Middle Aged Motorcyclists
Pediatric Mortality After MVA
Pediatric Renal Injuries
Pediatric Trauma from Power Lawnmowers
Penetrating Cardiac Injuries
Penetrating Neck Trauma Paper
Penetrating Pulmonary Injuries
PI Assessment of VRC Verification Criteria
Popliteal Artery Injuries
Potential Patient and System Factors that Influence Discharge from Acute Care to Inpatient Rehabilitation
Predicting Financial Outcomes in Trauma
Predictive Model Development
Predictive Value of Early Hospital Assessment on Outcome in Pediatric Trauma.
Predictors of Length of Stay After Trauma
Presence of Emergency Medicine Residency Programs at Level I Trauma Centers: Is There an Effect on Trauma Patient Outcome?
Preventing Injuries From Falls in the Elderly
Prognostic Indicators Predictive of Mortality in Geriatric Patients: When is Resuscitation Futile?
Quality Chasm in Trauma Care - Does One Exist?
Quality Trauma Care Can be Delivered by General Surgeons in Practice at a Level II Trauma Center
Query NTDB for Specific Injuries and the Surgical Procedures Performed as a Result of Them for Directional Guidance in a Trauma Related Product
Race/Ethnicity & Seriousness of Assault
Racial Disparities in Injury Mortality
Racial Disparities in Trauma: Injuries and Outcomes
Rapid Infusion

Project Title
Rate of Operation for Liver/Splenic Trauma in Children
Re-Calculation of TRISS Survival Statistic Co-Efficients Utilizing the NTDB Data Set
Relationship of Time to Operative Management and Patient Outcomes
Request for NTDB Data Points
Research Paper
Resource Utilization in the Management of Severe Renal Trauma.
Retrospective Analysis of Traumatic Esophageal Injury
Risk Assessment in Blunt Thoracic Trauma
Role of Pre-Hospital ALS Interventions in Trauma
San Joaquin County Trauma Planning - TRISS Study
Serious Inflicted Neurotrauma in Trauma Centers
SHOCs
Simplifying the TRISS methodology
Ski Helmet Study
Spinal Cord Injury
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State of Tennessee
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Survivor Risk Ratio Estimation
Teen Injuries Relating to Alcohol and Substance Abuse
Temporal Factors in the Quality of Trauma Care
The Burden of Suicide on Trauma Centers
The Changing Demographic of Motorcycle Injury in the US
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 Influence of Age on Survivorship From Pancreatic Injury
The Influence of Altitude on Incidence and Type of Trauma
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
Thrombolic Complications Following Trauma: Incidence and Risk Factors
Timely Arrival of Trauma Surgeon in ED
Tracheobrinchial Injuries Following Blunt Trauma
Trauma and Pregnancies Risk Factors and Outcomes
Trauma in the Elderly
Trauma Patient Complications

Project Title
Trauma Report Card
Trauma Services: Benchmarking
Traumatic Hip fracture surgery outcomes
Traumatic Hip Fracture, Outcomes and Complications
Tree Stand Falls
Trends in Alcohol and Drug Use Among Patients Admitted with Injuries: A study of the National Trauma Data Bank
UCI Trauma Performance Improvement Project
Undergraduate Study Module
Ureteral Trauma in Childhood
Urologic Trauma Care
Use of Double Contrast CT scan in Blunt Abdominal Trauma
Variation in Rates of Tracheostomy in Trauma Patients with Acute Respiratory Failure
Ventilator Associated Pneumonia in Trauma Patients
Violence Prevention in Pediatric Population
Violent Crime and the Economy
Volume-Outcome Relationship in Trauma Centers: Is It a Function of Patient Risk?

Executive Summary

The National Trauma Data Bank (NTDB) is the largest aggregation of trauma registry data ever assembled. It contains almost 1.5 million records from 565 U.S. trauma centers. The 2005 Annual Report reviews the combined data set for the period 2000 - 2004, containing 917,265 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

- 565 hospitals submitted data.
- 133 are verified as Level I, representing 70% of Level I centers.
- 138 are verified as Level II, representing 53% of Level II centers.
- 39 are verified as Level III, representing 15% of Level III centers.
- 255 are verified as Level IV, Level V and unspecified, representing 48% of Level IV, V and Unspecified centers.

Patient Characteristics

- NTDB has accrued a total of 1,493,955 records.
- The age distribution of patients in NTDB peaks from ages 16 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 Fall.
- Up to age 70, men predominate and after age 70 most patients are women.

Mechanism of Injury

- Motor Vehicle Traffic related injuries account for 43.12% 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 46% of mortalities.
- Fall accounts for 26% of cases in the NTDB.
  - The incidence of Fall peaks around 82 years of age.
  - Fall is associated with the second largest number of hospital and ICU days utilized.
  - Fall accounts for 20% of mortalities.
- Struck By, Against and Transport, Other are the next most frequent categories, representing 6.5% and 5.2% 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.

- Firearm accounts for 5.9% 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 accounts for 21% of mortalities.
- Unintentional injuries accounts for 85% of hospital days, while intentional injuries accounts for 14% 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.

- Over two thirds (68%) 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 (3.39 days), yet accounted for almost half (44.74%) of the total hospital days due to its size.
- The Moderate group (ISS 10-15) had an average ICU length of stay 1.7 days, accounting for 11% of all ICU days.
- The Severe group (ISS 16-24) had an average ICU length of stay 3.86 days, accounting for 27% of all ICU days.
- The Very Severe group (ISS > 24) had an average ICU length of stay 7.65 days, accounting for 44.88% of all ICU days.

Payment

- Self-Pay is the largest single payment category at 21.14%.
- Medicare accounts for 16.65%.
- Managed Care accounts for 15.24%.
- Medicaid accounts for 11.22%.
- Commercial Insurance accounts for 9.69%.

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 4.89% of cases, and remain relatively stable until 75 years after which they decline.
- Fall results in death in 3.52% of cases.
- Firearm is associated with death in 16.04% of cases, the highest percentage of any penetrating injury.
- Pedestrian injuries are associated with death in 5.67% of cases, the highest percentage for all blunt injuries.
- Fire/Burn is associated with death in 4.50% of cases.
- Case fatality 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 Firearm 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 2005 is available on the ACS website as a PDF file and a PowerPoint presentation at http://www.ntdb.org.

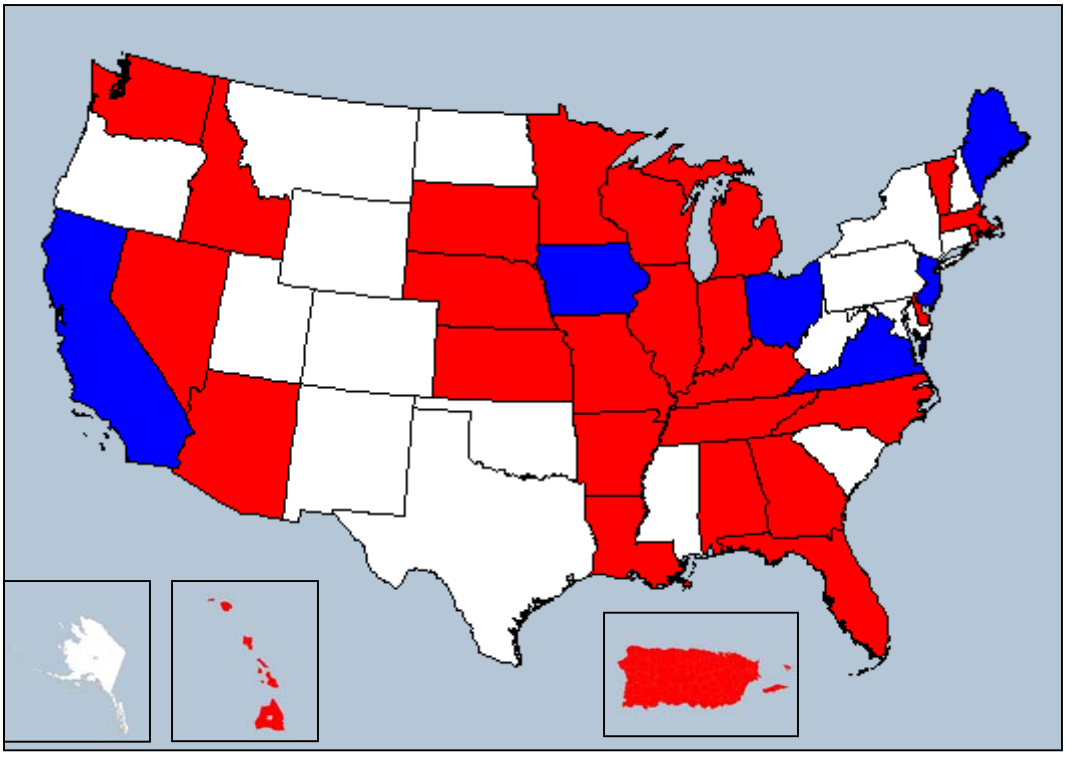

Figure 1

States and U.S Territories submitting data to the NTDB. Percent of hospitals = Number of hospitals in the state that have submitted to the NTDB* divided by the number of hospitals identified by the Trauma Exchange Information Program (TIEP) as a trauma center. A trauma center is a hospital that is designated by a state or local authority or is verified by the American College of Surgeons.

Red - 67% and greater
Blue - 34% to 66%
White - 0% to 33%

*Hospitals submitting to the NTDB not identified by TIEP were included in the numerator

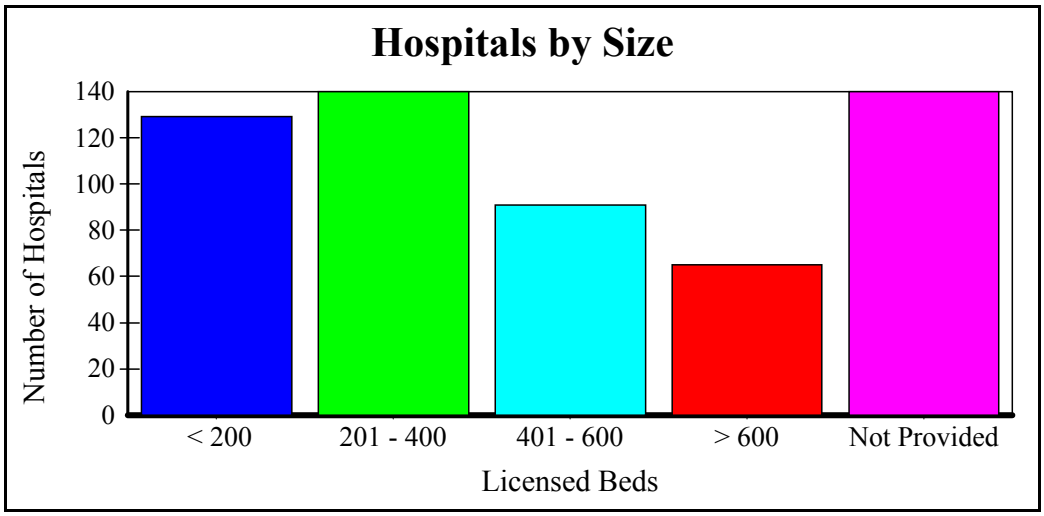

Figure 2A

Size of hospitals submitting data to the NTDB as indicated by number of licensed beds. Total N = 565.

Bed size	Number of Hospitals by Size	% of Total Hospitals by Size
< 200	129	22.83%
201 - 400	140	24.78%
401 - 600	91	16.11%
> 600	65	11.50%
Not Provided	140	24.78%
Totals	565	

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).

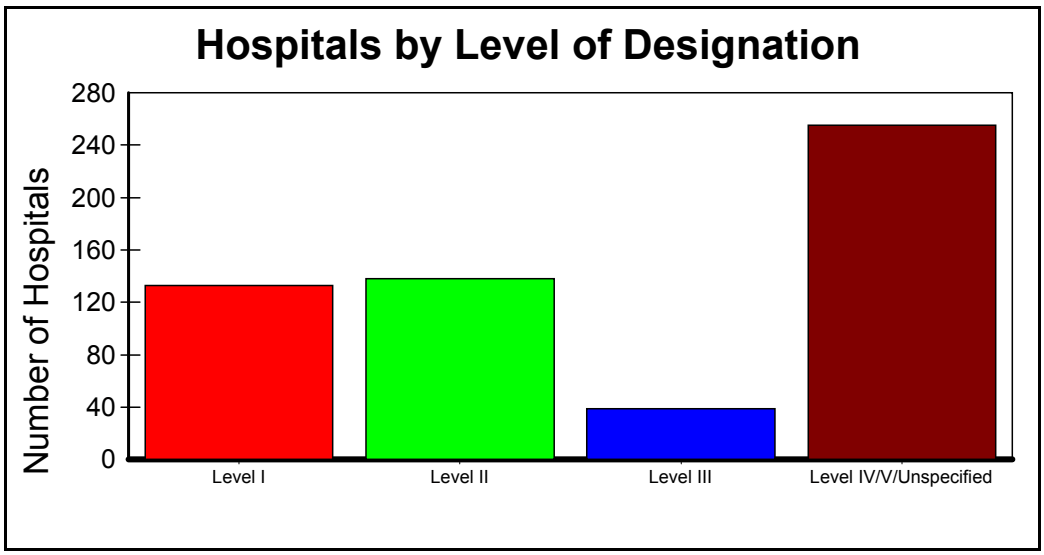

Figure 3A
Number of hospitals submitting to the NTDB ranked by level of designation. Total N = 565.

Level of Designation	Number of Hospitals Submitting to the NTDB	Number of All Trauma Centers in the U.S.*	Percentage of Submitting Hospitals
I	133	189	70%
II	138	261	53%
III	39	263	15%
IV/V/Unspecified	255	536	48%
Totals	565	1249	

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). The large number of unspecified centers is due to state data submissions.

* Number of all trauma centers in the U.S. were generated from MacKenzie EJ et. al. National Inventory of Hospital Trauma Centers. JAMA 2003 Mar 26; 289(12):1517. ©2003 American Medical Association

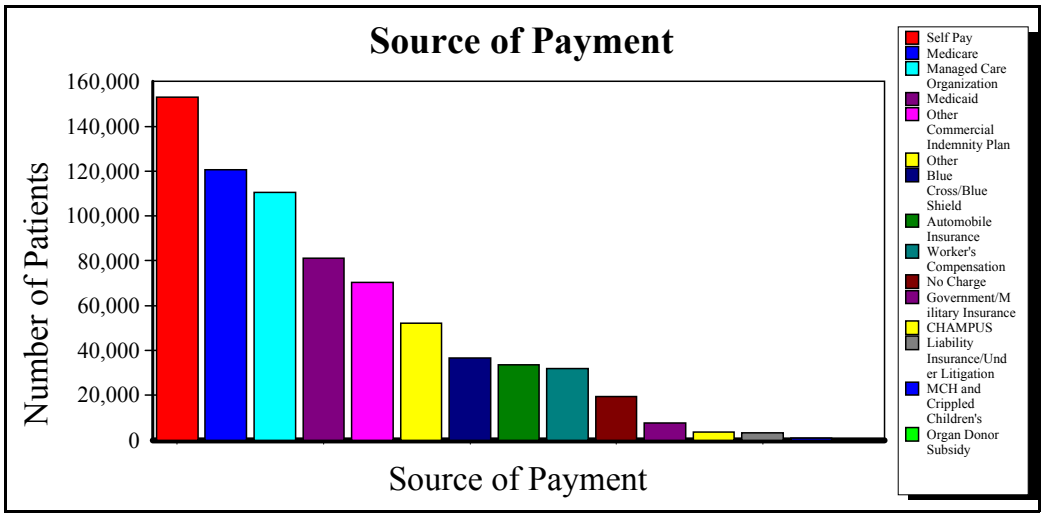

Figure 4A

Source of payment for hospital charges. Total patients with known source of payment = 724,731.

Source of Payment	Number of Patients	% of Total Patients
Self Pay	153,186	21.14%
Medicare	120,668	16.65%
Managed Care Organization	110,437	15.24%
Medicaid	81,293	11.22%
Other Commercial Indemnity Plan	70,241	9.69%
Other	52,125	7.19%
Blue Cross/Blue Shield	36,684	5.06%
Automobile Insurance	33,456	4.62%
Worker's Compensation	32,006	4.42%
No Charge	19,533	2.70%
Government/Military Insurance	7,461	1.03%
CHAMPUS	3,449	0.48%
Liability Insurance/Under Litigation	3,298	0.46%
MCH and Crippled Children's	886	0.12%
Organ Donor Subsidy	8	0.00%
Totals	724,731	

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).

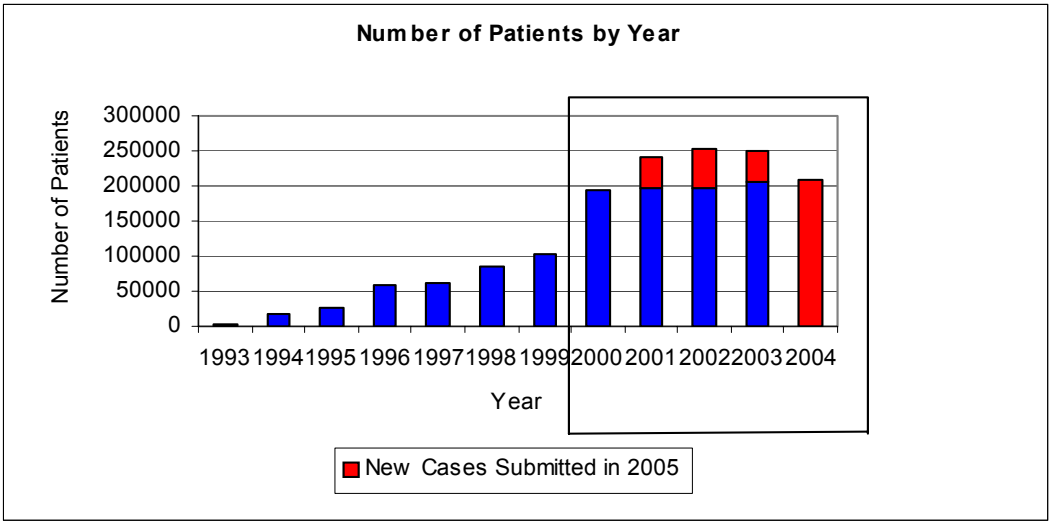

Figure 5A

Yearly comparison of all patients in the NTDB. The NTDB currently contains 1,493,955 patients records. The 2005 Annual Report reviews the combined data set for the period 2000 - 2004 that contains 917,265 records, highlighted in the box. Total N = 917,265.

Year	Total Number of Patients for 1993-2004	Number of Patients for 2005 Report	% of Actual Records
1993	1,487	0	0.00%
1994	18,497	0	0.00%
1995	25,195	0	0.00%
1996	57,883	0	0.00%
1997	62,146	0	0.00%
1998	85,238	0	0.00%
1999	102,746	0	0.00%
2000	189,434	*140,841	74.35%
2001	240,947	*189,830	78.78%
2002	251,901	*205,497	81.58%
2003	249,216	*198,786	79.76%
2004	209,265	*182,311	87.12%
Totals	1,493,955	917,265	

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.

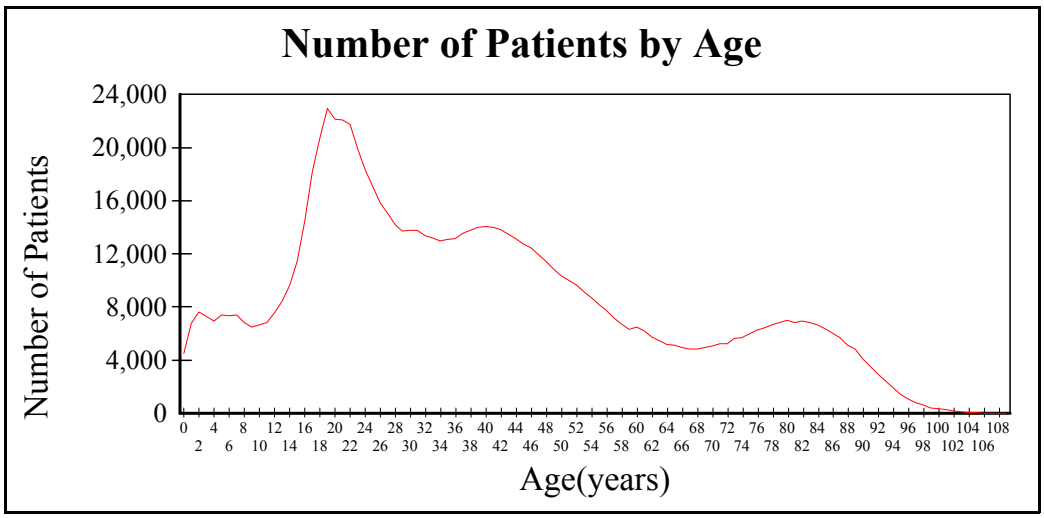

Figure 6A

Number of patients grouped by age. Total N = 917,265.

Age Range	Number of Patients	% of All Patients
< 1	4,505	0.49%
1-4	28,656	3.12%
5-9	35,389	3.86%
10-14	39,059	4.26%
15-19	87,785	9.57%
20-24	104,232	11.36%
25-34	142,917	15.58%
35-44	136,153	14.84%
45-54	107,336	11.70%
55-64	65,167	7.10%
65-74	51,518	5.62%
75-84	66,333	7.23%
>= 85	48,215	5.26%
Totals	917,265	

Figure 6B

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

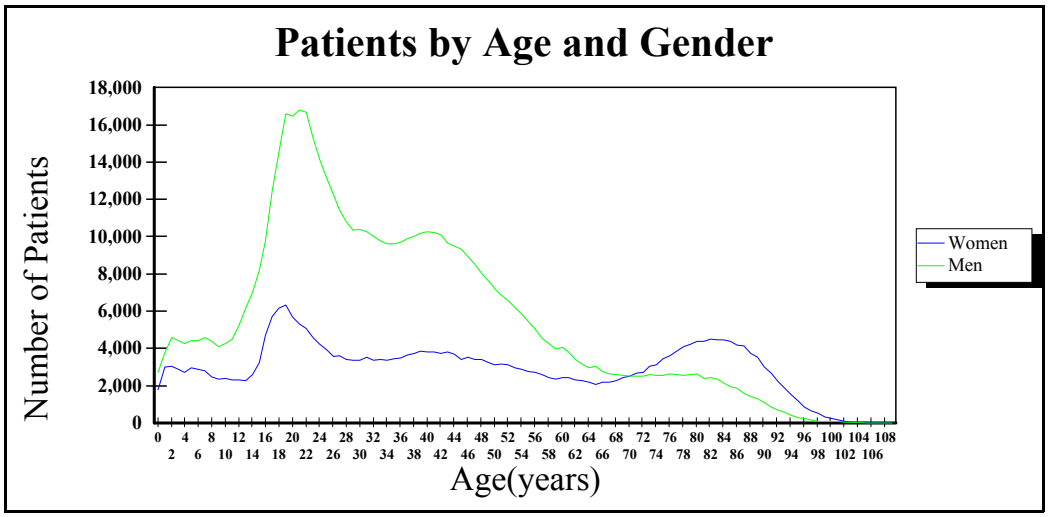

Figure 7A

Number of men and women grouped by age. Total N = 917,265.

Age Range	Number of Patients	Number of Patients Men	% of Age Group Men	Number of Patients Women	% of Age Group Women
< 1	4,505	2,707	60.09%	1,798	39.91%
1-4	28,656	17,017	59.38%	11,639	40.62%
5-9	35,389	21,923	61.95%	13,466	38.05%
10-14	39,059	27,166	69.55%	11,893	30.45%
15-19	87,785	61,587	70.16%	26,198	29.84%
20-24	104,232	79,348	76.13%	24,884	23.87%
25-34	142,917	108,017	75.58%	34,900	24.42%
35-44	136,153	99,188	72.85%	36,965	27.15%
45-54	107,336	75,099	69.97%	32,237	30.03%
55-64	65,167	40,635	62.36%	24,532	37.64%
65-74	51,518	26,275	51.00%	25,243	49.00%
75-84	66,333	24,912	37.56%	41,421	62.44%
>= 85	48,215	12,851	26.65%	35,364	73.35%
Totals	917,265	596,725		320,540	

Figure 7B

Percentage of patients for men and women at each age range from 0 to 85 and older. (Percentage of patients by gender = number of patients by gender divided by the number of patients X 100 by age range).

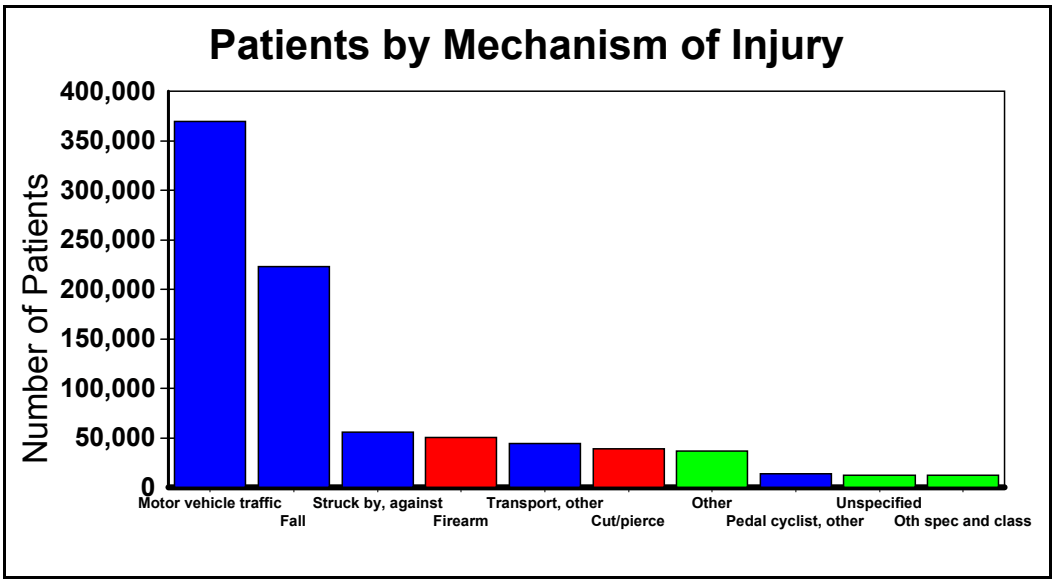

Figure 8A

Proportional distribution of patients, grouped by mechanism of injury. Total N = 857,428.

Mechanism of injury is defined in Appendix D.

Other includes the 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	369,727	43.12%
Fall	222,806	25.99%
Struck by, against	55,894	6.52%
Firearm	50,189	5.85%
Transport, other	44,411	5.18%
Cut/pierce	39,406	4.60%
Pedal cyclist, other	13,710	1.60%
Unspecified	12,241	1.43%
Other specified and classifiable	12,060	1.41%
Machinery	11,971	1.40%
Natural/environmental	6,528	0.76%
Fire/burn	5,818	0.68%
Other specified, not elsewhere classifiable	3,669	0.43%
Pedestrian, other	3,032	0.35%
Overexertion	2,552	0.30%
Suffocation	1,175	0.14%
Poisoning	934	0.11%
Drowning/submersion	874	0.10%
Adverse effects	431	0.05%
Totals	857,428	

Figure 8B

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

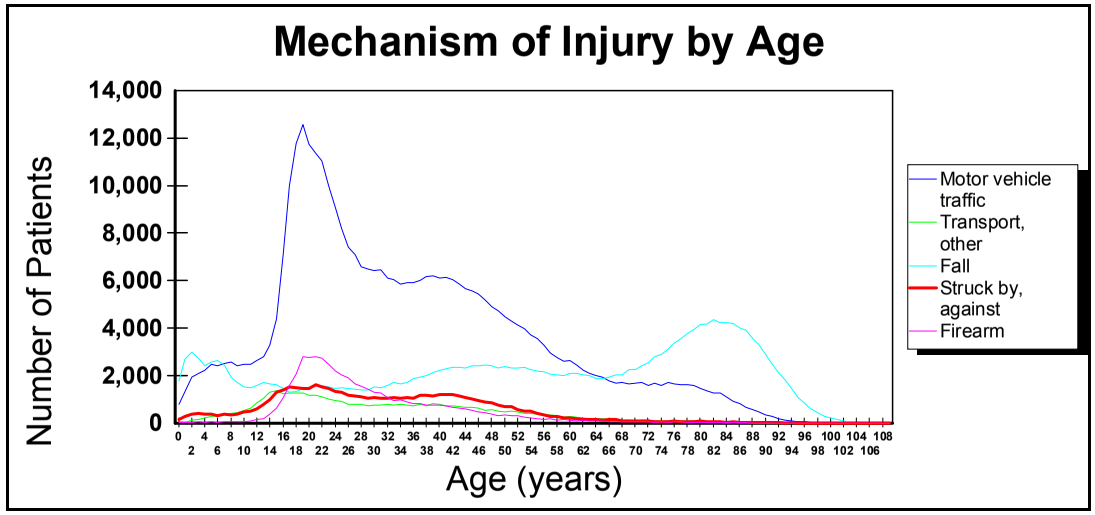

Figure 9A

Number of patients injured by the most common mechanism of injury categories grouped by age. Total N = 857,428.

Mechanism of injury is defined in Appendix D.

Figure 9B

Percentage of patients due to the most common mechanism of injury categories grouped by age range. (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	4,296	786	18.30%	55	1.28%	1,783	41.50%	172	4.00%	33	0.77%
1-4	26,488	7,596	28.68%	546	2.06%	10,868	41.03%	1,470	5.55%	161	0.61%
5-9	33,298	12,403	37.25%	1,852	5.56%	11,315	33.98%	1,820	5.47%	258	0.77%
10-14	36,888	13,680	37.09%	4,374	11.86%	7,970	21.61%	3,342	9.06%	846	2.29%
15-19	84,249	45,880	54.46%	6,453	7.66%	7,179	8.52%	7,177	8.52%	8,186	9.72%
20-24	99,764	53,201	53.33%	5,448	5.46%	7,645	7.66%	7,427	7.44%	12,941	12.97%
25-34	136,271	66,612	48.88%	7,959	5.84%	15,141	11.11%	11,099	8.14%	14,176	10.40%
35-44	129,096	59,999	46.48%	7,470	5.79%	21,179	16.41%	11,458	8.88%	7,474	5.79%
45-54	101,346	46,402	45.79%	5,176	5.11%	23,636	23.32%	7,448	7.35%	3,624	3.58%
55-64	60,794	26,609	43.77%	2,739	4.51%	20,537	33.78%	2,489	4.09%	1,321	2.17%
65-74	46,662	17,042	36.52%	1,231	2.64%	23,107	49.52%	1,035	2.22%	626	1.34%
75-84	57,976	14,684	25.33%	796	1.37%	38,908	67.11%	654	1.13%	405	0.70%
>= 85	40,300	4,833	11.99%	312	0.77%	33,538	83.22%	303	0.75%	138	0.34%
Totals	857,428	369,727		44,411		222,806		55,894		50,189	

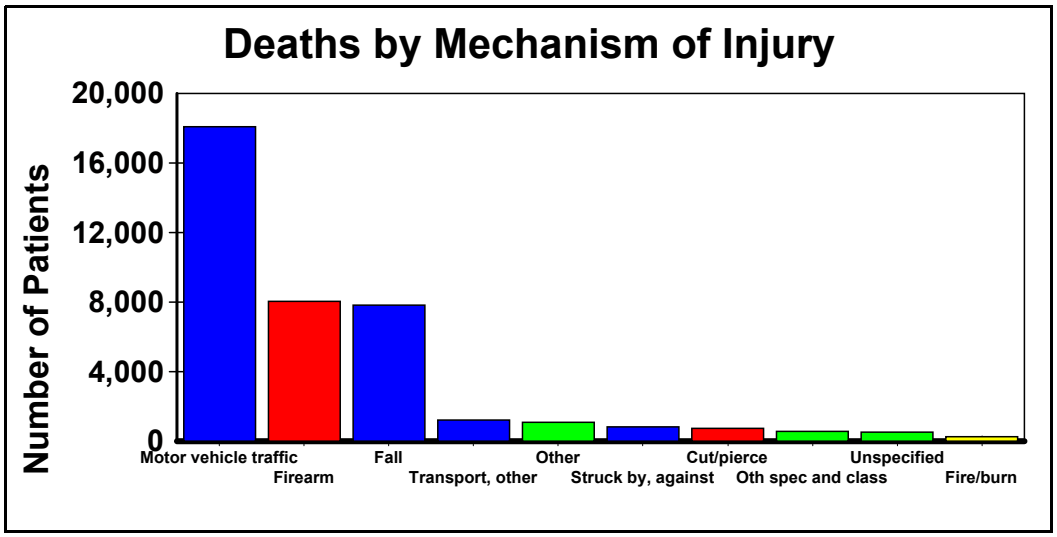

Figure 10A

Number of deaths in each category of injury mechanism. Total N = 39,275.

Mechanism of injury is defined in Appendix D.

Other includes the other specified and classifiable mechanism.

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

Figure 10B

Mechanism of Injury	Number of Patients	Number of Patients Died	Case Fatality Mechanism of Injury
Motor vehicle traffic	369,727	18,075	4.89%
Firearm	50,189	8,052	16.04%
Fall	222,806	7,832	3.52%
Transport, other	44,411	1,249	2.81%
Struck by, against	55,894	840	1.50%
Cut/pierce	39,406	740	1.88%
Other specified and classifiable	12,060	581	4.82%
Unspecified	12,241	555	4.53%
Fire/burn	5,818	262	4.50%
Suffocation	1,175	253	21.53%
Machinery	11,971	209	1.75%
Pedestrian, other	3,032	172	5.67%
Pedal cyclist, other	13,710	131	0.96%
Drowning/submersion	874	128	14.65%
Natural/environmental	6,528	77	1.18%
Other specified, not elsewhere classifiable	3,669	74	2.02%
Adverse effects	431	21	4.87%
Poisoning	934	19	2.03%
Overexertion	2,552	5	0.20%
Totals	857,428	39,275	

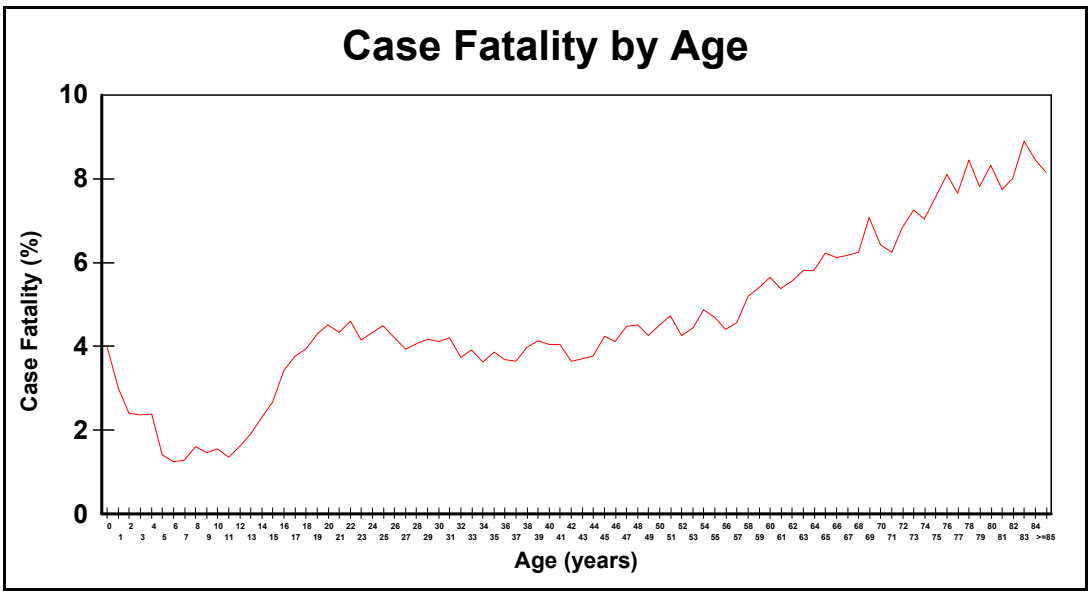

Figure 11A

Case fatality grouped by age. (Case Fatality = number of deaths divided by the number of patients X 100 by age). Total N = 41,821.

Figure 11B

Age Range	Number of Patients	Number of Patients Died	Case Fatality by Age Range
< 1	4,505	180	4.00%
1-4	28,656	687	2.40%
5-9	35,389	499	1.41%
10-14	39,059	701	1.79%
15-19	87,785	3,286	3.74%
20-24	104,232	4,572	4.39%
25-34	142,917	5,809	4.06%
35-44	136,153	5,250	3.86%
45-54	107,336	4,748	4.42%
55-64	65,167	3,382	5.19%
65-74	51,518	3,393	6.59%
75-84	66,333	5,376	8.10%
>= 85	48,215	3,938	8.17%
Totals	917,265	41,821	

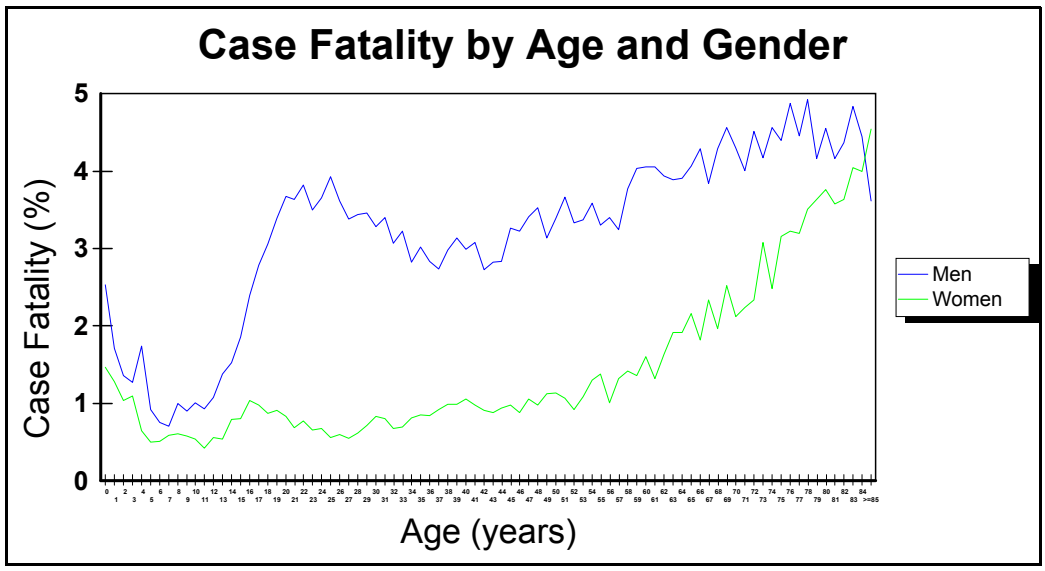

Figure 12A

Case fatality for men and women grouped by age. (Case fatality = number of deaths divided by the number of patients X 100 by age and gender).
Total N = 41,821.

Figure 12B

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	180	1,798	66	3.67%	2,707	114	4.21%
1-4	687	11,639	286	2.46%	17,017	401	2.36%
5-9	499	13,466	195	1.45%	21,923	304	1.39%
10-14	701	11,893	228	1.92%	27,166	473	1.74%
15-19	3,286	26,198	809	3.09%	61,587	2,477	4.02%
20-24	4,572	24,884	759	3.05%	79,348	3,813	4.81%
25-34	5,809	34,900	969	2.78%	108,017	4,840	4.48%
35-44	5,250	36,965	1,274	3.45%	99,188	3,976	4.01%
45-54	4,748	32,237	1,121	3.48%	75,099	3,627	4.83%
55-64	3,382	24,532	950	3.87%	40,635	2,432	5.98%
65-74	3,393	25,243	1,195	4.73%	26,275	2,198	8.37%
75-84	5,376	41,421	2,379	5.74%	24,912	2,997	12.03%
>= 85	3,938	35,364	2,189	6.19%	12,851	1,749	13.61%
Totals	41,821	320,540	12,420		596,725	29,401	

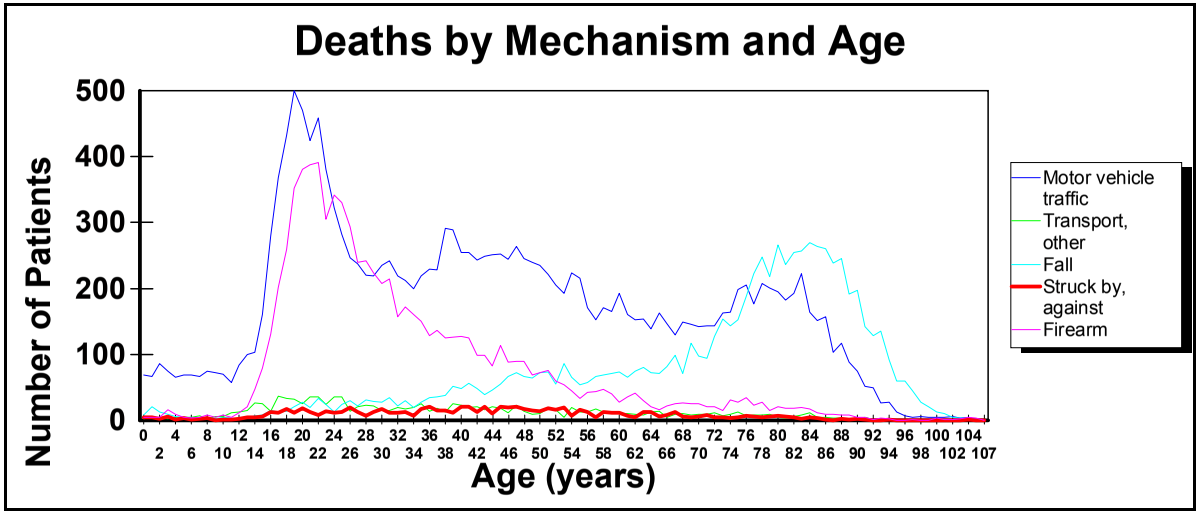

Figure 13A

Number of deaths due to injuries from the most common mechanism of injury categories grouped by age. Total N = 36,048.

Mechanism of injury is defined in Appendix D.

Figure 13B

Case fatality due to the most common mechanism of injury categories grouped by age range. (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	786	69	8.78%	55	2	3.64%	1,783	8	0.45%	172	4	2.33%	33	5	15.15%
1-4	7,596	293	3.86%	546	13	2.38%	10,868	47	0.43%	1,470	14	0.95%	161	33	20.50%
5-9	12,403	351	2.83%	1,852	24	1.30%	11,315	19	0.17%	1,820	9	0.49%	258	25	9.69%
10-14	13,680	414	3.03%	4,374	70	1.60%	7,970	19	0.24%	3,342	13	0.39%	846	90	10.64%
15-19	45,880	1,741	3.79%	6,453	141	2.19%	7,179	71	0.99%	7,177	57	0.79%	8,186	1,023	12.50%
20-24	53,201	2,056	3.86%	5,448	154	2.83%	7,645	117	1.53%	7,427	63	0.85%	12,941	1,806	13.96%
25-34	66,612	2,313	3.47%	7,959	200	2.51%	15,141	268	1.77%	11,099	122	1.10%	14,176	2,242	15.82%
35-44	59,999	2,508	4.18%	7,470	194	2.60%	21,179	424	2.00%	11,458	162	1.41%	7,474	1,195	15.99%
45-54	46,402	2,321	5.00%	5,176	142	2.74%	23,636	675	2.86%	7,448	167	2.24%	3,624	755	20.83%
55-64	26,609	1,673	6.29%	2,739	113	4.13%	20,537	682	3.32%	2,489	102	4.10%	1,321	360	27.25%
65-74	17,042	1,490	8.74%	1,231	90	7.31%	23,107	1,053	4.56%	1,035	64	6.18%	626	225	35.94%
75-84	14,684	1,944	13.24%	796	77	9.67%	38,908	2,311	5.94%	654	51	7.80%	405	218	53.83%
>= 85	4,833	902	18.66%	312	29	9.29%	33,538	2,138	6.37%	303	12	3.96%	138	75	54.35%
Totals	369,727	18,075		44,411	1,249		222,806	7,832		55,894	840		50,189	8,052	

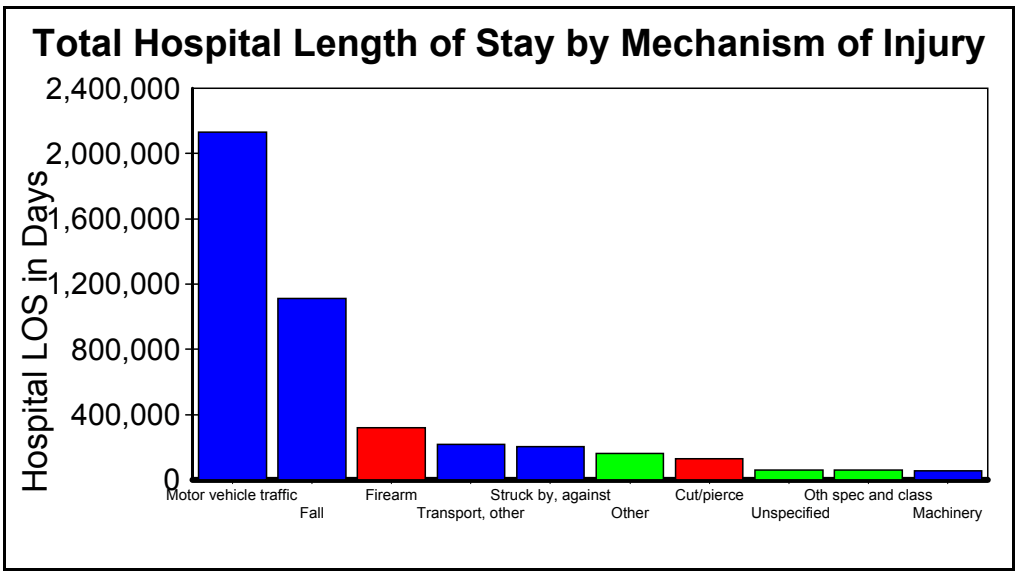

Figure 14A

Proportional distribution of total hospital length of stay, grouped by mechanism of injury. Total N = 857,428. Total hospital length of stay = 4,447,817 days.

Mechanism of injury is defined in Appendix D.

Other includes the 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 14B

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	369,727	43.12%	2,131,295	47.92%	5.76
Fall	222,806	25.99%	1,112,769	25.02%	4.99
Firearm	50,189	5.85%	319,254	7.18%	6.36
Transport, other	44,411	5.18%	214,854	4.83%	4.84
Struck by, against	55,894	6.52%	202,941	4.56%	3.63
Cut/pierce	39,406	4.60%	128,730	2.89%	3.27
Unspecified	12,241	1.43%	61,204	1.38%	5.00
Other specified and classifiable	12,060	1.41%	57,337	1.29%	4.75
Machinery	11,971	1.40%	56,037	1.26%	4.68
Pedal cyclist, other	13,710	1.60%	42,839	0.96%	3.12
Fire/burn	5,818	0.68%	39,600	0.89%	6.81
Natural/environmental	6,528	0.76%	23,340	0.52%	3.58
Pedestrian, other	3,032	0.35%	19,443	0.44%	6.41
Other specified, not elsewhere classifiable	3,669	0.43%	14,383	0.32%	3.92
Overexertion	2,552	0.30%	6,919	0.16%	2.71
Suffocation	1,175	0.14%	5,216	0.12%	4.44
Drowning/submersion	874	0.10%	4,599	0.10%	5.26
Adverse effects	431	0.05%	3,779	0.08%	8.77
Poisoning	934	0.11%	3,278	0.07%	3.51
Totals	857,428		4,447,817		

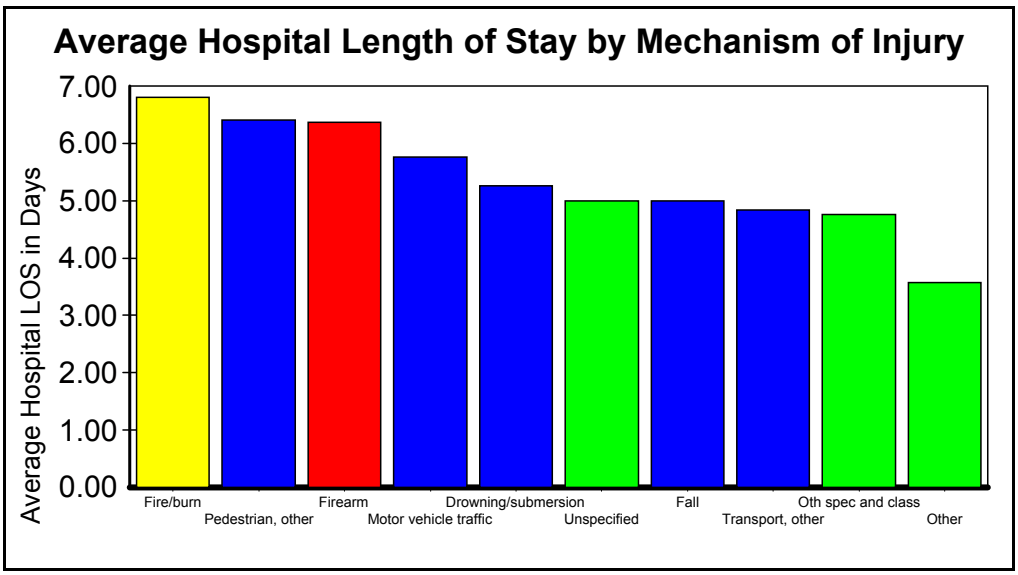

Figure 15A

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 = 856,997.

Mechanism of injury is defined in Appendix D.

Other includes the other specified and classifiable mechanism.

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

Figure 15B

Mechanism of Injury	Number of Patients	% of Total Patients	Average of Hospital LOS in Days
Fire/burn	5,818	0.68%	6.81
Pedestrian, other	3,032	0.35%	6.41
Firearm	50,189	5.86%	6.36
Motor vehicle traffic	369,727	43.14%	5.76
Drowning/submersion	874	0.10%	5.26
Unspecified	12,241	1.43%	5.00
Fall	222,806	26.00%	4.99
Transport, other	44,411	5.18%	4.84
Other specified and classifiable	12,060	1.41%	4.75
Machinery	11,971	1.40%	4.68
Suffocation	1,175	0.14%	4.44
Other specified, not elsewhere classifiable	3,669	0.43%	3.92
Struck by, against	55,894	6.52%	3.63
Natural/environmental	6,528	0.76%	3.58
Poisoning	934	0.11%	3.51
Cut/pierce	39,406	4.60%	3.27
Pedal cyclist, other	13,710	1.60%	3.12
Overexertion	2,552	0.30%	2.71
Totals	856,997		

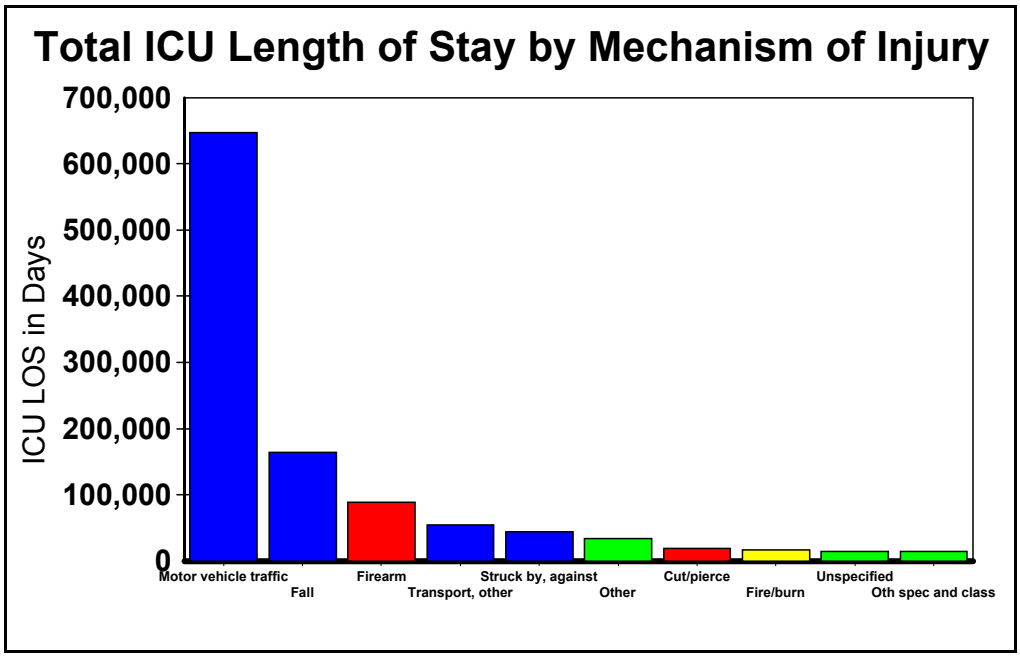

Figure 16A

Proportional distribution of total days of ICU care grouped by mechanism of injury. Total N = 560,322. Total ICU length of stay = 1,100,167 days.

Mechanism of injury is defined in Appendix D.

Other includes the other specified and classifiable mechanism.

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

Figure 16B

Mechanism of Injury	Number of Patients	% of Total Patients	Total of ICU LOS in Days	% of ICU LOS in Days
Motor vehicle traffic	250,848	44.77%	647,159	58.82%
Fall	134,502	24.00%	163,956	14.90%
Firearm	32,299	5.76%	88,884	8.08%
Transport, other	31,691	5.66%	54,677	4.97%
Struck by, against	36,546	6.52%	44,550	4.05%
Cut/pierce	24,913	4.45%	19,572	1.78%
Fire/burn	4,328	0.77%	16,707	1.52%
Unspecified	7,741	1.38%	15,159	1.38%
Other specified and classifiable	8,326	1.49%	15,036	1.37%
Machinery	8,414	1.50%	8,992	0.82%
Pedal cyclist, other	8,513	1.52%	8,610	0.78%
Pedestrian, other	1,917	0.34%	4,631	0.42%
Natural/environmental	4,305	0.77%	3,697	0.34%
Other specified, not elsewhere classifiable	2,280	0.41%	2,803	0.25%
Suffocation	890	0.16%	2,168	0.20%
Drowning/submersion	673	0.12%	1,879	0.17%
Poisoning	611	0.11%	1,105	0.10%
Adverse effects	196	0.03%	481	0.04%
Overexertion	1,329	0.24%	101	0.01%
Totals	560,322		1,100,167	

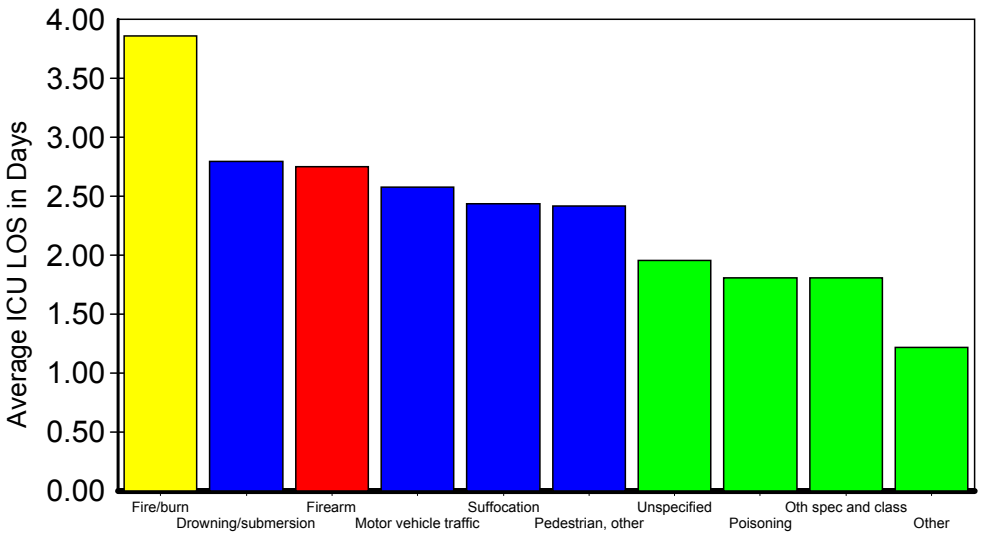

Figure 17A

Average ICU length of stay grouped by mechanism of injury. Total N = 560,126.

Mechanism of injury is defined in Appendix D.

Other includes the other specified and classifiable mechanism.

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

Figure 17B

Mechanism of Injury	Number of Patients	% of Total Patients	Average of ICU LOS in Days
Fire/burn	4,328	0.77%	3.86
Drowning/submersion	673	0.12%	2.79
Firearm	32,299	5.77%	2.75
Motor vehicle traffic	250,848	44.78%	2.58
Suffocation	890	0.16%	2.44
Pedestrian, other	1,917	0.34%	2.42
Unspecified	7,741	1.38%	1.96
Poisoning	611	0.11%	1.81
Other specified and classifiable	8,326	1.49%	1.81
Transport, other	31,691	5.66%	1.73
Other specified, not elsewhere classifiable	2,280	0.41%	1.23
Struck by, against	36,546	6.52%	1.22
Fall	134,502	24.01%	1.22
Machinery	8,414	1.50%	1.07
Pedal cyclist, other	8,513	1.52%	1.01
Natural/environmental	4,305	0.77%	0.86
Cut/pierce	24,913	4.45%	0.79
Overexertion	1,329	0.24%	0.08
Totals	560,126		

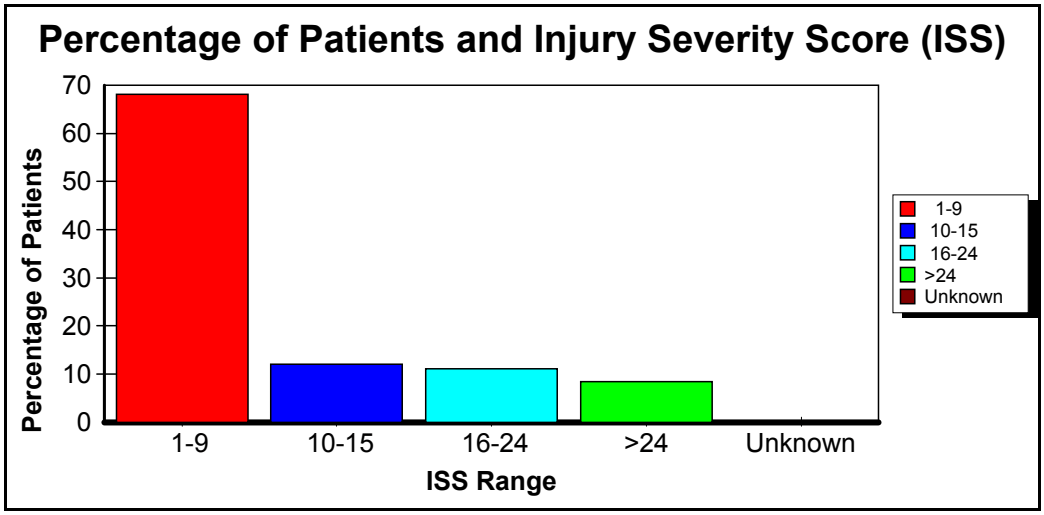

Figure 18A

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).
Total N = 917,265.

ISS Range	Number of Patients	% of Total Patients
1-9	624,127	68.04%
10-15	111,257	12.13%
16-24	101,556	11.07%
>24	77,947	8.50%
Unknown	2,378	0.26%
Totals	917,265	

Figure 18B

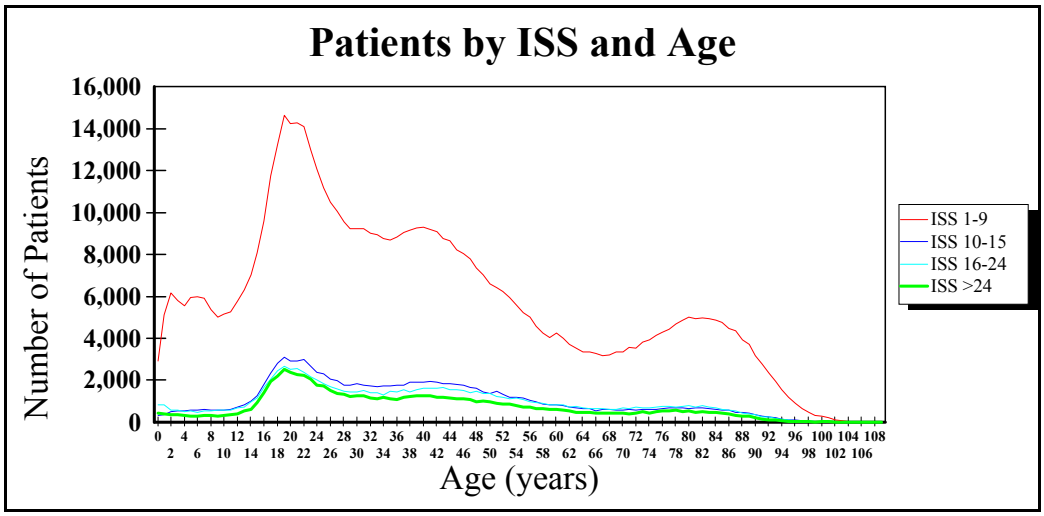

Figure 19A

Number of injured patients grouped by Injury Severity Score (ISS) range, at each age. Total N = 914,887.

Figure 19B

Percentage of patients by Injury Severity Score (ISS) range at each age range. (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	4,488	0.49%	2,911	64.86%	333	7.42%	827	18.43%	417	9.29%
1-4	28,489	3.11%	22,626	79.42%	1,932	6.78%	2,505	8.79%	1,426	5.01%
5-9	35,294	3.86%	28,242	80.02%	2,898	8.21%	2,663	7.55%	1,491	4.22%
10-14	38,946	4.26%	29,534	75.83%	3,751	9.63%	3,496	8.98%	2,165	5.56%
15-19	87,574	9.57%	57,292	65.42%	11,319	12.93%	9,968	11.38%	8,995	10.27%
20-24	103,984	11.37%	67,699	65.11%	13,904	13.37%	11,636	11.19%	10,745	10.33%
25-34	142,520	15.58%	95,733	67.17%	18,599	13.05%	15,089	10.59%	13,099	9.19%
35-44	135,778	14.84%	89,974	66.27%	18,446	13.59%	15,510	11.42%	11,848	8.73%
45-54	107,094	11.71%	69,247	64.66%	14,796	13.82%	13,320	12.44%	9,731	9.09%
55-64	65,016	7.11%	41,975	64.56%	8,513	13.09%	8,510	13.09%	6,018	9.26%
65-74	51,400	5.62%	34,532	67.18%	5,913	11.50%	6,593	12.83%	4,362	8.49%
75-84	66,192	7.23%	47,101	71.16%	6,637	10.03%	7,366	11.13%	5,088	7.69%
>= 85	48,112	5.26%	37,261	77.45%	4,216	8.76%	4,073	8.47%	2,562	5.33%
Totals	914,887		624,127		111,257		101,556		77,947	

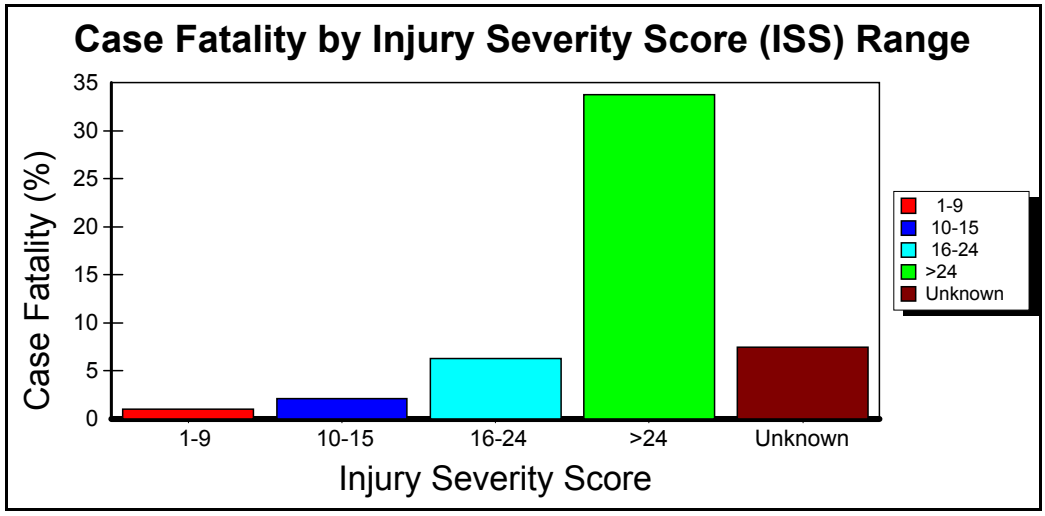

Figure 20A

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). Total N = 41,821.

ISS Range	Number of Patients	Number of Patients Died	Case Fatality ISS Range
1-9	624,127	6,545	1.05%
10-15	111,257	2,379	2.14%
16-24	101,556	6,398	6.30%
>24	77,947	26,322	33.77%
Unknown	2,378	177	7.44%
Totals	917,265	41,821	

Figure 20B

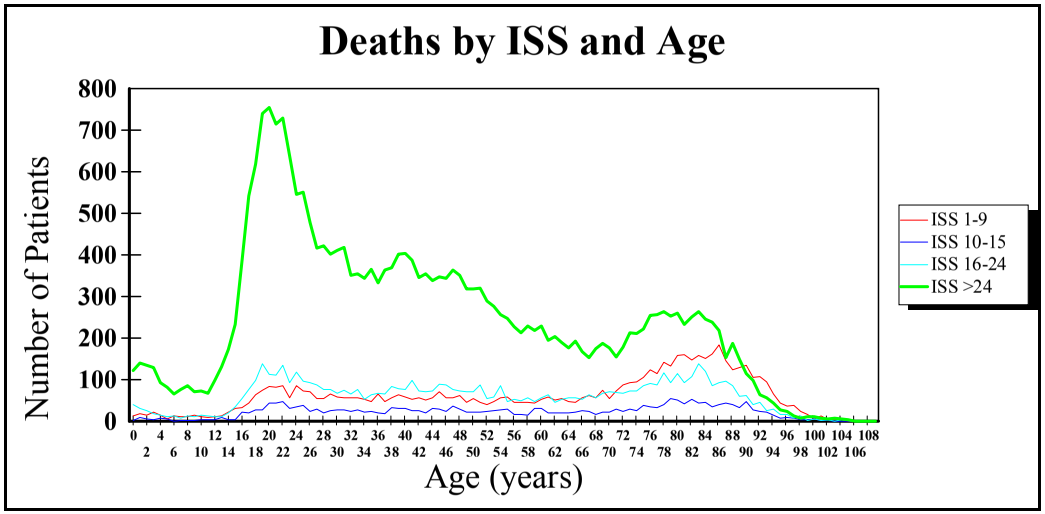

Figure 21A

Number of deaths grouped by Injury Severity Score (ISS) range at each age. Total N =41,644.

Figure 21B

Case fatality by ISS range at each age range. (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 All ISS	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	4,488	175	3.90%	2,911	13	0.45%	333	2	0.60%	827	39	4.72%	417	121	29.02%
1-4	28,489	678	2.38%	22,626	68	0.30%	1,932	26	1.35%	2,505	88	3.51%	1,426	496	34.78%
5-9	35,294	495	1.40%	28,242	53	0.19%	2,898	10	0.35%	2,663	55	2.07%	1,491	377	25.29%
10-14	38,946	693	1.78%	29,534	64	0.22%	3,751	22	0.59%	3,496	67	1.92%	2,165	540	24.94%
15-19	87,574	3,269	3.73%	57,292	244	0.43%	11,319	100	0.88%	9,968	404	4.05%	8,995	2,521	28.03%
20-24	103,984	4,540	4.37%	67,699	391	0.58%	13,904	199	1.43%	11,636	567	4.87%	10,745	3,383	31.48%
25-34	142,520	5,777	4.05%	95,733	598	0.62%	18,599	261	1.40%	15,089	767	5.08%	13,099	4,151	31.69%
35-44	135,778	5,226	3.85%	89,974	555	0.62%	18,446	257	1.39%	15,510	749	4.83%	11,848	3,665	30.93%
45-54	107,094	4,726	4.41%	69,247	534	0.77%	14,796	258	1.74%	13,320	749	5.62%	9,731	3,185	32.73%
55-64	65,016	3,372	5.19%	41,975	501	1.19%	8,513	213	2.50%	8,510	528	6.20%	6,018	2,130	35.39%
65-74	51,400	3,385	6.59%	34,532	695	2.01%	5,913	236	3.99%	6,593	648	9.83%	4,362	1,806	41.40%
75-84	66,192	5,372	8.12%	47,101	1,393	2.96%	6,637	432	6.51%	7,366	1,046	14.20%	5,088	2,501	49.15%
>= 85	48,112	3,936	8.18%	37,261	1,436	3.85%	4,216	363	8.61%	4,073	691	16.97%	2,562	1,446	56.44%
Totals	914,887	41,644		624,127	6,545		111,257	2,379		101,556	6,398		77,947	26,322	

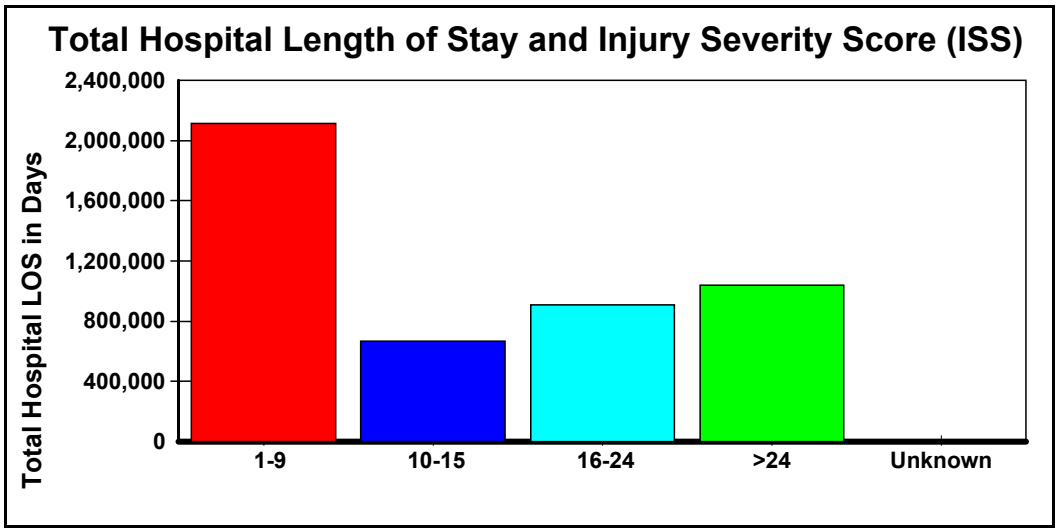

Figure 22A

Proportional distribution of total hospital length of stay for patients, grouped by Injury Severity Score (ISS) range. Total N = 917,265. Total hospital length of stay = 4,740,082 days.

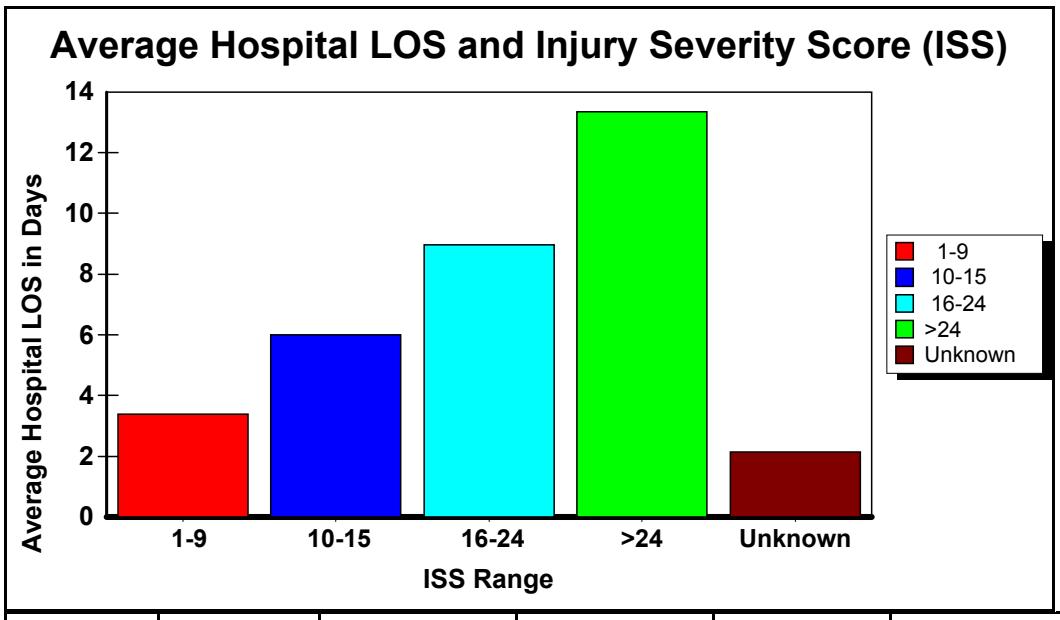

Figure 22B

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	624,127	68.04%	2,116,959	44.66%	3.39
10-15	111,257	12.13%	667,419	14.08%	6.00
16-24	101,556	11.07%	909,382	19.18%	8.95
>24	77,947	8.50%	1,041,254	21.97%	13.36
Unknown	2,378	0.26%	5,068	0.11%	2.13
Totals	917,265		4,740,082		

Figure 22C

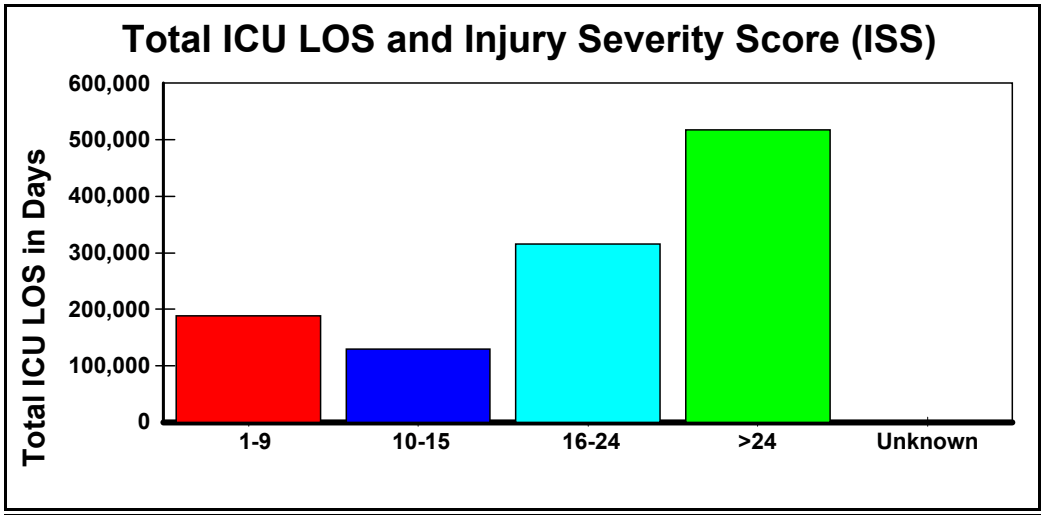

Figure 23A

Proportional distribution of total ICU length of stay for patients, grouped by Injury Severity Score (ISS) range. Total N = 594,844. Total ICU length of stay = 1,152,553 days.

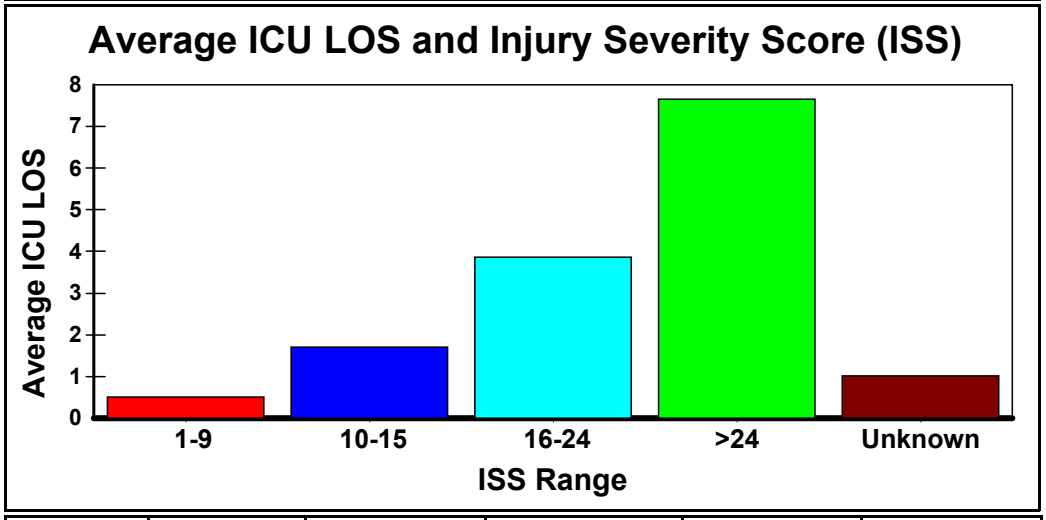

Figure 23B

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	368,032	61.87%	188,186	16.33%	0.51
10-15	76,586	12.87%	130,171	11.29%	1.70
16-24	81,825	13.76%	316,136	27.43%	3.86
>24	67,603	11.36%	517,245	44.88%	7.65
Unknown	798	0.13%	815	0.07%	1.02
Totals	594,844		1,152,553		

Figure 23C

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Annual Report 2005

Special Section: Unintentional Motor Vehicle Traffic Related Injuries

Figures 24-25 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:

Mechanism/Cause	**Unintentional**
Motor vehicle traffic[2,3]	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, 9th 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).

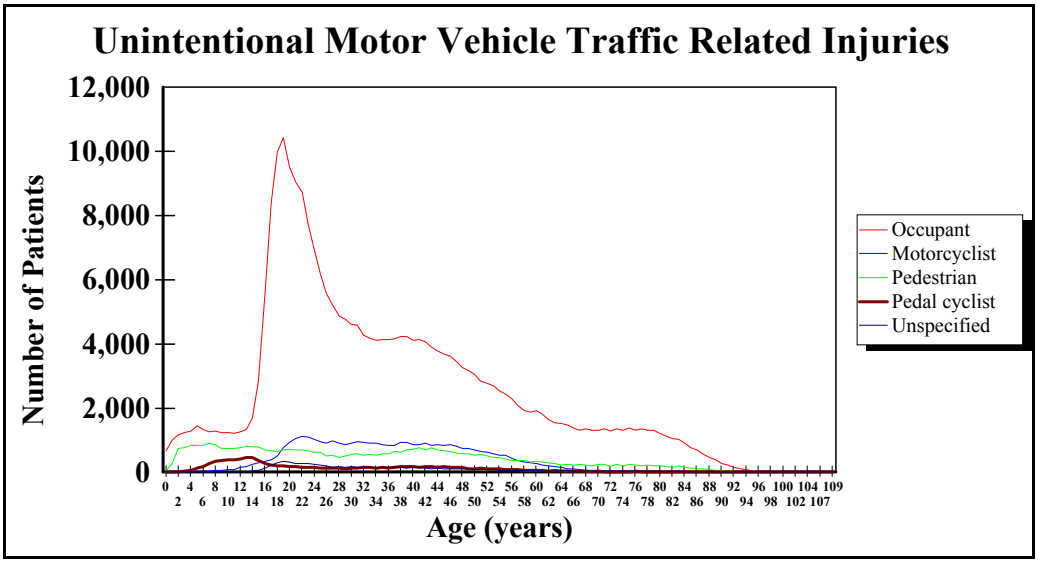

Figure 24A

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. Total N = 366,021.

Figure 24B

Percentage of patients for UMVTRI at each age range. (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 Motor-cyclist	% of Motor-cyclist	Number of Patients Pedestrian	% of Pedestrian	Number of Patients Pedal Cyclist	% of Pedal Cyclist	Number of Patients Unspecified	% of Unspec-ified
< 1	777	681	87.64%	26	3.35%	52	6.69%	7	0.90%	11	1.42%
1-4	7,491	4,699	62.73%	45	0.60%	2,617	34.94%	101	1.35%	29	0.39%
5-9	12,271	6,540	53.30%	195	1.59%	4,171	33.99%	1,301	10.60%	64	0.52%
10-14	13,482	6,702	49.71%	752	5.58%	3,833	28.43%	2,106	15.62%	89	0.66%
15-19	45,338	37,282	82.23%	2,284	5.04%	3,471	7.66%	1,259	2.78%	1,042	2.30%
20-24	52,705	41,949	79.59%	5,210	9.89%	3,382	6.42%	800	1.52%	1,364	2.59%
25-34	65,883	48,359	73.40%	9,228	14.01%	5,364	8.14%	1,291	1.96%	1,641	2.49%
35-44	59,387	40,884	68.84%	8,705	14.66%	6,764	11.39%	1,644	2.77%	1,390	2.34%
45-54	45,970	31,041	67.52%	7,088	15.42%	5,607	12.20%	1,293	2.81%	941	2.05%
55-64	26,381	19,009	72.06%	2,945	11.16%	3,300	12.51%	605	2.29%	522	1.98%
65-74	16,947	13,435	79.28%	662	3.91%	2,223	13.12%	255	1.50%	372	2.20%
75-84	14,589	11,985	82.15%	173	1.19%	1,985	13.61%	145	0.99%	301	2.06%
>= 85	4,800	3,925	81.77%	27	0.56%	733	15.27%	30	0.63%	85	1.77%
Totals	366,021	266,491		37,340		43,502		10,837		7,851	

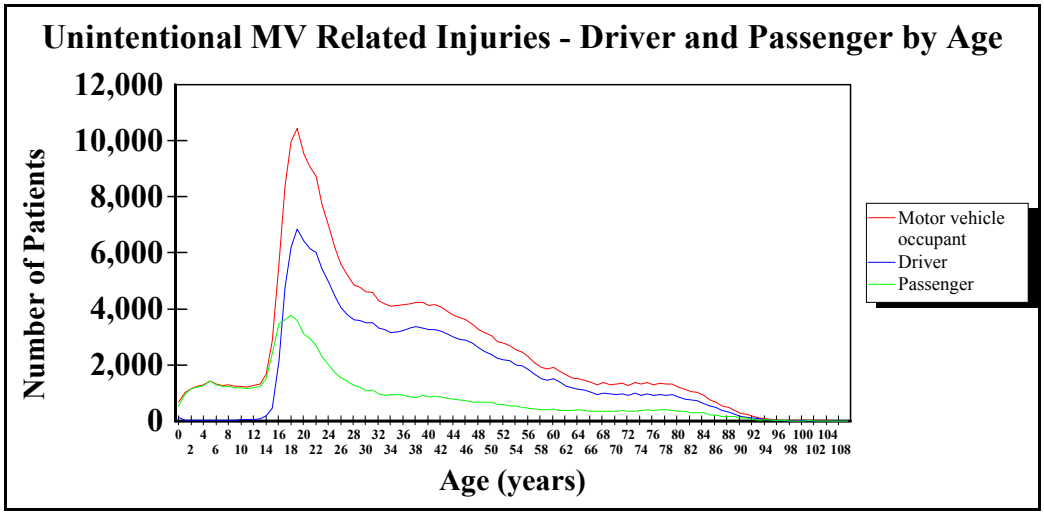

Figure 25A

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. Total N = 266,491.

Age Range	Number of Patients Motor vehicle occupant	Number of Patients Driver	% of Driver	Number of Patients Passenger	% of Passenger
< 1	681	*132	19.38%	549	80.62%
1-4	4,699	*97	2.06%	4,602	97.94%
5-9	6,540	*157	2.40%	6,383	97.60%
10-14	6,702	*418	6.24%	6,284	93.76%
15-19	37,282	20,425	54.79%	16,857	45.21%
20-24	41,949	28,915	68.93%	13,034	31.07%
25-34	48,359	36,235	74.93%	12,124	25.07%
35-44	40,884	32,211	78.79%	8,673	21.21%
45-54	31,041	24,624	79.33%	6,417	20.67%
55-64	19,009	14,877	78.26%	4,132	21.74%
65-74	13,435	9,821	73.10%	3,614	26.90%
75-84	11,985	8,393	70.03%	3,592	29.97%
>= 85	3,925	2,574	65.58%	1,351	34.42%
Totals	266,491	178,879		87,612	

Figure 25B

Percentage of patients for UMVTRI occupant - driver and passenger at each age range. (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.

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Annual Report 2005

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 2005. This approach to intentionality is seen in Figures 26 – 27.

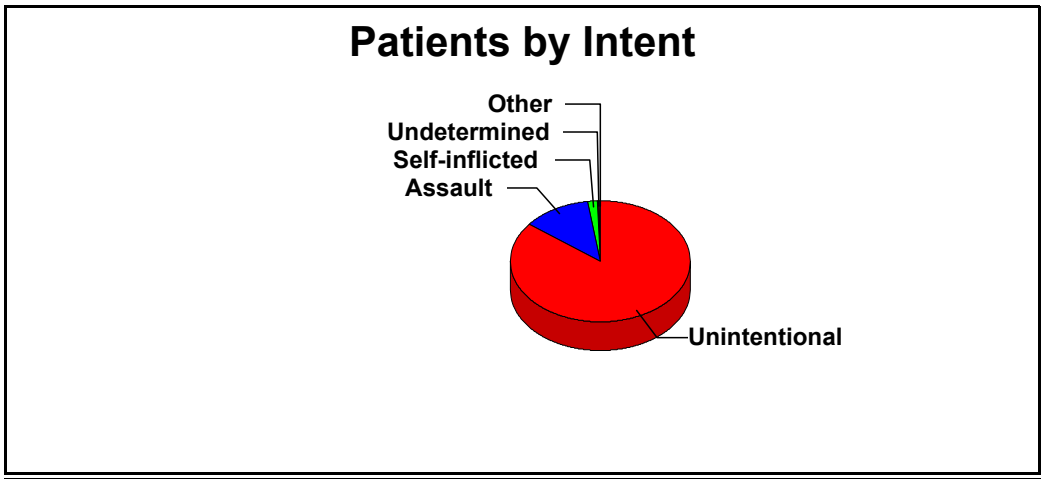

Figure 26A

Proportional distribution of patients, grouped by intent defined in Appendix D. Total N = 857,428.

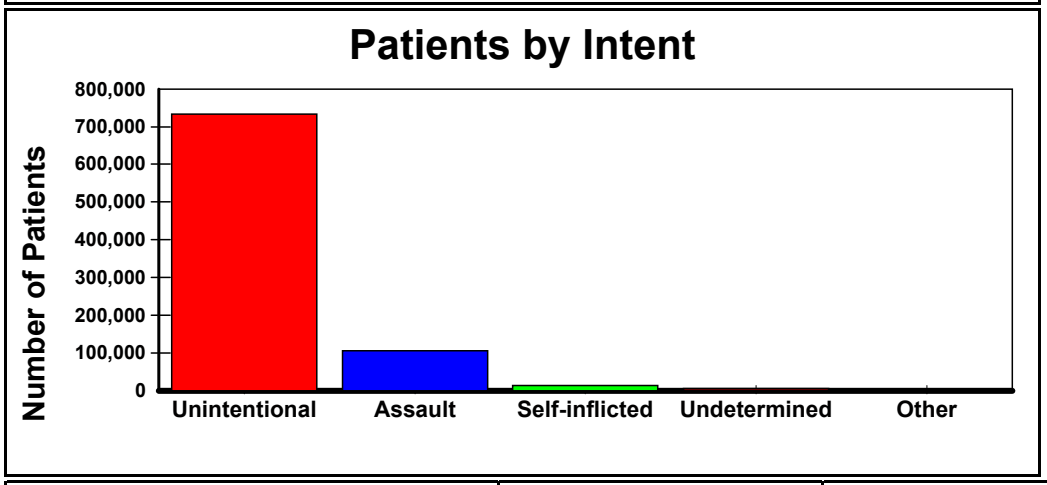

Figure 26B

Number of patients in each category of Intent.

Intent	Number of Patients	% of Total Patients Intent
Unintentional	732,906	85.48%
Assault	106,296	12.40%
Self-inflicted	12,298	1.43%
Undetermined	4,493	0.52%
Other	1,435	0.17%
Totals	857,428	

Figure 26C

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

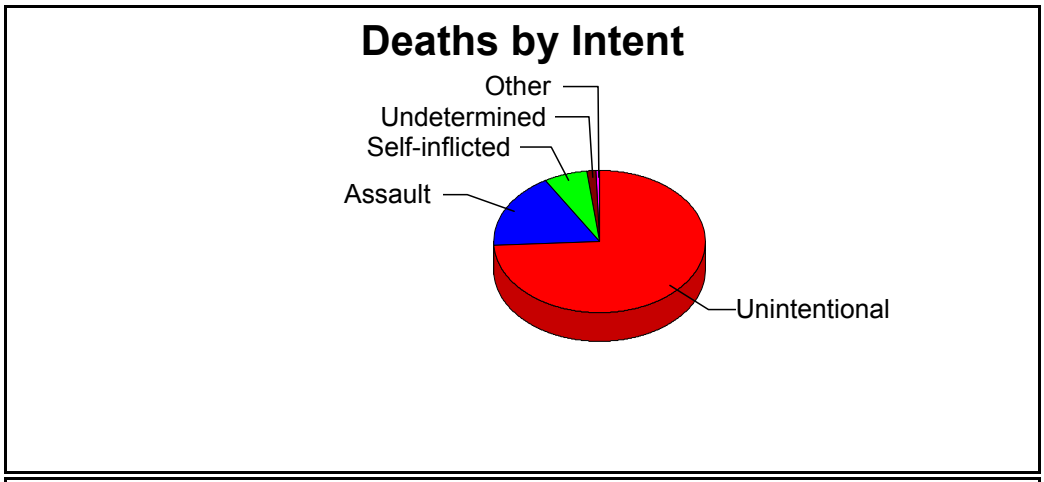

Figure 27A

Proportional distribution of deaths, grouped by Intent defined in Appendix D. Total N = 39,275.

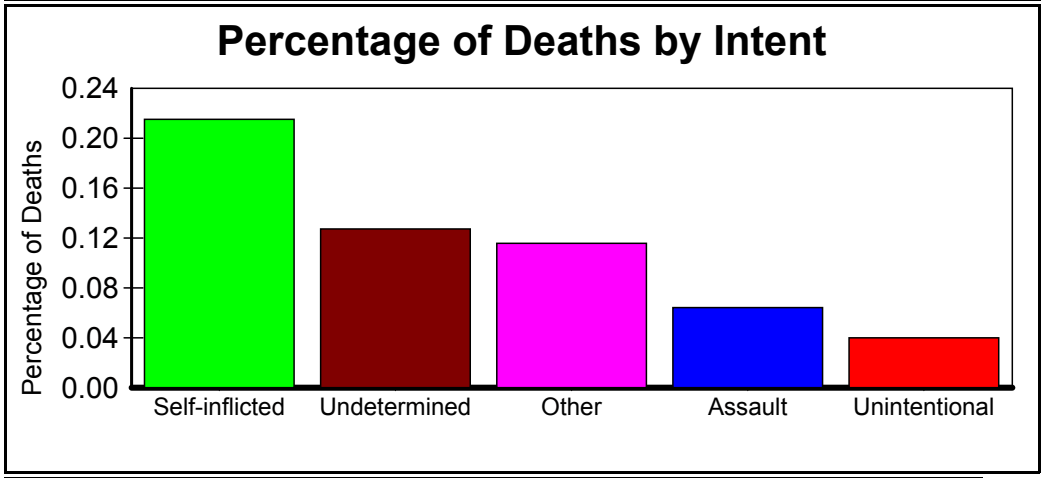

Figure 27B

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

Intent	Number of Patients	Number of Patients Died	% of Deaths Intent
Self-inflicted	12,298	2,646	21.52%
Undetermined	4,493	572	12.73%
Other	1,435	166	11.57%
Assault	106,296	6,805	6.40%
Unintentional	732,906	29,086	3.97%
Totals	857,428	39,275	

Figure 27C

Appendix A

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

*Definition of trauma patient was generated from the Resources for Optimal Care of the Injured Patients: Committee on Trauma of the American College of Surgeons.

All patients 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)

AND
Who were admitted

OR
Who died after receiving any evaluation or treatment or were dead on arrival

OR
Who transferred into or out of the hospital.

* Definition of trauma patient was generated from the Resources for Optimal Care of the Injured Patients: 1999 by Committee on Trauma of the American College of Surgeons.

Appendix B

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**.

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

NTDB Data Quality

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. Records were excluded from the analysis for this report if they contained missing and/or invalid values for any of the following items:

- Date of birth
- Gender
- LOS
- ISS
- Ecode
- Discharge disposition/Discharge status
- LOS < ICU days

In addition, NTDB data records were screened for the following field specific edit checks. Records were not excluded from analysis (unless also listed above) based on the following checks, but were flagged in the dataset if they failed the check:

Data Field	**Edit Check**
Gender	Valid values are Male and Female
LOS < ICU days	The total ICU days must be less than the total length of stay
Year of Admission	Year of Admission greater than or equal to 1993
Date of Birth	Year of Birth is less than or equal to Year of Admission and Year of Birth plus 120 is less than Year of Admission
Incident date	Must fall between date of injury and admission date.
E-Code (primary)	Should not be E849.x
ED Arrival Time	Based on 24-hour clock from 0000 to 2359 with valid entries for hour and minute
Initial ED systolic blood pressure	Must have First Systolic Blood Pressure between 0 and 299
Initial ED respiratory rate	First Unassisted Respiratory Rate between 0 and 59
ED Disposition	If DOA, then final hospital disposition must be DOA and must have First Systolic Blood Pressure = 0, First Unassisted Respiratory Rate = 0
Discharge Date	Year of Admission must be less than or equal to Year of Death
Injury Severity Score (ISS)	Valid range is from 0 to 75, and must be the sum of three squares
Length of Stay (LOS)	Valid range is 0 to 364
Discharge Disposition/Discharge Status	Must be consistent (lived/died)
FIM Score Total	Total FIM must be an integer between 1 and 12
FIM – feed	Individual component values must be between 0 and 4.
FIM – express	Individual component values must be between 0 and 4.
FIM -- locomotion	Individual component values must be between 0 and 4.
Glasgow Coma Scale (GCS) Eye	Valid range is 1 to 4, or “unobtainable”, “unknown”, or “missing”
GCS Verbal	Valid range is 1 to 5, or “unobtainable”, “unknown”, or “missing”. If GCS qualifier indicates patient intubated, GCS Verbal must be “unobtainable”.
GCS Motor	Valid ranges is 1 to 6, or “unobtainable”, “unknown”, or “missing”
GCS Qualifier	T, TP, S, L
GCS Total	Must be sum of GCS Eye, Verbal, and Motor if all three are numeric; must be “unobtainable” if any of the above are “unobtainable”
Number of Days to Admission	Valid range is 0 to 30, “unknown”, or “missing”
Probability of Survival	Valid range is 0 to 1
Ventilator Days	Cannot be greater than Length of Stay

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[1]
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[2,3]	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[3]	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[4]	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[1]**
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

[1]Includes legal intervention (E970-E978) and operations of war (E990-E999).
[2]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.
[3]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.
[4]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

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
Alaska State Department of Health
Central Ohio
Delaware State
Georgia State
Iowa Department of Public Health
Kansas Department of Public Health
LA-County Department, CA
Missouri Department of Health
State of Minnesota
State of Nevada
State of North Carolina
State of Washington
Wyoming Department Of Health

Alabama
Children's Hospital of AL
Crestwood Medical Center
DCH Regional Medical Center
Huntsville Hospital
Northeast Alabama Regional Medical Center
Northport Medical Center
University Hospital
University of South Alabama Medical Center
Walker Baptist Medical Center

Alaska
Alaska Native Medical Center

Arizona
Banner Good Samaritan Medical Center
Flagstaff Medical Center
John C. Lincoln Hospital, North Mountain
Maricopa Integrated Health Systems
Scottsdale Healthcare - Osborn
St. Joseph's Hospital and Medical Center

Arkansas
Arkansas Children's Hospital
UAMS Medical Center
White River Medical Center

California
Arrowhead Regional Medical Center
Biggs-Gridley
Cedars-Sinai Medical Center
Children's Hospital Los Angeles
Enloe Medial Center
Fairchild Medical Center
Glenn Medical Center
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
Mayers Memorial Hospital
Memorial Medical Center
Mercy Medical Center, Mt. Shasta
Mercy Medical Center, Redding
Mercy San Juan Hospital
Mission Hospital Regional Medical Center
Northridge Hospital Medical Center
Palomar Medical Center
Providence Holy Cross Medical Center
Riverside County Regional 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
Shasta Regional Medical Center
St. Elizabeth Community 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
Swedish Medical Center

Connecticut
Danbury Hospital
Hartford Hospital
Hospital of Saint Raphael

Norwalk Hospital

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
Bayfront Medical Center
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
St. Joseph's hospital
Tampa General Hospital
West Florida Hospital

Georgia
Atlanta Medical Center
Children's Healthcare of Atlanta at Egleston
Children's Healthcare Of Atlanta Of Scottish Rite
Columbus Regional Healthcare System, Inc
DeKalb Medical Center
Floyd Medical Center
Grady Memorial Health
Gwinnett Medical Center
Hamilton Medical Center
John D. Archbold Memorial Hospital
Medical Center of Central Georgia
Medical College of Georgia
Memorial Health University Medical Center
Morehouse
Morgan Memorial Hospital
North Fulton Regional Hospital
Southern Regional Medical Center

Stewart Webster Hospital

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 Center
Kiwanis-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 Hospital
Via Christi Regional Medical Center St. Francis

Kentucky
Kosair Children's Hospital
Regional Medical Center - Madisonville
Taylor Regional Hospital
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
Anna Jaques Hospital
Berkshire Medical Center
Beth Israel Deaconess Medical Center
Beverly Hospital
Boston Medical Center

Brigham and Women's Hospital
Falmouth Hospital
Lahey Clinic
Lawrence General Hospital
Massachusetts General Hospital
North Shore Medical Center
UMass Memorial Health Care

Michigan
Borgess Medical Center
Bronson Methodist Medical Center
Detroit Receiving Hospital
Genesys Regional Medical Center
Hackley Hospital
Henry Ford Hospitals
Hurley Medical Center
McLaren Regional Medical Center
Munson Medical Center
Saint Mary's Mercy Medical Center
Sparrow Health System
Spectrum Health
St. John Medical Center
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
St. Cloud Hospital
St. Luke's Hospital
St. Mary's Medical Center
Unity Hospital

Missouri
Barnes-Jewish Hospital
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 Children's Hospital
St. Louis University Hospital
University of Missouri Healthcare

Montana
Deaconess Billings Clinic

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

Nevada
University Medical Center
Washoe Medical Center

New Jersey
Atlanticare Regional Medical Center
Cooper Hospital Trauma Center
Morristown Memorial Hospital
NJ Trauma Center
Robert Wood Johnson University Hospital

New Mexico
University Of New Mexico Hospital

New York
Bellevue Hospital
Jacobi Medical Center
New York Presbyterian Hospital/Weill Cornell
North Shore University Hospital
Strong Memorial Hospital
United Health Services
University Hospital Stony Brook

North Carolina
Carolinas Medical Center
Cleveland Regional Medical Center
Duke University Medical Center
Forsyth Medical Center
Iredell Memorial
Lake Norman Regional Medical Center
Mission Hospital
Moore Regional Hospital
Moses H. Cone Hospital
Rowan Regional Medical Center
Nash General Hospital
Catawba Memorial
UNC Hospitals
New Hanover Regional Medical Center
Cape Fear Medical Center

Frye Regional Medical Center
UHS-East Carolina - Pitt
Wake Forest University Baptist Medical Center
Wake Medical Center - Wakemed

North Dakota
Altru Hospital
St. Luke's Hospital

Ohio
Akron City Hospital
Children's Hospital, Inc.
Cincinnati Children's Hospital Medical Center
Miami Valley Hospital
St. Vincent Mercy Med Center/Mercy Children's
The University Hospital

Oklahoma
OU Medical Center
St. John Medical Center

Oregon
Legacy Emanuel Hospital

Pennsylvania
The Western Pennsylvania Hospital

Puerto Rico
Puerto Rico Trauma Center

Rhode Island
Rhode Island Hospital

South Carolina
Carolinas Hospital System
Greenville Memorial Hospital
McLeod regional Medical Center
Medical University of SC
Palmetto Health
Regional Medical Center of Orangeburg and Calhoun
Spartanburg Regional Healthcare System
South Dakota
Avera McKennan Hospital
Avera Queen Of Peace
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
East Texas Medical Center
Hillcrest Baptist Medical Center
University of Texas Medical Branch @Galveston
Methodist Dallas Medical Center
Nacogdoches Medical Center
Parkland Health & Hospital System
Shannon Medical Center
Texas Children's Hospital
University Medical Center
Wilford Hall Med Center

Utah
LDS Hospital

Vermont
Fletcher Allen Health Care

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