



National Trauma Data Bank 2010

Pediatric 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 2010

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Editors' Note

The Annual Report of the National Trauma Data Bank® (NTDB) is an updated analysis of the largest aggregation of U.S./Canadian trauma registry data ever assembled. In total, the NTDB now contains over 4 million records. The 2010 Annual Report is based on 681,990 2009 admission year records from 682 facilities while the 2010 Annual Pediatric Report is based on 139,476 2009 admission year records. The NTDB classifies pediatric patients in this report as patients that are less than twenty years of age.

For the second year, we are including an expanded section on facility information. In addition to the usual information on hospital characteristics such as bed size and trauma level, we have now included 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. We have not included a table on complications in the report because this field is too incomplete to provide an accurate record of complications in NTDB participating centers.

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. 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, 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

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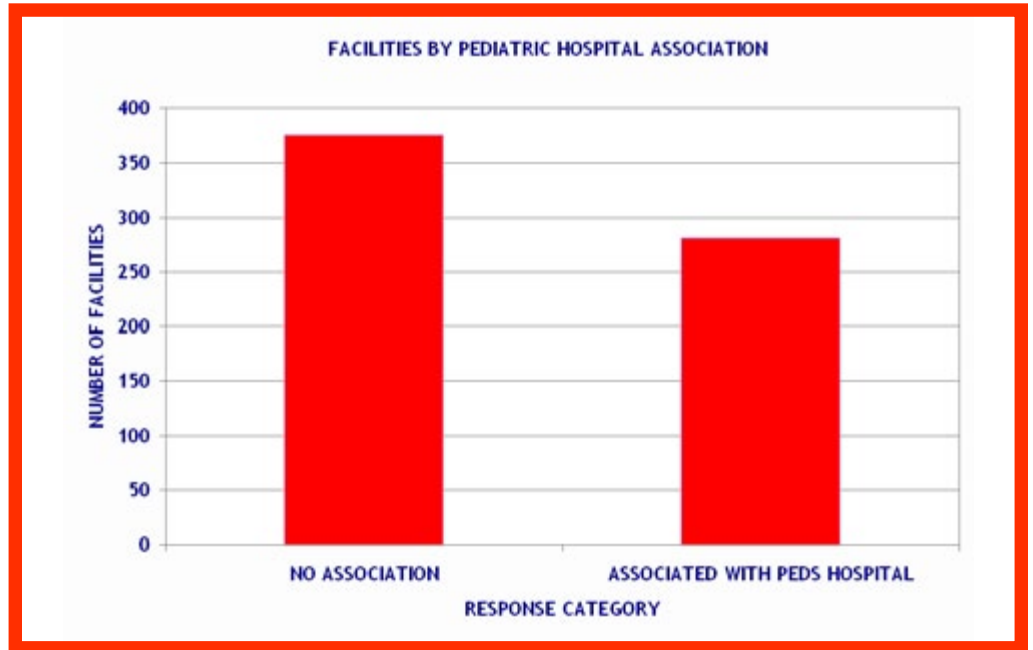
Hospital Information

**Table
1**

FACILITIES BY PEDIATRIC HOSPITAL ASSOCIATION		
PEDIATRIC ASSOCIATION	NUMBER	PERCENT
NO ASSOCIATION	376	57.23
ASSOCIATED WITH PEDS HOSPITAL	281	42.77
Total	657	100.00

**This does not include the 21 hospitals that are classified as pediatric-only centers.*

**Figure
1**

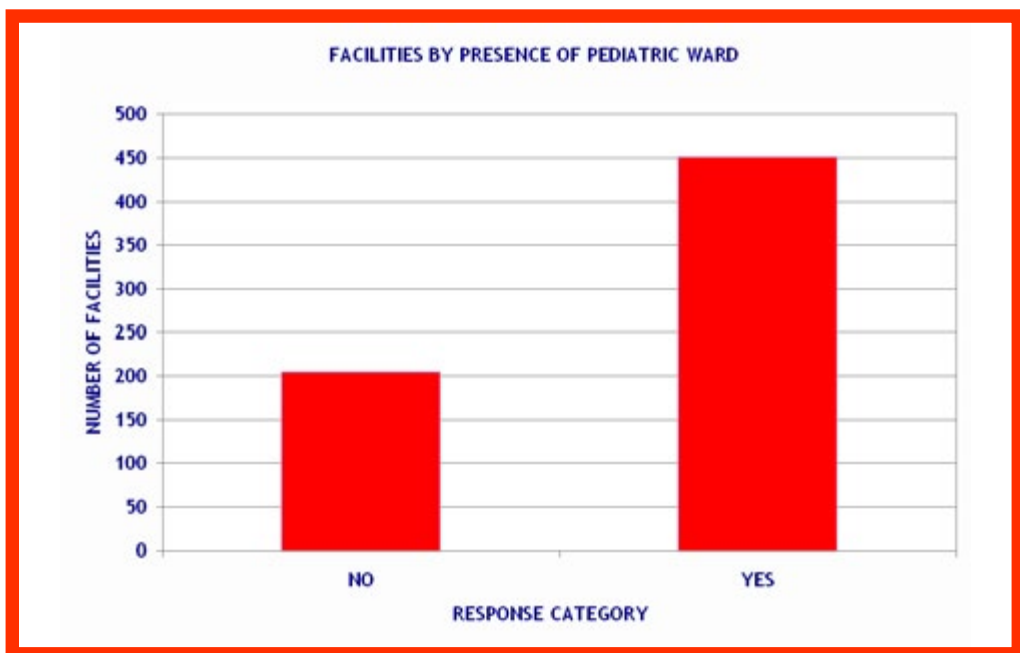


**Table
2**

FACILITIES BY PRESENCE OF PEDIATRIC WARD		
PEDIATRIC WARD	NUMBER	PERCENT
NO	205	31.20
YES	452	68.80
Total	657	100.00

**This does not include the 21 hospitals that are classified as pediatric-only centers.*

**Figure
2**

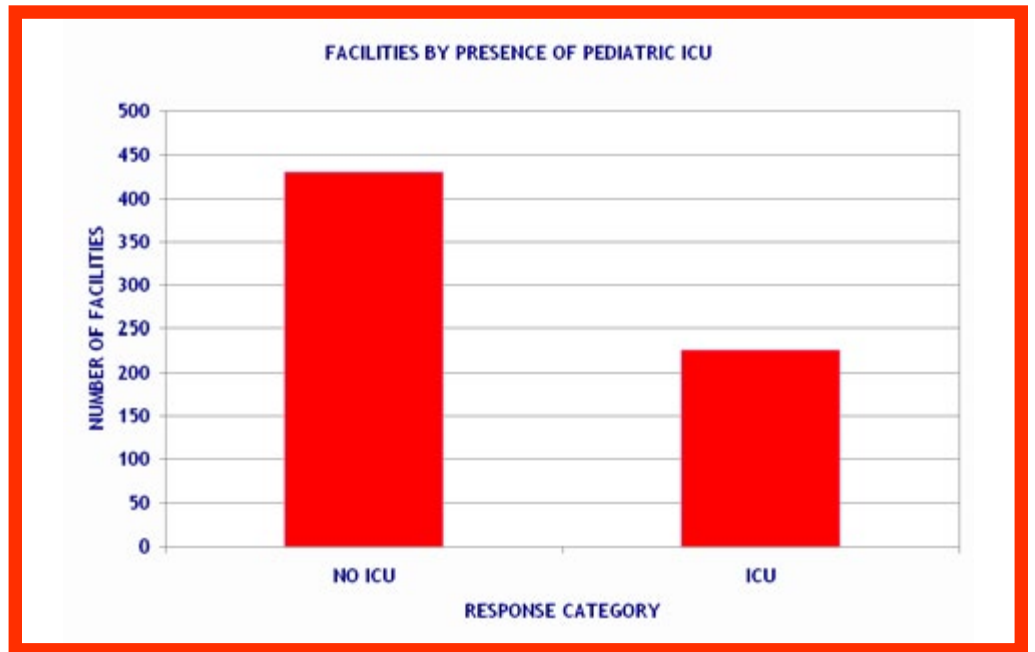


**Table
3**

FACILITIES BY PRESENCE OF PEDIATRIC ICU		
PEDIATRIC ICU	NUMBER	PERCENT
NO ICU	431	65.60
ICU	226	34.40
Total	657	100.00

**This does not include the 21 hospitals that are classified as pediatric-only centers.*

**Figure
3**

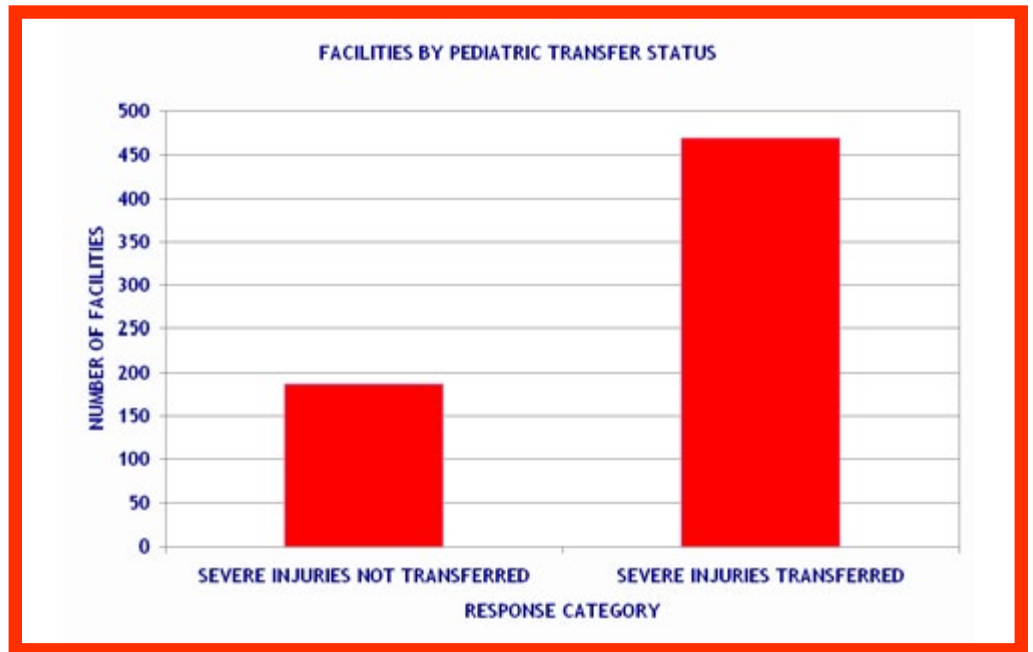


**Table
4**

FACILITIES BY PEDIATRIC TRANSFER STATUS		
PEDIATRIC TRANSFER	NUMBER	PERCENT
SEVERE INJURIES NOT TRANSFERRED	187	28.46
SEVERE INJURIES TRANSFERRED	470	71.54
Total	657	100.00

**This does not include the 21 hospitals that are classified as pediatric-only centers.*

**Figure
4**

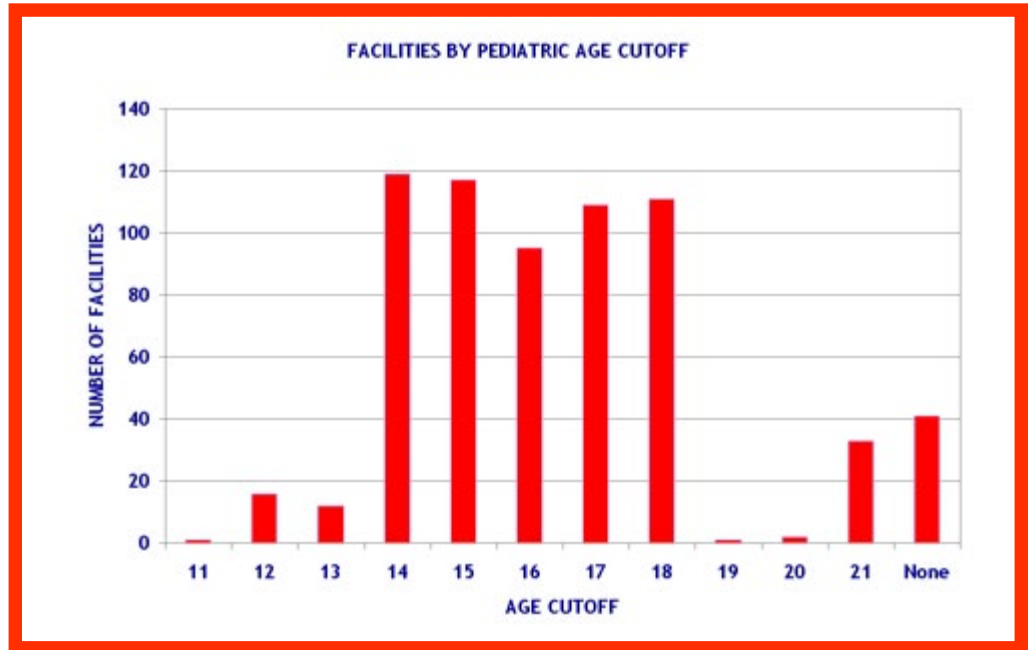


**Table
5**

FACILITIES BY PEDIATRIC AGE CUTOFF		
AGE	NUMBER	PERCENT
11	1	0.15
12	16	2.44
13	12	1.83
14	119	18.11
15	117	17.81
16	95	14.46
17	109	16.59
18	111	16.89
19	1	0.15
20	2	0.30
21	33	5.02
None	41	6.24
Total	657	100.00

**This does not include the 21 hospitals that are classified as pediatric-only centers.*

**Figure
5**



Demographic Information

Table 6

INCIDENTS AND CASE FATALITY RATE BY AGE				
AGE	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
< 1 year	8,724	6.25	248	2.84
1	6,787	4.87	138	2.03
2	6,229	4.47	116	1.86
3	5,530	3.96	62	1.12
4	5,154	3.70	71	1.38
5	5,132	3.68	48	0.94
6	4,911	3.52	39	0.79
7	4,502	3.23	34	0.76
8	4,354	3.12	38	0.87
9	4,197	3.01	40	0.95
10	4,067	2.92	33	0.81
11	4,367	3.13	42	0.96
12	5,018	3.60	57	1.14
13	5,887	4.22	69	1.17
14	6,957	4.99	89	1.28
15	8,046	5.77	151	1.88
16	10,159	7.28	269	2.65
17	12,051	8.64	367	3.05
18	13,541	9.71	482	3.56
19	13,863	9.94	478	3.45
Total	139,476	100.00	2,871	

Figure 6A

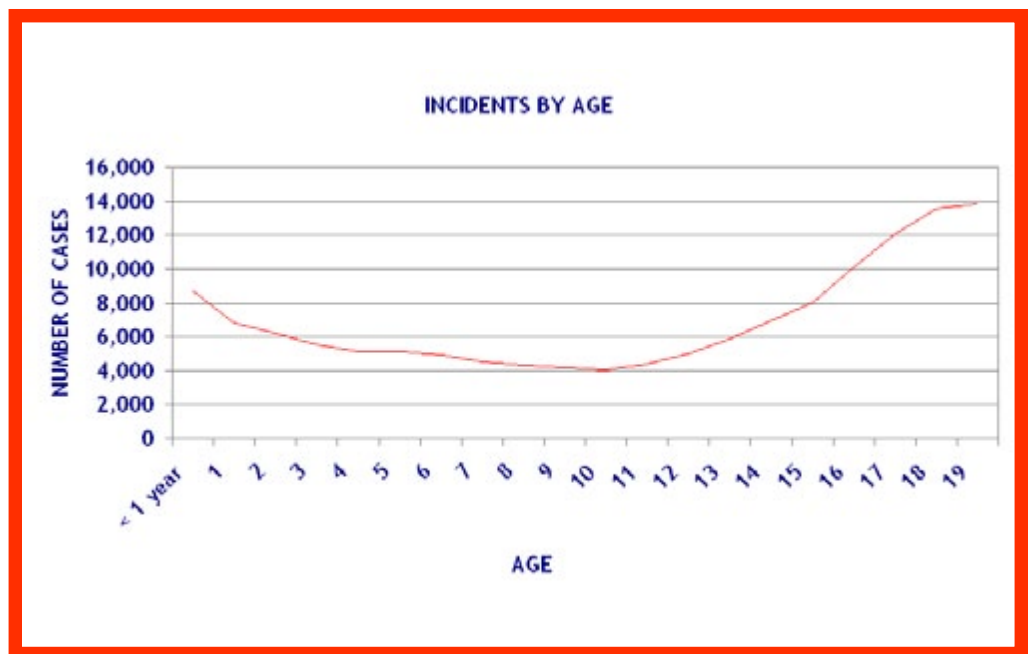


Figure 6B

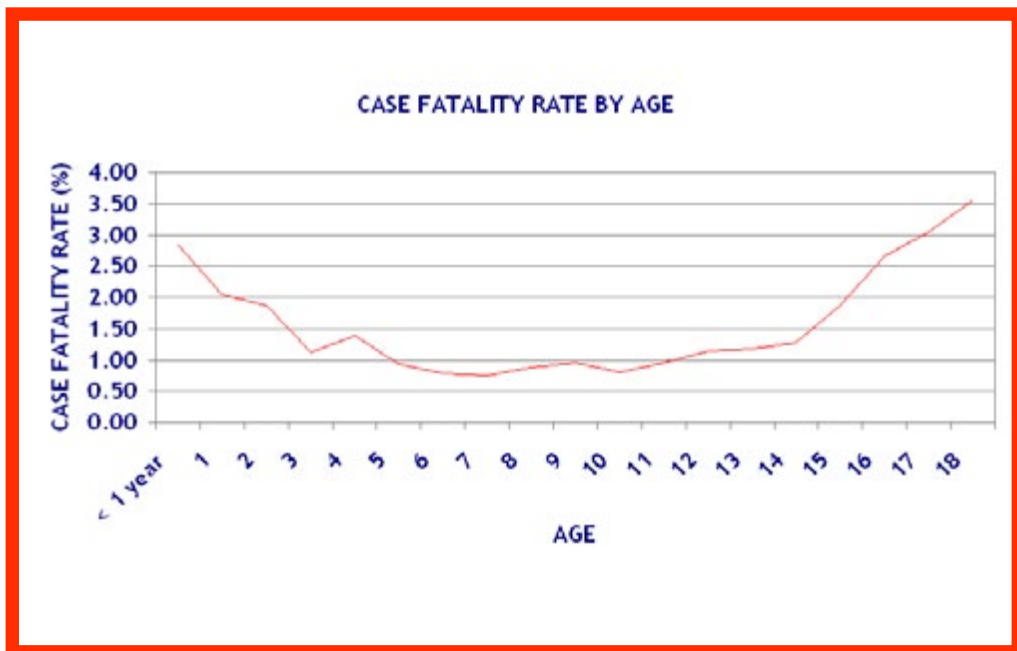


Table
7

INCIDENTS AND CASE FATALITY BY AGE AND GENDER									
AGE	NUMBER (FEMALE)	NUMBER (MALE)	DEATHS (FEMALE)	DEATHS (MALE)	CASE FATALITY RATE (FEMALE)	CASE FATALITY RATE (MALE)	CASE FATALITY RATE (FEMALE)	CASE FATALITY RATE (MALE)	CASE FATALITY RATE (NK/NR)
<1 year	3,658	5,060	99	149	2.71	2.94	2.77	2.42	0.00
1	2,828	3,956	58	80	2.05	2.02	2.18	2.13	0.00
2	2,462	3,766	48	68	1.95	1.81	2.50	1.89	0.00
3	2,242	3,287	31	31	1.38	0.94	2.21	1.49	0.00
4	2,047	3,106	30	41	1.47	1.32	1.05	1.52	0.00
5	2,059	3,072	15	33	0.73	1.07	0.95	0.98	0.00
6	1,985	2,926	17	22	0.86	0.75	0.60	0.87	0.00
7	1,755	2,742	14	20	0.80	0.73	0.96	1.00	0.00
8	1,637	2,716	20	18	1.22	0.66	1.56	0.70	0.00
9	1,519	2,678	16	24	1.05	0.90	1.28	1.02	0.00
10	1,409	2,657	11	22	0.78	0.83	1.15	0.84	0.00
11	1,408	2,957	17	25	1.21	0.85	1.31	1.23	0.00
12	1,414	3,597	15	42	1.06	1.17	1.39	0.99	0.00
13	1,455	4,431	15	54	1.03	1.22	0.90	1.18	0.00
14	1,738	5,218	21	68	1.21	1.30	1.68	1.57	0.00
15	2,139	5,903	38	113	1.78	1.91	2.47	2.31	1.67
16	2,956	7,197	71	198	2.40	2.75	2.45	2.88	0.00
17	3,423	8,617	80	287	2.34	3.33	2.29	3.40	0.00
18	3,846	9,687	105	377	2.73	3.89	2.96	4.08	0.00
19	3,625	10,227	93	385	2.57	3.76	2.76	4.04	0.00
Total	45,605	93,800	814	2,057					

Figure 7A



Figure 7B

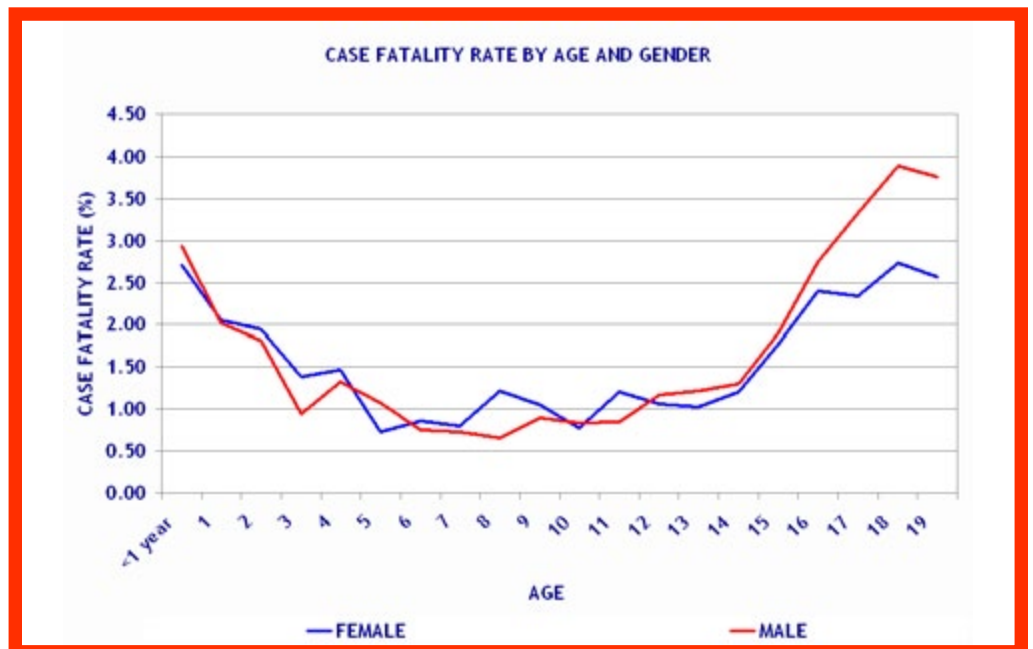
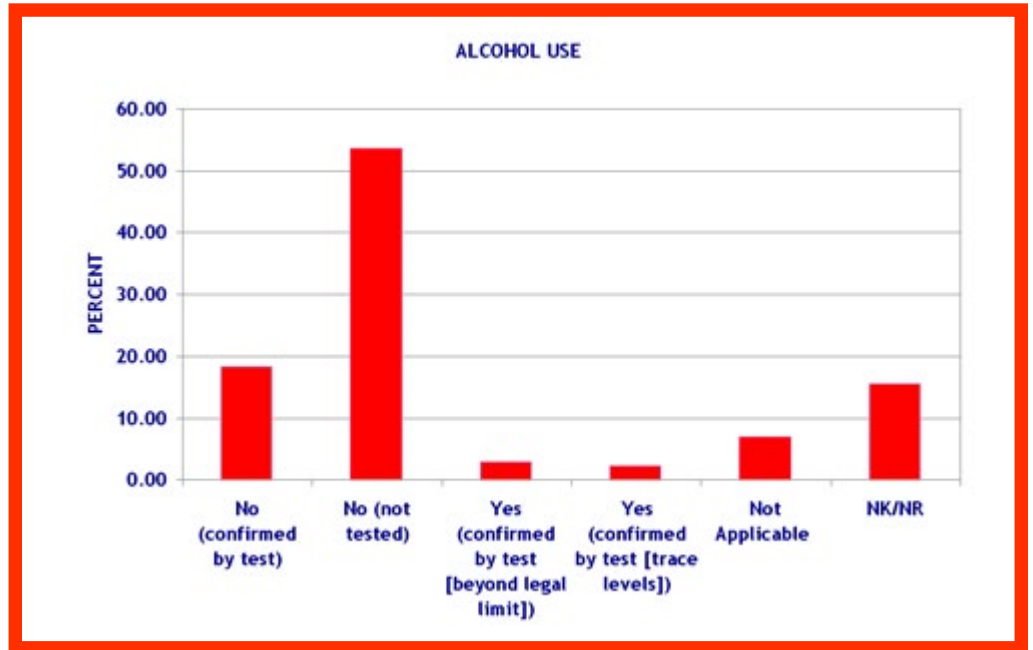


Table 8

ALCOHOL USE		
ALCOHOL USE	NUMBER	PERCENT
No (confirmed by test)	25,617	18.37
No (not tested)	74,933	53.72
Yes (confirmed by test [beyond legal limit])	3,979	2.85
Yes (confirmed by test [trace levels])	3,270	2.34
Not Applicable	9,845	7.06
NK/NR	21,832	15.65
Total	139,476	100.00

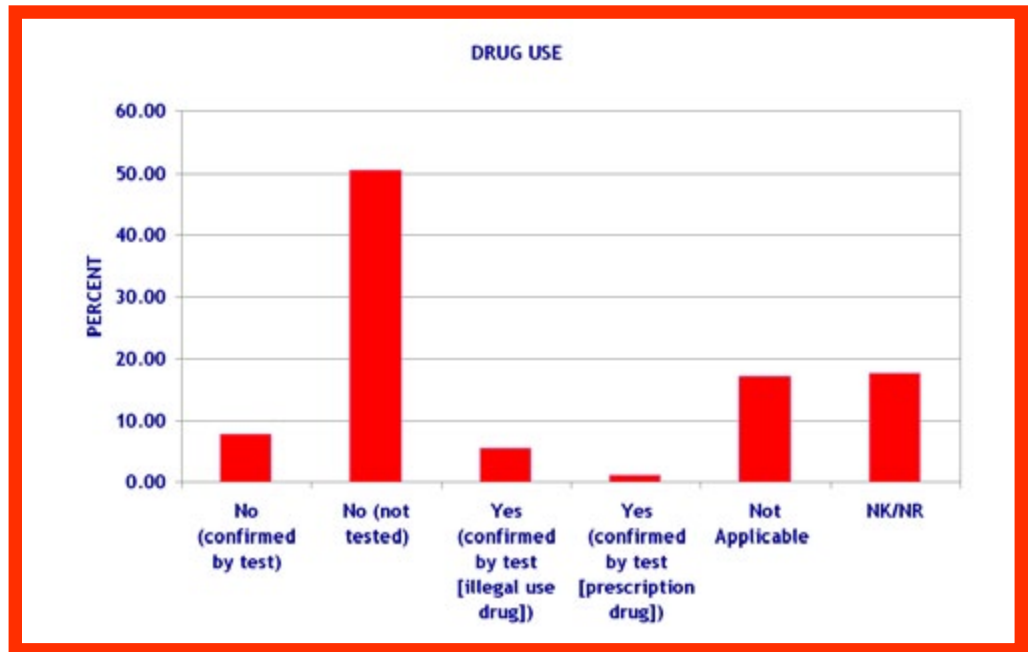
Figure 8



**Table
9**

DRUG USE		
DRUG USE	NUMBER	PERCENT
No (confirmed by test)	10,794	7.74
No (not tested)	70,547	50.58
Yes (confirmed by test [illegal use drug])	7,778	5.58
Yes (confirmed by test [prescription drug])	1,599	1.15
Not Applicable	24,070	17.26
NK/NR	24,688	17.70
Total	139,476	100.00

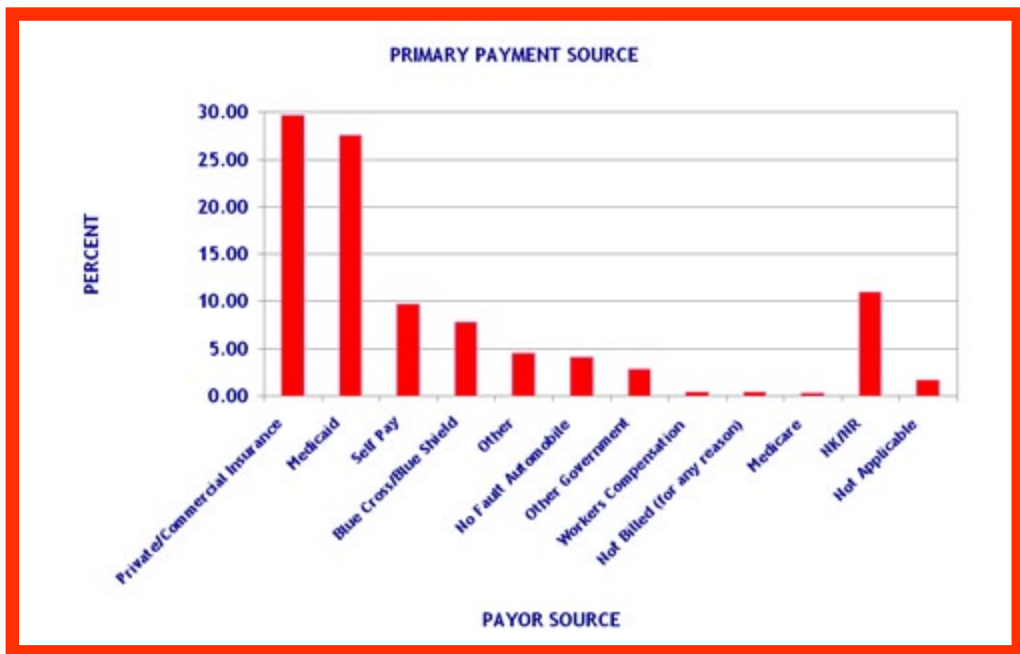
**Figure
9**



**Table
10**

PRIMARY PAYMENT SOURCE		
PRIMARY PAYMENT SOURCE	NUMBER	PERCENT
Private/Commercial Insurance	41,410	29.69
Medicaid	38,524	27.62
Self Pay	13,432	9.63
Blue Cross/Blue Shield	10,851	7.78
Other	6,327	4.54
No Fault Automobile	5,754	4.13
Other Government	3,928	2.82
Workers Compensation	638	0.46
Not Billed (for any reason)	607	0.44
Medicare	381	0.27
NK/NR	15,296	10.97
Not Applicable	2,328	1.67
Total	139,476	100.00

**Figure
10**



Injury Characteristics

Table
11

INCIDENTS AND CASE FATALITY RATE BY MECHANISM OF INJURY				
MECHANISM	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Fall	41,056	29.44	107	0.26
Motor Vehicle Traffic	37,503	26.89	1,214	3.24
Struck by, against	15,025	10.77	74	0.49
Transport, other	10,730	7.69	129	1.20
Firearm	7,155	5.13	830	11.60
Cut/pierce	5,525	3.96	65	1.18
Pedal cyclist, other	5,280	3.79	8	0.15
Other specified and classifiable	4,261	3.06	230	5.40
Hot object/substance	3,978	2.85	3	0.08
Natural/environmental, Bites and stings	1,768	1.27	5	0.28
Unspecified	1,702	1.22	40	2.35
Fire/flame	1,562	1.12	38	2.43
Other specified, not elsewhere classifiable	825	0.59	15	1.82
Pedestrian, other	770	0.55	23	2.99
Overexertion	559	0.40	0	0.00
Natural/environmental, Other	558	0.40	8	1.43
Machinery	523	0.37	3	0.57
Suffocation	142	0.10	47	33.10
Drowning/submersion	135	0.10	14	10.37
Poisoning	70	0.05	5	7.14
NK/NR	306	0.22	11	3.59
Total	139,433	99.97	2,869	

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

Figure 11A

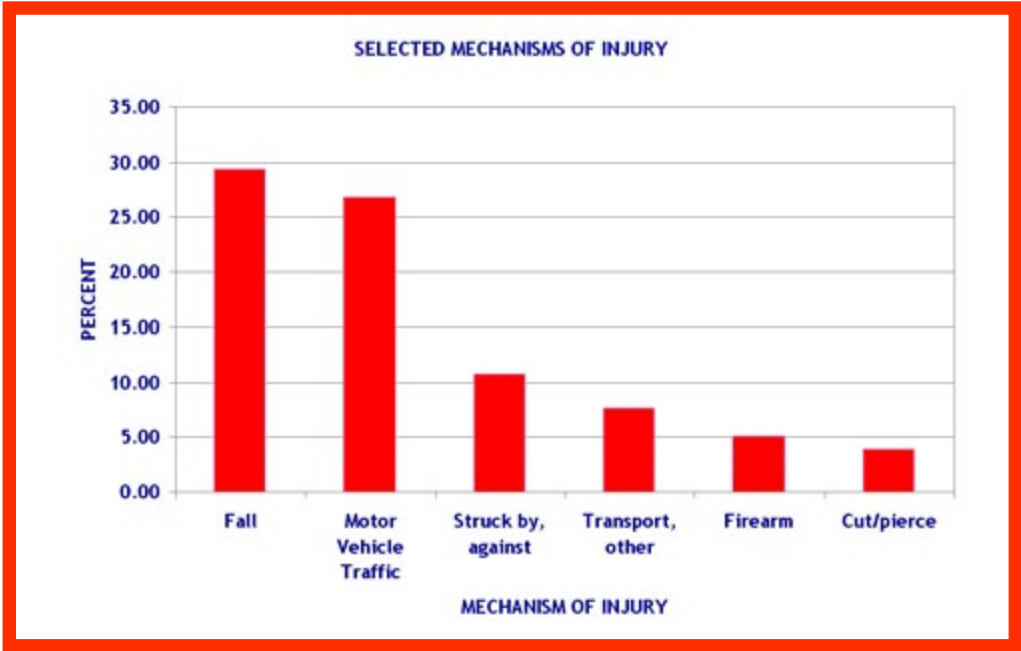


Figure 11B

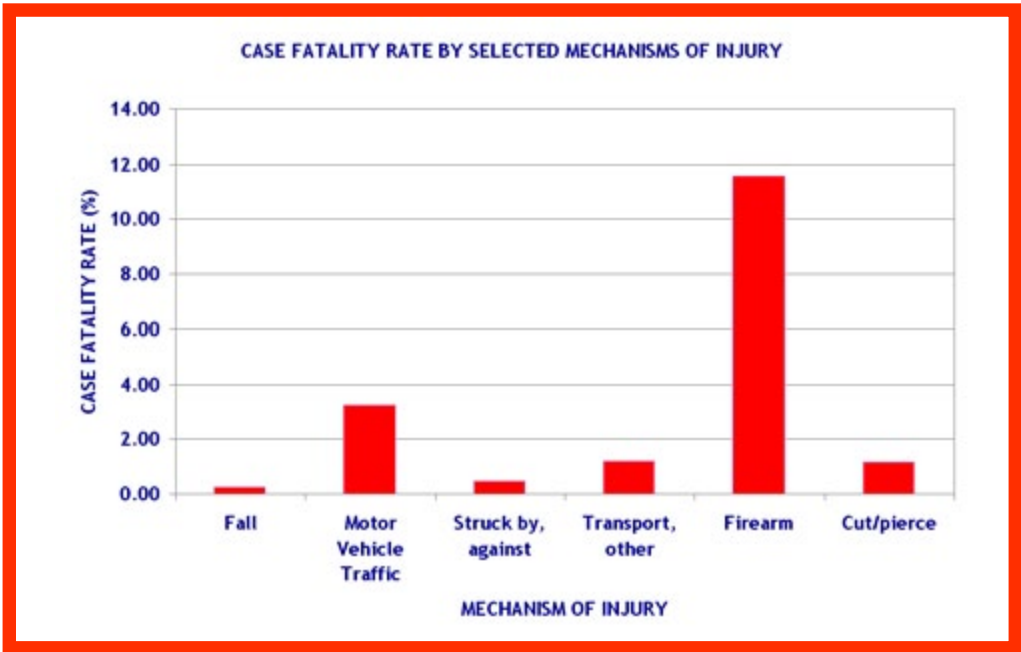


Table 12

SELECTED MECHANISMS OF INJURY BY AGE						
AGE	FALL	MOTOR VE- HICLE TRAFFIC	STRUCK BY, AGAINST	TRANSPORT, OTHER	FIREARM	CUT/PIERCE
<1 year	4,650	515	412	57	29	58
1	2,979	618	454	62	20	107
2	3,159	840	494	122	29	131
3	2,780	810	494	155	33	131
4	2,532	907	408	222	41	136
5	2,721	865	365	246	17	108
6	2,501	849	357	279	24	88
7	2,005	893	349	293	28	89
8	1,755	908	390	340	31	97
9	1,548	913	419	416	49	86
10	1,375	855	494	414	51	75
11	1,412	901	571	559	59	83
12	1,543	970	660	731	72	112
13	1,619	1,224	911	816	158	148
14	1,609	1,632	1,227	1,046	278	228
15	1,494	2,256	1,378	1,036	492	402
16	1,405	3,884	1,462	1,059	896	544
17	1,348	5,128	1,586	980	1,305	753
18	1,283	6,251	1,299	988	1,715	1,028
19	1,338	6,284	1,295	909	1,828	1,121
Total	41,056	37,503	15,025	10,730	7,155	5,525

Figure 12

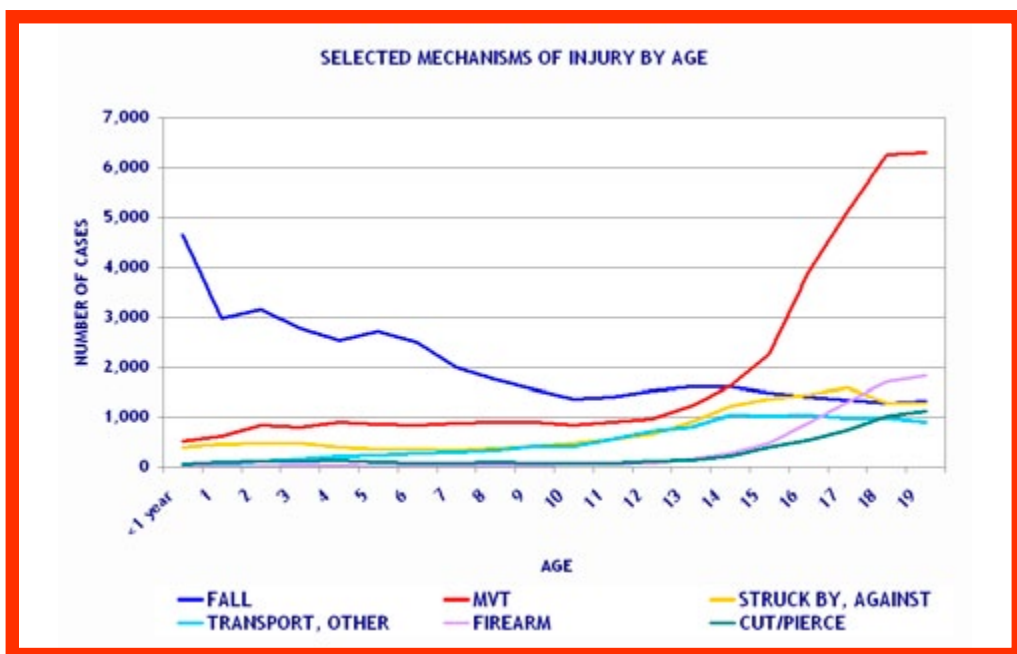


Table 13

CASE FATALITY RATE BY MECHANISMS OF INJURY AND AGE						
AGE	FALL CASE FATALITY RATE	MVT 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	0.39	9.51	3.64	10.53	10.34	3.45
1	0.47	7.28	2.42	0.00	15.00	0.00
2	0.22	5.36	1.62	1.64	24.14	0.00
3	0.14	2.72	1.21	3.23	18.18	0.76
4	0.24	3.31	1.23	1.35	12.20	0.00
5	0.07	3.35	0.55	1.63	35.29	0.00
6	0.00	2.83	0.56	0.72	4.17	0.00
7	0.05	2.24	0.29	1.02	3.57	0.00
8	0.06	2.42	0.77	0.88	9.68	0.00
9	0.06	2.74	0.48	0.96	4.08	0.00
10	0.15	2.11	0.40	0.72	5.88	0.00
11	0.35	2.33	0.18	0.54	10.17	1.20
12	0.13	3.09	0.15	1.09	13.89	0.00
13	0.00	3.27	0.22	0.86	7.59	0.68
14	0.12	2.45	0.08	0.67	10.07	0.44
15	0.33	2.93	0.07	0.58	12.20	0.25
16	0.36	3.01	0.21	1.32	12.05	1.47
17	0.45	2.91	0.25	1.43	12.87	1.59
18	1.01	3.42	0.15	1.42	11.90	1.56
19	0.97	3.31	0.15	2.31	10.61	1.96

Figure 13

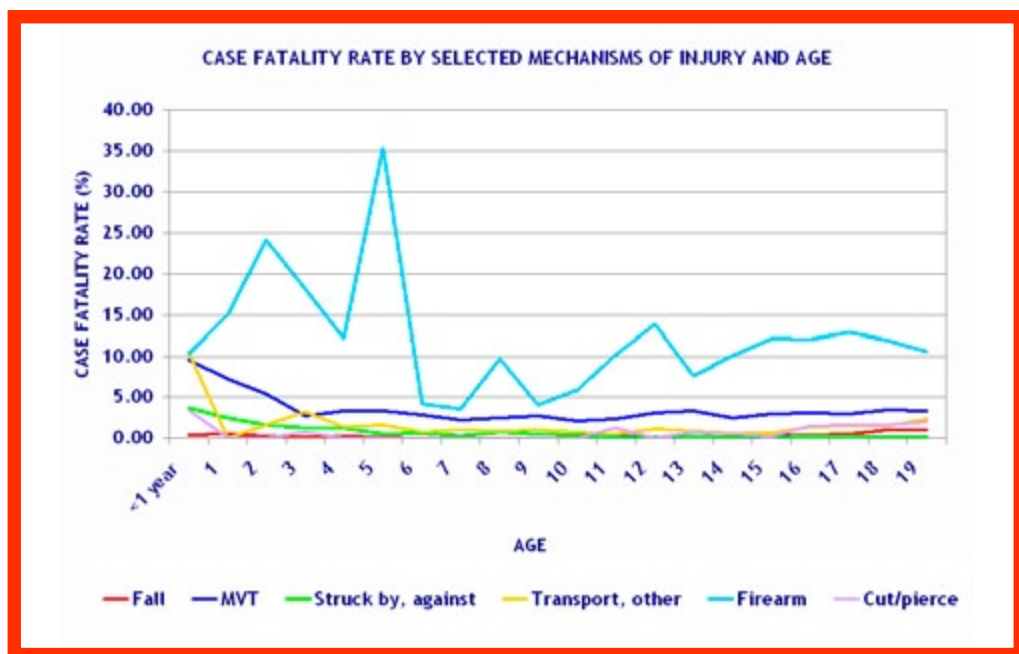


Table
14

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	33.01	27.70	0.21	0.29
Motor Vehicle Traffic	33.18	23.84	3.07	3.35
Transport, other	7.26	7.90	0.79	1.39
Struck by, against	6.51	12.85	1.01	0.37
Hot object/substance	3.68	2.45	0.06	0.09
Other specified and classifiable	3.23	2.97	6.04	5.06
Pedal Cyclist	2.62	4.35	0.08	0.17
Cut/Pierce	2.33	4.75	1.13	1.19
Natural/environmental, Bites and stings	1.73	1.04	0.38	0.20
Firearm	1.70	6.80	11.60	11.61
Unspecified	1.24	1.21	2.65	2.20
Fire/flame	0.86	1.25	2.56	2.39
Other specified, not elsewhere classifiable	0.61	0.58	3.25	1.09
Pedestrian, other	0.56	0.55	3.13	2.92
Natural/environmental, Other	0.48	0.36	0.92	1.76
Overexertion	0.35	0.43	0.00	0.00
NK/NR	0.21	0.22	4.21	3.37
Machinery	0.20	0.46	0.00	0.70
Drowning/submersion	0.09	0.10	7.14	11.83
Suffocation	0.08	0.11	32.43	33.33
Poisoning	0.05	0.05	4.76	8.16
Total	99.96	99.97		

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

Figure 14A

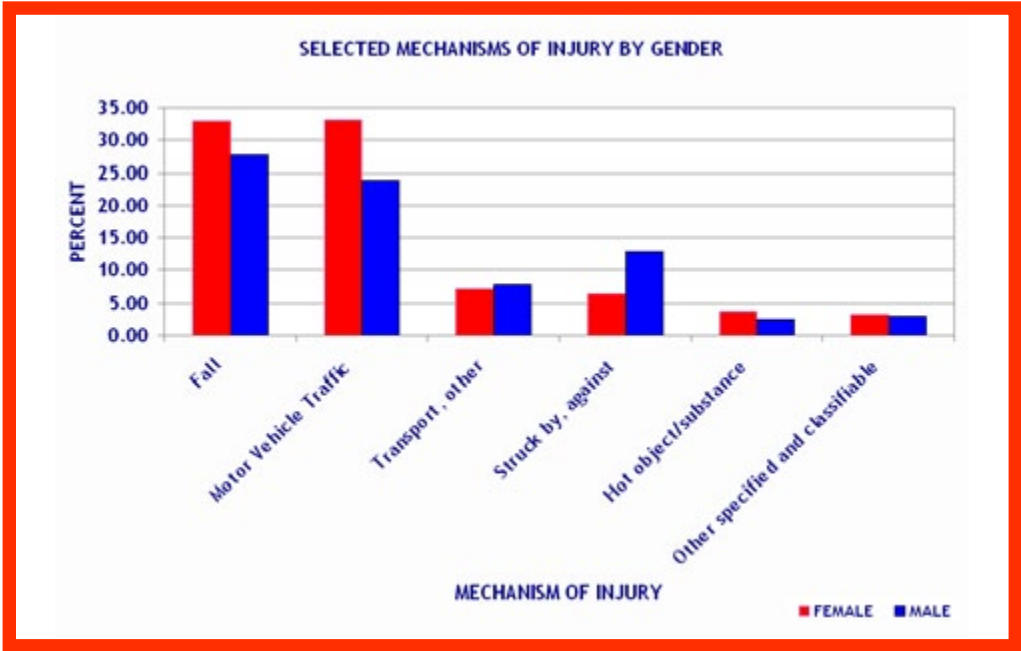


Figure 14B

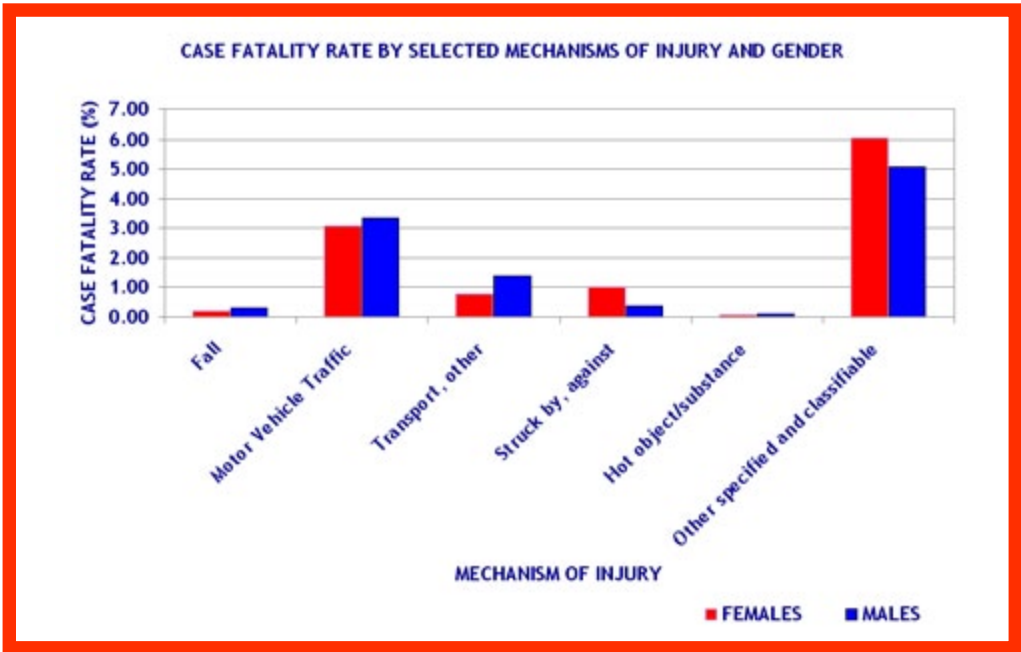
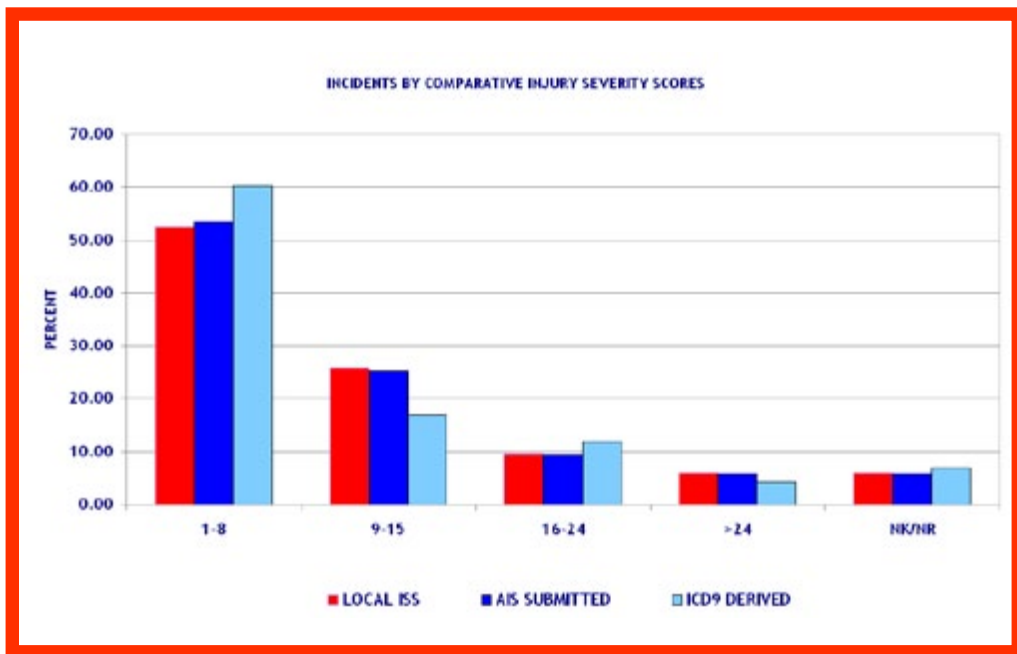


Table 15

INCIDENTS BY COMPARATIVE INJURY SEVERITY SCORES						
ISS	LOCAL ISS		AIS SUBMITTED		ICD 9 DERIVED	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
1-8	73,337	52.58	74,682	53.54	83,874	60.14
9-15	35,956	25.78	35,197	25.24	23,595	16.92
16-24	13,386	9.60	13,149	9.43	16,559	11.87
>24	8,383	6.01	8,186	5.87	5,972	4.28
NK/NR	8,414	6.03	8,262	5.92	9,476	6.79
Total	139,476	100.00	139,476	100.00	139,476	100.00

Figure 15



**Table
16**

INCIDENTS AND CASE FATALITY RATE BY INJURY SEVERITY SCORE				
ISS	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
1-8	83,874	60.14	257	0.31
9-15	23,595	16.92	254	1.08
16-24	16,559	11.87	474	2.86
>24	5,972	4.28	1,496	25.05
NK/NR	9,476	6.79	390	4.12
Total	139,476	100.00	2,871	

**Figure
16**

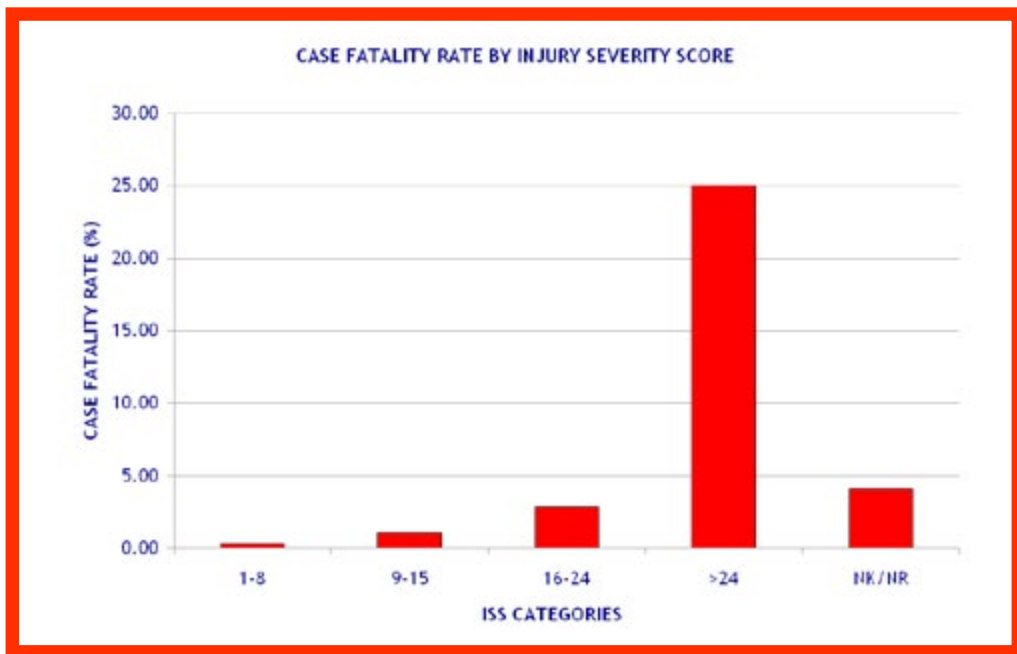
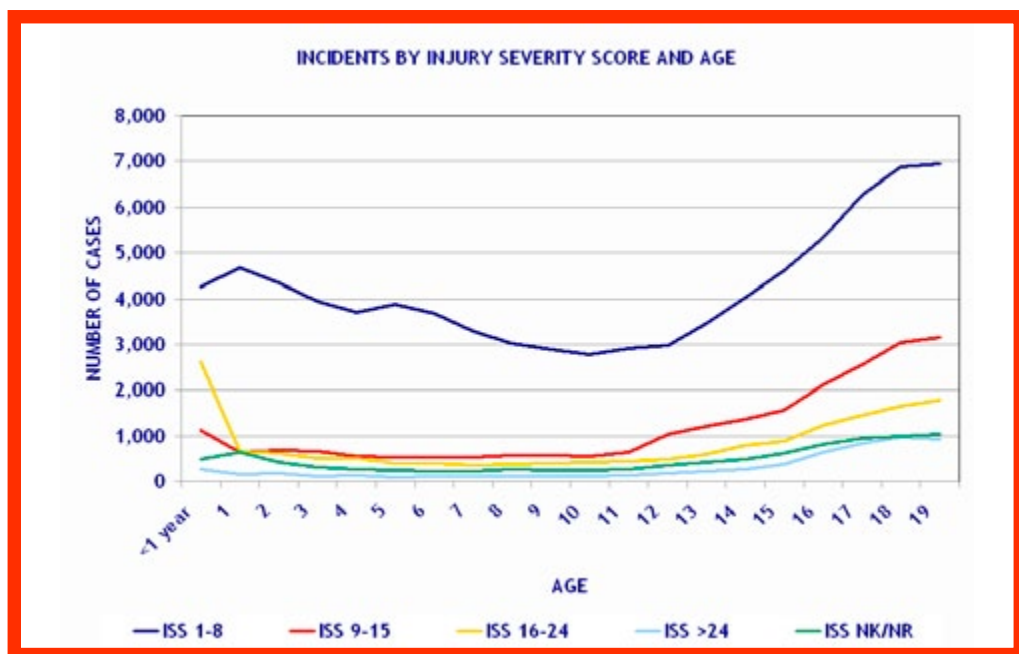


Table 17

INCIDENTS BY INJURY SEVERITY SCORE AND AGE						
	ISS 1-8	ISS 9-15	ISS 16-24	ISS >24	ISS NK/NR	Total
<1 year	4,243	1,115	2,613	266	487	8,724
1	4,678	650	659	155	645	6,787
2	4,344	682	613	171	419	6,229
3	3,942	655	505	109	319	5,530
4	3,704	549	509	129	263	5,154
5	3,877	524	406	91	234	5,132
6	3,674	530	387	102	218	4,911
7	3,288	534	352	102	226	4,502
8	3,030	565	384	111	264	4,354
9	2,893	564	401	102	237	4,197
10	2,768	549	408	110	232	4,067
11	2,906	640	430	131	260	4,367
12	2,980	1,040	487	168	343	5,018
13	3,457	1,207	588	222	413	5,887
14	4,044	1,358	795	273	487	6,957
15	4,600	1,573	877	369	627	8,046
16	5,344	2,115	1,240	634	826	10,159
17	6,271	2,547	1,453	833	947	12,051
18	6,880	3,042	1,661	959	999	13,541
19	6,951	3,156	1,791	935	1,030	13,863
Total	83,874	23,595	16,559	5,972	9,476	139,476

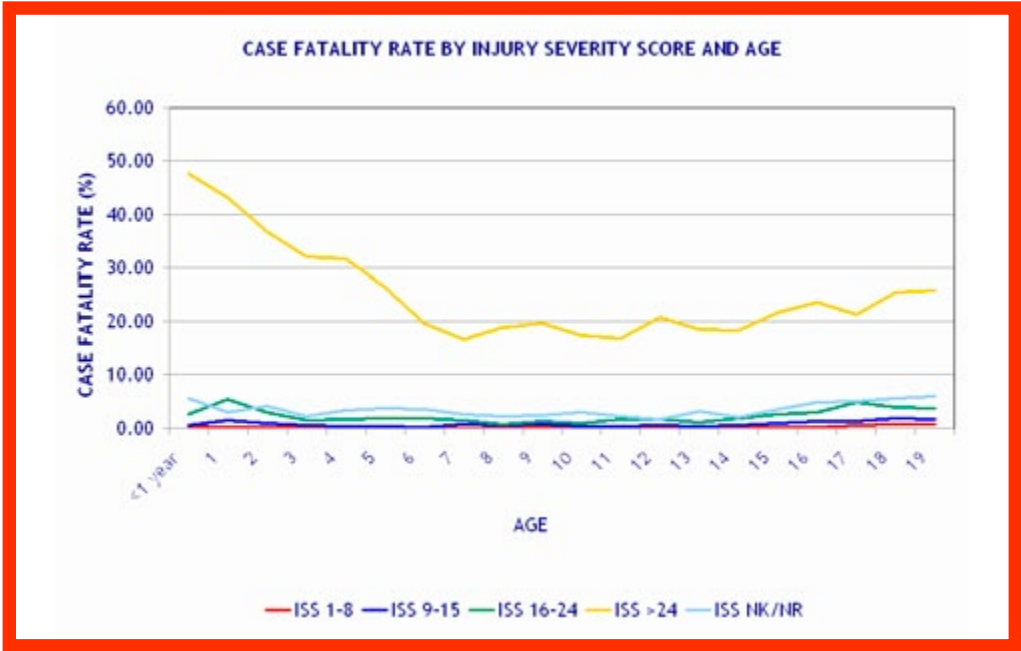
Figure 17



**Table
18**

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	17	0.40	6	0.54	70	2.68	127	47.74	28	5.75
1	6	0.13	10	1.54	36	5.46	67	43.23	19	2.95
2	12	0.28	6	0.88	18	2.94	63	36.84	17	4.06
3	8	0.20	4	0.61	8	1.58	35	32.11	7	2.19
4	10	0.27	2	0.36	9	1.77	41	31.78	9	3.42
5	5	0.13	2	0.38	8	1.97	24	26.37	9	3.85
6	3	0.08	1	0.19	7	1.81	20	19.61	8	3.67
7	2	0.06	4	0.75	5	1.42	17	16.67	6	2.65
8	5	0.17	3	0.53	3	0.78	21	18.92	6	2.27
9	5	0.17	4	0.71	5	1.25	20	19.61	6	2.53
10	1	0.04	2	0.36	4	0.98	19	17.27	7	3.02
11	5	0.17	2	0.31	7	1.63	22	16.79	6	2.31
12	3	0.10	5	0.48	8	1.64	35	20.83	6	1.75
13	3	0.09	5	0.41	7	1.19	41	18.47	13	3.15
14	7	0.17	7	0.52	15	1.89	50	18.32	10	2.05
15	11	0.24	14	0.89	23	2.62	80	21.68	23	3.67
16	14	0.26	27	1.28	37	2.98	150	23.66	41	4.96
17	33	0.53	36	1.41	71	4.89	178	21.37	49	5.17
18	55	0.80	58	1.91	67	4.03	245	25.55	57	5.71
19	52	0.75	56	1.77	66	3.69	241	25.78	63	6.12
Total	257		254		474		1496		390	

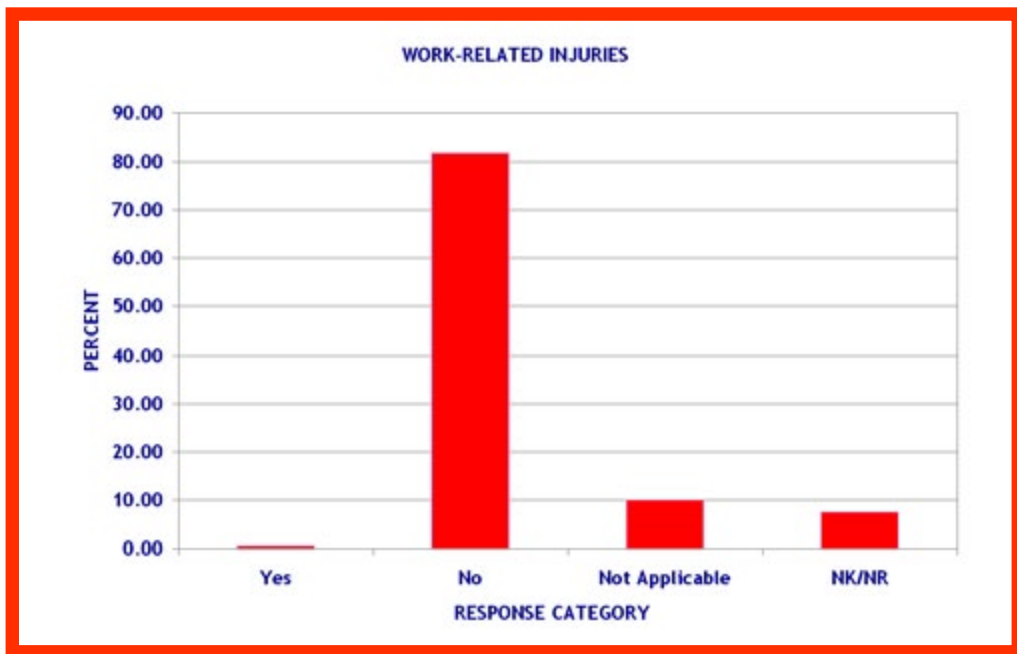
Figure 18

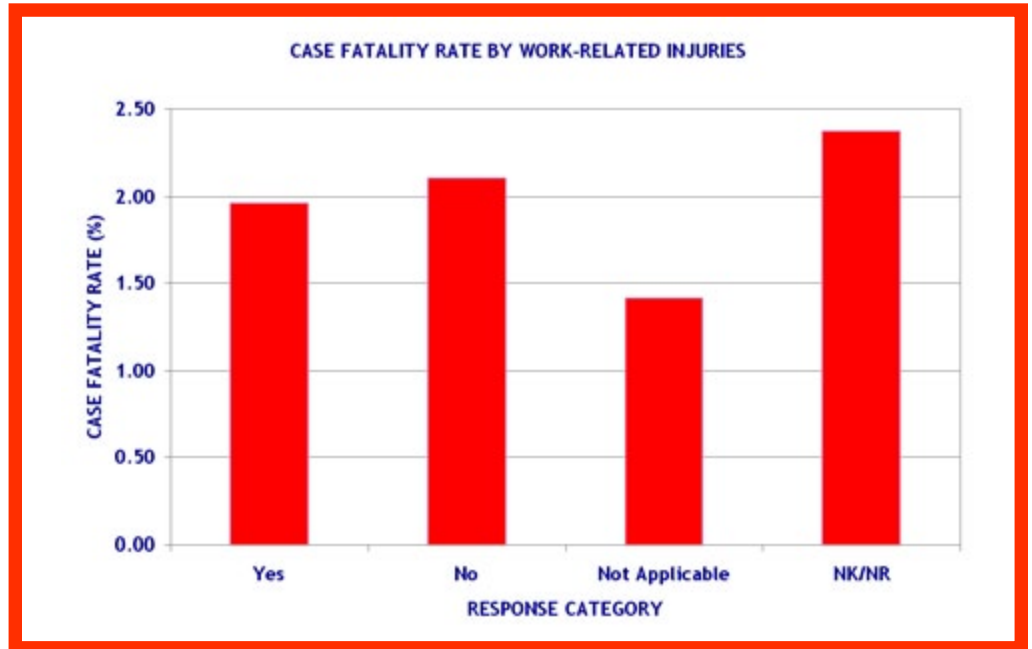


**Table
19**

INCIDENTS AND CASE FATALITY RATE BY WORK-RELATED INJURIES				
WORK-RELATED	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Yes	814	0.58	16	1.97
No	114,343	81.98	2,410	2.11
Not Applicable	13,810	9.90	195	1.41
NK/NR	10,509	7.53	250	2.38
Total	139,476	100.00	2,871	

**Figure
19A**



**Figure
19B**

**Table
20**

INCIDENTS AND CASE FATALITY RATE BY INTENT				
INTENT	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Self-inflicted	1,039	0.74	171	16.46
Other	147	0.11	11	7.48
Undetermined	924	0.66	63	6.82
Assault	15,704	11.26	928	5.91
NK/NR	306	0.22	11	3.59
Unintentional	121,356	87.01	1,687	1.39
Total	139,476	100.00	2,871	

**Figure
20**

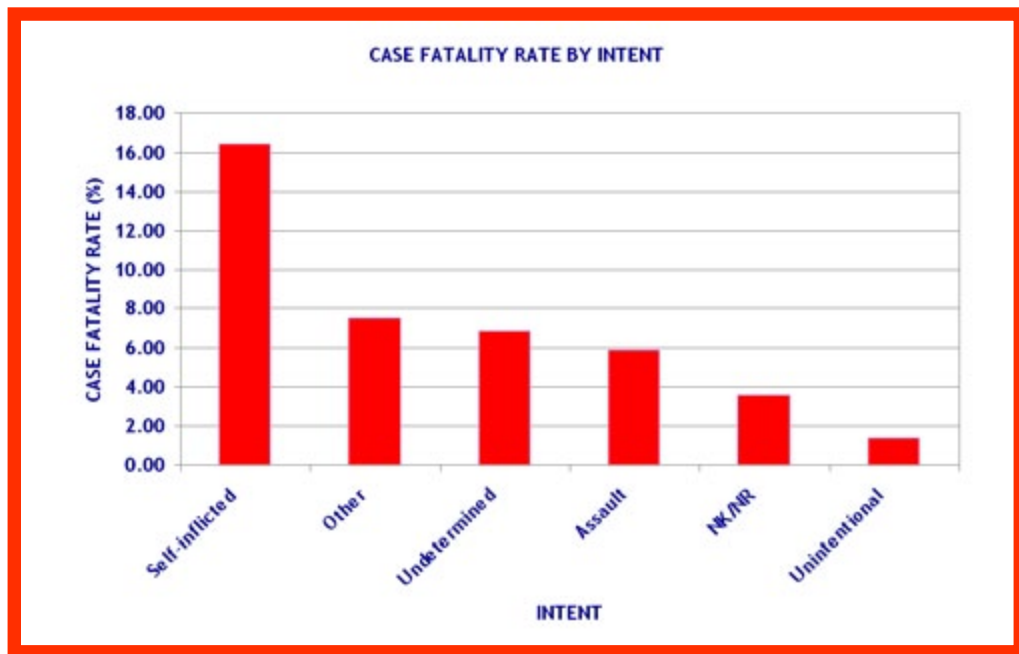
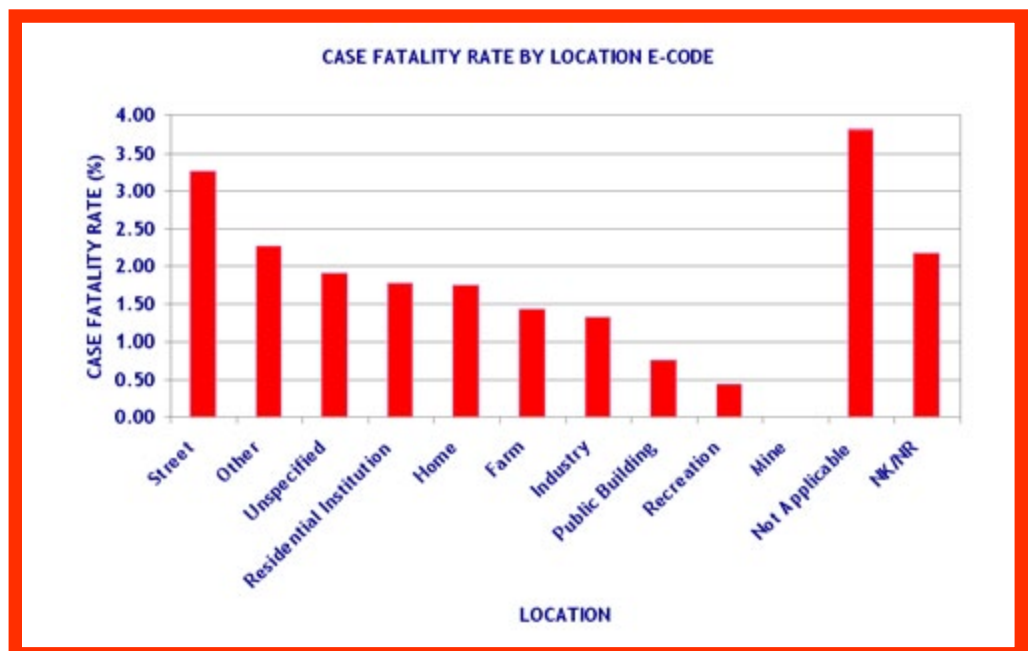


Table 21

INCIDENTS AND CASE FATALITY RATE BY LOCATION E-CODE				
LOCATION E-CODE	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Street	45,641	32.72	1,492	3.27
Other	5,903	4.23	134	2.27
Unspecified	12,102	8.68	230	1.90
Residential Institution	508	0.36	9	1.77
Home	42,002	30.11	732	1.74
Farm	913	0.65	13	1.42
Industry	456	0.33	6	1.32
Public Building	7,420	5.32	56	0.75
Recreation	19,343	13.87	85	0.44
Mine	27	0.02	0	0.00
Not Applicable	105	0.08	4	3.81
NK/NR	5,056	3.62	110	2.18
Total	139,476	100.00	2,871	

Figure 21

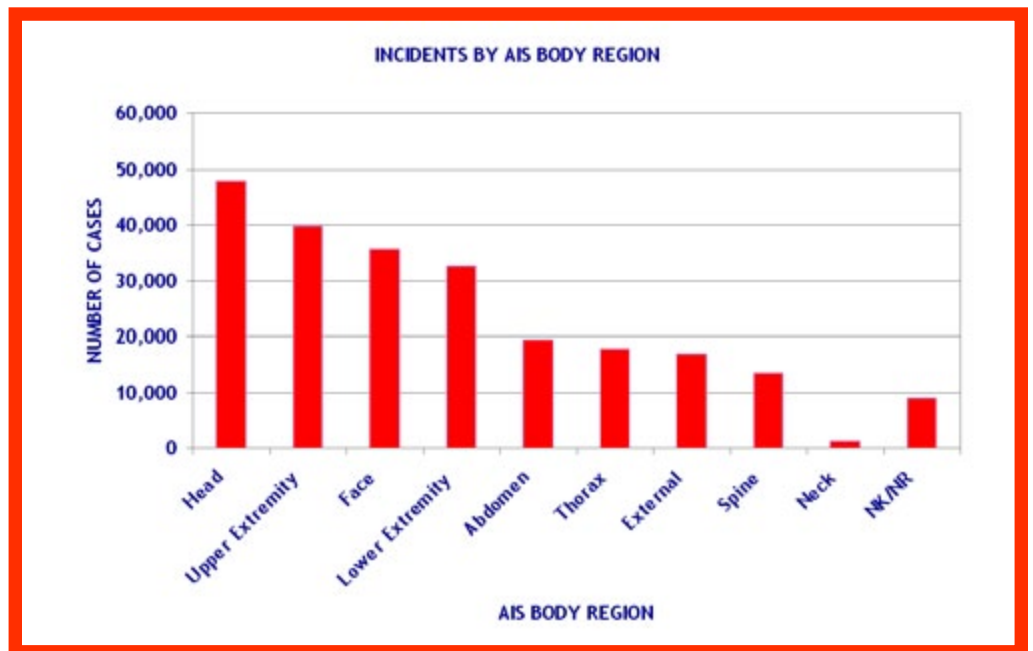


**Table
22**

INCIDENTS BY AIS BODY REGION		
AIS BODY REGION	NUMBER	PERCENT
Head	47,849	34.31
Upper Extremity	39,784	28.52
Face	35,685	25.59
Lower Extremity	32,541	23.33
Abdomen	19,511	13.99
Thorax	17,813	12.77
External	16,897	12.11
Spine	13,550	9.71
Neck	1,250	0.90
NK/NR	9,027	6.47
Total Incidents	139,476	

*A patient can have injuries in multiple body regions.

**Figure
22**

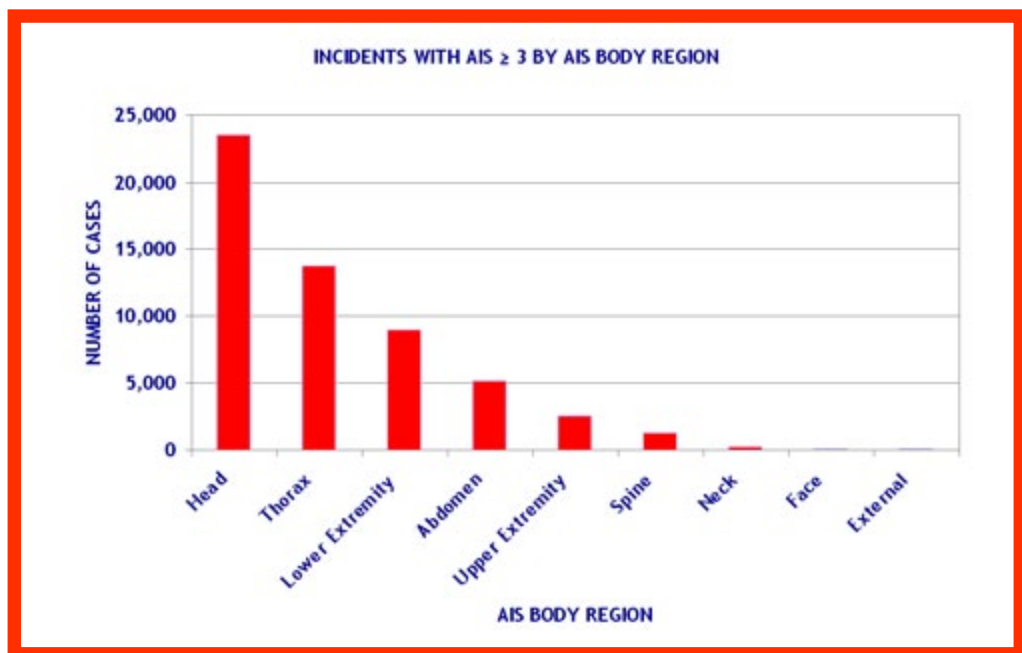


**Table
23**

INCIDENTS WITH AIS ≥ 3 BY AIS BODY REGION		
AIS BODY REGION	NUMBER	PERCENT
Head	21,786	16.49
Thorax	13,403	10.14
Lower Extremity	8,984	6.80
Abdomen	4,975	3.77
Upper Extremity	2,705	2.05
Spine	1,361	1.03
External	252	0.19
Neck	186	0.14
Face	103	0.08
Total Incidents	132,126	

*A patient can have injuries in multiple body regions.

**Figure
23**

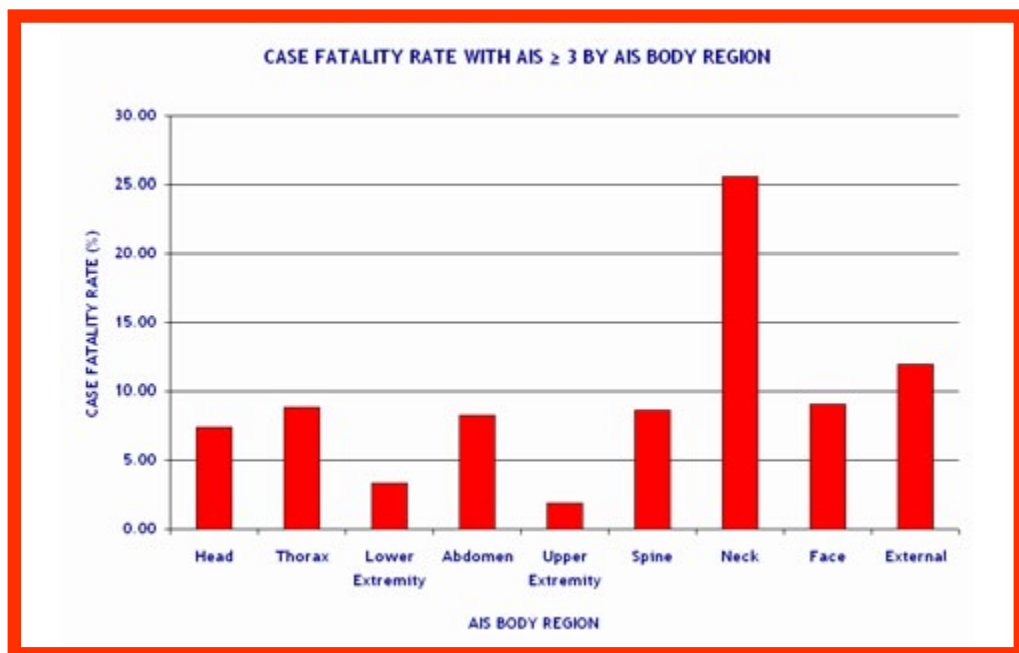


**Table
24**

INCIDENTS AND CASE FATALITY RATE BY AIS BODY REGION			
AIS BODY REGION	NUMBER	DEATHS	CASE FATALITY RATE
Head	23,579	1,750	7.42
Thorax	13,714	1,212	8.84
Lower Extremity	8,932	295	3.30
Abdomen	5,180	429	8.28
Upper Extremity	2,551	48	1.88
Spine	1,284	111	8.64
Neck	239	61	25.52
Face	110	10	9.09
External	84	10	11.90
Total Incidents	139,476	2,871	

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

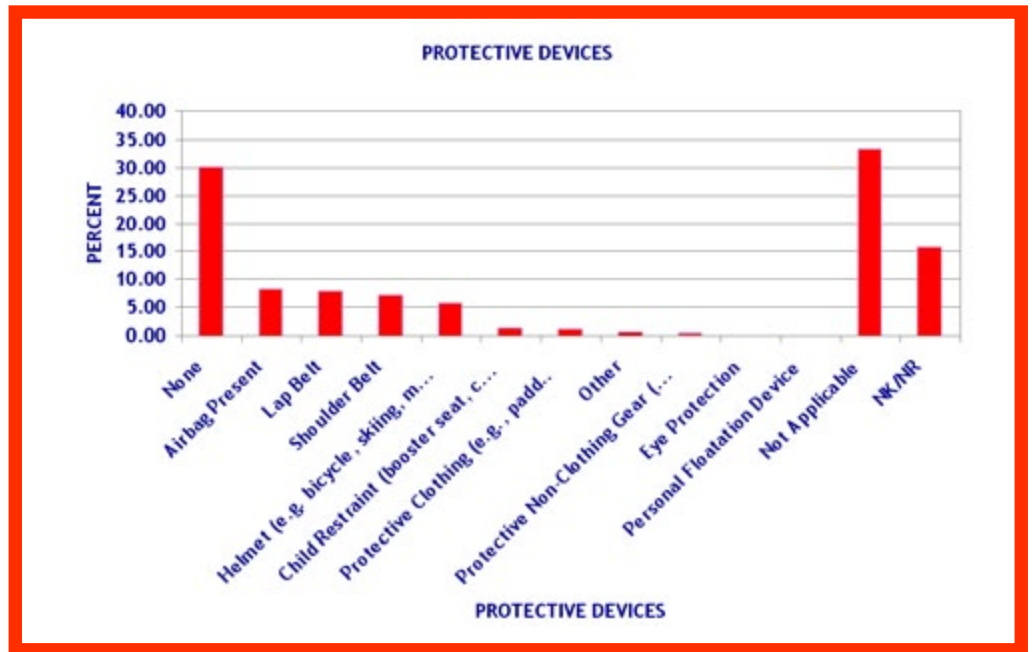
**Figure
24**



**Table
25**

INCIDENTS BY PROTECTIVE DEVICES		
PROTECTIVE DEVICES	NUMBER	PERCENT
None	41,987	30.10
Airbag Present	11,484	8.23
Lap Belt	11,080	7.94
Shoulder Belt	10,062	7.21
Helmet (e.g. bicycle, skiing, motorcycle)	8,033	5.76
Child Restraint (booster seat, child car seat)	1,806	1.29
Protective Clothing (e.g., padded leather pants)	1,408	1.01
Other	641	0.46
Protective Non-Clothing Gear (e.g., shin guard)	502	0.36
Eye Protection	54	0.04
Personal Floatation Device	54	0.04
Not Applicable	46,518	33.35
NK/NR	22,084	15.83
Total Incidents	139,476	

**Figure
25**

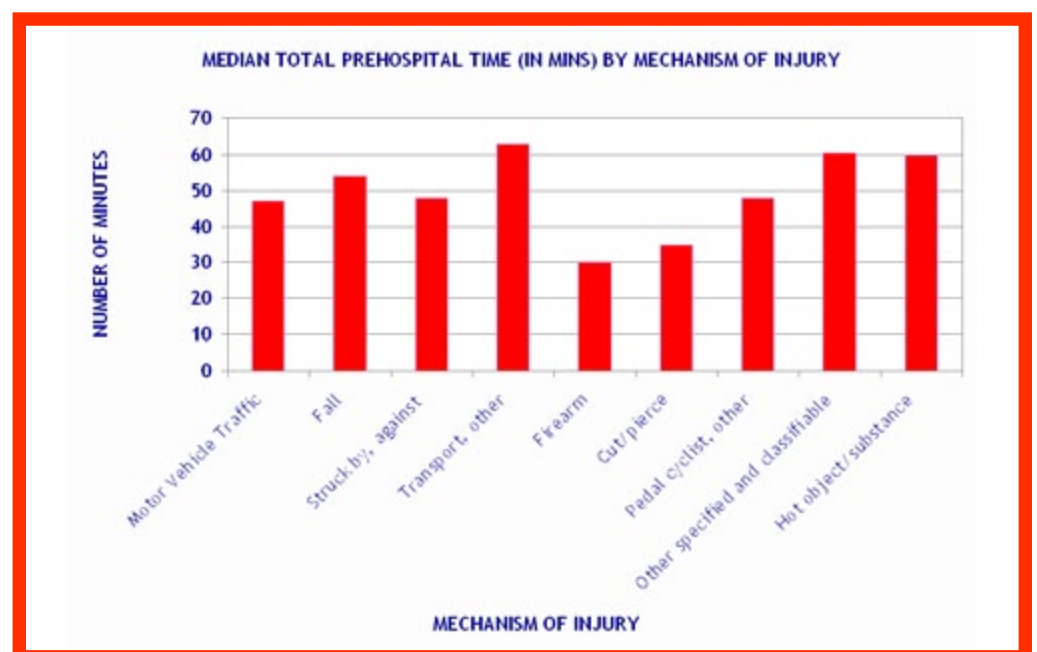


Outcomes

Table 26

MEDIAN PREHOSPITAL TIME (IN MINS) BY MECHANISM OF INJURY		
MECHANISM	NUMBER	MEDIAN
Motor Vehicle Traffic	21,186	47
Fall	10,574	54
Struck by, against	4,690	48
Transport, other	4,258	63
Firearm	3,690	30
Cut/pierce	2,236	35
Pedal cyclist, other	1,720	48
Other specified and classifiable	1,242	61
Hot object/substance	974	60
Natural/environmental, Bites and stings	454	52
Fire/flame	451	62
Unspecified	405	45
Pedestrian, other	358	43
Other specified, not elsewhere classifiable	222	42
Natural/environmental, Other	204	71
Machinery	187	59
Overexertion	116	53
Suffocation	81	40
Drowning/submersion	61	45
Poisoning	30	41
NK/NR	112	39

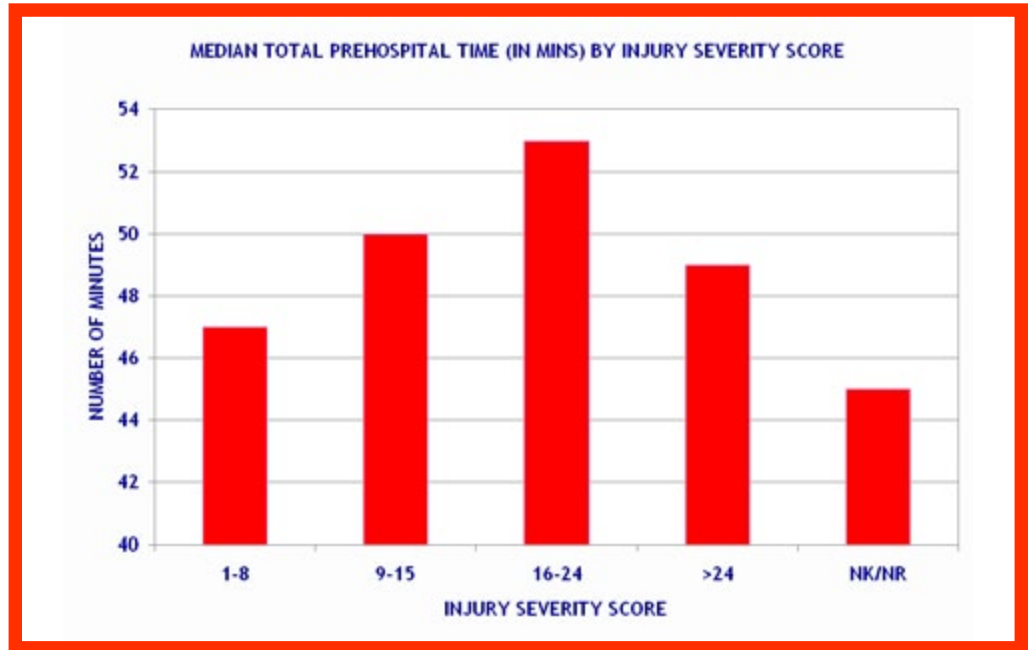
Figure 26



**Table
27**

MEDIAN TOTAL EMS LENGTH (IN MINS) BY INJURY SEVERITY SCORE		
ISS	NUMBER	MEDIAN
1-8	27,526	47
9-15	10,637	50
16-24	7,157	53
>24	3,379	49
NK/NR	4,561	45

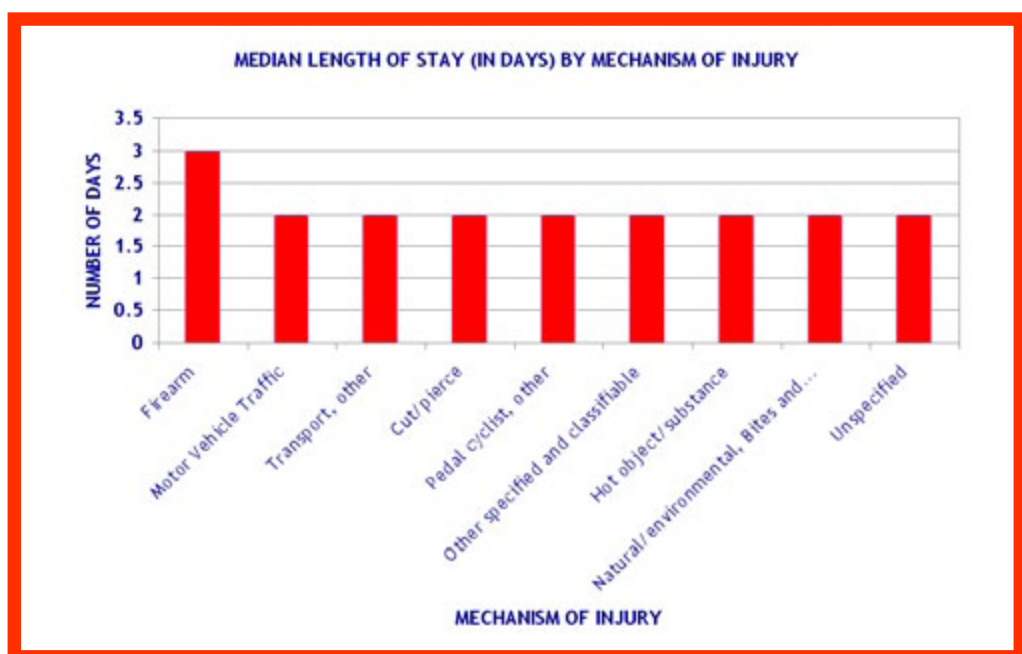
**Figure
27**



**Table
28**

MEDIAN LENGTH OF STAY (IN DAYS) BY MECHANISM OF INJURY		
MECHANISM	NUMBER	MEDIAN
Fall	41,013	1
Motor Vehicle Traffic	37,464	2
Struck by, against	15,009	1
Transport, other	10,720	2
Firearm	7,138	3
Cut/pierce	5,521	2
Pedal cyclist, other	5,276	2
Other specified and classifiable	4,258	2
Hot object/substance	3,973	2
Natural/environmental, Bites and stings	1,767	2
Unspecified	1,698	2
Fire/flame	1,560	2
Other specified, not elsewhere classifiable	824	2
Pedestrian, other	768	2
Overexertion	559	2
Natural/environmental, Other	557	2
Machinery	523	2
Suffocation	142	2
Drowning/submersion	135	2
Poisoning	70	2
NK/NR	297	1

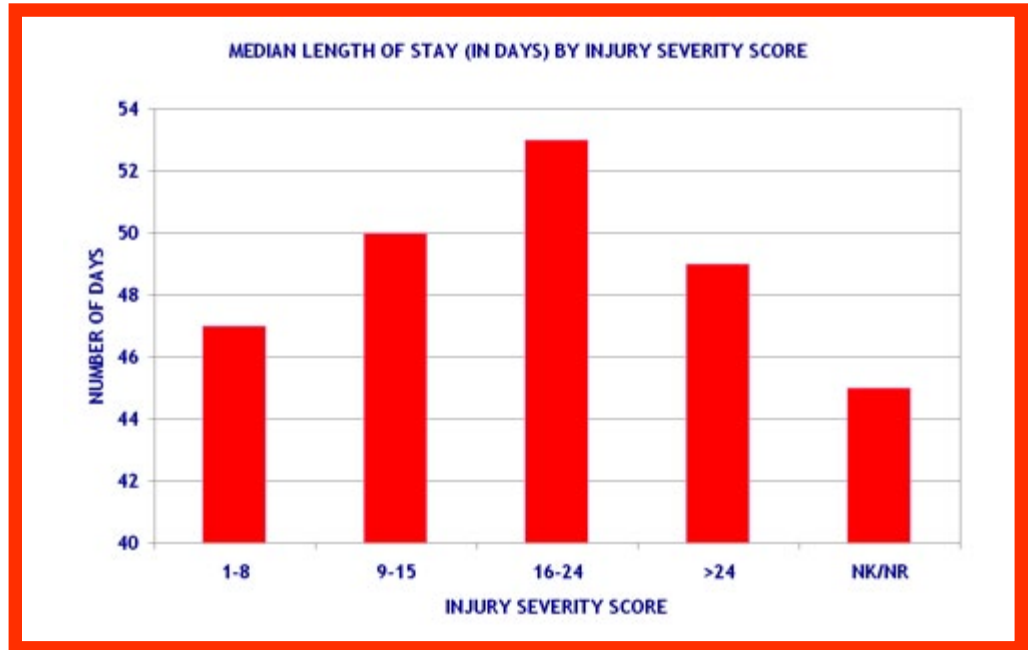
**Figure
28**



**Table
29**

MEDIAN LENGTH OF STAY (IN DAYS) BY INJURY SEVERITY SCORE		
ISS	NUMBER	MEDIAN
1-8	27,526	47
9-15	10,637	50
16-24	7,157	53
>24	3,379	49
NK/NR	4,561	45

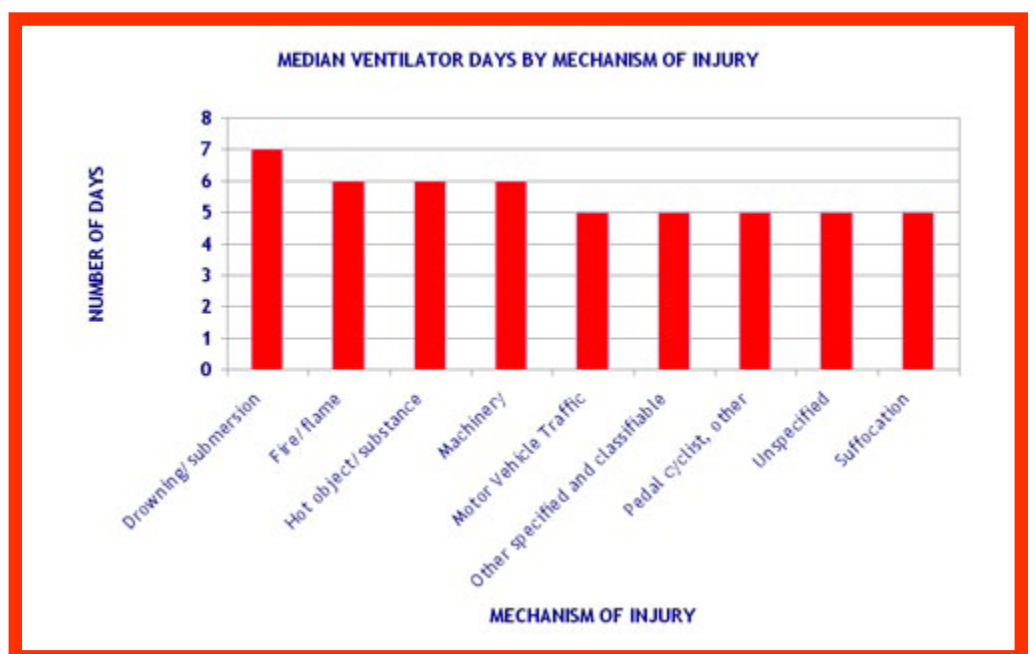
**Figure
29**



**Table
30**

MEDIAN VENTILATOR DAYS BY MECHANISM OF INJURY		
MECHANISM	NUMBER	MEDIAN
Motor Vehicle Traffic	3,189	5
Firearm	691	4
Fall	448	4
Transport, other	437	4
Other specified and classifiable	368	5
Struck by, against	242	4
Cut/pierce	135	3
Fire/flame	108	6
Pedal cyclist, other	69	5
Unspecified	64	5
Suffocation	43	5
Pedestrian, other	42	4
Hot object/substance	40	6
Other specified, not elsewhere classifiable	30	5
Drowning/submersion	22	7
Natural/environmental, Bites and stings	18	5
Natural/environmental, Other	17	5
Machinery	13	6
Poisoning	7	5
Overexertion	0	0
NK/NR	31	5

**Figure
30**



**Table
31**

MEDIAN VENTILATOR DAYS BY INJURY SEVERITY SCORE		
ISS	NUMBER	MEDIAN
1-8	429	3
9-15	738	3
16-24	1,739	4
>24	2,044	6
NK/NR	1,067	5

**Figure
31**

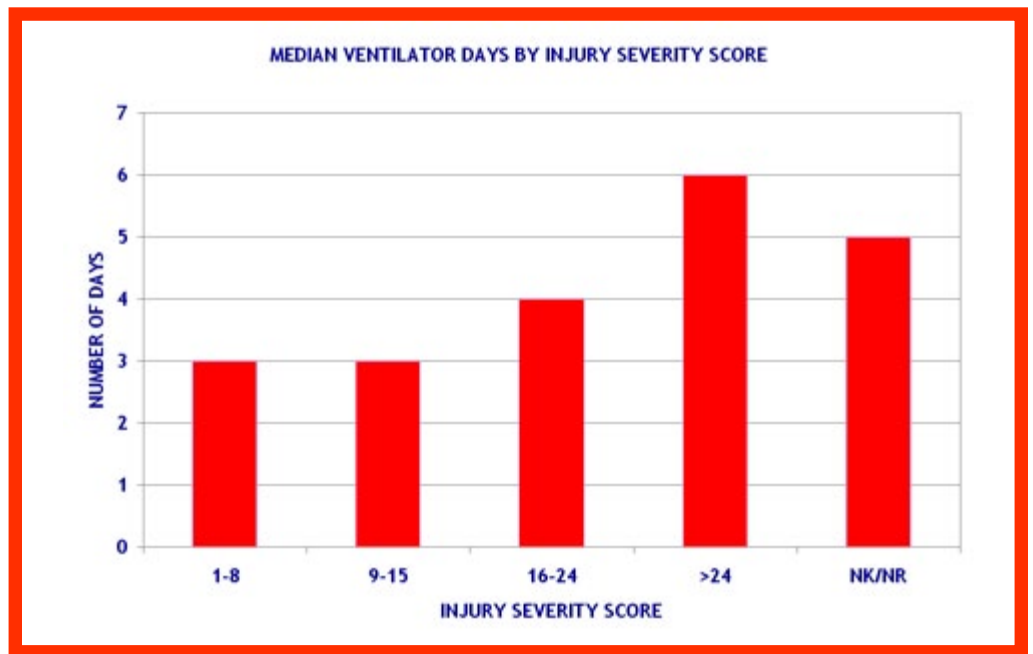
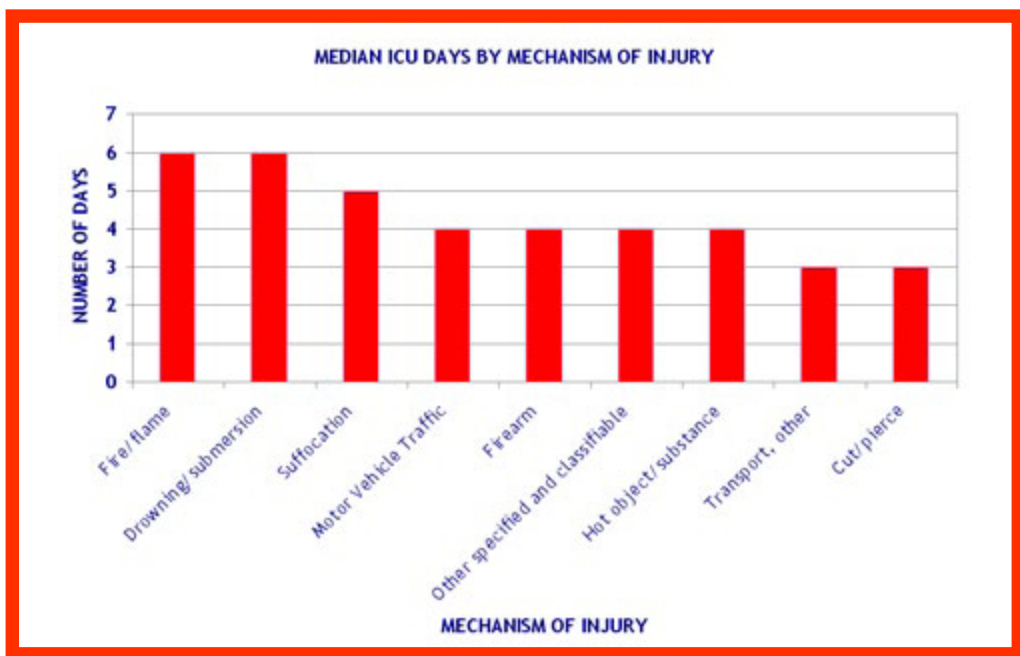


Table 32

MEDIAN ICU DAYS BY MECHANISM OF INJURY		
MECHANISM	NUMBER	MEDIAN
Motor Vehicle Traffic	7,679	4
Fall	2,343	2
Firearm	1,584	4
Transport, other	1,509	3
Struck by, against	1,179	2
Other specified and classifiable	831	4
Pedal cyclist, other	495	2
Cut/pierce	483	3
Hot object/substance	392	4
Fire/flame	357	6
Unspecified	187	3
Pedestrian, other	134	3
Natural/environmental, Other	88	3
Natural/environmental, Bites and stings	84	2
Other specified, not elsewhere classifiable	76	3
Suffocation	57	5
Machinery	50	3
Drowning/submersion	41	6
Poisoning	13	3
Overexertion	13	2
NK/NR	29	3

Figure 32



**Table
33**

MEDIAN ICU DAYS BY INJURY SEVERITY SCORE		
ISS	NUMBER	MEDIAN
1-8	2,879	2
9-15	3,258	3
16-24	5,776	3
>24	3,494	6
NK/NR	2,231	4

**Figure
33**

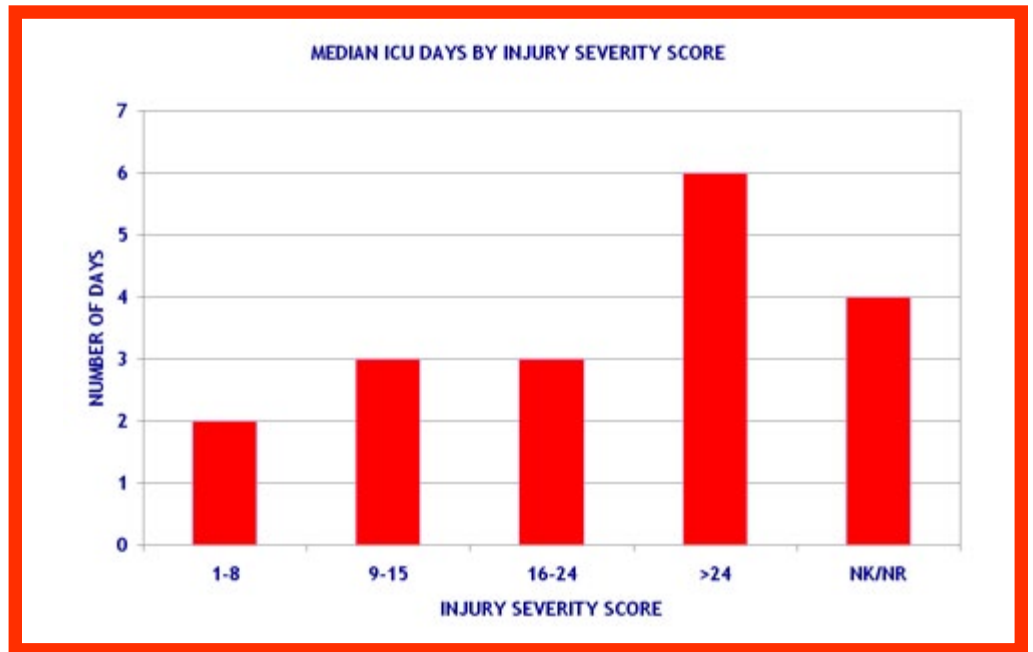
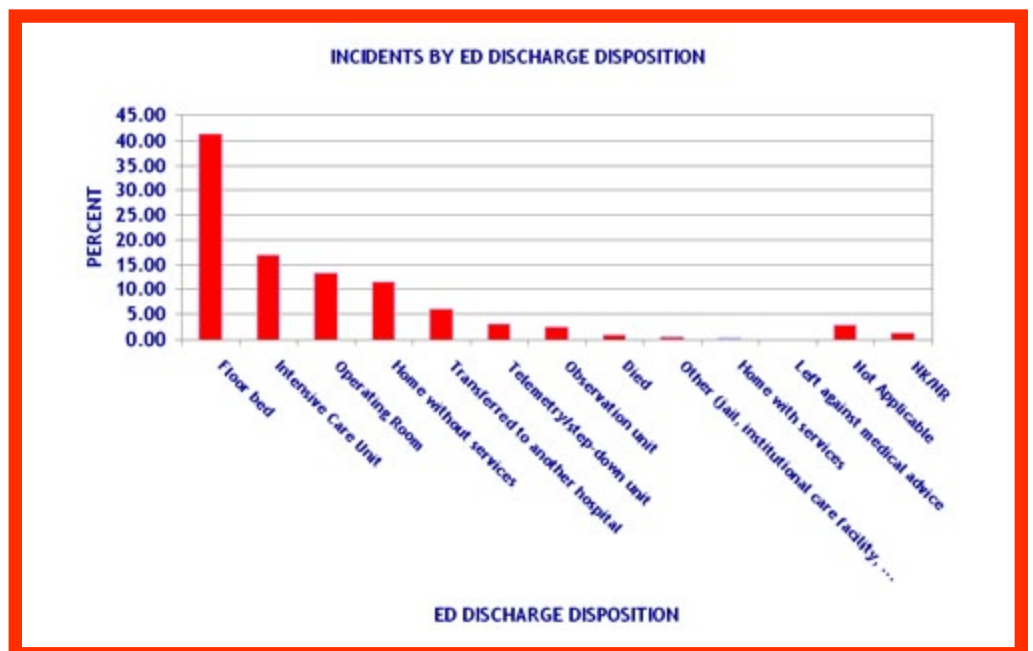


Table 34

INCIDENTS BY ED DISCHARGE DISPOSITION		
ED DISCHARGE DISPOSITION	NUMBER	PERCENT
Floor bed	57,614	41.31
Intensive Care Unit	23,504	16.85
Operating Room	18,627	13.35
Home without services	16,068	11.52
Transferred to another hospital	8,365	6.00
Telemetry/step-down unit	4,271	3.06
Observation unit	3,486	2.50
Died	1,040	0.75
Other (jail, institutional care facility, etc)	606	0.43
Home with services	181	0.13
Left against medical advice	122	0.09
Not Applicable	3,876	2.78
NK/NR	1,716	1.23
Total	139,476	100.00

Figure 34



**Table
35**

REASONS FOR DEATH IN ED		
DIED IN ED	NUMBER	PERCENT
DOA: Declared dead on arrival with minimal or no resuscitation attempt (no invasive procedures attempted)	238	8.29
Death after failed resuscitation attempt (failure to respond within 15 minutes)	200	6.97
Died in ED (other than failed resuscitation attempt)	590	20.55
Total Deaths	2,871	

**Figure
35**

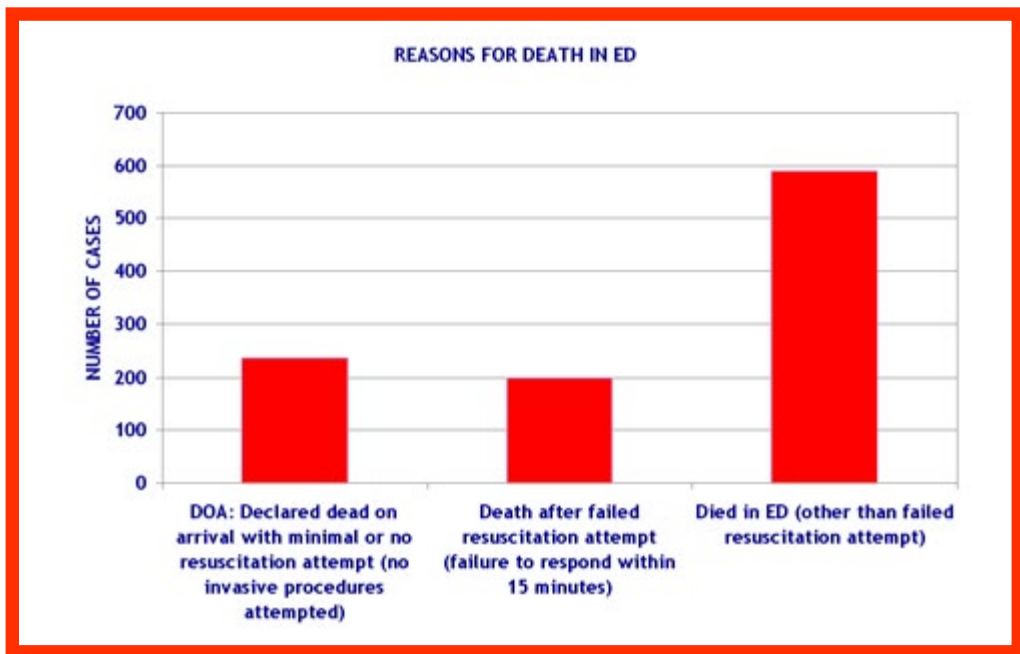
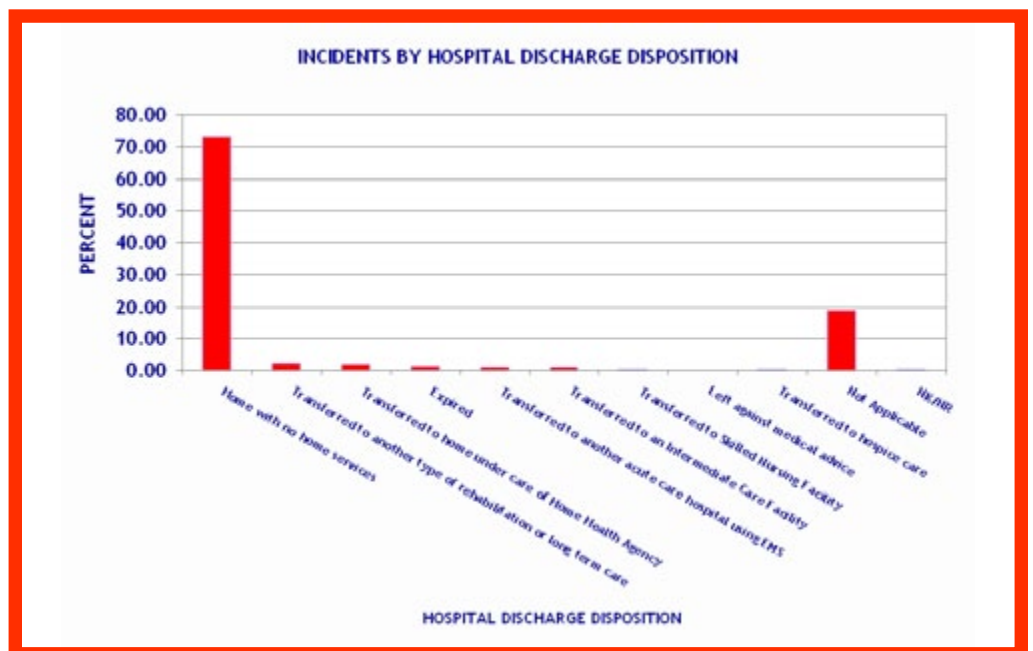


Table 36

INCIDENTS BY HOSPITAL DISCHARGE DISPOSITION		
HOSPITAL DISCHARGE DISPOSITION	NUMBER	PERCENT
Home with no home services	101,751	72.95
Transferred to another type of rehabilitation or long term care	3,242	2.32
Transferred to home under care of Home Health Agency	2,596	1.86
Expired	1,831	1.31
Transferred to another acute care hospital using EMS	1,534	1.10
Transferred to an Intermediate Care Facility	1,185	0.85
Transferred to Skilled Nursing Facility	377	0.27
Left against medical advice	15	0.01
Transferred to hospice care	247	0.18
Not Applicable	26,382	18.92
NK/NR	316	0.23
Total	139,476	

Figure 36

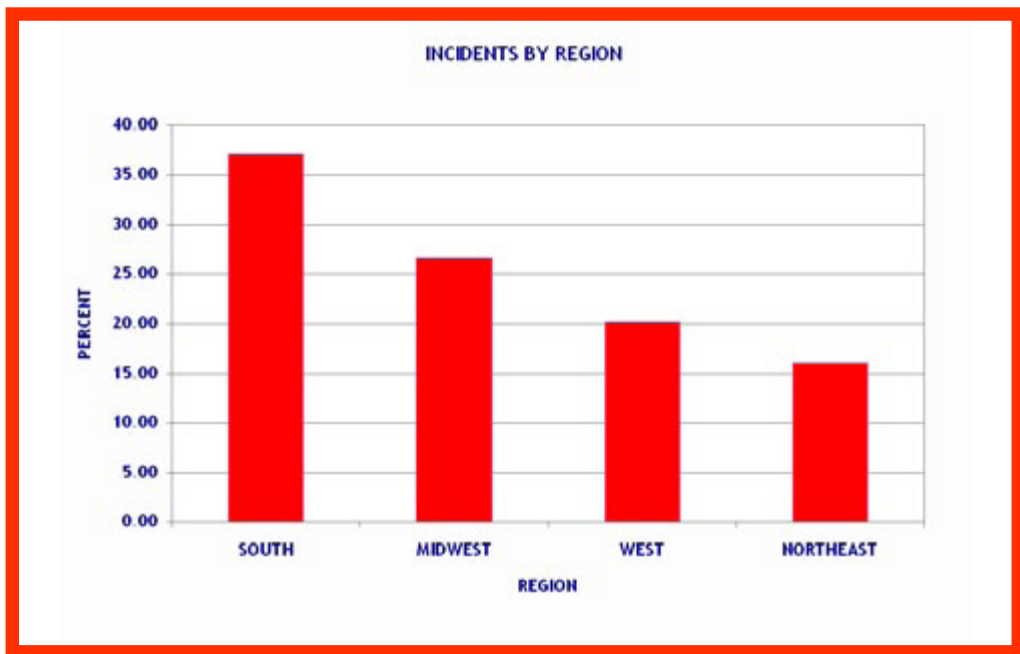


Regional Analyses

**Table
37**

INCIDENTS BY REGION		
REGION	NUMBER	PERCENT
SOUTH	51,772	37.12
MIDWEST	37,158	26.64
WEST	28,074	20.13
NORTHEAST	22,472	16.11
Total	139,476	100.00

**Figure
37**



**Table
38**

CASE FATALITY RATE BY REGION			
REGION	NUMBER	DEATHS	CASE FATALITY RATE
WEST	28,074	631	2.25
SOUTH	51,772	1,150	2.22
MIDWEST	37,158	744	2.00
NORTHEAST	22,472	346	1.54
Total	139,476	2871	

**Figure
38**

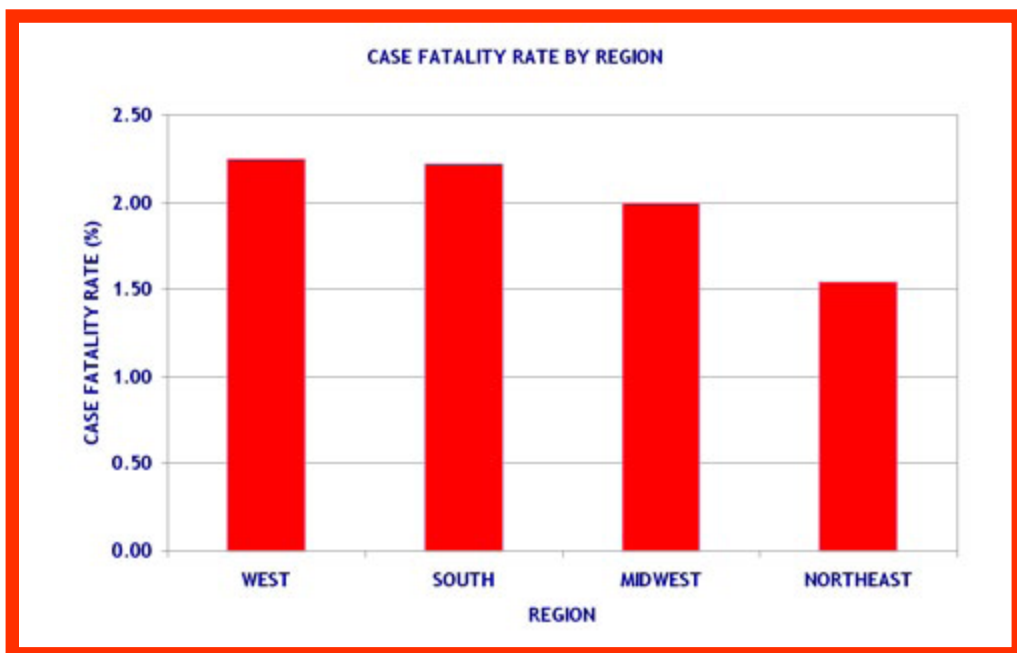
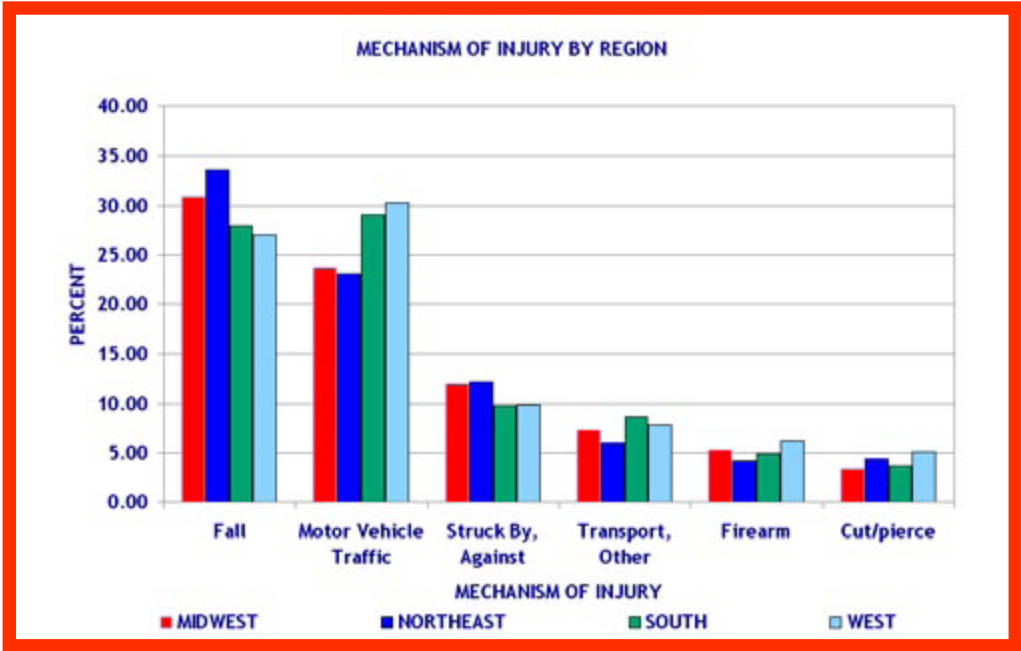


Table
39

MECHANISM OF INJURY BY REGION					
REGION	NUMBER	MIDWEST PERCENT	NORTHEAST PERCENT	SOUTH PERCENT	WEST PERCENT
Fall	41,056	30.88	33.62	27.88	27.04
Motor Vehicle Traffic	37,503	23.64	23.08	29.06	30.23
Struck By, Against	15,025	11.97	12.18	9.78	9.88
Transport, Other	10,730	7.29	6.03	8.64	7.82
Firearm	7,155	5.28	4.21	4.84	6.19
Cut/pierce	5,525	3.31	4.33	3.69	5.03
Pedal Cyclist, Other	5,280	4.31	4.42	2.86	4.29
Other Specified and Classifiable	4,261	2.92	2.91	3.28	2.95
Hot Object/Substance	3,978	3.23	3.27	3.13	1.50
Natural/Environmental, Bites and Stings	1,768	1.47	1.05	1.47	0.80
Unspecified	1,702	1.40	1.19	1.29	0.89
Fire/Flame	1,562	1.35	0.81	1.32	0.69
Other Specified, Not Elsewhere Classifiable	825	0.66	0.57	0.63	0.45
Pedal Cyclist, Other	770	0.48	0.69	0.51	0.60
Overexertion	559	0.40	0.56	0.47	0.15
Natural/Environmental, Other	558	0.40	0.28	0.45	0.41
Machinery	523	0.55	0.36	0.30	0.30
Suffocation	142	0.13	0.05	0.09	0.12
Drowning	135	0.12	0.09	0.09	0.09
Poisoning	70	0.09	0.04	0.04	0.04
NK/NR	306	0.08	0.24	0.13	0.55
Total	139,476	99.97	99.96	99.96	99.99

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

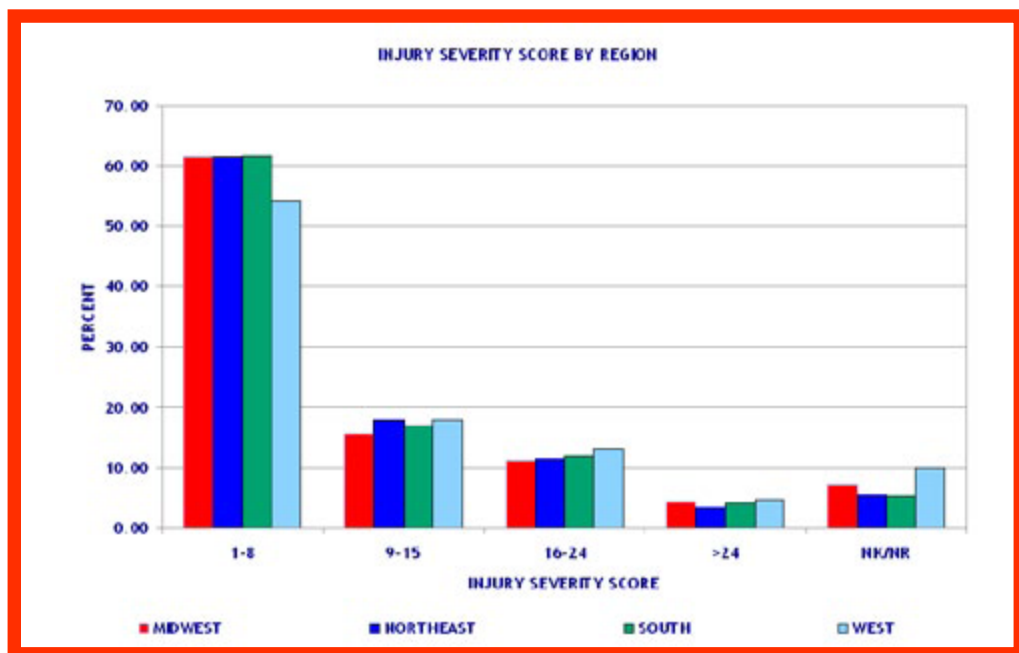
Figure 39



**Table
40**

INJURY SEVERITY SCORE BY REGION					
ISS	NUMBER	MIDWEST PERCENT	NORTHEAST PERCENT	SOUTH PERCENT	WEST PERCENT
1-8	83,874	61.52	61.64	61.66	54.28
9-15	23,595	15.68	17.99	16.80	17.91
16-24	16,559	11.11	11.50	11.93	13.08
>24	5,972	4.42	3.44	4.31	4.72
NK/NR	9,476	7.27	5.43	5.30	10.01
Total	139,476	100.00	100.00	100.00	100.00

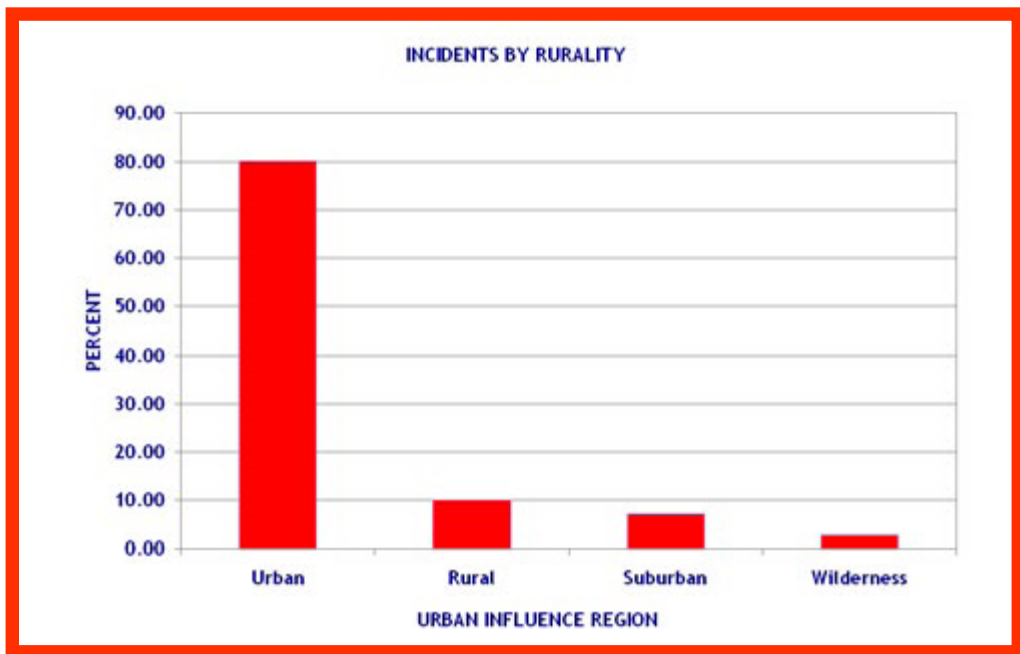
**Figure
40**



**Table
41**

INCIDENTS BY RURALITY		
URBAN CATEGORY	NUMBER	PERCENT
Rural	6,892	10.03
Suburban	4,835	7.03
Urban	55,094	80.14
Wilderness	1,923	2.80
Total	68,744	100

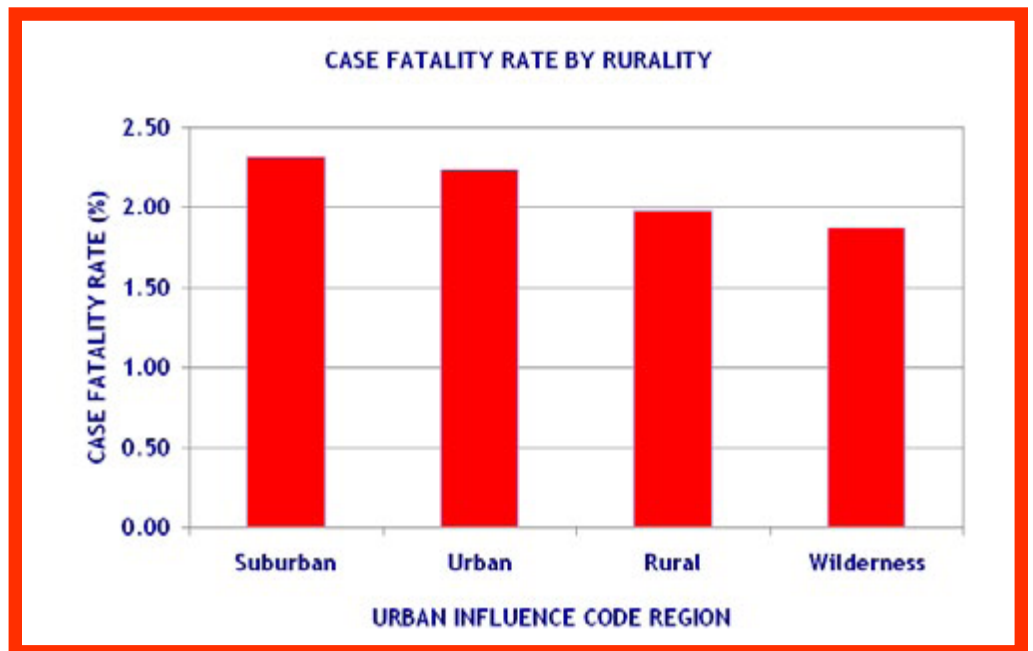
**Figure
41**



**Table
42**

CASE FATALITY RATE BY RURALITY			
URBAN CATEGORY	NUMBER	DEATHS	CASE FATALITY RATE
Suburban	5,791	134	2.31
Urban	61,211	1,366	2.23
Rural	9,128	181	1.98
Wilderness	2,245	42	1.87
Total	78,375	1,723	

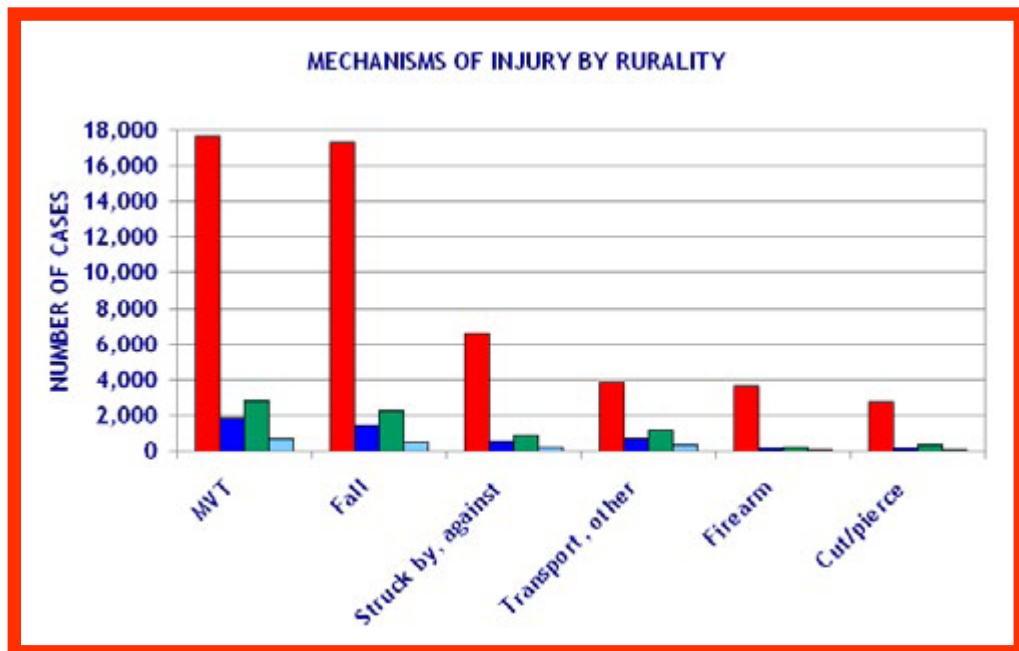
**Figure
42**



**Table
43**

MECHANISM OF INJURY BY RURALITY								
MECHANISM	NUMBER (URBAN)	PERCENT (URBAN)	NUMBER (SUBURBAN)	PERCENT (SUBURBAN)	NUMBER (RURAL)	PERCENT (RURAL)	NUMBER (WILDERNESS)	PERCENT (WILDERNESS)
Motor Vehicle Traffic	17,684	28.89	1,856	32.05	2,829	30.99	682	30.38
Fall	17,331	28.31	1,453	25.09	2,299	25.19	515	22.94
Struck by, against	6,599	10.78	528	9.12	865	9.48	210	9.35
Transport, other	3,821	6.24	663	11.45	1,150	12.60	375	16.70
Firearm	3,645	5.95	148	2.56	210	2.30	46	2.05
Cut/pierce	2,761	4.51	134	2.31	319	3.49	57	2.54
Pedal cyclist, other	2,135	3.49	188	3.25	249	2.73	51	2.27
Other specified and classifiable	1,788	2.92	195	3.37	331	3.63	64	2.85
Hot object/substance	1,780	2.91	194	3.35	238	2.61	52	2.32
Natural/environmental, Bites and stings	766	1.25	95	1.64	106	1.16	34	1.51
Unspecified	666	1.09	52	0.90	69	0.76	19	0.85
Fire/flame	611	1.00	109	1.88	132	1.45	41	1.83
Pedestrian, other	378	0.62	35	0.60	45	0.49	19	0.85
Other specified, not elsewhere classifiable	319	0.52	37	0.64	64	0.70	10	0.45
Overexertion	228	0.37	16	0.28	46	0.50	11	0.49
Natural/environmental, Other	201	0.33	33	0.57	74	0.81	28	1.25
Machinery	170	0.28	42	0.73	61	0.67	24	1.07
Suffocation	66	0.11	4	0.07	8	0.09	2	0.09
Drowning/submersion	61	0.10	2	0.03	10	0.11	3	0.13
Poisoning	21	0.03	3	0.05	3	0.03	0	0.00
NK/NR	170	0.28	3	0.05	16	0.18	1	0.04
Total	61,201	100	5,790	100	9,124	100	2,244	100

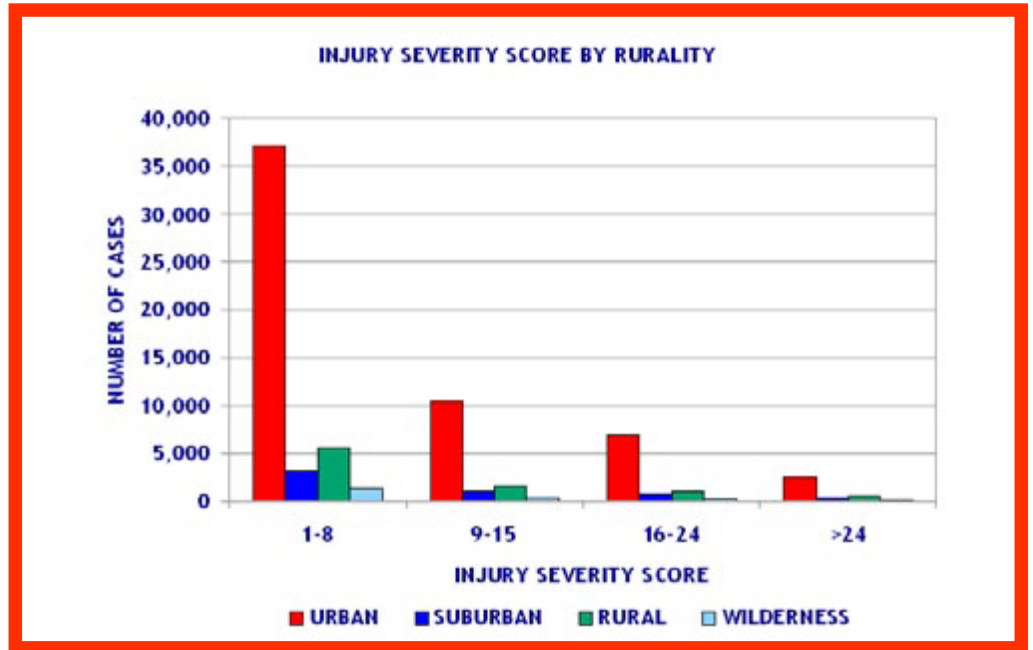
**Figure
43**



**Table
44**

INJURY SEVERITY SCORE BY RURALITY								
ISS	NUMBER (URBAN)	PERCENT (URBAN)	NUMBER (SUBURBAN)	PERCENT (SUBURBAN)	NUMBER (RURAL)	PERCENT (RURAL)	NUMBER (WILDERNESS)	PERCENT (WILDERNESS)
1-8	37,158	60.70	3,274	56.54	5,617	61.54	1,307	58.22
9-15	10,548	17.23	1,087	18.77	1,516	16.61	414	18.44
16-24	6,951	11.36	785	13.56	1,088	11.92	283	12.61
>24	2,569	4.20	311	5.37	426	4.67	124	5.52
NK/NR	3,985	6.51	334	5.77	481	5.27	117	5.21
Total	61,211	100.00	5,791	100.00	9,128	100.00	2,245	100.00

**Figure
44**



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.