NTDB®
NATIONAL TRAUMA DATA BANK

National Trauma Data Bank 2009

Annual Report

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 2009

Editors' Note

The Annual Report of the National Trauma Data Bank (NTDB), is an updated analysis of the largest aggregation of U.S. trauma registry data ever assembled. In total, the NTDB now contains over 3 million records. The 2009 Annual Report is based on 627,664 2008 admission year records from 567 facilities.

New in the report this year is an expanded section on facility information. This section includes information on registry inclusion criteria for participating hospitals. This information allows the reader to consider differences in case mix across hospitals while reading the report. Please note that 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 Annual Report 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 Web site 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, MD, PhD, FACS, Chair
National Trauma Data Bank Subcommittee

Richard J. Fantus, MD, FACS, Chair
Trauma Registry Advisory Ad Hoc Committee

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 2009 Annual Report reviews 2008 admissions submitted in the 2009 call for data, totaling 627,664 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*

- 567 hospitals submitted data to the NTDB in 2009.
- 186 are verified/designated as Level I, representing 94% of Level I centers.
- 192 are verified/designated as Level II, representing 77% of Level II centers.
- 146 are verified/designated as Level III or IV, representing 17% of Level III and IV centers.
- 118 centers are verified/designated as Level I or II pediatric centers.
- 65.6% of participating trauma centers reported using the NTDB ICD9 inclusion criteria for their registries.
- 54% of participating centers reported including all hip fractures (in accordance with NTDB inclusion criteria).
- 90% reported including DOA's in their registires.
- 91% include all tranfers in, and 97.5% include all transfers out of their hospitals in their registries.

AGE

- The age distribution of patients in NTDB peaks from ages 16 to 29, primarily representing patients injured in Motor Vehicle Traffic related incidents and by Firearm.
- There is a second peak between ages 40 and 50, representing patients injured in Motor Vehicle Traffic and Fall related injuries.
- Up to age 70, men account for 70% of incidents. After age 70 most patients are women.
- Mechanism of Injury
- Falls account for 34.7% of cases in the NTDB, with high incident rates for patients under age ten and age 75 and over.
- Motor Vehicle Traffic related injuries account for 31.8% of cases in the NTDB, with a dramatic rise between age 14 and 40, peaking around age 18.
- Firearm injuries peak around 18 years of age, and then steadily decrease.
- Drowning/Submersion, Suffocation and Firearm injuries have the highest case fatality rates, with Drowning/Submersion at 23% and both Suffocation and Firearm at 16%.

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 (49.5%) of patients suffer Minor injuries and about one-fourth (24.6%) have Moderate injuries.
- Case fatality rates increase with injury severity, with the most severe group experiencing a case fatality rate of 30.2.
- Case fatality for all severity levels is higher for patients age 75 and over.
- Median length of stay (LOS) increases for each consecutive severity grouping.

PAYMENT

- Private/Commercial Insurance is the single largest payment source at 20.9%.
- Medicare is second at 15.6%.
- Self–Pay is the third largest payment category at 15.3%.

MORTALITY

- The largest number of deaths is caused by Motor Vehicle Traffic related injuries, followed by Fall and Firearm.
- Suffocation, Drowning, and Firearm injuries have the highest case fatality rates.
- Case fatality rates are highest in patients age 75 and over.
- Firearm injuries have the highest case fatality rates in every age group among the selected mechanisms shown in the report.

(continued on next page)

Executive Summary (continued)

OUTCOMES

- Median EMS total transport times are greatest for Natural, environmental, other injuries, followed by Transport, other, Fire/flame, and Hot object/substance.
- 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 injuries have the highest median number of ventilator and ICU days.
- Most patients (42.1%) were discharged from the ED to a floor bed, followed in frequency by ICU at 18.9% and OR at 12.8%.
- Of those patients that died, 6.1% were DOA, an additional 5.3% died after a failed resuscitation attempt, and 16.4% died without resuscitation attempt.
- 16.7% of records submitted to NTDB had no indication of whether the patient had hospital complications. Complications information is considered missing for these records.
- In 44.3% of cases, it was indicated that no NTDB listed complications exist. Further, in 32.7% 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 with no services. An additional 7.8% were discharged to a skilled nursing facility and 6.7% went to a rehab/long term care facility.
- Three percent of patients died.

COMMENTS

We hope that this document has expanded your understanding of patients treated in trauma centers in the United States. 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 2009 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 February 2009): 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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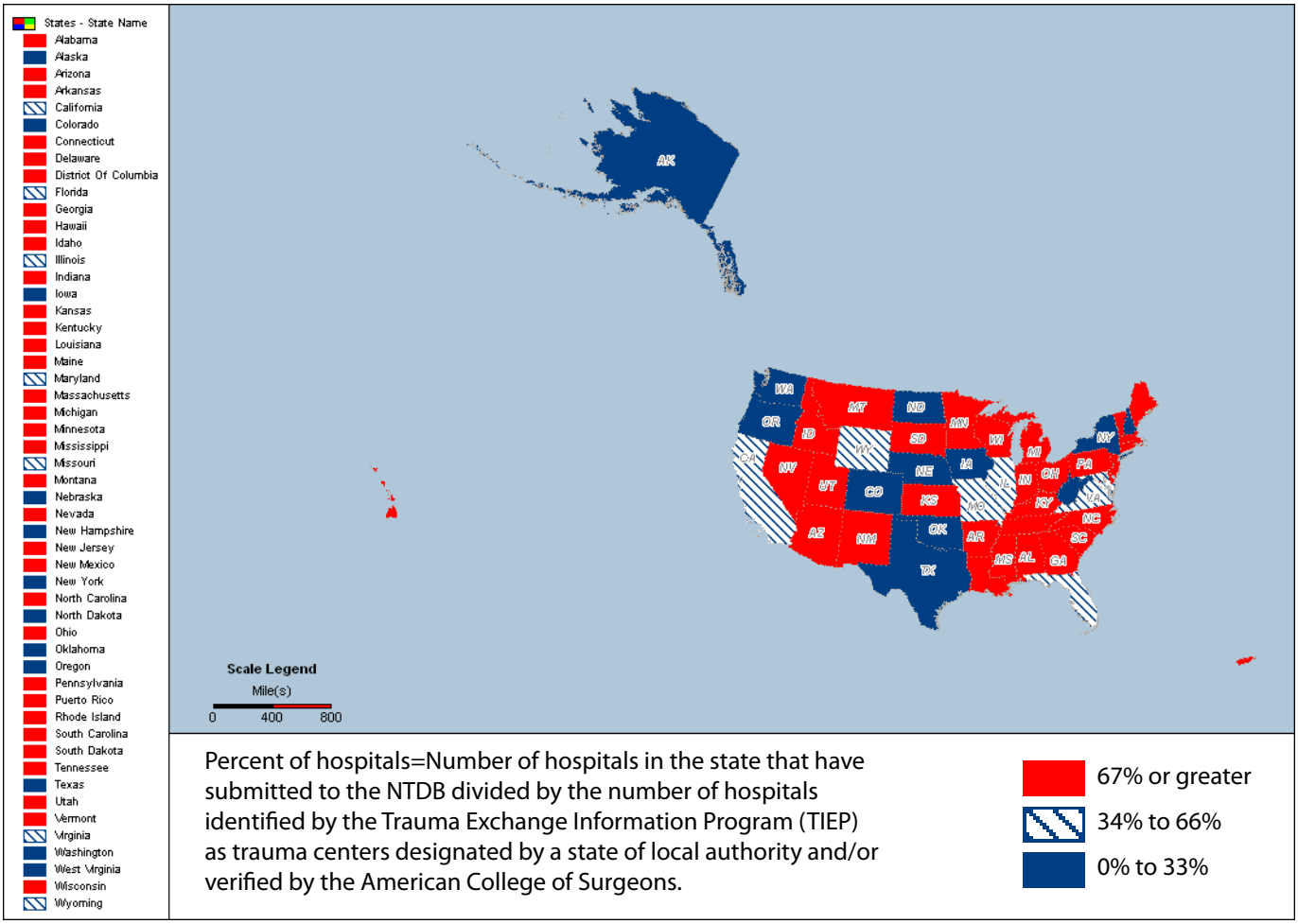
Hospital Information

Figure 1



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 trauma centers designated by a state of local authority and/or verified by the American College of Surgeons.

- 67% or greater
- 34% to 66%
- 0% to 33%

Table 2

FACILITIES BY BED SIZE		
BED SIZE	NUMBER	PERCENT
≤200	137	24.16
201 - 400	200	35.27
401 - 600	132	23.28
>600	98	17.28
Total	567	100.00

Figure 2

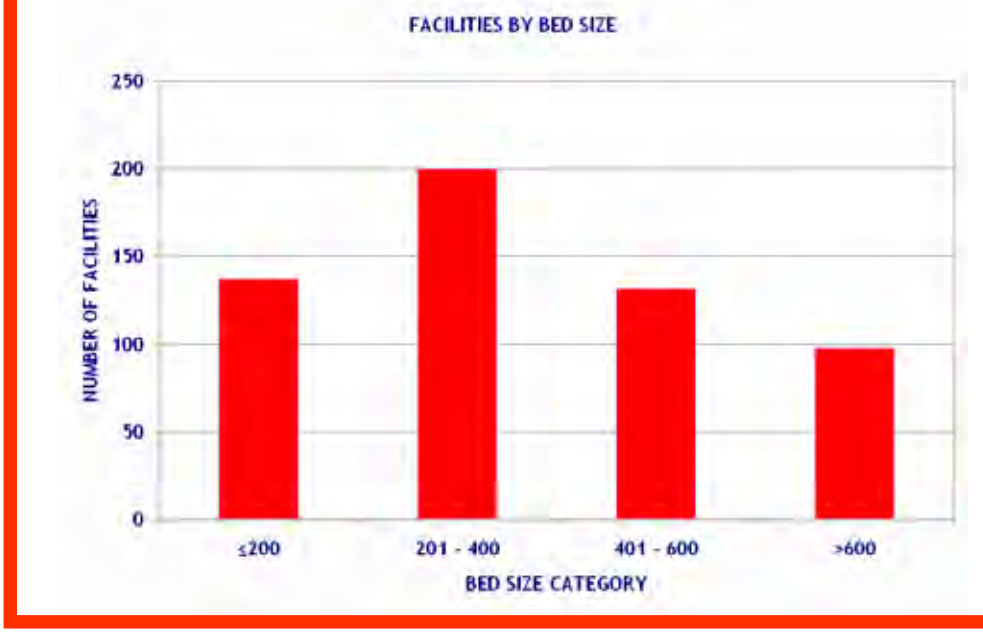


Table 3

FACILITIES BY TRAUMA LEVEL		
TRAUMA LEVEL	NUMBER	PERCENT
I	186	33.45
II	192	34.53
III	86	15.47
IV	46	8.27
NA	38	6.83
Other	8	1.44
Total	556	100.00

Please note that the 11 pediatric only verified/designated facilities are not included in this table.

Figure 3

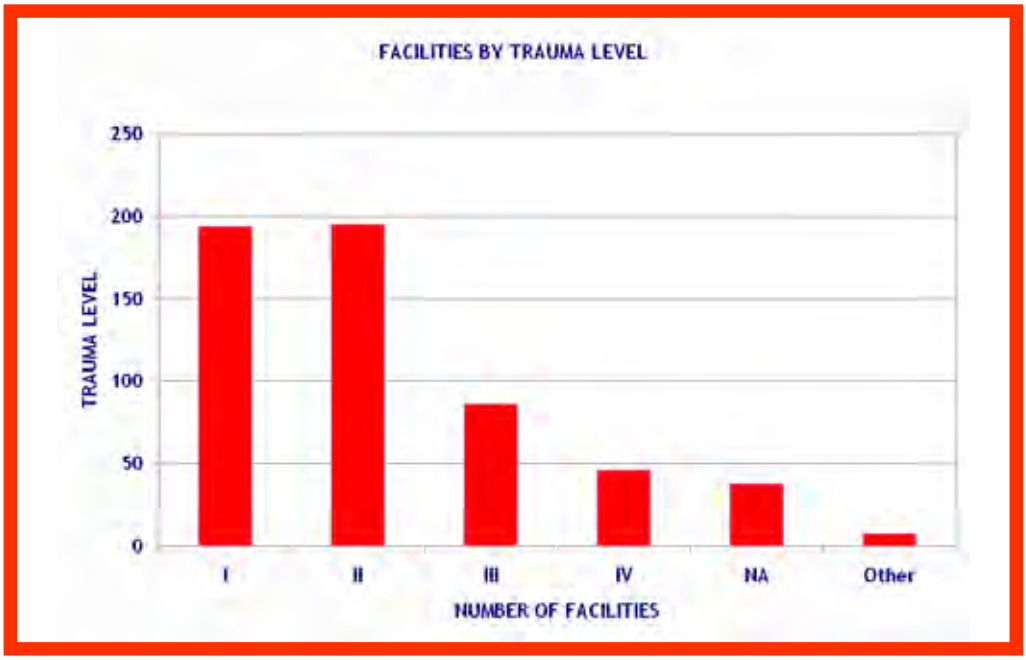


Table 4

FACILITIES BY REGION		
REGION	NUMBER	PERCENT
Midwest	186	32.80
Northeast	83	14.64
South	186	32.80
West	112	19.75
Total	567	100.00

Figure 4

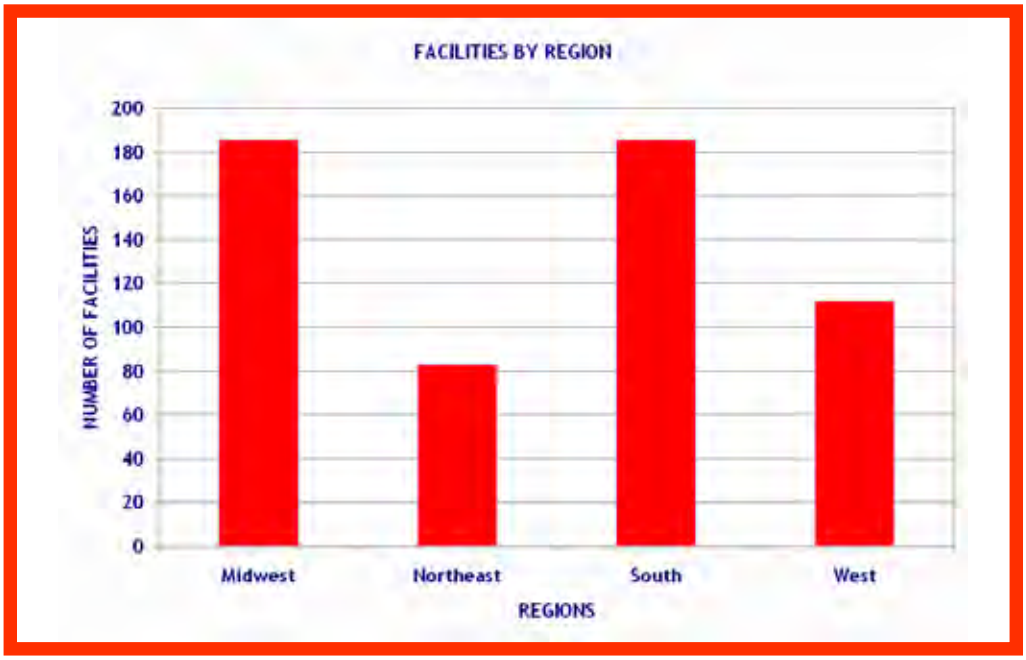


Table 5

FACILITIES BY ICD-9 CRITERIA		
ICD-9 INCLUSION SAME AS NTDB	NUMBER	PERCENT
False	195	34.39
True	372	65.61
Total	567	100.00

Figure 5

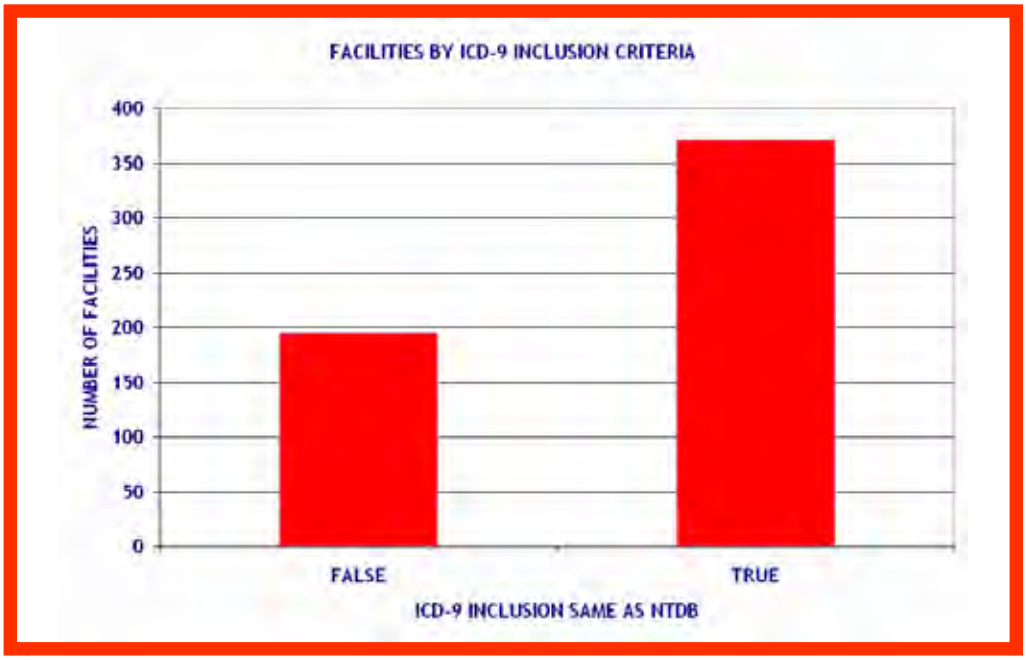


Table 6

FACILITIES BY LOS CRITERIA		
LOS	NUMBER	PERCENT
23 Hour Holds	23	4.06
≥ 24 Hours	67	11.82
≥ 48 Hours	48	8.47
≥ 72 Hours	25	4.41
All Admissions	404	71.25
Total	567	100.00

Figure 6

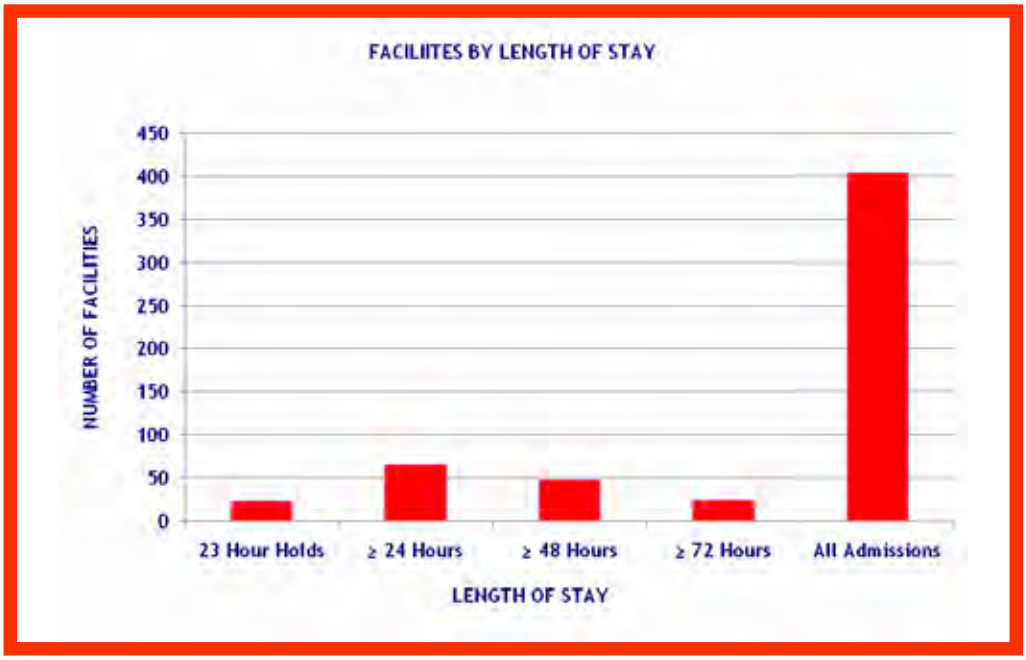


Table 7

FACILITIES BY HIP CRITERIA		
HIP FRACTURE	NUMBER	PERCENT
All	307	54.14
None	132	23.28
Patients ≤18 Years	23	4.06
Patients ≤50 Years	5	0.88
Patients ≤55 Years	12	2.12
Patients ≤60 Years	7	1.23
Patients ≤65 Years	77	13.58
Patients ≤70 Years	4	0.71
Total	567	100.00

Figure 7

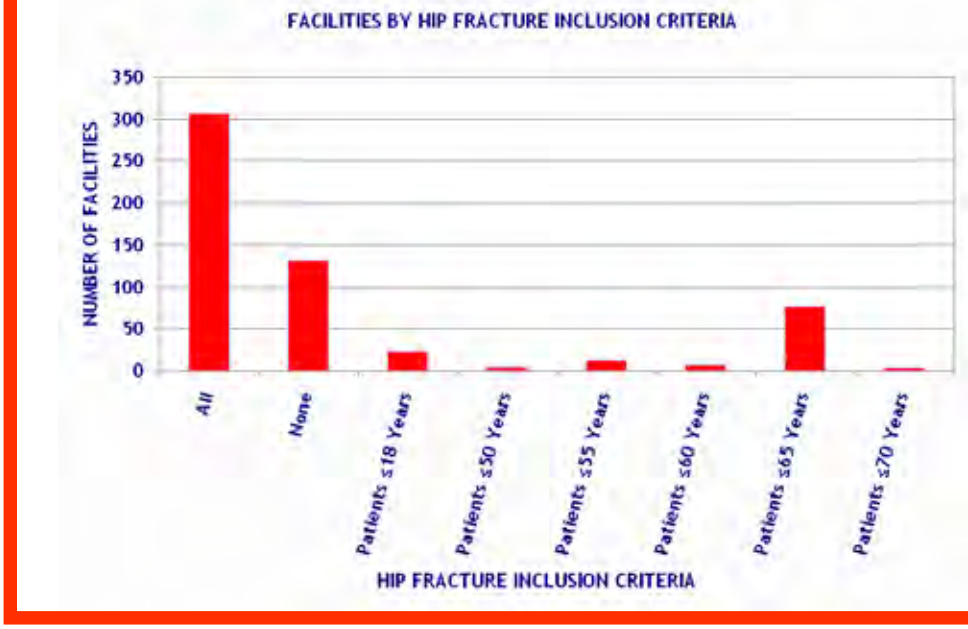


Table 8

FACILITIES BY DEATH ON ARRIVAL (DOA) INCLUSION CRITERIA		
DOA	NUMBER	PERCENT
False	58	10.23
True	509	89.77
Total	567	100.00

Figure 8

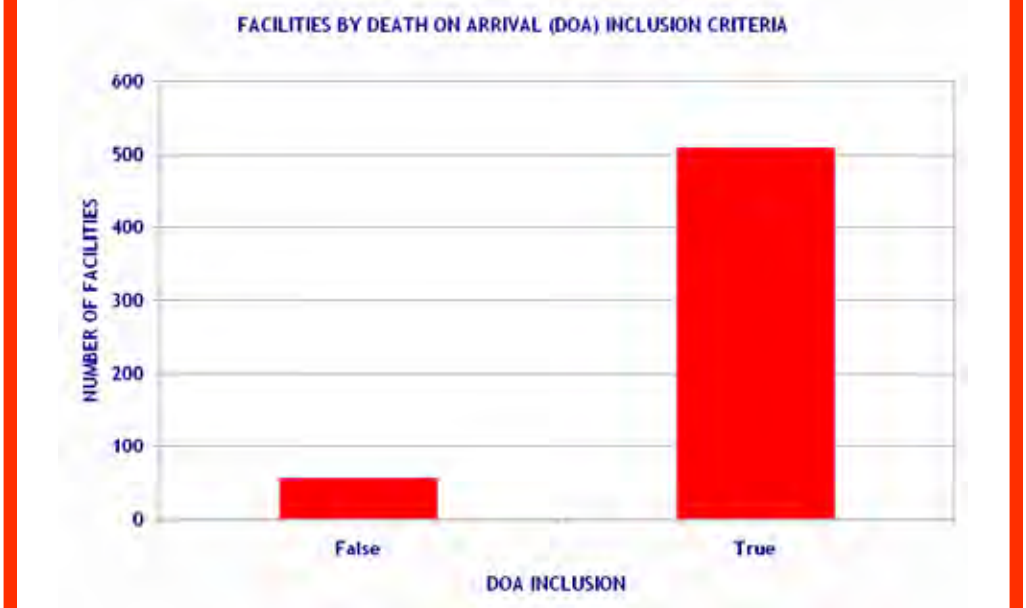


Table 9

FACILITIES BY TRANSFER-IN CRITERIA		
Transfer-In	NUMBER	PERCENT
All Transfers	516	91.01
None	27	4.76
Within 12 Hours	2	0.35
Within 24 Hours	6	1.06
Within 4 Hours	3	0.53
Within 48 Hours	8	1.41
Within 72 Hours	5	0.88
Total	567	100.00

Figure 9

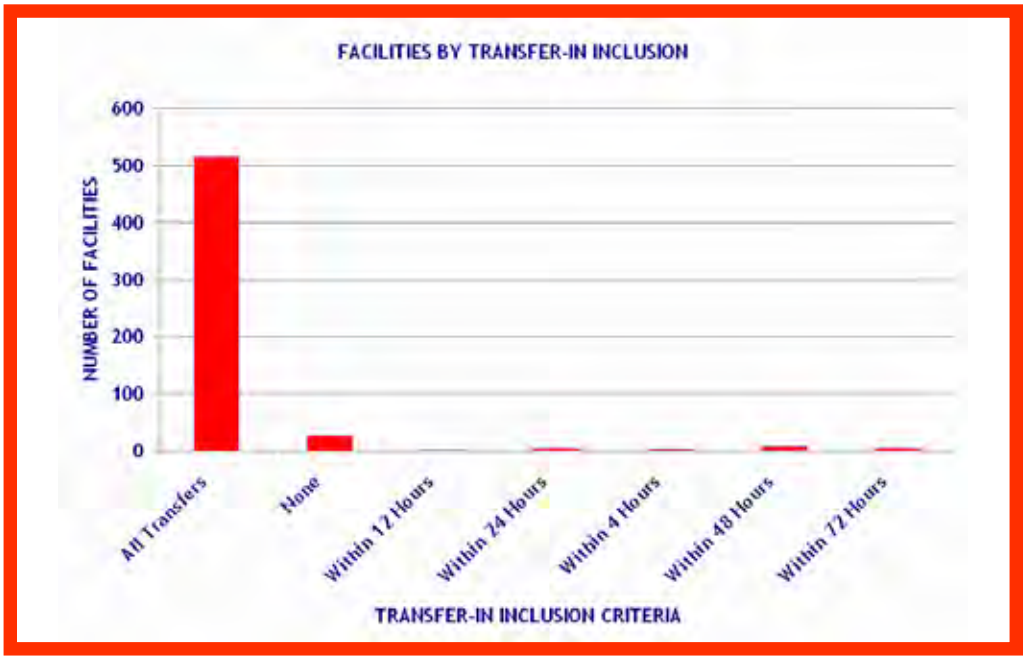
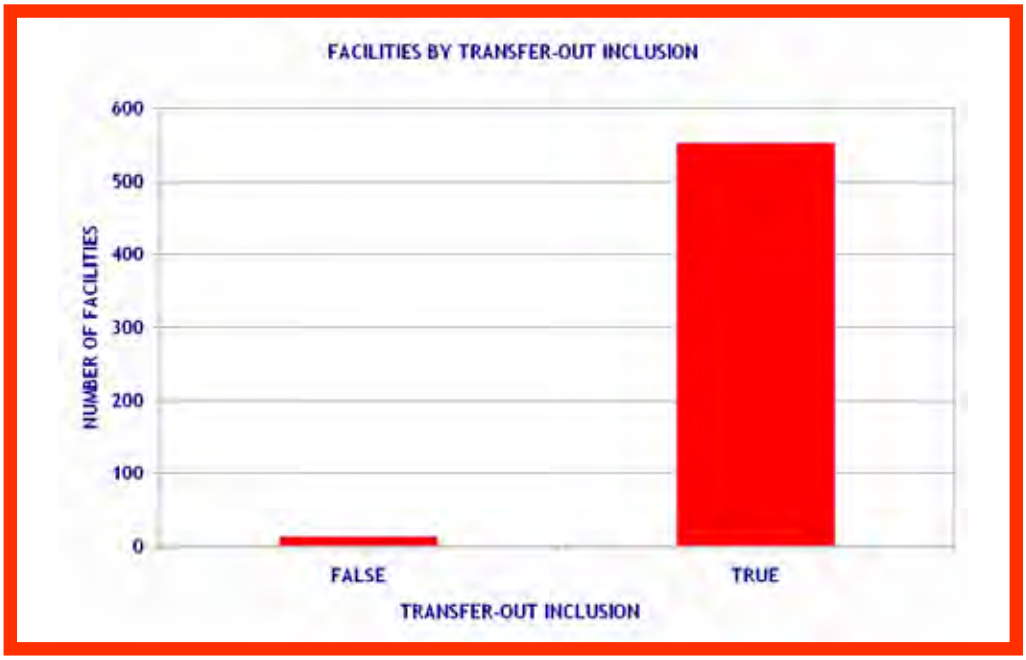


Table 10

FACILITIES BY TRANSFER-OUT CRITERIA		
TRANSFER-OUT	NUMBER	PERCENT
False	14	2.47
True	553	97.53
Total	567	100.00

Figure 10



Demographic Information

Table 11

INCIDENTS AND CASE FATALITY RATE BY AGE				
AGE	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
<1 year	7,722	1.23	198	2.56
1-4	21,251	3.39	399	1.88
5-9	21,649	3.45	209	0.97
10-14	24,926	3.97	308	1.24
15-19	56,578	9.01	1,820	3.22
20-24	60,589	9.65	2,364	3.90
25-34	86,217	13.74	3,191	3.70
35-44	76,504	12.19	2,556	3.34
45-54	80,754	12.87	3,050	3.78
55-64	57,798	9.21	2,486	4.30
65-74	41,169	6.56	2,235	5.43
75-84	50,310	8.02	3,611	7.18
≥85	39,031	6.22	3,015	7.72
NK/NR	3,166	0.50	305	9.63
Total	627,664	100.00	25,747	

Figure 11A

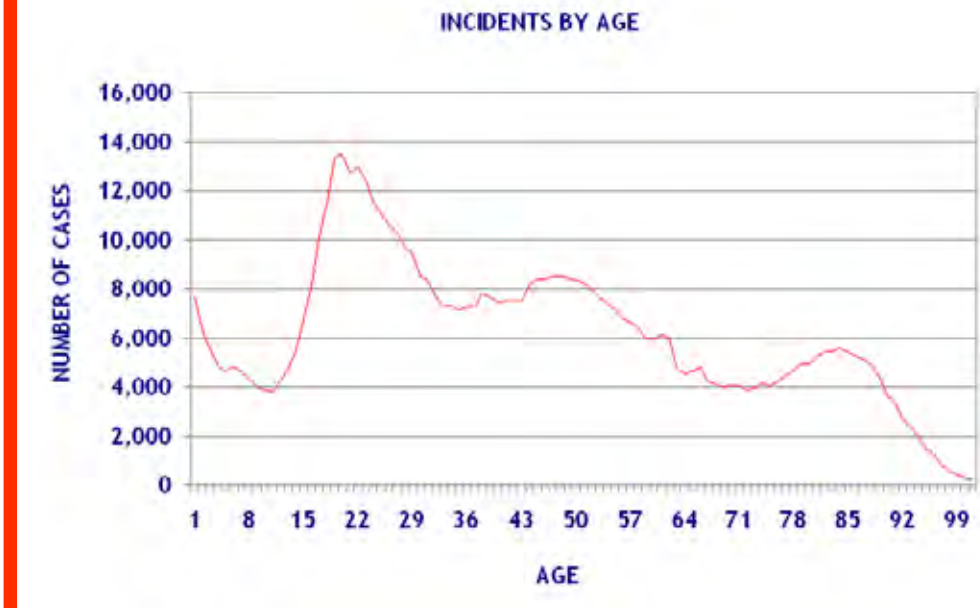


Figure 11B

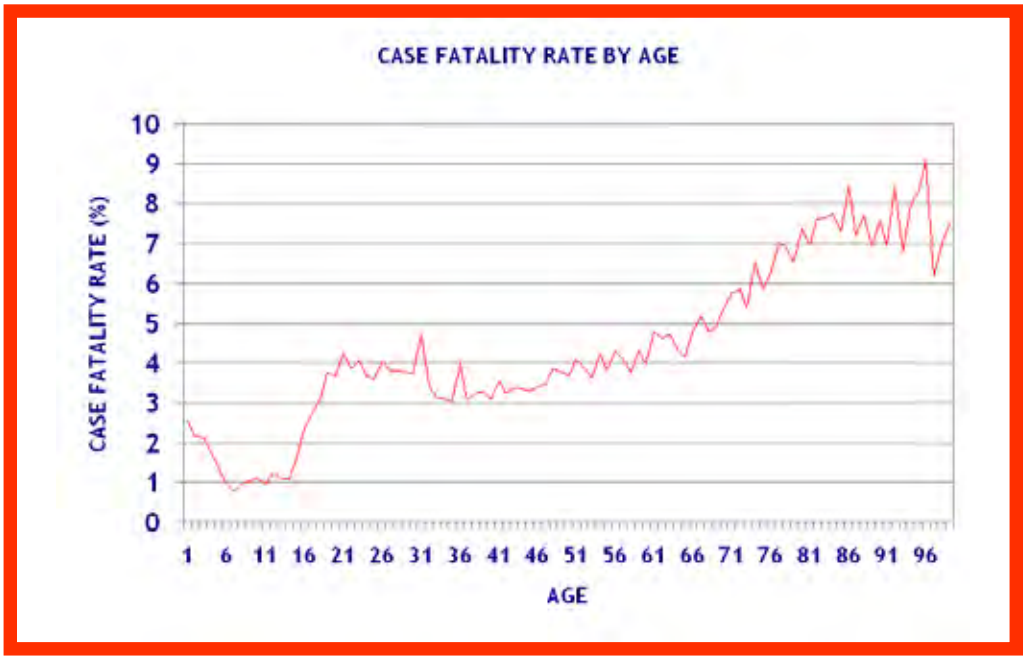


Table 12

INCIDENTS AND CASE FATALITY RATE BY AGE AND GENDER									
AGE	NUMBER (FEMALE)	NUMBER (MALE)	NUMBER (NK/NR)	DEATHS (FEMALE)	DEATHS (MALE)	DEATHS (NK/NR)	CASE FATALITY RATE (FEMALE)	CASE FATALITY RATE (MALE)	CASE FATALITY RATE (NK/NR)
<1 year	3,250	4,463	259	90	108	1	2.77	2.42	0.39
1-4	8,528	12,691	9	172	227	0	2.02	1.79	0.00
5-9	8,326	13,290	32	87	122	0	1.04	0.92	0.00
10-14	6,987	17,849	33	91	217	0	1.30	1.22	0.00
15-19	14,939	41,233	90	390	1,429	0	2.61	3.47	0.00
20-24	13,885	46,260	406	355	2,008	1	2.56	4.34	0.25
25-34	19,910	65,557	444	505	2,684	1	2.54	4.09	0.23
35-44	20,025	55,763	750	516	2,039	2	2.58	3.66	0.27
45-54	23,410	56,668	716	736	2,313	1	3.14	4.08	0.14
55-64	21,130	36,227	676	610	1,872	1	2.89	5.17	0.15
65-74	19,580	21,360	441	754	1,477	4	3.85	6.91	0.91
75-84	30,013	20,063	229	1,548	2,061	4	5.16	10.27	1.75
≥85	27,232	11,616	234	1,591	1,422	2	5.84	12.24	0.85
NK/NR	1,131	1,776	183	152	152	2	13.44	8.56	1.09
Total	218,346	404,816	4,502	7,597	18,131	19			

Figure 12A

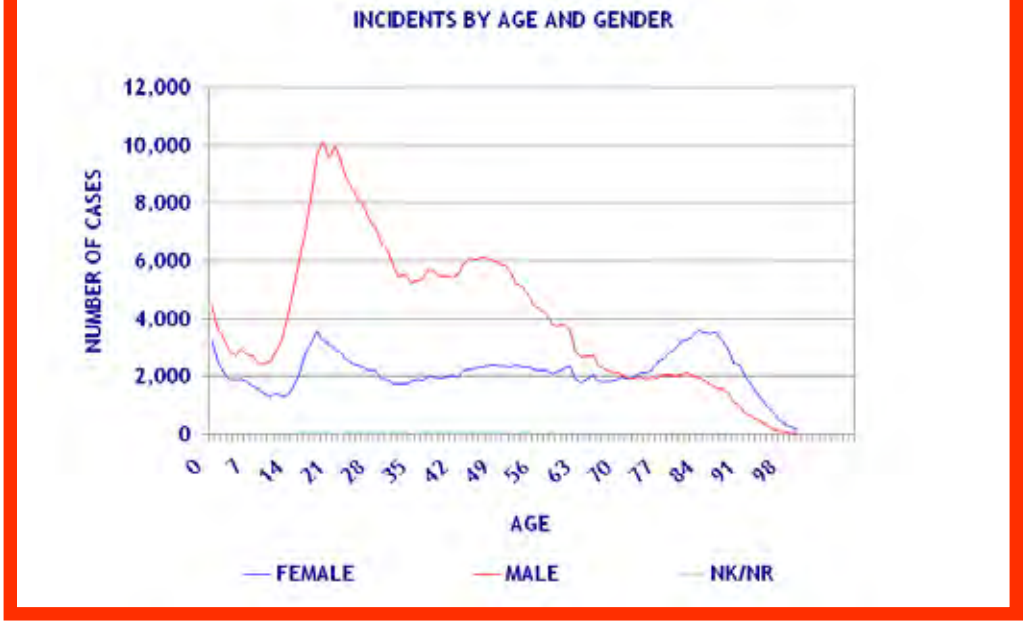


Figure 12B

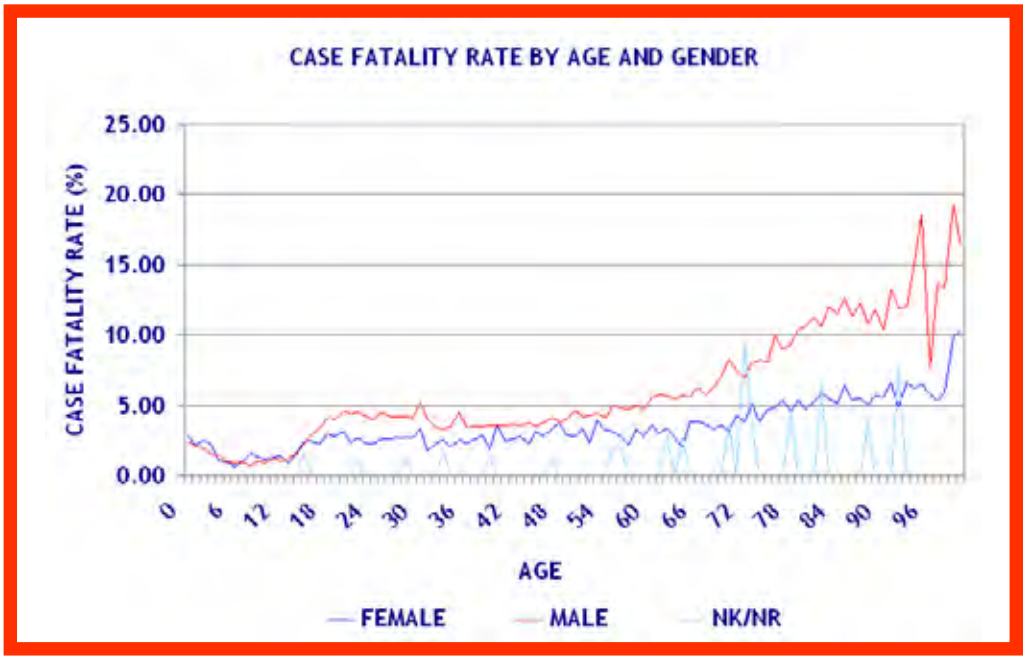


Table 13

ALCOHOL USE		
ALCOHOL USE	NUMBER	PERCENT
No (Confirmed By Test)	130,927	20.86
No (Not Suspected, Not Tested)	140,351	22.36
Not Applicable	93,673	14.92
NK/NR	176,050	28.05
Yes (Confirmed By Test [Beyond Legal Limit])	58,903	9.38
Yes (Confirmed By Test [Trace Levels])	27,760	4.42
Total	627,664	100

Figure 13

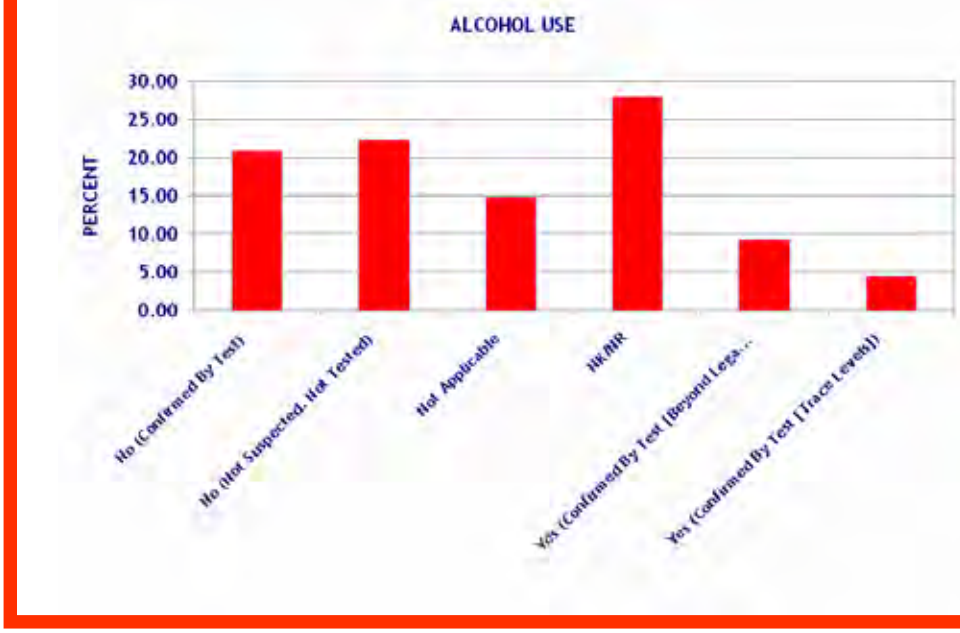


Table 14

DRUG USE		
DRUG USE	NUMBER	PERCENT
No (Confirmed By Test)	67,232	10.71
No (Not Suspected, Not Tested)	222,728	35.49
Not Applicable	58,704	9.35
NK/NR	209,052	33.31
Yes (Confirmed By Test [Illegal Use Drug])	57,386	9.14
Yes (Confirmed By Test [Prescription Drug])	12,562	2.00
Total	627,664	100.00

Figure 14

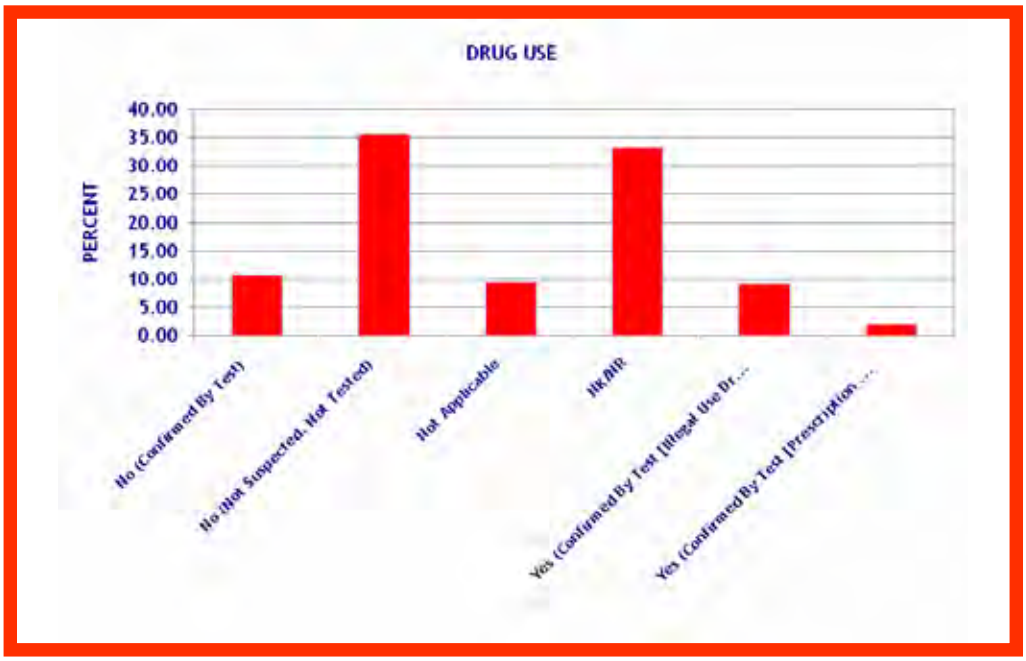
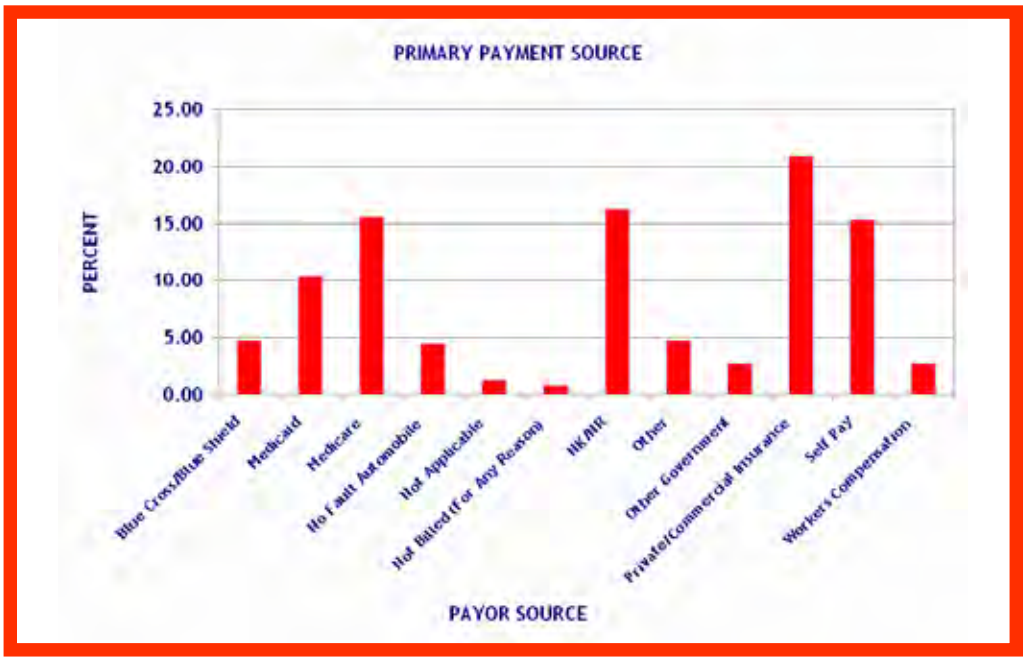


Table 15

PRIMARY PAYMENT SOURCE		
PRIMARY PAYMENT SOURCE	NUMBER	PERCENT
Blue Cross/Blue Shield	29,813	4.75
Medicaid	64,985	10.35
Medicare	97,948	15.61
No Fault Automobile	27,968	4.46
Not Applicable	8,306	1.32
Not Billed (For Any Reason)	5,030	0.80
NK/NR	102,177	16.28
Other	29,715	4.73
Other Government	17,190	2.74
Private/Commercial Insurance	130,988	20.87
Self Pay	96,162	15.32
Workers Compensation	17,382	2.77
Total	627,664	100.00

Figure 15



Injury Information

Table 16

INCIDENTS AND CASE FATALITY RATE BY MECHANISM OF INJURY				
MECHANISM	COUNT	PERCENT	DEATHS	CASE FATALITY RATE
Fall	217,743	34.69	7,715	3.54
Motor Vehicle Traffic	199,566	31.80	9,023	4.52
Struck By, Against	47,565	7.58	551	1.16
Transport, Other	34,512	5.50	763	2.21
Cut/Pierce	31,586	5.03	649	2.05
Firearm	31,499	5.02	5,061	16.07
Pedal Cyclist, Other	10,967	1.75	115	1.05
Other Specified And Classifiable	10,512	1.67	454	4.32
Unspecified	7,277	1.16	294	4.04
Fire/Flame	7,087	1.13	459	6.48
Machinery	6,963	1.11	127	1.82
Hot Object/Substance	6,906	1.10	46	0.67
Other Specified, Not Elsewhere Classifiable	3,299	0.53	64	1.94
Natural/Environmental, Bites And Stings	3,029	0.48	10	0.33
Pedestrian, Other	2,140	0.34	106	4.95
Natural/Environmental, Other	2,018	0.32	40	1.98
Overexertion	1,597	0.25	2	0.13
Suffocation	536	0.09	124	23.13
Drowning/Submersion	371	0.06	60	16.17
Poisoning	321	0.05	13	4.05
NK/NR	1,912	0.30	55	2.88
Total	627,664	99.96	25,731	

**Adverse effects have been removed from all mechanism tables, therefore percentages may not equal 100.*

Figure 16A

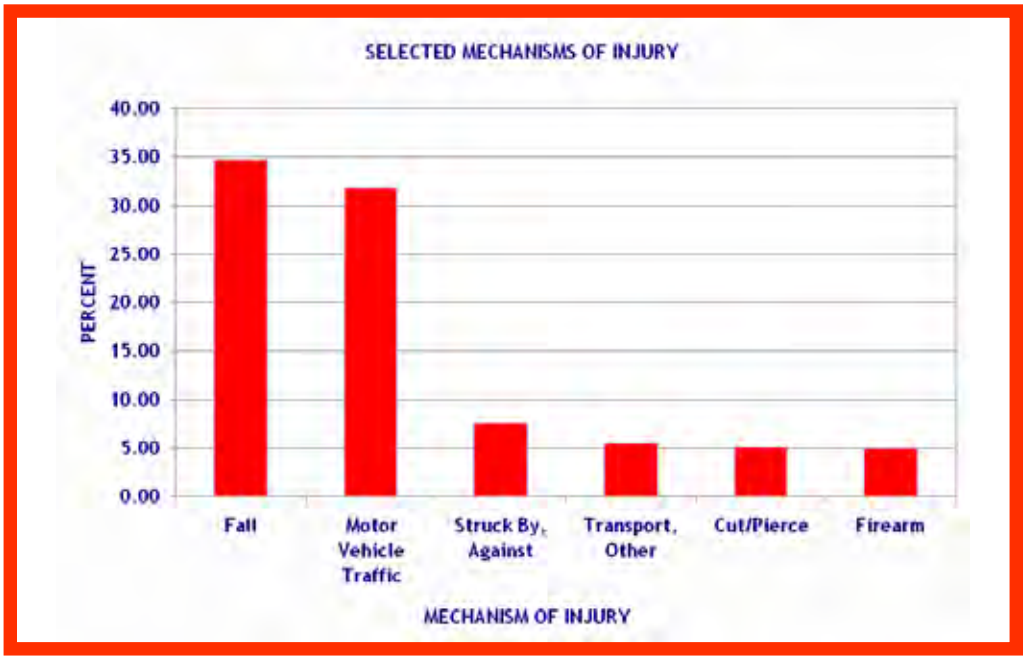


Figure 16B

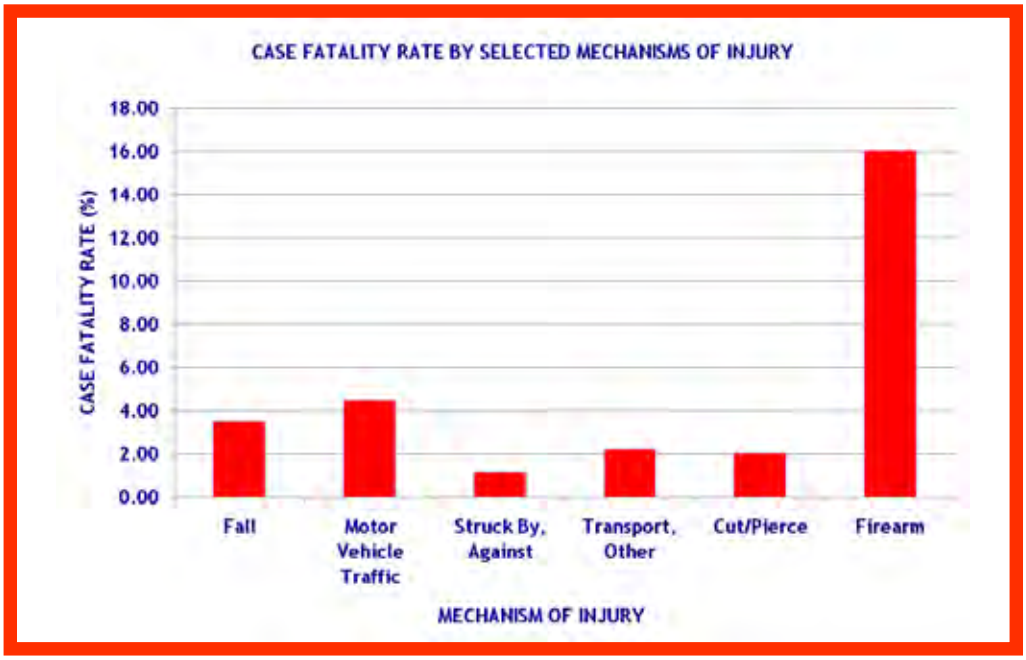


Table 17

SELECTED MECHANISMS OF INJURY BY AGE						
AGE	CUT/PIERCE	FALL	FIREARM	MOTOR VEHICLE TRAFFIC	STRUCK BY, AGAINST	TRANSPORT, OTHER
<1 year	45	4,054	41	491	334	34
1-4	393	9,971	119	3,149	1,598	521
5-9	413	9,796	178	4,396	1,722	1,505
10-14	637	7,079	654	5,813	3,364	3,274
15-19	3,851	6,540	6,647	23,701	6,434	4,873
20-24	5,571	5,946	7,218	26,722	6,117	3,823
25-34	8,134	11,760	8,224	35,154	8,806	5,394
35-44	5,804	14,945	4,106	30,059	7,395	5,094
45-54	4,264	23,179	2,409	29,595	6,931	4,689
55-64	1,483	24,629	1,020	19,158	2,808	2,772
65-74	516	24,836	436	10,238	1,016	1,317
75-84	245	39,083	270	7,633	622	717
≥85	97	34,732	100	2,682	242	286
NK/NR	133	1,193	77	775	176	213
Total	31,586	217,743	31,499	199,566	47,565	34,512

Figure 17

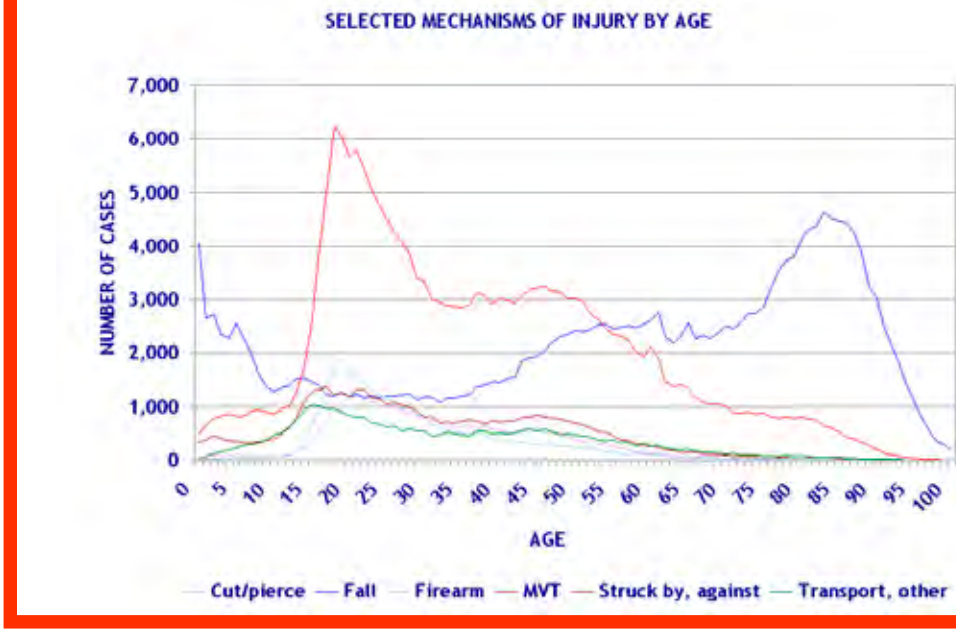


Table 18

CASE FATALITY RATE BY SELECTED MECHANISMS OF INJURY AND AGE						
AGE	CUT/PIERCE	FALL	FIREARM	MOTOR VEHICLE TRAFFIC	STRUCK BY, AGAINST	TRANSPORT, OTHER
<1 year	4.44	0.35	17.07	8.76	2.10	0.00
1-4	1.02	0.22	15.97	4.76	1.94	1.54
5-9	0.24	0.06	11.24	2.78	0.52	0.93
10-14	0.78	0.14	10.86	2.46	0.27	1.04
15-19	1.51	0.61	11.84	3.26	0.34	1.58
20-24	1.88	1.48	13.87	3.52	0.69	2.41
25-34	1.86	1.28	15.65	3.45	0.82	2.09
35-44	2.33	1.72	17.10	3.54	1.14	2.02
45-54	2.51	2.50	21.21	4.54	1.53	1.94
55-64	2.83	2.84	26.86	5.59	2.99	2.67
65-74	3.49	4.26	31.88	7.40	3.25	4.02
75-84	3.27	5.93	51.48	11.36	4.98	10.04
≥85	11.34	6.60	65.00	17.67	7.02	9.44
NK/NR	1.50	15.09	50.65	7.48	2.27	2.35

Figure 18

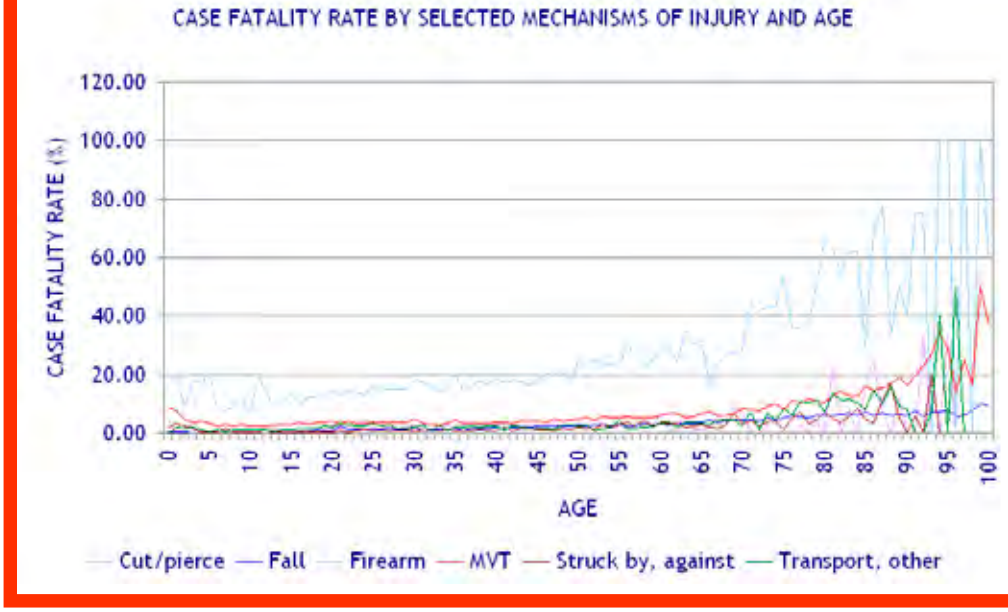


Table 19

INCIDENTS AND CASE FATALITY RATE BY MECHANISM OF INJURY AND GENDER				
MECHANISM	PERCENT (FEMALE)	PERCENT (MALE)	CASE FATALITY RATE (FEMALE)	CASE FATALITY RATE (MALE)
Fall	48.15	27.59	3.19	3.89
Motor Vehicle Traffic	32.80	31.23	3.91	4.91
Transport, Other	4.55	6.02	1.78	2.40
Struck By, Against	3.30	9.91	1.11	1.17
Cut/Pierce	2.09	6.62	1.78	2.12
Firearm	1.48	6.90	16.02	16.26
Other Specified And Classifiable	1.28	1.89	5.35	3.97
Hot Object/Substance	1.20	0.99	0.92	0.55
Pedal Cyclist, Other	1.06	2.13	0.69	1.15
Fire/Flame	0.81	1.26	10.62	5.30
Unspecified	0.69	1.40	4.51	3.96
Natural/Environmental, Bites And Stings	0.58	0.43	0.31	0.35
Other Specified, Not Elsewhere Classifiable	0.38	0.61	2.53	1.75
Natural/Environmental, Other	0.36	0.30	2.15	1.89
Pedestrian, Other	0.30	0.36	4.74	5.09
Overexertion	0.28	0.24	0.00	0.20
Machinery	0.24	1.58	0.96	1.91
Suffocation	0.06	0.10	17.21	24.88
Poisoning	0.05	0.05	1.80	5.34
Drowning/Submersion	0.04	0.07	18.39	15.55
NK/NR	0.23	0.28	2.15	3.87
Total	99.93	99.97		

**Adverse effects have been removed from all mechanism tables, therefore percentages may not equal 100.*

Figure 19A

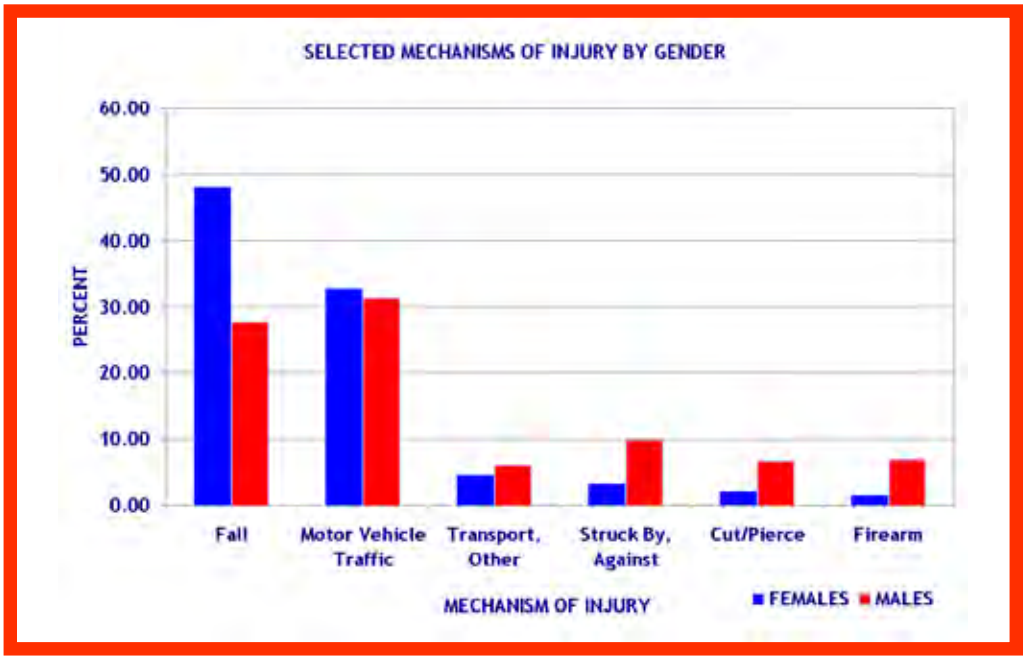


Figure 19B

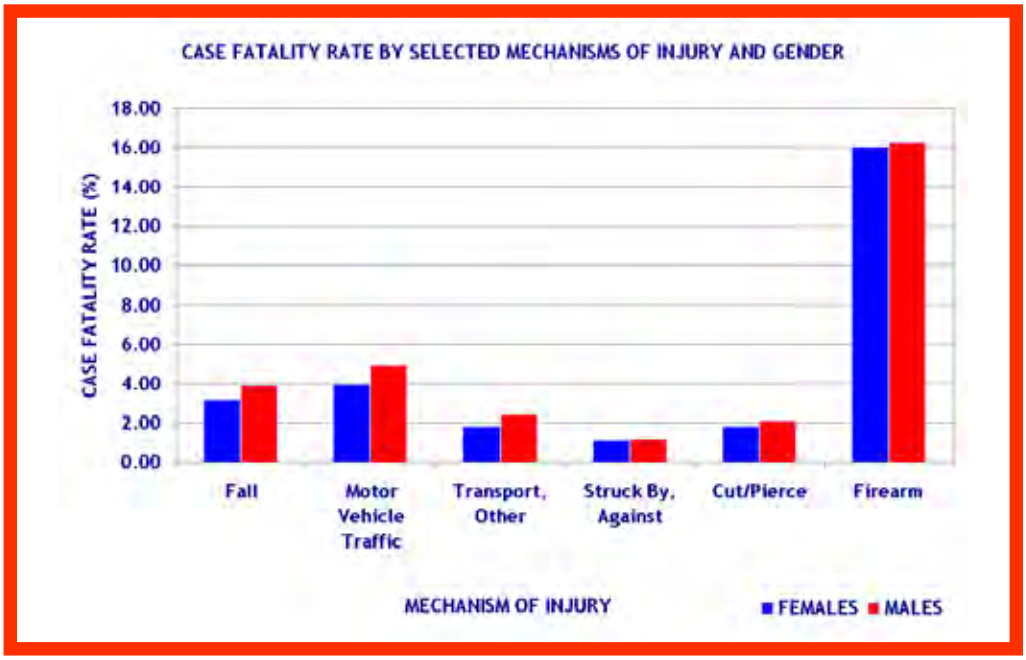


Table 20

INCIDENTS BY COMPARATIVE INJURY SEVERITY SCORES						
	LOCAL ISS		ICD90 DERIVED		AIS DERIVED	
ISS	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
1-8	280,983	44.77	310,902	49.53	285,310	45.46
9-15	193,306	30.80	154,687	24.64	190,659	30.38
16-24	76,014	12.11	85,684	13.65	76,146	12.13
>24	52,599	8.38	33,417	5.32	52,541	8.37
NK/NR	24,762	3.95	42,974	6.85	23,008	3.67
Total	627,664	100.00	627,664	100.00	627,664	100.00

Figure 20

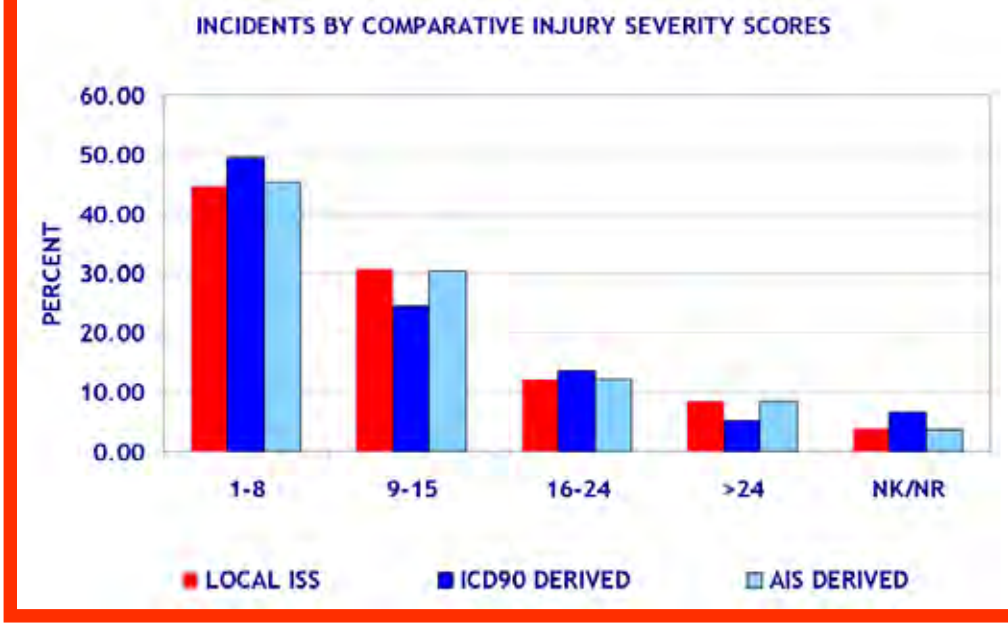


Table 21

INCIDENTS AND CASE FATALITY RATE BY INJURY SEVERITY SCORE				
ISS	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
1-8	310,902	49.53	2,503	0.81
9-15	154,687	24.64	3,876	2.51
16-24	85,684	13.65	5,718	6.67
>24	33,417	5.32	10,088	30.19
NK/NR	42,974	6.85	3,562	8.29
Total	627,664	100.00	25,747	

Figure 21

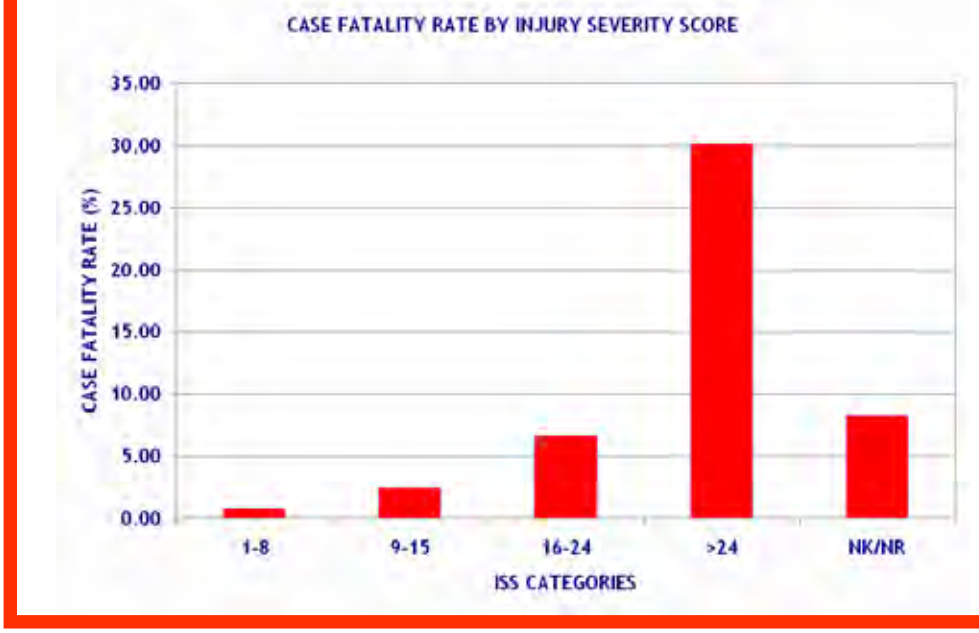


Table 22

INJURY SEVERITY SCORE BY AGE					
	ISS 1-8 NUMBER	ISS 9-15 NUMBER	ISS 16-24 NUMBER	ISS >24 NUMBER	ISS NK/NR NUMBER
<1 year	3,880	863	2,215	237	527
1-4	14,834	2,217	1,960	579	1,661
5-9	15,547	2,653	1,761	471	1,217
10-14	15,044	4,676	2,534	865	1,807
15-19	29,266	12,155	6,847	3,788	4,522
20-24	31,230	13,151	7,224	4,256	4,728
25-34	45,759	18,368	10,000	5,305	6,785
35-44	40,142	16,526	9,582	4,376	5,878
45-54	39,760	18,486	11,778	4,862	5,868
55-64	26,420	14,839	9,185	3,249	4,105
65-74	16,779	12,792	7,193	2,037	2,368
75-84	17,777	19,248	9,012	2,121	2,152
≥85	12,756	17,785	6,109	1,160	1,221
NK/NR	1,708	928	284	111	135
Total	310,902	154,687	85,684	33,417	42,974

Figure 22

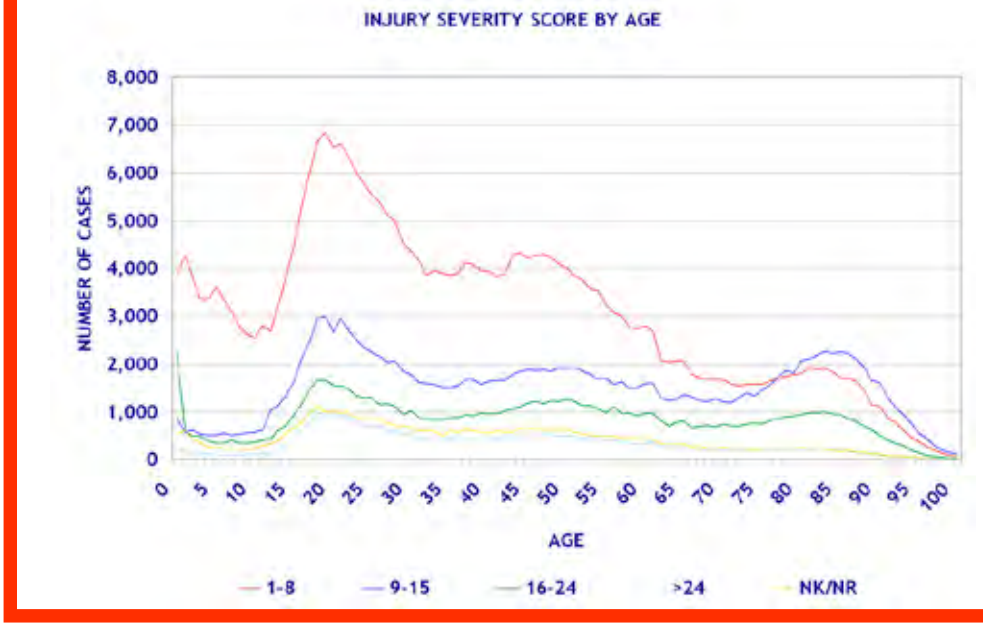


Table 23

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	12	0.31	16	1.85	40	1.81	105	44.30	25	4.74
1-4	30	0.20	21	0.95	77	3.93	224	38.69	47	2.83
5-9	18	0.12	20	0.75	25	1.42	113	23.99	33	2.71
10-14	26	0.17	24	0.51	53	2.09	158	18.27	47	2.60
15-19	135	0.46	194	1.60	268	3.91	957	25.26	266	5.88
20-24	203	0.65	266	2.02	377	5.22	1,155	27.14	363	7.68
25-34	291	0.64	393	2.14	534	5.34	1,491	28.11	482	7.10
35-44	227	0.57	286	1.73	469	4.89	1,156	26.42	418	7.11
45-54	251	0.63	325	1.76	602	5.11	1,336	27.48	536	9.13
55-64	200	0.76	292	1.97	582	6.34	976	30.04	436	10.62
65-74	222	1.32	321	2.51	636	8.84	742	36.43	314	13.26
75-84	379	2.13	694	3.61	1,148	12.74	1,019	48.04	371	17.24
≥85	436	3.42	880	4.95	867	14.19	625	53.88	207	16.95
NK/NR	73	4.27	144	15.52	40	14.08	31	27.93	17	9.63
Total	2,503		3,876		5,718		10,088		3,562	

Figure 23

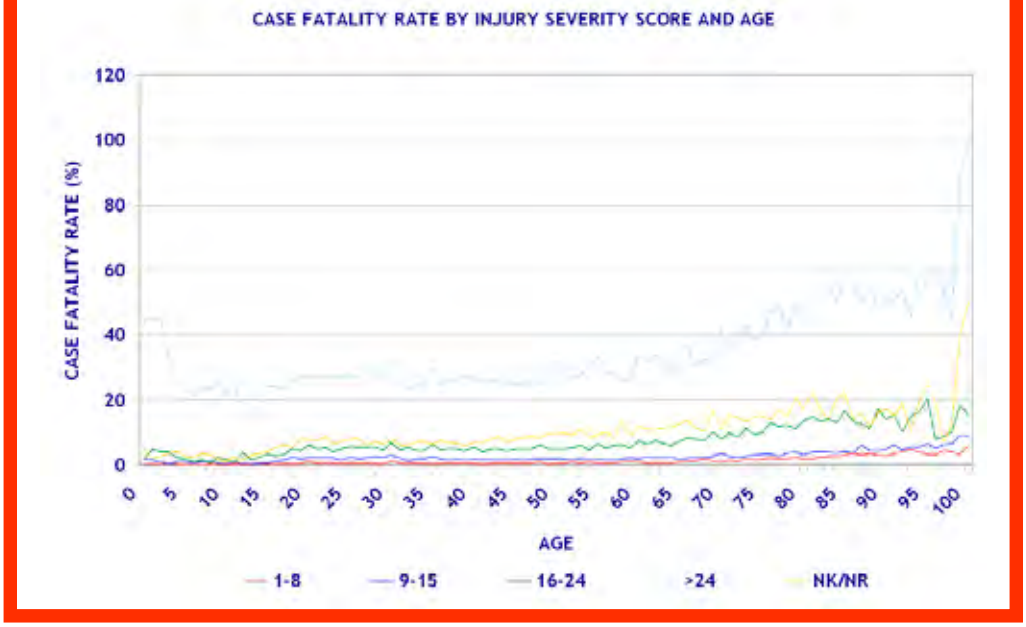


Table 24

INCIDENTS AND CASE FATALITY RATE BY WORK-RELATED INJURIES				
WORK-RELATED INJURY	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Yes	26,577	4.23	642	2.42
No	482,279	76.84	20,026	4.15
Not Applicable	18,867	3.01	647	3.43
NK/NR	99,941	15.92	4,432	4.43
Total	627,664	100.00	25,747	

Figure 24A

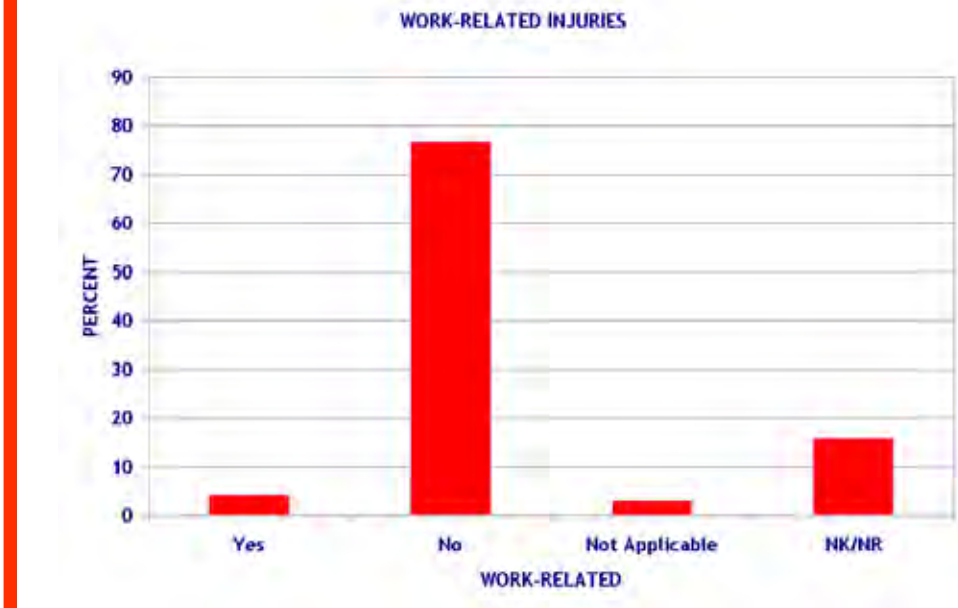


Figure 24B

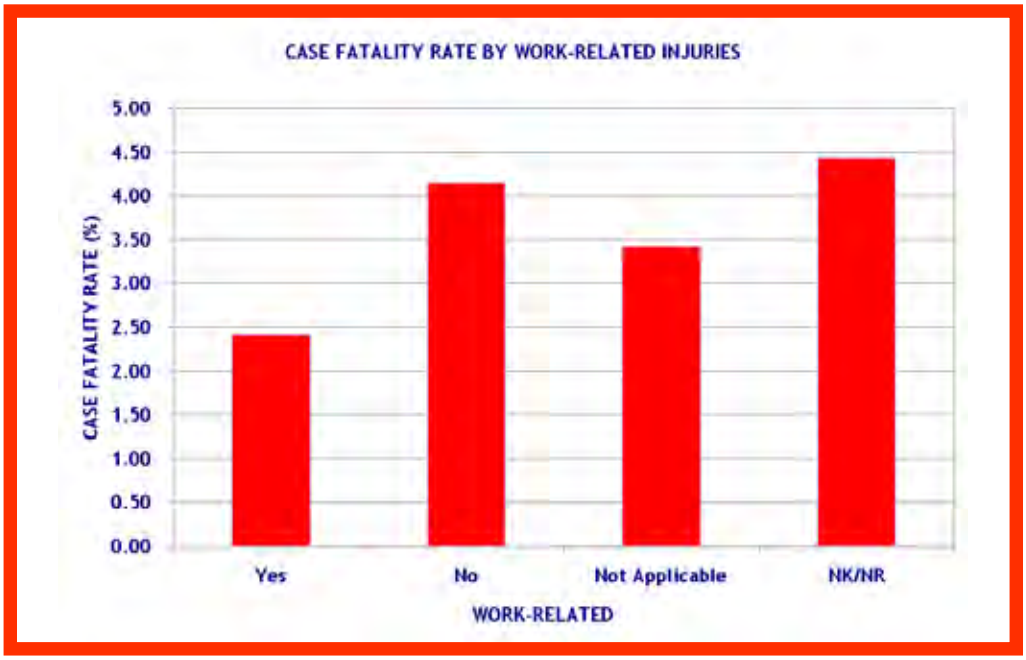


Table 25

INCIDENTS AND CASE FATALITY RATE BY INTENT				
INTENT	COUNT	PERCENT	DEATHS	CASE FATALITY RATE
Assault	80,299	12.79	4,493	5.60
Other	1,374	0.22	137	9.97
Self-Inflicted	9,114	1.45	1,685	18.49
Undetermined	3,085	0.49	318	10.31
Unintentional	531,880	84.74	19,059	3.58
NK/NR	1,912	0.30	55	2.88
Total	627,664	100.00	25,747	

Figure 25

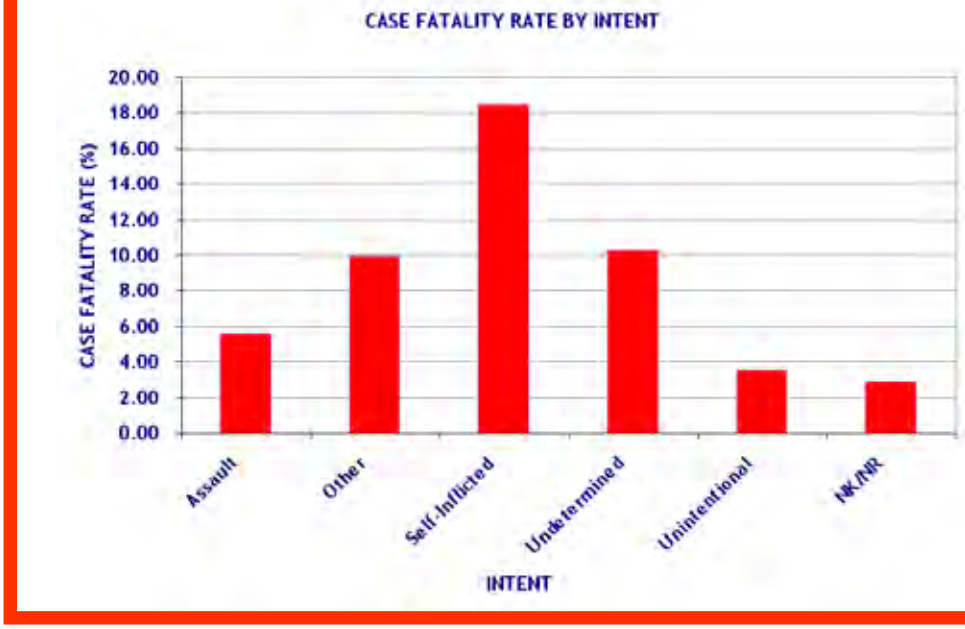


Table 26

CASE FATALITY RATE BY LOCATION E-CODE				
LOCATION OF INJURY	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Farm	4,406	0.70	114	2.59
Home	175,044	27.89	7,893	4.51
Industry	17,361	2.77	364	2.10
Mine	338	0.05	7	2.07
Public Building	27,285	4.35	896	3.28
Recreation	36,263	5.78	395	1.09
Residential Institution	18,142	2.89	973	5.36
Street	234,311	37.33	10,850	4.63
Unspecified	62,024	9.88	2,631	4.24
Other	27,411	4.37	1,030	3.76
Not Applicable	764	0.12	14	1.83
NK/NR	24,315	3.87	580	2.39
Total	627,664	100.00	25,747	

Figure 26

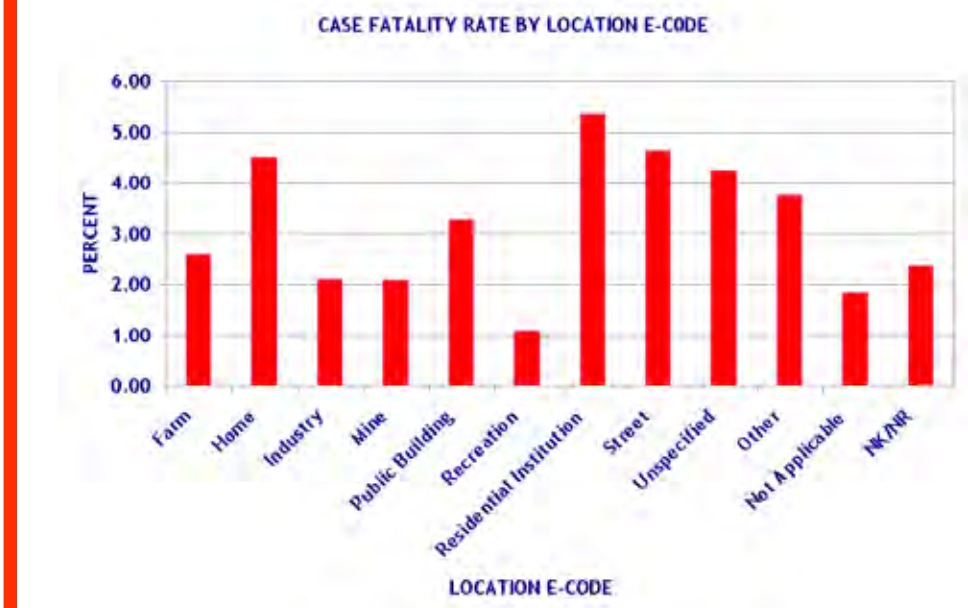


Table 27

INCIDENTS BY AIS BODY REGION		
AIS BODY REGION	NUMBER	PERCENT
Head	204,751	32.62
Face	155,848	24.83
Neck	6,532	1.04
Thorax	126,219	20.11
Abdomen	81,502	12.98
Spine	106,762	17.01
Upper Extremity	172,597	27.50
Lower Extremity	220,034	35.06
External	58,549	9.33
NK/NR	18,481	2.94
Total Incidents	627,664	

**A patient can have injuries in multiple body regions.*

Figure 27

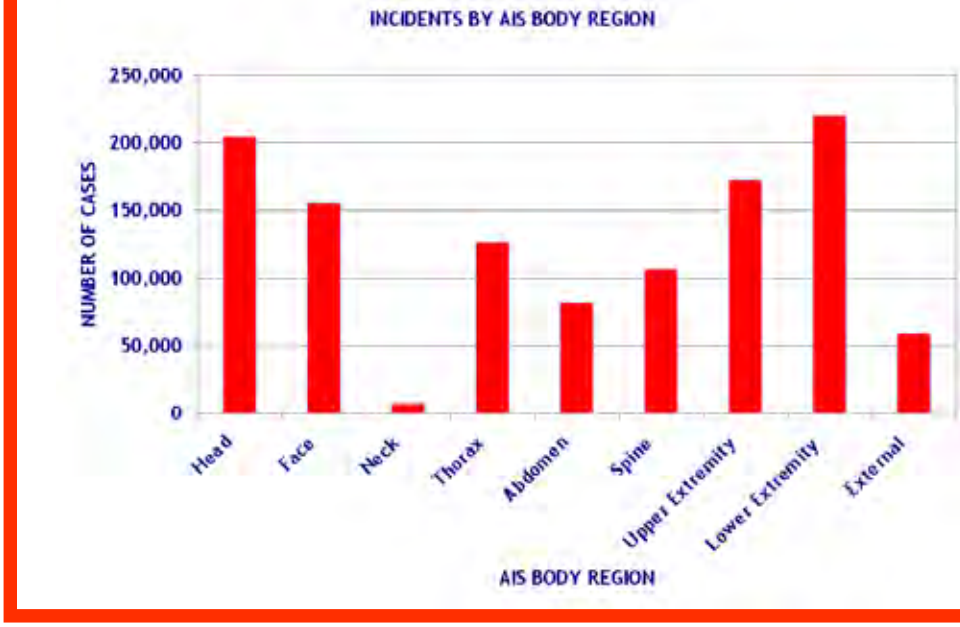


Table 28

INCIDENTS WITH AIS ≥ 3 BY AIS BODY REGION		
AIS BODY REGION	NUMBER	PERCENT
Head	109,419	17.43
Face	703	0.11
Neck	1,085	0.17
Thorax	83,115	13.24
Abdomen	21,443	3.42
Spine	9,971	1.59
Upper Extremity	12,826	2.04
Lower Extremity	86,004	13.70
External	1,334	0.21
Total Incidents	627,664	

**A patient can have injuries in multiple body regions.*

Figure 28

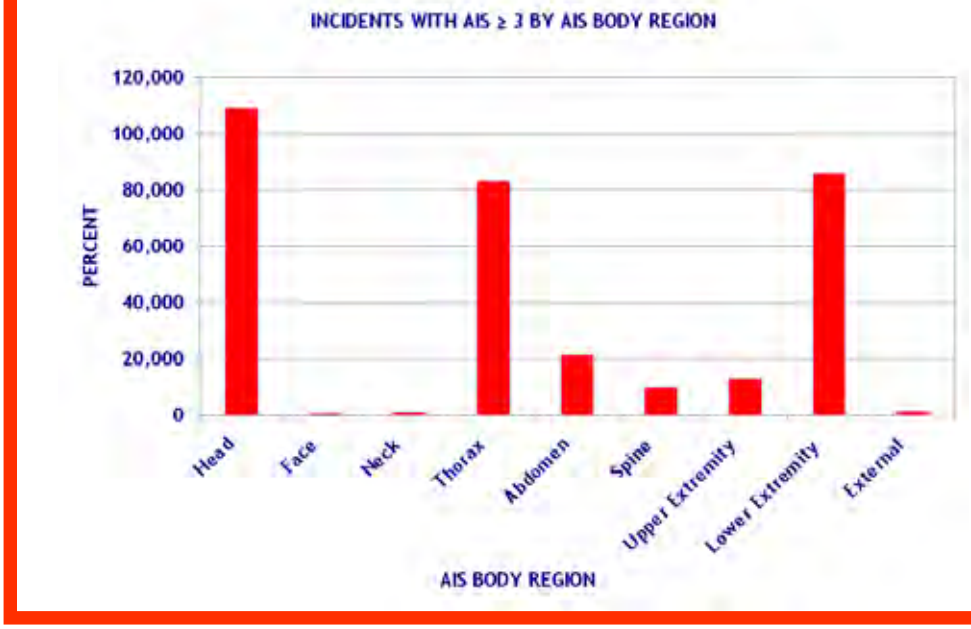


Table 29

INCIDENTS AND CASE FATALITY RATE BY AIS BODY REGION			
AIS BODY REGION	NUMBER	DEATHS	CASE FATALITY RATE
Head	204,751	14,878	7.27
Face	155,848	7,370	4.73
Neck	6,532	632	9.68
Thorax	126,219	10,590	8.39
Abdomen	81,502	6,306	7.74
Spine	106,762	5,052	4.73
Upper Extremity	172,597	6,127	3.55
Lower Extremity	220,034	7,899	3.59
External	58,549	2,576	4.40
NK/NR	18,481	1,259	6.81
Total Incidents/Deaths	664,927	62,689	

**A patient can have injuries in multiple body regions.*

Figure 29

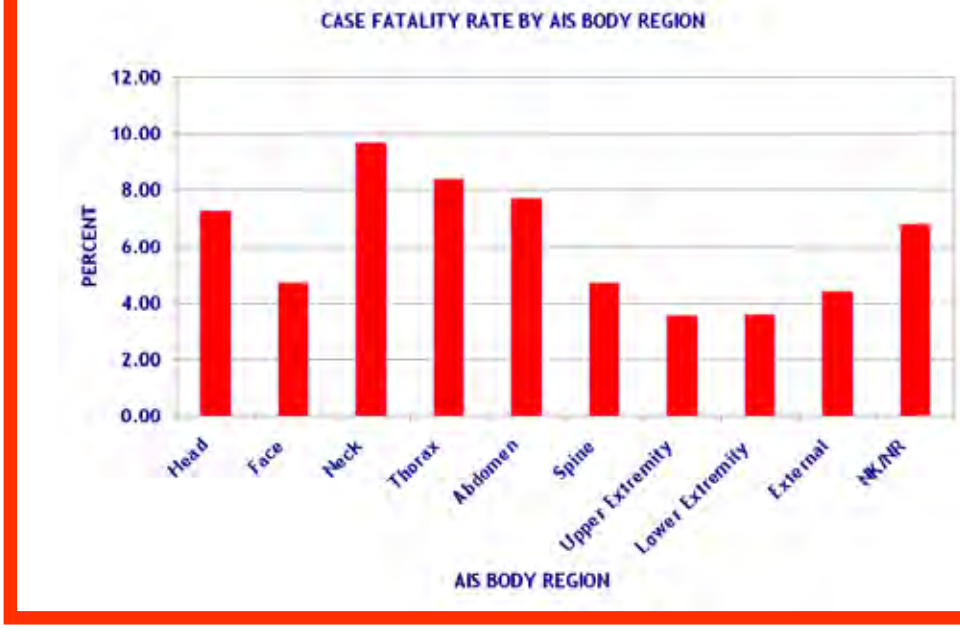
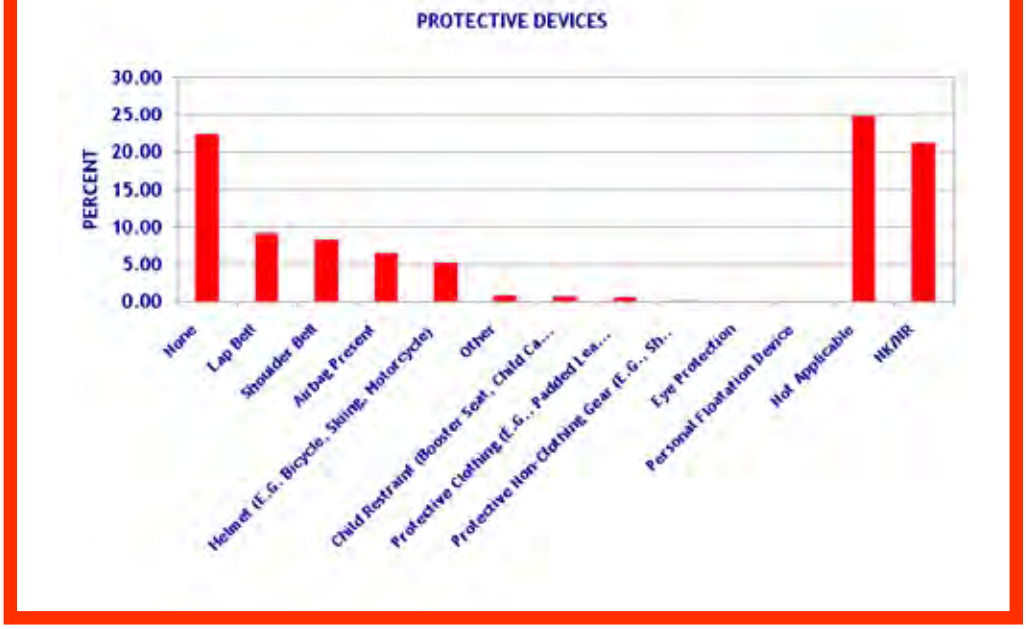


Table 30

INCIDENTS BY PROTECTIVE DEVICES		
PROTECTIVE DEVICES	NUMBER	PERCENT
None	162,614	24.46
Lap Belt	66,666	10.03
Shoulder Belt	60,937	9.16
Airbag Present	46,571	7.00
Helmet (E.G. Bicycle, Skiing, Motorcycle)	37,921	5.70
Other	6,118	0.92
Child Restraint (Booster Seat, Child Car Seat)	4,488	0.67
Protective Clothing (E.G., Padded Leather Pants)	3,663	0.55
Protective Non-Clothing Gear (E.G., Shin Guard)	1,107	0.17
Eye Protection	309	0.05
Personal Floatation Device	236	0.04
Not Applicable	180,789	27.19
NK/NR	153,776	23.13
Total Incidents	664,927	

Figure 30



Outcomes

Table 31

MEDIAN TOTAL EMS LENGTH (MINS) BY MECHANISM OF INJURY		
MECHANISM	NUMBER	MEDIAN
Motor Vehicle Traffic	102,777	43
Fall	80,599	47
Struck by, against	17,068	43
Firearm	15,677	31
Transport, other	13,484	60
Cut/pierce	13,378	34
Pedal cyclist, other	4,194	43
Other specified and classifiable	3,221	50
Unspecified	2,890	40
Machinery	2,380	52
Fire/flame	2,188	53
Hot object/substance	1,394	53
Other specified, not elsewhere classifiable	1,181	40
Pedestrian, other	1,011	41
Natural/environmental, Other	679	64
Natural/environmental, Bites and stings	567	48
Overexertion	396	51
Suffocation	251	42
Drowning/submersion	162	51
Poisoning	143	43
NK/NR	679	40

Figure 31

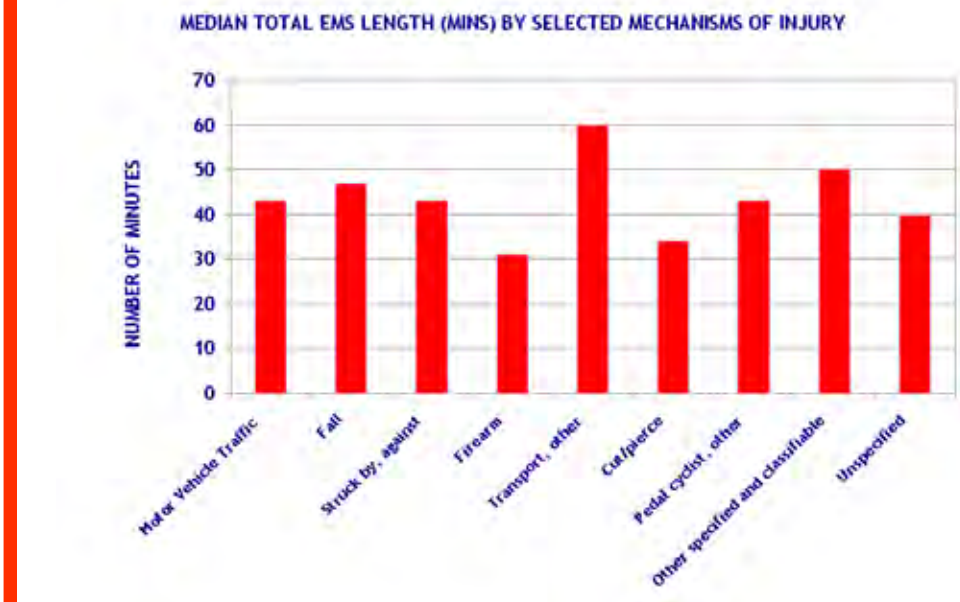


Table 32

MEDIAN TOTAL EMS LENGTH (IN MINS) BY INJURY SEVERITY SCORE		
ISS	NUMBER	MEDIAN
1-8	116,015	43
9-15	66,888	46
16-24	36,607	47
>24	17,357	44
NK/NR	19,854	43

Figure 32

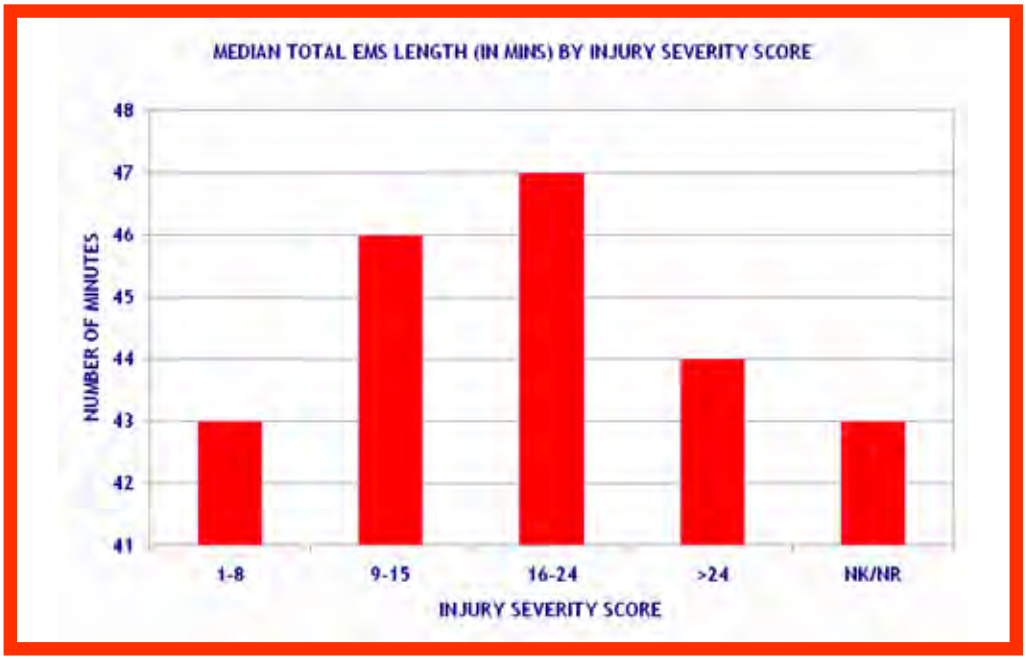


Table 33

MEDIAN LENGTH OF STAY (DAYS) BY MECHANISM OF INJURY		
MECHANISM	NUMBER	MEDIAN
Fall	217,408	4
MVT	198,993	3
Struck by, against	47,459	2
Transport, other	34,394	3
Cut/pierce	31,501	2
Firearm	31,399	3
Pedal cyclist, other	10,955	2
Other specified and classifiable	10,492	2
Unspecified	7,264	3
Fire/flame	7,065	3
Machinery	6,945	2
Hot object/substance	6,892	2
Other specified, not elsewhere classifiable	3,291	2
Natural/environmental, Bites and stings	3,027	2
Pedestrian, other	2,133	3
Natural/environmental, Other	2,010	3
Overexertion	1,591	2
Suffocation	533	2
Drowning/submersion	368	3
Poisoning	320	3
NK/NR	1,454	2

Figure 33

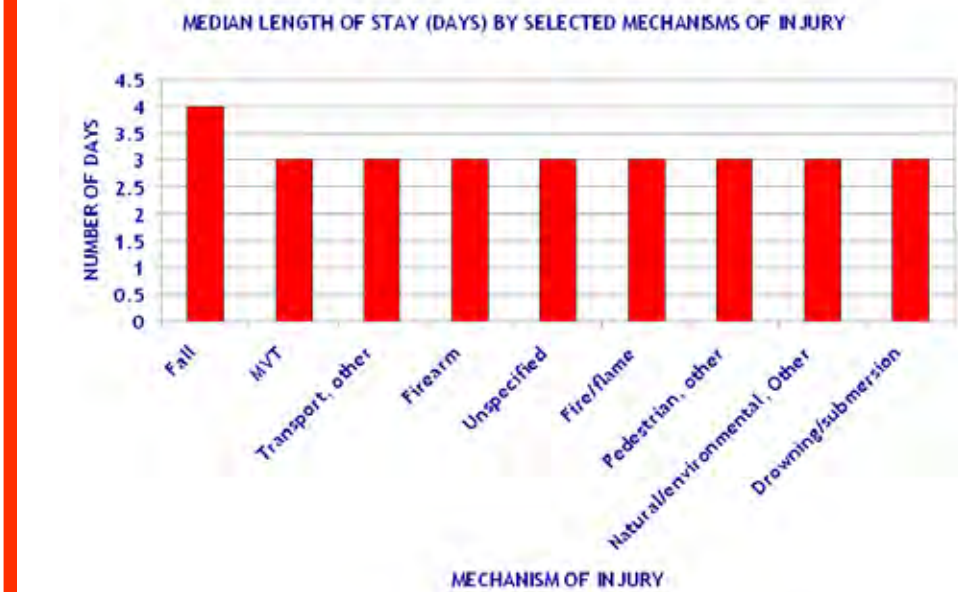


Table 34

MEDIAN LENGTH OF STAY (DAYS) BY INJURY SEVERITY SCORE		
ISS	NUMBER	MEDIAN
1-8	309,759	2
9-15	154,313	4
16-24	85,473	5
>24	33,326	7
NK/NR	42,881	3

Figure 34

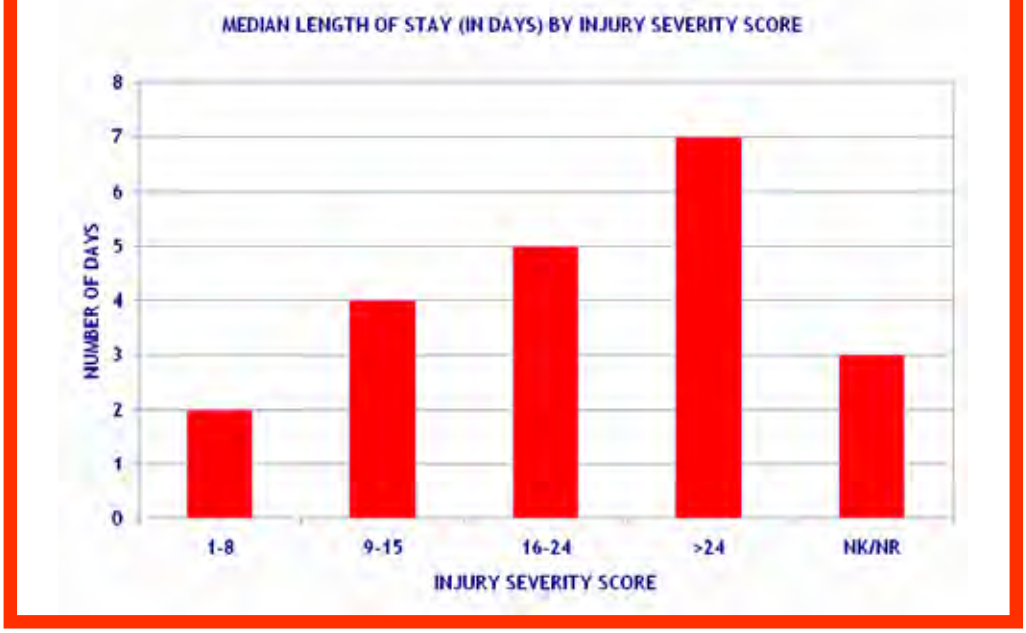


Table 35

MEDIAN VENTILATOR DAYS BY MECHANISM OF INJURY		
MECHANISM	NUMBER	MEDIAN
MVT	18,331	7
Fall	8,281	5
Firearm	3,447	5
Transport, other	2,069	6
Struck by, against	1,694	5
Cut/pierce	1,022	3
Other specified and classifiable	838	5
Fire/flame	806	9
Unspecified	603	5
Pedal cyclist, other	317	5
Machinery	246	5
Pedestrian, other	207	6
Other specified, not elsewhere classifiable	140	4
Hot object/substance	118	7
Suffocation	118	3
Natural/environmental, Other	103	6
Drowning/submersion	69	7
Natural/environmental, Bites and stings	35	3
Poisoning	26	4
Overexertion	6	3
NK/NR	147	5

Figure 35

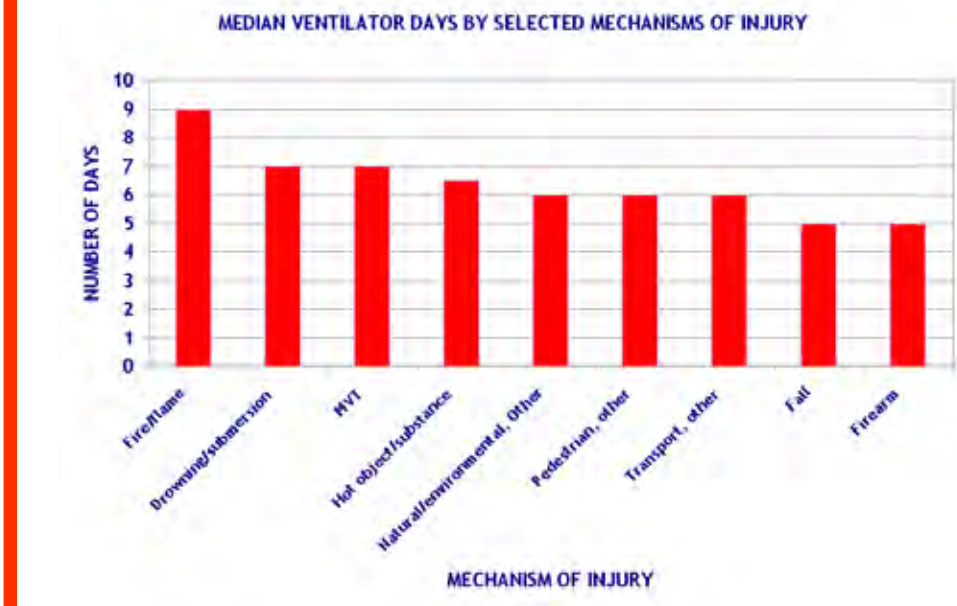


Table 36

MEDIAN VENTILATOR DAYS BY INJURY SEVERITY SCORE		
ISS	NUMBER	MEDIAN
1-8	3,547	3
9-15	5,954	4
16-24	11,628	6
>24	11,262	8
NK/NR	6,257	6

Figure 36

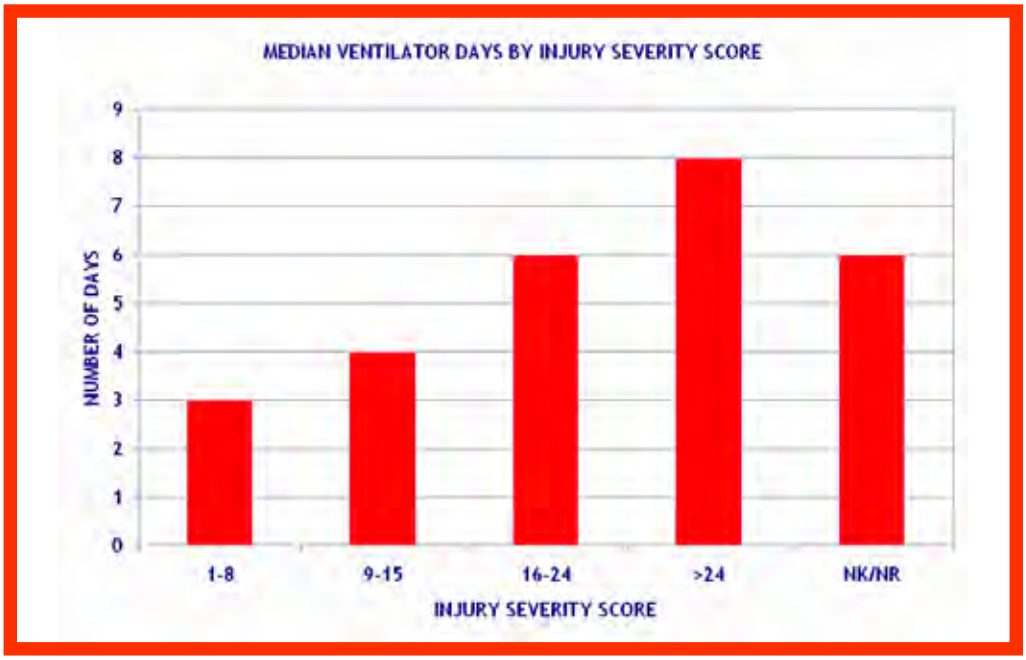


Table 37

MEDIAN ICU DAYS BY MECHANISM OF INURY		
MECHANISM	NUMBER	MEDIAN
MVT	43,642	5
Fall	29,544	4
Firearm	7,212	4
Transport, other	5,997	4
Struck by, against	5,520	3
Cut/pierce	3,106	3
Fire/flame	1,960	8
Other specified and classifiable	1,905	5
Unspecified	1,443	4
Pedal cyclist, other	1,224	3
Hot object/substance	824	5
Machinery	728	4
Pedestrian, other	474	4
Other specified, not elsewhere classifiable	473	3
Natural/environmental, Other	392	3
Suffocation	187	3
Natural/environmental, Bites and stings	127	2
Drowning/submersion	111	5
Poisoning	71	3
Overexertion	29	3
NK/NR	210	4

Figure 37

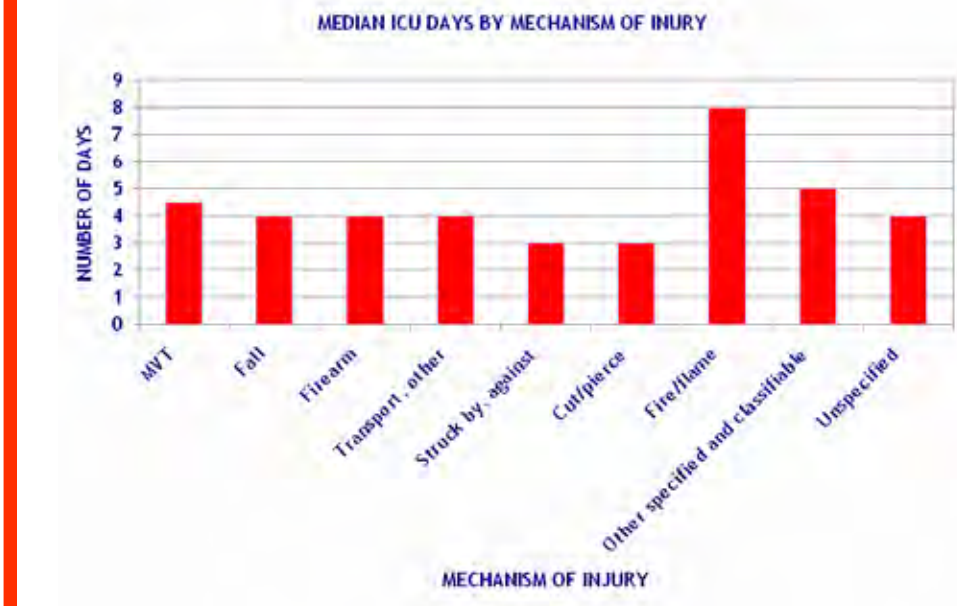


Table 38

MEDIAN ICU DAYS BY INJURY SEVERITY SCORE		
ISS	NUMBER	MEDIAN
1-8	15,694	3
9-15	22,407	3
16-24	34,895	4
>24	19,506	7
NK/NR	12,739	5

Figure 38

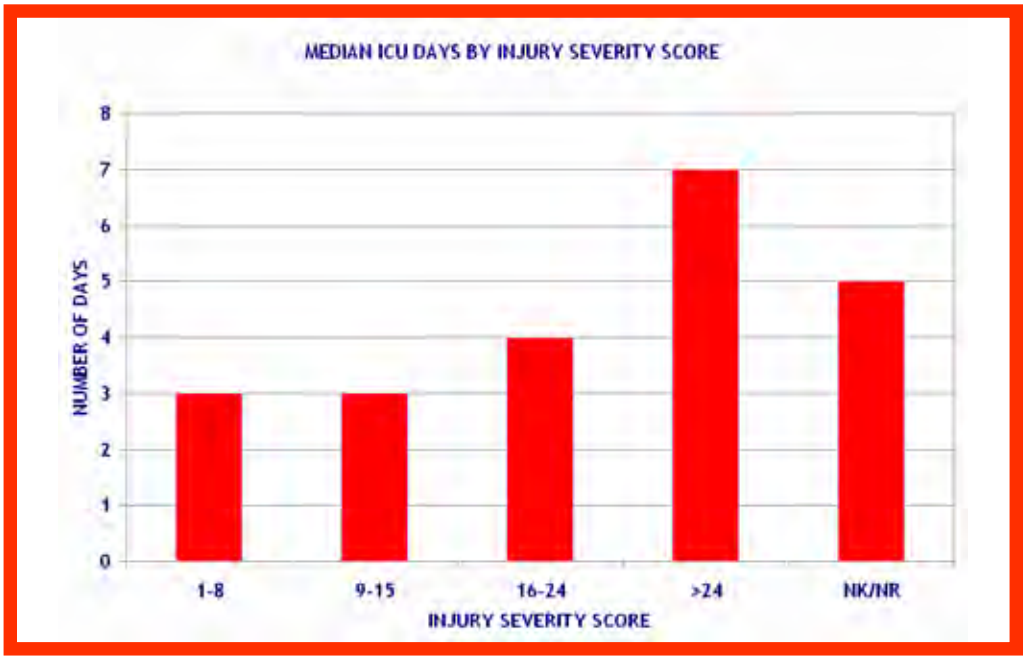


Table 39

ED DISCHARGE DISPOSITION		
ED DISCHARGE DISPOSITION	NUMBER	PERCENT
Died	7,305	1.16
Floor bed (general admission, non specialty unit bed)	264,544	42.15
Home with services	497	0.08
Home without services	57,721	9.20
Intensive Care Unit (ICU)	118,872	18.94
Left against medical advice	1,180	0.19
Observation unit (unit that provides <24 hour stays)	10,832	1.73
Operating Room	80,567	12.84
Other (jail, institutional care facility, mental health, etc)	3,581	0.57
Telemetry/step-down unit (less acuity than ICU)	34,693	5.53
Transferred to another hospital	18,326	2.92
Not Applicable	14,324	2.28
NK/NR	15,222	2.43
Total	627,664	100.00

Figure 39

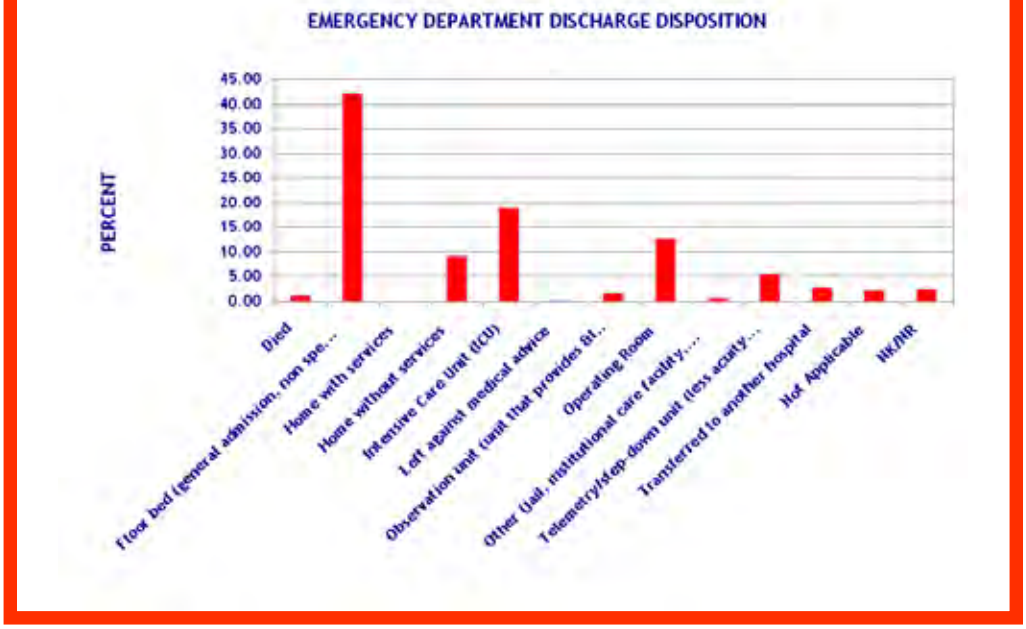


Table 40

REASONS FOR DEATH IN EMERGENCY DEPARTMENT		
Died in ED (other than failed resuscitation attempt)	NUMBER	PERCENT
DOA: Declared dead on arrival with minimal or no resuscitation attempt	1,564	6.07
Death after failed resuscitation attempt (failure to respond within 15 minutes)	1,354	5.26
Died in ED (other than failed resuscitation attempt)	4,217	16.38
Total Deaths	25,747	

Figure 40

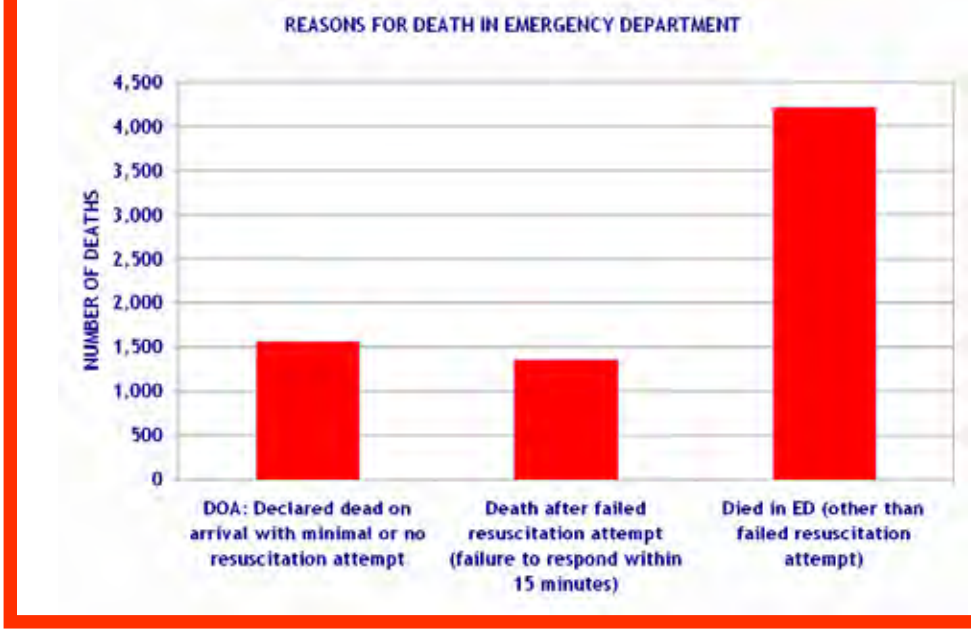


Table 41

HOSPITAL DISCHARGE DISPOSITION		
HOSPITAL DISCHARGE DISPOSITION	NUMBER	PERCENT
Discharge/Transferred to home under care of Home Health Agency	21,453	3.42
Discharged home with no home services	361,347	57.57
Discharged/Transferred to Skilled Nursing Facility	48,870	7.79
Discharged/Transferred to an Intermediate Care Facility	15,627	2.49
Discharged/Transferred to another acute care hospital using EMS	8,294	1.32
Discharged/Transferred to another type of rehabilitation or long term care	42,072	6.70
Discharged/Transferred to hospice care	998	0.16
Expired	18,442	2.94
Left against medical advice	3,657	0.58
Not Applicable	94,719	15.09
NK/NR	12,185	1.94
Total	627,664	100.00

Figure 41

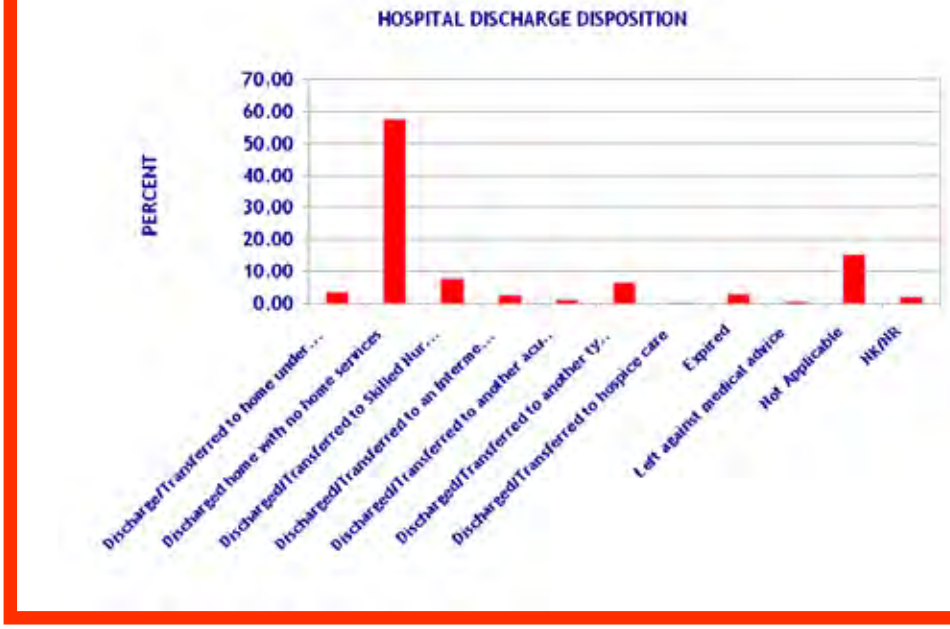
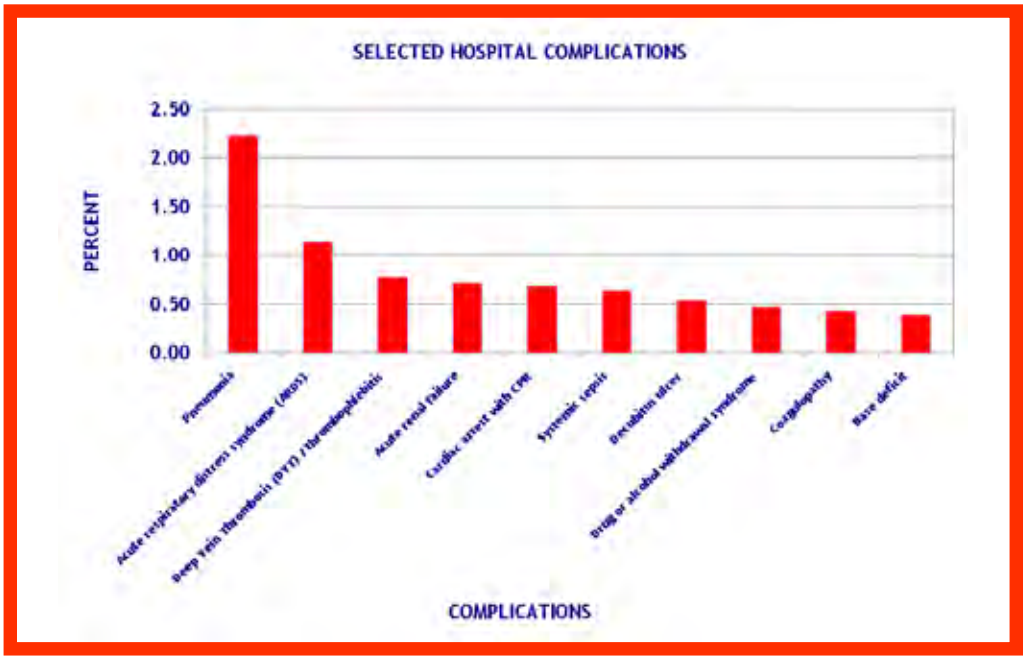


Table 42

HOSPITAL COMPLICATIONS		
COMPLICATIONS	NUMBER	PERCENT
Pneumonia	13,988	2.23
Acute respiratory distress syndrome (ARDS)	7,137	1.14
Deep Vein Thrombosis (DVT) / thrombophlebitis	4,855	0.77
Acute renal failure	4,499	0.72
Cardiac arrest with CPR	4,253	0.68
Systemic sepsis	4,004	0.64
Decubitus ulcer	3,389	0.54
Drug or alcohol withdrawal syndrome	2,913	0.46
Coagulopathy	2,706	0.43
Base deficit	2,460	0.39
Pulmonary embolism	2,170	0.35
Bleeding	1,547	0.25
Organ/space surgical site infection	1,482	0.24
Myocardial infarction	1,462	0.23
Unplanned intubation	1,285	0.20
Extremity compartment syndrome	1,135	0.18
Intracranial pressure	890	0.14
Superficial surgical site infection	872	0.14
Stroke / CVA	729	0.12
Abdominal compartment syndrome	645	0.10
Wound disruption	624	0.10
Coma	503	0.08
Graft/prosthesis/flap failure	303	0.05
Deep surgical site infection	289	0.05
Abdominal fascia left open	164	0.03
NK/NR	104,704	16.68
No NTDS listed Medical Complications Occurred	278,139	44.31
Not Applicable	205,450	32.73
Total Incidents	627,664	

Figure 42



Regional Analyses

Table 43

INCIDENTS BY REGION		
REGION	NUMBER	PERCENT
MIDWEST	168,004	26.77
NORTHEAST	100,297	15.98
SOUTH	218,845	34.87
WEST	140,518	22.39
Total	627,664	100.00

Figure 43

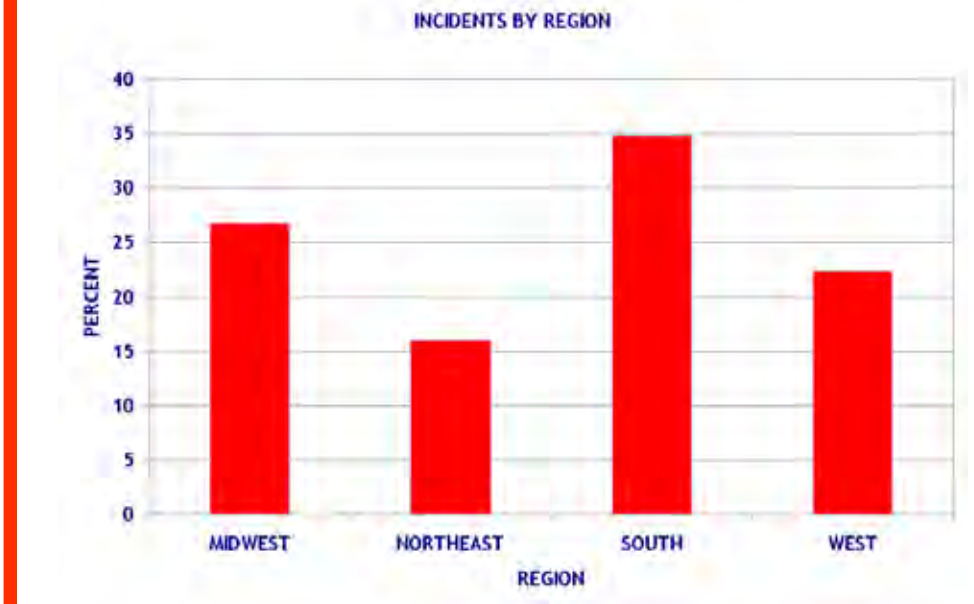


Table 44

CASE FATALITY RATE BY REGION			
REGION	NUMBER	DEATHS	CASE FATALITY RATE
MIDWEST	168,004	6,341	3.77
NORTHEAST	100,297	4,400	4.39
SOUTH	218,845	9,597	4.39
WEST	140,518	5,409	3.85
Total	627,664	25,747	

Figure 44

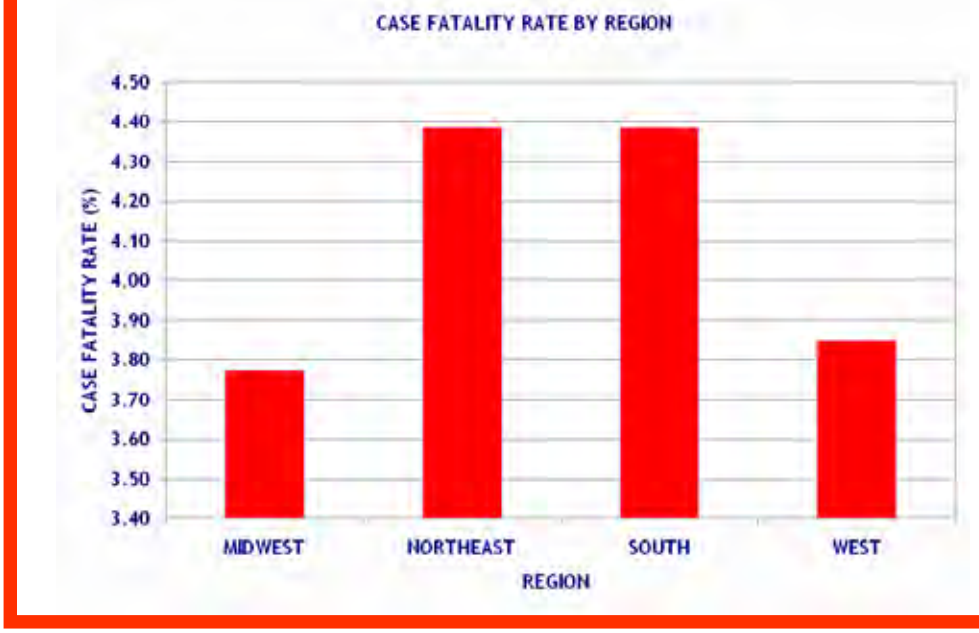


Table 45

MECHANISM OF INJURY BY REGION					
REGION	NUMBER	MIDWEST PERCENT	NORTHEAST PERCENT	SOUTH PERCENT	WEST PERCENT
Fall	217,743	41.68	43.10	29.26	28.78
Motor Vehicle Traffic	199,566	26.63	26.90	35.44	35.79
Struck By, Against	47,565	7.63	7.19	7.33	8.18
Transport, Other	34,512	4.91	4.38	5.92	6.35
Cut/Pierce	31,586	3.91	4.89	5.27	6.09
Firearm	31,499	4.53	3.61	5.92	5.21
Pedal Cyclist, Other	10,967	1.69	1.83	1.21	2.59
Other Specified And Classifiable	10,512	1.64	1.52	1.94	1.41
Unspecified	7,277	1.09	1.29	1.07	1.28
Fire/Flame	7,087	1.29	1.03	1.41	0.58
Machinery	6,963	1.40	1.06	1.16	0.72
Hot Object/Substance	6,906	1.15	1.06	1.45	0.52
Other Specified, Not Elsewhere Classifiable	3,299	0.51	0.49	0.62	0.42
Natural/Environmental, Bites And Stings	3,029	0.55	0.33	0.62	0.30
Pedestrian, Other	2,140	0.32	0.35	0.34	0.36
Natural/Environmental, Other	2,018	0.38	0.21	0.37	0.26
Overexertion	1,597	0.29	0.34	0.27	0.13
Suffocation	536	0.10	0.08	0.07	0.08
Drowning/Submersion	371	0.06	0.05	0.07	0.04
Poisoning	321	0.08	0.03	0.03	0.06
NK/NR	1,912	0.10	0.22	0.18	0.81
Total	627,664	99.95	99.95	99.97	99.95

Adverse effects have been removed from all mechanism tables, therefore percentages may not equal 100.

Figure 45

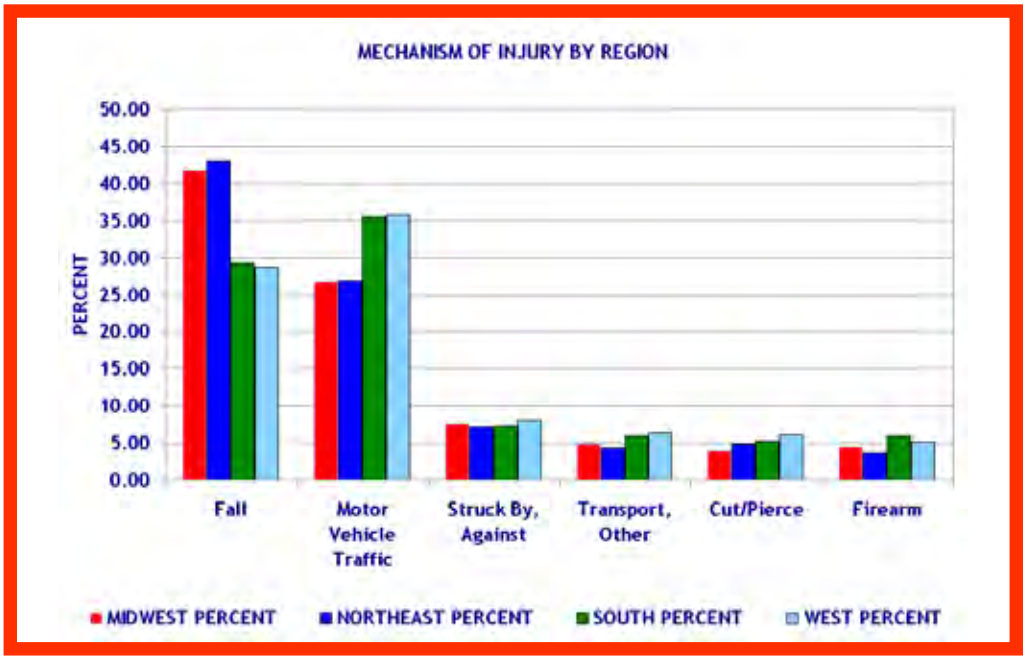


Table 46

INJURY SEVERITY SCORE BY REGION					
ISS	NUMBER	MIDWEST PERCENT	NORTHEAST PERCENT	SOUTH PERCENT	WEST PERCENT
1-8	310,902	49.93	48.96	49.07	50.18
9-15	154,687	25.91	25.11	25.05	22.17
16-24	85,684	13.06	15.08	14.16	12.54
>24	33,417	4.96	4.39	6.03	5.32
NK/NR	42,974	6.14	6.45	5.68	9.78
Total	627,664	100.00	100.00	100.00	100.00

Figure 46

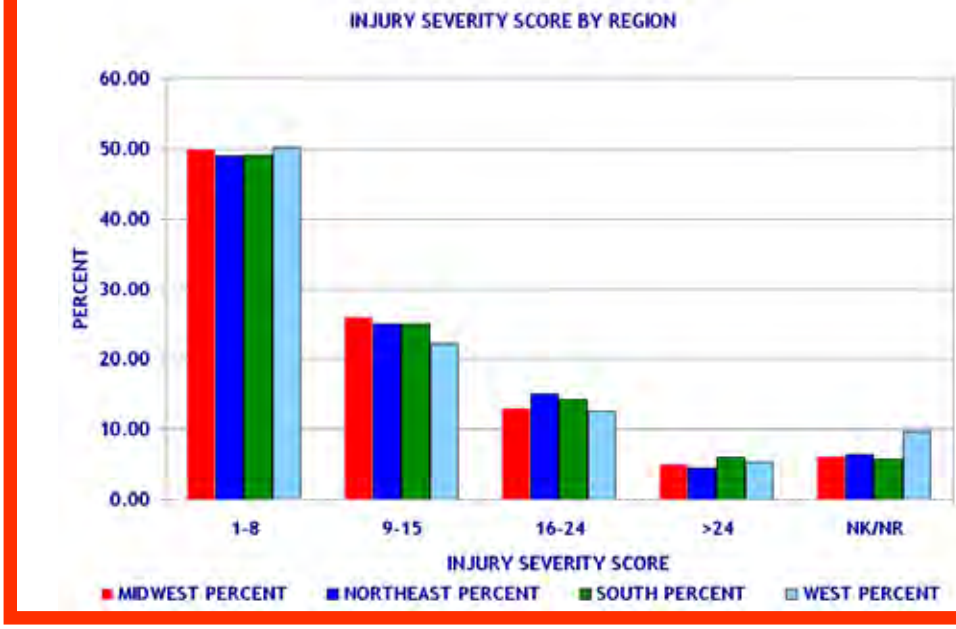


Table 47

INCIDENTS BY URBAN INFLUENCE CODE REGION		
URBAN CATEGORY	NUMBER	PERCENT
Rural	32,485	9.72
Suburban	22,358	6.69
Urban	268,957	80.50
Wilderness	10,325	3.09
Total	334,125	100.00

Figure 47

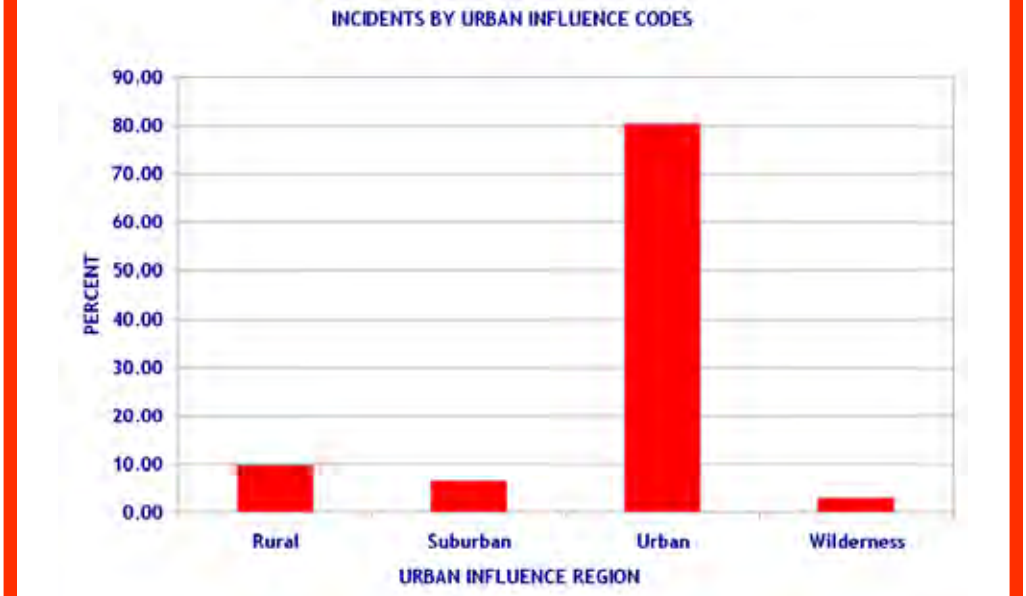


Table 48

CASE FATALITY RATE BY URBAN INFLUENCE CODES			
URBAN CATEGORY	NUMBER	DEATHS	CASE FATALITY RATE
Rural	32,485	1,375	4.23
Suburban	22,358	1,012	4.53
Urban	268,957	11,941	4.44
Wilderness	10,325	405	3.92
Total	334,125	14,733	

Figure 48

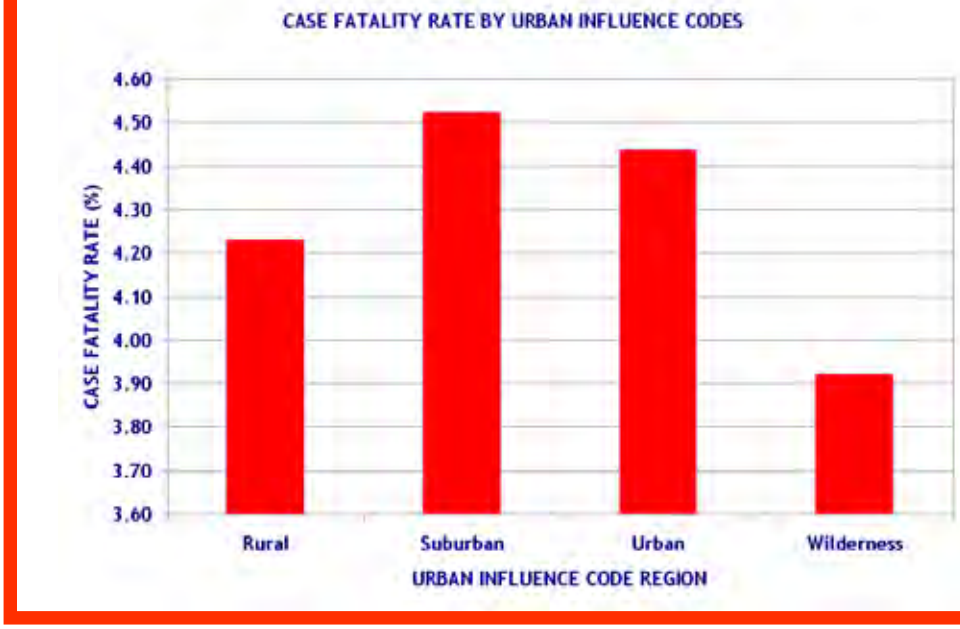


Table 49

MECHANISM OF INJURY BY URBAN INFLUENCE CODES								
MECHANISM	NUMBER (URBAN)	PERCENT (URBAN)	NUMBER (SUBURBAN)	PERCENT (SUBURBAN)	NUMBER (RURAL)	PERCENT (RURAL)	NUMBER (WILDERNESS)	PERCENT (WILDERNESS)
Fall	94,386	35.10	7,320	32.75	10,653	32.81	3,357	32.52
MVT	86,648	32.23	7,973	35.67	10,959	33.76	3,214	31.13
Struck by, against	20,136	7.49	1,427	6.38	2,001	6.16	644	6.24
Cut/pierce	14,924	5.55	697	3.12	1,153	3.55	348	3.37
Firearm	14,724	5.48	686	3.07	989	3.05	284	2.75
Transport, other	11,612	4.32	1,823	8.16	3,110	9.58	1,328	12.86
Pedal cyclist, other	4,600	1.71	282	1.26	404	1.24	91	0.88
Other specified and classifiable	4,137	1.54	423	1.89	721	2.22	257	2.49
Hot object/substance	3,191	1.19	271	1.21	281	0.87	78	0.76
Unspecified	2,868	1.07	186	0.83	272	0.84	62	0.60
Fire/flame	2,837	1.06	403	1.80	458	1.41	130	1.26
Machinery	2,489	0.93	338	1.51	608	1.87	229	2.22
Other specified, not elsewhere classifiable	1,413	0.53	75	0.34	134	0.41	40	0.39
Natural/environmental, Bites and stings	1,253	0.47	126	0.56	179	0.55	54	0.52
Pedestrian, other	951	0.35	84	0.38	139	0.43	44	0.43
Natural/environmental, Other	697	0.26	127	0.57	234	0.72	102	0.99
Overexertion	668	0.25	48	0.21	80	0.25	39	0.38
Suffocation	235	0.09	10	0.04	25	0.08	8	0.08
Drowning/submersion	127	0.05	27	0.12	30	0.09	9	0.09
Poisoning	106	0.04	9	0.04	13	0.04	2	0.02
NK/NR	869	0.32	19	0.08	21	0.06	4	0.04
Total	268,871	100	22,354	100	32,464	100	10,324	100

Figure 49

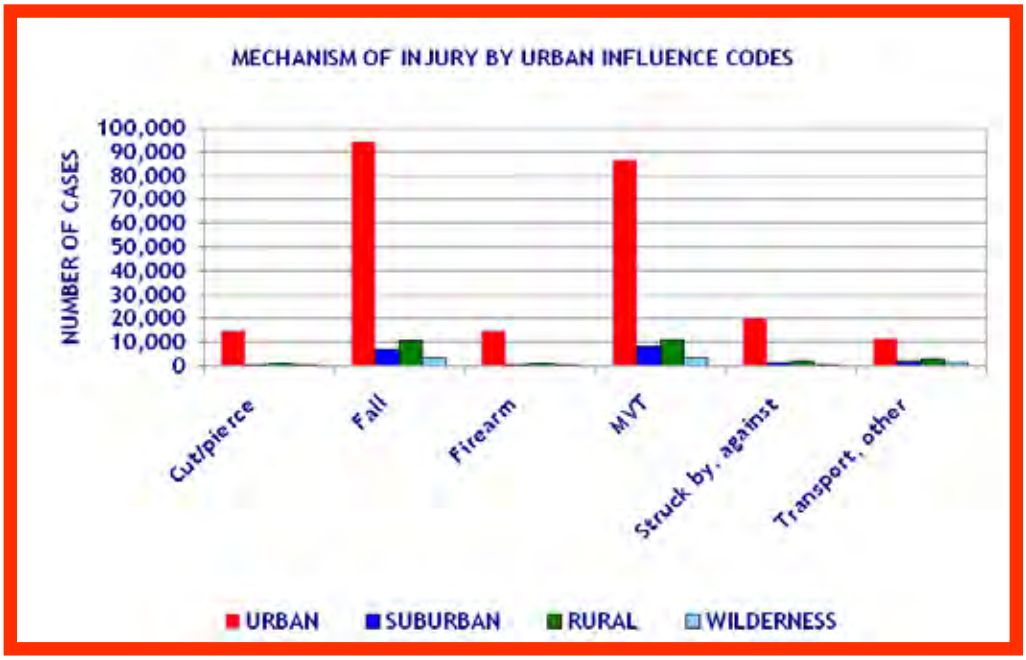
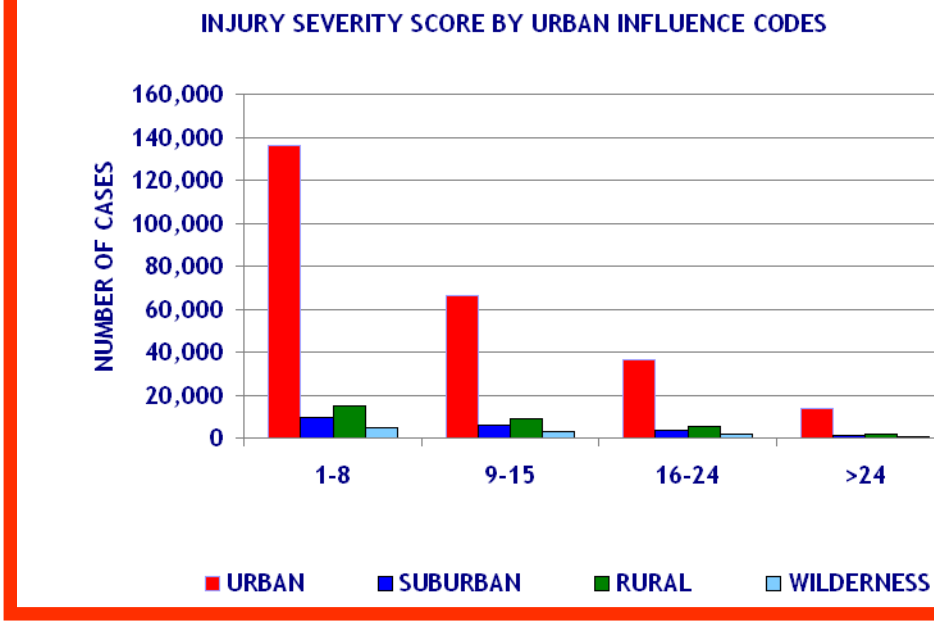


Table 50

INJURY SEVERITY SCORE BY URBAN INFLUENCE CODES								
ISS	NUMBER (URBAN)	PERCENT (URBAN)	NUMBER (SUBURBAN)	PERCENT (SUBURBAN)	NUMBER (RURAL)	PERCENT (RURAL)	NUMBER (WILDERNESS)	PERCENT (WILDERNESS)
1-8	136,048	50.58	9,581	42.85	14,690	45.22	4,540	43.97
9-15	66,452	24.71	5,984	26.76	8,666	26.68	3,123	30.25
16-24	36,219	13.47	3,867	17.30	5,286	16.27	1,511	14.63
>24	13,443	5.00	1,474	6.59	2,038	6.27	615	5.96
NK/NR	16,795	6.24	1,452	6.49	1,805	5.56	536	5.19
Total	268,957	100	22,358	100	32,485	100	10,325	100

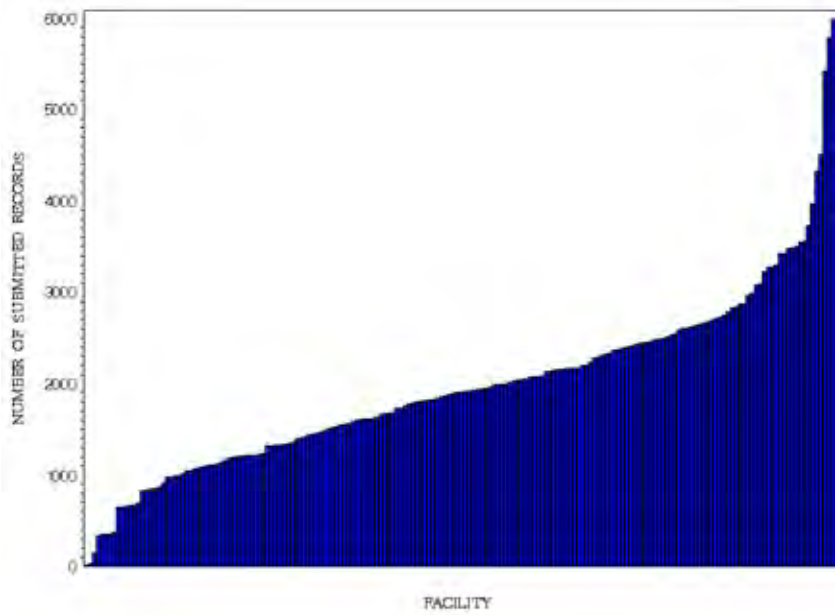
Figure 50



Comparative Analyses

Figure 51

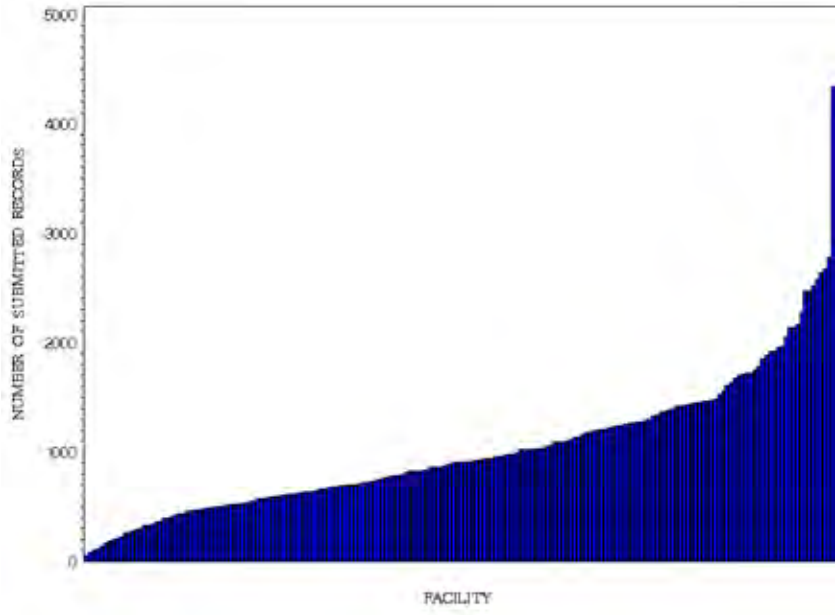
Number of Cases Submitted per Facility for Level I Facilities



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, however, pediatric hospitals are not included in the analysis.

Figure 52

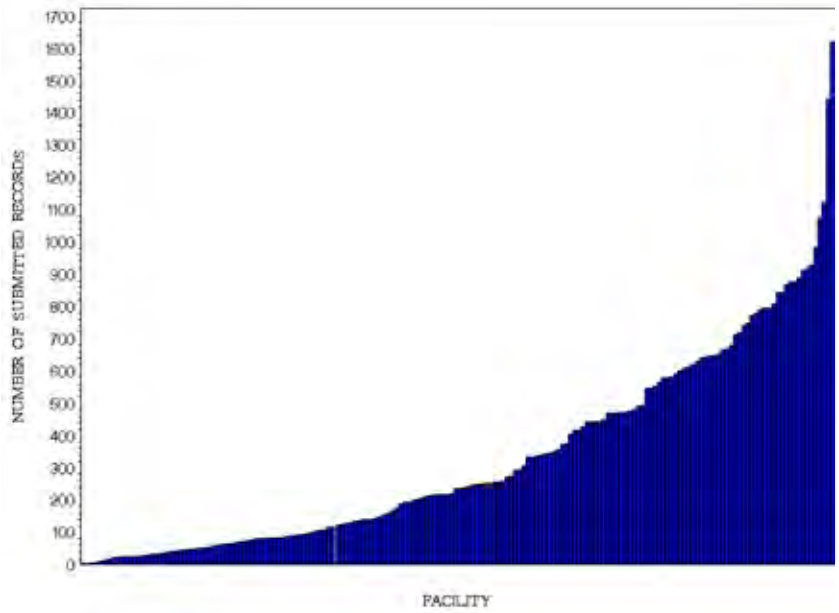
Number of Cases Submitted per Facility for Level II Facilities



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, however, pediatric hospitals are not included in the analysis.

Figure 53

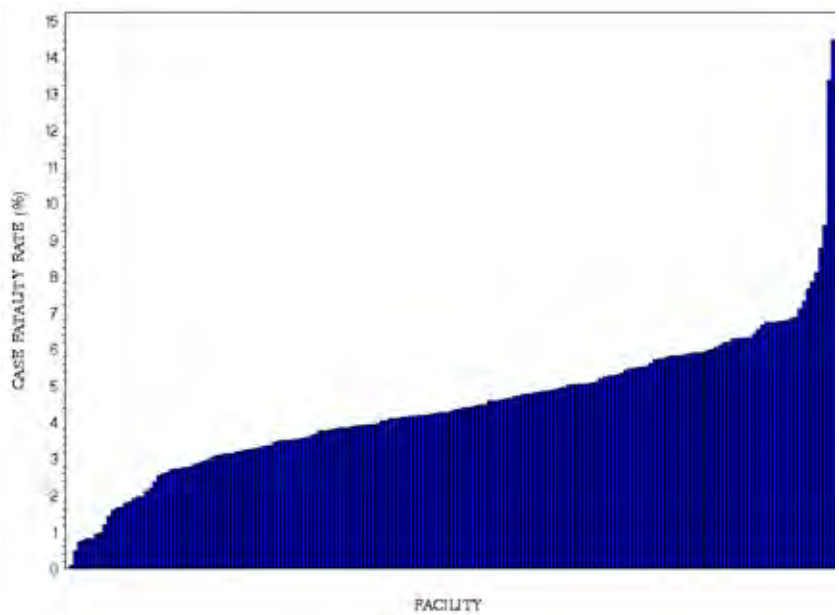
Number of Cases Submitted per Facility for Level III and IV Facilities and Facilities with Designation Other or Not Applicable



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 54

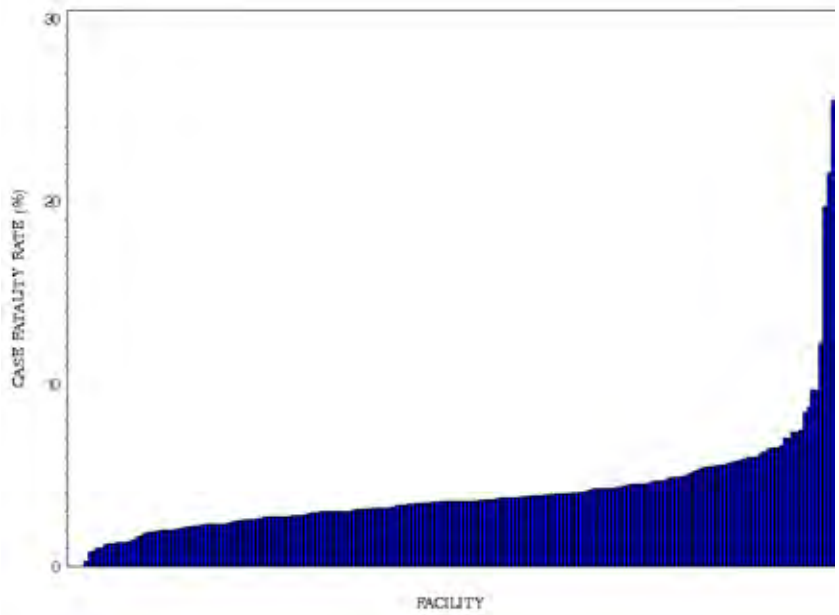
Case Fatality Rate per Facility for Level I Facilities



One facility out of the 186 level I facilities had a case fatality rate of 0% reported and is therefore 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, however, pediatric hospitals are not included in the analysis

Figure 55

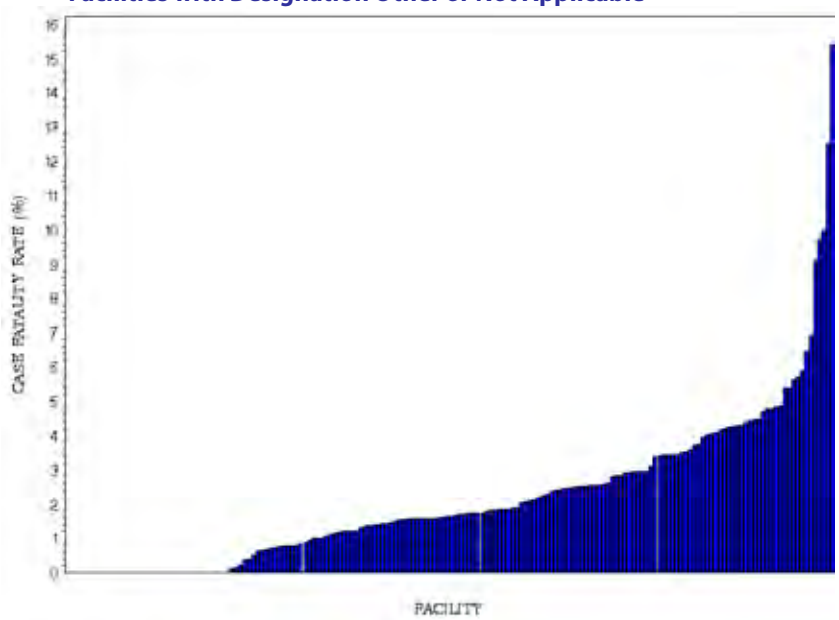
Case Fatality Rate per Facility for Level II Facilities



Four out of the 192 facilities had a case fatality rate of 0% reported and are therefore 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, however, pediatric hospitals are not included in the analysis.

Figure 56

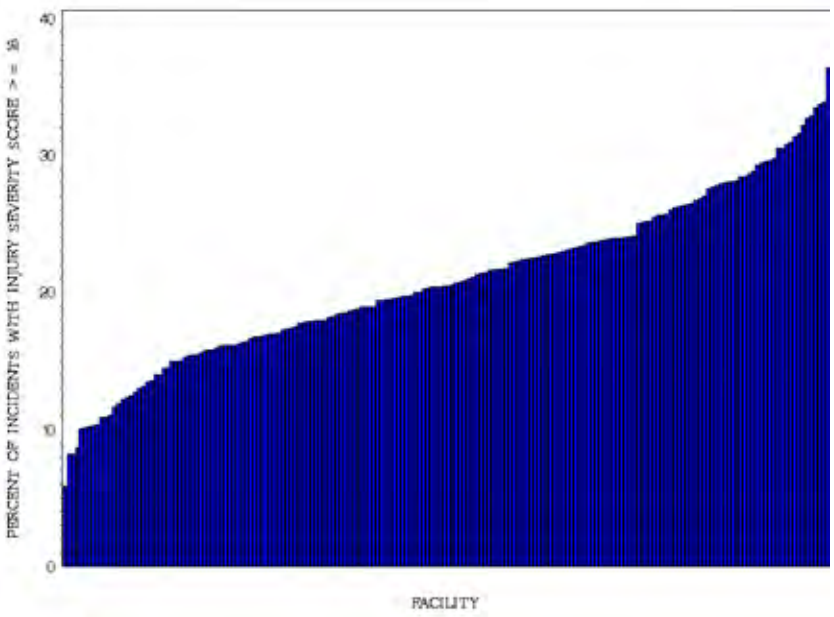
Case Fatality Rate per Facility for Level III and IV Facilities and Facilities with Designation Other or Not Applicable



Thirty-eight facility out of the 178 level I facilities had a case fatality rate of 0% reported and is therefore 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 57

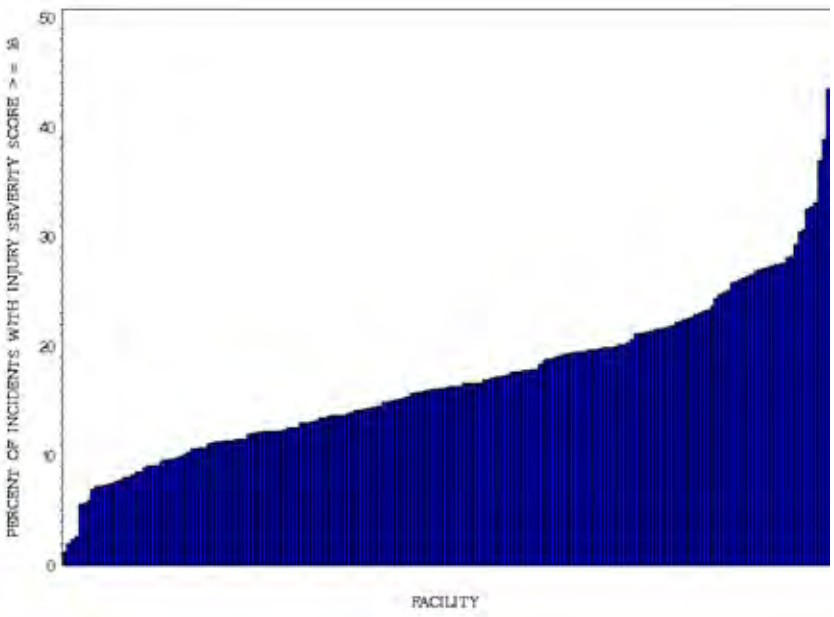
Percentage of Cases with ISS ≥ 16 per Facility for Level I Facilities



The ISS score calculated for all records are based on the ICD-90 map. Trauma level is based upon ACS verification and state designation, however, pediatric hospitals are not included in the analysis.

Figure 58

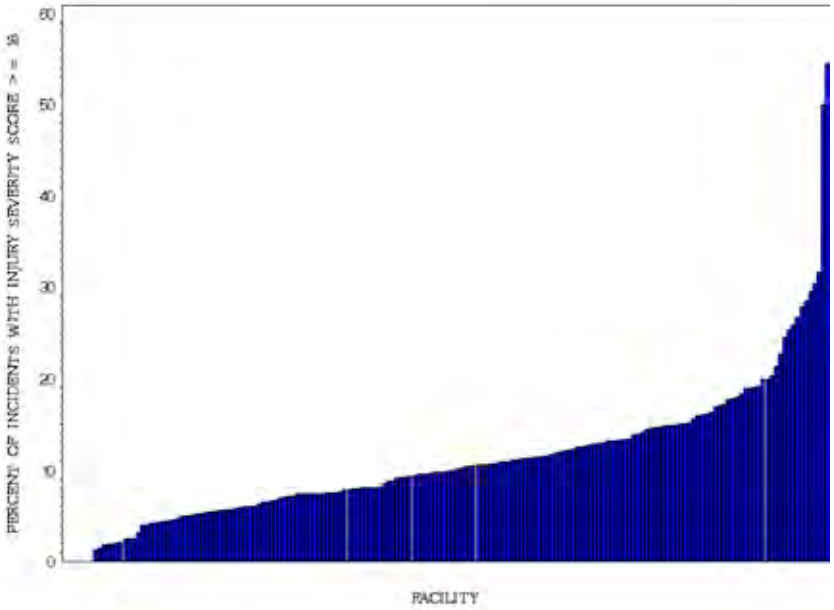
Percentage of Cases with ISS ≥ 16 per Facility for Level II Facilities



The ISS score calculated for all records are based on the ICD-90 map. Trauma level is based upon ACS verification and state designation, however, pediatric hospitals are not included in the analysis.

Figure 59

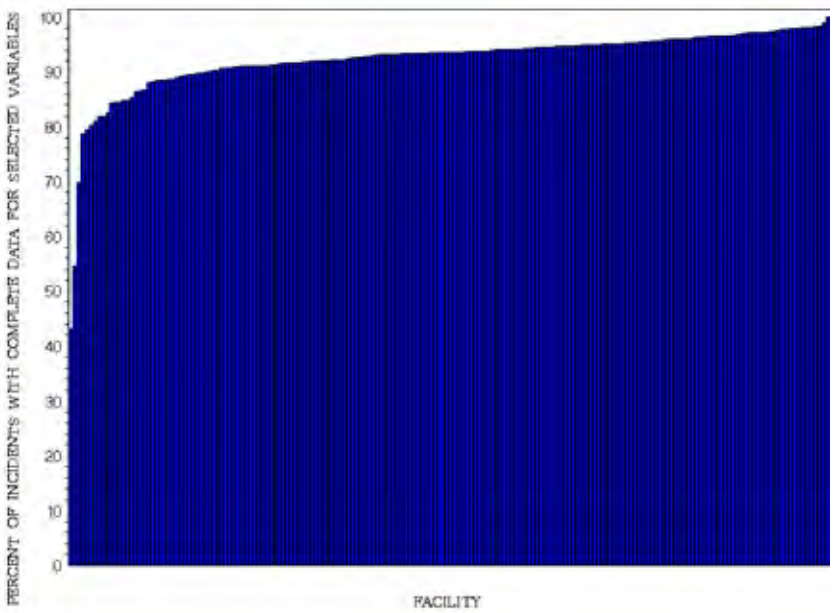
Percentage of Cases with ISS ≥ 16 per Facility for Level III and IV Facilities and Facilities with Designation Other or Not Applicable



Seven out of 178 facilities had no incidents with ISS ≥16, and are therefore not visible on the graph. The ISS score calculated for all records are based on the ICD-90. Trauma level is based upon ACS verification and state designation.

Figure 60

Data Completeness per Facility for Level I Facilities



An incident was classified as not complete if any of the following key variables were not known/ not documented: Age, Gender, Primary E-Code, Locally submitted Injury Severity Score, ED/Hospital Discharge Disposition, and Length of Stay. Trauma level is based upon ACS verification and state designation, however, pediatric hospitals are not included in the analysis.

Figure 61

Three out of 192 facilities had 0% of the incidents complete, and are therefore 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, Locally submitted Injury Severity Score, ED/Hospital Discharge Disposition, and Length of Stay. Trauma level is based upon ACS verification and state designation, however, pediatric hospitals are not included in the anlaysis.

Data Completeness per Facility for Level II Facilities

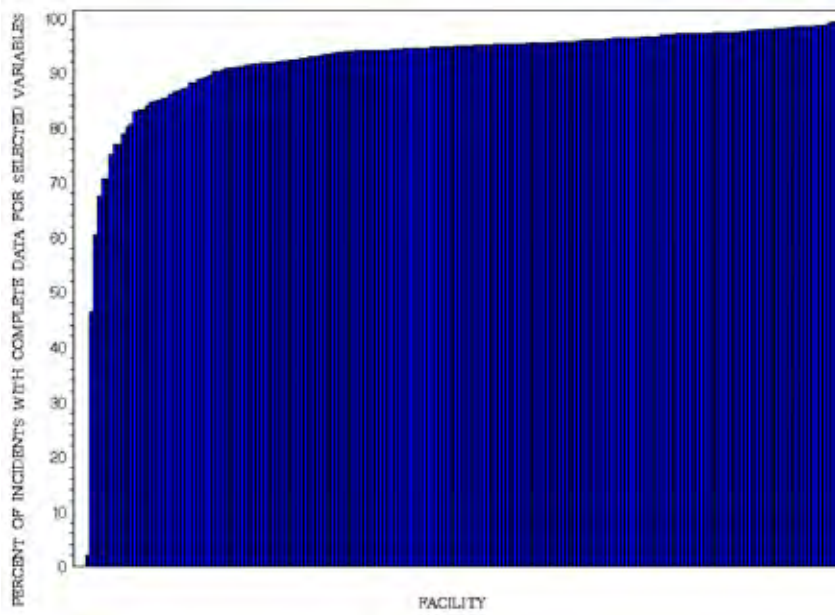


Figure 62

Thirteen out of 178 facilities had 0% of the incidents complete, and are therefore 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, Locally submitted Injury Severity Score, ED/Hospital Discharge Disposition, and Length of Stay. Trauma level is based upon ACS verification and state designation.

Data Completeness per Facility for Level III and IV Facilities and Facilities with Designation Other or Not Applicable

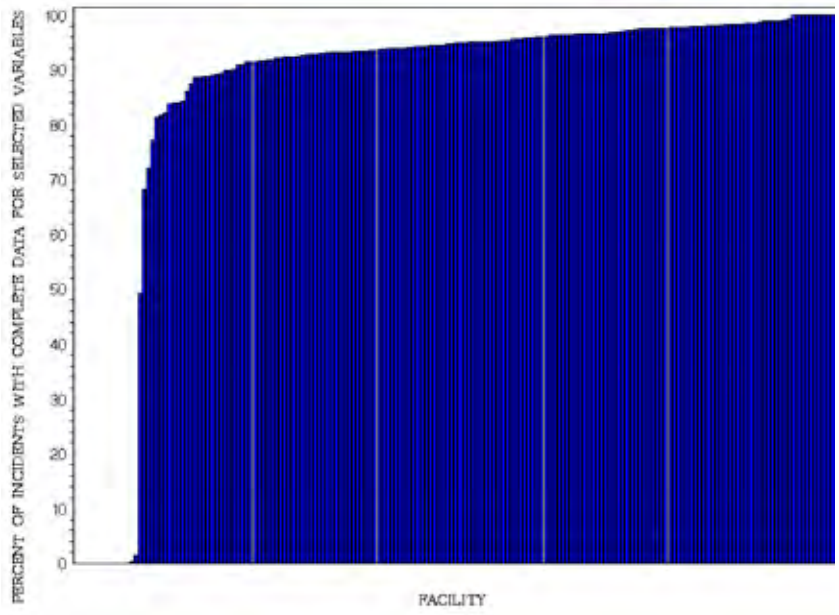
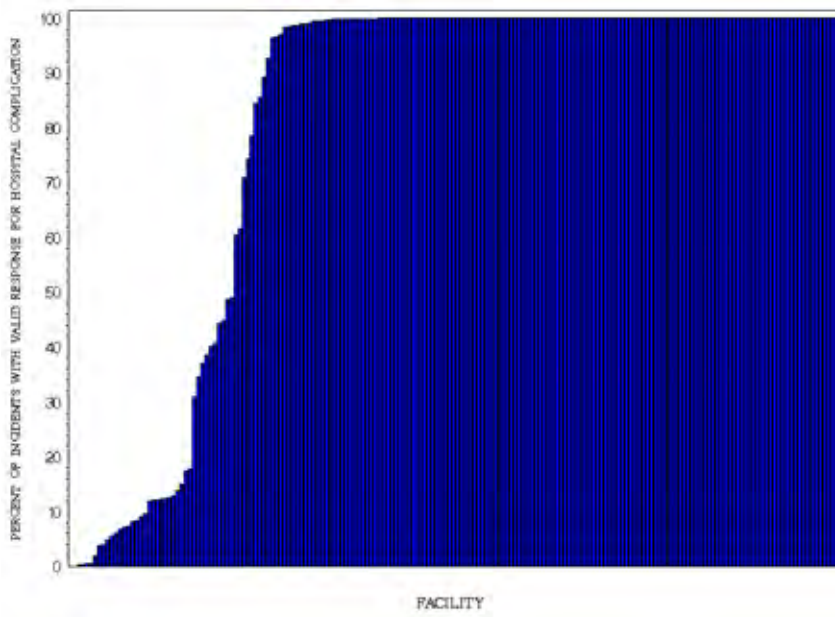


Figure 63

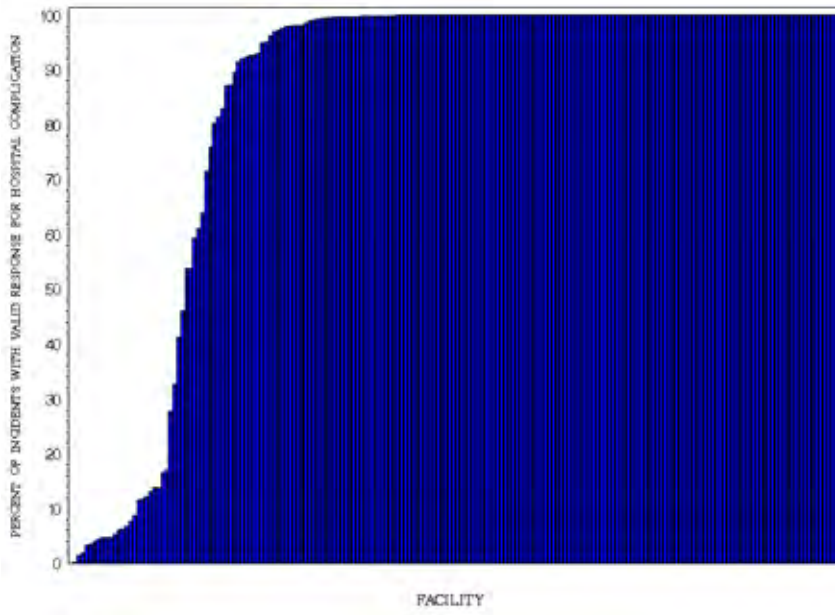
Complications Reported per Facility for Level I Facilities



Two out of 186 facilities had 0% of the incidents with valid response for hospital complications, including not applicable, and are therefore not visible on the graph. Trauma level is based upon ACS verification and state designation, however, pediatric hospitals are not included in the analysis.

Figure 64

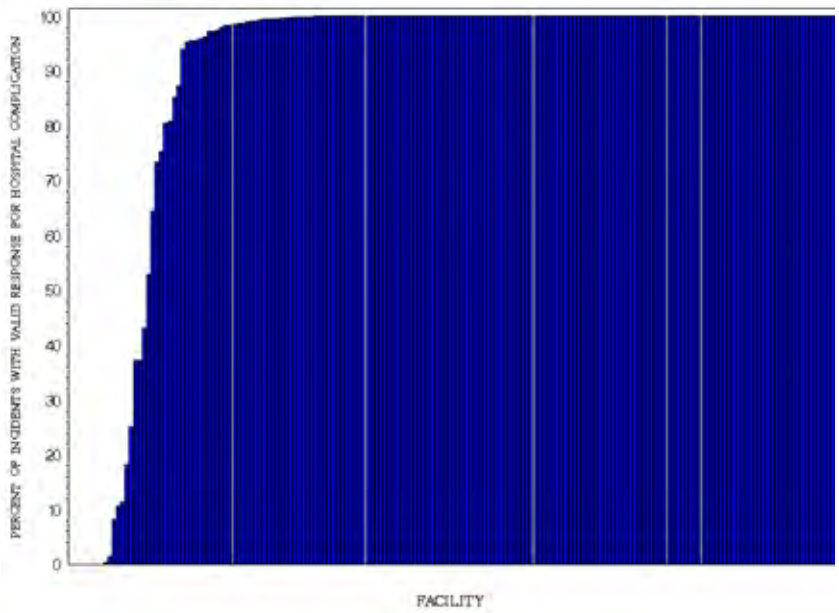
Complications Reported per Facility for Level II Facilities



One out of 192 facilities had 0% of the incidents with valid response for hospital complications, including not applicable, and are therefore not visible on the graph. Trauma level is based upon ACS verification and state designation, however, pediatric hospitals are not included in the analysis.

Figure 65

Complications Reported per Facility for Level III and IV Facilities and Facilities with Designation Other or Not Applicable



Eight out of 178 facilities had 0% of the incidents with valid response for hospital complications, including not applicable, and are therefore not visible on the graph. Trauma level is based upon ACS verification and state designation.

Appendices

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)

E-Code Grouping

Recommended Framework for E-Code Groupings for Presenting Injury Mortality and Morbidity Data.
Reference MMWR 1997;46:1–30. Updated last time in 2009.

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	E927.0-..4,.8,.9				
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
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— the listed E- code and should only appear as an additional code to specify the place of occurrence of the injury incident.

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 nationwide. 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 2003–2007 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 2008 data for NSP will be available later this year. For further information on the NSP please visit: ***http://www.facs.org/trauma/ntdb/nsp.html.***

Table 1

WEIGHTED ESTIMATES OF NUMBER OF INCIDENTS BY ADMISSION YEAR		
ADMISSION YEAR	WEIGHTED NUMBER OF INCIDENTS N (95% CI)	PERCENT (95% CI)
2003	577,421 (445693, 709149)	19.15 (16.15, 22.16)
2004	524,267 (406983, 641550)	17.39 (14.30, 20.48)
2005	608,524 (499450, 717598)	20.18 (17.38, 22.99)
2006	673,991 (543427, 804555)	22.36 (19.34, 25.37)
2007	630,645 (543521, 717768)	20.92 (17.74, 24.09)
Total	3,014,847 (2651514, 3378180)	

Figure 1

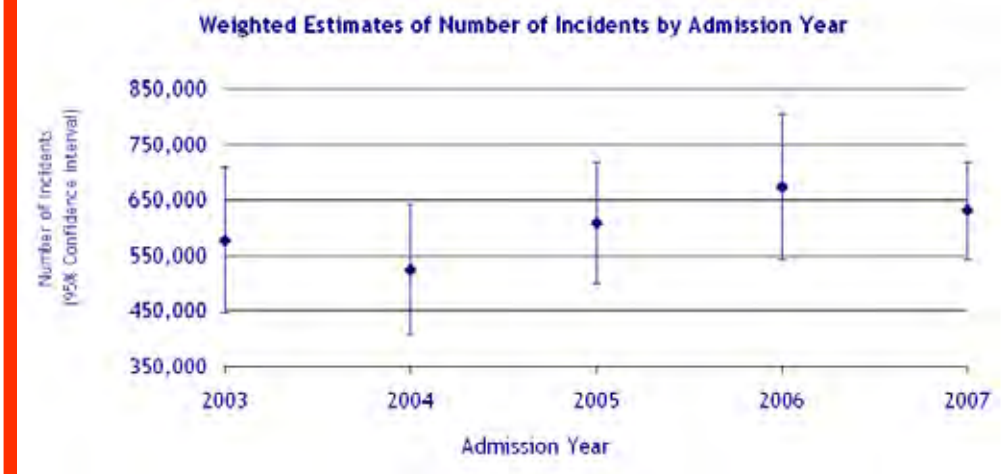


Table 2

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	189,654	384,843	33.01 (32.13, 33.89)	66.99 (66.11, 67.87)
2004	176,884	344,637	33.92 (31.90, 35.93)	66.08 (64.07, 68.09)
2005	206,469	399,889	33.98 (32.79, 35.16)	65.81 (64.62, 67.00)
2006	228,207	427,144	34.63 (33.26, 36.00)	64.81 (63.34, 66.29)
2007	209,939	410,662	33.29 (31.96, 34.62)	65.12 (63.52, 66.71)

Figure 2

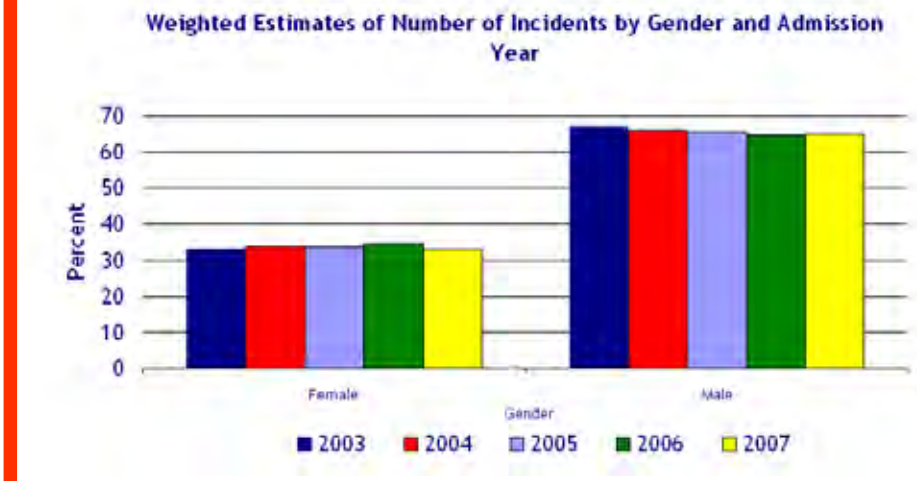


Table 3

WEIGHTED ESTIMATES OF PERCENT 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)	ADMISSION YEAR 2007 PERCENT (95% CI)
≤14	9.24 (8.09,10.40)	8.94 (7.50,10.39)	8.20 (6.94,9.46)	8.21 (7.06,9.35)	8.00 (6.82,9.17)
15–19	10.25 (9.94,10.56)	10.21 (9.72,10.69)	10.42 (10.00,10.85)	10.58 (10.04,11.11)	9.31 (8.99,9.64)
20–24	12.45 (11.97, 12.93)	12.21 (11.45,12.96)	12.30 (11.82,12.78)	11.92 (11.41,12.44)	10.98 (10.54,11.43)
25–34	16.97 (16.41,17.52)	16.04 (14.88,17.21)	16.20 (15.40,17.00)	15.71 (14.91,16.51)	15.72 (15.13,16.30)
35–44	16.26 (15.59,16.93)	15.54 (14.74,16.33)	15.31 (14.62,15.99)	14.29 (13.74,14.84)	13.92 (13.51,14.33)
45–54	12.54 (12.08,12.99)	13.32 (12.74,13.89)	13.24 (12.81,13.66)	13.28 (12.93,13.63)	14.19 (13.90,14.48)
55–64	7.68 (7.43,7.93)	8.11 (7.65,8.57)	8.59 (8.31,8.78)	8.44 (8.16,8.73)	9.51 (9.22,9.80)
65-74	5.71 (5.39,6.03)	5.91 (5.26,6.58)	5.74 (5.33,6.14)	6.26 (5.77,6.74)	6.65 (6.29,7.01)
75–84	6.53 (5.93,7.12)	6.92 (5.77,8.08)	7.14 (6.36,7.93)	7.93 (6.96,8.90)	8.27 (7.60,8.94)
≥85	2.37 (2.08,2.67)	2.80 (2.17,3.42)	2.86 (2.37,3.36)	3.39 (2.83,3.96)	3.45 (3.04,3.86)

Figure 3

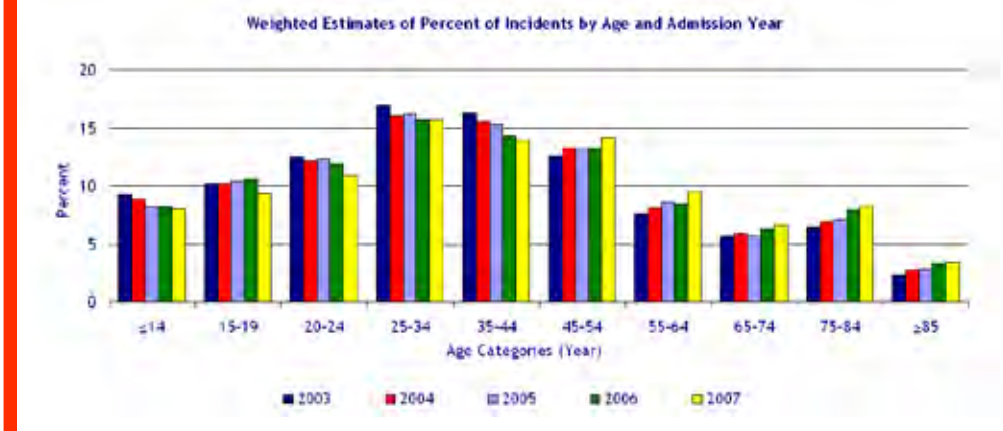


Table 4

WEIGHTED ESTIMATES OF PERCENT OF INCIDENTS BY ISS CATEGORY AND ADMISSION YEAR				
ADMISSION YEAR	ISS 1–8 PERCENT (95% CI)	ISS 9–15 PERCENT (95% CI)	ISS 16–24 PERCENT (95% CI)	ISS >24 PERCENT (95% CI)
2003	50.47 (47.81, 53.14)	29.58 (28.16, 31.00)	11.30 (10.59, 12.01)	8.65 (7.60, 9.70)
2004	47.61 (44.00, 51.22)	31.32 (29.70, 32.95)	12.31 (11.01, 13.61)	8.76 (7.46, 10.06)
2005	48.75 (46.13, 51.37)	30.07 (28.79, 31.35)	12.35 (11.58, 13.12)	8.83 (7.79, 9.87)
2006	49.91 (46.34, 53.47)	30.41 (27.97, 32.85)	11.54 (10.59, 12.50)	8.14 (6.98, 9.31)
2007	51.83 (49.85, 53.80)	26.98 (25.93, 28.03)	14.87 (14.01, 15.72)	6.32 (5.86, 6.80)

Figure 4

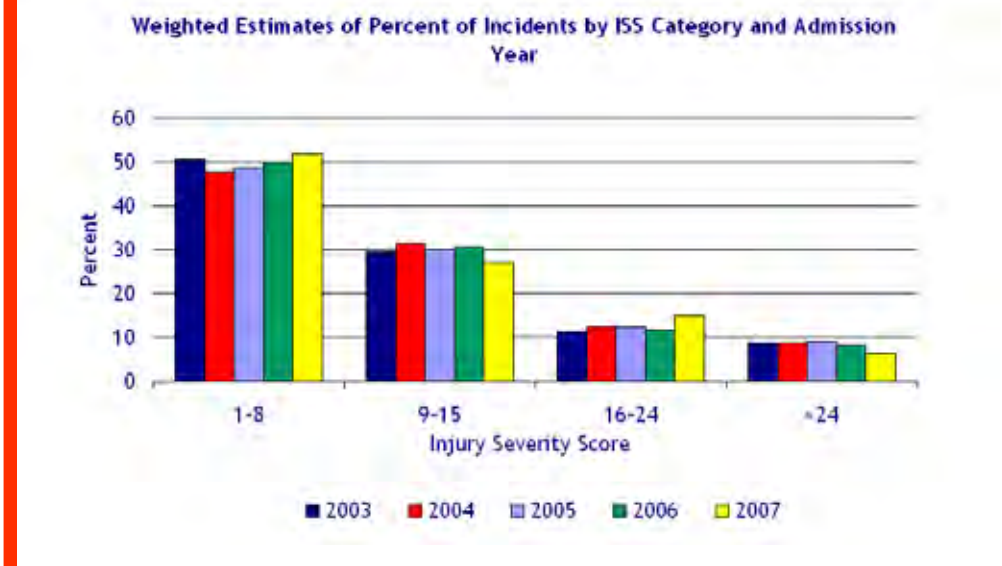


Table 5

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	38.46 (35.35,41.57)	24.76 (22.49, 27.03)	5.58 (5.14, 6.03)	6.55 (5.95, 7.14)
2004	37.56 (33.84, 41.27)	28.34 (24.07, 32.61)	5.16 (4.59, 5.73)	6.90 (6.02, 7.78)
2005	35.71 (32.38, 39.04)	27.59 (24.84, 30.35)	4.77 (4.21, 5.34)	6.52 (5.93, 7.11)
2006	33.39 (29.87, 36.91)	28.88 (25.67, 32.09)	4.55 (3.83, 5.28)	6.45 (5.83, 7.07)
2007	34.19 (32.49, 35.89)	32.67 (30.45, 34.90)	5.36 (5.00, 5.72)	7.27 (6.59, 7.96)

Figure 5

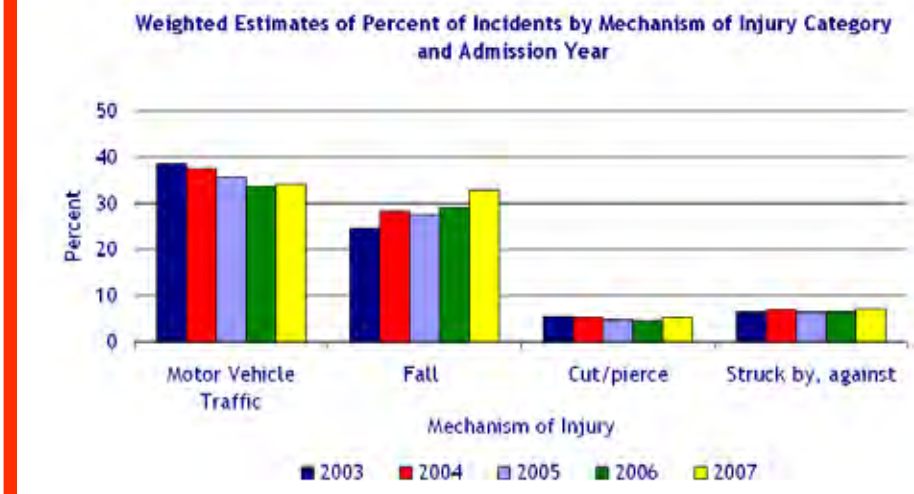


Table 6

WEIGHTED ESTIMATES OF PERCENT OF DEATHS BY ADMISSION YEAR		
ADMISSION YEAR	WEIGHTED NUMBER OF DEATHS	PERCENT DEATHS (95% CI)
2003	30,642	5.31 (4.07, 6.54)
2004	24,958	4.76 (3.96, 5.56)
2005	25,780	4.44 (4.06, 4.82)
2006	27,603	4.15 (3.79, 4.50)
2007	29,842	4.86 (4.28, 5.44)
Total	138,825	4.69 (4.22, 5.16)

Figure 6