



# National Trauma Data Bank 2009

## Pediatric Report

## Acknowledgments

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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

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## Editors' Note

**T**he Annual Pediatric 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, while the 2009 Annual Pediatric Report is based on 132,126 2008 admission year records from 553 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

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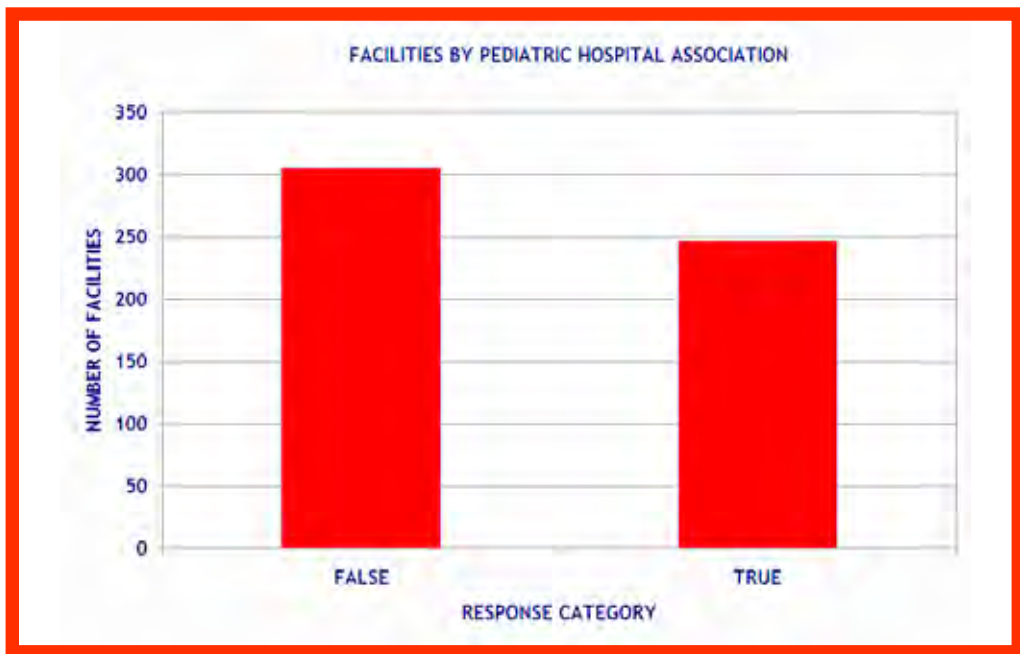
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# Hospital Information

**Table  
1**

FACILITIES BY PEDIATRIC HOSPITAL ASSOCIATION		
PEDIATRIC ASSOCIATION	NUMBER	PERCENT
False	306	55.33
True	247	44.67
Total	553	100.00

**Figure  
1**

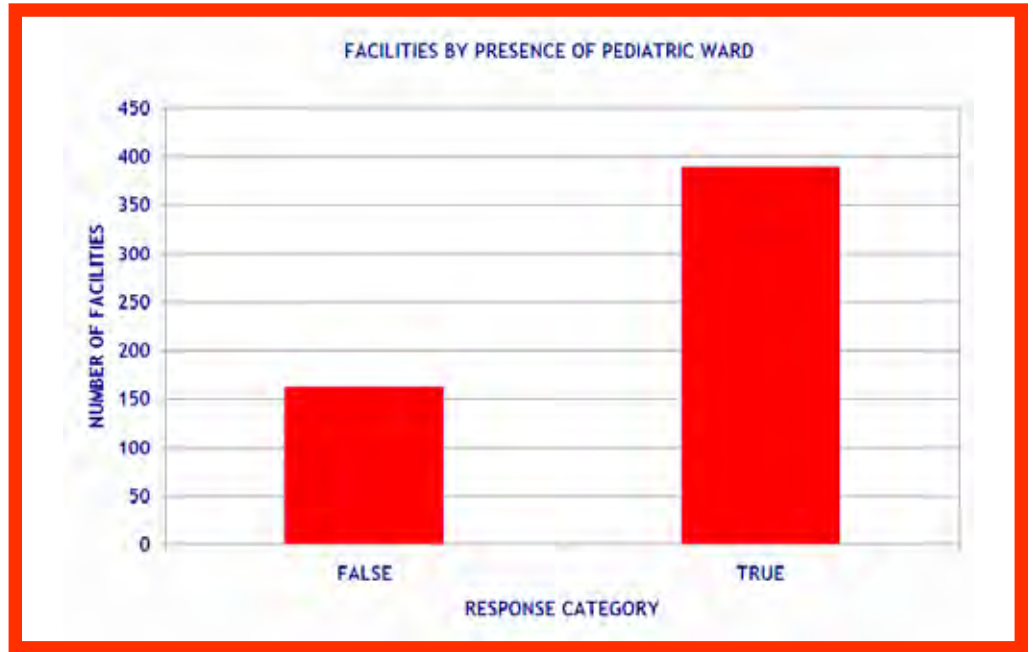




**Table  
2**

FACILITIES BY PRESENCE OF PEDIATRIC WARD		
PEDIATRIC WARD	NUMBER	PERCENT
False	163	29.48
True	390	70.52
Total	553	100.00

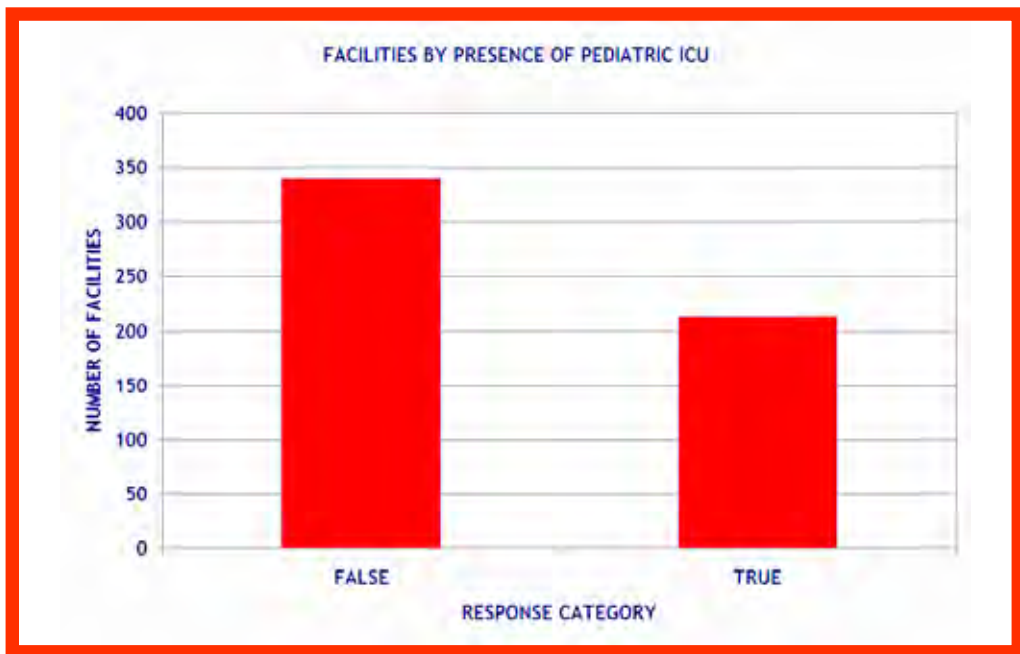
**Figure  
2**



**Table  
3**

FACILITIES BY PRESENCE OF PEDIATRIC ICU		
PEDIATRIC ICU	NUMBER	PERCENT
False	340	61.48
True	213	38.52
Total	553	100.00

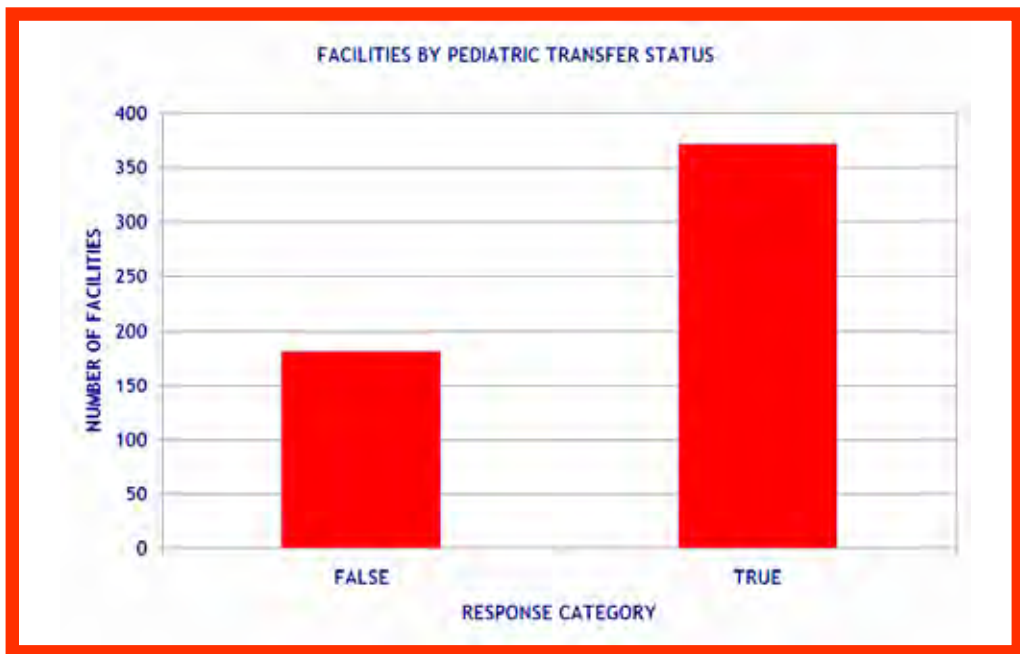
**Figure  
3**



**Table  
4**

FACILITIES BY PEDIATRIC TRANSFER STATUS		
PEDIATRIC TRANSFER	NUMBER	PERCENT
False	181	32.73
True	372	67.27
Total	553	100.00

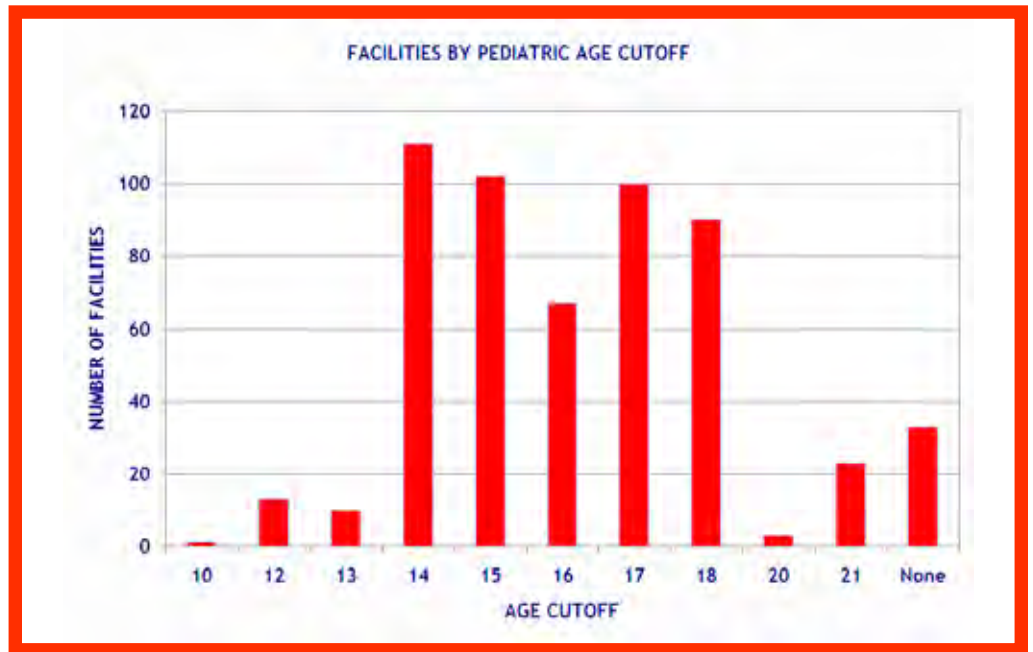
**Figure  
4**



**Table  
5**

FACILITIES BY PEDIATRIC AGE CUTOFF		
PEDIATRIC CUTOFF	NUMBER	PERCENT
10	1	0.18
12	13	2.35
13	10	1.81
14	111	20.07
15	102	18.44
16	67	12.12
17	100	18.08
18	90	16.27
20	3	0.54
21	23	4.16
None	33	5.97
<b>Total</b>	<b>553</b>	<b>100.00</b>

**Figure  
5**



# Demographic Information

**Table  
6**

INCIDENTS AND CASE FATALITY RATE BY AGE				
AGE	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
<1 year	7,722	5.84	198	2.56
1	6,232	4.72	134	2.15
2	5,554	4.20	118	2.12
3	4,854	3.67	86	1.77
4	4,611	3.49	61	1.32
5	4,851	3.67	47	0.97
6	4,575	3.46	35	0.77
7	4,368	3.31	43	0.98
8	3,991	3.02	41	1.03
9	3,864	2.92	43	1.11
10	3,820	2.89	36	0.94
11	4,235	3.21	53	1.25
12	4,639	3.51	51	1.10
13	5,504	4.17	61	1.11
14	6,728	5.09	107	1.59
15	8,147	6.17	191	2.34
16	10,076	7.63	275	2.73
17	11,551	8.74	355	3.07
18	13,320	10.08	500	3.75
19	13,484	10.21	499	3.70
Total	132,126	100.00	2,934	

**Figure  
6A**



Figure 6B

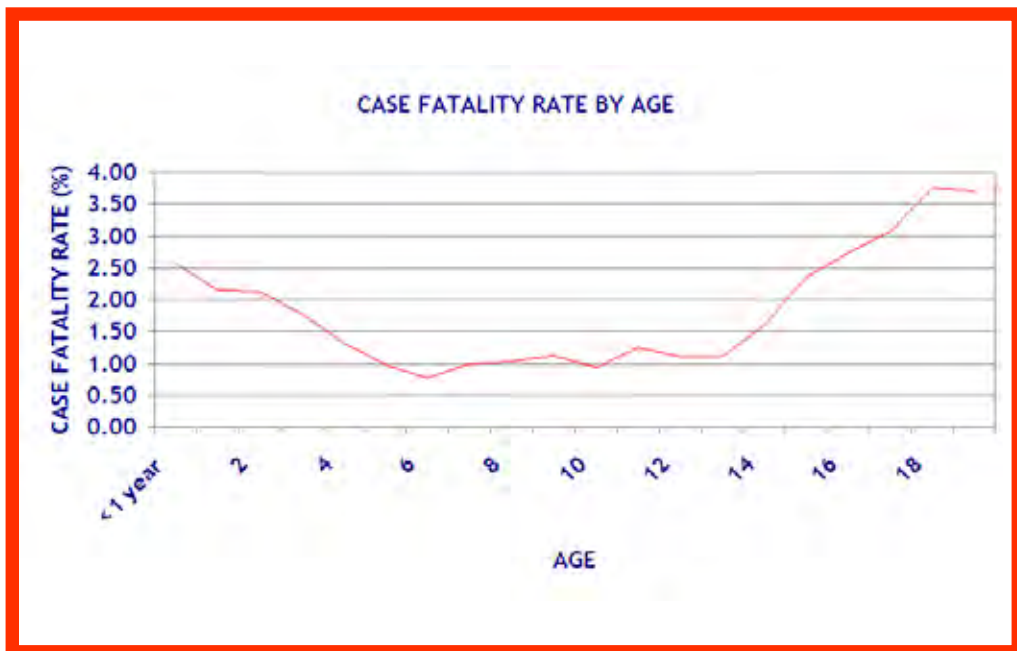
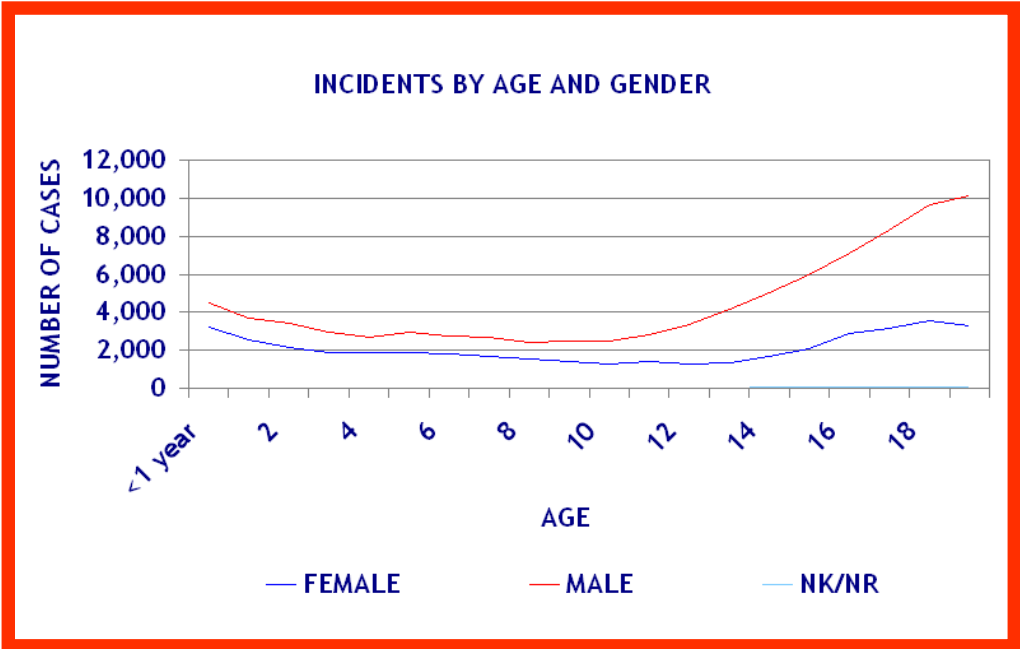


Table  
7

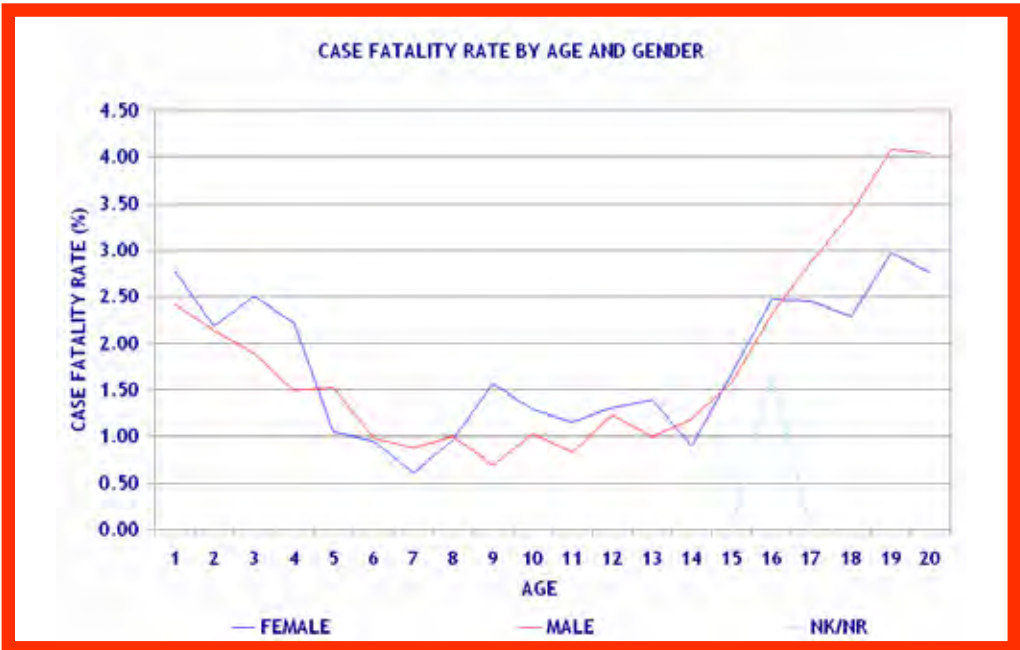
INCIDENTS AND CASE FATALITY BY AGE AND GENDER									
AGE	NUMBER (FEMALE)	NUMBER (MALE)	NUMBER (NK/NR)	DEATHS (FEMALE)	DEATHS (MALE)	DEATHS (NK/NR)	CASE FATALITY RATE (FEMALE)	CASE FATALITY RATE (MALE)	CASE FATALITY RATE (NK/NR)
<1 year	3,250	4,463	9	90	108	0	2.77	2.42	0.00
1	2,564	3,657	11	56	78	0	2.18	2.13	0.00
2	2,156	3,387	11	54	64	0	2.50	1.89	0.00
3	1,903	2,945	6	42	44	0	2.21	1.49	0.00
4	1,905	2,702	4	20	41	0	1.05	1.52	0.00
5	1,890	2,952	9	18	29	0	0.95	0.98	0.00
6	1,824	2,748	3	11	24	0	0.60	0.87	0.00
7	1,668	2,699	1	16	27	0	0.96	1.00	0.00
8	1,539	2,443	9	24	17	0	1.56	0.70	0.00
9	1,405	2,448	11	18	25	0	1.28	1.02	0.00
10	1,300	2,513	7	15	21	0	1.15	0.84	0.00
11	1,379	2,845	11	18	35	0	1.31	1.23	0.00
12	1,298	3,330	11	18	33	0	1.39	0.99	0.00
13	1,339	4,140	25	12	49	0	0.90	1.18	0.00
14	1,671	5,021	36	28	79	0	1.68	1.57	0.00
15	2,103	5,984	60	52	138	1	2.47	2.31	1.67
16	2,854	7,129	93	70	205	0	2.45	2.88	0.00
17	3,184	8,302	65	73	282	0	2.29	3.40	0.00
18	3,543	9,685	92	105	395	0	2.96	4.08	0.00
19	3,255	10,133	96	90	409	0	2.76	4.04	0.00
Total	42,030	89,526	570	830	2,103	1			



**Figure 7A**



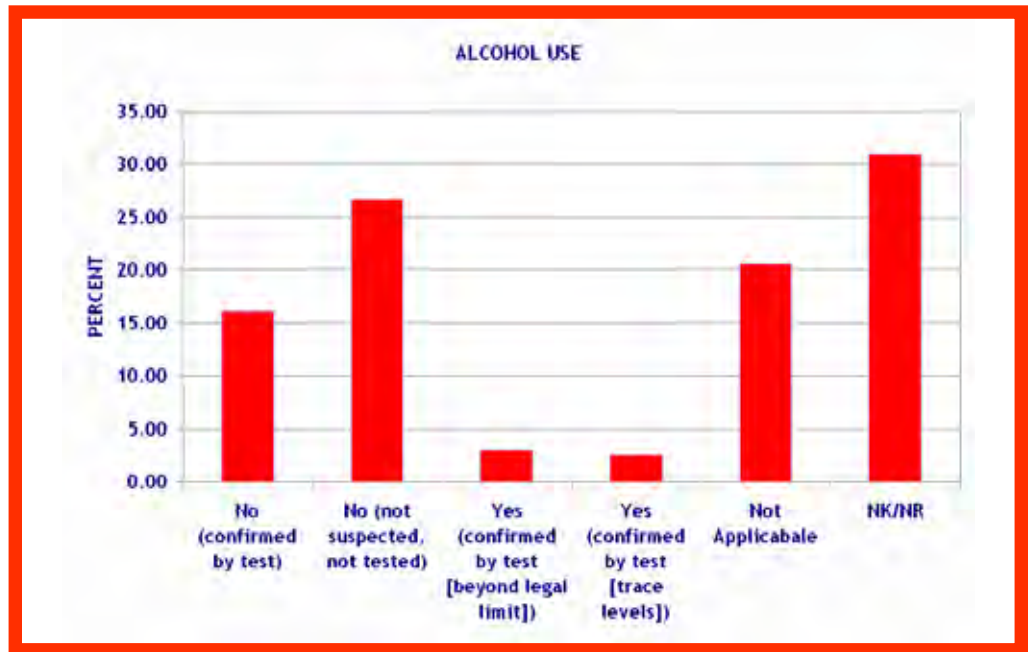
**Figure 7B**



**Table 8**

ALCOHOL USE		
ALCOHOL USE	NUMBER	PERCENT
No (confirmed by test)	21,324	16.14
No (not suspected, not tested)	35,297	26.71
Yes (confirmed by test [beyond legal limit])	3,871	2.93
Yes (confirmed by test [trace levels])	3,392	2.57
Not Applicabile	27,257	20.63
NK/NR	40,985	31.02
<b>Total</b>	<b>132,126</b>	<b>100.00</b>

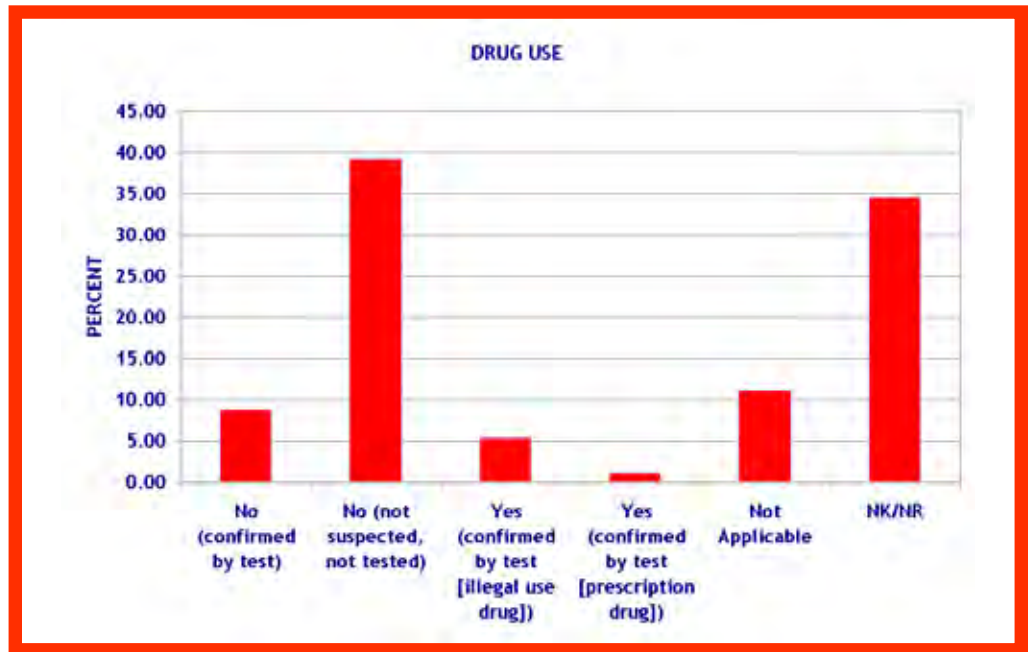
**Figure 8**



**Table  
9**

DRUG USE		
DRUG USE	NUMBER	PERCENT
No (confirmed by test)	11,573	8.76
No (not suspected, not tested)	51,824	39.22
Yes (confirmed by test [illegal use drug])	7,070	5.35
Yes (confirmed by test [prescription drug])	1,518	1.15
Not Applicable	14,620	11.07
NK/NR	45,521	34.45
<b>Total</b>	<b>132,126</b>	<b>100.00</b>

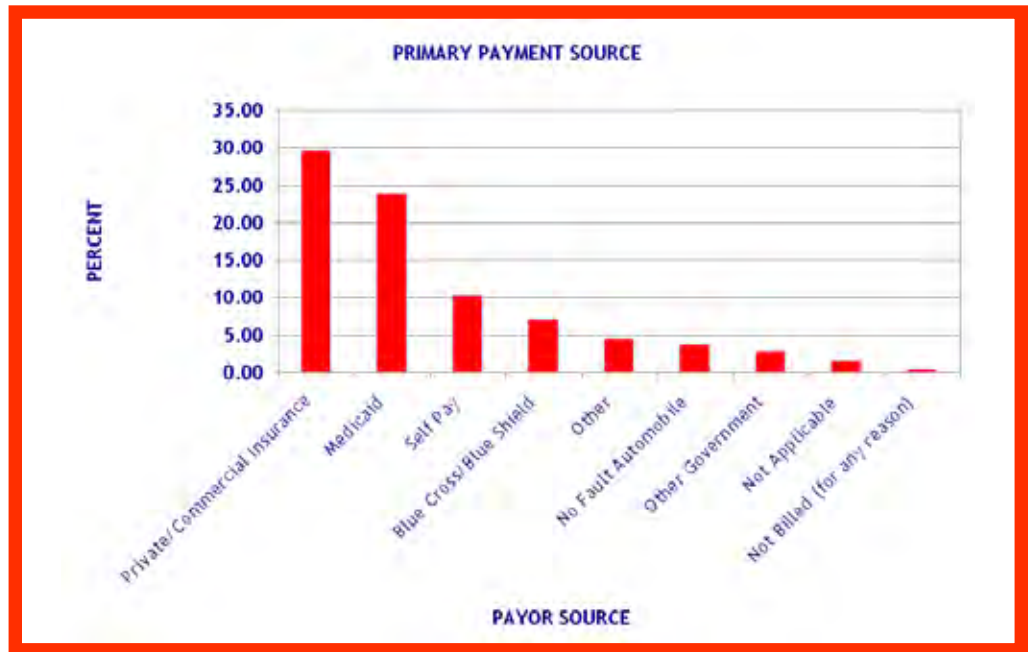
**Figure  
9**



**Table  
10**

PRIMARY PAYMENT SOURCE		
PRIMARY PAYMENT SOURCE	NUMBER	PERCENT
	39,175	29.65
Medicaid	31,485	23.83
Self Pay	13,677	10.35
Blue Cross/Blue Shield	9,364	7.09
Other	6,095	4.61
No Fault Automobile	4,960	3.75
Other Government	3,764	2.85
Not Applicable	2,100	1.59
Not Billed (for any reason)	620	0.47
Workers Compensation	581	0.44
Medicare	336	0.25
NK/NR	19,969	15.11
<b>Total</b>	<b>132,126</b>	<b>100.00</b>

**Figure  
10**



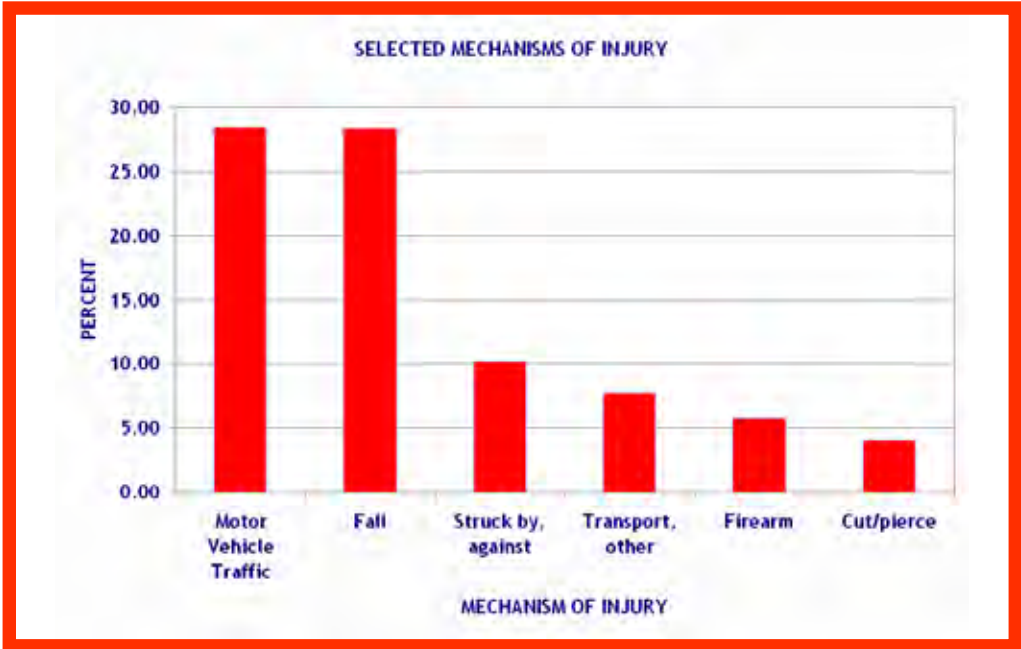
# Injury Characteristics

Table  
11

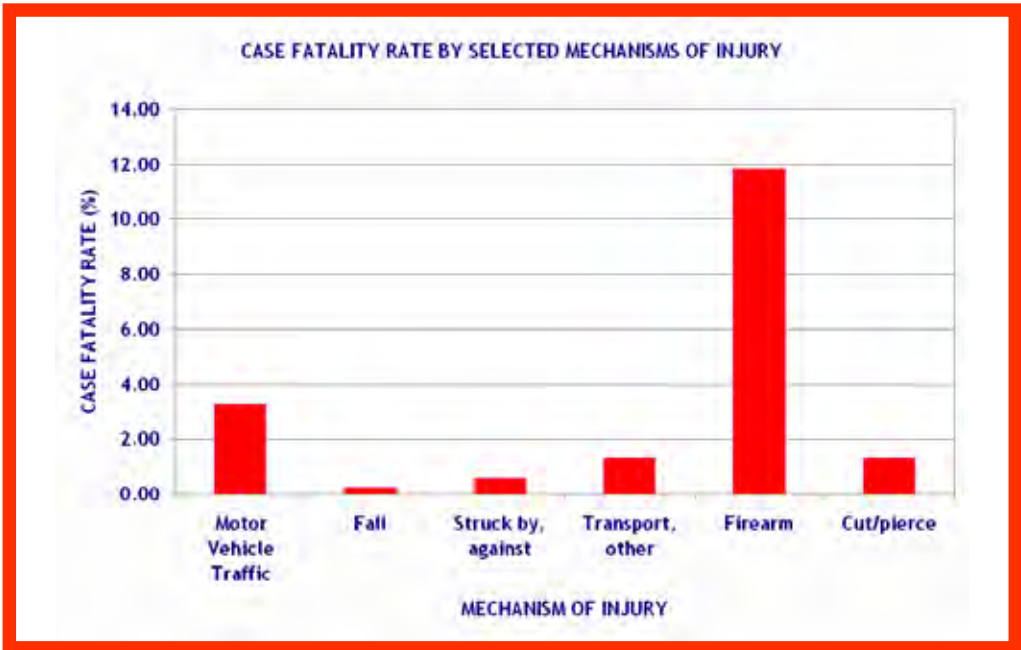
INCIDENTS AND CASE FATALITY RATE BY MECHANISM OF INJURY				
MECHANISM	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Motor Vehicle Traffic	37,550	28.42	1,231	3.28
Fall	37,440	28.34	92	0.25
Struck by, against	13,452	10.18	78	0.58
Transport, other	10,207	7.73	133	1.30
Firearm	7,639	5.78	904	11.83
Cut/pierce	5,339	4.04	70	1.31
Pedal cyclist, other	4,562	3.45	11	0.24
Other specified and classifiable	3,966	3.00	211	5.32
Hot object/substance	3,754	2.84	6	0.16
Fire/flame	1,551	1.17	47	3.03
Natural/environmental, Bites and stings	1,506	1.14	6	0.40
Unspecified	1,344	1.02	32	2.38
Pedestrian, other	725	0.55	19	2.62
Other specified, not elsewhere classifiable	701	0.53	16	2.28
Machinery	592	0.45	5	0.84
Natural/environmental, Other	563	0.43	5	0.89
Overexertion	521	0.39	0	0.00
NK/NR	307	0.23	3	0.98
Suffocation	159	0.12	47	29.56
Drowning/submersion	131	0.10	16	12.21
Poisoning	78	0.06	2	2.56
Total	132,126	99.97	2,934	

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

**Figure 11A**



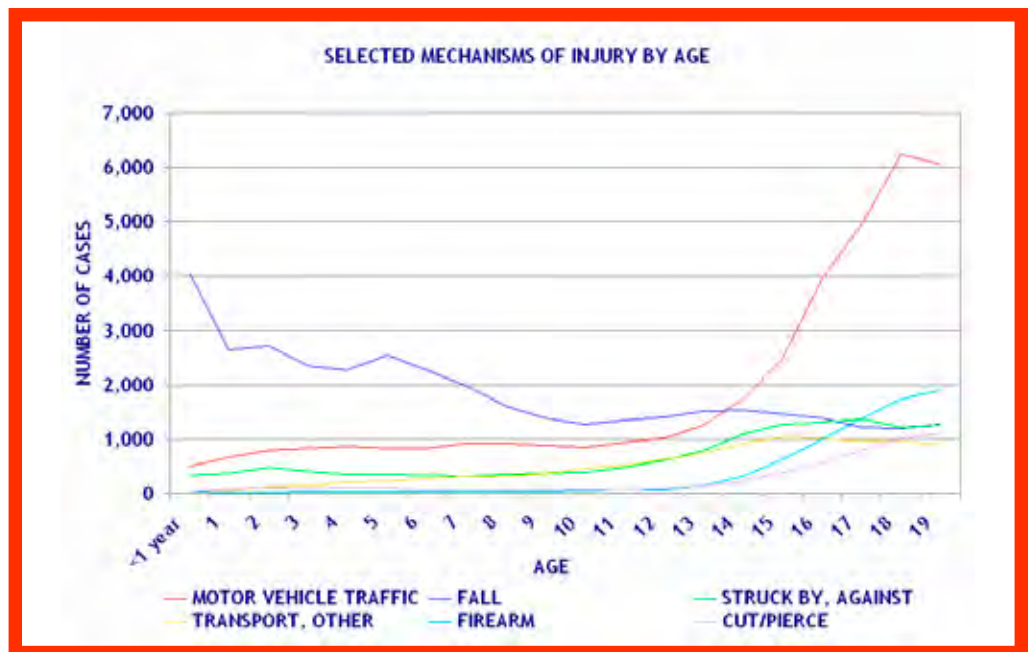
**Figure 11B**



**Table 12**

SELECTED MECHANISMS OF INJURY BY AGE						
AGE	MOTOR VE- HICLE TRAFFIC	FALL	STRUCK BY, AGAINST	TRANSPORT, OTHER	FIREARM	CUT/PIERCE
<1 year	491	4,054	334	34	41	45
1	666	2,642	367	48	21	87
2	788	2,723	474	125	24	103
3	832	2,342	400	153	38	100
4	863	2,264	357	195	36	103
5	824	2,557	356	230	29	104
6	829	2,276	328	273	36	81
7	919	1,982	323	308	40	74
8	929	1,602	345	322	33	81
9	895	1,379	370	372	40	73
10	858	1,275	396	466	50	81
11	935	1,346	482	513	68	82
12	1,014	1,398	606	619	79	96
13	1,265	1,518	785	747	146	153
14	1,741	1,542	1,095	929	311	225
15	2,491	1,460	1,280	1,034	622	391
16	3,947	1,381	1,312	1,015	993	549
17	4,971	1,217	1,370	965	1,388	790
18	6,239	1,209	1,217	963	1,738	1,021
19	6,053	1,273	1,255	896	1,906	1,100
Total	37,550	37,440	13,452	10,207	7,639	5,339

**Figure 12**





**Table 13**

CASE FATALITY RATE BY MECHANISMS OF INJURY AND AGE						
AGE	MVT CASE FATALITY RATE	FALL CASE FATALITY RATE	STRUCK BY, AGAINST CASE FATALITY RATE	TRANSPORT, OTHER CASE FATALITY RATE	FIREARM CASE FATALITY RATE	CUT/PIERCE CASE FATALITY RATE
<1 year	8.76	0.35	2.10	0.00	17.07	4.44
1	7.51	0.38	3.27	2.08	19.05	0.00
2	4.44	0.26	2.32	1.60	8.33	1.94
3	3.49	0.17	1.50	1.96	18.42	2.00
4	4.17	0.04	0.56	1.03	16.67	0.00
5	3.28	0.08	0.28	0.43	20.69	0.00
6	2.41	0.09	0.30	1.10	8.33	0.00
7	2.94	0.00	1.55	0.32	7.50	0.00
8	2.48	0.12	0.29	1.24	9.09	1.23
9	2.79	0.00	0.27	1.34	12.50	0.00
10	2.21	0.00	0.51	1.07	6.00	0.00
11	2.35	0.22	0.21	1.36	19.12	0.00
12	2.27	0.14	0.00	1.13	13.92	0.00
13	2.69	0.07	0.38	0.54	8.22	1.31
14	2.58	0.26	0.27	1.18	10.29	1.33
15	2.85	0.27	0.31	1.06	13.50	1.53
16	3.57	0.22	0.23	1.67	9.77	0.91
17	2.78	0.58	0.36	1.45	11.96	1.27
18	3.45	1.24	0.33	1.45	12.66	2.15
19	3.44	0.86	0.48	2.34	11.54	1.36

**Figure 13**

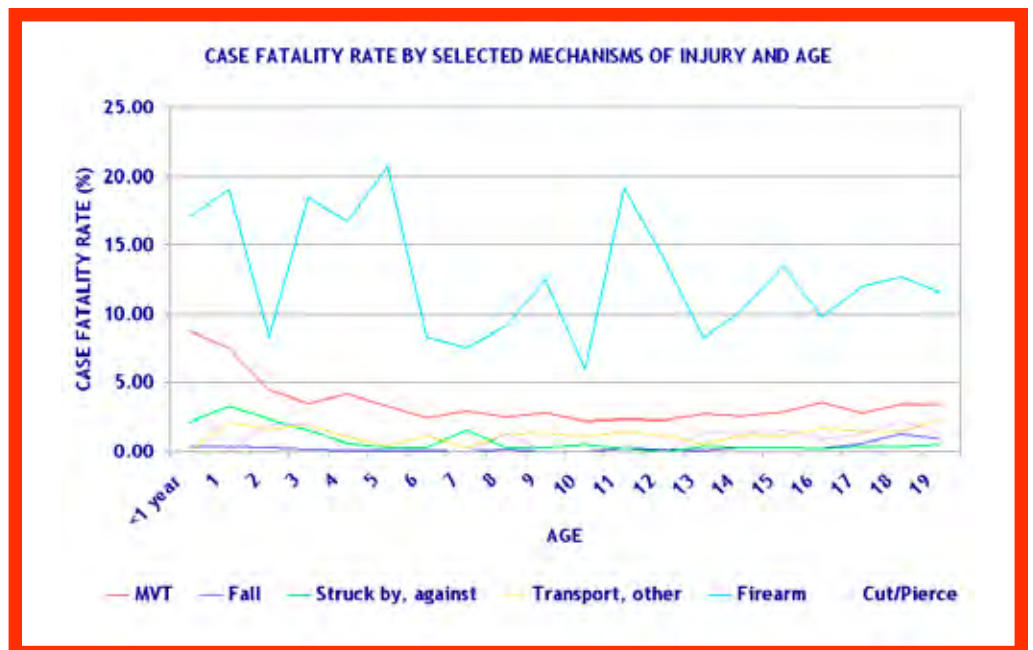
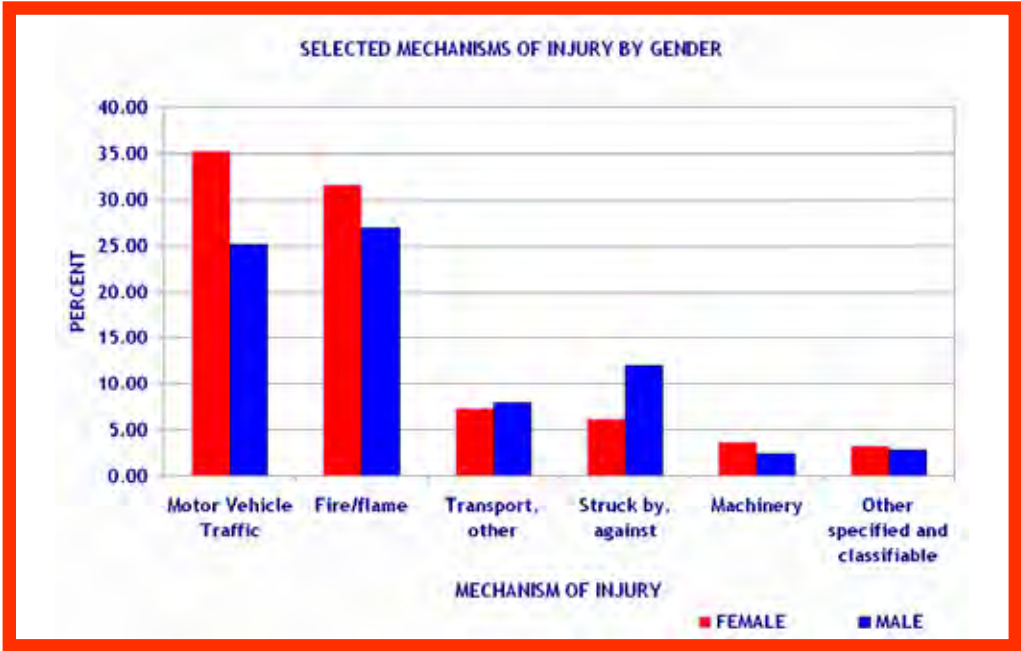


Table  
14

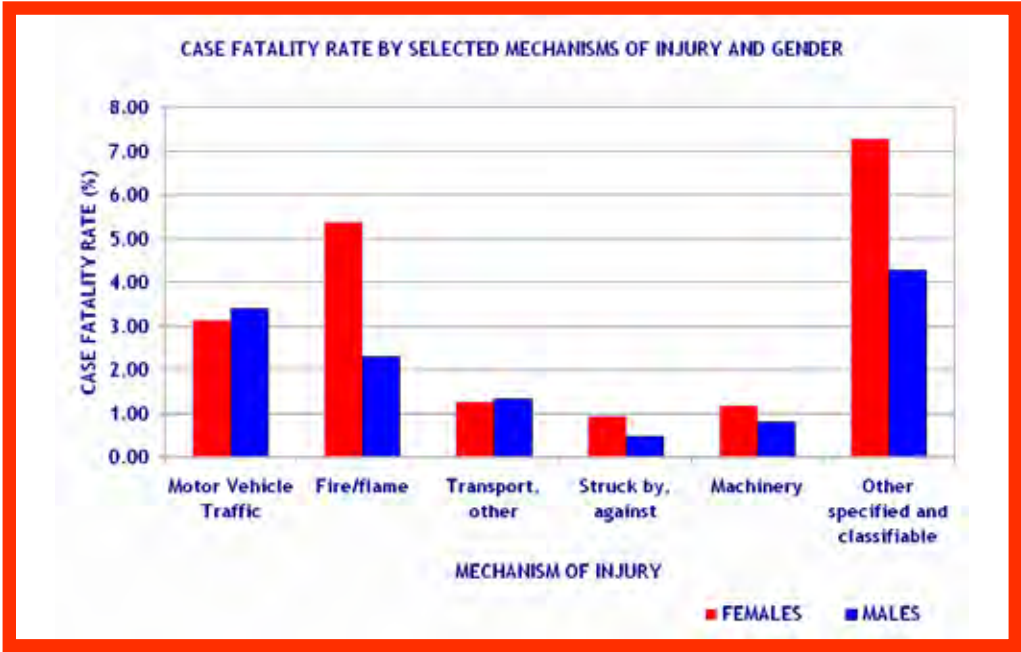
INCIDENTS AND CASE FATALITY RATE BY MECHANISM OF INJURY AND GENDER				
MECHANISM	PERCENT (FEMALE)	PERCENT (MALE)	CASE FATALITY RATE (FEMALE)	CASE FATALITY RATE (MALE)
Motor Vehicle Traffic	35.16	25.21	3.12	3.41
Fire/flame	31.63	26.89	5.37	2.30
Transport, other	7.31	7.92	1.27	1.33
Struck by, against	6.25	12.04	0.95	0.49
Machinery	3.76	2.38	1.18	0.80
Other specified and classifiable	3.29	2.87	7.30	4.28
Pedal cyclist, other	2.32	4.00	0.41	0.20
Drowning/submersion	2.29	4.86	11.90	12.50
Hot object/substance	1.96	7.55	0.13	0.19
Natural/environmental, Other	1.46	0.99	1.27	0.62
Unspecified	0.99	1.02	4.07	1.64
Firearm	0.93	1.26	11.88	11.92
NK/NR	0.56	0.36	0.00	1.42
Pedestrian, other	0.50	0.57	2.36	2.73
Other specified, not elsewhere classifiable	0.50	0.55	3.83	1.64
Overexertion	0.38	0.40	0.00	0.00
Natural/environmental, Bites and stings	0.20	0.56	0.49	0.34
Fall	0.10	0.10	0.16	0.29
Suffocation	0.09	0.14	18.42	33.06
Poisoning	0.08	0.05	3.13	2.17
Cut/pierce	0.03	0.02	0.83	1.42
Total	99.77	99.75		

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

**Figure 14A**



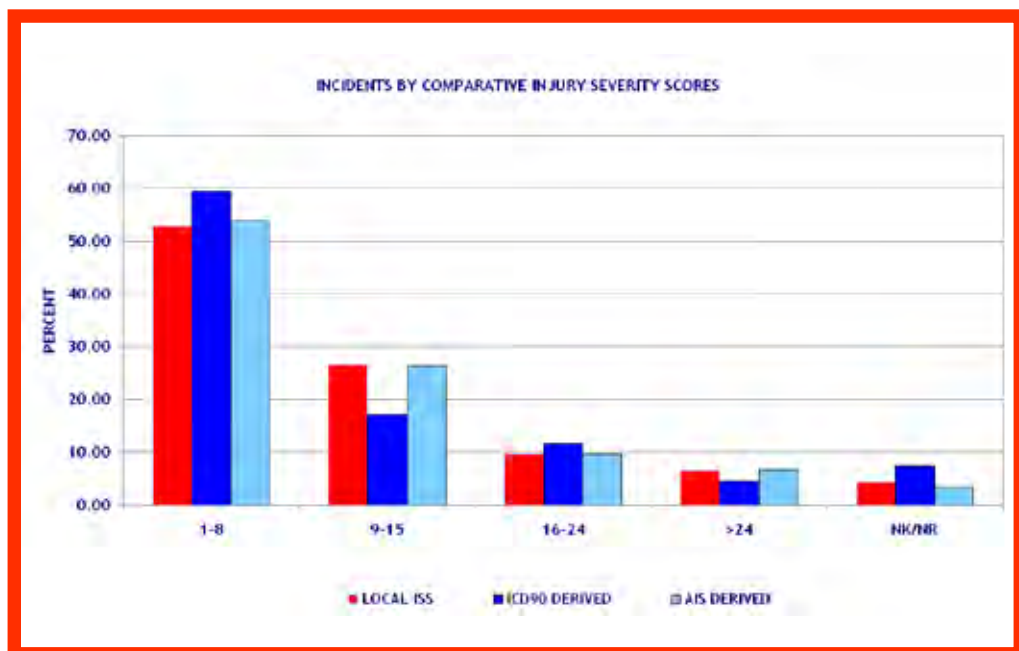
**Figure 14B**



**Table 15**

INCIDENTS BY COMPARATIVE INJURY SEVERITY SCORES						
ISS	LOCAL ISS		ICD90 DERIVED		AIS DERIVED	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
1-8	69,755	52.79	78,571	59.47	71,125	53.83
9-15	35,144	26.60	22,564	17.08	34,872	26.39
16-24	12,759	9.66	15,317	11.59	12,846	9.72
>24	8,668	6.56	5,940	4.50	8,688	6.58
NK/NR	5,800	4.39	9,734	7.37	4,595	3.48
Total	132,126	100.00	132,126	100.00	132,126	100.00

**Figure 15**



**Table  
16**

INCIDENTS AND CASE FATALITY RATE BY INJURY SEVERITY SCORE				
ISS	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
1-8	78,571	59.47	221	0.28
9-15	22,564	17.08	275	1.22
16-24	15,317	11.59	463	3.02
>24	5,940	4.50	1,557	26.21
NK/NR	9,734	7.37	418	4.29
Total	132,126	100.00	2,934	

**Figure  
16**

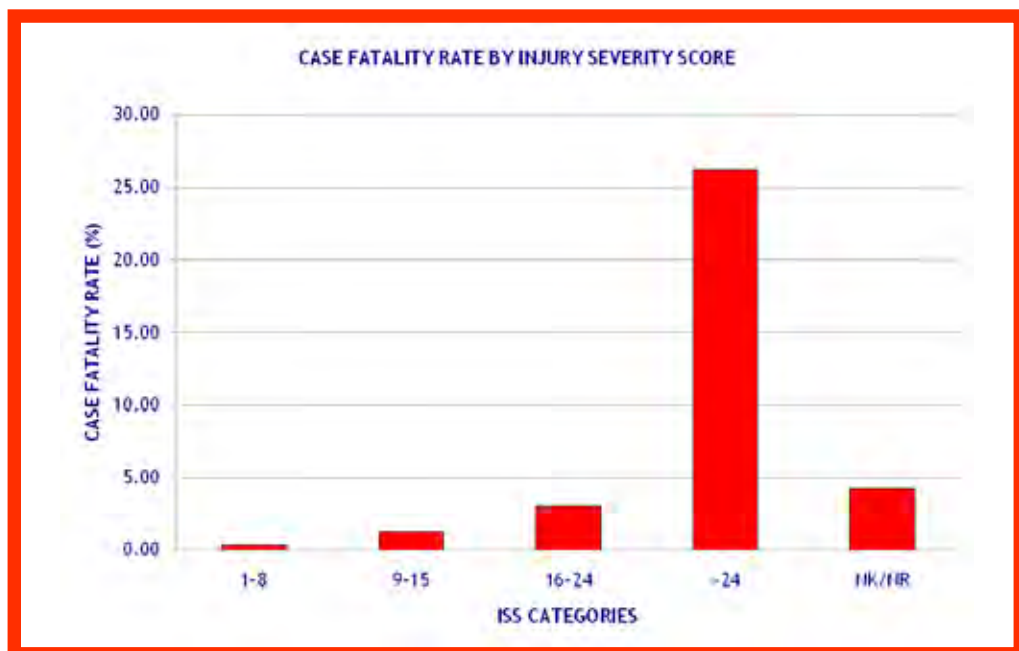
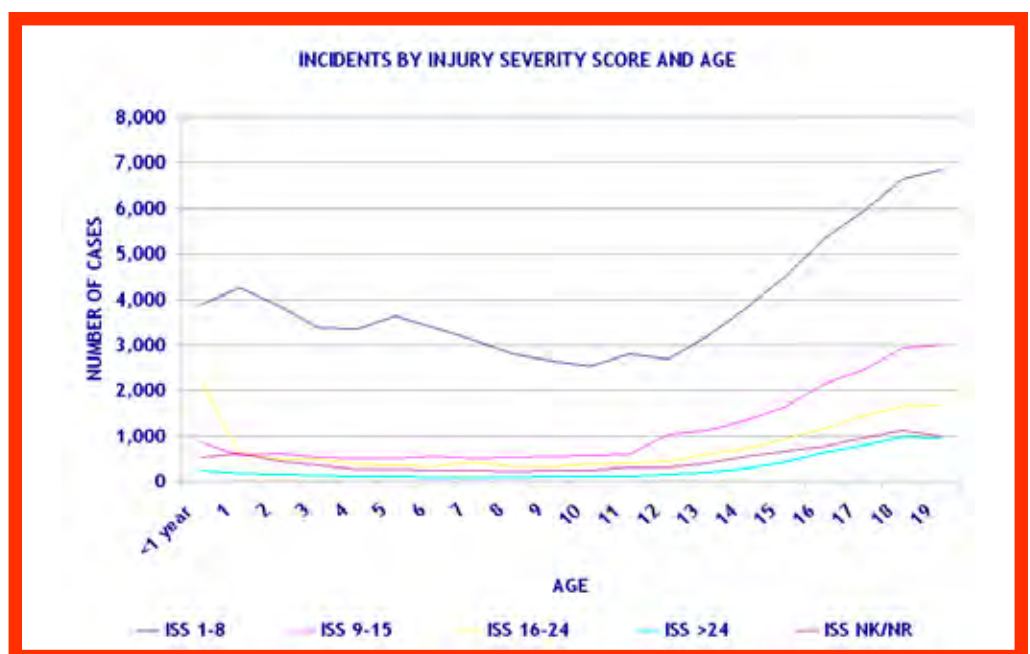


Table 17

INCIDENTS BY INJURY SEVERITY SCORE AND AGE						
	ISS 1-8	ISS 9-15	ISS 16-24	ISS >24	ISS NK/NR	Total
<1 year	3,880	863	2,215	237	527	7,722
1	4,264	581	608	171	608	6,232
2	3,850	608	493	157	446	5,554
3	3,366	521	477	138	352	4,854
4	3,354	507	382	113	255	4,611
5	3,629	508	342	105	267	4,851
6	3,371	549	330	85	240	4,575
7	3,111	514	412	89	242	4,368
8	2,800	539	338	89	225	3,991
9	2,636	543	339	103	243	3,864
10	2,532	574	365	113	236	3,820
11	2,804	604	403	118	306	4,235
12	2,688	1,039	451	144	317	4,639
13	3,201	1,123	589	200	391	5,504
14	3,819	1,336	726	290	557	6,728
15	4,494	1,637	928	424	664	8,147
16	5,342	2,136	1,170	646	782	10,076
17	5,937	2,436	1,434	791	953	11,551
18	6,639	2,939	1,643	969	1,130	13,320
19	6,854	3,007	1,672	958	993	13,484
Total	78,571	22,564	15,317	5,940	9,734	132,126

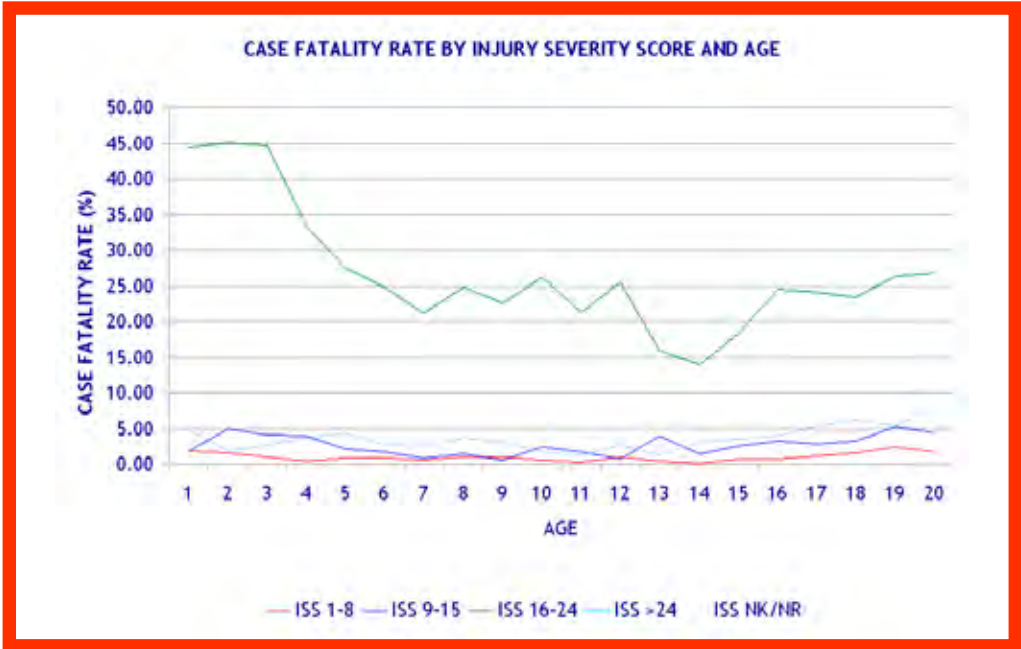
Figure 17



**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	12	0.31	16	1.85	40	1.81	105	44.30	25	4.74
1	7	0.16	9	1.55	30	4.93	77	45.03	11	1.81
2	10	0.26	6	0.99	20	4.06	70	44.59	12	2.69
3	6	0.18	2	0.38	19	3.98	46	33.33	13	3.69
4	7	0.21	4	0.79	8	2.09	31	27.43	11	4.31
5	4	0.11	4	0.79	6	1.75	26	24.76	7	2.62
6	5	0.15	3	0.55	3	0.91	18	21.18	6	2.50
7	1	0.03	5	0.97	6	1.46	22	24.72	9	3.72
8	7	0.25	5	0.93	2	0.59	20	22.47	7	3.11
9	1	0.04	3	0.55	8	2.36	27	26.21	4	1.65
10	1	0.04	2	0.35	6	1.64	24	21.24	3	1.27
11	6	0.21	6	0.99	3	0.74	30	25.42	8	2.61
12	2	0.07	4	0.38	18	3.99	23	15.97	4	1.26
13	11	0.34	2	0.18	8	1.36	28	14.00	12	3.07
14	6	0.16	10	0.75	18	2.48	53	18.28	20	3.59
15	19	0.42	12	0.73	30	3.23	104	24.53	26	3.92
16	21	0.39	23	1.08	33	2.82	156	24.15	42	5.37
17	27	0.45	37	1.52	47	3.28	185	23.39	59	6.19
18	29	0.44	71	2.42	85	5.17	255	26.32	60	5.31
19	39	0.57	51	1.70	73	4.37	257	26.83	79	7.96
<b>Total</b>	<b>221</b>		<b>275</b>		<b>463</b>		<b>1557</b>		<b>418</b>	

**Figure 18**





**Table  
19**

INCIDENTS AND CASE FATALITY RATE BY WORK-RELATED INJURIES				
WORK-RELATED	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Yes	985	0.75	16	1.62
No	102,153	77.31	2,297	2.25
Not Applicable	7,319	5.54	125	1.71
NK/NR	21,669	16.40	496	2.29
<b>Total</b>	<b>132,126</b>	<b>100.00</b>	<b>2,934</b>	

**Figure  
19A**

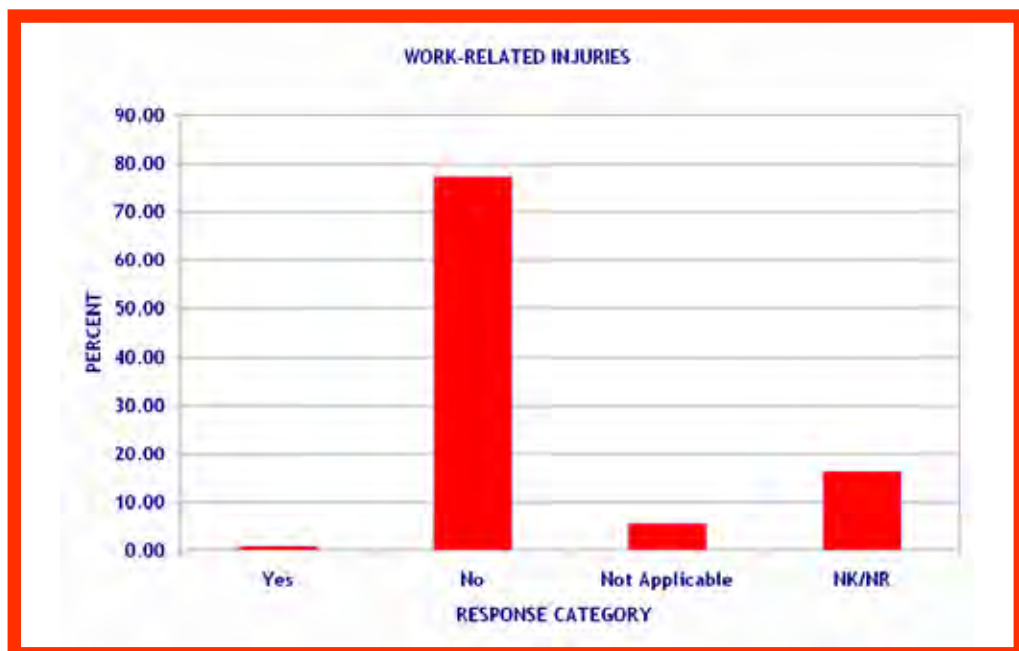
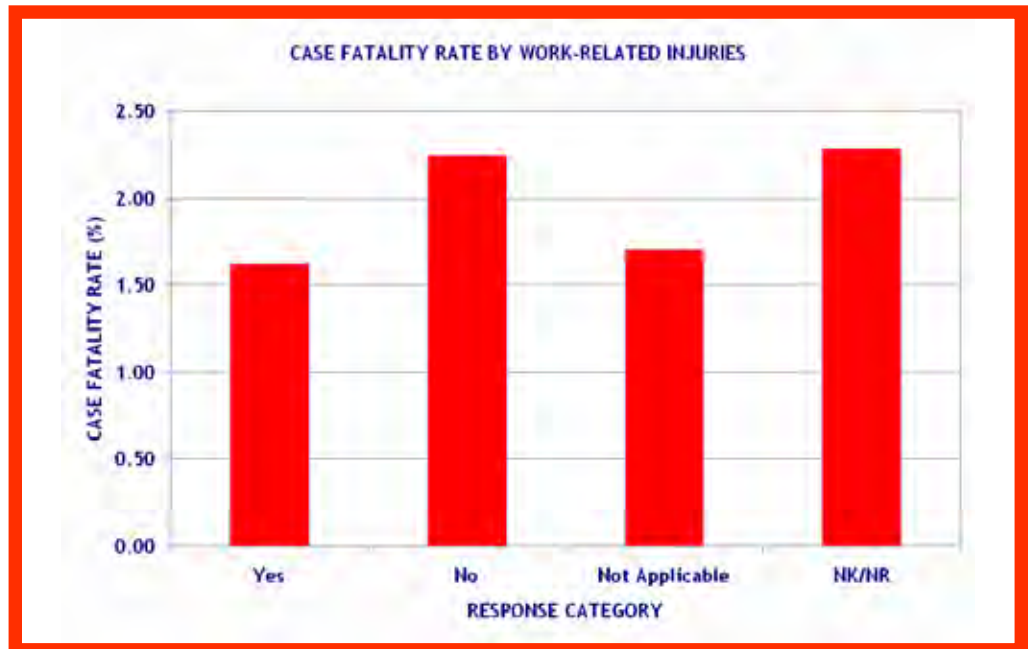


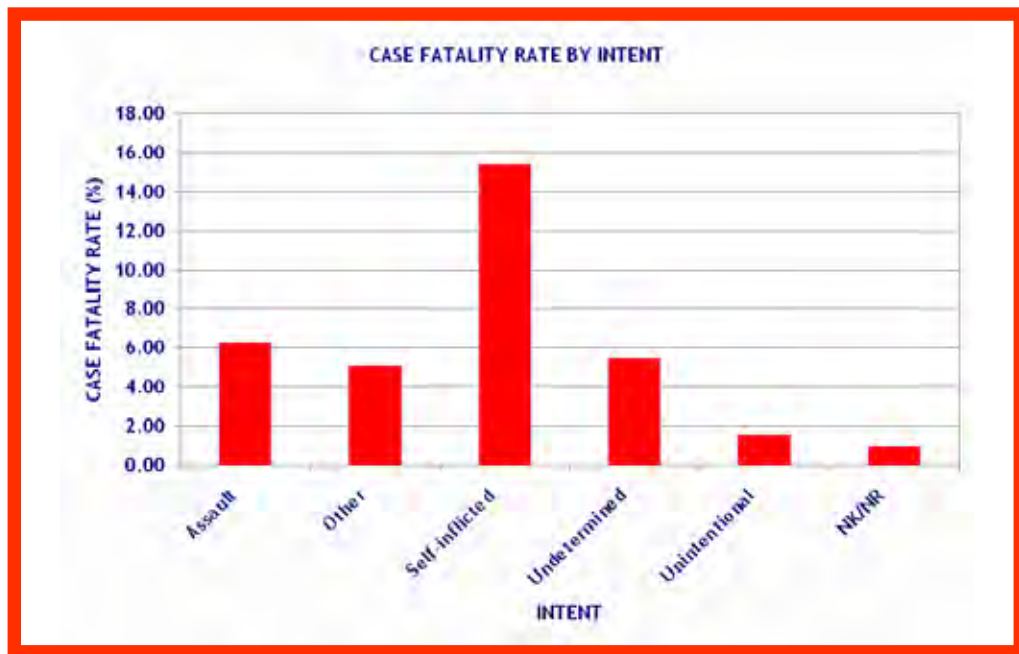
Figure  
19B



**Table  
20**

INCIDENTS AND CASE FATALITY RATE BY INTENT				
INTENT	COUNT	PERCENT	DEATHS	CASE FATALITY RATE
Assault	15,914	12.04	995	6.25
Other	138	0.10	7	5.07
Self-inflicted	979	0.74	151	15.42
Undetermined	907	0.69	50	5.51
Unintentional	113,881	86.19	1,728	1.52
NK/NR	307	0.23	3	0.98
<b>Total</b>	<b>132,126</b>	<b>100.00</b>	<b>2,934</b>	

**Figure  
20**



**Table 21**

INCIDENTS AND CASE FATALITY RATE BY LOCATION E-CODE				
LOCATION E-CODE	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Farm	910	0.69	13	1.43
Home	37,065	28.05	700	1.89
Industry	659	0.50	10	1.52
Mine	18	0.01	0	0.00
Other	5,368	4.06	136	2.53
Public Building	6,831	5.17	68	1.00
Recreation	17,838	13.50	84	0.47
Residential Institution	575	0.44	5	0.87
Street	45,045	34.09	1,535	3.41
Unspecified	12,889	9.76	296	2.30
Not Applicable	97	0.07	2	2.06
NK/NR	4,831	3.66	85	1.76
<b>Total</b>	<b>132,126</b>	<b>100</b>	<b>2,934</b>	

**Figure 21**



**Table  
22**

INCIDENTS BY AIS BODY REGION		
AIS BODY REGION	NUMBER	PERCENT
Head	44,989	34.05
Upper Extremity	37,253	28.20
Lower Extremity	35,476	26.85
Face	31,470	23.82
Abdomen	18,282	13.84
Thorax	17,350	13.13
External	14,133	10.70
Spine	13,068	9.89
Neck	1,239	0.94
NK/NR	5,007	3.79
<b>Total Incidents</b>	<b>132,126</b>	

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

**Figure  
22**

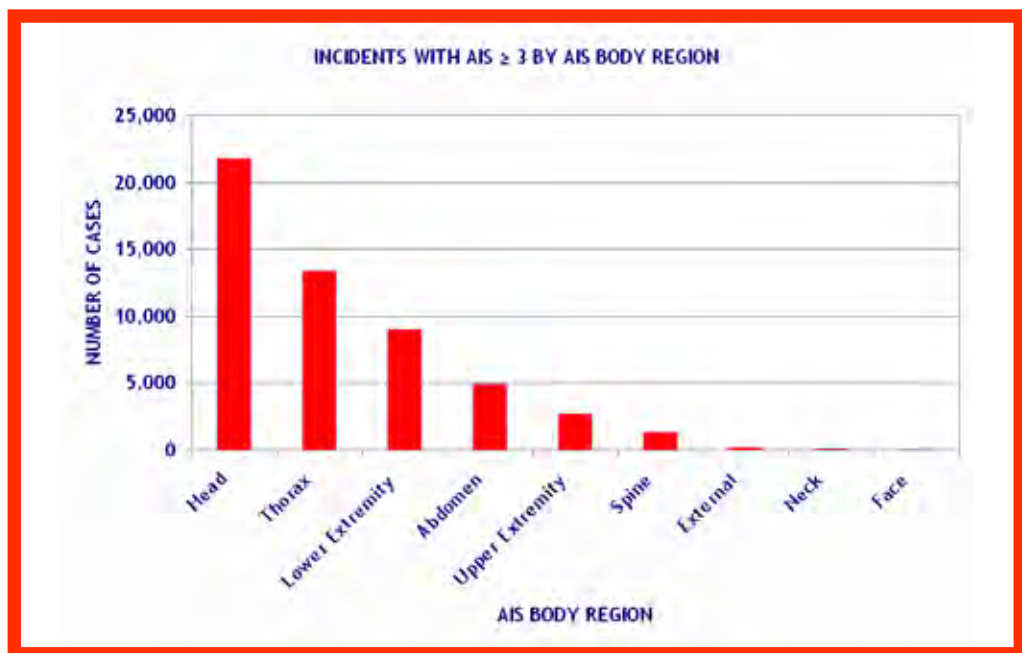


**Table  
23**

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
<b>Total Incidents</b>	<b>132,126</b>	

\*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	44,989	1,950	4.33
Upper Extremity	37,253	657	1.76
Lower Extremity	35,476	768	2.16
Face	31,470	913	2.90
Abdomen	18,282	917	5.02
Thorax	17,350	1,436	8.28
External	14,133	327	2.31
Spine	13,068	444	3.40
Neck	1,239	96	7.75
NK/NR	5,007	137	2.74
<b>Total Incidents</b>	<b>132,126</b>	<b>2,934</b>	

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

**Figure  
24**

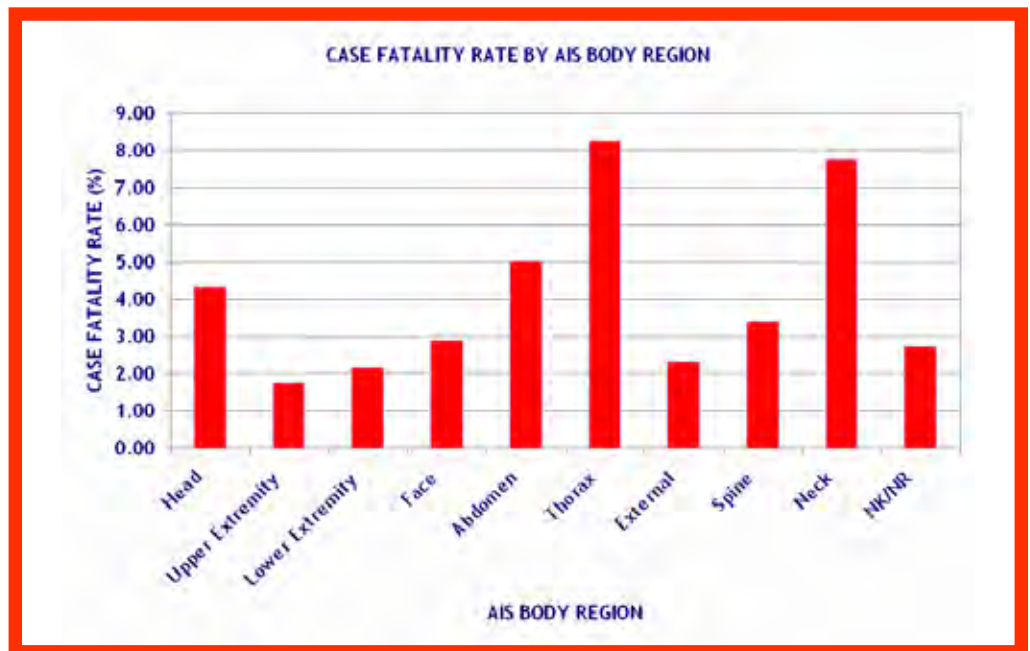
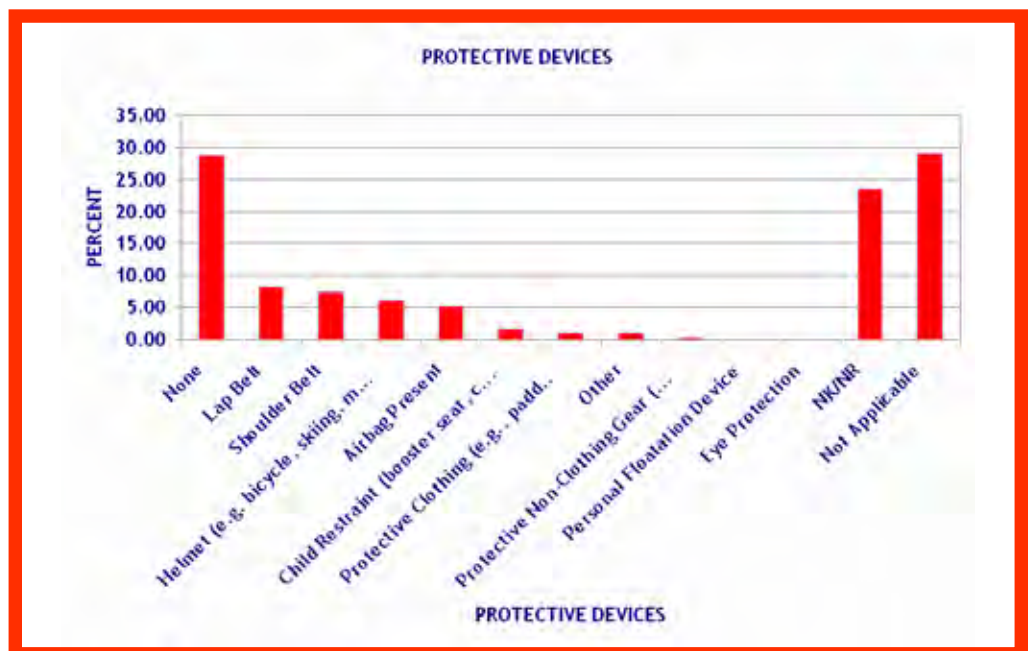


Table 25

INCIDENTS BY PROTECTIVE DEVICES		
PROTECTIVE DEVICES	NUMBER	PERCENT
None	37,865	28.66
Lap Belt	10,826	8.19
Shoulder Belt	9,740	7.37
Helmet (e.g. bicycle, skiing, motorcycle)	8,070	6.11
Airbag Present	6,832	5.17
Child Restraint (booster seat, child car seat)	2,130	1.61
Protective Clothing (e.g., padded leather pants)	1,299	0.98
Other	1,162	0.88
Protective Non-Clothing Gear (e.g., shin guard)	513	0.39
Personal Floatation Device	57	0.04
Eye Protection	45	0.03
NK/NR	31,091	23.53
Not Applicable	38,426	29.08
<b>Total Incidents</b>	<b>132,126</b>	

Figure 25



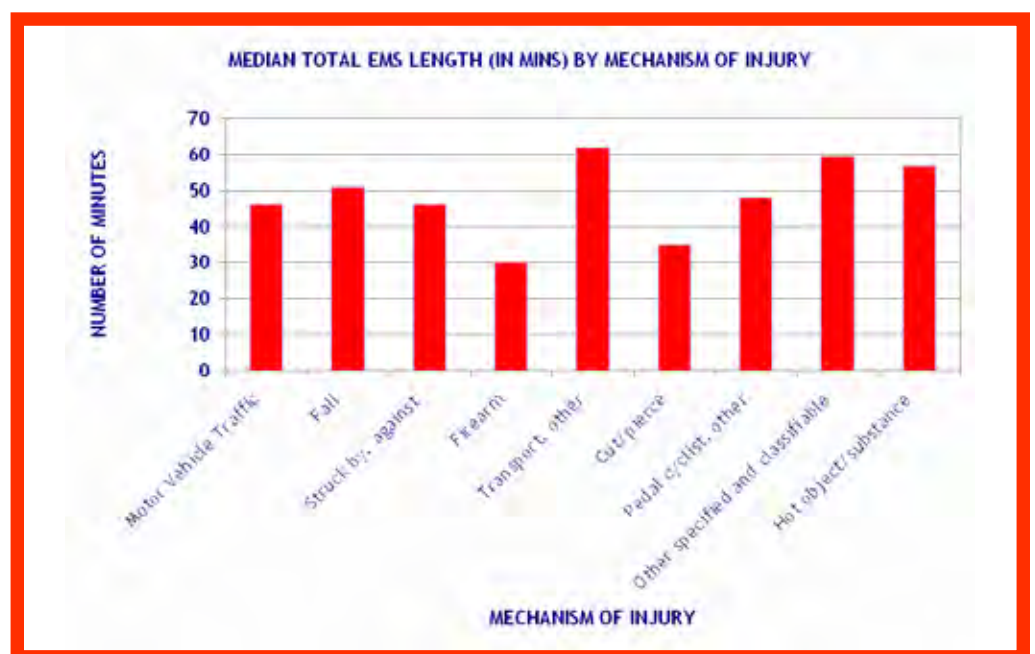


# Outcomes

Table 26

MEDIAN TOTAL EMS LENGTH (IN MINS) BY MECHANISM OF INJURY		
MECHANISM	NUMBER	MEDIAN
Motor Vehicle Traffic	18,926	46
Fall	8,390	51
Struck by, against	3,779	46
Firearm	3,702	30
Transport, other	3,632	62
Cut/pierce	2,011	35
Pedal cyclist, other	1,313	48
Other specified and classifiable	1,008	60
Hot object/substance	738	57
Fire/flame	412	57
Pedestrian, other	308	48
Unspecified	282	44
Natural/environmental, Bites and stings	278	50
Other specified, not elsewhere classifiable	194	44
Machinery	186	57
Natural/environmental, Other	184	64
Overexertion	106	57
Suffocation	66	47
Drowning/submersion	55	43
Poisoning	29	47
NK/NR	113	36

Figure 26



**Table  
27**

MEDIAN TOTAL EMS LENGTH (IN MINS) BY INJURY SEVERITY SCORE		
ISS	NUMBER	MEDIAN
1-8	23,518	46
9-15	9,093	47
16-24	6,005	53
>24	3,052	46
NK/NR	4,052	44

**Figure  
27**

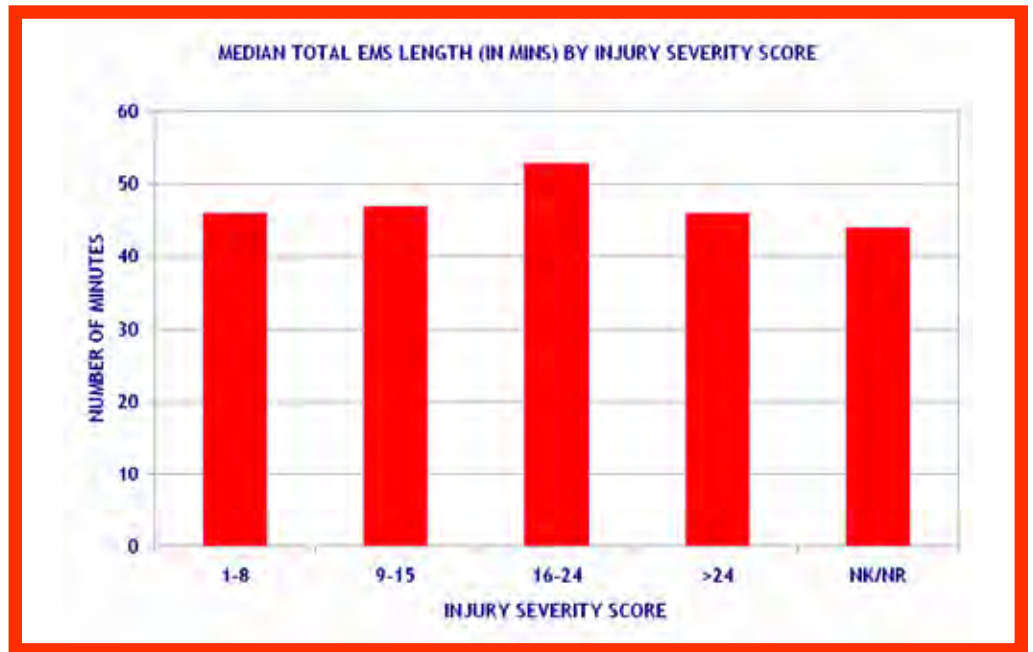
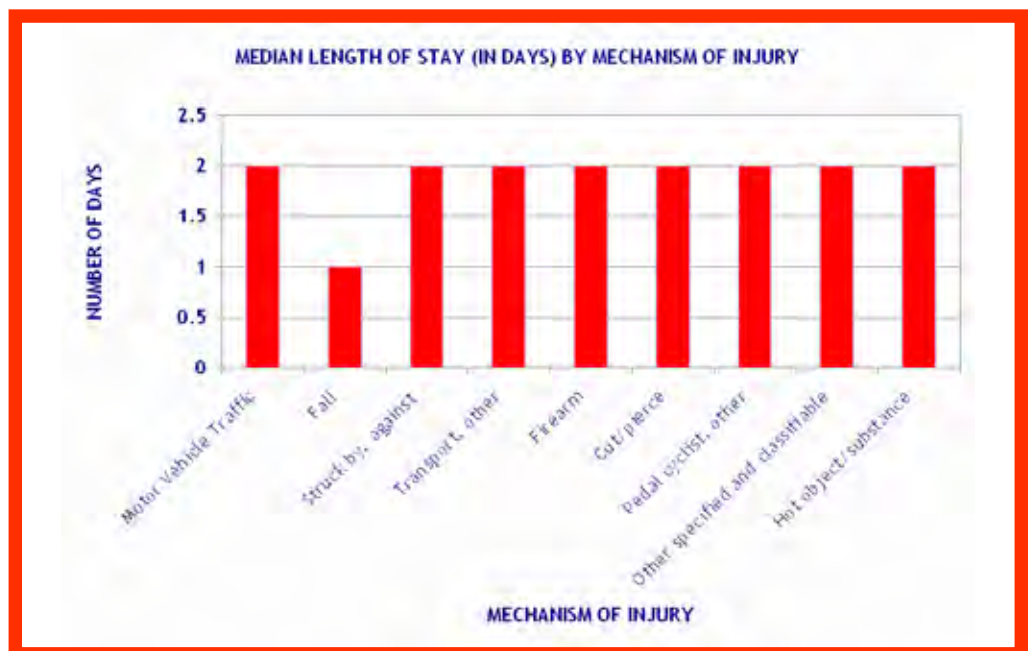


Table 28

MEDIAN LENGTH OF STAY (IN DAYS) BY MECHANISM OF INJURY		
MECHANISM	NUMBER	MEDIAN
Motor Vehicle Traffic	37,494	2
Fall	37,392	1
Struck by, against	13,426	2
Transport, other	10,194	2
Firearm	7,619	2
Cut/pierce	5,331	2
Pedal cyclist, other	4,558	2
Other specified and classifiable	3,963	2
Hot object/substance	3,749	2
Fire/flame	1,547	2
Natural/environmental, Bites and stings	1,505	2
Unspecified	1,341	2
Pedestrian, other	724	2
Other specified, not elsewhere classifiable	698	2
Machinery	592	2
Natural/environmental, Other	562	2
Overexertion	521	2
NK/NR	275	1
Suffocation	158	2
Drowning/submersion	129	2
Poisoning	78	2

Figure 28



**Table  
29**

MEDIAN LENGTH OF STAY (IN DAYS) BY INJURY SEVERITY SCORE		
ISS	NUMBER	MEDIAN
1-8	78,398	1
9-15	22,539	3
16-24	15,301	4
>24	5,937	6
NK/NR	9,720	2

**Figure  
29**

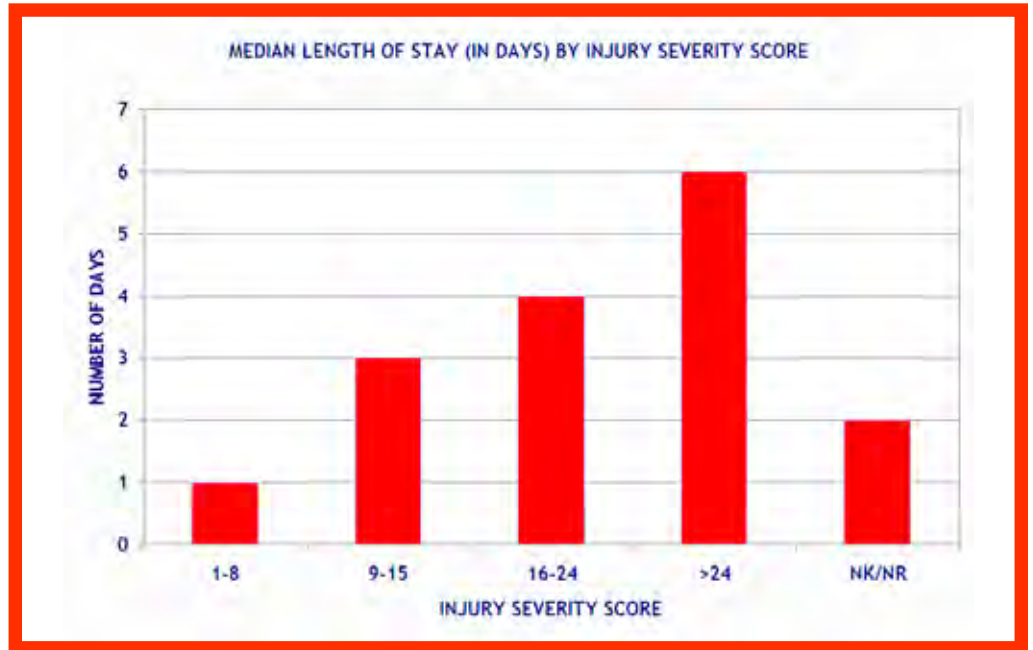
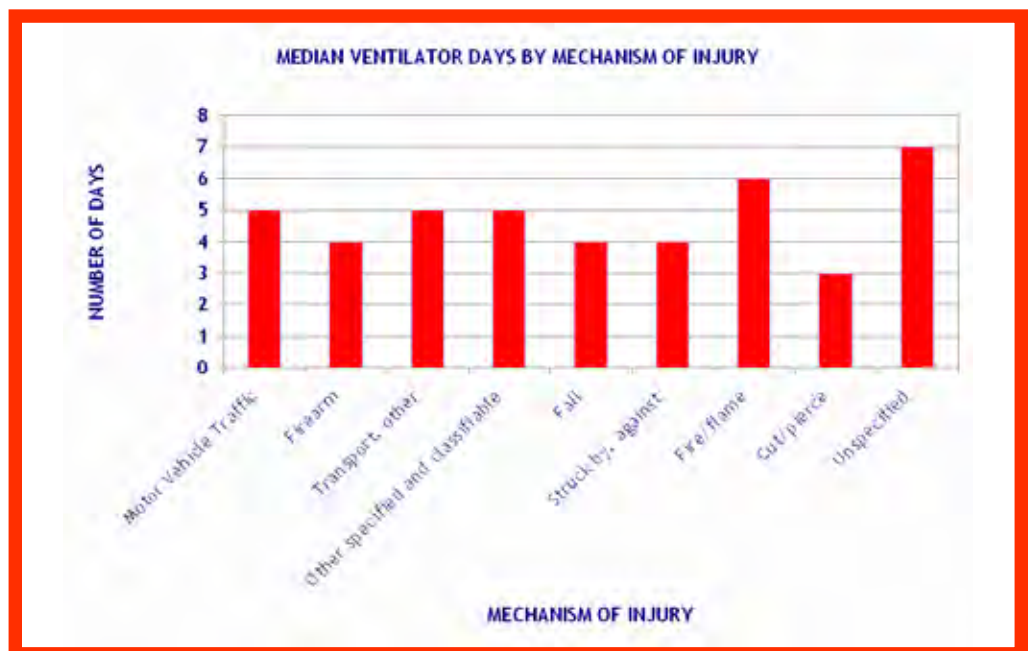


Table 30

MEDIAN VENTILATOR DAYS BY MECHANISM OF INJURY		
MECHANISM	NUMBER	MEDIAN
Motor Vehicle Traffic	2,726	5
Firearm	642	4
Transport, other	411	5
Other specified and classifiable	385	5
Fall	374	4
Struck by, against	231	4
Fire/flame	101	6
Cut/pierce	98	3
Unspecified	57	7
Pedal cyclist, other	53	4
Pedestrian, other	41	6
Hot object/substance	37	7
Suffocation	36	3
Drowning/submersion	31	6
Other specified, not elsewhere classifiable	29	5
Machinery	21	5
Natural/environmental, Other	16	5.5
Natural/environmental, Bites and stings	14	3
Poisoning	6	2.5
Overexertion	1	5
NK/NR	28	5

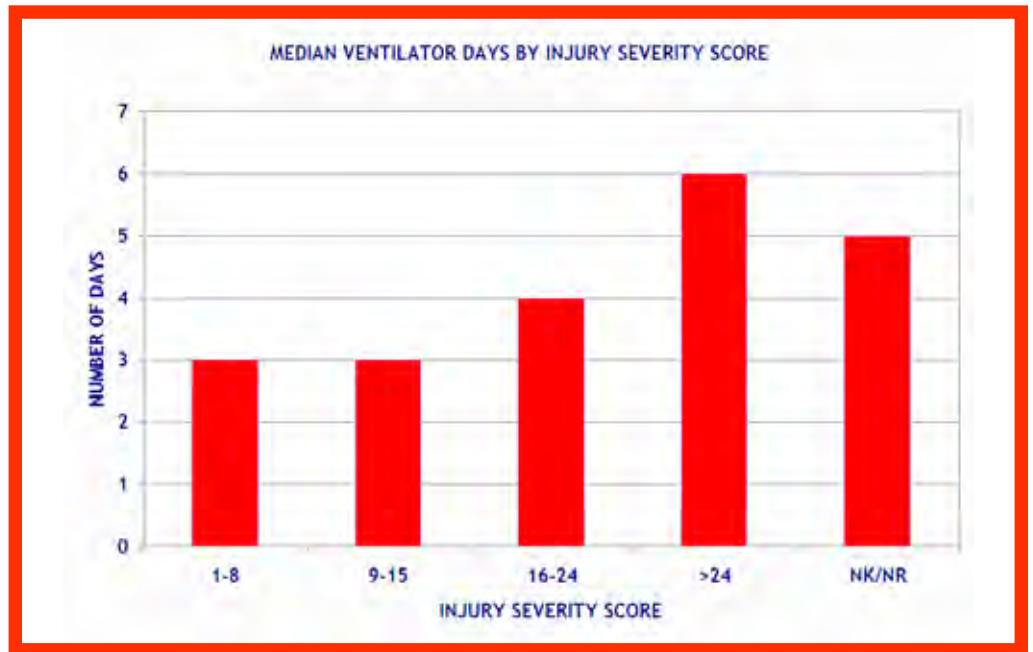
Figure 30



**Table  
31**

MEDIAN VENTILATOR DAYS BY INJURY SEVERITY SCORE		
ISS	NUMBER	MEDIAN
1-8	376	3
9-15	631	3
16-24	1,571	4
>24	1,851	6
NK/NR	912	5

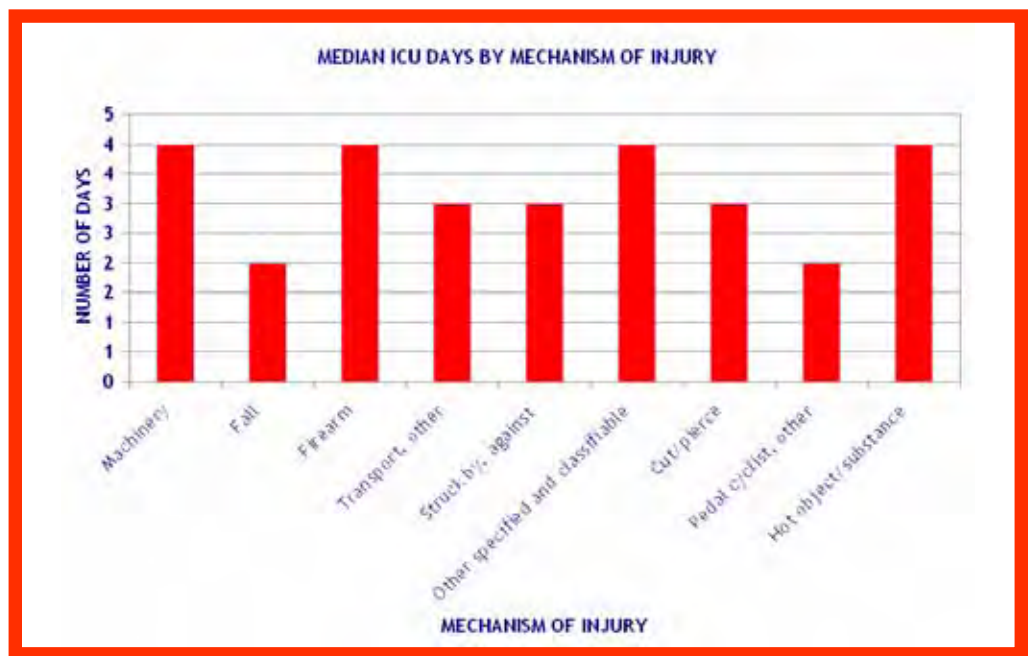
**Figure  
31**



**Table  
32**

MEDIAN ICU DAYS BY MECHANISM OF INJURY		
MECHANISM	NUMBER	MEDIAN
Machinery	7,097	4
Fall	2,045	2
Firearm	1,526	4
Transport, other	1,490	3
Struck by, against	1,041	3
Other specified and classifiable	789	4
Cut/pierce	389	3
Pedal cyclist, other	372	2
Hot object/substance	358	4
Fire/flame	289	7
Unspecified	163	3
Pedestrian, other	122	3
Natural/environmental, Other	96	3
Other specified, not elsewhere classifiable	78	3
Motor Vehicle Traffic	7,097	4
Natural/environmental, Bites and stings	70	2
Suffocation	57	3
Drowning/submersion	41	5
Poisoning	10	3
Overexertion	9	2
NK/NR	32	3

**Figure  
32**





**Table  
33**

MEDIAN ICU DAYS BY INJURY SEVERITY SCORE		
ISS	NUMBER	MEDIAN
1-8	2,522	2
9-15	2,948	3
16-24	5,276	3
>24	3,356	6
NK/NR	2,058	4

**Figure  
33**

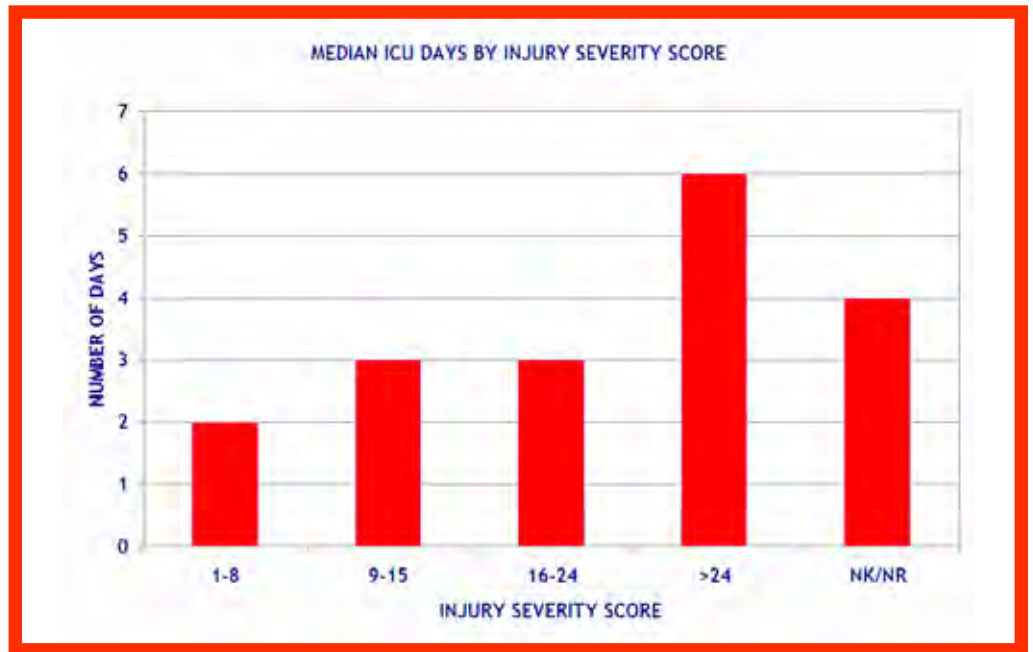
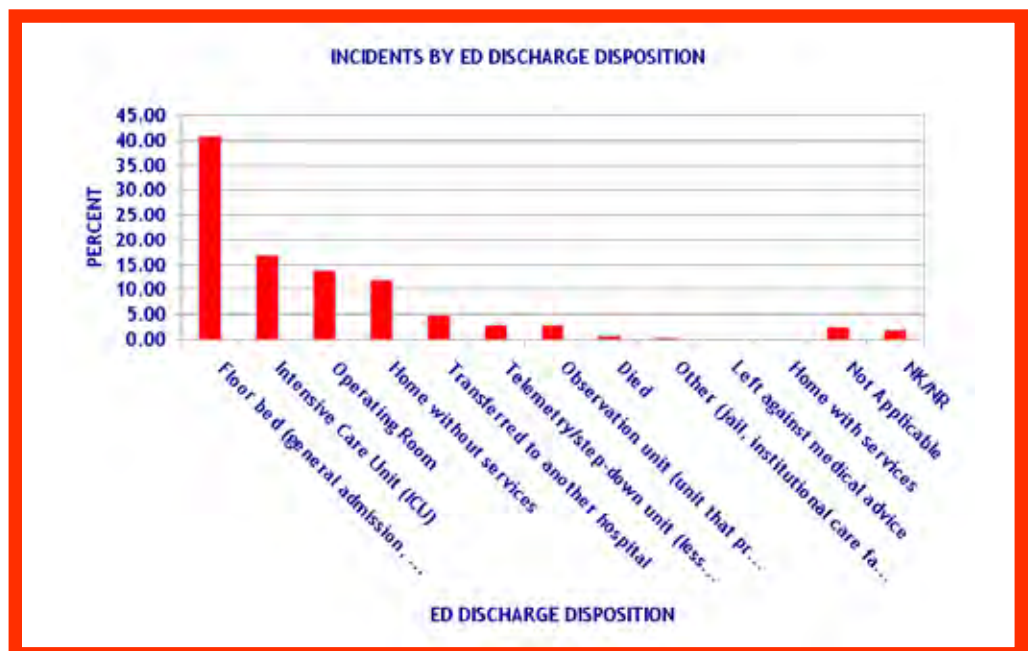


Table 34

INCIDENTS BY ED DISCHARGE DISPOSITION		
ED DISCHARGE DISPOSITION	NUMBER	PERCENT
Floor bed (general admission, non specialty unit bed)	53,931	40.82
Intensive Care Unit (ICU)	22,511	17.04
Operating Room	18,410	13.93
Home without services	15,637	11.83
Transferred to another hospital	6,596	4.99
Telemetry/step-down unit (less acuity than ICU)	3,707	2.81
Observation unit (unit that provides <24 hour stays)	3,619	2.74
Died	1,138	0.86
Other (jail, institutional care facility, mental health, etc)	620	0.47
Left against medical advice	106	0.08
Home with services	103	0.08
Not Applicable	3,229	2.44
NK/NR	2,519	1.91
<b>Total</b>	<b>132,126</b>	<b>100.00</b>

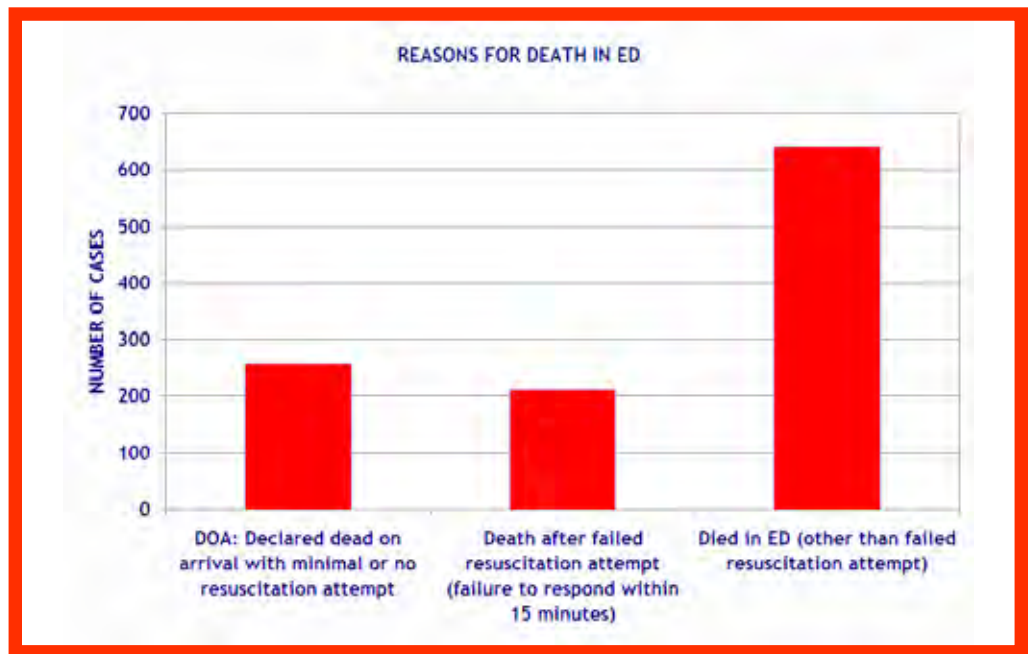
Figure 34



**Table 35**

REASONS FOR DEATH IN ED		
DIED IN ED	NUMBER	PERCENT
DOA: Declared dead on arrival with minimal or no resuscitation attempt	258	8.79
Death after failed resuscitation attempt (failure to respond within 15 minutes)	211	7.19
Died in ED (other than failed resuscitation attempt)	641	21.85
<b>Total</b>	<b>2,934</b>	

**Figure 35**



**Table  
36**

INCIDENTS BY HOSPITAL DISCHARGE DISPOSITION		
HOSPITAL DISCHARGE DISPOSITION	NUMBER	PERCENT
Discharged home with no home services	94,509	71.53
Discharged/Transferred to another type of rehabilitation or long term care	3,232	2.45
Discharge/Transferred to home under care of Home Health Agency	2,330	1.76
Expired	1,796	1.36
Discharged/Transferred to another acute care hospital using EMS	1,263	0.96
Discharged/Transferred to an Intermediate Care Facility	1,094	0.83
Discharged/Transferred to Skilled Nursing Facility	352	0.27
Left against medical advice	251	0.19
Discharged/Transferred to hospice care	10	0.01
Not Applicable	25,224	19.09
NK/NR	2,065	1.56
<b>Total</b>	<b>132,126</b>	<b>100.00</b>

**Figure  
36**

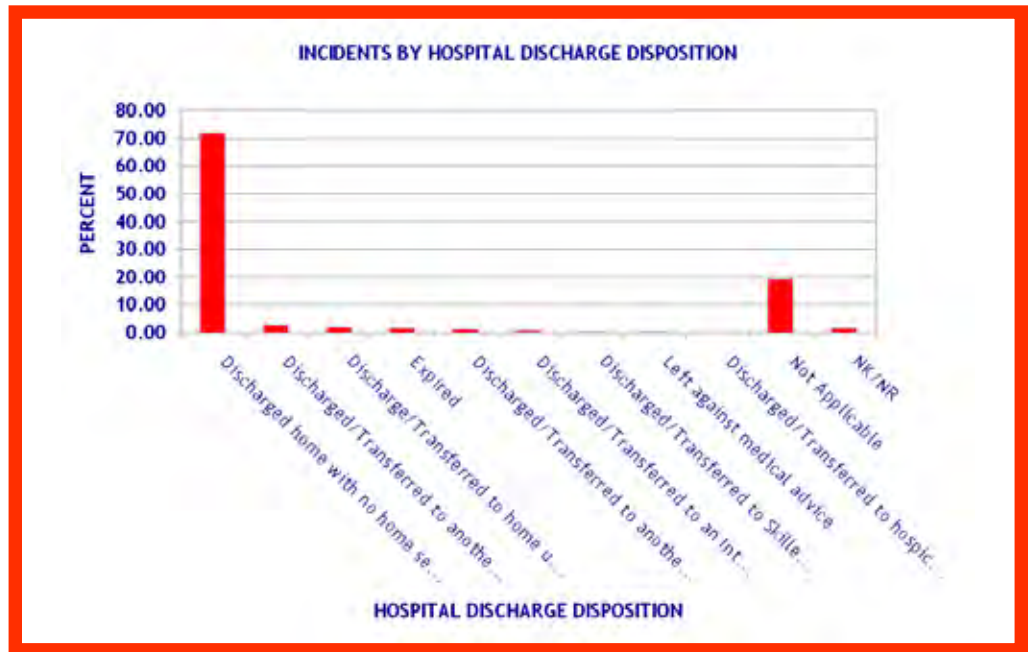
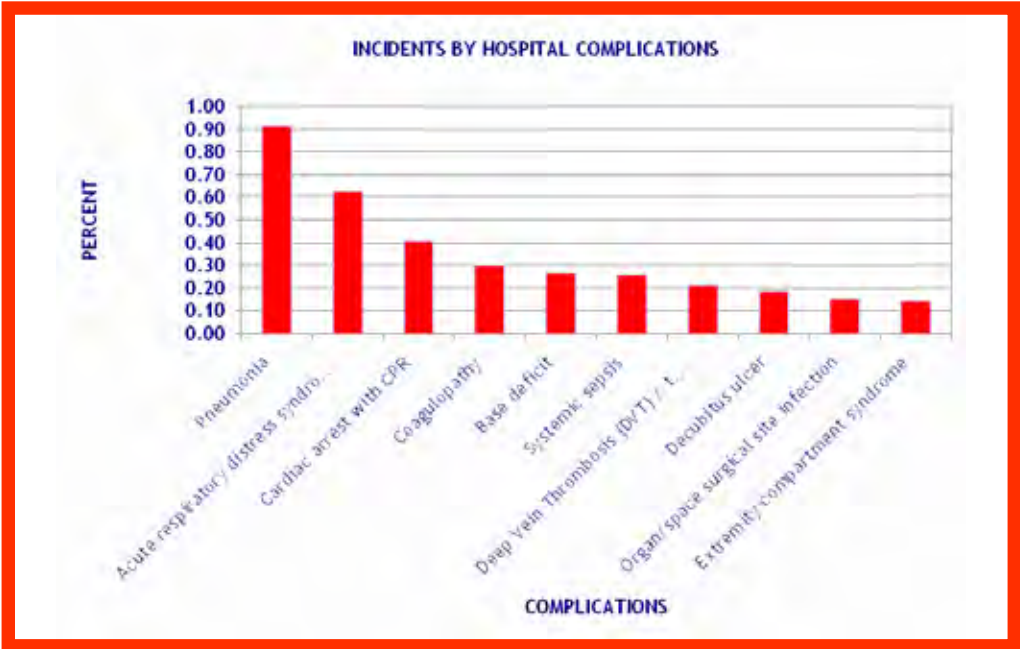


Table  
37

INCIDENTS BY HOSPITAL COMPLICATIONS		
COMPLICATIONS	NUMBER	PERCENT
Pneumonia	1,205	0.91
Acute respiratory distress syndrome (ARDS)	822	0.62
Cardiac arrest with CPR	537	0.41
Coagulopathy	395	0.30
Base deficit	351	0.27
Systemic sepsis	341	0.26
Deep Vein Thrombosis (DVT) / thrombophlebitis	282	0.21
Decubitus ulcer	246	0.19
Organ/space surgical site infection	196	0.15
Extremity compartment syndrome	190	0.14
Intracranial pressure	180	0.14
Bleeding	127	0.10
Acute renal failure	121	0.09
Coma	116	0.09
Superficial surgical site infection	116	0.09
Unplanned intubation	112	0.08
Pulmonary embolism	98	0.07
Abdominal compartment syndrome	96	0.07
Drug or alcohol withdrawal syndrome	65	0.05
Wound disruption	65	0.05
Stroke / CVA	61	0.05
Graft/prosthesis/flap failure	30	0.02
Deep surgical site infection	22	0.02
Abdominal fascia left open	16	0.01
Myocardial infarction	11	0.01
No NTDS listed Medical Complications Occurred	59,422	44.97
Not Applicable	44,673	33.81
NK/NR	24,195	18.31
Total Complications	134,091	
Total Incidents	132,126	

**Figure 37**

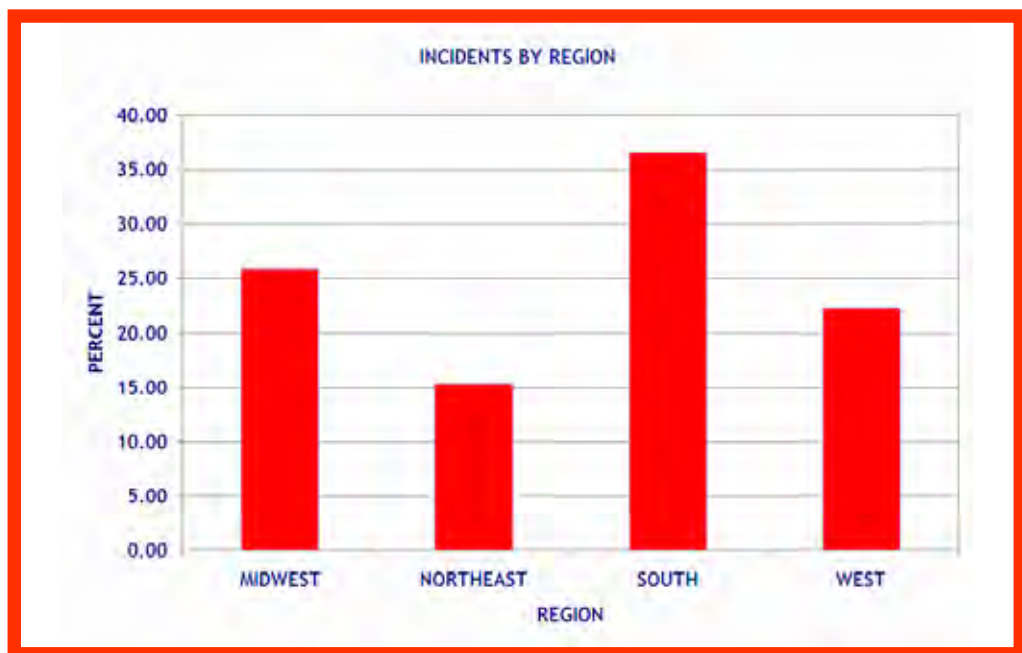


# Regional Analyses

**Table  
38**

INCIDENTS BY REGION		
REGION	NUMBER	PERCENT
MIDWEST	34,160	25.85
NORTHEAST	20,218	15.30
SOUTH	48,287	36.55
WEST	29,461	22.30
Total	132,126	100.00

**Figure  
38**





**Table  
39**

CASE FATALITY RATE BY REGION			
REGION	NUMBER	DEATHS	CASE FATALITY RATE
MIDWEST	34,160	776	2.27
NORTHEAST	20,218	371	1.83
SOUTH	48,287	1154	2.39
WEST	29,461	633	2.15
Total	132,126	2934	

**Figure  
39**

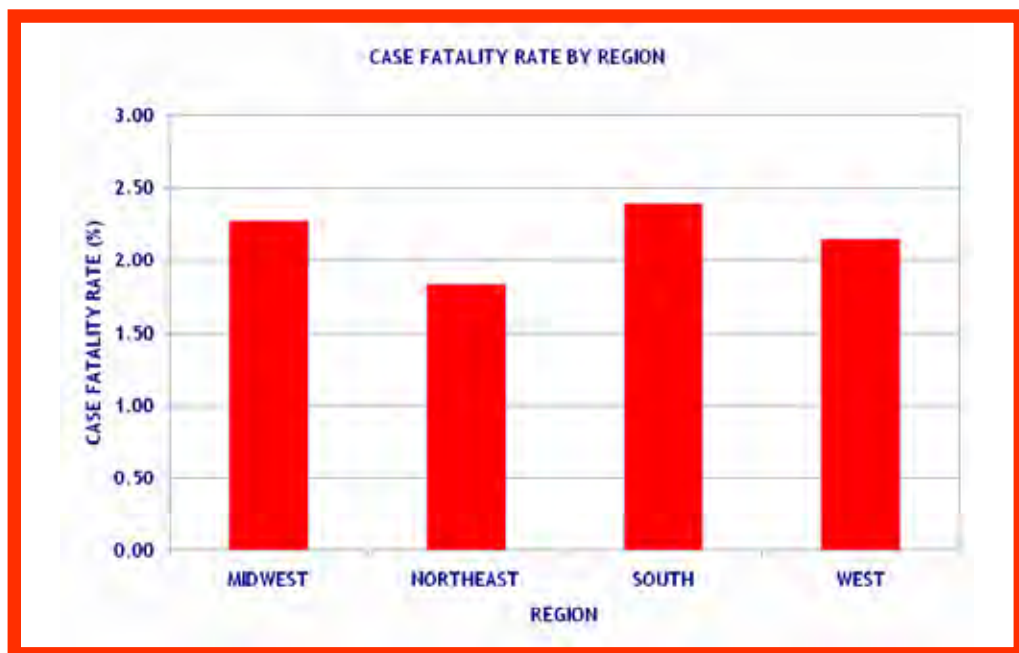
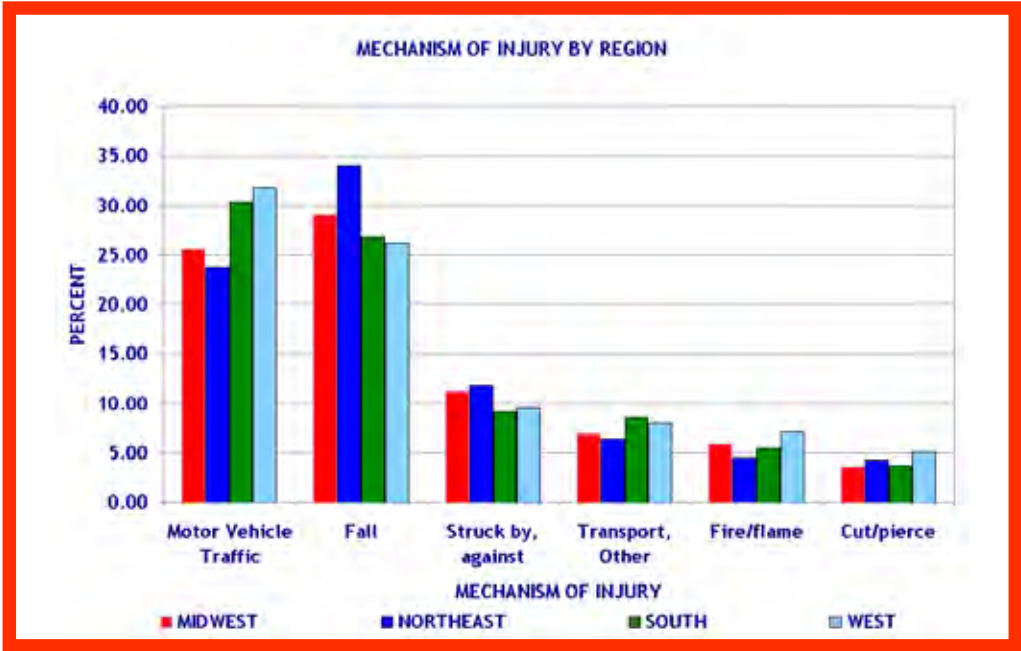


Table  
40

MECHANISM OF INJURY BY REGION					
REGION	NUMBER	MIDWEST PERCENT	NORTHEAST PERCENT	SOUTH PERCENT	WEST PERCENT
Motor Vehicle Traffic	37,550	25.58	23.76	30.35	31.77
Fall	37,440	29.07	34.00	26.75	26.23
Struck by, against	13,452	11.21	11.80	9.14	9.59
Transport, Other	10,207	6.90	6.40	8.66	8.07
Fire/flame	7,639	5.86	4.47	5.47	7.11
Cut/pierce	5,339	3.58	4.30	3.66	5.03
Pedal cyclist, Other	4,562	3.92	4.18	2.70	3.65
Other specified, not elsewhere classifiable	3,966	3.01	2.91	3.26	2.63
Hot object/substance	3,754	3.41	2.56	3.51	1.28
Firearm	1,551	1.47	1.02	1.35	0.65
Natural/environmental, Bites and stings	1,506	1.36	0.82	1.41	0.67
Unspecified	1,344	1.21	1.01	1.00	0.83
Pedestrian, Other	725	0.58	0.46	0.56	0.56
Other specified and classifiable	701	0.66	0.50	0.54	0.38
Machinery	592	0.64	0.44	0.43	0.26
Natural/environmental, Other	563	0.50	0.34	0.50	0.29
Overexertion	521	0.46	0.61	0.41	0.15
NK/NR	307	0.09	0.20	0.08	0.66
Suffocation	159	0.18	0.09	0.09	0.12
Drowning/submersion	131	0.16	0.08	0.10	0.04
Poisoning	78	0.12	0.04	0.02	0.05
<b>Total</b>	<b>132,087</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

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

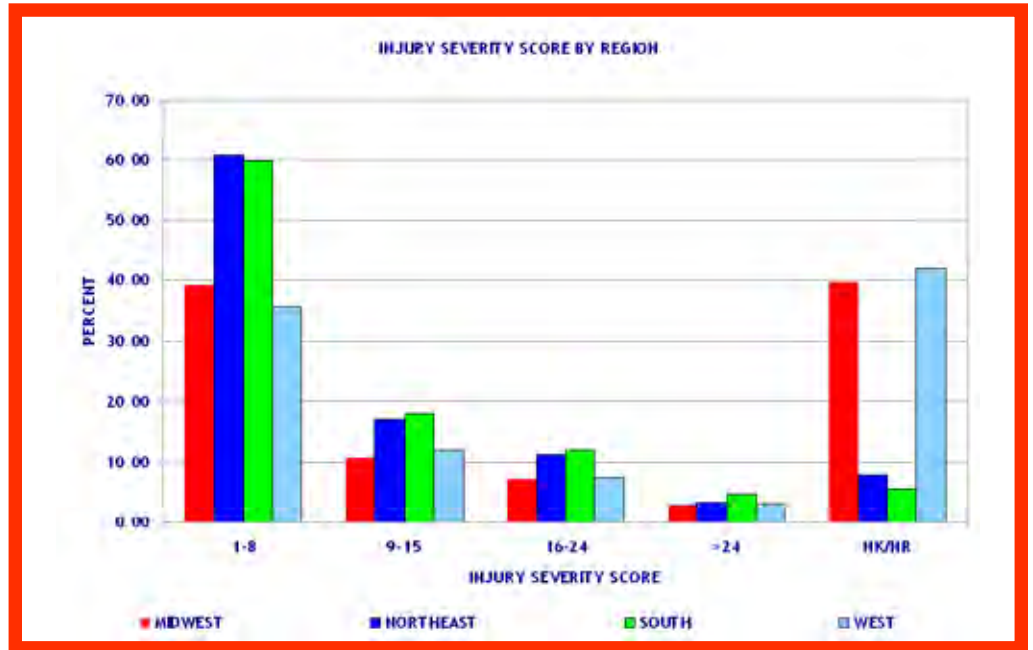
**Figure 40**



**Table  
41**

INJURY SEVERITY SCORE BY REGION					
ISS	NUMBER	MIDWEST PER-CENT	NORTHEAST PERCENT	SOUTH PERCENT	WEST PERCENT
1-8	78,571	60.76	61.15	60.32	55.40
9-15	22,564	16.16	17.20	17.66	17.10
16-24	15,317	11.10	11.35	11.91	11.82
>24	5,940	4.61	3.32	4.68	4.87
NK/NR	9,734	7.37	6.97	5.43	10.81
Total	132,126	100.00	100.00	100.00	100.00

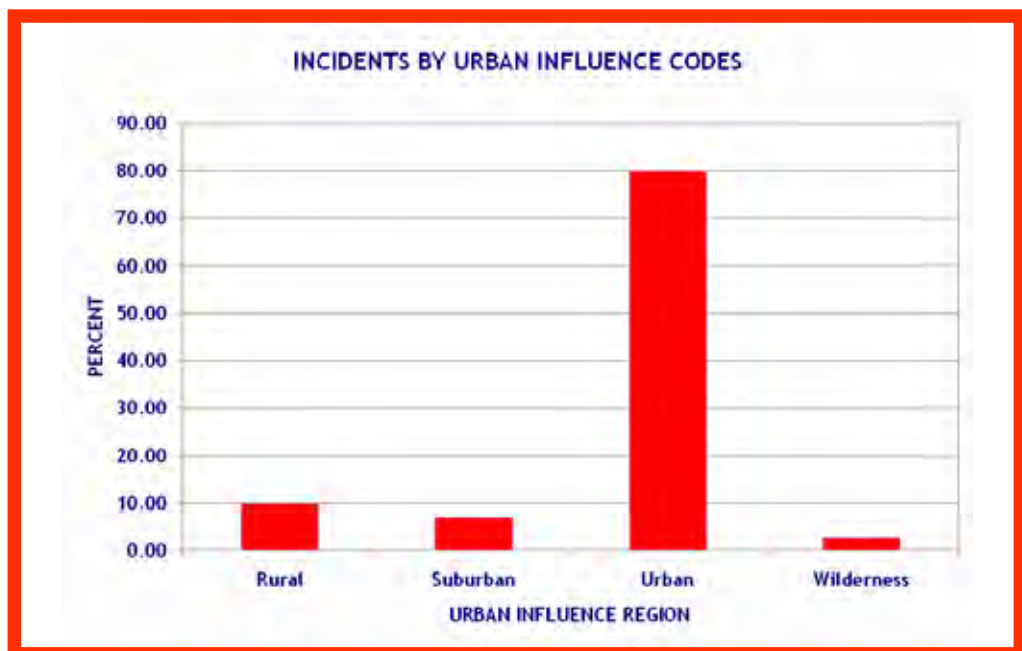
**Figure  
41**



**Table  
42**

INCIDENTS BY URBAN INFLUENCE CODE REGION		
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	100.00

**Figure  
42**



**Table  
43**

CASE FATALITY RATE BY URBAN INFLUENCE CODES			
URBAN CATEGORY	NUMBER	DEATHS	CASE FATALITY RATE
Rural	6,892	149	2.16
Suburban	4,835	99	2.05
Urban	55,094	1,334	2.42
Wilderness	1,923	44	2.29
Total	68,744	1,626	

**Figure  
43**

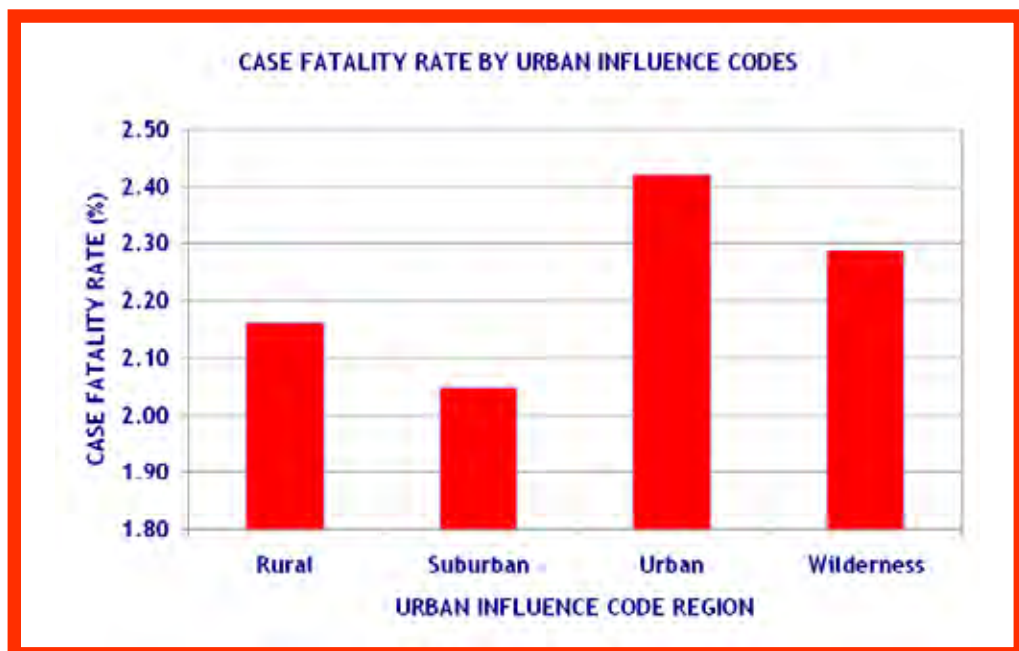
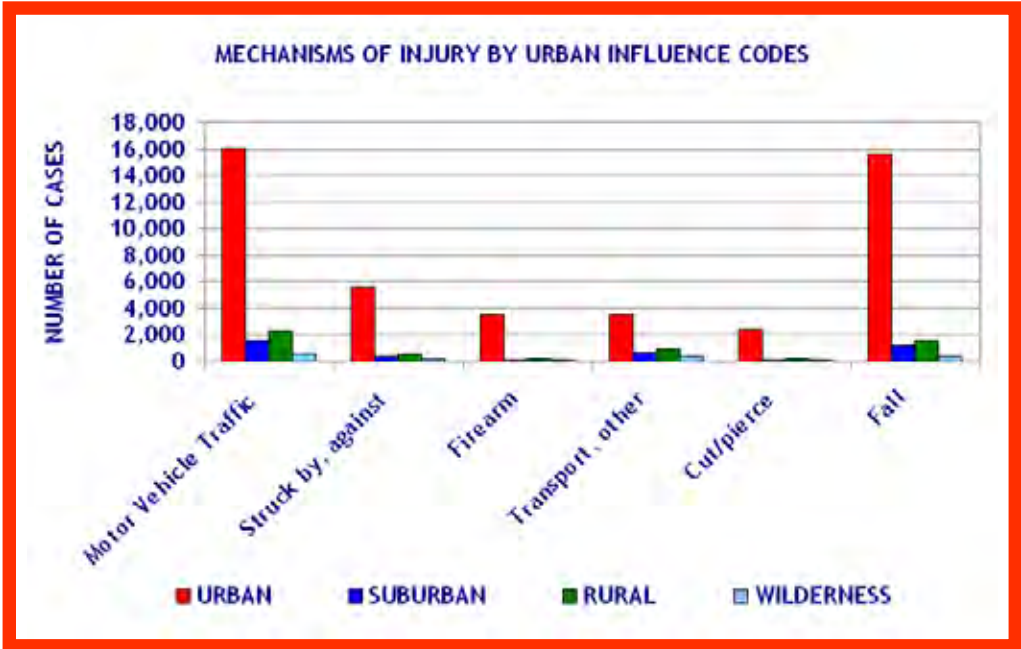


Table  
44

MECHANISM OF INJURY BY URBAN INFLUENCE CODES								
MECHANISM	NUMBER (URBAN)	PERCENT (URBAN)	NUMBER (SUBURBAN)	PERCENT (SUBURBAN)	NUMBER (RURAL)	PERCENT (RURAL)	NUMBER (WILDERNESS)	PERCENT (WILDERNESS)
Motor Vehicle Traffic	16,021	29.09	1,583	32.74	2,286	33.19	579	30.11
Fall	15,631	28.38	1,186	24.53	1,622	23.55	390	20.28
Struck by, against	5,529	10.04	399	8.25	575	8.35	163	8.48
Firearm	3,550	6.45	104	2.15	174	2.53	64	3.33
Transport, other	3,505	6.36	629	13.01	953	13.84	379	19.71
Cut/pierce	2,450	4.45	117	2.42	177	2.57	53	2.76
Pedal cyclist, other	1,863	3.38	155	3.21	198	2.87	43	2.24
Hot object/substance	1,693	3.07	143	2.96	149	2.16	41	2.13
Other specified and classifiable	1,628	2.96	165	3.41	258	3.75	68	3.54
Natural/environmental, Bites and stings	609	1.11	75	1.55	99	1.44	25	1.30
Fire/flame	553	1.00	76	1.57	90	1.31	23	1.20
Unspecified	483	0.88	31	0.64	61	0.89	10	0.52
Pedestrian, other	313	0.57	31	0.64	51	0.74	18	0.94
Other specified, not elsewhere classifiable	284	0.52	25	0.52	28	0.41	11	0.57
Overexertion	231	0.42	17	0.35	31	0.45	11	0.57
Machinery	217	0.39	30	0.62	54	0.78	23	1.20
Natural/environmental, Other	215	0.39	47	0.97	59	0.86	19	0.99
Suffocation	69	0.13	3	0.06	11	0.16	1	0.05
Drowning/submersion	50	0.09	11	0.23	5	0.07	2	0.10
Poisoning	19	0.03	3	0.06	2	0.03	0	0.00
NK/NR	164	0.30	5	0.10	5	0.07	0	0.00
<b>Total</b>	<b>55,077</b>	<b>100</b>	<b>4,835</b>	<b>100</b>	<b>6,888</b>	<b>100</b>	<b>1,923</b>	<b>100</b>

**Figure 44**

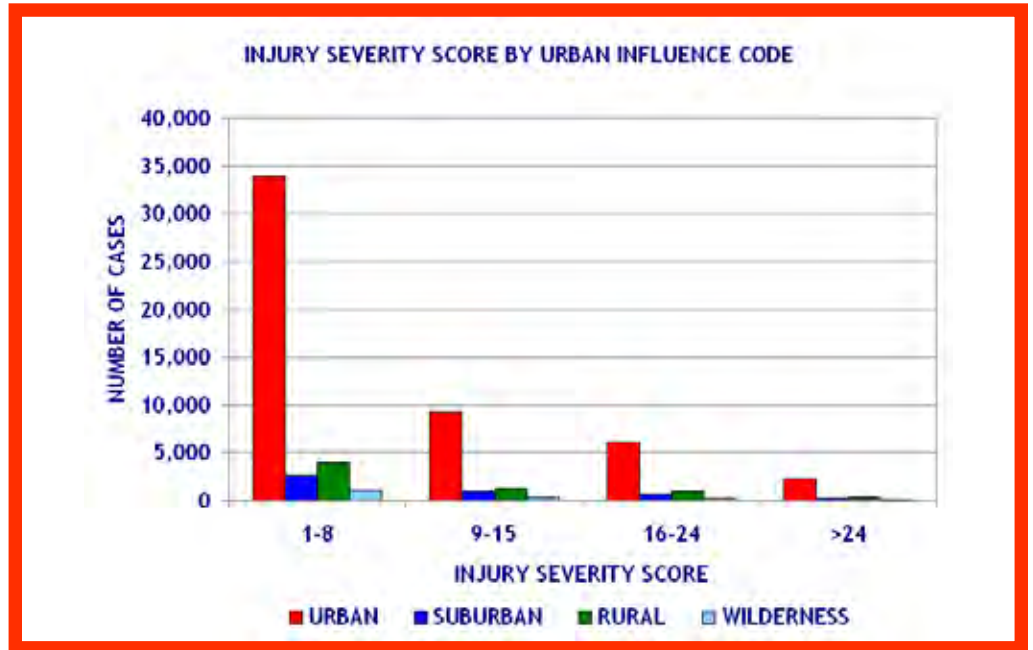




**Table  
45**

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	33,857	61.45	2,672	55.26	3,946	57.25	1,068	55.54
9-15	9,299	16.88	948	19.61	1,277	18.53	397	20.64
16-24	6,169	11.20	681	14.08	962	13.96	254	13.21
>24	2,303	4.18	238	4.92	358	5.19	107	5.56
NK/NR	3,466	6.29	296	6.12	349	5.06	97	5.04
Total	55,094	100.00	4,835	100.00	6,892	100.00	1,923	100.00

**Figure  
45**



# Appendices

### Definition of Trauma Patient

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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 <sup>1</sup>
CUT/PIERCE	E920.0–9	E956	E966	E986	E974
DROWNING/SUBMERSION	E830.0–9, E832.0–9 E910.0–9	E954	E964	E984	
FALL	E880.0–E886.9, E888	E957.0–9	E968.1	E987.0–9	
FIRE/BURN	E890.0–E899, E924.0–9	E958.1,.2,.7	E961, E968.0,.3	E988.1,.2,.7	
FIRE/FLAME	E890.0–E899	E958.1	E968.0	E988.1	
HOT OBJECT/SUBSTANCE	E924.0–9	E958.2,.7	E961, E968.3	E988.2,.7	
FIREARM	E922.0–3,.8, .9	E955.0–4	E965.0–4	E985.0–4	E970
MACHINERY	E919 (.0–9)				
MOTOR VEHICLE TRAFFIC <sup>2,3</sup>	E810–E819 (.0–9)	E958.5	E968.5	E988.5	
OCCUPANT	E810–E819 (.0,.1)				
MOTORCYCLIST	E810–E819 (.2,.3)				
PEDAL CYCLIST	E810–E819 (.6)				
PEDESTRIAN	E810–E819 (.7)				
UNSPECIFIED	E810–E819 (.9)				
PEDAL CYCLIST, OTHER	E800–E807 (.3) E820–E825 (.6), E826.1,.9 E827–E829(.1)				
PEDESTRIAN, OTHER	E800–807(.2) E820–E825(.7) E826–E829(.0)				
TRANSPORT, OTHER	E800–E807 (.0,.1,.8,.9) E820–E825 (.0–5,.8,.9) E826.2–8 E827–E829 (.2–9), E831.0–9, E833.0–E845.9	E958.6		E988.6	
NATURAL/ENVIRONMENTAL	E900.0–E909, E928.0–2	E958.3		E988.3	
BITES AND STINGS <sup>3</sup>	E905.0–6,.9 E906.0–4,.5,.9				
OVEREXERTION	E927.0–.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 <sup>4</sup>	E846–E848, E914–E915 E918, E921.0–9, E922.4,5 E923.0–9, E925.0–E926.9 E928.3, E929.0–5	E955.5,.6,.7,.9 E958.0,.4	E960.1, E965.5–9 E967.0–9, E968.4,.6, .7 E979.0–9	E985.5,.6,.7 E988.0,.4	E971, E978, E990–E994, E996 E997.0–2
OTHER SPECIFIED, NOT ELSEWHERE CLASSIFIABLE	E928.8, E929.8	E958.8, E959	E968.8, E969	E988.8, E989	E977, E995, E997.8 E998, E999
UNSPECIFIED	E887, E928.9, E929.9	E958.9	E968.9	E988.9	E976, E997.9
ALL INJURY	E800–E869, E880–E929	E950–E959	E960–E969, E979	E980–E989	E970–E978, E990–E999
ADVERSE EFFECTS					E870–E879 E930.0–E949.9
MEDICAL CARE					E870–E879
DRUGS					E930.0–E949.9
ALL EXTERNAL CAUSES					E800–E999

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

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

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

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