



NTDB[®]
NATIONAL TRAUMA DATA BANK

National Trauma Data Bank 2008

Annual Report

Version 8.0

Acknowledgments

The American College of Surgeons Committee on Trauma wishes to thank the Centers for Disease Control and Prevention (CDC) for their support of the NTDB.

NTDB Annual Report 2008

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Editors' Note

The 2008 Annual Report of the National Trauma Data Bank (NTDB), Version 8.0, is an updated analysis of the largest aggregation of U.S. trauma registry data ever assembled. This year marks the first data collection under the new NTDB data set, also known as the National Trauma Data Standard (NTDS). From 2004 through 2006, the NTDB Committee was supported by the U.S. Health Resources and Services Administration (HRSA) to devise a uniform set of trauma registry variables and associated definitions. This work resulted in the NTDS, the new data dictionary for NTDB. Trauma centers are encouraged to provide a yearly download of these uniform variables to the NTDB for all patients satisfying the inclusion criteria.

In total, the NTDB now contains over 3 million records. The 2008 Annual Report is based on 506,452 records from the 2007 admission year submitted in the new NTDS format.

This report differs from previous annual reports because it is based on the new dataset. New features include analyses by AIS body region and geographic region. Also included are graphs showing the number of cases with ISS ≥ 16 and number of complications submitted, by facility. Appendix C contains an analysis of data from the NTDB National Sample Program.

The mission of the American College of Surgeons (ACS) Committee on Trauma (COT) is to develop and implement meaningful programs for trauma care. In keeping with this mission, the NTDB is committed to being the principal national repository for trauma center registry data. 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.

The NTDB Committee would like to thank all of the trauma centers that contributed data and hope that this report will attract new participants. The National Trauma Data Bank Report Version 8.0 is available on the ACS Web site as a PDF file and a PowerPoint presentation at <http://www.ntdb.org>. In addition, information is available on our website about how to obtain NTDB data for more detailed study.

Many dedicated individuals on the ACS COT, as well as at trauma centers around the country, have contributed to the early development of the NTDB and its rapid growth in recent years. Building on these achievements, our goals in the coming years include improving data quality, updating analytic methods, and enabling more useful inter-hospital comparisons. These efforts will be reflected in future NTDB reports to participating hospitals as well as in the Annual Reports.

Avery B. Nathens, PhD, MD, FACS, Chair
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Executive Summary

The National Trauma Data Bank (NTDB) is the largest aggregation of U.S. trauma registry data ever assembled. It contains over 3 million records. The 2008 Annual Report reviews 2007 admissions submitted in the 2008 call for data, totaling 506,452 records with valid trauma diagnoses. The goal of the 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 endeavor 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*

- 435 hospitals submitted data to the NTDB in 2008.
- 150 are verified/designated as Level I, representing 76.5% of Level I centers.
- 155 are verified/designated as Level II, representing 59.4% of Level II centers.
- 64 are verified/designated as Level III, representing 24.0% of Level III centers.
- 95 centers are verified/designated as Level I or II pediatric centers.

Age

- The age distribution of patients in NTDB peaks from ages 16 to 24, primarily representing patients injured in Motor Vehicle Traffic related incidents and by Firearm.
- There is a second peak between ages 35 and 44, primarily representing patients injured in Motor Vehicle Traffic and Fall related injuries.
- Up to age 70, men account for 69% of incidents. After age 70 most patients are women.

Mechanism of Injury

- Motor Vehicle Traffic related injuries account for 33.9 of cases in the NTDB, with a dramatic rise between age 14 and 24, peaking around age 19.
- Suffocation and Firearm injuries have the highest case fatality rates, at 22.8 and 15.5 respectively.
- Falls account for 32.3% of cases in the NTDB, with high incident rates for patients under age five and over age 75.
- Struck by, against, Transport, other, Firearm, and Cut/Pierce injuries are the next most frequent categories, representing 7.4%, 5.7%, 5.2% and 4.8% of injuries, respectively. See Appendix B for details on these injury categories.
- Firearm injuries peak around 19 years of age, and then steadily decrease.

Injury Severity Score

The Injury Severity Score (ISS) is a system for numerically stratifying injury severity. The ISS system has a range of 1–75 and risk of death increases with a higher score. This report categorizes ISS 1–8 as

Minor; 9–15 as Moderate; 16–24 as Severe; and greater than 24 as Very Severe. ISS used in the report analysis are based on scores derived through the ICD 90 mapping program.

- Almost half (49.3%) of patients suffer Minor injuries and about one-fourth (24.1%) have Moderate injuries.
- Case fatality rates increase with injury severity, with the most severe group experiencing a case fatality rate of 30.6.
- Case fatality for all severity levels is higher for patients over age 75.
- Median length of stay (LOS) increases for each consecutive severity grouping.

Payment

- Self-Pay is the second largest payment category at 15.7%, after Private/Commercial which accounts for 18.9%.
- Medicare is third at 12.7%.

Mortality

- The largest number of deaths is caused by Motor Vehicle Traffic related injuries, followed by Falls and Firearm.
- Suffocation, Firearm, and Drowning injuries have the highest case fatality rates.
- Case fatality rates are highest in the group aged 85 and over.
- Firearm injuries have the highest case fatality rates in every age group among the selected mechanisms shown in the report.

Outcomes

- Median EMS total transport times are greatest for Natural, environmental, other injuries, followed by Transport, other, Machinery, and Drowning.
- Median EMS total transport time is similar across injury severity scores, with Mild injuries having a slightly lower median transport time.
- Median length of hospital stay is greatest for Fall injuries.
- More severe injuries have a greater median length of hospital stay and more ICU and ventilator days.
- Fire/flame and Hot object/substance injuries have the highest median number of ventilator days.
- Most patients (38.4%) were discharged from the ED to a floor bed, followed in frequency by ICU at 17.8% and OR at 12.6%.
- Of those patients that died, 3.8% were DOA, an additional 3.8% died after a failed resuscitation attempt, and 19.4% died without resuscitation attempt.
- 59.3% of records submitted to NTDB had no indication of whether the patient had hospital complications. Complications information is considered missing for these records.
- In 30.8% of cases, it was indicated that no NTDB listed complications exist. Further, in 5.1% of cases, it was indicated that the patient had no complications of any kind.
- Most patients (64.3%) were discharged from the hospital to home without services. An additional 6.6% were discharged to a skilled nursing facility and 5.6% went to a rehab/long term care facility.
- Four percent of patients died.

Comments

We hope that this document has expanded your understanding of patients treated in trauma centers in the United States, and why. We further hope that your opinions will be informed by these data, and that you will find ways to share these data with other audiences. Finally, we hope this report has increased your interest to look more deeply at specific topics in the field of injury using the NTDB as a resource. The full National Trauma Data Bank Report 2008, Version 8.0, is available on the ACS Web site as a PDF file and a PowerPoint presentation at <http://www.ntdb.org>.

* Percentages of trauma centers at each level are based on the following:

Original Source (updated March 2008): MacKenzie EJ et. al. National Inventory of Hospital Trauma Centers. JAMA 2003 Mar 26; 289(12):1517. © American Medical Association

Please note:

The abbreviation NK/NR used on many tables denotes Not Known, Not Recorded, or Blank. If Not Applicable is *not* shown as a separate row on the table, then it is also included in the NK/NR category.

“Local ISS” denotes ISS scores submitted directly by hospitals regardless of the method of calculation. “ICD90 Derived” are scores derived by converting ICD9 codes to AIS using the ICD 90 Mapping program and then calculating ISS with the resulting AIS severity scores. “AIS Derived” are calculated from AIS submitted directly by hospitals. Analyses in this report use the ICD 90 Derived ISS.

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Figure 1

Percent of Hospitals Submitting to the NTDB, by State and U.S. Territory

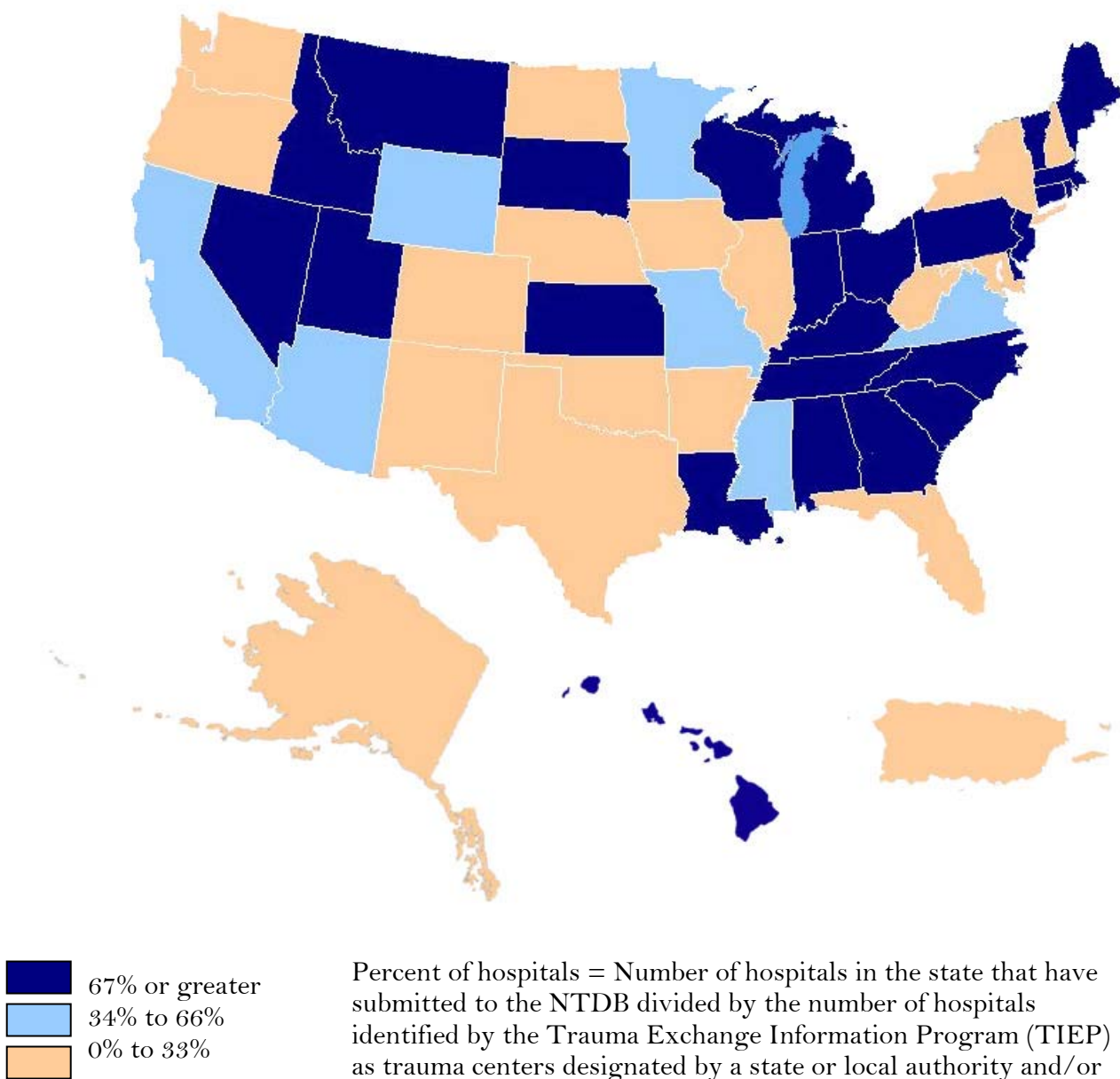


Figure 2

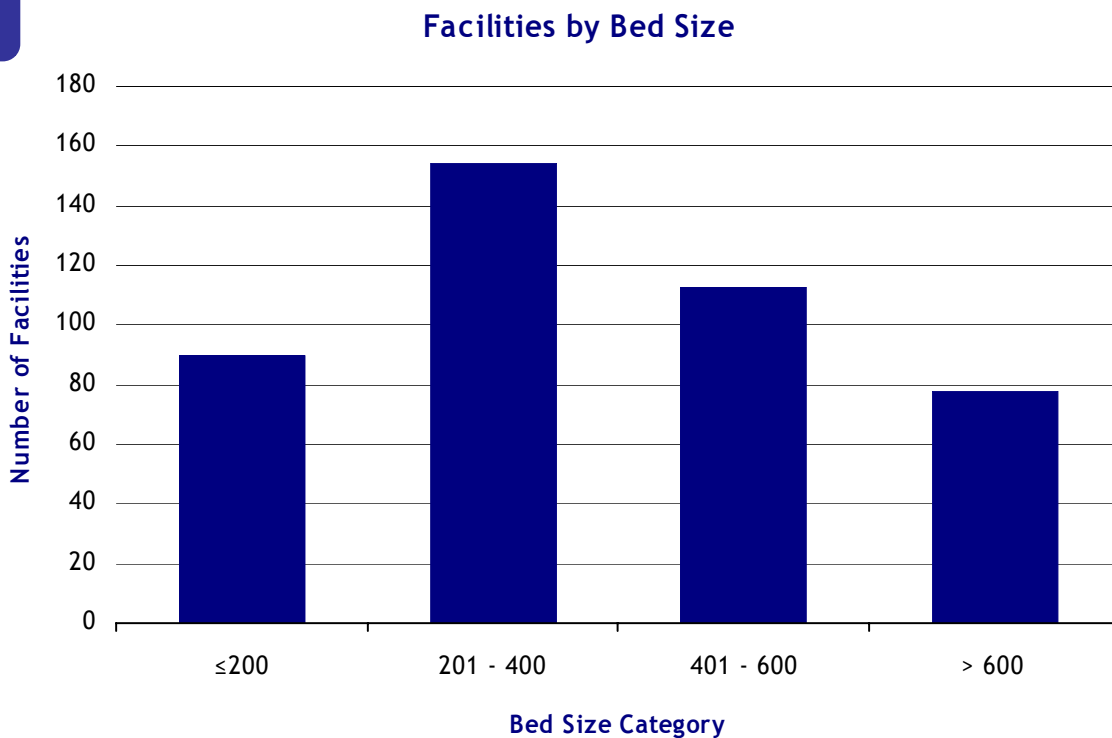


Table 2

Facilities by Bed Size

Bed Size	Number	Percent
≤200	90	20.69
201 - 400	154	35.40
401 - 600	113	25.98
> 600	78	17.93
Total	435	100.00

Figure 3

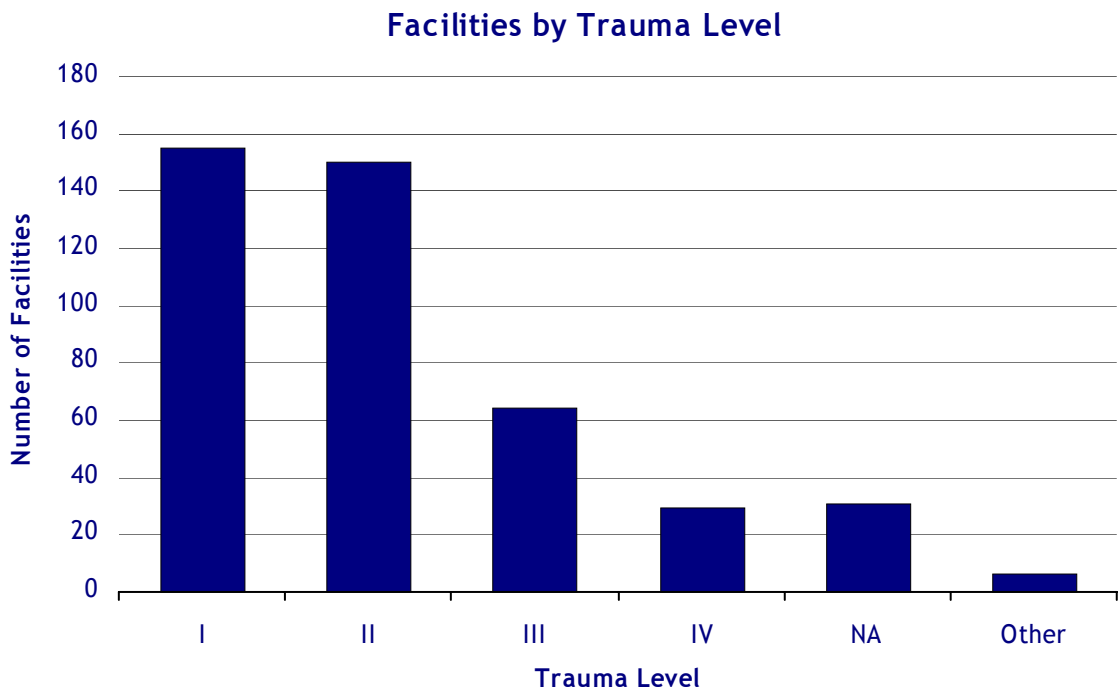


Table 3

Facilities by Trauma Level

Level	Number	Percent
I	155	35.63
II	150	34.48
III	64	14.71
IV	29	6.67
NA	31	7.13
Other	6	1.38
Total	435	100

Figure 4

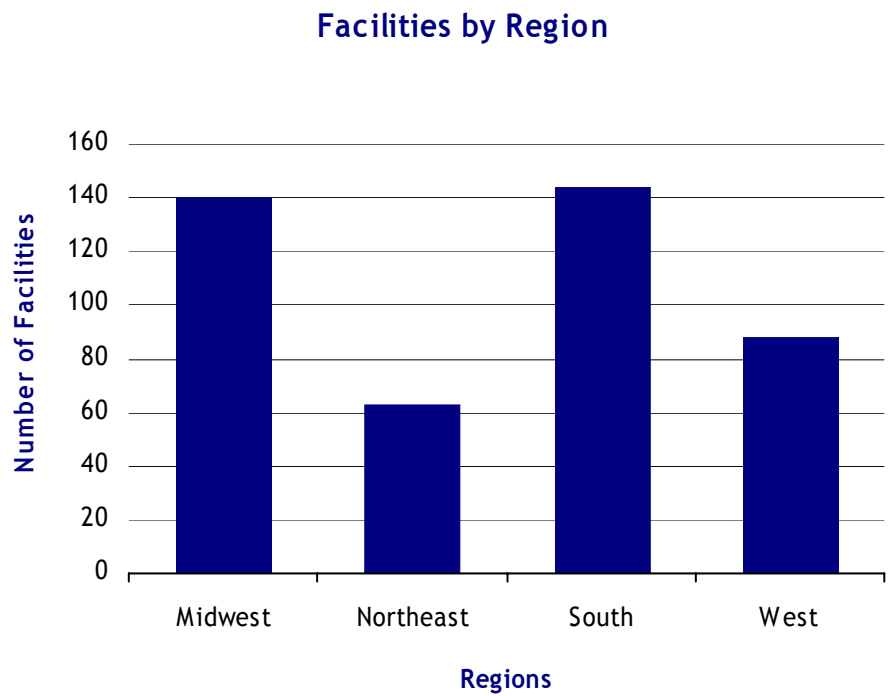


Table 4

Facilities by Region

Region	Number	Percent
Midwest	140	32.18
Northeast	63	14.48
South	144	32.87
West	88	20.23
Total	435	100.00

Demographic Information

Figure 5A

Incidents by Age

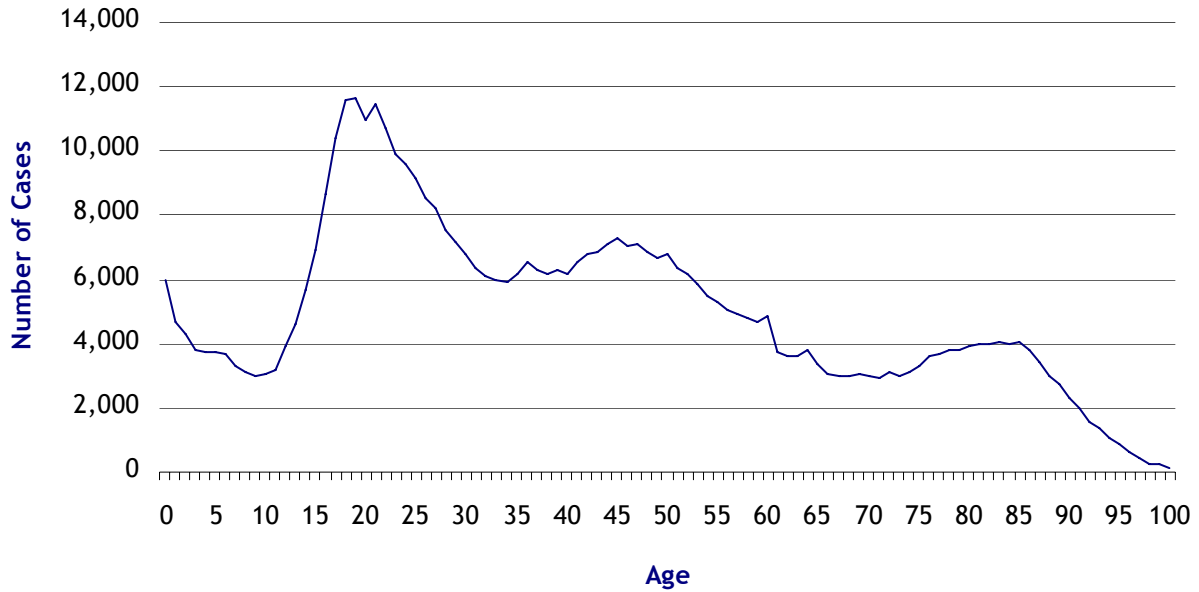
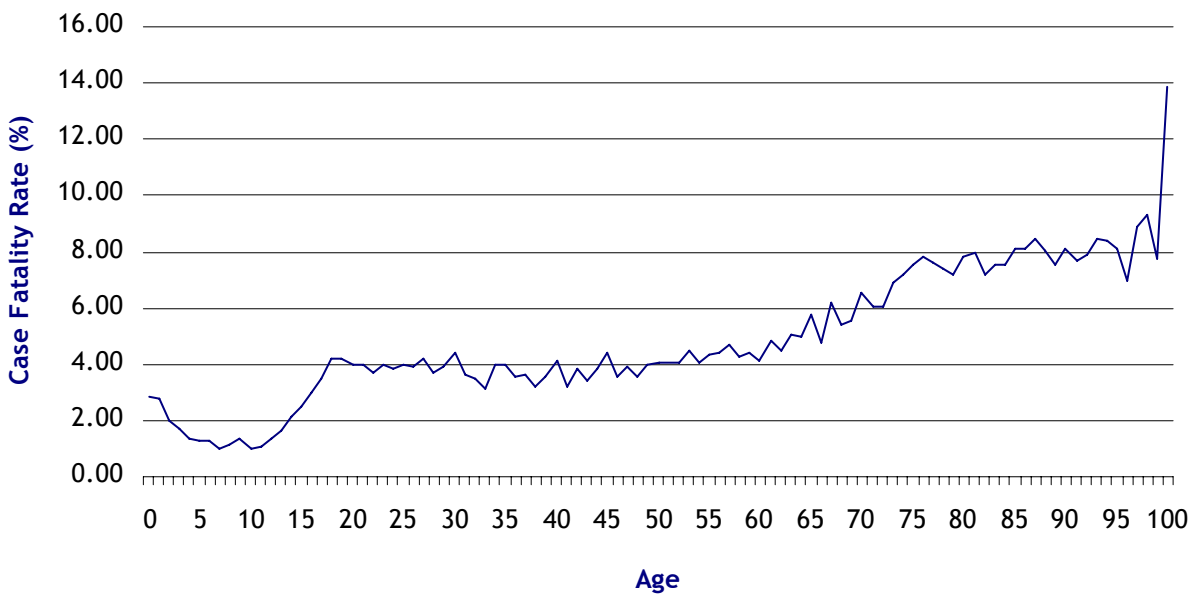


Figure 5B

Case Fatality Rate by Age



**Table
5**

Case Fatality Rate by Age

Age	Number	Percent	Deaths	Case Fatality Rate
<1 year	5,975	1.18	171	2.86
1-4	16,493	3.26	330	2.00
5-9	16,799	3.32	202	1.20
10-14	20,484	4.04	312	1.52
15-19	49,112	9.70	1,772	3.61
20-24	52,544	10.37	2,049	3.90
25-34	71,634	14.14	2,760	3.85
35-44	64,949	12.82	2,362	3.64
45-54	65,499	12.93	2,623	4.00
55-64	44,219	8.73	2,002	4.53
65-74	30,587	6.04	1,847	6.04
75-84	38,058	7.51	2,878	7.56
≥85	28,016	5.53	2,297	8.20
NK/NR	2,083	0.41	208	9.99
Total	506,452	100.00	21,813	

Demographic Information

Figure 6A

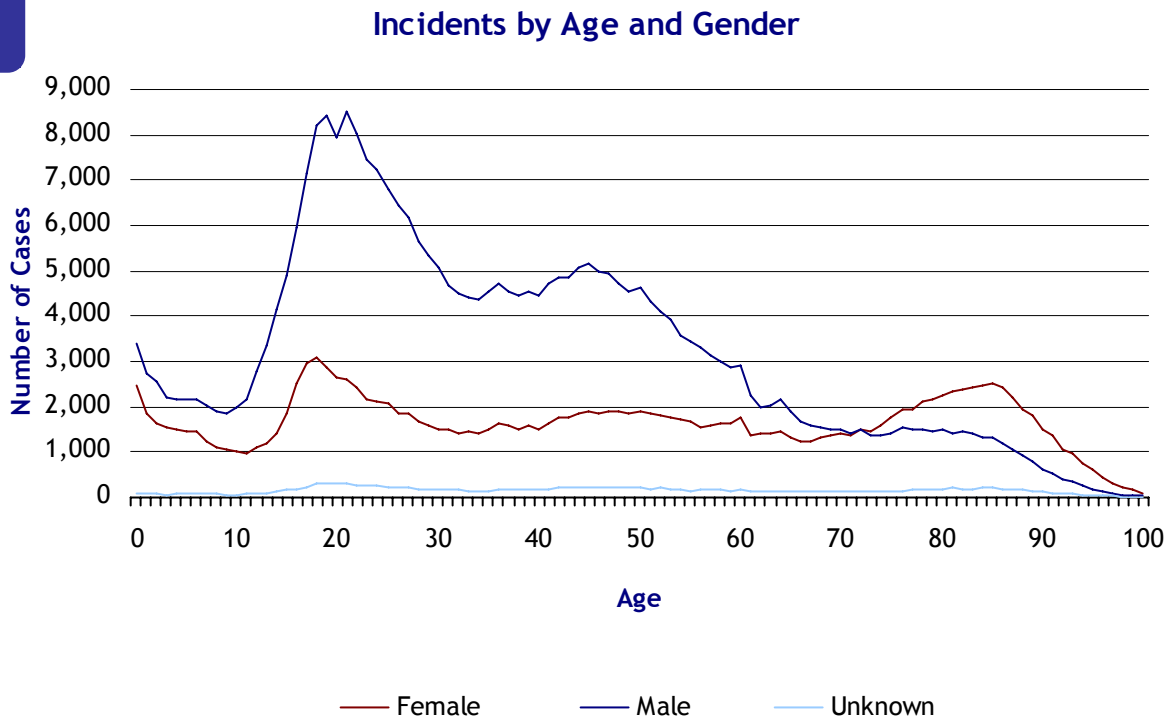
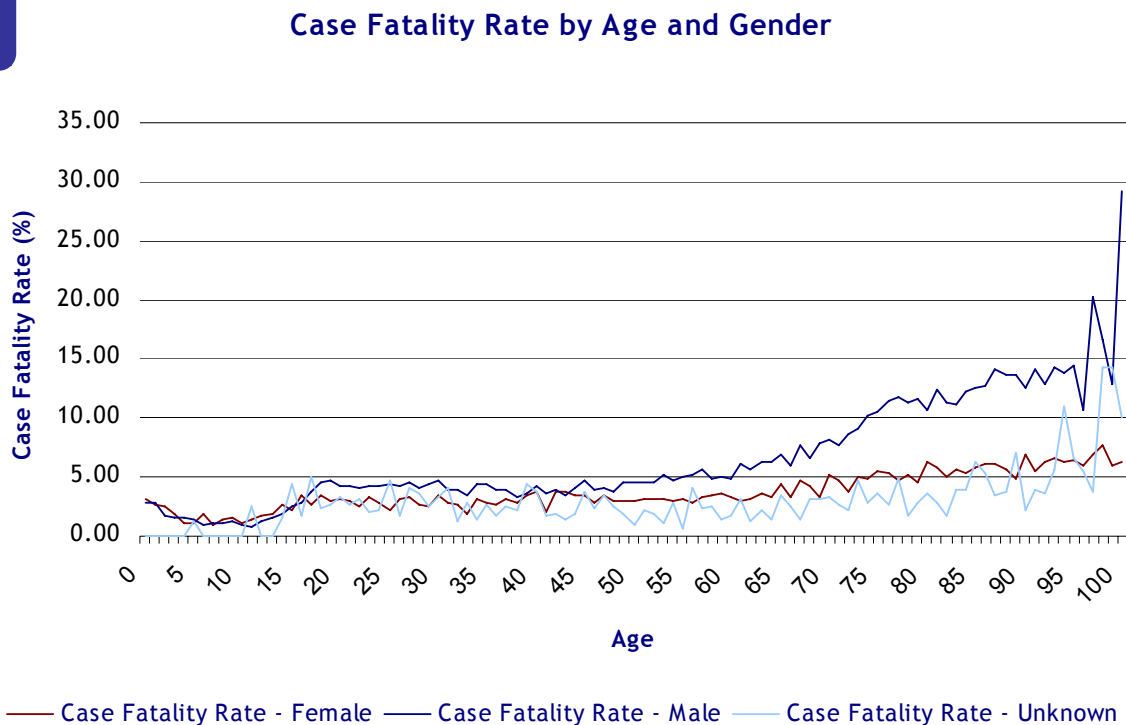


Figure 6B



Demographic Information

**Table
6**

Incidents and Case Fatality Rate by Age and Gender

Age	Number (Female)	Number (Male)	Deaths (Females)	Deaths (Males)	Case Fatality Rate(Female)	Case Fatality Rate (Male)
<1 year	2,490	3,384	77	94	3.09	2.78
1-4	6,540	9,669	139	191	2.13	1.98
5-9	6,317	10,098	85	116	1.35	1.15
10-14	5,651	14,392	104	204	1.84	1.42
15-19	13,328	34,611	398	1,337	2.99	3.86
20-24	11,961	39,185	355	1,656	2.97	4.23
25-34	16,348	53,406	458	2,245	2.80	4.20
35-44	16,334	46,747	522	1,795	3.20	3.84
45-54	18,532	44,922	583	1,993	3.15	4.44
55-64	15,585	27,104	509	1,461	3.27	5.39
65-74	13,853	15,404	607	1,201	4.38	7.80
75-84	21,770	14,546	1,161	1,662	5.33	11.43
≥85	18,527	7,996	1,121	1,089	6.05	13.62
NK/NR	599	1,384	47	151	7.85	10.91
Total	167,835	322,848	6,166	15,195		

Figure 7

Alcohol Use

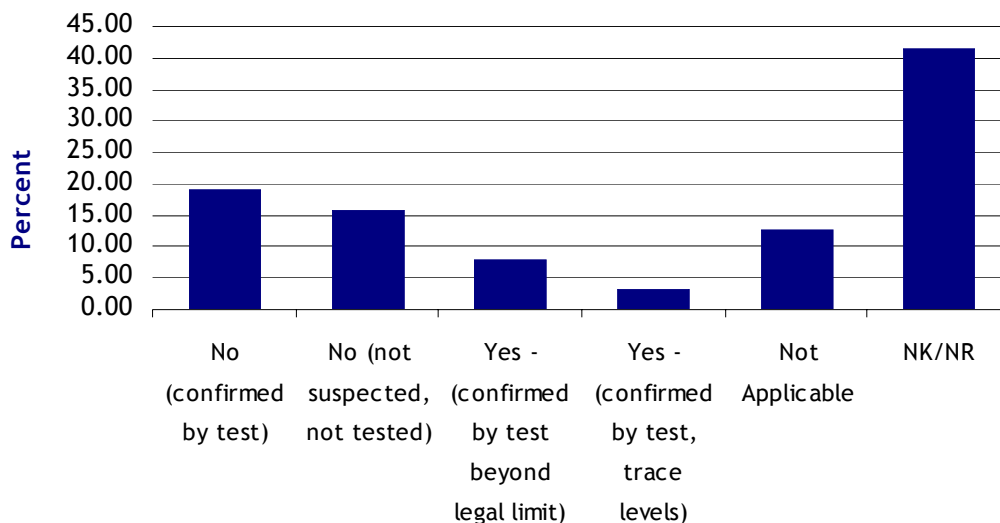


Table 7

Alcohol Use

Alcohol Use	Number	Percent
No (confirmed by test)	96,771	19.11
No (not suspected, not tested)	80,214	15.84
Yes - (confirmed by test beyond legal limit)	40,059	7.91
Yes - (confirmed by test, trace levels)	15,922	3.14
Not Applicable	63,798	12.60
NK/NR	209,688	41.40
Total	506,452	100.00

Demographic Information

Figure 8

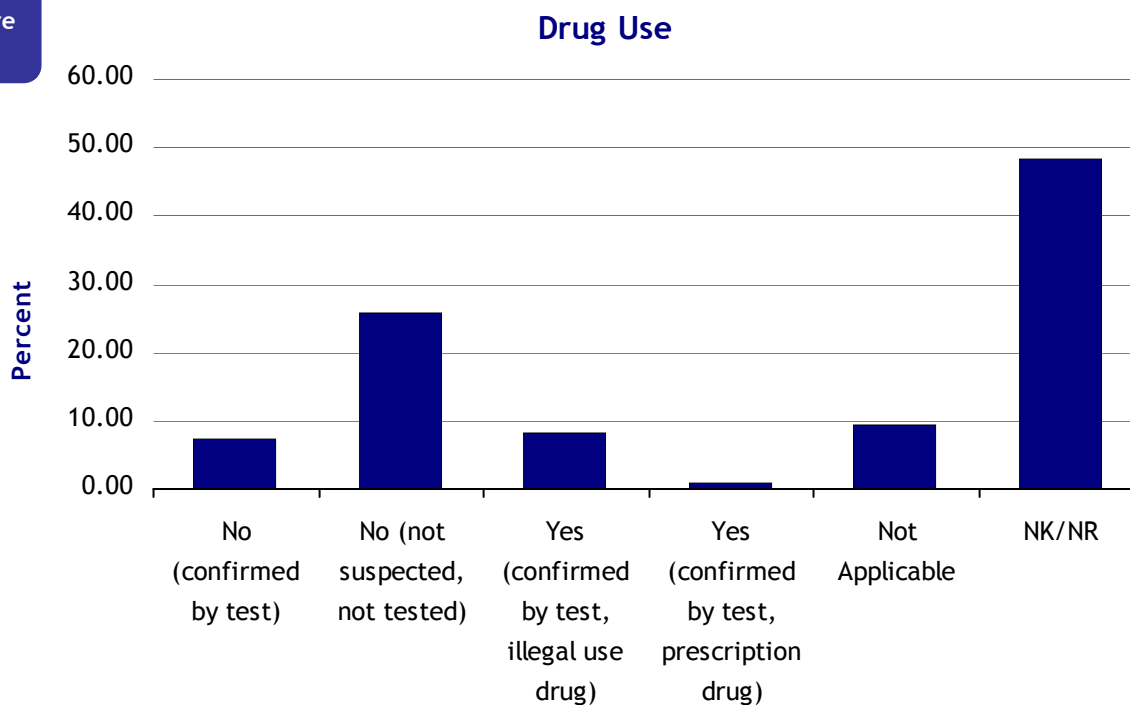


Table 8

Drug Use

Drug Use	Number	Percent
No (confirmed by test)	37,767	7.46
No (not suspected, not tested)	129,703	25.61
Yes (confirmed by test, illegal use drug)	41,722	8.24
Yes (confirmed by test, prescription drug)	4,238	0.84
Not Applicable	48,140	9.51
NK/NR	244,882	48.35
Total	506,452	100.00

Demographic Information

Figure 9

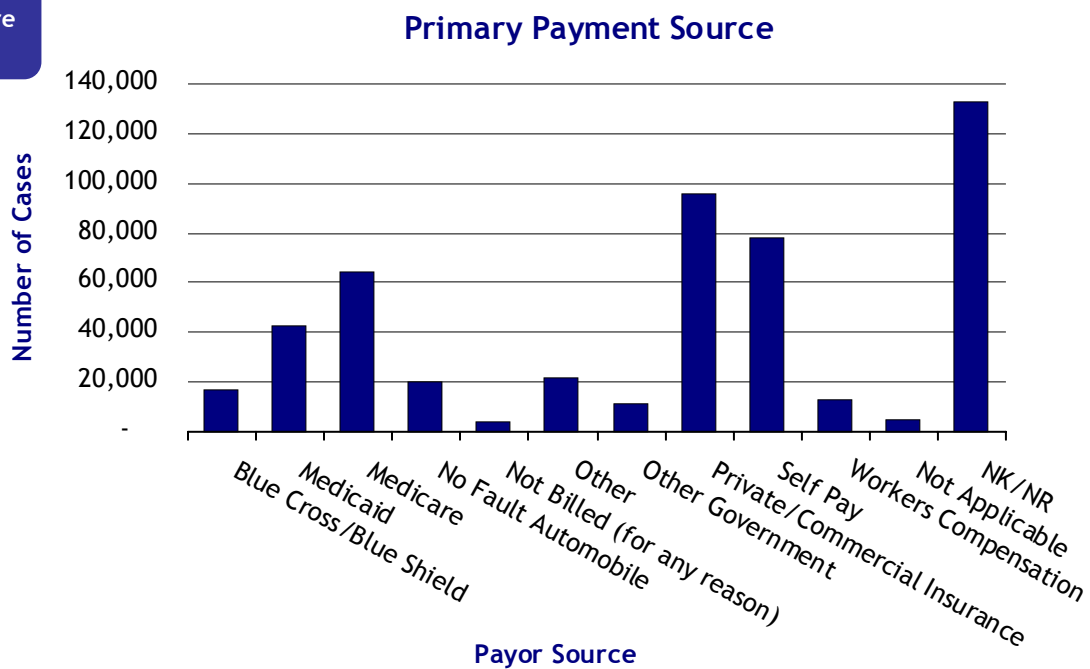


Table 9

Primary Payment Source

Primary Payment Source	Number	Percent
Blue Cross/Blue Shield	17,268	3.41
Medicaid	42,890	8.47
Medicare	64,186	12.67
No Fault Automobile	20,300	4.01
Not Billed (for any reason)	4,411	0.87
Other	21,890	4.32
Other Government	11,158	2.20
Private/Commercial Insurance	95,883	18.93
Self Pay	78,063	15.41
Workers Compensation	12,830	2.53
Not Applicable	4,814	0.95
NK/NR	132,759	26.21
Total	506,452	100.00

Injury Information

Figure 10A

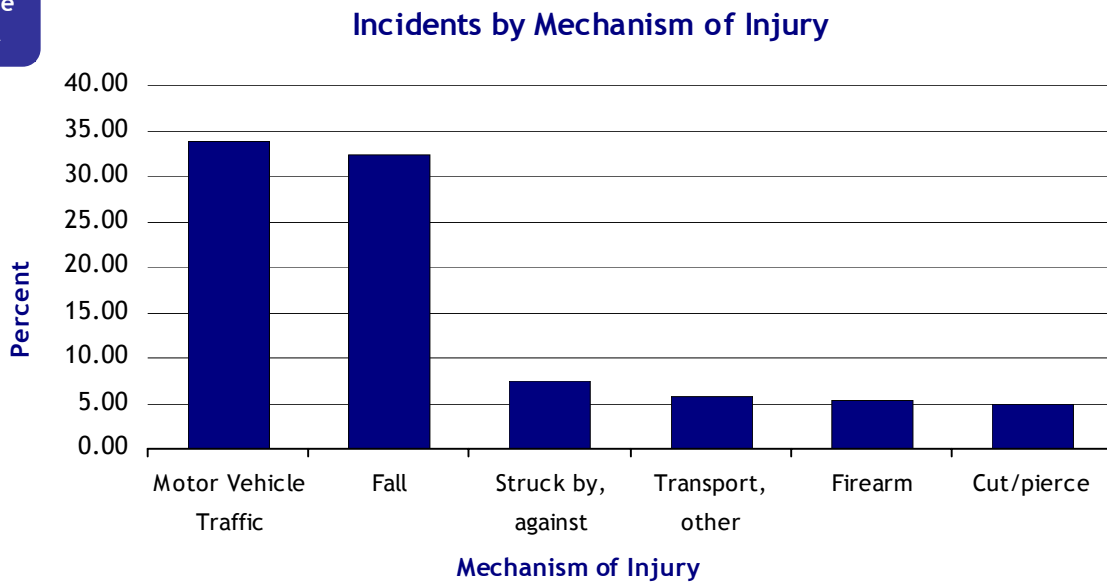
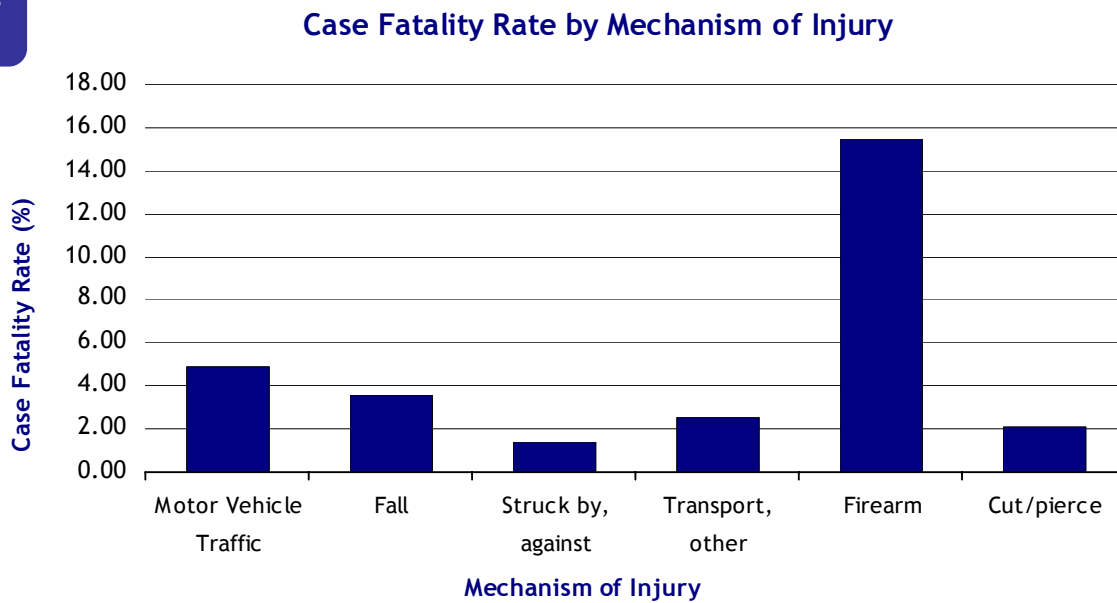


Figure 10B



**Table
10**

Incidents and Case Fatality Rate by Mechanism of Injury

Mechanism	Number	Percent	Deaths	Case Fatality Rate
Motor Vehicle Traffic	171,527	33.87	8,409	4.90
Fall	163,504	32.28	5,818	3.56
Struck by, against	37,262	7.36	531	1.43
Transport, other	28,813	5.69	725	2.52
Firearm	26,464	5.23	4,096	15.48
Cut/pierce	24,335	4.80	511	2.10
Other specified and classifiable	8,473	1.67	366	4.32
Pedal cyclist, other	8,159	1.61	92	1.13
Unspecified	6,237	1.23	254	4.07
Fire/flame	5,953	1.18	361	6.06
Hot object/substance	5,950	1.17	35	0.59
Machinery	5,775	1.14	94	1.63
Other specified, Not elsewhere classifiable	2,565	0.51	56	2.18
Natural/environmental, Bites and stings	2,114	0.42	12	0.57
Pedestrian, other	1,797	0.35	121	6.73
Natural/environmental, other	1,548	0.31	40	2.58
Overexertion	1,290	0.25	4	0.31
Suffocation	443	0.09	101	22.80
Drowning/submersion	311	0.06	42	13.50
Poisoning	252	0.05	10	3.97
Adverse effects, drugs	110	0.02	5	4.55
Adverse effects, medical care	95	0.02	2	2.11
NK/NR	3,475	0.69	128	3.68
Total	506,452	100.00	21,813	

Figure 11

Mechanism of Injury by Age

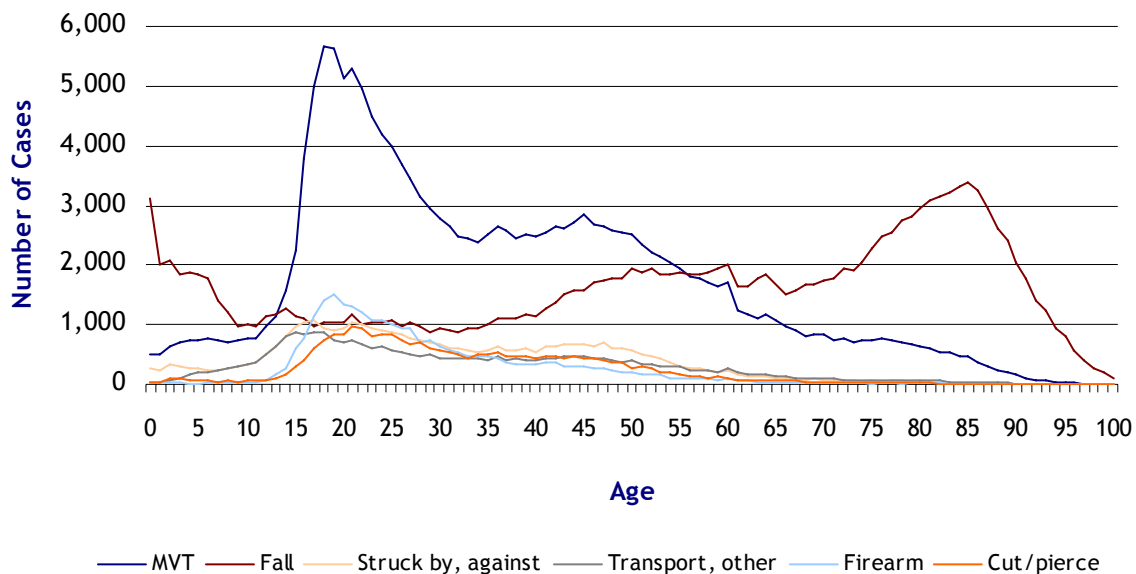


Table 11

Mechanism of Injury by Age

Age	Motor Vehicle Traffic	Fall	Struck By, Against	Transport, Other	Firearm	Cut/Pierce
<1 year	488	3,113	253	39	42	30
1-4	2,577	7,767	1,148	384	90	302
5-9	3,721	7,212	1,326	1,211	113	288
10-14	5,204	5,558	2,639	2,631	539	497
15-19	22,336	5,311	4,939	4,182	5,405	2,910
20-24	24,075	5,296	4,807	3,382	6,061	4,367
25-34	29,997	9,465	6,872	4,713	6,966	6,094
35-44	25,748	12,393	6,145	4,314	3,659	4,768
45-54	24,529	18,001	5,560	3,781	2,098	3,263
55-64	15,249	18,260	2,014	2,165	779	1,097
65-74	8,332	17,533	730	1,004	340	388
75-84	6,380	28,570	485	621	164	194
≥85	2,150	24,500	194	206	86	60
NK/NR	741	525	150	180	122	77
Total	171,527	163,504	37,262	28,813	26,464	24,335

Figure 12

Case Fatality Rate by Mechanism of Injury and Age

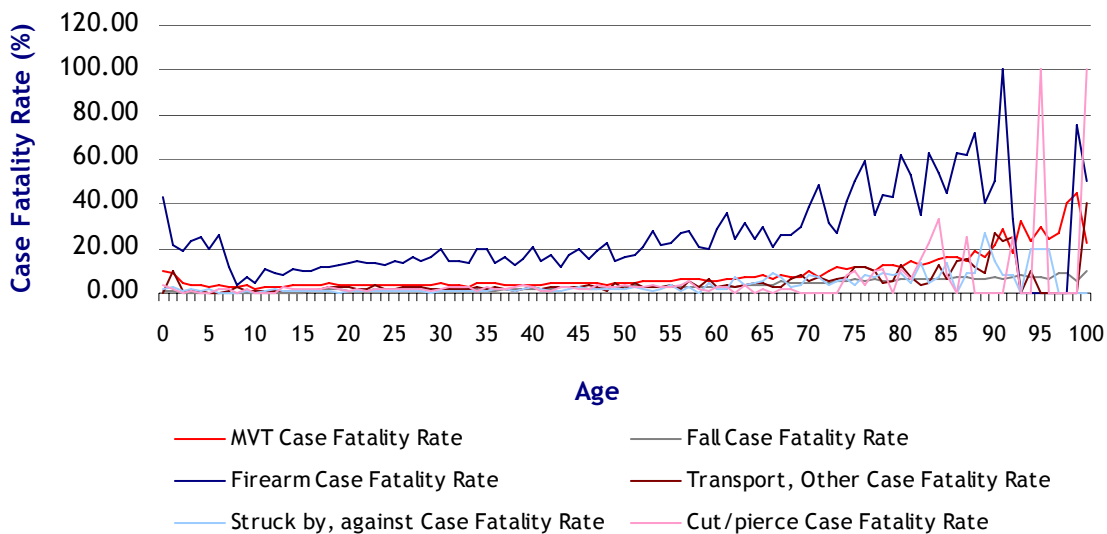


Table 12

Case Fatality Rate by Mechanism of Injury and Age

Age	MVT Case Fatality Rate	Fall Case Fatality Rate	Struck By, Against Case Fatality Rate	Transport, Other Case Fatality Rate	Firearm Case Fatality Rate	Cut/Pierce Case Fatality Rate
<1 year	9.84	0.55	1.98	0.00	42.86	3.33
1-4	4.97	0.44	1.57	1.56	22.22	0.66
5-9	3.14	0.08	0.75	0.99	12.39	1.04
10-14	2.90	0.18	0.80	1.03	9.65	1.41
15-19	3.87	0.98	0.75	1.82	11.45	2.06
20-24	3.73	1.30	0.77	2.45	13.51	1.49
25-34	3.67	1.61	0.76	2.21	15.42	1.77
35-44	4.13	1.77	1.37	2.13	15.88	2.10
45-54	4.68	2.68	1.94	2.86	18.88	2.73
55-64	6.09	2.94	2.83	3.70	25.55	2.46
65-74	8.41	4.60	5.89	5.28	30.88	1.29
75-84	12.30	6.02	7.42	8.53	48.78	9.79
≥85	18.79	6.89	10.31	13.59	58.14	15.00
NK/NR	9.72	4.95	2.00	1.67	56.56	20.78

Injury Information

Figure 13A

Incidents by Mechanism of Injury and Gender

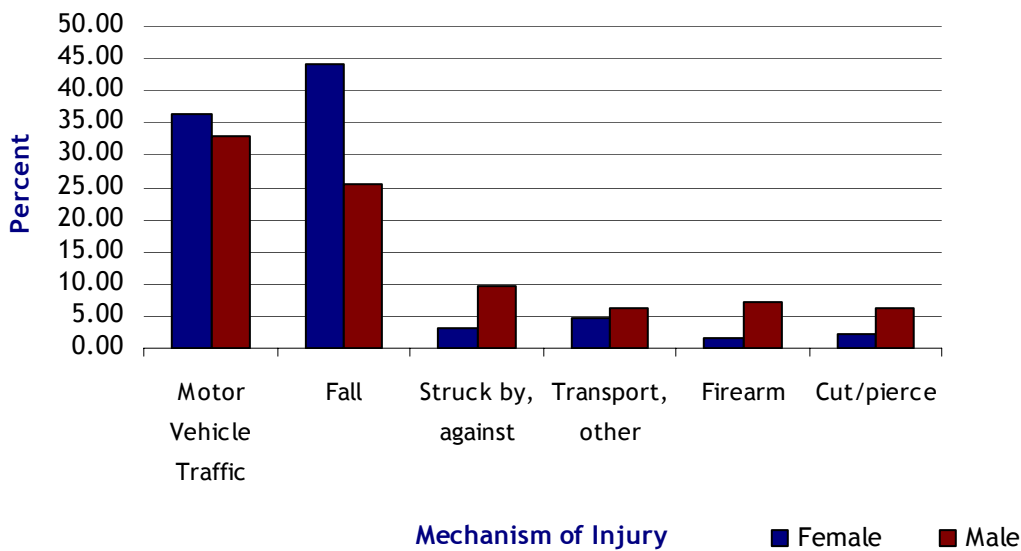
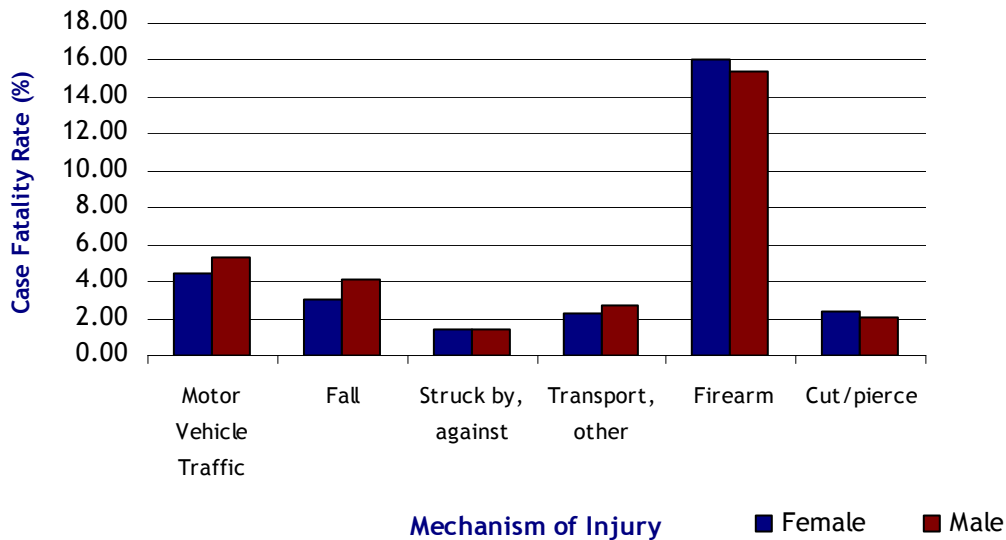


Figure 13B

Case Fatality Rate by Mechanism of Injury and Gender



Injury Information

**Table
13**

Incidents and Case Fatality Rate by Mechanism of Injury and Gender

Mechanism	Percent (Female)	Percent (Male)	Case Fatality Rate(Female)	Case Fatality Rate (Male)
Motor Vehicle Traffic	36.19	32.96	4.41	5.26
Fall	44.05	25.61	3.05	4.12
Struck by, against	3.21	9.55	1.37	1.46
Transport, other	4.71	6.29	2.24	2.67
Firearm	1.59	7.13	16.04	15.45
Cut/pierce	2.08	6.27	2.40	2.07
Other specified and classifiable	1.20	1.92	4.55	4.35
Pedal cyclist, other	1.03	1.92	0.64	1.29
Unspecified	0.76	1.50	4.18	4.11
Fire/flame	0.84	1.33	10.66	4.43
Hot object/substance	1.32	1.12	0.86	0.42
Machinery	0.27	1.59	1.53	1.68
Other specified, not elsewhere classifiable	0.36	0.58	1.83	2.28
Natural/environmental, Bites and stings	0.52	0.36	0.58	0.60
Pedestrian, other	0.36	0.36	4.79	7.85
Natural/environmental, Other	0.35	0.28	1.19	3.31
Overexertion	0.26	0.25	0.69	0.12
Suffocation	0.06	0.10	23.15	22.53
Drowning/submersion	0.05	0.07	15.91	12.79
Poisoning	0.05	0.05	2.44	5.00
Adverse effects, drugs	0.03	0.02	7.27	1.82
Adverse effects, medical care	0.03	0.02	0.00	3.85
NK/NR	0.68	0.71	2.91	4.01
Total	100.00	100.00		

Figure 14

Incidents by Comparative Injury Severity Scores

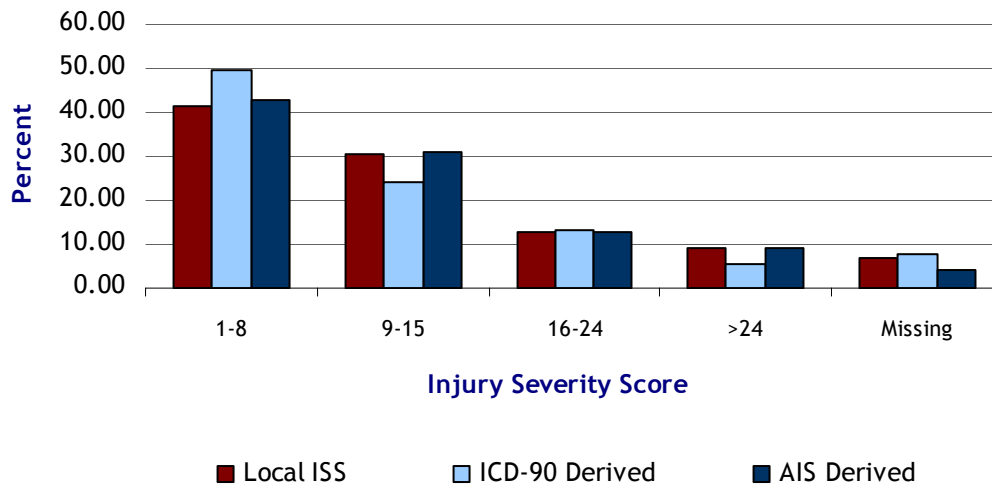


Table 14

Incidents by Comparative Injury Severity Score Scores

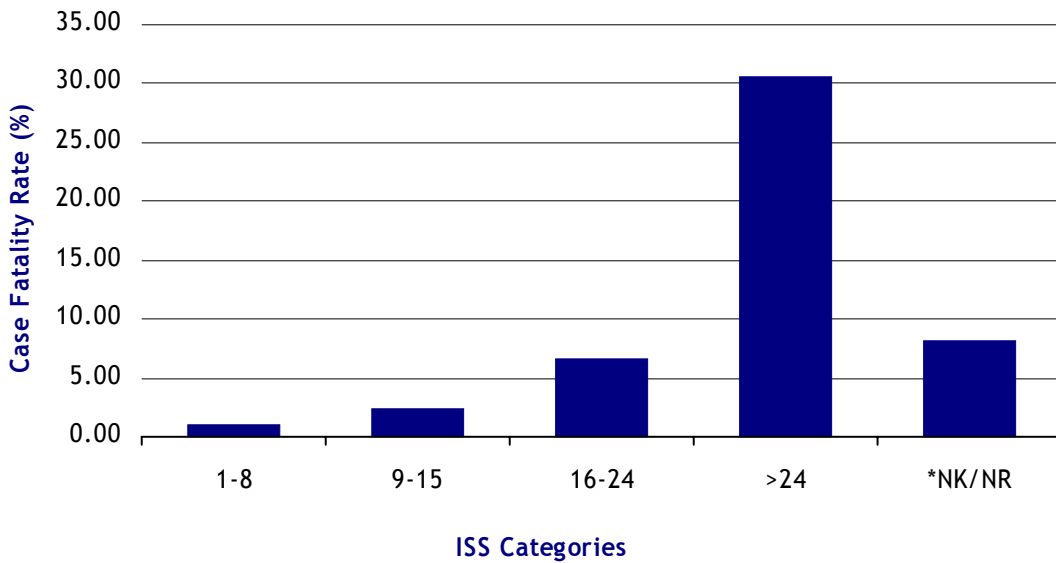
ISS	Local ISS		ICD90 Derived		AIS Derived	
	Number	Percent	Number	Percent	Number	Percent
1-8	208,376	41.14	249,799	49.32	217,403	42.93
9-15	155,222	30.65	121,786	24.05	157,562	31.11
16-24	63,364	12.51	67,005	13.23	64,818	12.80
>24	45,226	8.93	27,795	5.49	46,001	9.08
NK/NR	34,264	6.77	40,067	7.91	20,668	4.08
Total	506,452		506,452		506,452	

“Local ISS” denotes ISS scores submitted directly by hospitals regardless of the method of calculation. “ICD90 Derived” are scores derived by converting ICD9 codes to AIS using the ICD 90 Mapping program and then calculating ISS with the resulting AIS severity scores. “AIS Derived” are calculated from AIS submitted directly by hospitals. Analyses in this report use the ICD90 Derived ISS.

Injury Information

**Figure
15**

Case Fatality Rate by Injury Severity Score



**Table
15**

Case Fatality Rate by Injury Severity Score

ISS	Number	Percent	Deaths	Case Fatality Rate
1-8	249,799	49.32	2,725	1.09
9-15	121,786	24.05	2,920	2.40
16-24	67,005	13.23	4,395	6.56
>24	27,795	5.49	8,519	30.65
NK/NR	40,067	7.91	3,254	8.12
Total	506,452	100.00	21,813	

Figure 16

Incidents by Injury Severity Score and Age

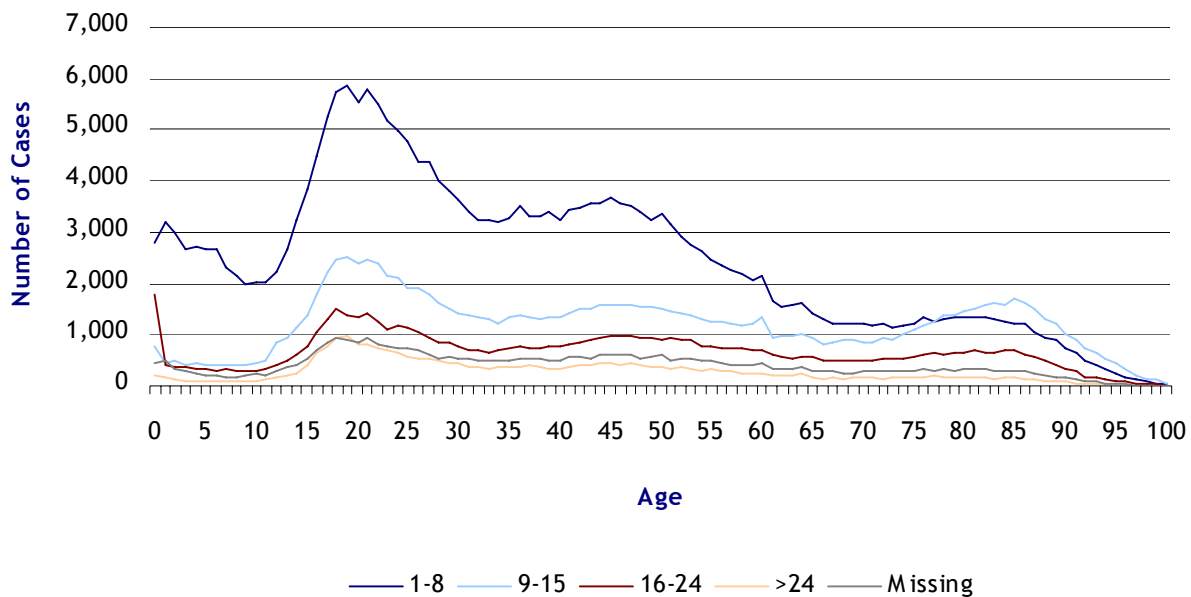


Table 16

Incidents by Injury Severity Score and Age

Age	ISS 1-8 Number	ISS 9-15 Number	ISS 16-24 Number	ISS > 24 Number	ISS NK/NR Number
<1 year	2,801	763	1,768	217	426
1-4	11,522	1,785	1,445	449	1,292
5-9	11,835	2,067	1,498	458	941
10-14	12,207	3,841	2,135	816	1,485
15-19	25,198	10,359	5,986	3,680	3,889
20-24	26,974	11,524	6,302	3,684	4,060
25-34	38,042	15,344	8,259	4,382	5,607
35-44	34,044	13,945	7,943	3,768	5,249
45-54	32,241	14,851	9,180	3,727	5,500
55-64	19,868	11,342	6,644	2,461	3,904
65-74	12,233	8,939	5,131	1,510	2,774
75-84	13,020	14,016	6,385	1,625	3,012
≥85	8,695	12,507	4,122	902	1,790
NK/NR	1,119	503	207	116	138
Total	249,799	121,786	67,005	27,795	40,067

Figure 17

Case Fatality Rate by Injury Severity Score and Age

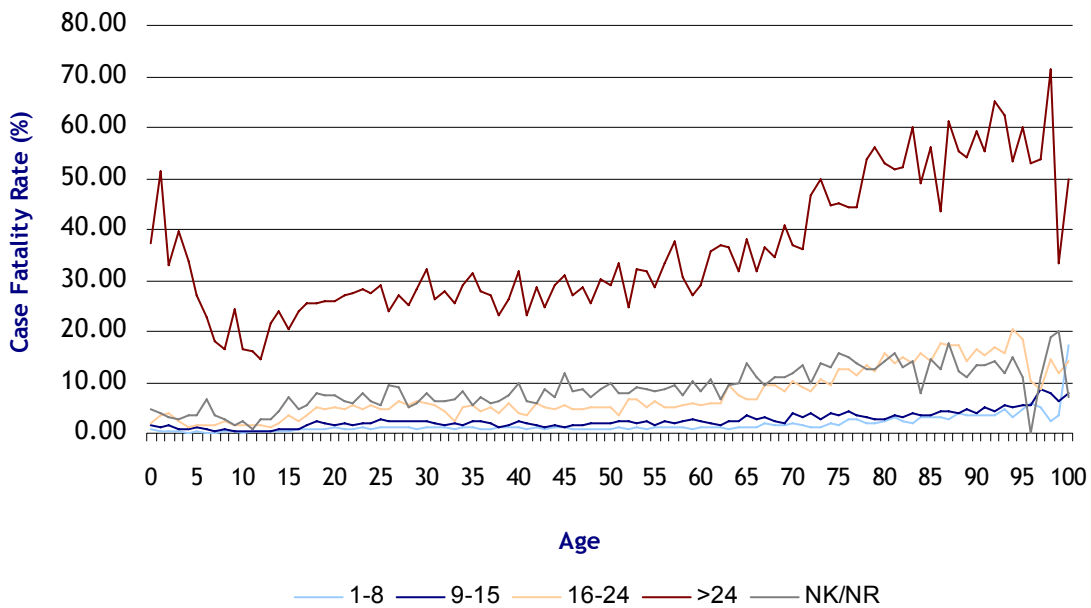


Table 17

Case Fatality Rate by Injury Severity Score and Age

Age	ISS 1-8 Deaths	ISS 1-8 Case Fatality Rate	ISS 9-15 Deaths	ISS 9-15 Case Fatality Rate	ISS 16-24 Deaths	ISS 16-24 Case Fatality Rate	ISS > 24 Deaths	ISS > 24 Case Fatality Rate	ISS NK/NR Deaths	ISS NK/NR Case Fatality Rate
<1 year	21	0.75	11	1.44	38	2.15	81	37.33	20	4.69
1-4	42	0.36	19	1.06	43	2.98	181	40.31	45	3.48
5-9	26	0.22	16	0.77	26	1.74	99	21.62	35	3.72
10-14	52	0.43	22	0.57	35	1.64	160	19.61	43	2.90
15-19	201	0.80	170	1.64	238	3.98	909	24.70	254	6.53
20-24	258	0.96	204	1.77	317	5.03	999	27.12	271	6.67
25-34	410	1.08	332	2.16	424	5.13	1,200	27.38	394	7.03
35-44	338	0.99	249	1.79	382	4.81	1,029	27.31	364	6.93
45-54	285	0.88	283	1.91	484	5.27	1,088	29.19	483	8.78
55-64	218	1.10	238	2.10	403	6.07	797	32.39	346	8.86
65-74	186	1.52	283	3.17	450	8.77	599	39.67	329	11.86
75-84	309	2.37	474	3.38	867	13.58	824	50.71	404	13.41
≥85	322	3.70	576	4.61	659	15.99	501	55.54	239	13.35
NK/NR	57	5.09	43	8.55	29	14.01	52	44.83	27	19.57
Total	2,725		2,920		4,395		8,519		3,254	

Figure 18A

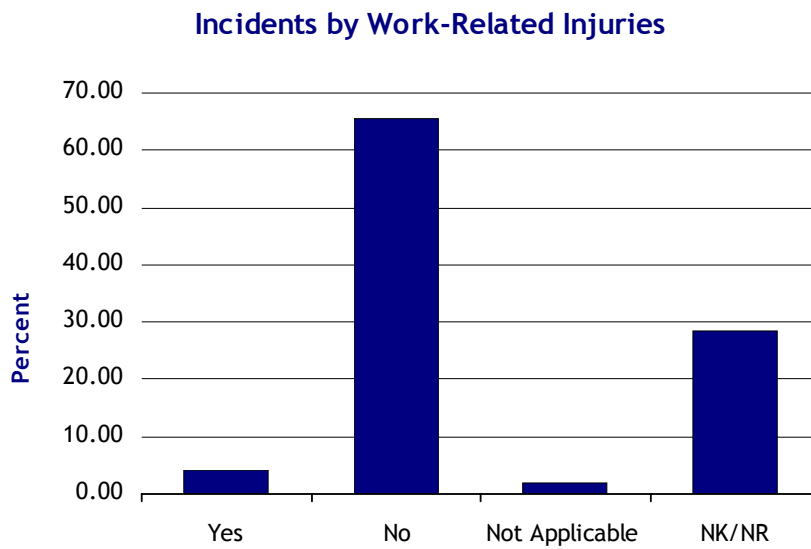
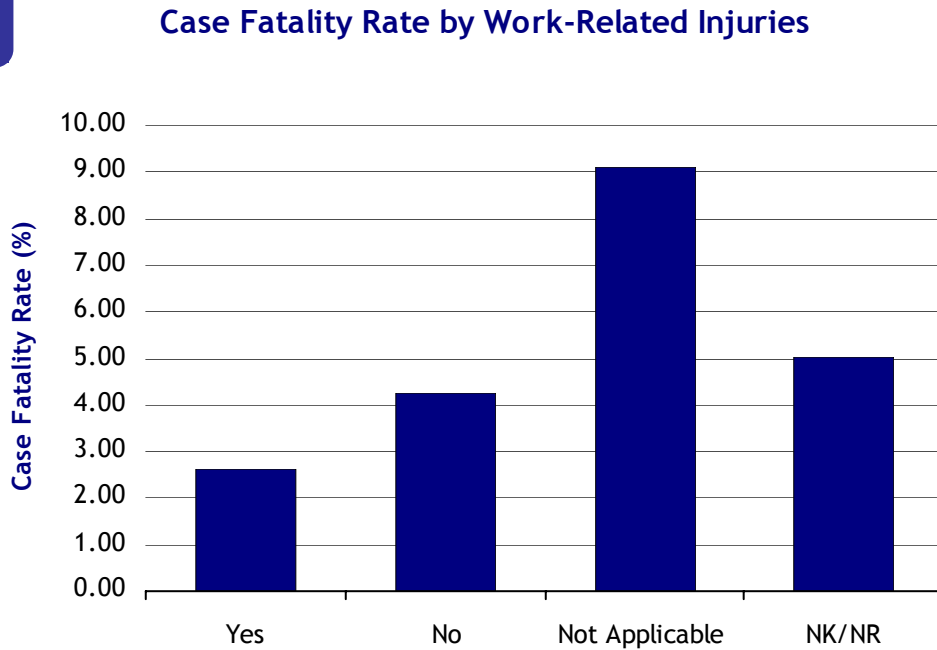


Figure 18B



Injury Information

**Table
18**

Case Fatality Rate by Work-Related Injuries

Work-Related Injury	Number	Percent	Deaths	Case Fatality Rate
Yes	20,258	4.00	531	2.62
No	332,358	65.62	14,100	4.24
Not Applicable	10,522	2.08	957	9.10
NK/NR	143,314	28.30	7,182	5.01
Total	506,452	100.00	21,813	

Injury Information

Figure
19

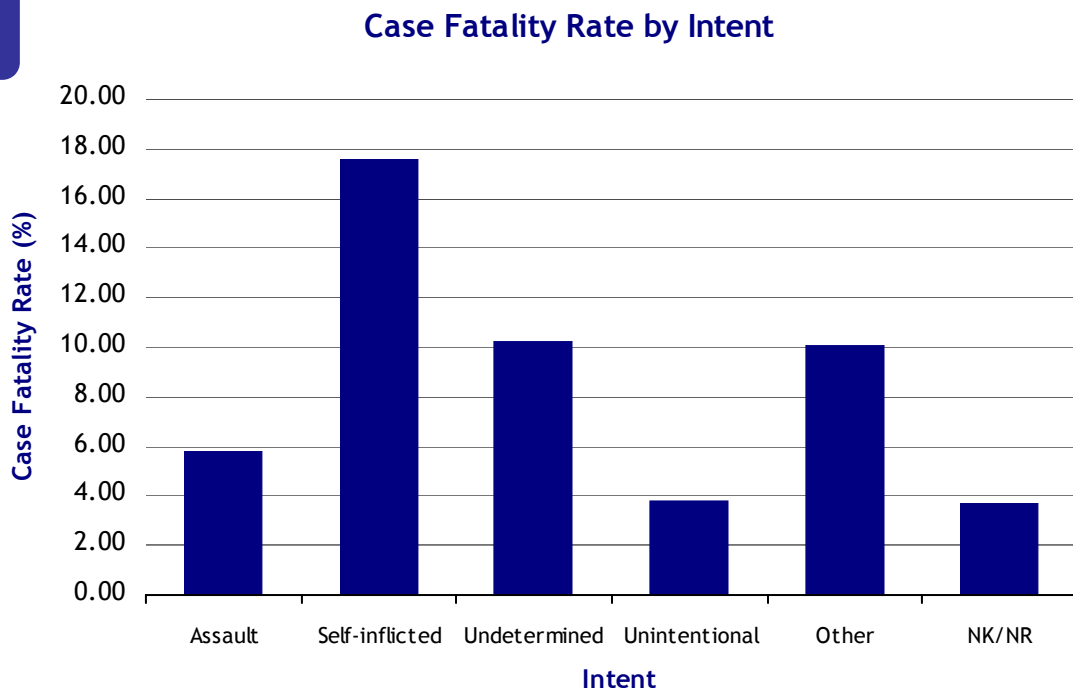


Table
19

Case Fatality Rate by Intent

Intent	Number	Percent	Deaths	Case Fatality Rate
Assault	64,173	12.67	3,746	5.84
Self-inflicted	7,071	1.40	1,242	17.56
Undetermined	2,590	0.51	266	10.27
Unintentional	428,143	84.54	16,330	3.81
Other	1,000	0.20	101	10.10
NK/NR	3,475	0.69	128	3.68
Total	506,452	100.00	21,813	

Figure 20

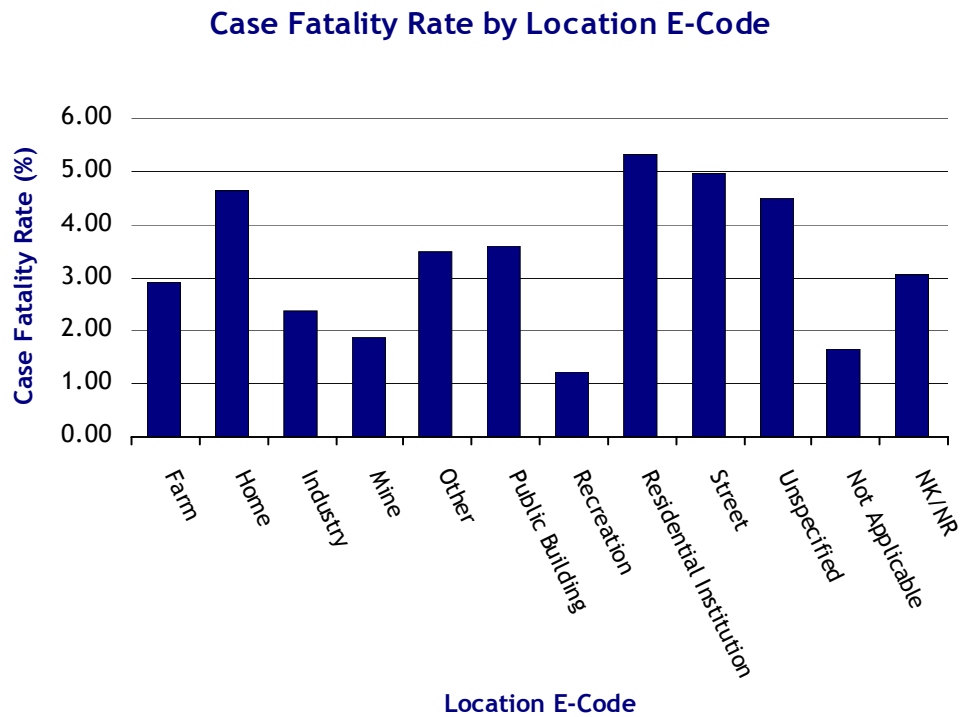


Table 20

Case Fatality Rate by Location E-code

Location of Injury	Number	Percent	Deaths	Case Fatality Rate
Farm	3,298	0.65	96	2.91
Home	122,808	24.25	5,679	4.62
Industry	14,736	2.91	347	2.35
Mine	266	0.05	5	1.88
Other	19,971	3.94	695	3.48
Public Building	18,781	3.71	674	3.59
Recreation	28,590	5.65	349	1.22
Residential Institution	13,075	2.58	696	5.32
Street	196,177	38.74	9,755	4.97
Unspecified	55,662	10.99	2,507	4.50
Not Applicable	61	0.01	1	1.64
NK/NR	33,027	6.52	1,009	3.06
Total	506,452	100.00	21,813	

Injury Information

Figure 21

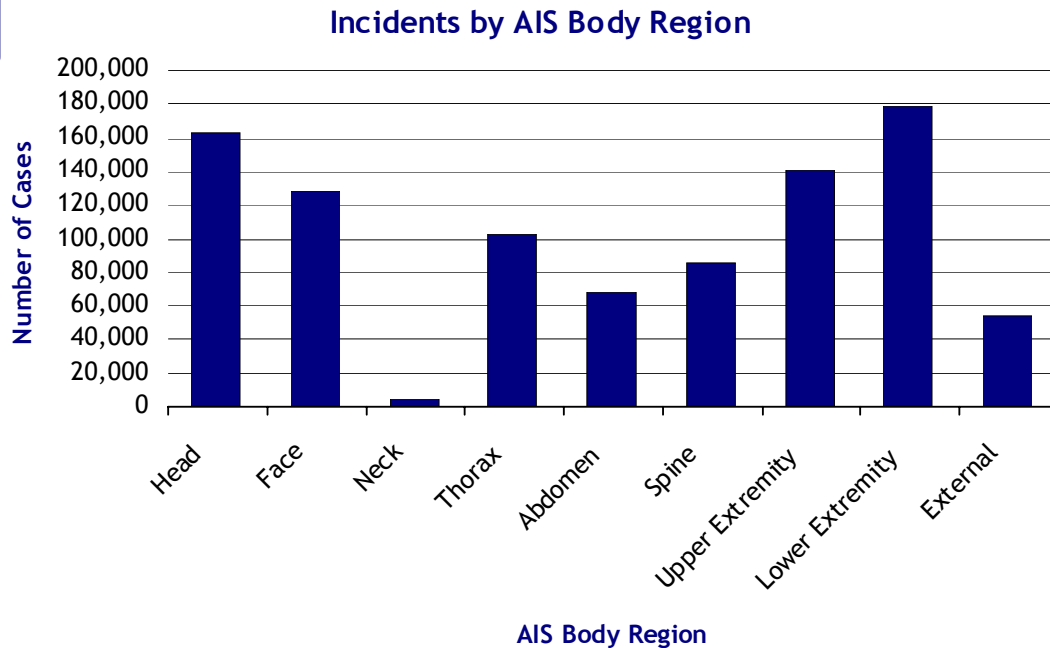


Table 21

Incidents by AIS Body Region

AIS Body Region	Number	Percent
Head	162,882	32.16
Face	127,751	25.22
Neck	5,072	1.00
Thorax	103,404	20.42
Abdomen	68,086	13.44
Spine	85,257	16.83
Upper Extremity	140,867	27.81
Lower Extremity	178,691	35.28
External	53,976	10.66
NK/NR	59,252	11.70
Total	506,452	100.00

Please note that an incident may involve multiple body regions, and, if so, the patient will be counted in each of the categories in which there is an injury.

Injury Information

Figure
22

Incidents with AIS \geq 3 by AIS Body Region

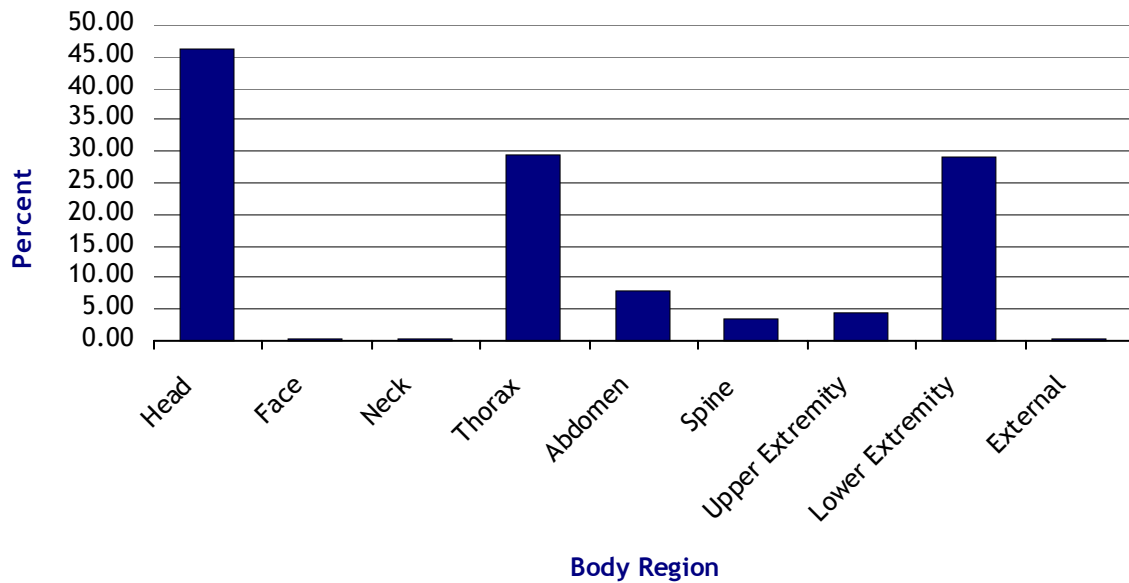


Table
22

Incidents with AIS \geq 3 by AIS Body Region

AIS Body Region	Number	Percent
Head	105,785	46.14
Face	526	0.23
Neck	780	0.34
Thorax	67,183	29.30
Abdomen	17,921	7.82
Spine	8,151	3.55
Upper Extremity	10,300	4.49
Lower Extremity	66,984	29.21
External	1,030	0.45
Total	229,286	100.00

Please note that an incident may involve multiple body regions, and, if so, the patient will be counted in each of the categories in which there is an injury.

Figure 23

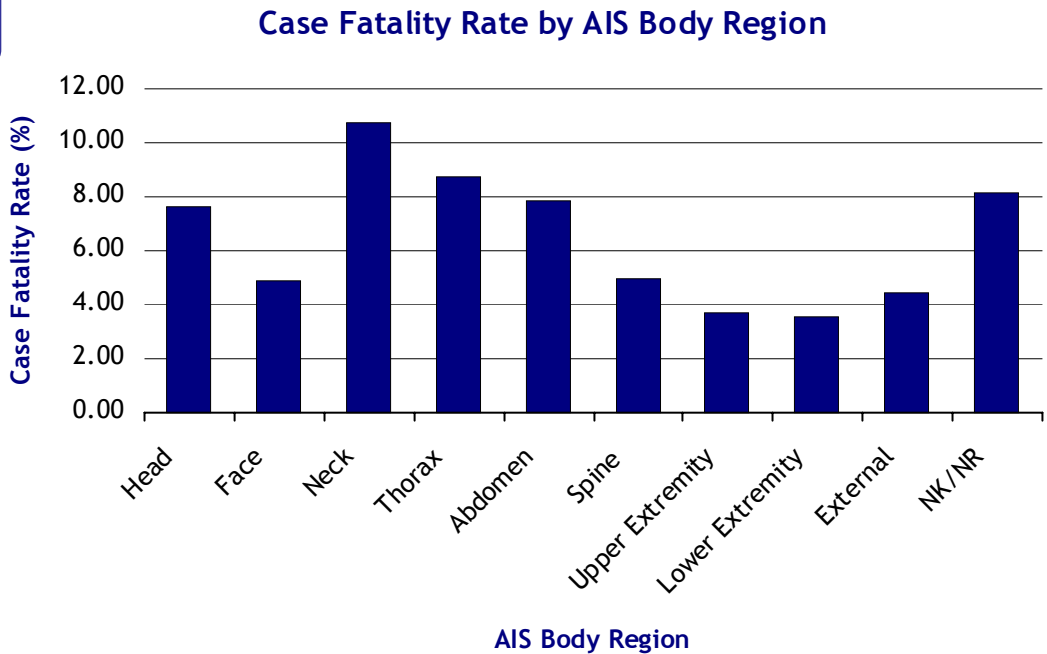


Table 23

Case Fatality Rate by AIS Body Region

AIS Body Region	Number	Deaths	Case Fatality Rate
Head	162,882	12,471	7.66
Face	127,751	6,223	4.87
Neck	5,072	544	10.73
Thorax	103,404	9,046	8.75
Abdomen	68,086	5,338	7.84
Spine	85,257	4,223	4.95
Upper Extremity	140,867	5,214	3.70
Lower Extremity	178,691	6,403	3.58
External	53,976	2,401	4.45
NK/NR	59,252	4,811	8.12
Total	506,452	21,813	

Please note that an incident may involve multiple body regions, and, if so, the patient will be counted in each of the categories in which there is an injury.

Injury Information

Figure
24

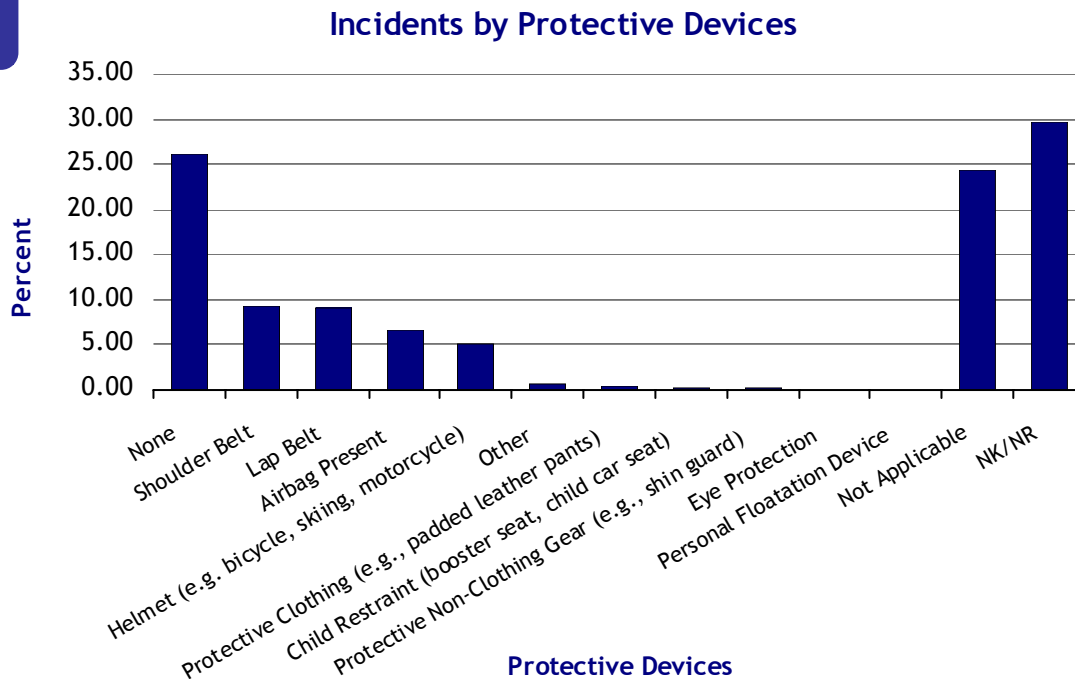


Table
24

Incidents by Protective Devices

Protective Devices	Number	Percent
None	132,308	26.12
Shoulder Belt	47,634	9.41
Lap Belt	45,982	9.08
Airbag Present	33,099	6.54
Helmet (e.g. bicycle, skiing, motorcycle)	26,240	5.18
Other	3,261	0.64
Protective Clothing (e.g., padded leather pants)	2,122	0.42
Child Restraint (booster seat, child car seat)	1,411	0.28
Protective Non-Clothing Gear (e.g., shin guard)	597	0.12
Eye Protection	239	0.05
Personal Floatation Device	198	0.04
Not Applicable	123,223	24.33
NK/NR	150,408	29.70
Total	506,452	100.00

Outcomes

Figure 25

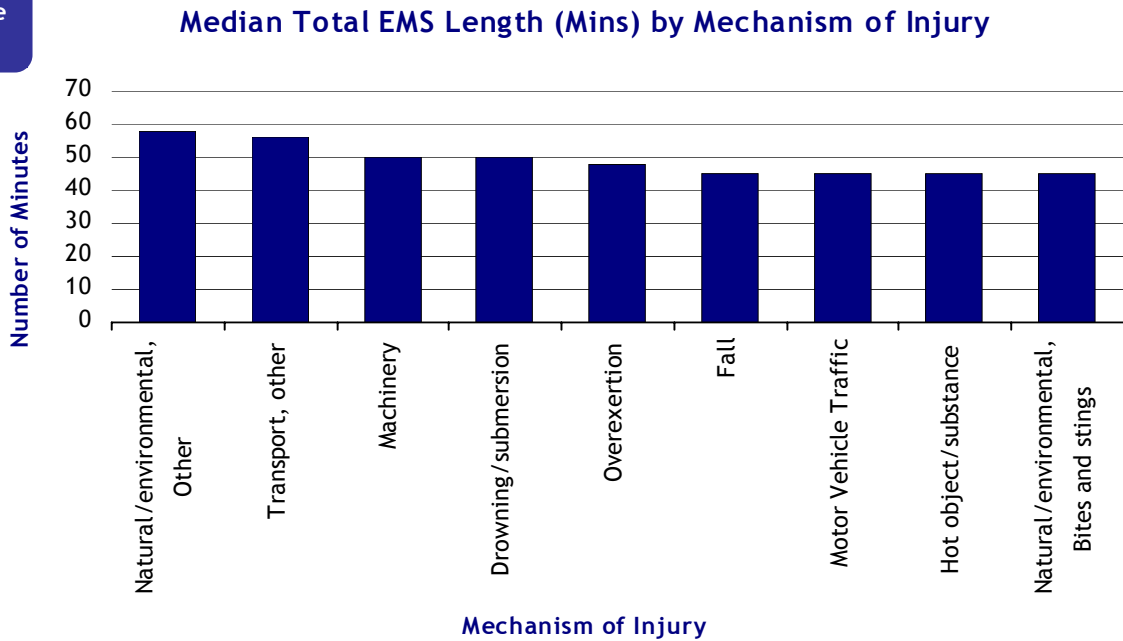
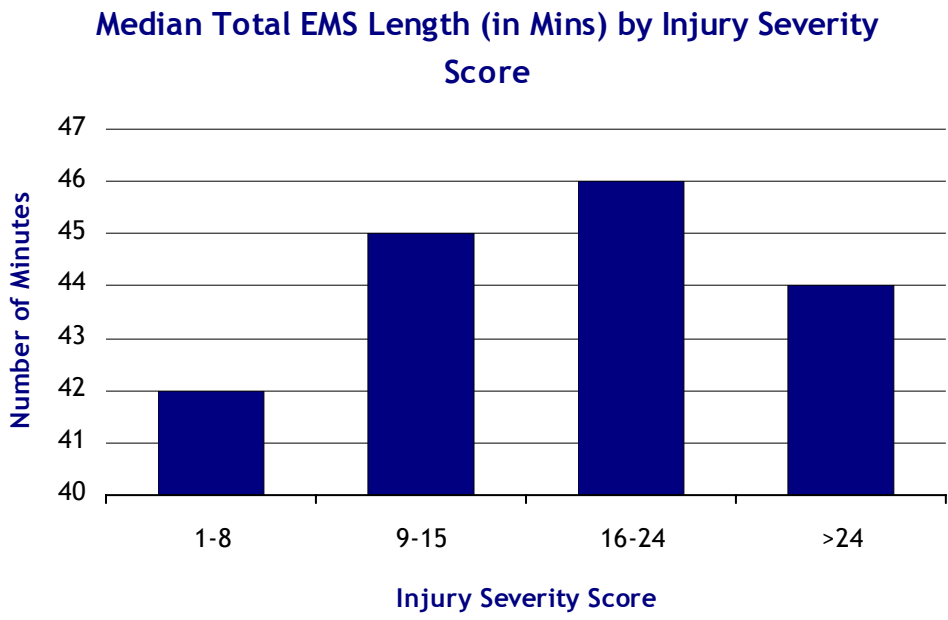


Table 25

Median Total EMS Length (Mins) by Mechanism of Injury

Mechanism	Number	Median
Natural/environmental, other	376	58
Transport, other	9,082	56
Machinery	1,623	50
Drowning/submersion	117	50
Overexertion	258	48
Fall	49,274	45
Motor Vehicle Traffic	70,715	45
Hot object/substance	763	45
Natural/environmental, bites and stings	346	45
Fire/flame	1,367	44
Pedal cyclist, other	2,339	42
Suffocation	172	42
Struck by, against	10,514	41
Unspecified	1,656	39
Pedestrian, other	744	39
Poisoning	67	39
Cut/pierce	7,950	33
Firearm	10,237	30
Adverse effects, medical care	29	43
Adverse effects, drugs	41	47
Other specified, not elsewhere classifiable	723	40
Other specified and classifiable	2,104	46

**Figure
26**



**Table
26**

Median Total EMS Length (in Mins) by Injury Severity Score

ISS	Number	Median
1-8	76,387	42.00
9-15	44,648	45.00
16-24	23,676	46.00
>24	12,092	44.00
NK/NR	14,560	44.50

Figure 27

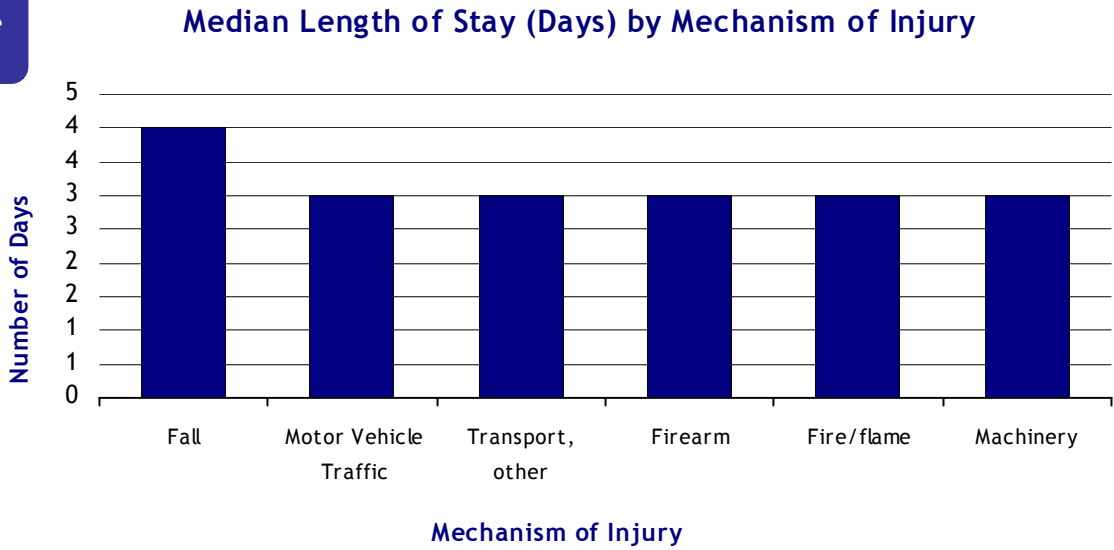


Table 27

Median Length of Stay (Days) by Mechanism of Injury

Mechanism	Number	Median
Fall	163,328	4
Motor Vehicle Traffic	171,148	3
Transport, other	28,732	3
Firearm	26,389	3
Fire/flame	5,938	3
Machinery	5,760	3
Pedestrian, other	1,793	3
Natural/environmental, other	1,547	3
Suffocation	443	3
Poisoning	252	3
Struck by, against	37,191	2
Cut/pierce	24,249	2
Pedal cyclist, other	8,148	2
Hot object/substance	5,936	2
Natural/environmental, bites and stings	2,113	2
Overexertion	1,287	2
Drowning/submersion	310	2
Adverse effects, drugs	110	6
Adverse effects, medical care	94	6
Other specified, not elsewhere classifiable	2,560	2
Other specified and classifiable	8,455	3
Unspecified	6,222	3
NK/NR	3,294	2

Outcomes

Figure 28

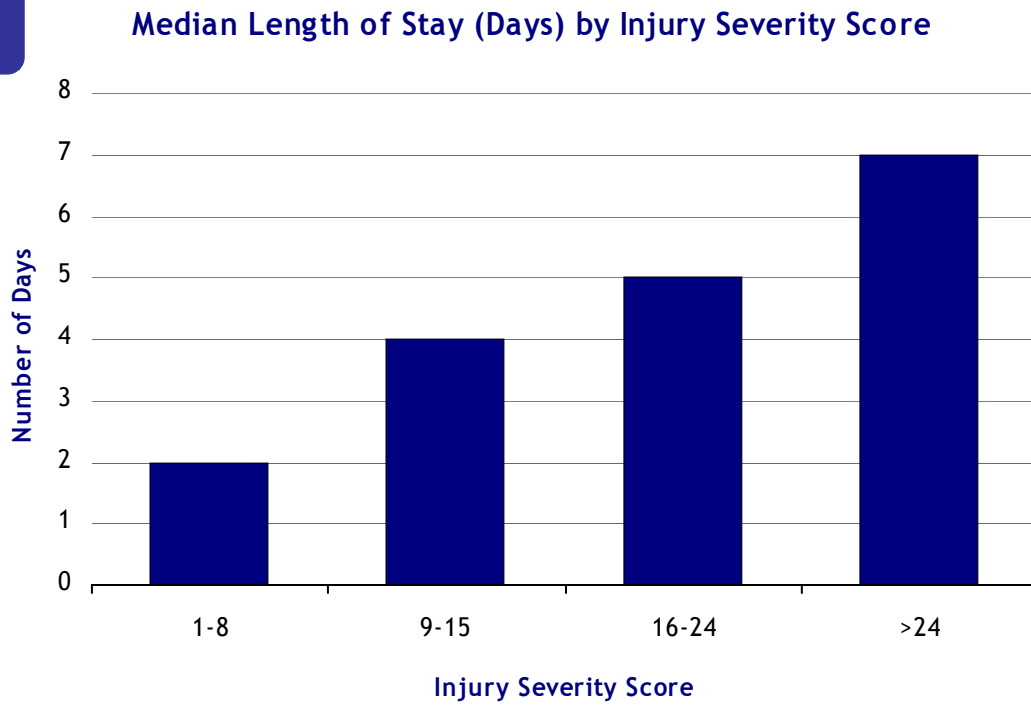


Table 28

Median Length of Stay (Days) by Injury Severity Score

ISS	Number	Median
1-8	248,985	2
9-15	121,669	4
16-24	66,947	5
>24	27,753	7
NK/NR	39,944	4

Figure 29

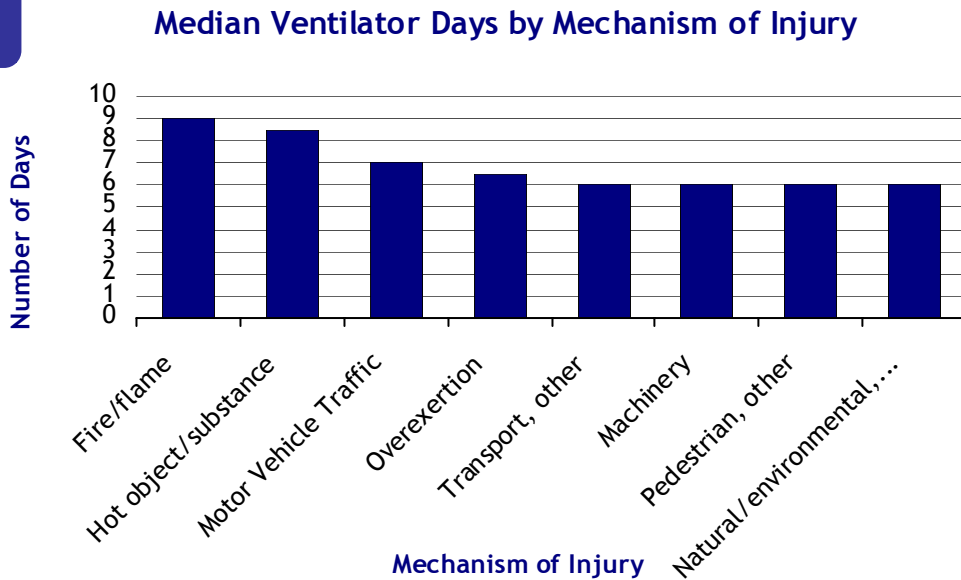


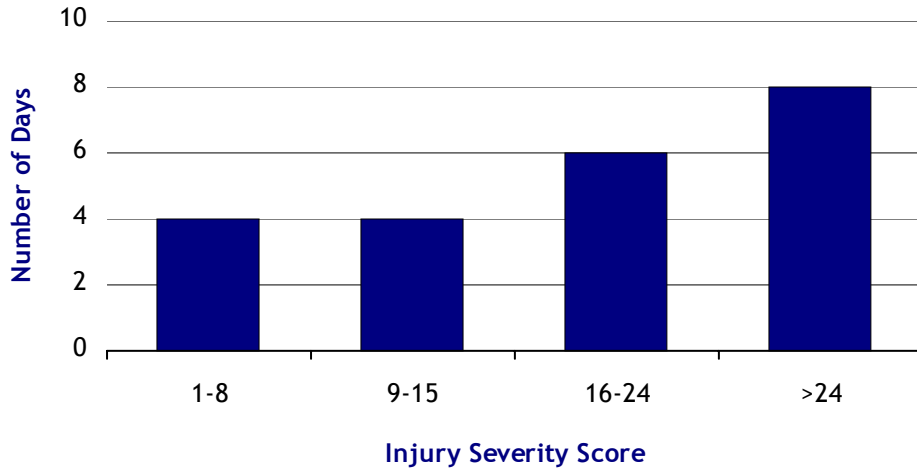
Table 29

Median Ventilator Days by Mechanism of Injury

Mechanism	Number	Median
Fire/flame	621	9
Hot object/substance	86	9
Motor Vehicle Traffic	14,493	7
Overexertion	6	7
Transport, other	1,588	6
Machinery	170	6
Pedestrian, other	132	6
Natural/environmental, bites and stings	29	6
Natural/environmental, other	66	5
Poisoning	22	5
Fall	5,520	5
Firearm	2,348	5
Struck by, against	1,119	5
Pedal cyclist, other	215	5
Drowning/submersion	47	4
Cut/pierce	655	4
Suffocation	98	4
Adverse effects, drugs	10	4
Adverse effects, medical care	6	4
Other specified, not elsewhere classifiable	82	6
Unspecified	442	6
Other specified and classifiable	462	6
NK/NR	136	5

**Figure
30**

Median Ventilator Days by Injury Severity Score



**Table
30**

Median Ventilator Days by Injury Severity Score

ISS	Number	Median
1-8	2,428	4
9-15	4,106	4
16-24	8,245	6
>24	8,252	8
NK/NR	5,322	6

Outcomes

Figure 31

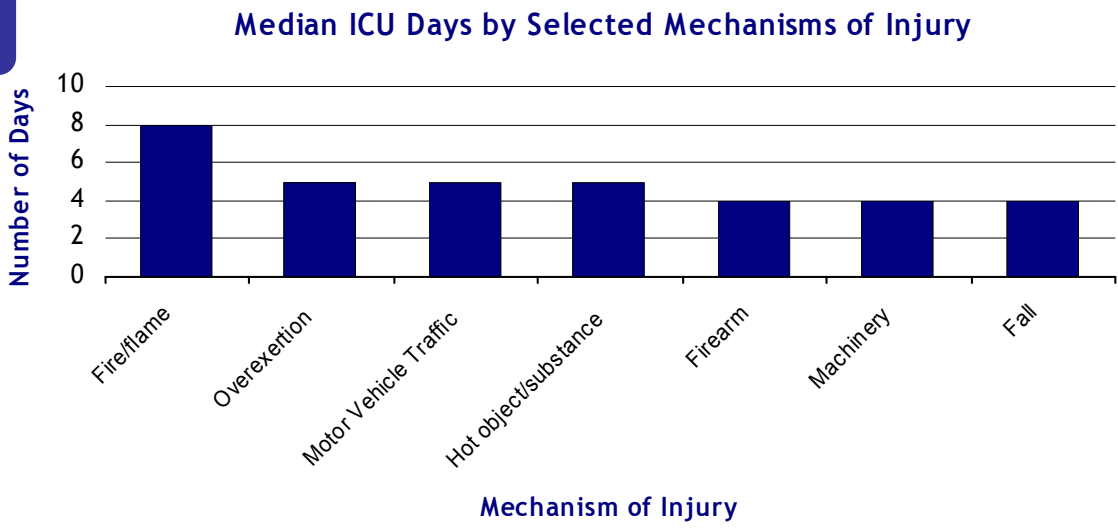


Table 31

Median ICU Days by Mechanism of Injury

Mechanism	Number	Median
Fire/flame	1,633	8
Overexertion	20	5
Motor Vehicle Traffic	37,485	5
Hot object/substance	745	5
Firearm	5,933	4
Machinery	619	4
Fall	21,939	4
Transport, other	5,037	4
Pedestrian, other	413	4
Suffocation	163	4
Drowning/submersion	90	4
Struck by, against	4,343	3
Pedal cyclist, other	950	3
Other specified, not elsewhere classifiable	310	3
Poisoning	55	3
Cut/pierce	2,298	3
Natural/environmental, other	252	3
Natural/environmental, bites and stings	129	3
Adverse effects, drugs	25	3
Adverse effects, medical care	20	6
Unspecified	1,252	4
NK/NR	443	4

Outcomes

Figure
32

Median ICU Days by Injury Severity Score

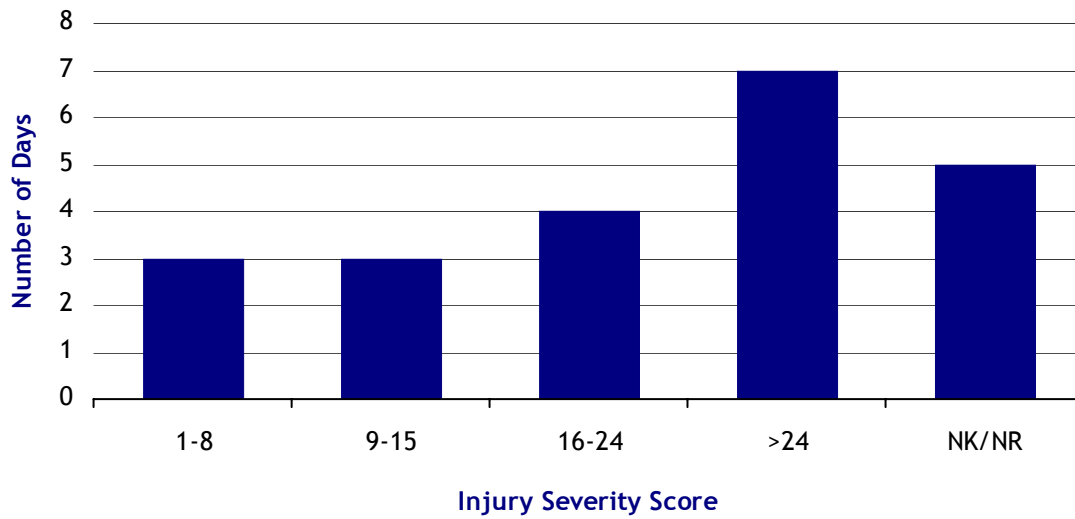


Table
32

Median ICU Days by Injury Severity Score

ISS	Number	Median
1-8	12,557	3
9-15	17,841	3
16-24	27,273	4
>24	16,265	7
NK/NR	11,618	5

Outcomes

Figure
33

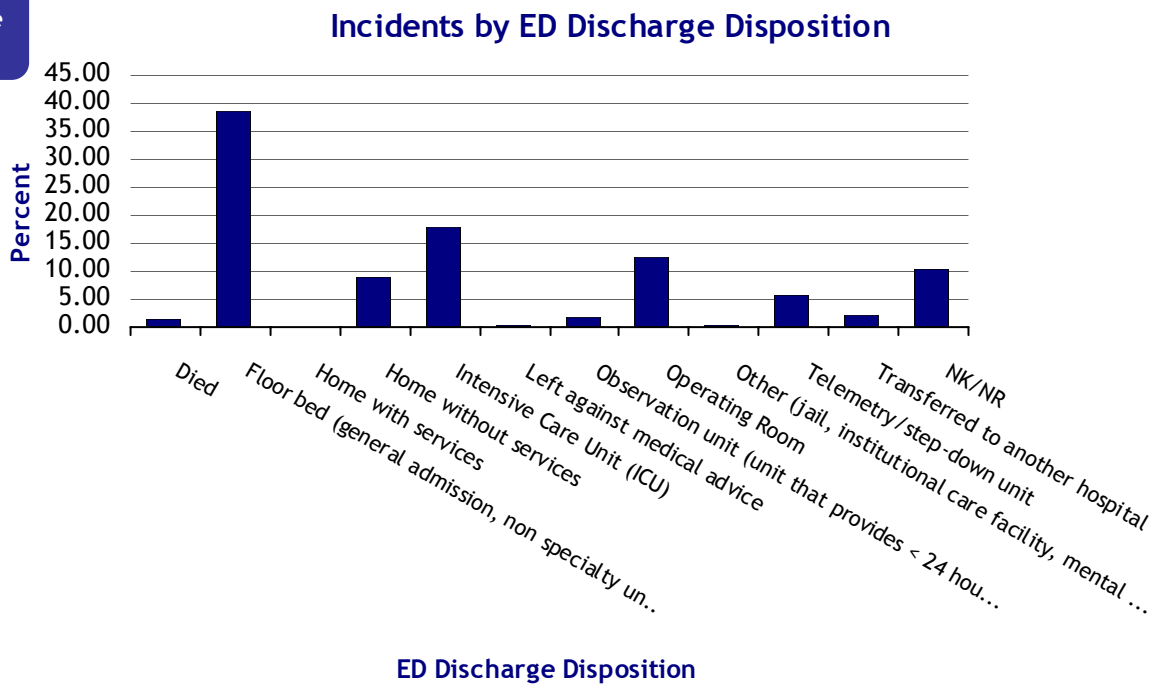


Table
33

Incidents by ED Discharge Disposition

ED Discharge Disposition	Number	Percent
Died	6,421	1.27
Floor bed (general admission, non specialty unit bed)	194,632	38.43
Home with services	339	0.07
Home without services	44,963	8.88
Intensive Care Unit (ICU)	90,208	17.81
Left against medical advice	920	0.18
Observation unit (unit that provides < 24 hour stays)	9,735	1.92
Operating Room	63,587	12.56
Other (jail, institutional care facility, mental health, etc)	2,702	0.53
Telemetry/step-down unit	28,395	5.61
Transferred to another hospital	11,466	2.26
NK/NR	53,084	10.48
Total	506,452	100.00

Outcomes

Figure 34

Reasons for Death in Emergency Department

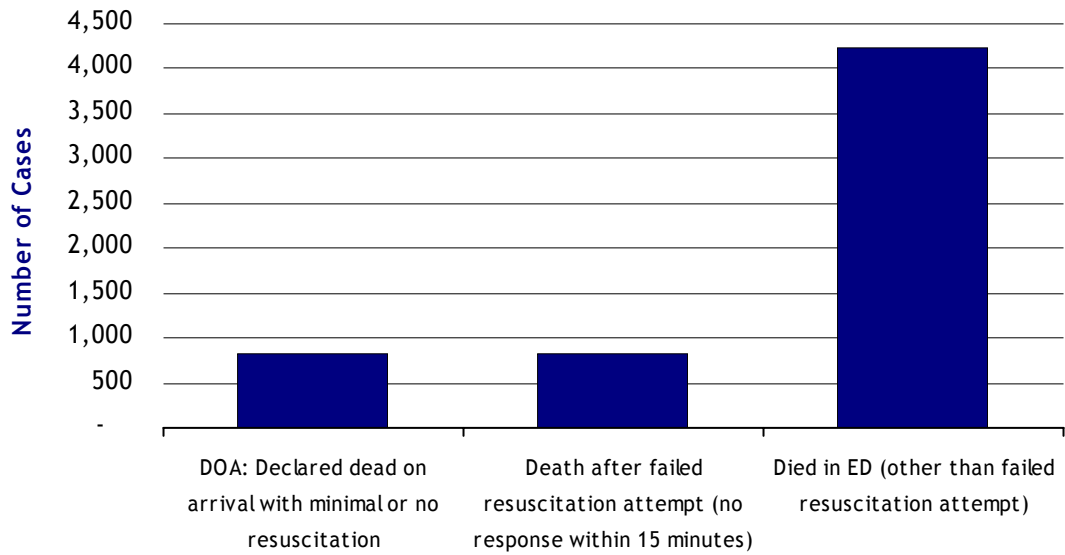


Table 34

Reasons for Death in Emergency Department

Died in ED	Number	Percent
DOA: Declared dead on arrival with minimal or no resuscitation	832	3.81
Death after failed resuscitation attempt (no response within 15 minutes)	824	3.78
Died in ED (other than failed resuscitation attempt)	4,238	19.43
Total Deaths	21,813	27.02

Figure 35

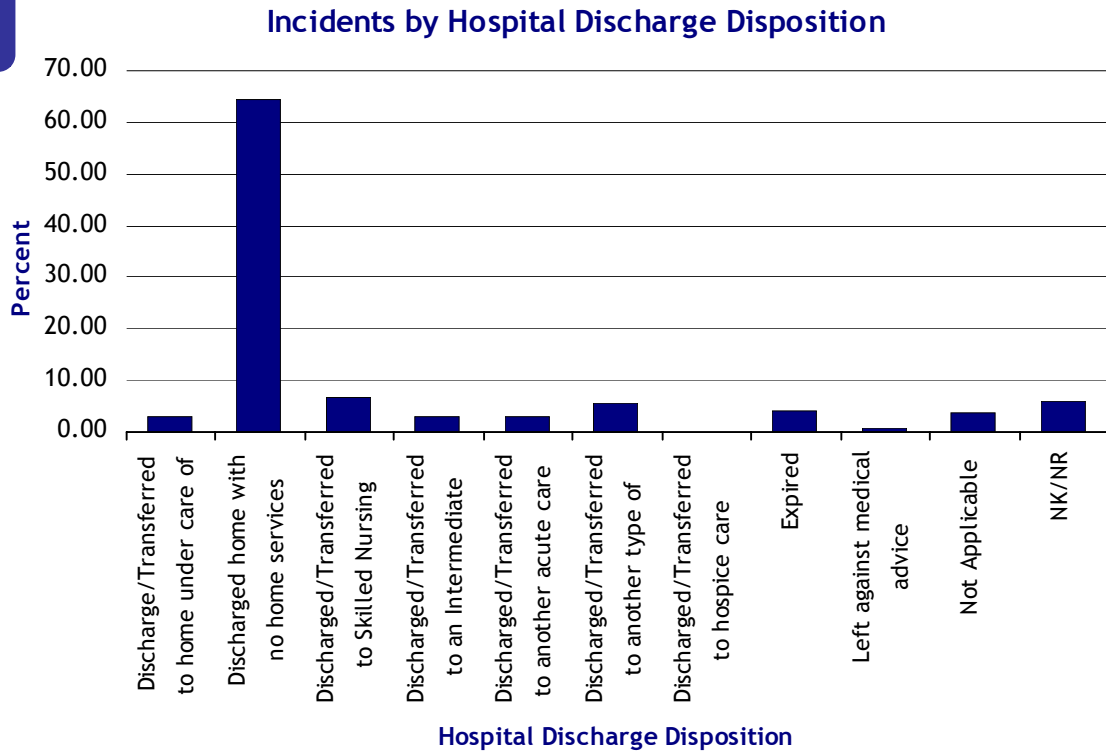
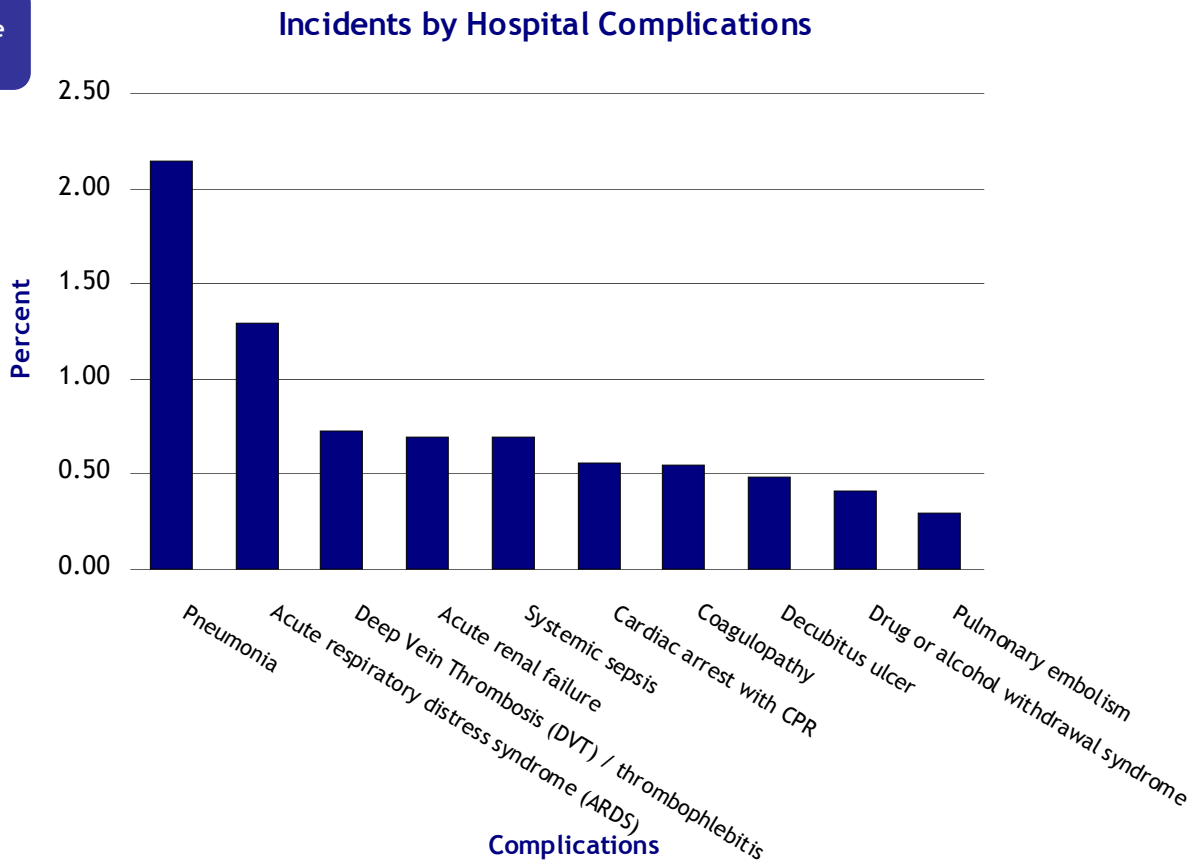


Table 35

Incidents by Hospital Discharge Disposition

Hospital Discharge Disposition	Number	Percent
Discharge/transferred to home under care of Home Health Agency	15,940	3.15
Discharged home with no home services	325,467	64.26
Discharged/transferred to Skilled Nursing Facility	33,580	6.63
Discharged/transferred to an Intermediate Care Facility	14,234	2.81
Discharged/transferred to another acute care hospital using EMS	15,218	3.00
Discharged/transferred to another type of rehabilitation or long term care	28,464	5.62
Discharged/transferred to hospice care	388	0.08
Expired	20,480	4.04
Left against medical advice	3,753	0.74
Not applicable	19,294	3.81
NK/NR	29,634	5.85
Total	506,452	100.00

Figure 36



**Table
36**

Incidents by Hospital Complications

Complications	Number	Percent
Pneumonia	10,827	2.14
Acute respiratory distress syndrome (ARDS)	6,551	1.29
Deep vein thrombosis (DVT) / thrombophlebitis	3,688	0.73
Acute renal failure	3,523	0.70
Systemic sepsis	3,488	0.69
Cardiac arrest with CPR	2,824	0.56
Coagulopathy	2,748	0.54
Decubitus ulcer	2,456	0.48
Drug or alcohol withdrawal syndrome	2,090	0.41
Pulmonary embolism	1,492	0.29
Myocardial infarction	1,094	0.22
Extremity compartment syndrome	938	0.19
Organ/space surgical site infection	938	0.19
Bleeding	698	0.14
Superficial surgical site infection	647	0.13
Base deficit	603	0.12
Wound disruption	516	0.10
Abdominal compartment syndrome	514	0.10
Unplanned intubation	509	0.10
Stroke / CVA	483	0.10
Intracranial pressure	451	0.09
Graft/prosthesis/flap failure	300	0.06
Deep surgical site infection	111	0.02
Coma	81	0.02
Abdominal fascia left open	23	0.00
NK/NR	300,410	59.32
No NTDS complications reported	156,226	30.85
Not applicable/no complications reported	25,866	5.11
Total Incidents	506,452	100.00

Figure 37

Incidents by Region

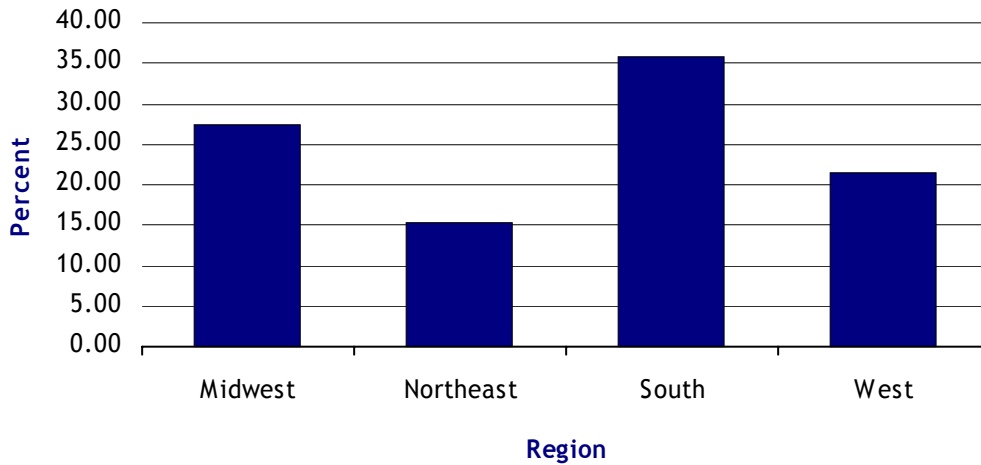


Table 37

Incidents by Region

Region	Number	Percent
Midwest	138,944	27.43
Northeast	77,513	15.31
South	181,105	35.76
West	108,890	21.50
Total	506,452	100.00

Regional Analysis

Figure 38

Case Fatality Rate by Region

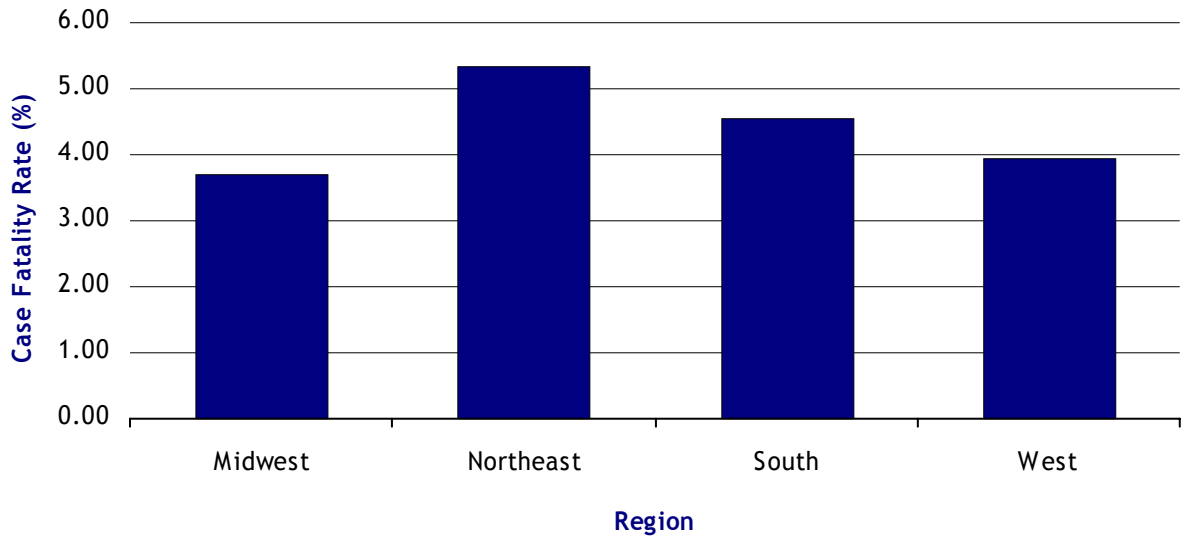


Table 38

Case Fatality Rate by Region

Region	Number	Deaths	Case Fatality Rate
Midwest	138,944	5,143	3.70
Northeast	77,513	4,142	5.34
South	181,105	8,238	4.55
West	108,890	4,290	3.94
Total	506,452	21,813	

Figure 39

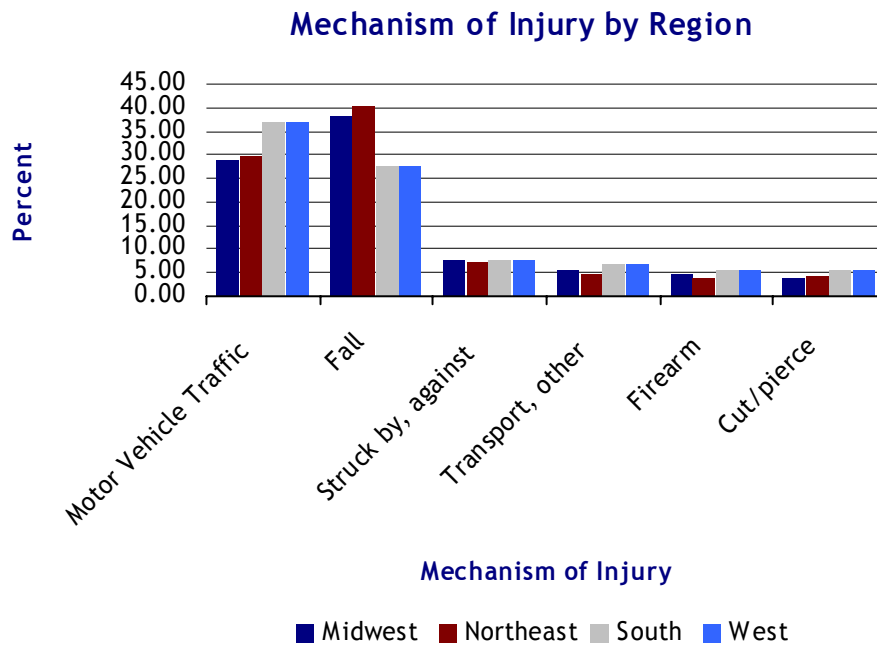


Table 39

Mechanism of Injury by Region

Mechanism of Injury	Number	Midwest Percent	Northeast Percent	South Percent	West Percent
Motor Vehicle Traffic	171,527	28.80	29.83	37.62	36.98
Fall	163,504	38.15	40.46	27.02	27.74
Struck by, against	37,262	7.67	7.02	7.11	7.61
Transport, other	28,813	5.47	4.55	5.77	6.66
Firearm	26,464	4.56	4.00	5.97	5.70
Cut/pierce	24,335	3.99	4.27	5.12	5.71
Other specified and classifiable	8,473	1.69	1.54	1.91	1.34
Pedal cyclist, other	8,159	1.58	1.69	1.16	2.34
Unspecified	6,237	1.14	1.31	1.27	1.23
Fire/flame	5,953	1.26	1.23	1.36	0.71
Hot object/substance	5,950	1.26	1.16	1.48	0.58
Machinery	5,775	1.34	1.07	1.24	0.77
*NK/NR	3,475	0.75	0.17	0.71	0.93
Other specified, not elsewhere classifiable	2,565	0.53	0.41	0.58	0.42
Natural/environmental, Bites and stings	2,114	0.46	0.24	0.56	0.25
Pedestrian, other	1,797	0.36	0.33	0.36	0.36
Natural/environmental, Other	1,548	0.37	0.20	0.29	0.32
Overexertion	1,290	0.29	0.33	0.26	0.15
Suffocation	443	0.10	0.08	0.08	0.09
Drowning/submersion	311	0.06	0.07	0.07	0.05
Poisoning	252	0.08	0.02	0.03	0.05
Adverse effects, drugs	110	0.05	0.00	0.01	0.02
Adverse effects, medical care	95	0.02	0.02	0.02	0.02
Total	506,452	100.00	100.00	100.00	100.00

Figure 40

Injury Severity Score by Region

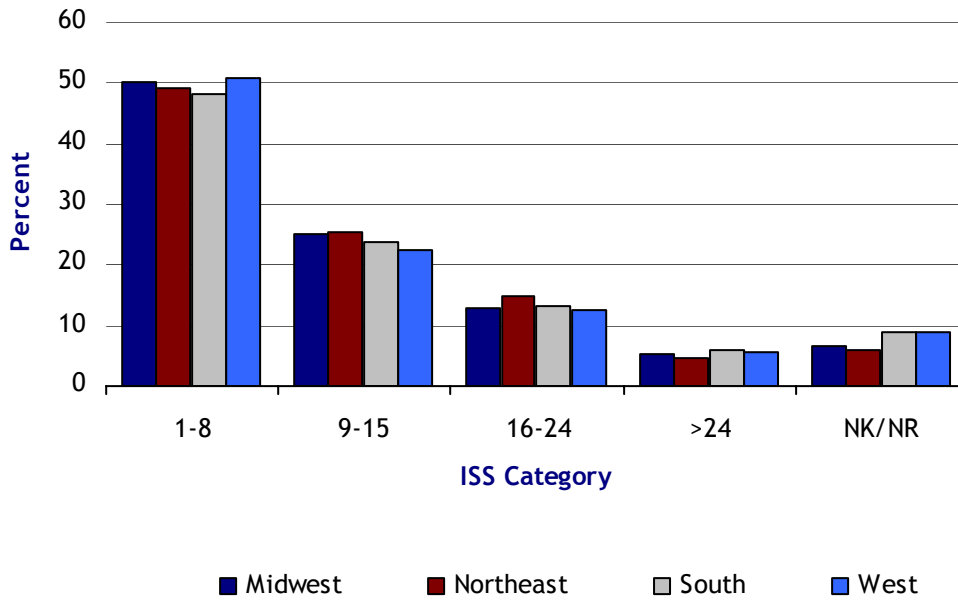


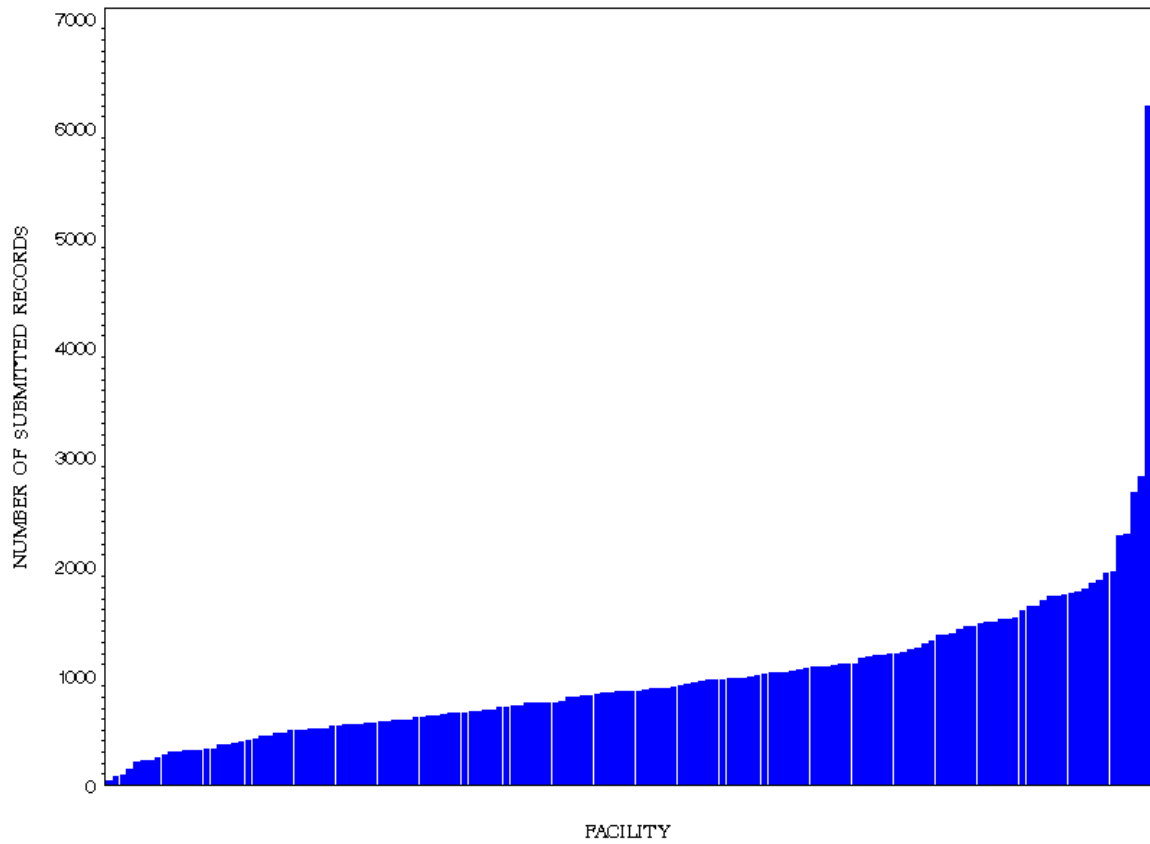
Table 40

Injury Severity Score by Region

ISS	Number	Midwest Percent	Northeast Percent	South Percent	West Percent
1-8	249,799	50.02	49.17	48.00	50.74
9-15	121,786	25.06	25.45	23.67	22.39
16-24	67,005	12.87	14.79	13.31	12.44
>24	27,795	5.29	4.64	6.03	5.44
NK/NR	40,067	6.75	5.95	9.00	8.99
Total	506,452	100.00	100.00	100.00	100.00

Figure 41

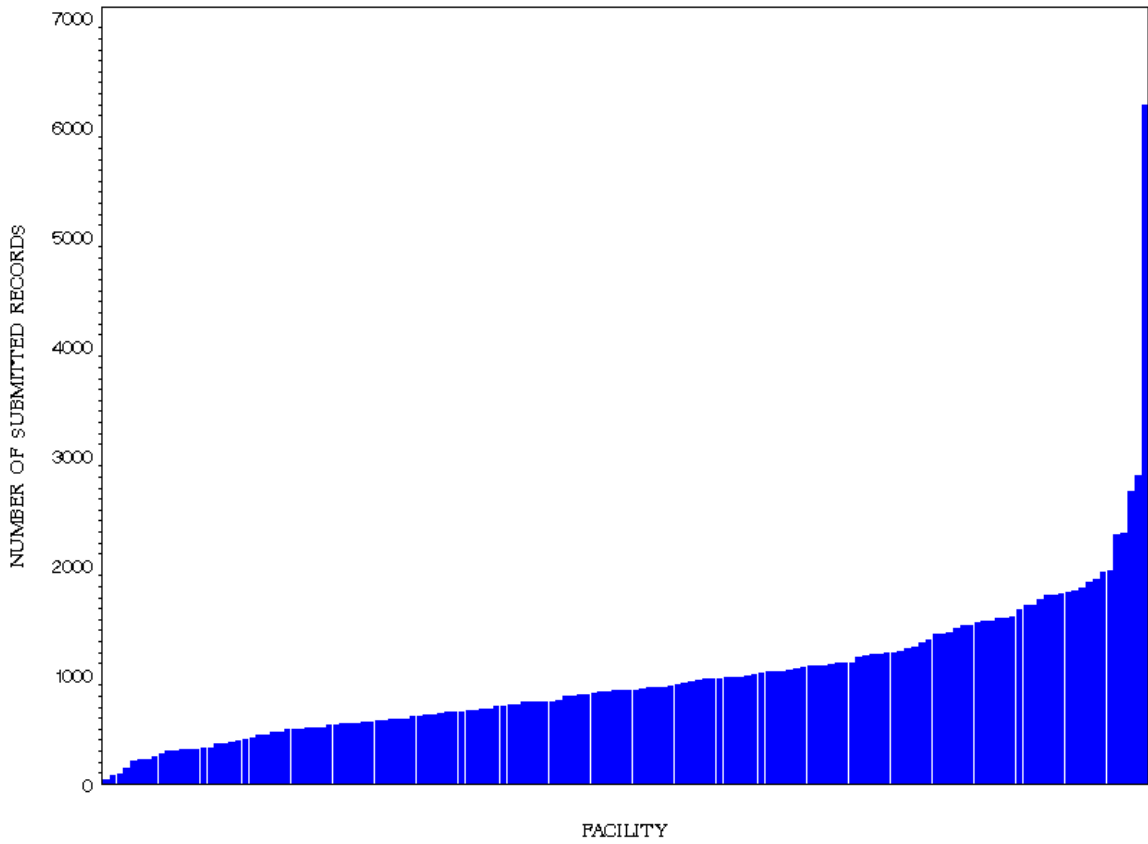
Number of Cases Submitted per Facility for Level I Facilities



Only cases with valid trauma diagnosis code per the NTDB criteria are included in the analysis. Trauma level is based upon ACS verification and state designation.

Figure 42

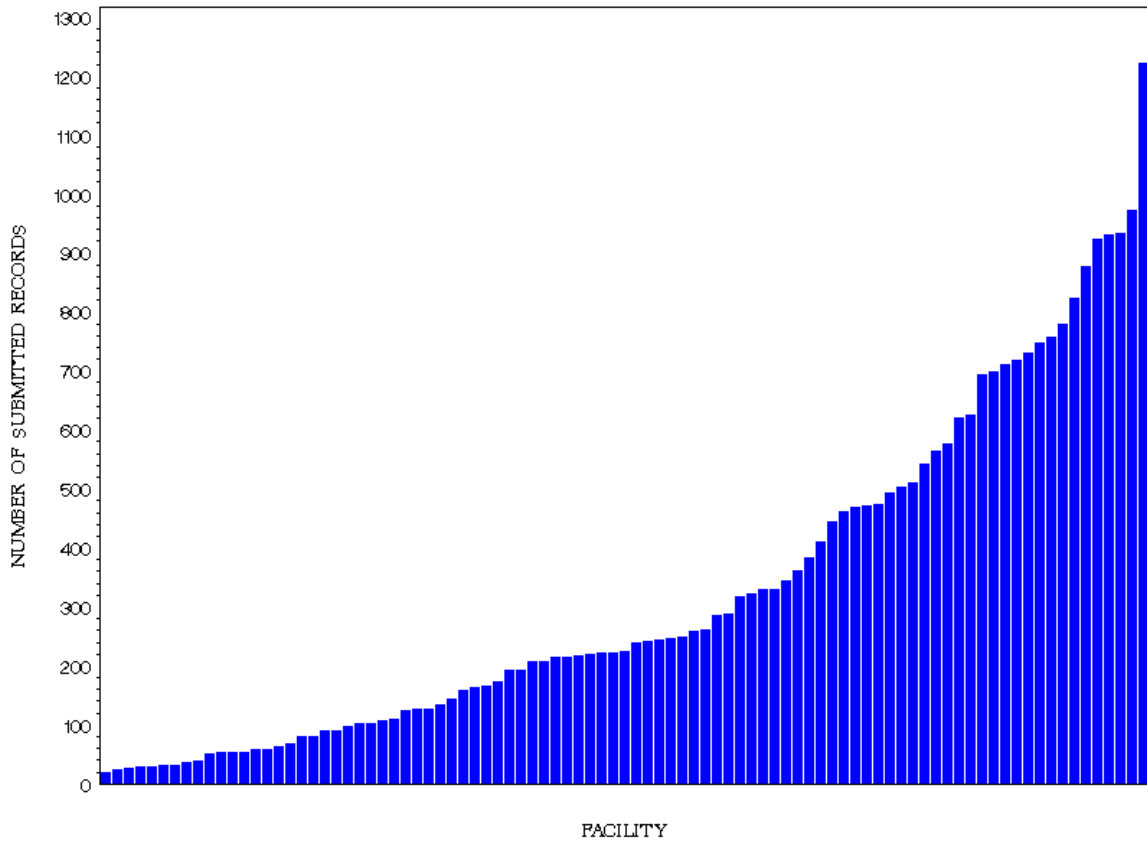
Number of Cases Submitted per Facility for Level II Facilities



Only cases with valid trauma diagnosis code per the NTDB criteria are included in the analysis. Trauma level is based upon ACS verification and state designation.

Figure 43

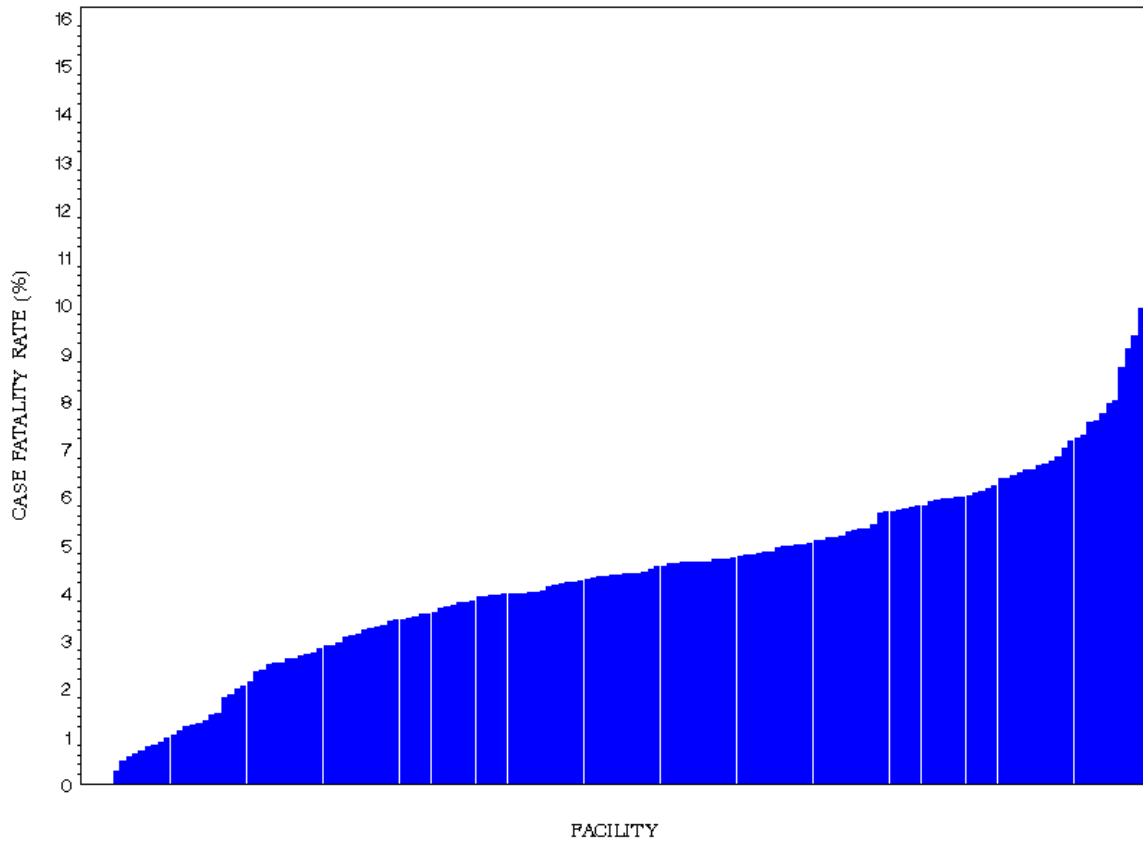
Number of Cases Submitted per Facility for Level III or IV Facilities



Only cases with valid trauma diagnosis code per the NTDB criteria are included in the analysis. Trauma level is based upon ACS verification and state designation.

Figure 44

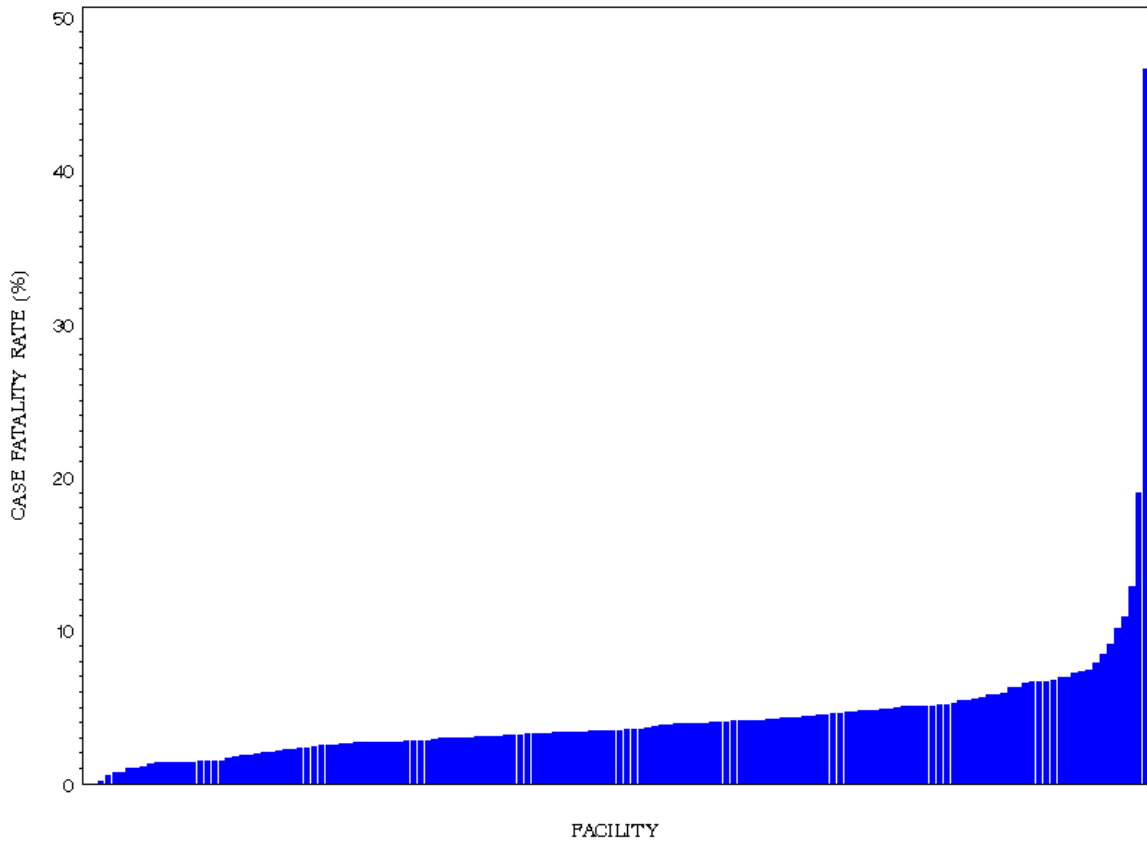
Case Fatality Rate per Facility for Level I Facilities



Five out of 168 facilities had a case fatality rate of 0% reported and are not visible on the graph. All deaths including Dead on Arrival are included in the analysis. Trauma level is based upon ACS verification and state designation.

Figure 45

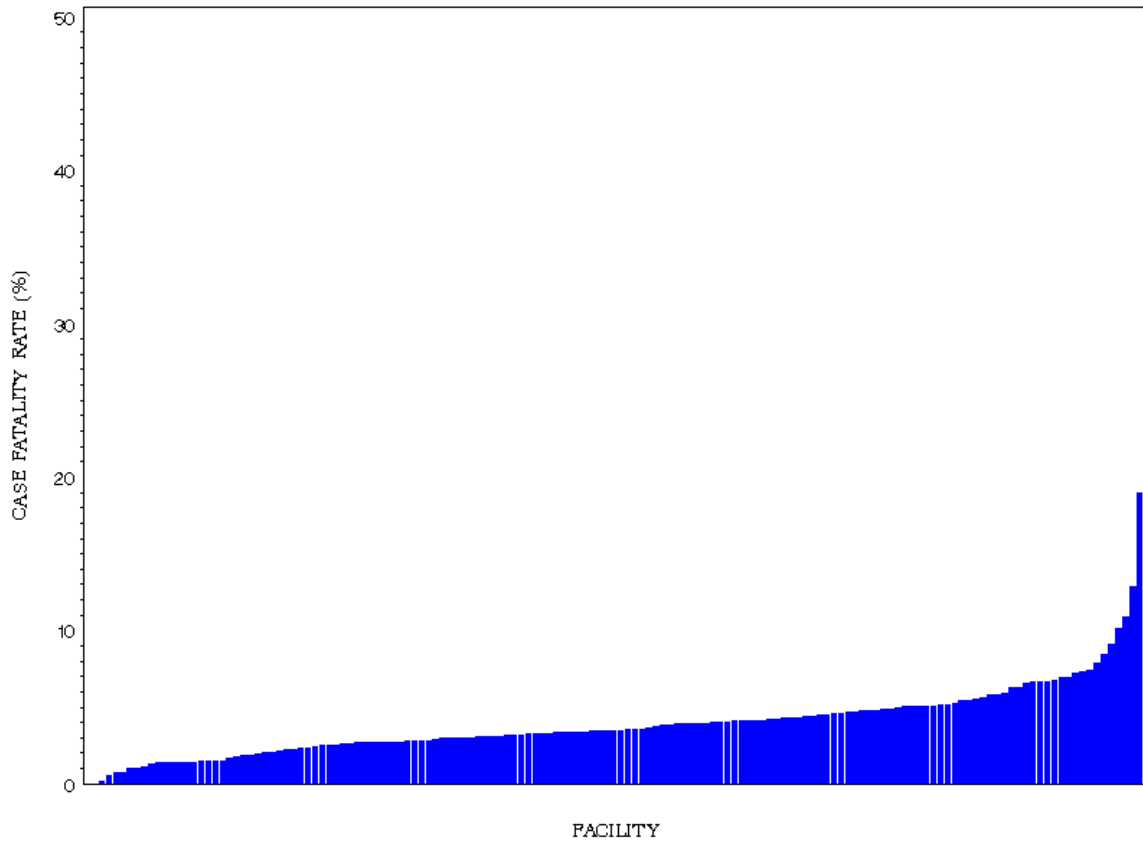
Case Fatality Rate per Facility for Level II Facilities



Two out of 150 facilities had a case fatality rate of 0% reported, and are not visible on the graph. All deaths including Dead on Arrival are included in the analysis. Trauma level is based upon ACS verification and state designation.

Figure 46

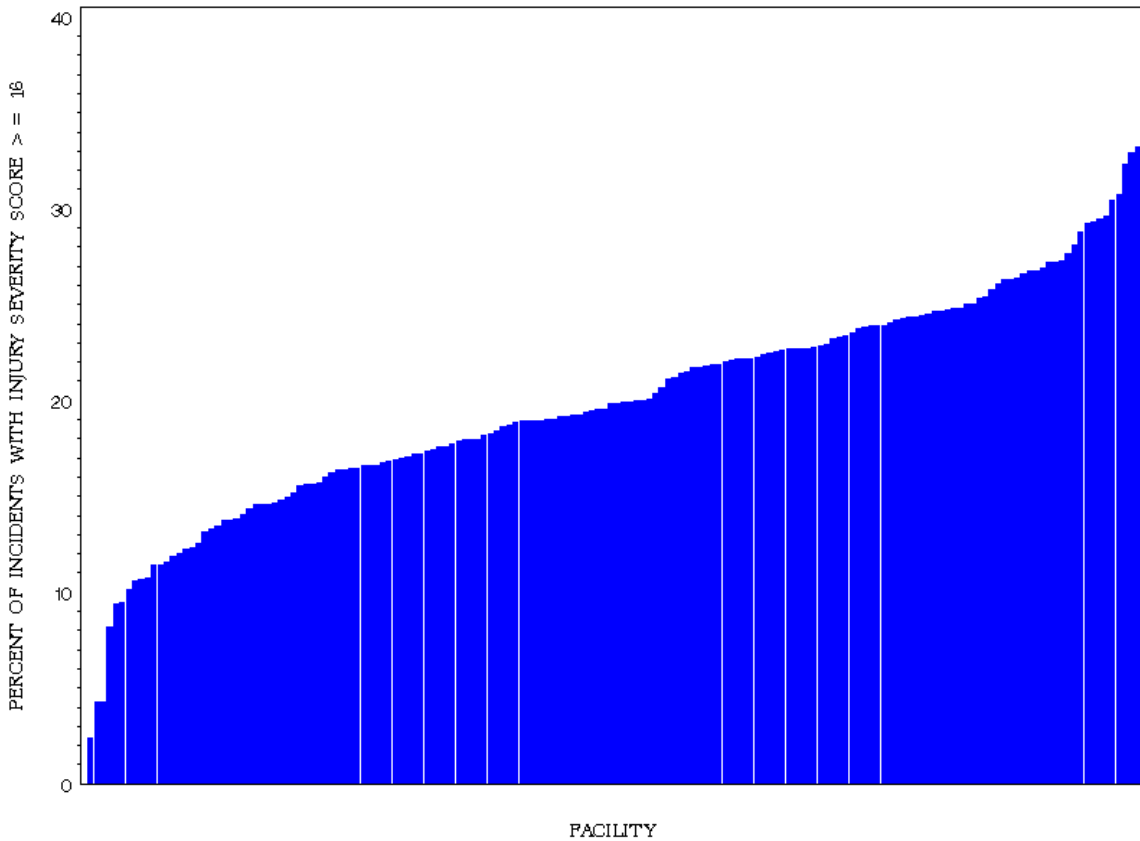
Case Fatality Rate per Facility for Level III or IV Facilities



Eighteen out of 91 facilities had a case fatality rate of 0% reported, and are not visible on the graph. All deaths including Dead on Arrival are included in the analysis. Trauma level is based upon ACS verification and state designation.

Figure 47

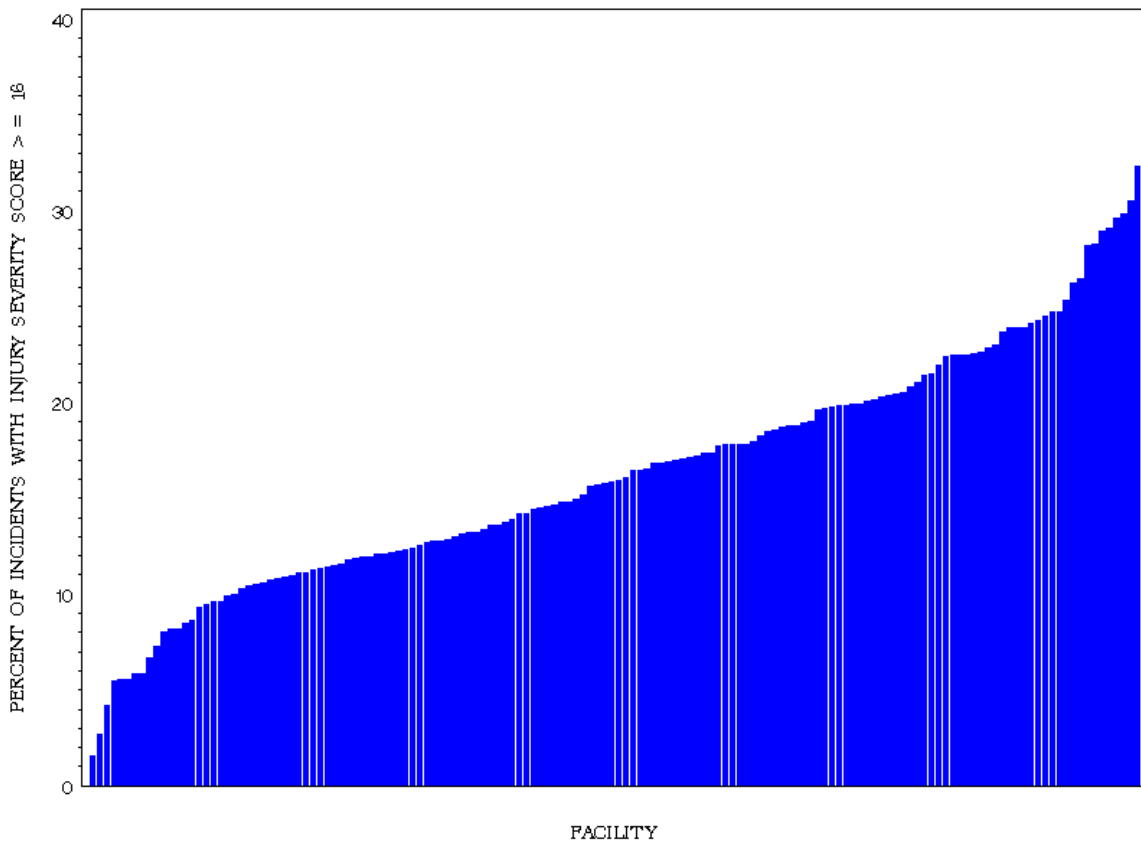
Percentage of Cases with ISS \geq 16 per Facility for Level I Facilities



One out of 168 facilities had no incidents with ISS \geq 16, and is not visible on the graph. The ISS score calculated for all records based on the ICD-90 map was used for this analysis. Trauma level is based upon ACS verification and state designation.

Figure 48

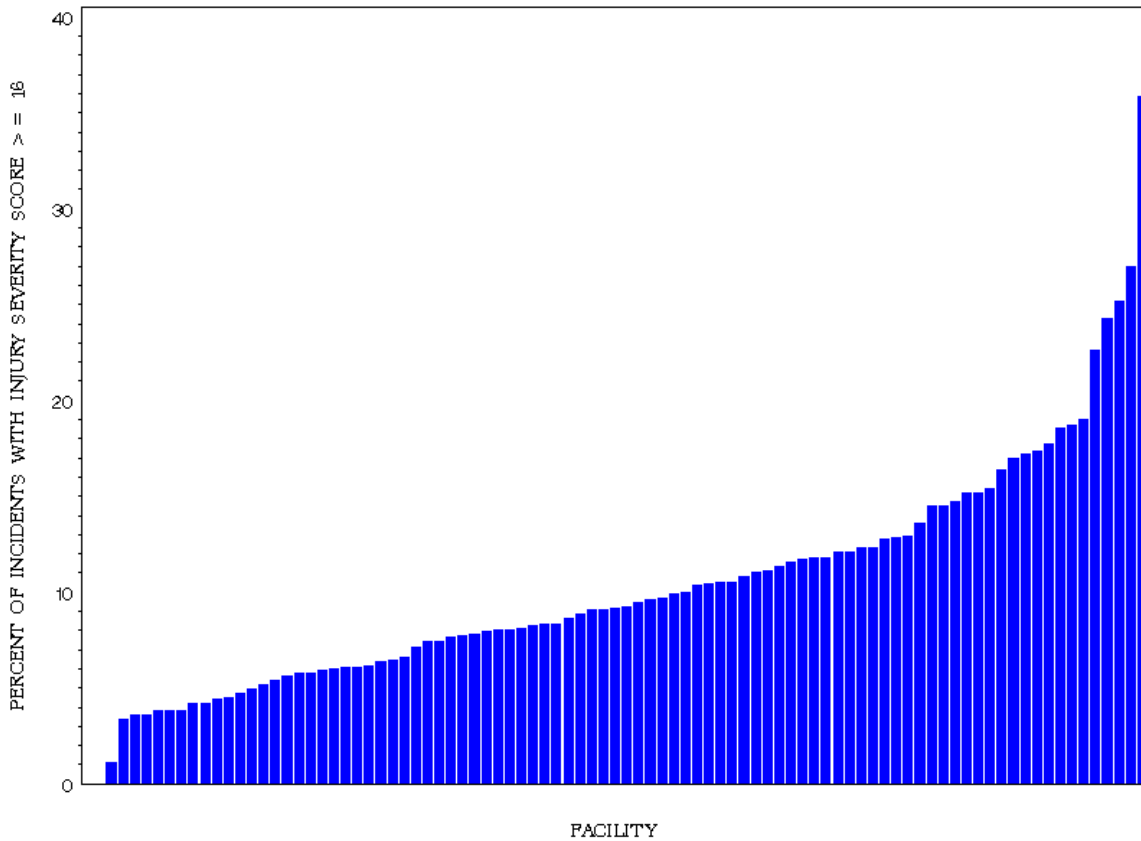
Percentage of Cases with ISS \geq 16 per Facility for Level II Facilities



One out of 150 facilities had no incidents with ISS \geq 16, and is not visible on the graph. The ISS score calculated for all records based on the ICD-90 map was used for this analysis. Trauma level is based upon ACS verification and state designation.

Figure 49

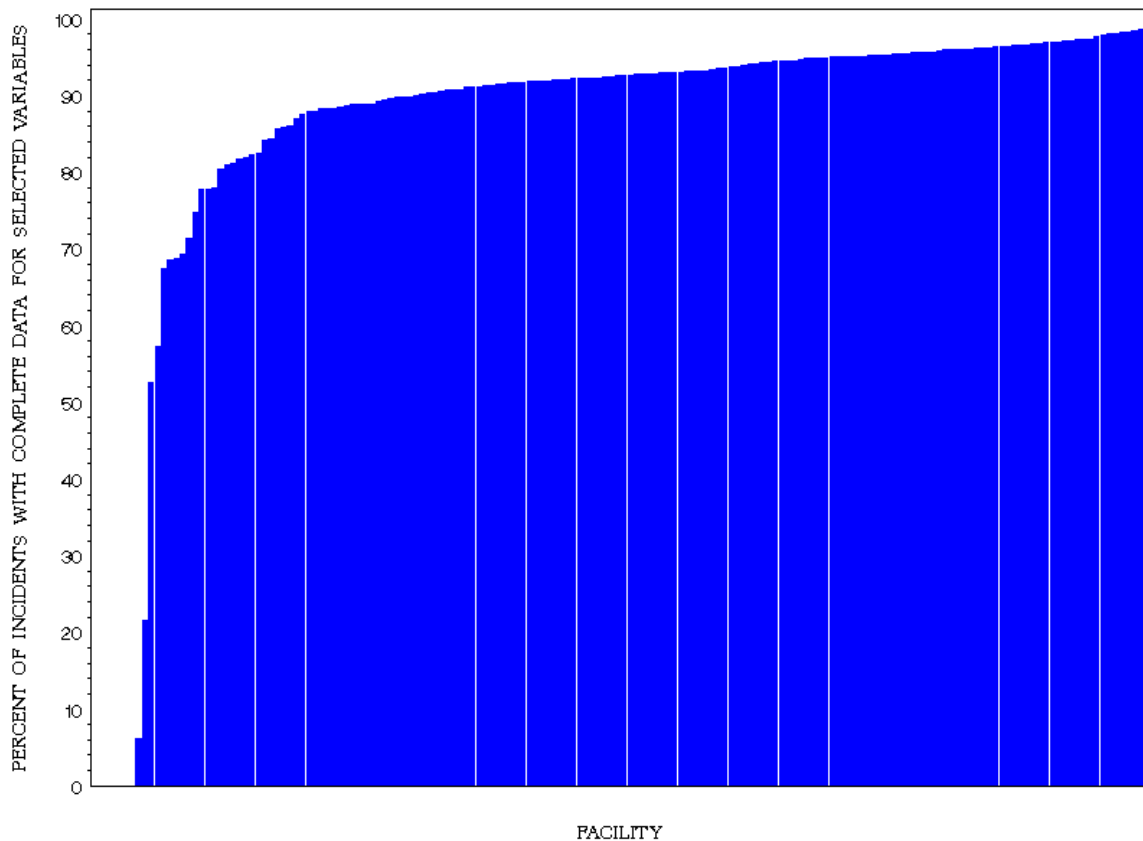
Percentage of Cases with ISS \geq 16 per Facility for Level III or IV Facilities



Two out of 91 facilities had no incidents with ISS \geq 16, and are not visible on the graph. The ISS score calculated for all records based on the ICD-90 map was used for this analysis. Trauma level is based upon ACS verification and state designation.

Figure 50

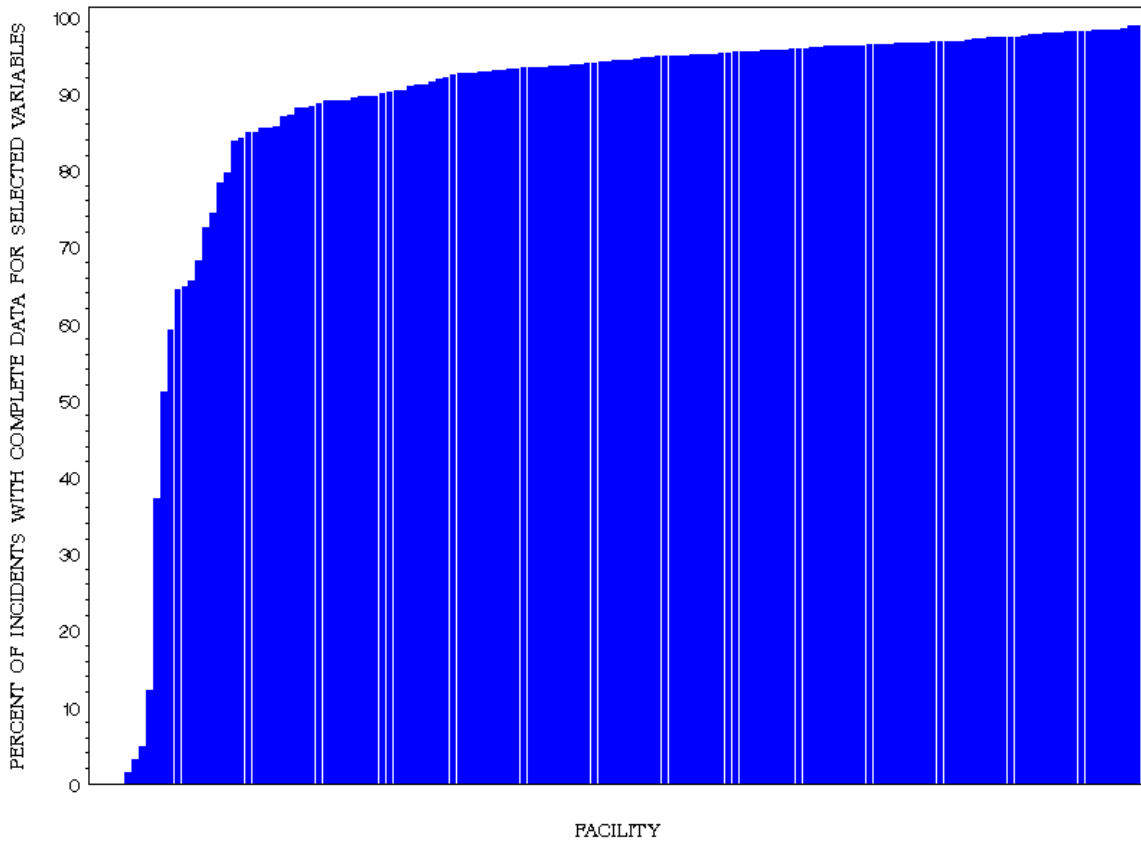
Data Completeness per Facility for Level I Facilities



Seven out of 168 facilities had 0% of the incidents complete, and are not visible on the graph. An incident was classified as not complete if any of the following key variables were not known/not documented: Age, Gender, Primary E-Code, ICD90 Mapped Injury Severity Score, ED/Hospital Discharge Disposition, and Length of Stay. Trauma level is based upon ACS verification and state designation.

Figure 51

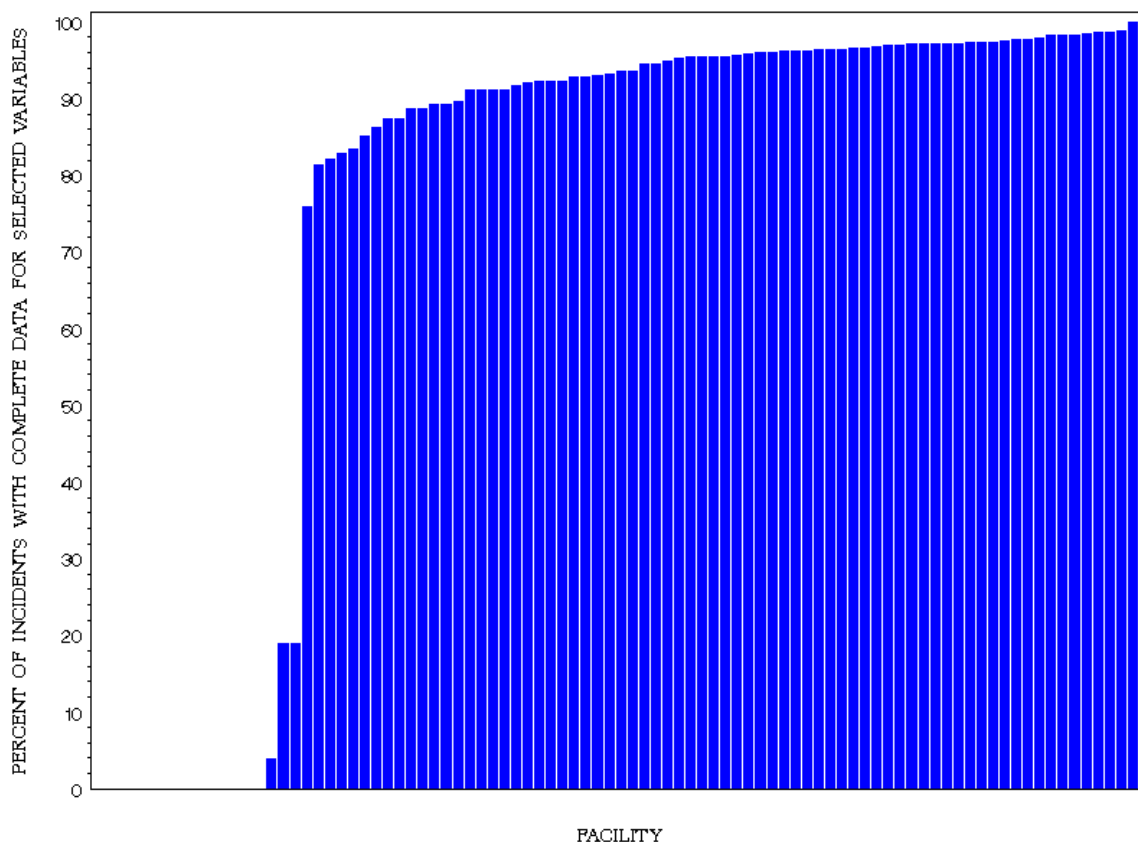
Data Completeness per Facility for Level II Facilities



Five out of 150 facilities had 0% of the incidents complete, and are not visible on the graph. An incident was classified as not complete if any of the following key variables were not known/not documented: Age, Gender, Primary E-Code, ICD90 Mapped Injury Severity Score, ED/Hospital Discharge Disposition, and Length of Stay. Trauma level is based upon ACS verification and state designation.

Figure 52

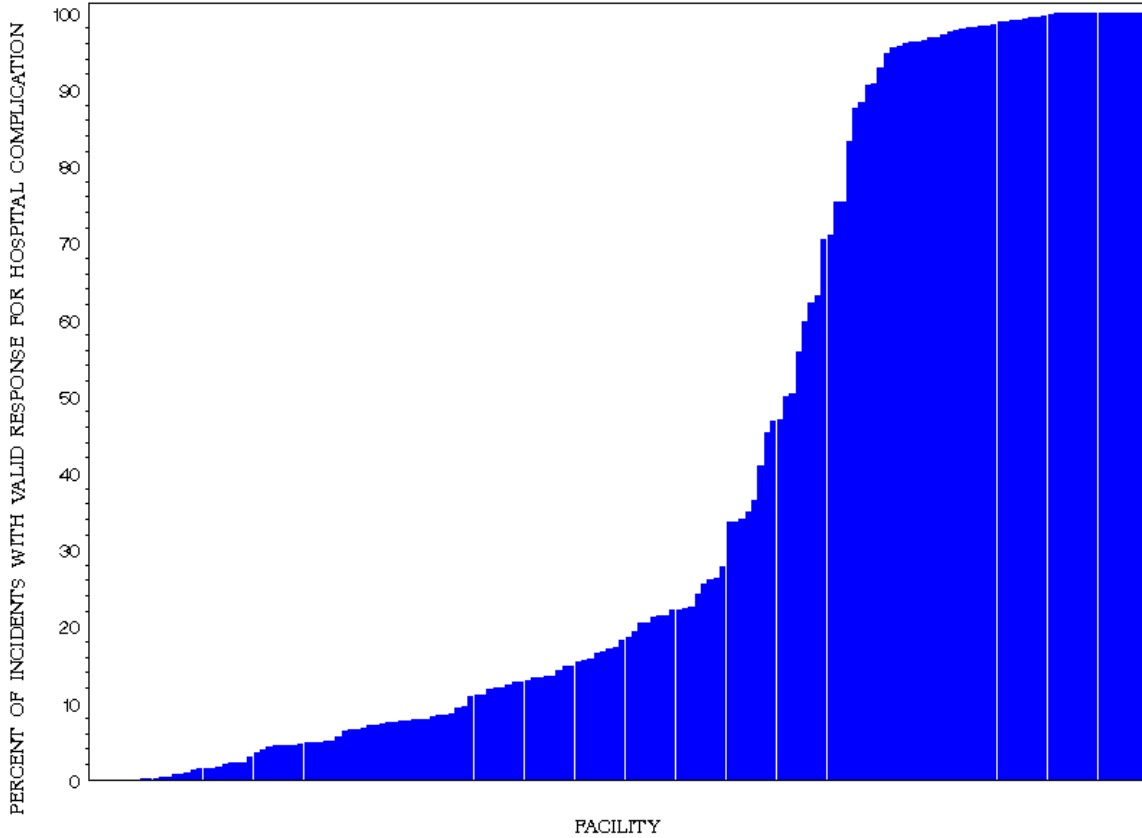
Data Completeness per Facility for Level III or IV Facilities



Fifteen out of 91 facilities had 0% of the incidents complete, and are not visible on the graph. An incident was classified as not complete if any of the following key variables were not known/not documented: Age, Gender, Primary E-Code, ICD90 Mapped Injury Severity Score, ED/Hospital Discharge Disposition, and Length of Stay. Trauma level is based upon ACS verification and state designation.

Figure 53

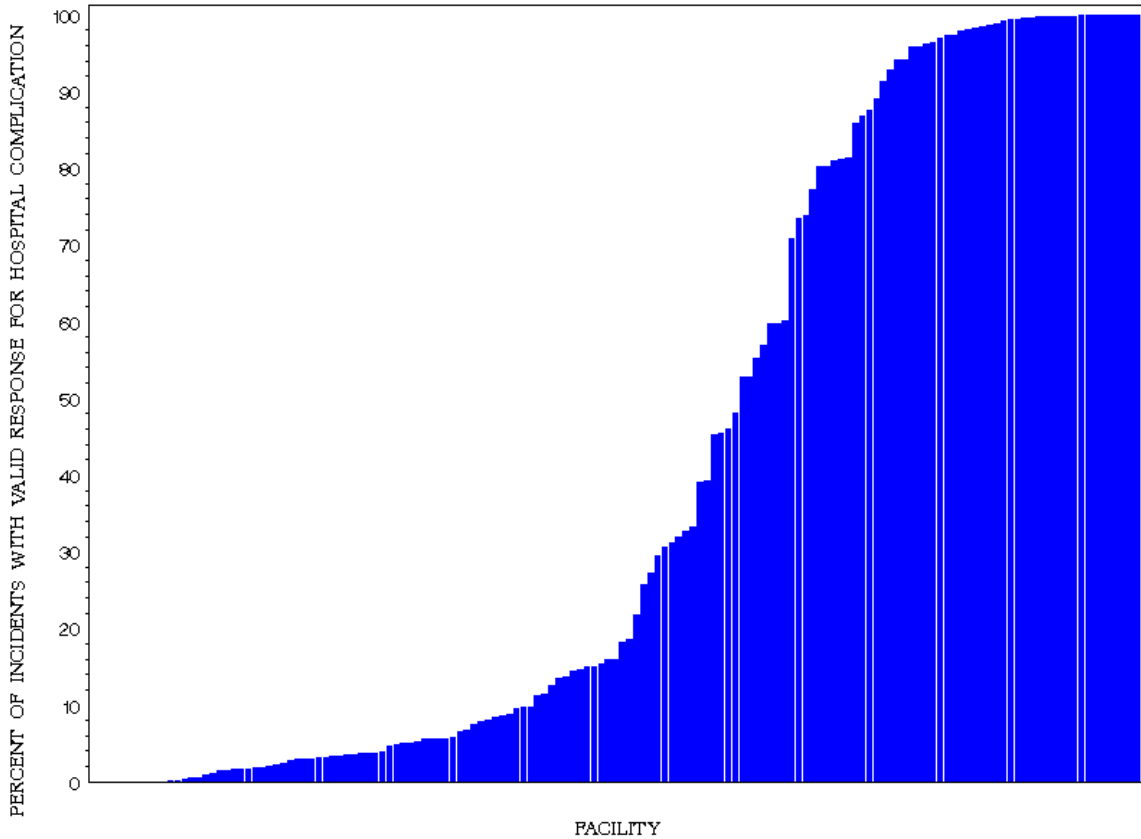
Complications Reported per Facility for Level I Facilities



Seven out of 168 facilities had 0% of the incidents with valid response for hospital complications, including not applicable, and are not visible on the graph. Trauma level is based upon ACS verification and state designation.

Figure 54

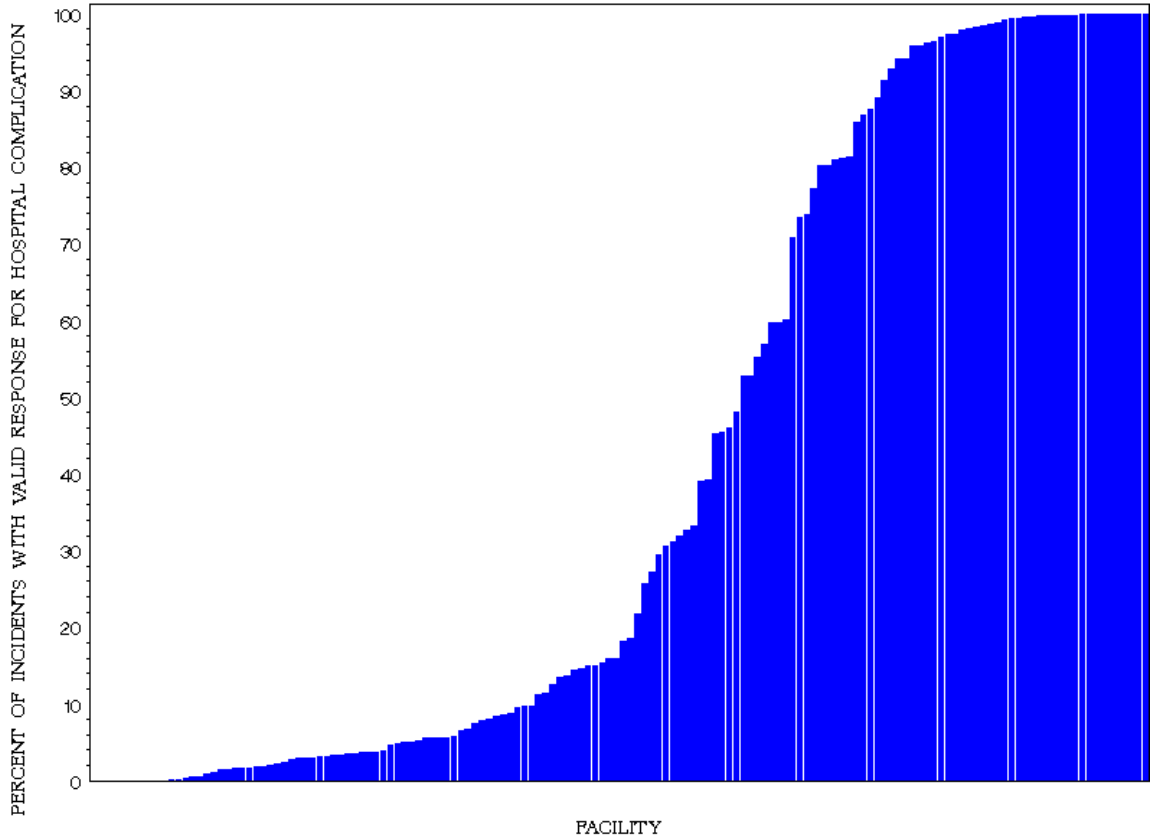
Complications Reported per Facility for Level II Facilities



Eleven out of 150 facilities had 0% of the incidents with valid response for hospital complications, including not applicable, and are not visible on the graph. Trauma level is based upon ACS verification and state designation.

Figure 55

Complications Reported per Facility for Level III or IV Facilities



Twenty-two out of 91 facilities had 0% of the incidents with valid response for hospital complications, including not applicable, and are not visible on the graph. Trauma level is based upon ACS verification and state designation.

Appendix A Definition of Trauma Patient

Definition of Trauma Patient adopted by NATIONAL TRAUMA DATA BANK (NTDB)*

At least one of the following injury diagnostic codes defined in the *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM): 800-959.9*

Excluding the following isolated injuries:

- 905-909.9 (late effects of injury)
- 910-924.9 (superficial injuries, including blisters, contusions, abrasions, and insect bites)
- 930-939.9 (foreign bodies)

AND MUST INCLUDE ONE OF THE FOLLOWING IN ADDITION TO (ICD-9-CM 800-959.9):

- Hospital admission as defined by your trauma registry inclusion criteria; OR
- Patient transfer via EMS transport (including air ambulance) from one hospital to another hospital; OR
- Death resulting from the traumatic injury (independent of hospital admission or hospital transfer status)

*Definition of trauma patient from the Resources for Optimal Care of the Injured Patients: 2007 by Committee on Trauma of the American College of Surgeons.

Appendix B E-Code Grouping

Recommended Framework for E-Code Groupings for Presenting Injury Mortality and Morbidity Data. Reference MMWR 1997;46:1-30.

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

Appendices

Mechanism/Cause	Manner/Intent				
	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

¹Includes legal intervention (E970–E978) and operations of war (E990–E999).

²Three 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.

³E968.5 (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.

⁴E849 (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— the 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 Web site:

<http://www.cdc.gov/nchs/about/otheract/ice/projects.htm>.

APPENDIX C

Yearly Comparisons Based on the NTDB National Sample Program

The National Trauma Data Bank (NTDB), managed by the American College of Surgeons (ACS) Committee on Trauma (COT), is the largest aggregation of trauma data in the U. S. The NTDB contains over three million patient records from trauma registries representing more than 900 hospitals. Of the 453 U.S. hospitals identified by the Trauma Information Exchange Program (MacKenzie et al, 2003) as Level I or II centers, more than half have submitted data to the NTDB for at least one of the past five years. However, since the NTDB is not population-based but consists of centers that participate voluntarily, it is likely that their data will produce biased estimates and thus the inferences based on NTDB may not be valid at the national level.

Nationally representative administrative data on hospitalized patients are available in the National Hospital Discharge Survey (NHDS) or Nationwide Inpatient Sample (NIS). However, these lack the richness of trauma registry data, which contain detailed information on injury mechanisms, anatomic diagnoses, physiologic status, associated conditions, and hospital treatment.

The ACS was awarded a contract from the National Center for Injury Prevention and Control (NCIPC), Centers for Disease Control and Prevention (CDC) to develop the National Sample Program (NSP) to obtain a nationally representative sample of trauma patients treated in U.S. Level I and II trauma centers. The NSP is intended to enhance the NTDB by providing data from a probabilistic sample of trauma center hospitals nationwide to meet the broad range of trauma care assessment, clinical outcomes research, and injury surveillance needs. That is, the objective of the NSP is to provide annual estimates of patients treated at a Level I or II trauma centers in the U.S. In addition, the NSP can be used to develop yearly comparisons of trauma data, which is something that has been problematic to do with the NTDB.

The NSP is a stratified statistical sample based on NTDB data of 100 Level I and II trauma centers. Stratification was based on U.S. Census region (Northeast, Midwest, South, and West), level of trauma care designation (Level I and II), and NTDB participation status as of 2003 (NTDB and non-NTDB). Thus, there were 16 total strata: 8 NTDB strata and 8 non-NTDB strata. Of the 100 sample hospitals, 90 are NTDB-contributing hospitals and 10 are non-NTDB hospitals. The sample size of 100 hospitals was chosen on the basis of recent NTDB data that suggest that a sample of 100 hospitals would provide estimates having sufficient precision for most analyses at the national level. A probability-proportional-to-size method was used to randomly select the hospitals in the sample and calculate the weights, where the size measure was the annual number of emergency room visits. The final weights for each hospital were adjusted for non-response and for changes in ED admissions.

Weighted estimates from admission year 2003–2006 were computed based on the NSP data. The yearly comparison of number of incidents, gender, ISS scores and mechanism of injury, and percent deaths are displayed in this Appendix. The admission year 2007 data for NSP will be available later this year. For further information on the NSP please visit:
<http://www.facs.org/trauma/nsp/index.html>

Figure 1

Weighted Estimates of Number of Incidents by Admission Year

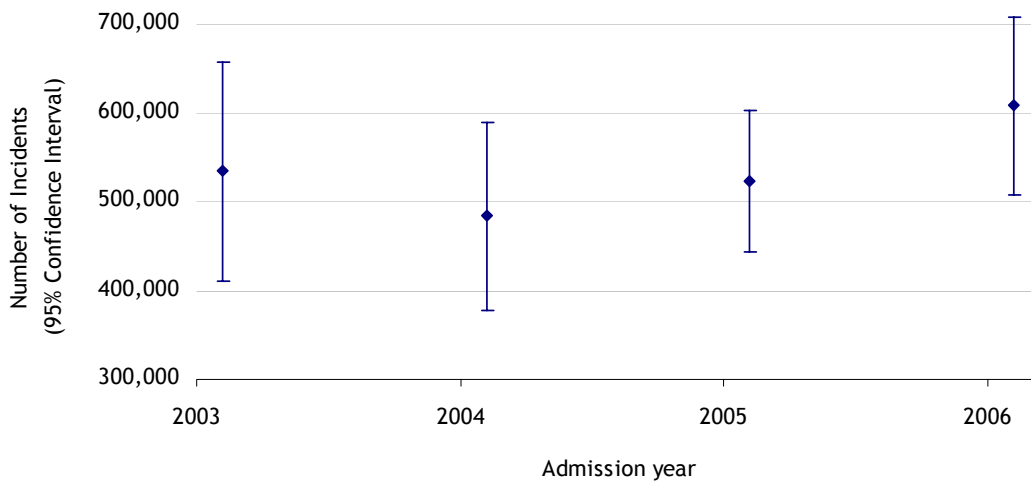


Table 1

Weighted Estimates of Number of Incidents by Admission Year

Admission Year	Weighted Number of Incidents N (95% CI)	Percent (95% CI)
2003	534,681 (411,590, 657,771)	24.87 (21.33, 28.42)
2004	483,982 (378,469, 589,496)	22.52 (18.71, 26.32)
2005	522,582 (442,908, 602,256)	24.312 (21.40, 27.23)
2006	608,234 (507,522, 708,945)	28.30 (25.01, 31.58)
Total	2,149,479 (1,857,168, 2,441,789)	

Table 2

Weighted Estimates of Number of Incidents by Gender and Admission Year

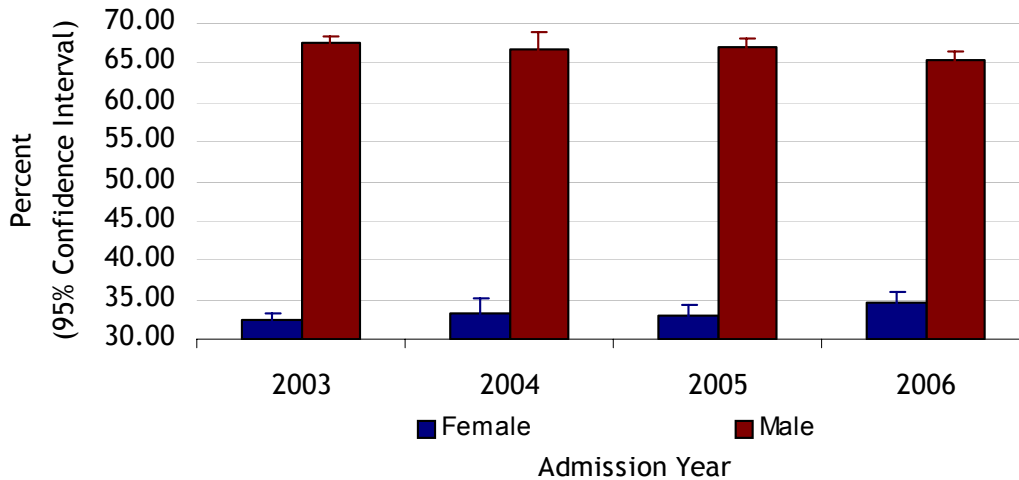


Figure 2

Weighted Estimates of Number of Incidents by Gender and Admission Year

Admission Year	Weighted Number of Females	Weighted Number of Males	Percent Females (95% CI)	Percent Males (95% CI)
2003	173,055	359,129	32.52 (31.71,33.32)	67.48 (66.68,68.29)
2004	159,897	321,547	33.21 (31.16,35.26)	66.79 (64.74,68.84)
2005	172,260	348,823	33.06 (31.77,34.38)	66.94 (65.65,68.24)
2006	208,918	393,823	34.70 (33.43,35.95)	65.30 (64.05,66.57)
Total	714,130	1,423,322	33.41	66.59

Figure 3

Weighted Estimates of Percent of Incidents by Age and Admission Year

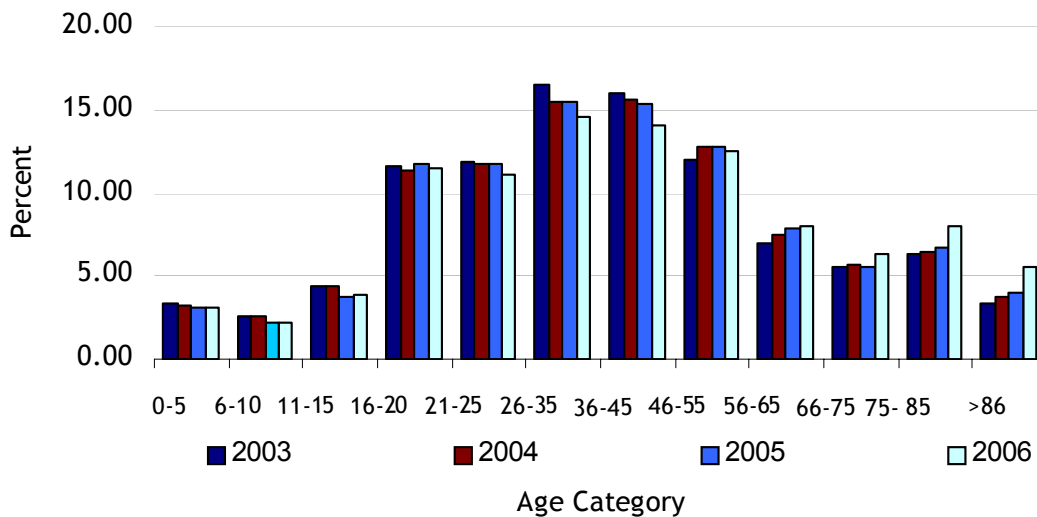


Table 3

Weighted Estimates of Number of Incidents by Age and Admission Year

Age	Admission Year 2003 Percent (95 % CI)	Admission Year 2004 Percent (95 % CI)	Admission Year 2005 Percent (95 % CI)	Admission Year 2006 Percent (95 % CI)
≤15	10.30 (9.16,11.45)	10.17 (8.90,11.44)	9.12 (7.94,10.30)	9.05 (7.90,10.20)
16-20	11.58 (11.21,11.94)	11.40 (10.80,12.00)	11.75 (11.21,12.29)	11.43 (10.85,12.00)
21-25	11.88 (11.38,12.39)	11.71 (10.91,12.51)	11.76 (11.18,12.33)	11.16 (10.58,11.75)
26-35	16.48 (15.93,17.02)	15.43 (14.30,16.55)	15.52 (14.73,16.31)	14.61 (13.86,15.35)
36-45	16.01 (15.44,16.58)	15.65 (14.84,16.45)	15.38 (14.71,16.05)	14.05 (13.48,14.62)
46-55	12.05 (11.67,12.43)	12.72 (12.16,13.27)	12.78 (12.38,13.18)	12.47 (12.14,12.79)
56-65	7.03 (6.83,7.22)	7.44 (7.03,7.85)	7.85 (7.56,8.13)	7.94 (7.69,8.19)
66-75	5.60 (5.28,5.92)	5.73 (5.09,6.37)	5.61 (5.17,6.05)	6.26 (5.82,6.70)
76-85	6.26 (5.60,6.93)	6.47 (5.40,7.54)	6.75 (5.78,7.72)	8.00 (7.12,8.89)
>85	3.37 (2.90,3.84)	3.79 (2.79,4.80)	4.06 (3.30,4.82)	5.61 (4.61,6.61)

Figure 4

Weighted Estimates of Percent of Incidents by ISS Category and Admission Year

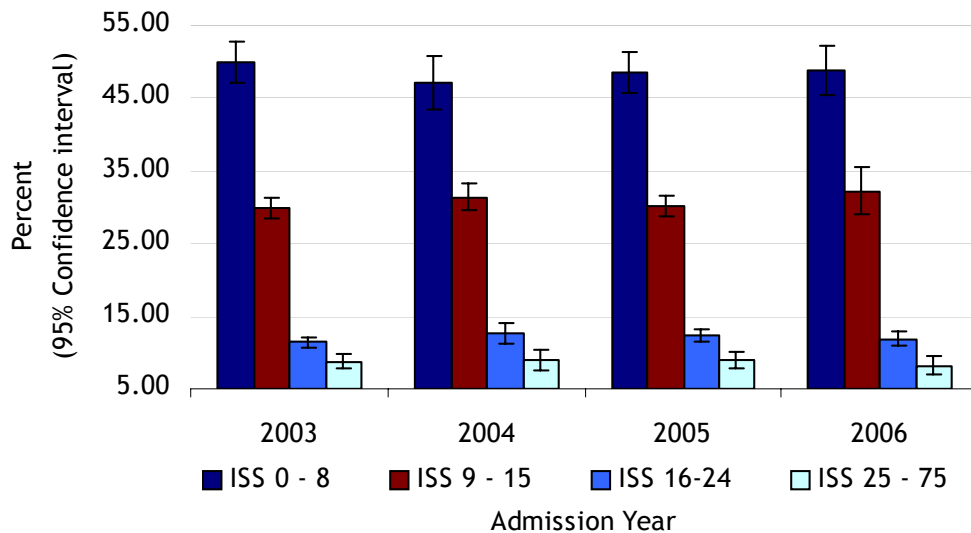


Table 4

Weighted Estimates of Percent of Incidents by ISS Category and Admission Year

Admission Year	ISS 0-8 Percent (95% CI)	ISS 9-15 Percent (95% CI)	ISS 16-24 Percent (95% CI)	ISS 25-75 Percent (95% CI)
2003	49.88 (47.14,52.63)	29.82 (28.35,31.28)	11.49 (10.79,12.19)	8.81 (7.73,9.89)
2004	47.14 (43.45,50.84)	31.36 (29.54,33.17)	12.55 (11.16,13.93)	8.96 (7.58,10.33)
2005	48.52 (45.70,51.34)	30.07 (28.72,31.43)	12.38 (11.51,13.25)	9.02 (7.89,10.15)
2006	48.70 (45.33,52.06)	32.24 (28.93,33.54)	11.83 (10.86,12.80)	8.24 (7.05,9.44)

Figure 5

Weighted Estimates of Percent of Incidents by Mechanism of Injury Category and Admission Year

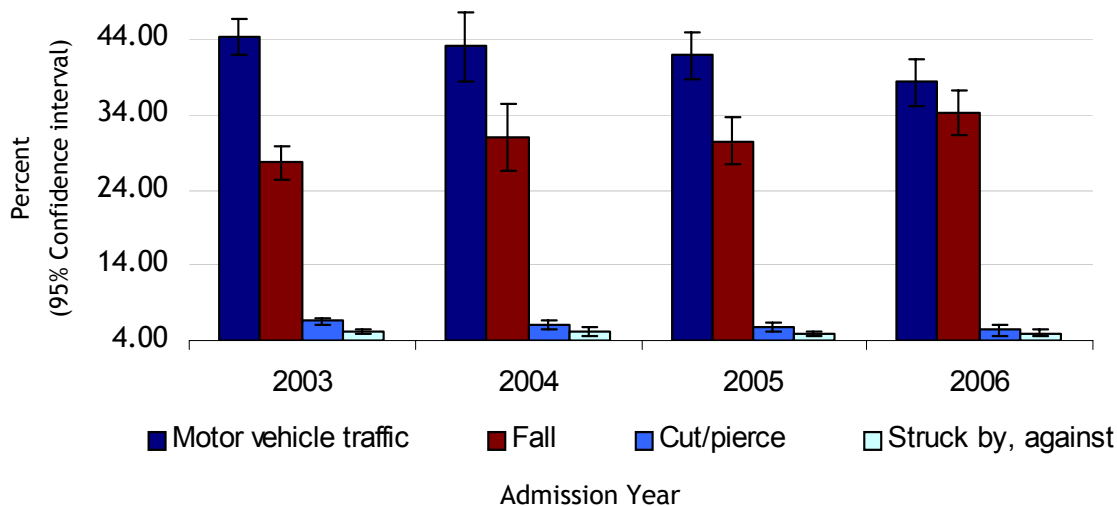


Table 5

Weighted Estimates of Percent of Incidents by Mechanism of Injury Category and Admission Year

Admission Year	Motor Vehicle Traffic Percent (95% CI)	Fall Percent (95% CI)	Cut/pierce Percent (95% CI)	Struck by, against Percent (95% CI)
2003	44.33 (41.95,46.72)	27.69 (25.53,29.86)	6.58 (6.13,7.02)	5.22 (4.86,5.58)
2004	43.11 (38.61,47.60)	30.97 (26.47,35.47)	6.07 (5.36,6.78)	5.18 (4.47,5.90)
2005	41.96 (38.88,45.03)	30.55 (27.47,33.64)	5.66 (5.06,6.26)	5.00 (4.69,5.31)
2006	38.39 (35.20,41.59)	34.30 (31.34,37.26)	5.34 (4.49,6.26)	5.01 (4.65,5.38)

Figure 6

Weighted Estimates of Percent of Deaths by Admission Year

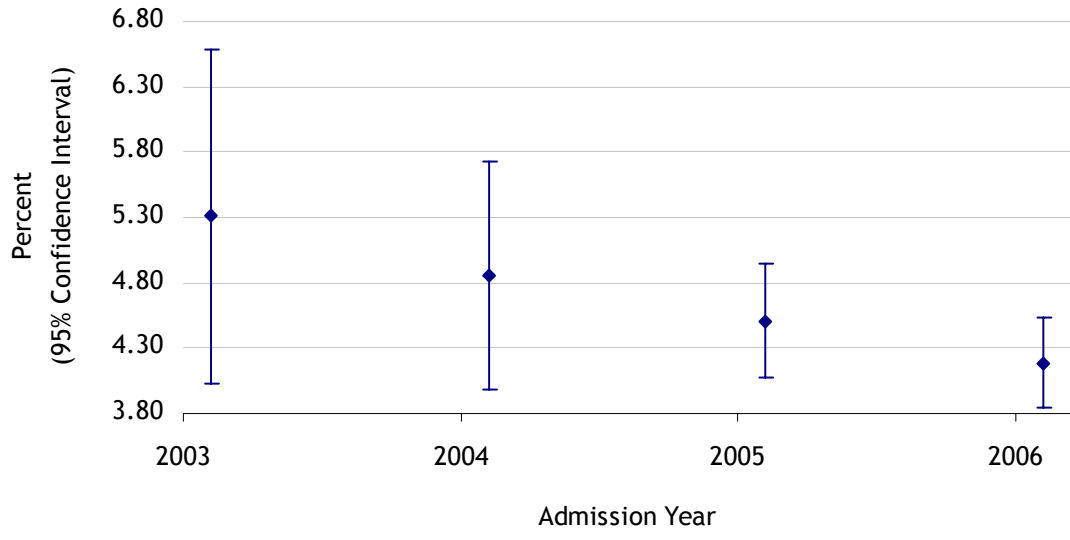


Table 6

Weighted Estimates of Percent of Deaths by Admission Year

Admission year	Weighted Number of Deaths	Percent Deaths (95% CI)
2003	28,339	5.31 (4.03, 6.60)
2004	23,521	4.86 (3.99, 5.73)
2005	23,207	4.51 (4.07, 4.95)
2006	25,309	4.19 (3.84, 4.55)
Total	100,376	5.31 (4.03, 6.60)