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NTDB®
NATIONAL TRAUMA DATA BANK

National Trauma Data Bank 2016

Annual Report

NTDB Annual Report 2016

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Editor's 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 more than 7 million records. The 2016 Annual Report is based on 861,888 2015 admission year records from 747 facilities.

In the interest of capturing a better picture of deaths in the NTDB, any patients that have been recorded as "Discharged to Hospice" have now been counted as deaths.

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 hopes that this report will attract new participants. The National Trauma Data Bank Annual Report is available on the ACS website as a PowerPoint PDF at *www.ntdb.org*. In addition, information is available on our website about how to obtain NTDB data for more detailed study.

Editor's Note, cont'd

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.

To cite figures used from the NTDB Annual Report, please specify the title of the report, the year, and the name of the figure used in the following format of the following:

Name of Figure, Committee on Trauma, American College of Surgeons. NTDB Annual/Pediatric Report 20XX. Chicago, IL. The content reproduced from the NTDB remains the full and exclusive copyrighted property of the American College of Surgeons. The American College of Surgeons is not responsible for any claims arising from works based on the original data, text, tables, or figures.

Executive Summary

The National Trauma Data Bank is the largest aggregation of U.S. trauma registry data ever assembled.

It contains close to 7.5 million records. The 2016 Annual Report reviews 2015 admissions submitted in the 2016 Call for Data, totaling 861,888 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 Committee on Trauma, which is "To improve the care of the injured through systematic efforts in prevention, care, and rehabilitation."

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 is calculated by using the AIS submitted by hospitals and then crosswalked to AIS98. If the hospital does not submit AIS, then ISS is based on AIS derived from ICDMAP-90.

- Almost half (45.29%) of patients suffer minor injuries and just under one-third (32.69%) have moderate injuries.
- Case fatality rates increase with injury severity, with the most severe group experiencing a case fatality rate of almost 30.
- 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 has overtaken Medicare as the single largest payment source at 35.10%
- Medicare is second at 27%
- Medicaid is the third largest payment category at 16.28%.

Mortality

- The overall mortality rate is 4.39%.
- The largest number of deaths is caused by fall-related injuries, followed by Motor Vehicle Traffic and firearm injuries.
- Firearm, suffocation, and drowning/submersion 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.

Executive Summary (cont'd)

NTDB Hospitals

- 747 hospitals submitted data to the NTDB in 2015.
- 239 are Level I centers.
- 263 are Level II centers.
- 196 are Level III or Level IV centers.
- 36 are Level I or Level II pediatric-only centers.
- 64.26% of participating centers reported including all hip fractures (in accordance with NTDB inclusion criteria).
- 91.70% reported including DOAs in their registries.

Age

- Injuries initially peak in ages 14 to 29 , primarily from MVT-related incidents, and peak again between the ages of 40 and 50, when falls begin to increase.
- Fall-related injuries spike in children aged 5-9 and adults over the age of 65.
- Males account for 70% of all incidents up to age 70, after age 71, most patients are female.

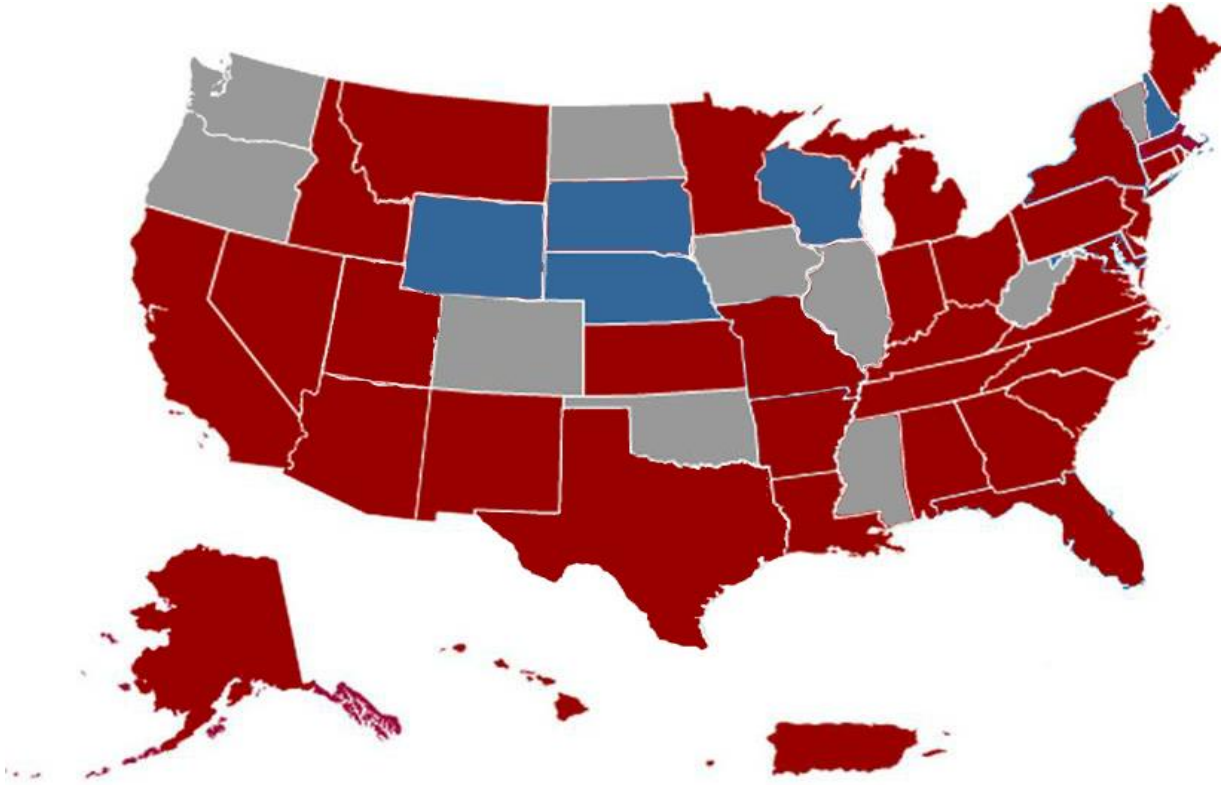
Mechanism of Injury

- Falls account for 44.18% of cases in the NTDB, with injuries increasing in children under age 7 and adults over the age of 75.
- Motor vehicle traffic-related injuries account for 25.97% of cases in the NTDB, with a dramatic rise between ages 16 and 26, peaking around age 21.
- At age 12, firearm injuries double and steadily increase until age 22, then decrease afterwards.
- Suffocation, drowning/submersion injuries, and firearm injuries have the highest case fatality rates, with suffocation at 27.12%, firearm at 15.30%, and drowning/submersion at 19.20%.

Facility Information

Figure 1

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



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	151	20.21
201 - 400	289	38.69
401 - 600	166	22.22
≥600	141	18.88
Total	747	100

Figure 2

Facilities by Bed Size

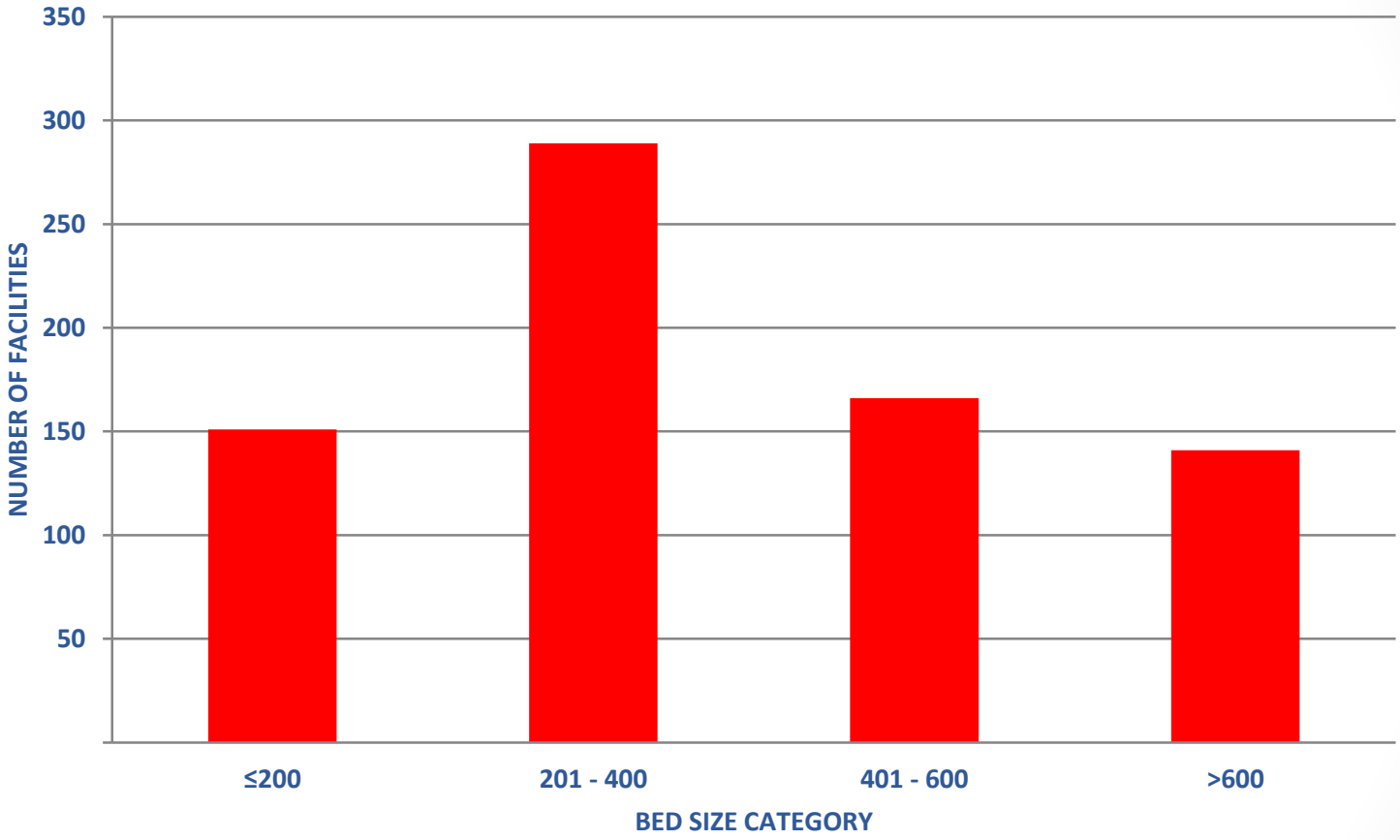


Table 3

Facilities by Trauma Level

LEVEL	NUMBER	PERCENT
I	239	31.99
II	263	35.21
III	179	23.96
IV	17	2.28
Other	16	2.14
NA	33	4.42
Total	747	100

This table includes 36 pediatric-only centers.
Both ACS-verified and state-designated centers are included.
NK/NR denotes “Not Known/Not Recorded” on all slides.

Figure 3

Facilities by Trauma Level

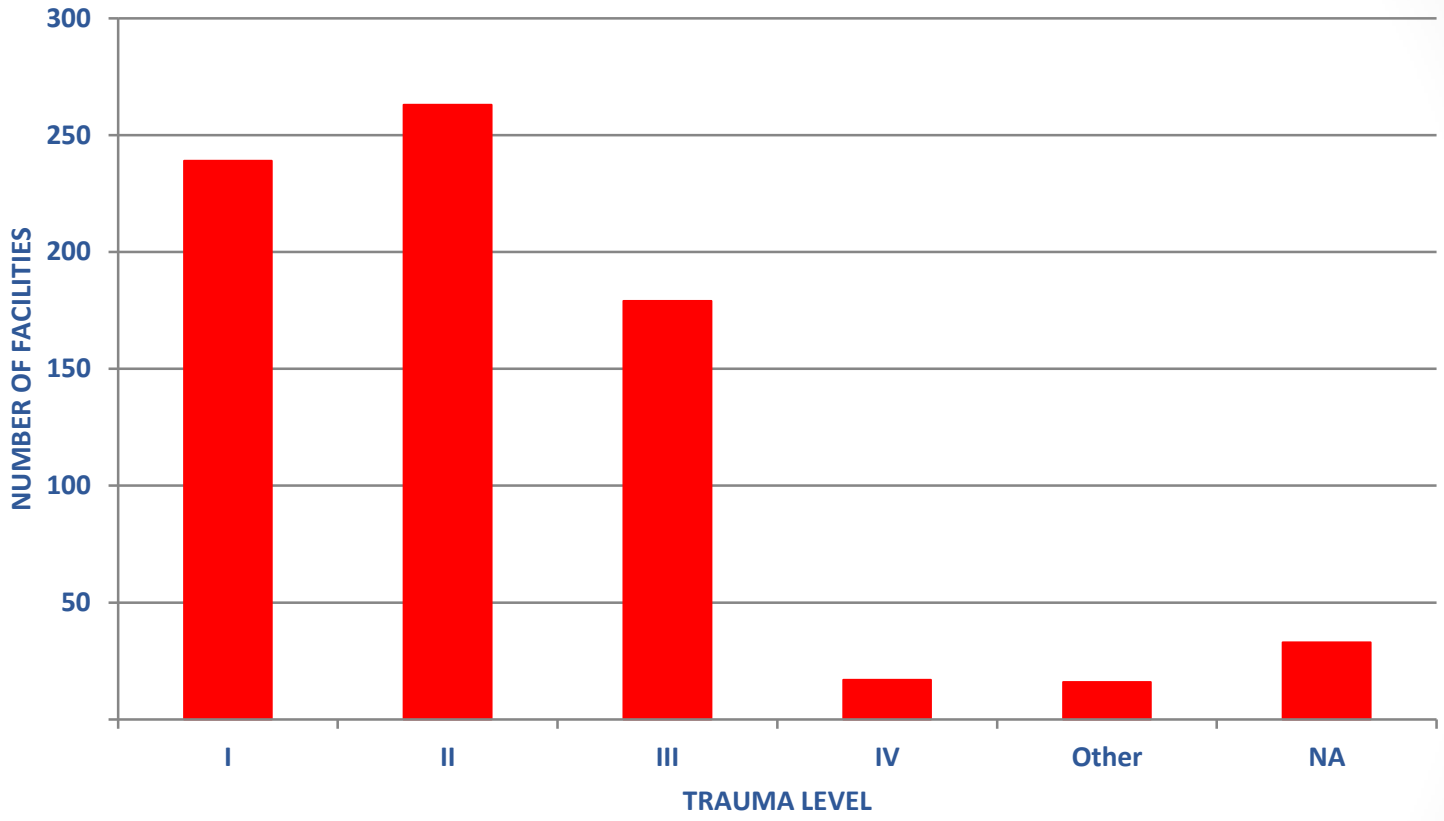


Table 4

Facilities by Region

REGION	NUMBER	PERCENT
South	241	32.26
Midwest	214	28.65
West	164	21.95
Northeast	123	16.47
Non-U.S.	5	0.67
Total	747	100

Figure 4

Facilities by Region

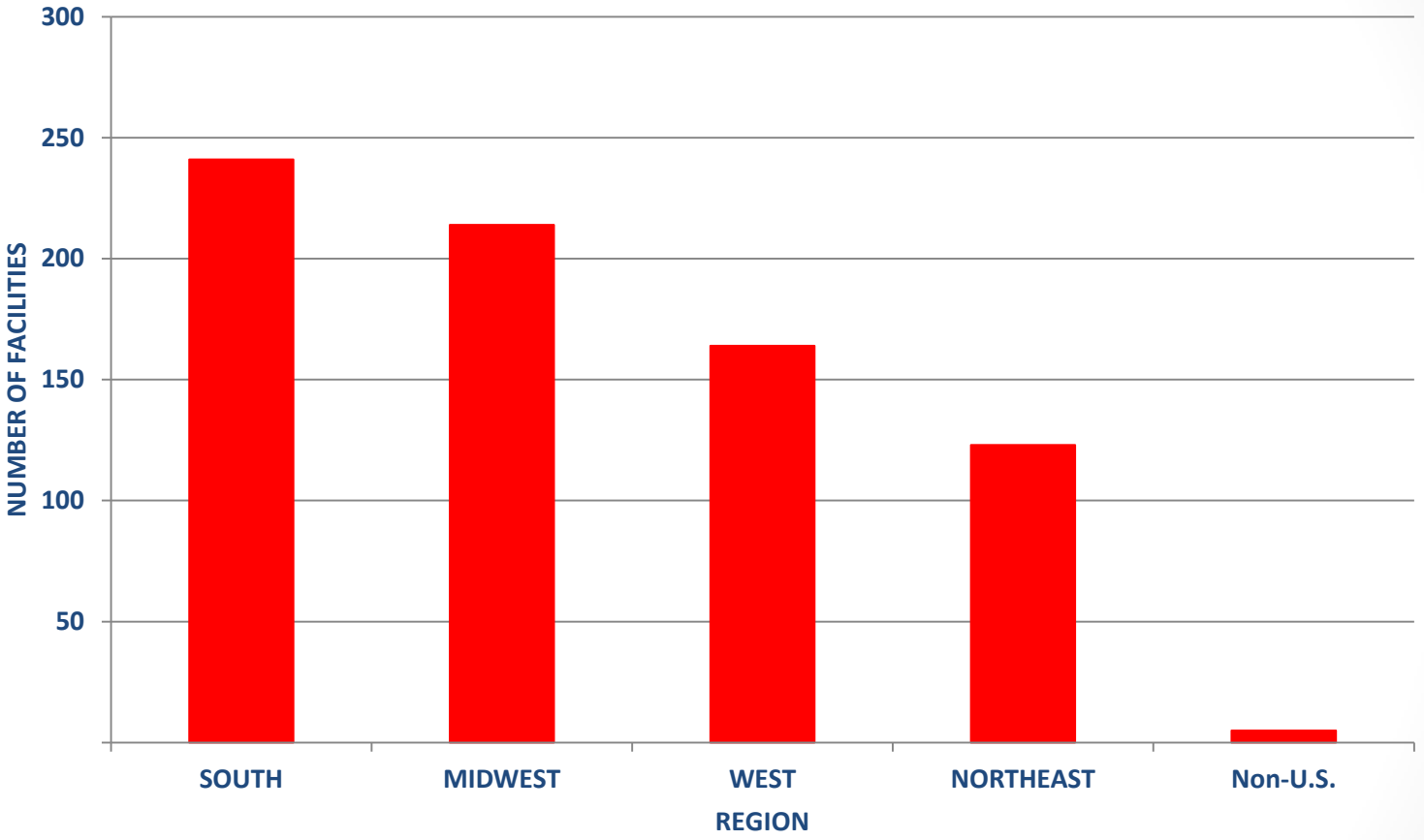


Table 5

Facilities by Length of Stay (LOS) Inclusion Criteria

LOS	NUMBER	PERCENT
All admissions	576	77.11
23 hour holds	48	6.43
≥24 hours	81	10.84
≥48 hours	40	5.35
≥72 hours	2	0.27
Total	747	100

Figure 5

Facilities by Length of Stay (LOS) Inclusion Criteria

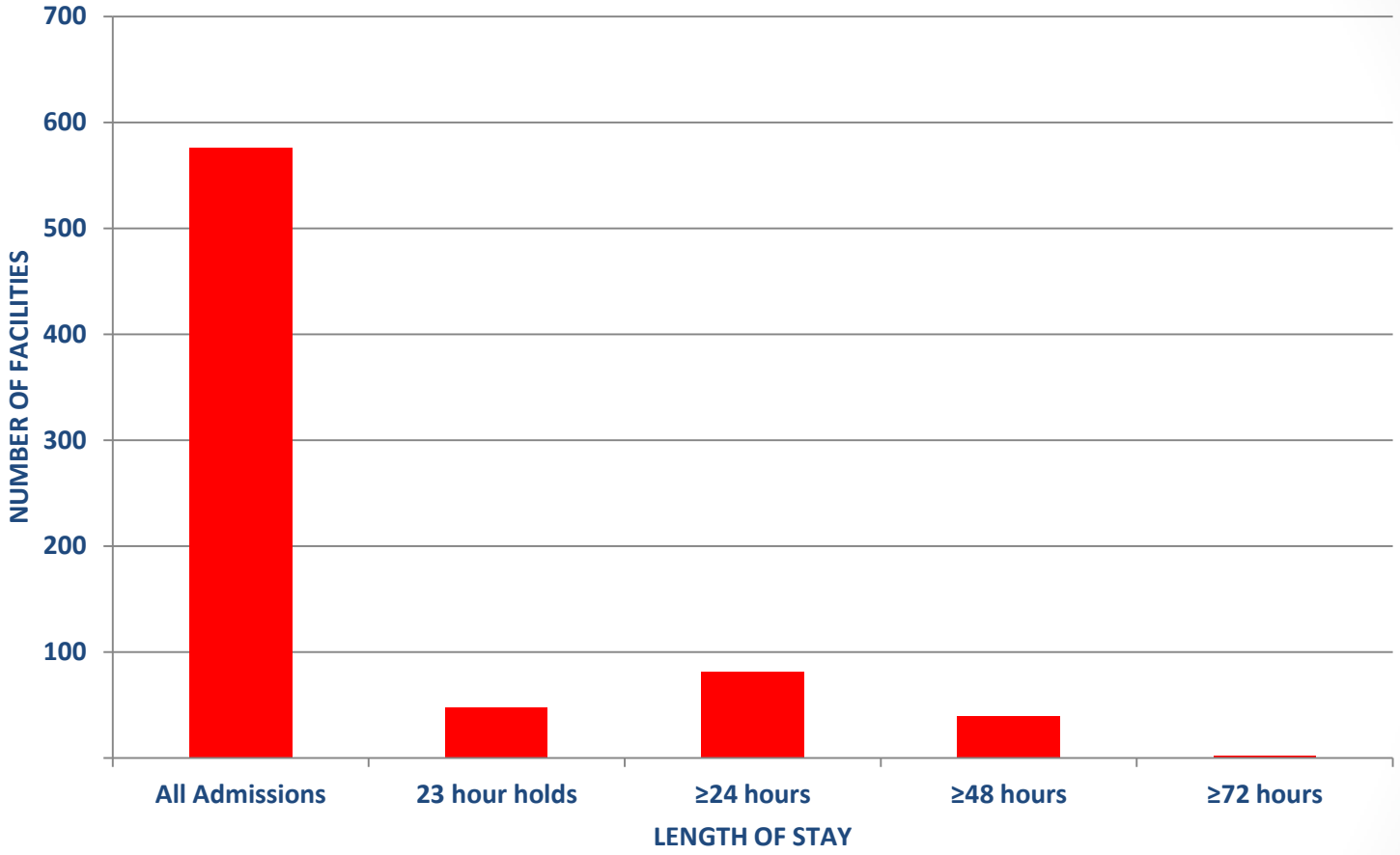


Table 6

Facilities by Isolated Hip Fracture Inclusion Criteria by Age

IHF INCLUSION	NUMBER	PERCENT
All	480	64.26
Patients ≤18 years	31	4.15
Patients ≤50 years	5	0.67
Patients ≤55 years	4	0.54
Patients ≤60 years	2	0.27
Patients ≤65 years	76	10.17
Patients ≤70 years	25	3.35
None	124	16.60
Total	747	100

Denotes whether a facility includes isolated hip fractures in its registry.

Figure 6

Facilities by Isolated Hip Fracture Inclusion Criteria by Age

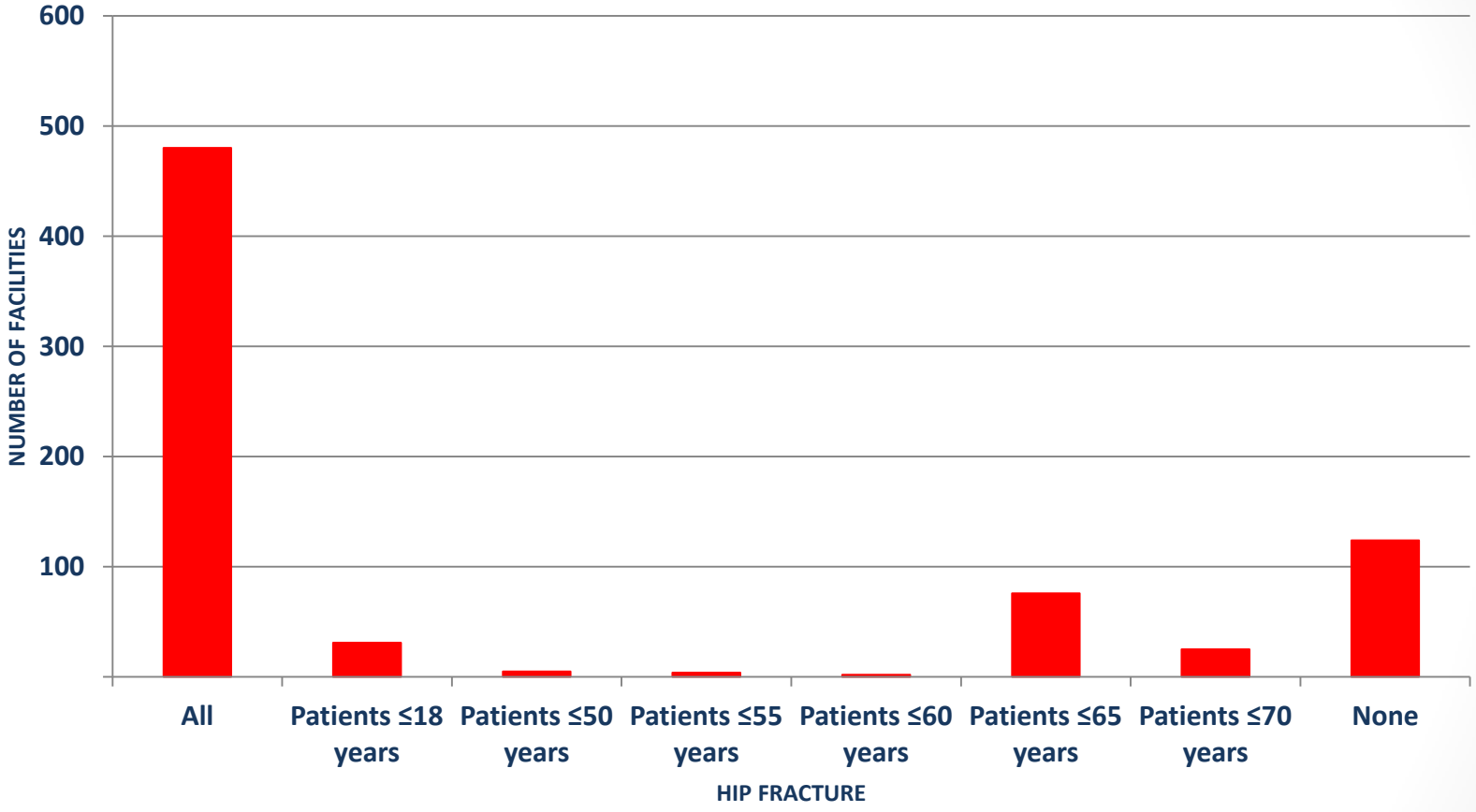


Table 7

Facilities by Death on Arrival (DOA) Inclusion Criteria

DOA INCLUDED	NUMBER	PERCENT
No	62	8.30
Yes	685	91.70
Total	747	100

Figure 7

Facilities by Death on Arrival (DOA) Inclusion Criteria

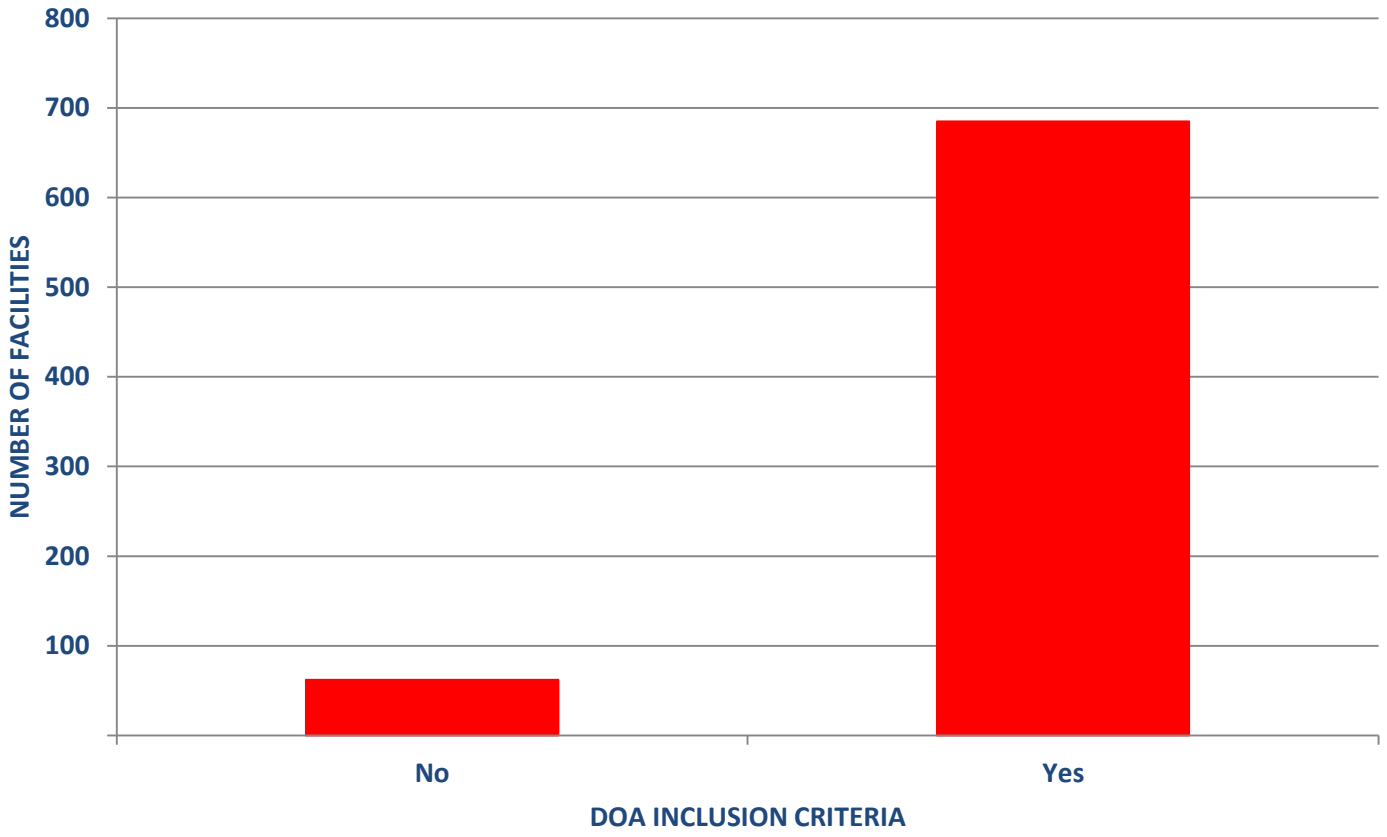


Table 8

Facilities by Transfer-In Criteria

TRANSFERS IN	NUMBER	PERCENT
All transfers	717	95.98
Within 4 hours	1	0.13
Within 8 hours	2	0.27
Within 12 hours	1	0.13
Within 24 hours	4	0.54
Within 48 hours	5	0.67
Within 72 hours	5	0.67
None	12	1.61
Total	747	100

Figure 8

Facilities by Transfer-In Criteria

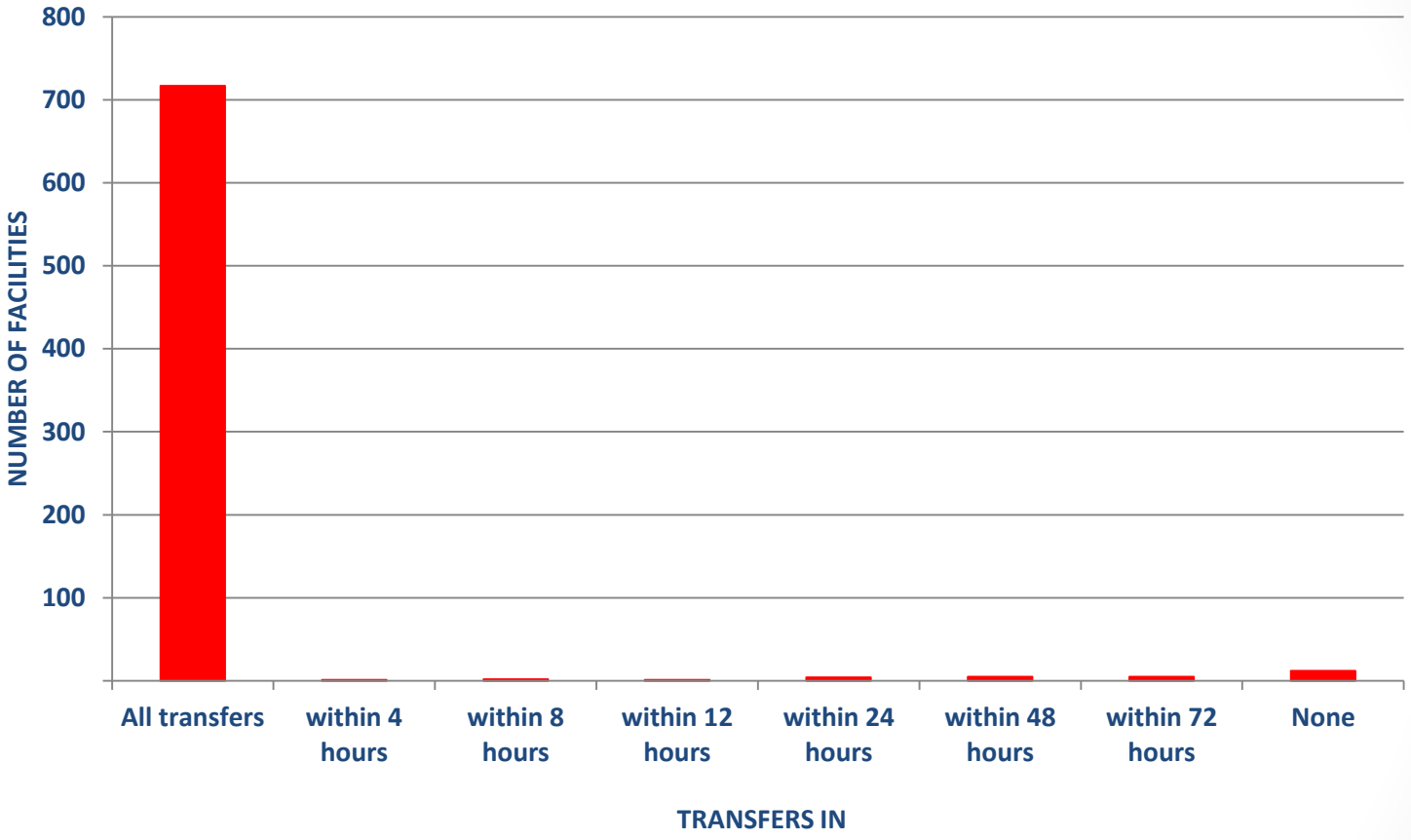


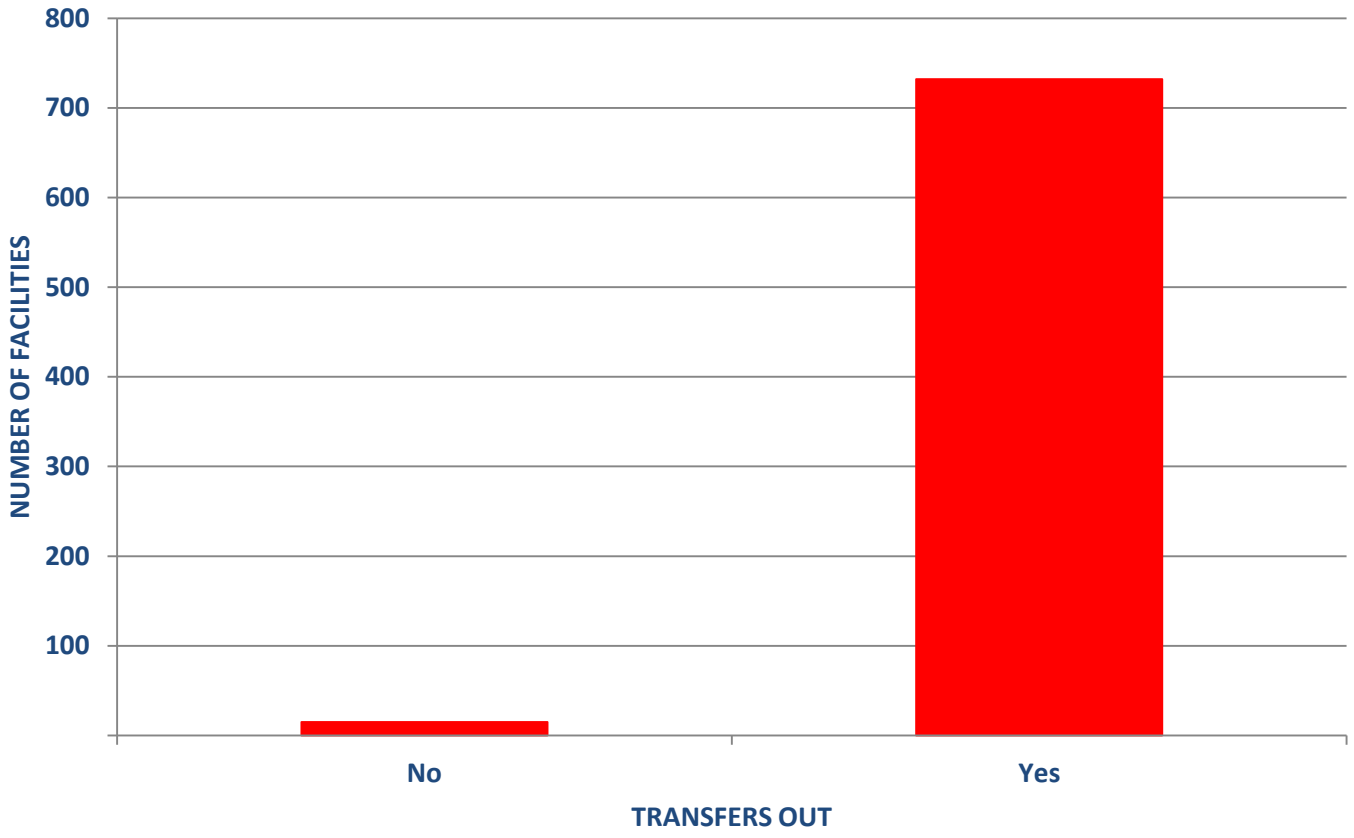
Table 9

Facilities by Transfer-Out Criteria

TRANSFERS OUT	NUMBER	PERCENT
No	15	2.01
Yes	732	97.99
Total	747	100

Figure 9

Facilities by Transfer-Out Criteria



Demographic Information

Table 10

Incidents by Age

AGE	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
<1 year	9,275	1.08	203	2.19
1-4	24,734	2.87	540	2.18
5-9	28,094	3.26	618	2.20
10-14	28,065	3.26	559	1.99
15-19	50,883	5.90	1,541	3.03
20-24	66,103	7.67	2,562	3.88
25-34	107,762	12.50	3,847	3.57
35-44	82,781	9.60	2,776	3.35
45-54	97,233	11.28	3,326	3.42
55-64	101,825	11.81	4,058	3.99
65-74	88,158	10.23	4,265	4.84
75-84	90,960	10.55	6,056	6.66
>84	85,932	9.97	7,418	8.63
NK/NR	83	0.01	56	67.47
Total	861,888	100	37,825	4.39

Figure 10A

Incidents by Age

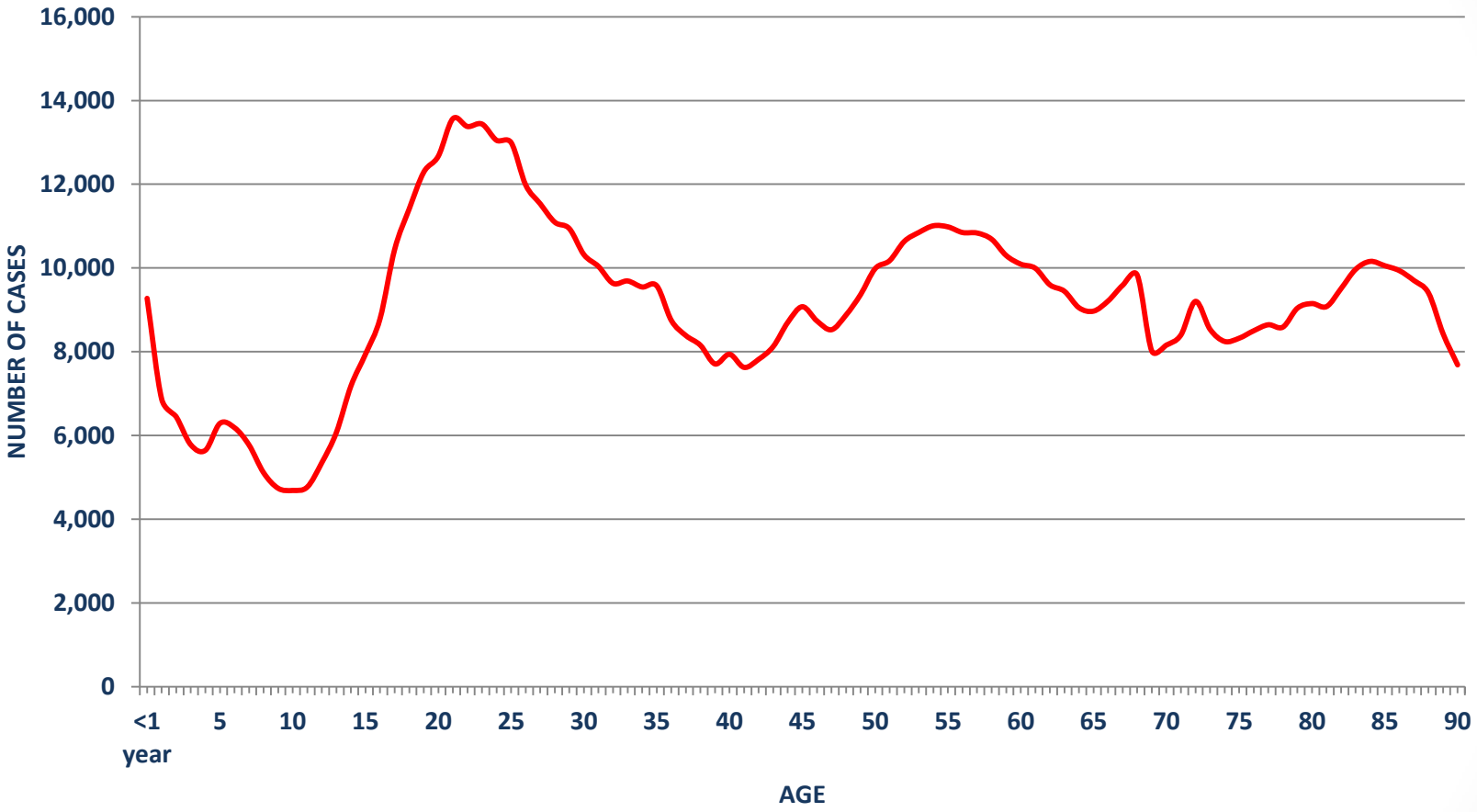


Figure 10B

Case Fatality Rate by Age

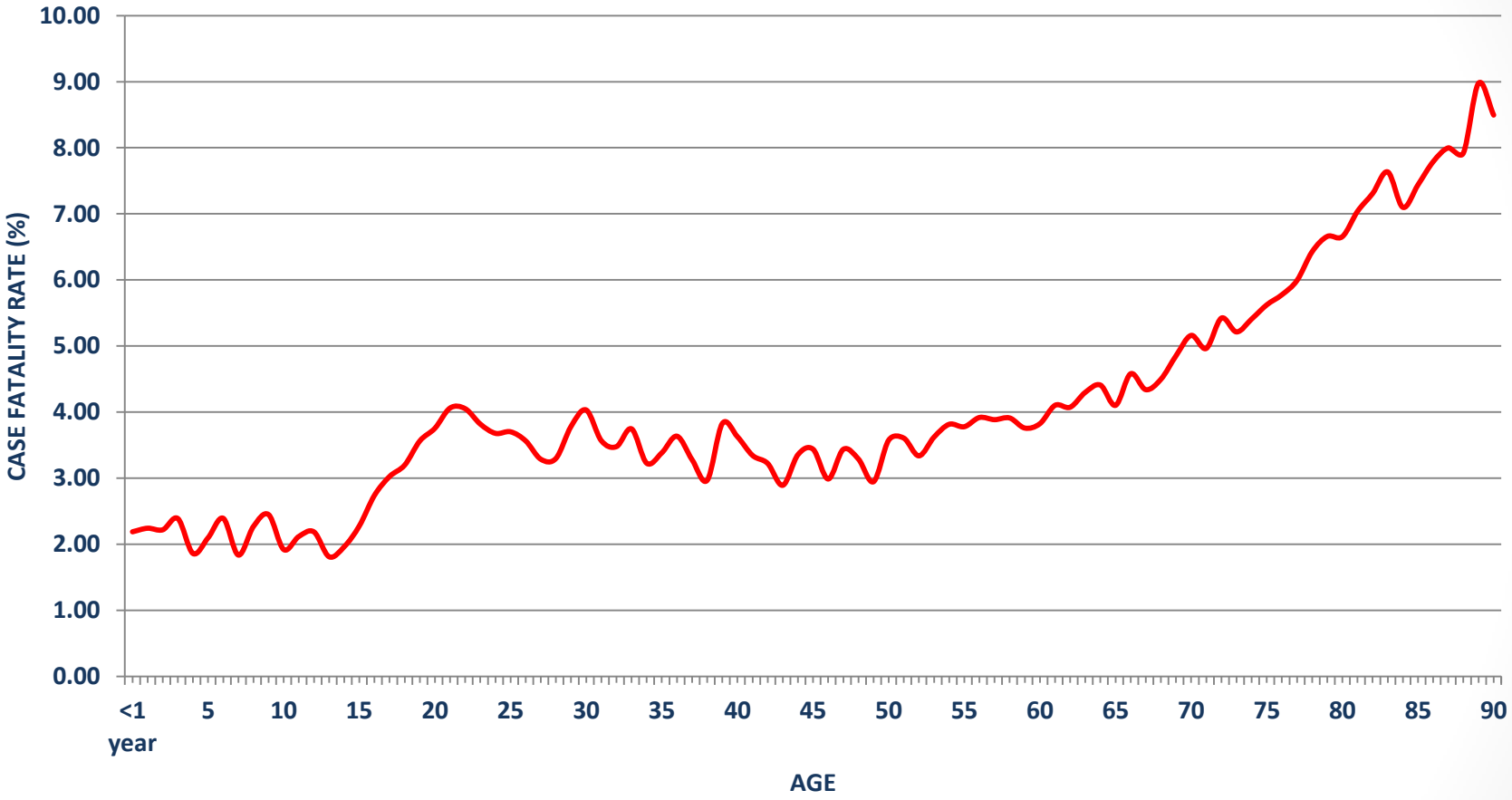


Table 11

Incidents and Case Fatality Rate by Age and Gender

AGE CATEGORY	NUMBER (FEMALE)	NUMBER (MALE)	DEATHS (FEMALE)	DEATHS (MALE)	CASE FATALITY RATE (FEMALE)	CASE FATALITY RATE (MALE)
<1 year	4,007	5,264	86	117	2.15	2.22
1-4	10,142	14,585	191	349	1.88	2.39
5-9	11,418	16,668	245	373	2.15	2.24
10-14	8,592	19,469	156	403	1.82	2.07
15-19	14,546	36,327	330	1,209	2.27	3.33
20-24	16,957	49,125	423	2,139	2.49	4.35
25-34	26,790	80,943	677	3,169	2.53	3.92
35-44	21,977	60,793	535	2,241	2.43	3.69
45-54	29,124	68,088	820	2,505	2.82	3.68
55-64	37,658	64,150	1,047	3,011	2.78	4.69
65-74	42,825	45,318	1,430	2,834	3.34	6.25
75-84	54,056	36,889	2,588	3,466	4.79	9.40
>84	58,729	27,189	4,089	3,329	6.96	12.24
NK/NR	10	70	6	49	60.00	70.00
Total	336,831	524,878	12,623	25,194	3.75	4.80

Figure 11A

Incidents by Age and Gender

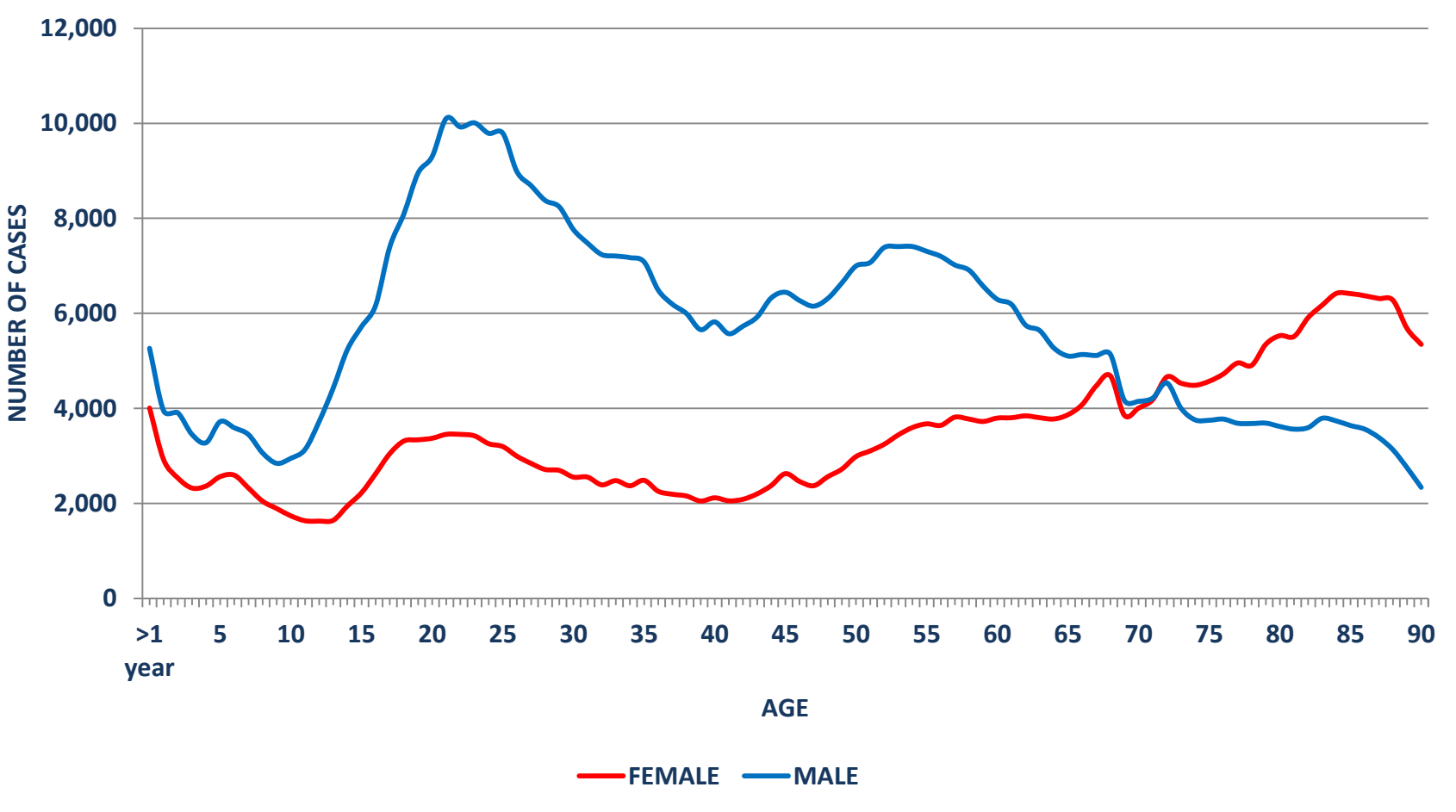


Figure 11B

Case Fatality Rate by Age and Gender

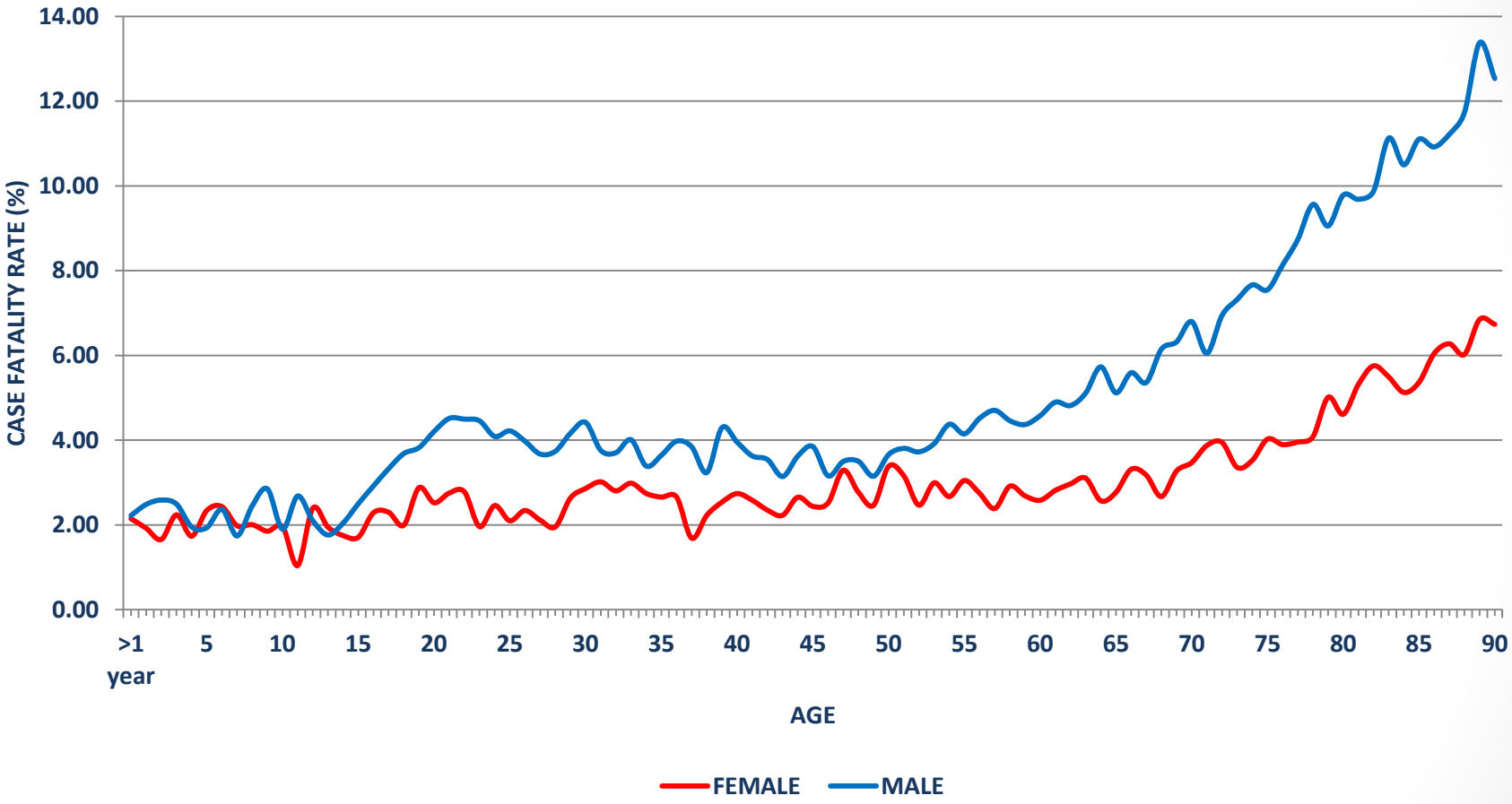


Table 12

Alcohol Use

ALCOHOL USE	NUMBER	PERCENT
No (confirmed by test)	223,382	25.92
No (not tested)	437,582	50.77
Yes (confirmed by test [beyond legal limit])	84,507	9.80
Yes (confirmed by test [trace levels])	29,789	3.46
Not Applicable	60,390	7.01
NK/NR	26,238	3.04
Total	861,888	100

Figure 12

Alcohol Use

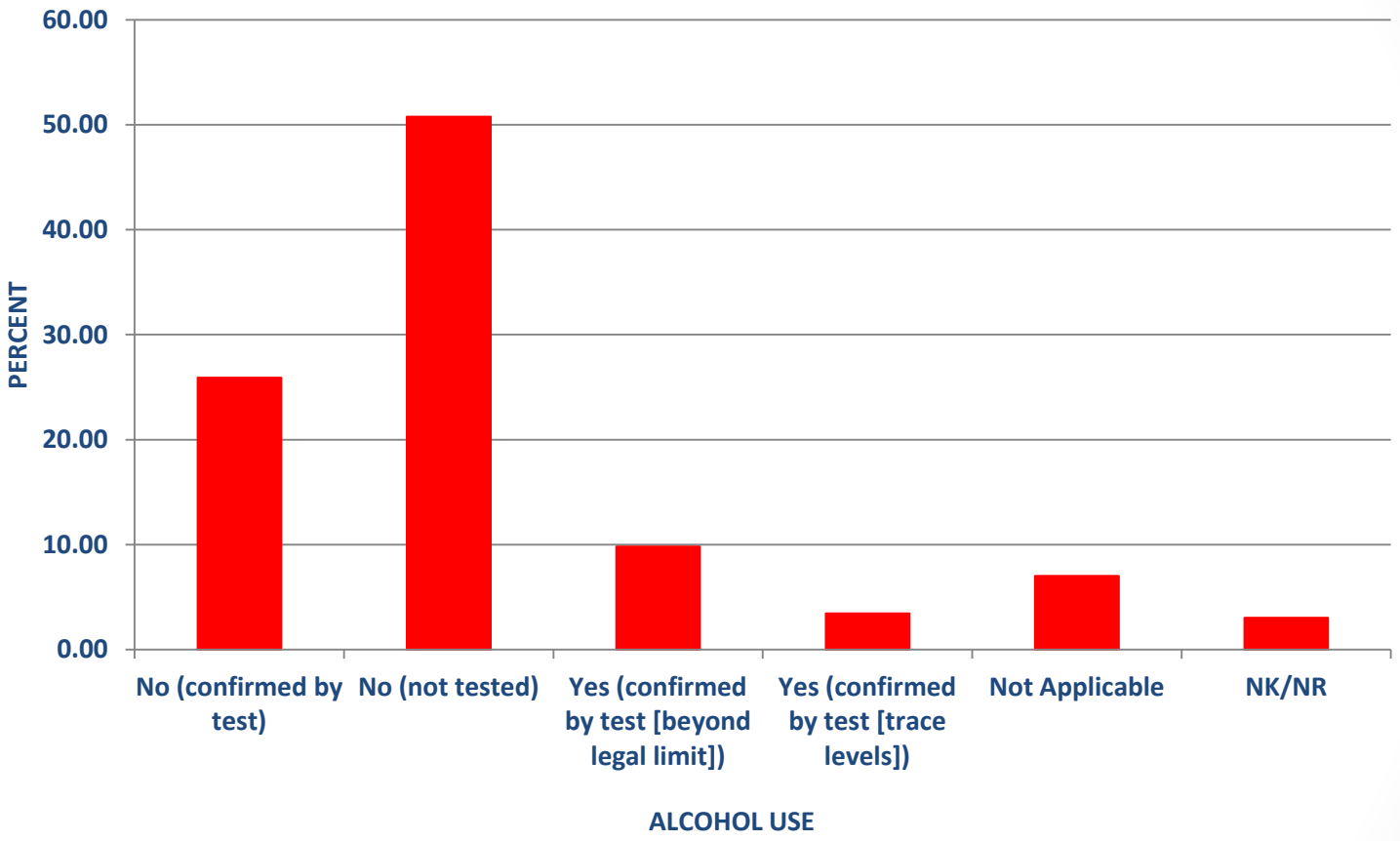


Table 13

Drug Use

DRUG USE	NUMBER	PERCENT
No (confirmed by test)	90,571	10.51
No (not tested)	581,616	67.48
Yes (confirmed by test [illegal use drug])	62,215	7.22
Yes (confirmed by test [prescription drug])	41,369	4.80
Not Applicable	37,085	4.30
NK/NR	49,032	5.69
Total	861,888	100

Figure 13

Drug Use

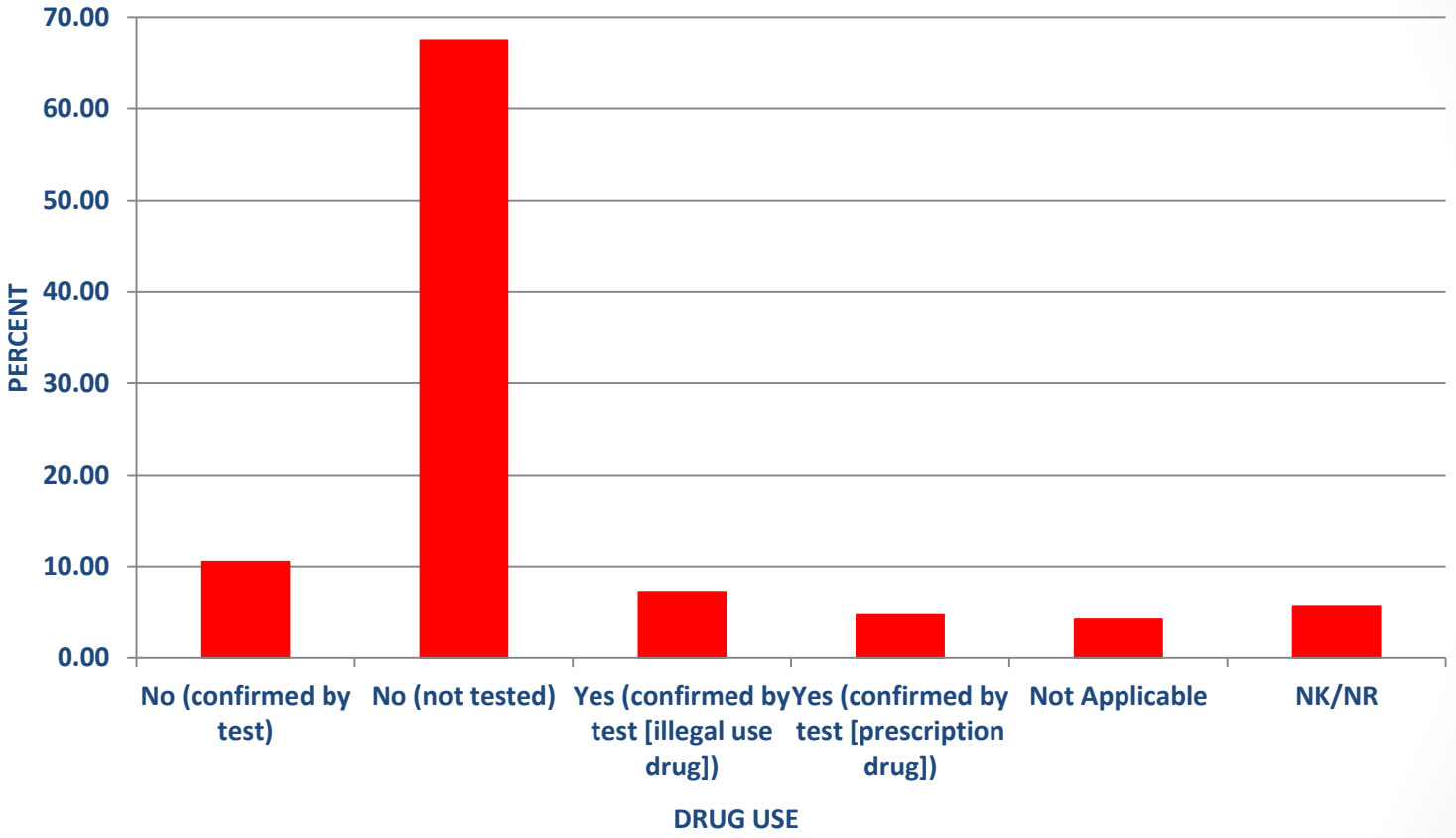


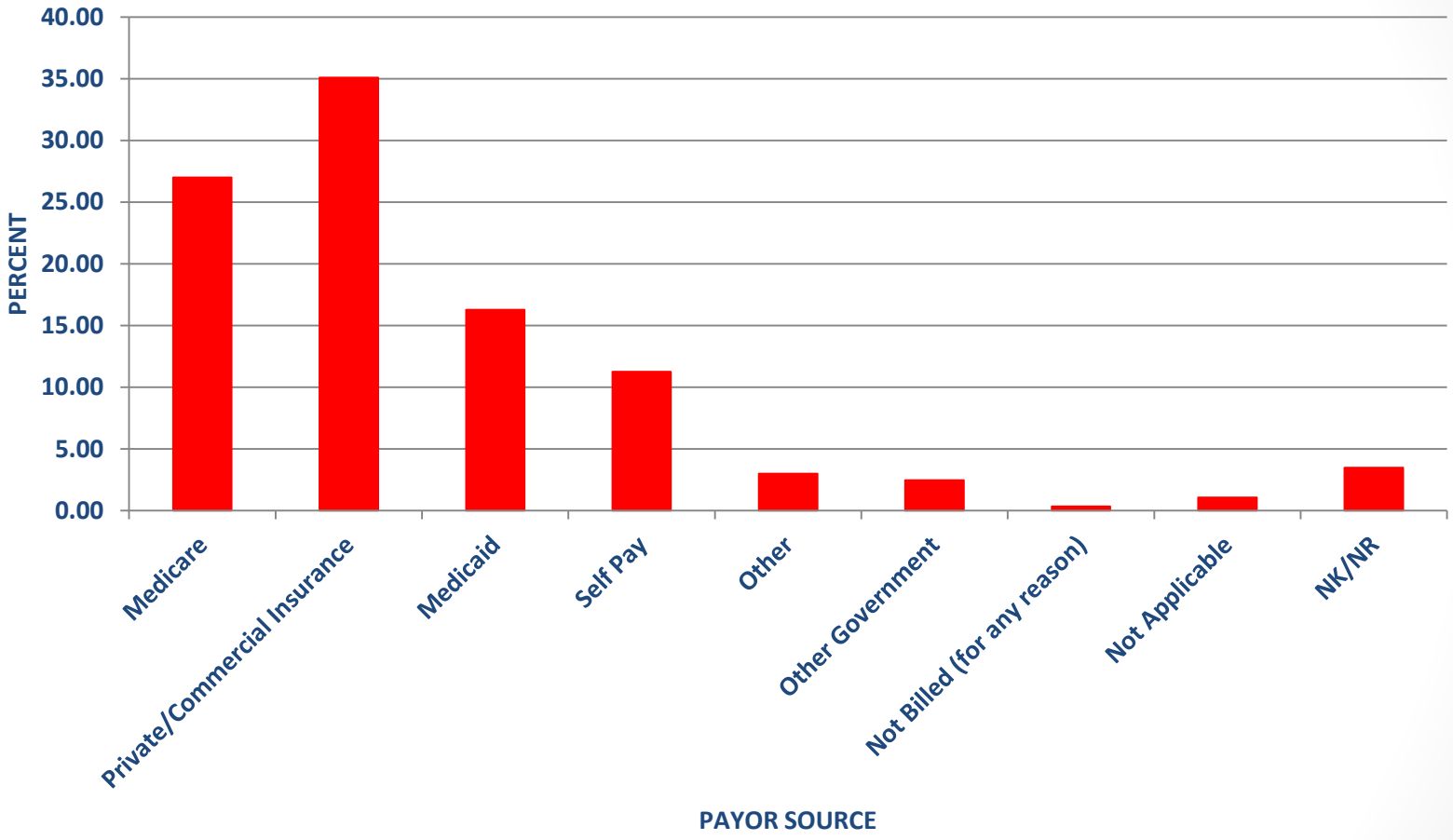
Table 14

Primary Payment Source

PRIMARY PAYMENT SOURCE	NUMBER	PERCENT
Medicare	232,675	27.00
Private/Commercial Insurance	302,506	35.10
Medicaid	140,354	16.28
Self Pay	96,972	11.25
Other	25,819	3.00
Other Government	21,360	2.48
Not Billed (for any reason)	2,980	0.35
Not Applicable	9,303	1.08
NK/NR	29,919	3.47
Total	861,888	100

Figure 14

Primary Payment Source



Injury Characteristics

Table 15

Incidents by Mechanism of Injury

MECHANISM	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Fall	380,800	44.18	16,623	4.37
Motor Vehicle Traffic	223,866	25.97	10,343	4.62
Struck by, against	55,662	6.46	755	1.36
Transport, other	39,269	4.56	903	2.30
Cut/pierce	35,565	4.13	776	2.18
Firearm	36,325	4.21	5,557	15.30
Pedal cyclist, other	14,730	1.71	207	1.41
Other specified and classifiable	13,682	1.59	522	3.82
Hot object/substance	8,401	0.97	36	0.43
Fire/flame	7,877	0.91	467	5.93
Unspecified	7,834	0.91	433	5.53
Machinery	8,101	0.94	99	1.22
Natural/environmental, Bites and stings	5,868	0.68	62	1.06
Other specified, not elsewhere classifiable	4,059	0.47	74	1.82
Overexertion	2,613	0.30	12	0.46
Pedestrian, other	2,845	0.33	177	6.22
Natural/environmental, Other	2,387	0.28	38	1.59
Suffocation	885	0.10	240	27.12
Poisoning	413	0.05	8	1.94
Drowning/submersion	375	0.04	72	19.20
Adverse effects, medical care	224	0.03	11	4.91
Adverse effects, drugs	102	0.01	7	6.86
NK/NR	10,005	1.16	403	4.03
Total	861,888	100	37,825	4.39

Figure 15A

Incidents by Selected Mechanism of Injury

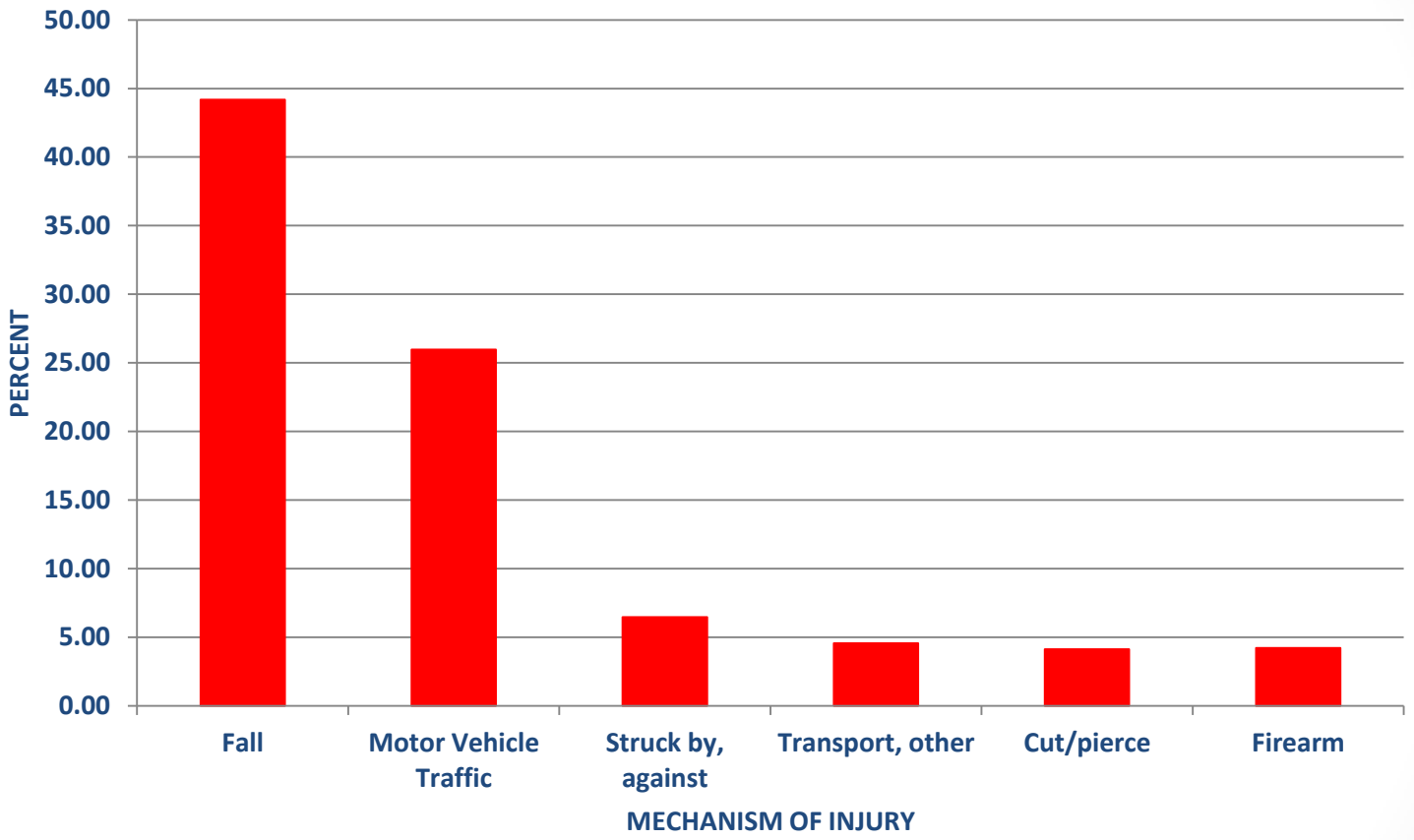


Figure 15B

Case Fatality Rate by Selected Mechanism of Injury

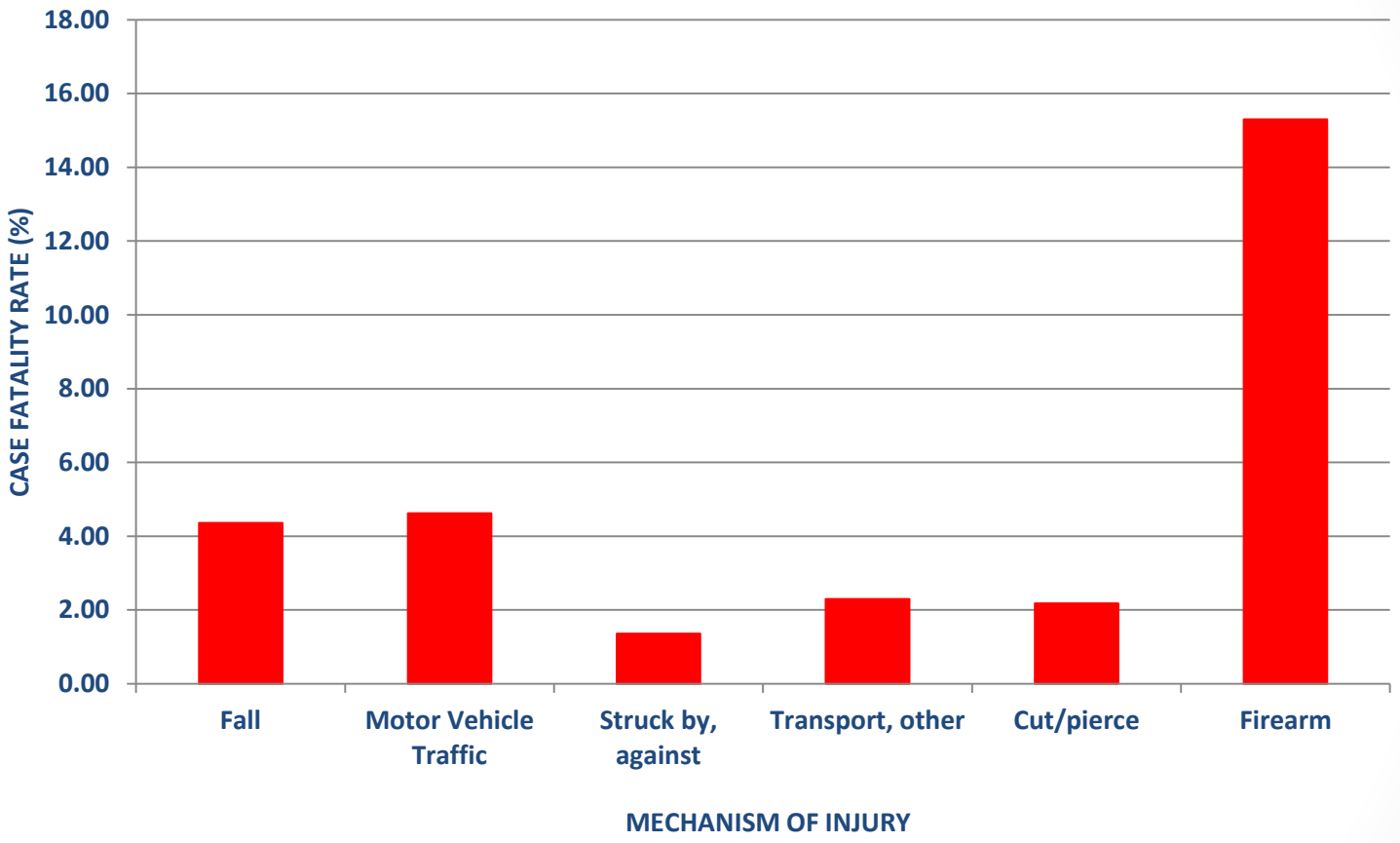


Table 16

Incidents by Selected Mechanism of Injury and Age

AGE	FALL	MOTOR VEHICLE TRAFFIC	STRUCK BY, AGAINST	TRANSPORT, OTHER	FIREARM	CUT/PIERCE
<1 year	5,018	454	339	47	32	34
1-4	12,225	2,916	1,757	518	194	461
5-9	14,262	4,576	1,995	1,575	192	563
10-14	9,336	5,415	3,940	3,118	636	776
15-19	7,267	20,073	5,849	4,666	5,157	2,712
20-24	7,307	28,614	5,855	4,329	8,453	5,239
25-34	15,785	41,897	10,868	6,369	10,519	9,709
35-44	18,169	29,364	8,117	4,917	5,196	6,431
45-54	31,300	31,714	8,031	5,263	3,064	5,327
55-64	49,225	27,616	5,144	4,176	1,651	2,783
65-74	58,467	16,800	2,122	2,493	732	1,043
75-84	74,200	10,199	1,040	1,234	315	373
>84	78,229	4,183	603	562	171	113
NK/NR	10	45	2	2	13	1
Total	380,800	223,866	55,662	39,269	36,325	35,565

Figure 16

Incidents by Selected Mechanism of Injury and Age

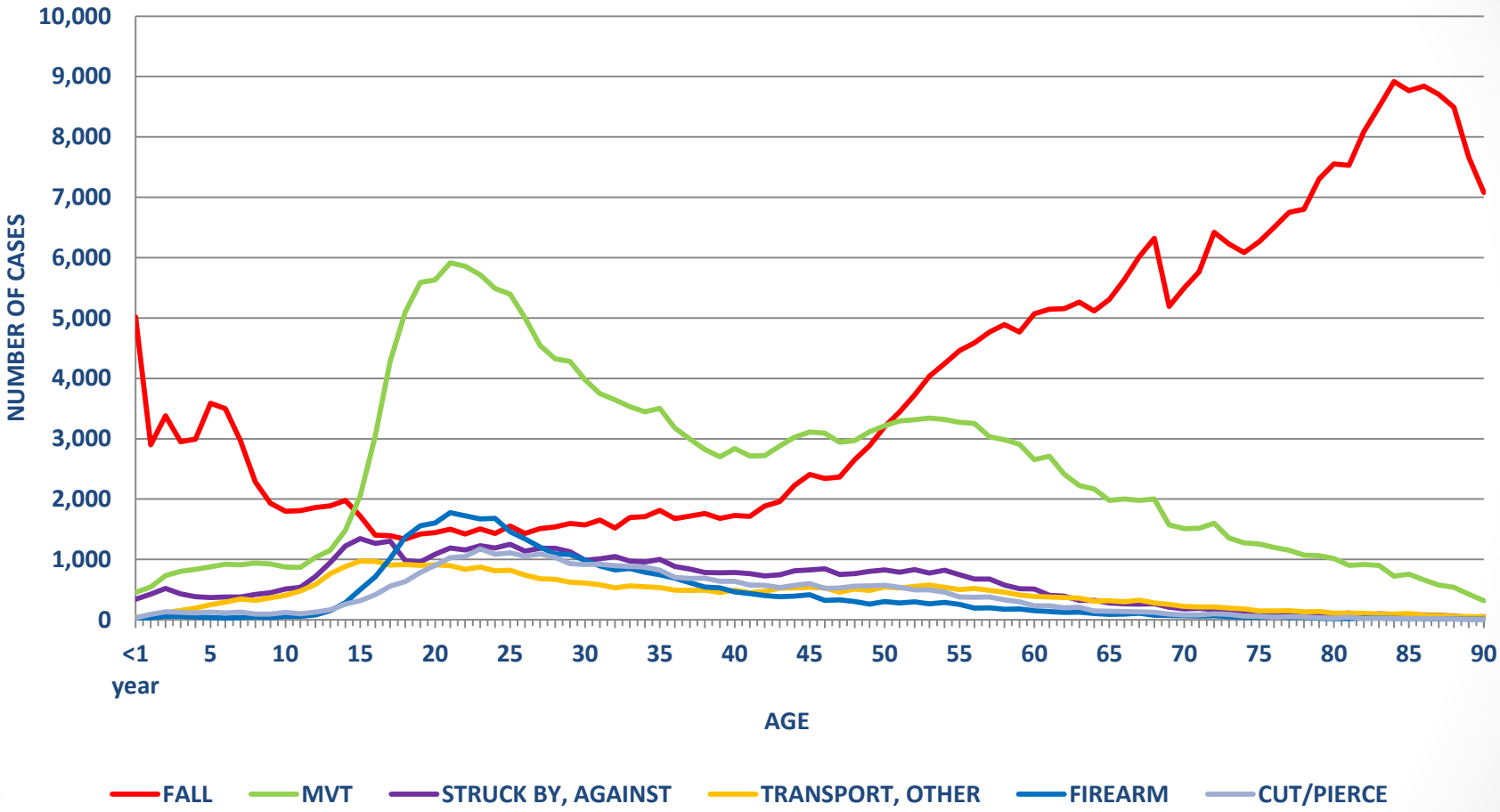


Table 17

Case Fatality Rate by Selected Mechanism of Injury and Age

AGE	FALL	MOTOR VEHICLE TRANSPORT	STRUCK BY, AGAINST	TRANSPORT, OTHER	FIREARM	CUT/PIERCE
<1 year	0.30	6.61	1.47	0.00	25.00	0.00
1-4	1.30	4.73	1.76	1.35	12.37	1.52
5-9	2.13	3.23	2.36	0.95	10.94	1.42
10-14	1.59	2.42	1.78	1.35	10.53	1.29
15-19	1.07	3.08	0.58	1.69	11.15	1.70
20-24	1.34	3.40	0.67	1.64	13.13	2.33
25-34	1.29	3.50	0.59	1.82	14.22	2.13
35-44	1.67	3.75	0.97	2.09	15.01	2.18
45-54	2.25	4.36	1.48	2.15	18.41	2.20
55-64	2.85	5.72	1.92	2.97	24.05	2.12
65-74	4.04	6.70	3.77	3.73	32.51	2.78
75-84	6.05	9.71	4.90	6.89	42.22	5.90
>84	8.11	14.92	6.14	9.61	79.53	7.08
NK/NR	70.00	77.78	0.00	50.00	61.54	100.00

Figure 17

Case Fatality Rate by Selected Mechanism of Injury and Age

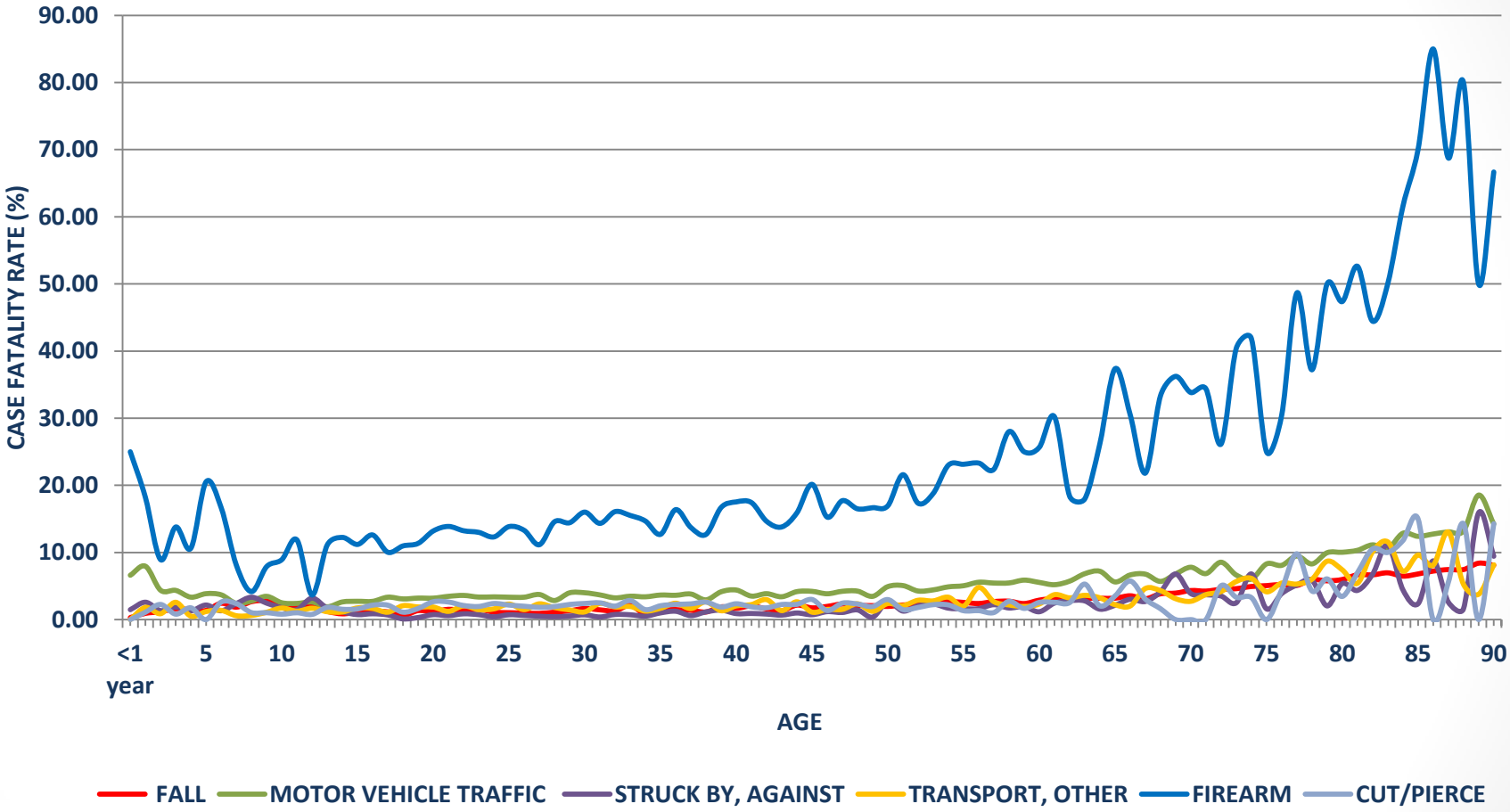


Table 18

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	58.27	35.15	3.88	4.88
Motor Vehicle Traffic	24.30	27.05	3.79	5.10
Struck by, against	2.98	8.69	1.37	1.35
Transport, other	3.61	5.16	1.76	2.54
Cut/pierce	1.74	5.66	1.95	2.23
Firearm	1.25	6.12	14.52	15.40
Pedal cyclist, other	0.98	2.18	0.85	1.57
Other specified and classifiable	1.10	1.90	3.78	3.83
Hot object/substance	0.99	0.96	0.48	0.40
Fire/flame	0.61	1.11	8.90	4.88
Unspecified	0.62	1.09	6.19	5.29
Machinery	0.21	1.41	0.42	1.30
Natural/environmental, Bites and stings	0.79	0.61	0.79	1.28
Other specified, not elsewhere classifiable	0.33	0.56	2.35	1.63
Overexertion	0.31	0.30	0.57	0.39
Pedestrian, other	0.30	0.35	5.18	6.81
Natural/environmental, Other	0.28	0.28	1.08	1.92
Suffocation	0.07	0.12	27.76	26.88
Poisoning	0.05	0.05	1.74	2.08
Drowning/submersion	0.03	0.05	23.68	17.24
Adverse effects, medical care	0.04	0.02	3.20	7.07
Adverse effects, drugs	0.02	0.01	6.90	6.82
NK/NR	1.12	1.19	2.87	4.73
Total	100	100		

Figure 18A

Incidents by Selected Mechanism of Injury and Gender

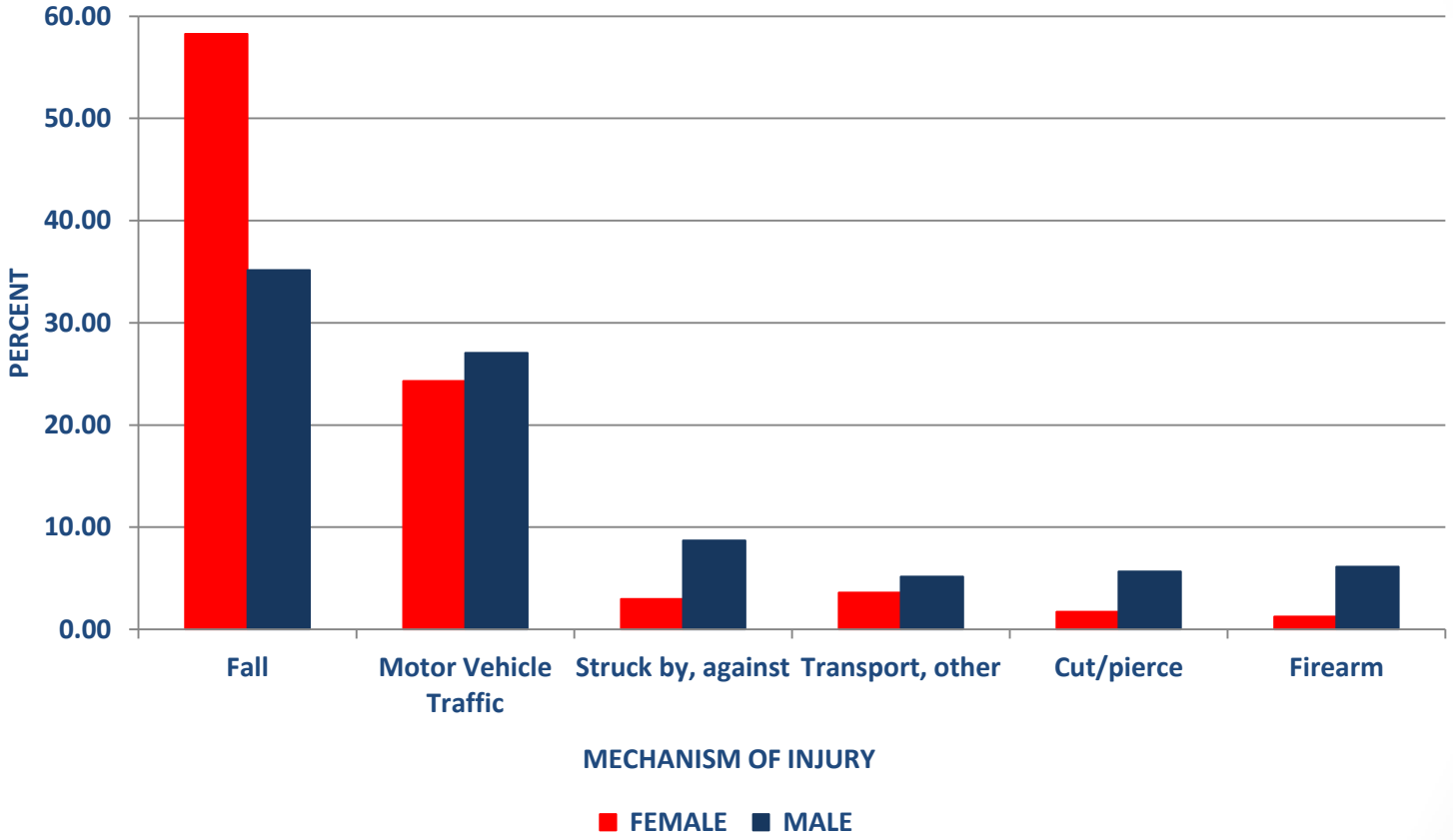


Figure 18B

Case Fatality Rate by Selected Mechanism of Injury and Gender

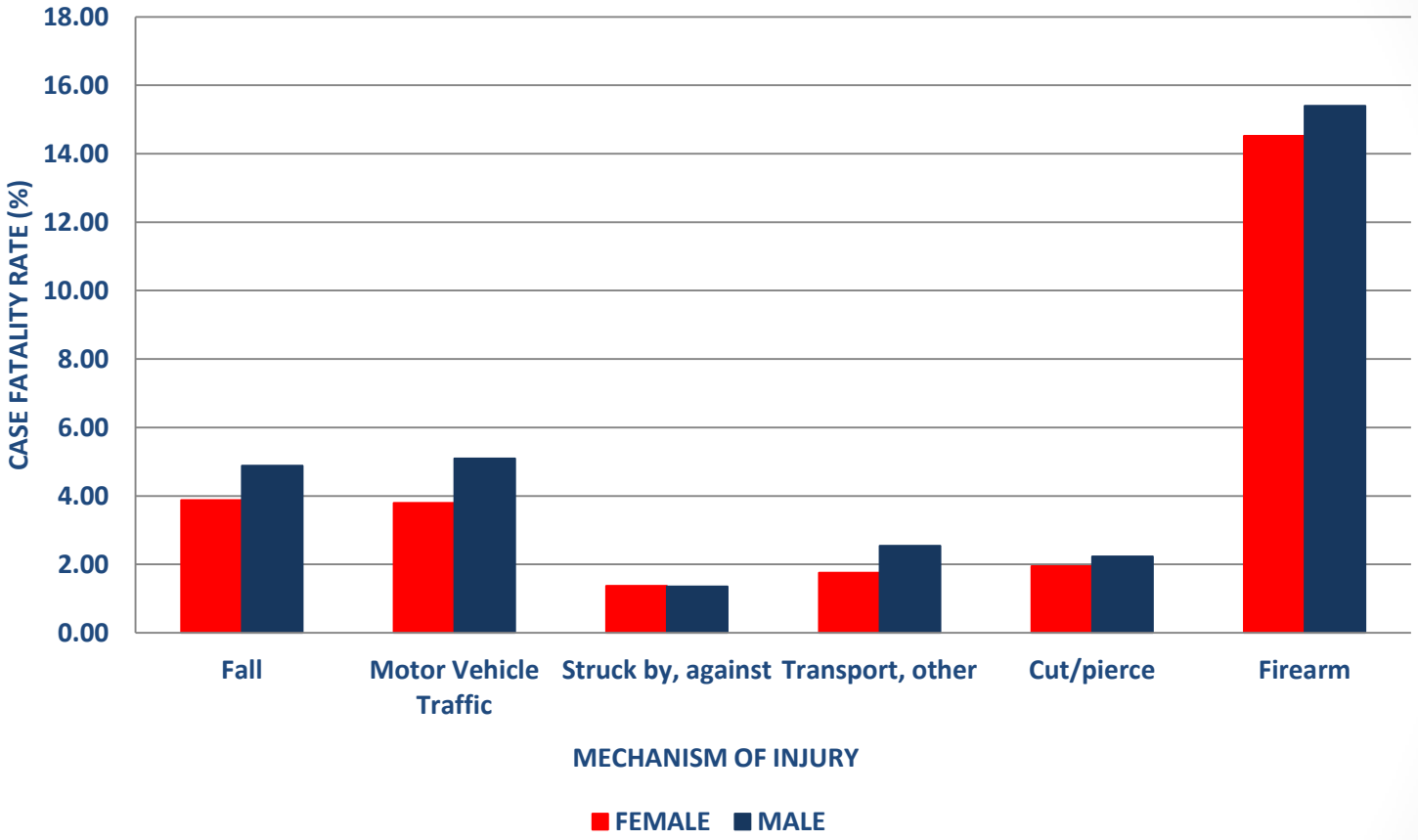


Table 19

Incidents by Comparative Injury Severity Scores (ISS)

ISS	LOCAL ISS		SUBMITTED ISS		AIS98 CROSSWALKED ISS		ICDMAP-90 ISS	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
1-8	430,898	49.99	425,149	49.33	390,386	45.29	414,443	48.09
9-15	282,756	32.81	278,767	32.34	281,763	32.69	234,676	27.23
16-24	84,529	9.81	81,785	9.49	119,166	13.83	128,776	14.94
>24	54,654	6.34	52,923	6.14	66,998	7.77	43,079	5.00
NK/NR	9,051	1.05	23,264	2.70	3,575	0.41	40,914	4.75
Total	861,888	100.00	861,888	100.00	861,888	100.00	861,888	100.00

Injury Severity Score definitions can be found in Appendix B.

Figure 19

Incidents by Comparative Injury Severity Scores (ISS)

Injury Severity Score definitions can be found in Appendix B.

Table 20

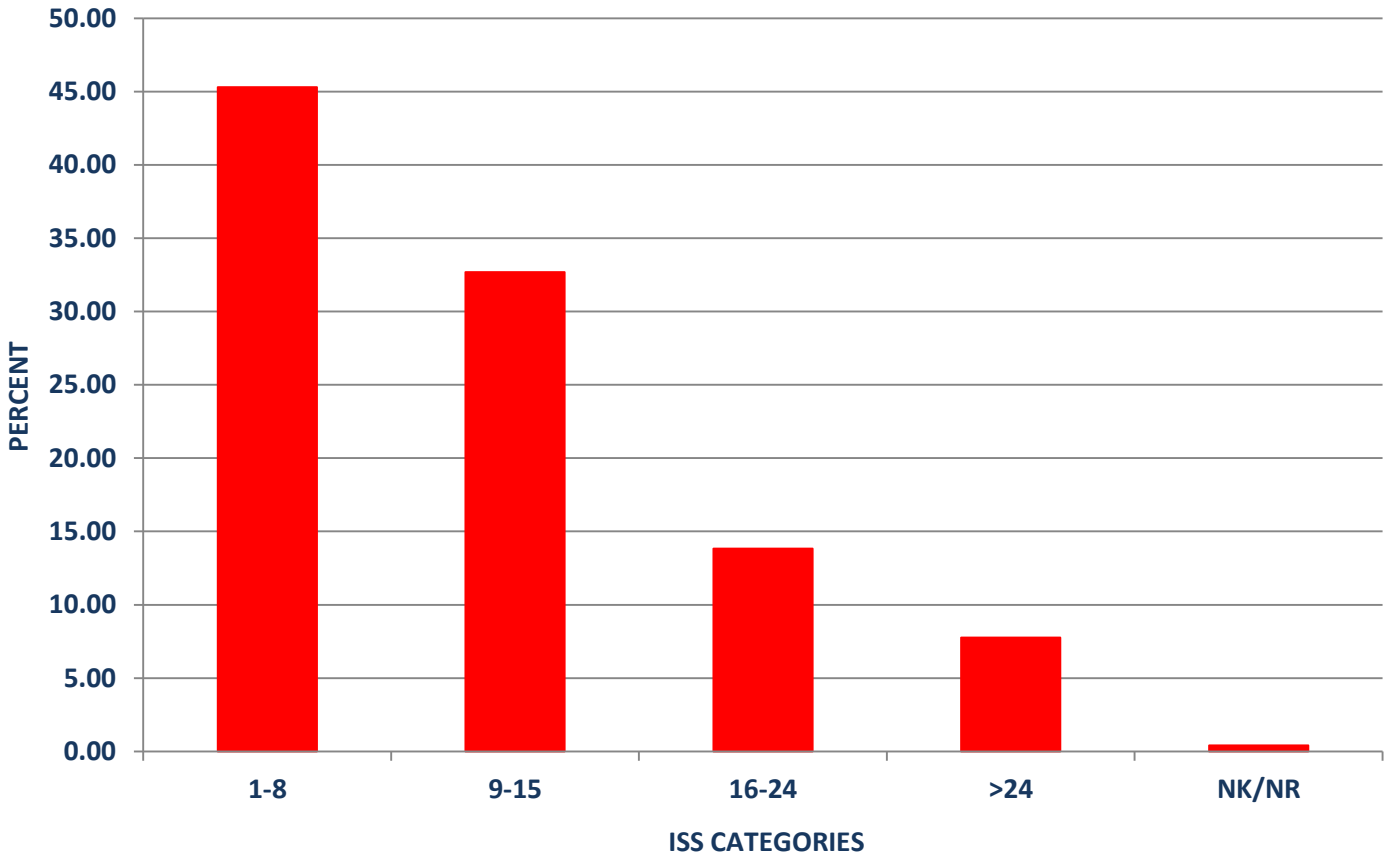
Incidents and Case Fatality Rate by Injury Severity Score (ISS)

ISS	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
1-8	390,386	45.29	4,837	1.24
9-15	281,763	32.69	7,712	2.74
16-24	119,166	13.83	6,532	5.48
>24	66,998	7.77	18,470	27.57
NK/NR	3,575	0.41	274	7.66
Total	861,888	100.00	37,825	4.39

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Figure 20A

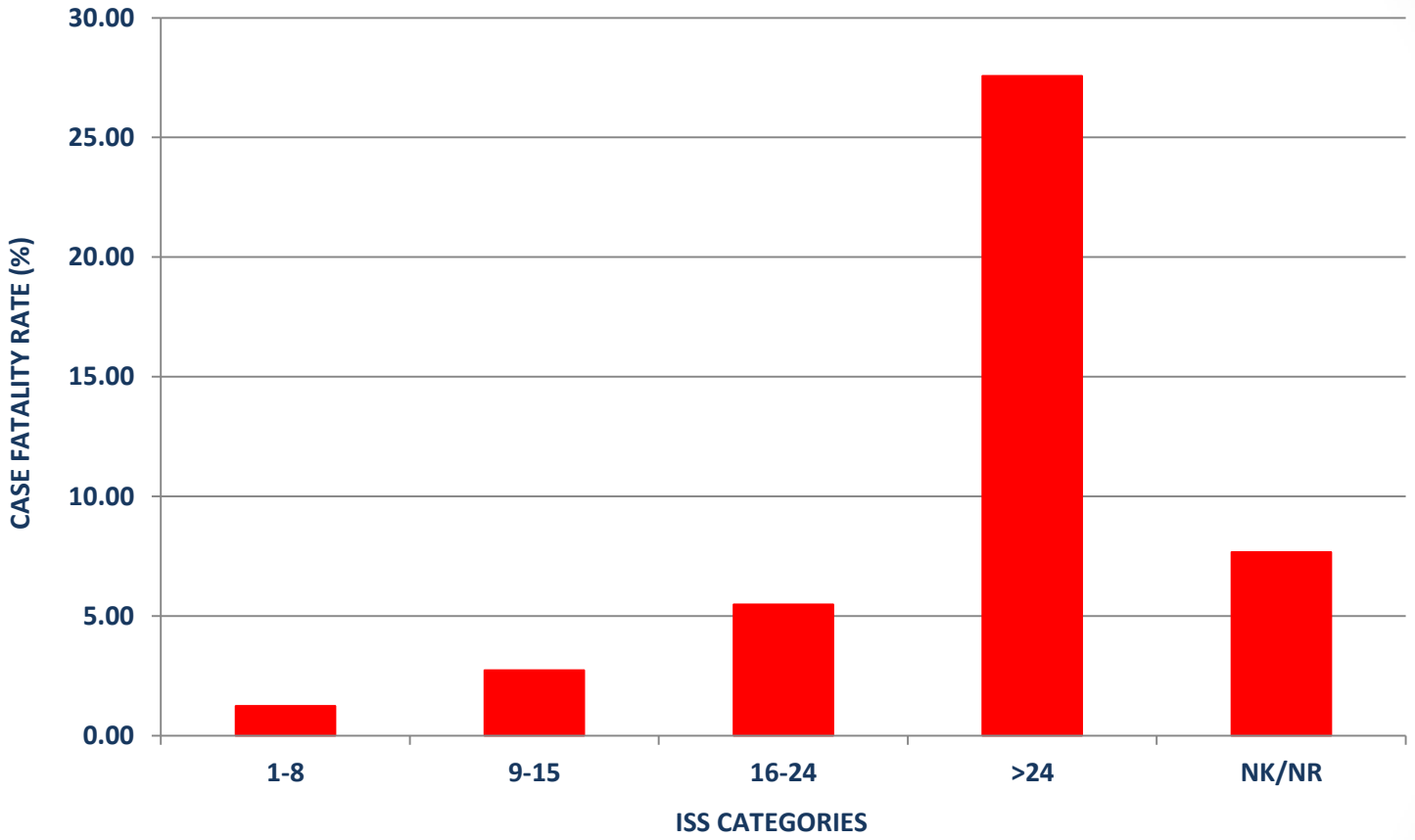
Incidents by Injury Severity Score (ISS)



Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Figure 20B

Case Fatality Rate by Injury Severity Score (ISS)



Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Table 21

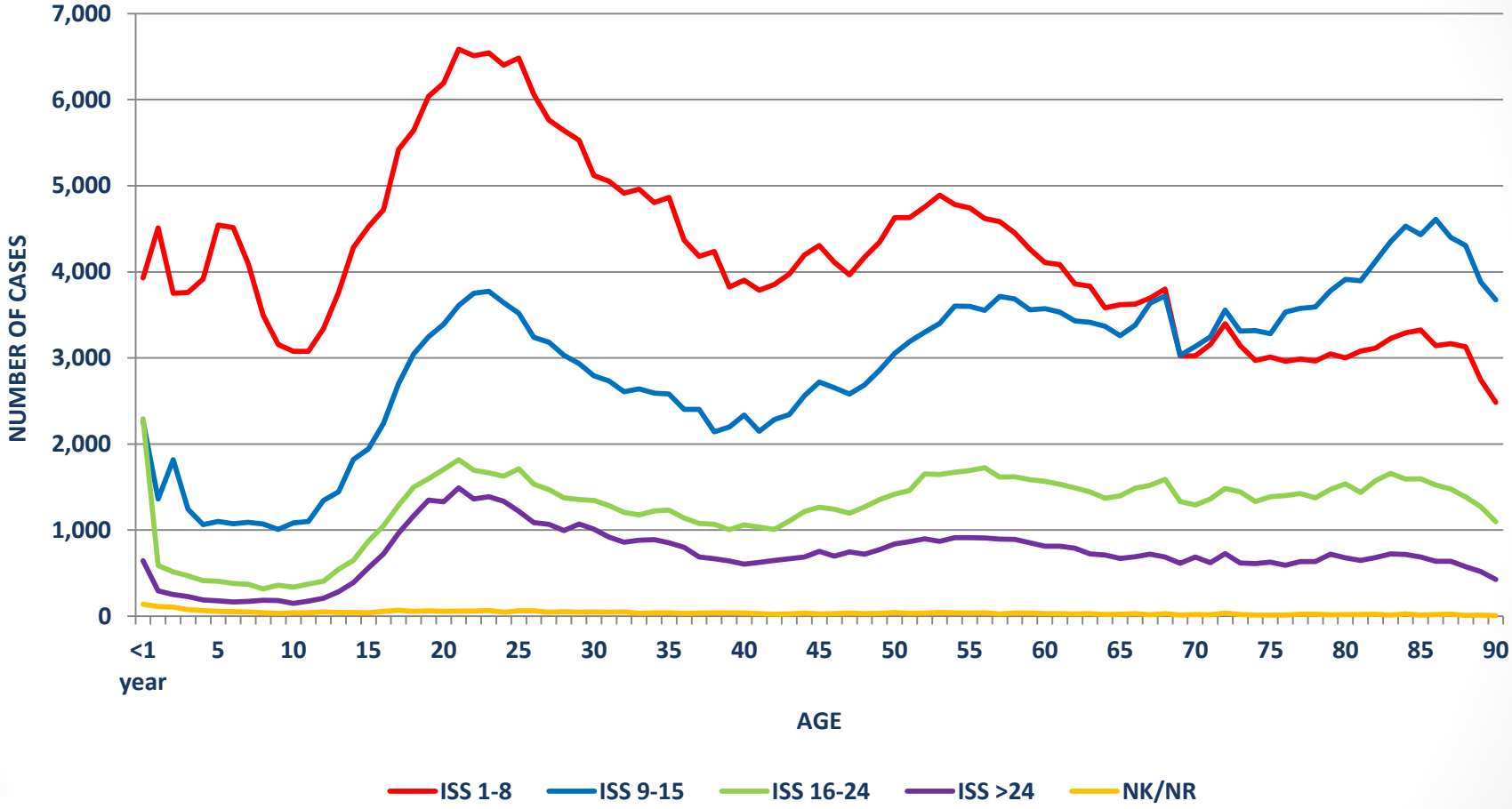
Injury Severity Score (ISS) by Age

AGE	ISS 1-8 NUMBER	ISS 9-15 NUMBER	ISS 16-24 NUMBER	ISS >24 NUMBER	ISS NK/NR NUMBER
<1 year	3,930	2,268	2,294	644	139
1-4	15,938	5,486	1,988	962	360
5-9	19,799	5,346	1,837	882	230
10-14	17,540	6,793	2,312	1,207	213
15-19	26,348	13,178	6,307	4,767	283
20-24	32,231	18,167	8,510	6,907	288
25-34	54,320	29,267	13,681	10,000	494
35-44	41,193	23,400	10,952	6,887	349
45-54	44,578	30,045	14,183	8,080	347
55-64	42,124	35,426	15,647	8,313	315
65-74	33,451	33,591	14,242	6,652	222
75-84	30,679	38,574	14,863	6,653	191
>84	28,227	40,200	12,345	5,030	130
NK/NR	28	22	5	14	14
Total	390,386	281,763	119,166	66,998	3,575

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Figure 21

Injury Severity Score (ISS) by Age



Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Table 22

Case Fatality Rate by Injury Severity Score (ISS) and Age

AGE	ISS 1-8 CASE FATALITY RATE	ISS 9-15 CASE FATALITY RATE	ISS 16-24 CASE FATALITY RATE	ISS >24 CASE FATALITY RATE	ISS NK/NR CASE FATALITY RATE
<1 year	0.51	0.97	2.18	16.93	1.44
1-4	1.01	1.15	3.27	25.26	2.22
5-9	1.87	0.84	1.31	19.73	2.17
10-14	1.51	1.00	1.25	16.07	1.88
15-19	0.60	1.09	2.81	21.94	5.65
20-24	0.70	1.59	4.05	24.29	9.03
25-34	0.72	1.54	3.93	24.25	8.50
35-44	0.70	1.51	3.60	24.87	7.74
45-54	0.72	1.53	3.55	24.85	10.66
55-64	0.96	1.75	4.33	27.85	12.70
65-74	1.37	2.67	6.15	30.22	9.91
75-84	2.40	3.98	8.92	36.68	9.95
>84	3.63	6.84	12.36	41.79	10.00
NK/NR	46.43	68.18	40.00	92.86	92.86

Injury Severity Score tables are generated using AIS98 Crosswalked ISS. Injury Severity Score definitions can be found in Appendix B.

Table 23

Incidents by Work-Related Injuries

WORK-RELATED INJURY	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
No	783,626	90.92	35,390	4.52
Yes	34,358	3.99	717	2.09
Not Applicable	28,064	3.26	933	3.32
NK/NR	15,840	1.84	785	4.96
Total	861,888	100.00	37,825	4.39

Figure 23A

Incidents by Work-Related Injuries

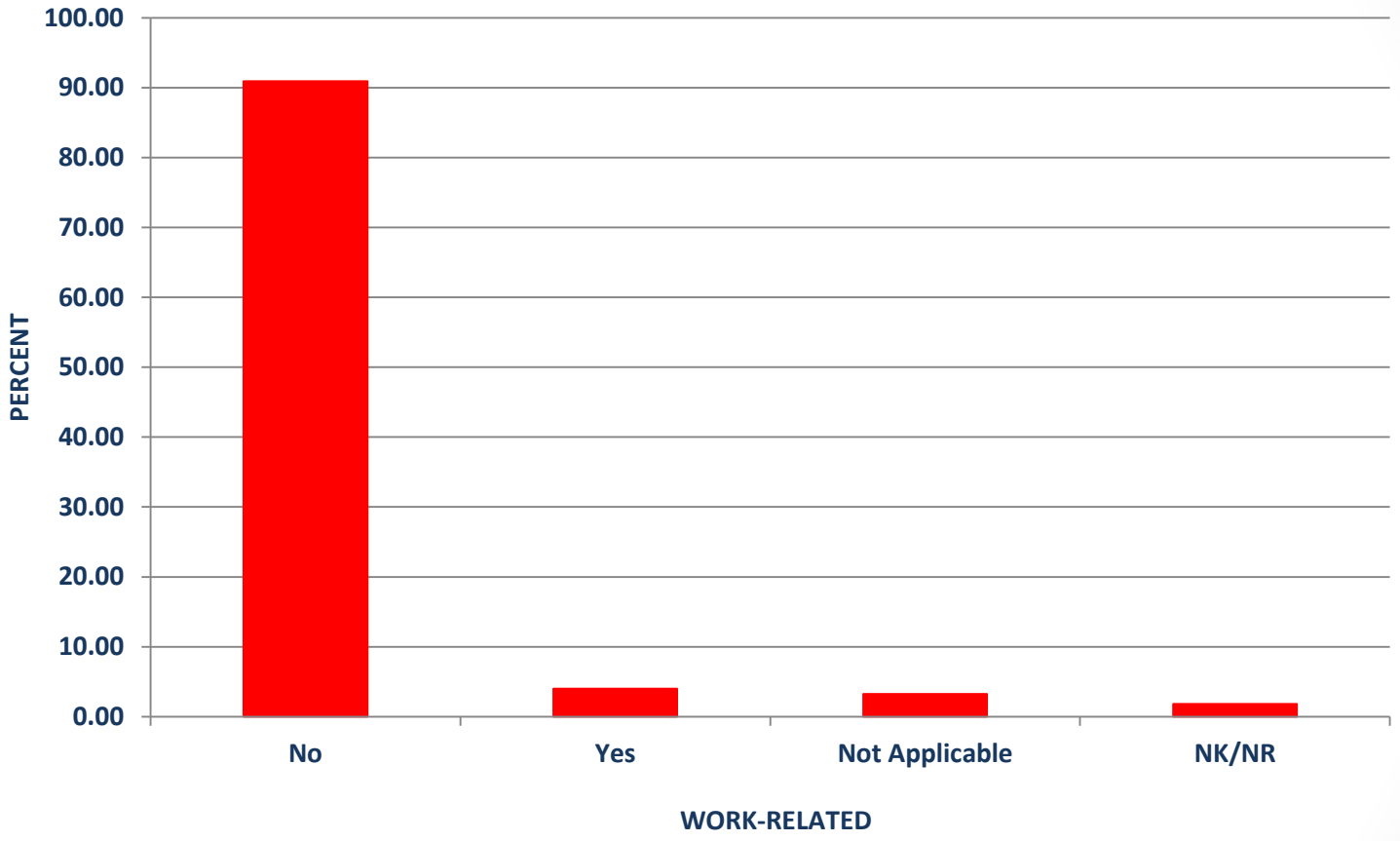


Figure 23B

Case Fatality Rate by Work-Related Injuries

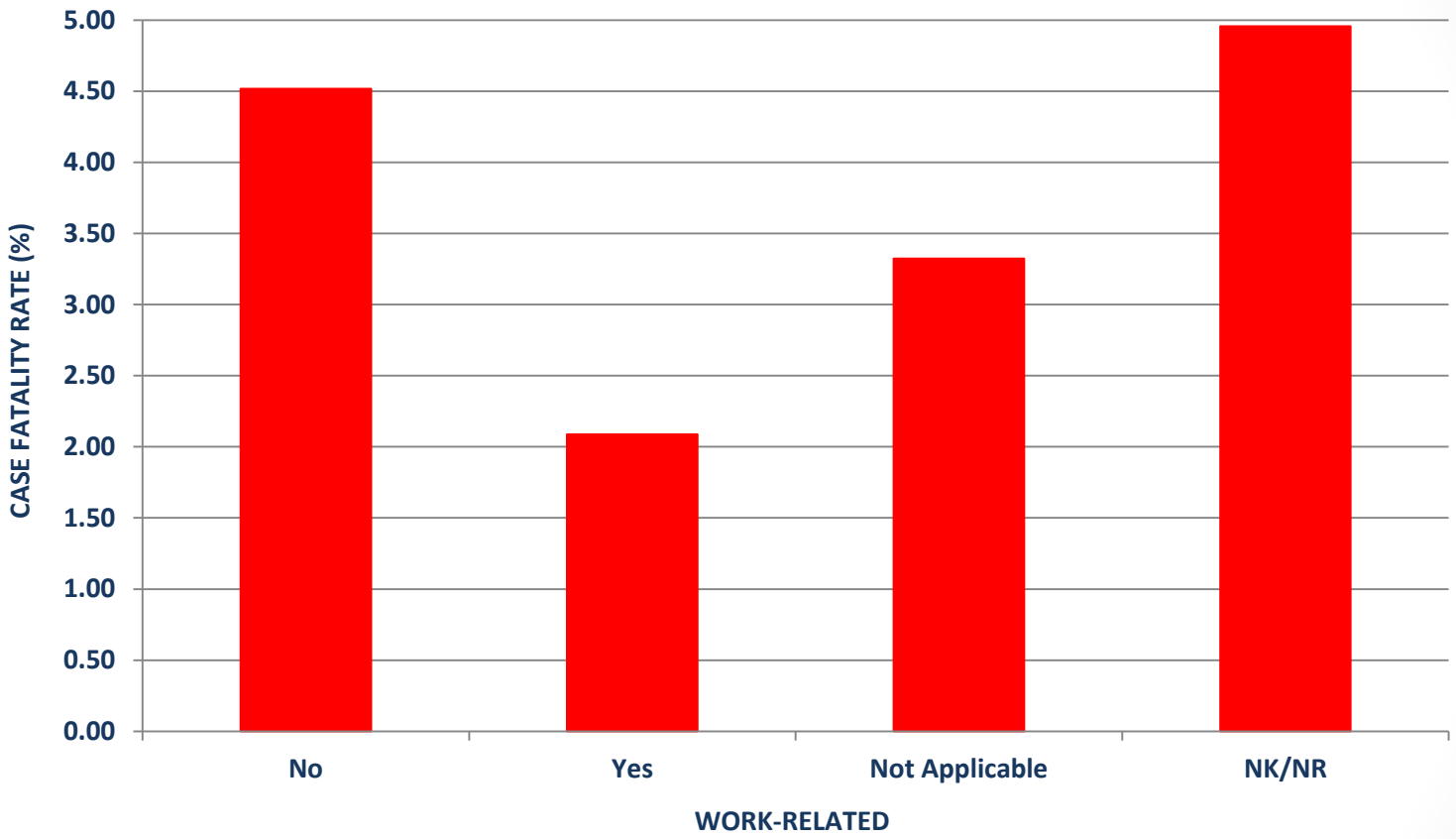


Table 24

Incidents and Case Fatality Rate by Intent

INTENT	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Unintentional	748,798	86.88	29,971	4.00
Assault	84,067	9.75	4,445	5.29
Self-inflicted	13,029	1.51	2,403	18.44
Undetermined	4,478	0.52	417	9.31
Other	1,511	0.18	186	12.31
NK/NR	10,005	1.16	403	4.03
Total	861,888	100.00	37,825	4.39

Figure 24A

Incidents by Intent

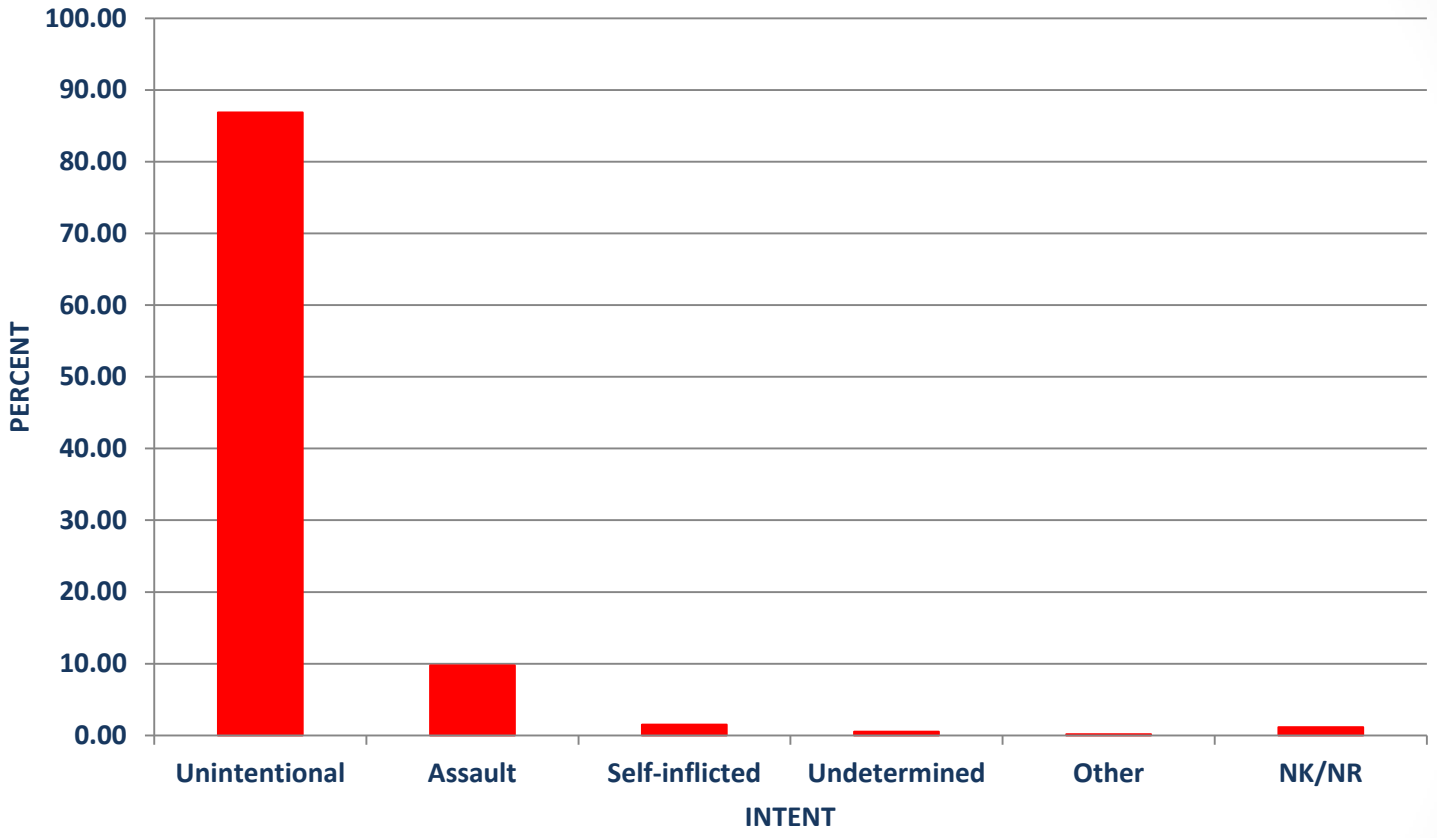


Figure 24B

Case Fatality Rate by Intent

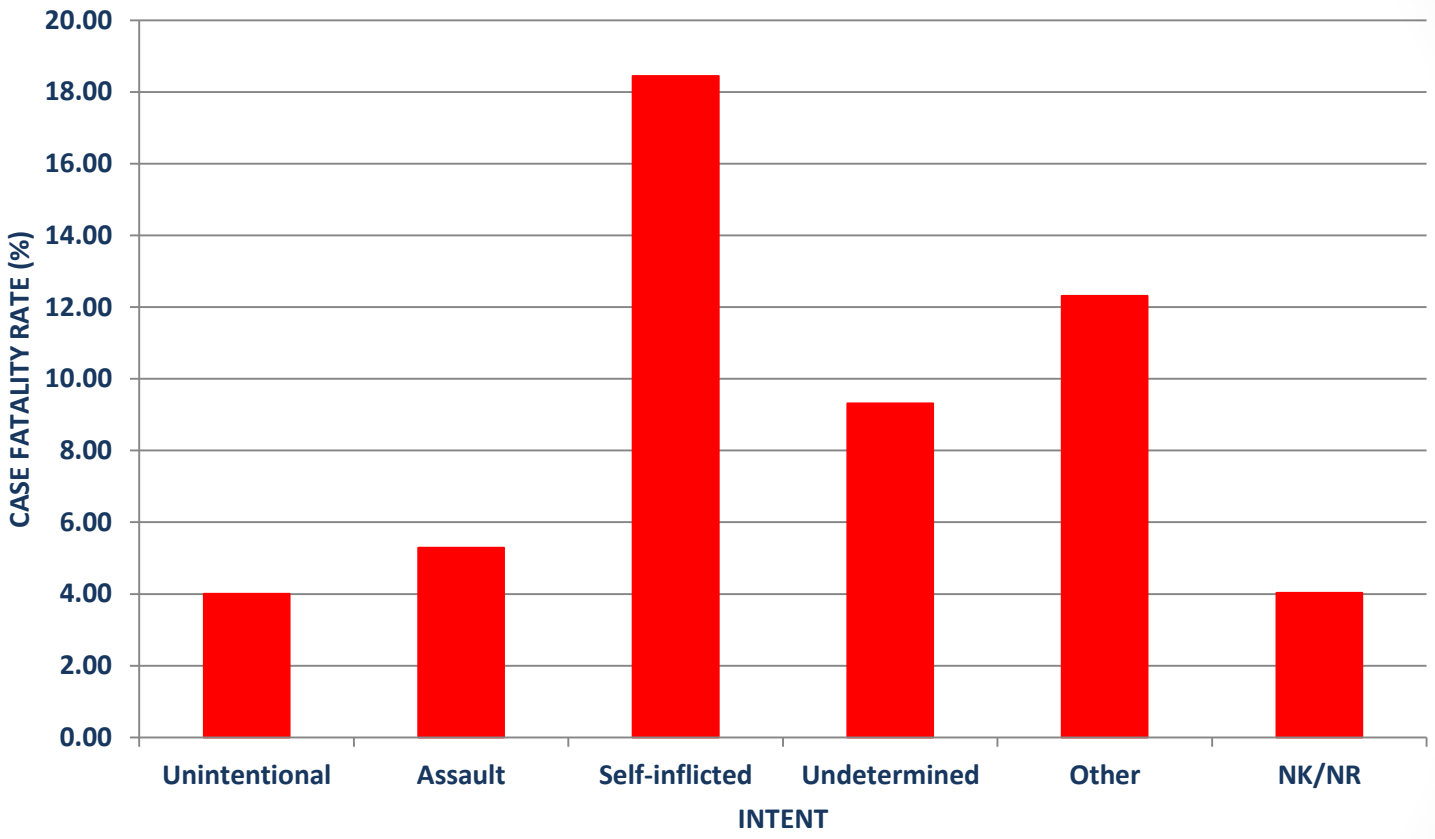


Table 25

Incidents and Case Fatality Rate by Location E-Code

LOCATION OF INJURY	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Home	320,550	37.19	15,713	4.90
Street	283,083	32.84	13,185	4.66
Unspecified	57,001	6.61	1,687	2.96
Recreation	45,956	5.33	603	1.31
Public Building	44,799	5.20	1,604	3.58
Other	33,396	3.87	1,130	3.38
Residential Institution	33,497	3.89	2,720	8.12
Industry	19,360	2.25	390	2.01
Farm	5,131	0.60	118	2.30
Mine	286	0.03	8	2.80
Not Applicable	1,165	0.14	59	5.06
NK/NR	17,664	2.05	608	3.44
Total	861,888	100.00	37,825	4.39

Figure 25A

Incidents by Location E-Code

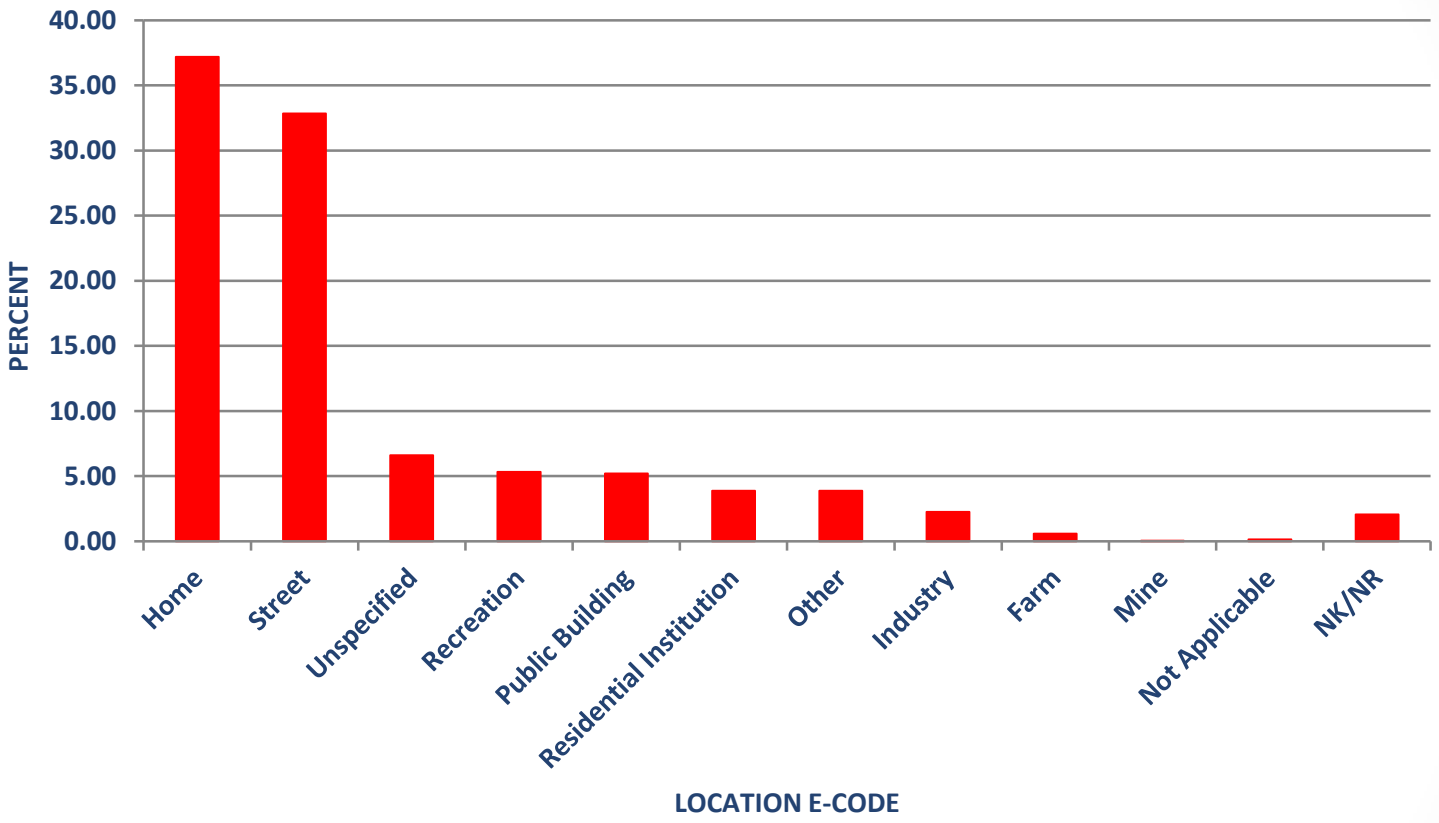


Figure 25B

Case Fatality Rate by Location E-Code

Table 26

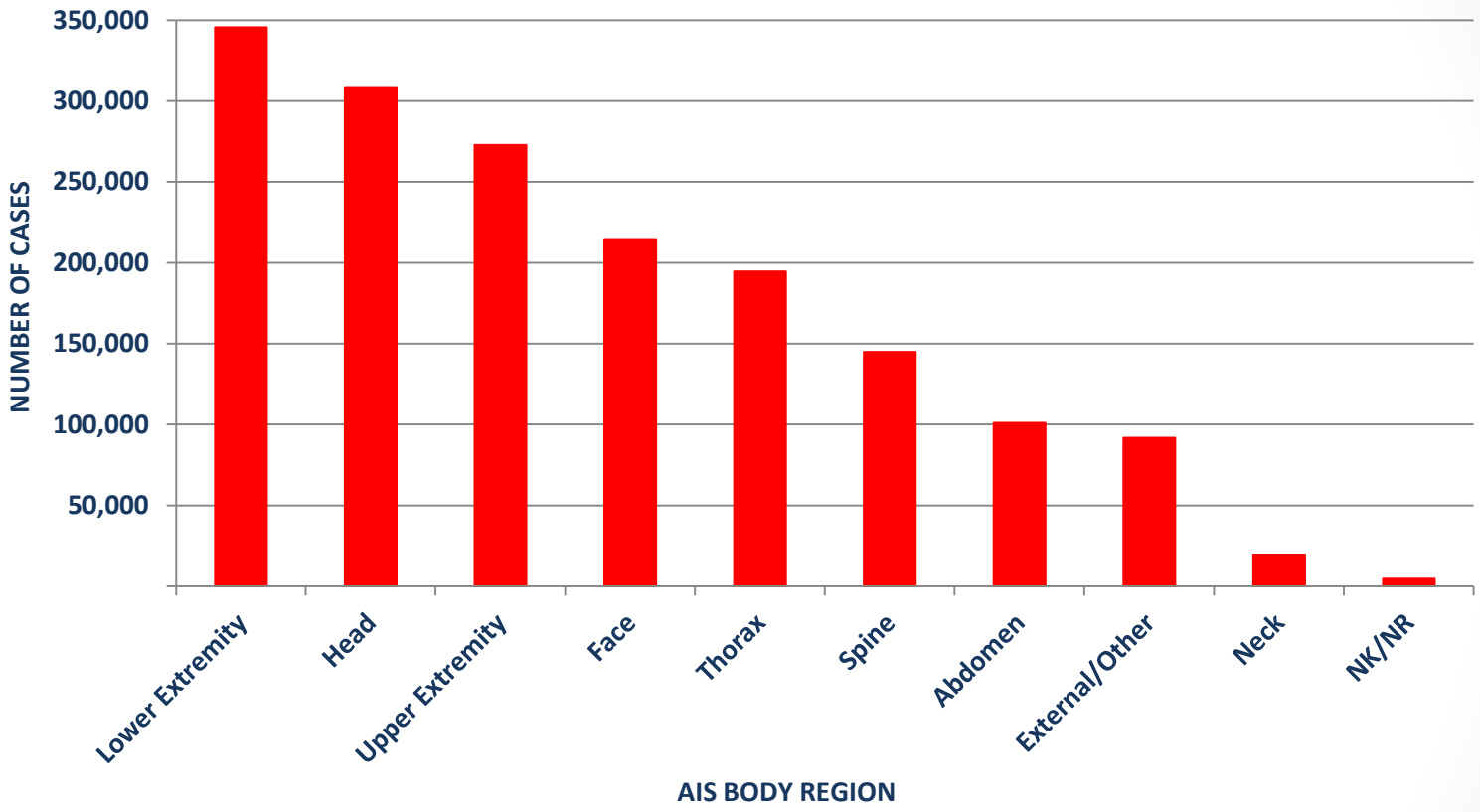
Incidents by AIS Body Region

AIS BODY REGION	NUMBER	PERCENT
Lower Extremity	345,558	40.09
Head	308,109	35.75
Upper Extremity	272,845	31.66
Face	214,693	24.91
Thorax	194,622	22.58
Spine	144,909	16.81
Abdomen	100,996	11.72
External/Other	91,787	10.65
Neck	19,696	2.29
NK/NR	4,769	0.55

A patient can have injuries in multiple body regions.

Figure 26

Incidents by AIS Body Region



An incident may involve multiple organ systems, and a patient will then be counted for each of the organ systems in which there is an injury.

Table 27

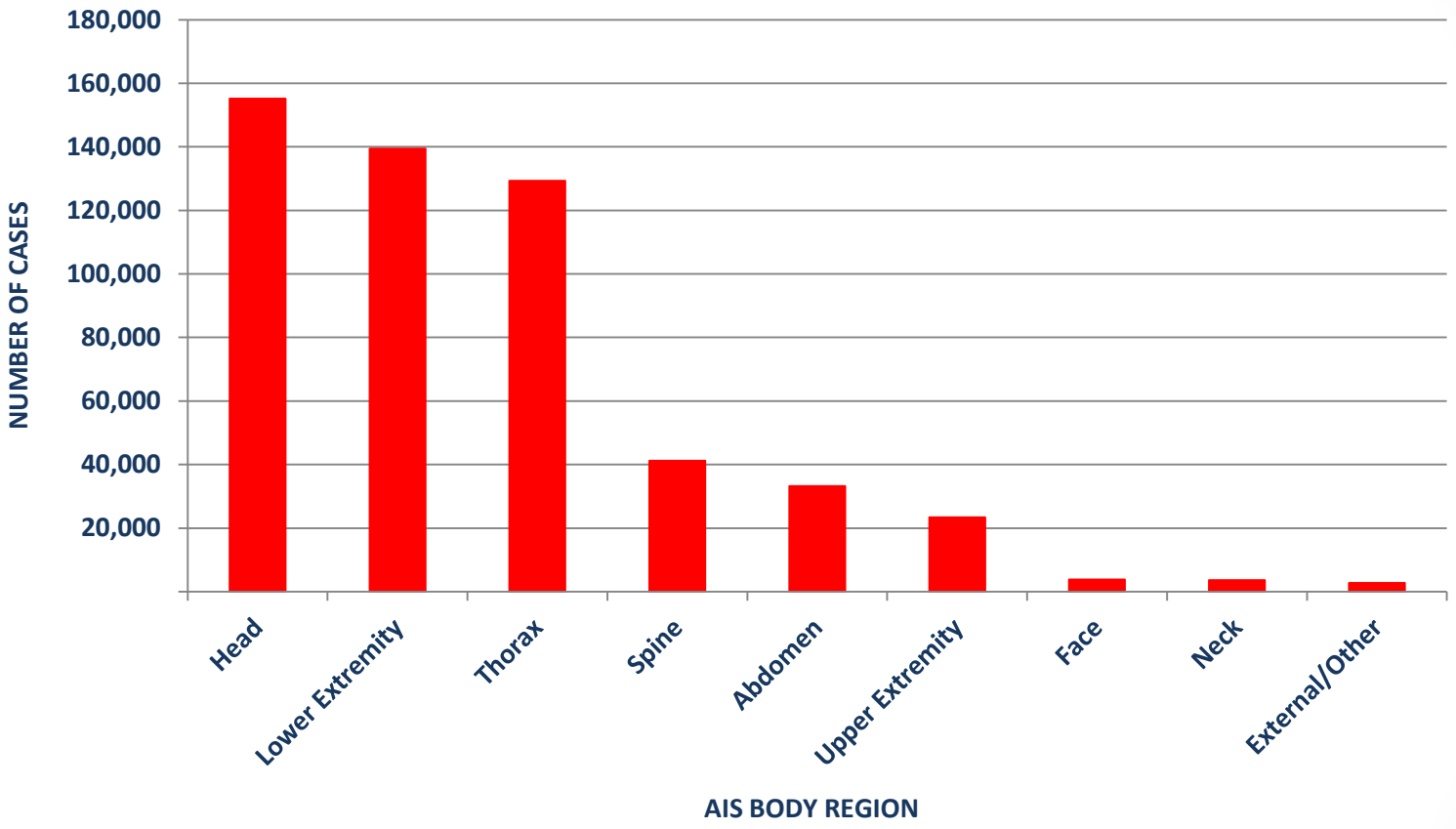
Incidents and Case Fatality Rate with AIS ≥ 3 by AIS Body Region

AIS BODY REGION	NUMBER	PERCENT	CASE FATALITY RATE
Head	155,175	18.00	12.72
Lower Extremity	139,405	16.17	5.11
Thorax	129,338	15.01	9.53
Spine	41,214	4.78	8.27
Abdomen	33,194	3.85	12.87
Upper Extremity	23,438	2.72	4.47
Face	3,877	0.45	14.91
Neck	3,600	0.42	17.36
External/Other	2,760	0.32	16.67

An incident may involve multiple organ systems, and a patient will then be counted for each of the organ systems in which there is an injury.

Figure 27A

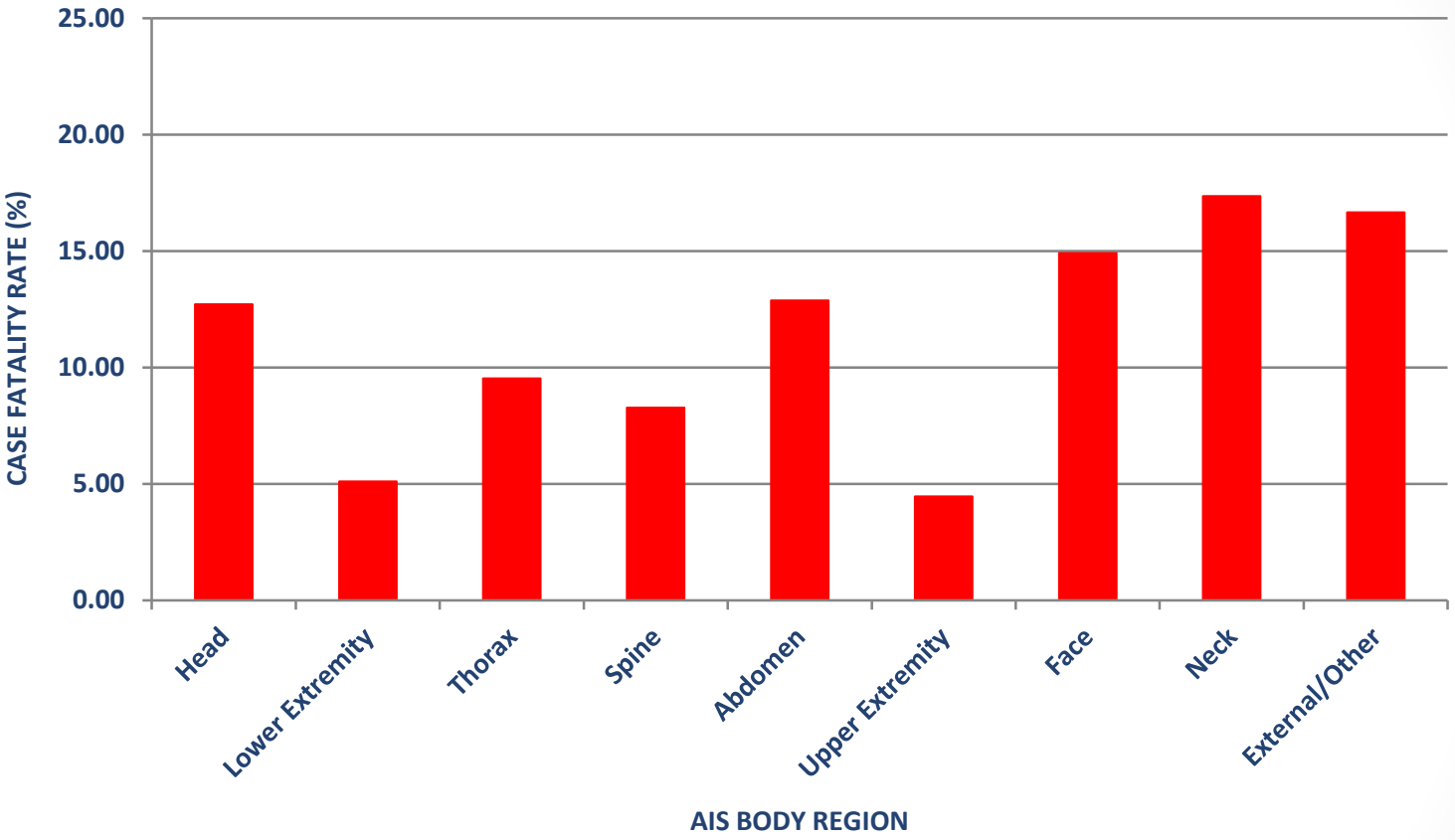
Incidents with AIS ≥ 3 by AIS Body Region



An incident may involve multiple organ systems, and a patient will then be counted for each of the organ systems in which there is an injury.

Figure 27B

Case Fatality Rate for AIS ≥ 3 AIS Body Region



An incident may involve multiple organ systems, and a patient will then be counted for each of the organ systems in which there is an injury.

Table 28

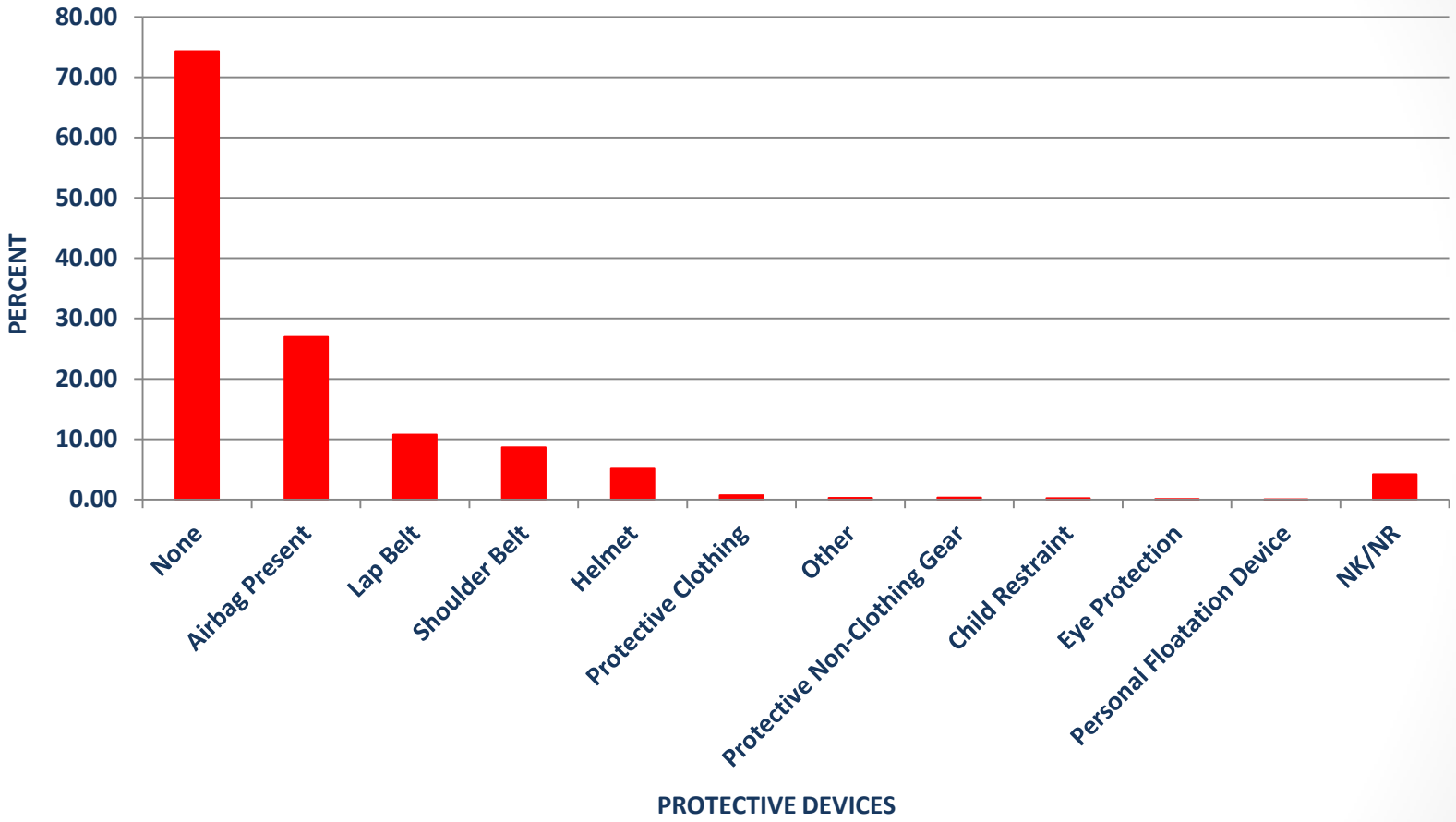
Incidents by Protective Devices

PROTECTIVE DEVICES	NUMBER	PERCENT
None	640,485	74.31
Airbag Present	232,607	26.99
Lap Belt	92,775	10.76
Shoulder Belt	74,747	8.67
Helmet (e.g. bicycle, skiing, motorcycle)	44,441	5.16
Protective Clothing (e.g., padded leather pants)	6,303	0.73
Other	2,595	0.30
Protective Non-Clothing Gear (e.g., shin guards)	2,805	0.33
Child Restraint (booster seat or child car seat)	2,228	0.26
Eye Protection	666	0.08
Personal Floatation Device	210	0.02
NK/NR	36,086	4.19

A patient can have multiple protective devices.

Figure 28

Incidents by Protective Devices



A patient can have multiple protective devices.

Outcomes Information

Table 29

Median Total Prehospital Time (in Minutes) by Mechanism of Injury

MECHANISM	NUMBER	MEDIAN
Fall	272,100	58
Motor Vehicle Traffic	195,381	53
Struck by, against	36,281	59
Transport, other	29,498	74
Firearm	28,254	36
Cut/pierce	25,426	42
Pedal cyclist, other	10,157	54
NK/NR	7,330	62
Other specified and classifiable	8,612	75
Unspecified	5,380	50
Machinery	5,421	71
Fire/flame	5,217	89
Hot object/substance	4,396	107
Natural/environmental, Bites and stings	3,091	74
Other specified, not elsewhere classifiable	2,582	55
Pedestrian, other	2,355	50
Natural/environmental, Other	1,615	82
Overexertion	1,387	64
Suffocation	758	51
Poisoning	266	58
Drowning/submersion	303	66
Adverse effects, medical care	126	59
Adverse effects, drugs	74	54

Figure 29

Median Total Prehospital Time (in Minutes) by Selected Mechanism of Injury

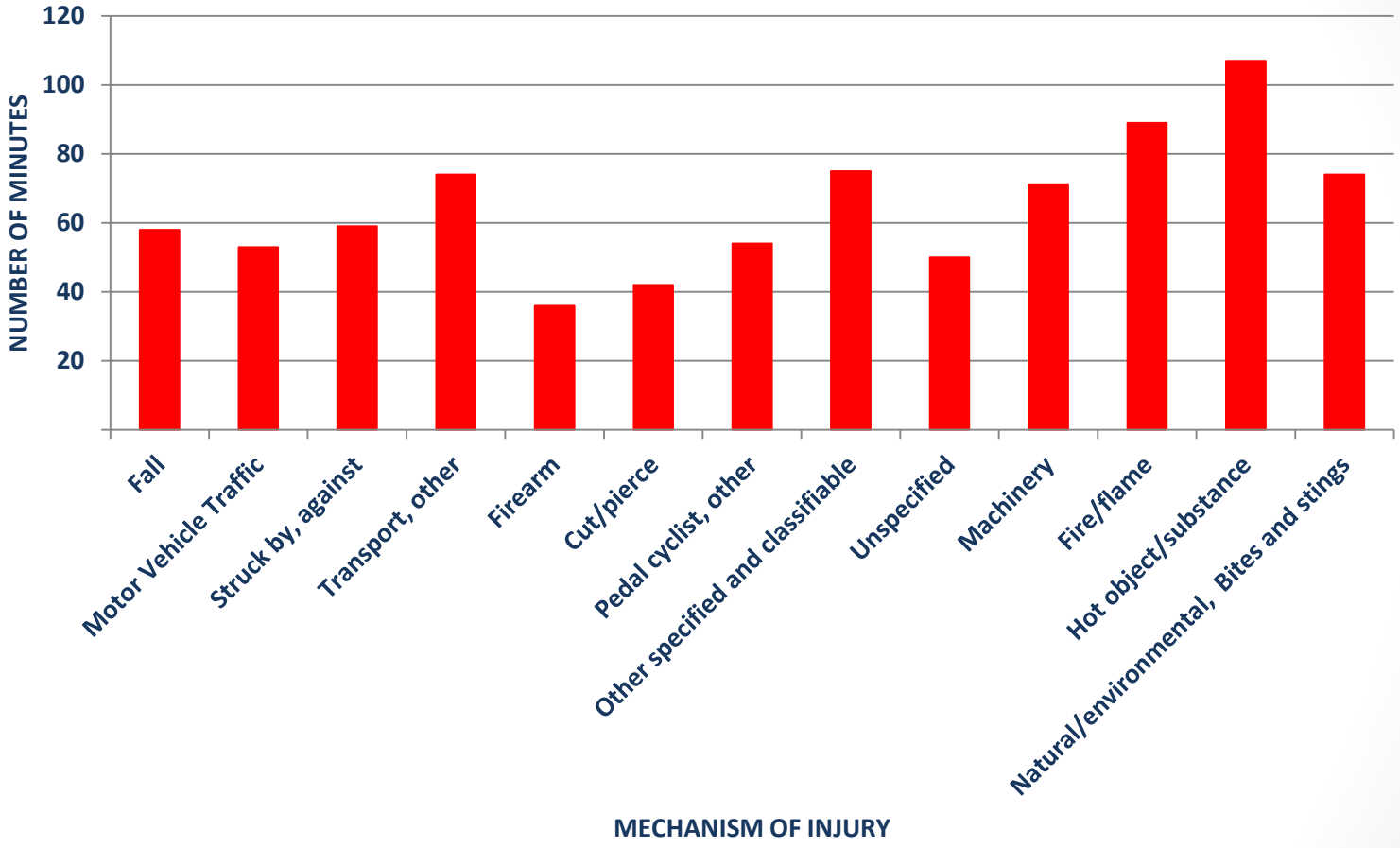


Table 30

Median Total Prehospital Time (in Minutes) by Injury Severity Score (ISS)

ISS	NUMBER	MEDIAN
1-8	265,747	53
9-15	222,249	58
16-24	97,200	60
>24	58,471	56
NK/NR	2,343	45

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Figure 30

Median Total Prehospital Time (in Minutes) by Injury Severity Score (ISS)

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Table 31

Median Length of Stay (LOS) in Days by Mechanism of Injury

MECHANISM	NUMBER	MEDIAN
Fall	379,568	4
Motor Vehicle Traffic	223,588	3
Struck by, against	55,581	2
Transport, other	39,202	3
Cut/pierce	35,516	2
Firearm	36,281	3
Pedal cyclist, other	14,693	3
Other specified and classifiable	13,664	3
NK/NR	9,993	3
Hot object/substance	8,387	2
Fire/flame	7,865	2
Unspecified	7,825	3
Machinery	8,091	2
Natural/environmental, Bites and stings	5,848	2
Other specified, not elsewhere classifiable	4,050	3
Overexertion	2,608	3
Pedestrian, other	2,838	4
Natural/environmental, Other	2,380	3
Suffocation	884	3
Poisoning	412	3
Drowning/submersion	375	3
Adverse effects, medical care	224	6
Adverse effects, drugs	102	6

Figure 31

Median Length of Stay (LOS) in Days by Selected Mechanism of Injury

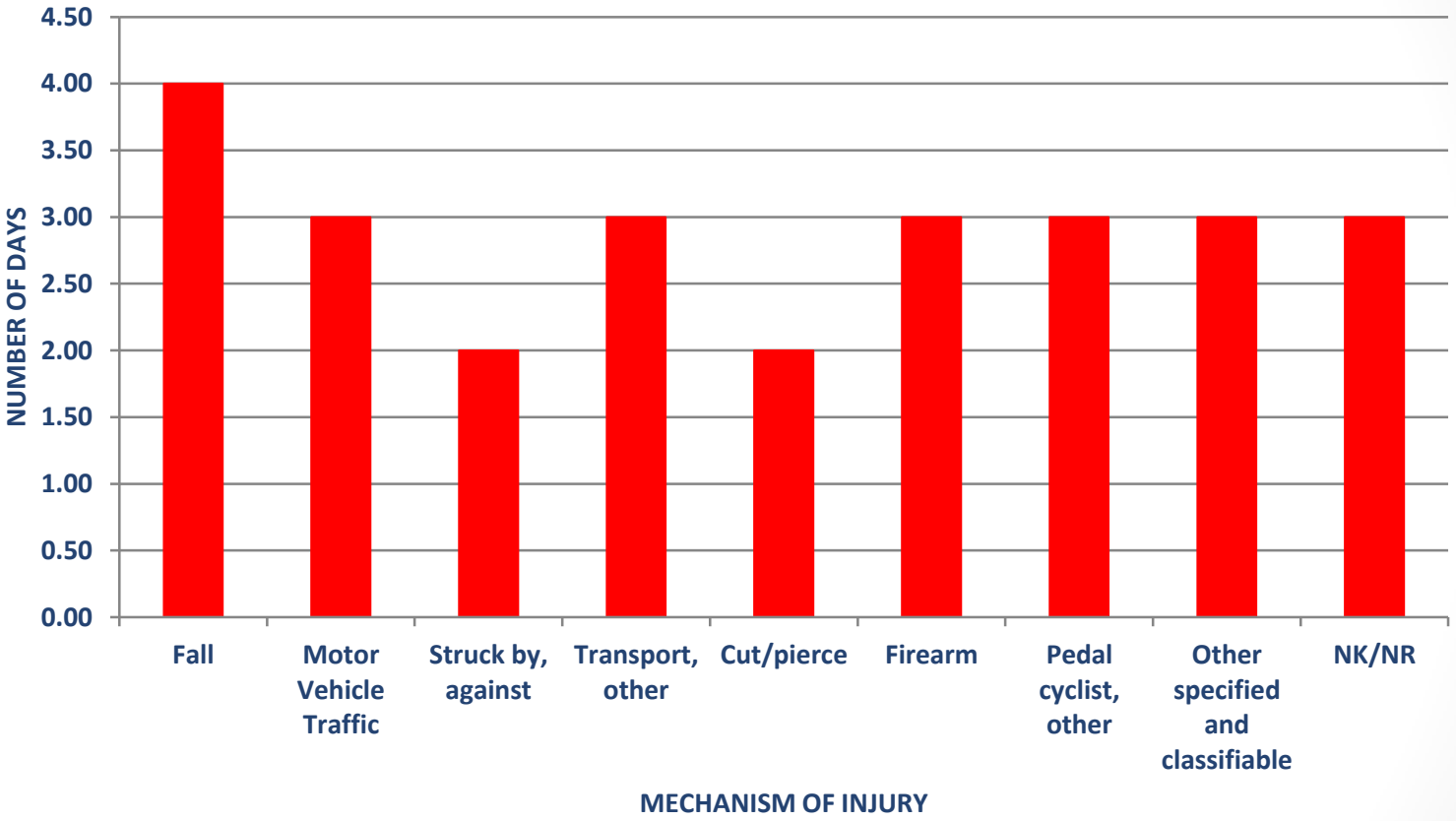


Table 32

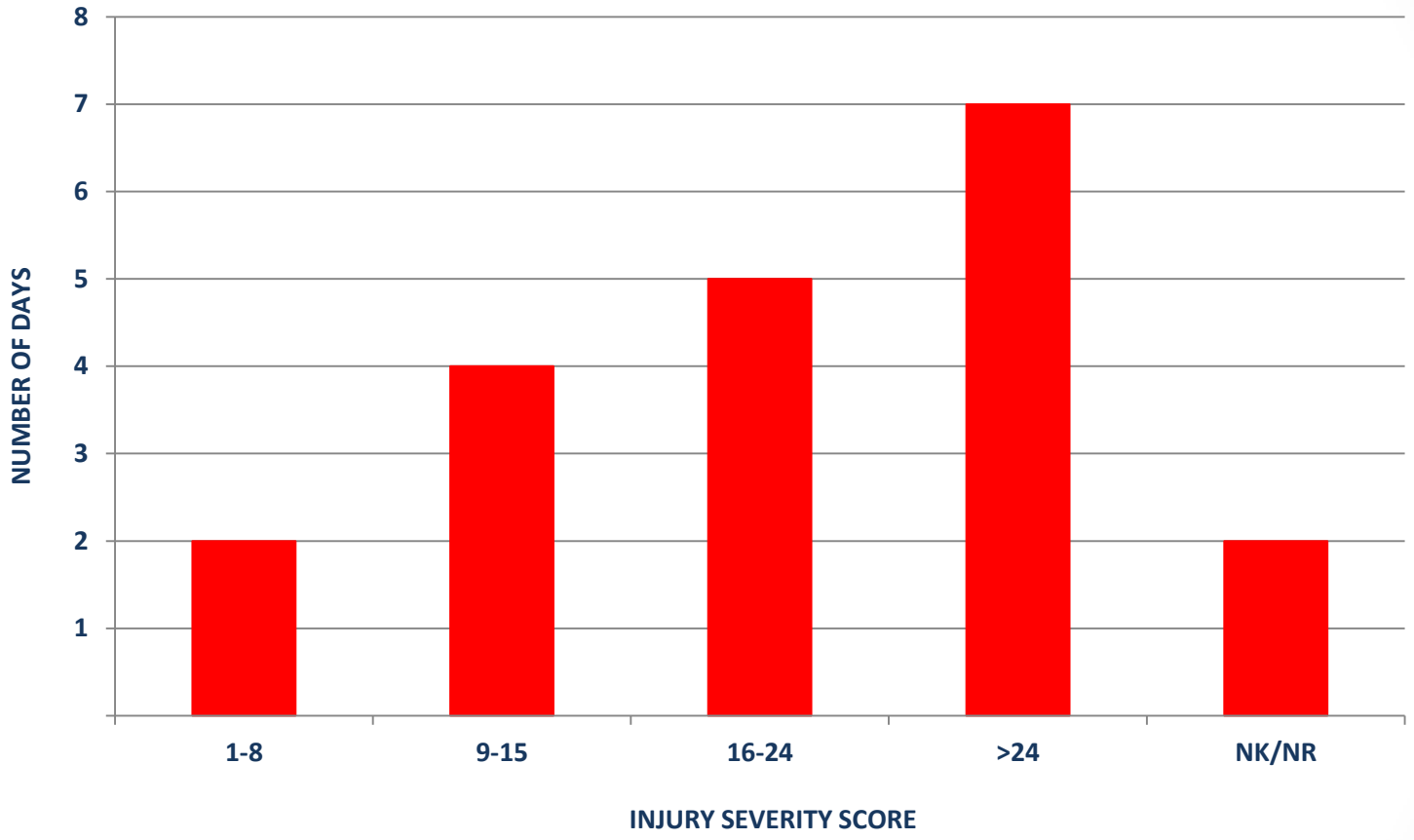
Median Length of Stay (LOS) in Days by Injury Severity Score (ISS)

ISS	NUMBER	MEDIAN
1-8	389,336	2
9-15	281,086	4
16-24	119,040	5
>24	66,951	7
NK/NR	3,562	2

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Figure 32

Median Length of Stay (LOS) in Days by Injury Severity Score (ISS)



Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Table 33

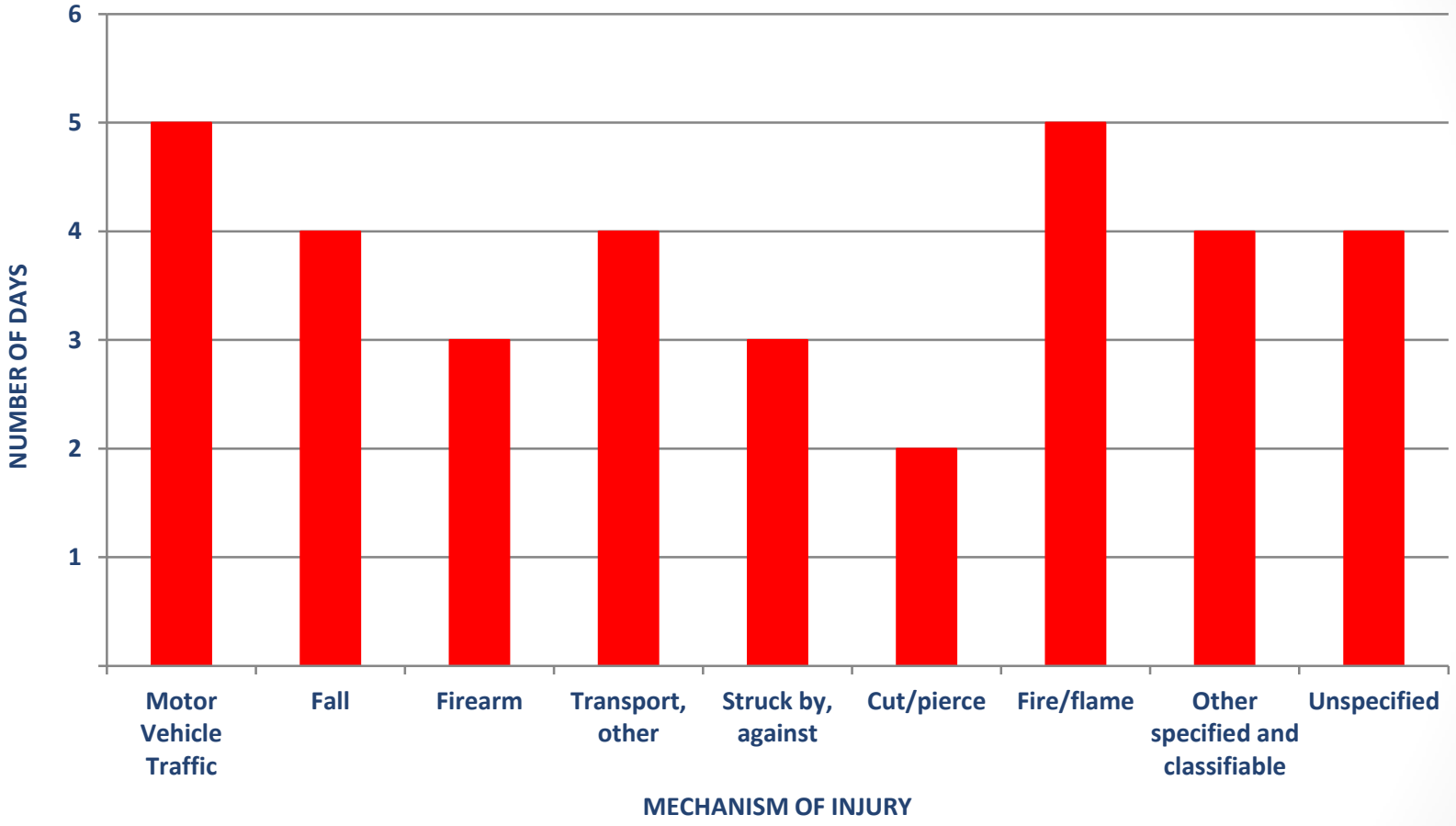
Median Ventilator Days by Mechanism of Injury

MECHANISM	NUMBER	MEDIAN
Motor Vehicle Traffic	25,470	5
Fall	17,526	4
Firearm	5,837	3
Transport, other	2,889	4
Struck by, against	2,445	3
Cut/pierce	1,849	2
Fire/flame	1,092	5
Other specified and classifiable	1,066	4
Unspecified	1,032	4
NK/NR	752	5
Pedal cyclist, other	573	4
Suffocation	331	3
Pedestrian, other	317	5
Machinery	294	4
Other specified, not elsewhere classifiable	260	3
Natural/environmental, Other	119	4
Hot object/substance	130	5
Drowning/submersion	110	4
Natural/environmental, Bites and stings	69	3
Poisoning	63	3
Adverse effects, medical care	17	8
Overexertion	17	3
Adverse effects, drugs	9	4

In patients with ventilator days > 0.

Figure 33

Median Ventilator Days by Selected Mechanism of Injury



In patients with ventilator days > 0.

Table 34

Median Ventilator Days by Injury Severity Score (ISS)

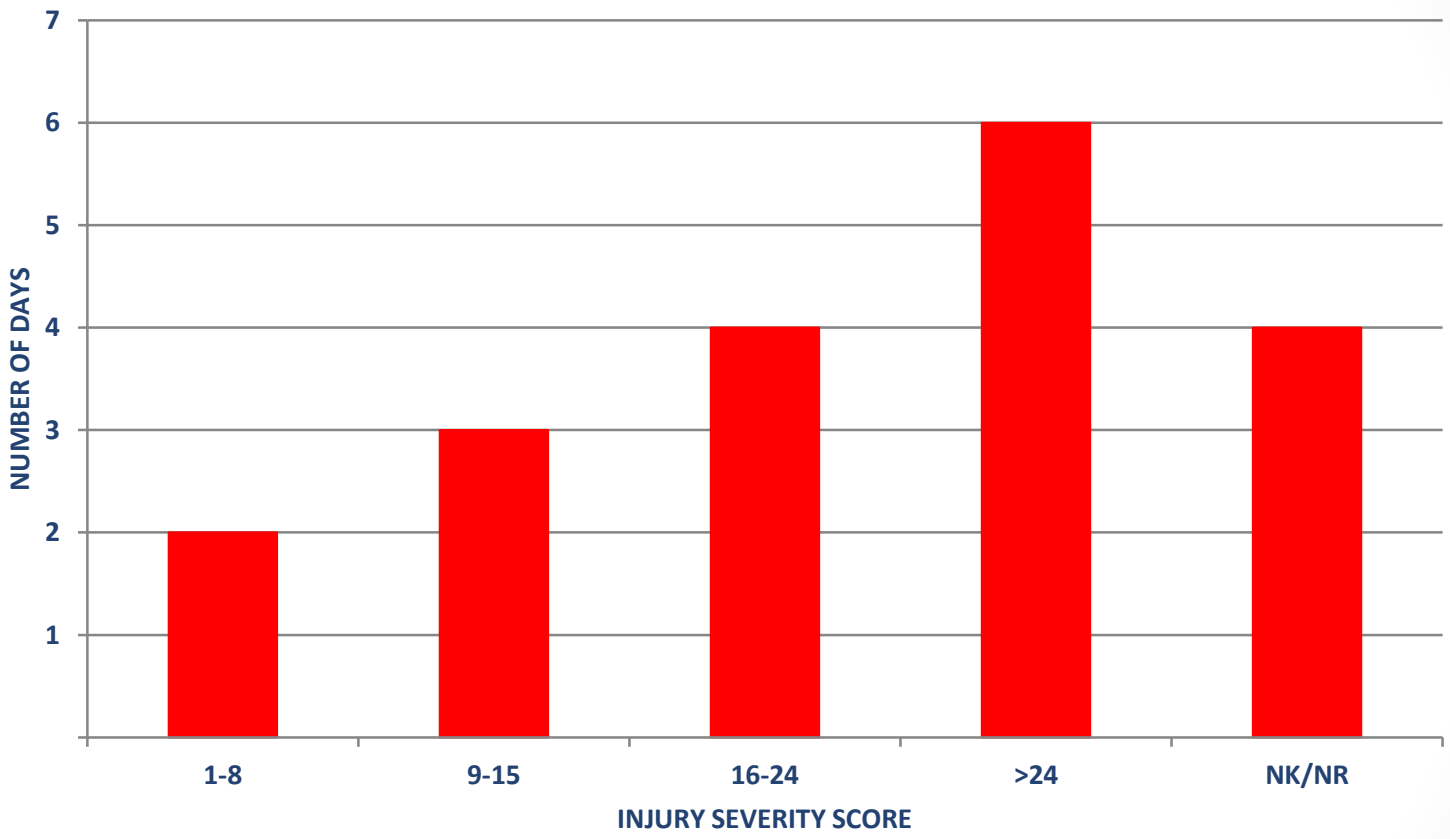
ISS	NUMBER	MEDIAN
1-8	6,401	2
9-15	11,465	3
16-24	16,271	4
>24	27,984	6
NK/NR	146	4

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

In patients with ventilator days > 0.

Figure 34

Median Ventilator Days by Injury Severity Score (ISS)



Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.
In patients with ventilator days > 0.

Table 35

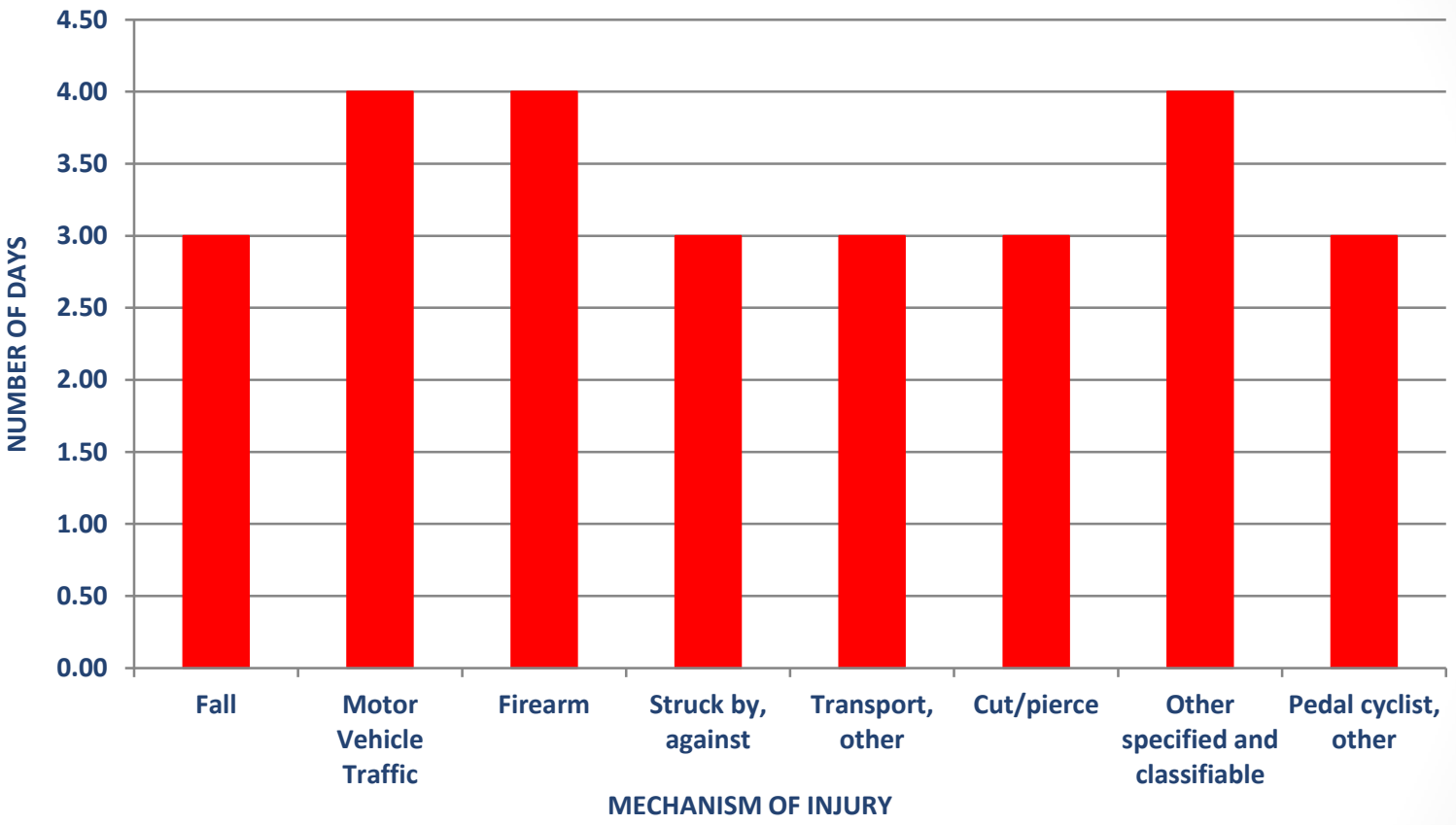
Median ICU Days by Mechanism of Injury

MECHANISM	NUMBER	MEDIAN
Fall	72,904	3
Motor Vehicle Traffic	60,261	4
Firearm	10,208	4
Struck by, against	8,407	3
Transport, other	8,624	3
Cut/pierce	4,853	3
Other specified and classifiable	2,490	4
Pedal cyclist, other	2,419	3
Unspecified	2,260	3
Fire/flame	2,019	6
NK/NR	2,365	3
Hot object/substance	846	4
Machinery	939	3
Pedestrian, other	759	4
Other specified, not elsewhere classifiable	673	3
Natural/environmental, Other	471	3
Suffocation	443	3
Natural/environmental, Bites and stings	406	2
Drowning/submersion	158	4
Overexertion	116	3
Poisoning	119	3
Adverse effects, medical care	64	4
Adverse effects, drugs	31	5

In patients with ICU days > 0.

Figure 35

Median ICU Days by Selected Mechanism of Injury



In patients with ICU days > 0.

Table 36

Median ICU Days by Injury Severity Score (ISS)

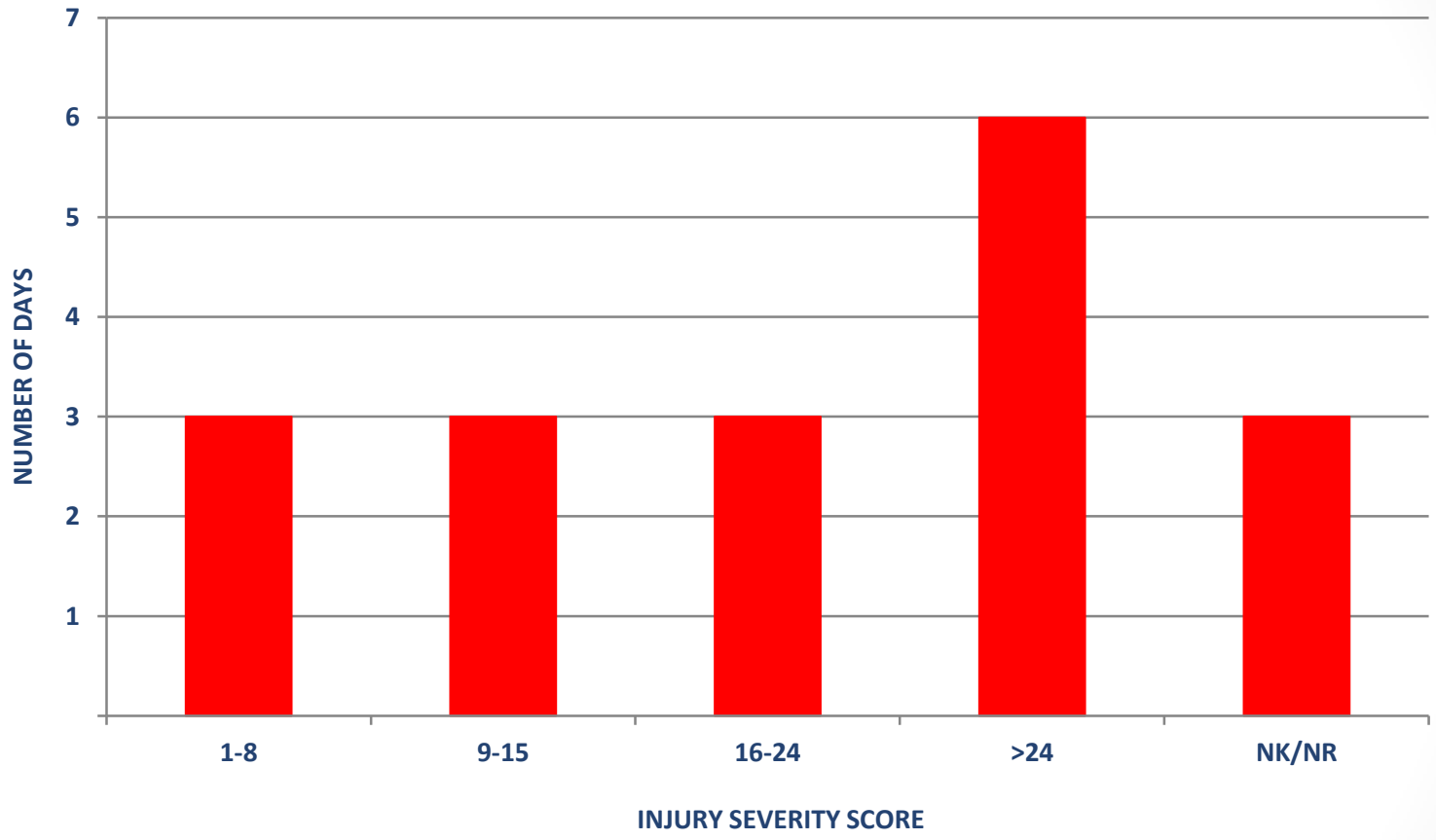
ISS	NUMBER	MEDIAN
1-8	25,796	3
9-15	51,682	3
16-24	57,975	3
>24	46,034	6
NK/NR	348	3

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

In patients with ICU days > 0.

Figure 36

Median ICU Days by Injury Severity Score (ISS)



Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

In patients with ICU days > 0.

Table 37

Incidents by ED Discharge Disposition

ED DISCHARGE DISPOSITION	NUMBER	PERCENT
Floor bed (general admission, non-specialty unit bed)	366,675	42.54
Intensive Care Unit (ICU)	157,522	18.28
Operating Room	96,252	11.17
Home without services	67,542	7.84
Telemetry/step-down unit (less acuity than ICU)	60,144	6.98
Transferred to another hospital	32,939	3.82
Observation unit (unit that provides < 24 hour stays)	28,710	3.33
Deceased/Expired	9,999	1.16
Other (jail, institutional care facility, mental health, etc.)	4,783	0.55
Left against medical advice	1,678	0.19
Home with services	1,811	0.21
Not Applicable	22,464	2.61
NK/NR	11,369	1.32
Total	861,888	100.00

Figure 37

Incidents by ED Discharge Disposition

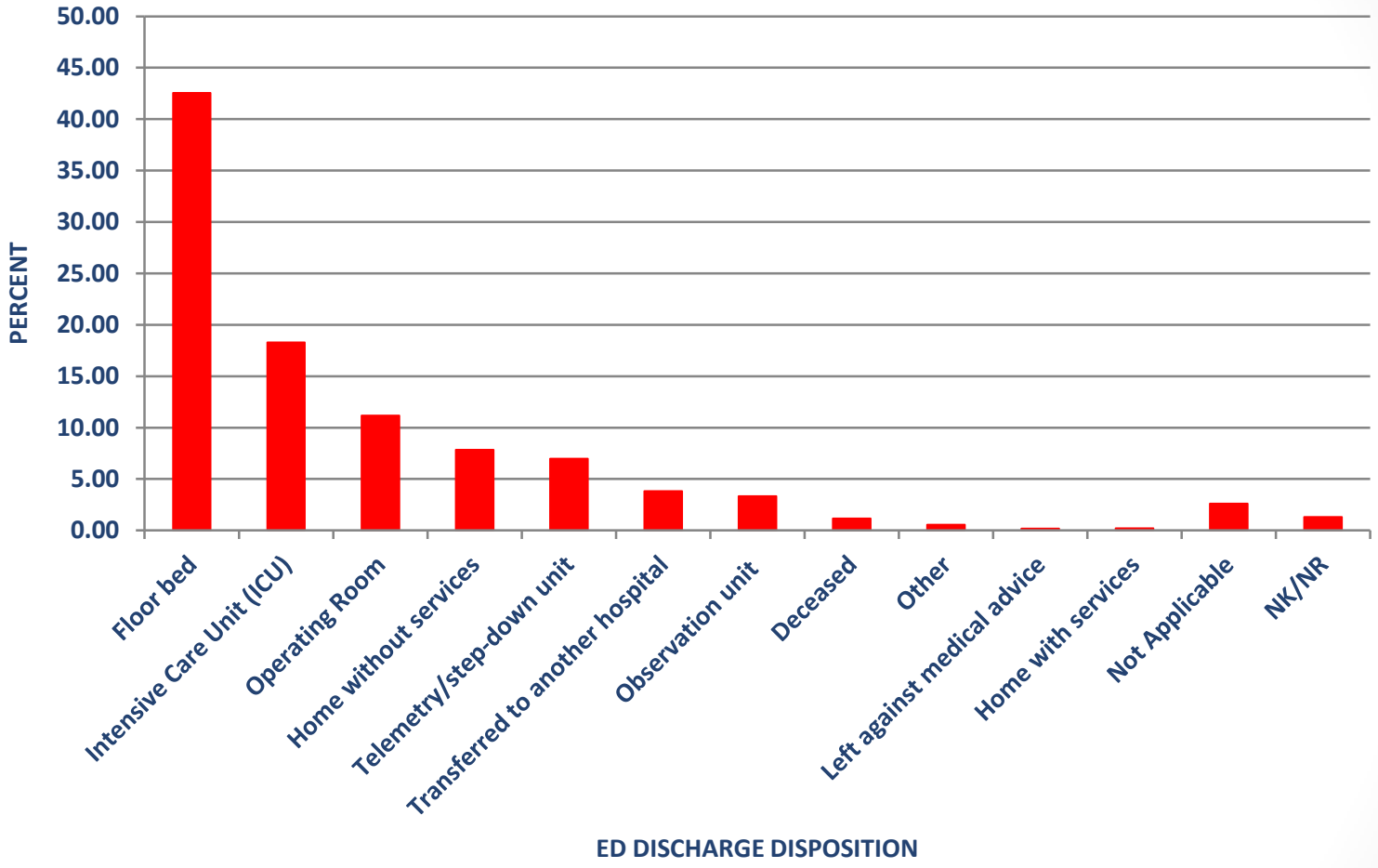


Table 38

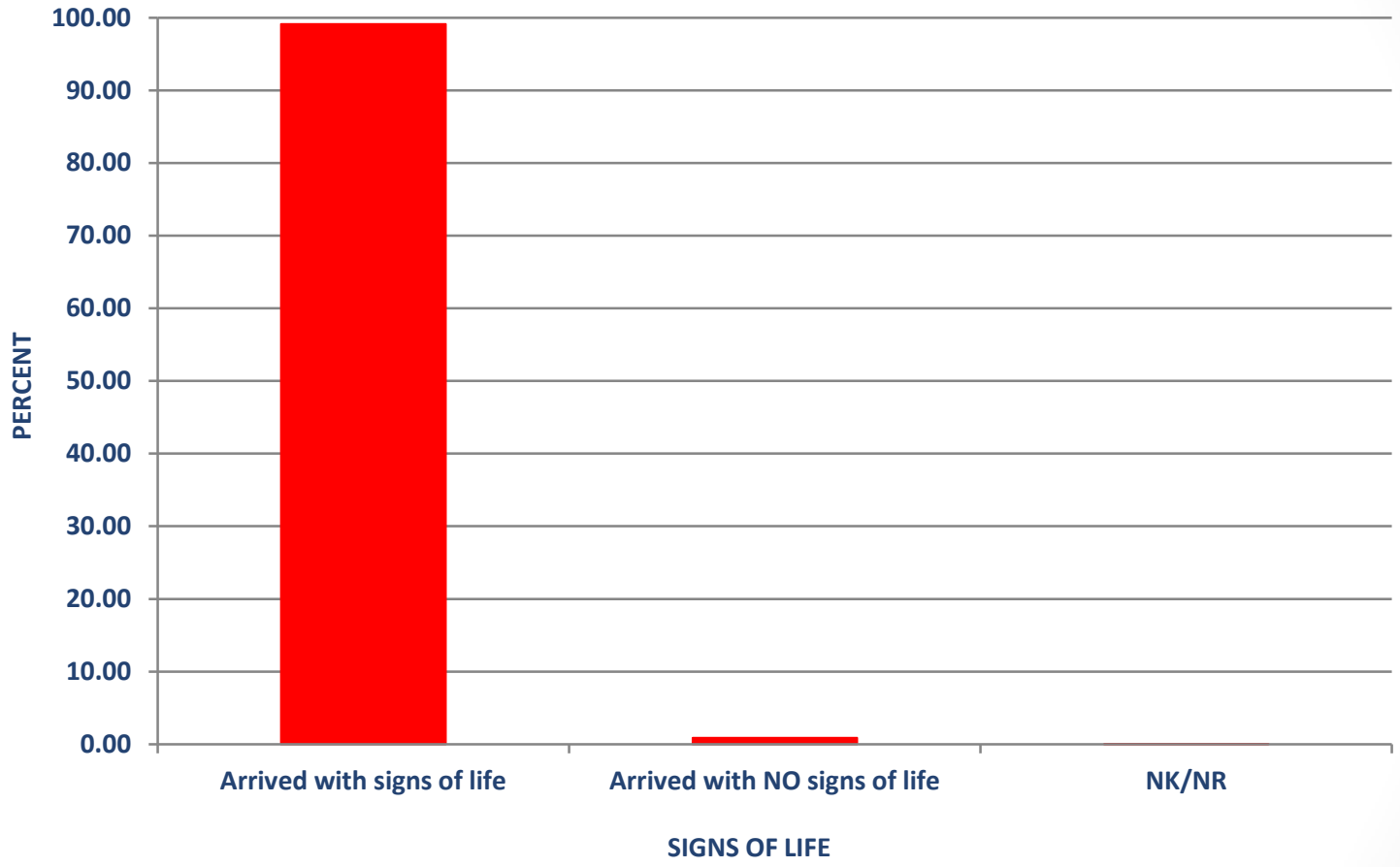
Signs of Life

SIGNS OF LIFE	NUMBER	PERCENT
Arrived with signs of life	854,319	99.12
Arrived with no signs of life	7,561	0.88
NK/NR	8	0.00
Total	861,888	100

Indication of whether patient arrived at ED/hospital with signs of life.

Figure 38

Signs of Life



Indication of whether patient arrived at ED/Hospital with signs of life.

Table 39

Incidents by Hospital Discharge Disposition

HOSPITAL DISCHARGE DISPOSITION	NUMBER	PERCENT
Discharged to home or self-care (routine discharge)	447,591	51.93
Discharged/transferred to skilled nursing facility	104,971	12.18
Discharged/transferred to inpatient rehab or designated unit	71,808	8.33
Discharge/transferred to home under care of organized home health service	48,677	5.65
Deceased/expired	22,689	2.63
Discharged/transferred to a short-term general hospital for inpatient care	10,315	1.20
Discharged/transferred to another type of institution not defined elsewhere	7,554	0.88
Left against medical advice or discontinued care	7,114	0.83
Discharged/transferred to hospice care	5,137	0.60
Discharged/transferred to a psychiatric hospital or psychiatric distinct part unit of a hospital	5,322	0.62
Discharged/transferred to long term care hospital	4,685	0.54
Discharged/transferred to court/law enforcement	4,603	0.53
Discharged/transferred to an intermediate care facility (ICF)	2,466	0.29
Not Applicable	118,752	13.78
NK/NR	204	0.02
Total	861,888	100

Figure 39

Incidents by Hospital Discharge Disposition

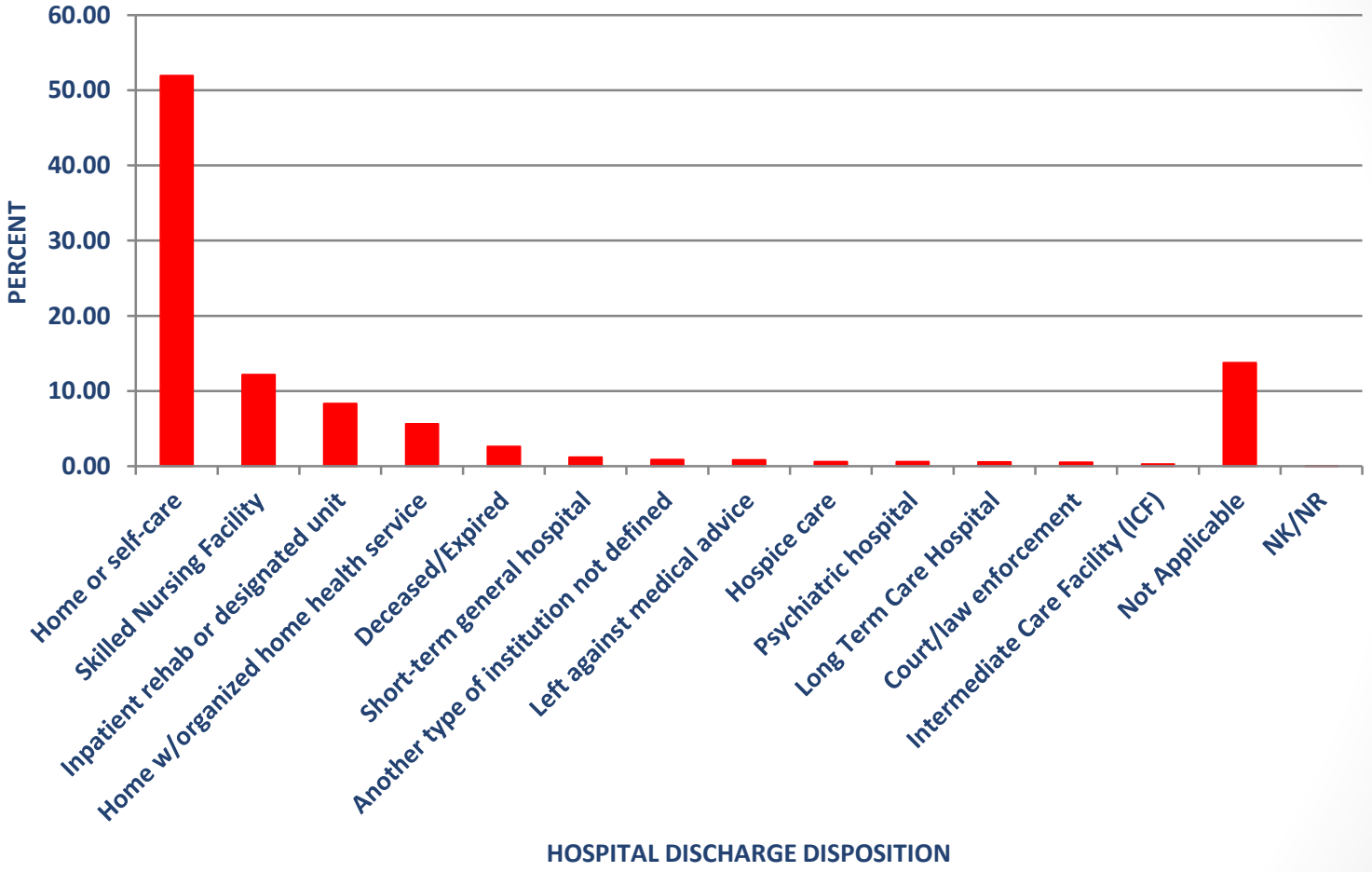


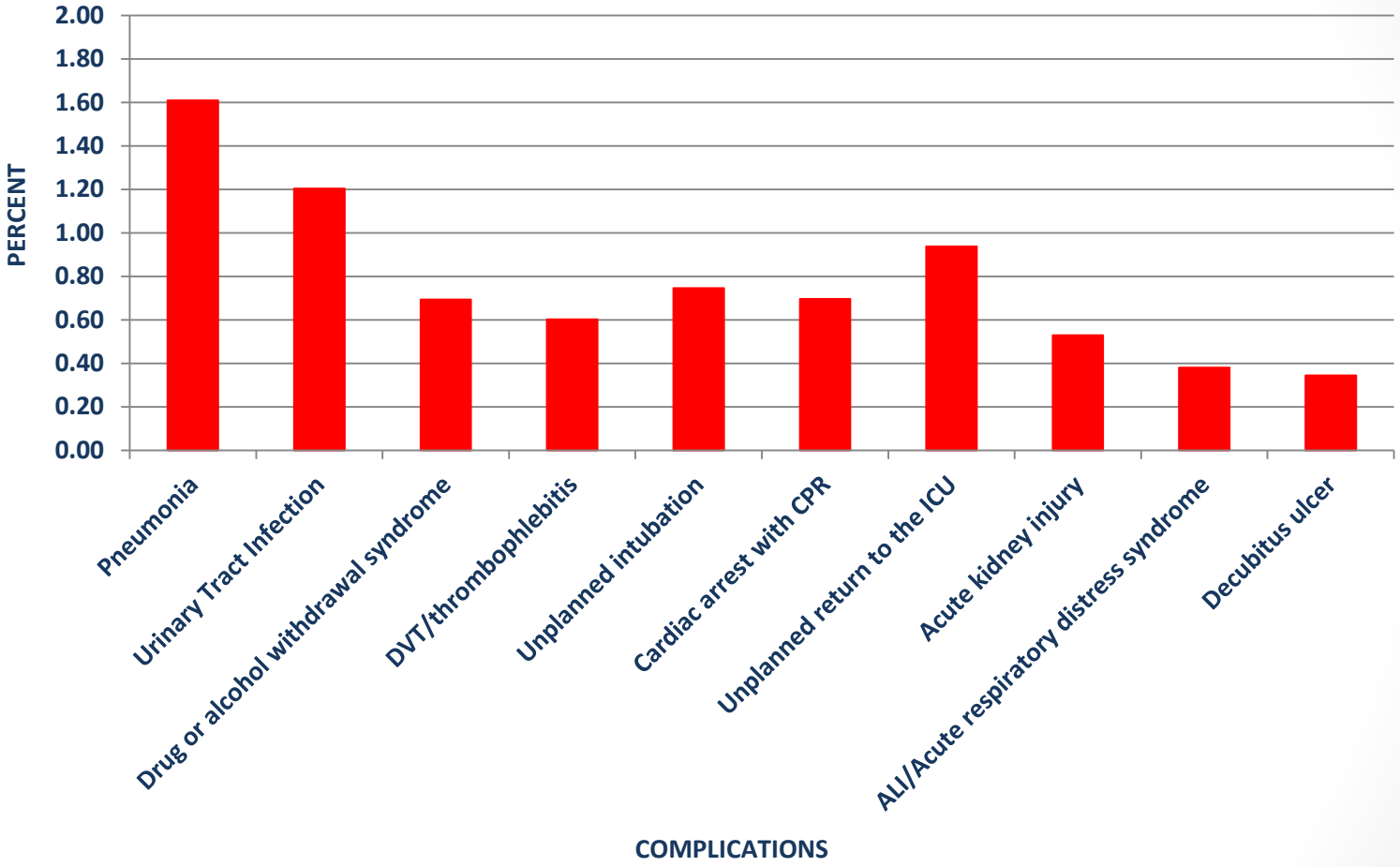
Table 40

Hospital Complications

COMPLICATIONS	NUMBER	PERCENT
Pneumonia	13,868	1.61
Urinary tract infection	10,375	1.20
Drug or alcohol withdrawal syndrome	5,980	0.69
Deep vein thrombosis (DVT) / thrombophlebitis	5,192	0.60
Unplanned intubation	6,426	0.75
Cardiac arrest with resuscitative efforts by healthcare provider	6,001	0.70
Unplanned return to the ICU	8,079	0.94
Acute kidney injury	4,562	0.53
Acute lung injury/Acute respiratory distress syndrome (ARDS)	3,273	0.38
Decubitus ulcer	2,963	0.34
Severe sepsis	2,974	0.35
Unplanned return to the OR	2,866	0.33
Pulmonary embolism	2,322	0.27
Stroke / CVA	1,744	0.20
Myocardial infarction	1,555	0.18
Superficial surgical site infection	1,285	0.15
Extremity compartment syndrome	1,110	0.13
Organ/space surgical site infection	763	0.09
Deep surgical site infection	987	0.11
Catheter-related blood stream infection	559	0.06
Graft/prosthesis/flap failure	198	0.02
Osteomyelitis	138	0.02

Figure 40

Top 10 Complications



REGIONAL ANALYSIS

Table 41

Incidents by Region

REGION	NUMBER	PERCENT
South	336,916	39.09
Midwest	204,855	23.77
West	162,987	18.91
Northeast	152,094	17.65
Non-U.S.	5,036	0.58
Total	861,888	100

Figure 41

Incidents by Region

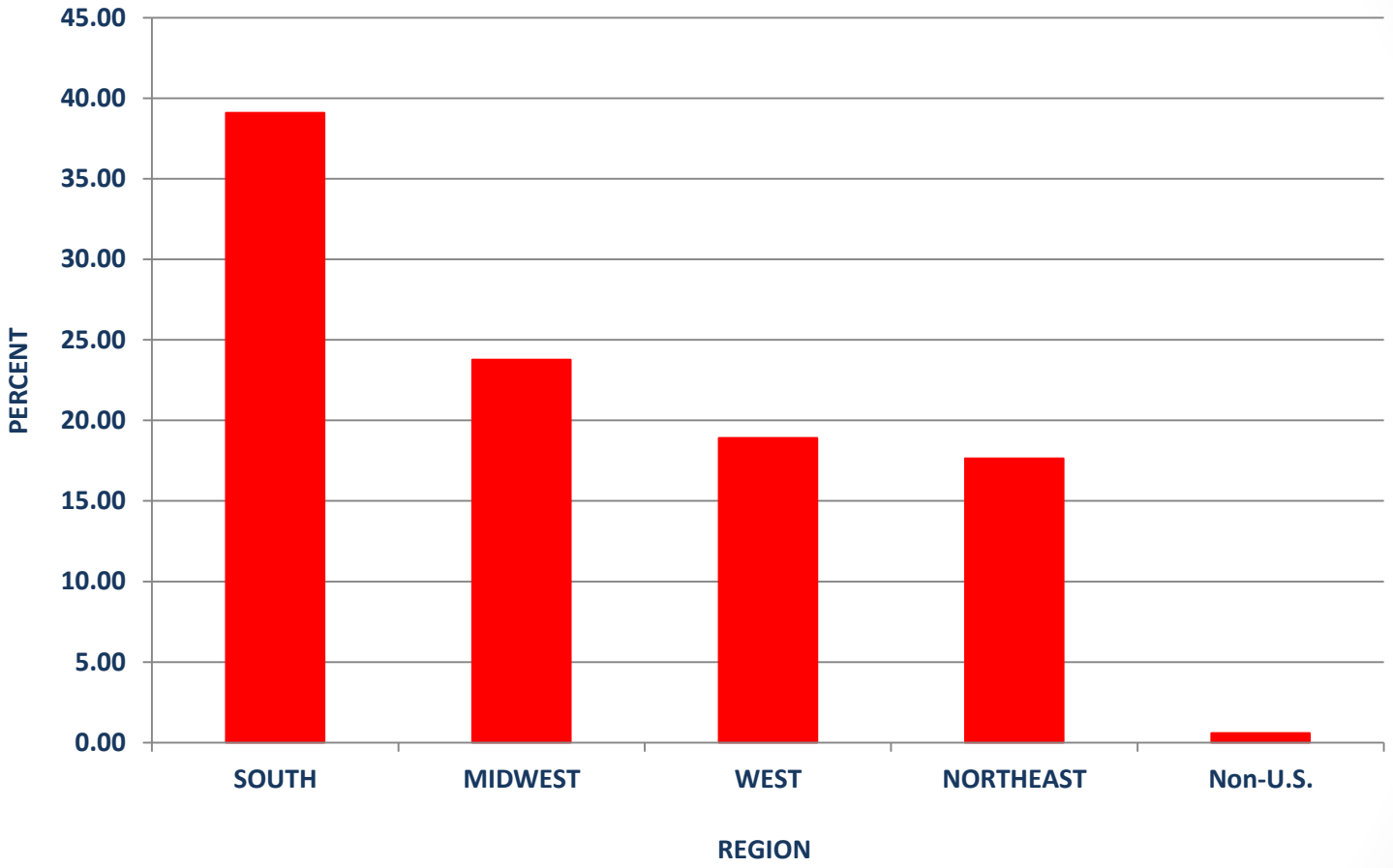


Table 42

Case Fatality Rate by Region

REGION	NUMBER	DEATHS	CASE FATALITY RATE
South	336,916	16,684	4.95
Midwest	204,855	7,899	3.86
West	162,987	6,571	4.03
Northeast	152,094	6,197	4.07
Non-U.S.	5,036	474	9.41
Total	861,888	37,825	4.39

Figure 42

Case Fatality Rate by Region

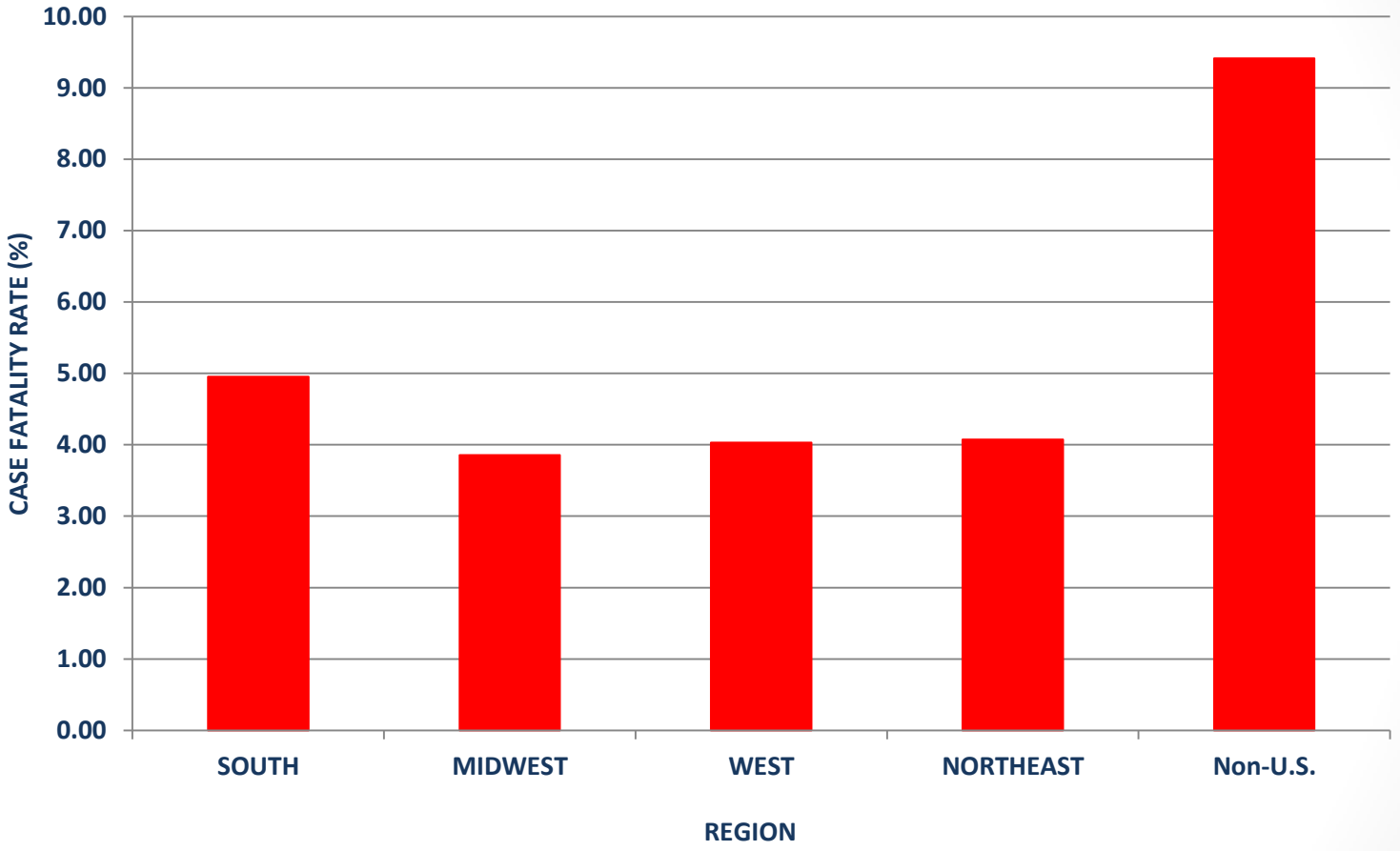


Table 43

Mechanism of Injury by Region

MECHANISM	NUMBER	PERCENT (MIDWEST)	PERCENT (NORTHEAST)	PERCENT (SOUTH)	PERCENT (WEST)	PERCENT (NON-U.S.)
Fall	380,800	49.09	52.84	39.94	39.03	33.60
Motor Vehicle Traffic	223,866	21.86	20.75	29.07	29.27	37.73
Struck by, against	55,662	6.24	6.41	6.56	6.56	6.71
Transport, other	39,269	4.28	3.61	4.75	5.37	5.14
Cut/pierce	35,565	3.14	3.78	4.48	4.84	8.22
Firearm	36,325	3.49	3.04	5.39	3.85	2.44
Pedal cyclist, other	14,730	1.54	1.73	1.17	3.02	1.31
Other specified and classifiable	13,682	1.62	1.36	1.79	1.37	0.89
NK/NR	10,005	2.64	0.54	0.25	1.81	0.16
Hot object/substance	8,401	0.95	1.04	1.20	0.50	0.18
Fire/flame	7,877	1.09	0.85	1.03	0.54	0.36
Machinery	8,101	1.12	0.79	1.01	0.71	0.91
Unspecified	7,834	0.79	1.00	0.86	1.07	0.95
Natural/environmental, Bites and stings	5,868	0.63	0.47	0.90	0.51	0.06
Other specified, not elsewhere classifiable	4,059	0.40	0.63	0.44	0.48	0.20
Overexertion	2,613	0.30	0.37	0.33	0.19	0.04
Pedestrian, other	2,845	0.27	0.39	0.32	0.37	0.32
Natural/environmental, Other	2,387	0.32	0.17	0.30	0.28	0.38
Suffocation	885	0.11	0.10	0.10	0.10	0.26
Poisoning	413	0.05	0.03	0.05	0.05	0.06
Drowning/submersion	375	0.03	0.04	0.05	0.05	0.08
Adverse effects, medical care	224	0.02	0.05	0.02	0.02	0.00
Adverse effects, drugs	102	0.01	0.02	0.01	0.01	0.00
Total	861,888	100	100	100	100	100

Figure 43

Selected Mechanism of Injury by Region

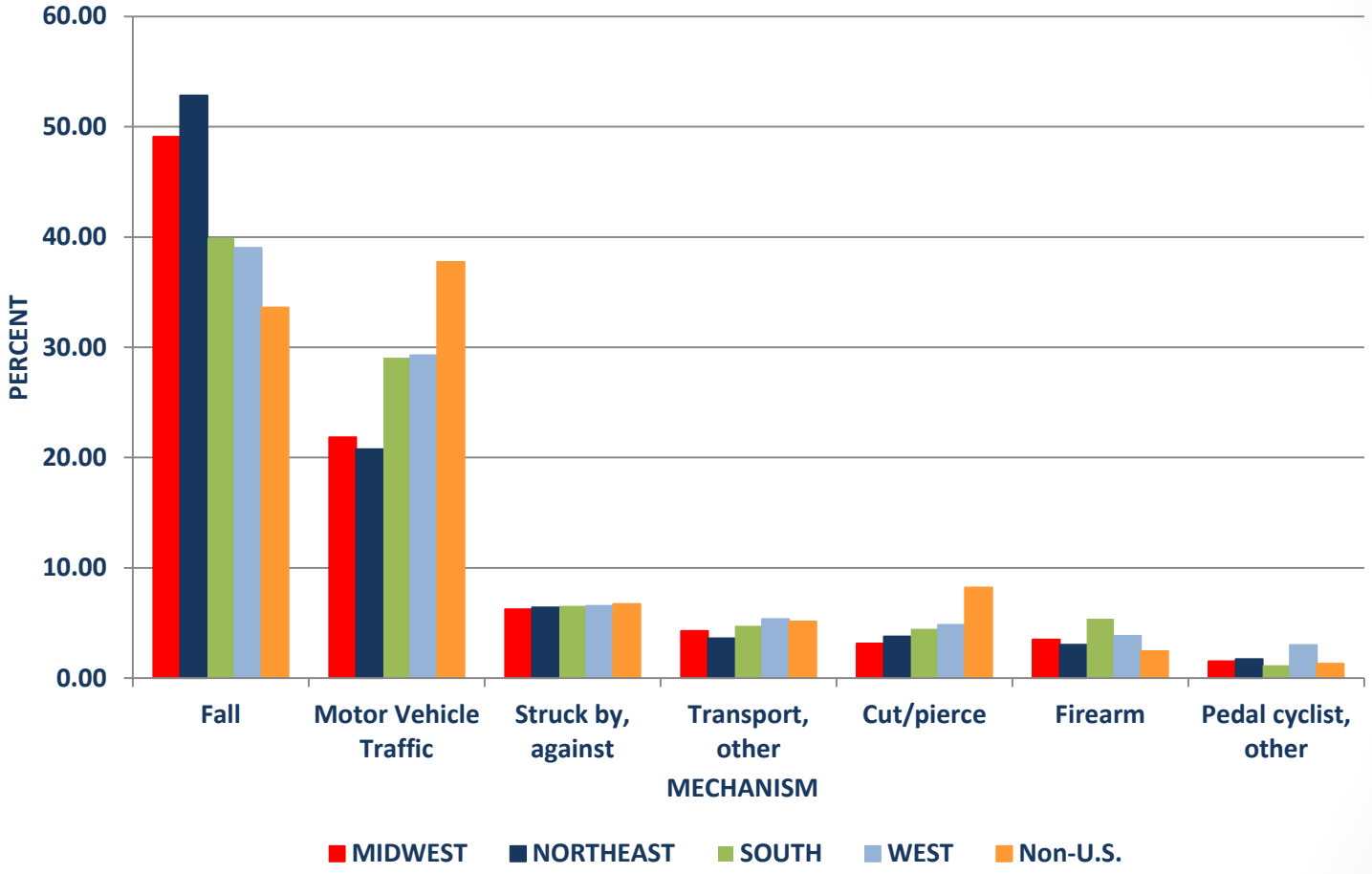


Table 44

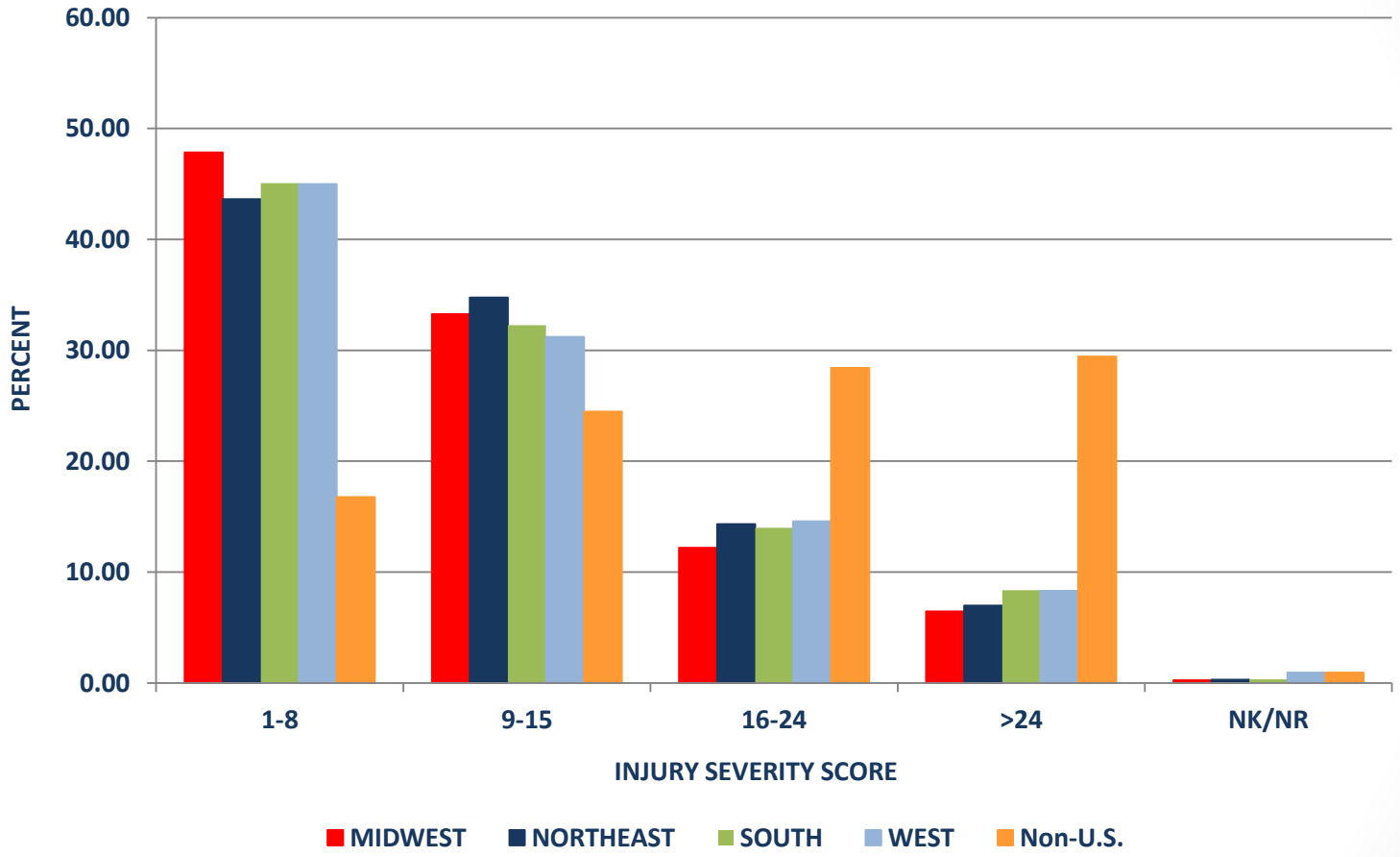
Injury Severity Score (ISS) by Region

ISS	NUMBER	PERCENT (MIDWEST)	PERCENT (NORTHEAST)	PERCENT (SOUTH)	PERCENT (WEST)	PERCENT (NON-U.S.)
1-8	390,386	47.85	43.63	45.07	44.98	16.76
9-15	281,763	33.26	34.77	32.25	31.20	24.46
16-24	119,166	12.20	14.33	14.00	14.58	28.42
>24	66,998	6.44	6.98	8.36	8.30	29.43
NK/NR	3,575	0.25	0.29	0.31	0.93	0.93
Total	861,888	100	100	100	100	100

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Figure 44

Injury Severity Score (ISS) by Region



Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Table 45

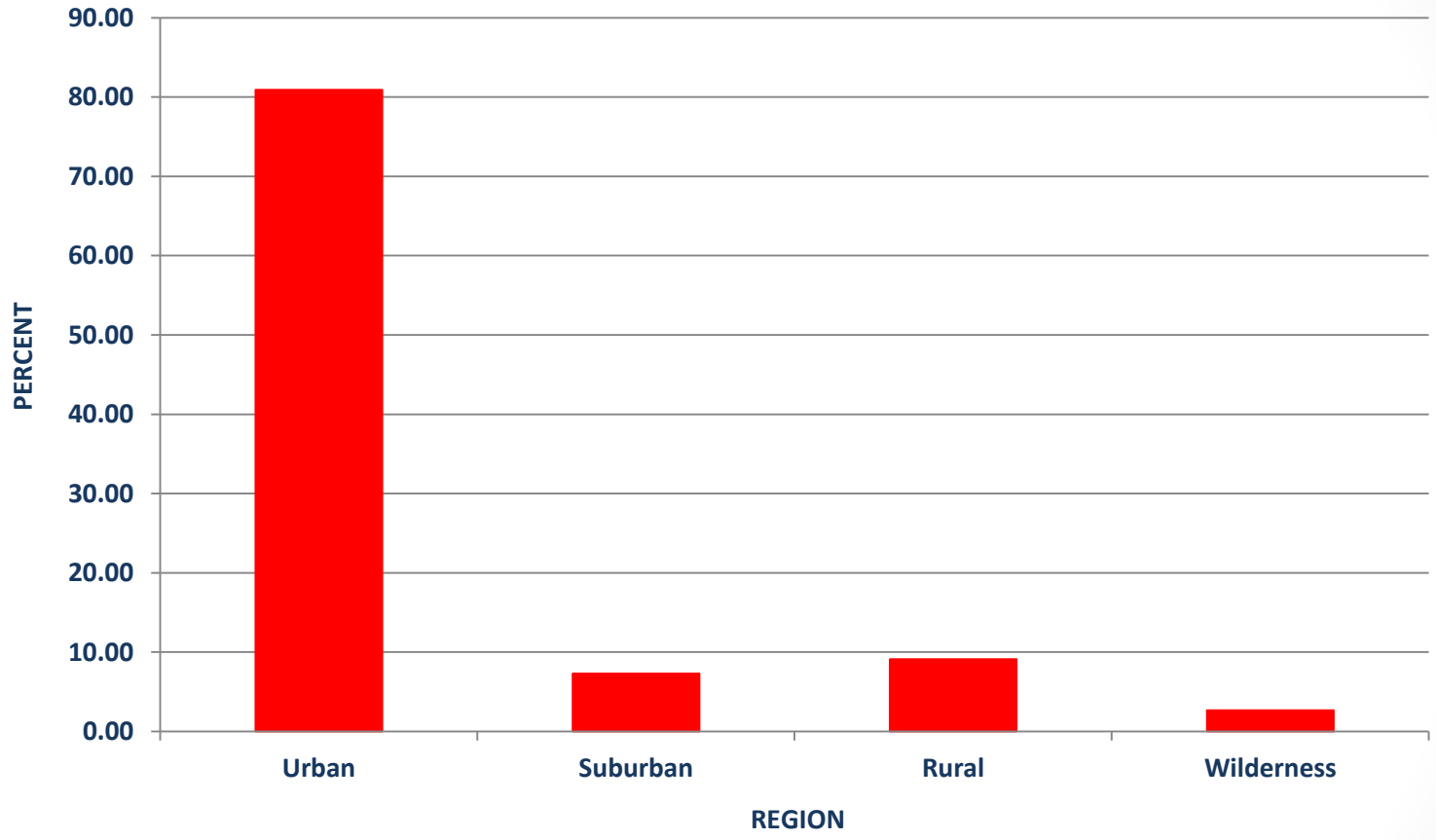
Incidents by Rurality

REGION	NUMBER	PERCENT
Urban	396,527	80.92
Suburban	35,793	7.30
Rural	44,544	9.09
Wilderness	13,131	2.68
Total	489,995	100

All rurality tables are determined by Urban Influence Codes that are developed by the Office of Management and Budget. Urban Influence Codes only apply to incidents and are not available for every record in the NTDB.

Figure 45

Incidents by Rurality



All rurality tables are determined by Urban Influence Codes that are developed by the Office of Management and Budget. Urban Influence Codes only apply to incidents and are not available for every record in the NTDB.

Table 46

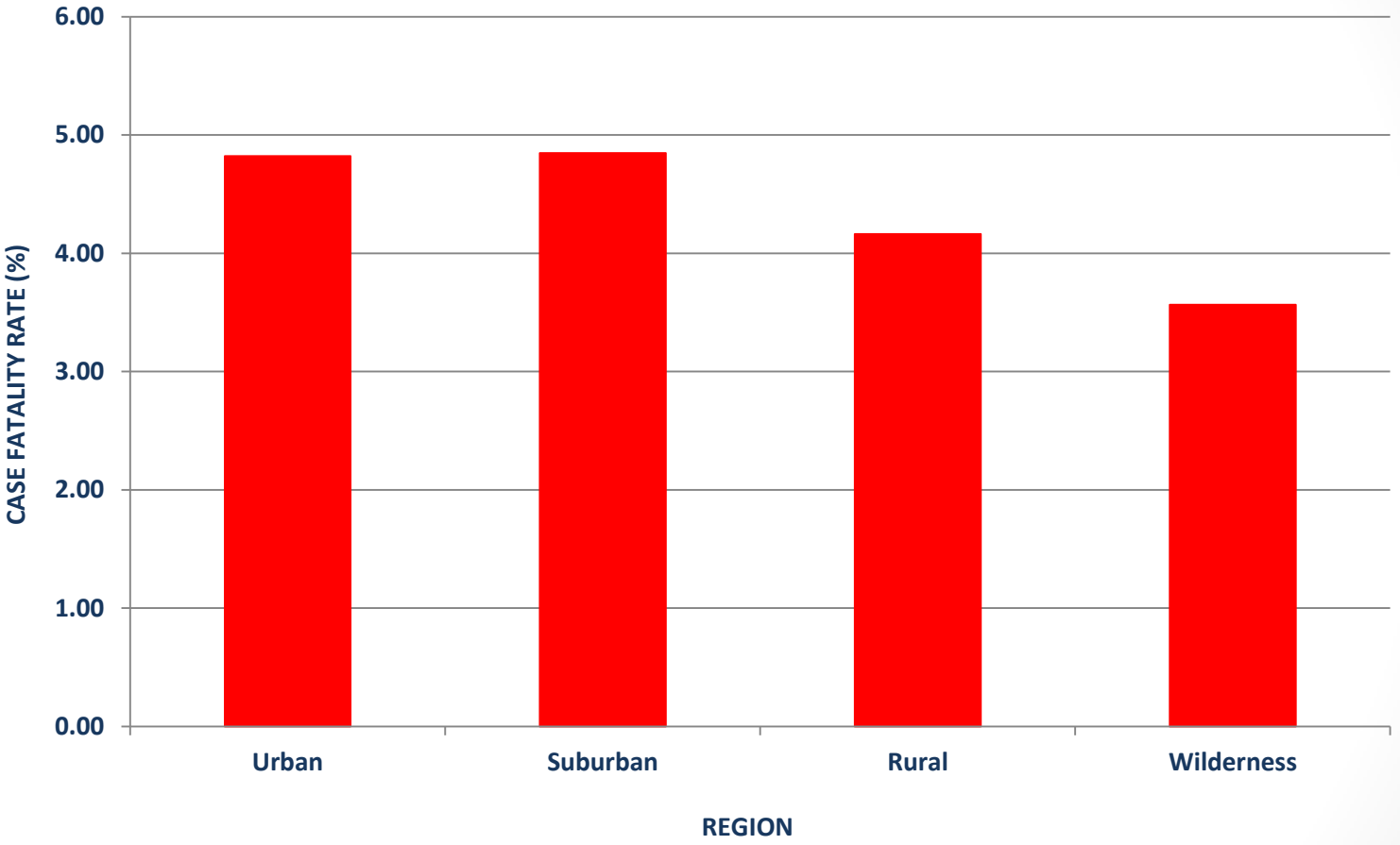
Case Fatality Rate by Rurality

REGION	NUMBER	DEATHS	CASE FATALITY RATE
Urban	396,527	19,124	4.82
Suburban	35,793	1,735	4.85
Rural	44,544	1,854	4.16
Wilderness	13,131	468	3.56
Total	489,995	37,825	7.72

All rurality tables are determined by Urban Influence Codes that are developed by the Office of Management and Budget. Urban Influence Codes only apply to incidents and are not available for every record in the NTDB.

Figure 46

Case Fatality Rate by Rurality



All rurality tables are determined by Urban Influence Codes that are developed by the Office of Management and Budget. Urban Influence Codes only apply to incidents and are not available for every record in the NTDB.

Table 47

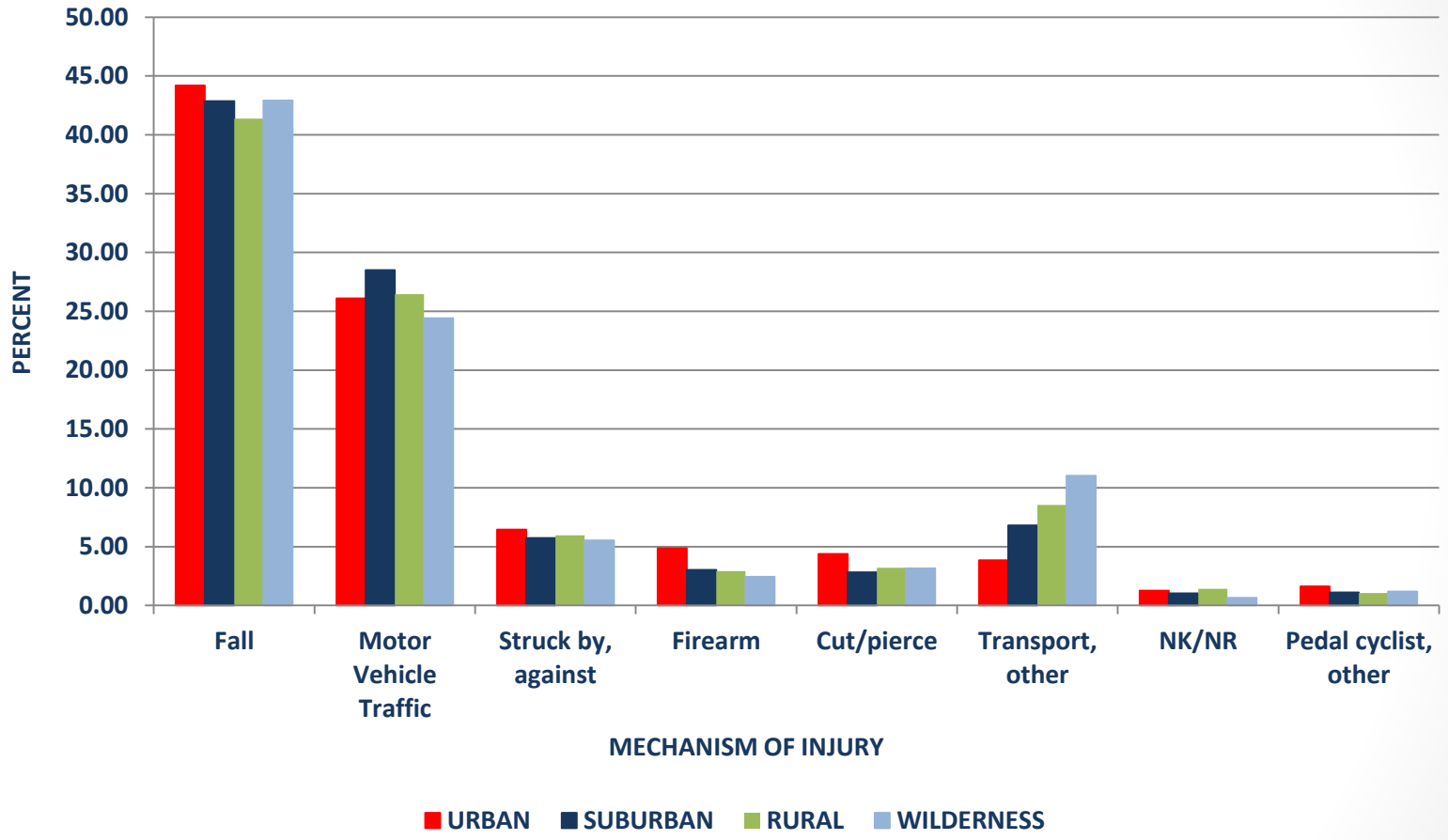
Mechanism of Injury by Rurality

MECHANISM	NUMBER (URBAN)	PERCENT (URBAN)	NUMBER (SUBURBAN)	PERCENT (SUBURBAN)	NUMBER (RURAL)	PERCENT (RURAL)	NUMBER (WILDERNESS)	PERCENT (WILDERNESS)
Fall	175,204	44.18	15,341	42.86	18,430	41.37	5,635	42.91
Motor Vehicle Traffic	103,437	26.09	10,197	28.49	11,779	26.44	3,204	24.40
Struck by, against	25,512	6.43	2,054	5.74	2,650	5.95	725	5.52
Firearm	19,237	4.85	1,085	3.03	1,305	2.93	320	2.44
Cut/pierce	17,310	4.37	1,008	2.82	1,428	3.21	414	3.15
Transport, other	15,185	3.83	2,433	6.80	3,799	8.53	1,447	11.02
NK/NR	4,948	1.25	368	1.03	626	1.41	86	0.65
Pedal cyclist, other	6,409	1.62	396	1.11	471	1.06	155	1.18
Other specified and classifiable	6,128	1.55	676	1.89	976	2.19	259	1.97
Hot object/substance	4,079	1.03	332	0.93	370	0.83	76	0.58
Drowning/submersion	145	0.04	21	0.06	31	0.07	8	0.06
Unspecified	3,634	0.92	231	0.65	296	0.66	69	0.53
Fire/flame	3,462	0.87	418	1.17	550	1.23	164	1.25
Machinery	3,020	0.76	445	1.24	621	1.39	212	1.61
Natural/environmental, Bites and stings	2,630	0.66	233	0.65	385	0.86	102	0.78
Other specified, not elsewhere classifiable	1,981	0.50	151	0.42	178	0.40	52	0.40
Pedestrian, other	1,496	0.38	105	0.29	175	0.39	25	0.19
Overexertion	1,157	0.29	97	0.27	126	0.28	45	0.34
Natural/environmental, Other	795	0.20	135	0.38	284	0.64	111	0.85
Suffocation	434	0.11	45	0.13	39	0.09	11	0.08
Poisoning	185	0.05	13	0.04	16	0.04	8	0.06
Adverse effects, medical care	99	0.02	8	0.02	6	0.01	3	0.02
Adverse effects, drugs	40	0.01	1	0.00	3	0.01		0.00
Total	396,527	100.00	35,793	100.00	44,544	100.00	13,131	100.00

All rurality tables are determined by Urban Influence Codes that are developed by the Office of Management and Budget. Urban Influence Codes only apply to incidents and are not available for every record in the NTDB.

Figure 47

Selected Mechanism of Injury by Rurality



All rurality tables are determined by Urban Influence Codes that are developed by the Office of Management and Budget. Urban Influence Codes only apply to incidents and are not available for every record in the NTDB.

Table 48

Injury Severity Score (ISS) by Rurality

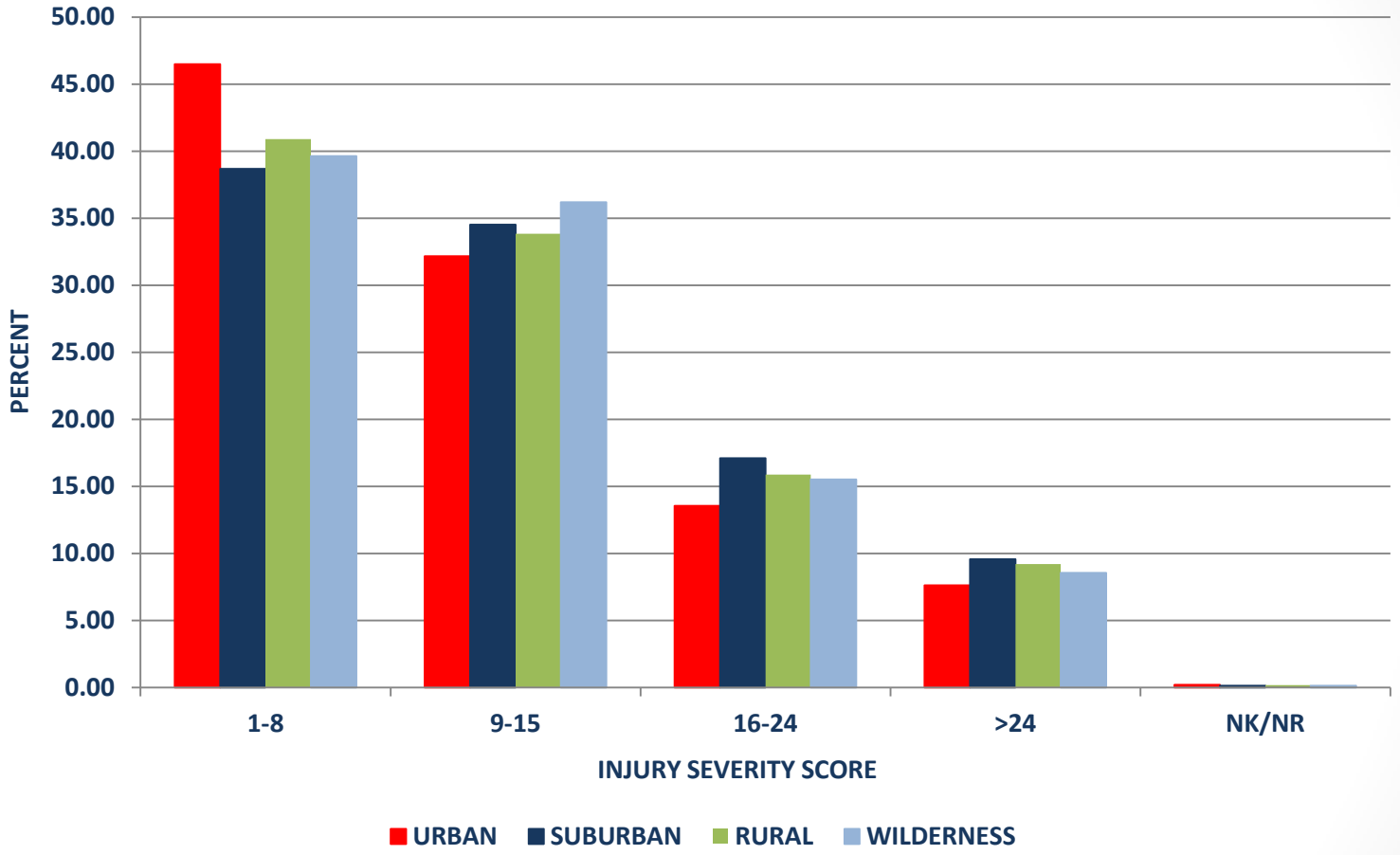
ISS	NUMBER (URBAN)	PERCENT (URBAN)	NUMBER (SUBURBAN)	PERCENT (SUBURBAN)	NUMBER (RURAL)	PERCENT (RURAL)	NUMBER (WILDERNESS)	PERCENT (WILDERNESS)
1-8	184,326	46.49	13,848	38.69	18,219	40.90	5,203	39.62
9-15	127,498	32.15	12,358	34.53	15,074	33.84	4,752	36.19
16-24	53,746	13.55	6,118	17.09	7,076	15.89	2,037	15.51
>24	30,209	7.62	3,423	9.56	4,095	9.19	1,122	8.54
NK/NR	748	0.19	46	0.13	80	0.18	17	0.13
Total	396,527	100.00	35,793	100.00	44,544	100.00	13,131	100.00

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

All rurality tables are determined by Urban Influence Codes that are developed by the Office of Management and Budget. Urban Influence Codes only apply to incidents and are not available for every record in the NTDB.

Figure 48

Injury Severity Score (ISS) by Rurality



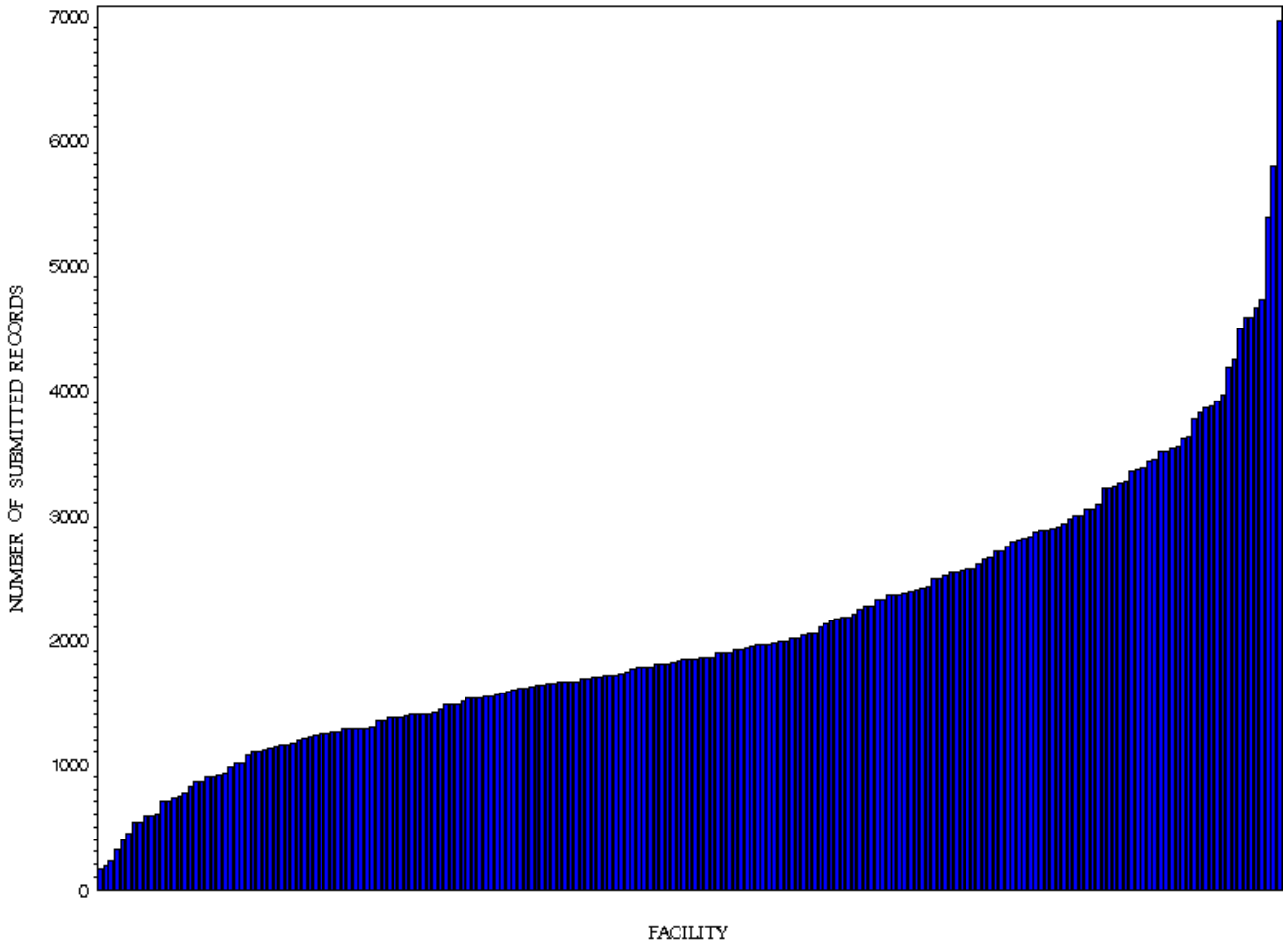
Injury Severity Score tables are generated using AIS98 Crosswalked ISS. Injury Severity Score definitions can be found in Appendix B.

All rurality tables are determined by Urban Influence Codes that are developed by the Office of Management and Budget. Urban Influence Codes only apply to incidents and are not available for every record in the NTDB.

Comparative Analysis

Figure 49

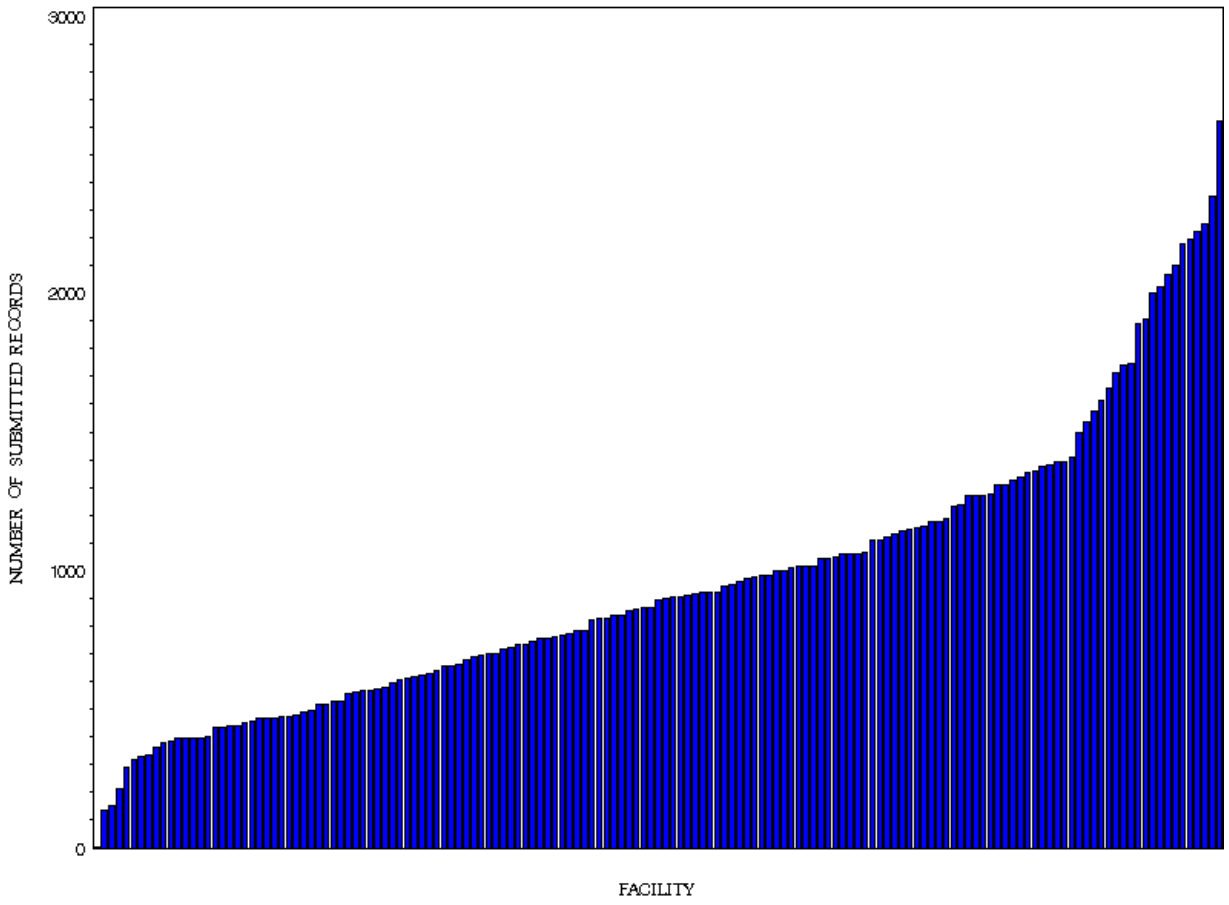
Number of Cases Submitted per Facility for Level I Facilities



Only cases with valid trauma diagnosis code per the NTDB criteria are included in the analysis. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 50

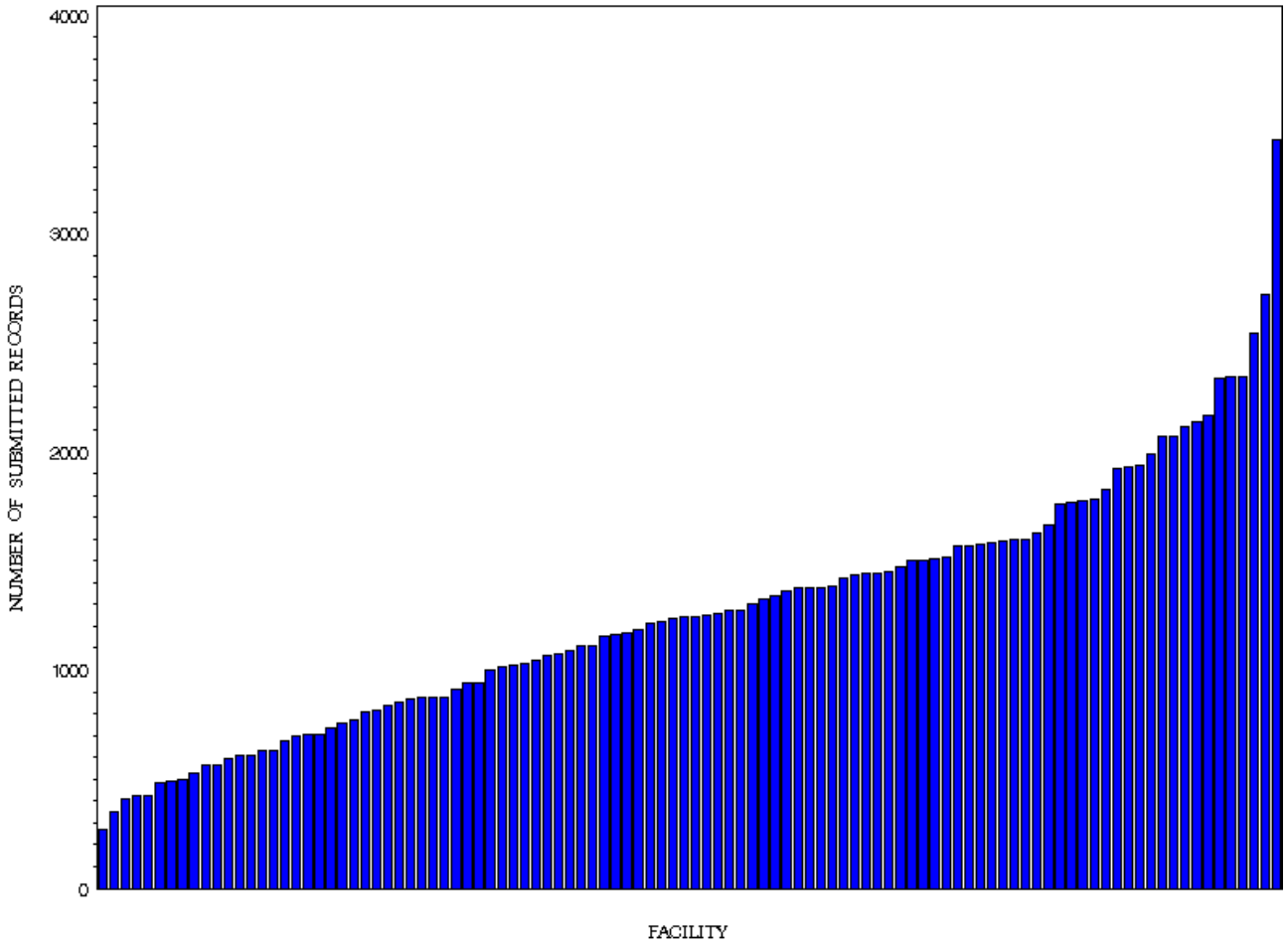
Number of Cases Submitted per Facility for Level II Facilities with Bed Size ≤ 400 Beds



Only cases with valid trauma diagnosis code per the NTDB criteria are included in the analysis. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 51

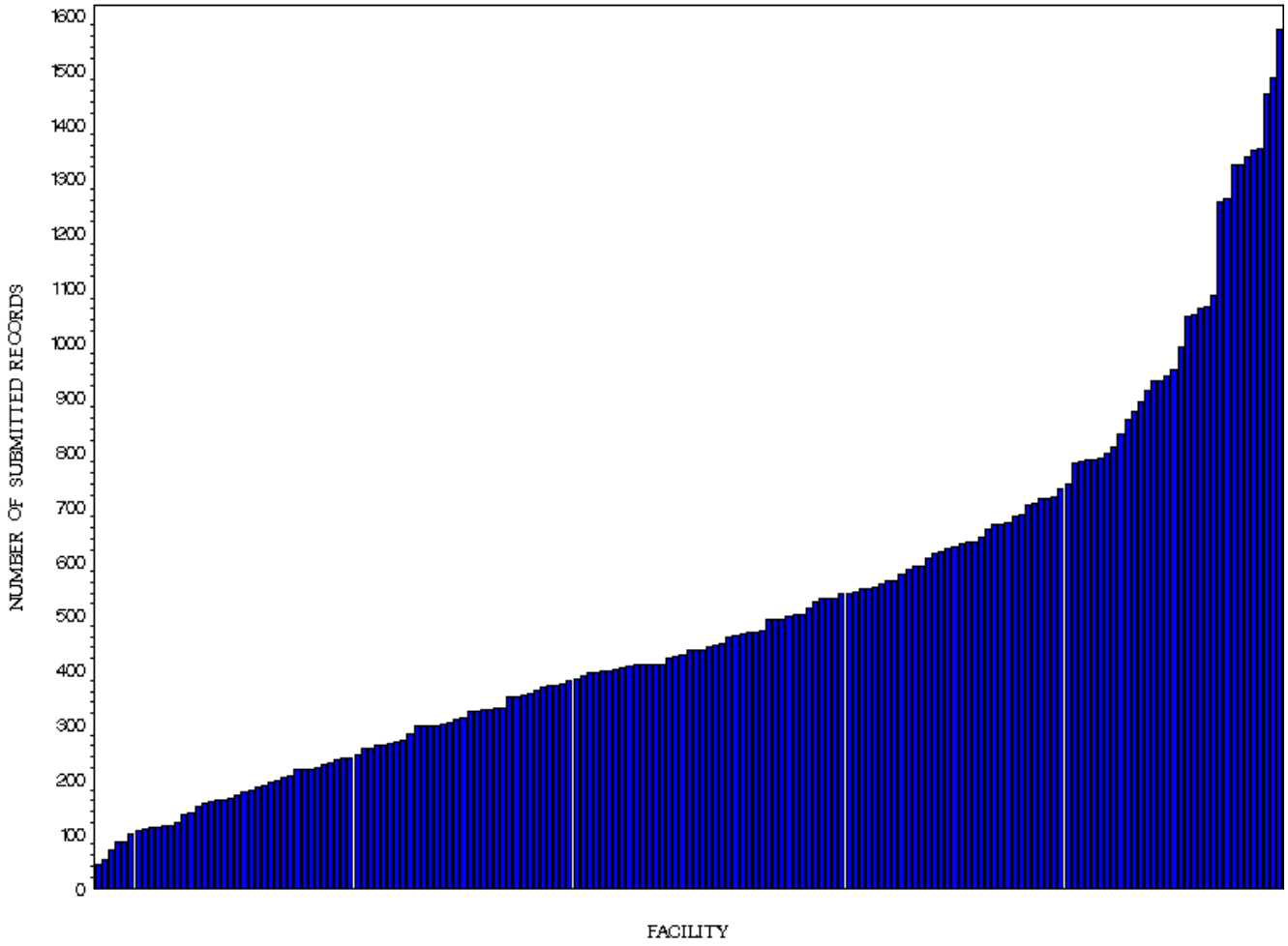
Number of Cases Submitted per Facility for Level II Facilities with Bed Size > 400 Beds



Only cases with valid trauma diagnosis code per the NTDB criteria are included in the analysis. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 52

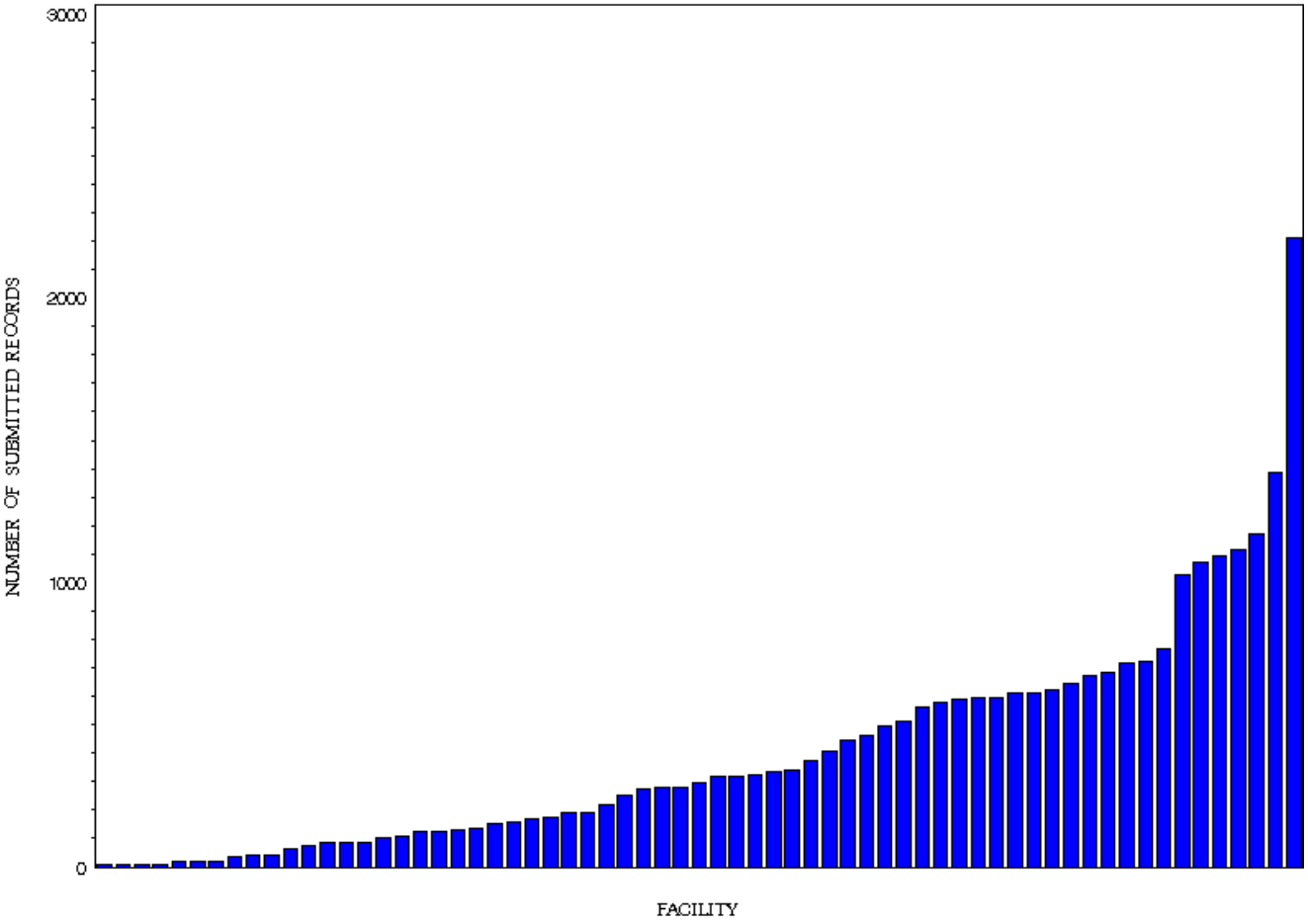
Number of Cases Submitted per Facility for Level III Facilities



Only cases with valid trauma diagnosis code per the NTDB criteria are included in the analysis. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 53

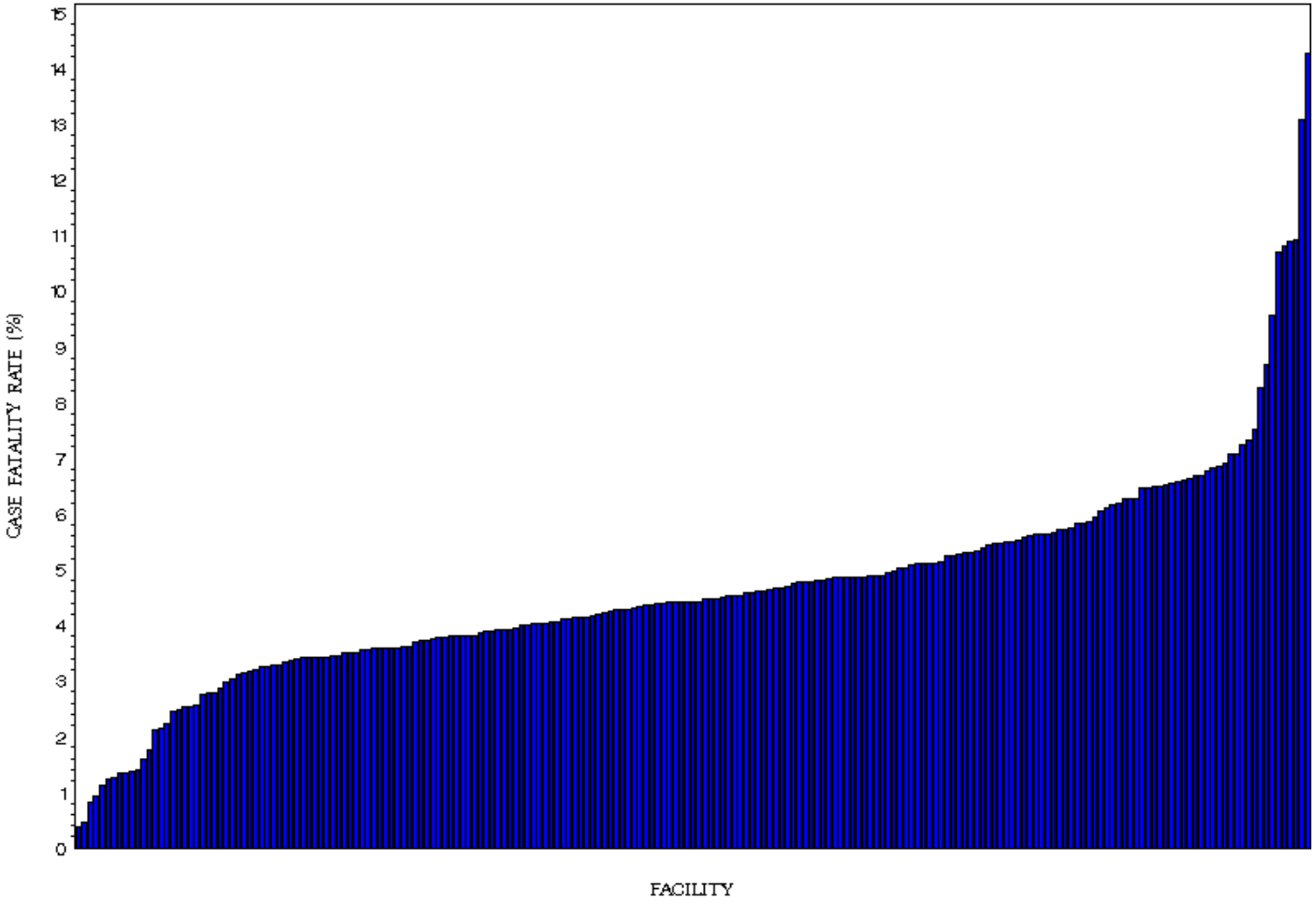
Number of Cases Submitted per Facility for Level IV Facilities and Facilities with Designation Other or Not Applicable



Only cases with valid trauma diagnosis code per the NTDB criteria are included in the analysis. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 54

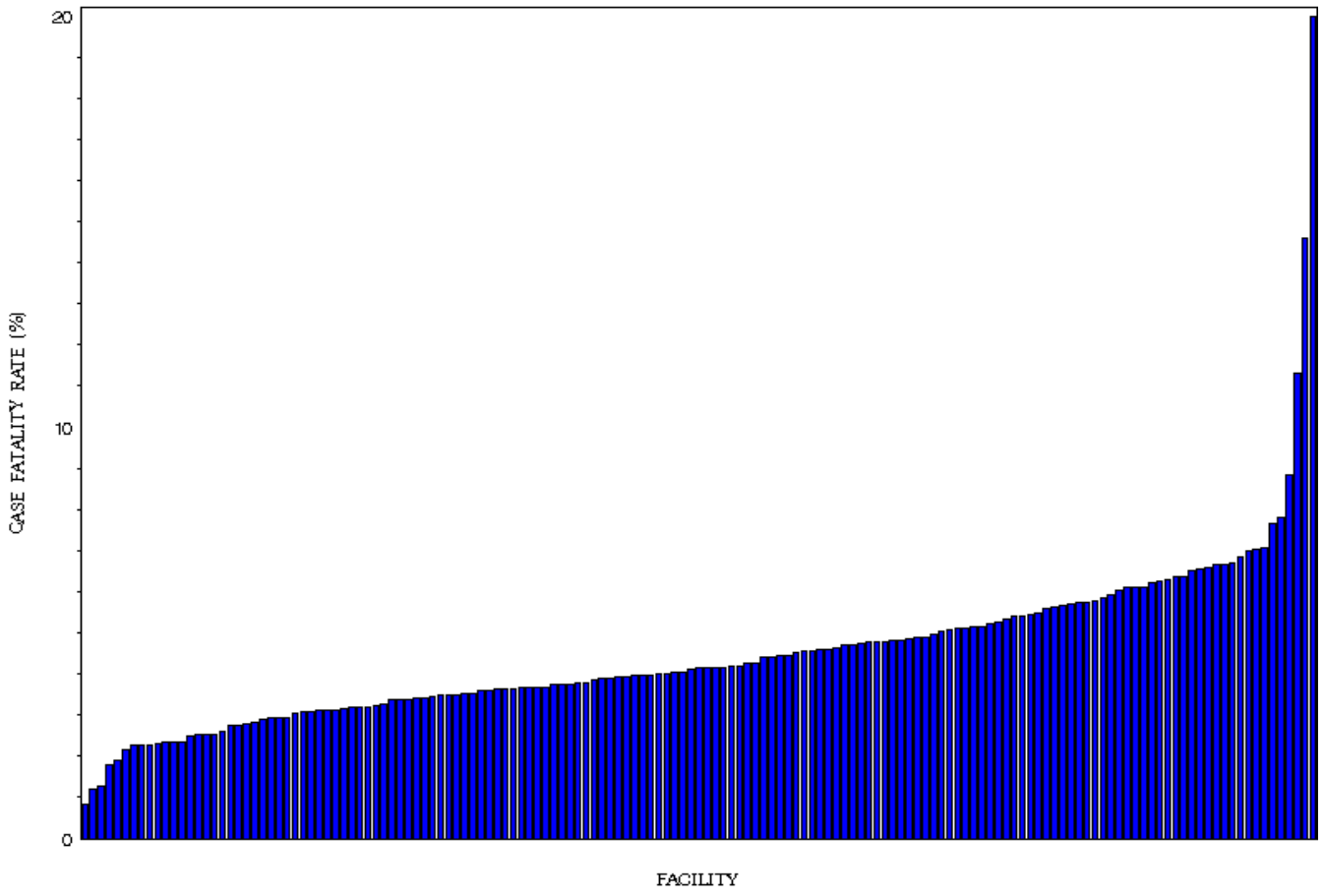
Case Fatality Rate per Facility for Level I Facilities



All deaths, including patients discharged to hospice or reported as dead on arrival are included in the analysis. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 55

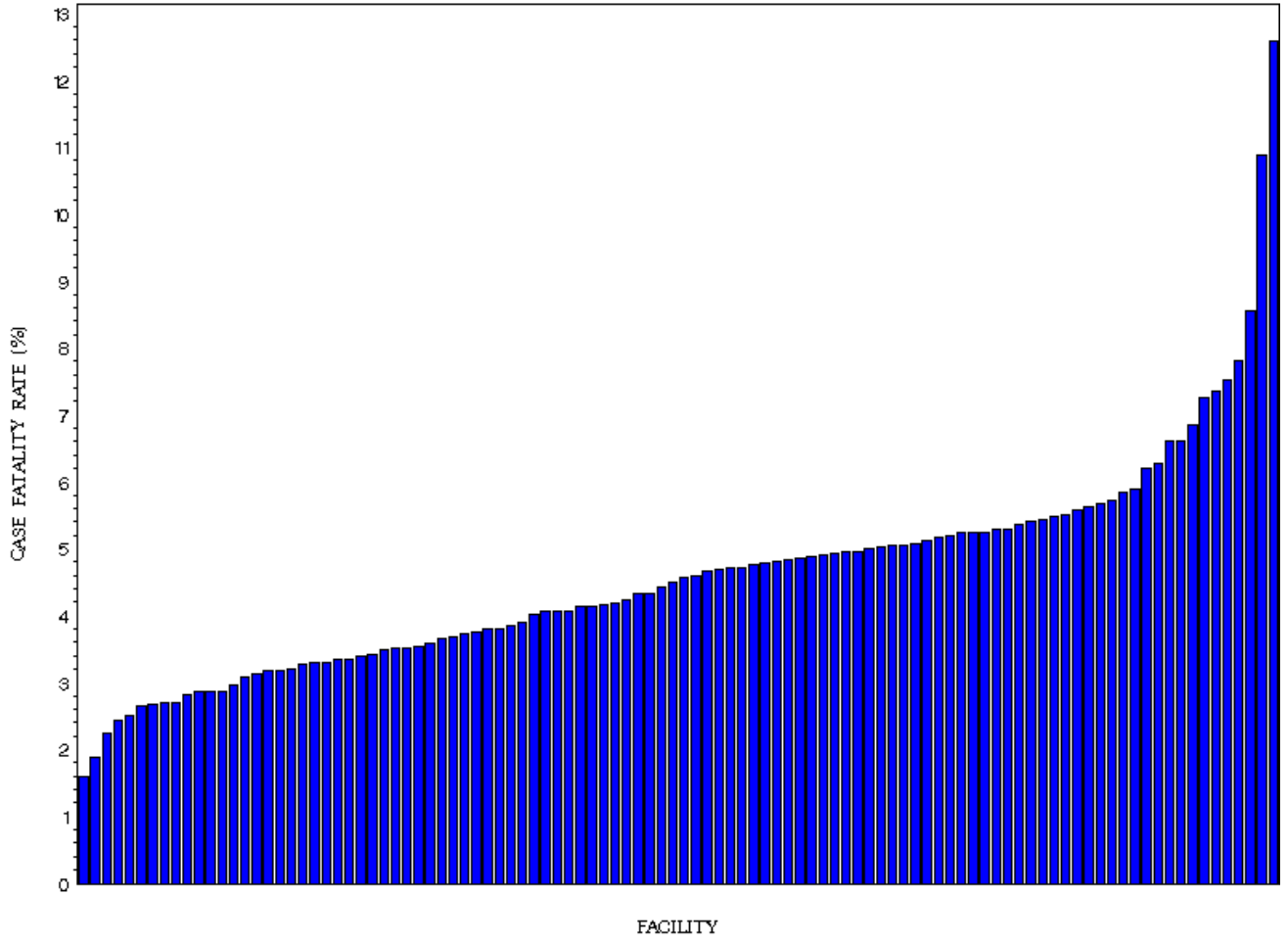
Case Fatality Rate per Facility for Level II Facilities with Bed Size ≤ 400 Beds



All deaths, including patients discharged to hospice or reported as dead on arrival are included in the analysis. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 56

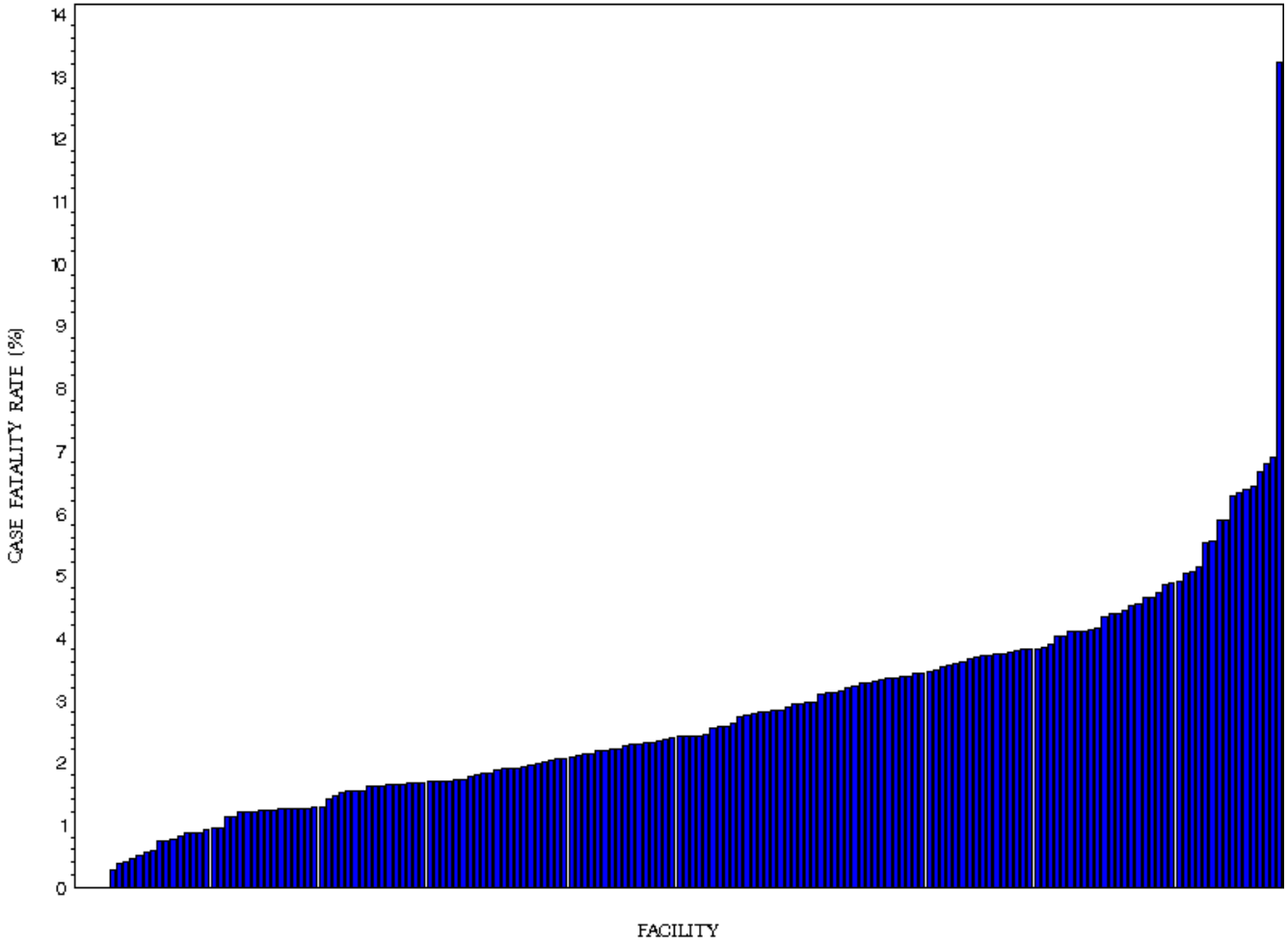
Case Fatality Rate per Facility for Level II Facilities with Bed Size > 400 Beds



All deaths, including patients discharged to hospice or reported as dead on arrival are included in the analysis. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 57

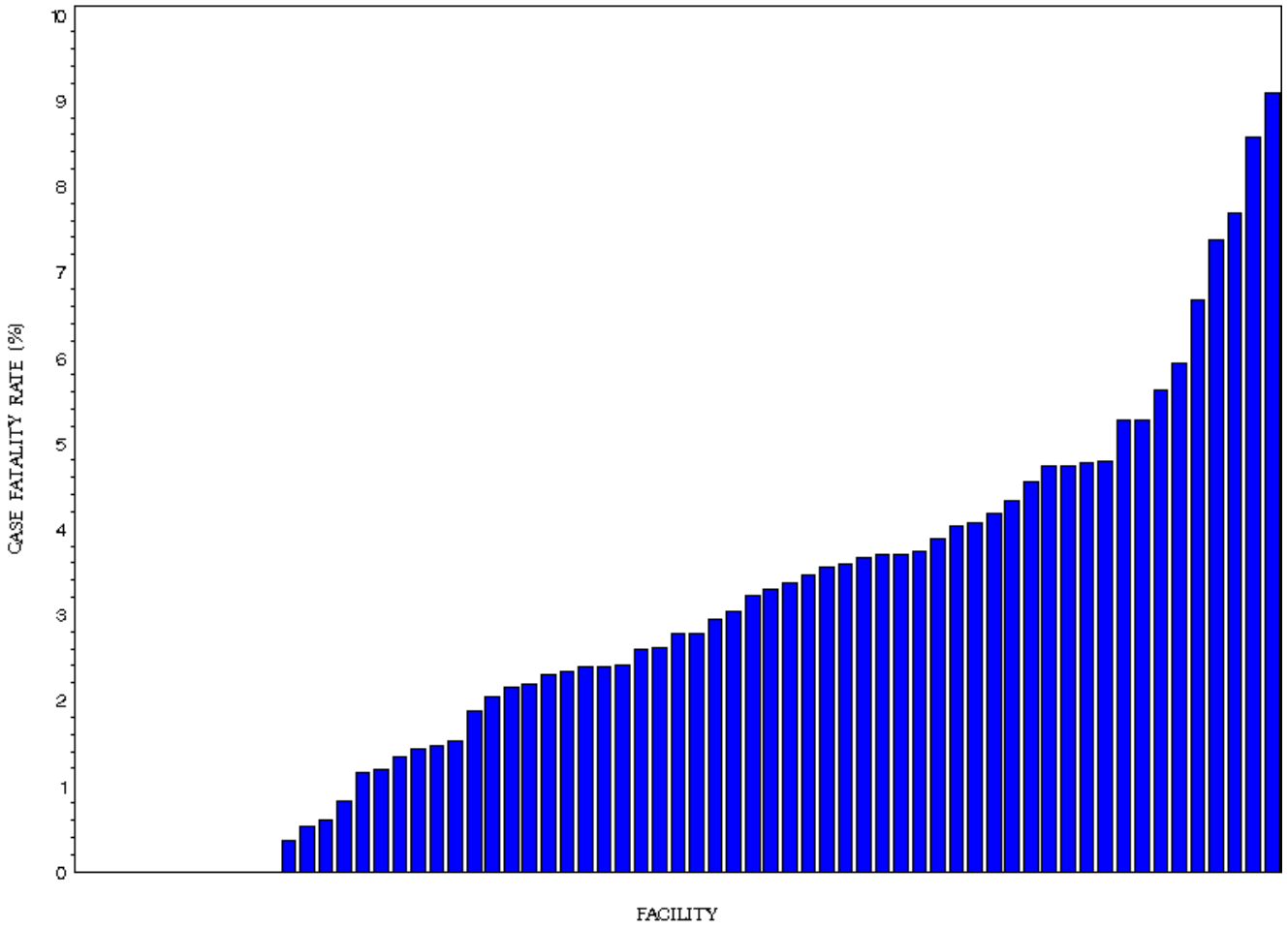
Case Fatality Rate per Facility for Level III Facilities



Five facilities out of the 179 Level III facilities had a case fatality rate of 0% reported and are therefore not visible on the graph. All deaths, including patients discharged to hospice or reported as dead on arrival are included in the analysis. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 58

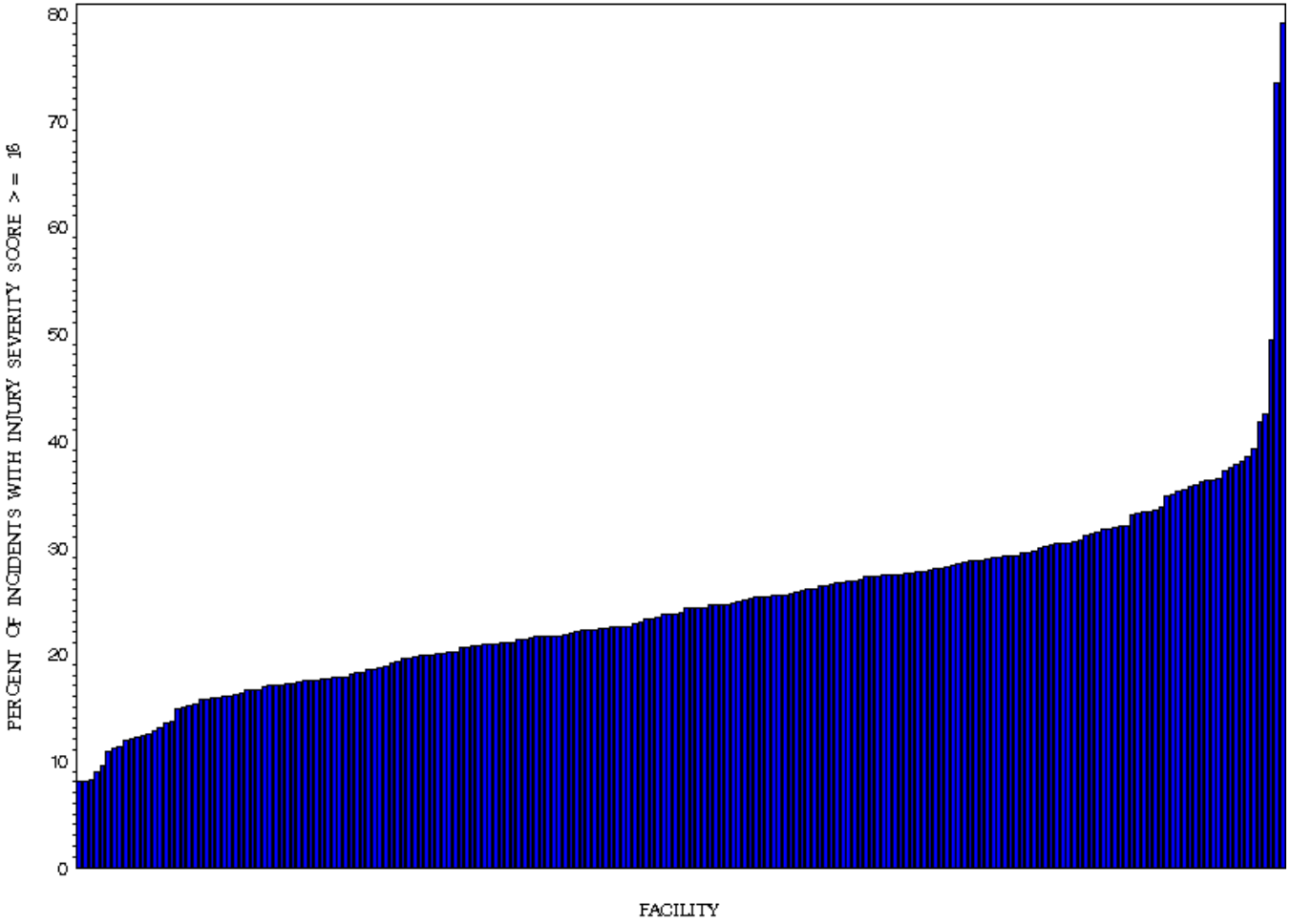
Case Fatality Rate per Facility for Level IV Facilities and Facilities with Designation Other or Not Applicable



Eleven facilities out of the 65 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 on 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 I Facilities

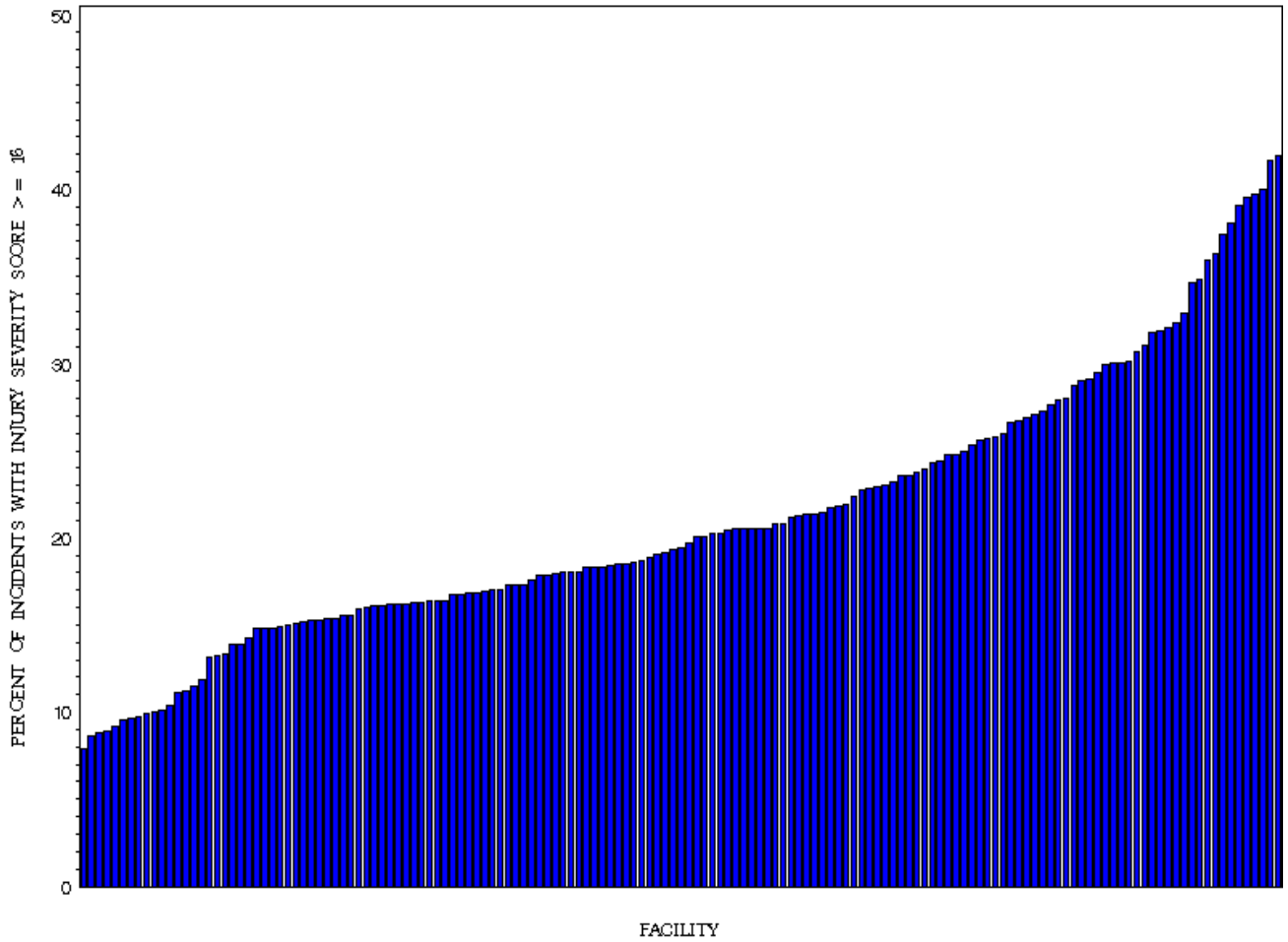


The ISS score calculated for all records is based on the AIS98 Crosswalk. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Figure 60

Percentage of Cases with ISS ≥ 16 per Facility for Level II Facilities with Bed Size ≤ 400 Beds

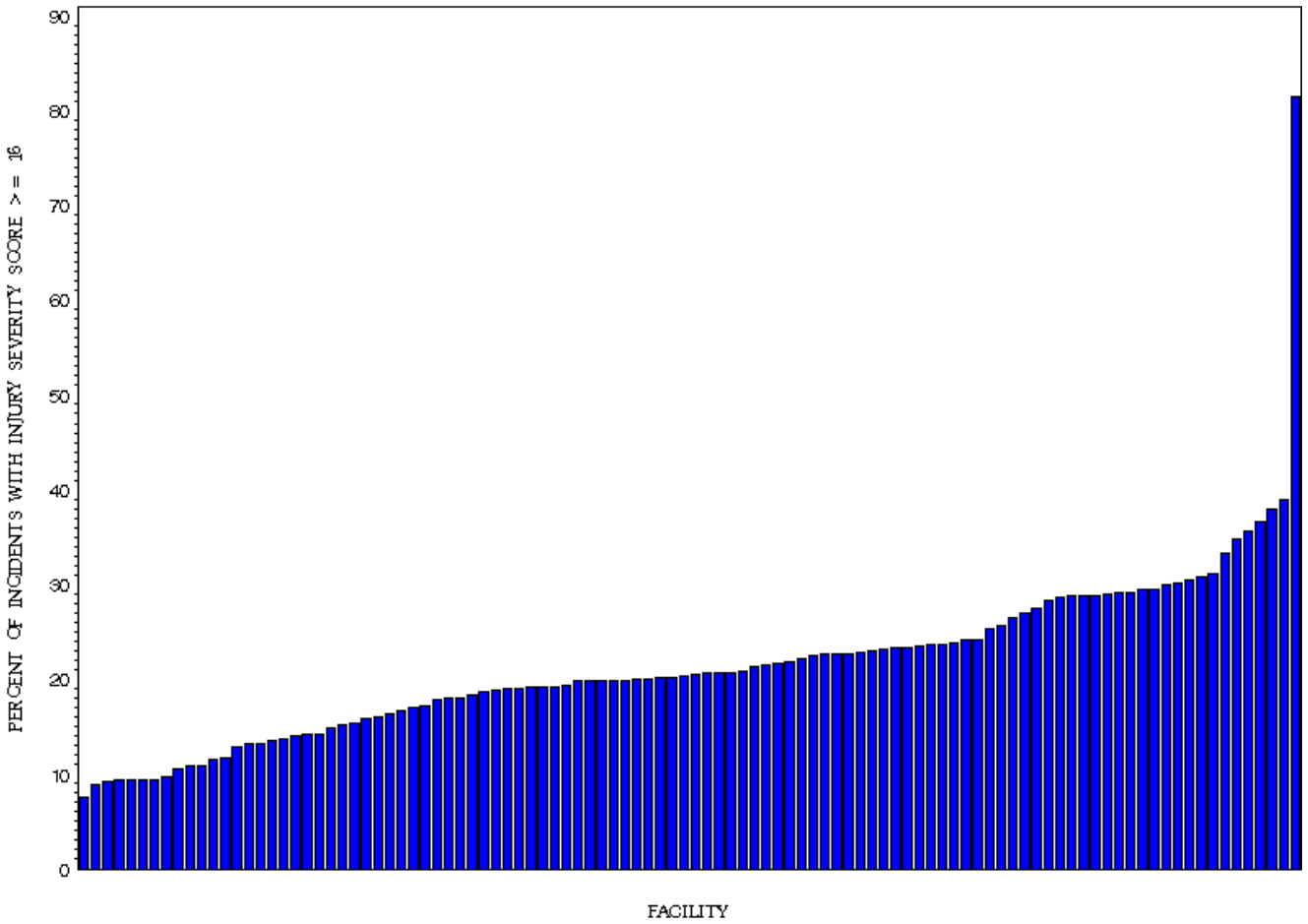


Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Figure 61

Percentage of Cases with ISS ≥ 16 per Facility for Level II Facilities with Bed Size > 400 Beds

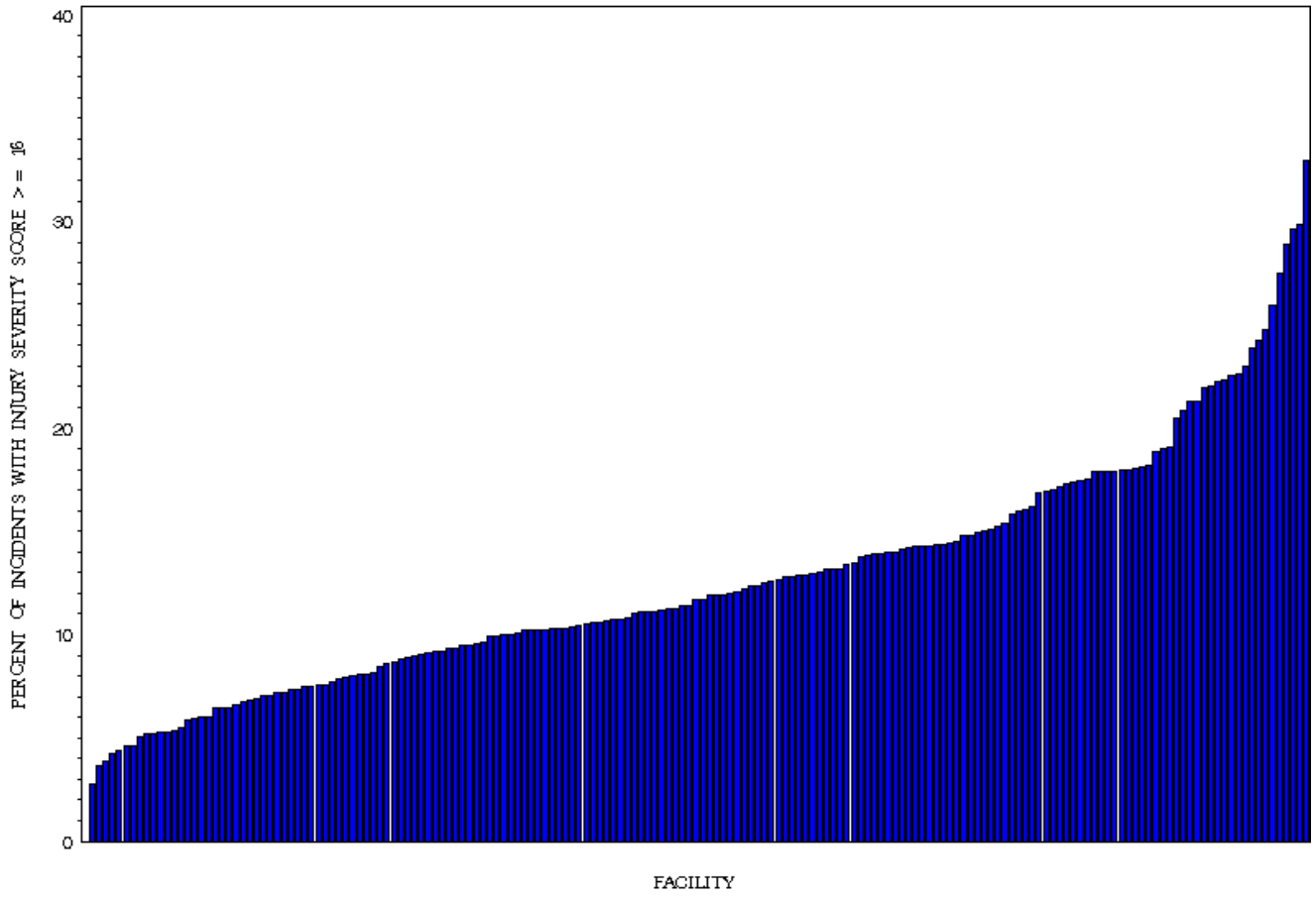


Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Injury Severity Score tables are generated using AIS98 Crosswalked ISS. Injury Severity Score definitions can be found in Appendix B.

Figure 62

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

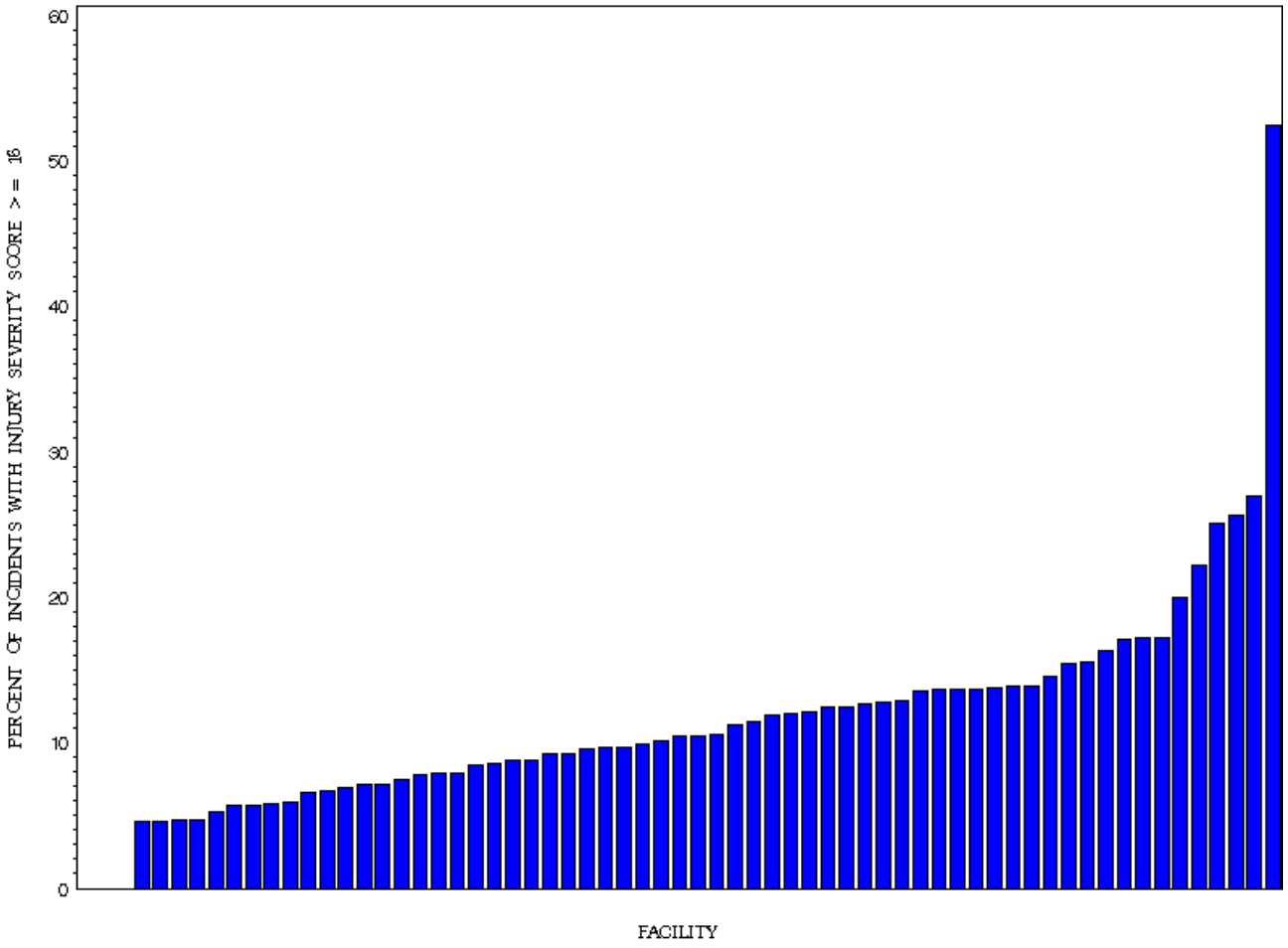


One out of 179 facilities had no incidents with ISS ≥16 and are therefore not visible on the graph. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Figure 63

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

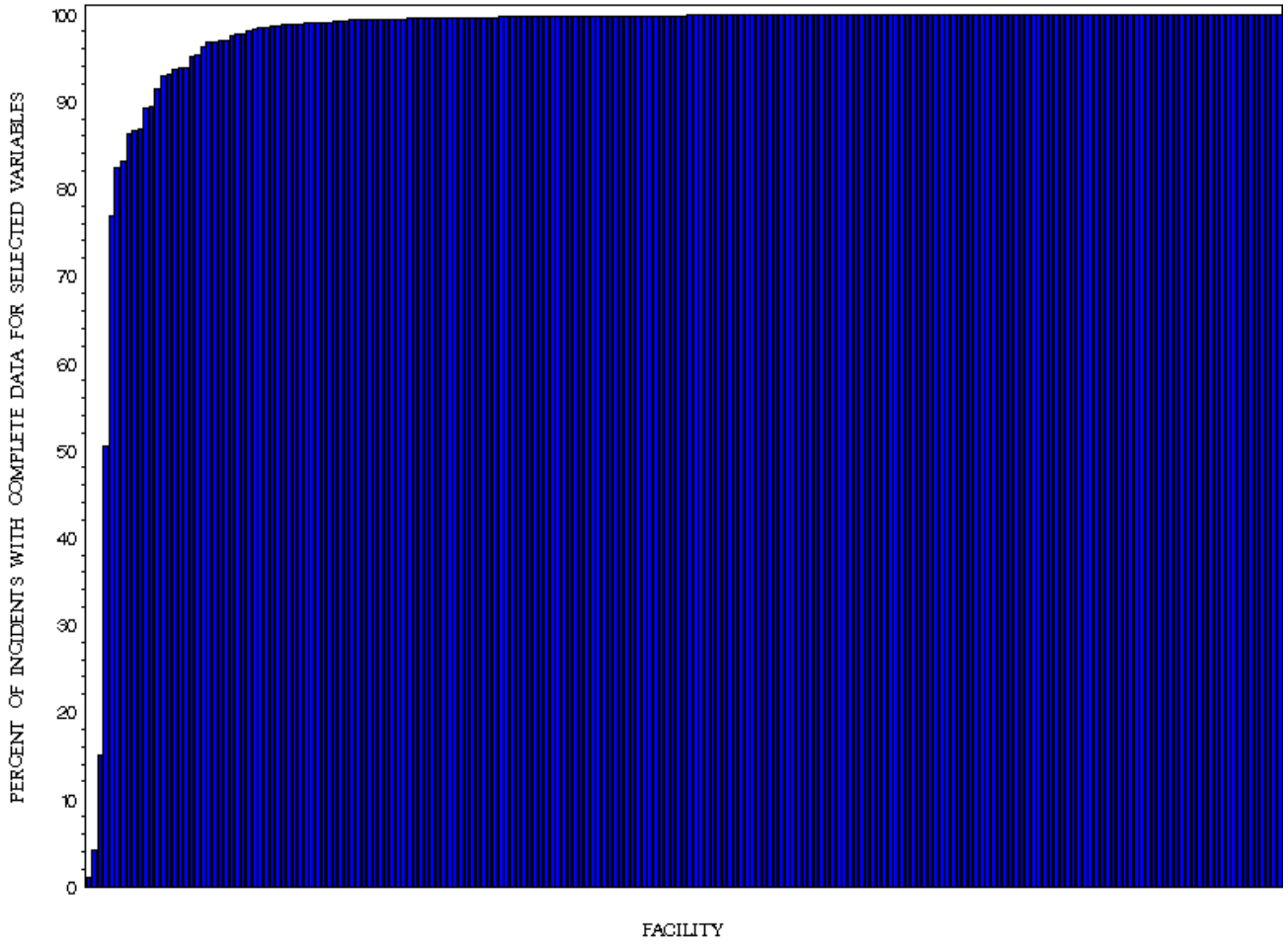


Three out of 65 facilities had no incidents with ISS ≥16 and are therefore not visible on the graph.
Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Injury Severity Score tables are generated using AIS98 Crosswalked ISS.
Injury Severity Score definitions can be found in Appendix B.

Figure 64

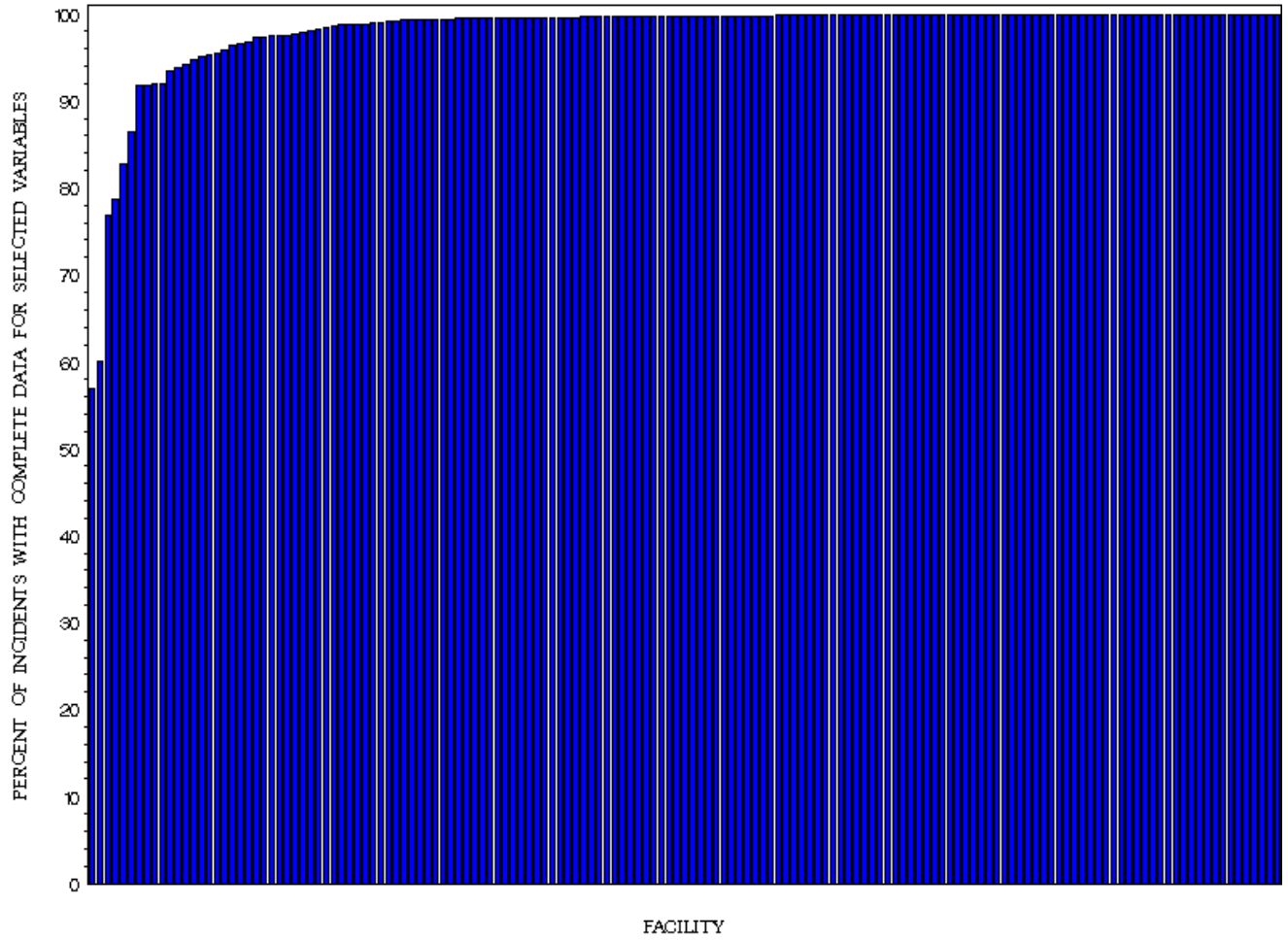
Data Completeness per Facility for Level I Facilities



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 on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 65

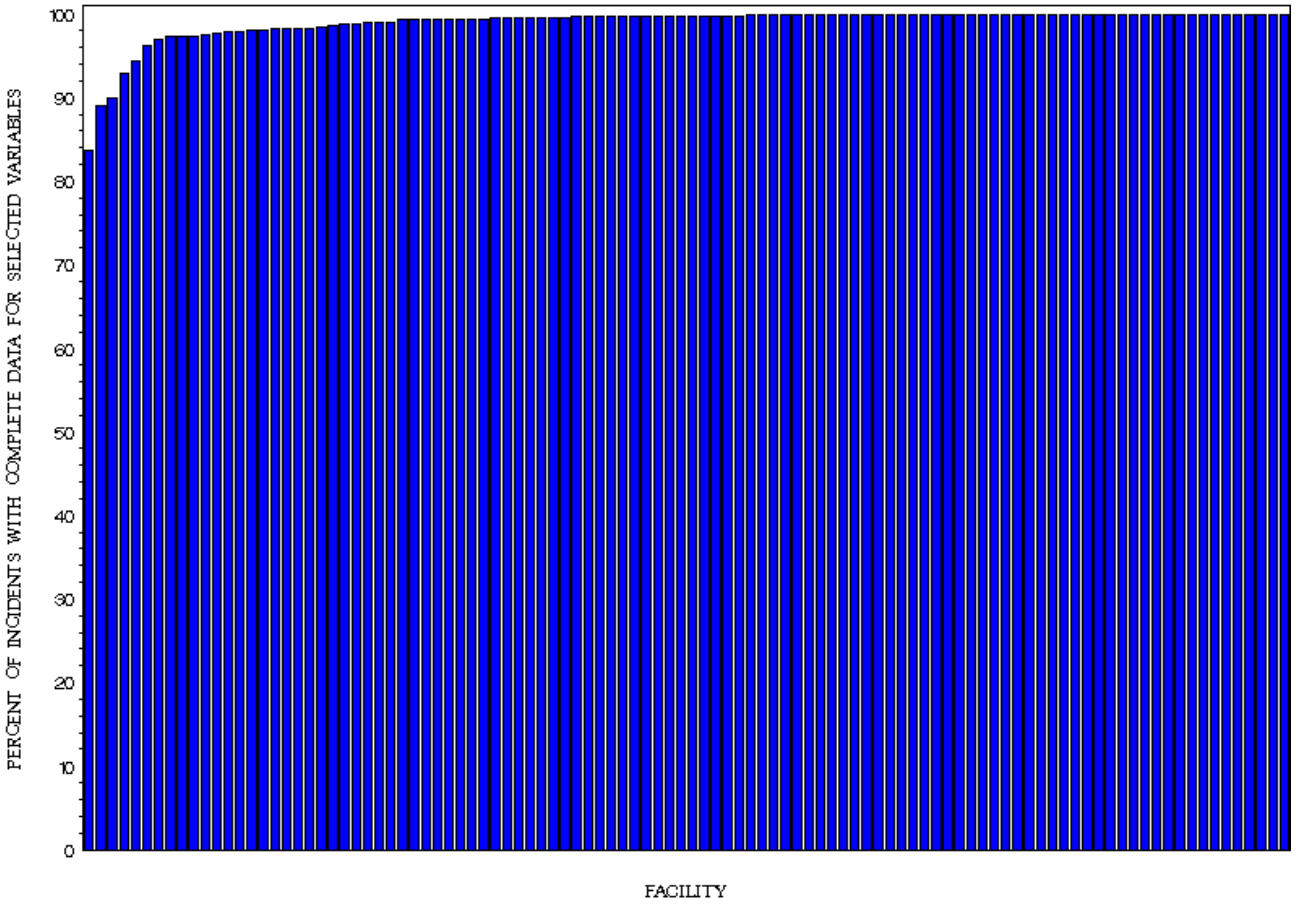
Data Completeness per Facility for Level II Facilities with Bed Size ≤ 400 Beds



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 on ACS verification and state designation, however, pediatric hospitals are not included in the analysis.

Figure 66

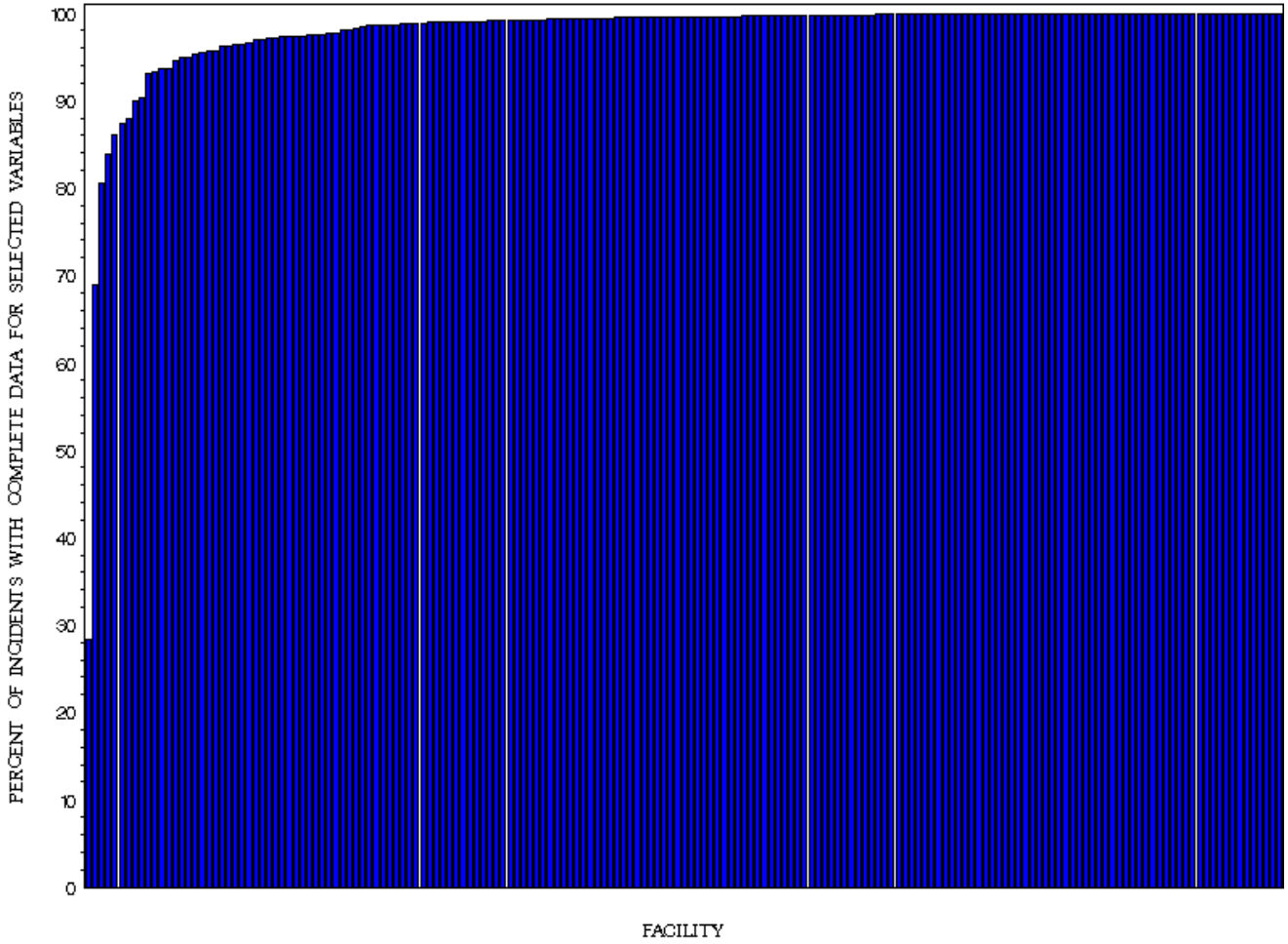
Data Completeness per Facility for Level II Facilities with Bed Size > 400 Beds



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 on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 67

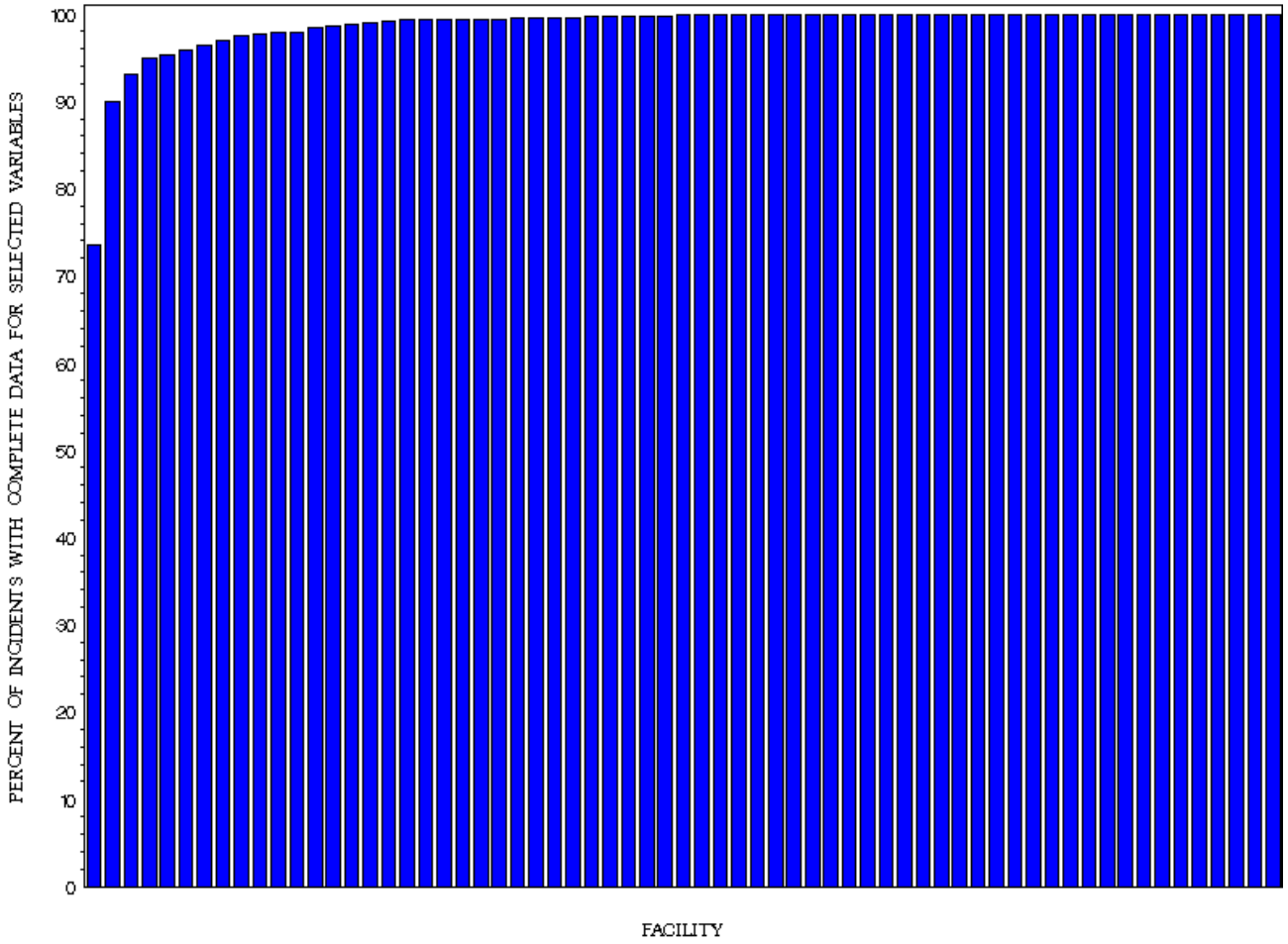
Data Completeness per Facility for Level III Facilities



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 on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 68

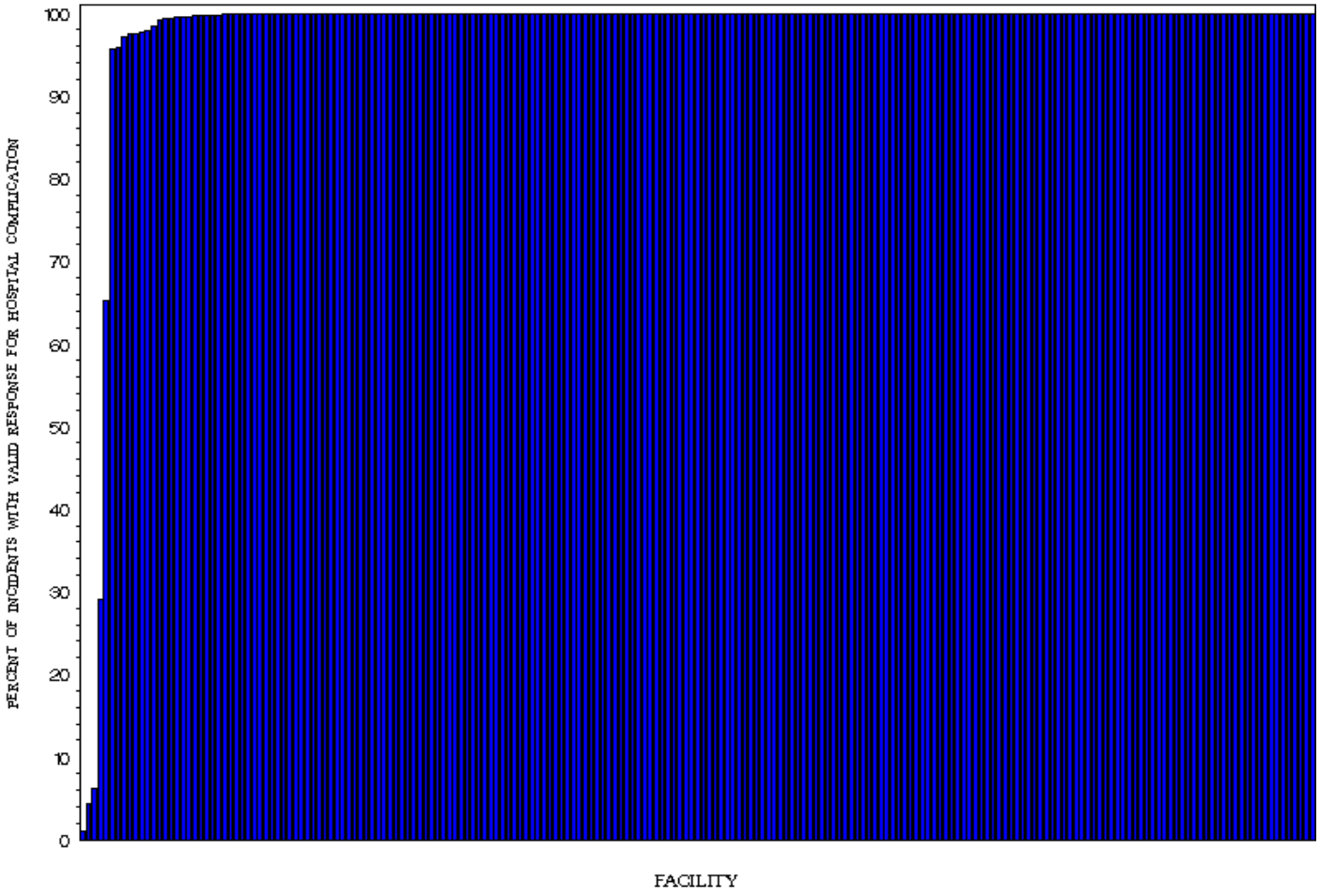
Data Completeness per Facility for Level IV Facilities and Facilities with Designation Other or Not Applicable



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 on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 69

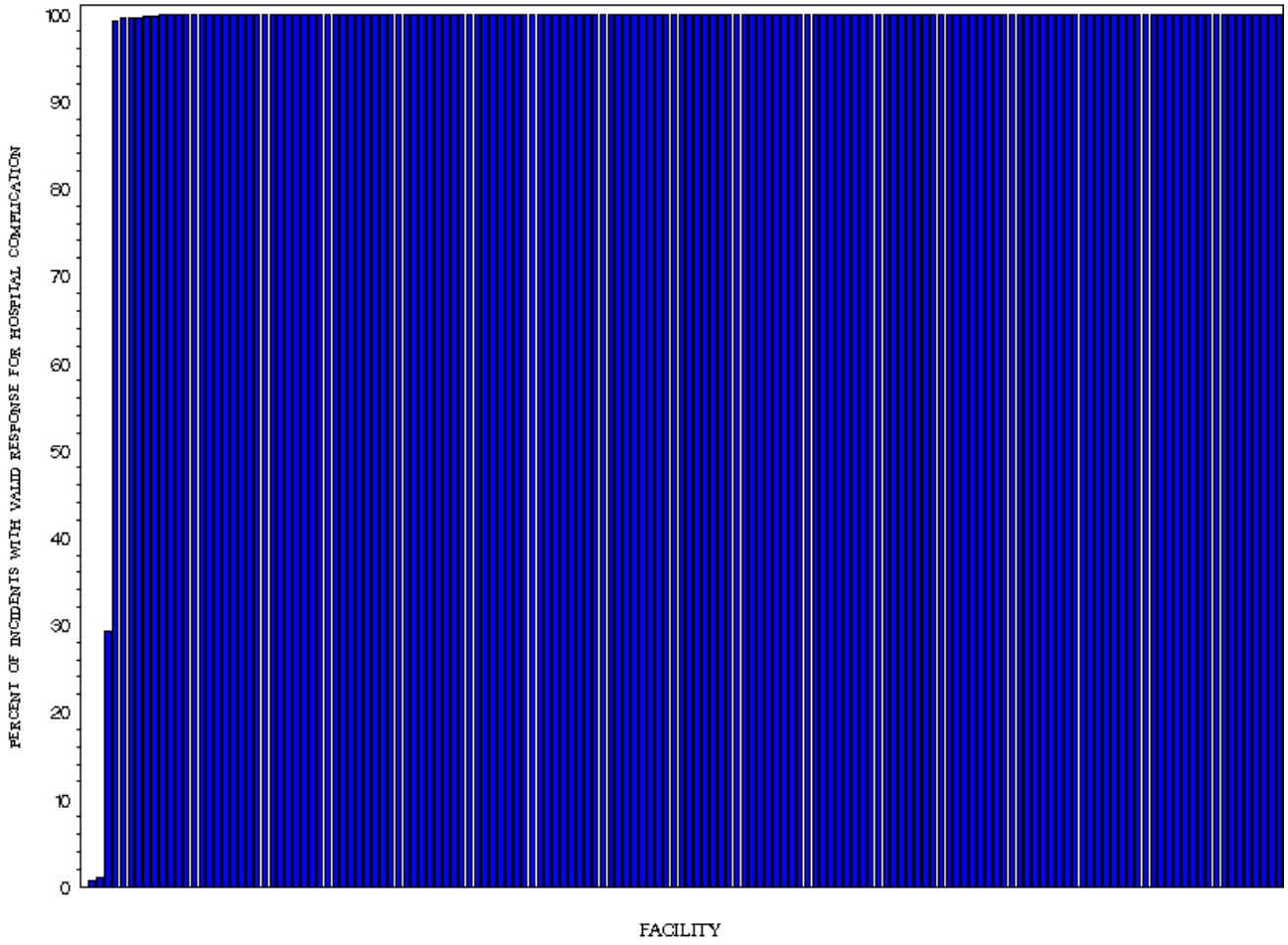
Complications Reported per Facility for Level I Facilities



Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 70

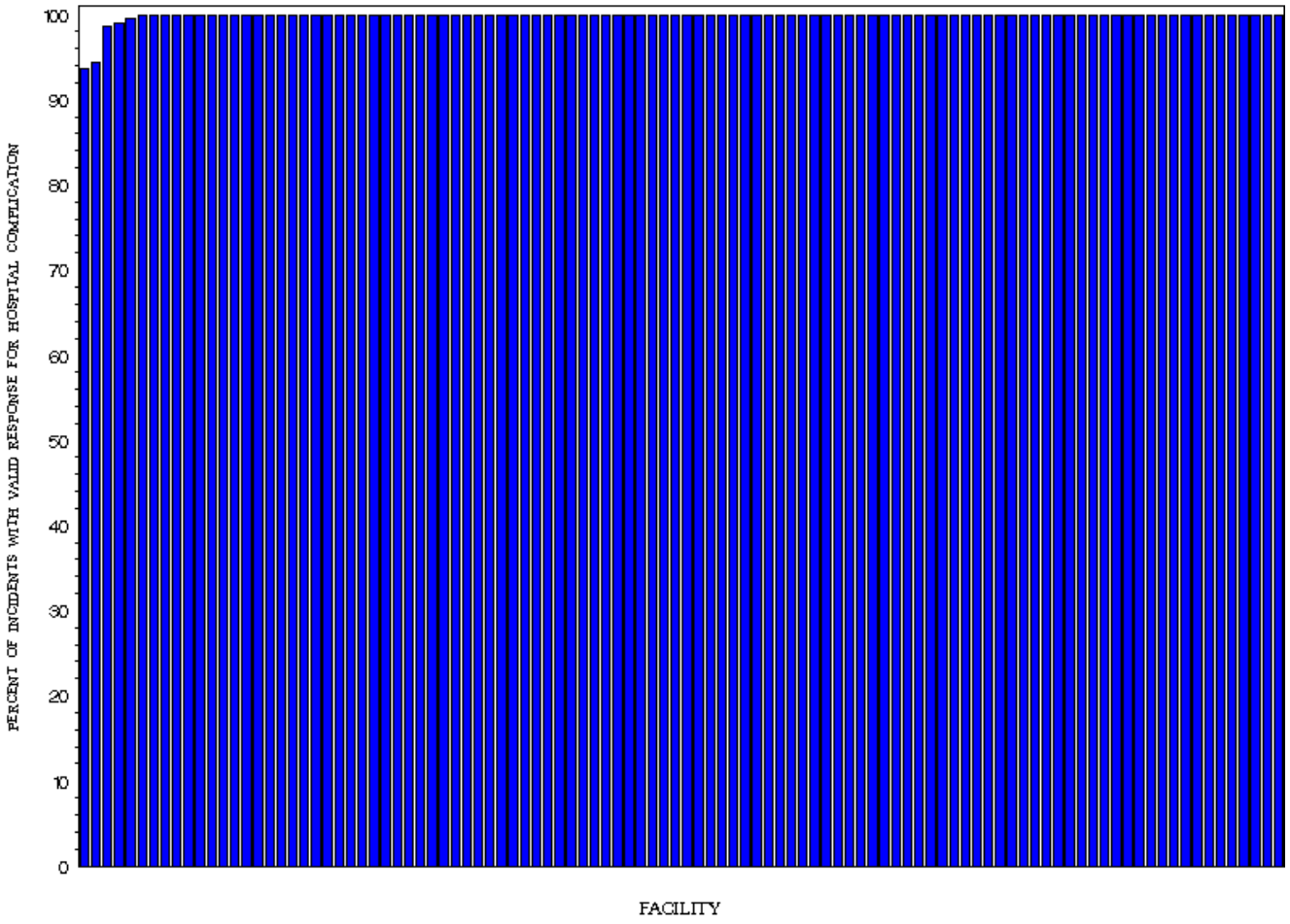
Complications Reported per Facility for Level II Facilities with Bed Size ≤ 400 Beds



One out of 153 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 on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 71

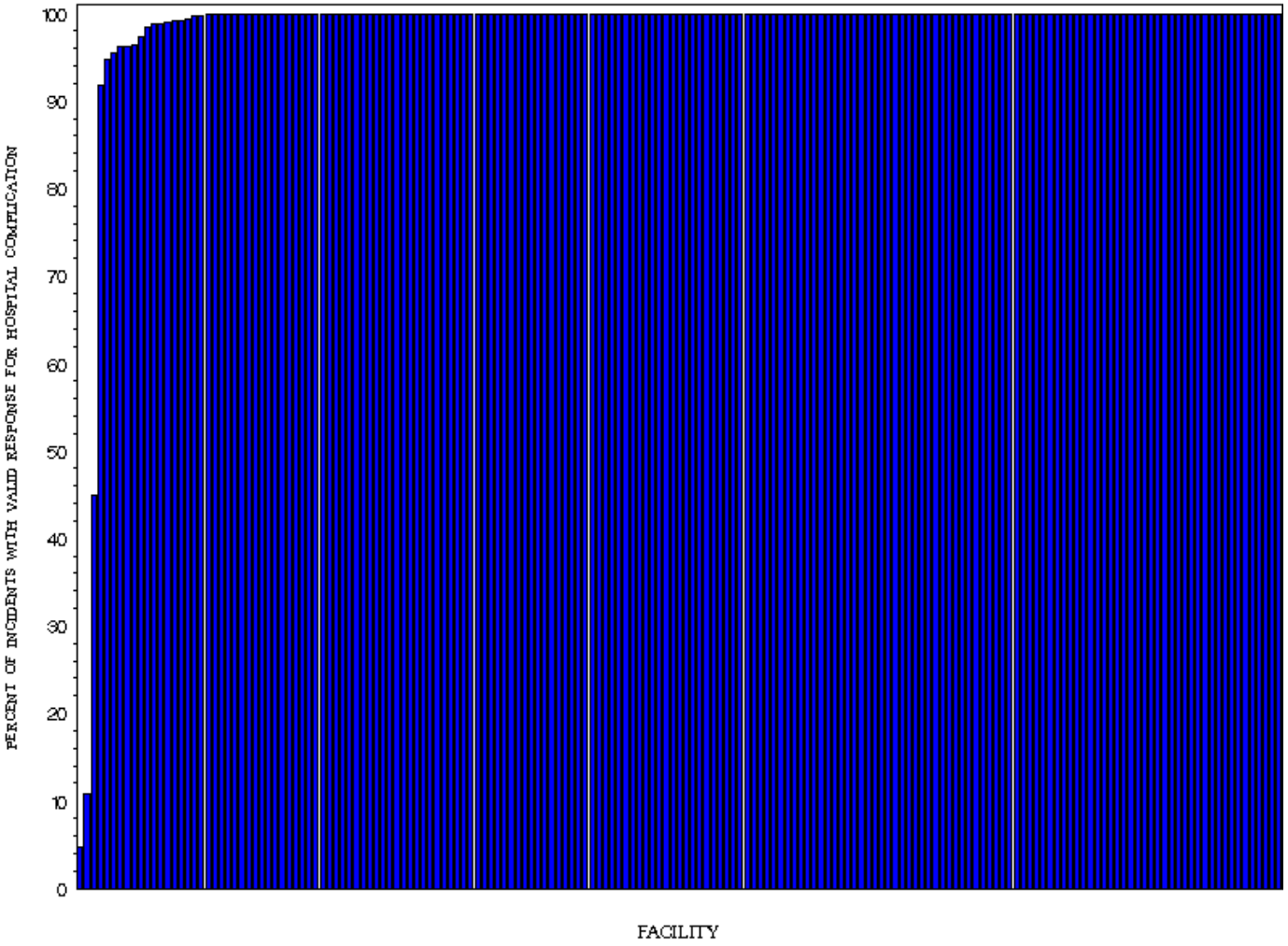
Complications Reported per Facility for Level II Facilities with Bed Size > 400 Beds



Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 72

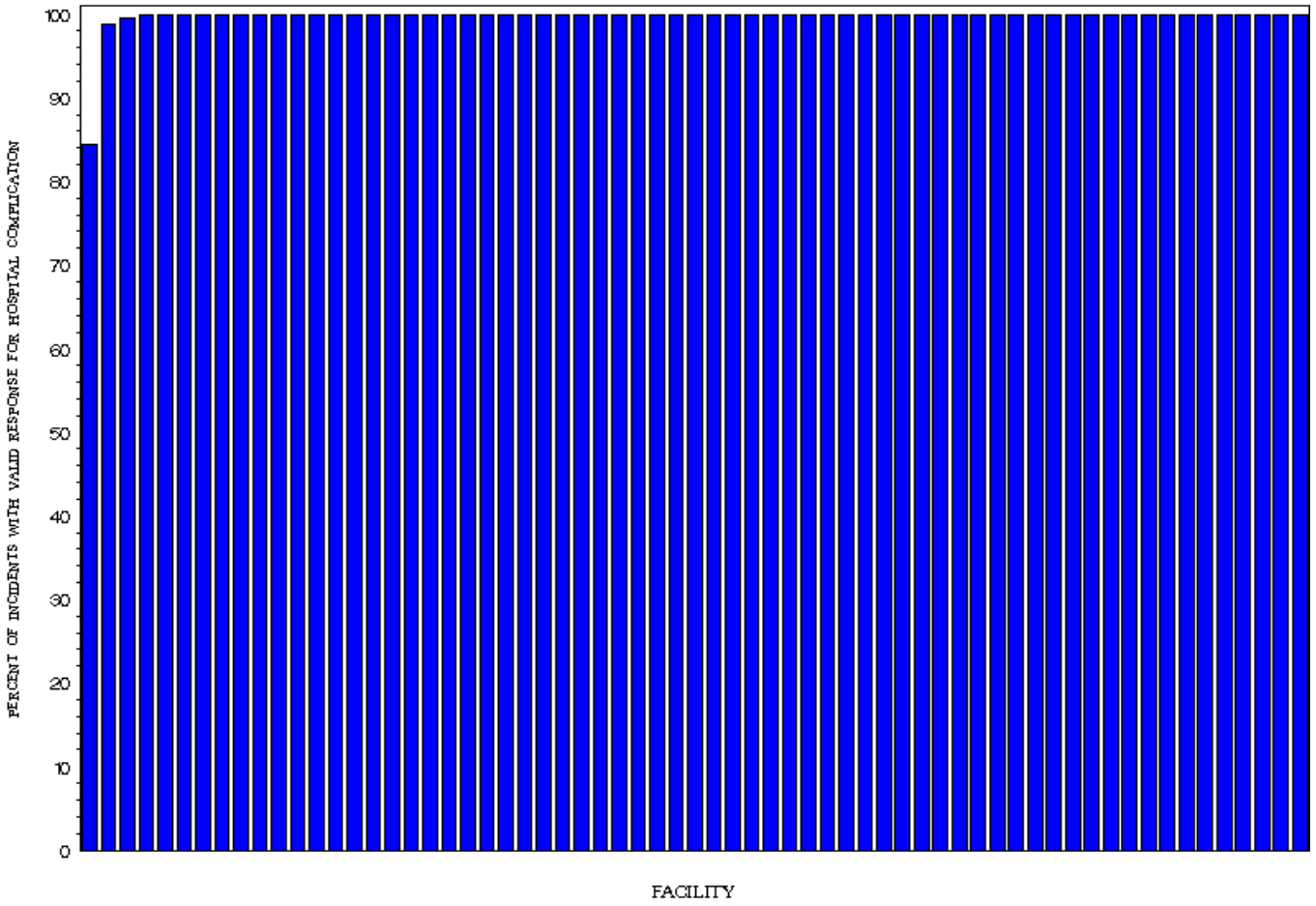
Complications Reported per Facility for Level III Facilities



Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Figure 73

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



Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

APPENDICES

APPENDIX A

Definition of a Trauma Patient

Definition of a Trauma Patient Adopted by the NATIONAL TRAUMA DATA BANK®

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)

ICD-10-CM:

S00-S99, T07, T14, T20-T28, T30-T32 and T79.A1-T79.A9

Excluding the following isolated injuries:

- S00, S10, S20, S30, S40, S50, S60, S70, S80, S90

AND MUST INCLUDE ONE OF THE FOLLOWING IN ADDITION TO THE CODES LISTED ABOVE:

- 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)

APPENDIX B

Comparative Injury Severity Score (ISS) Definitions

Local ISS: Injury Severity Scores as submitted by the facility.

AIS Submitted: Injury Severity Scores as calculated by the NTDB from AIS codes submitted by the facility.

AIS98 Crosswalked: Injury Severity Scores as calculated using AIS submitted by hospitals and then crosswalked to AIS98. If hospital does not submit AIS98, then ISS is based on AIS derived from ICDMAP-90.

AIS ICDMAP-90: Injury Severity Scores as calculated by the NTDB using ICD-9-CM diagnosis codes that are mapped to AIS90 codes using ICDMAP-90 software.

APPENDIX C

E-Code Grouping: Recommended Framework for E-Code Groupings for Presenting Injury Mortality and Morbidity Data

Mechanism/Cause	Manner/Intent				
	Unintentional	Self-Inflicted	Assault	Undetermined	Other
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[3]	E890.0-E899, E924.0-.9	E958.1,.2,.7	E961, E968.0,.3, E979.3	E988.1,.2,.7	
Fire/flame[3]	E890.0-E899	E958.1	E968.0, E979.3	E988.1	
Hot object/ substance	E924.0-.9	E958.2,.7	E961,E968.3	E988.2,37	
Firearm[3]	E922.0-.3,.8,.9	E955.0-.4	E965.0-4, E979.4	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-E807(.2) E820-E825(.7) E826-E829(.0)				

Link to ICD-10 Matrix

APPENDIX C

E-Code Grouping: Recommended Framework for E-Code Groupings for Presenting Injury Mortality and Morbidity Data

Mechanism/Cause	Manner/Intent				
	Unintentional	Self-Inflicted	Assault	Undetermined	Other
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	E900.00-E909, E928.0-.2	E958.3		E958.3	
Bites/stings[3]	E905.0-.6,.9 E906.0-.4,.5,.9				
Overexertion	E927				
Poisoning	E850.0-E869.9	E950.0-E952.9	E962.0-.9, E979.6,.7	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[3,4]	E846-E848, E914-E915 E918, E921.0-39, E922.4,.5 E923.0-.9, E925.0-E926.9 E928(.3-.5), E929.0-.5	E9555,.6,.7,.9 E958.0,.4	E960.1,E965.5-.9 E967.0-.9, E968.4,.6,.7 E979 (.0-.2,.5,.8,.9)	E985.5,.6,.7 E988.0,.4	E971, E978 E990-E994, E996 E997.0-.2
Unspecified	E887. E928.9, E929.9	E958.9	E968.9	E988.9	E976, E997.9
All Injury[3]	E800-E869, E880-E929	E950-E959	E960-E969, E979, E999.1	E980-E989	E970-E978, E990-E999.0
Adverse effects					E870-E879 E930.0-E949.9
Medical care					E870-E879
Drugs					E930.0-E949.9
All external causes					E800-E999

[Link to ICD-10 Matrix]

APPENDIX C

E-Code Grouping: Table Notes

[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]Codes in bold are for morbidity coding only. For details see Table 2.
[4]E849 (place of occurrence) has been excluded from the matrix. For mortality coding, an *ICD-9* E849 code does not exist. For morbidity coding, an *ICD-9-CM* E849 code should never be first-listed E-code and should only appear as an additional code to specify the place of occurrence of the injury incident.
Note: ICD-9 E-codes for coding underlying cause of death apply to injury-related death data from 1979 through 1998. Then there is a new ICD-10 external cause of injury matrix that applies to death data from 1999 and after. This can be found on the National Center for Health Statistics website at http://www.cdc.gov/nchs/about/otheract/ice/projects.htm.

Reference MM WR 1997;46:1-30. Updated last time in 2009.

Resources

- www.ntdb.org for more information about NTDB
- www.ntdbdatacenter.com to submit data to NTDB
- www.facs.org/quality-programs/trauma/ntdb/ntds for information on the data standard