

Japan Trauma Data Bank Report 2013 (2008-2012)

Japan Trauma Care and Research

**The Japanese Association for the Surgery of Trauma
(Trauma Registry Committee)**



**The Japanese Association for Acute Medicine
(Committee for Clinical Care Evaluation)**



Japan Trauma Data Bank Report 2008-2012

Teine Keijinkai Hospital	Funabashi Municipal Medical Center	Yokohama Municipal Citizens Hospital
Hokkaido University Hospital	Juntendo University Urayasu Hospital	Odawara Municipal Hospital
Hokuto Hospital	Asahi Central Hospital	Yokosuka Kyosai Hospital
Hokkaido Medical Center	Nippon Medical School Chiba Hokusoh Hospital	Hiratsuka City Hospital
Sapporo City General Hospital	Chiba University Hospital	Fujisawa City Hospital
Nikko Memorial Hospital	Chiba Emergency Medical Center	Kanto Rosai Hospital
Sapporo Medical University Hospital	Matsudo City Hospital	Yokohama Rosai Hospital
Hirosaki University School of Medicine & Hospital	Kameda General Hospital	Yokohama City University Medical Center
Aomori Prefectural Central Hospital	Kimitsu Chuou Hospital	Tokai University Hospital
Hachinohe City Hospital	Showa University Hospital	Showa University Fujigaoka Hospital
Iwate Medical University Hospital	Tokyo Medical Center	Kitasato University Hospital
Kuji Prefectural Hospital	Department of Social Medicine, School of Medicine, Nihon University	Yokosuka General Hospital Uwamachi
Osaki Citizen Hospital	National Disaster Medical Center	Yokohama City Minato Red Cross Hospital
Tohoku University Hospital	Tokyo Metropolitan Hiroo Hospital	Kouseiren Takaoaka Hospital
Sendai City Hospital	Musashino Red Cross Hospital	Tonami General Hospital
Ishinomaki Red Cross Hospital	Nippon Medical School Tama Nagayama Hospital	Toyama Prefectural Central Hospital
Sendai Medical Center	Tokyo Medical University Hospital	Toyama University Hospital
Akita Red Cross Hospital	Tokyo Medical University Hachioji Medical Center	Kanazawa University Hospital
Fukushima Medical University Hospital	Keio University Hospital	Fukui Prefectural Hospital
Ohta Nishinouchi Hospital	St.Luke's International Hospital	Yamanashi Prefectural Central Hospital
Aizu Central Hospital	Teikyo University Hospital	Aizawa Hospital
Niigata City General Hospital	Toho University Omori Medical Center	Suwa Red Cross Hospital
Niigata University Medical & Dental Hospital	National Center for Global Health and Medicine	Iida Municipal Hospital
Ibaraki Seinan Medical Hospital	University of Tokyo Hospital	Ina Central Hospital
Mito Medical Center	Showa General Hospital	Saku Central Hospital
University of Tsukuba Hospital	Tokyo Women's Medical University Medical Center East	Shinshu University Hospital
Tsukuba Medical Center Hospital	Nippon Medical School Hospital	Takayama Red Cross Hospital
Dokkyo Medical University Hospital	Kyorin University Hospital	Ogaki Municipal Hospital
Jichi Medical University Hospital	Surugadai Nihon University Hospital	Gero City Kanayama Hospital
Saiseikai Utunomiya Hospital	Tokyo Women's Medical University Hospital	Chuno Kosei Hospital
Gunma University Hospital	Ohme Municipal General Hospital	Gifu University Hospital
Maebashi Red Cross Hospital	Nihon University Itabashi Hospital	Numazu City Hospital
Takasaki General Medical Center	Tokyo Medical and Dental University Hospital	Shizuoka Red Cross Hospital
Ota Memorial Hospital	Tokyo Metropolitan Bokutoh Hospital	Shizuoka Children's Hospital
Saitama Red Cross Hospital	Showa University Northern Yokohama Hospital	Shizuoka Saiseikai General Hospital
Saitama Medical University International Medical Center	Yokohama Medical Center	Juntendo University Shizuoka Hospital
Kuki General Hospital	Nippon Medical School Musashikosugi Hospital	Seirei Mikatahara General Hospital
Kawaguchi Municipal Medical Center	Saiseikai Yokohama-city East Hospital	Toyohashi Municipal Hospital
Dokkyo Medical University Koshigaya Hospital	St. Marianna University School of Medicine Hospital	Daiyukai General Hospital
National Defense Medical College Hospital	Shonan Kamakura General Hospital	
Saitama Medical University Medical Center		

Figure 1A Names of All Hospitals Submitting Data to the JTDB (N=221, part 1)

Japan Trauma Data Bank Report 2008-2012

Fujita Health University Hospital	Tottori University Hospital	Oita University Hospital
Nagoya City University Hospital	Tsuyama Chuo Hospital	Miyazaki Prefectural Miyazaki Hospital
Handa City Hospital	Kawasaki Medical School Hospital	Miyazaki University Hospital
Aichi Medical University Hospital	Kurashiki Central Hospital	Miyazaki Zenjinkai Hospital
Nagoya Ekisaikai Hospital	Okayama University Hospital	Miyakonojo Regional Medical Center
Social Insurance Chukyo Hospital	Hiroshima University Hospital	Osumikanoya Hospital
Okazaki City Hospital	Kure Medical Center	Kagoshima City Hospital
Mie University Hospital	Fukuyama City Hospital	Okinawa Prefectural Chubu Hospital
Omihashiman Community Medical Center	Hiroshima Prefectural Hospital	Okinawa Prefectural Hokubu Hospital
Saiseikai Shigaken Hospital	Chugoku Rosai Hospital	Ryukyu University Hospital
Kyoto Daini Red Cross Hospital	Kanmon Medical Center	Urasoe General Hospital
Kyoto Medical Center	Tokuyama Central Hospital	Nakagami Hospital
Rakuwakai Otowa Hospital	Yamaguchi Grand Medical Center	
Fukuchiyama City Hospital	Yamaguchi University Hospital	
Kyoto Daiichi Red Cross Hospital	Tokushima Prefectural Kaifu Hospital	
Osaka Prefectural Senshu Critical Medical Care Center	Tokushima Prefectural Central Hospital	
Saiseikai Senri Hospital	Kagawa University Hospital	
Osaka General Medical Center	Ehime Prefectural Central Hospital	
Hanwa Memorial Hospital	Ehime University Hospital	
Osaka Medical Center	Kochi Medical Center	
Nakakawachi Medical Center of Acute Medicine	Chikamori Hospital	
Osaka Mishima Emergency Medical Center	Kurume University Hospital	
Kinki University Hospital	Iizuka Hospital	
Kishiwada Tokushukai Hospital	Ohtemachi Hospital	
Osaka University Hospital	Kitakyushu Municipal Yahata Hospital	
Osaka City General Hospital	Kyushu University Hospital	
Kansai Medical University Takii Hospital	Kitakyushu General Hospital	
Osaka City University Hospital	Kokura Memorial Hospital	
Hyogo Prefectural Nishinomiya Hospital	Fukuoka Wajiro Hospital	
Hyogo Prefectural Kakogawa Medical Center	Fukuoka Red Cross Hospital	
Hyogo Prefectural Awaji Hospital	Fukuoka Higashi Medical Center	
Hospital of Hyogo College of Medicine	Saiseikai Fukuoka General Hospital	
Kobe City Medical Center General Hospital	Fukuoka University Hospital	
Kobe University Hospital	St. Maria's Hospital	
Hyogo Emergency Medical Center	Saga University Hospital	
Toyooka Hospital Tajima Emergency & Critical Care Medical Center	Saga Prefectural Hospital Koseikan	
Public Muraoka Hospital	Ureshino Medical Center	
Kansai Rosai Hospital	Nagasaki University Hospital	
Nara Prefectural Nara Hospital	Nagasaki Medical Center	
Nara Medical University Hospital	Arao Municipal Hospital	
Wakayama Medical University Hospital	Kumamoto Red Cross Hospital	
	Kumamoto Medical Center	
	Saiseikai Kumamoto Hospital	

Figure 1B Names of All Hospitals Submitting Data to the JTDB (N=221, part 2)

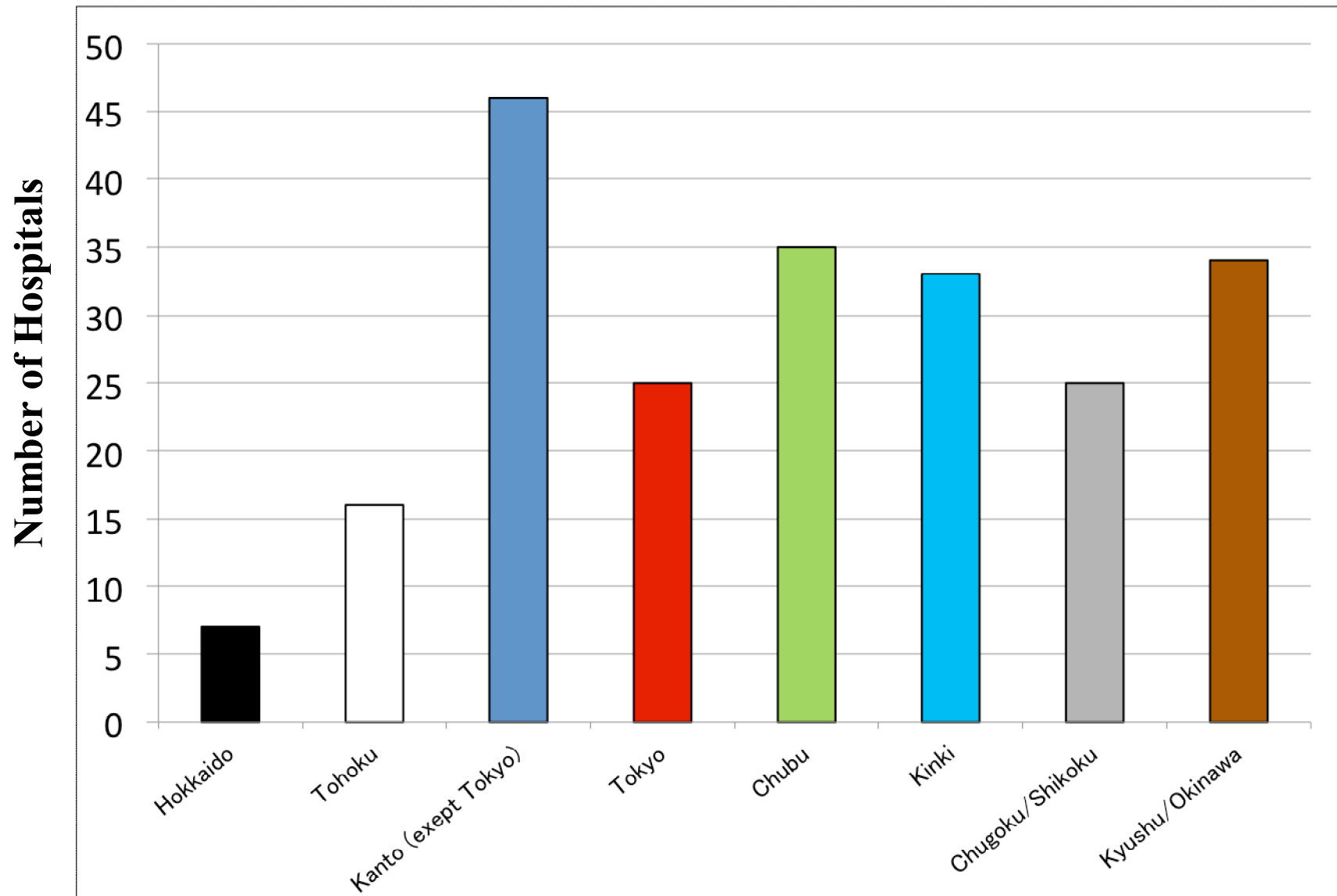


Figure 2 Number of Hospitals Submitting to the JTDB by Region.

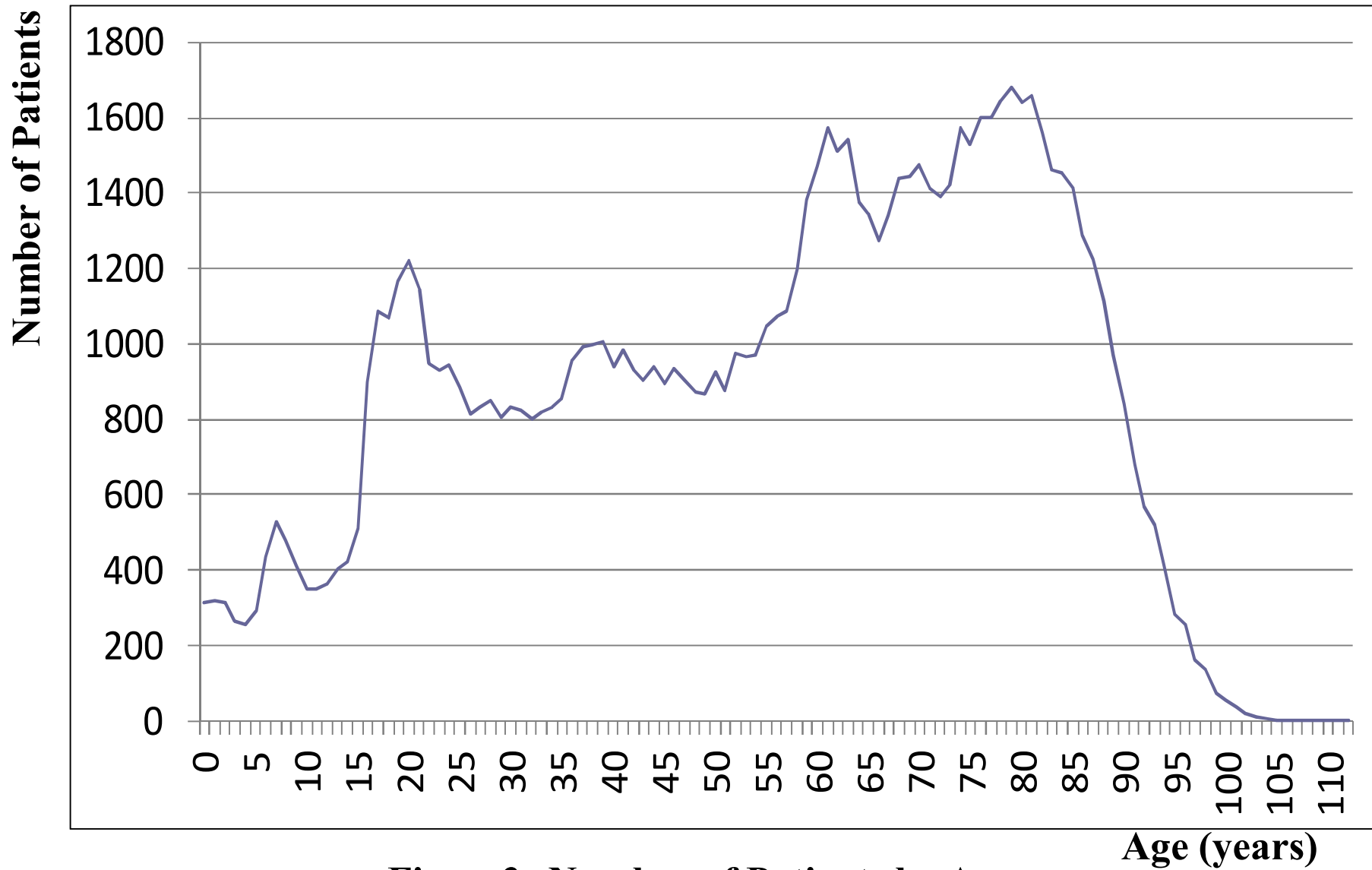


Figure3 Number of Patients by Age.

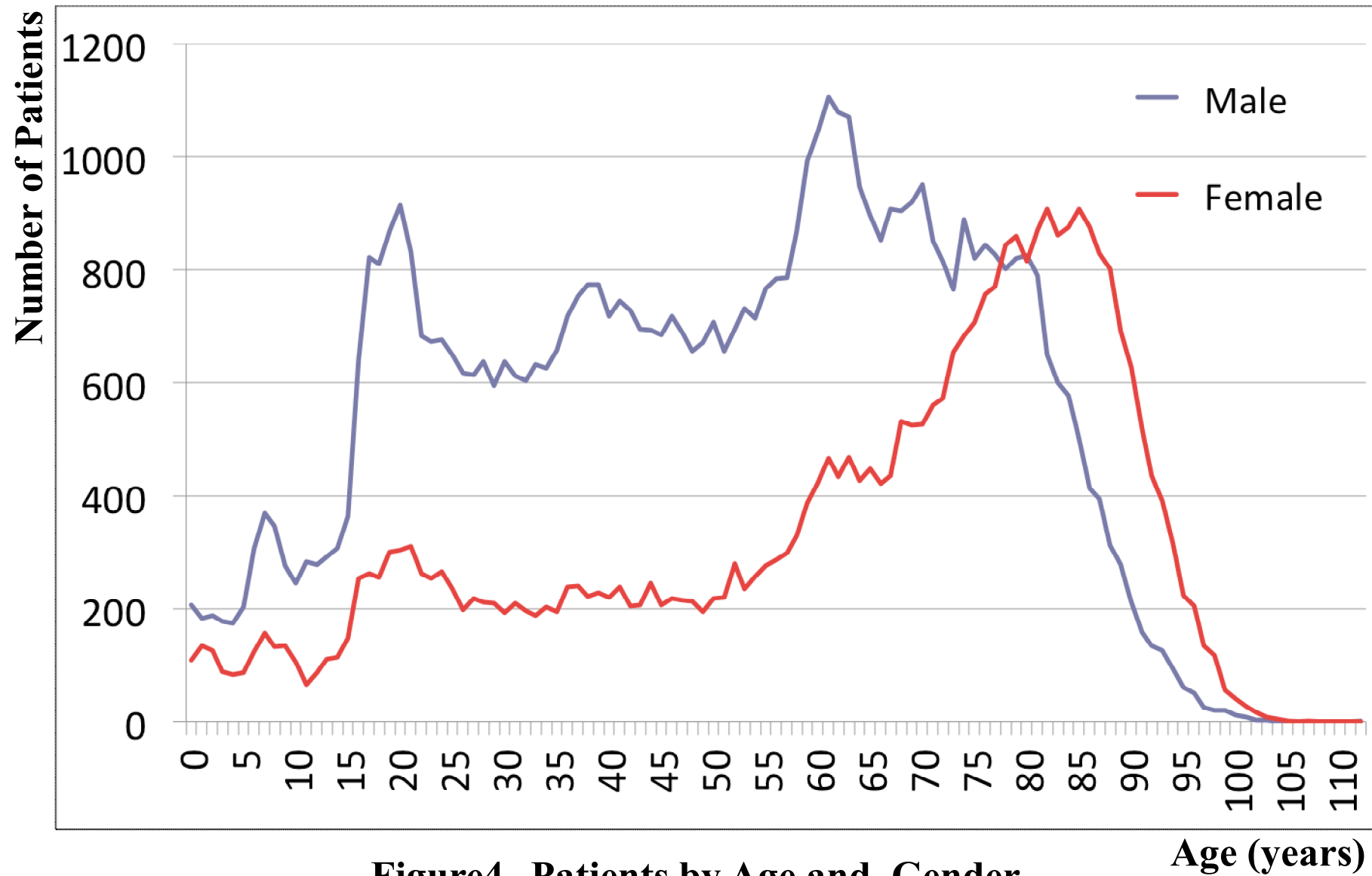


Figure4 Patients by Age and Gender.

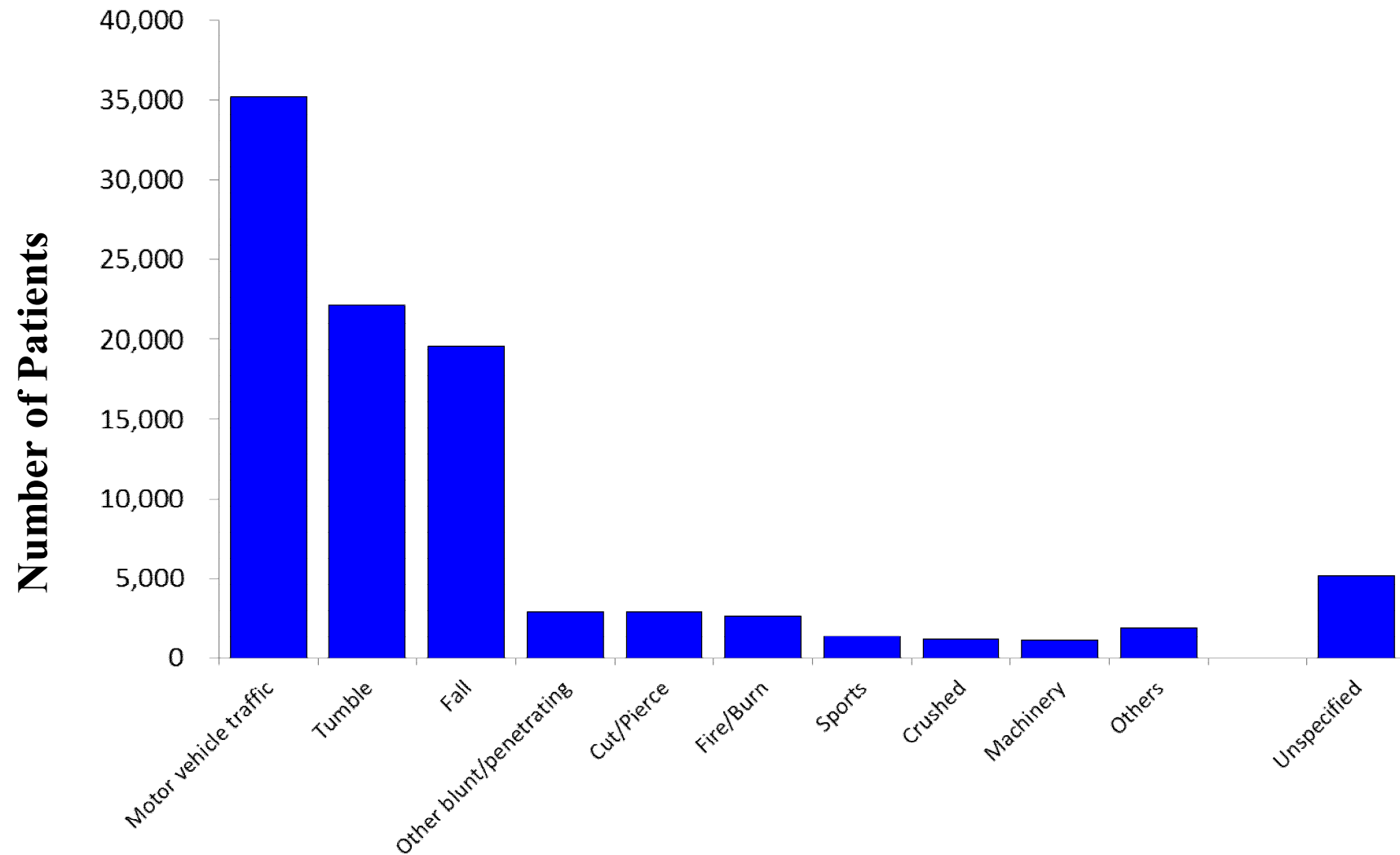


Figure 5 Patients by mechanism of injury
Motor vehicle traffic includes pedal cyclist and pedestrian victims.

Japan Trauma Data Bank Report 2008-2012

Mechanism of injury	Patients (n)	Patients by mechanism of injury (%)
Motor vehicle traffic	35220	36.72
Tumble	22090	23.03
Fall	19643	20.48
Other blunt/penetrating	2864	2.99
Cut/Pierce	2849	2.97
Fire/Burn	2600	2.71
Sports	1361	1.42
Crushed	1176	1.23
Machinery	1081	1.13
Transport, others	863	0.90
Falling objects	703	0.73
Explosion	187	0.19
Stake	82	0.09
Firearm	41	0.04
Unspecified	5164	5.38
Total	95924	100.00

Table 5 Patients by mechanism of injury

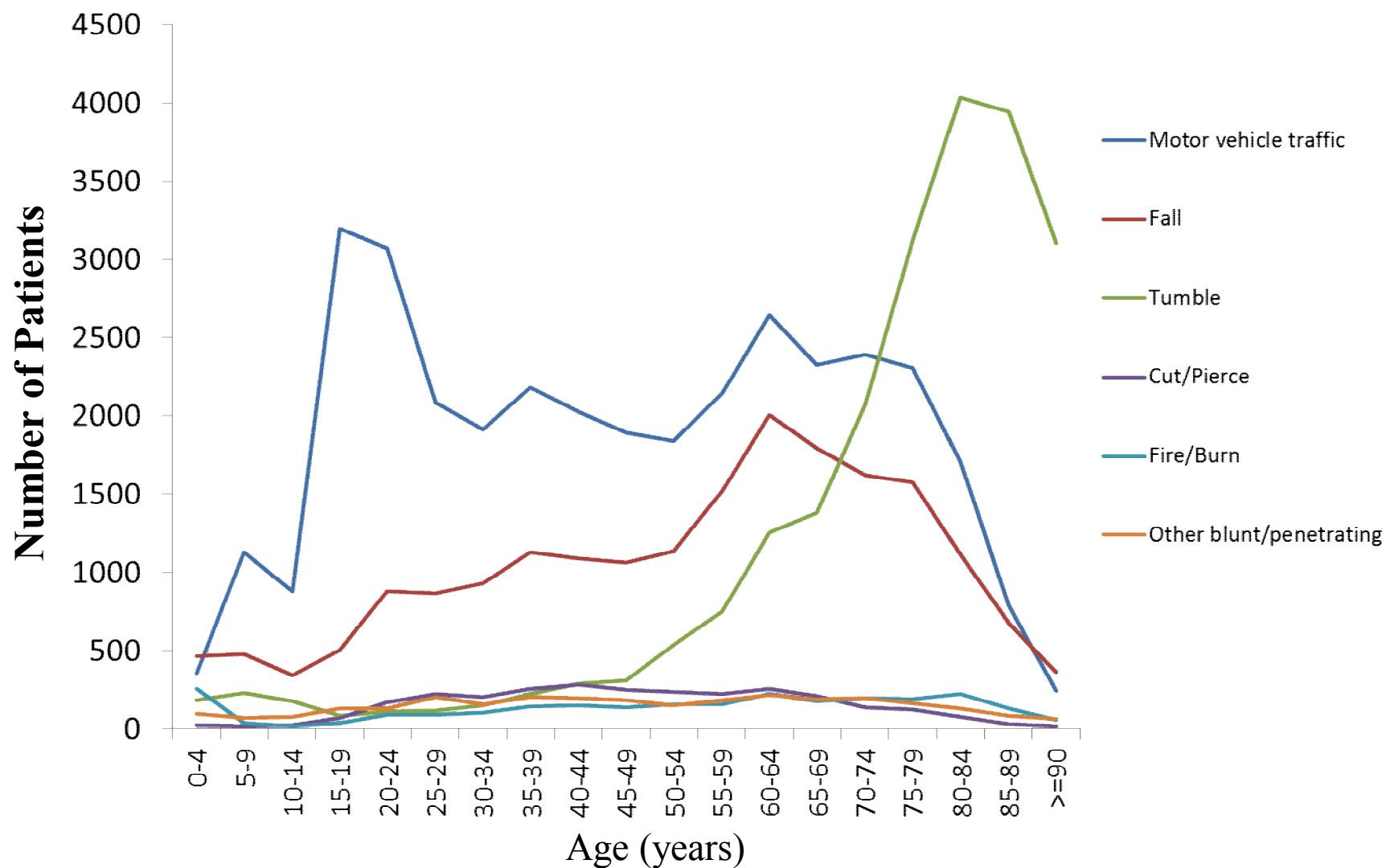


Figure 6 Mechanism of injury by age

Japan Trauma Data Bank Report 2008-2012

Range of Age (yr)	Motor vehicle traffic (n)	% of total range of age	Fall (n)	% of total range of age	Tumble (n)	% of total range of age	Cut/Pierce (n)	% of total range of age	Fire/Burn (n)	% of total range of age	Other blunt /penetrating (n)	% of total range of age
0-4	353	1.00	464	2.36	187	0.85	24	0.84	256	9.85	97	3.39
5-9	1133	3.22	477	2.43	233	1.05	19	0.67	42	1.62	74	2.58
10-14	878	2.49	343	1.75	176	0.80	27	0.95	22	0.85	79	2.76
15-19	3197	9.08	509	2.59	84	0.38	74	2.60	41	1.58	134	4.68
20-24	3068	8.71	882	4.49	109	0.49	172	6.04	93	3.58	132	4.61
25-29	2084	5.92	869	4.42	116	0.53	220	7.72	92	3.54	204	7.12
30-34	1913	5.43	936	4.77	149	0.67	203	7.13	102	3.92	158	5.52
35-39	2186	6.21	1133	5.77	225	1.02	253	8.88	144	5.54	202	7.05
40-44	2027	5.76	1090	5.55	286	1.29	283	9.93	154	5.92	195	6.81
45-49	1897	5.39	1067	5.43	307	1.39	252	8.85	140	5.38	186	6.49
50-54	1841	5.23	1138	5.79	537	2.43	237	8.32	157	6.04	154	5.38
55-59	2146	6.09	1518	7.73	752	3.40	226	7.93	158	6.08	186	6.49
60-64	2646	7.51	2003	10.20	1253	5.67	253	8.88	220	8.46	214	7.47
65-69	2328	6.61	1795	9.14	1381	6.25	207	7.27	174	6.69	193	6.74
70-74	2395	6.80	1622	8.26	2074	9.39	140	4.91	196	7.54	195	6.81
75-79	2311	6.56	1575	8.02	3115	14.10	123	4.32	189	7.27	166	5.80
80-84	1712	4.86	1116	5.68	4038	18.28	78	2.74	225	8.65	131	4.57
85-89	787	2.23	679	3.46	3943	17.85	31	1.09	133	5.12	88	3.07
>=90	246	0.70	362	1.84	3103	14.05	17	0.60	56	2.15	67	2.34
unspecified	72	0.20	65	0.33	22	0.10	10	0.35	6	0.23	9	0.31
total	35220	100	19643	100	22090	100	2849	100	2600	100	2864	100

Table 6 Mechanism of injury by range of age

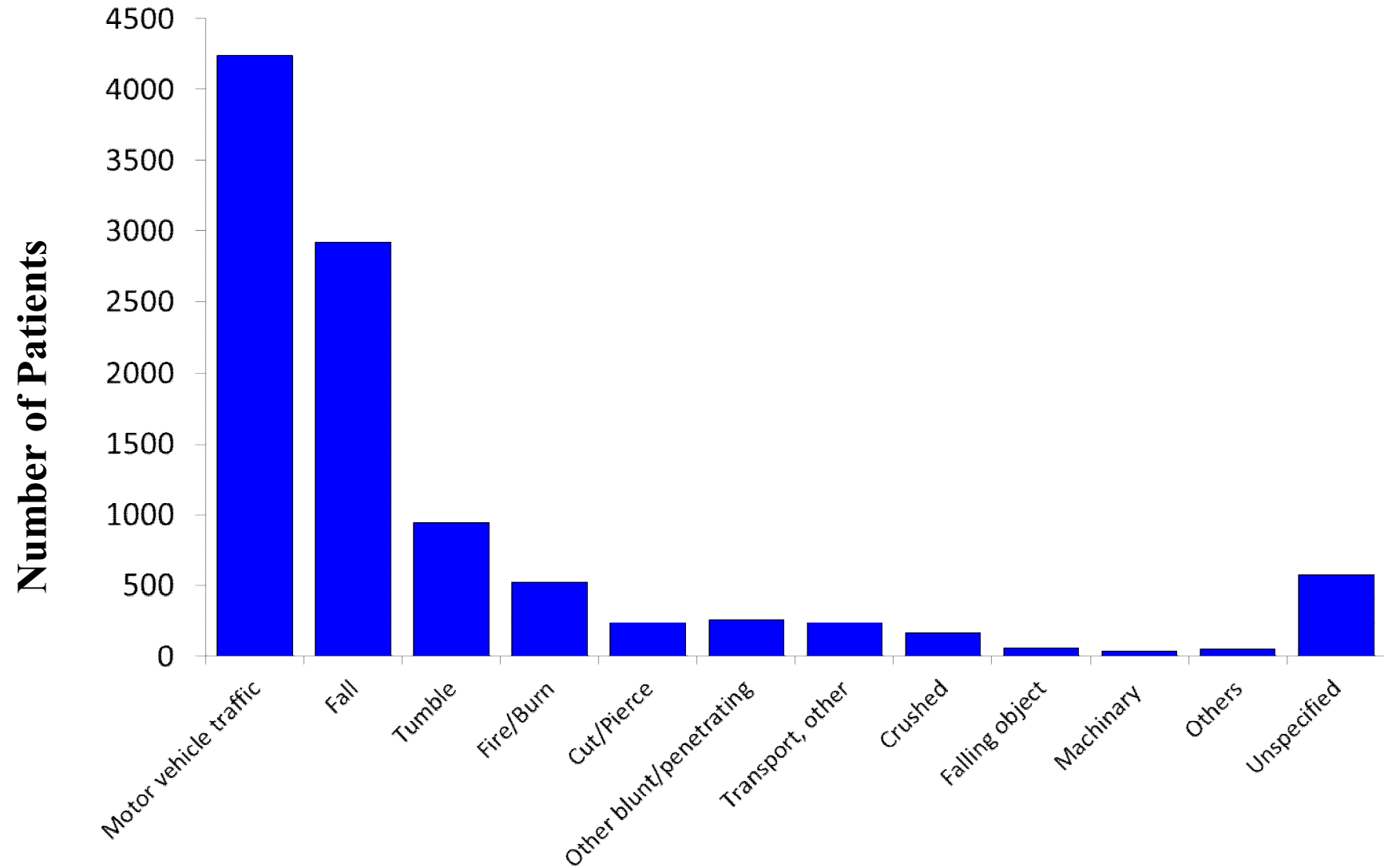


Figure 7 Deaths by Mechanism of injury

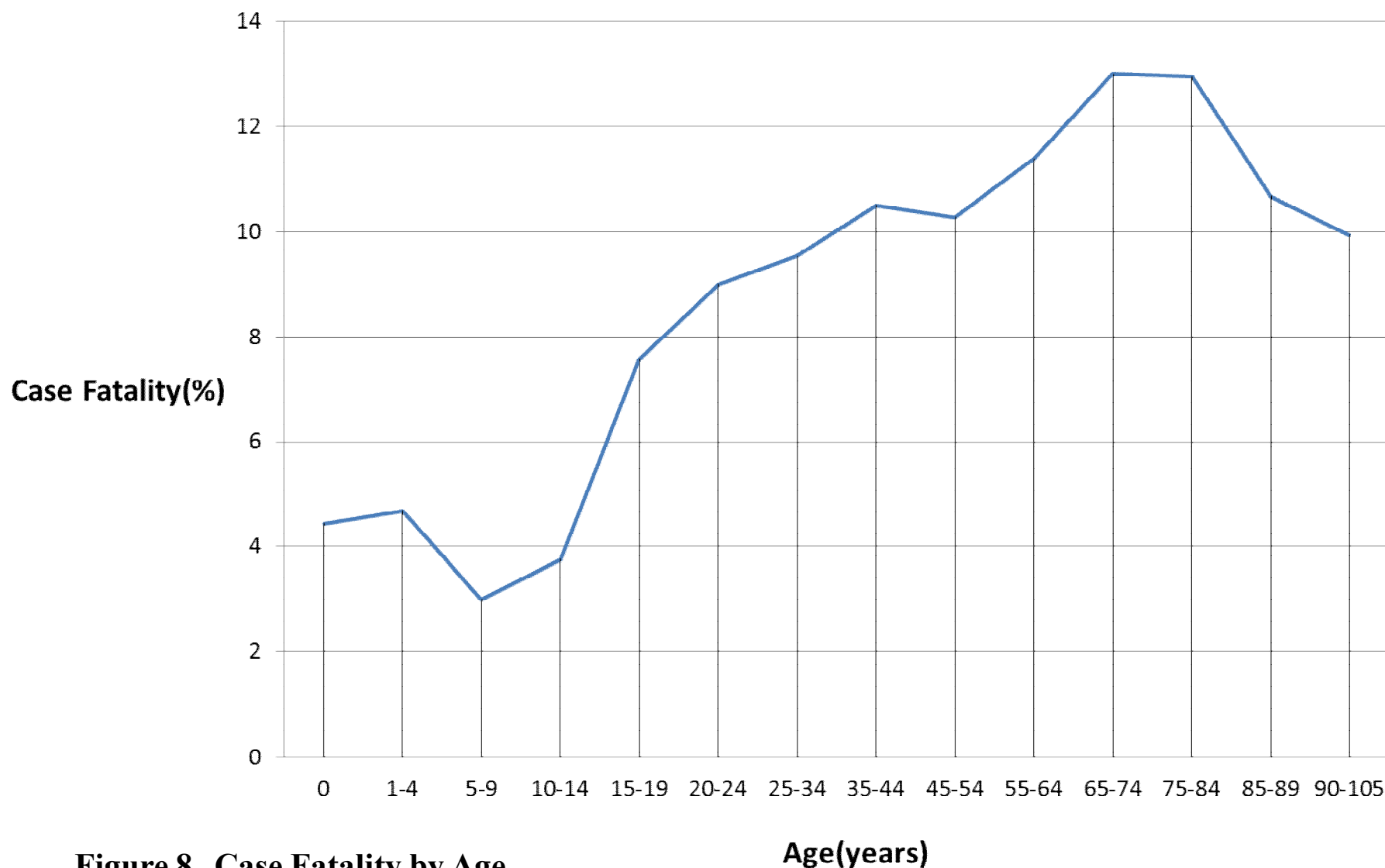


Figure 8 Case Fatality by Age

Case fatality at each age category (Case Fatality = number of deaths divided by the number of patients at each category × 100 by age)

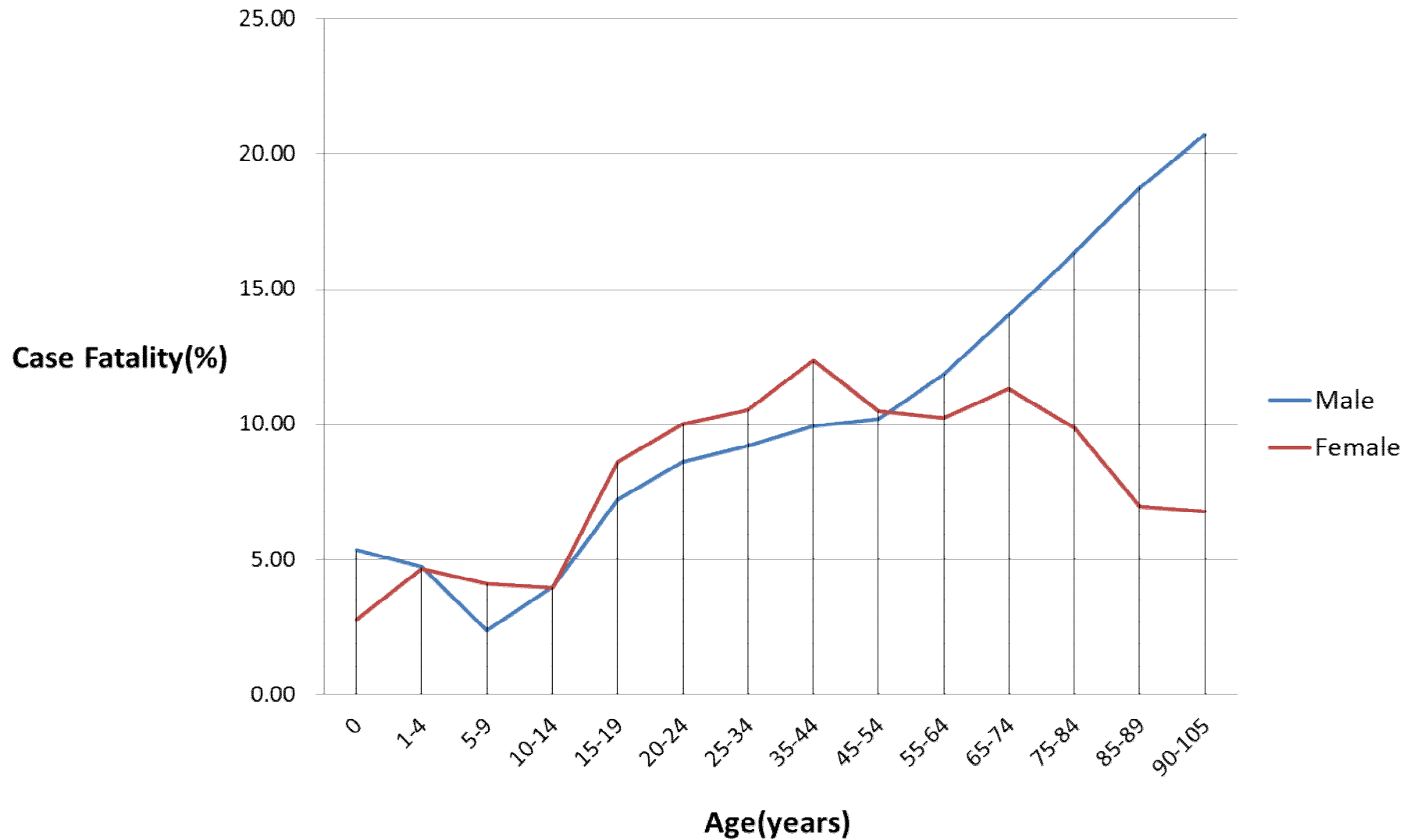


Figure 9 Case Fatality by Age and Gender

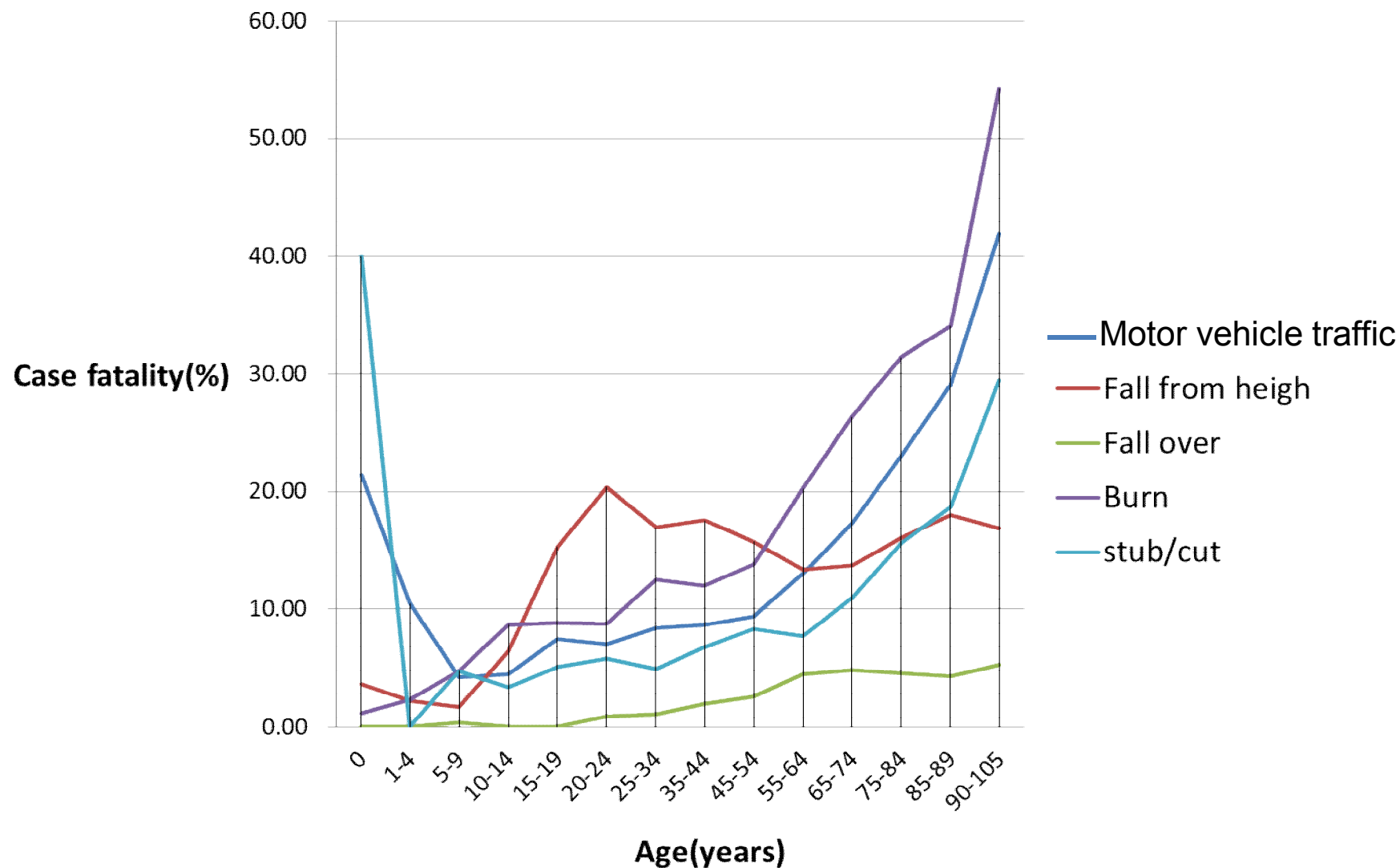


Figure 10 Case Fatality by Age

Case fatality due to motor vehicle accidents and burns and stub/cut increased with age.

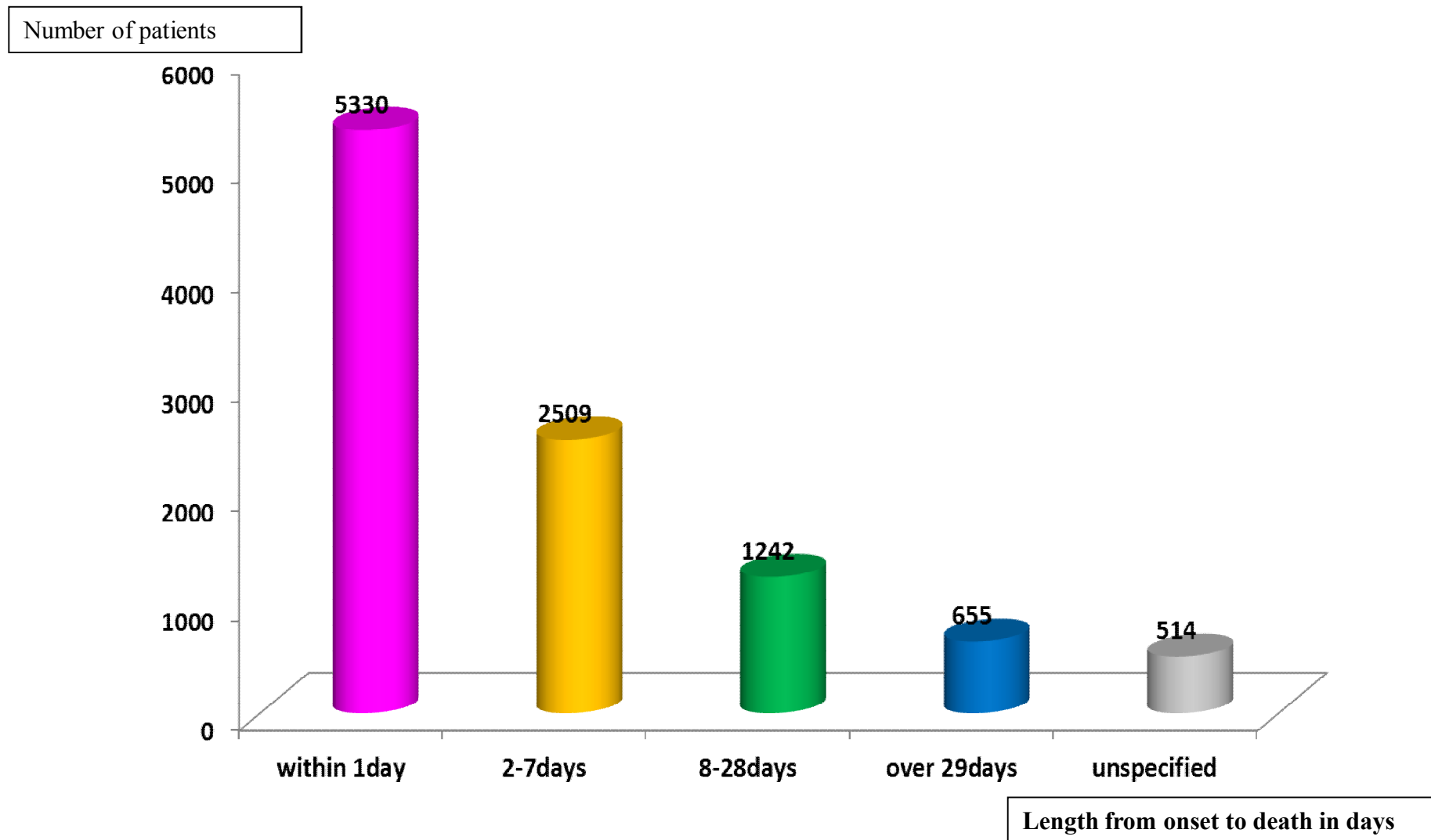


Figure 11A Proportional distribution of length from onset to fatality

The category within 1 day after onset includes CPAOA patients. Total number = 10,250

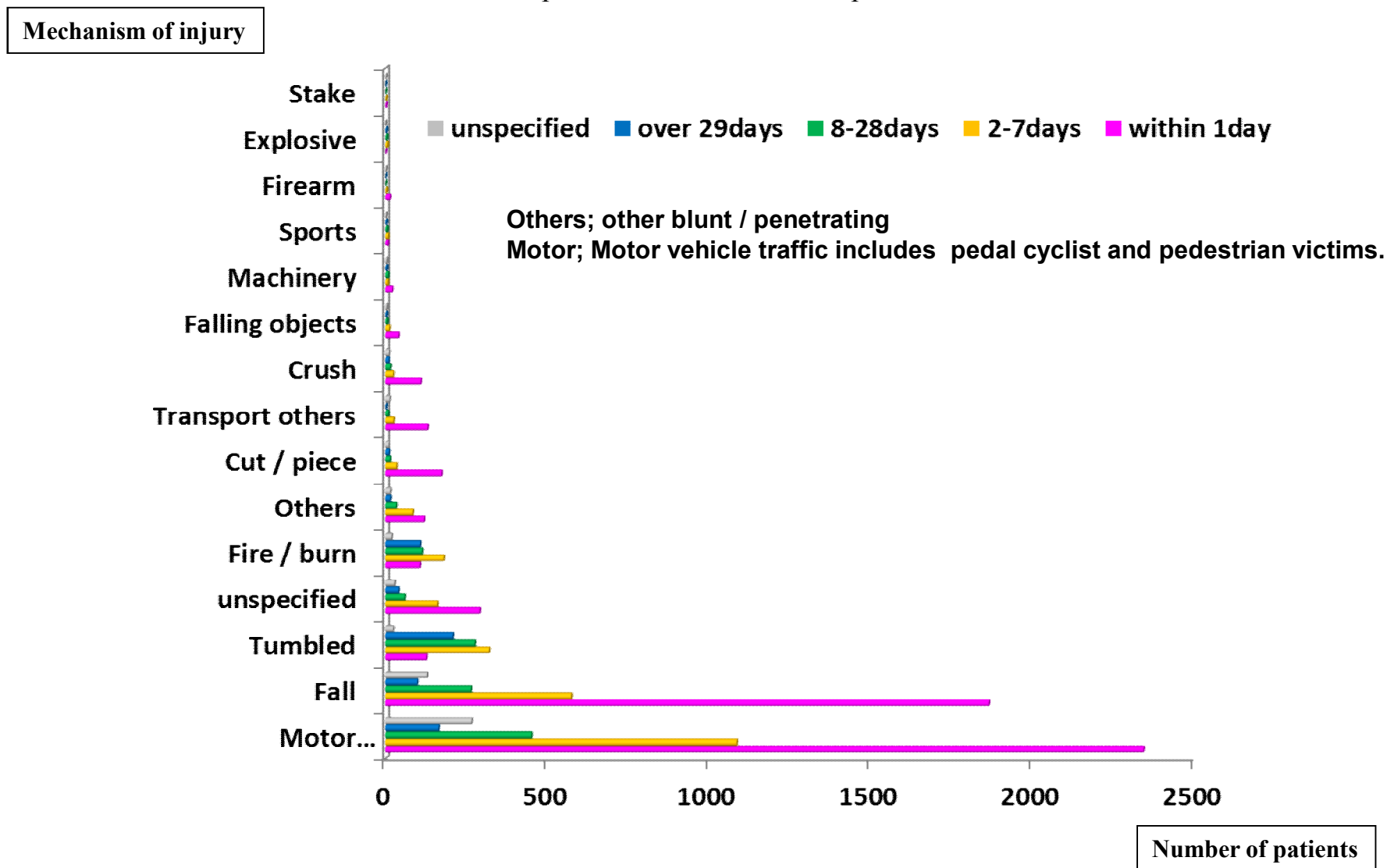


Figure 11B Proportional distribution of length from onset to fatality, grouped by mechanism of injury Total number = 10,250

Japan Trauma Data Bank Report 2008-2012

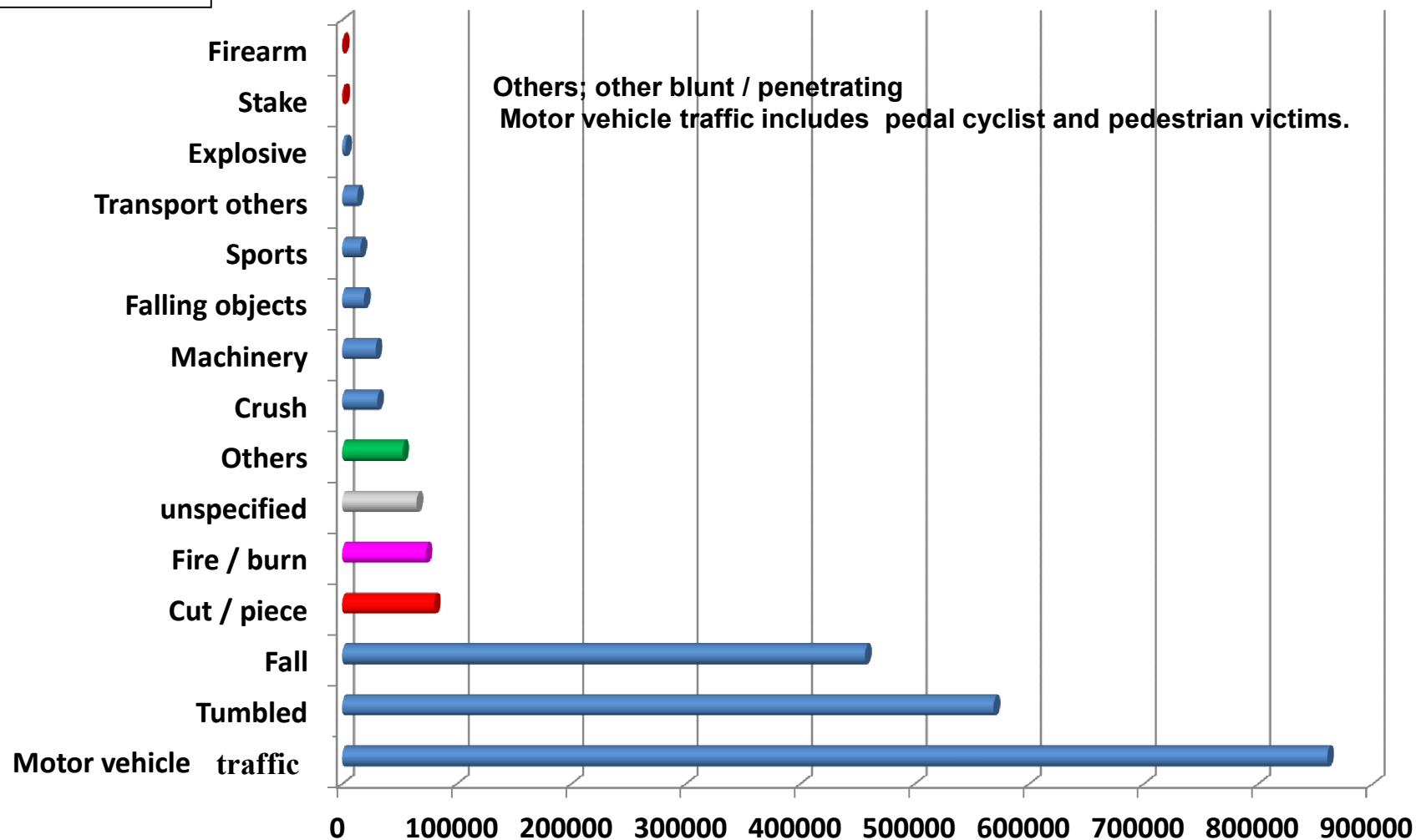
	Motor vehicle traffic	Fall	Tumbled	unspecified	Fire / burn	Other blunt/penet rating	Cut / piece
within 1day	2341	1863	125	290	105	118	172
2-7days	1084	573	319	159	179	83	33
8-28days	450	263	275	58	112	32	13
over 29days	163	97	207	39	106	14	10
unspecified	265	127	23	27	18	14	9
Total	4303	2923	949	573	520	261	237

	Crush	Falling objects	Machinery	Sports	Firearm	Explosive	Stake
within 1day	108	39	20	6	13	0	1
2-7days	23	11	6	7	2	5	1
8-28days	14	4	7	4	0	3	0
over 29days	9	2	3	2	0	2	0
unspecified	10	3	3	1	1	0	1
Total	164	59	39	20	16	10	3

Motor vehicle traffic includes pedal cyclist and pedestrian victims.

**Table 11B Proportional distribution of length from onset to fatality,
grouped by mechanism of injury Total number = 10,250**

Mechanism of injury



Total number of patients is 85,142.

Total hospital length of stay of patients are 2,270,401 days.

Total hospital length of stay

Figure12 Total hospital length of stay by mechanism of Injury

Japan Trauma Data Bank Report 2008-2012

	Number of patients	% of total patients	Total hospital LOS in days	Average of hospital LOS in days
Motor vehicle traffic	32064	37.66%	860481	26.84
Tumbled	20019	23.51%	569106	28.43
Fall	17873	20.99%	456711	25.55
Cut / piece	2507	2.94%	80362	32.06
Fire / burn	2306	2.71%	73015	31.66
unspecified	3245	3.81%	65140	20.07
Other blunt / penetrating	2448	2.88%	52762	21.55
Crush	1042	1.22%	30693	29.46
Machinery	912	1.07%	29246	32.07
Falling objects	912	1.07%	19139	20.99
Sports	1168	1.37%	16083	13.77
Transport others	401	0.47%	13068	32.59
Explosive	139	0.16%	2795	20.11
Stake	73	0.09%	1184	16.22
Firearm	33	0.04%	616	18.67
Total	85142		2270401	26.67

LOS; length of stay Motor vehicle traffic includes pedal cyclist and pedestrian victims

Table12 Total and average hospital length of stay by mechanism of injury

Mechanism of injury

Total number of patients is 85,142

Motor vehicle traffic includes pedal cyclist and pedestrian victims

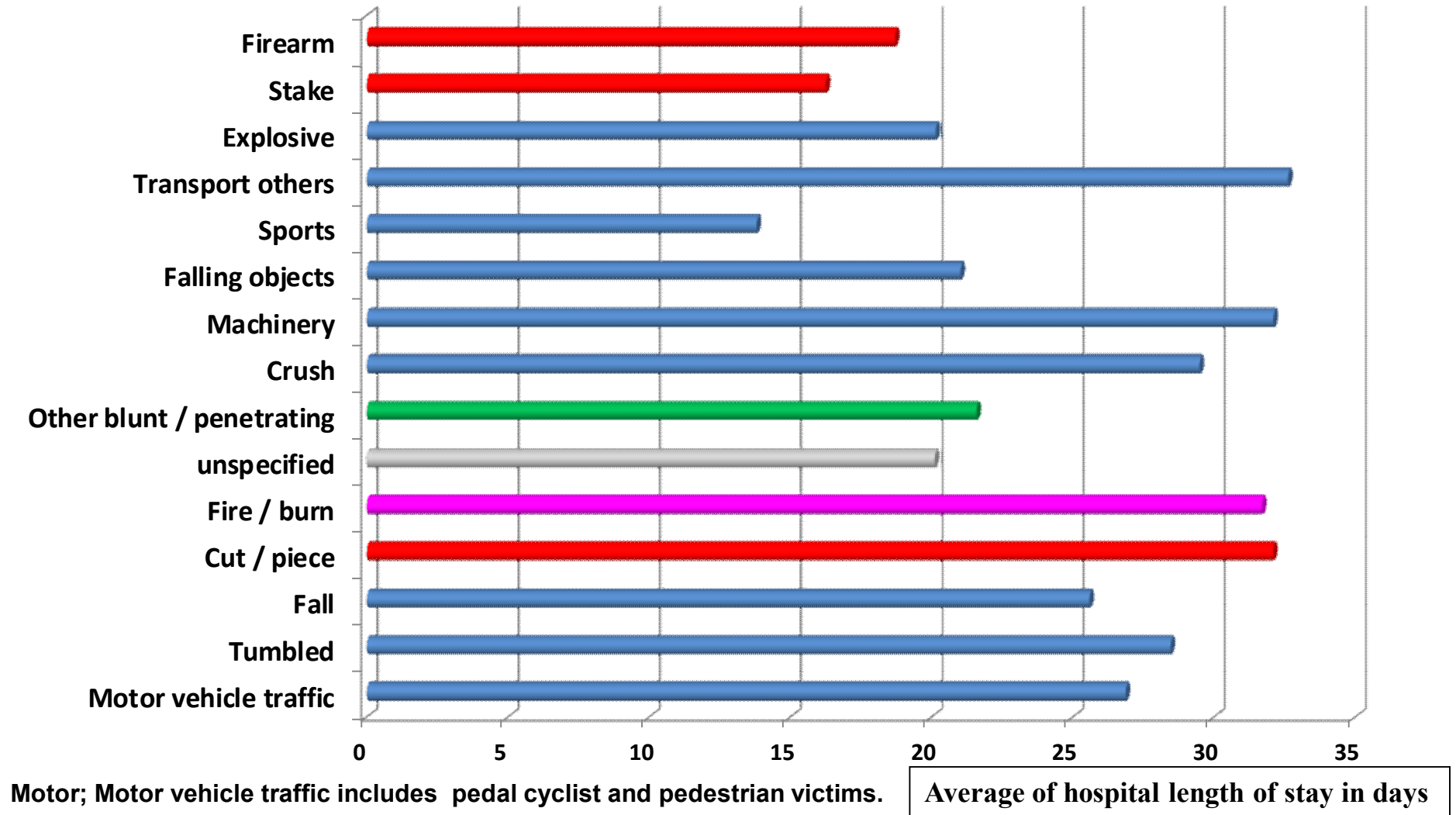


Figure 13 Average Hospital length of stay by mechanism of injury

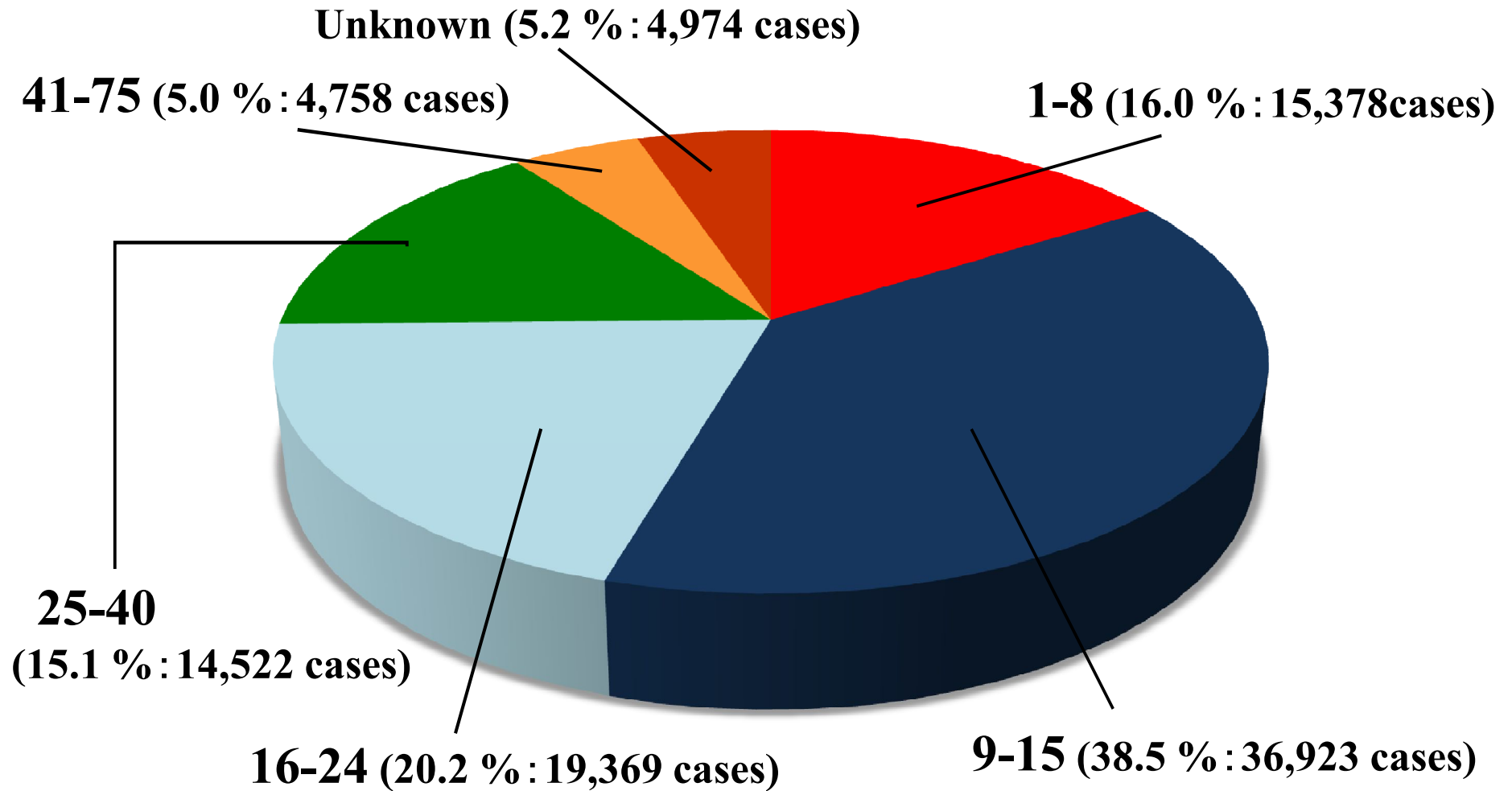


Figure 14 Patients and Injury Severity Score (ISS)

Proportional distribution of patients grouped by categories of the ISS range. Total N=95,924.

The number of patients of ISS 9-15 category was the most of all categories.

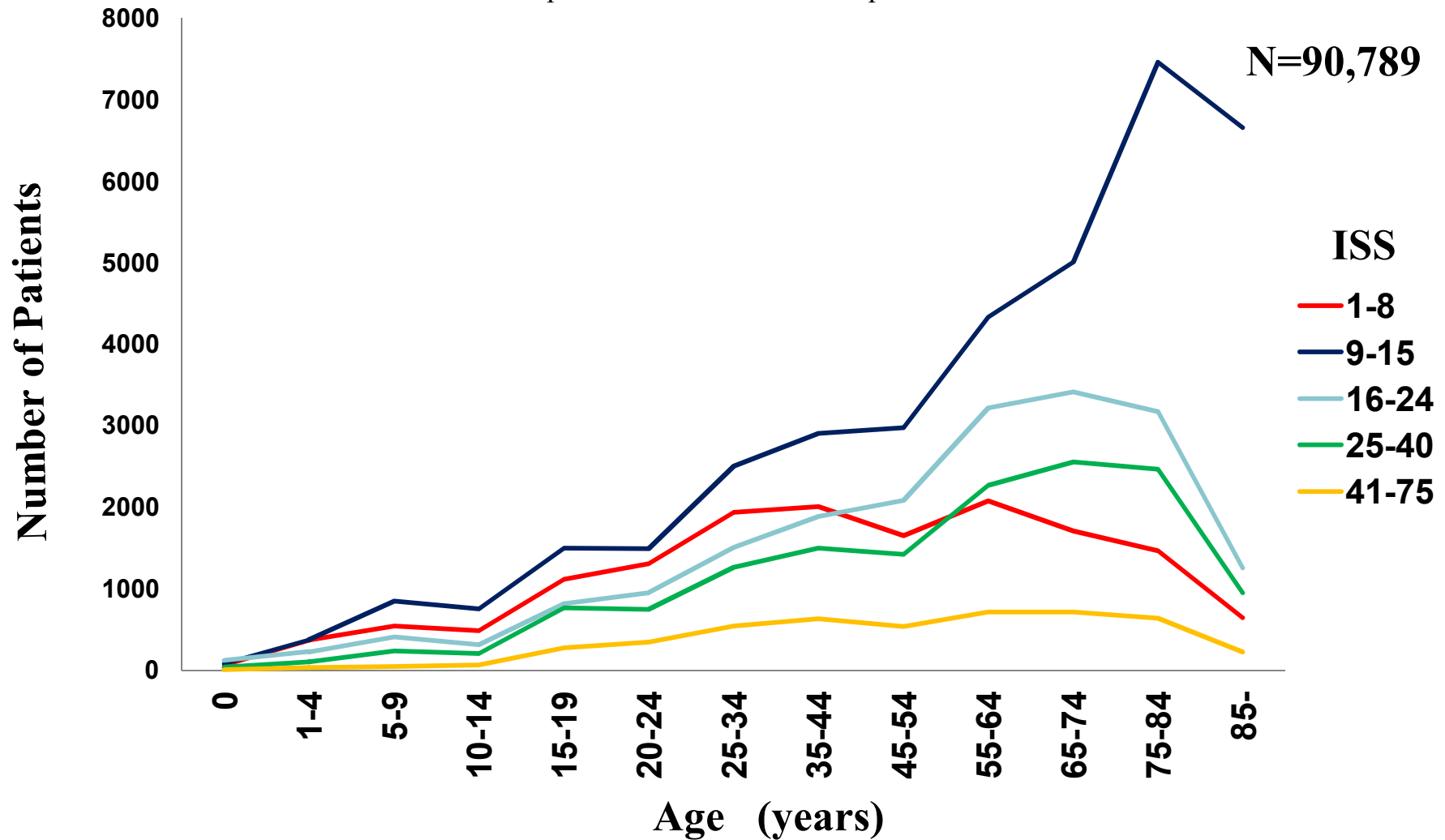


Figure 15 Patients by ISS and Age

Number of injured patients grouped by ISS range, at each age from 0 to 112.

The peaks of the number of patients based on age distribution were seen at 25-44 and 55-84 ages of any ISS categories, and at 75-84 ages of ISS 9-15 . Total N=90,789.

Japan Trauma Data Bank Report 2008-2012

Age ISS	0	1-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85-	Unknown	Total
1-8	62	365	543	485	1112	1304	1934	2004	1651	2074	1704	1463	640	37	15378
9-15	79	372	844	751	1495	1489	2506	2905	2974	4335	5010	7463	6661	39	36923
16-24	115	222	408	312	815	950	1501	1883	2081	3219	3413	3173	1255	22	19369
25-40	36	99	232	203	764	747	1263	1496	1419	2266	2553	2466	945	33	14522
41-75	3	30	40	59	273	341	537	629	536	710	714	635	221	30	4758
Unknown	20	66	70	79	272	351	545	581	525	645	718	631	330	141	4974
Total	315	1154	2137	1889	4731	5182	8286	9498	9186	13249	14112	15831	10052	302	95924

Table 15 Patients by ISS and Age

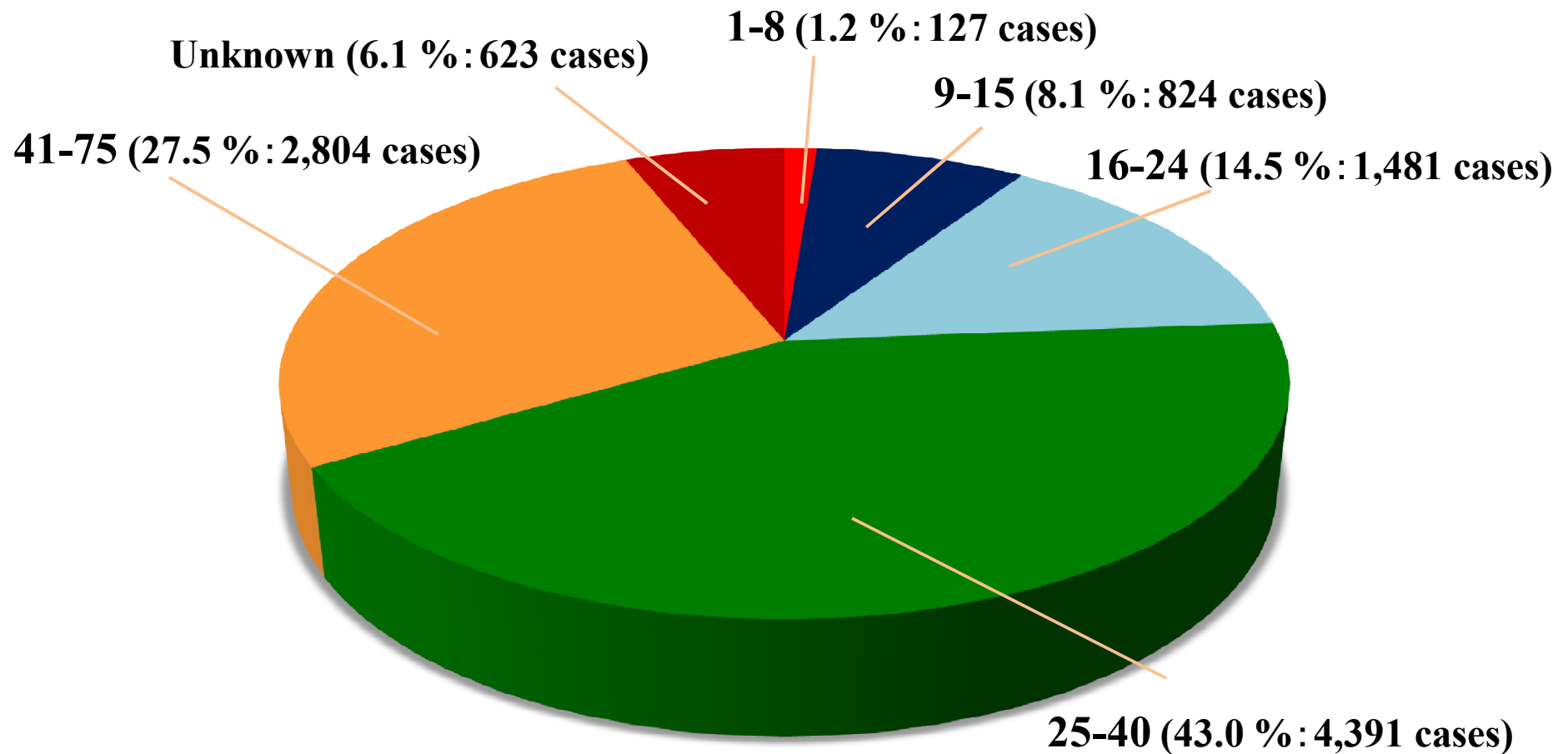


Figure 16A Deaths and Injury Severity Score (ISS)

**Proportional distribution of deaths grouped by categories of ISS range. Total N=10,250.
Deaths in ISS 25-40 category were the highest (4,391 cases: 43.0% of all deaths).**

N=10,250

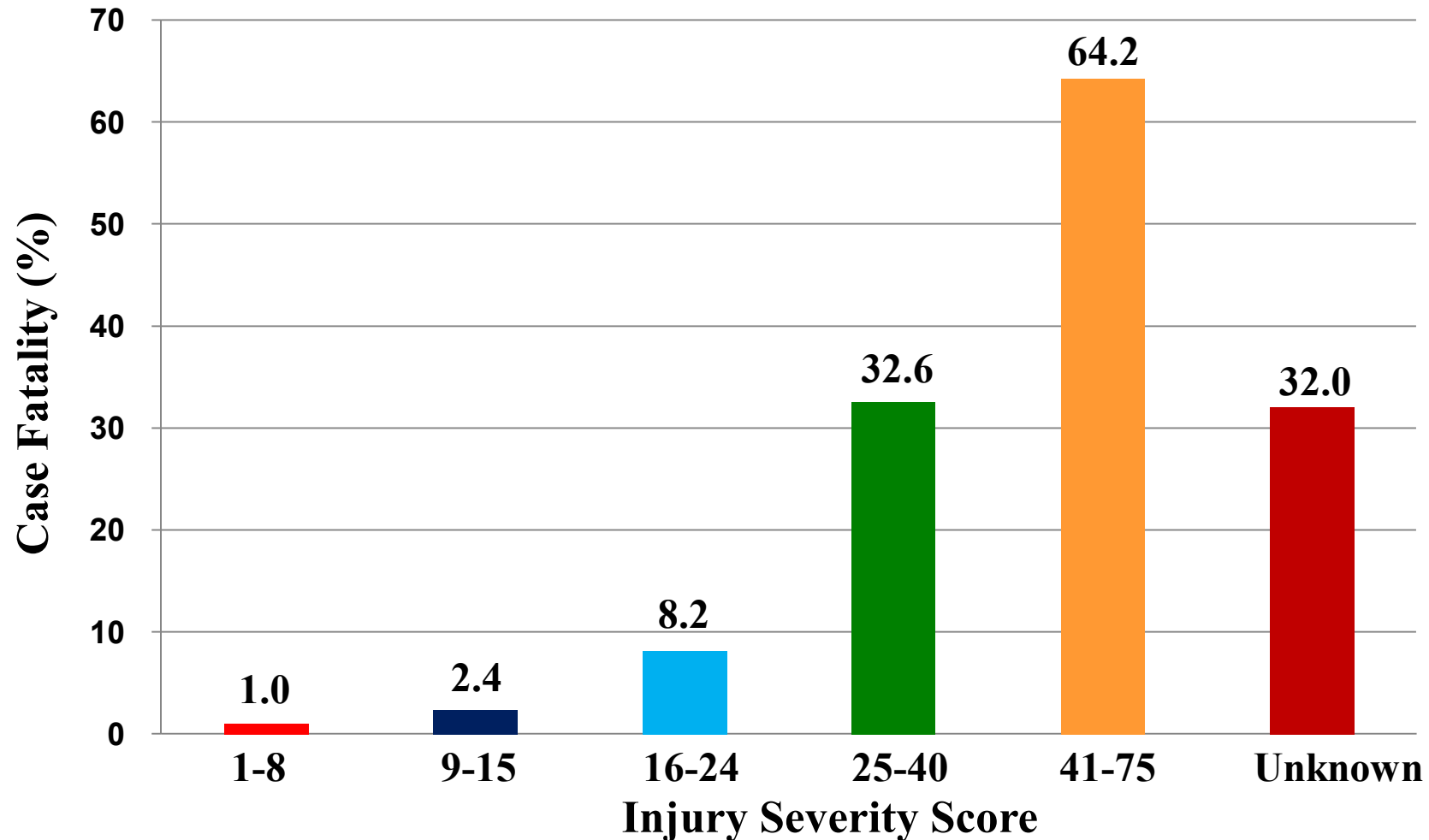


Figure 16B Case Fatality by Injury Severity Score (ISS) Range

Case fatality grouped by ISS range. (Case fatality = number of deaths divided by the number of patients × 100 by ISS range). Case fatality was higher in severe trauma category.

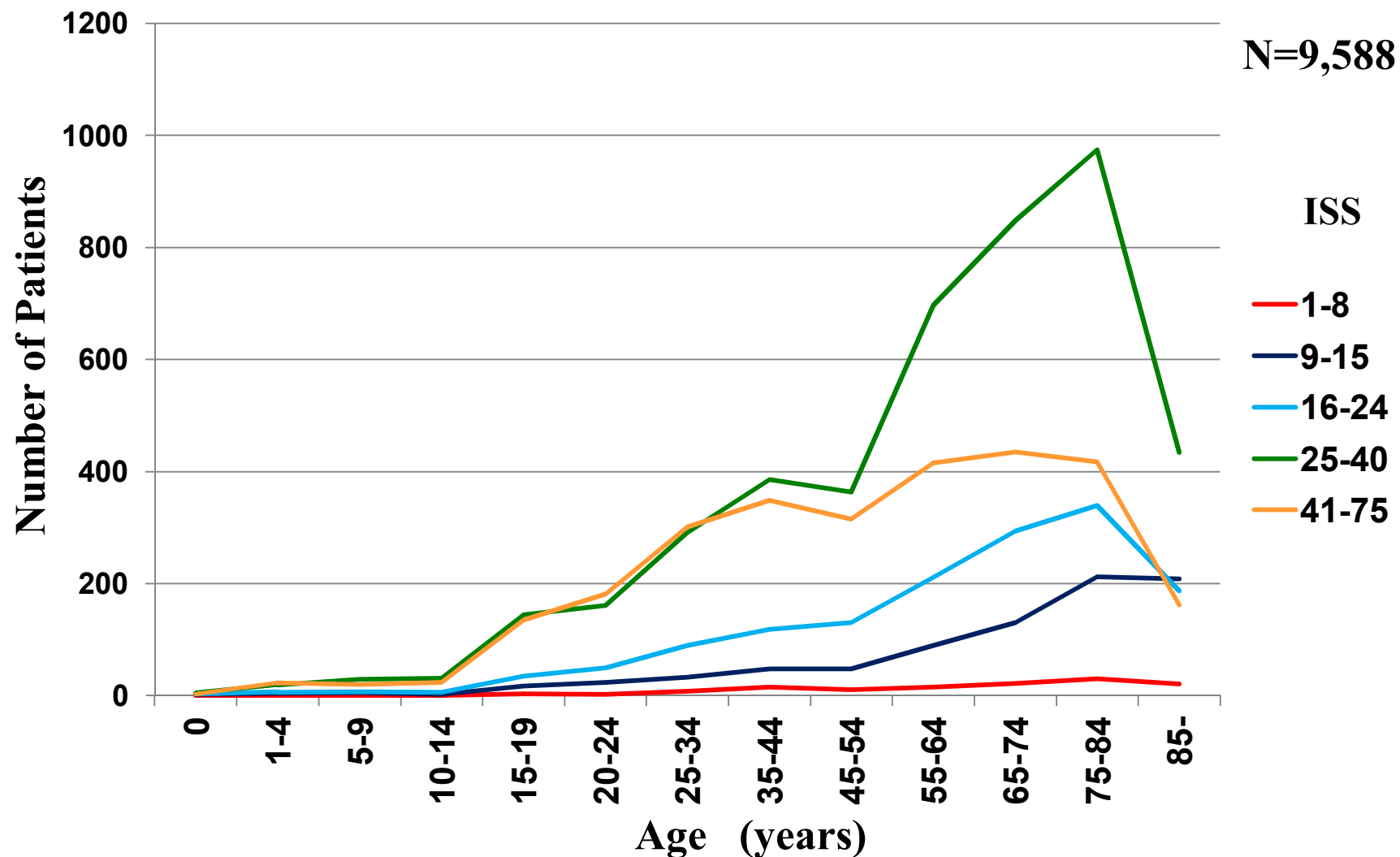


Figure 17 Deaths by ISS and Age

The peak was seen at elderly ages in ISS 16-24, and the category ISS 25-40 and ISS 41-75 has two peaks at young and elderly ages.

Japan Trauma Data Bank Report 2008-2012

Age ISS	0	1-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85-	Unknown	Total
1-8	0	0	0	0	3	2	8	15	11	15	22	30	21	0	127
9-15	2	4	5	2	17	24	33	48	48	90	130	212	208	1	824
16-24	3	6	7	6	35	50	90	118	130	211	294	339	187	5	1481
25-40	5	19	29	31	144	161	291	386	363	697	848	974	434	9	4391
41-75	3	23	20	24	135	181	301	349	315	415	435	417	162	24	2804
Unknown	1	2	3	8	24	48	67	81	77	80	107	78	32	15	623
Total	14	54	64	71	358	466	790	997	944	1508	1836	2050	1044	54	10250

Table 17 Deaths by ISS and Age

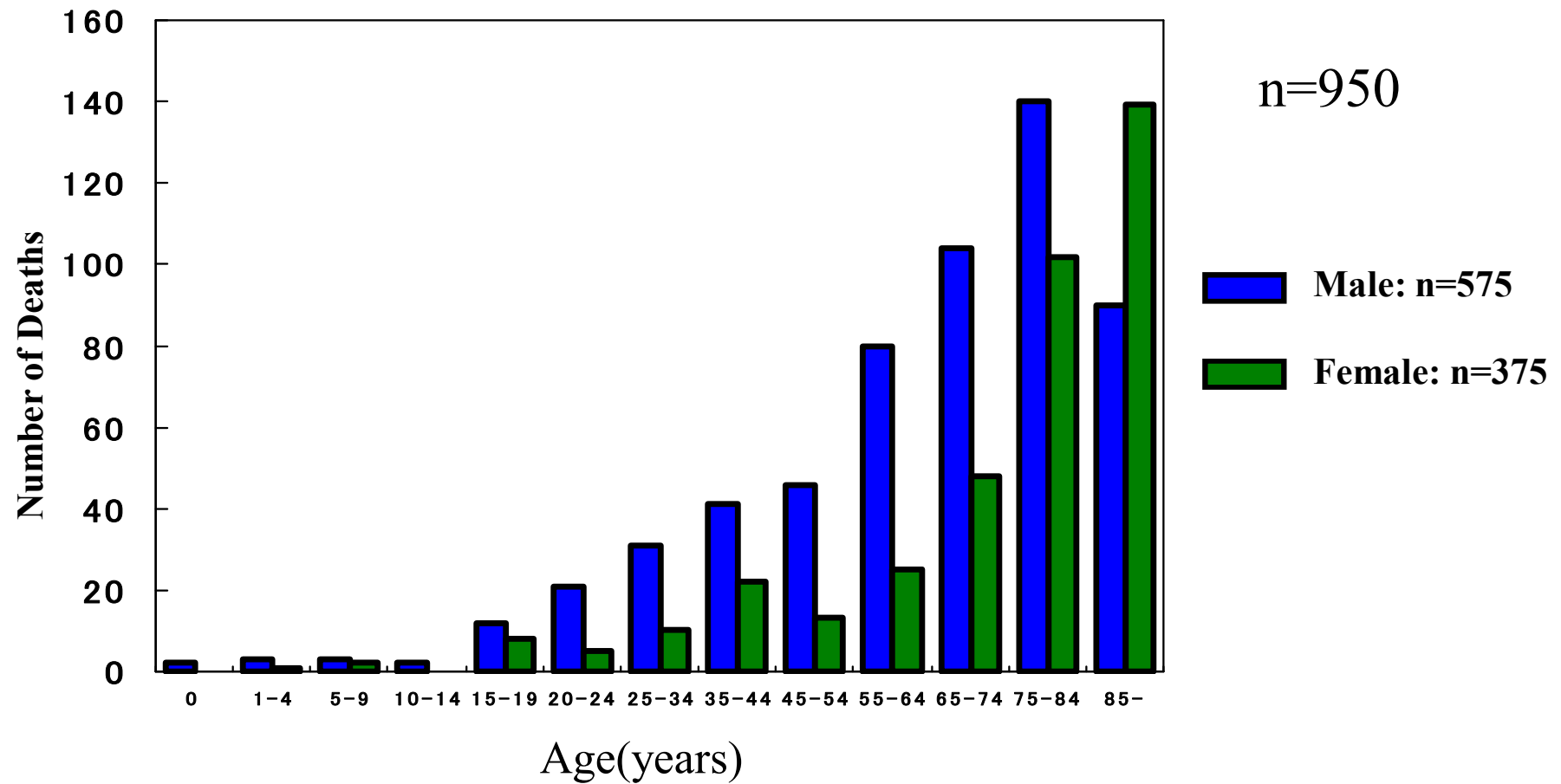


Figure18 Deaths by Age and Gender (ISS<=15)

Deaths for patients with ISS<=15 for males and females at each age category.

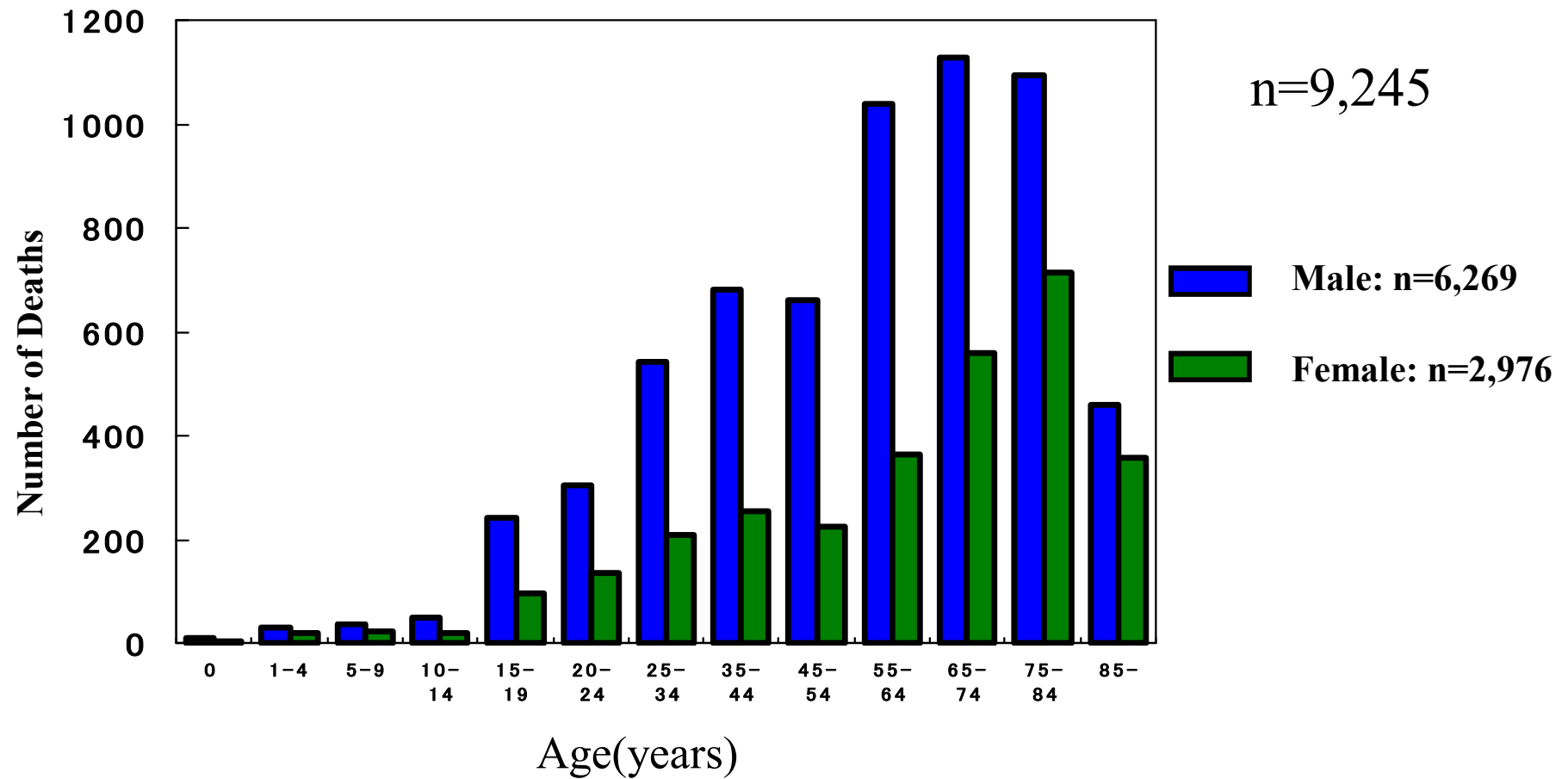


Figure19 Deaths by Age and Gender (ISS>15)

Deaths for patients with ISS>15 for males and females at each age category.

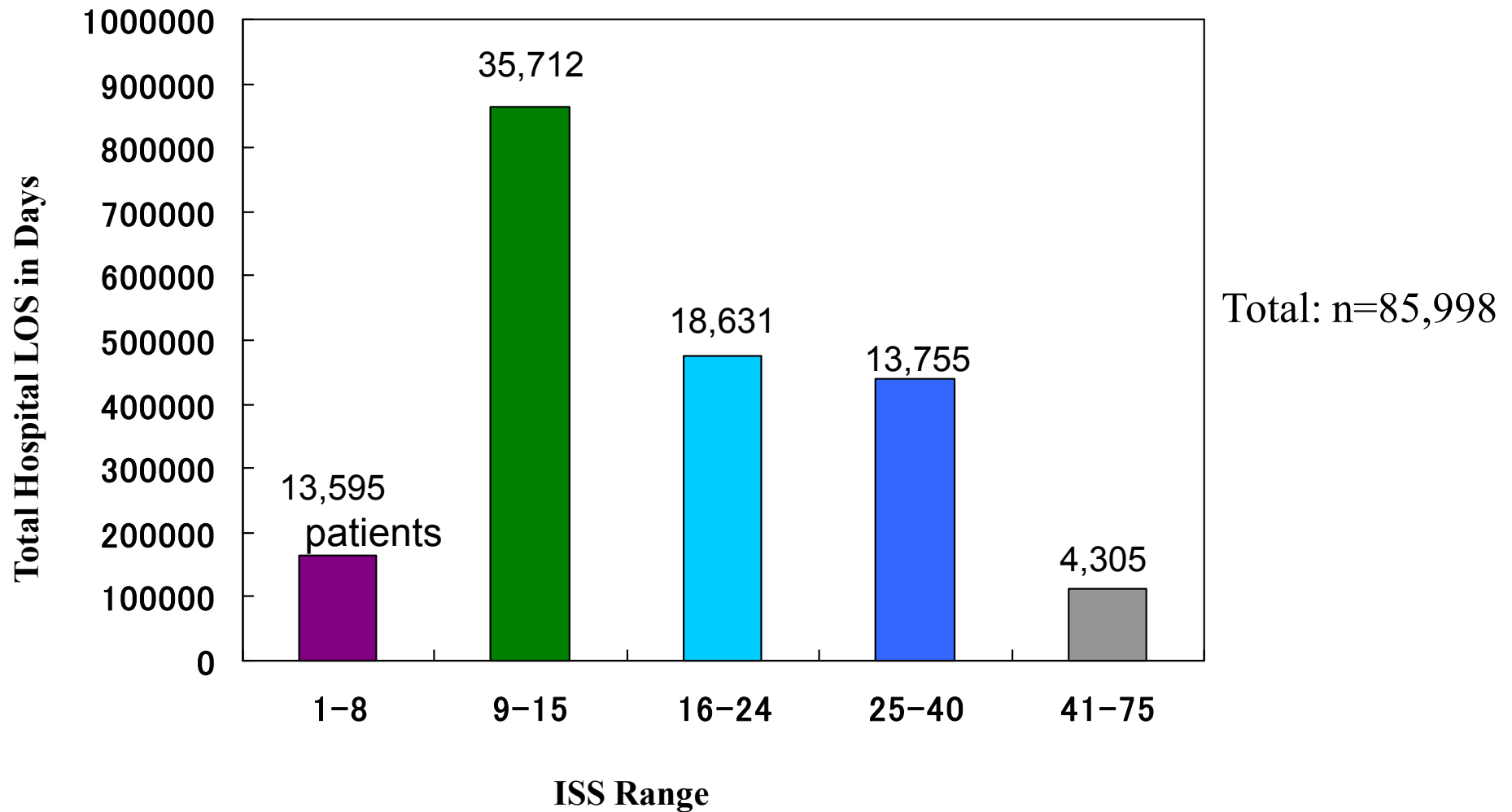


Figure 20A Total Hospital LOS and Injury Severity Score (ISS)
Proportional distribution of total hospital length of stay for patients, grouped by ISS range.

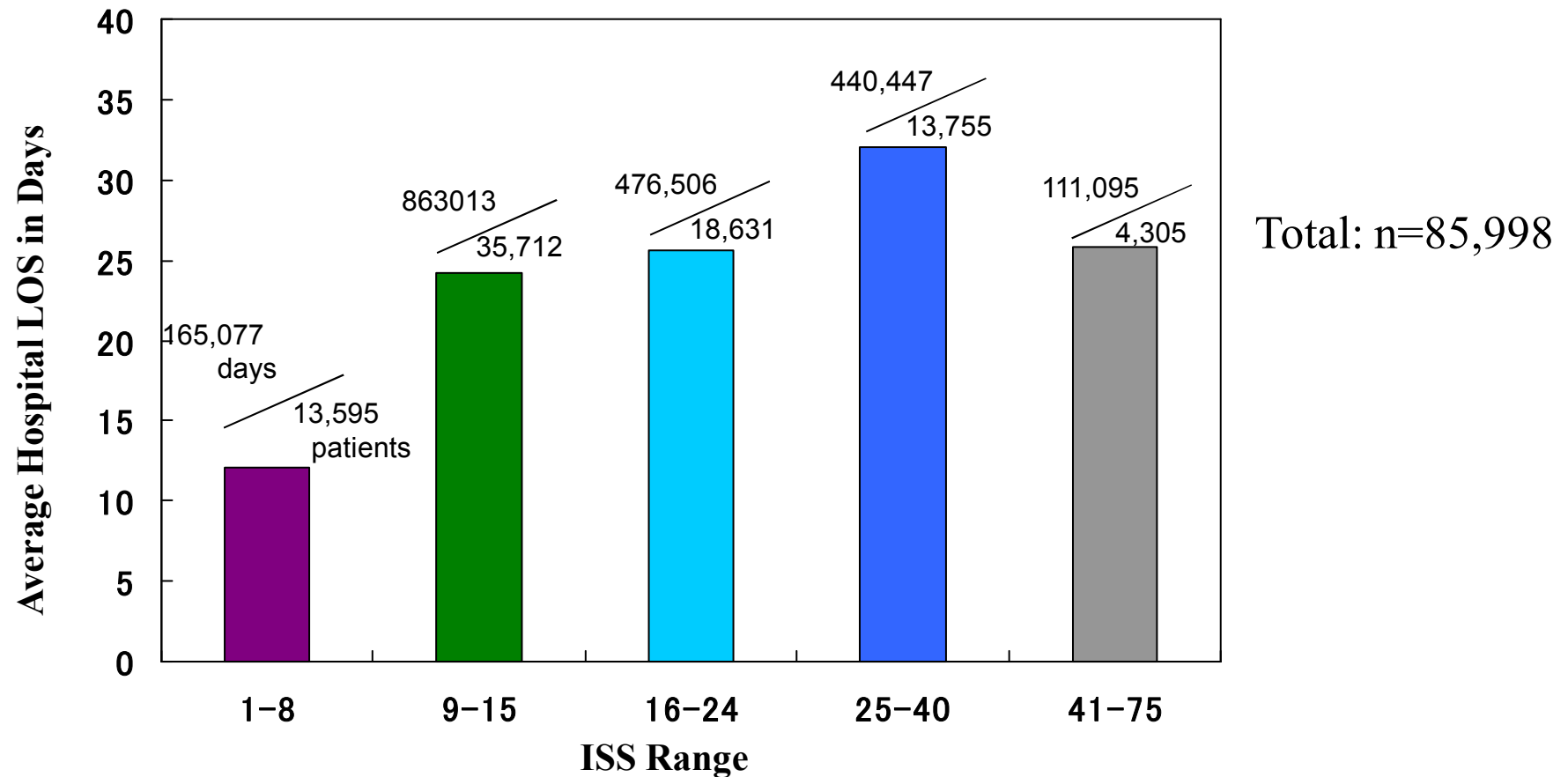


Figure 20B Average Hospital LOS and Injury Severity Score

Average hospital length of stay for each category of ISS range. (Average hospital length of stay = total hospital length of stay for each ISS range divided by the total number of patients).

Japan Trauma Data Bank Report 2008-2012

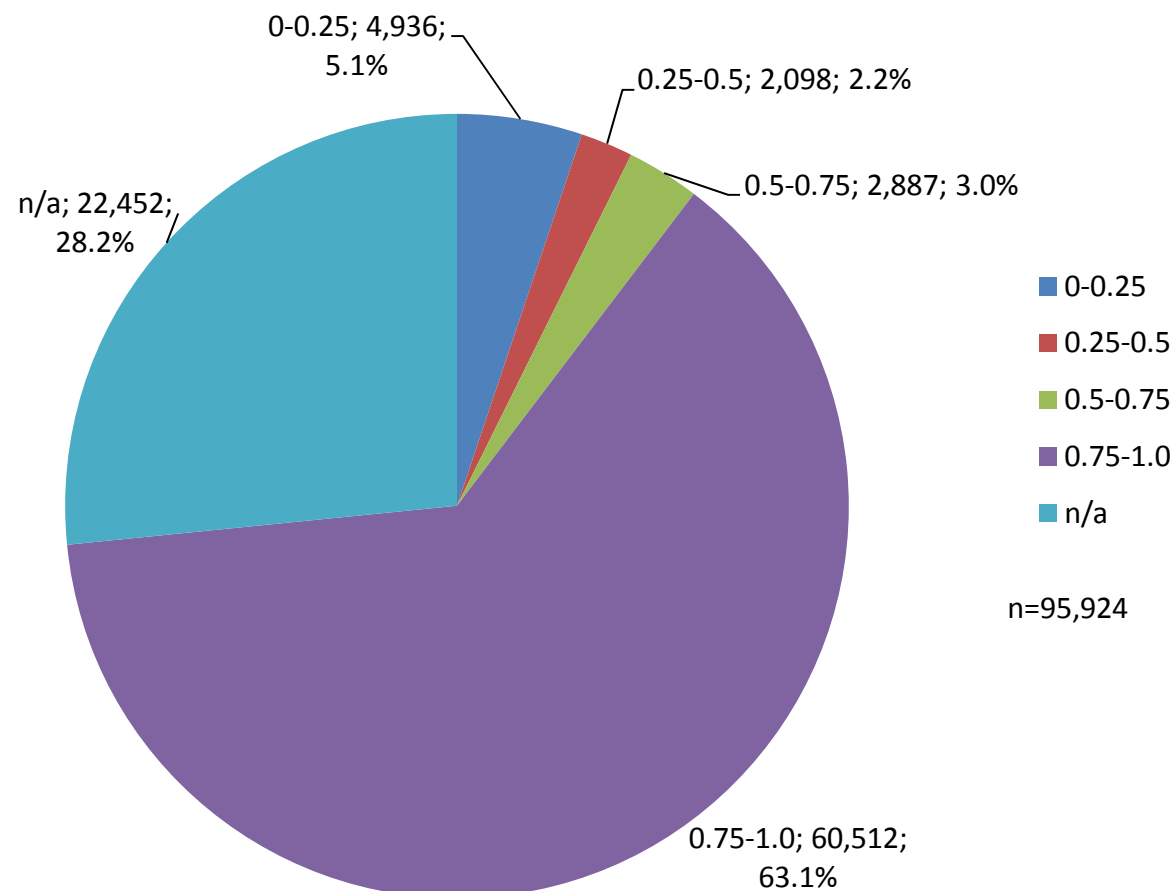


Figure 21 Patients by Probability of Survival (Ps)
Proportional distribution of patients, grouped by each category of Ps. The Ps category(0.75-1.0) accounted for 63.1% of all cases. Twenty-six precents of cases had at least one missing variable required to calculate Ps.
n/a: not assessed due to missing data.

Japan Trauma Data Bank Report 2008-2012

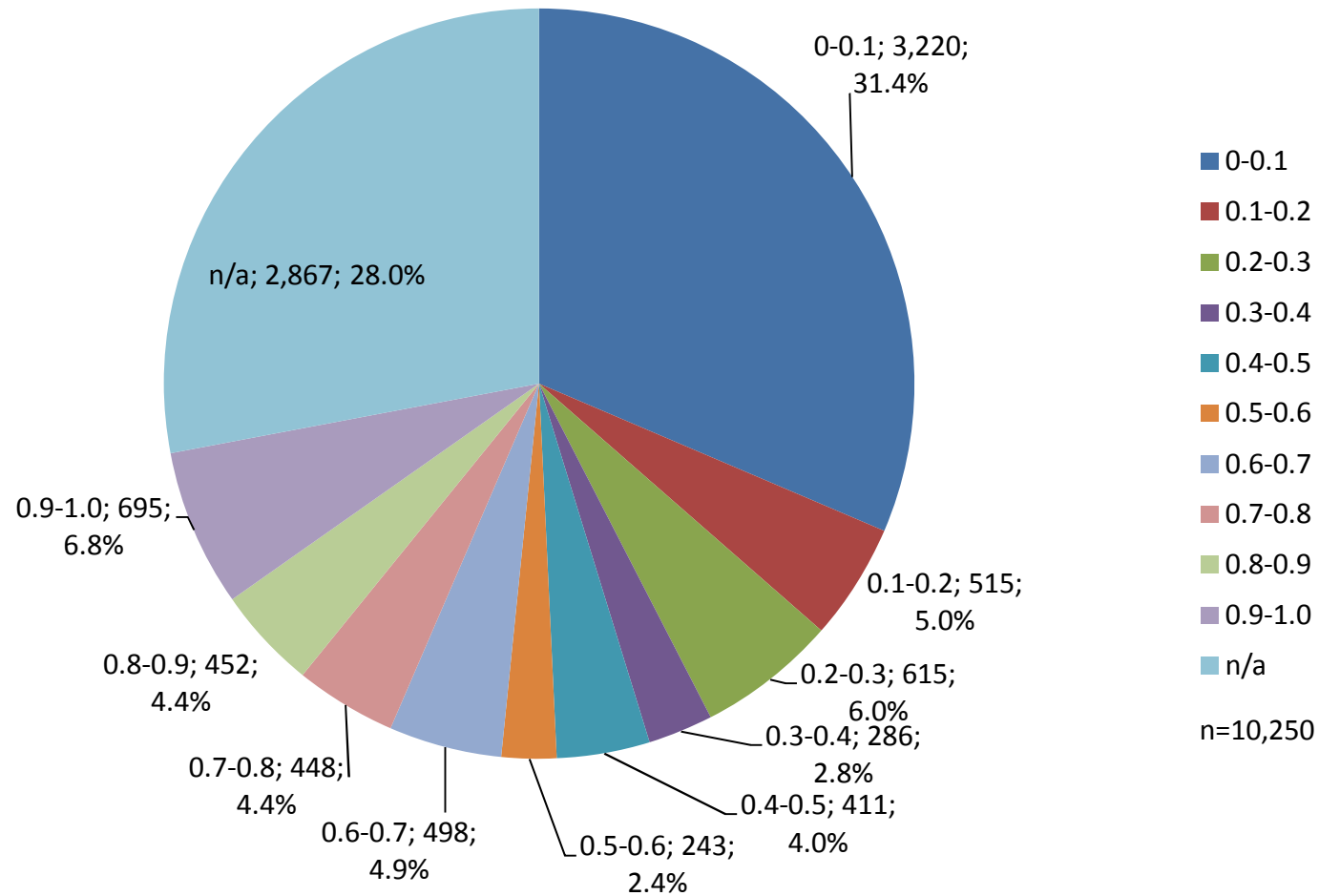


Figure 22A Deaths by Probability of survival (Ps)
Proportional distribution of deaths, grouped by each category of Ps.
The lowest Ps category (0-0.1) accounted for 28.0% of all deaths.
n/a: not assessed due to missing values.

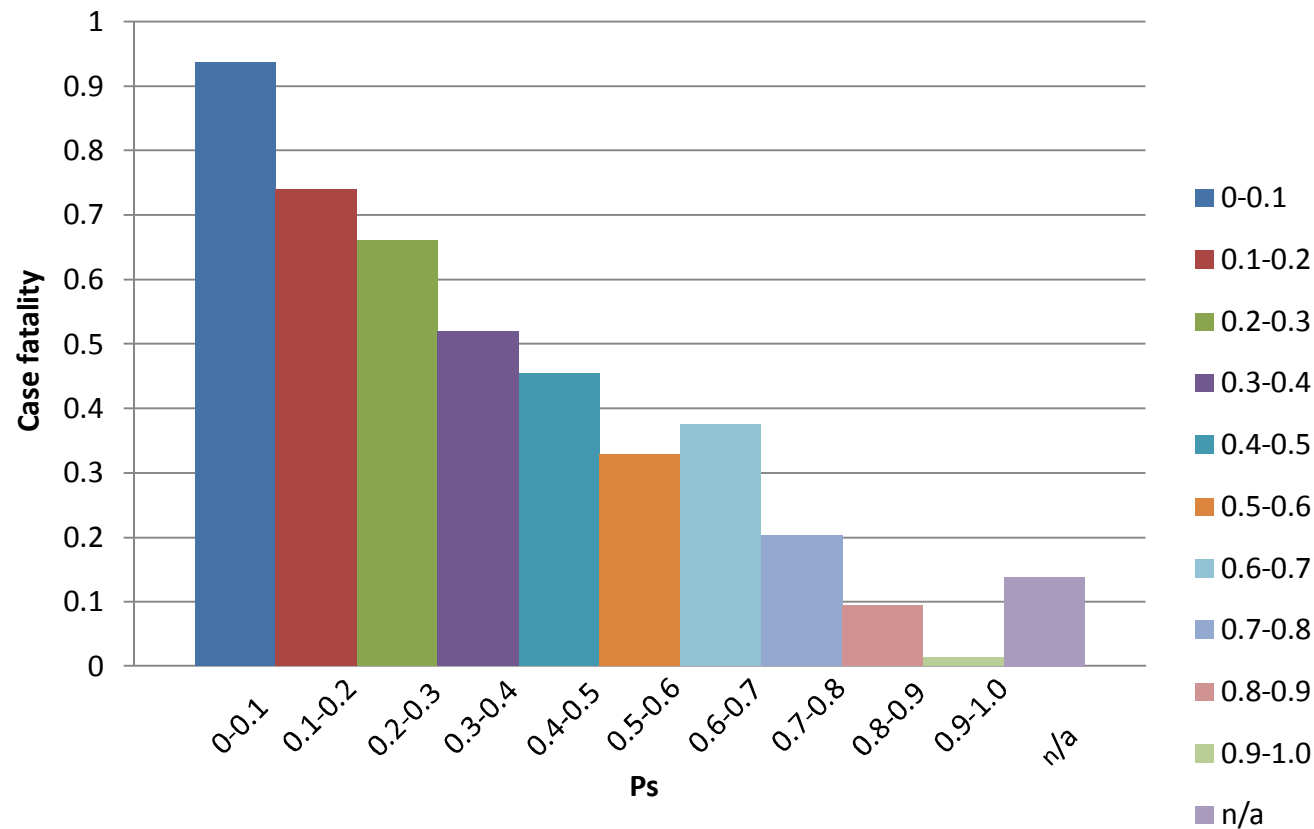


Figure 22B Case Fatality by Probability of Survival (Ps)

n=85,585

Case fatality for each Ps category (Case fatality = the number of deaths divided by the number of patients x 100 for each Ps category). The lowest Ps category (0-0.1) and the highest Ps category (0.9-1.0) had the highest fatality 93.6% and the lowest fatality 1.4%, respectively. The trend that the fatality would decrease as Ps increased was observed. Cases without outcome were excluded from this analysis.

n/a: not assessed due to missing values.

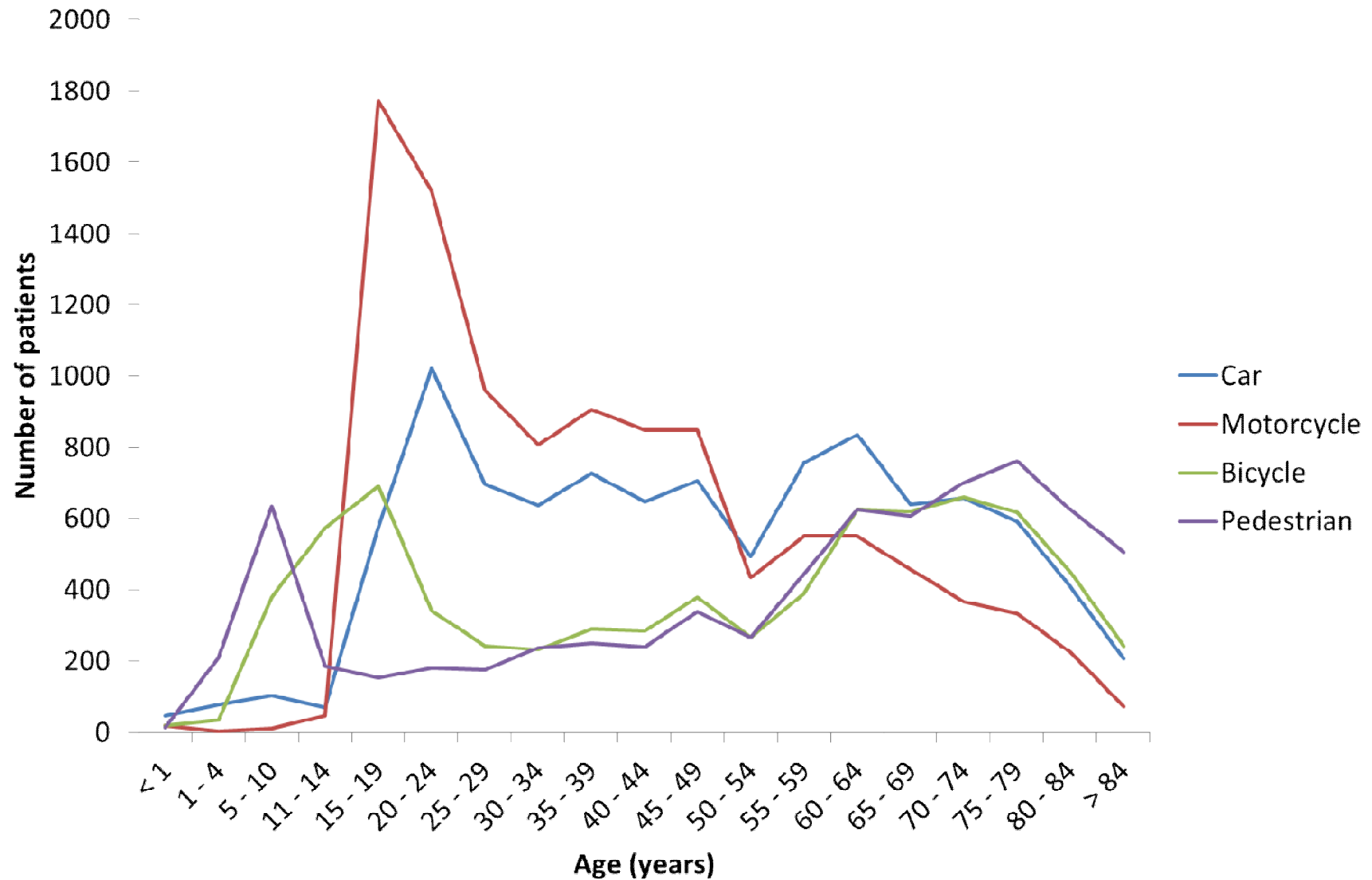


Figure 23 The number of patients in traffic accidents by types of vehicle and age (n = 35,129)

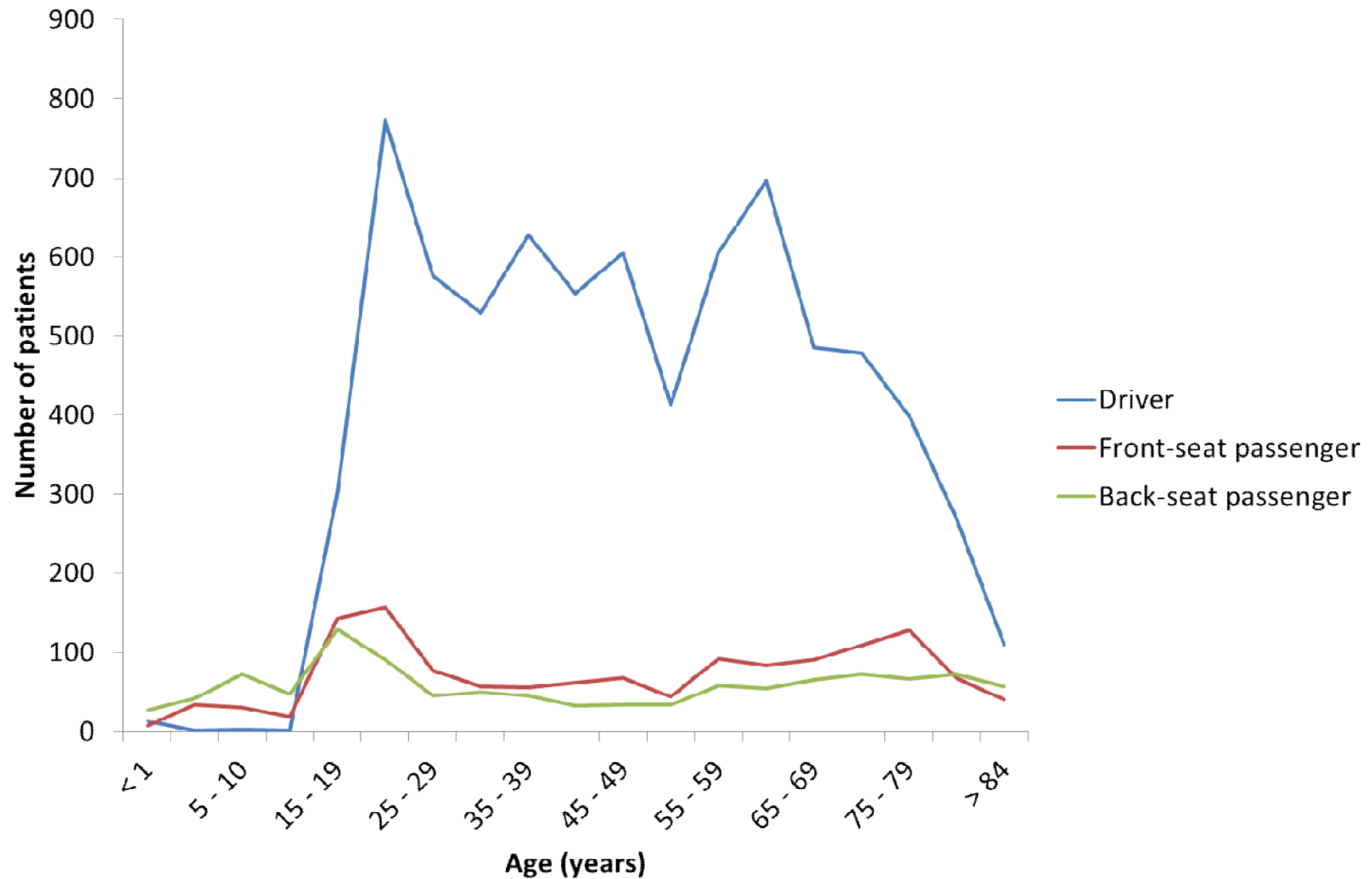


Figure 24 The number of patients in car accident by drivers and passengers and age (n = 9,906)

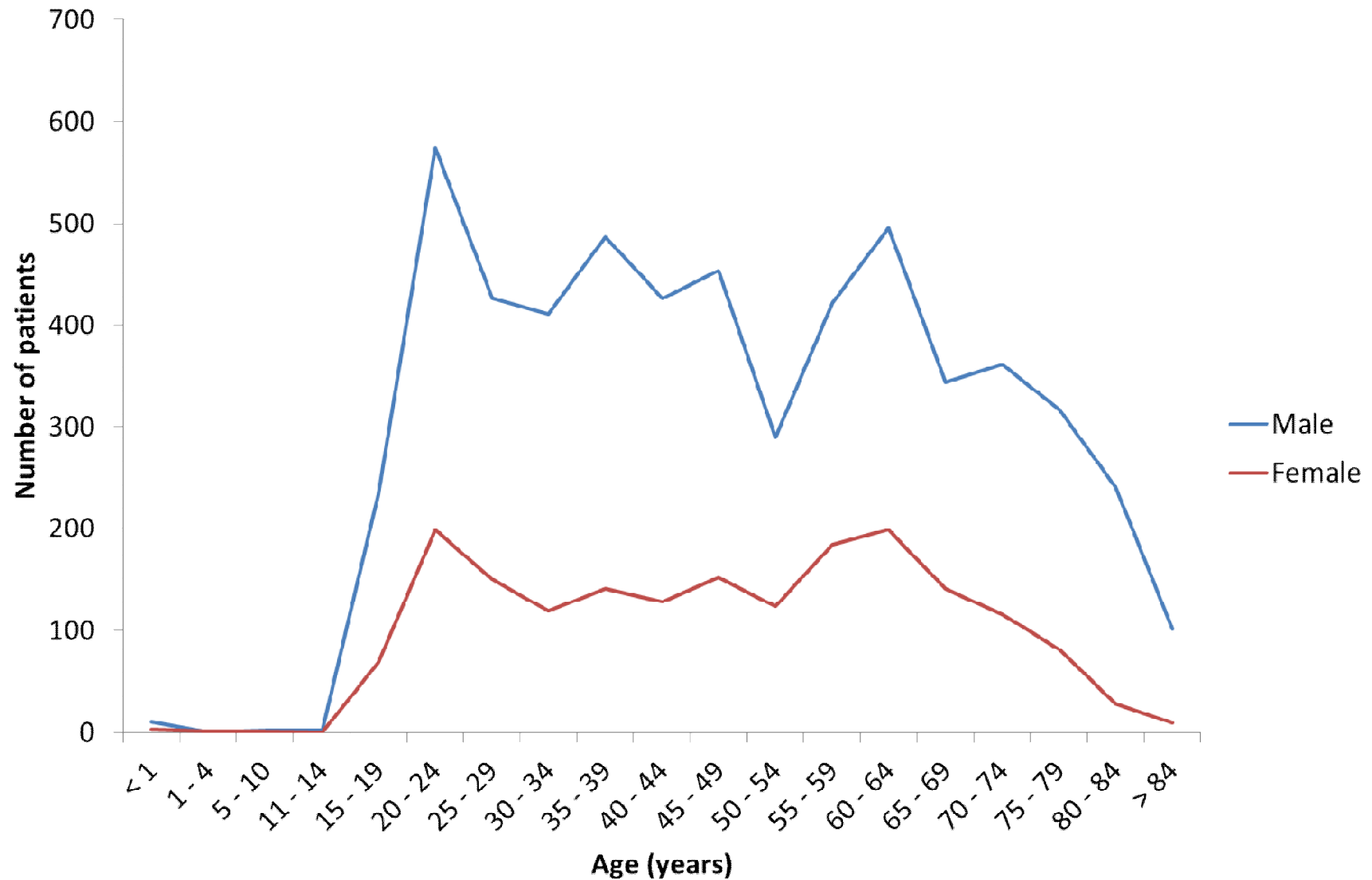


Figure 25 The number of patients in car accident (driver) by gender and age (n = 7,442)

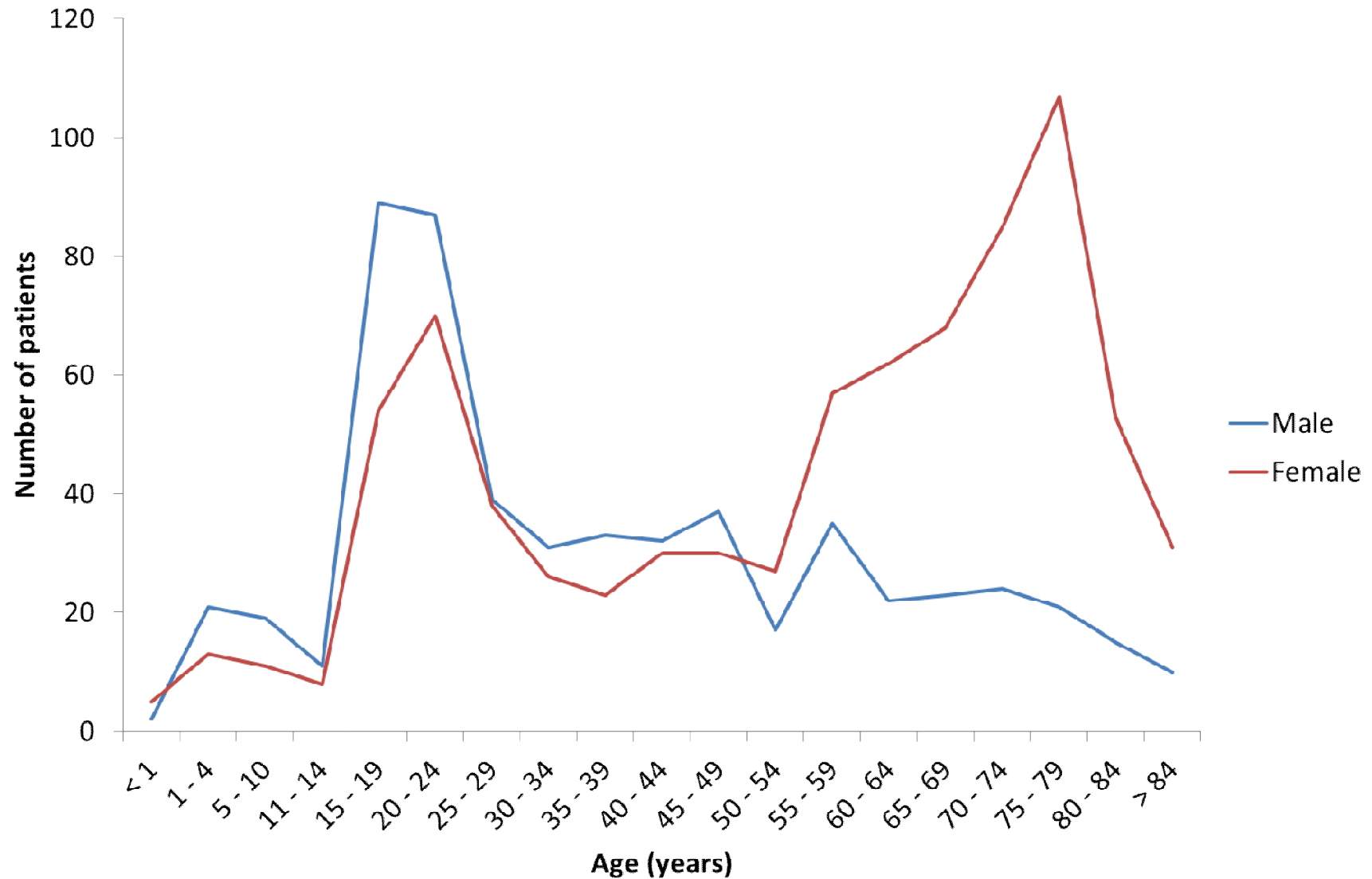


Figure 26 The number of patients in car accident (passenger) by gender and age (n = 1,366)

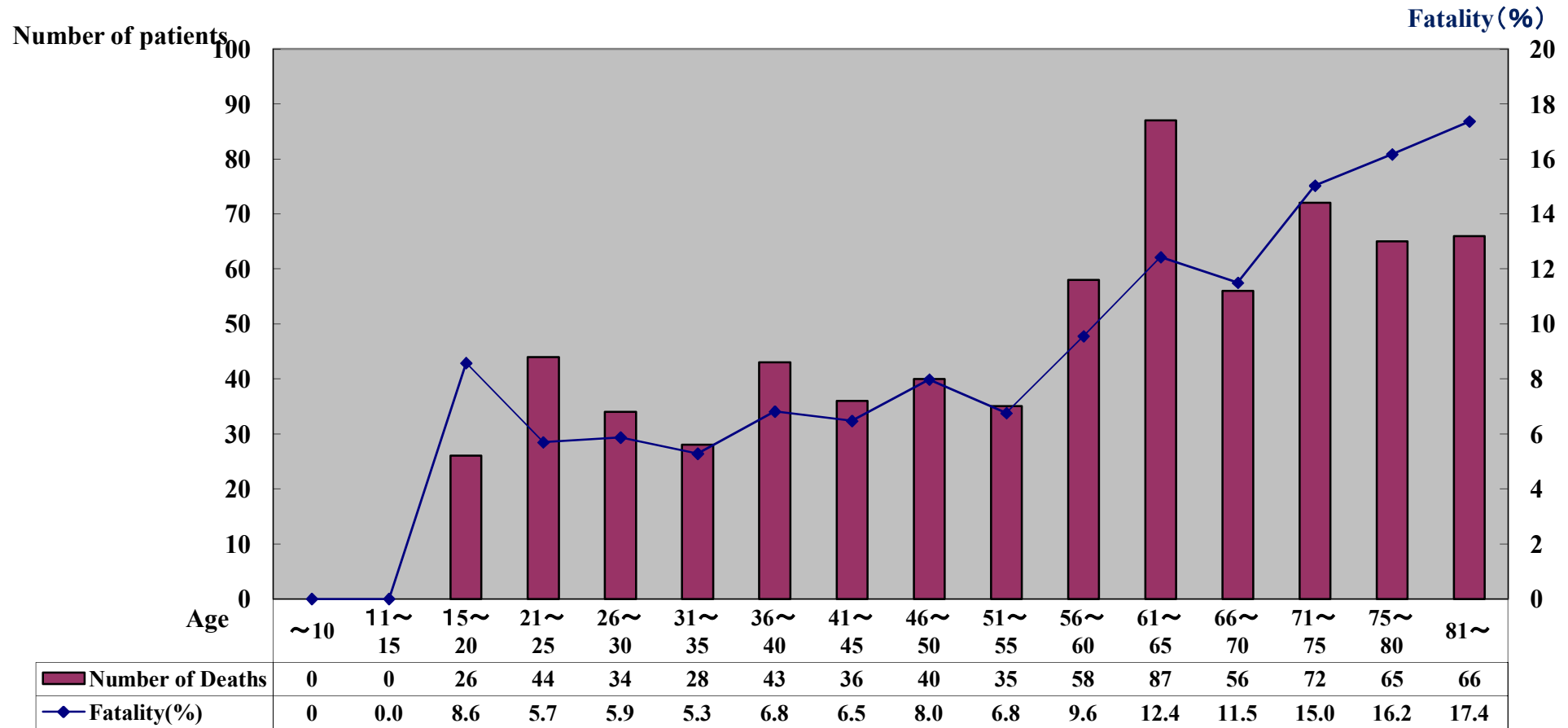


Figure 27 Number of Deaths and Fatalities of Motor Vehicular Drivers by Age

Japan Trauma Data Bank Report 2008-2012

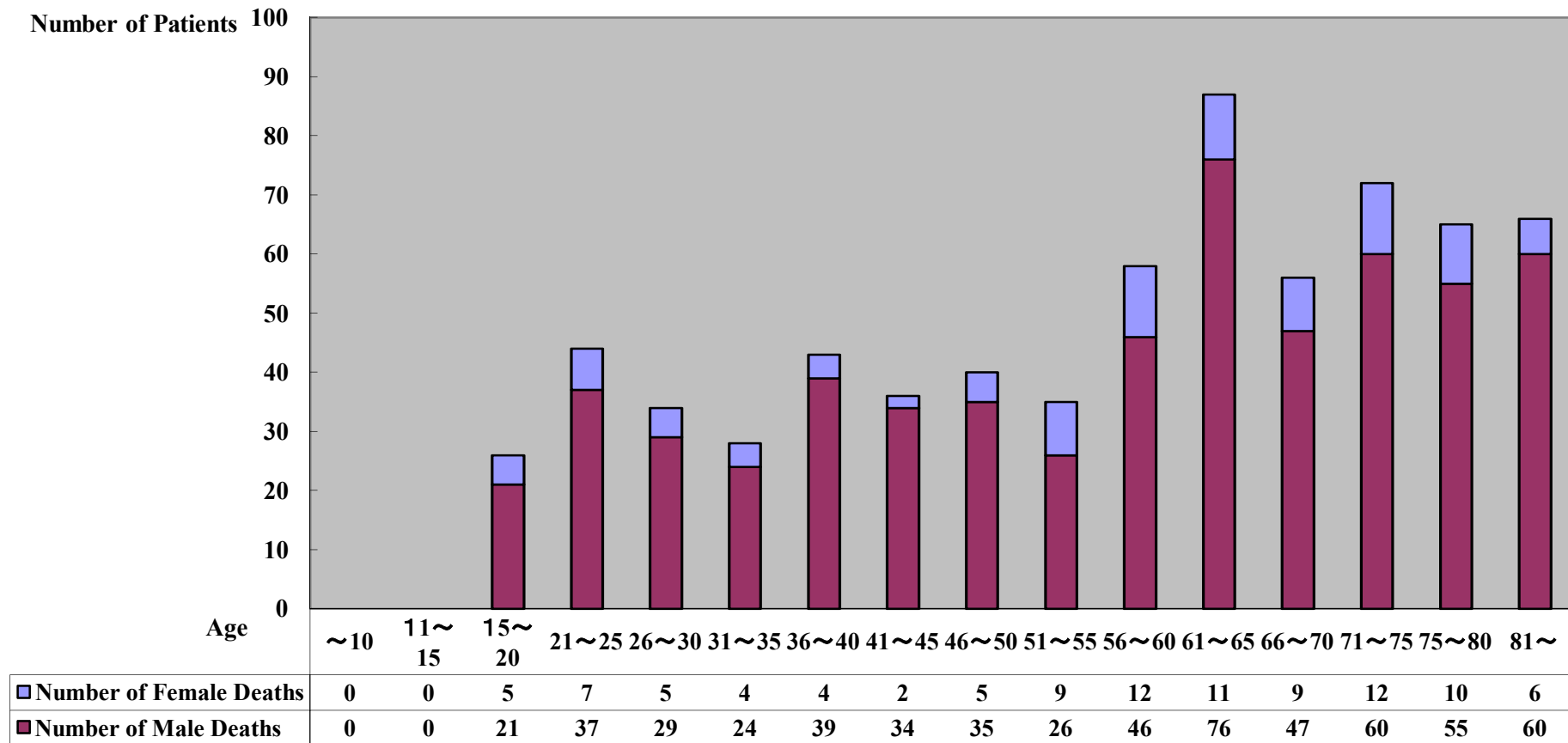


Figure 28 Number of Deaths of Motor Vehicular Drivers by Age and Genders

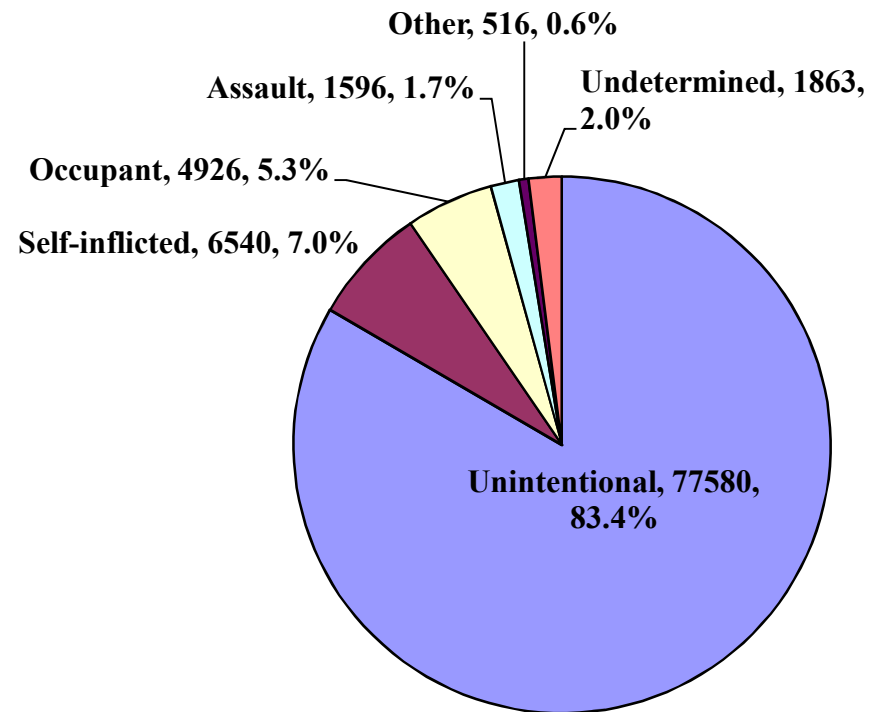


Figure 29 Proportional distribution of registered patients, groped by intent

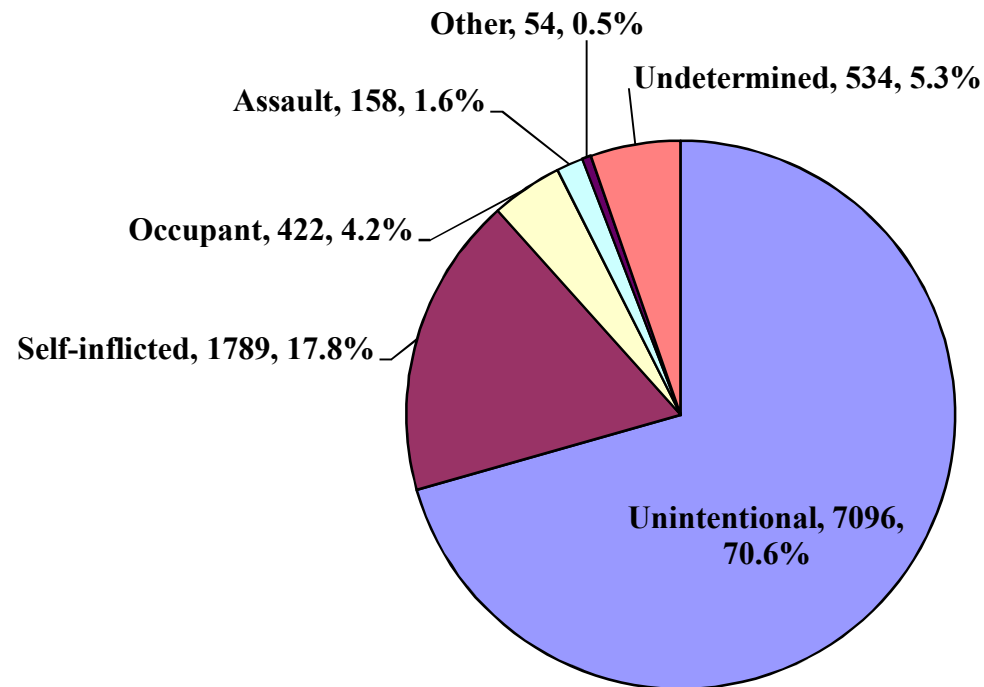


Figure 30 Proportional distribution of deaths, grouped by intent

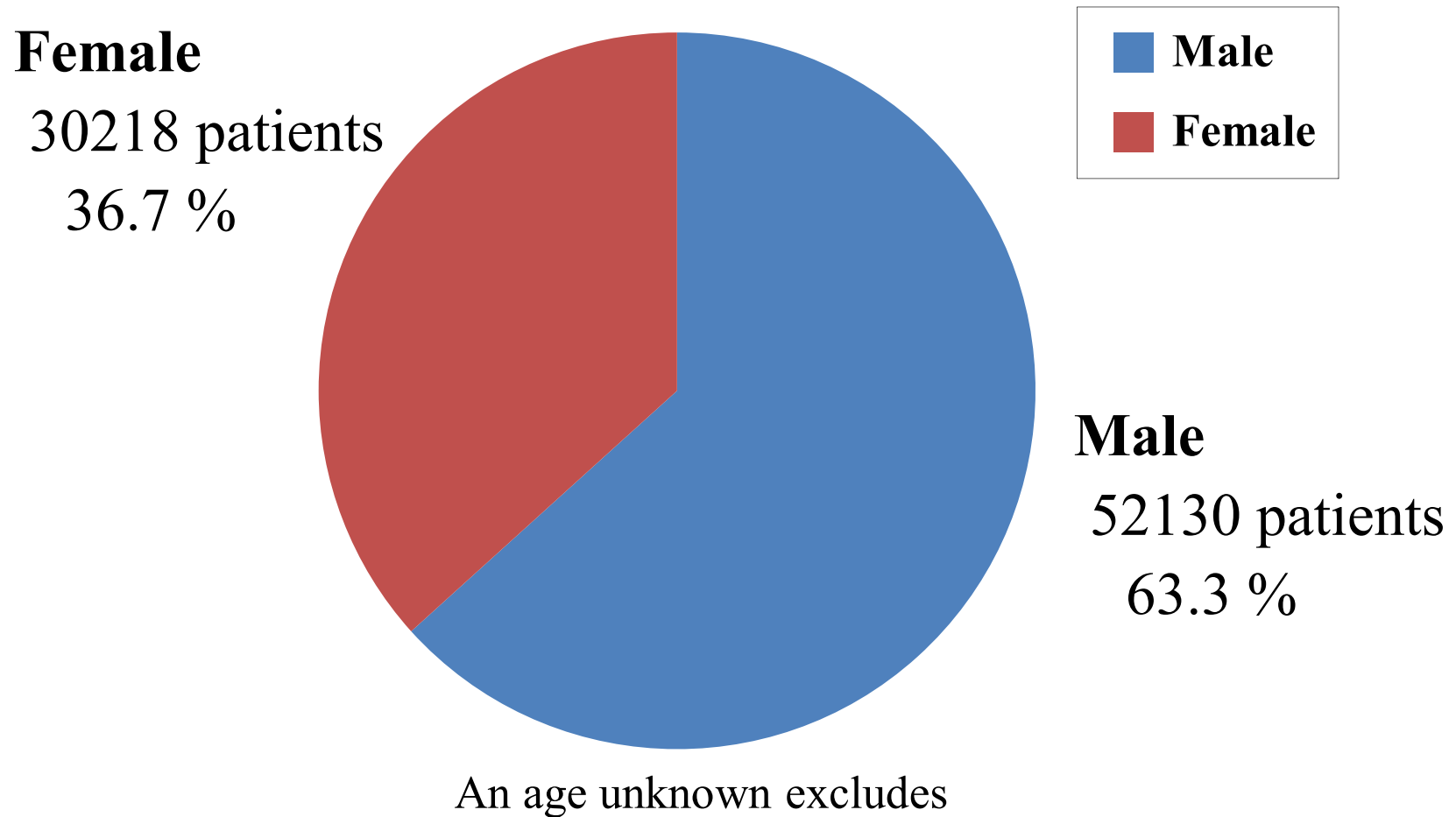


Figure 31 Gender proportion of Unintentional and Occupant

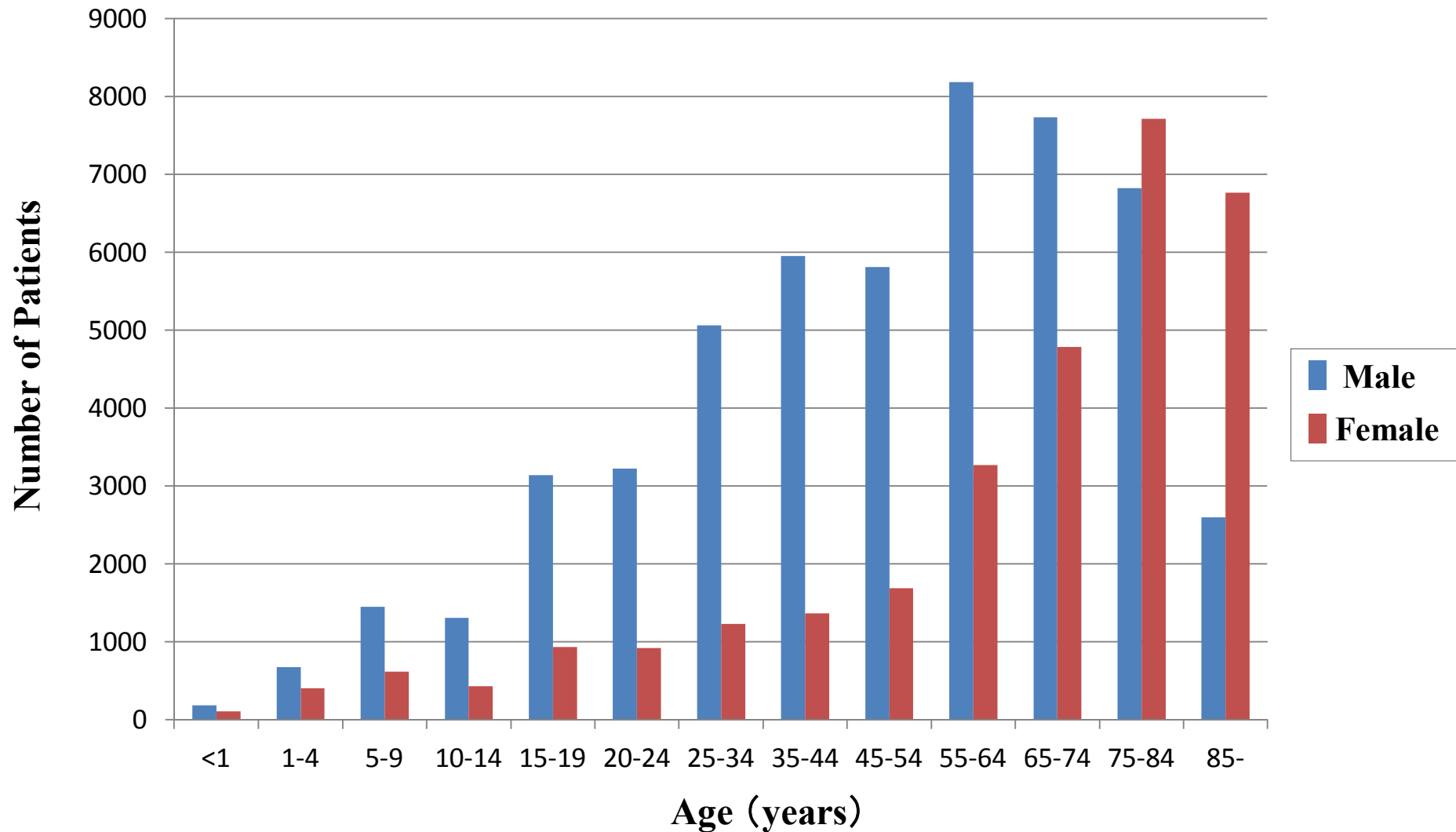


Figure 32 Unintentional and Occupant by Age and Gender

Age	Male	Female	total
< 1	184	105	289
1 - 4	674	403	1077
5 - 9	1446	617	2063
10 - 14	1307	427	1734
15 - 19	3138	932	4070
20 - 24	3225	920	4145
25 - 34	5060	1228	6288
35 - 44	5951	1368	7319
45 - 54	5811	1688	7499
55 - 64	8184	3268	11452
65 - 74	7732	4787	12519
75 - 84	6822	7710	14532
85 -	2592	6765	9361
	52130	30218	82348

Table 32 Unintentional and Occupant by Age and Gender

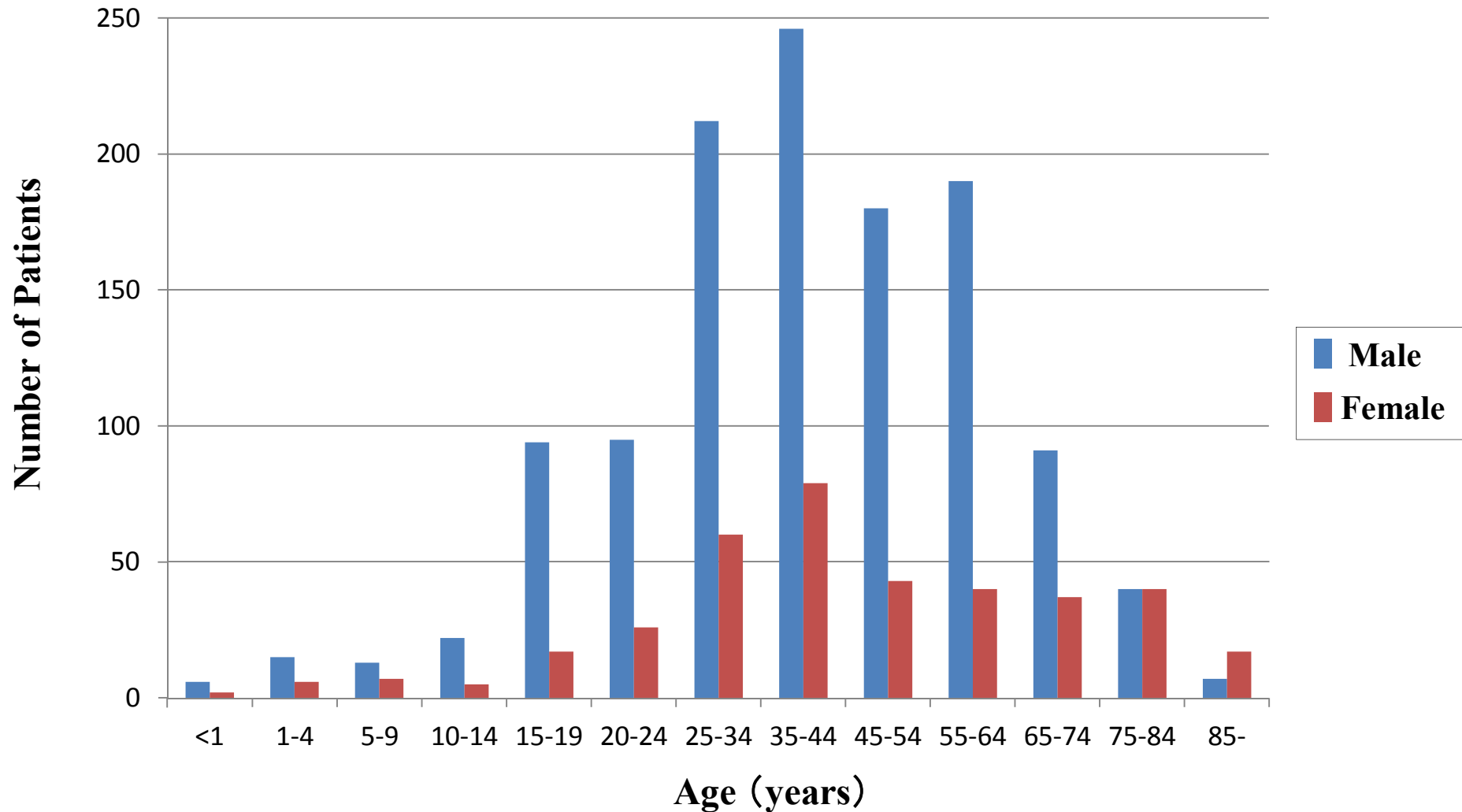


Figure 33 Assault by Age and Gender

Age	Male	Female	total
< 1	6	2	8
1 - 4	15	6	21
5 - 9	13	7	20
10 - 14	22	5	27
15 - 19	94	17	111
20 - 24	95	26	121
25 - 34	212	60	272
35 - 44	246	79	325
45 - 54	180	43	223
55 - 64	190	40	230
65 - 74	91	37	128
75 - 84	40	40	80
85 -	7	17	24
	1211	379	1590

Table 33 Assault by Age and Gender

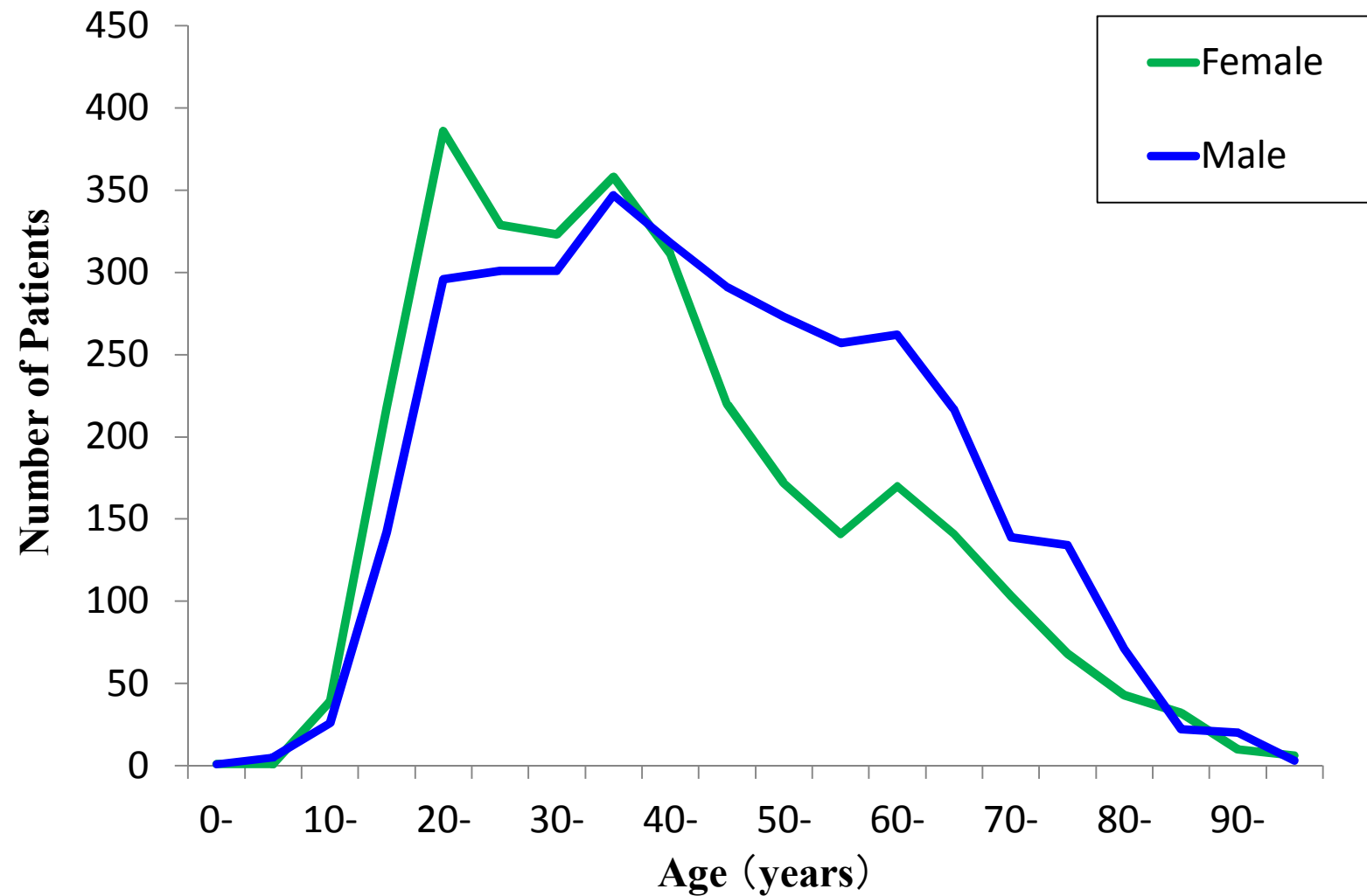


Figure 34 Self-inflicted by Age and Gender

Japan Trauma Data Bank Report 2008-2012

age	0-	5-	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	Unkno wn	total
female	1	1	39	218	386	329	323	358	311	220	172	141	170	141	103	68	43	32	10	6	19	3,091
male	1	5	26	142	296	301	301	347	318	291	273	257	262	217	139	134	71	22	20	3	23	3,449
total	2	6	65	360	682	630	624	705	629	511	445	398	432	358	242	202	114	54	30	9	42	6,540

Table 34 Self-inflicted by Age and Gender

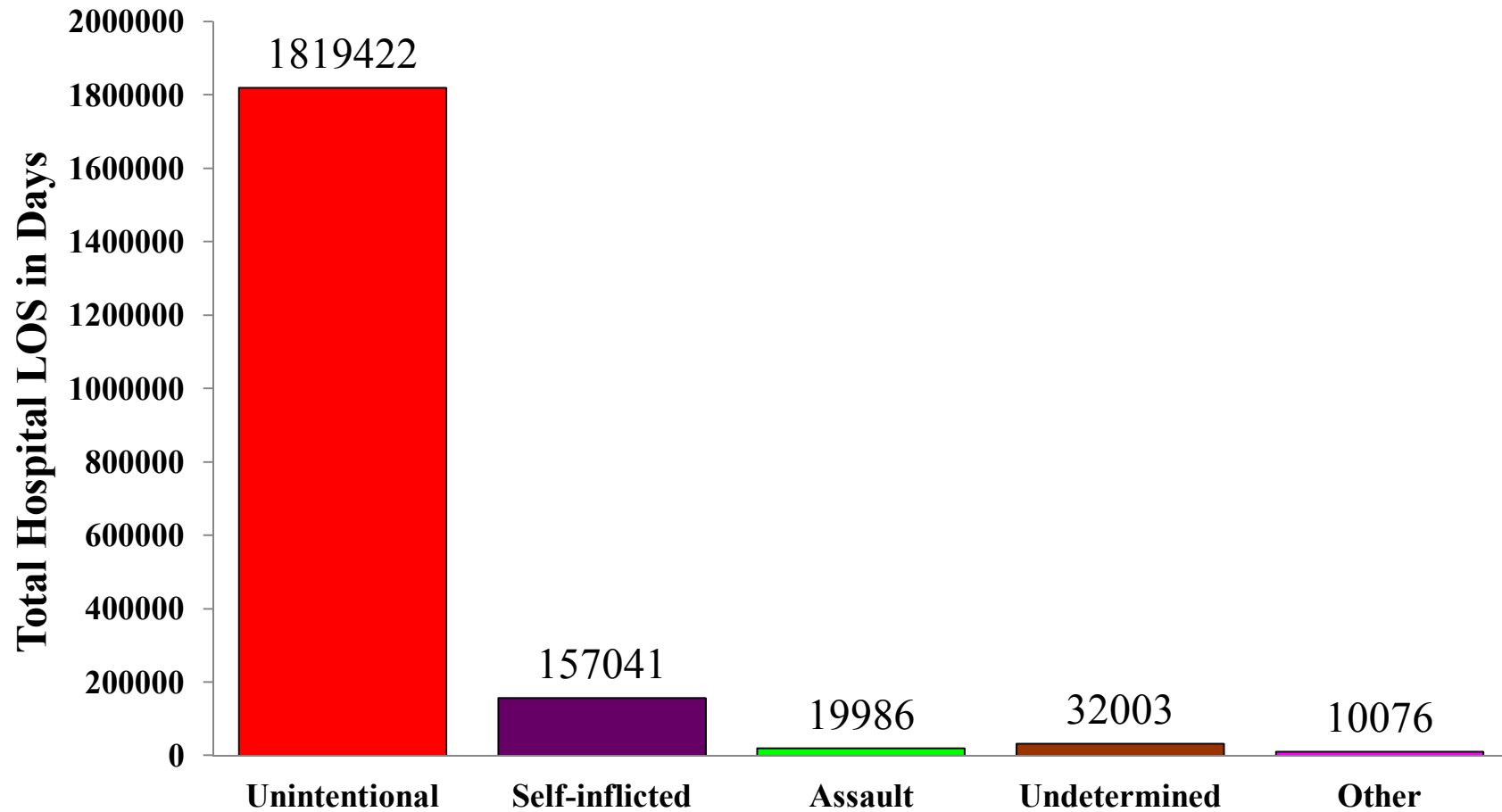


Figure 35A Total Hospital LOS by Intent
Industrial accident was included in the category of “Unintentional”.

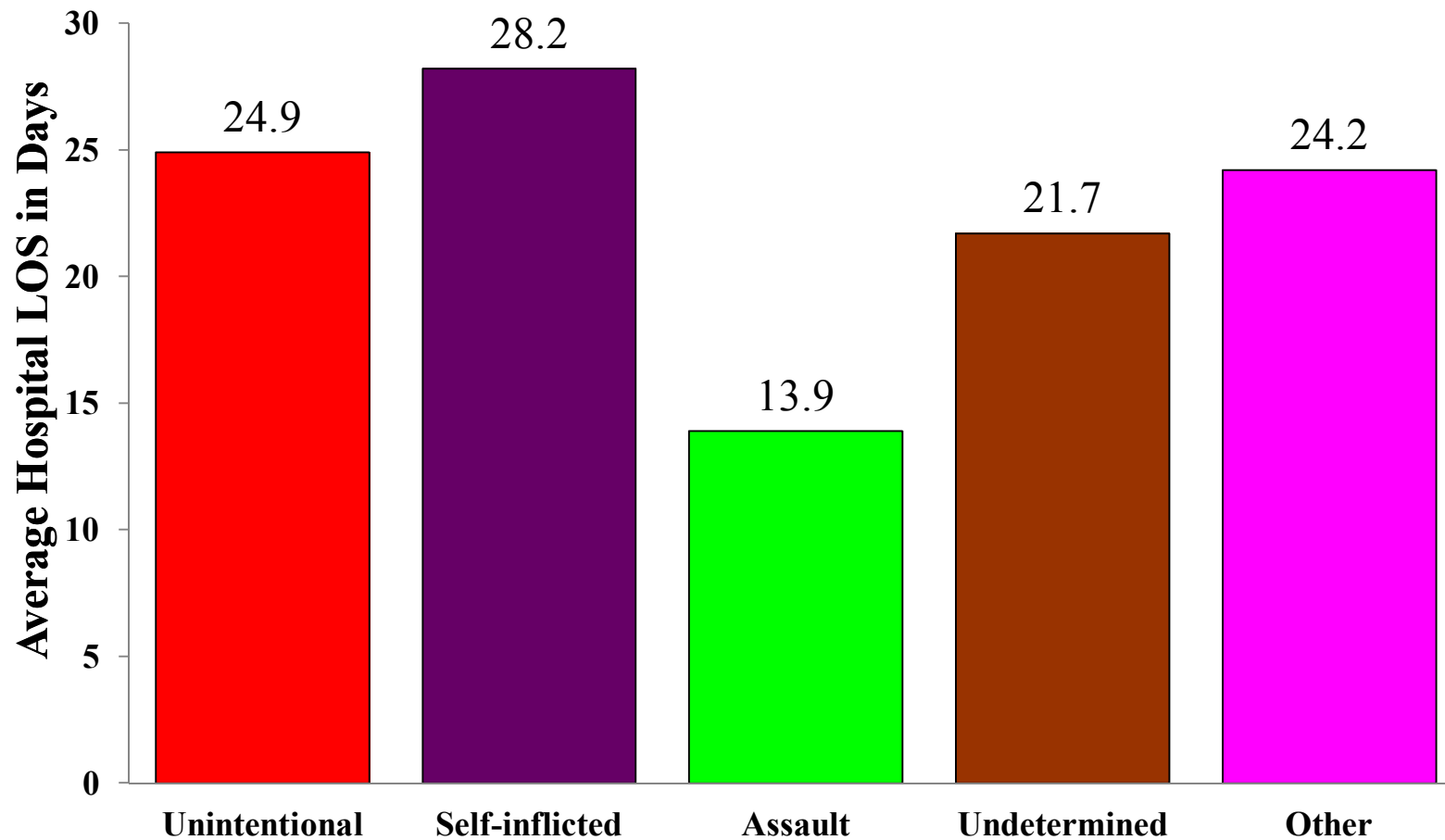


Figure 35B Average Hospital LOS by Intent

Average hospital length of stay in days = total hospital length of stay divided by the number of patients by intent.

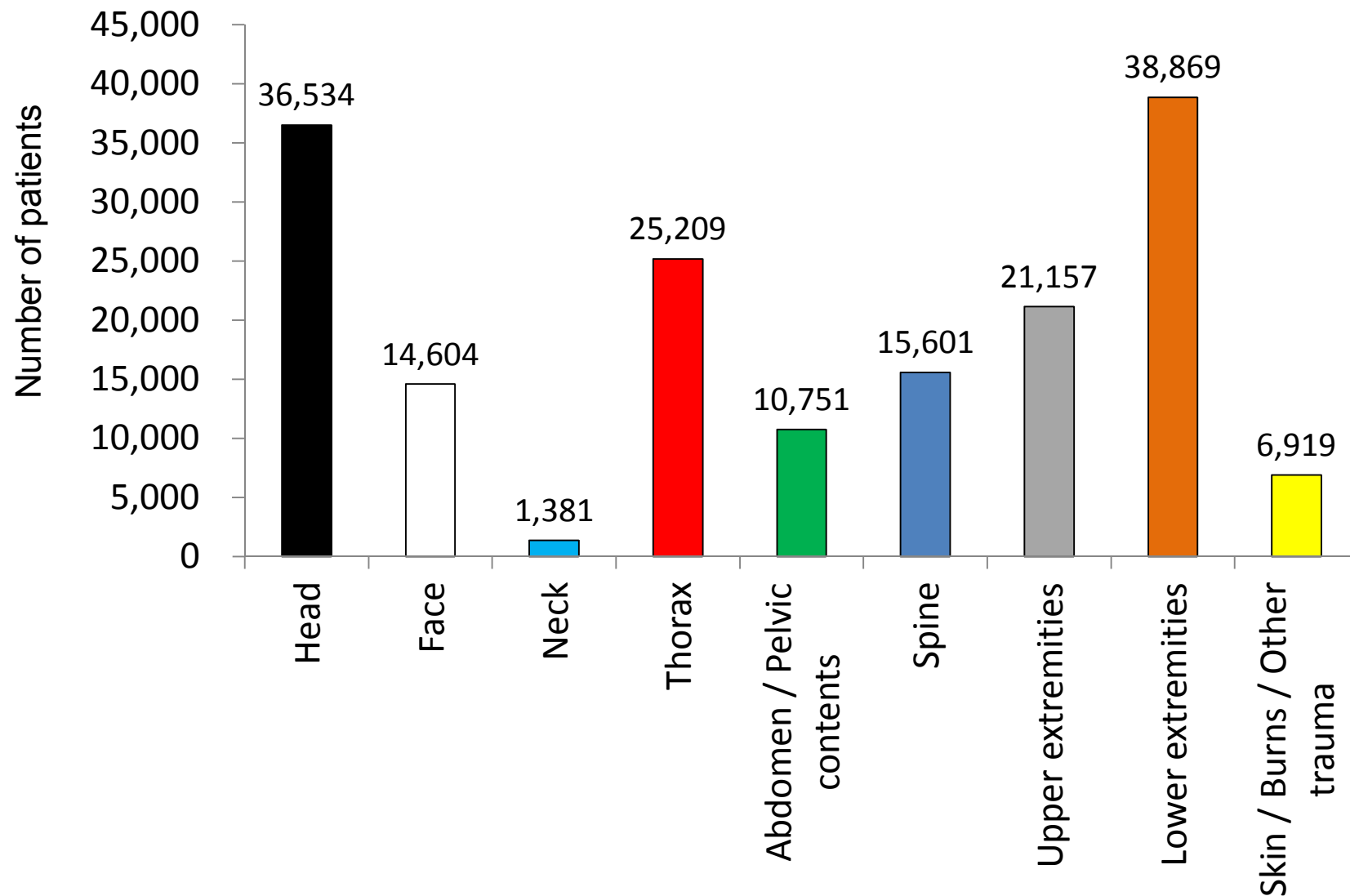


Figure 36 Number of Patients with Injured Body Parts based on AIS

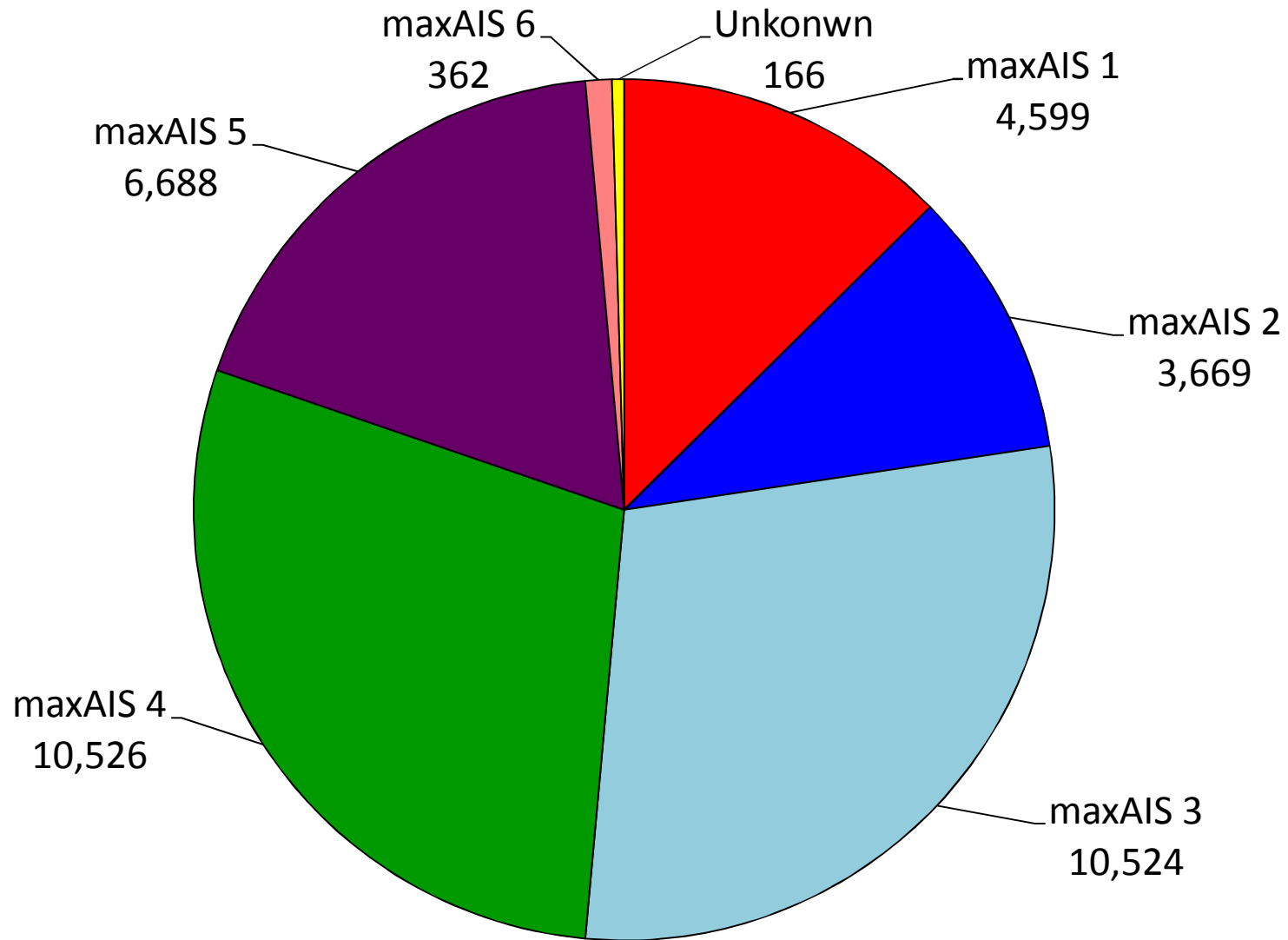


Figure 37A Head Injury and max AIS Score

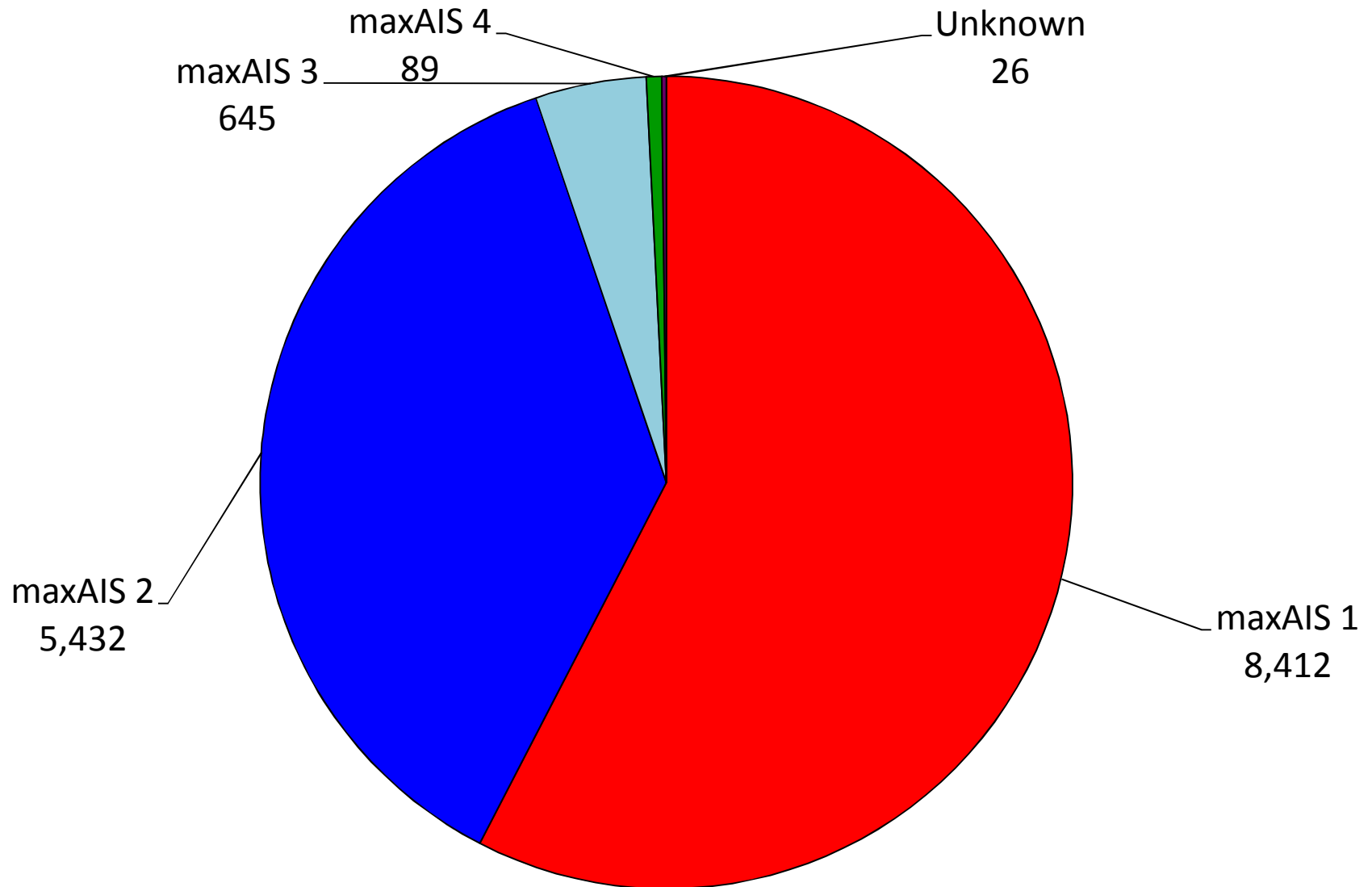


Figure 37B Facial Injury and max AIS Score

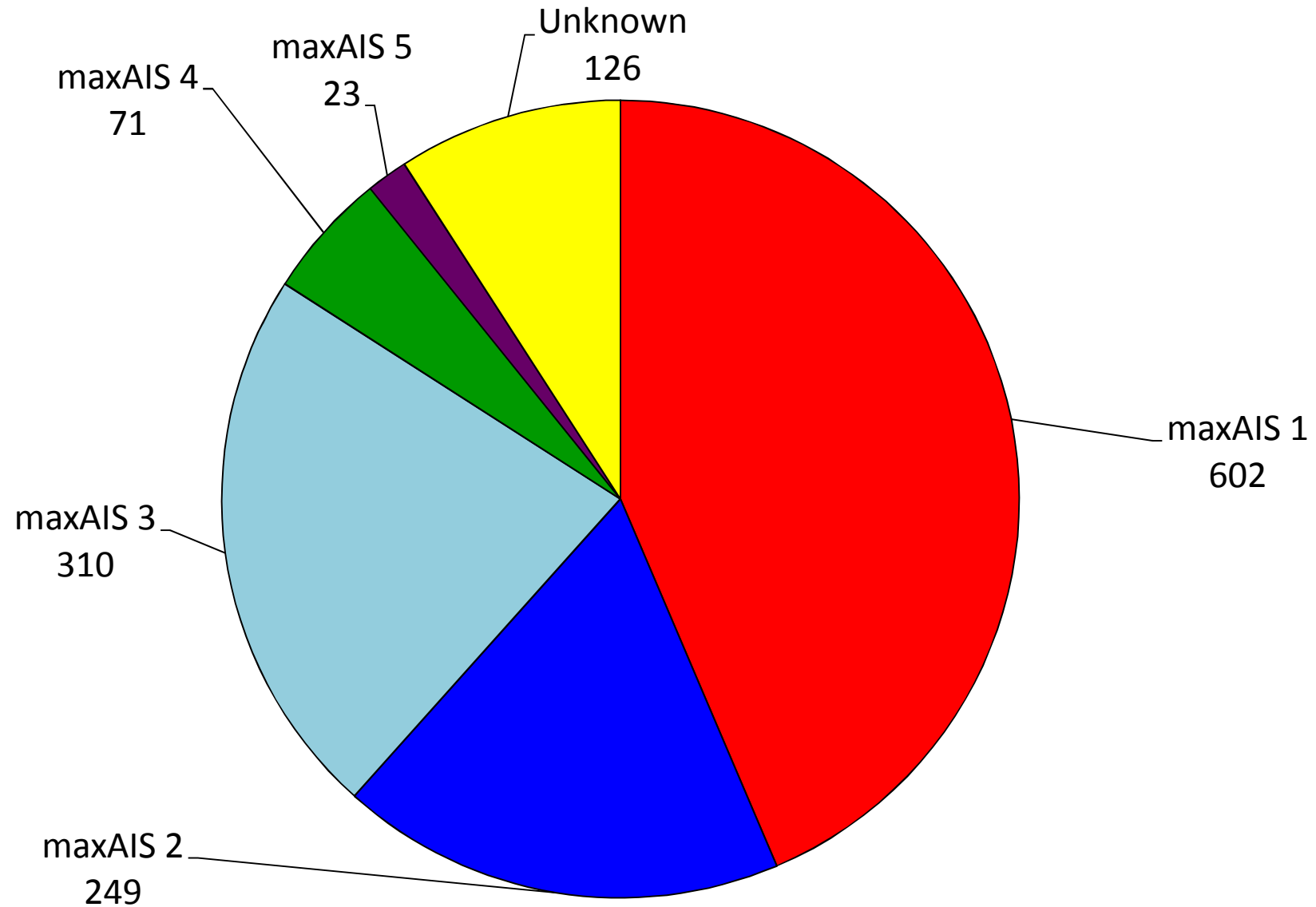


Figure 37C Neck Injury and max AIS Score

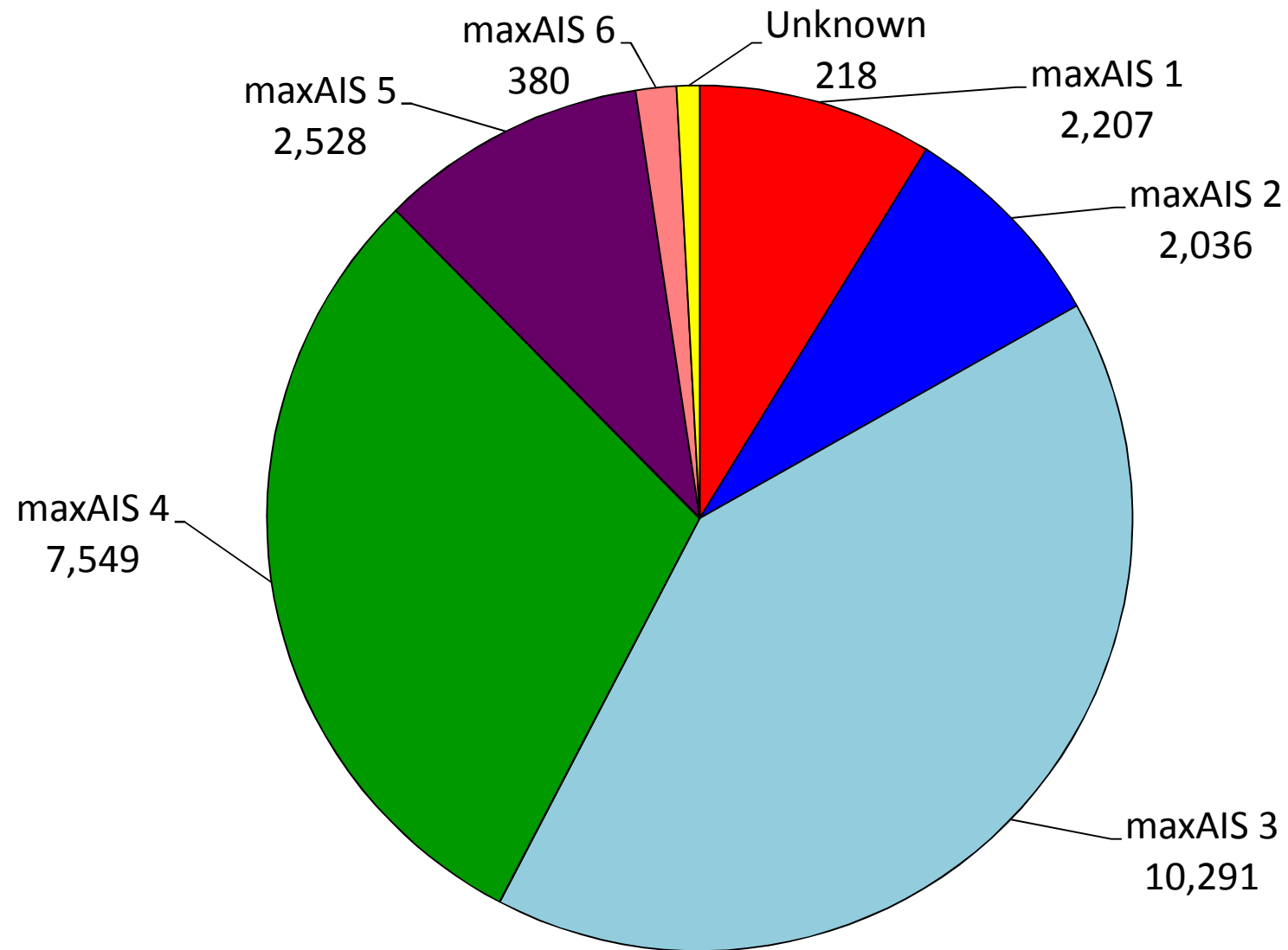


Figure 37D Thoracic Injury and max AIS Score

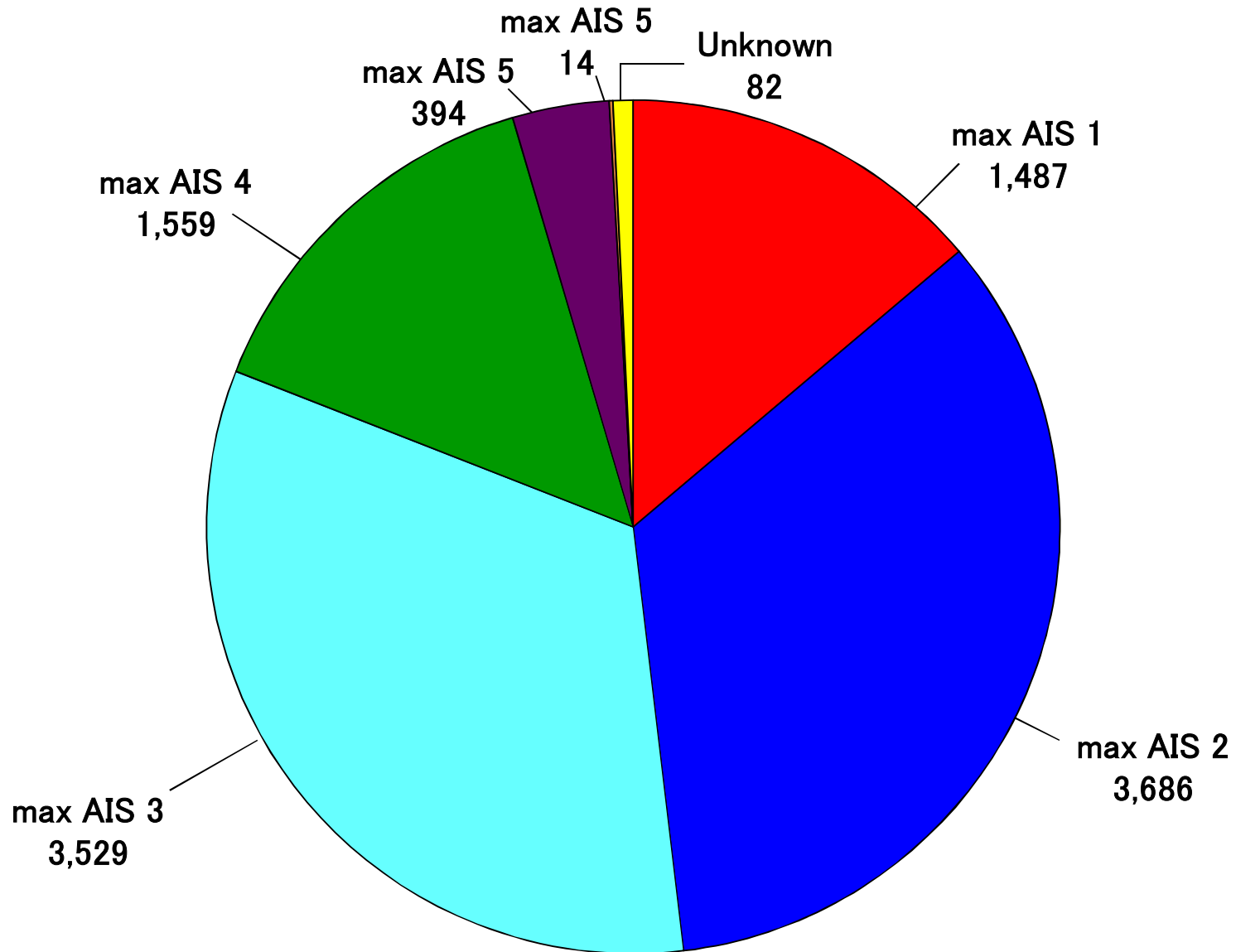


Figure 37E Injury of Abdomen/Pelvic Contents and max AIS Score

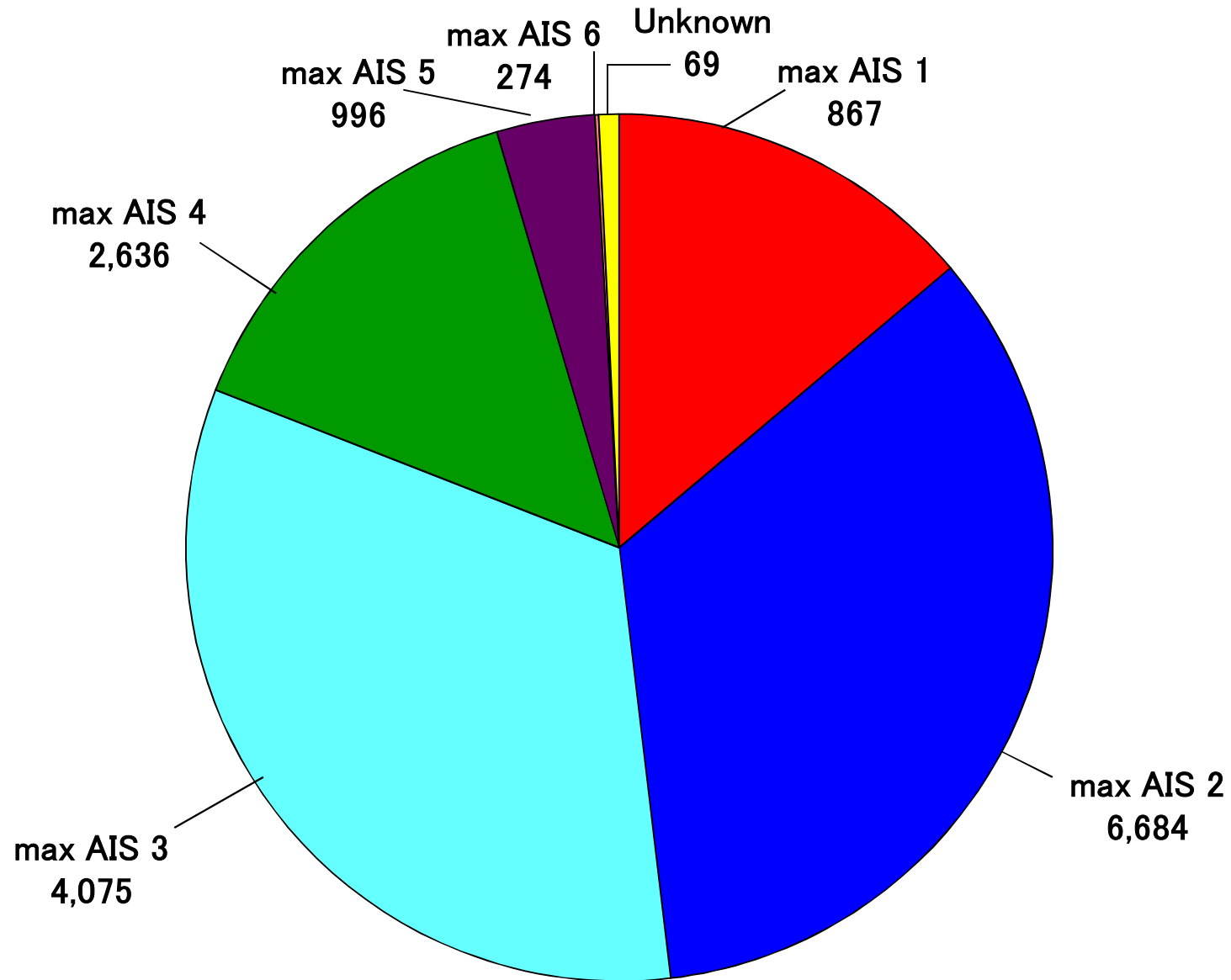


Figure 37F Spinal Injury and max AIS Score

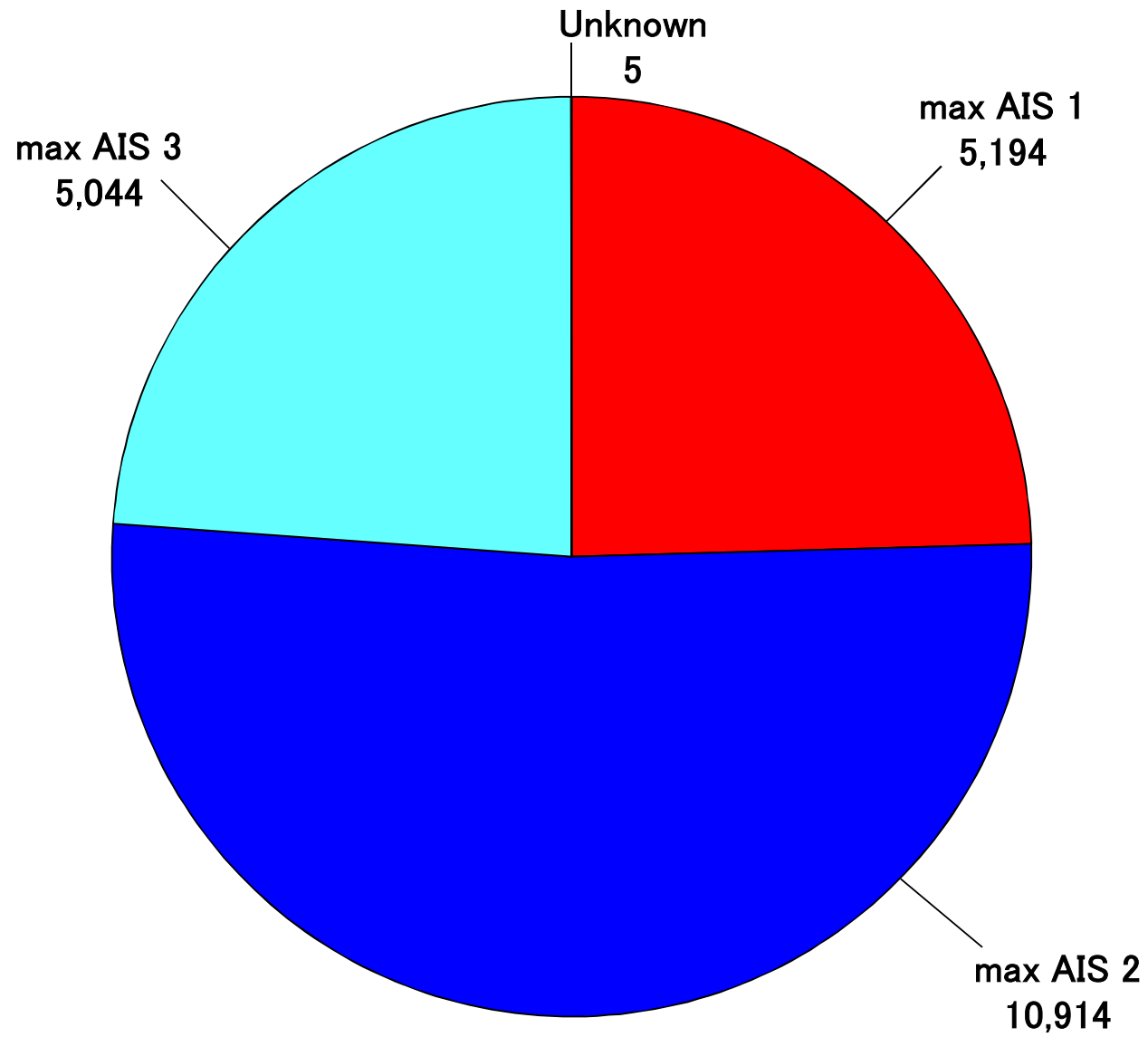


Figure 37G Injury of Upper Extremities and max AIS Score

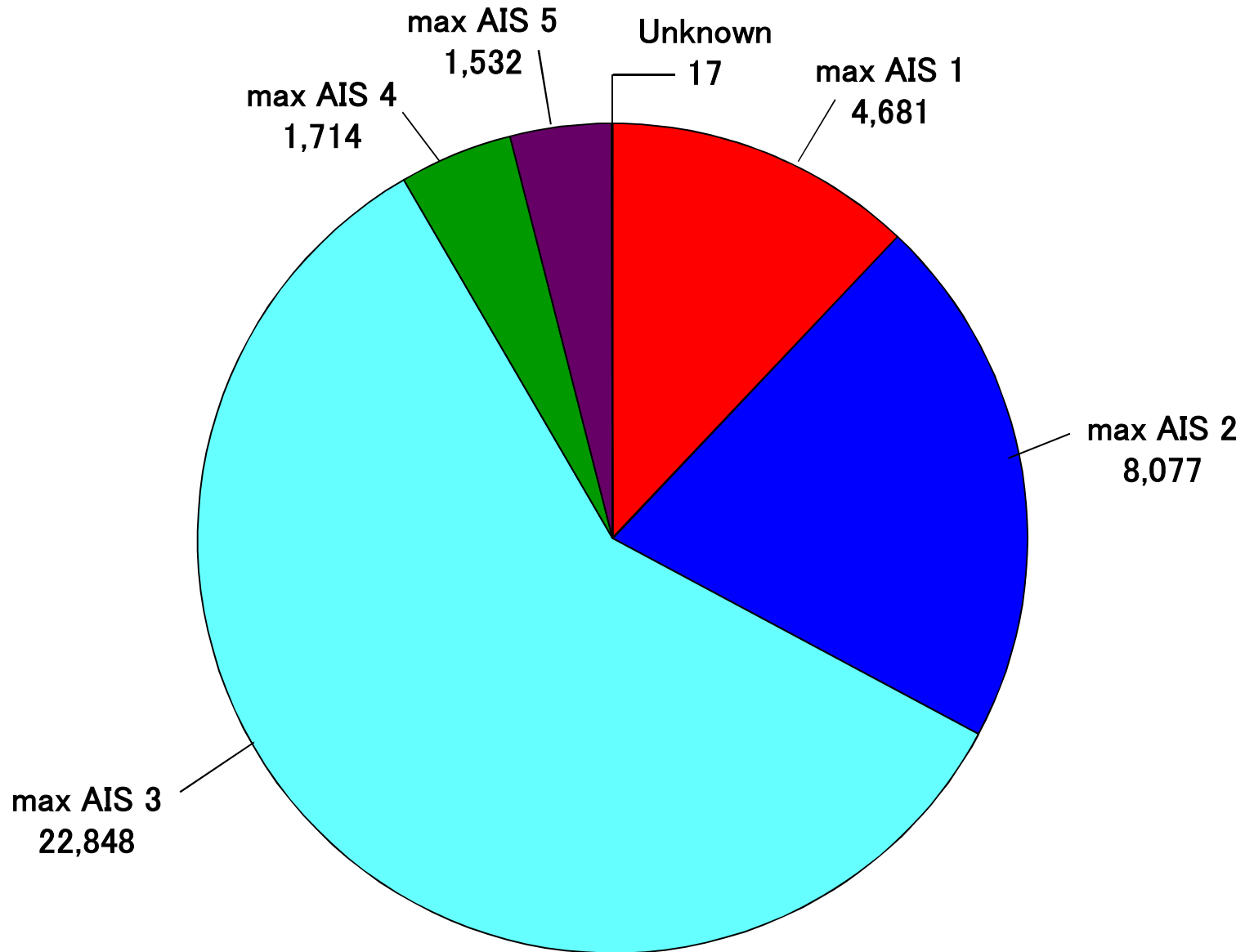


Figure 37H Injury of Lower Extremities and max AIS Score

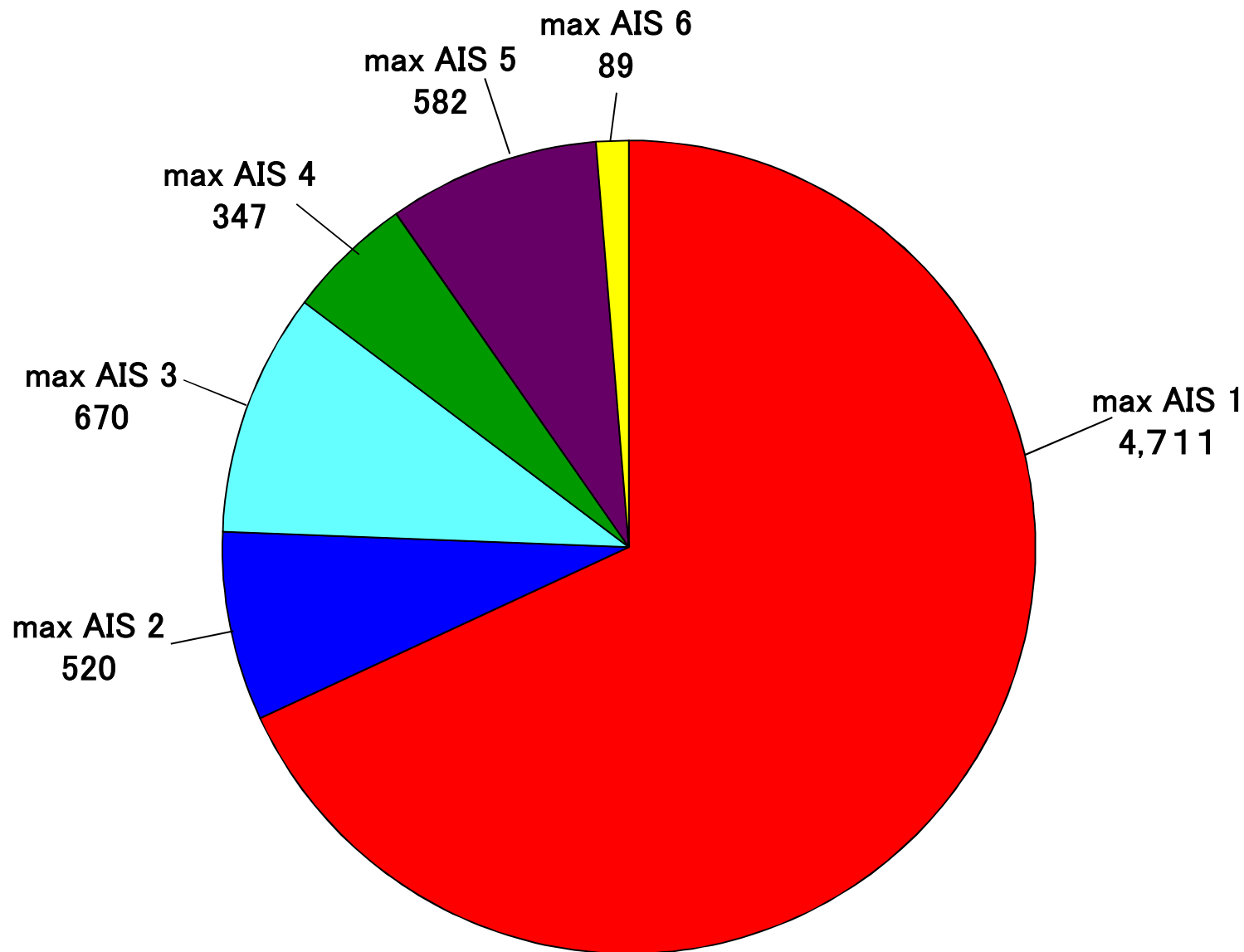


Figure 37I Skin/Burns/Other Trauma and max AIS Score

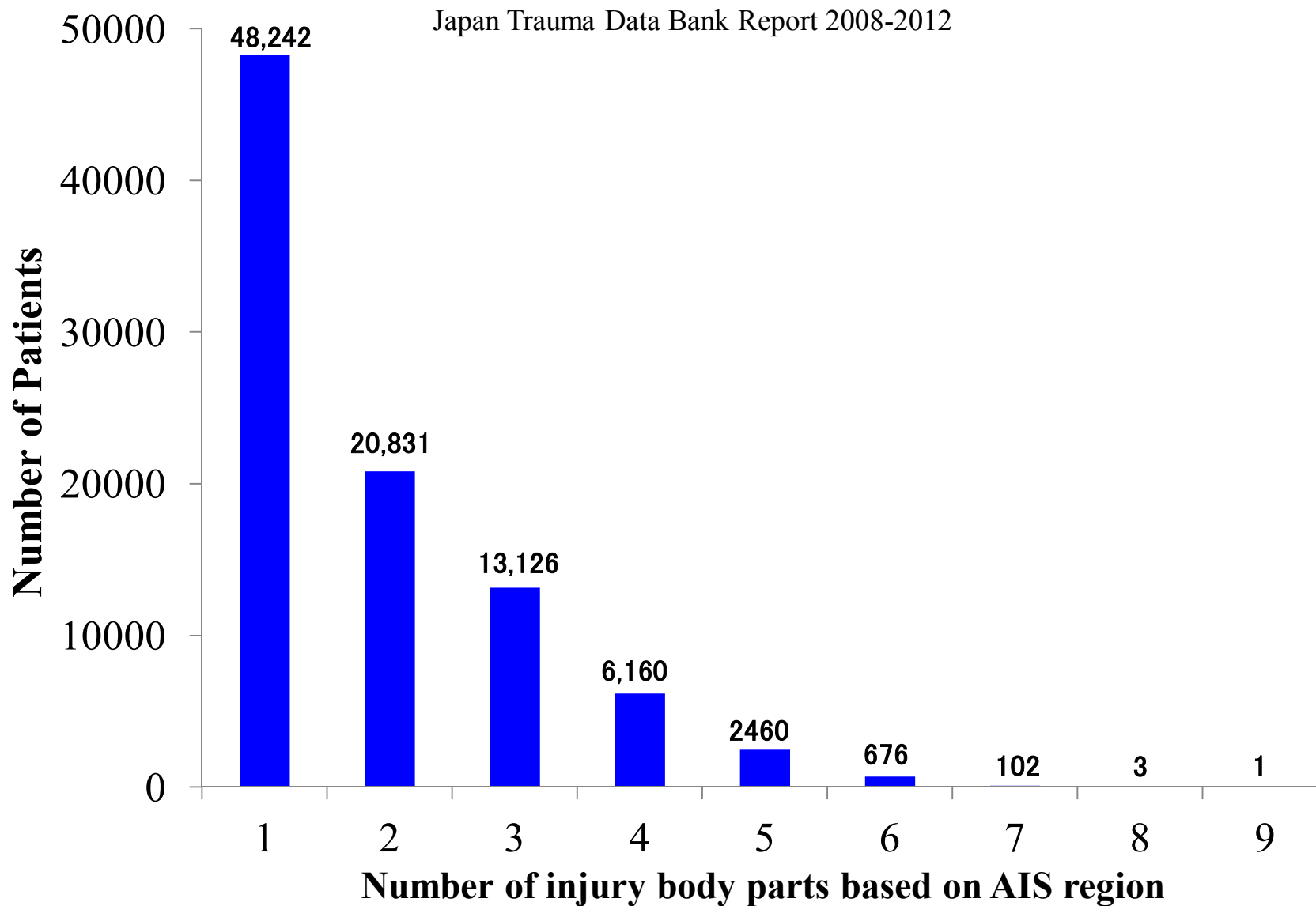


Figure 38 Number of Patients and Injured Body Parts based on AIS

**JAPAN TRAUMA DATA BANK
REPORT 2013 (2008-2012)**

December 15, 2013



The Japanese Association for Acute Medicine

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The Japanese Association for the Surgery of Trauma

Chairman: Tetsuya Sakamoto, MD

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