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NTDB®
NATIONAL TRAUMA DATA BANK

National Trauma Data Bank 2013

Annual Report

NTDB Annual Report 2013

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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 5 million records. The 2013 Annual Report is based on 833,311 2012 admission year records from 805 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 and year, and the name of the figure used in the format of the following:

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Executive Summary

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

It contains more than 5 million records. The 2013 Annual Report reviews 2012 admissions submitted in the 2013 call for data, totaling 833,311records 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 (47.05%) of patients suffer minor injuries and just under one–third (30.51%) have moderate injuries.
- Case fatality rates increase with injury severity, with the most severe group experiencing a case fatality rate of 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

- Medicare insurance is the single largest payment source at 22.73%.
- Private/commercial insurance is second at 20.31%.
- Self–pay is the third largest payment category at 14.90%.

Mortality

- The overall mortality rate is 4.15%.
- The largest number of deaths is caused by fall–related injuries, followed by motor vehicle traffic and firearm.
- 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

- 805 hospitals submitted data to the NTDB in 2012.
- 235 are Level I centers.
- 267 are Level II centers.
- 240 are Level III or Level IV centers.
- 33 are Level I or Level II Pediatric–only centers.
- 68.20% of participating trauma centers reported using the NTDB ICD–9 inclusion criteria for their registries.
- 55.53% of participating centers reported including all hip fractures (in accordance with NTDB inclusion criteria).
- 89.07% 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 under 7 and adults over the age of 75.
- Males account for 70% of all incidents up to age 70, after age 71, most patients are female.

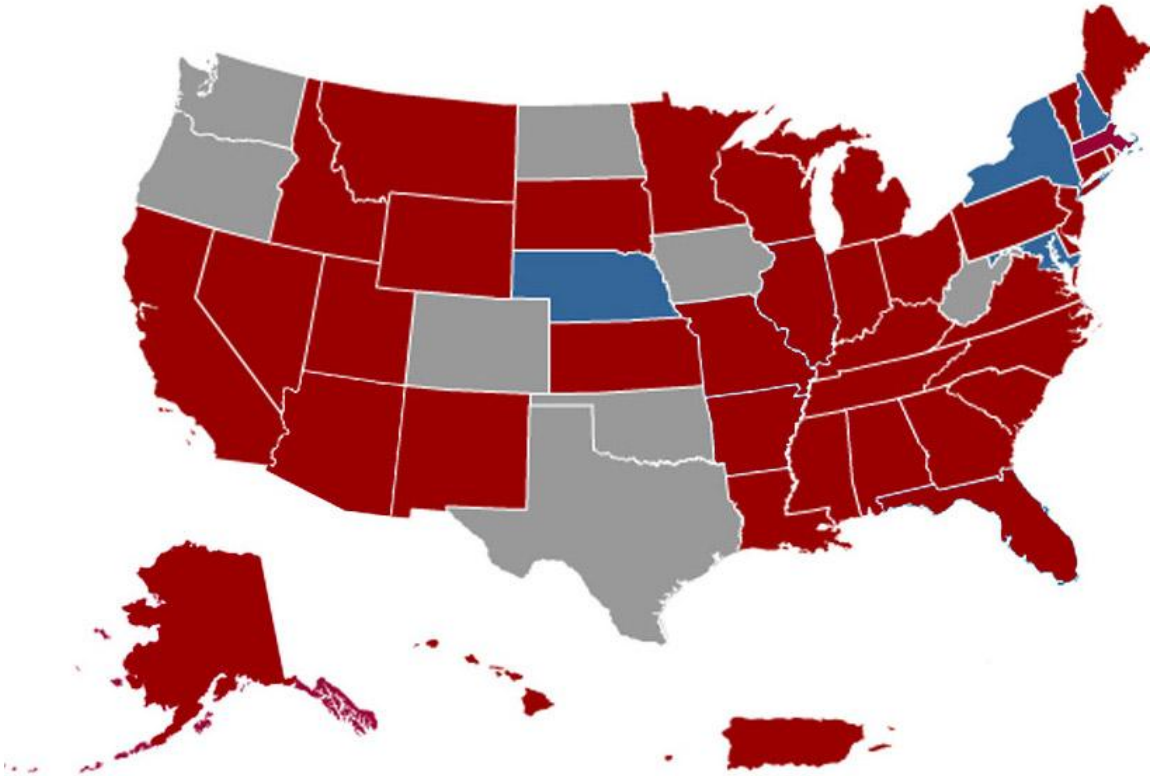
Mechanism of Injury

- Falls account for 40% 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 27% of cases in the NTDB, with a dramatic rise between age 15 and 33, peaking around age 19.
- Firearm injuries steadily increase from 15-34 and decrease afterwards
- Suffocation, drowning/submersion injuries, and firearm injuries, have the highest case fatality rates, with suffocation at 30.30%, drowning/submersion at 18.14%. and firearm at 16.21%.

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	242	30.06
201 – 400	274	34.04
401 – 600	161	20.00
≥600	128	15.90
Total	805	100.00

Figure 2

Facilities by Bed Size

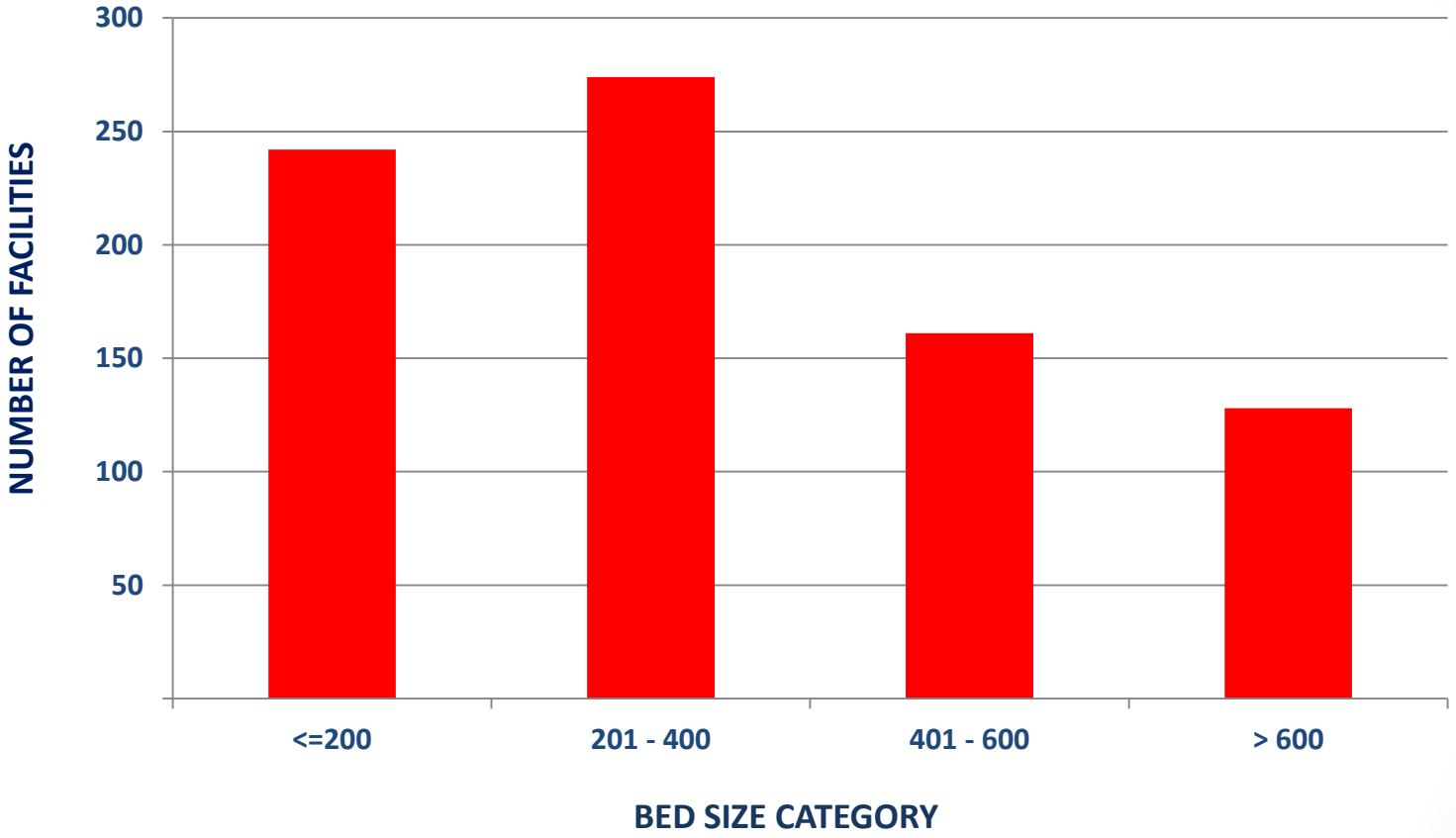


Table 3

Facilities by Trauma Level

LEVEL	NUMBER	PERCENT
I	235	29.19
II	267	33.17
III	153	19.01
IV	87	10.81
Other	10	1.24
NA	32	3.98
Total	805	100.00

This includes 33 pediatric–only centers.
Both ACS-verified and state-designated centers are included.

Figure 3

Facilities by Trauma Level

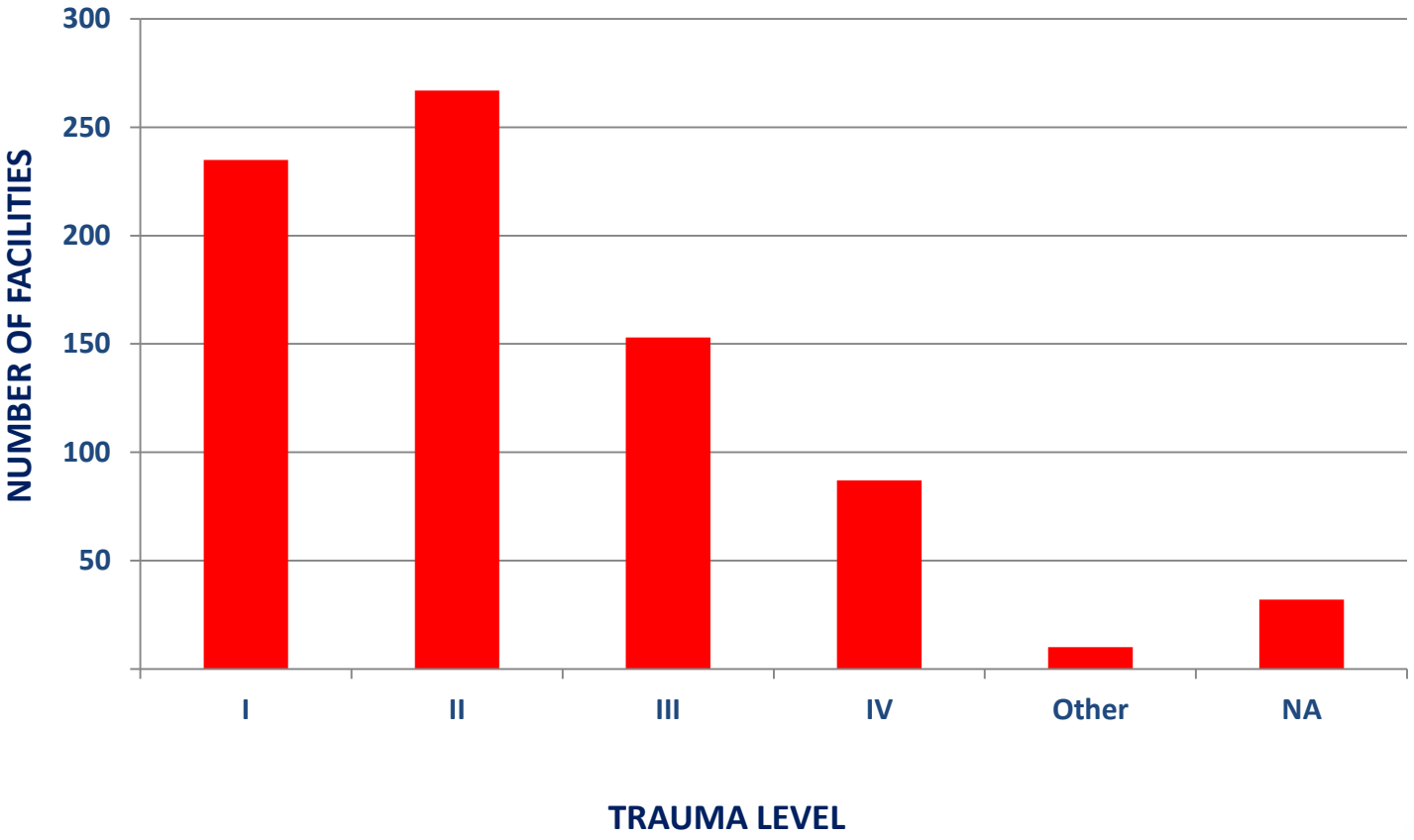


Table 4

Facilities by Region

REGION	NUMBER	PERCENT
MIDWEST	244	30.31
NORTHEAST	106	13.17
SOUTH	276	34.29
WEST	175	21.74
NON-US	4	0.50
Total	805	100.00

Figure 4

Facilities by Region

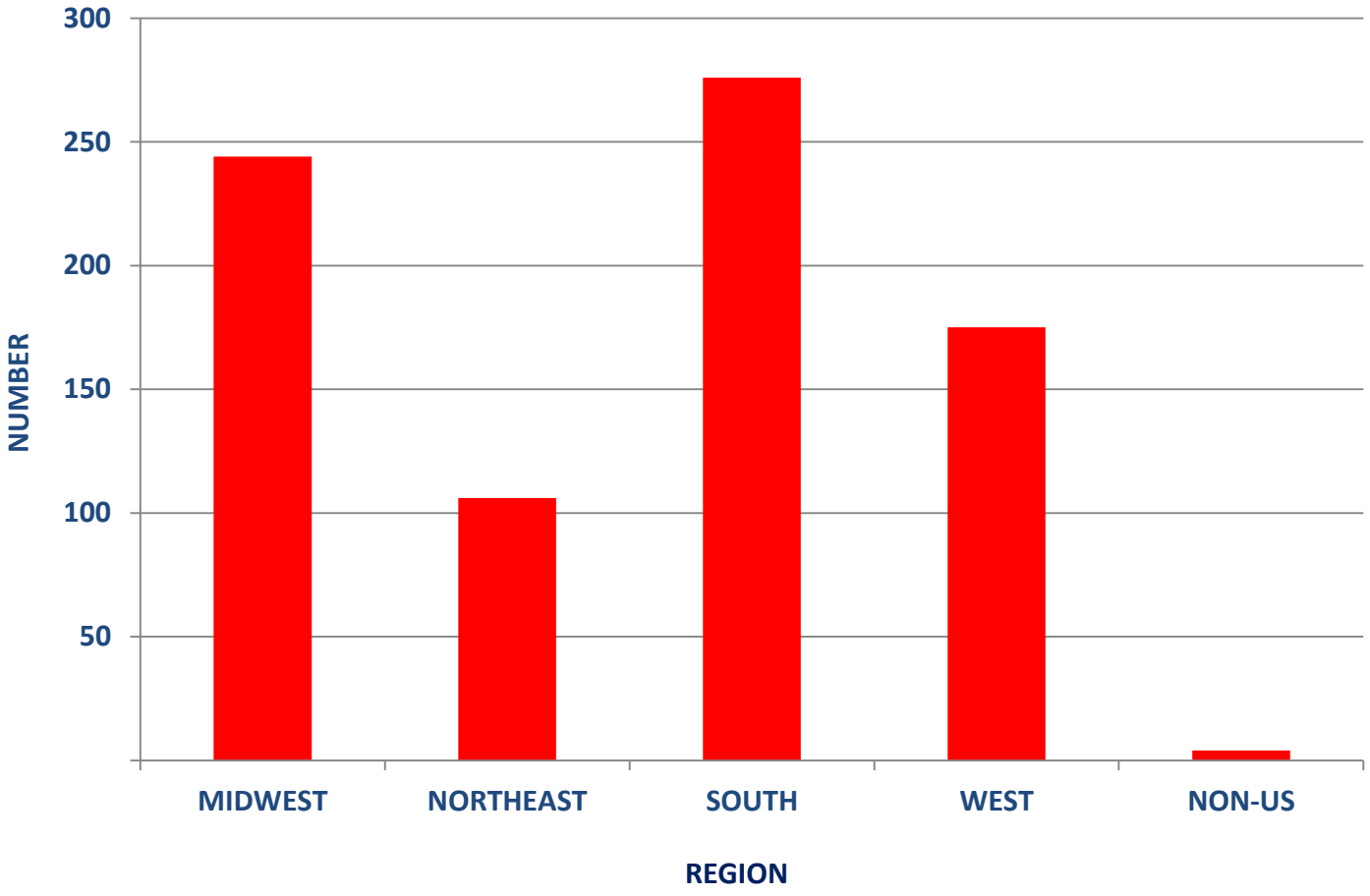


Table 5

Facilities by ICD-9 Inclusion Criteria

ICD-9 INCLUSION SAME AS NTDB	NUMBER	PERCENT
No	256	31.80
Yes	549	68.20
Total	805	100.00

Figure 5

Facilities by ICD-9 Inclusion Criteria

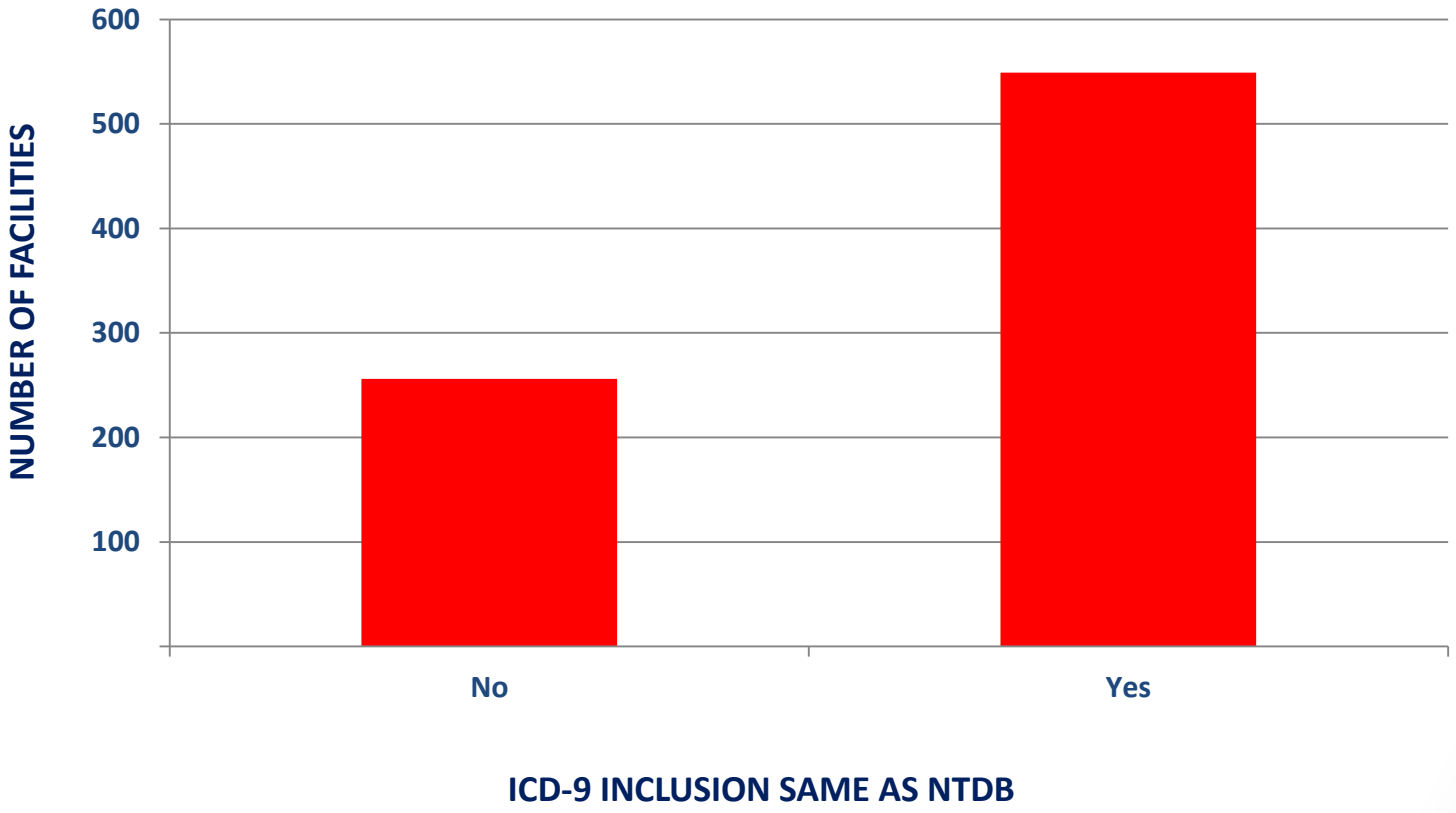


Table 6

Facilities by Length of Stay Inclusion Criteria

LOS	NUMBER	PERCENT
All admissions	556	69.07
23 hour holds	55	6.83
≥ 24 hours	87	10.81
≥ 48 hours	60	7.45
≥ 72 hours	47	5.84
Total	805	100.00

Figure 6

Facilities by Length of Stay Inclusion Criteria

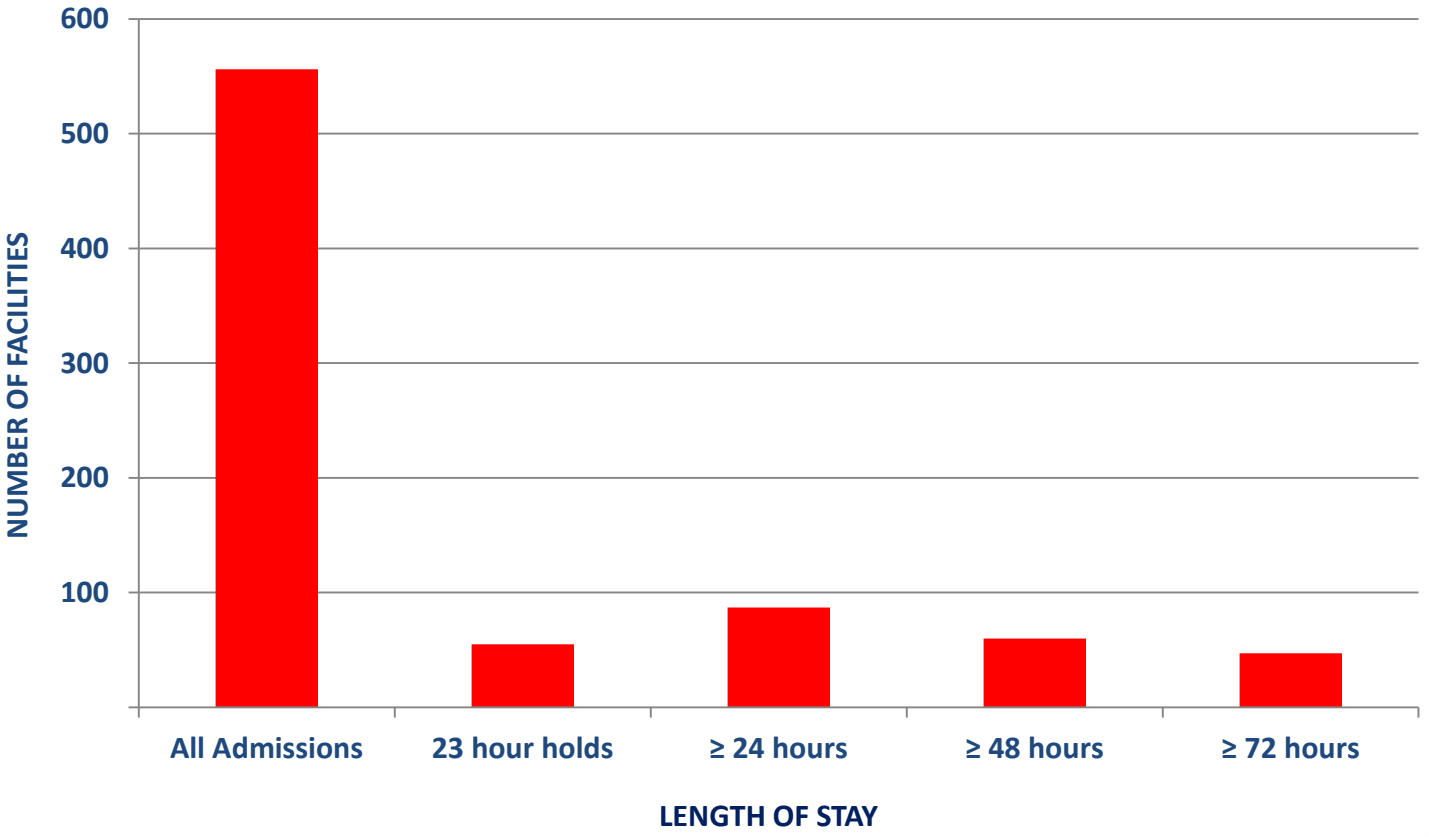


Table 7

Facilities by Isolated Hip Fracture Inclusion Criteria by Age

IHF Inclusion	NUMBER	PERCENT
All	447	55.53
Patients ≤18 years	31	3.85
Patients ≤50 years	3	0.37
Patients ≤55 years	12	1.49
Patients ≤60 years	5	0.62
Patients ≤65 years	139	17.27
Patients ≤70 years	11	1.37
None	157	19.50
Total	805	100.00

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

Figure 7

Facilities by Isolated Hip Fracture Inclusion Criteria by Age

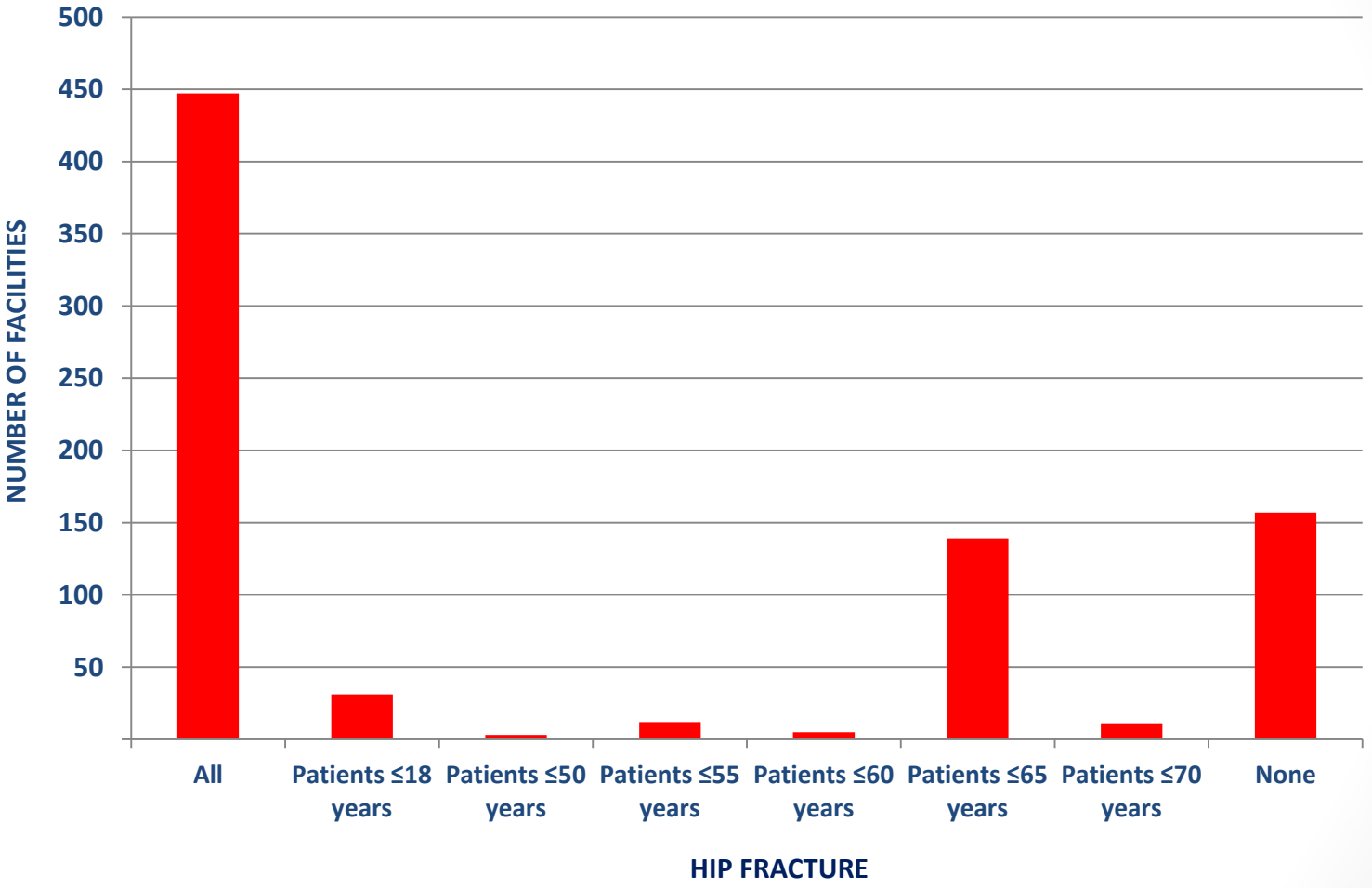


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Table 8

Facilities by Death on Arrival (DOA) Inclusion Criteria

DOA INCLUDED	NUMBER	PERCENT
No	88	10.93
Yes	717	89.07
Total	805	100.00

Figure 8

Facilities by Death on Arrival (DOA) Inclusion Criteria

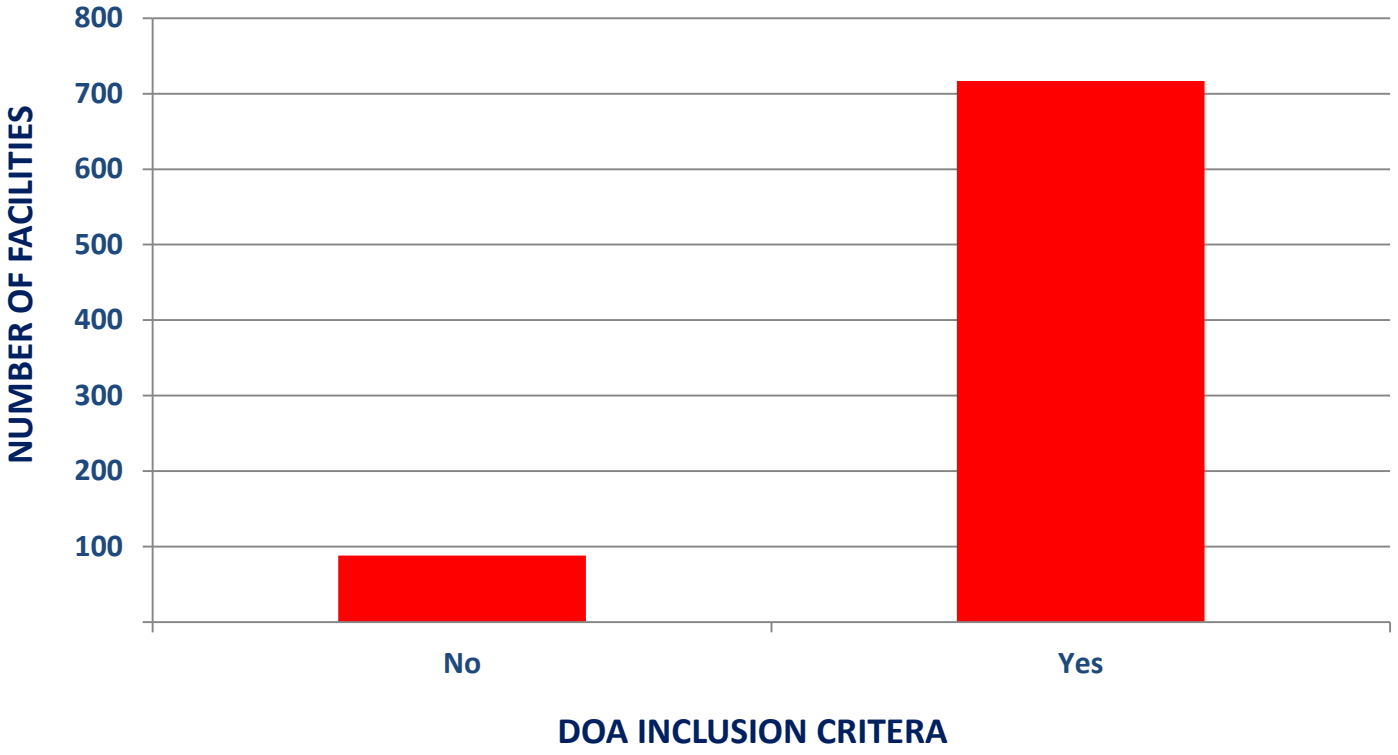


Table 9

Facilities by Transfer-In Criteria

TRANSFERS IN	NUMBER	PERCENT
All transfers	739	91.80
Within 4 hours	1	0.12
Within 8 hours	2	0.25
Within 12 hours	1	0.12
Within 24 hours	7	0.87
Within 48 hours	7	0.87
Within 72 hours	2	0.25
None	46	5.71
Total	805	100.00

Figure 9

Facilities by Transfer-In Criteria

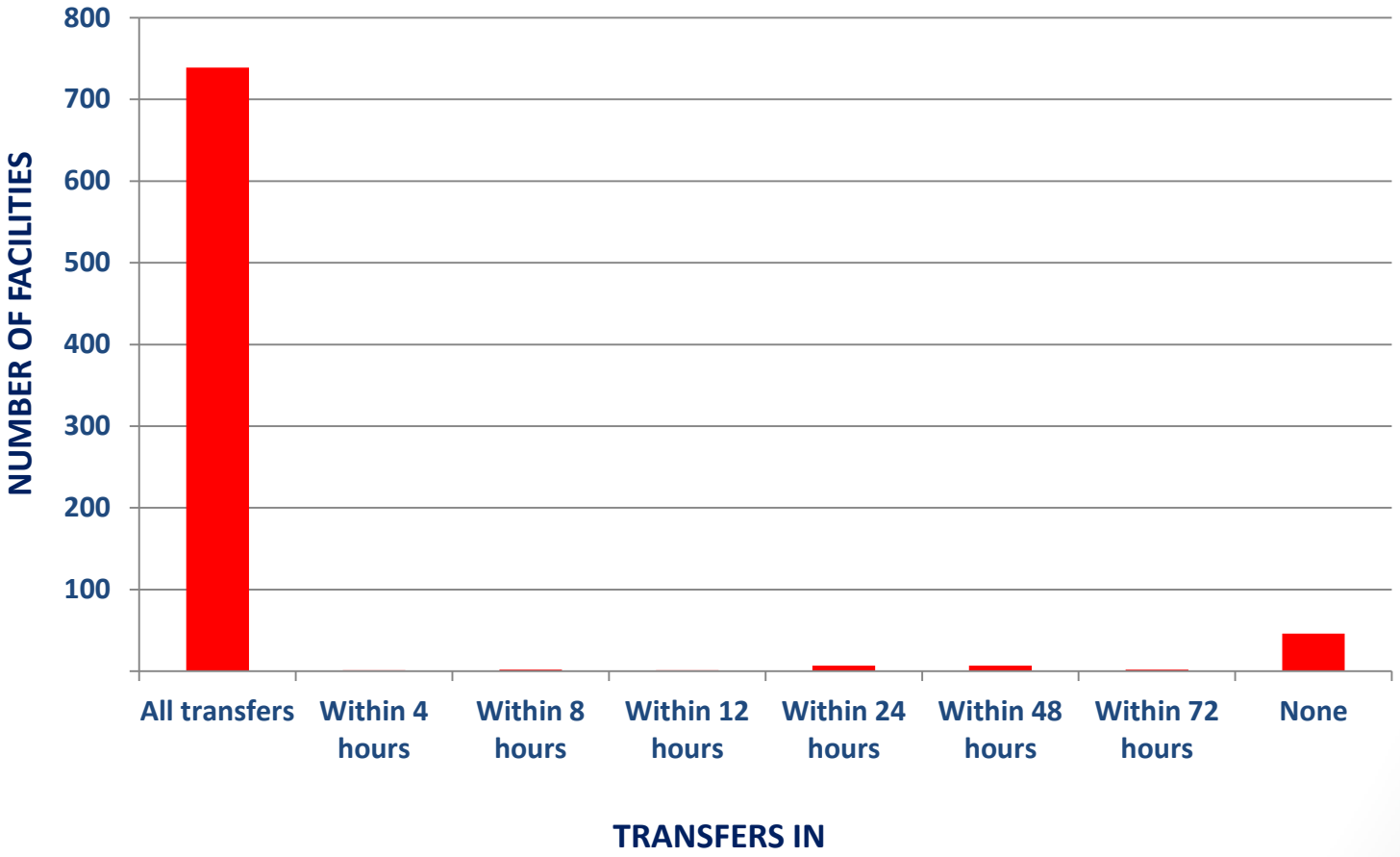


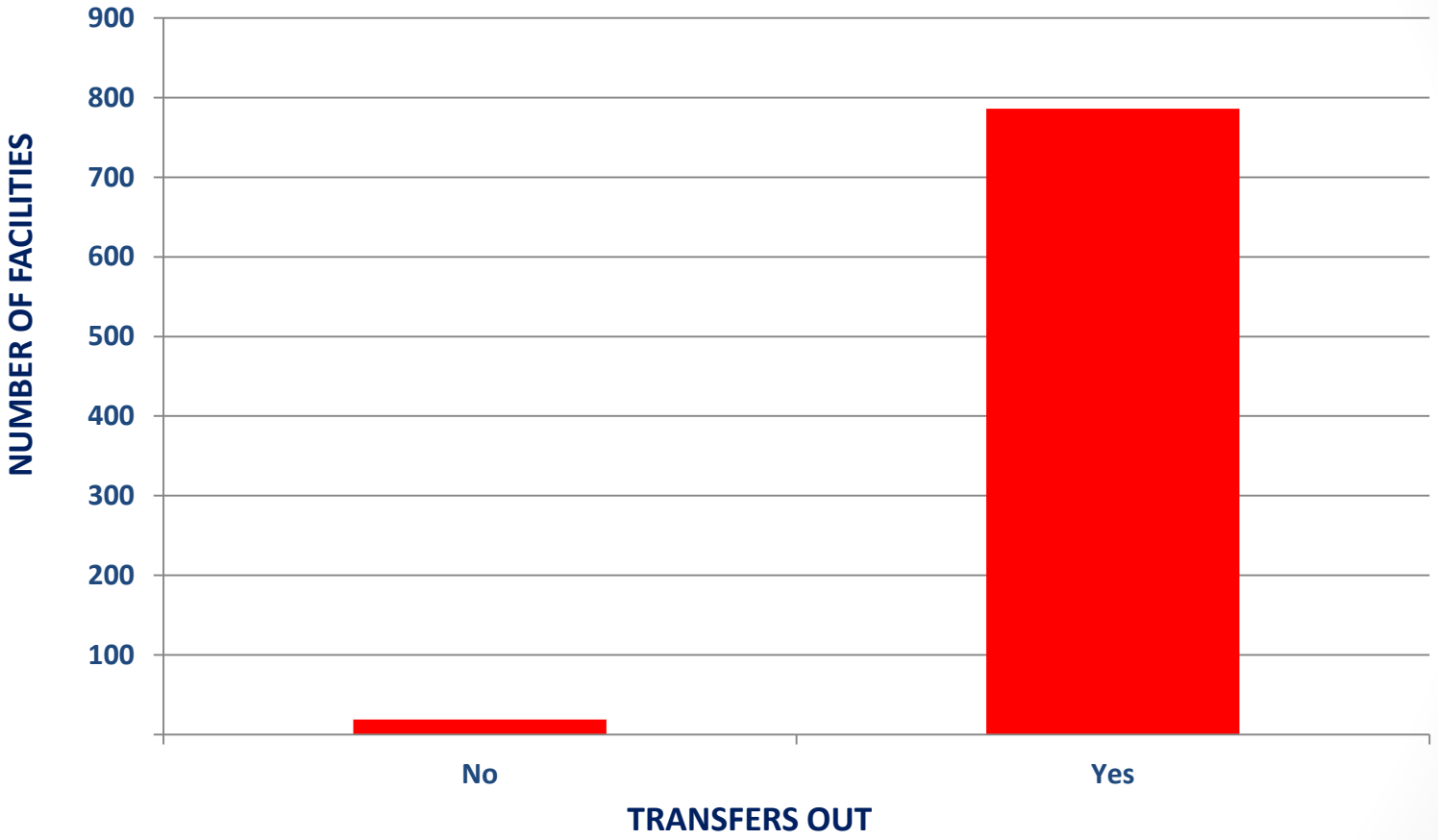
Table 10

Facilities by Transfer-Out Criteria

TRANSFERS OUT	NUMBER	PERCENT
No	19	2.36
Yes	786	97.64
Total	805	100.00

Figure 10

Facilities by Transfer-Out Criteria



DEMOGRAPHIC INFORMATION

Table 11

Incidents by Age

AGE	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
<1 year	9,569	1.15	215	2.25
1-4	27,535	3.30	429	1.56
5-9	28,397	3.41	246	0.87
10-14	29,817	3.58	299	1.00
15-19	57,567	6.91	1,645	2.86
20-24	73,444	8.81	2,630	3.58
25-34	107,429	12.89	3,751	3.49
35-44	86,345	10.36	2,888	3.34
45-54	102,791	12.34	3,566	3.47
55-64	91,277	10.95	3,748	4.11
65-74	69,805	8.38	3,556	5.09
75-84	78,475	9.42	5,536	7.05
>84	70,800	8.50	6,081	8.59
NK/NR	60	0.01	32	53.33
Total	833,311	100.00	34,622	4.15

NK/NR denotes “Not Known/Not Recorded” on all slides.

Figure 11

Incidents by Age

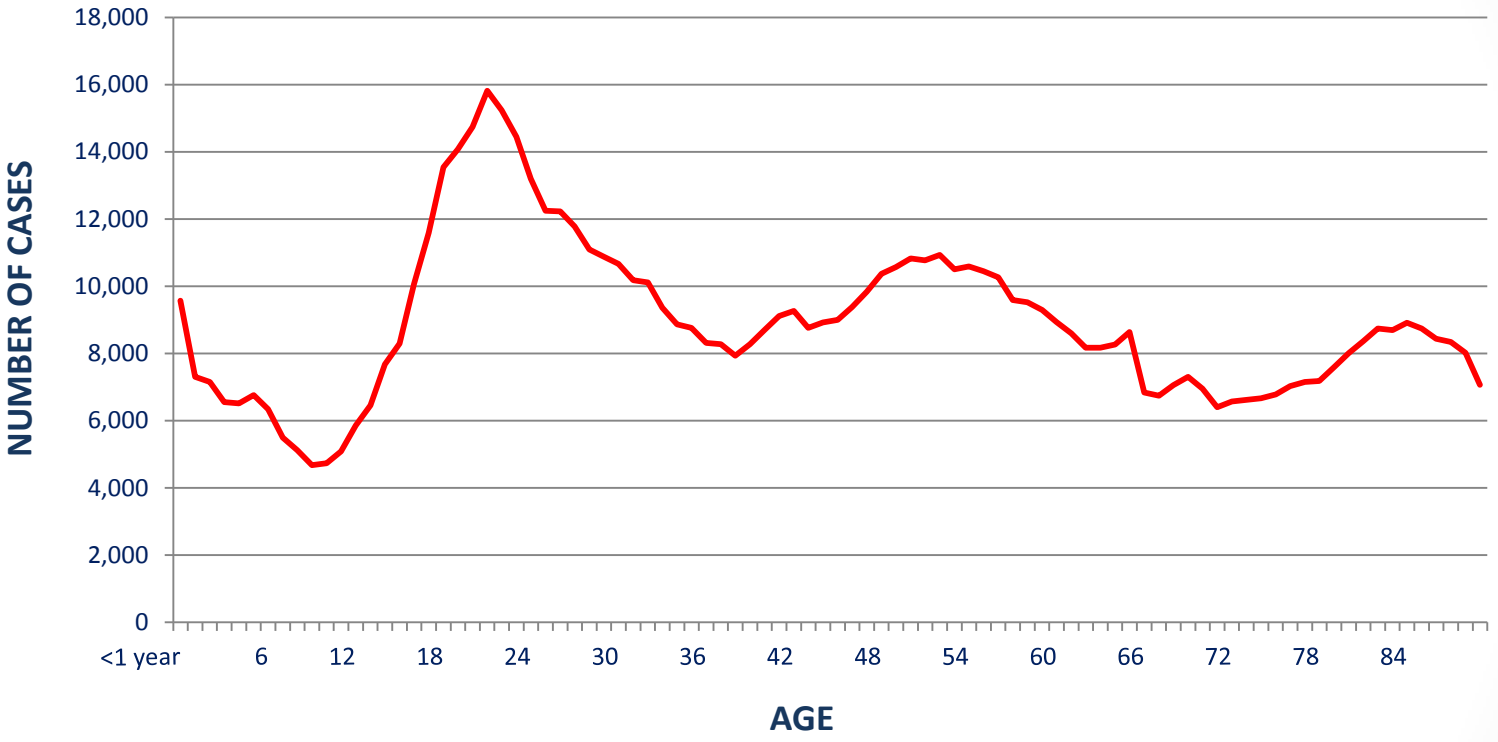


Figure 12

Case Fatality Rate by Age

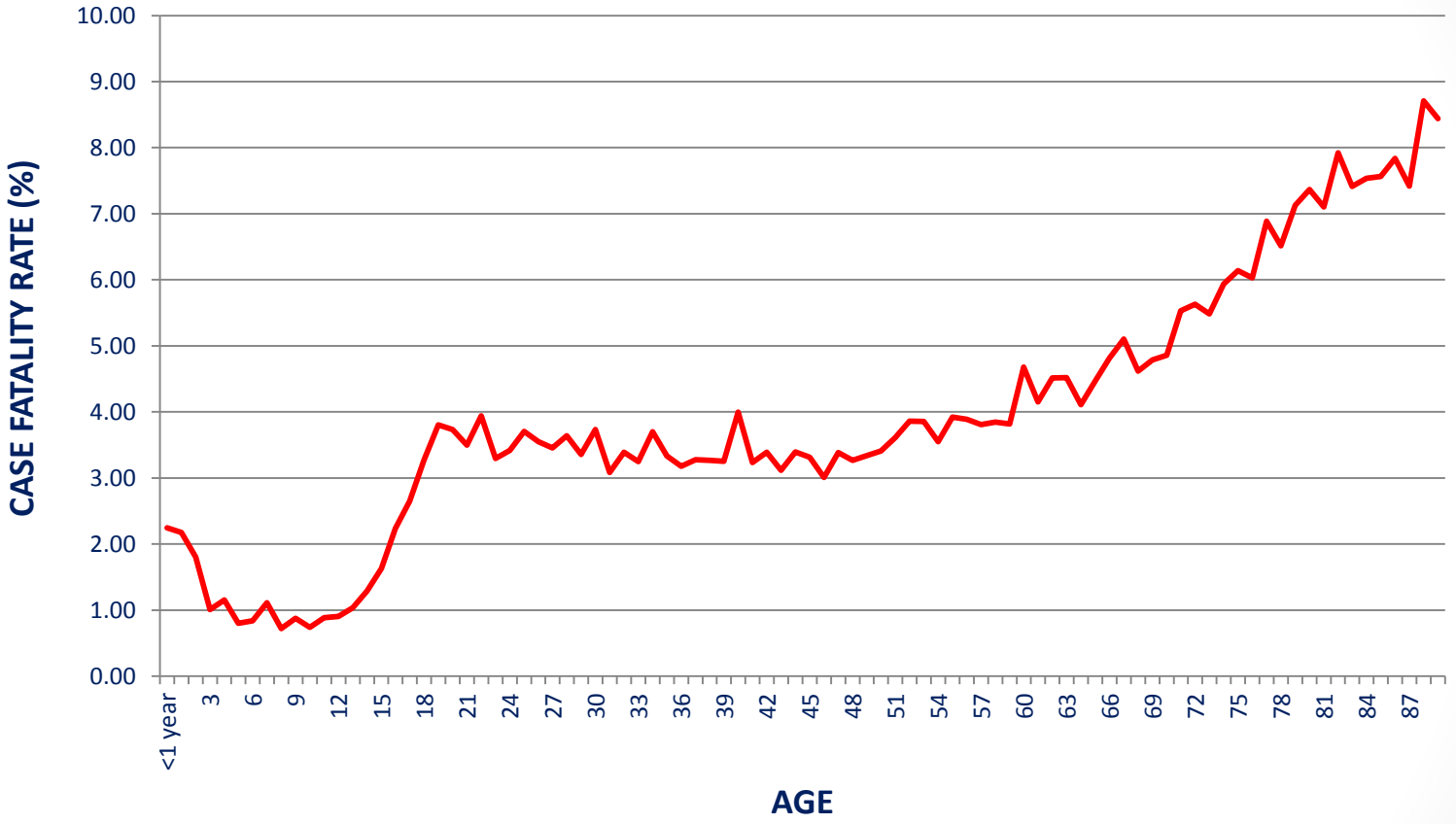


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Table 12

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	4,088	5,476	81	134	1.98	2.45
1-4	11,088	16,440	181	248	1.63	1.51
5-9	11,162	17,227	94	152	0.84	0.88
10-14	8,762	21,048	91	208	1.04	0.99
15-19	16,002	41,555	347	1,298	2.17	3.12
20-24	18,360	55,069	425	2,205	2.31	4.00
25-34	26,124	81,276	657	3,089	2.51	3.80
35-44	22,970	63,349	621	2,265	2.70	3.58
45-54	30,267	72,496	809	2,757	2.67	3.80
55-64	33,949	57,295	963	2,783	2.84	4.86
65-74	33,378	36,406	1,198	2,356	3.59	6.47
75-84	47,084	31,372	2,477	3,057	5.26	9.74
>84	49,264	21,512	3,386	2,694	6.87	12.52
NK/NR	10	49	7	25	70.00	51.02
Total	312,508	520,570	11,337	23,271	3.63	4.47

Figure 13

Incidents by Age and Gender

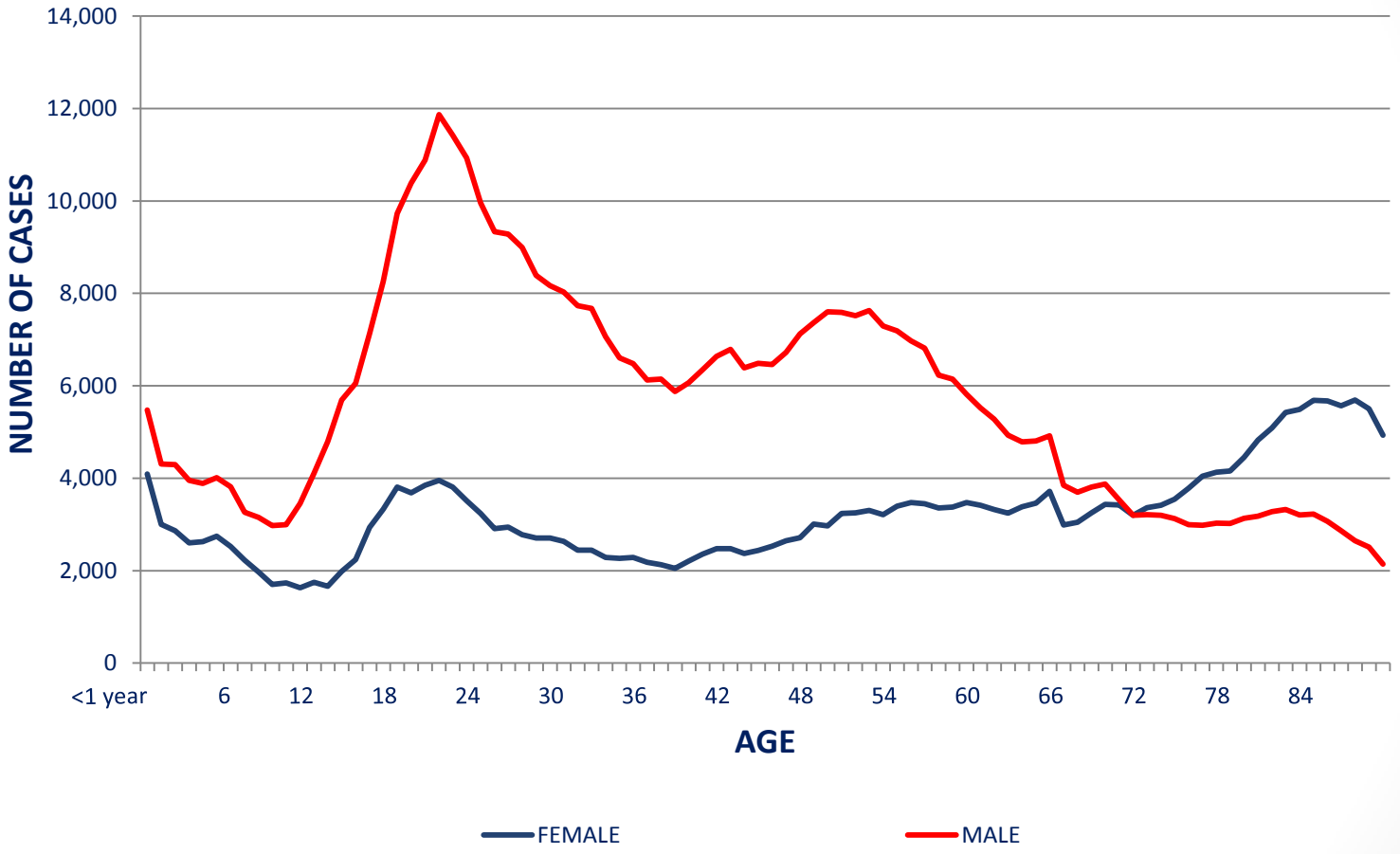

Figure 14

Case Fatality Rate by Age and Gender

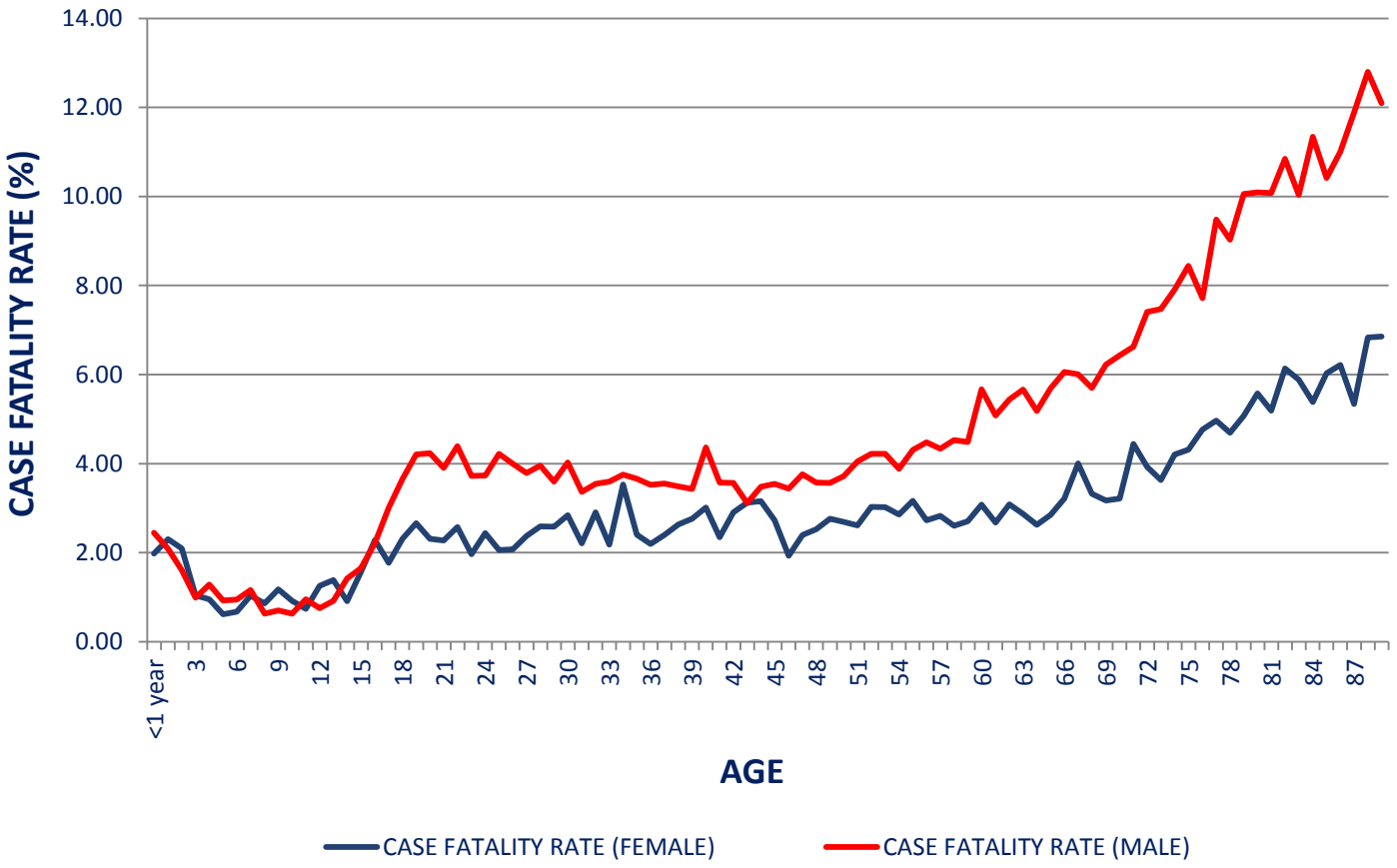

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Table 15

Alcohol Use

ALCOHOL USE	NUMBER	PERCENT
No (confirmed by test)	198,791	23.86
No (not tested)	434,465	52.14
Yes (confirmed by test - beyond legal limit)	85,337	10.24
Yes (confirmed by test - trace levels)	34,886	4.19
Not applicable	16,230	1.95
NK/NR	63,602	7.63
Total	833,311	100.00

Figure 15

Alcohol Use

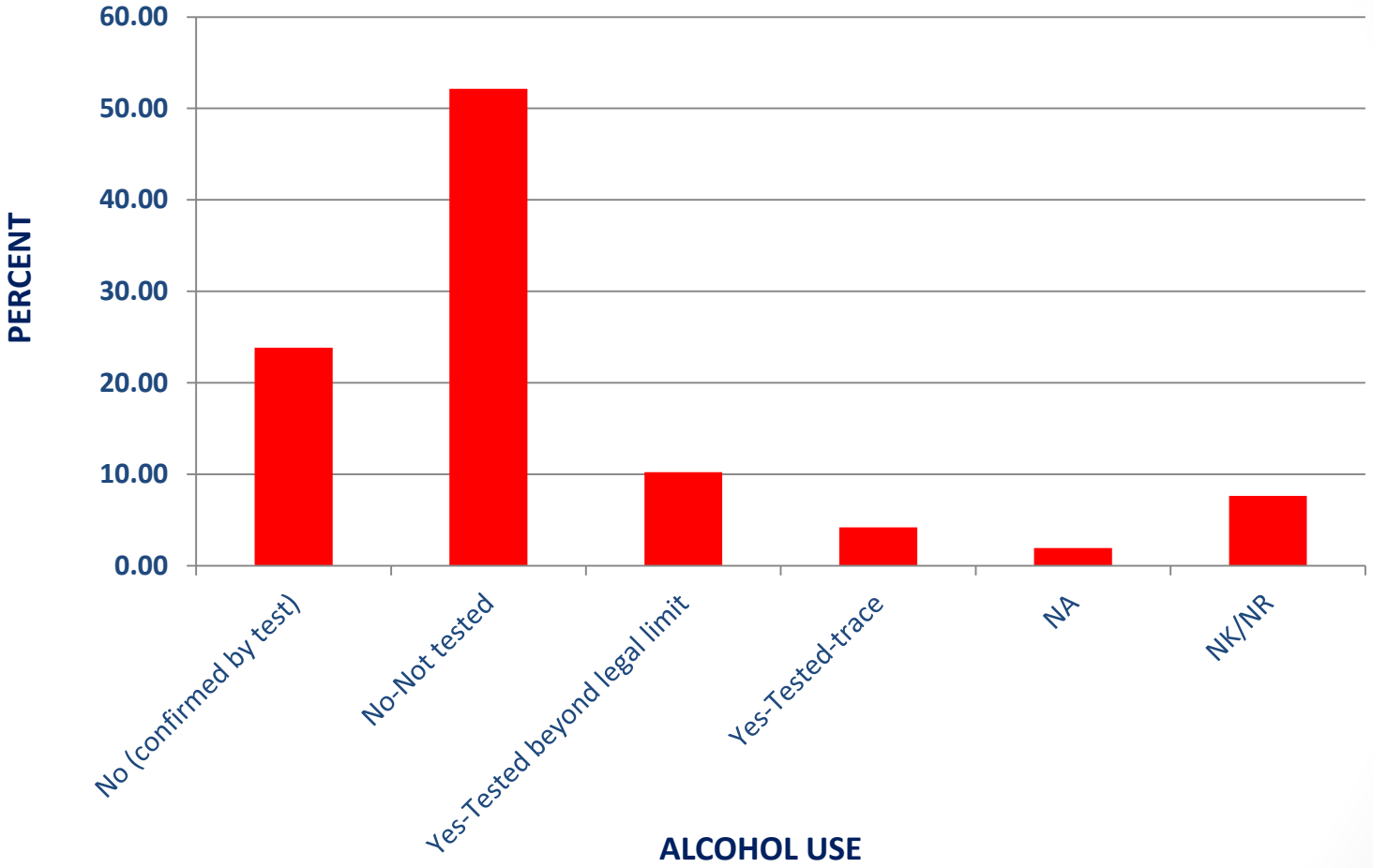


Table 16

Drug Use

DRUG USE	NUMBER	PERCENT
No (confirmed by test)	84,229	10.11
No (not tested)	497,332	59.68
Yes (confirmed by test - illegal use drug)	63,288	7.59
Yes (confirmed by test - prescription drug)	30,789	3.69
Not Applicable	48,593	5.83
NK/NR	109,080	13.09
Total	833,311	100.00

Figure 16

Drug Use

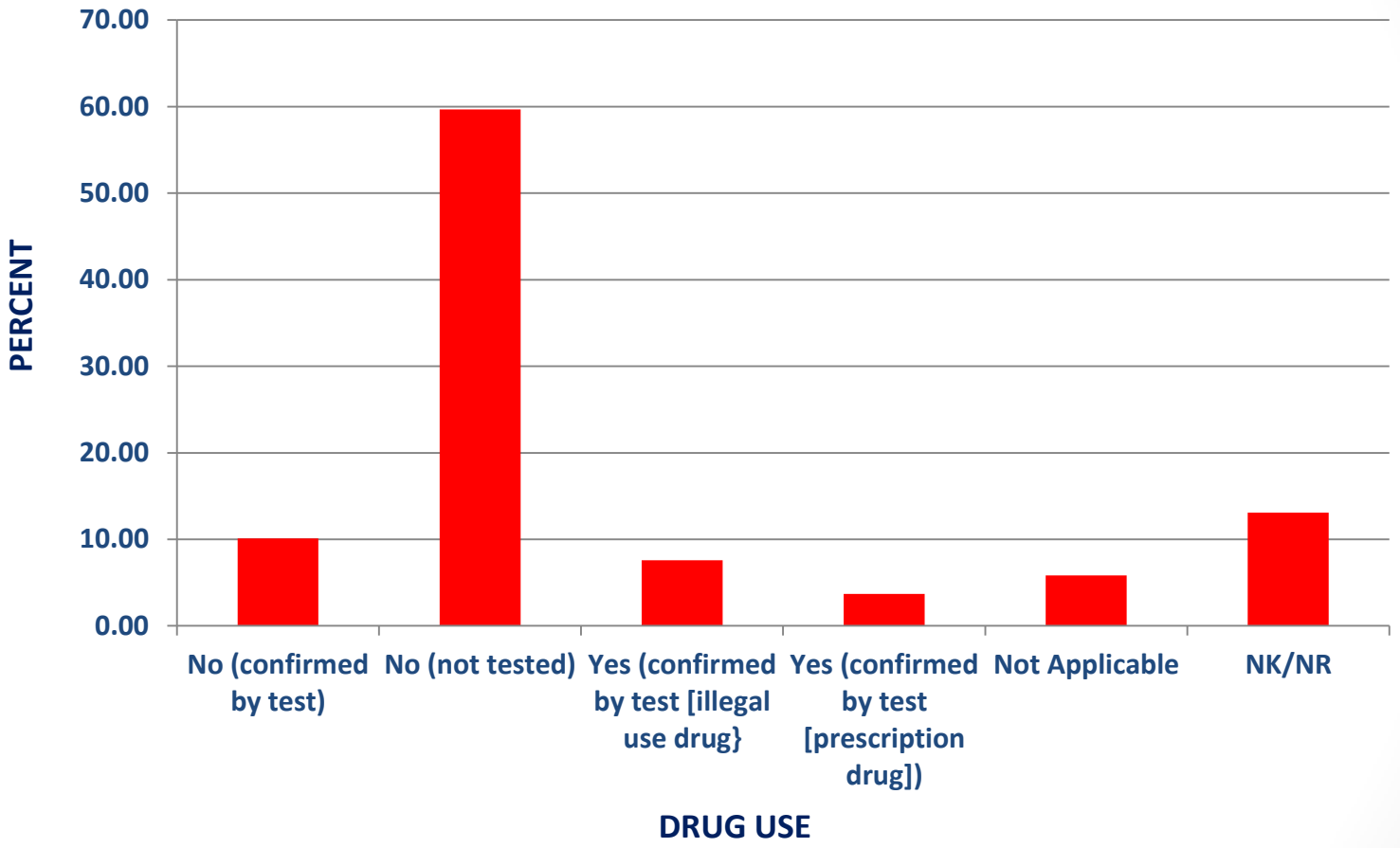


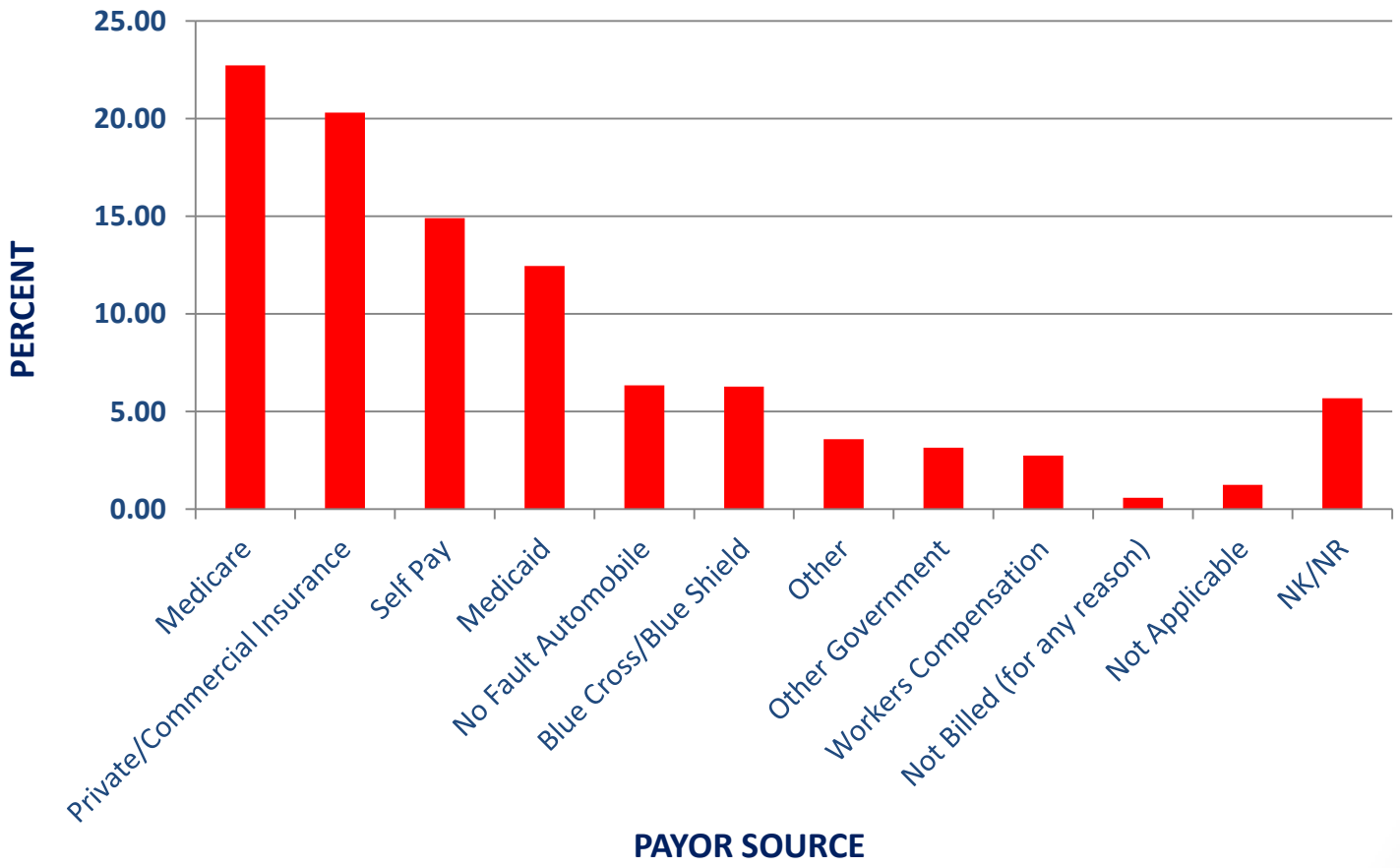
Table 17

Primary Payment Source

PRIMARY PAYMENT SOURCE	NUMBER	PERCENT
Medicare	189,370	22.73
Private/Commercial Insurance	169,262	20.31
Self Pay	124,182	14.90
Medicaid	103,825	12.46
No Fault Automobile	52,866	6.34
Blue Cross/Blue Shield	52,310	6.28
Other	29,850	3.58
Other Government	26,228	3.15
Workers Compensation	22,857	2.74
Not Billed (for any reason)	4,906	0.59
Not Applicable	10,361	1.24
NK/NR	47,294	5.68
Total	833,311	100.00

Figure 17

Primary Payment Source



INJURY CHARACTERISTICS

Table 18

Incidents by Mechanism of Injury

MECHANISM	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Fall	338,806	40.66	13,752	4.06
Motor Vehicle Traffic	234,164	28.10	10,450	4.46
Struck by, against	60,920	7.31	659	1.08
Transport, other	41,195	4.94	843	2.05
Cut/pierce	37,599	4.51	678	1.80
Firearm	36,162	4.34	5,862	16.21
Pedal cyclist, other	15,882	1.91	127	0.80
Other specified and classifiable	13,455	1.61	516	3.84
Unspecified	9,010	1.08	415	4.61
Hot object/substance	8,871	1.06	36	0.41
Fire/flame	8,763	1.05	468	5.34
Machinery	8,191	0.98	111	1.36
Natural/environmental, Bites and stings	5,283	0.63	13	0.25
Other specified, not elsewhere classifiable	4,257	0.51	76	1.79
Overexertion	2,712	0.33	12	0.44
Natural/environmental, Other	2,586	0.31	54	2.09
Pedestrian, other	2,486	0.30	145	5.83
Suffocation	812	0.10	246	30.30
Poisoning	440	0.05	15	3.41
Drowning/submersion	397	0.05	72	18.14
Adverse effects, medical care	177	0.02	7	3.95
Adverse effects, drugs	135	0.02	3	2.22
NK/NR	1,008	0.12	62	6.15
Total	833,311	100.00	34,622	4.15

Figure 18A

Incidents by Selected Mechanism of Injury

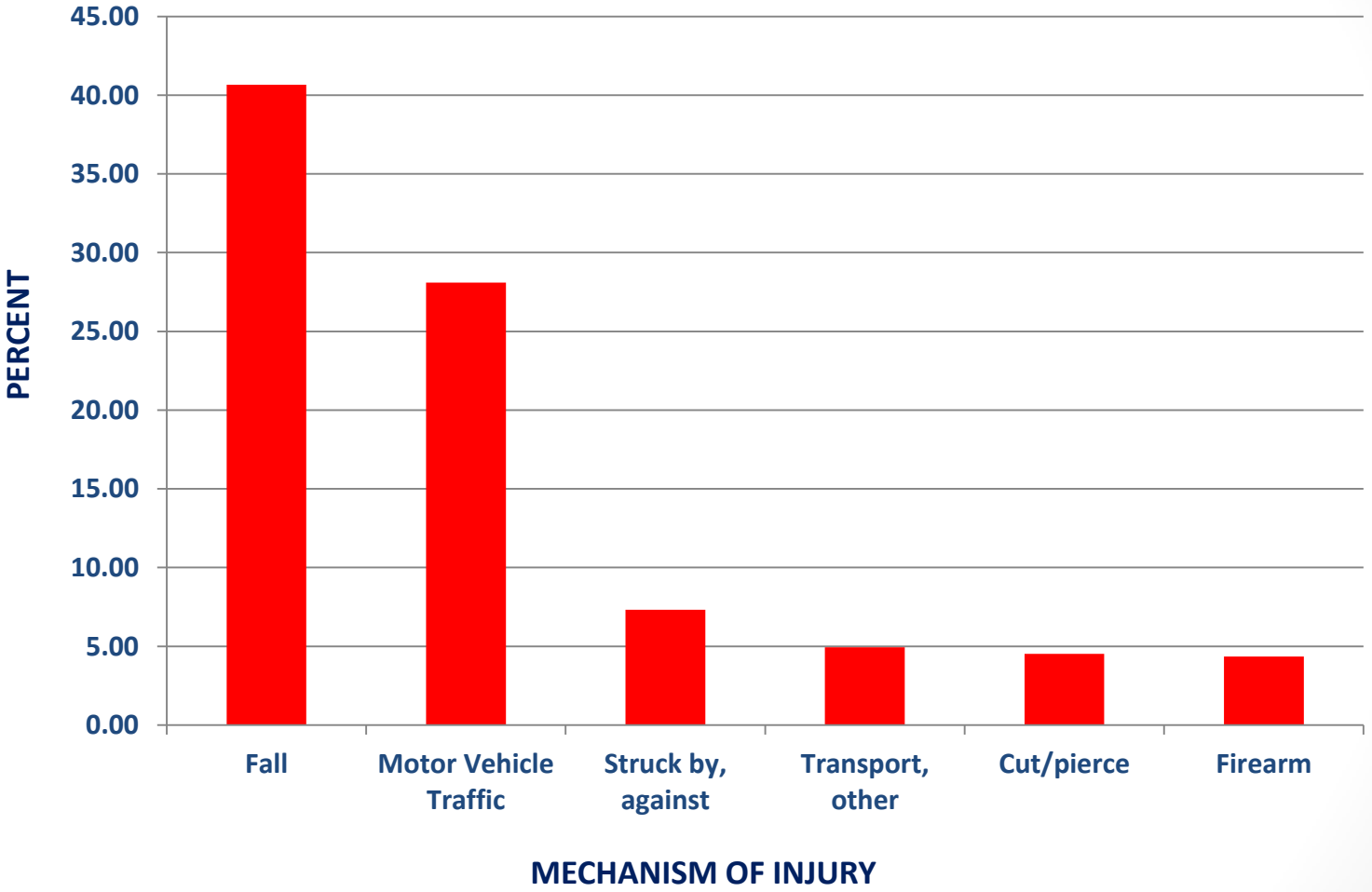


Figure 18B

Case Fatality Rate by Selected Mechanism of Injury

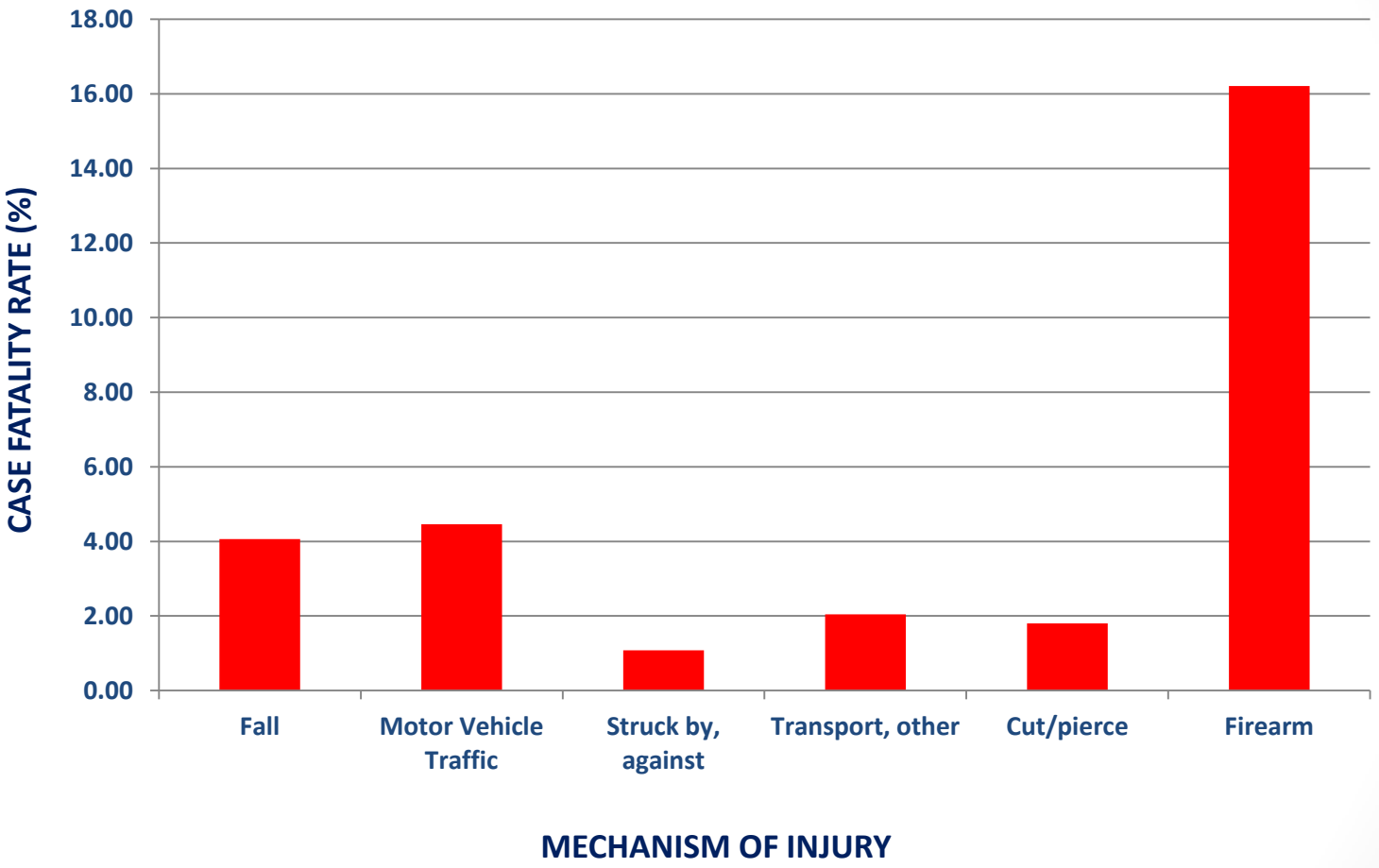


Table 19

Incidents by Selected Mechanism of Injury and Age

AGE	FALL	MOTOR VEHICLE TRAFFIC	STRUCK BY, AGAINST	TRANSPORT, OTHER	FIREARM	CUT/PIERCE
<1 year	5,249	460	423	38	43	45
1-4	13,803	3,435	2,194	628	173	487
5-9	14,422	4,784	2,204	1,604	180	507
10-14	9,403	6,007	4,497	3,681	634	719
15-19	7,863	23,423	6,940	5,132	5,727	3,502
20-24	8,041	32,213	7,471	4,468	8,563	6,280
25-34	15,785	41,958	11,597	6,287	10,182	10,005
35-44	18,113	31,775	8,704	5,514	4,860	6,757
45-54	31,624	34,825	8,901	5,927	3,122	5,363
55-64	42,195	26,739	4,663	4,153	1,561	2,506
65-74	44,660	14,996	1,731	2,166	646	901
75-84	63,458	9,589	1,007	1,124	297	390
>84	64,182	3,933	585	473	167	133
NK/NR	8	27	3	.	7	4
Total	338,806	234,164	60,920	41,195	36,162	37,599

Figure 19

Incidents by Selected Mechanism of Injury and Age

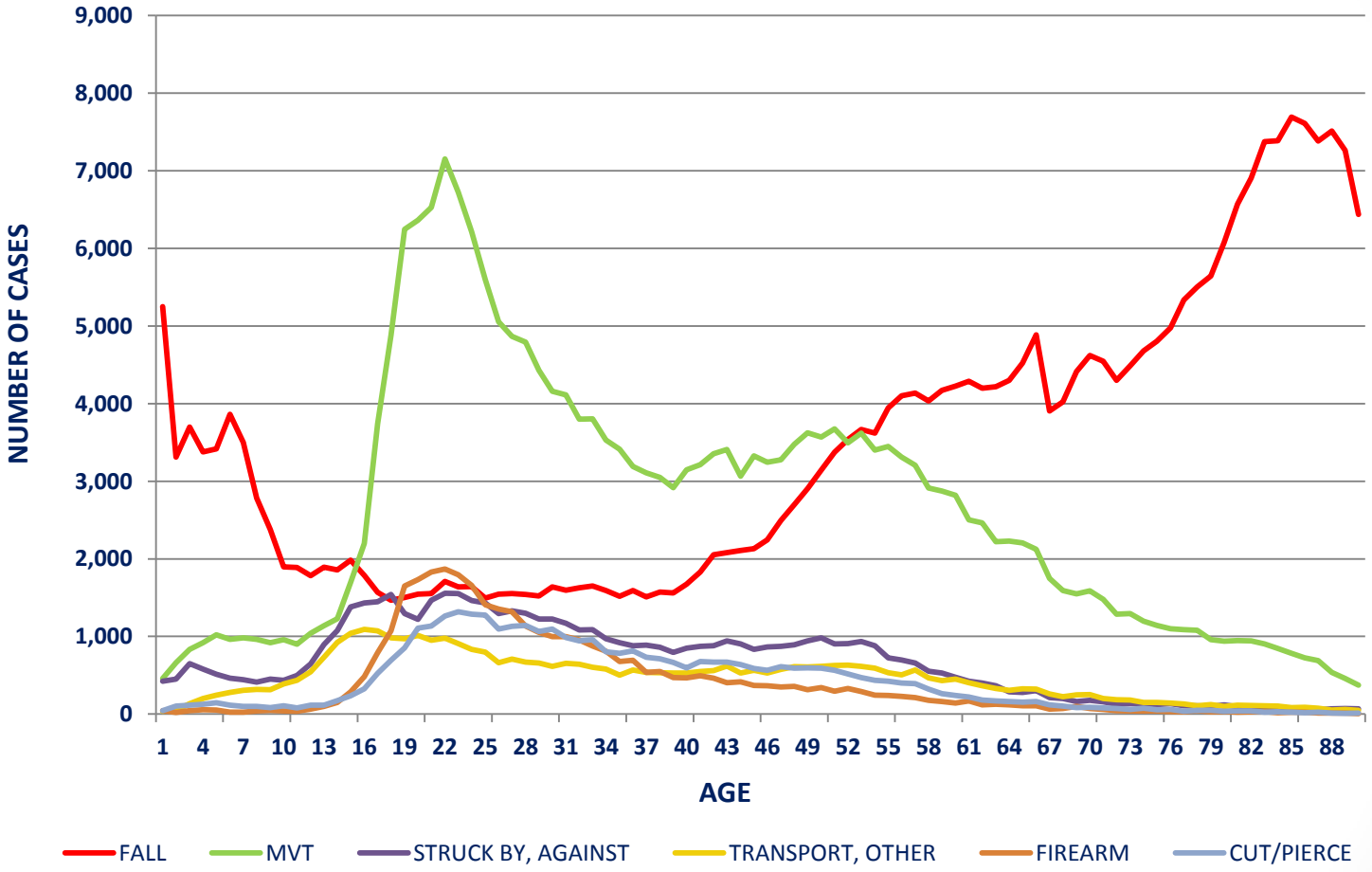


Table 20

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	0.29	7.39	1.42	2.63	13.95	6.67
1-4	0.20	4.63	1.37	1.75	13.29	1.03
5-9	0.07	3.11	0.50	1.18	10.56	0.39
10-14	0.07	2.10	0.16	0.76	12.62	0.56
15-19	0.57	2.99	0.20	1.29	12.43	1.20
20-24	1.11	3.34	0.48	1.30	13.44	1.54
25-34	1.31	3.42	0.70	1.61	14.94	1.74
35-44	1.51	3.79	1.14	1.80	17.30	1.92
45-54	2.38	4.38	1.40	2.18	19.25	2.13
55-64	3.07	5.24	2.17	2.67	27.99	2.27
65-74	4.22	6.88	3.64	3.97	32.51	2.66
75-84	6.33	10.13	5.36	7.21	55.22	3.85
>84	7.99	15.76	5.30	11.21	54.49	7.52
NK/NR	25.00	66.67	33.33	.	85.71	25.00

Figure 20

Case Fatality Rate by Selected Mechanism of Injury and Age

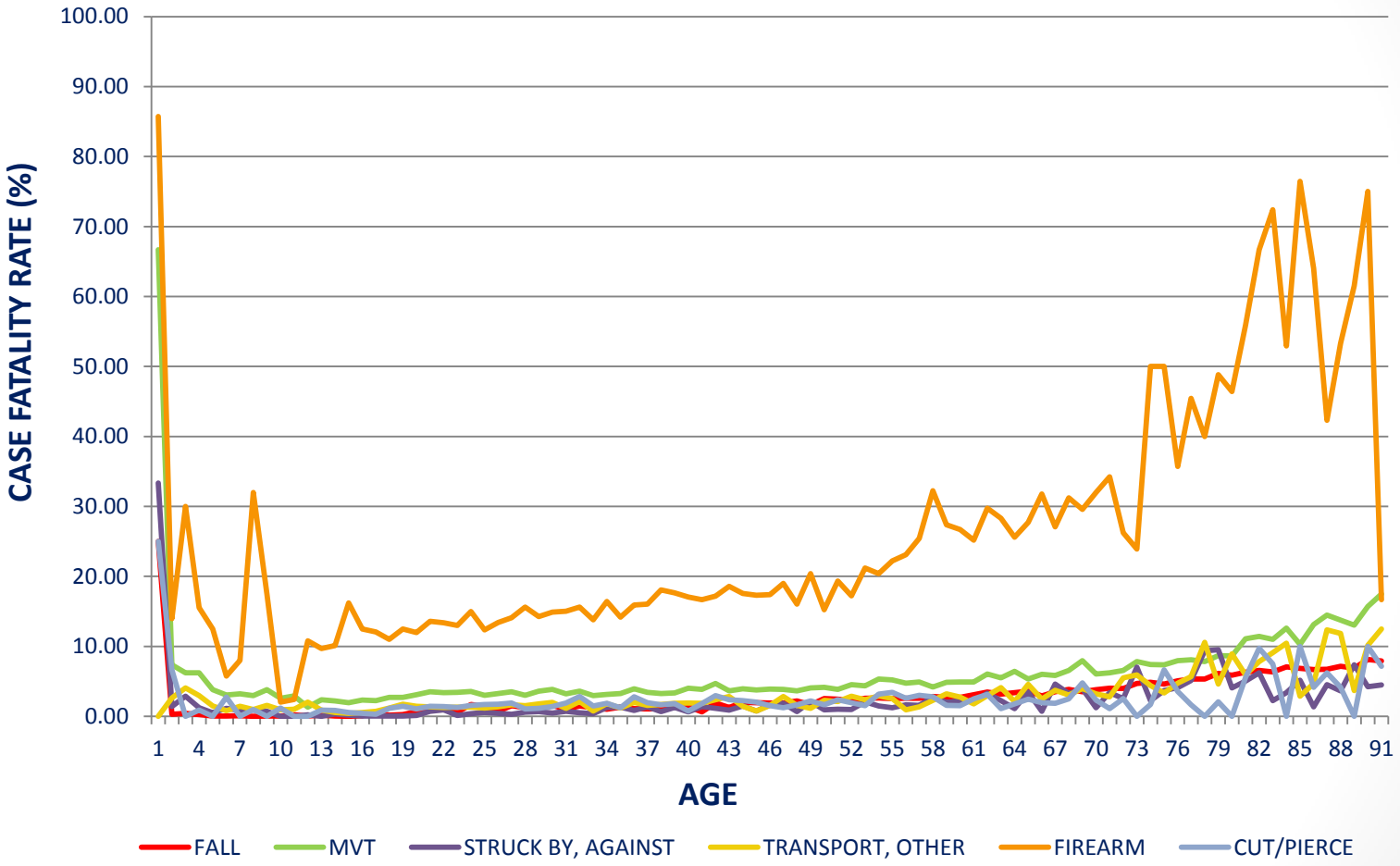


Table 21

Incidents by Selected Mechanism of Injury and Gender

MECHANISM	PERCENT (FEMALE)	PERCENT (MALE)	CASE FATALITY RATE (FEMALE)	CASE FATALITY RATE (MALE)
Fall	54.66	32.25	3.72	4.41
Motor Vehicle Traffic	27.26	28.60	3.78	4.85
Struck by, against	3.35	9.69	0.91	1.12
Transport, other	4.04	5.49	1.68	2.21
Cut/pierce	1.90	6.08	1.75	1.81
Firearm	1.30	6.16	16.38	16.19
Pedal cyclist, other	1.12	2.38	0.49	0.89
Other specified and classifiable	1.18	1.88	3.59	3.93
Unspecified	0.67	1.33	5.40	4.37
Hot object/substance	1.13	1.02	0.65	0.24
Fire/flame	0.75	1.23	7.61	4.51
Machinery	0.21	1.45	1.23	1.37
Natural/environmental, Bites and stings	0.76	0.56	0.21	0.27
Other specified, not elsewhere classifiable	0.37	0.60	2.09	1.67
Overexertion	0.36	0.30	0.62	0.32
Natural/environmental, Other	0.33	0.30	1.84	2.25
Pedestrian, other	0.28	0.31	6.47	5.49
Suffocation	0.07	0.11	26.11	31.91
Poisoning	0.06	0.05	4.30	2.77
Drowning/submersion	0.04	0.05	16.81	18.66
Adverse effects, medical care	0.03	0.02	2.25	5.68
Adverse effects, drugs	0.02	0.01	1.67	2.67
NK/NR	0.12	0.12	6.03	5.74
Total	.	.	.	.

Figure 21A

Incidents by Selected Mechanism of Injury and Gender

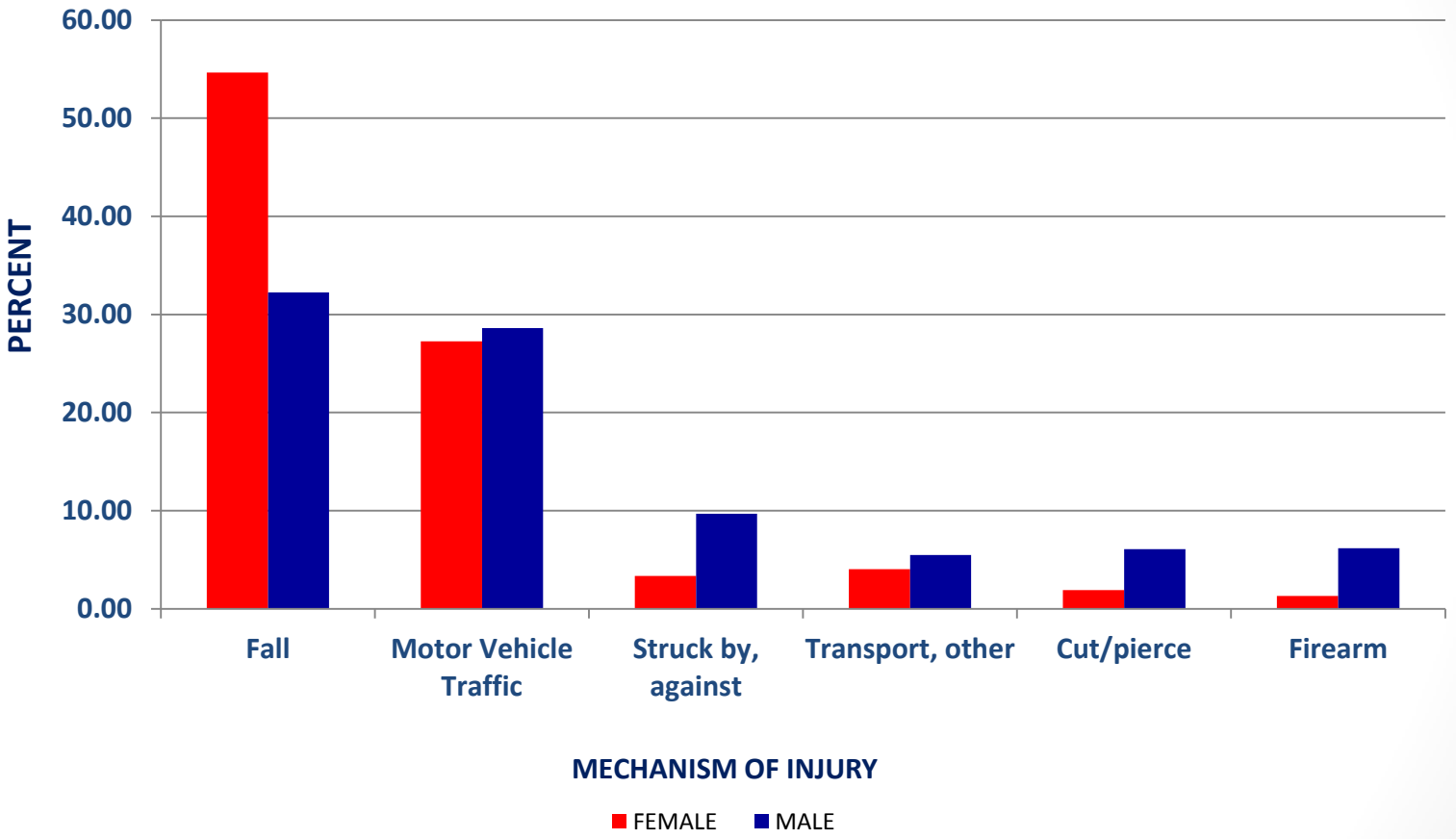


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Figure 21B

Case Fatality Rate by Selected Mechanism of Injury and Gender

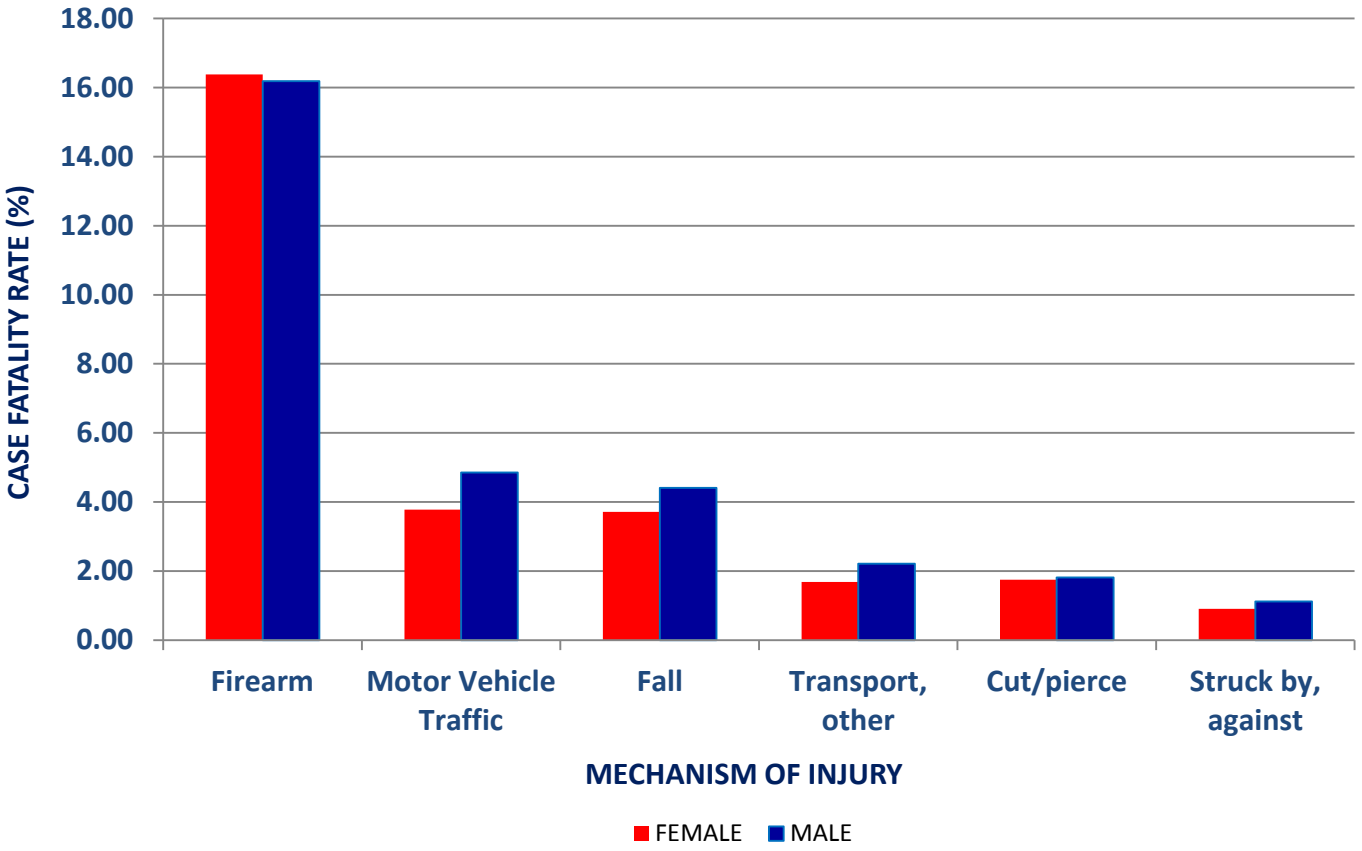


Table 22

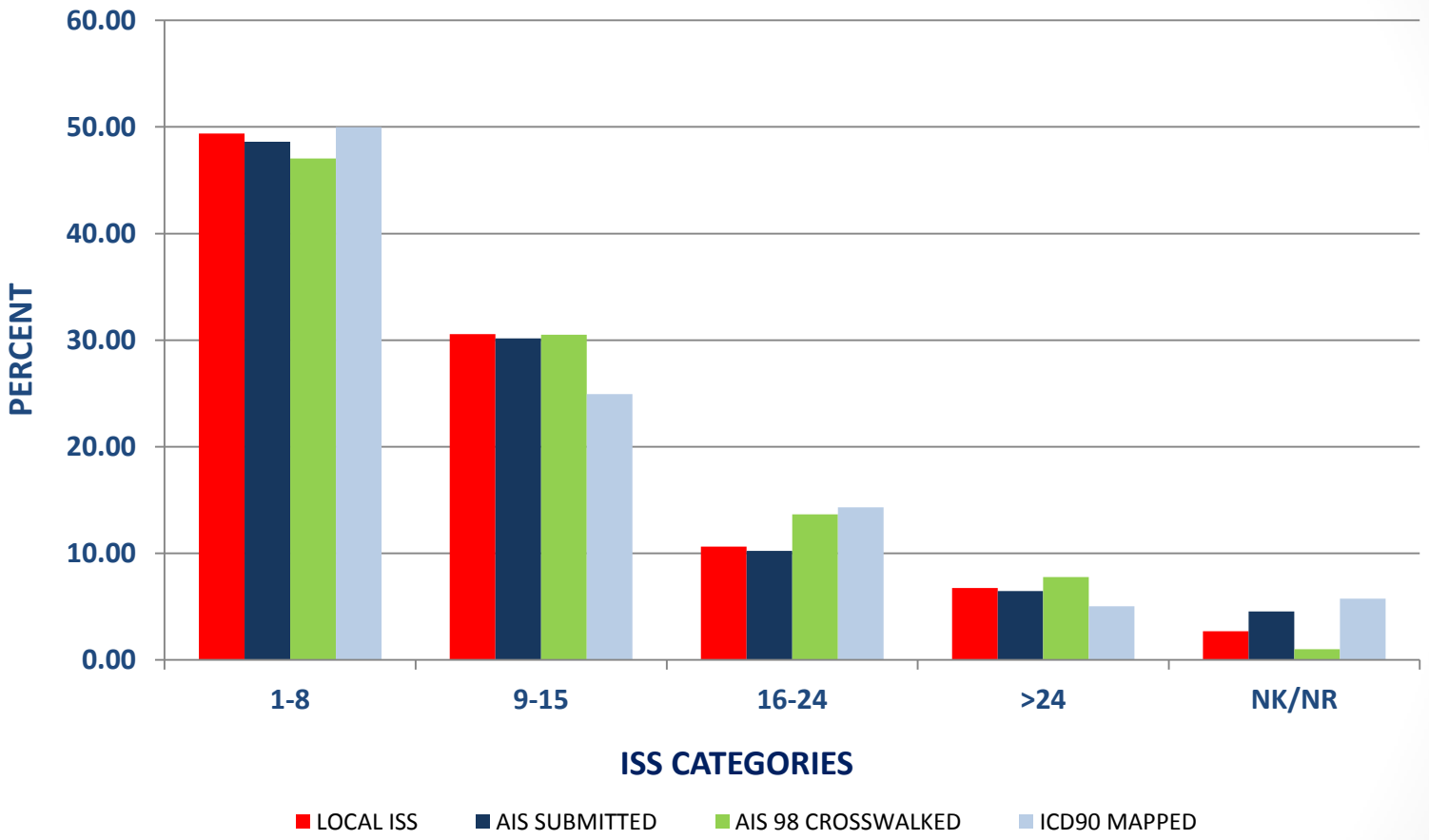
Incidents by Comparative Injury Severity Scores

ISS	LOCAL ISS	AIS SUBMITTED	AIS98 CROSSWALKED	AIS ICDMAP-90
1-8	49.37	48.62	47.05	49.97
9-15	30.56	30.15	30.51	24.95
16-24	10.62	10.23	13.65	14.32
>24	6.76	6.45	7.78	5.02
NK/NR	2.69	4.55	1.01	5.74

Injury Severity Score definitions can be found in Appendix B.

Figure 22

Incidents by Comparative Injury Severity Scores



Injury Severity Score definitions can be found in Appendix B.

Table 23

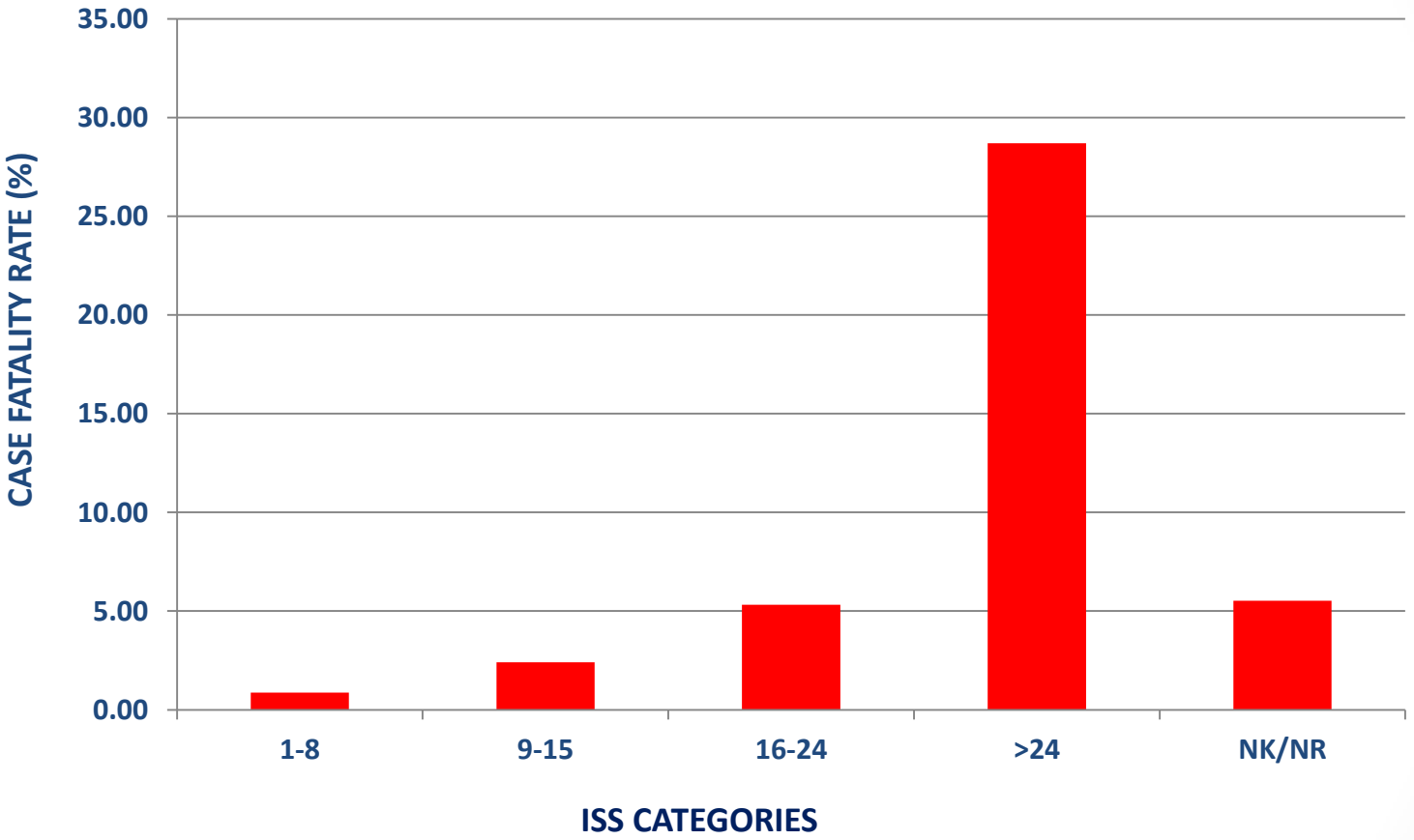
Case Fatality Rate by Injury Severity Score

ISS	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
1-8	392,033	47.05	3,391	0.86
9-15	254,269	30.51	6,104	2.40
16-24	113,723	13.65	6,047	5.32
>24	64,860	7.78	18,615	28.70
NK/NR	8,426	1.01	465	5.52
Total	833,311	100.00	34,622	4.15

Injury Severity Score definitions can be found in Appendix B.

Figure 23

Case Fatality Rate by Injury Severity Score



Injury Severity Score definitions can be found in Appendix B.

Table 24

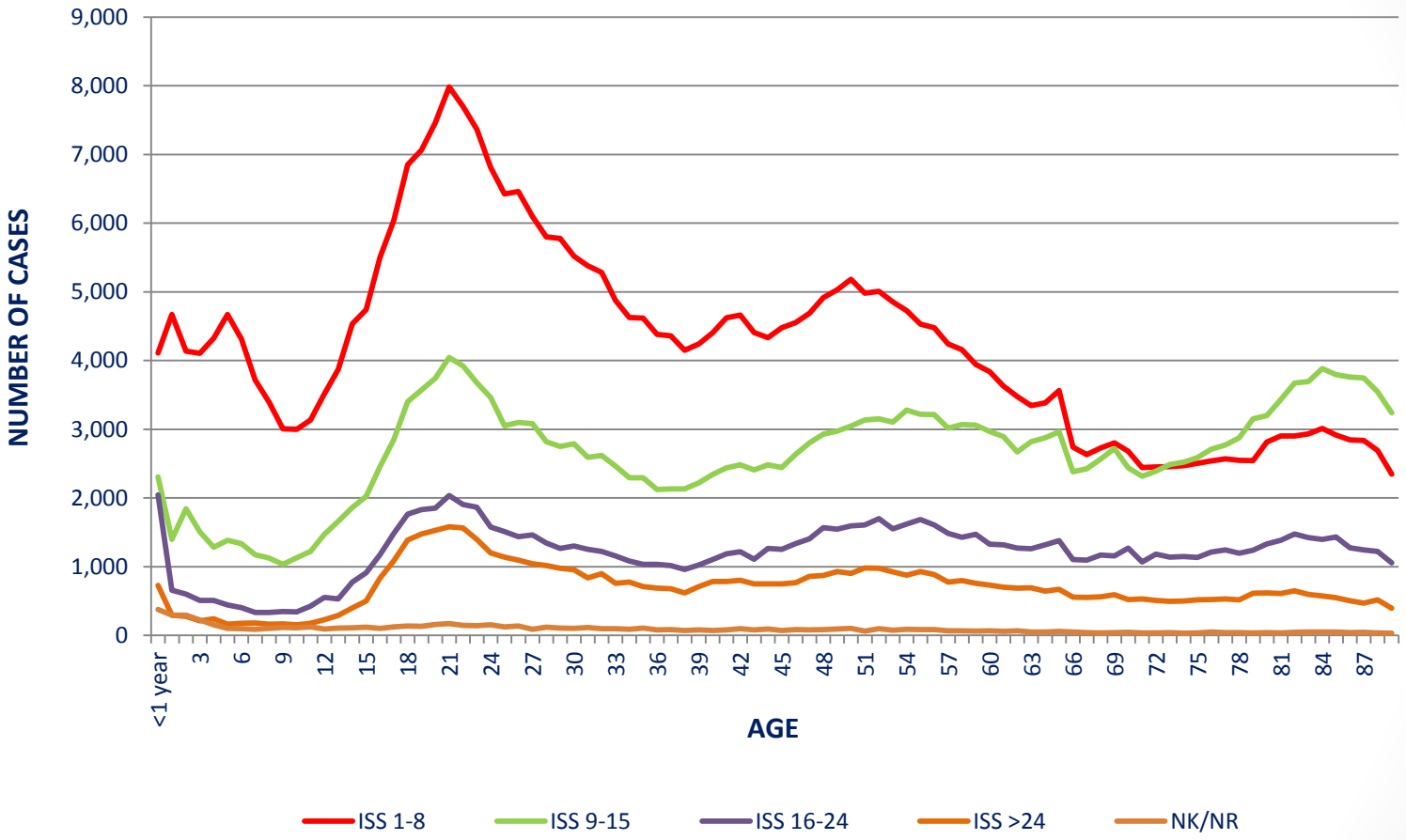
Injury Severity Score by Age

AGE	ISS 1–8 NUMBER	ISS 9–15 NUMBER	ISS 16–24 NUMBER	ISS >24 NUMBER	ISS NK/NR NUMBER
<1 year	4,110	2,309	2,046	727	377
1-4	17,232	6,034	2,278	1,024	967
5-9	19,108	6,058	1,866	853	512
10-14	18,056	7,347	2,626	1,247	541
15-19	30,200	14,302	7,164	5,286	615
20-24	37,315	18,843	9,241	7,269	776
25-34	56,242	27,559	13,043	9,499	1,086
35-44	44,188	23,064	10,964	7,279	850
45-54	48,418	29,501	15,182	8,841	849
55-64	39,028	29,801	14,174	7,612	662
65-74	26,964	25,207	11,723	5,494	417
75-84	27,269	31,983	13,040	5,756	427
>84	23,882	32,249	10,368	3,955	346
NK/NR	21	12	8	18	1
Total	392,033	254,269	113,723	64,860	8,426

Injury Severity Score definitions can be found in Appendix B.

Figure 24

Injury Severity Score by Age



Injury Severity Score definitions can be found in Appendix B.

Table 25

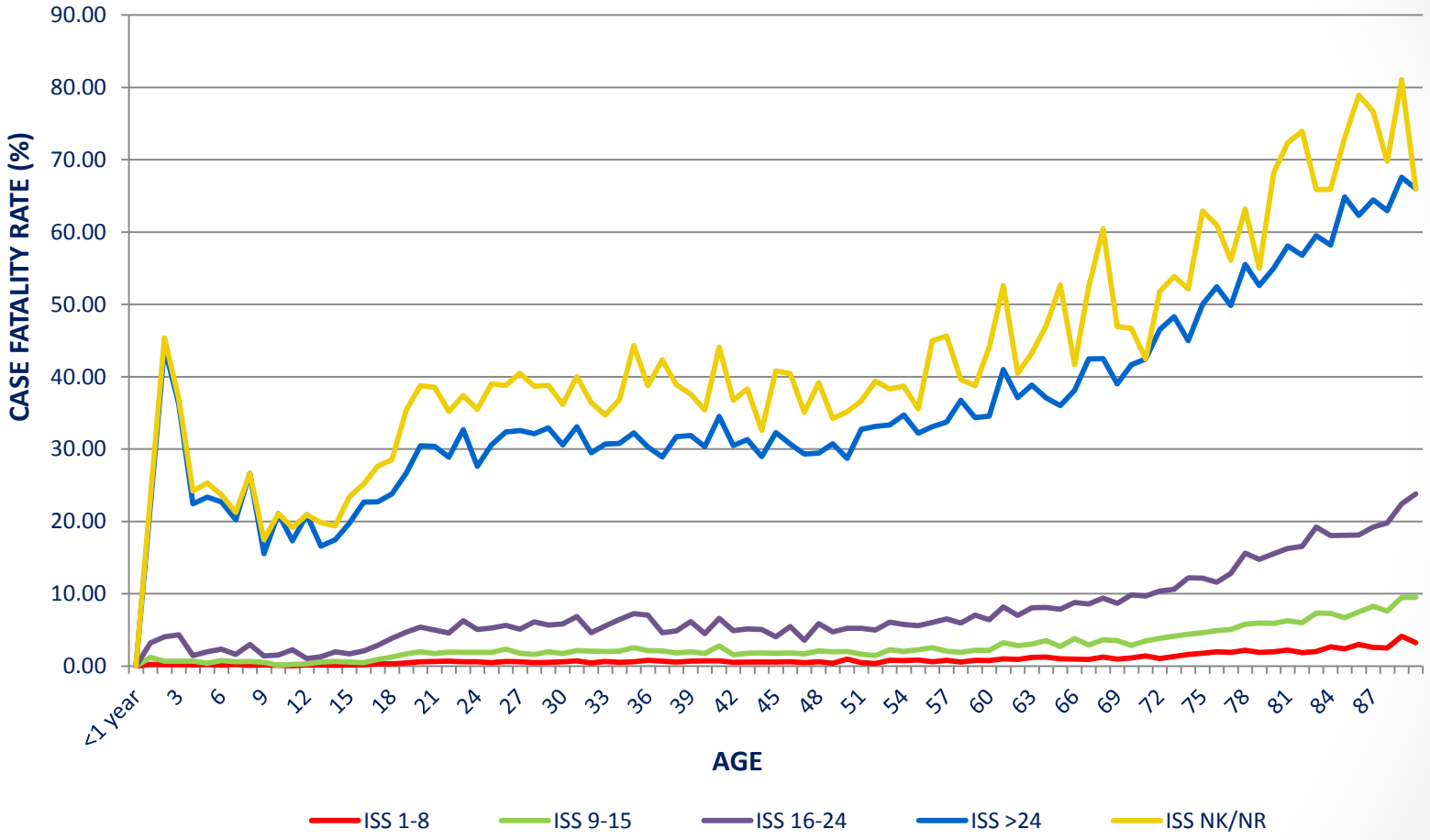
Case Fatality Rate by Injury Severity Score and Age

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	0.24	0.95	2.00	18.98	1.06
1-4	0.19	0.43	2.46	29.49	1.34
5-9	0.14	0.40	1.45	19.34	0.78
10-14	0.12	0.35	1.14	16.84	2.03
15-19	0.39	0.96	2.68	21.94	6.02
20-24	0.60	1.26	3.35	24.82	7.09
25-34	0.56	1.44	3.86	25.89	6.81
35-44	0.63	1.31	3.32	25.81	7.53
45-54	0.62	1.30	3.35	26.31	5.65
55-64	0.86	1.71	4.47	29.03	8.61
65-74	1.21	2.48	6.30	33.40	7.19
75-84	2.11	4.09	9.84	40.51	8.90
>84	3.43	6.50	13.11	44.98	8.38
NK/NR	33.33	58.33	12.50	88.89	100.00

Injury Severity Score definitions can be found in Appendix B.

Figure 25

Case Fatality Rate by Injury Severity Score and Age



Injury Severity Score definitions can be found in Appendix B.

Table 26

Incidents by Work-Related Injuries

WORK-RELATED INJURY	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
No	732,420	87.89	31,348	4.28
Yes	32,841	3.94	669	2.04
Not Applicable	33,989	4.08	1,195	3.52
NK/NR	34,061	4.09	1,410	4.14
Total	833,311	100.00	34,622	4.15

Figure 26A

Incidents by Work-Related Injuries

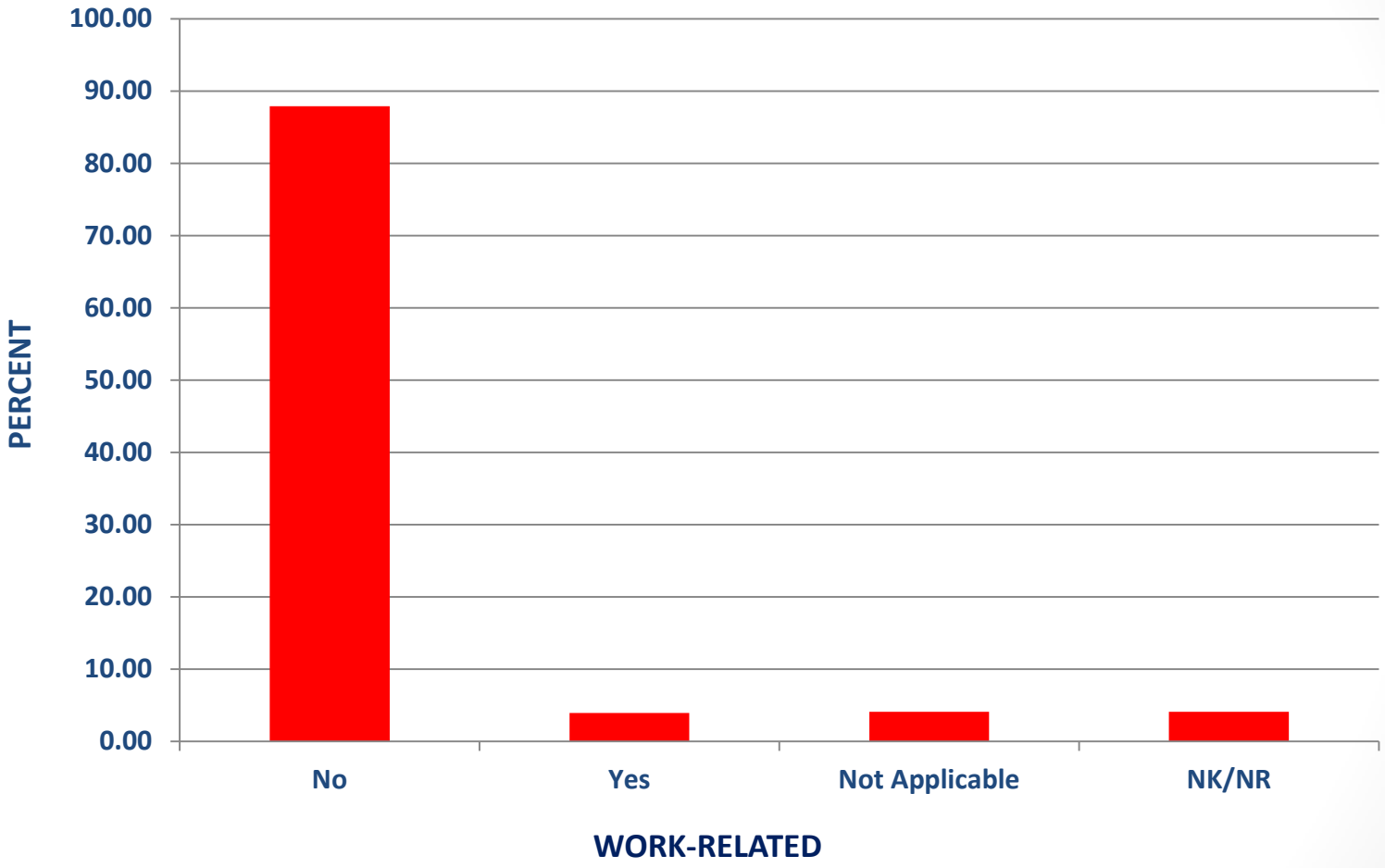


Figure 26B

Case Fatality Rate by Work-Related Injuries

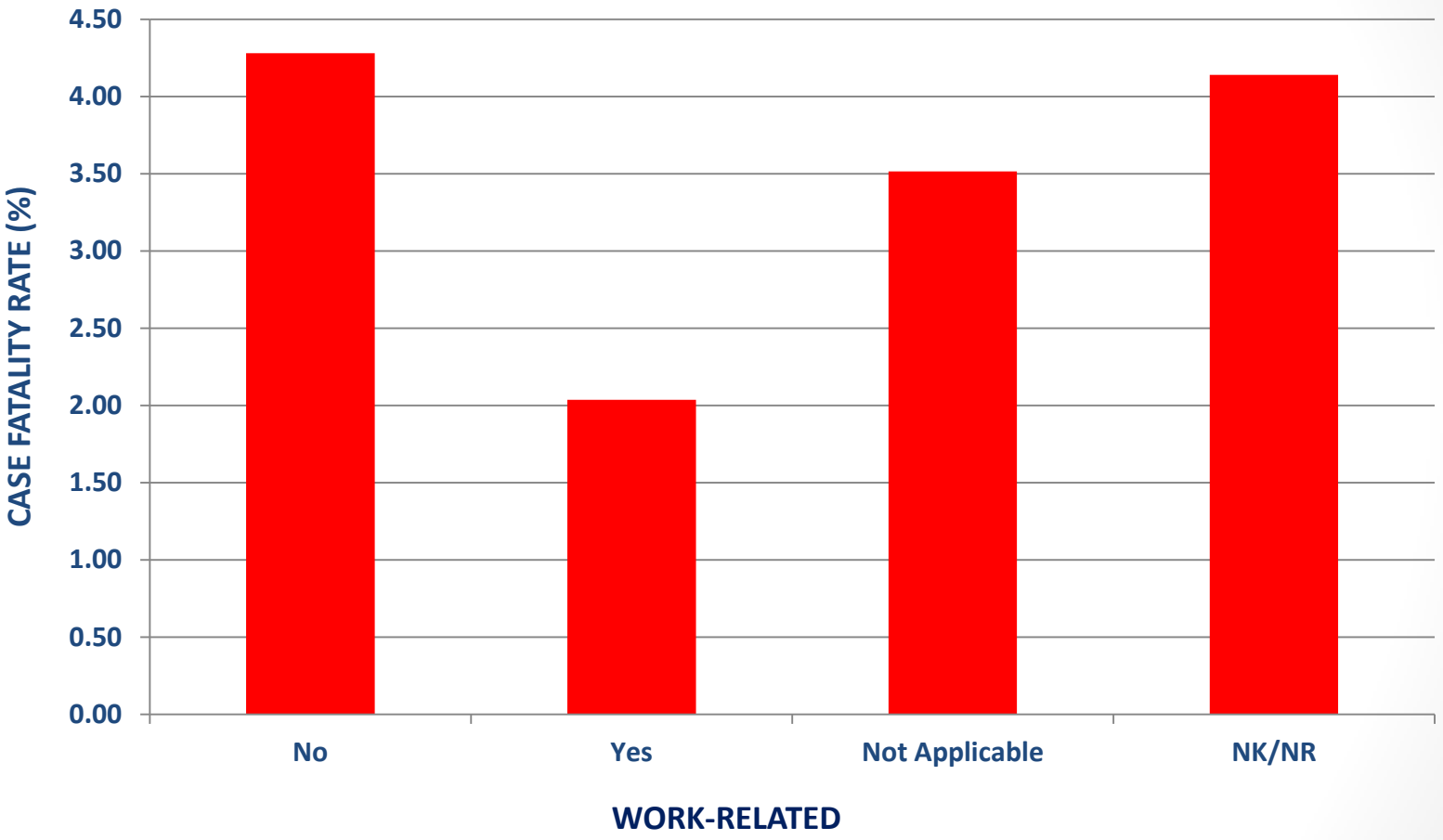


Table 27

Case Fatality Rate by Intent

INTENT	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Unintentional	723,298	86.80	26,800	3.71
Assault	90,712	10.89	4,774	5.26
Self-Inflicted	12,994	1.56	2,442	18.79
Undetermined	3,645	0.44	356	9.77
Other	1,654	0.20	188	11.37
NK/NR	1,008	0.12	62	6.15
Total	833,311	100.00	34,622	4.15

Figure 27

Case Fatality Rate by Intent

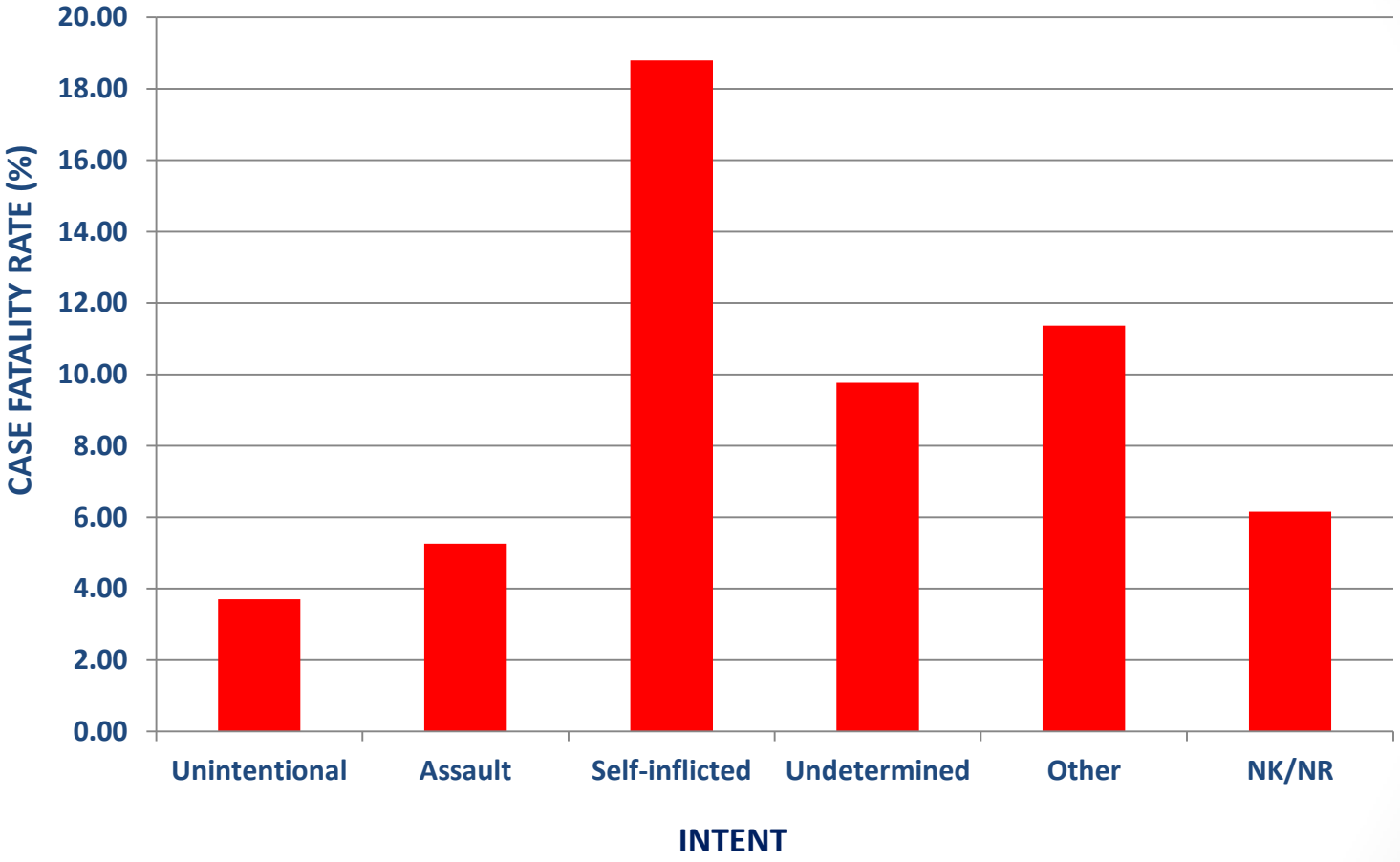


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Table 28

Case Fatality Rate by Location E-code

LOCATION OF INJURY	NUMBER	PERCENT	DEATHS	CASE FATALITY RATE
Home	286,446	34.37	13,358	4.66
Street	284,673	34.16	12,961	4.55
Unspecified	60,165	7.22	1,726	2.87
Recreation	47,173	5.66	407	0.86
Public Building	40,943	4.91	1,378	3.37
Other	36,355	4.36	1,258	3.46
Residential Institution	29,626	3.56	2,201	7.43
Industry	18,711	2.25	365	1.95
Farm	5,718	0.69	140	2.45
Mine	376	0.05	11	2.93
Not Applicable	587	0.07	20	3.41
NK/NR	22,538	2.70	797	3.54
Total	833,311	100.00	34,622	4.15

Figure 28

Case Fatality Rate by Location E-code

Table 29

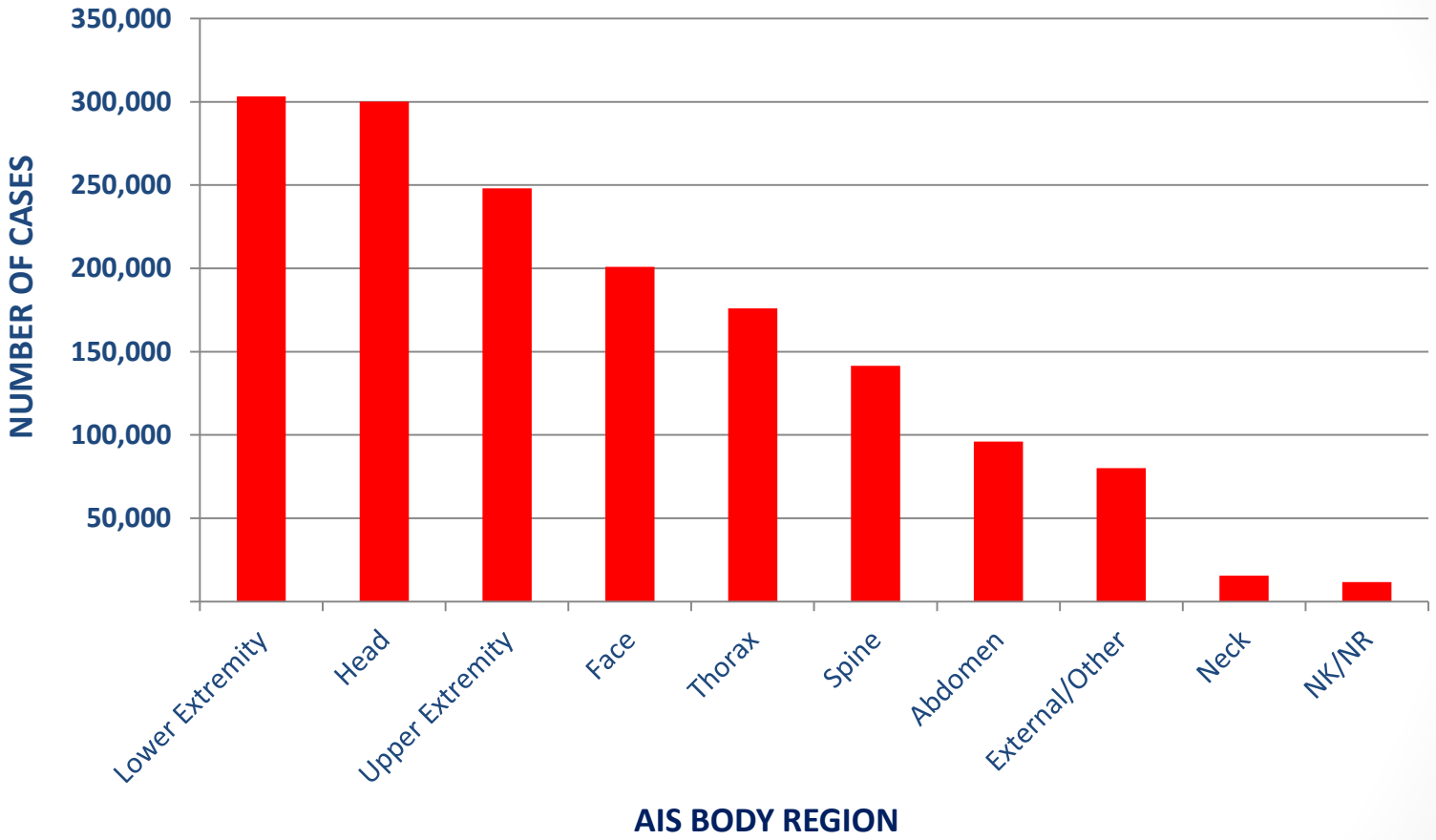
Incidents by AIS Body Region

AIS BODY REGION	NUMBER	PERCENT
Lower Extremity	303,270	36.39
Head	300,110	36.01
Upper Extremity	248,079	29.77
Face	201,013	24.12
Thorax	176,035	21.12
Spine	141,494	16.98
Abdomen	96,033	11.52
External/Other	80,139	9.62
Neck	15,570	1.87
NK/NR	11,643	1.40

A patient can have injuries in multiple body regions.

Figure 29

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 30

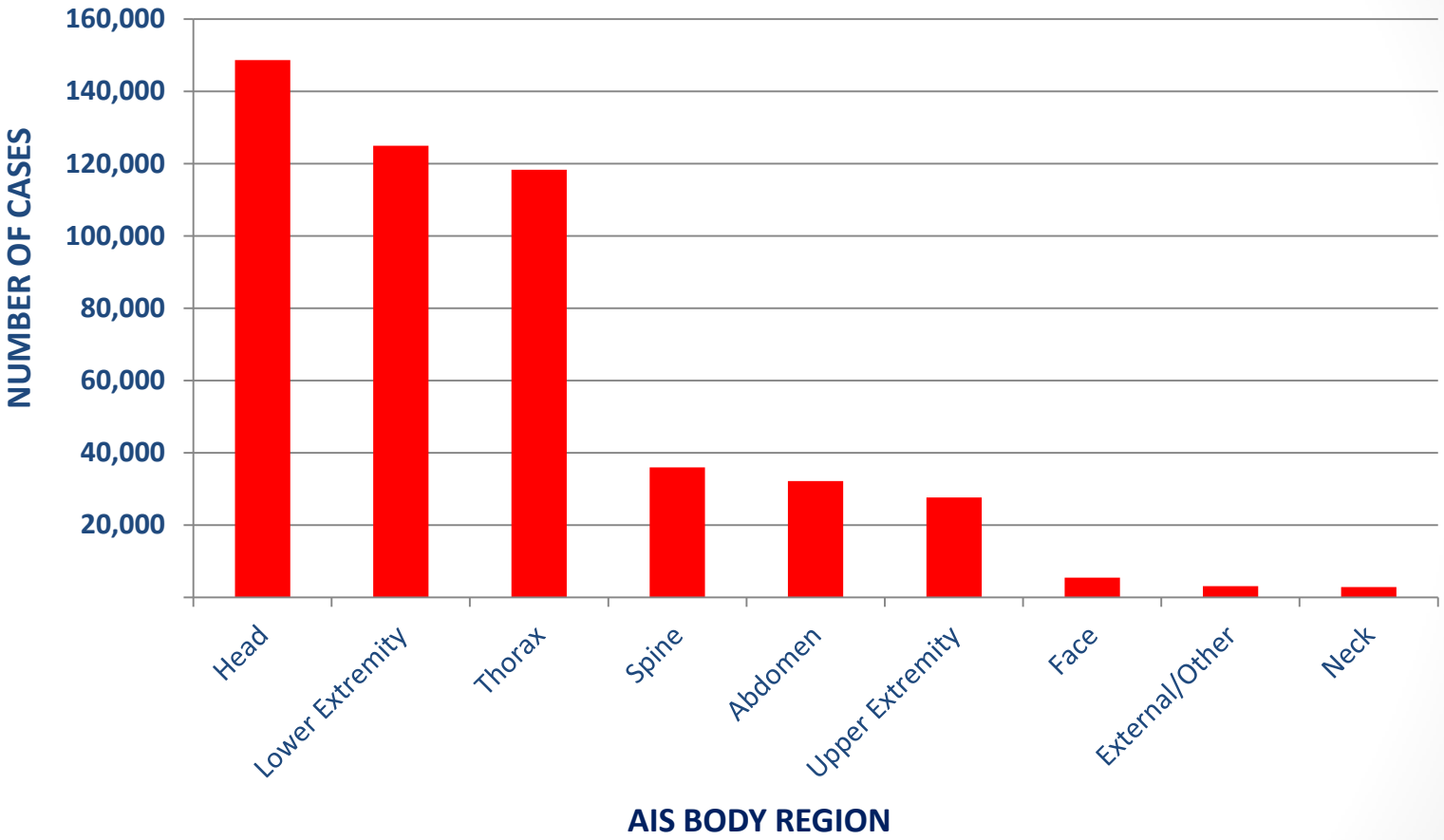
Incidents with AIS ≥ 3 by AIS Body Region

AIS BODY REGION	NUMBER	PERCENT
Head	148,691	17.84
Lower Extremity	124,989	15.00
Thorax	118,334	14.20
Spine	35,958	4.32
Abdomen	32,186	3.86
Upper Extremity	27,595	3.31
Face	5,411	0.65
External/Other	3,077	0.37
Neck	2,833	0.34

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 30

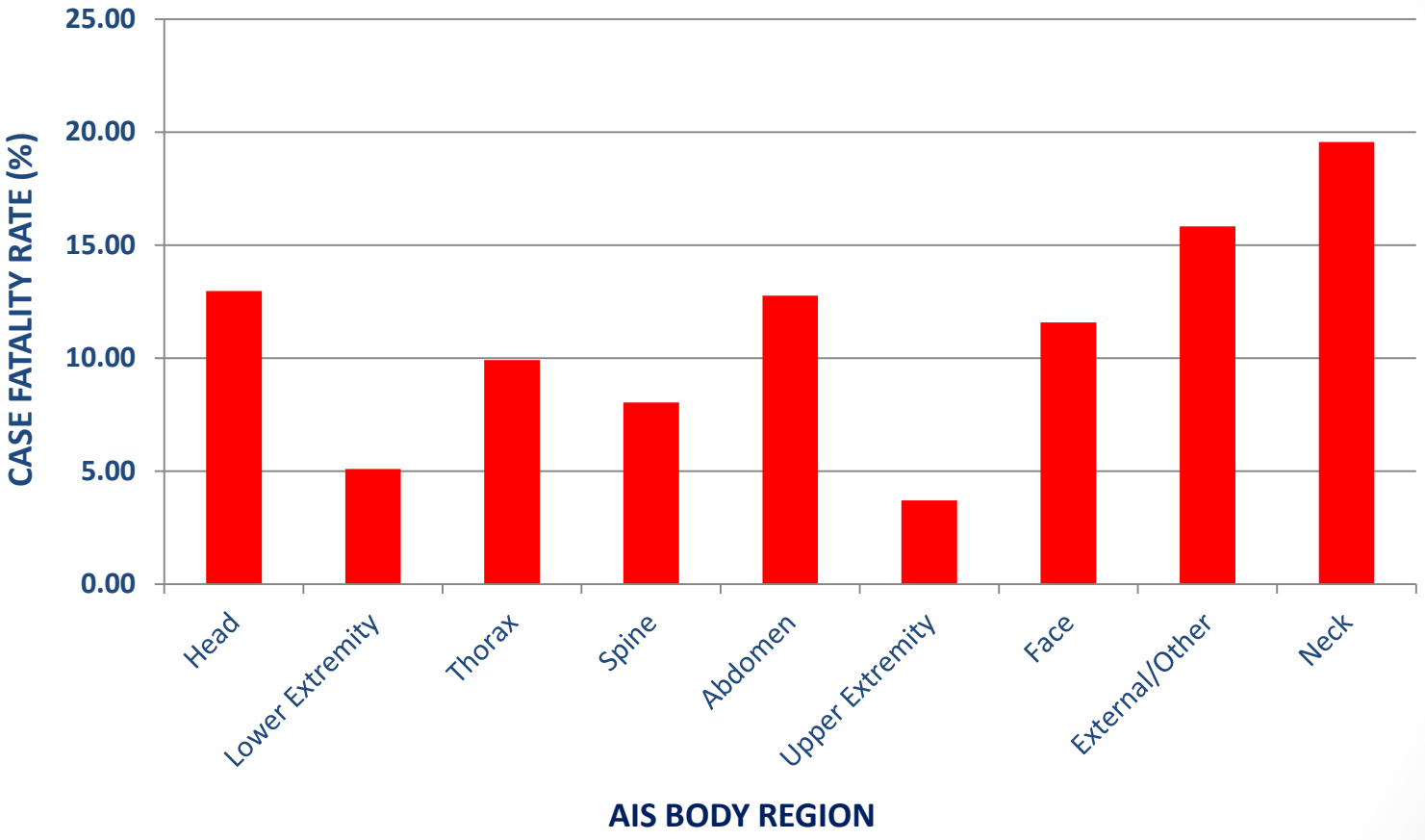
Incidents with AIS ≥ 3 by AIS Body Region



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 31

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.

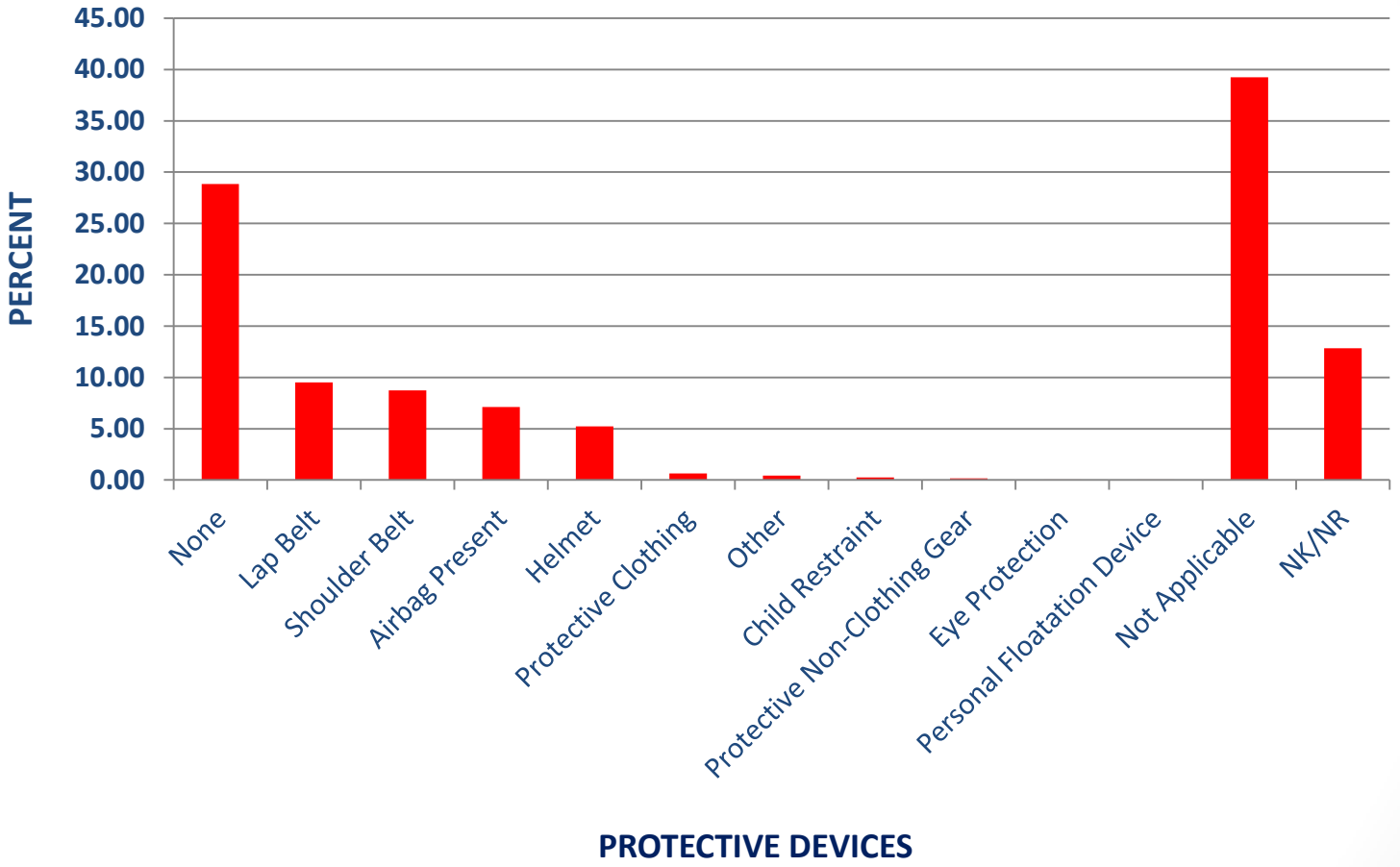
Table 32

Incidents by Protective Devices

PROTECTIVE DEVICES	NUMBER	PERCENT
None	240,253	28.83
Lap Belt	79,171	9.50
Shoulder Belt	72,706	8.72
Airbag Present	59,414	7.13
Helmet (e.g. bicycle, skiing, motorcycle)	43,674	5.24
Protective Clothing (e.g., padded leather pants)	5,311	0.64
Other	3,733	0.45
Child Restraint (booster seat or child car seat)	2,213	0.27
Protective Non-Clothing Gear (e.g., shin guard)	1,445	0.17
Eye Protection	388	0.05
Personal Floatation Device	99	0.01
Not Applicable	326,930	39.23
NK/NR	106,886	12.83

Figure 32

Incidents by Protective Devices



Outcomes Information

Table 33

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

MECHANISM	NUMBER	MEDIAN
Fall	217,927	60
Motor Vehicle Traffic	189,235	54
Struck by, against	36,047	58
Transport, other	27,206	78
Firearm	25,992	37
Cut/pierce	24,056	42
Pedal cyclist, other	10,164	54
Other specified and classifiable	7,310	76
Unspecified	5,712	50
Machinery	4,797	74
Fire/flame	4,725	91
Hot object/substance	3,570	115
Other specified, not elsewhere classifiable	2,454	52
Natural/environmental, Bites and stings	2,256	82
Pedestrian, other	1,840	51
Natural/environmental, Other	1,498	85
Overexertion	1,263	66
Suffocation	639	50
NK/NR	565	52
Drowning/submersion	290	69
Poisoning	272	61

Figure 33

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

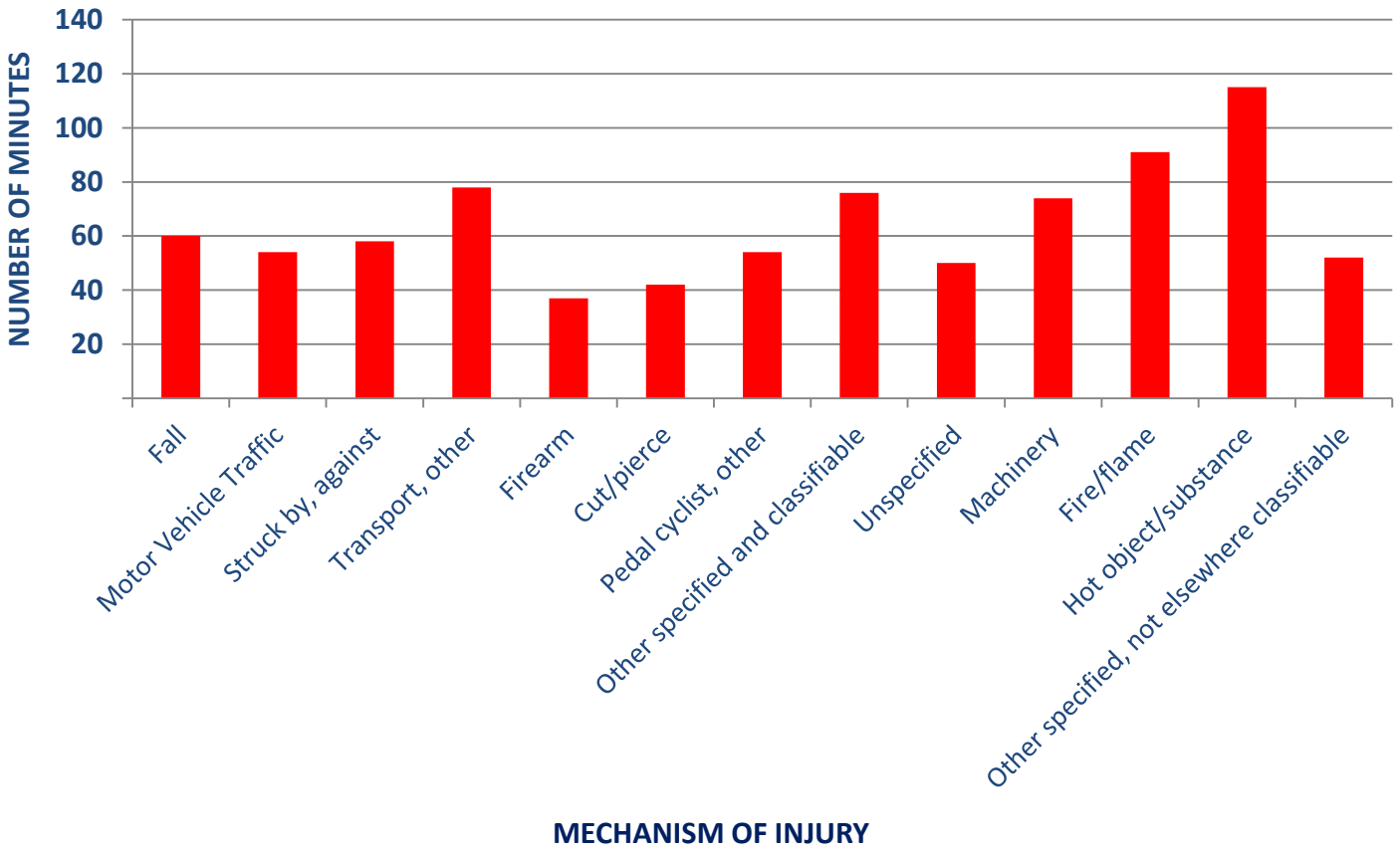


Table 34

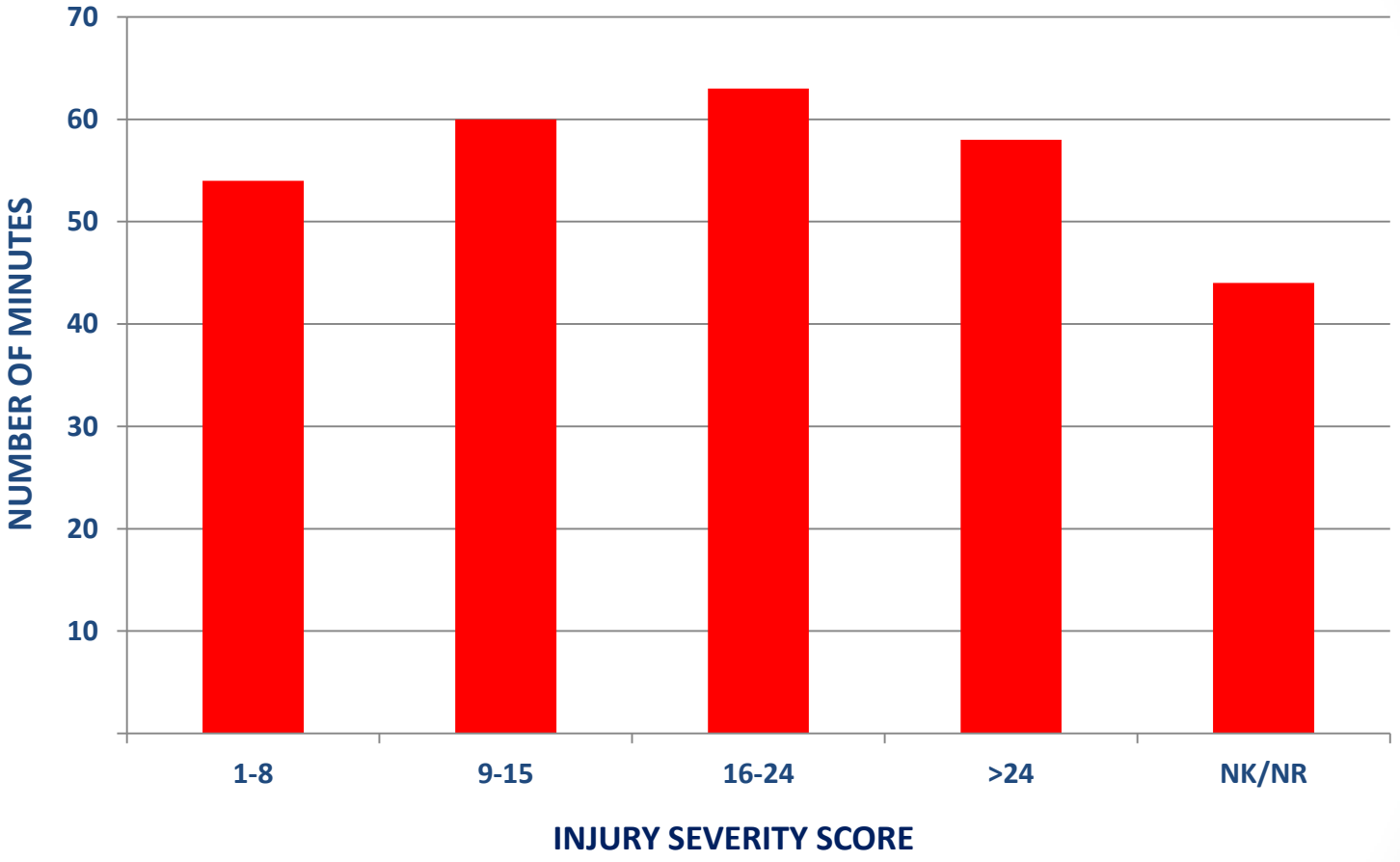
Median Total Prehospital Time (in Minutes) by Injury Severity Score

ISS	NUMBER	MEDIAN
1-8	243,073	54
9-15	181,484	60
16-24	85,142	63
>24	52,767	58
NK/NR	5,520	44

Injury Severity Score definitions can be found in Appendix B.

Figure 34

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



Injury Severity Score definitions can be found in Appendix B.

Table 35

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

MECHANISM	NUMBER	MEDIAN
Fall	337,444	4
Motor Vehicle Traffic	233,655	3
Struck by, against	60,761	2
Transport, other	41,085	3
Cut/pierce	37,479	2
Firearm	36,063	3
Pedal cyclist, other	15,836	3
Other specified and classifiable	13,434	3
Unspecified	8,986	3
Hot object/substance	8,852	2
Fire/flame	8,746	3
Machinery	8,180	3
Natural/environmental, Bites and stings	5,273	2
Other specified, not elsewhere classifiable	4,249	3
Overexertion	2,700	3
Natural/environmental, Other	2,582	3
Pedestrian, other	2,483	3
NK/NR	987	3
Suffocation	806	3
Poisoning	440	3
Drowning/submersion	395	3

Figure 35

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

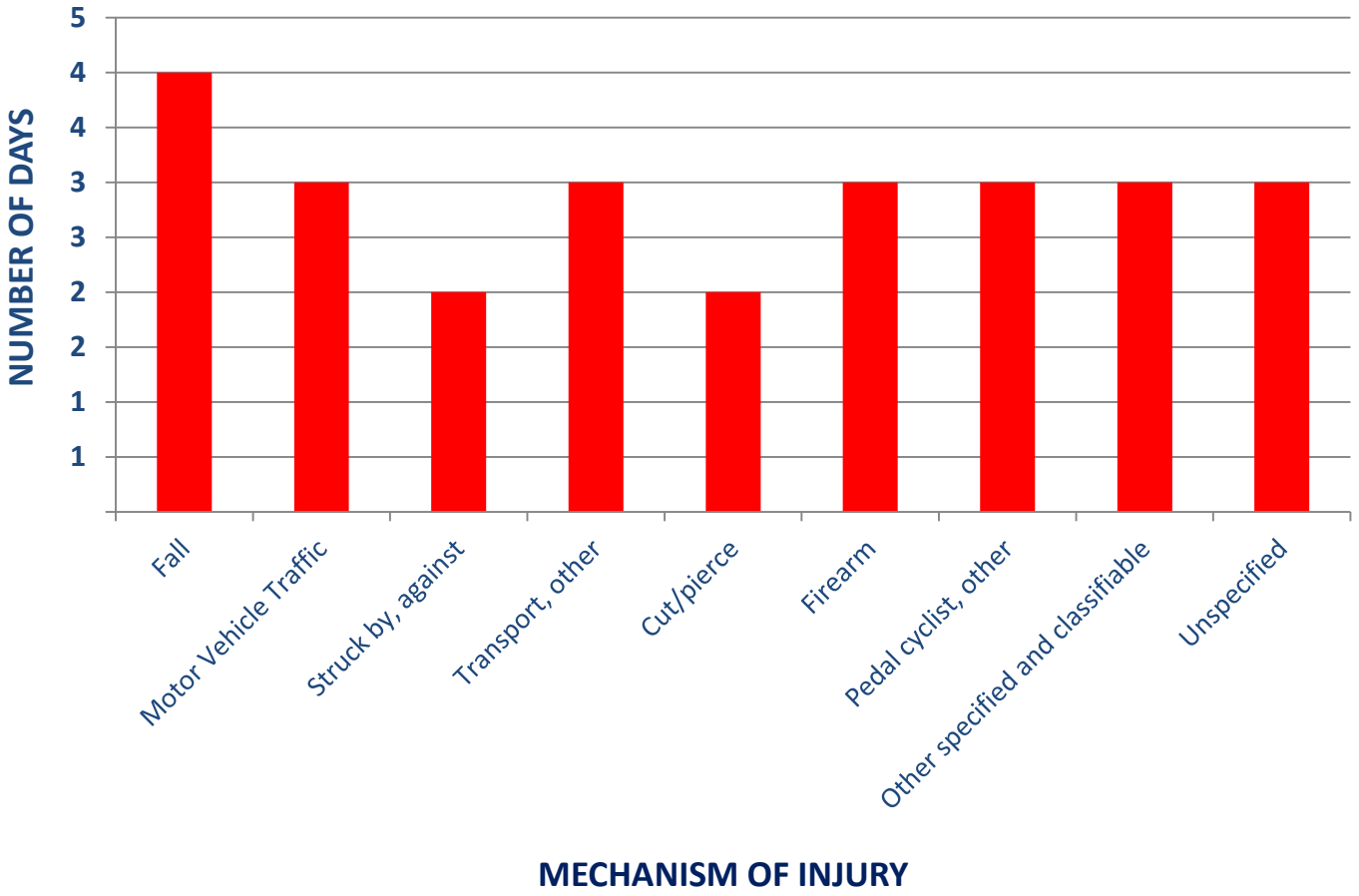


Table 36

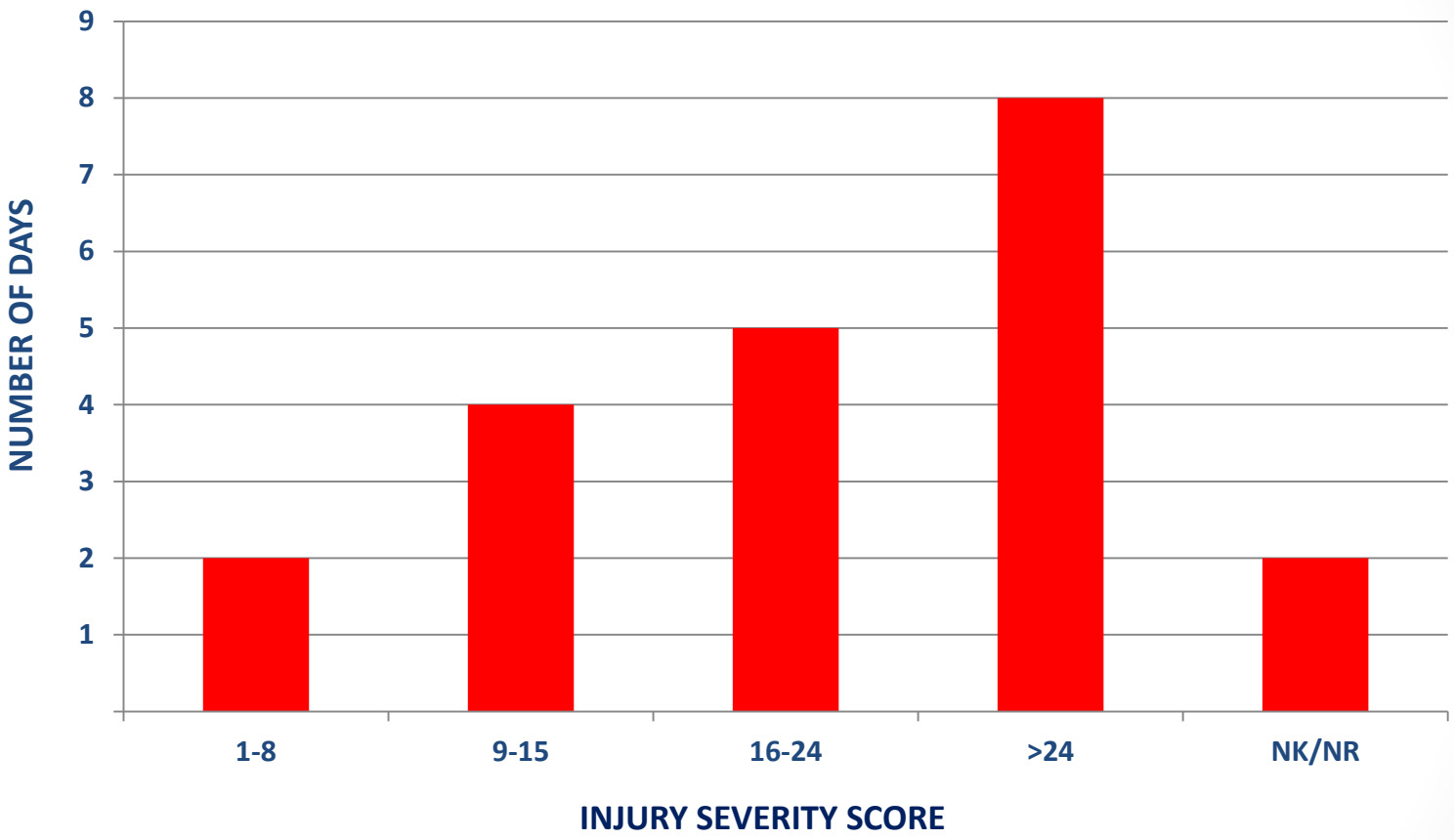
Median Length of Stay (in Days) by Injury Severity Score

ISS	NUMBER	MEDIAN
1-8	390,607	2
9-15	253,450	4
16-24	113,535	5
>24	64,767	8
NK/NR	8,389	2

Injury Severity Score definitions can be found in Appendix B.

Figure 36

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



Injury Severity Score definitions can be found in Appendix B.

Table 37

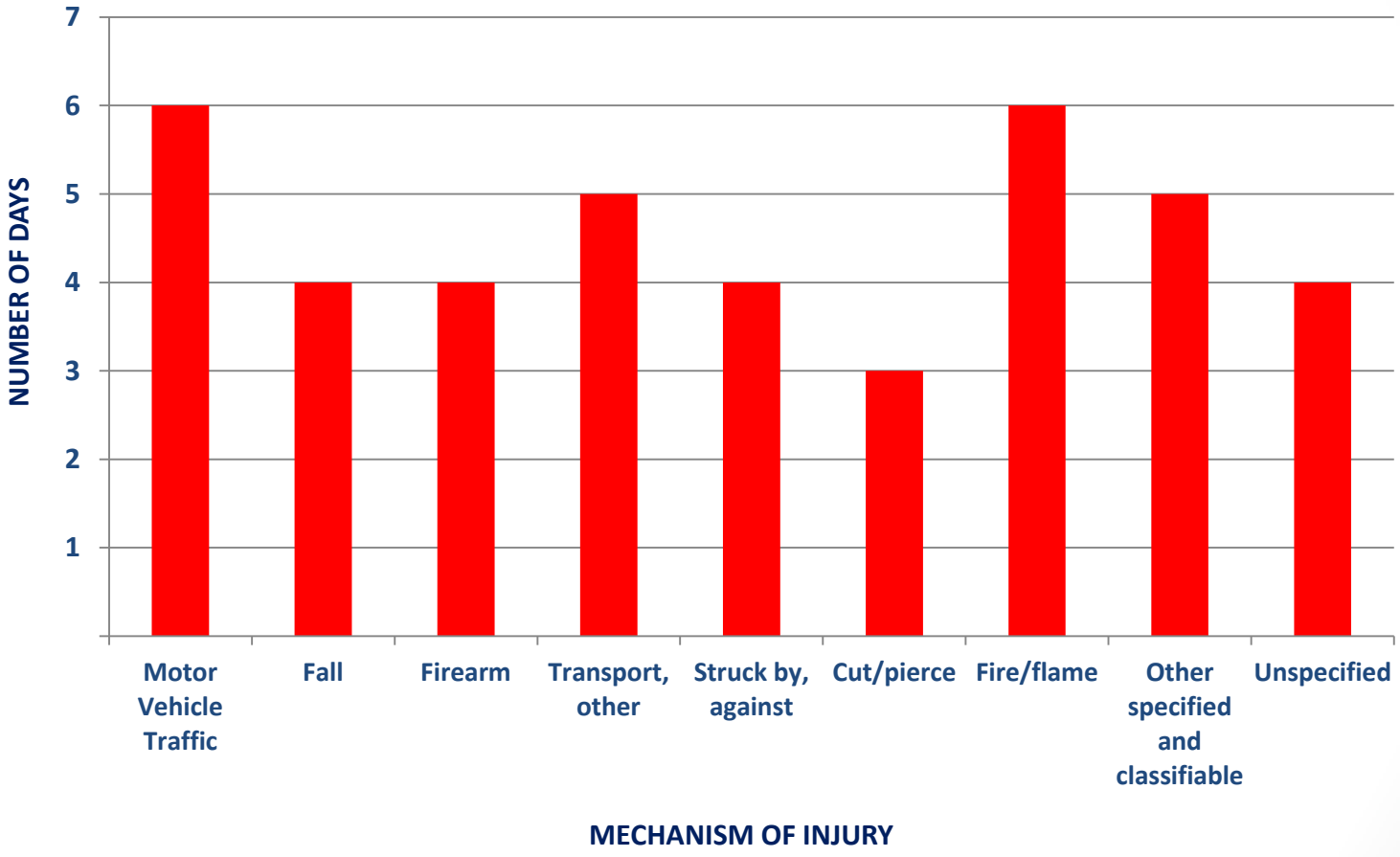
Median Ventilator Days by Selected Mechanism of Injury

MECHANISM	NUMBER	MEDIAN
Motor Vehicle Traffic	25,376	6
Fall	15,298	4
Firearm	5,083	4
Transport, other	2,757	5
Struck by, against	2,507	4
Cut/pierce	1,670	3
Fire/flame	1,111	6
Other specified and classifiable	1,095	5
Unspecified	951	4
Pedal cyclist, other	537	4
Machinery	311	5
Suffocation	281	3
Pedestrian, other	247	5
Other specified, not elsewhere classifiable	240	4
Natural/environmental, Other	167	5
Hot object/substance	124	4
Drowning/submersion	97	4
Natural/environmental, Bites and stings	60	4
Poisoning	48	3
NK/NR	45	7
Overexertion	10	5

In patients with ventilator days > 0.

Figure 37

Median Ventilator Days by Selected Mechanism of Injury



In patients with ventilator days > 0.

Table 38

Median Ventilator Days by Injury Severity Score

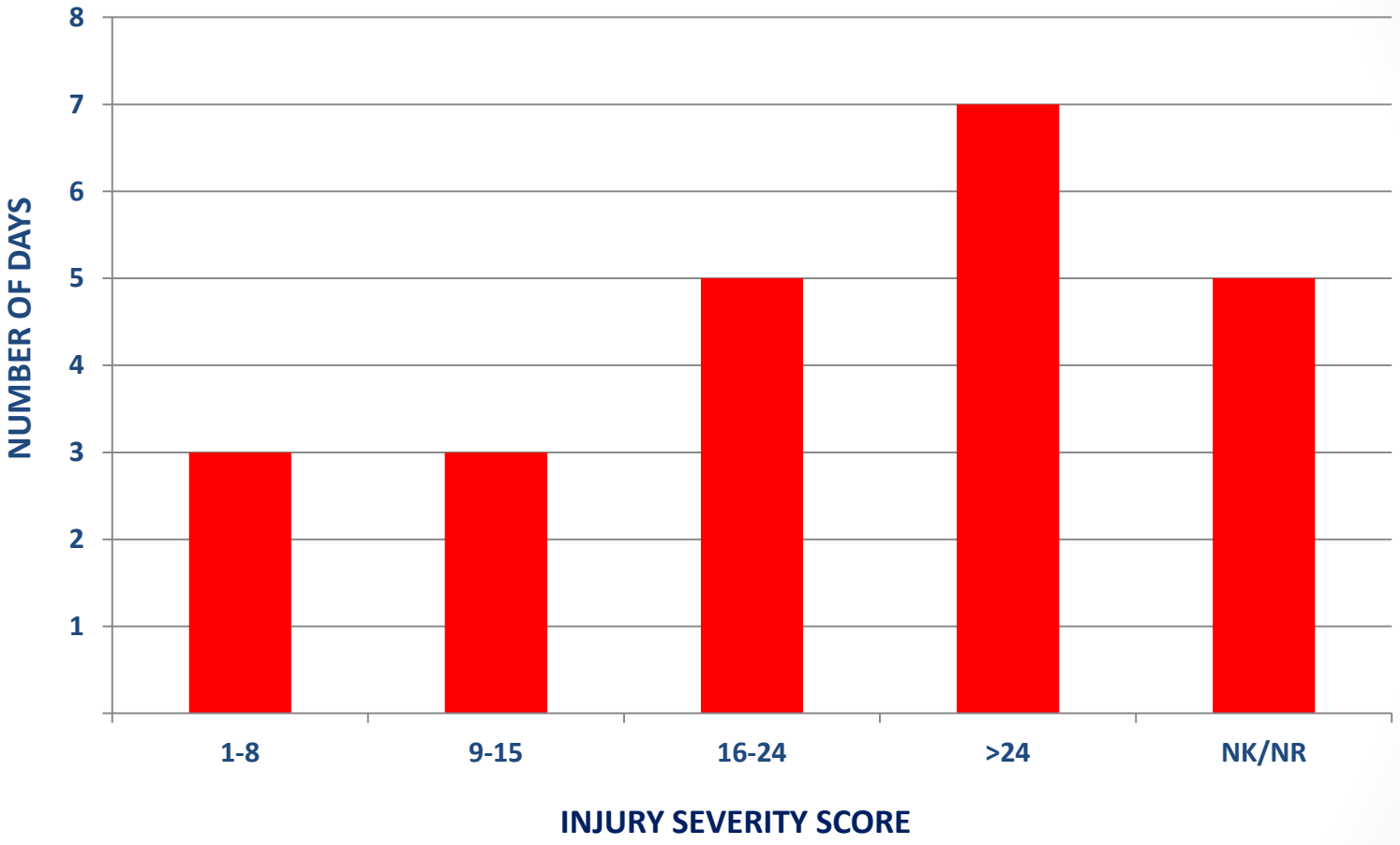
ISS	NUMBER	MEDIAN
1-8	5,445	3
9-15	10,594	3
16-24	15,717	5
>24	26,008	7
NK/NR	287	5

Injury Severity Score definitions can be found in Appendix B.

In patients with ventilator days > 0.

Figure 38

Median Ventilator Days by Injury Severity Score



Injury Severity Score definitions can be found in Appendix B.

In patients with ventilator days > 0.

Table 39

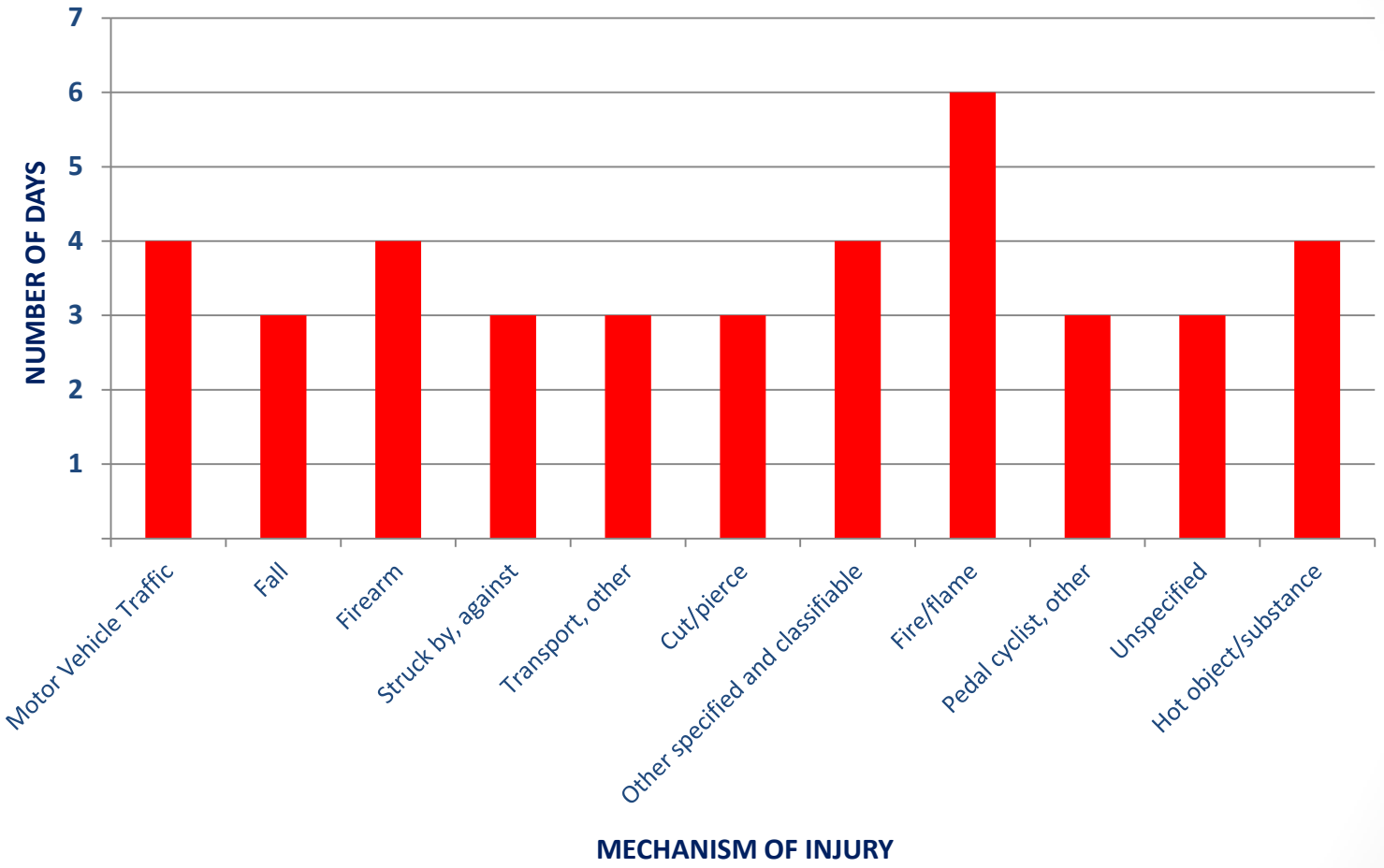
Median ICU Days by Mechanism of Injury

MECHANISM	NUMBER	MEDIAN
Motor Vehicle Traffic	57,624	4
Fall	57,194	3
Firearm	9,187	4
Struck by, against	8,392	3
Transport, other	8,185	3
Cut/pierce	4,576	3
Other specified and classifiable	2,627	4
Fire/flame	2,582	6
Pedal cyclist, other	2,294	3
Unspecified	2,082	3
Hot object/substance	1,150	4
Machinery	904	4
Other specified, not elsewhere classifiable	620	3
Pedestrian, other	608	4
Natural/environmental, Other	516	3
Suffocation	361	4
Natural/environmental, Bites and stings	314	3
NK/NR	211	3
Drowning/submersion	149	4
Poisoning	121	3
Overexertion	91	3

In patients with ICU days > 0.

Figure 39

Median ICU Days by Mechanism of Injury



In patients with ICU days > 0.

Table 40

Median ICU Days by Injury Severity Score

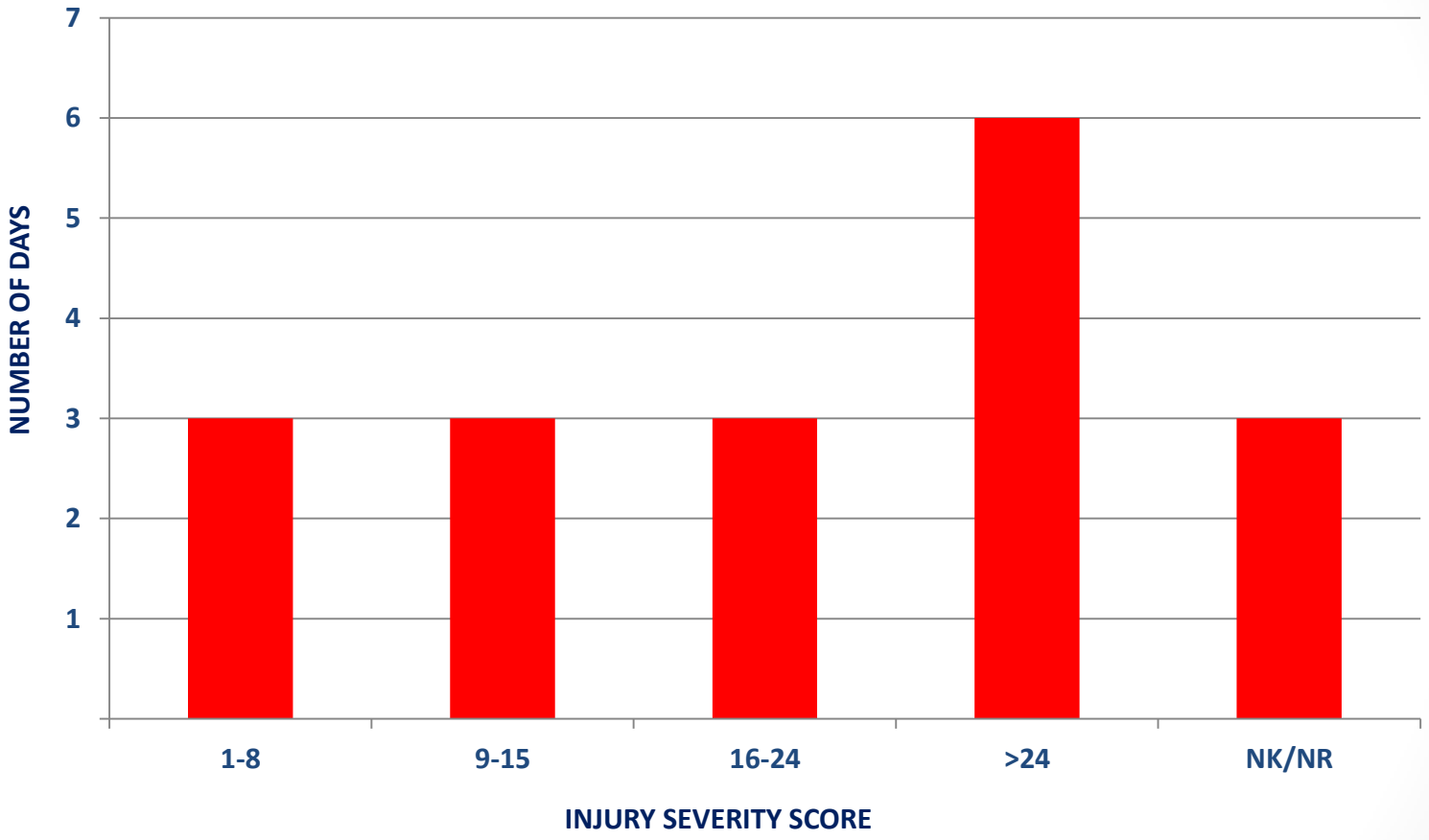
ISS	NUMBER	MEDIAN
1-8	23,511	3
9-15	43,029	3
16-24	50,950	3
>24	41,710	6
NK/NR	673	3

Injury Severity Score definitions can be found in Appendix B.

In patients with ICU days > 0.

Figure 40

Median ICU Days by Injury Severity Score



Injury Severity Score definitions can be found in Appendix B.

In patients with ICU days > 0.

Table 41

Incidents by ED Discharge Disposition

ED DISCHARGE DISPOSITION	NUMBER	PERCENT
Floor bed (general admission, non specialty unit bed)	353,824	42.46
Intensive Care Unit (ICU)	159,293	19.12
Operating Room	97,554	11.71
Home without services	75,744	9.09
Telemetry/step-down unit (less acuity than ICU)	55,616	6.67
Transferred to another hospital	33,133	3.98
Observation unit (unit that provides < 24 hour stays)	19,052	2.29
Died	8,882	1.07
Other (jail, institutional care facility, mental health, etc)	3,354	0.40
Left against medical advice	2,149	0.26
Home with services	1,325	0.16
Not Applicable	17,204	2.06
NK/NR	6,178	0.74
Total	833,308	100.00

Figure 41

Incidents by ED Discharge Disposition

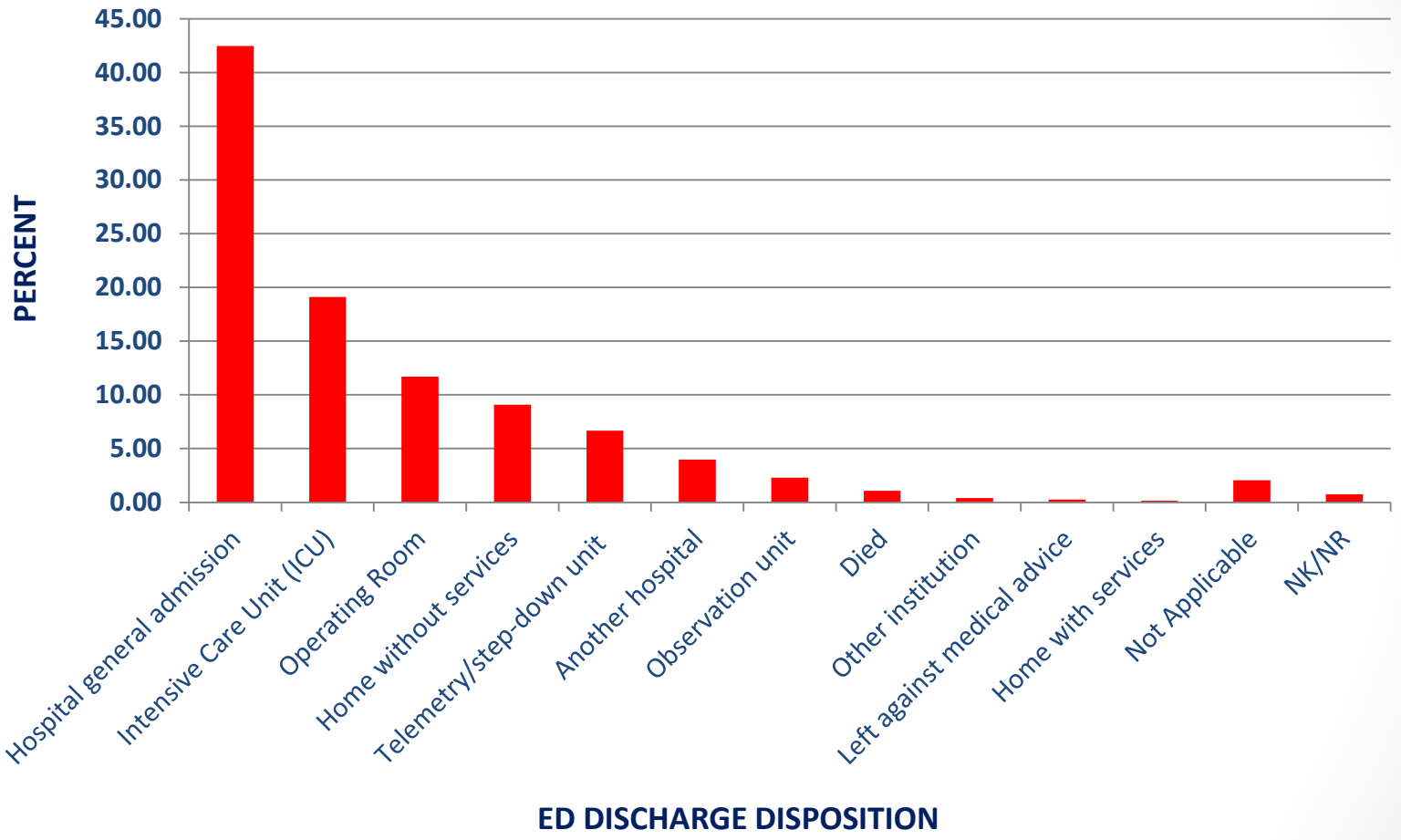


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Table 42

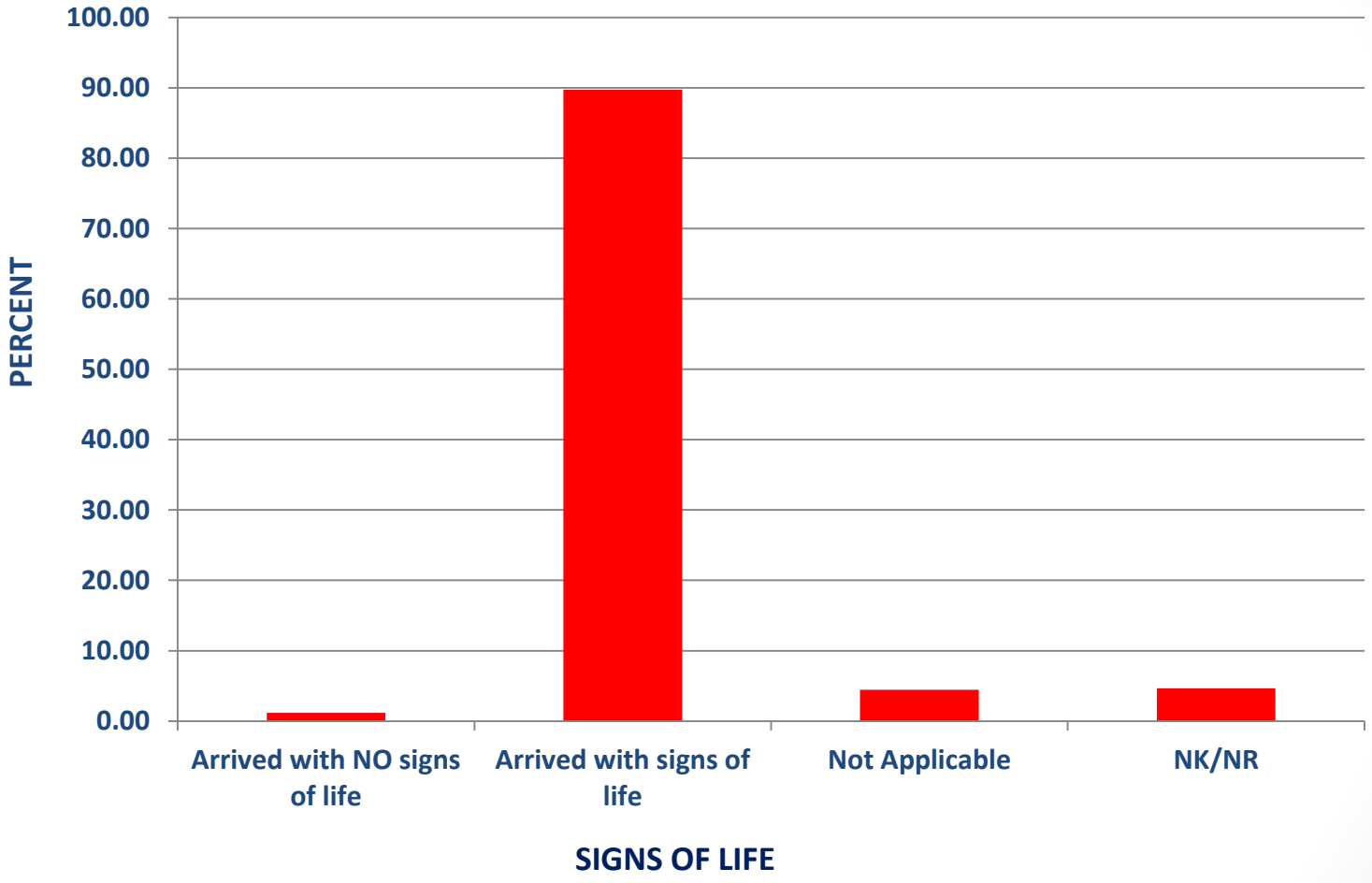
Signs of Life

SIGNS OF LIFE	NUMBER	PERCENT
Arrived with NO signs of life	9,772	1.17
Arrived with signs of life	747,793	89.74
Not applicable	36,985	4.44
NK/NR	38,758	4.65
Total	833,308	100.00

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

Figure 42

Signs of Life



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

Table 43

Incidents by Hospital Discharge Disposition

HOSPITAL DISCHARGE DISPOSITION	NUMBER	PERCENT
Discharged home with no home services	458,390	55.01
Discharged/Transferred to Skilled Nursing Facility	87,551	10.51
Discharged/Transferred to another type of rehabilitation or long term care	63,357	7.60
Discharge/Transferred to home under care of organized home health service	38,419	4.61
Expired	22,280	2.67
Discharged/Transferred to an Intermediate Care Facility (ICF)	16,563	1.99
Discharged/Transferred to a short-term general hospital for inpatient care	12,348	1.48
Left against medical advice or discontinued care	5,802	0.70
Discharged/Transferred to hospice care	3,460	0.42
Not Applicable	124,587	14.95
NK/NR	551	0.07
Total	833,308	100.00

Figure 43

Incidents by Hospital Discharge Disposition

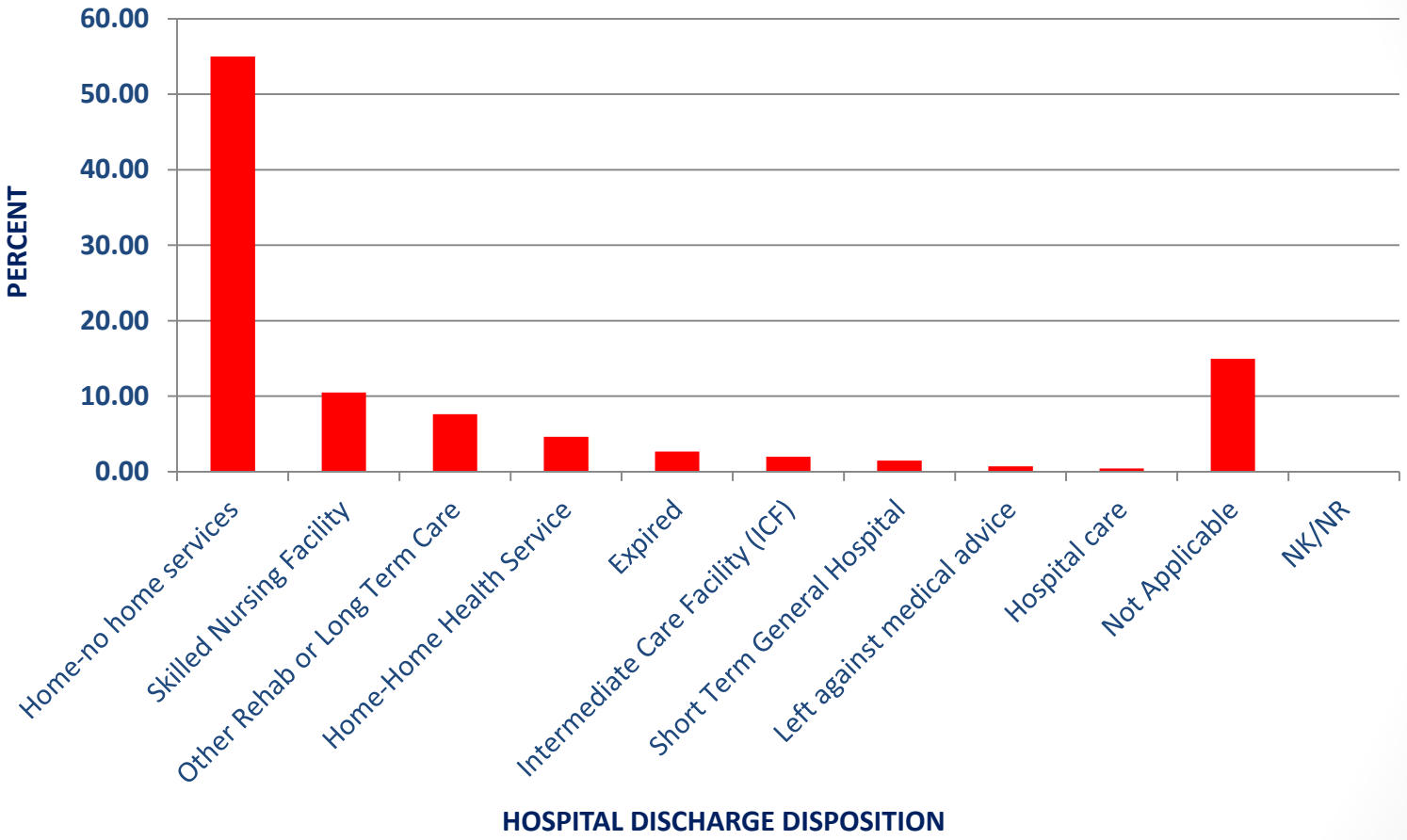


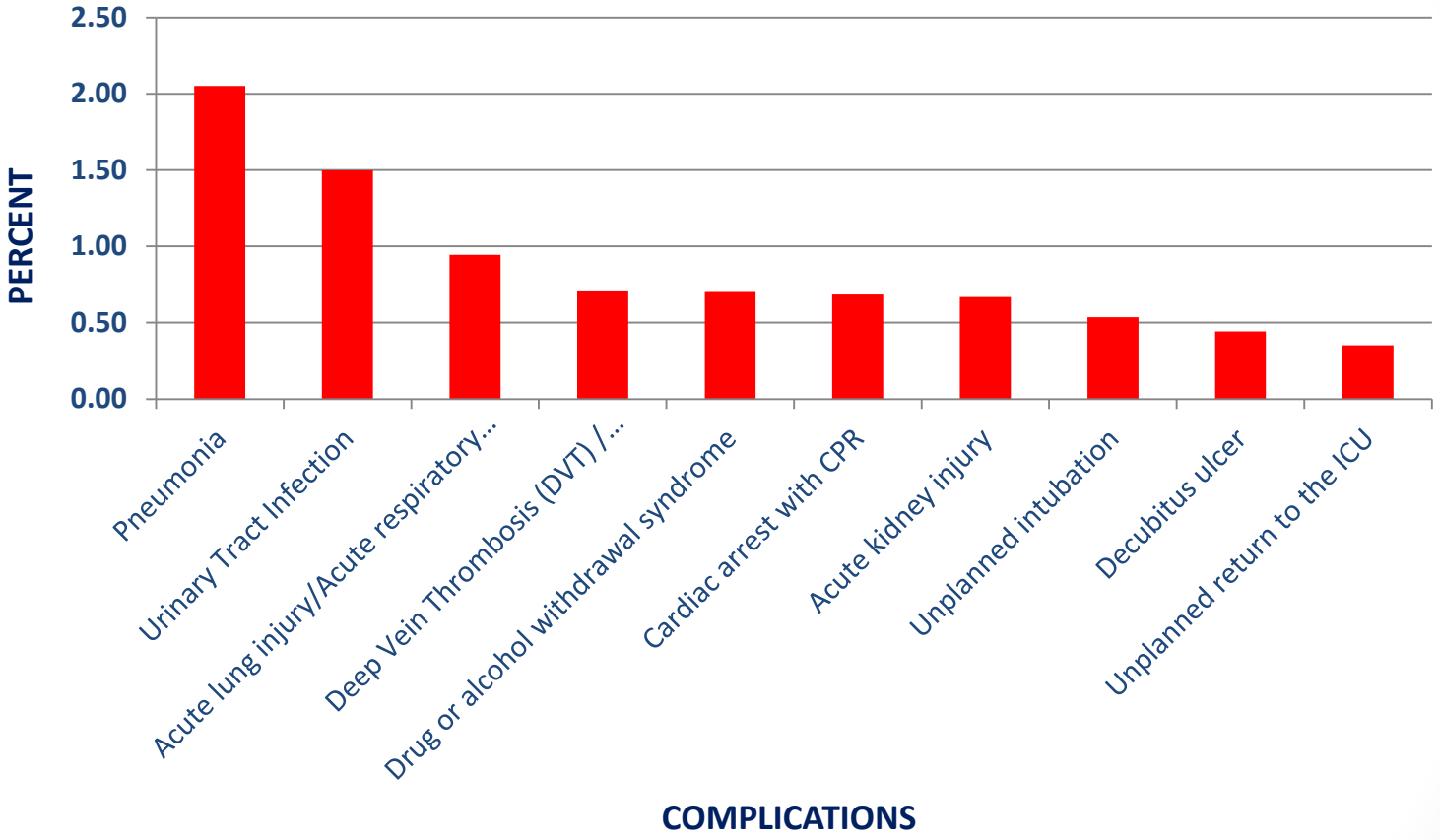
Table 44

Hospital Complications

COMPLICATIONS	NUMBER	PERCENT
Pneumonia	17,094	2.05
Urinary Tract Infection	12,484	1.50
Acute lung injury/Acute respiratory distress syndrome (ARDS)	7,870	0.94
Deep Vein Thrombosis (DVT) / thrombophlebitis	5,927	0.71
Drug or alcohol withdrawal syndrome	5,849	0.70
Cardiac arrest with CPR	5,713	0.69
Acute kidney injury	5,571	0.67
Unplanned intubation	4,463	0.54
Decubitus ulcer	3,699	0.44
Unplanned return to the ICU	2,931	0.35
Extremity compartment syndrome	2,664	0.32
Pulmonary embolism	2,483	0.30
Severe sepsis	2,312	0.28
Myocardial infarction	2,008	0.24
Stroke / CVA	1,901	0.23
Unplanned return to the OR	1,566	0.19
Organ/space surgical site infection	1,548	0.19
Superficial surgical site infection	1,334	0.16
Catheter-Related Blood Stream Infection	1,044	0.13
Deep surgical site infection	822	0.10
Graft/prosthesis/flap failure	436	0.05
Osteomyelitis	252	0.03

Figure 44

Top Ten Complications



REGIONAL ANALYSIS

Table 45

Incidents by Region

REGION	NUMBER	PERCENT
MIDWEST	227,724	27.33
NORTHEAST	129,109	15.49
SOUTH	301,395	36.17
WEST	169,837	20.38
NON-US	5,243	0.63
Total	833,308	100.00

Figure 45

Incidents by Region

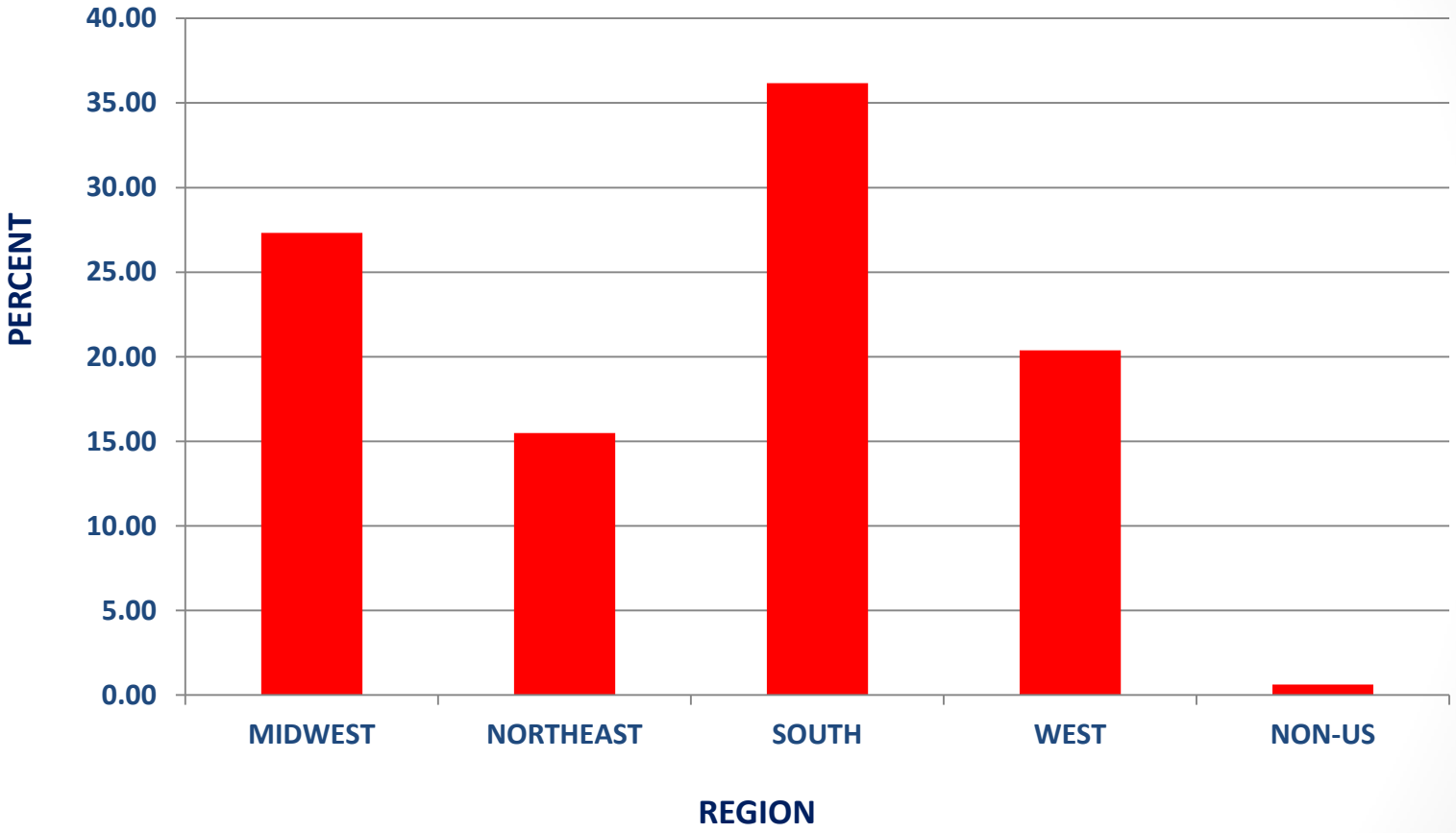


Table 46

Case Fatality Rate by Region

REGION	NUMBER	DEATHS	CASE FATALITY RATE
MIDWEST	227,724	9,045	3.97
NORTHEAST	129,109	5,628	4.36
SOUTH	301,395	12,786	4.24
WEST	169,837	6,729	3.96
NON-US	5,243	434	8.28
Total	833,308	34,622	4.15

Figure 46

Case Fatality Rate by Region

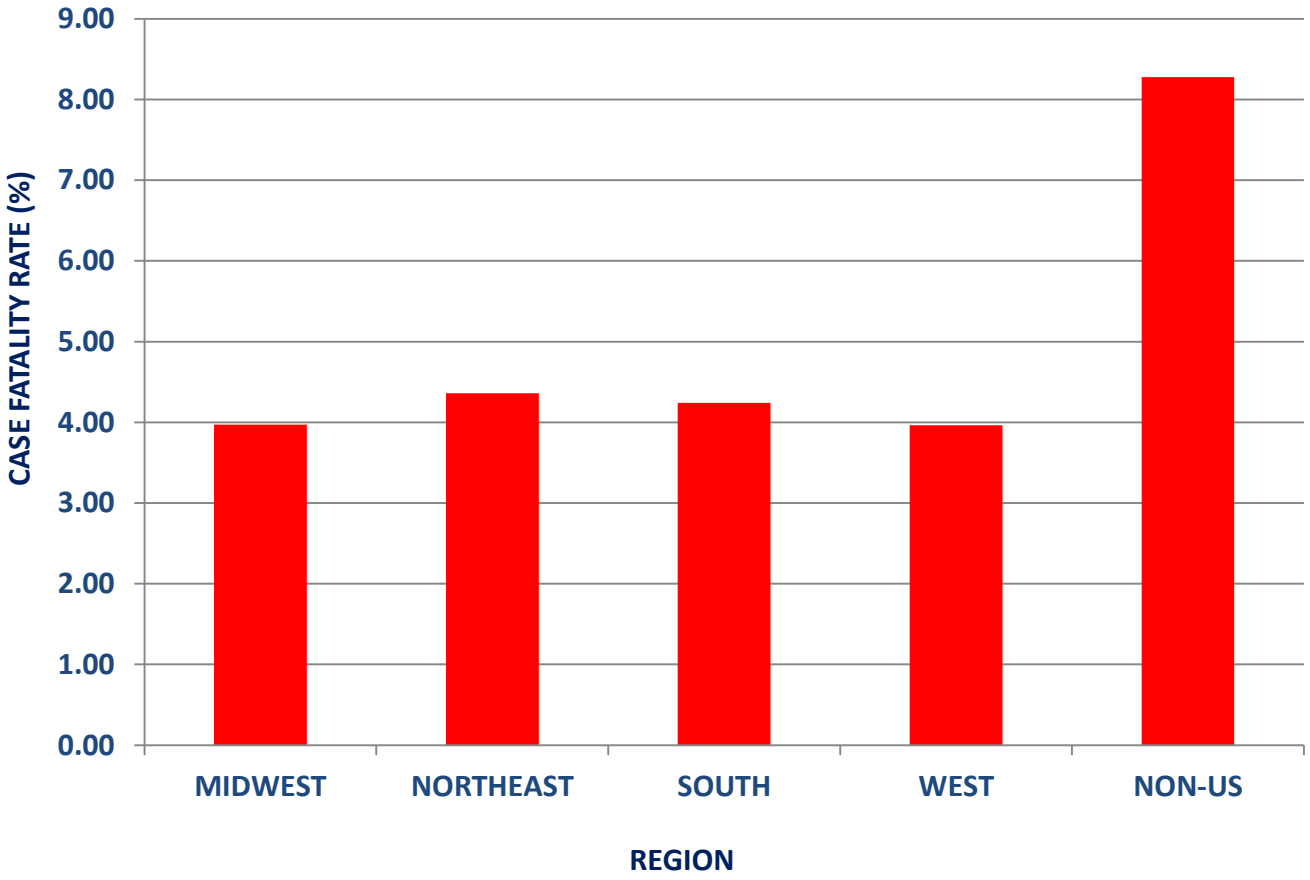


Table 47

Mechanism of Injury by Region

MECHANISM	NUMBER	PERCENT (MIDWEST)	PERCENT (NORTHEAST)	PERCENT (SOUTH)	PERCENT (WEST)
Fall	338,805	46.58	47.46	36.20	35.81
Motor Vehicle Traffic	234,164	23.91	24.52	30.68	31.51
Struck by, against	60,919	7.12	7.00	7.47	7.55
Transport, other	41,195	4.58	3.63	5.43	5.55
Cut/pierce	37,599	3.54	4.10	4.87	5.44
Firearm	36,162	4.13	3.45	4.84	4.31
Pedal cyclist, other	15,882	1.76	1.82	1.35	3.17
Other specified and classifiable	13,455	1.54	1.34	1.96	1.33
Unspecified	9,010	0.98	1.33	0.92	1.32
Hot object/substance	8,871	1.09	1.24	1.30	0.52
Fire/flame	8,763	1.20	1.02	1.21	0.60
Machinery	8,191	1.12	0.91	1.09	0.67
Natural/environmental, Bites and stings	5,283	0.63	0.39	0.86	0.45
Other specified, not elsewhere classifiable	4,257	0.47	0.56	0.51	0.54
Overexertion	2,712	0.35	0.37	0.36	0.21
Natural/environmental, Other	2,586	0.37	0.18	0.34	0.29
Pedestrian, other	2,486	0.26	0.25	0.34	0.32
NK/NR	1,008	0.08	0.20	0.08	0.19
Suffocation	811	0.13	0.09	0.08	0.10
Poisoning	440	0.09	0.03	0.05	0.04
Drowning/submersion	397	0.05	0.03	0.05	0.05
Adverse effects, medical care	177	0.02	0.04	0.02	0.01
Adverse effects, drugs	135	0.02	0.01	0.01	0.02
Total	833,308	100.00	100.00	100.00	100.00

Figure 47

Selected Mechanism of Injury by Region

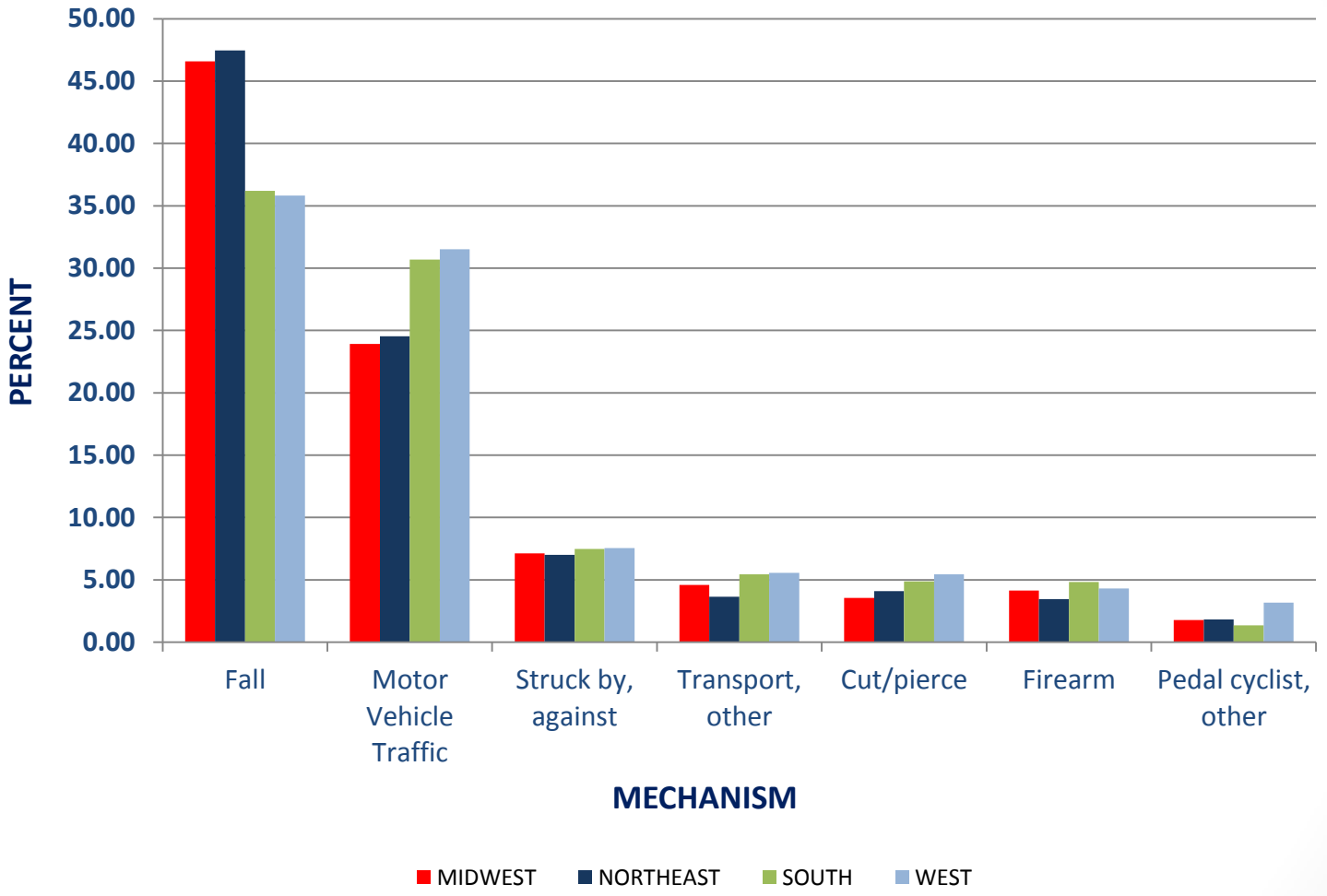


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Table 48

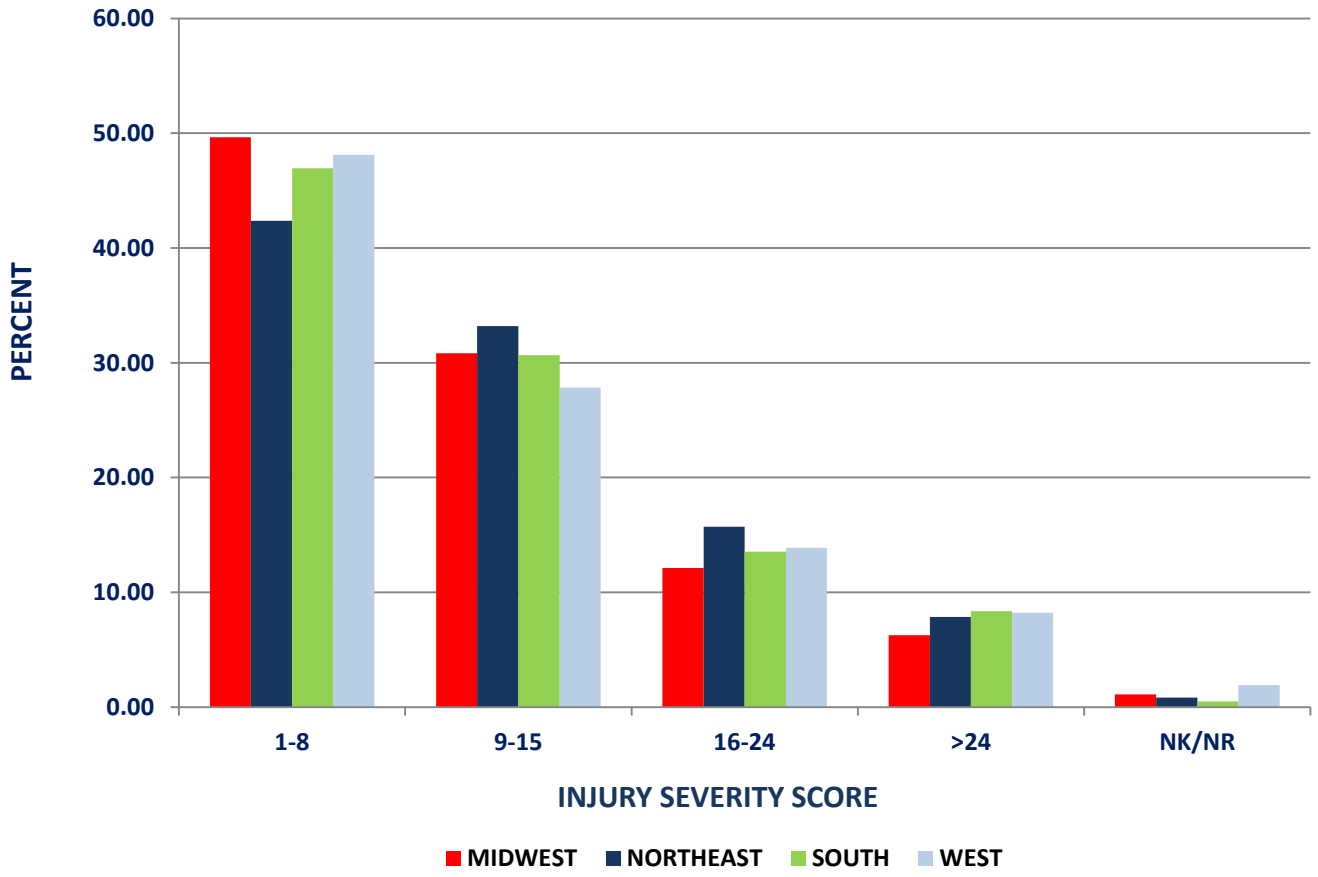
Injury Severity Score by Region

ISS	NUMBER	MIDWEST	NORTHEAST	SOUTH	WEST
1–8	392,032	49.66	42.39	46.94	48.10
9–15	254,269	30.84	33.21	30.66	27.86
16–24	113,723	12.11	15.72	13.56	13.89
>24	64,860	6.28	7.85	8.35	8.22
NK/NR	8,424	1.11	0.83	0.49	1.93
Total	833,308	100.00	100.00	100.00	100.00

Injury Severity Score definitions can be found in Appendix B.

Figure 48

Injury Severity Score by Region



Injury Severity Score definitions can be found in Appendix B.

Table 49

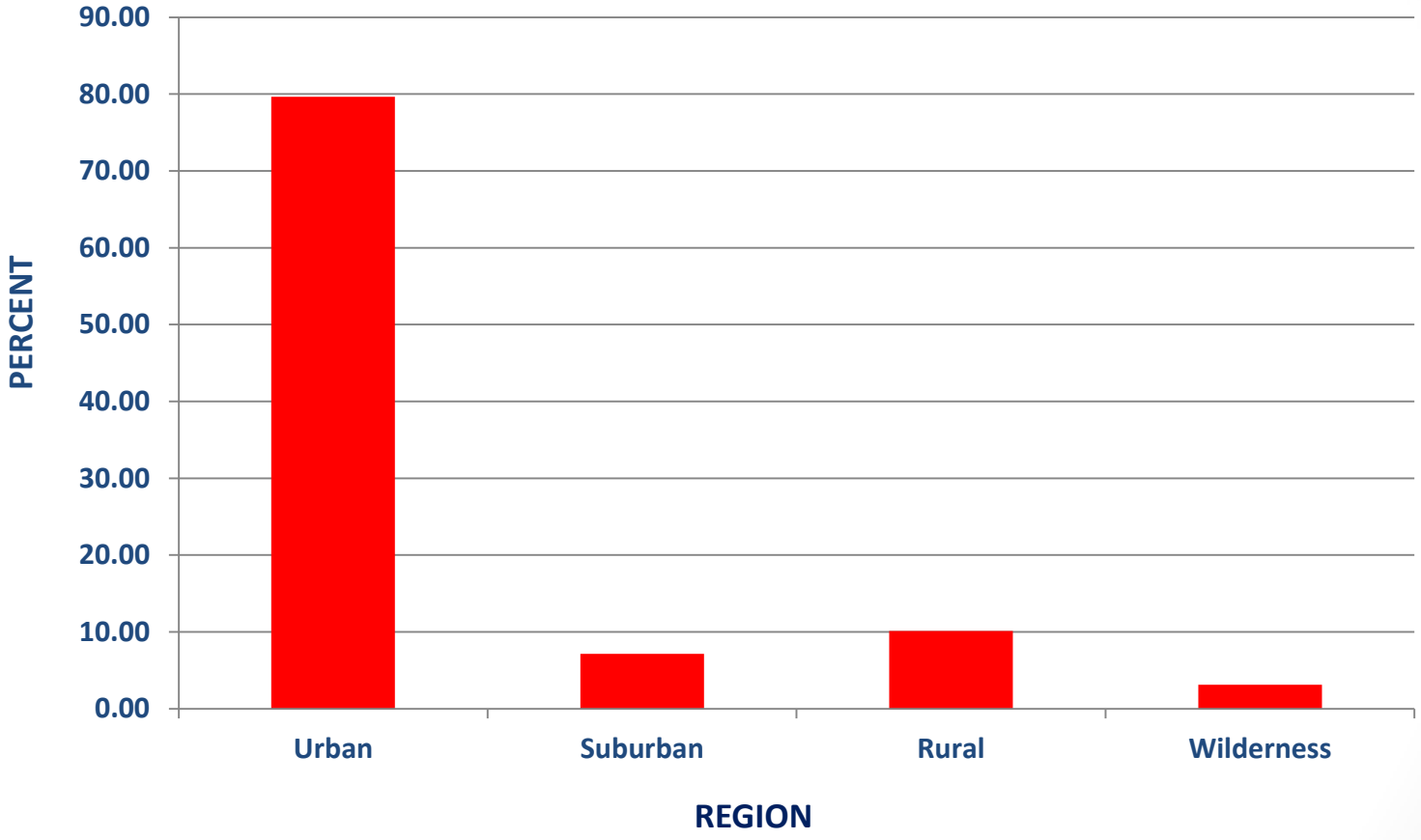
Incidents by Rurality

REGION	NUMBER	PERCENT
Urban	380,068	79.63
Suburban	34,069	7.14
Rural	48,222	10.10
Wilderness	14,919	3.13
Total	477,278	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 49

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 50

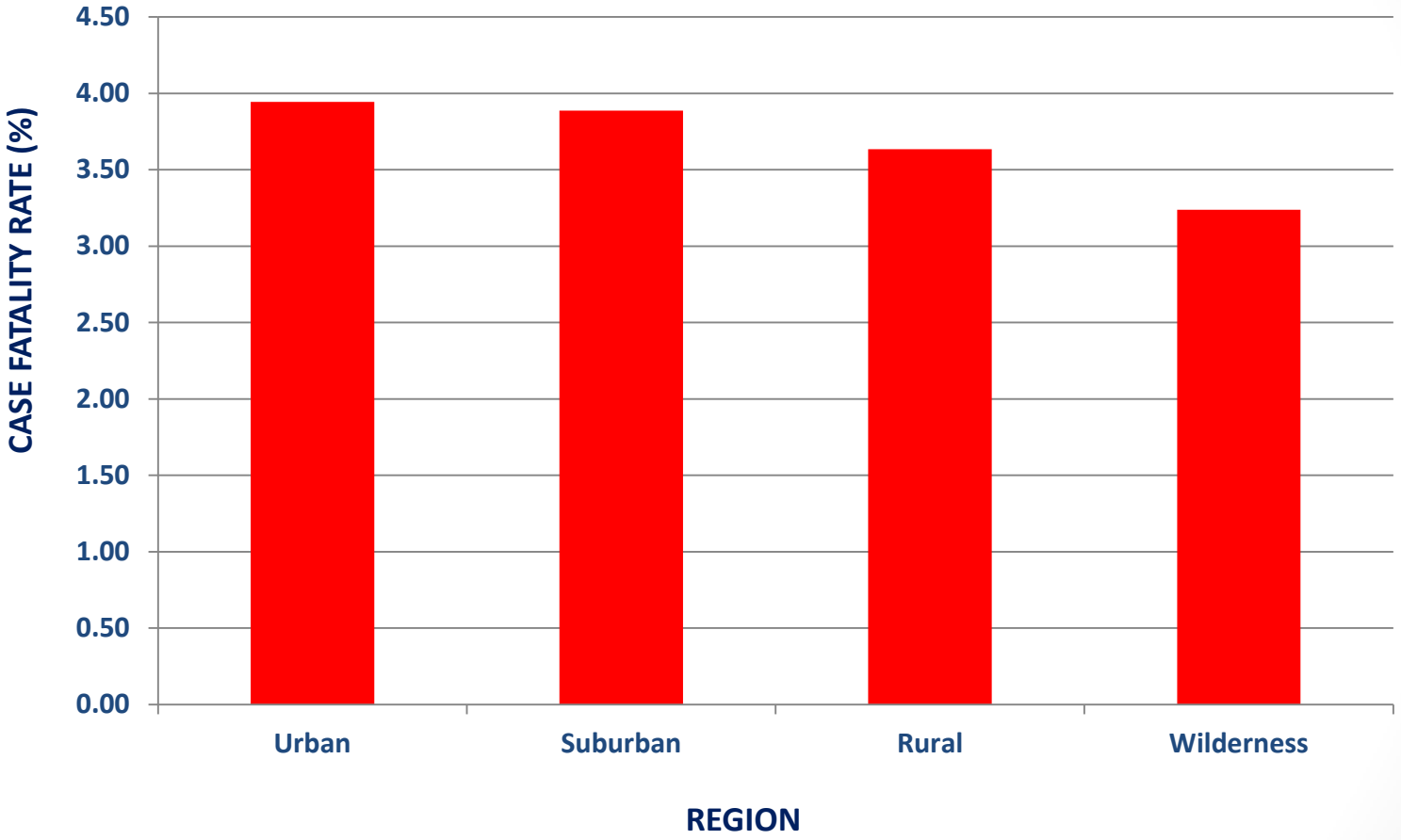
Case Fatality Rate by Rurality

REGION	NUMBER	DEATHS	CASE FATALITY RATE
Urban	380,068	14,988	3.94
Suburban	34,069	1,324	3.89
Rural	48,222	1,753	3.64
Wilderness	14,919	483	3.24
Total	477,278	31,162	6.53

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 50

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.

Figure 51

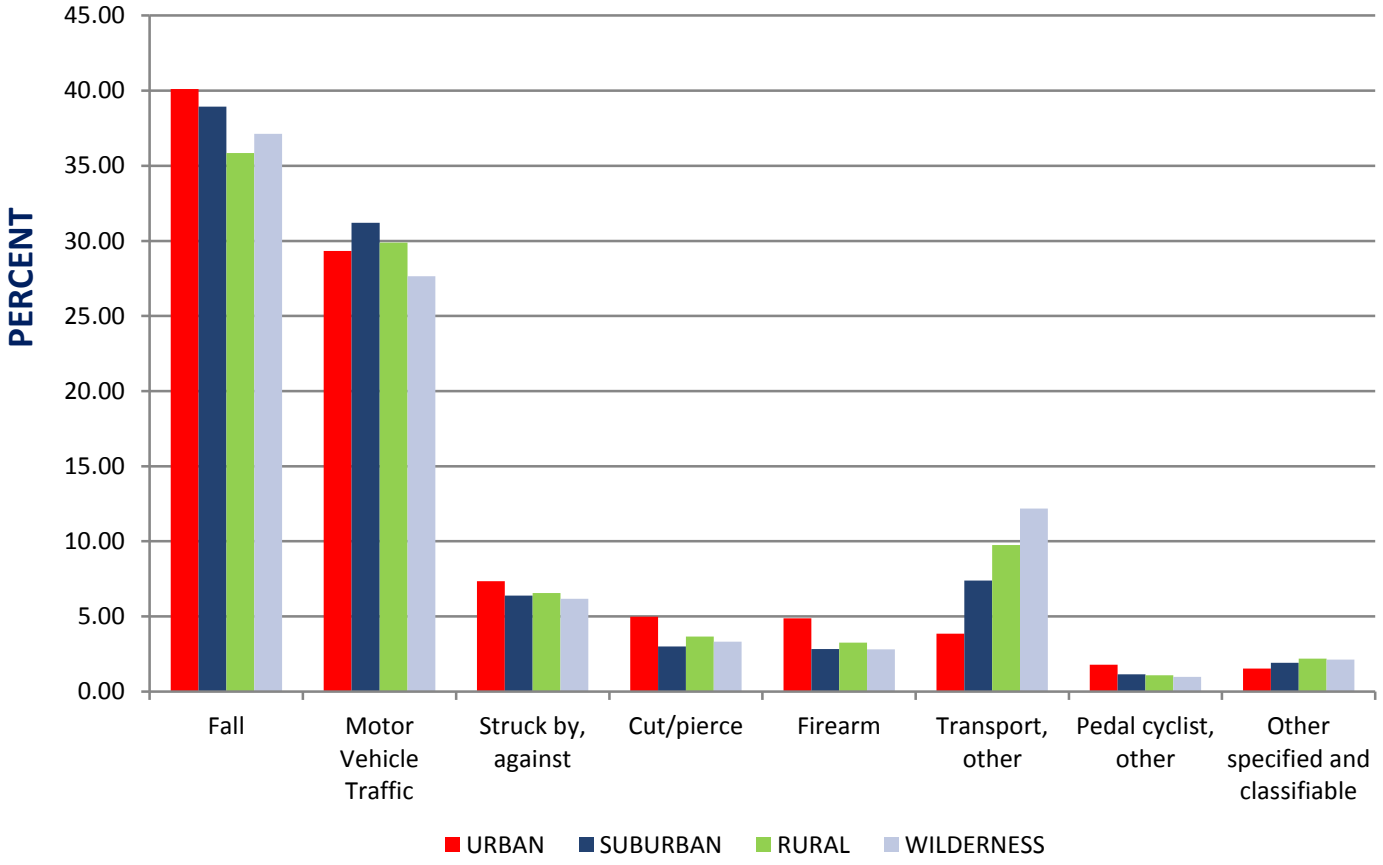
Mechanism of Injury by Rurality

MECHANISM	NUMBER (URBAN)	PERCENT (URBAN)	NUMBER (SUBURBAN)	PERCENT (SUBURBAN)	NUMBER (RURAL)	PERCENT (RURAL)	NUMBER (WILDERNESS)	PERCENT (WILDERNESS)
Fall	152,408	40.10	13,267	38.94	17,288	35.85	5,539	37.13
Motor Vehicle Traffic	111,438	29.32	10,628	31.20	14,416	29.90	4,125	27.65
Struck by, against	27,934	7.35	2,179	6.40	3,160	6.55	920	6.17
Cut/pierce	18,908	4.97	1,024	3.01	1,770	3.67	497	3.33
Firearm	18,491	4.87	964	2.83	1,569	3.25	420	2.82
Transport, other	14,607	3.84	2,519	7.39	4,702	9.75	1,817	12.18
Pedal cyclist, other	6,810	1.79	390	1.14	526	1.09	146	0.98
Other specified and classifiable	5,794	1.52	650	1.91	1,053	2.18	319	2.14
Unspecified	4,123	1.08	271	0.80	380	0.79	117	0.78
Hot object/substance	4,049	1.07	376	1.10	480	1.00	124	0.83
Fire/flame	3,640	0.96	487	1.43	674	1.40	210	1.41
Machinery	2,974	0.78	450	1.32	820	1.70	247	1.66
Natural/environmental, Bites and stings	2,307	0.61	246	0.72	373	0.77	107	0.72
Other specified, not elsewhere classifiable	2,004	0.53	105	0.31	187	0.39	58	0.39
Pedestrian, other	1,177	0.31	117	0.34	175	0.36	52	0.35
Overexertion	1,104	0.29	118	0.35	130	0.27	43	0.29
Natural/environmental, Other	843	0.22	174	0.51	347	0.72	122	0.82
NK/NR	539	0.14	30	0.09	49	0.10	18	0.12
Suffocation	394	0.10	26	0.08	61	0.13	13	0.09
Poisoning	210	0.06	19	0.06	14	0.03	6	0.04
Drowning/submersion	172	0.05	21	0.06	34	0.07	15	0.10
Adverse effects, medical care	88	0.02	4	0.01	8	0.02	3	0.02
Adverse effects, drugs	54	0.01	4	0.01	6	0.01	1	0.01
Total	380,068	100.00	34,069	100.00	48,222	100.00	14,919	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 51

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 52

Injury Severity Score by Rurality

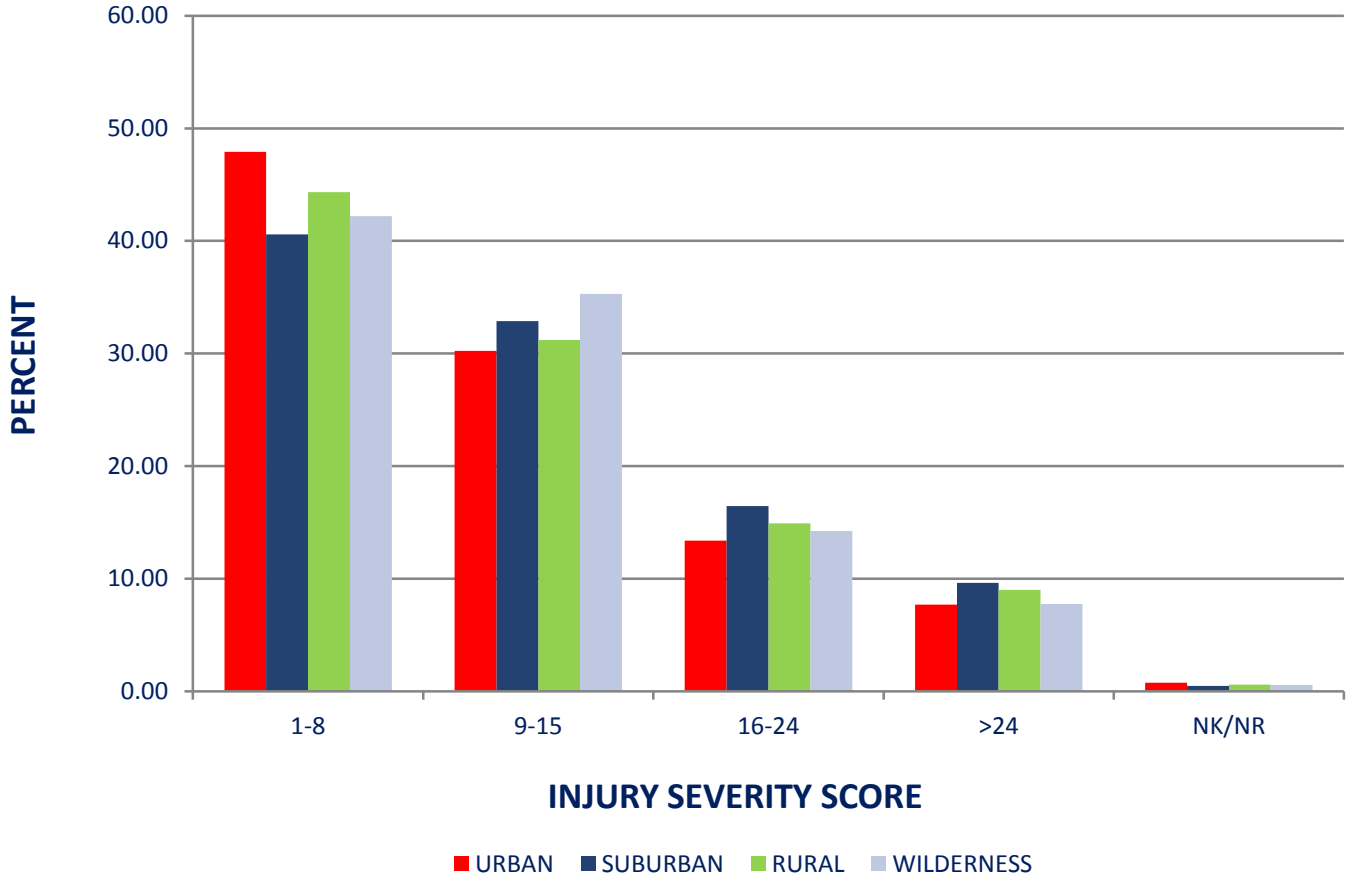
ISS	NUMBER (URBAN)	PERCENT (URBAN)	NUMBER (SUBURBAN)	PERCENT (SUBURBAN)	NUMBER (RURAL)	PERCENT (RURAL)	NUMBER (WILDERNESS)	PERCENT (WILDERNESS)
1-8	182,135	47.92	13,827	40.59	21,375	44.33	6,294	42.19
9-15	114,956	30.25	11,200	32.87	15,046	31.20	5,264	35.28
16-24	50,873	13.39	5,602	16.44	7,188	14.91	2,123	14.23
>24	29,233	7.69	3,281	9.63	4,336	8.99	1,156	7.75
NK/NR	2,871	0.76	159	0.47	277	0.57	82	0.55
Total	380,068	100.00	34,069	100.00	48,222	100.00	14,919	100.00

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 52

Injury Severity Score by Rurality



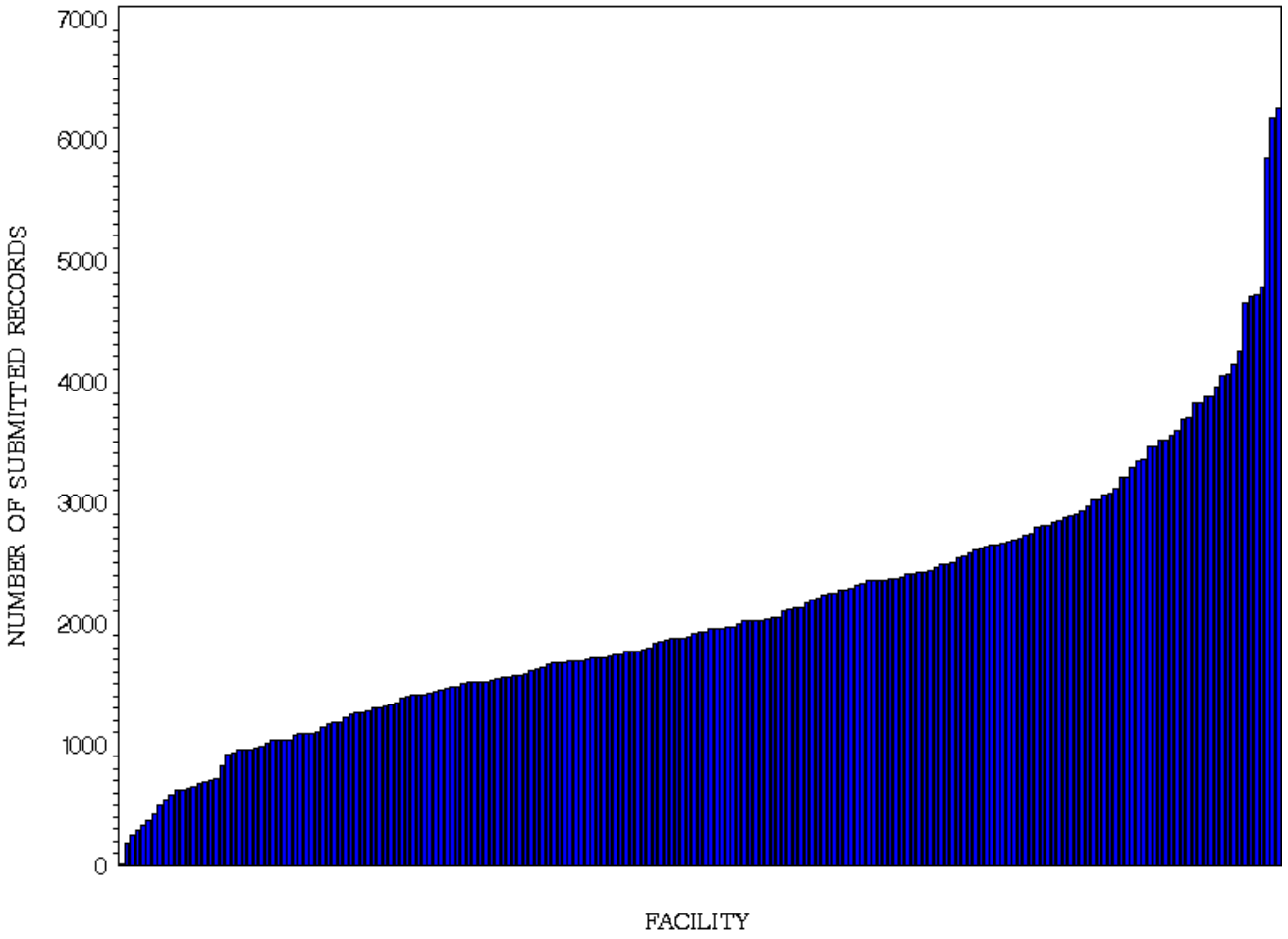
Injury Severity Score definitions can be found in Appendix B.

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 53

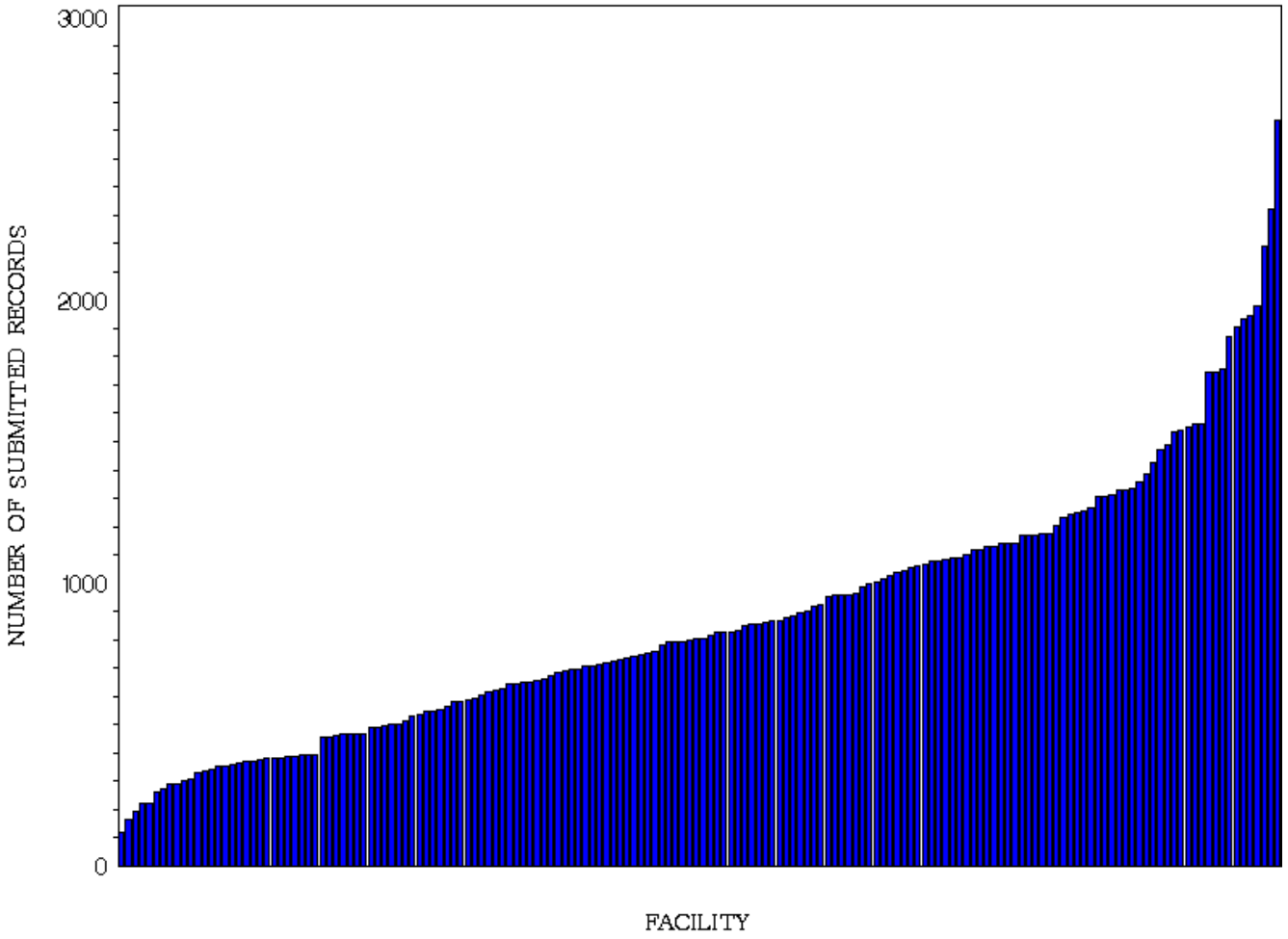
Number of Cases Submitted per Facility for Level I Facilities



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 54

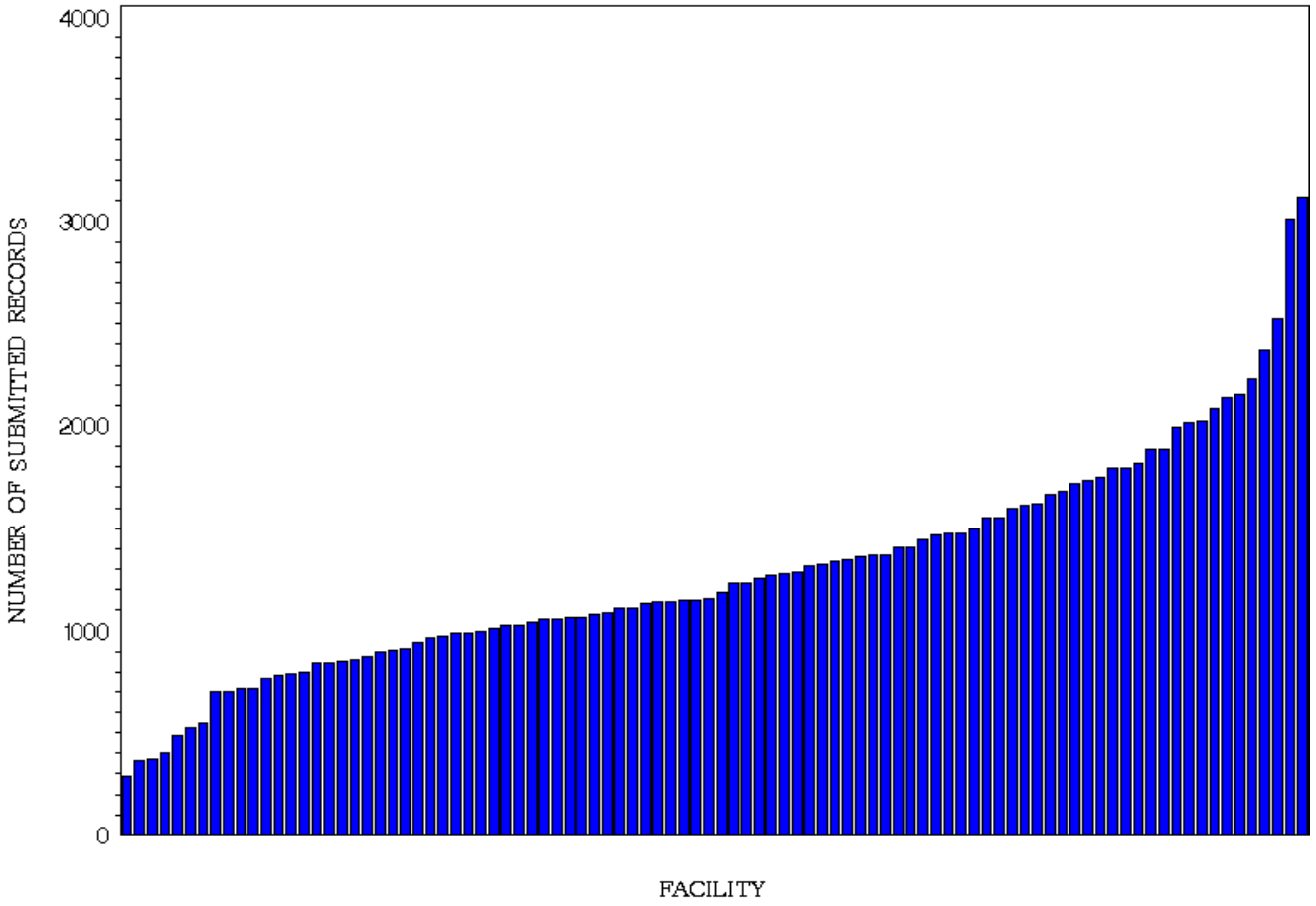
Number of Cases Submitted per Facility for Level II Facilities with Bed Size ≤ 400 Beds



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 55

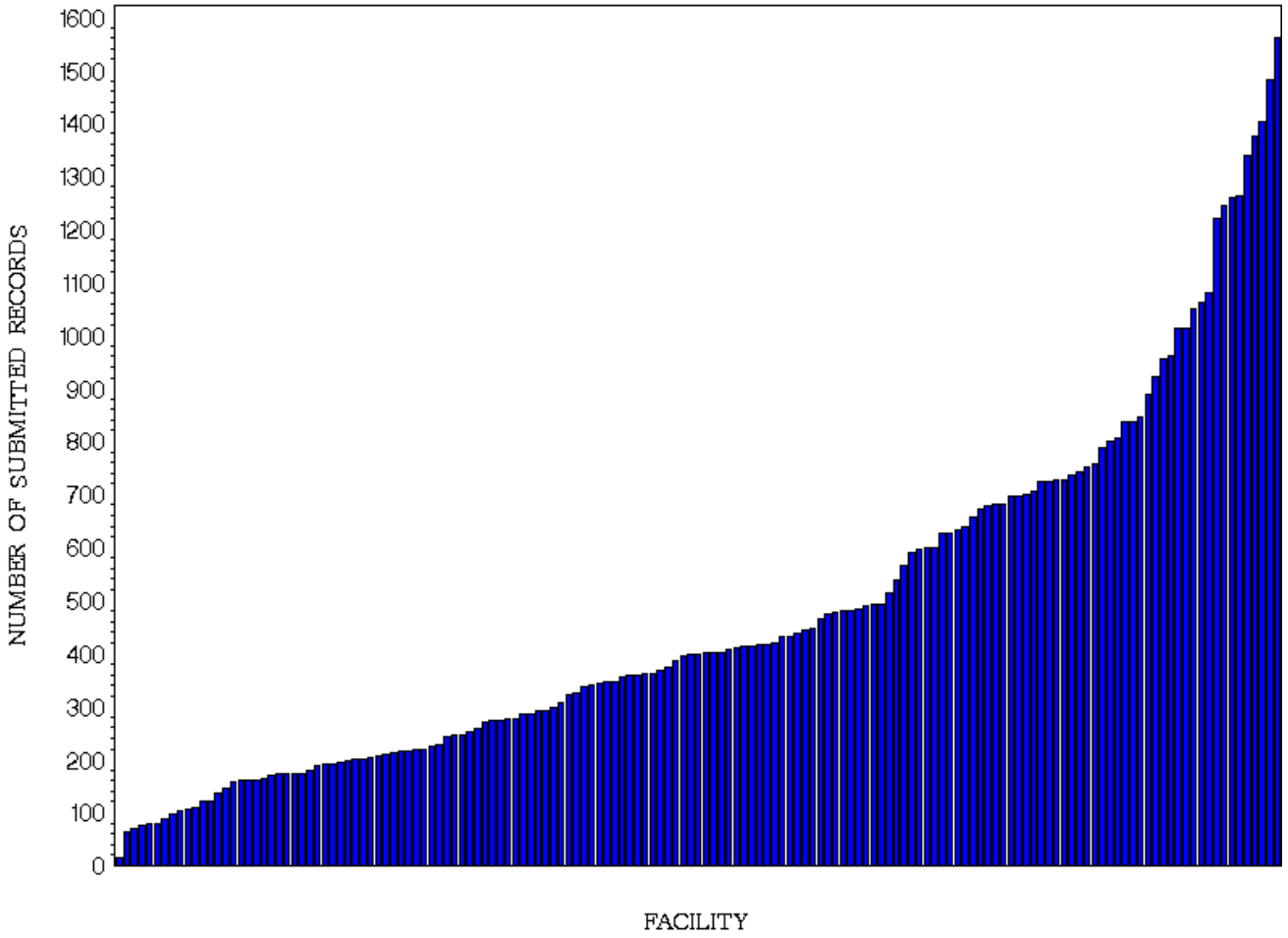
Number of Cases Submitted per Facility for Level II Facilities with Bed Size > 400 Beds



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 56

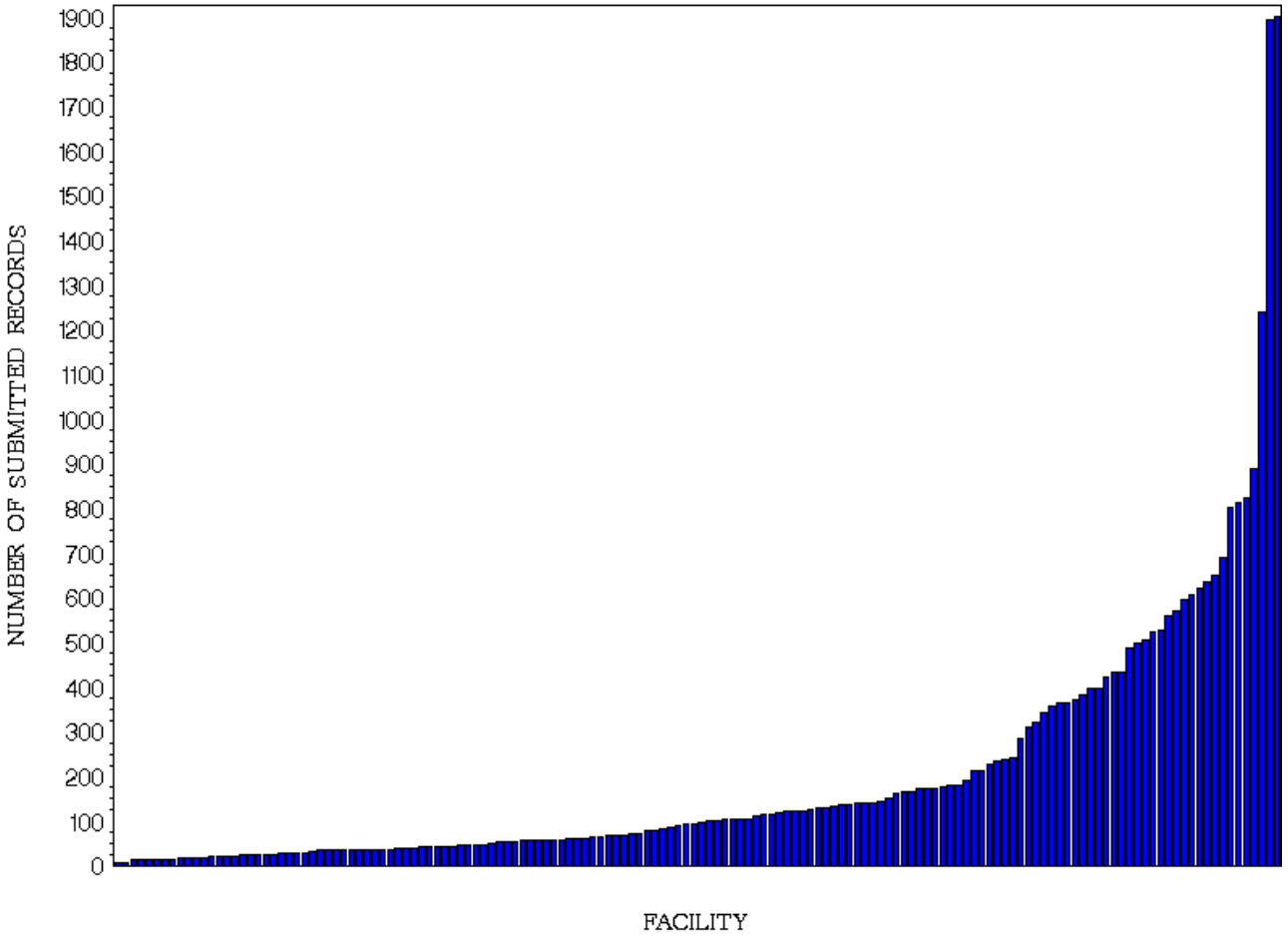
Number of Cases Submitted per Facility for Level III Facilities



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.

Figure 57

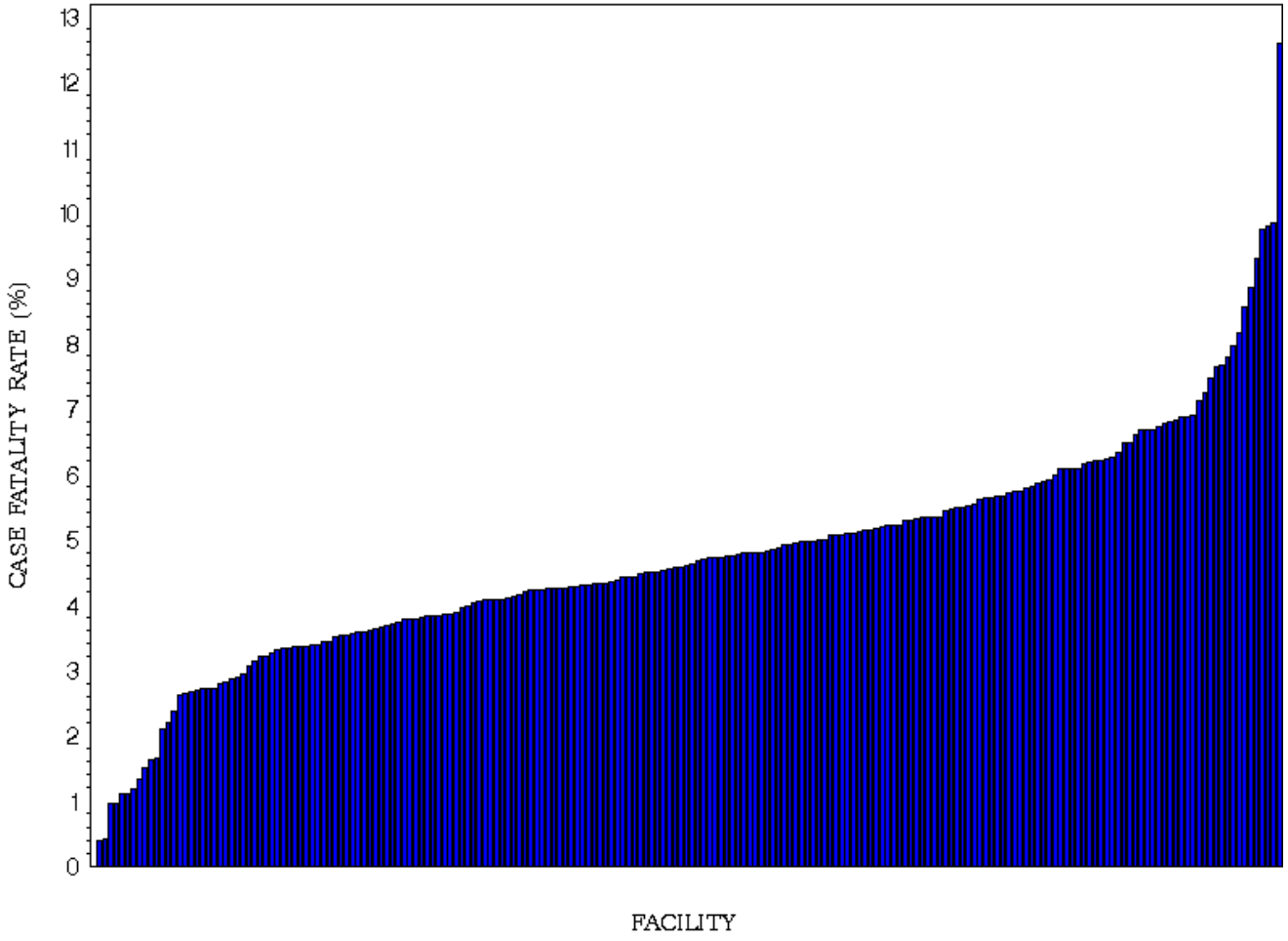
Number of Cases Submitted per Facility for Level IV Facilities and Facilities with Designation Other or Not Applicable



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.

Figure 58

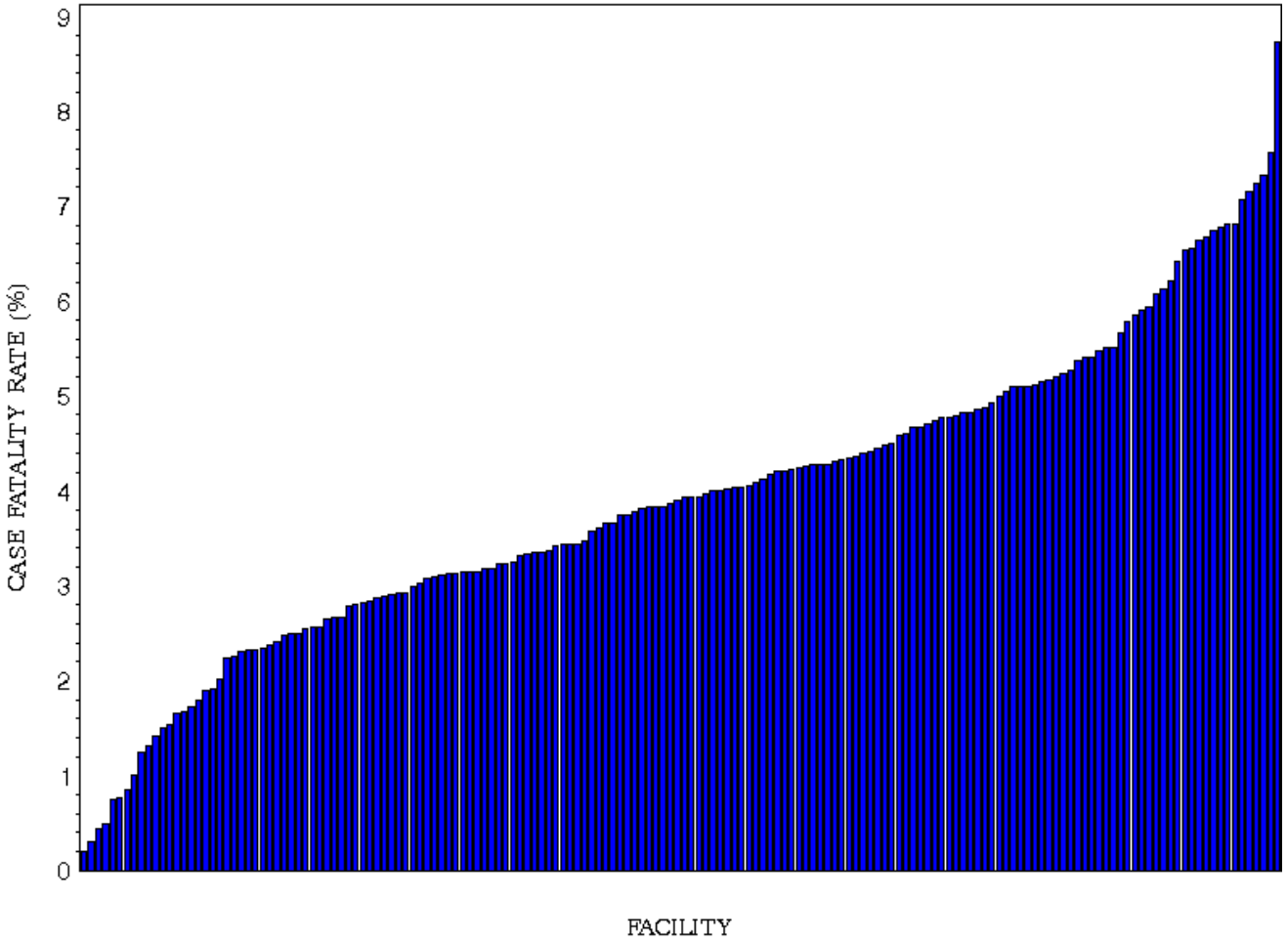
Case Fatality Rate per Facility for Level I Facilities



One out of 207 hospitals did not have any patients who died 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

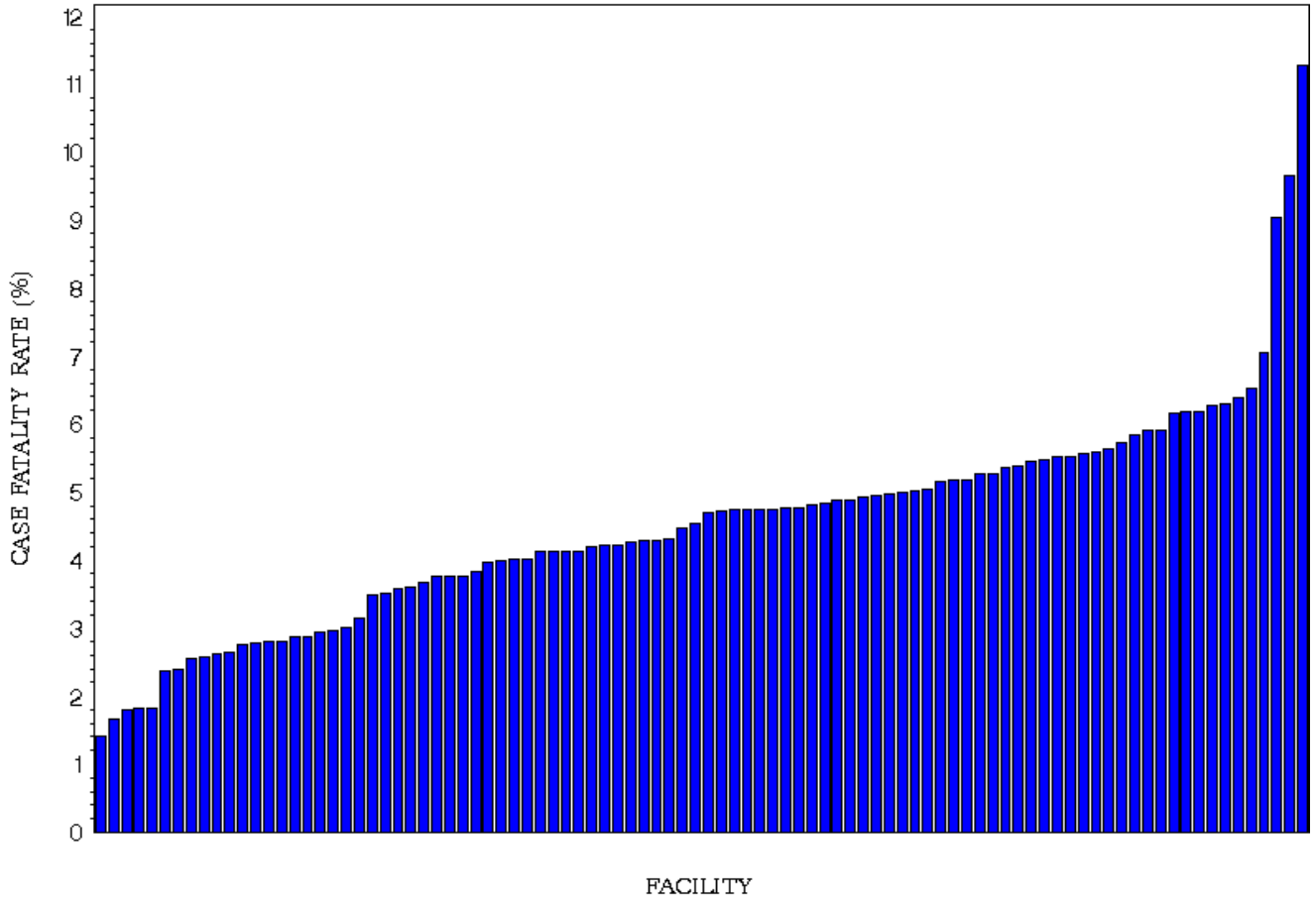
Case Fatality Rate per Facility for Level II Facilities with Bed Size ≤ 400 Beds



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 60

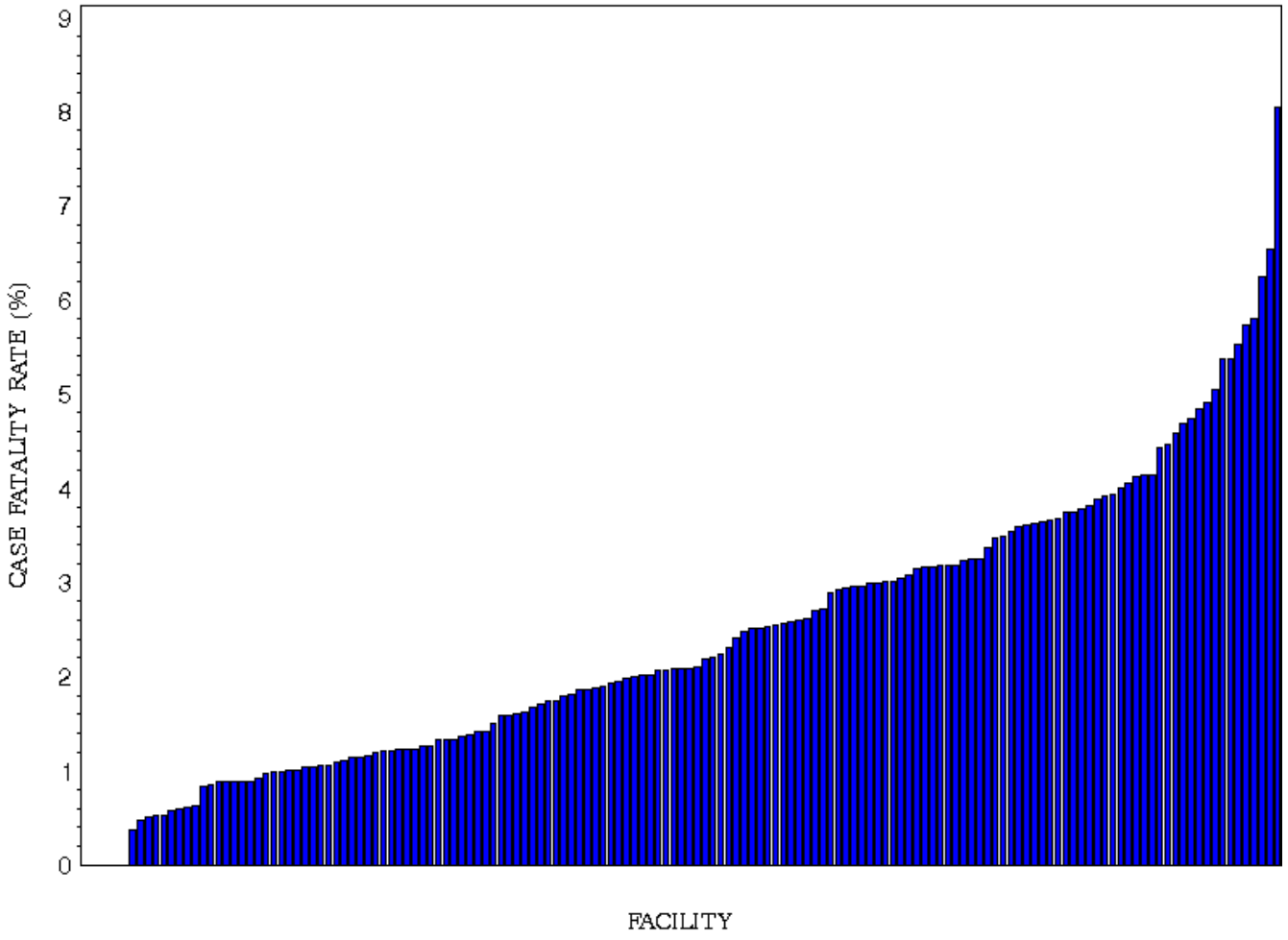
Case Fatality Rate per Facility for Level II Facilities with Bed Size > 400 Beds



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 61

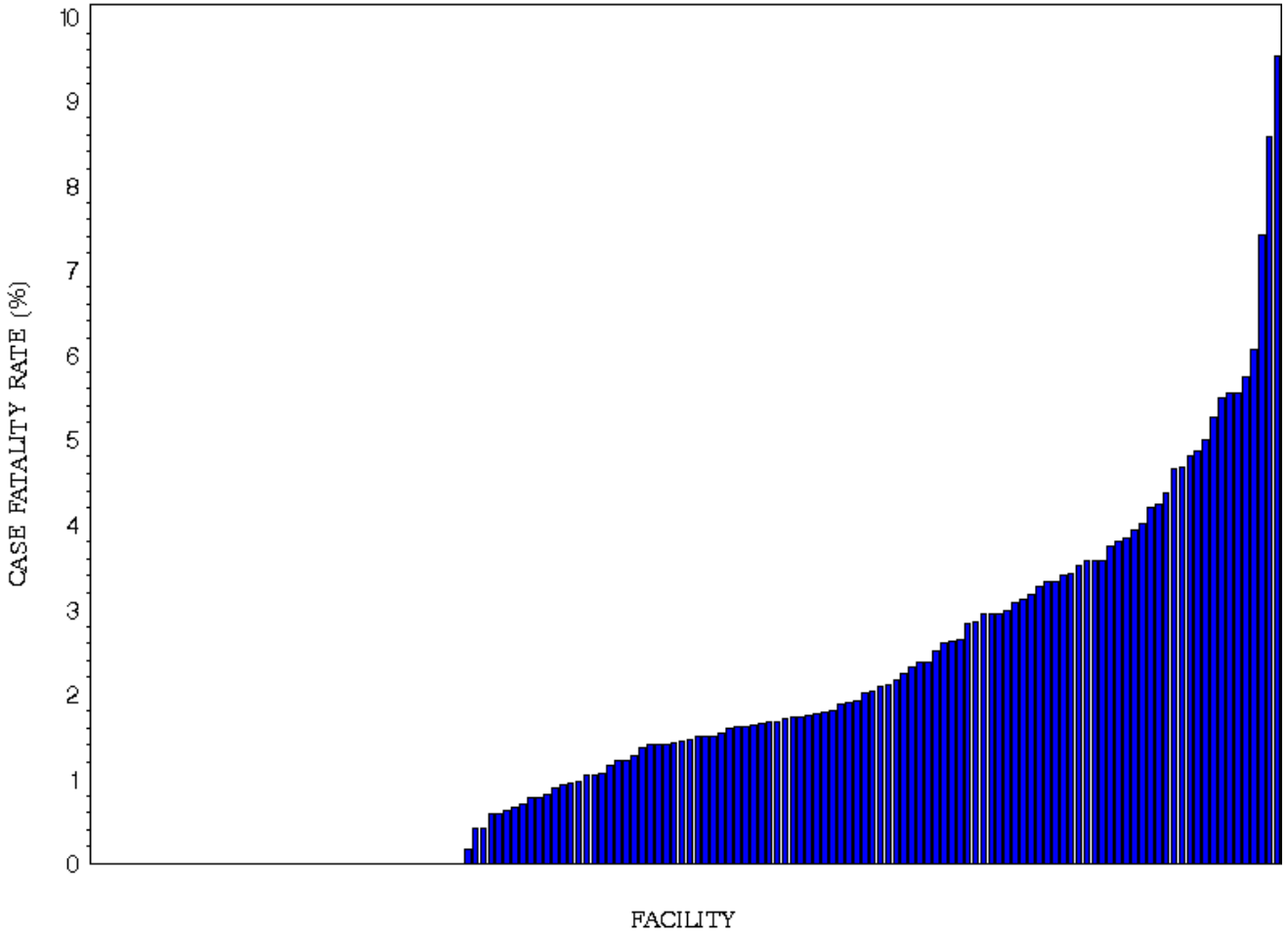
Case Fatality Rate per Facility for Level III Facilities



Six facilities out of the 153 Level III 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 62

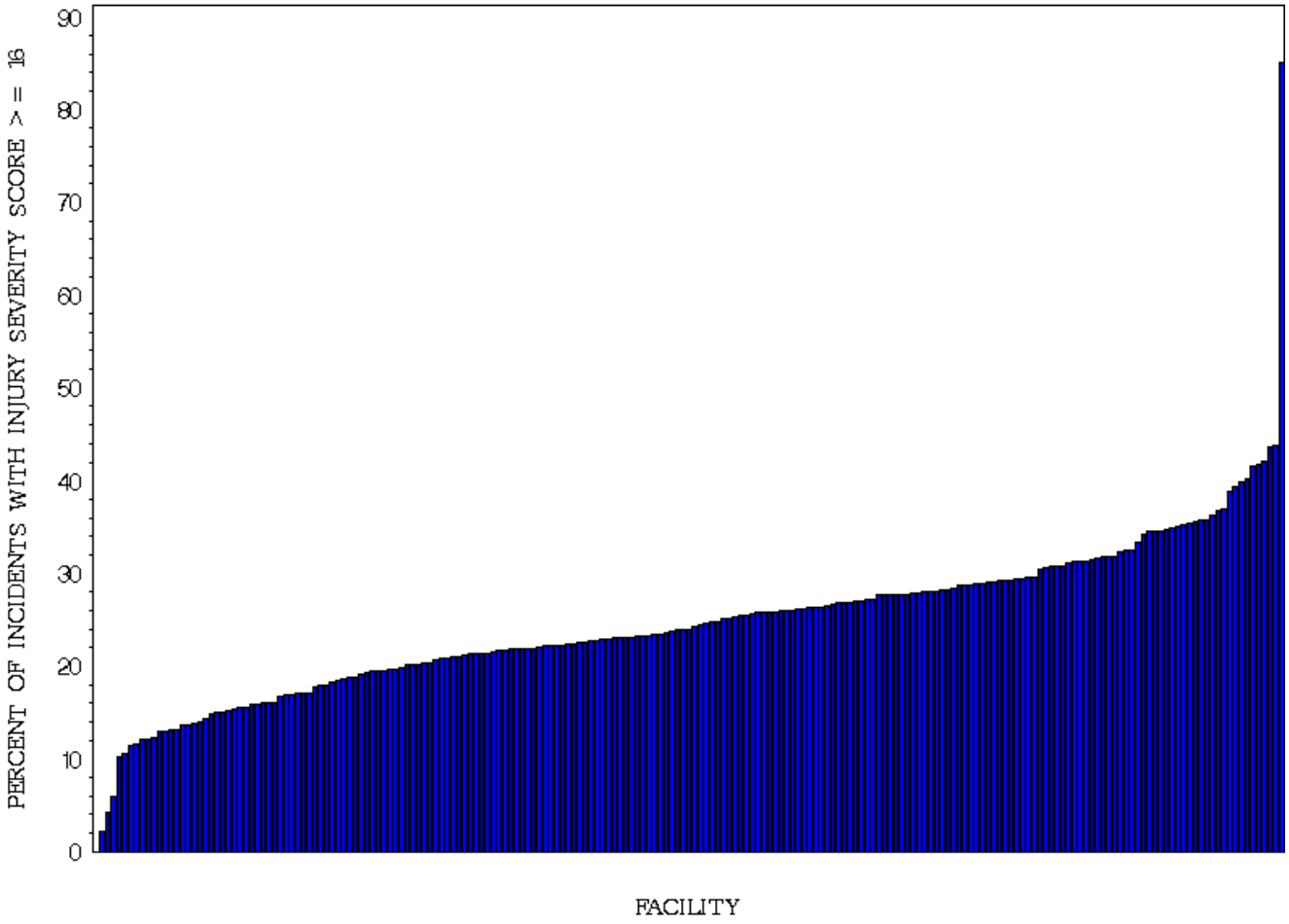
Case Fatality Rate per Facility for Level IV Facilities and Facilities with Designation Other or Not Applicable



Forty-seven facilities out of the 150 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 63

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

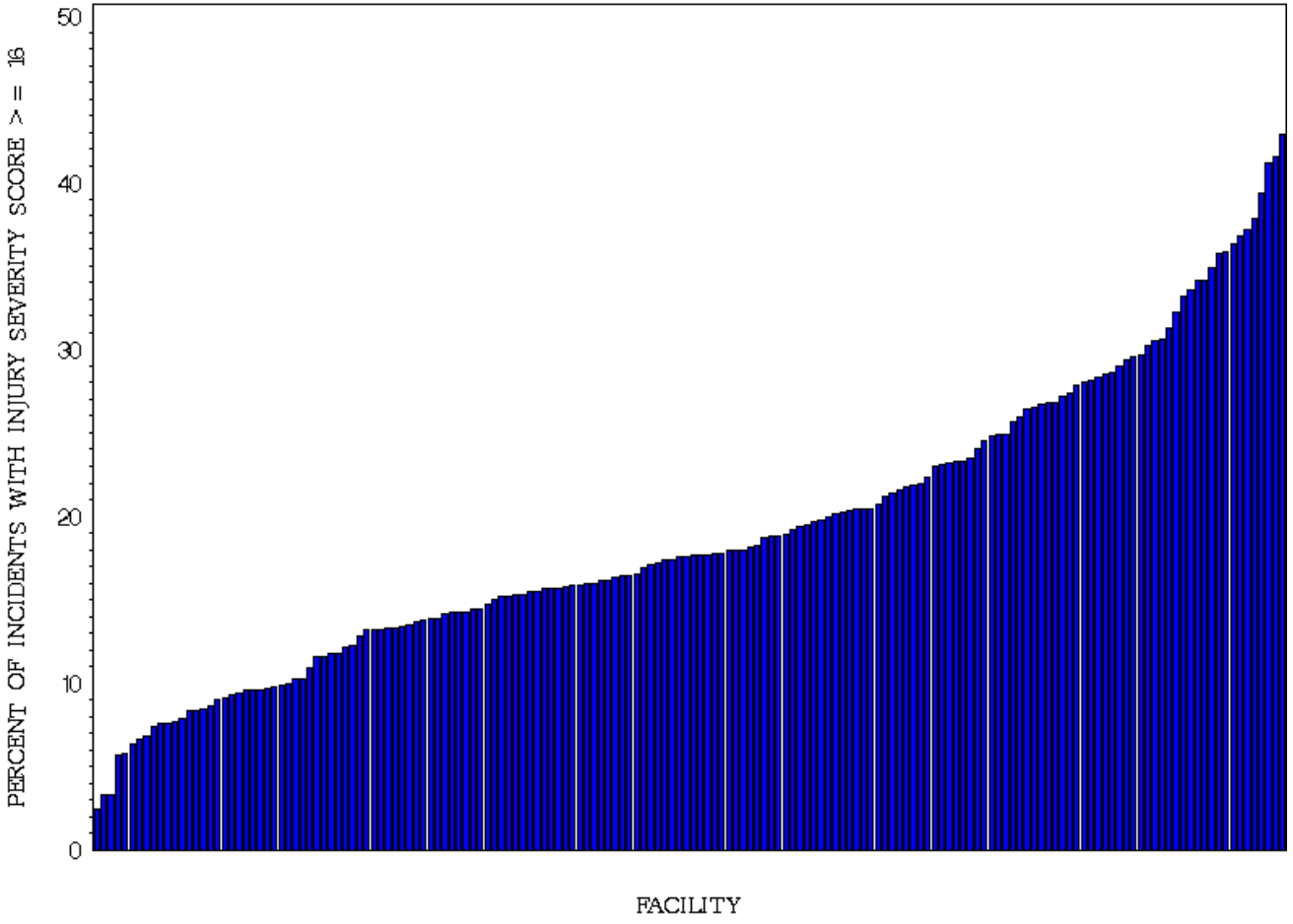


One out of 207 hospitals had no records with ISS ≥ 16 and is therefore not visible on the graph. The ISS score calculated for all records are based on the ICD–90 map. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Injury Severity Score definitions can be found in Appendix B.

Figure 64

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

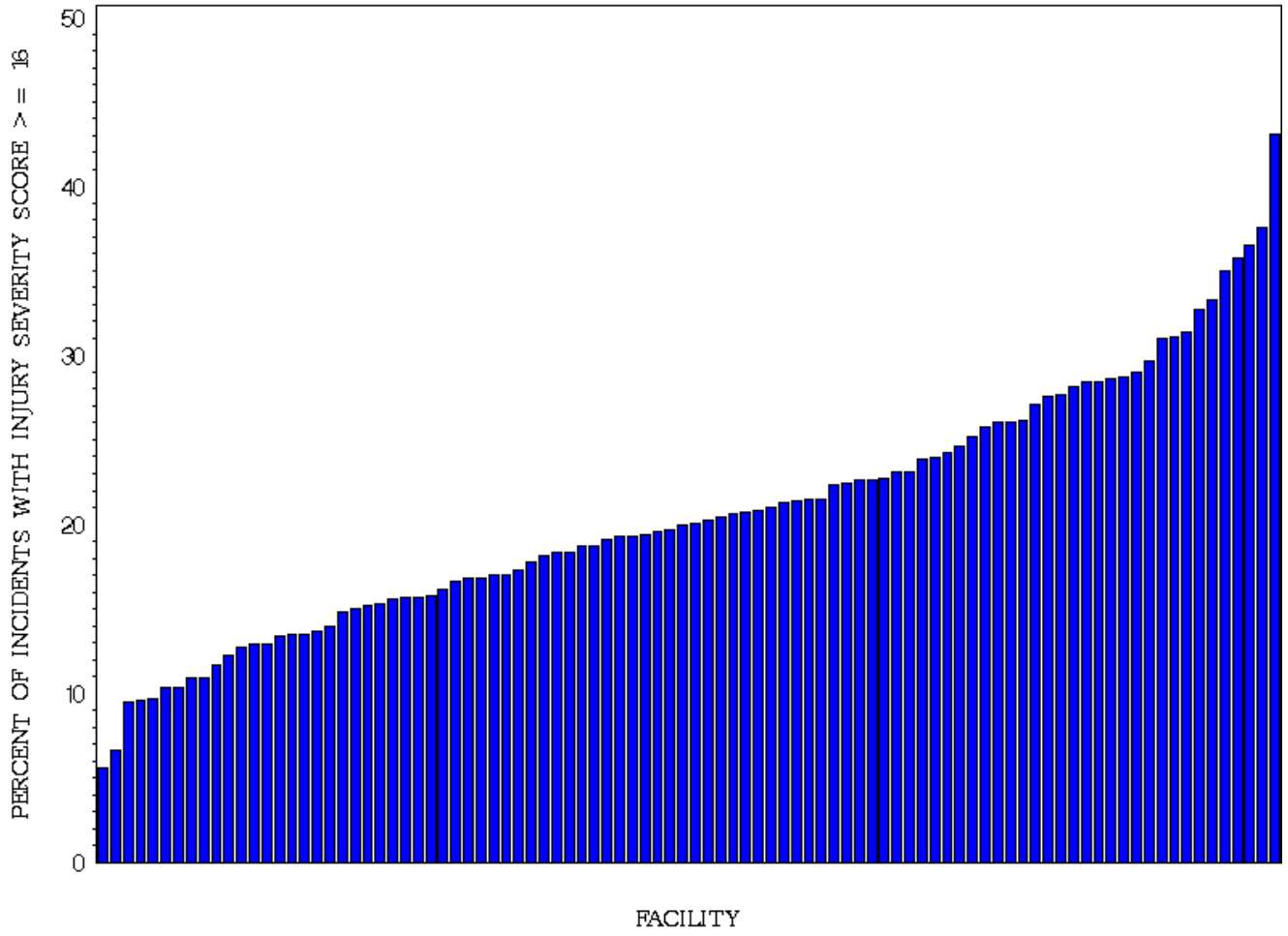


The ISS score calculated for all records is based on the AIS98 Crosswalk. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Injury Severity Score definitions can be found in Appendix B.

Figure 65

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

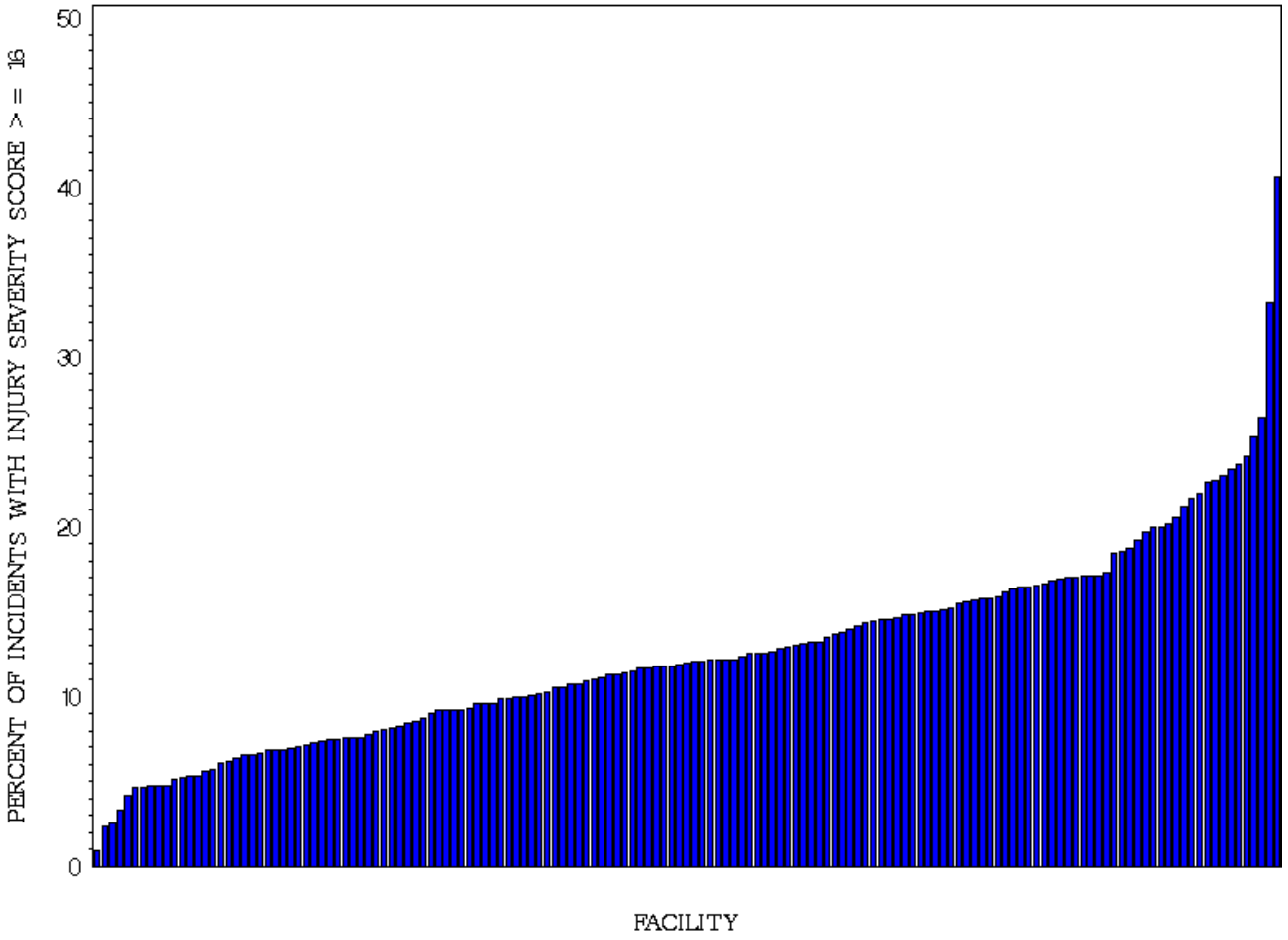


The ISS score calculated for all records is based on the AIS98 Crosswalk. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Injury Severity Score definitions can be found in Appendix B.

Figure 66

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

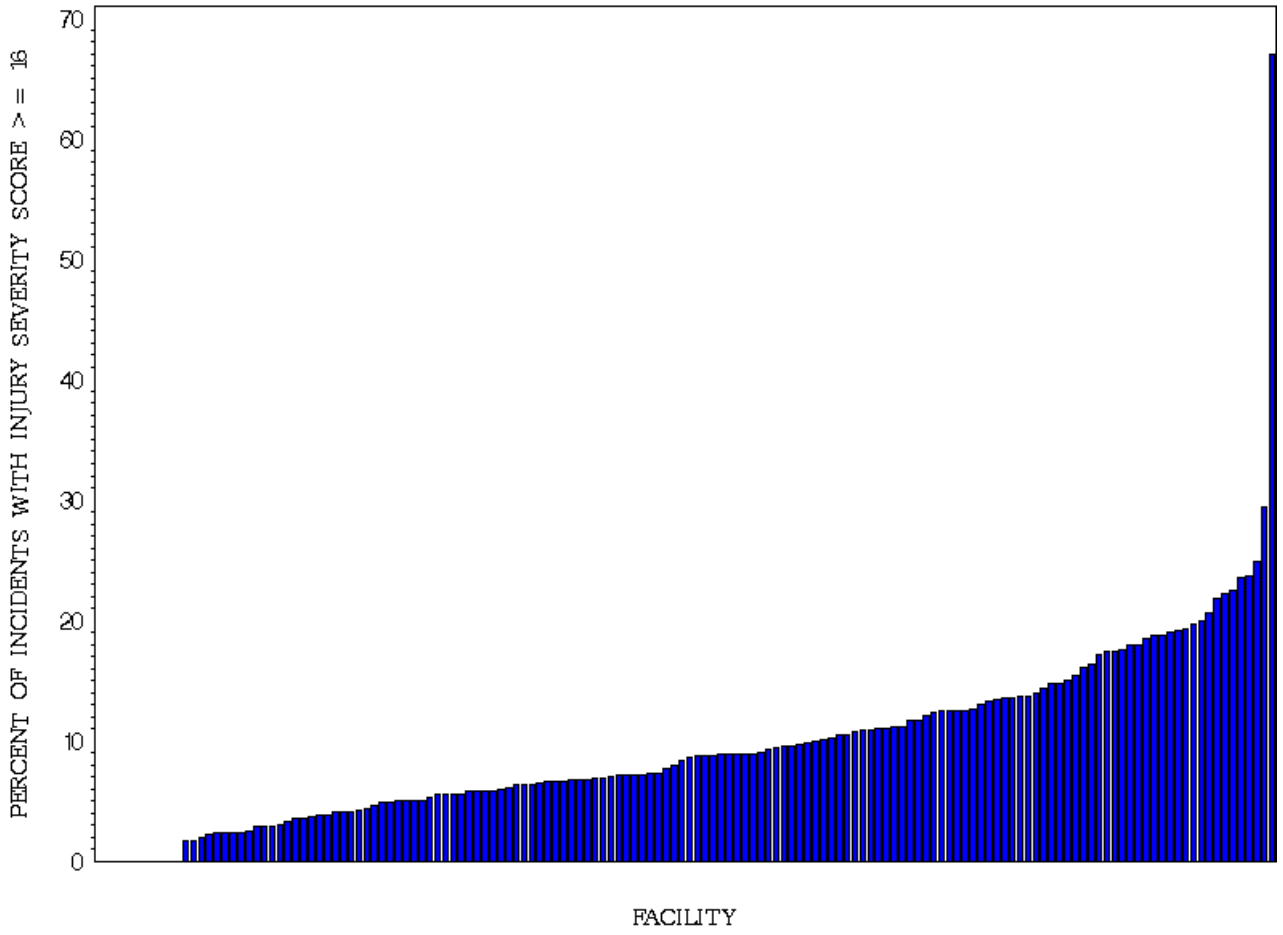


The ISS score calculated for all records is based on the AIS98 Crosswalk. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Injury Severity Score definitions can be found in Appendix B.

Figure 67

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

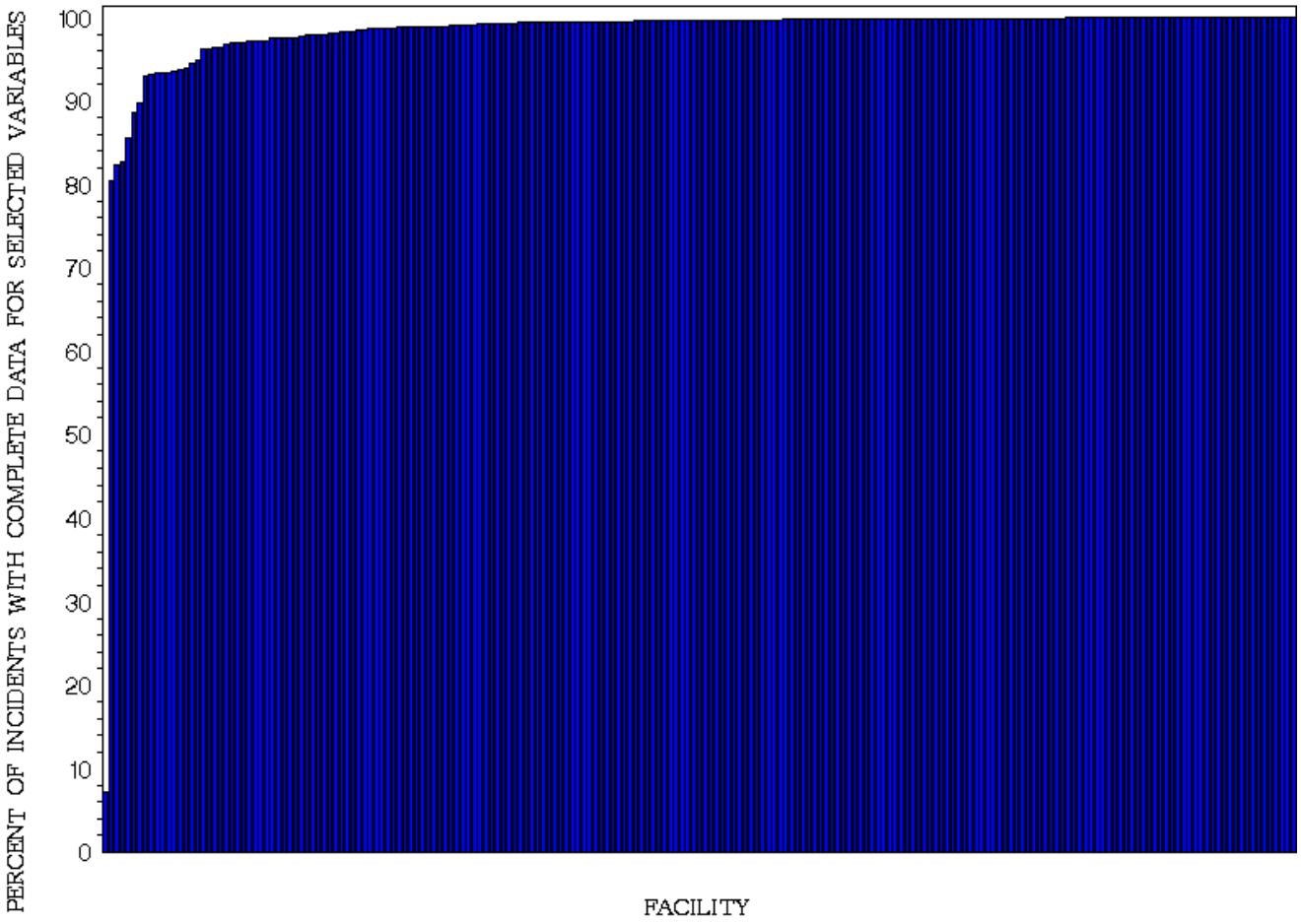


Eleven out of 150 facilities had no incidents with ISS ≥16 and are therefore not visible on the graph. The ISS score calculated for all records is based on the AIS98 Crosswalk. Trauma level is based on ACS verification and state designation; however, pediatric hospitals are not included in the analysis.

Injury Severity Score definitions can be found in Appendix B.

Figure 68

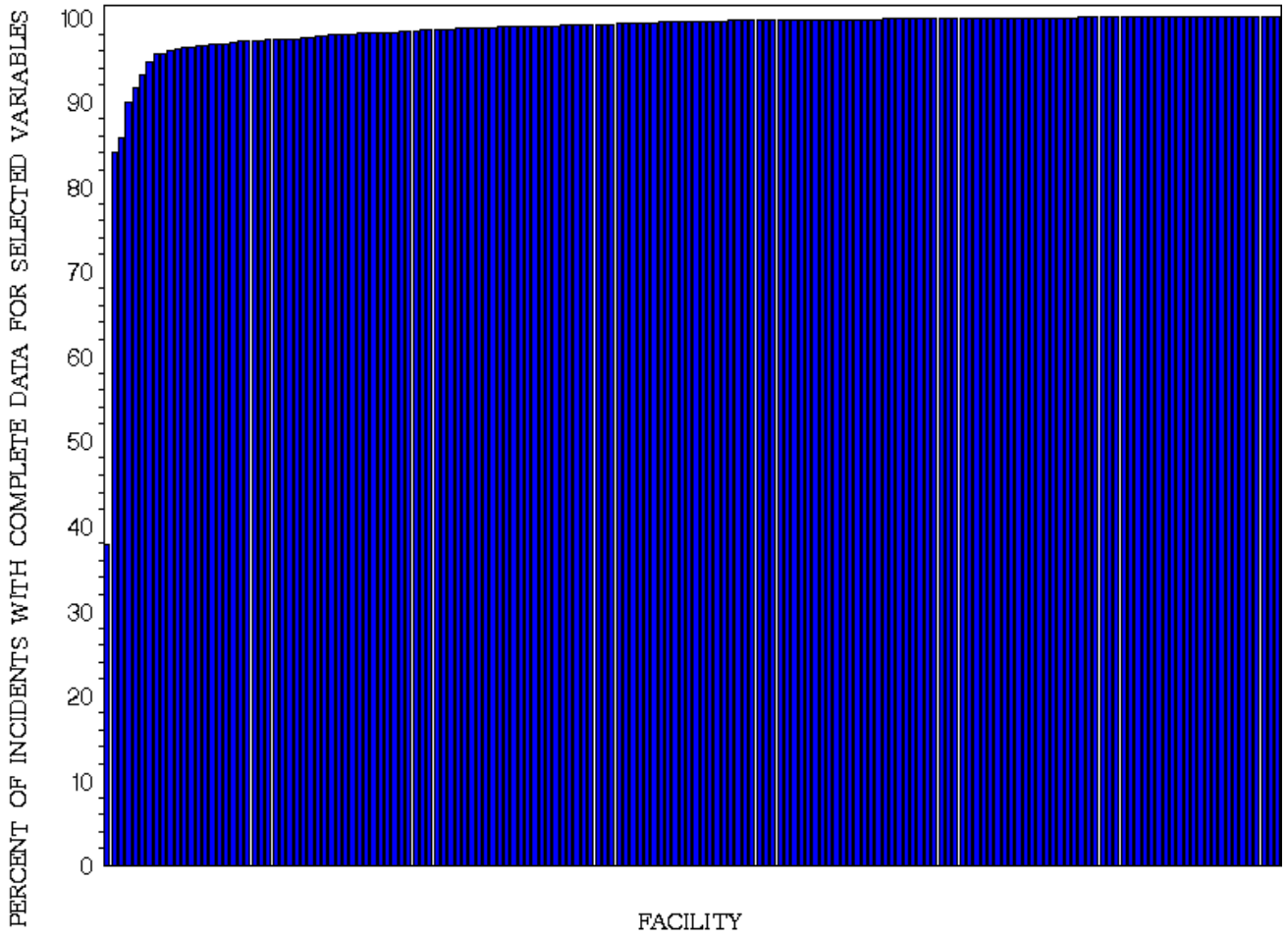
Data Completeness per Facility for Level I Facilities



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 69

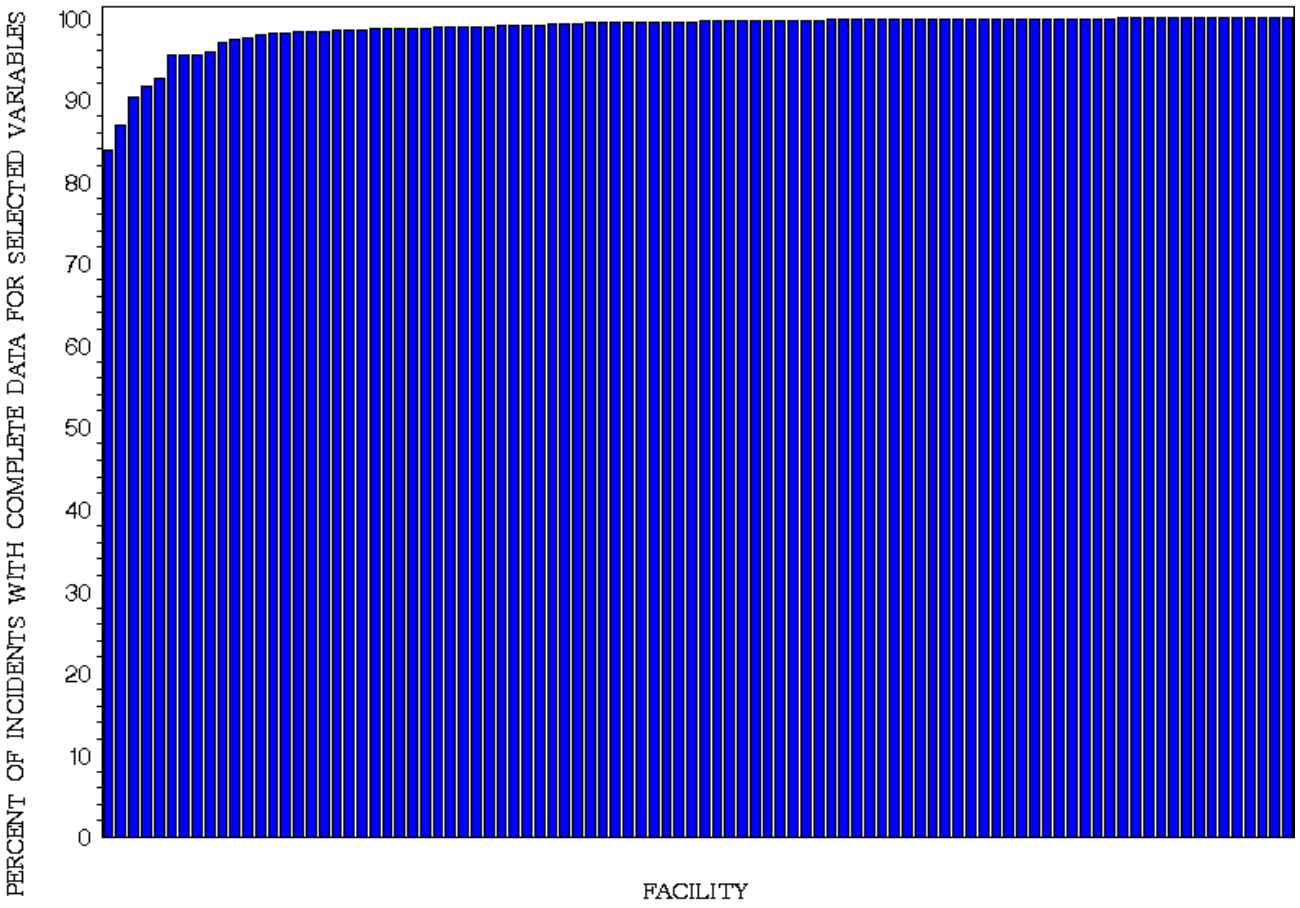
Data Completeness per Facility for Level II Facilities with Bed Size ≤ 400 Beds



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 70

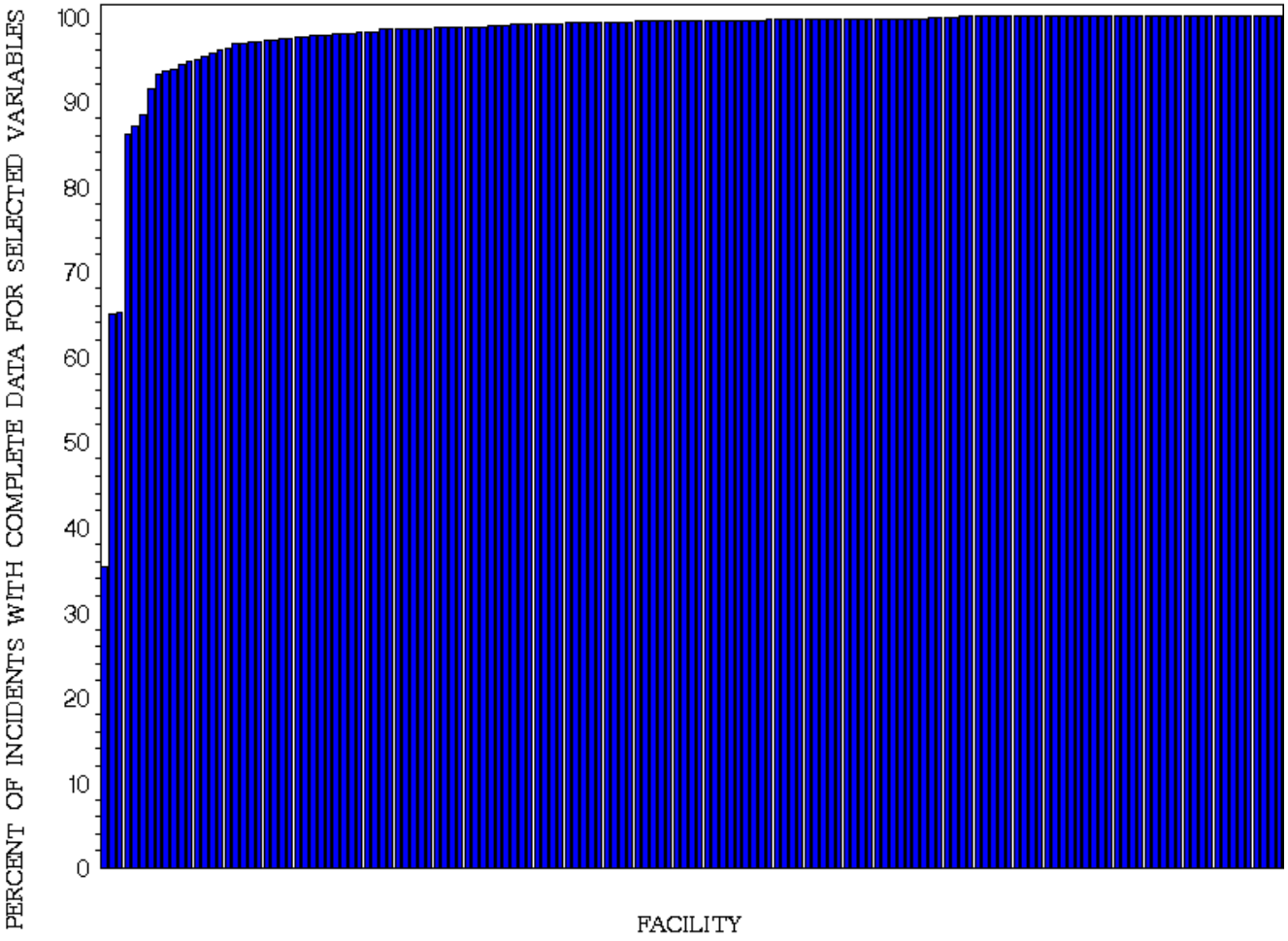
Data Completeness per Facility for Level II Facilities with Bed Size > 400 Beds



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 71

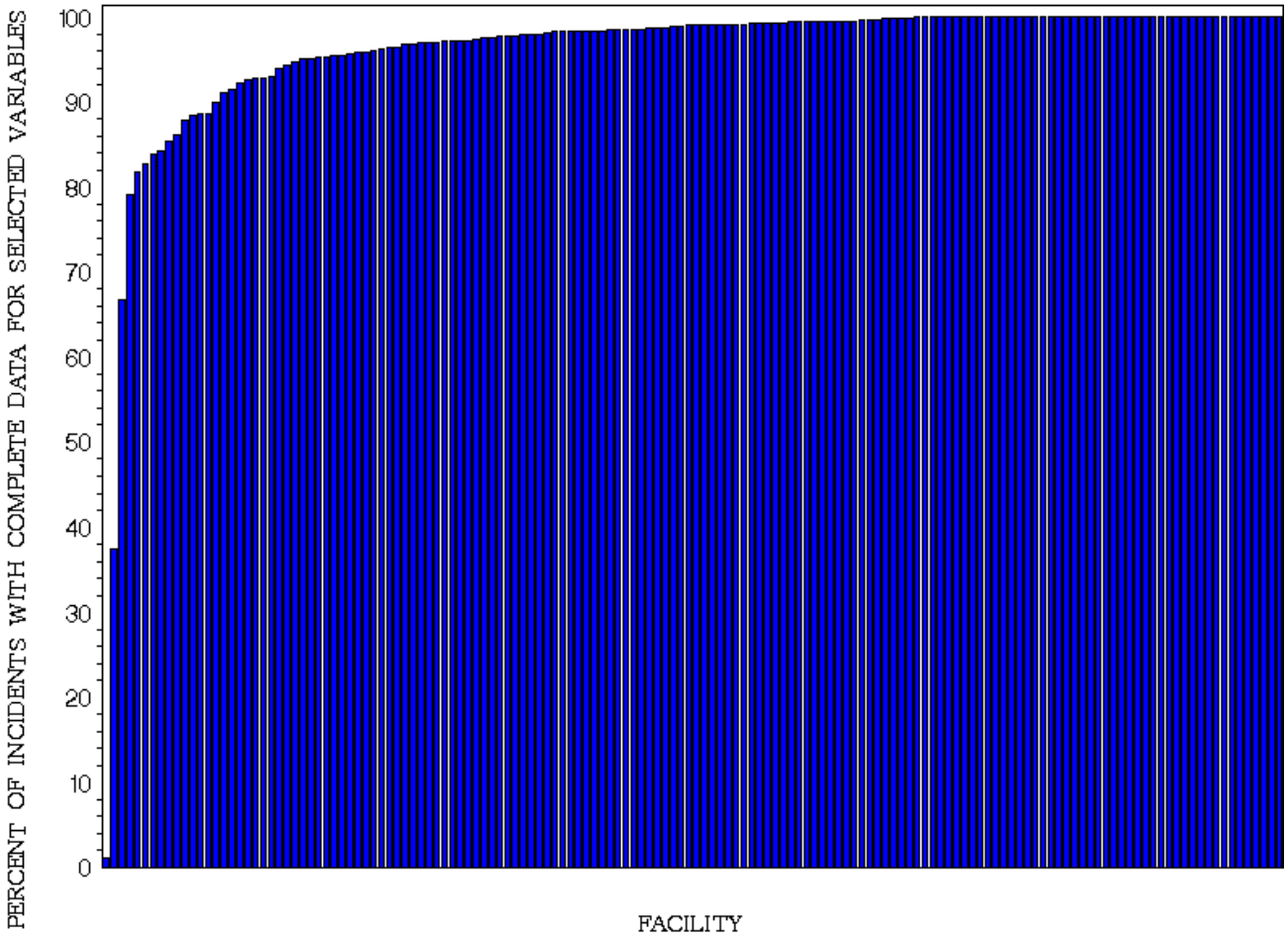
Data Completeness per Facility for Level III Facilities



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.

Figure 72

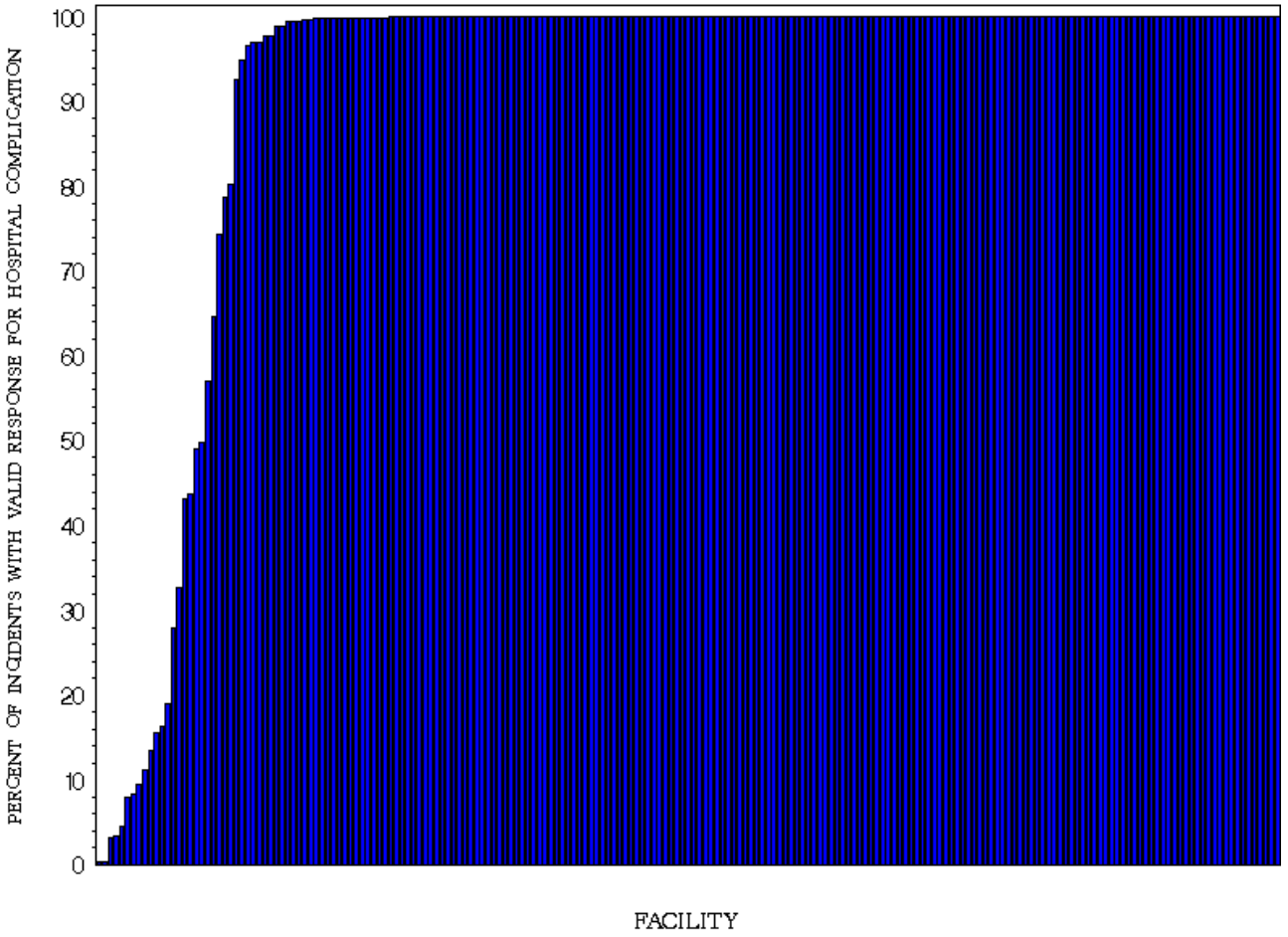
Data Completeness per Facility for Level IV Facilities and Facilities with Designation Other or Not Applicable



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.

Figure 73

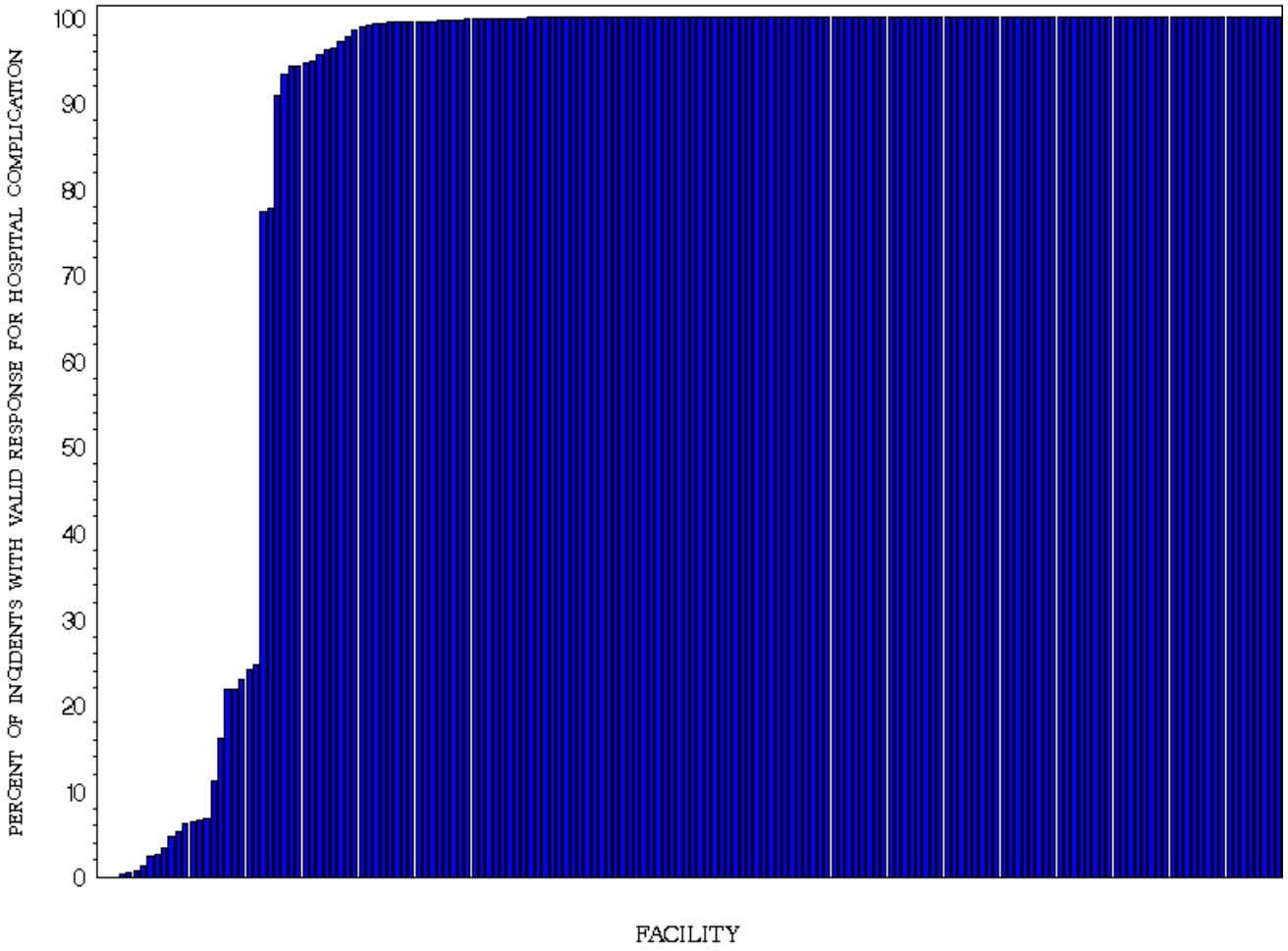
Complications Reported per Facility for Level I Facilities



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

Figure 74

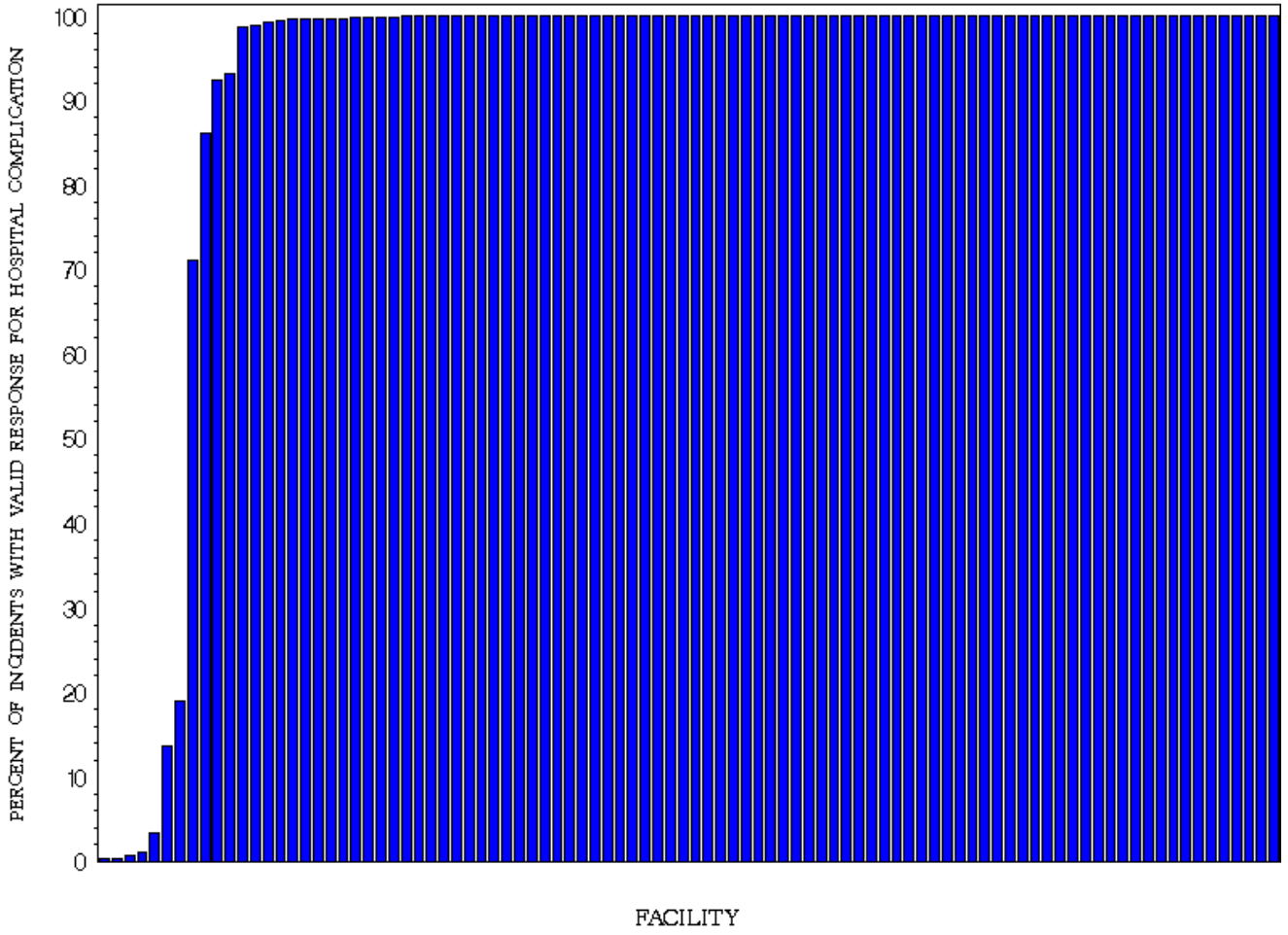
Complications Reported per Facility for Level II Facilities with Bed Size ≤ 400 Beds



Three out of 168 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 75

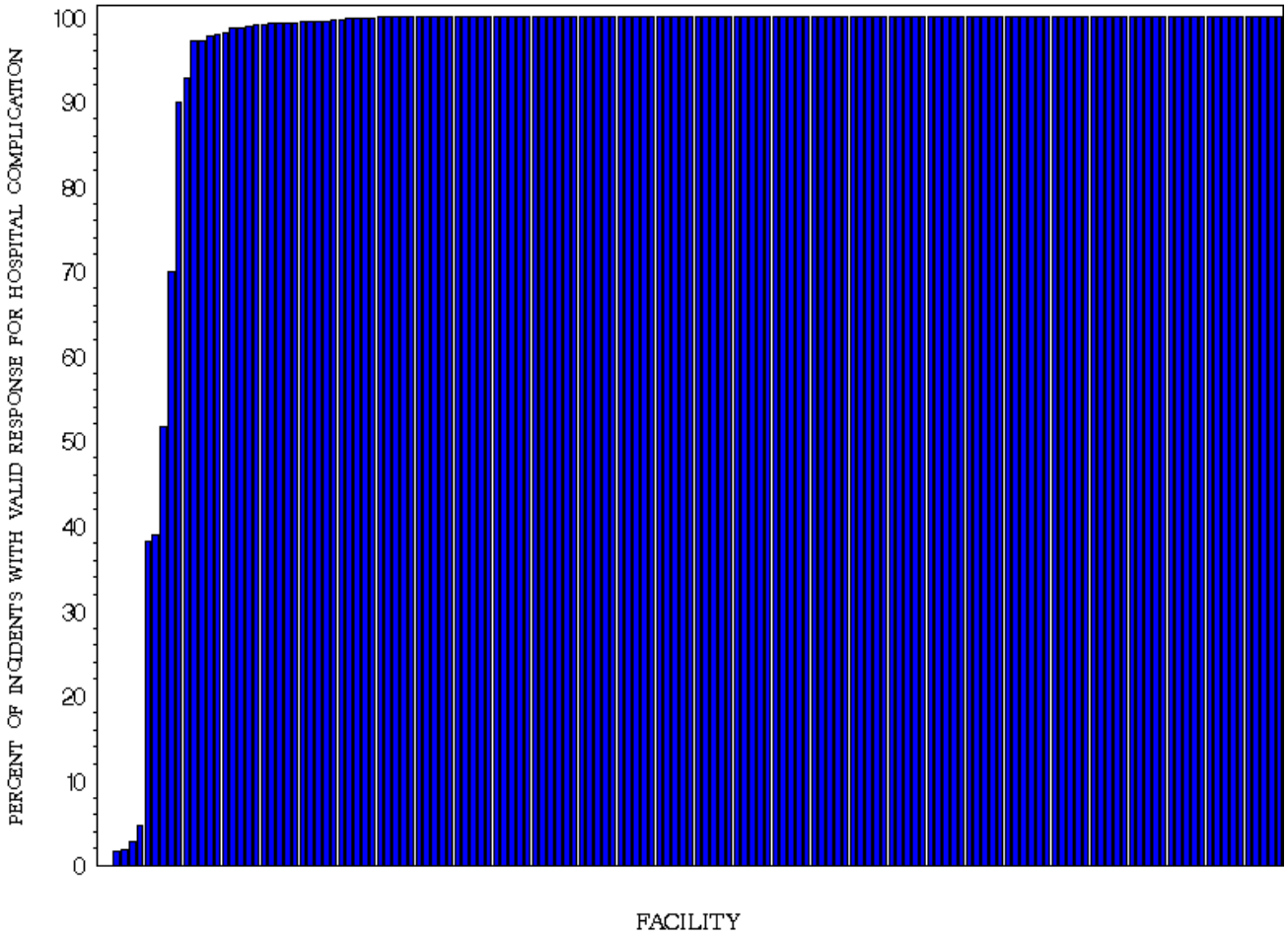
Complications Reported per Facility for Level II Facilities with Bed Size > 400 Beds



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

Figure 76

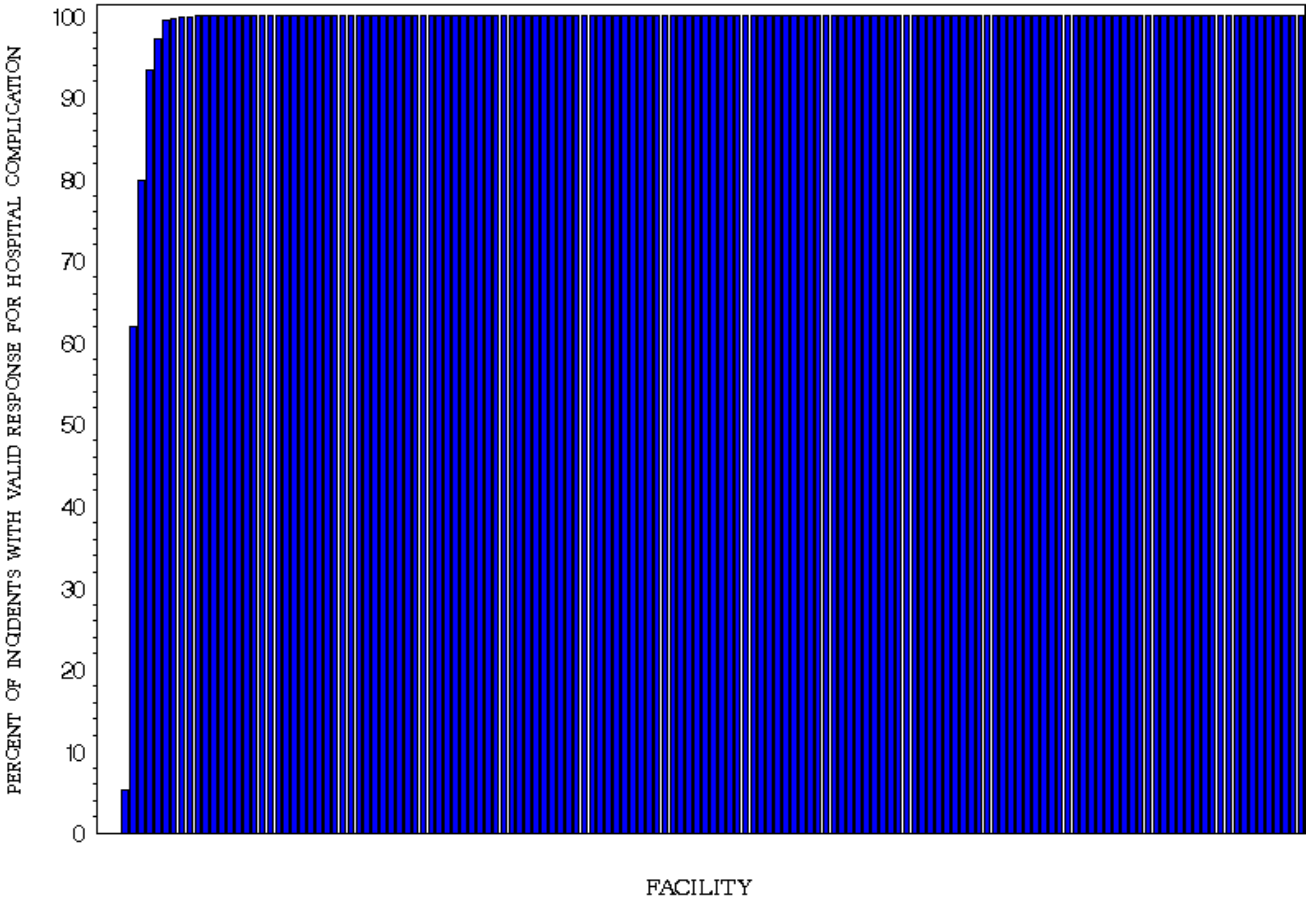
Complications Reported per Facility for Level III Facilities



Two out of 153 facilities had 0% of the incidents with valid response for hospital complications, including not applicable, and is 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 77

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



Three out of 150 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.

APPENDICES

APPENDIX A

Definition of a Trauma Patient

Definition of a Trauma Patient adopted by 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)

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)				

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

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.

Yearly Comparisons Based on the NTDB National Sample Program

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

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

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

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

Weighted estimates from admission year 2003–2011 were computed based on the NSP data. The yearly comparison of number of incidents, gender, ISS scores and mechanism of injury, and percent deaths are displayed in this Appendix. The admission year 2012 data for NSP will be available later this year. For further information on the NSP please visit: *http://www.facs.org/trauma/ntdb/nsp.html*

Table 76

Weighted Estimates of Incidents by Admission Year

ADMISSION YEAR	WEIGHTED NUMBER OF INCIDENTS (95% CI)	PERCENT (95% CI)
2003	577,421 (445,693, 709,149)	15.80 (13.17, 18.43)
2004	524,267 (406,983, 641,550)	14.34 (11.72, 16.97)
2005	608,524 (499,450, 717,598)	16.65 (14.28, 19.02)
2006	673,991 (543,427, 804,555)	18.44 (15.79, 21.09)
2007	630,645 (543,521, 717,768)	17.26 (14.96, 19.55)
2008	640,116 (568,229, 712,004)	17.51 (15.63, 19.40)
2009	630,134 (502,953, 757,316)	14.71 (12.82, 16.59)
2010	697,023 (536,310, 857,735)	12.13 (10.57, 13.70)
2011	762,464 (642,158, 882,771)	13.27 (11.90, 14.65)
Total	5,744,585 (5,030,737, 6,458,432)	

Figure 76

Weighted Estimates of Incidents by Admission Year

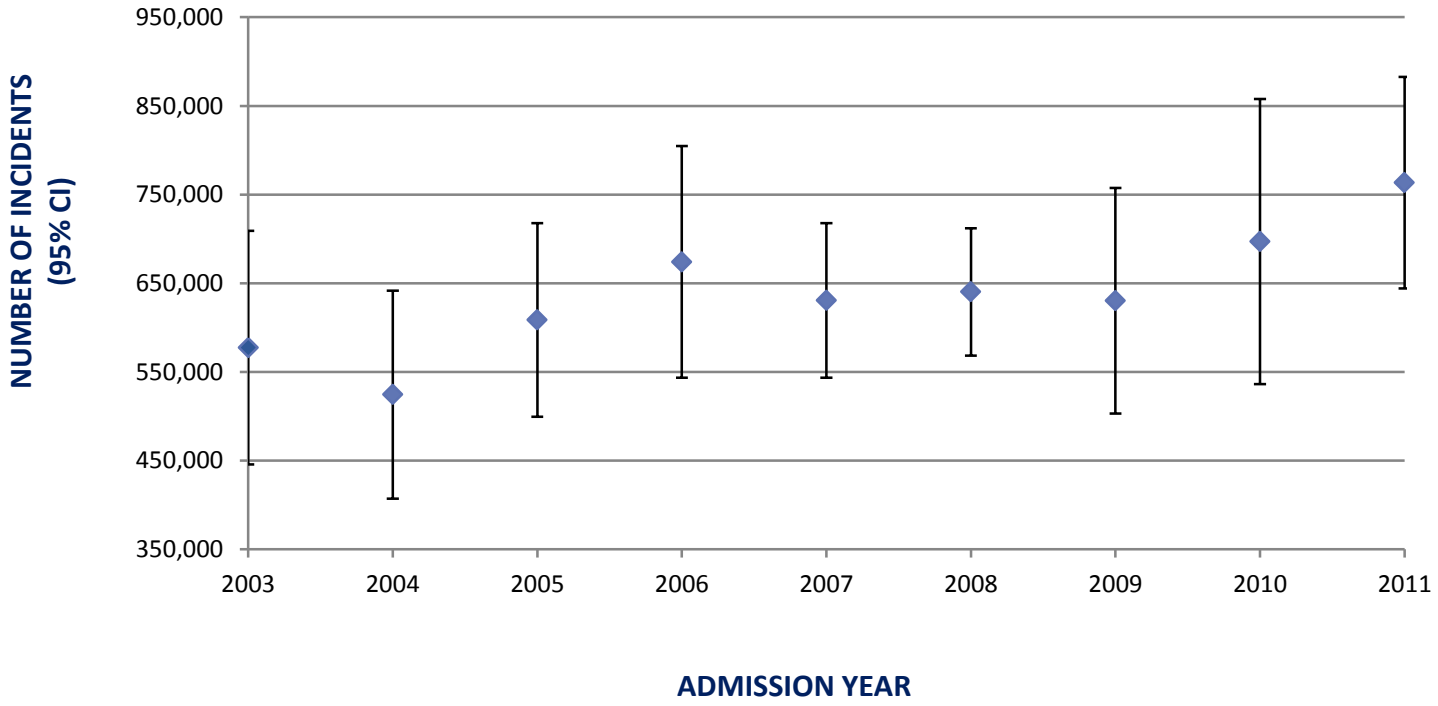


Table 77

Weighted Estimates of Incidents by Gender and Admission Year

ADMISSION YEAR	WEIGHTED NUMBER OF FEMALES	WEIGHTED NUMBER OF MALES	PERCENT FEMALES (95% CI)	PERCENT MALES (95% CI)
2003	189,654	384,843	33.01 (32.13, 33.89)	66.99 (66.11, 67.87)
2004	176,884	344,637	33.92 (31.90, 35.93)	66.08 (64.07, 68.09)
2005	206,469	399,889	33.98 (32.79, 35.16)	65.81 (64.62, 67.00)
2006	228,207	427,144	34.63 (33.26, 36.00)	64.81 (63.34, 66.29)
2007	209,939	410,662	33.29 (31.96, 34.62)	65.12 (63.52, 66.71)
2008	223,360	413,054	34.89 (33.67, 36.11)	64.53 (63.29, 65.77)
2009	221,877	408,069	35.21 (34.45, 35.97)	64.76 (64.00, 65.52)
2010	249,011	447,895	35.72 (34.99, 36.46)	64.26 (63.53, 64.99)
2011	284,412	477,880	37.30 (35.79, 38.81)	62.68 (61.17, 64.18)

Figure 77

Weighted Estimates of Incidents by Gender and Admission Year

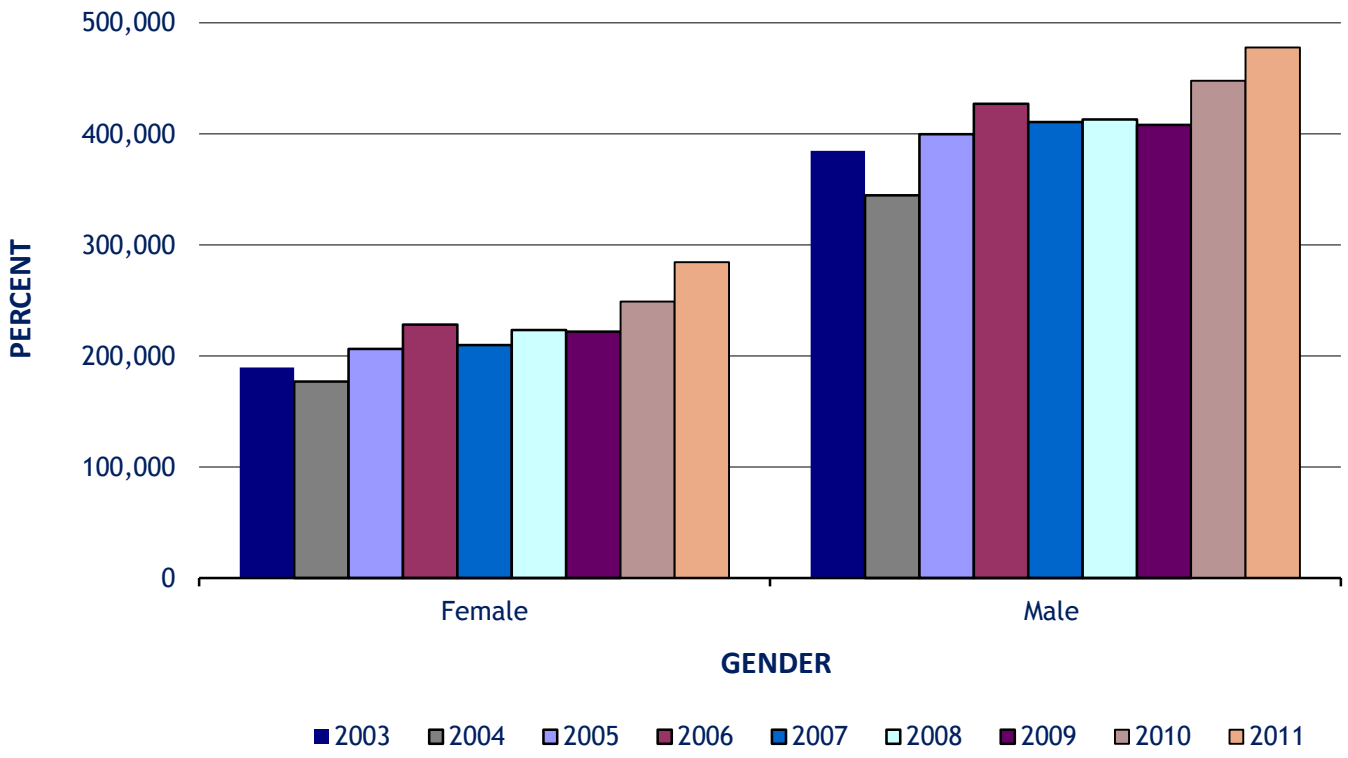


Table 78

Weighted Estimates of Incidents by Age and Admission Year

AGE	ADMISSION YEAR 2003 (95% CI)	ADMISSION YEAR 2004 (95% CI)	ADMISSION YEAR 2005 (95% CI)	ADMISSION YEAR 2006 (95% CI)	ADMISSION YEAR 2007 (95% CI)	ADMISSION YEAR 2008 (95% CI)	ADMISSION YEAR 2009 (95% CI)	ADMISSION YEAR 2010 (95% CI)	ADMISSION YEAR 2011 (95% CI)
≤14	9.24 (8.09,10.40)	8.94 (7.50,10.39)	8.20 (6.94,9.46)	8.21 (7.06,9.35)	8.00 (6.82,9.17)	7.65 (6.43,8.87)	7.15 (5.90,8.40)	6.38 (5.40, 7.36)	6.36 (5.06, 7.67)
15–19	10.25 (9.94,10.56)	10.21 (9.72,10.69)	10.42 (10.00,10.85)	10.58 (10.04,11.11)	9.31 (8.99,9.64)	8.58 (8.27,8.89)	8.33 (8.08,8.59)	7.87 (7.62, 8.13)	7.33 (6.85, 7.80)
20–24	12.45 (11.97, 12.93)	12.21 (11.45,12.96)	12.30 (11.82,12.78)	11.92 (11.41,12.44)	10.98 (10.54,11.43)	10.25 (9.85,10.65)	10.27 (9.82,10.72)	10.35 (9.86, 10.84)	9.78 (9.41, 10.15)
25–34	16.97 (16.41,17.52)	16.04 (14.88,17.21)	16.20 (15.40,17.00)	15.71 (14.91,16.51)	15.72 (15.13,16.30)	14.72 (14.05,15.38)	14.94 (14.43,15.45)	14.96 (14.41, 15.51)	14.41 (13.75,15.07)
35–44	16.26 (15.59,16.93)	15.54 (14.74,16.33)	15.31 (14.62,15.99)	14.29 (13.74,14.84)	13.92 (13.51,14.33)	13.23 (12.74,13.72)	12.81 (12.48,13.13)	12.36 (11.98,12.74)	12.01 (11.57,12.44)
45–54	12.54 (12.08,12.99)	13.32 (12.74,13.89)	13.24 (12.81,13.66)	13.28 (12.93,13.63)	14.19 (13.90,14.48)	14.39 (14.07,14.72)	14.59 (14.25,14.94)	14.62 (14.35, 14.88)	14.02 (13.67,14.28)
55–64	7.68 (7.43,7.93)	8.11 (7.65,8.57)	8.59 (8.31,8.78)	8.44 (8.16,8.73)	9.51 (9.22,9.80)	10.08 (9.77,10.40)	10.72 (10.44,11.00)	11.31 (11.00, 11.61)	12.04 (11.82,12.26)
65–74	5.71 (5.39,6.03)	5.91 (5.26,6.58)	5.74 (5.33,6.14)	6.26 (5.77,6.74)	6.65 (6.29,7.01)	7.55 (7.17,7.93)	7.62 (7.32,7.92)	8.04 (7.79, 8.30)	8.78 (8.24, 9.31)
75–84	6.53 (5.93,7.12)	6.92 (5.77,8.08)	7.14 (6.36,7.93)	7.93 (6.96,8.90)	8.27 (7.60,8.94)	9.16 (8.38,9.94)	9.33 (8.51,10.15)	9.43 (8.89, 9.96)	10.09 (8.89, 11.28)
≥85	2.37 (2.08,2.67)	2.80 (2.17,3.42)	2.86 (2.37,3.36)	3.39 (2.83,3.96)	3.45 (3.04,3.86)	4.40 (3.88,4.92)	4.23 (3.93,4.54)	4.96 (4.31, 5.07)	5.19 (4.37, 6.00)

Figure 78

Weighted Estimates of Incidents by Age and Admission Year

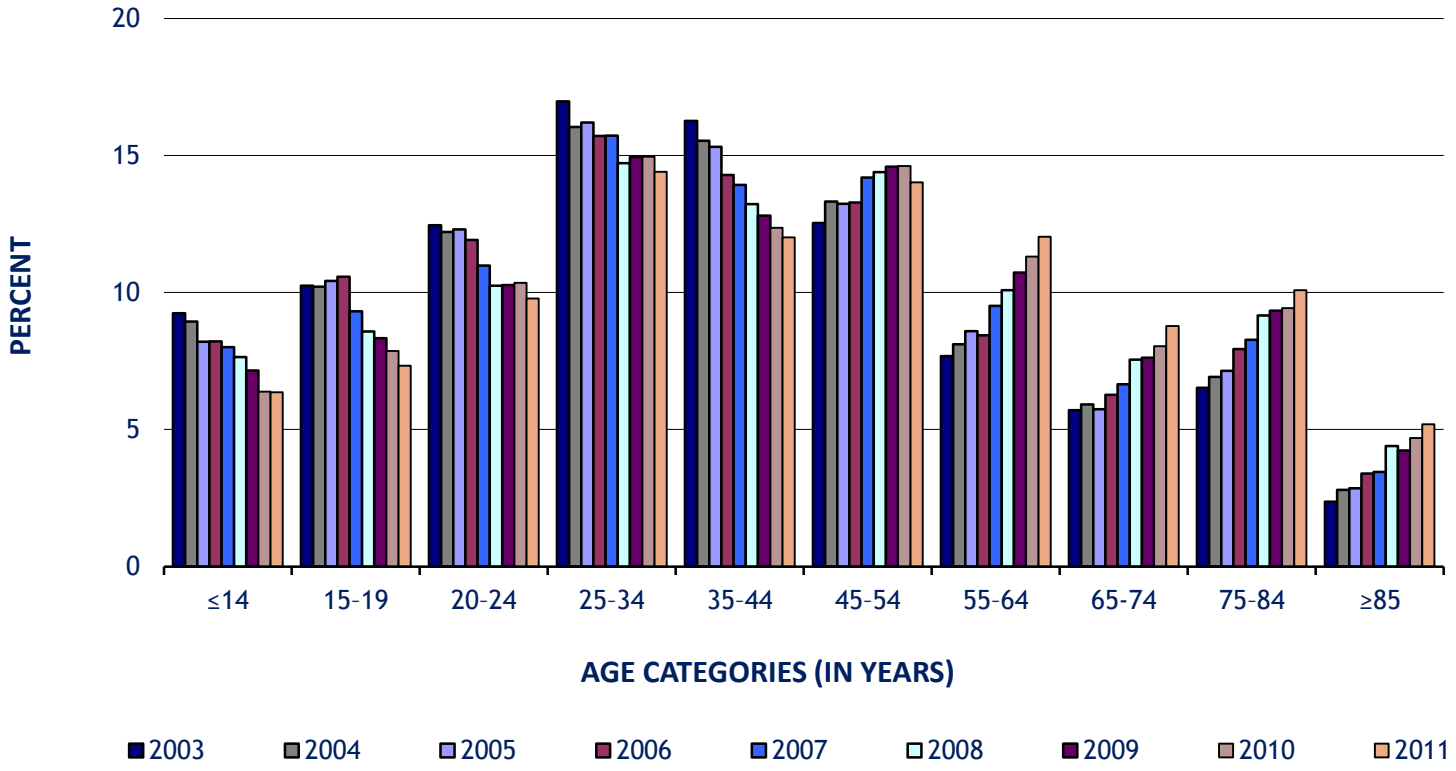


Table 79

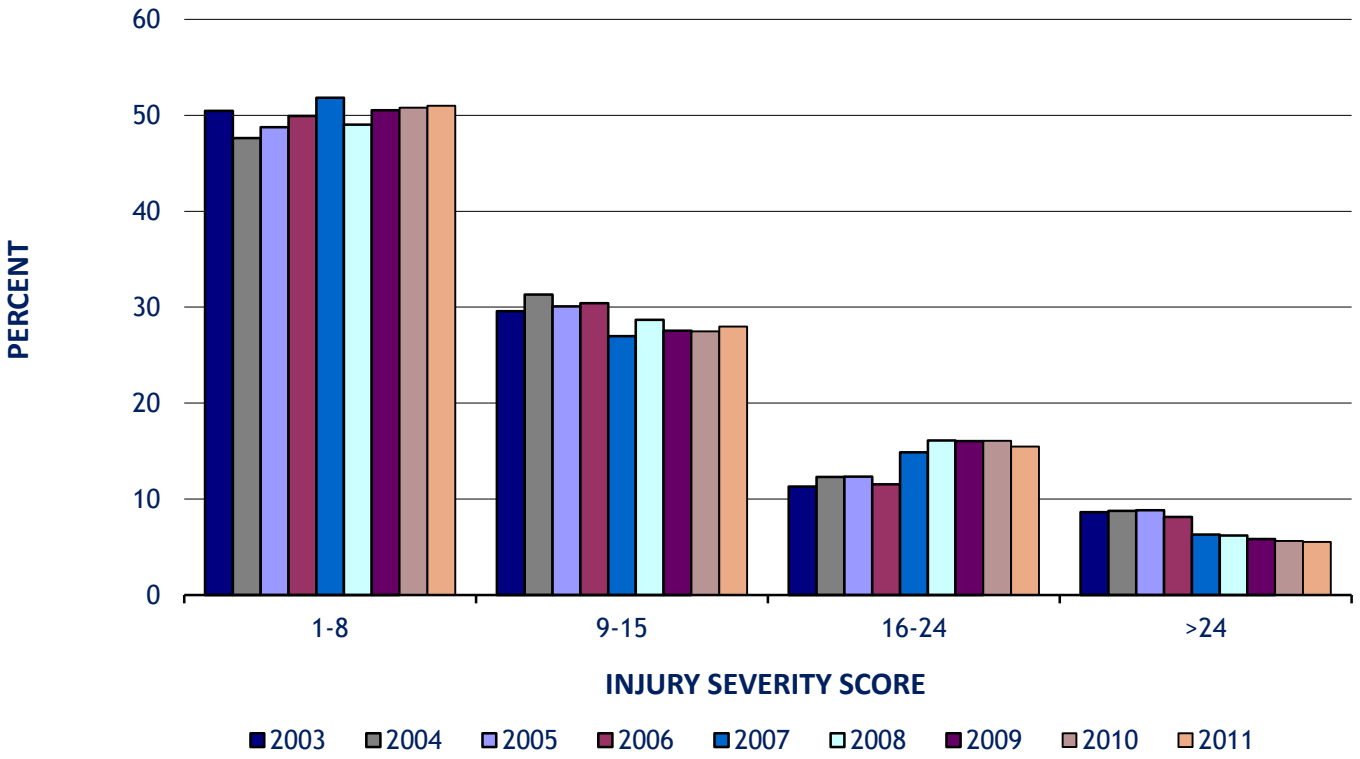
Weighted Estimates of Incidents by ISS Category and Admission Year

ADMISSION YEAR	ISS 1–8 (95% CI)	ISS 9–15 (95% CI)	ISS 16–24 (95% CI)	ISS >24 (95% CI)
2003	50.47 (47.81, 53.14)	29.58 (28.16, 31.00)	11.30 (10.59, 12.01)	8.65 (7.60, 9.70)
2004	47.61 (44.00, 51.22)	31.32 (29.70, 32.95)	12.31 (11.01, 13.61)	8.76 (7.46, 10.06)
2005	48.75 (46.13, 51.37)	30.07 (28.79, 31.35)	12.35 (11.58, 13.12)	8.83 (7.79, 9.87)
2006	49.91 (46.34, 53.47)	30.41 (27.97, 32.85)	11.54 (10.59, 12.50)	8.14 (6.98, 9.31)
2007	51.83 (49.85, 53.80)	26.98 (25.93, 28.03)	14.87 (14.01, 15.72)	6.32 (5.86, 6.80)
2008	49.02 (47.32, 50.72)	28.67 (27.69, 29.64)	16.11 (15.33, 16.89)	6.20 (5.73, 6.67)
2009	50.53 (48.23, 52.83)	27.56 (26.44, 28.68)	16.06 (15.00, 17.12)	5.85 (5.28, 6.42)
2010	50.79 (49.18, 52.39)	27.47 (26.68, 28.27)	16.09 (15.24, 16.95)	5.65 (5.17, 6.13)
2011	51.01 (49.43, 52.58)	27.97 (26.82, 29.11)	15.47 (14.83, 16.11)	5.56 (5.18, 5.93)

Injury Severity Score definitions can be found in Appendix B.

Figure 79

Weighted Estimates of Incidents by ISS Category and Admission Year



Injury Severity Score definitions can be found in Appendix B.

Table 80

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

ADMISSION YEAR	MOTOR VEHICLE TRAFFIC (95% CI)	FALL (95% CI)	CUT/PIERCE (95% CI)	STRUCK BY, AGAINST (95% CI)
2003	40.59 (38.37,42.82)	24.14 (23.91, 28.36)	6.91 (6.41, 7.41)	5.89 (5.54, 6.25)
2004	38.81 (35.23, 42.39)	28.29 (25.05, 33.52)	7.13 (6.30, 7.96)	5.33 (4.77, 5.89)
2005	37.78 (35.34, 40.23)	29.19 (26.74, 31.64)	6.90 (6.51, 7.30)	5.05 (4.56, 5.53)
2006	35.39 (32.34, 38.41)	30.60 (27.55, 33.64)	6.83 (6.29, 7.38)	4.82 (4.09, 5.56)
2007	34.31 (32.57, 36.04)	32.78 (30.57, 35.00)	7.30 (6.61, 7.98)	5.38 (5.01, 5.73)
2008	31.51 (29.99, 33.03)	35.67 (33.58, 37.77)	7.53 (6.97, 8.07)	5.31 (4.92, 5.71)
2009	31.24 (29.95, 32.54)	35.84 (34.15, 37.54)	7.93 (7.42, 8.44)	5.24 (4.82, 5.67)
2010	30.45 (29.27, 31.64)	36.90 (35.42, 38.39)	7.70 (7.29, 8.11)	5.40 (5.14, 5.66)
2011	28.63 (27.19, 30.07)	39.67 (36.42, 42.93)	7.34 (6.94, 7.74)	4.74 (4.33, 5.15)

Figure 80

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

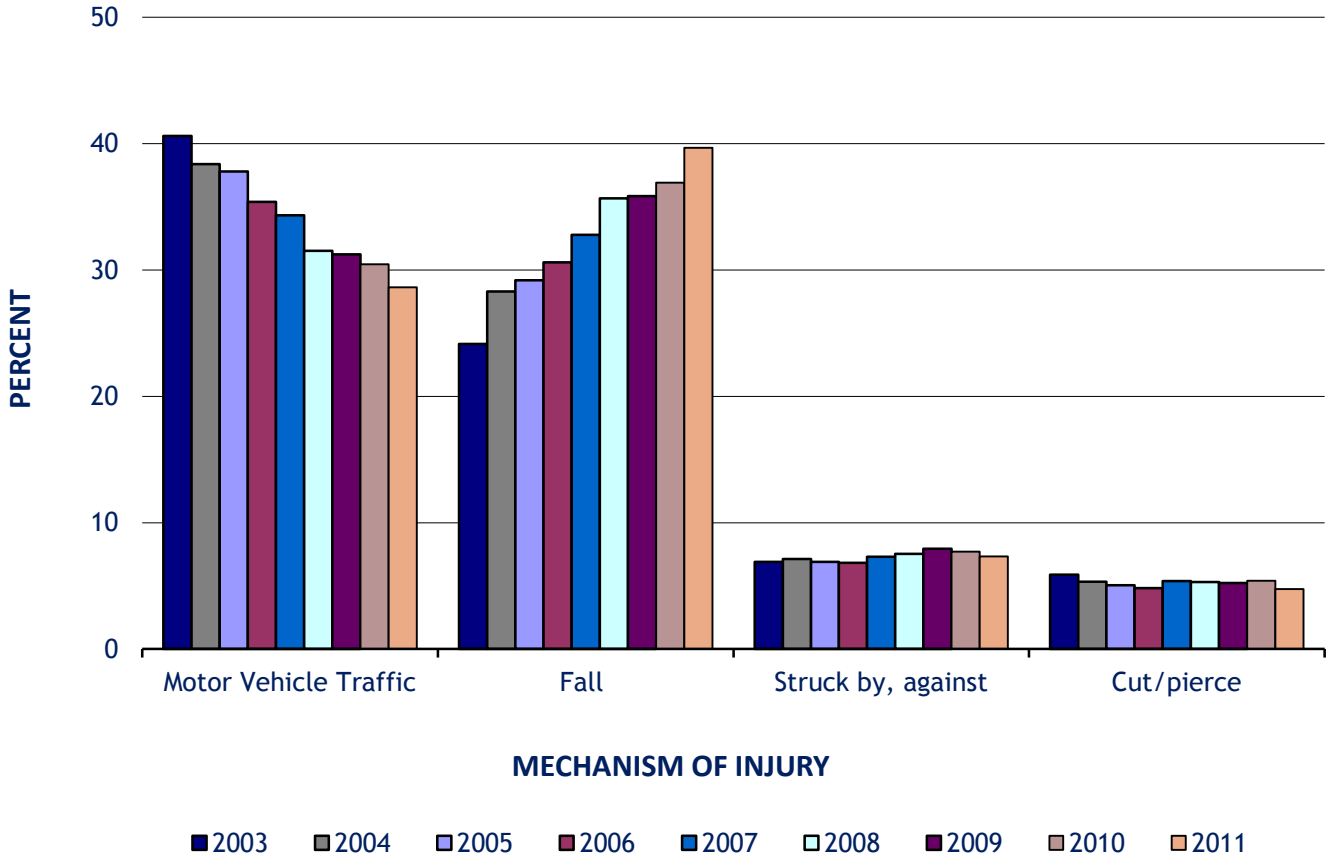


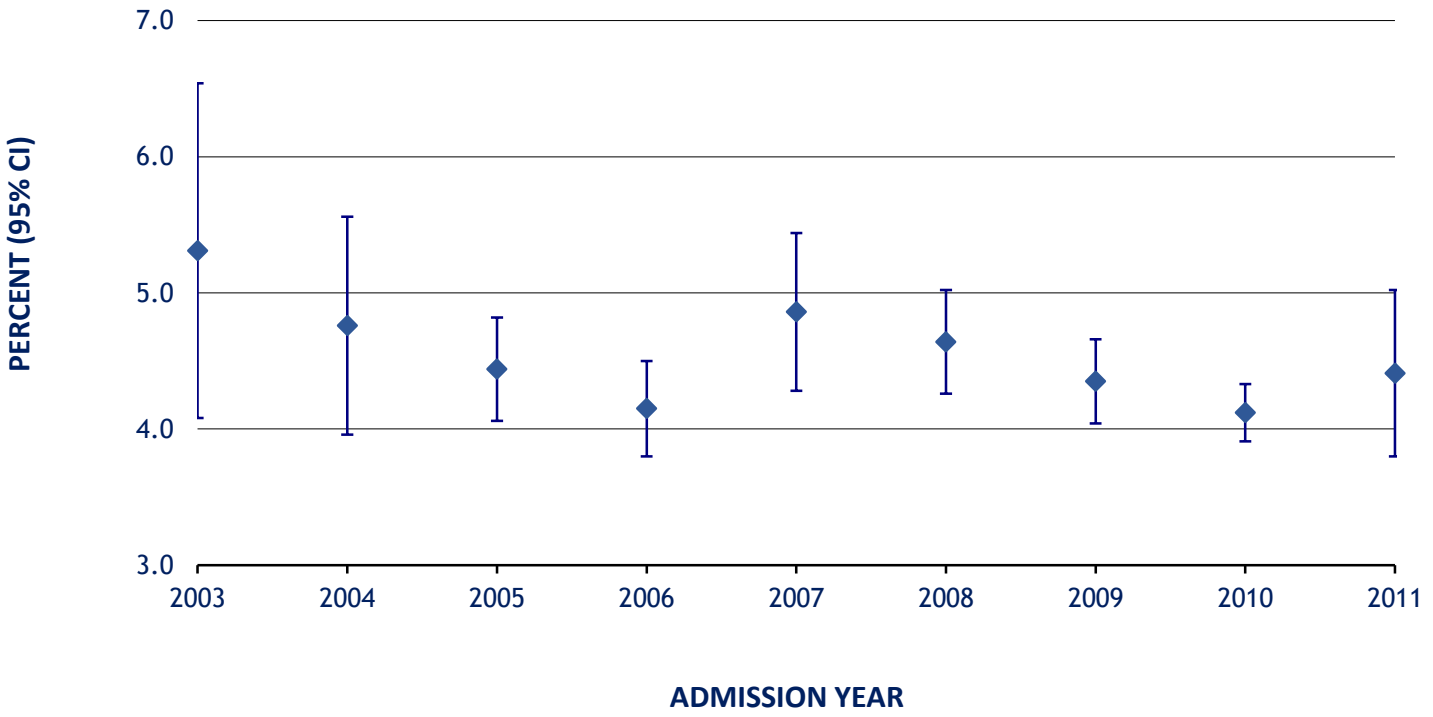
Table 81

Weighted Estimates of Deaths by Admission Year

ADMISSION YEAR	WEIGHTED NUMBER OF DEATHS	PERCENT DEATHS (95% CI)
2003	30,642	5.31 (4.07, 6.54)
2004	24,958	4.76 (3.96, 5.56)
2005	25,780	4.44 (4.06, 4.82)
2006	27,603	4.15 (3.79, 4.50)
2007	29,842	4.86 (4.28, 5.44)
2008	29,611	4.64 (4.27, 5.02)
2009	27,410	4.35 (4.04, 4.66)
2010	28,727	4.12 (3.91, 4.33)
2011	33,628	4.41 (3.80, 5.02)
Total	258,201	4.56 (4.02, 5.10)

Figure 81

Weighted Estimates of Deaths by Admission Year



Resources

- *www.ntdb.org* for more information about NTDB
- *www.ntdbdatacenter.com* to submit data to NTDB
- *www.ntdsdictionary.org* for information on the data standard