Japan Trauma Data Bank Report 2012 (2007-2011)

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)

Sapporo City General Hospital
Nikko Memorial Hospital
Sapporo Medical University Hospital
Teine Keijinkai Hospital
Hokkaido University Hospital
Hokuto Hospital
Hachinohe City Hospital
Hirosaki University School of Medicine & Hospital
Akita Red Cross Hospital
Iwate Medical University Hospital
Kuji Prefectural Hospital
Osaki Citizen Hospital
Tohoku University Hospital
Sendai City Hospital
Ishinomaki Red Cross Hospital
Ohta Nishinouchi Hospital
Aizu Central Hospital
Tsukuba Medical Center Hospital
Ibaraki Seinan Medical Hospital
Mito Medical Center
University of Tsukuba Hospital
Dokkyo Medical University Hospital
Jichi Medical University Hospital
Saiseikai Utunomiya Hospital
Gunma University Hospital
Maebashi Red Cross Hospital
Takasaki General Medical Center
Saitama Red Cross Hospital
Kawaguchi Municipal Medical Center
Dokkyo Medical University Koshigaya Hospital
National Defense Medical College Hospital
Saitama Medical University Medical Center
Saitama Medical University International Medical Center
Kuki General Hospital
Funabashi Municipal Medical Center
Asahi Central Hospital
Nippon Medical School Chiba Hokusoh Hospital
Chiba Emergency Medical Center
Kameda General Hospital
Kimitsu Chuou Hospital

Juntendo University Urayasu Hospital
Chiba University Hospital
Showa University Hospital
Tokyo Metropolitan Hiroo Hospital
Musashino Red Cross Hospital
Tokyo Medical University Hospital
Teikyo University Hospital
National Center for Global Health and Medicine
Tokyo Women's Medical University Medical Center East
National Disaster Medical Center
Nippon Medical School Hospital
Nippon Medical School Tama Nagayama Hospital
Kyorin University Hospital
Surugadai Nihon University Hospital
Tokyo Women's Medical University Hospital
Ohme Municipal General Hospital
Nihon University Itabashi Hospital
Tokyo Medical and Dental University Hospital
Tokyo Metropolitan Bokutoh Hospital
Tokyo Medical University Hachioji Medical Center
Keio University Hospital
St.Luke's International Hospital
Tokyo Medical Center
Toho University Omori Medical Center
Showa University Northern Yokohama Hospital
Yokohama Medical Center
Nippon Medical School Musashikosugi Hospital
Saiseikai Yokohama-city East Hospital
St. Marianna University School of Medicine Hospital
Kanto Rosai Hospital
Yokohama City University Medical Center
Tokai University Hospital
Showa University Fujigaoka Hospital
Kitasato University Hospital
Yokosuka General Hospital Uwamachi
Yokosuka Kyosai Hospital
Yokohama City Minato Red Cross Hospital
Shonan Kamakura General Hospital
Yokohama Municipal Citizens Hospital
Odawara Municipal Hospital

Niigata City General Hospital
Kanazawa University Hospital
Toyama Prefectural Central Hospital
Toyama University Hospital
Kouseiren Takaoka Hospital
Tonami General Hospital
Fukui Prefectural Hospital
Yamanashi Prefectural Central Hospital
Saku Central Hospital
Shinshu University Hospital
Aizawa Hospital
Suwa Red Cross Hospital
Iida Municipal Hospital
Chuno Kosei Hospital
Gifu University Hospital
Takayama Red Cross Hospital
Ogaki Municipal Hospital
Numazu City Hospital
Shizuoka Red Cross Hospital
Seirei Mikatahara General Hospital
Shizuoka Children's Hospital
Shizuoka Saiseikai General Hospital
Toyohashi Municipal Hospital
Aichi Medical University Hospital
Nagoya Ekisaikai Hospital
Social Insurance Chukyo Hospital
Okazaki City Hospital
Daiyukai General Hospital
Nagoya City University Hospital
Fujita Health University Hospital
Saiseikai Shigaken Hospital
Omihachiman Community Medical Center
Kyoto Daini Red Cross Hospital
Kyoto Medical Center
Rakuwakai Otowa Hospital
Osaka Prefectural Senshu Critical Medical Care Center
Saiseikai Senri Hospital
Hanwa Memorial Hospital
Osaka Mishima Emergency Medical Center
Kinki University Hospital

Figure 1A Names of All Hospitals Submitting Data to the JTDB (N=196, part 1)

Kishiwada Tokushukai Hospital
Osaka University Hospital
Osaka General Medical Center
Kansai Medical University Takii Hospital
Osaka City University Hospital
Osaka General Medical Center
Osaka Medical Center
Nakakawachi Medical Center of Acute Medicine
Kobe University Hospital
Hyogo Emergency Medical Center
Toyooka Hospital Tajima Emergency & Critical Care Medical Center
Public Muraoka Hospital
Kansai Rosai Hospital
Hyogo Prefectural Nishinomiya Hospital
Hyogo Prefectural Kakogawa Medical Center
Hyogo Prefectural Awaji Hospital
Hospital of Hyogo College of Medicine
Nara Prefectural Nara Hospital
Nara Medical University Hospital
Mie University Hospital
Wakayama Medical University Hospital
Tsuyama Chuo Hospital
Kawasaki Medical School Hospital
Okayama University Hospital
Hiroshima Prefectural Hospital
Chugoku Rosai Hospital
Hiroshima University Hospital
Kure Medical Center
Fukuyama City Hospital
Yamaguchi University Hospital
Kanmon Medical Center
Tokuyama Central Hospital
Yamaguchi Grand Medical Center
Tottori University Hospital
Tokushima Prefectural Miyoshi Hospital
Tokushima Prefectural Kaifu Hospital
Tokushima Prefectural Central Hospital
Taoka Hospital
Kagawa University Hospital
Kagawa Prefectural Central Hospital
Ehime Prefectural Central Hospital
Ehime University Hospital
Kochi Medical Center
Chikamori Hospital
Kurume University Hospital
Iizuka Hospital
Ohtemachi Hospital
Kitakyushu Municipal Yahata Hospital
Kyushu University Hospital
Kitakyushu General Hospital
Kokura Memorial Hospital
Saiseikai Fukuoka General Hospital
Fukuoka University Hospital
St. Maria's Hospital
Fukuoka Wajiro Hospital
Fukuoka Red Cross Hospital
Saga Prefectural Hospital Koseikan
Saga University Hospital
Arao Municipal Hospital
Kumamoto Red Cross Hospital
Kumamoto Medical Center
Saiseikai Kumamoto Hospital
Nagasaki University Hospital
Nagasaki Medical Center
Oita University Hospital
Miyazaki Prefectural Miyazaki Hospital
Miyazaki University Hospital
Miyazaki Zenjinkai Hospital
Miyakonojo Regional Medical Center
Osumikanoya Hospital
Kagoshima City Hospital
Okinawa Prefectural Chubu Hospital
Urasoe General Hospital
Nakagami Hospital
Okinawa Prefectural Hokubu Hospital
Ryukyu University Hospital

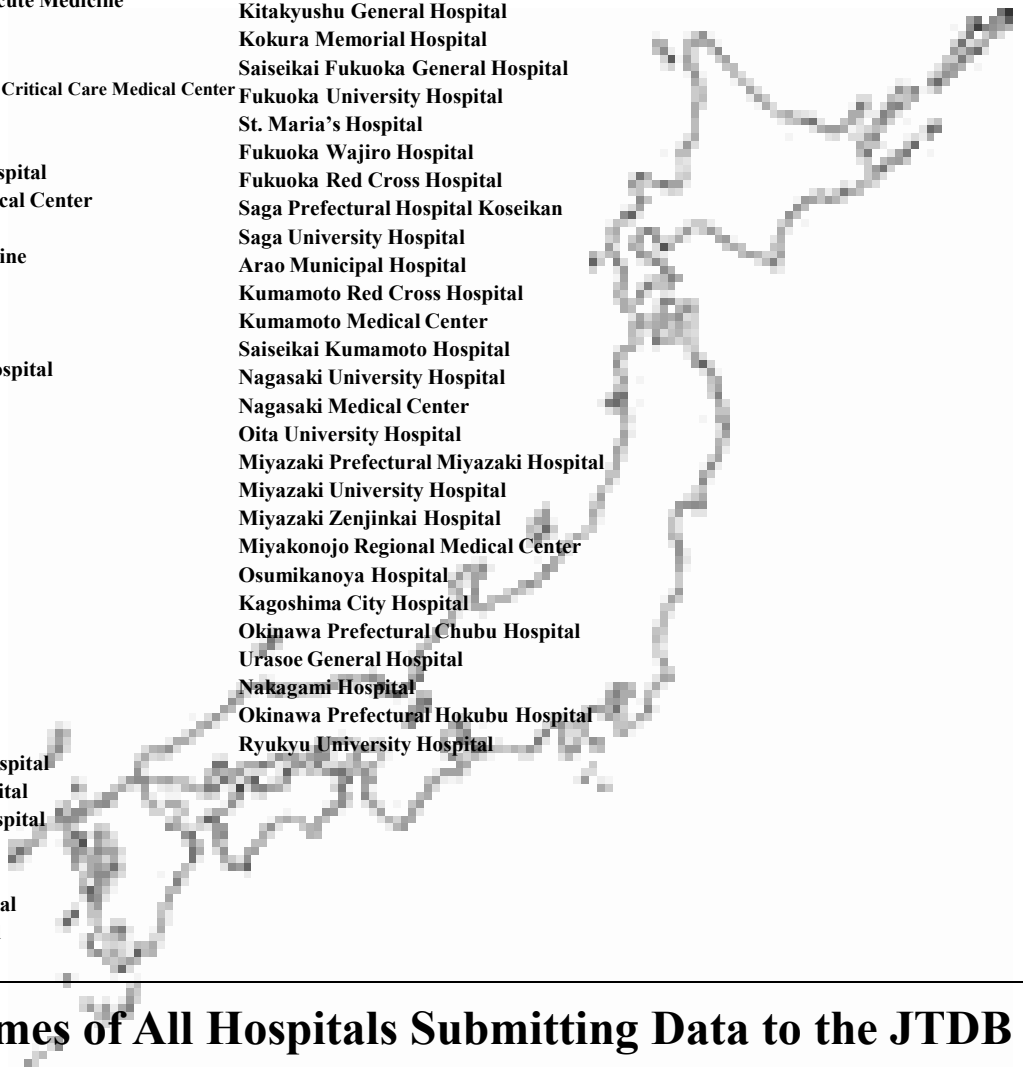


Figure 1B Names of All Hospitals Submitting Data to the JTDB (N=196, part 2)

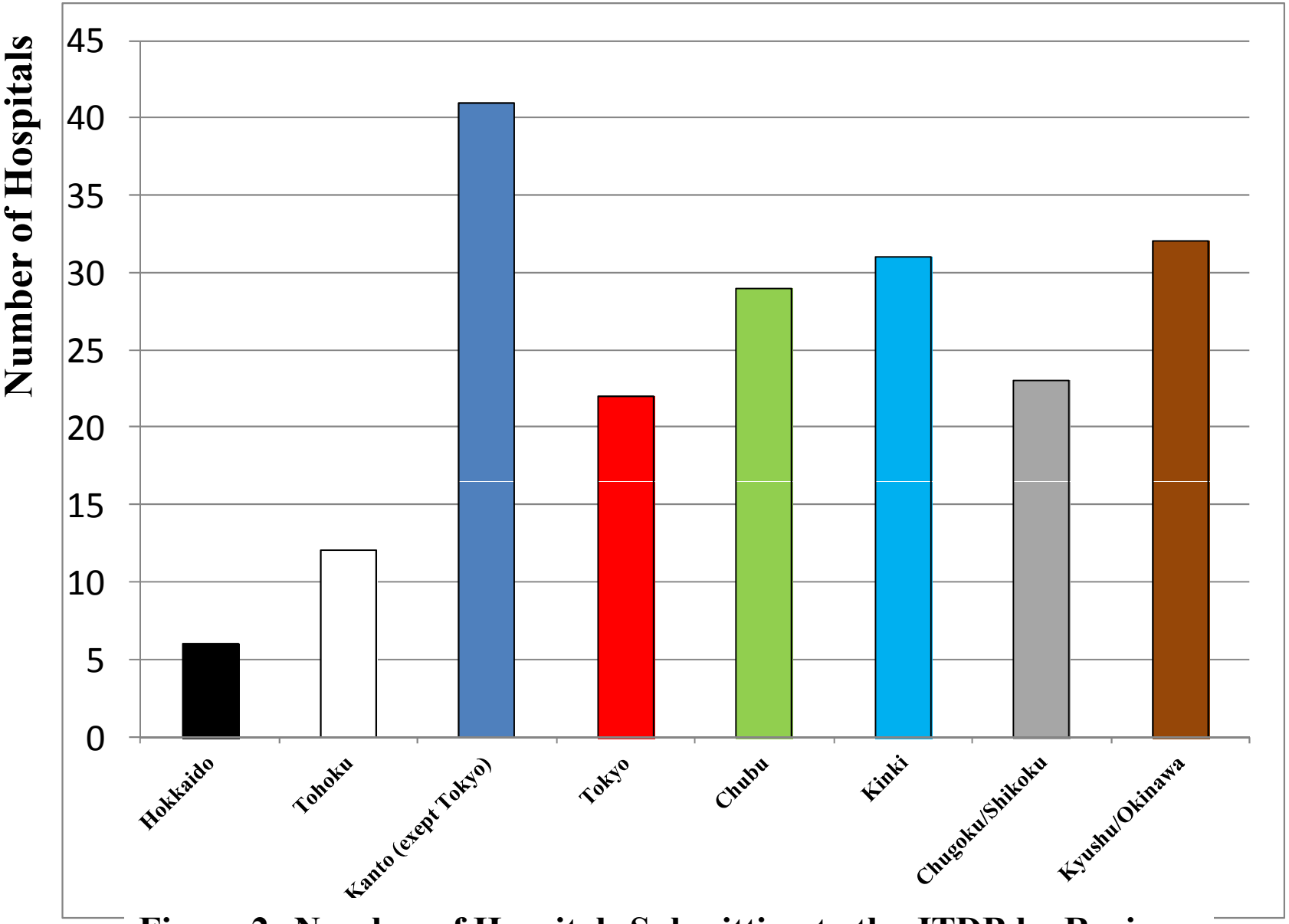


Figure 2 Number of Hospitals Submitting to the JTDB by Region.

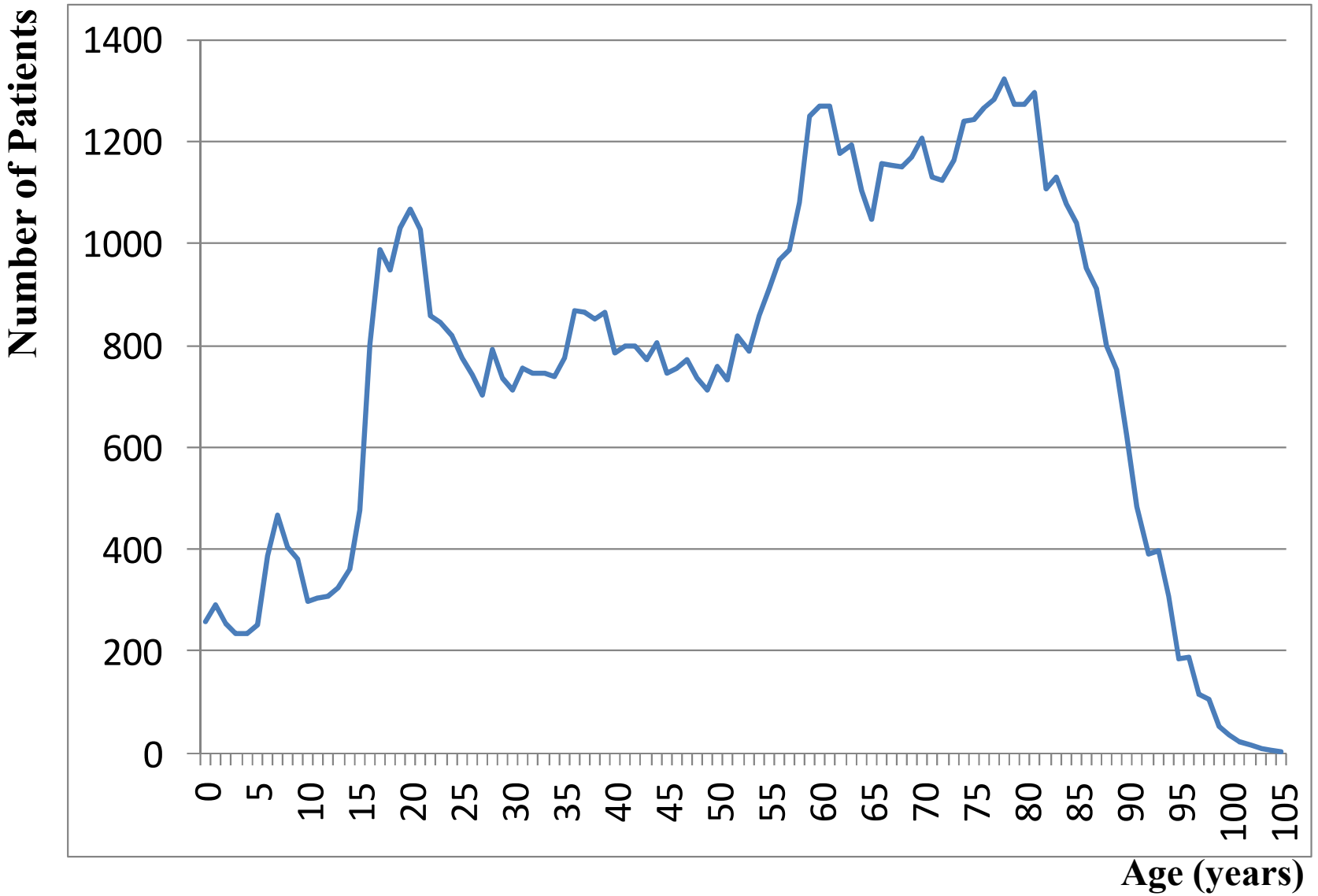


Figure3 Number of Patients by Age.

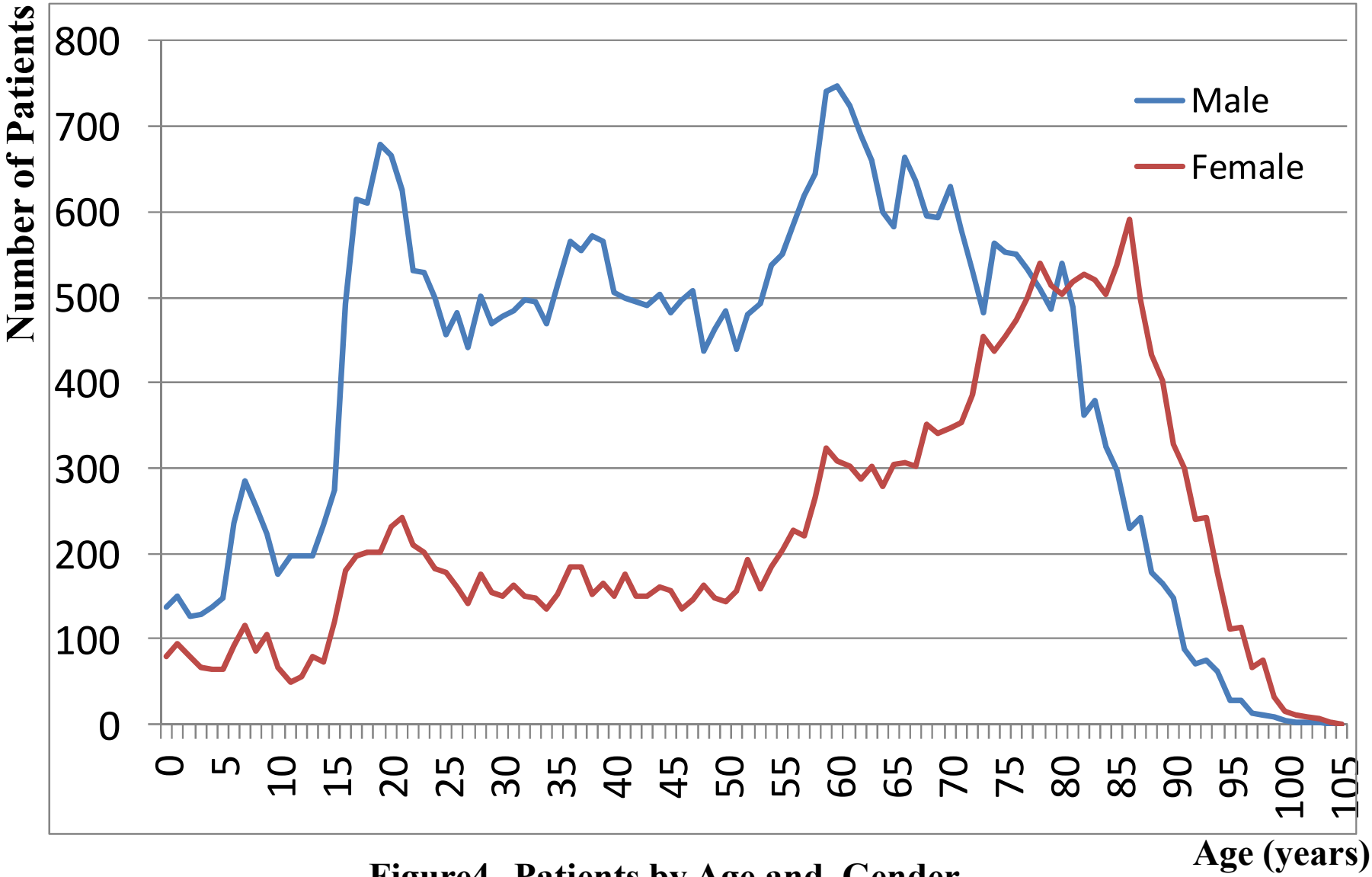


Figure4 Patients by Age and Gender.

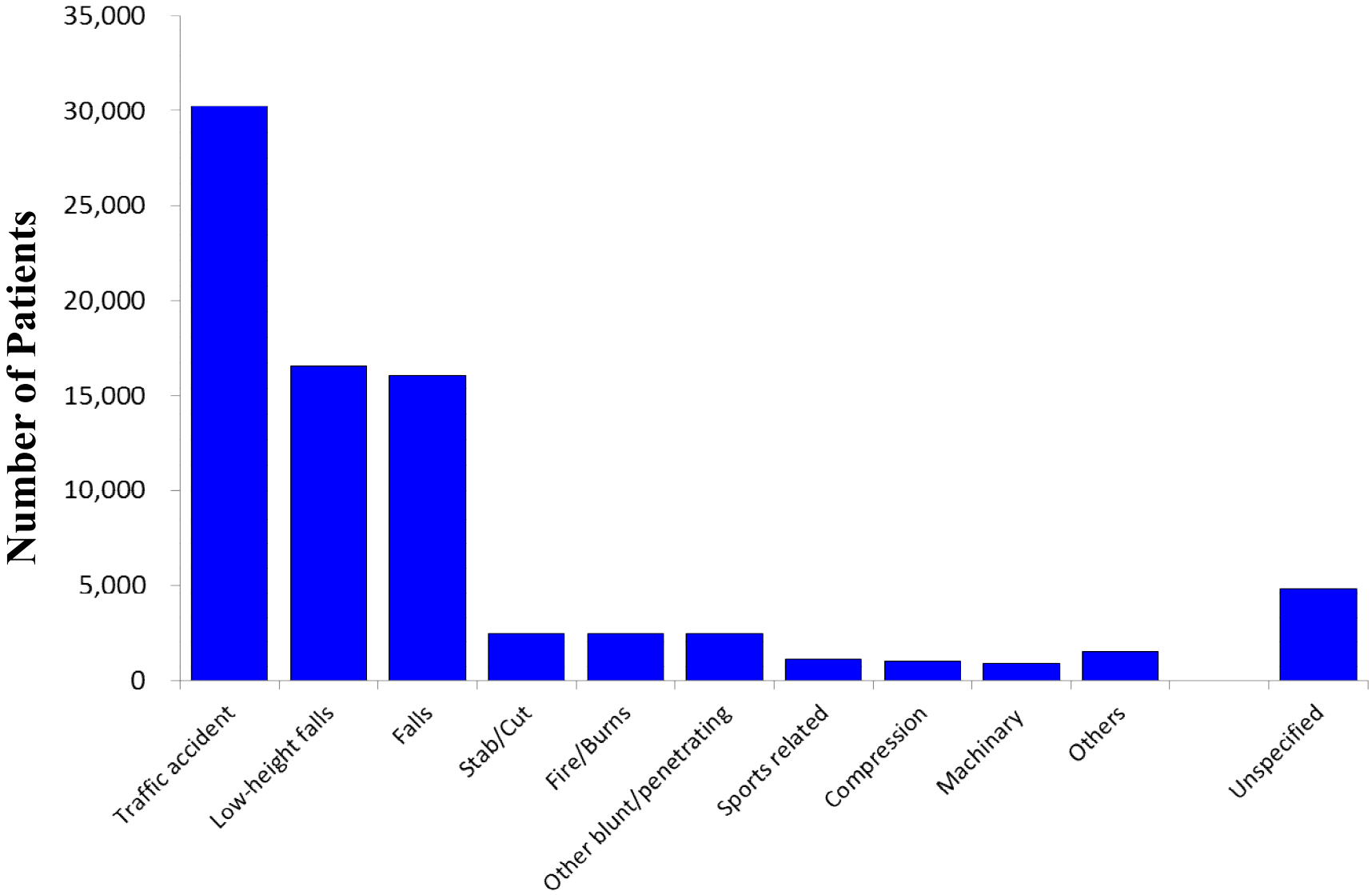


Figure 5 Patients by mechanism of injury

Traffic accident includes pedestrian victims.

Mechanism of injury	Patients (n)	Patients by mechanism of injury (%)
Traffic accident	30219	37.98
Low-height falls	16534	20.78
Falls	16065	20.19
Stab/Cut	2491	3.13
Fire/Burns	2466	3.10
Other blunt/penetrating	2441	3.07
Sports related	1120	1.41
Compression	987	1.24
Machinary	916	1.15
Transport, other	707	0.89
Falling object	656	0.82
Impalement injury	75	0.09
Gunshot	44	0.06
Unspecified	4855	6.10
Total	**79576**	**100.00**

Table 5 Patients by mechanism of injury

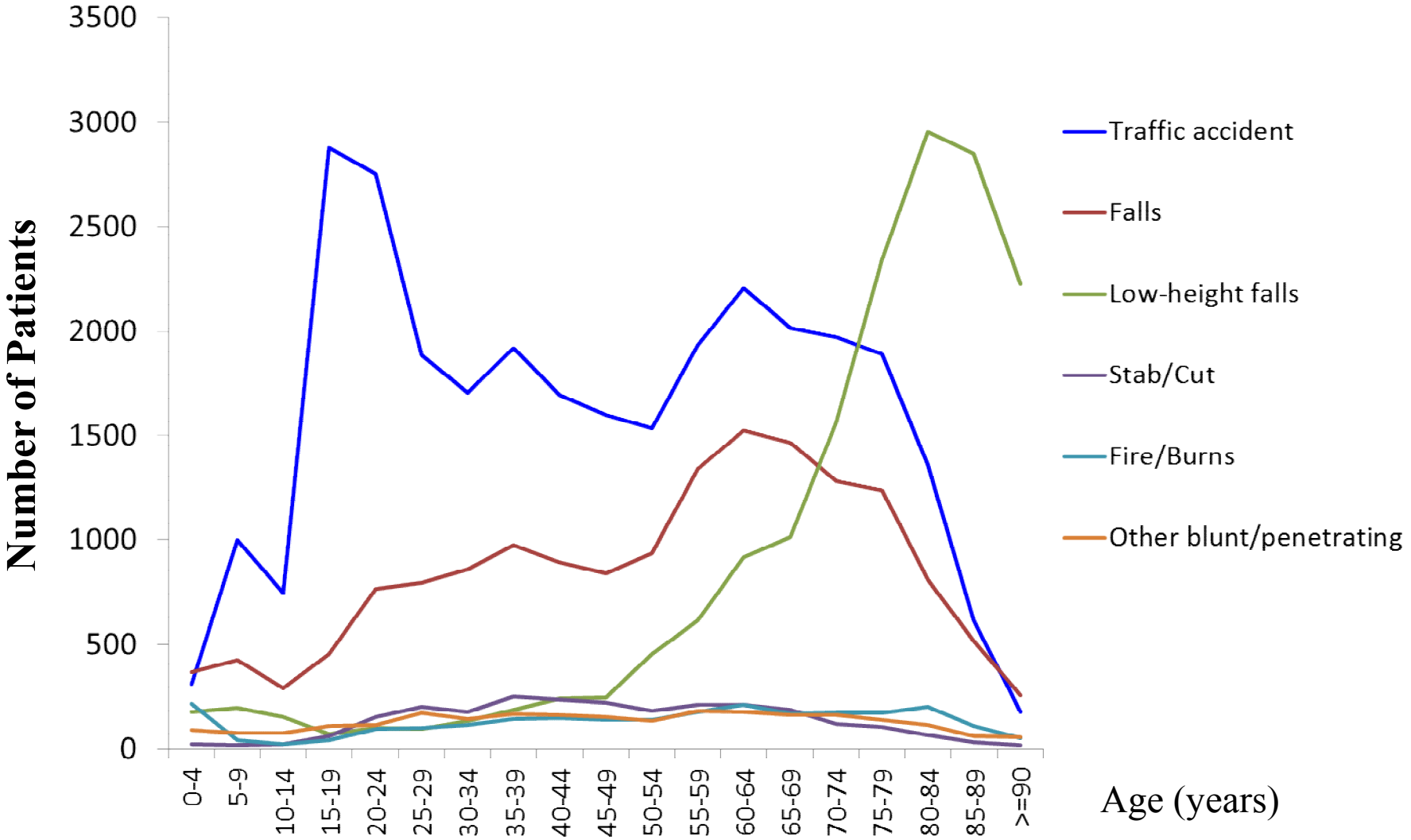


Figure 6 Mechanism of injury by range of age

Range of Age (yr)	Traffic accident (n)	% of total range of age（%）	Falls (n)	% of total range of age（%）	Low-height falls (n)	% of total range of age（%）	Stab/Cut (n)	% of total range of age（%）	Fire/Burns (n)	% of total range of age（%）	Other blunt/ pnetrating (n)	% of total range of age（%）
0-4	307	1.02	369	2.30	175	1.06	19	0.76	215	8.72	89	3.65
5-9	1000	3.31	425	2.65	195	1.18	18	0.72	43	1.74	75	3.07
10-14	747	2.47	290	1.81	153	0.93	21	0.84	22	0.89	73	2.99
15-19	2875	9.51	452	2.81	70	0.42	61	2.45	43	1.74	108	4.42
20-24	2749	9.10	766	4.77	98	0.59	155	6.22	94	3.81	114	4.67
25-29	1884	6.23	794	4.94	96	0.58	199	7.99	98	3.97	172	7.05
30-34	1704	5.64	858	5.34	133	0.80	179	7.19	116	4.70	143	5.86
35-39	1916	6.34	975	6.07	189	1.14	249	10.00	143	5.80	167	6.84
40-44	1692	5.60	891	5.55	238	1.44	235	9.43	149	6.04	163	6.68
45-49	1597	5.28	836	5.20	243	1.47	221	8.87	137	5.56	152	6.23
50-54	1532	5.07	935	5.82	452	2.73	183	7.35	140	5.68	135	5.53
55-59	1933	6.40	1337	8.32	615	3.72	213	8.55	178	7.22	180	7.37
60-64	2206	7.30	1526	9.50	918	5.55	211	8.47	211	8.56	176	7.21
65-69	2015	6.67	1468	9.14	1015	6.14	185	7.43	168	6.81	160	6.55
70-74	1974	6.53	1280	7.97	1565	9.47	121	4.86	171	6.93	163	6.68
75-79	1888	6.25	1235	7.69	2341	14.16	104	4.18	170	6.89	139	5.69
80-84	1360	4.50	808	5.03	2952	17.85	63	2.53	202	8.19	115	4.71
85-89	613	2.03	515	3.21	2848	17.23	29	1.16	108	4.38	58	2.38
>=90	179	0.59	256	1.59	2224	13.45	16	0.64	52	2.11	54	2.21
Unspecified	48	0.16	49	0.31	14	0.08	9	0.36	6	0.24	5	0.20
Total	**30219**		**16065**		**16534**		**2491**		**2466**		**2441**	

Table 6 Mechanism of injury by range of age

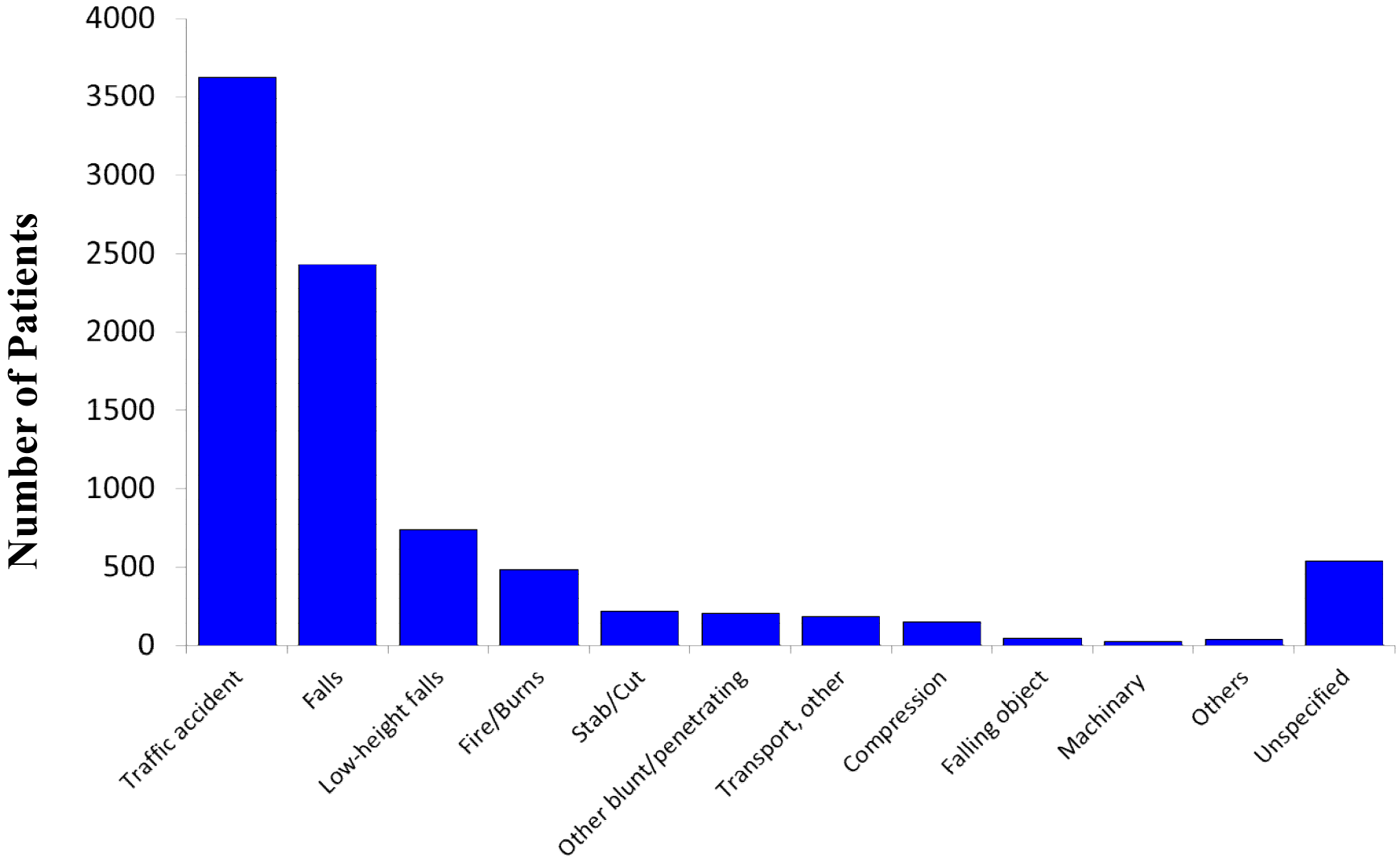


Figure 7 Deaths by Mechanism of injury

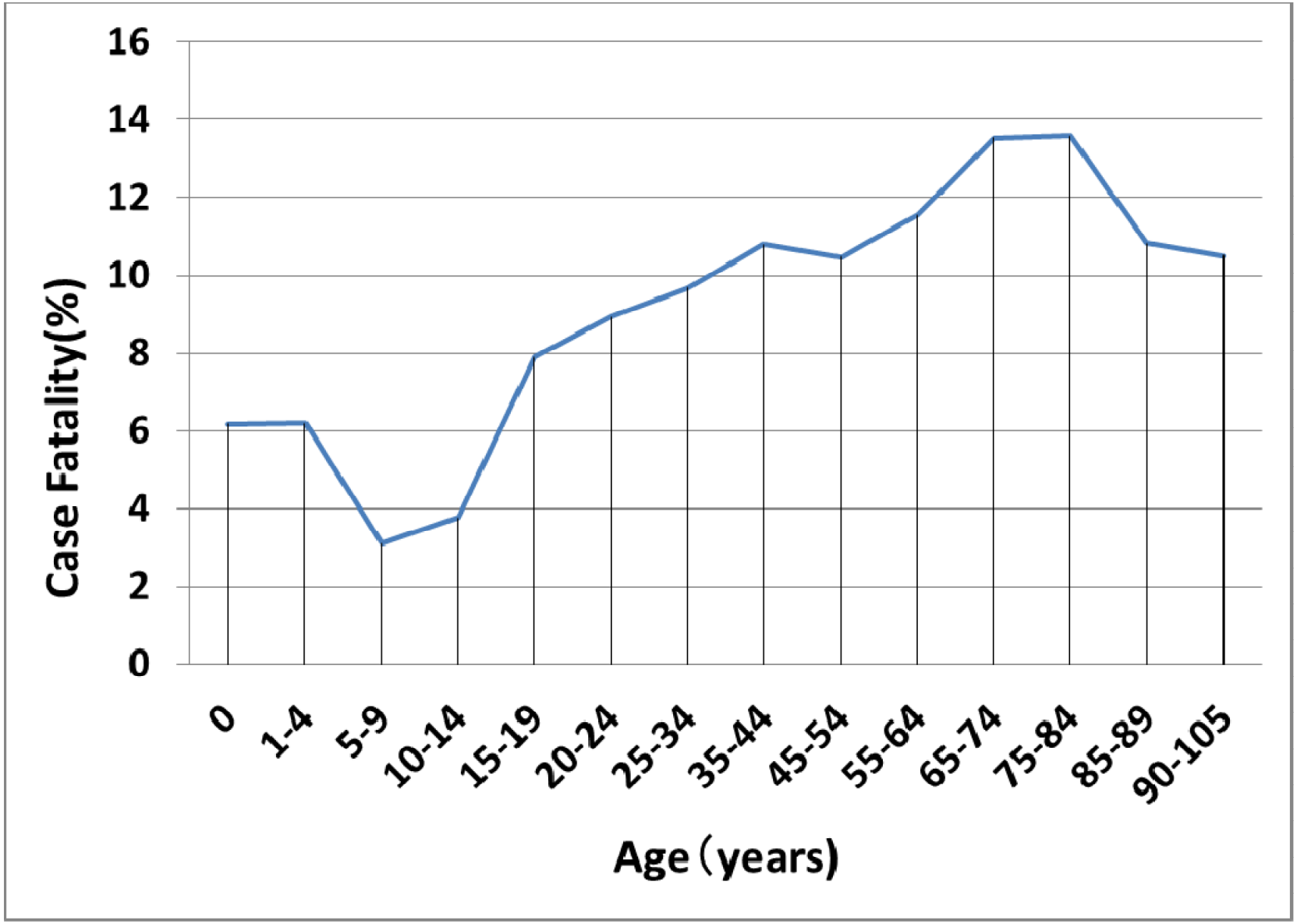


Figure 8　Case Fatality by Age

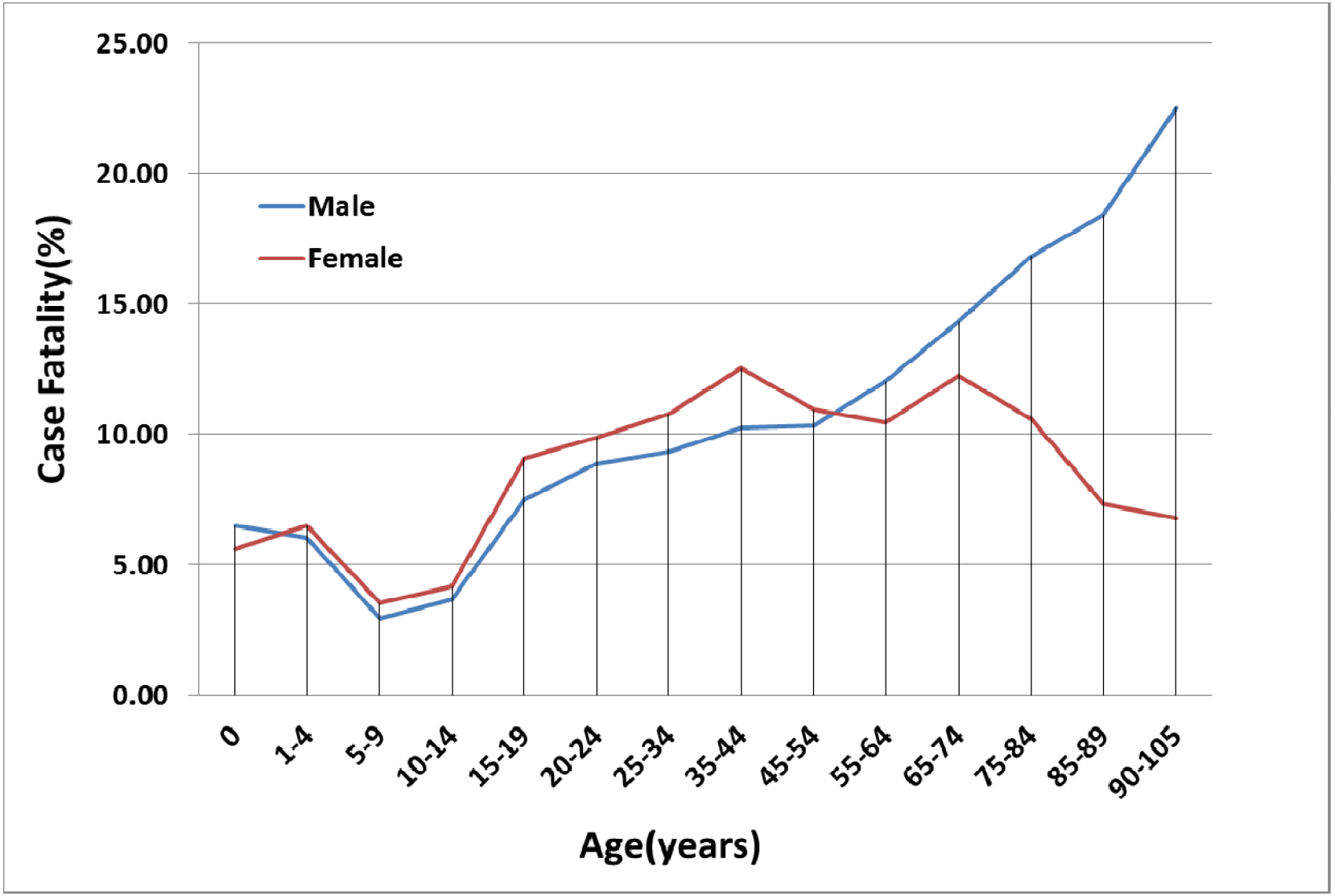


Figure 9　Case Fatality by Age
Case fatality at each age category (Case Fatality = number of deaths divided by the number of patients at each category ×100 by age)

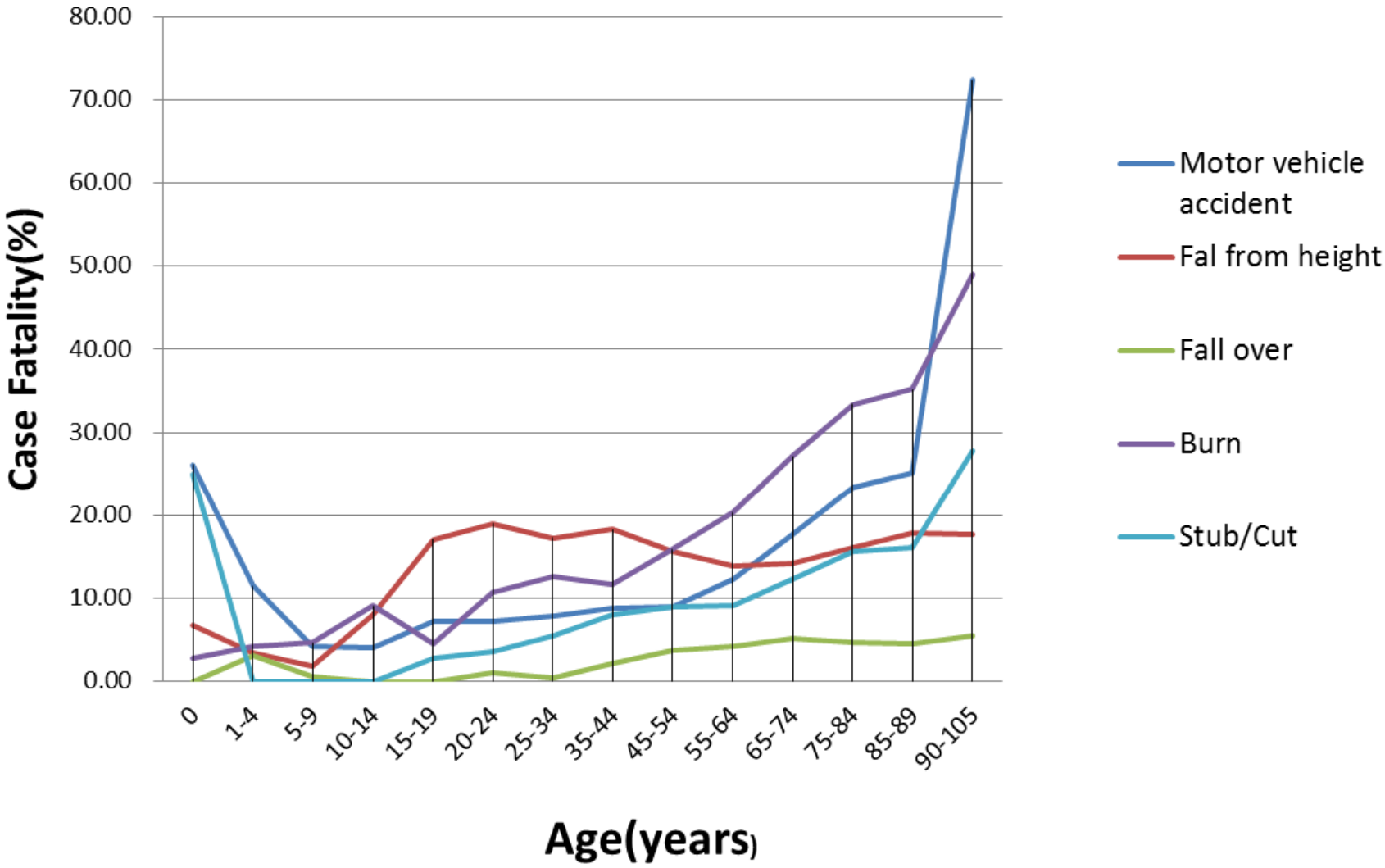


Figure 10 Case Fatality by Age
Case fatality due to motor vehicle accidents and burns and stub/cut increased with age.

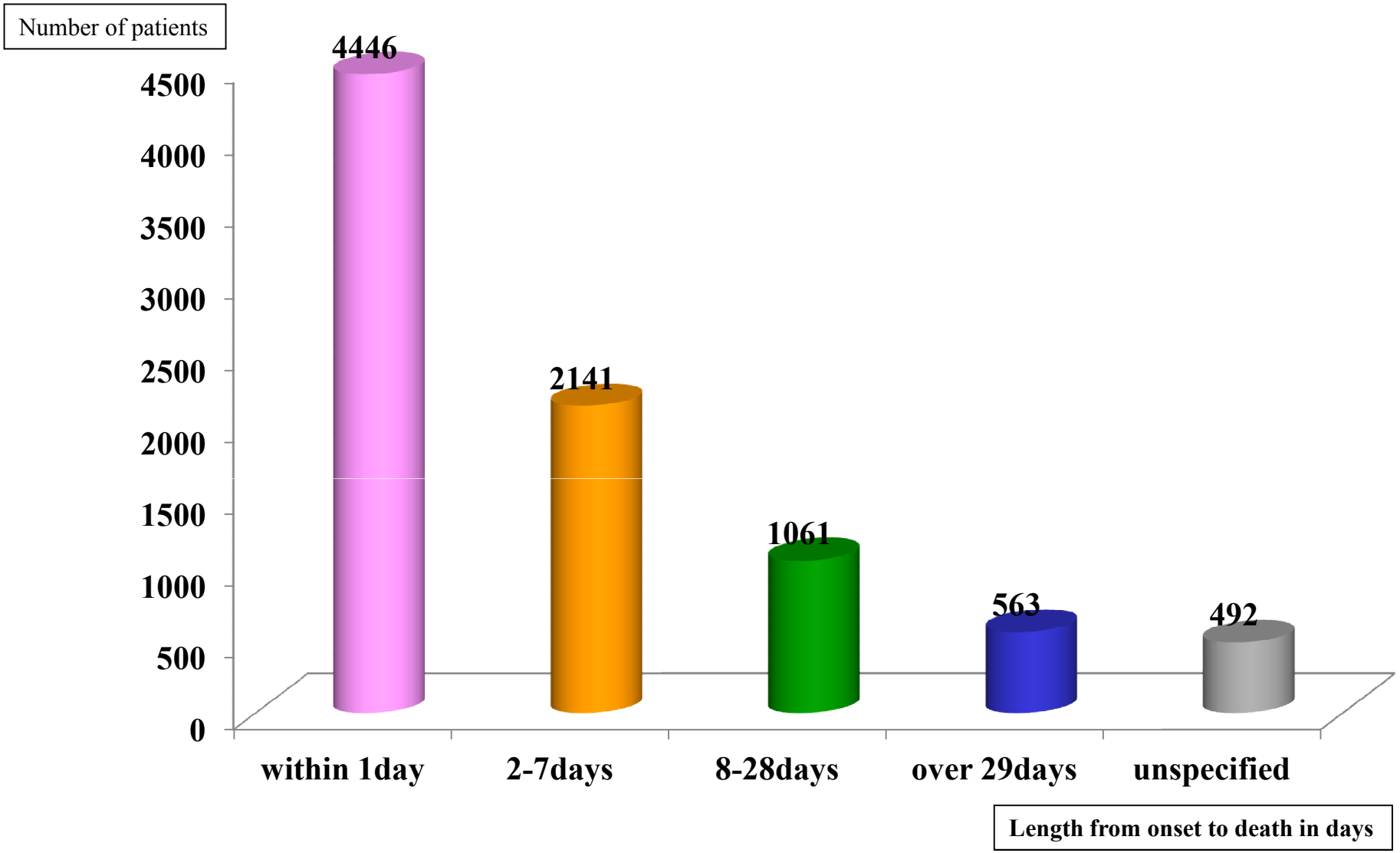


Figure 11A Proportional distribution of length from onset to fatality

The category within 1 day after onset includes CPAOA patients. Total number = 8,703

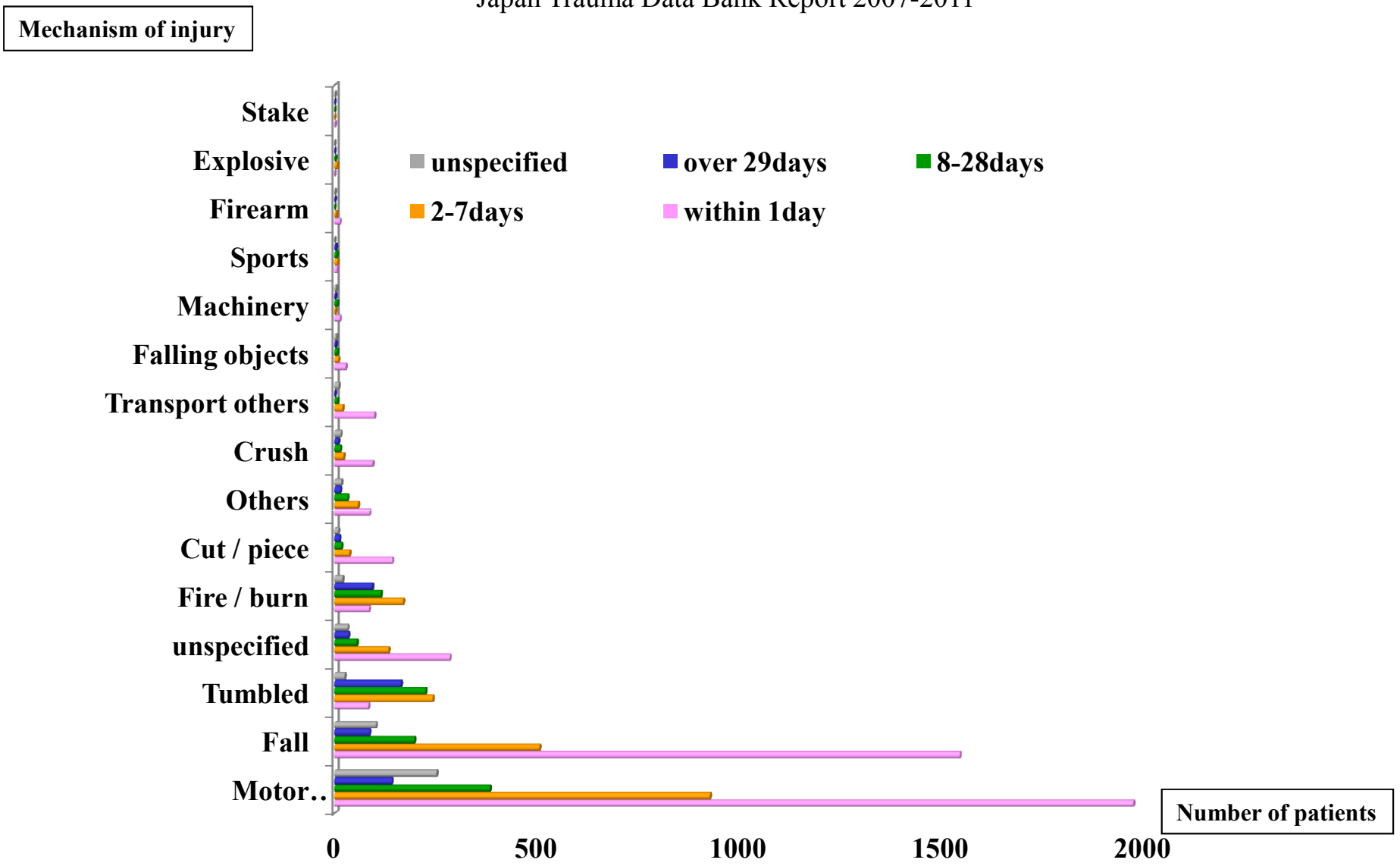


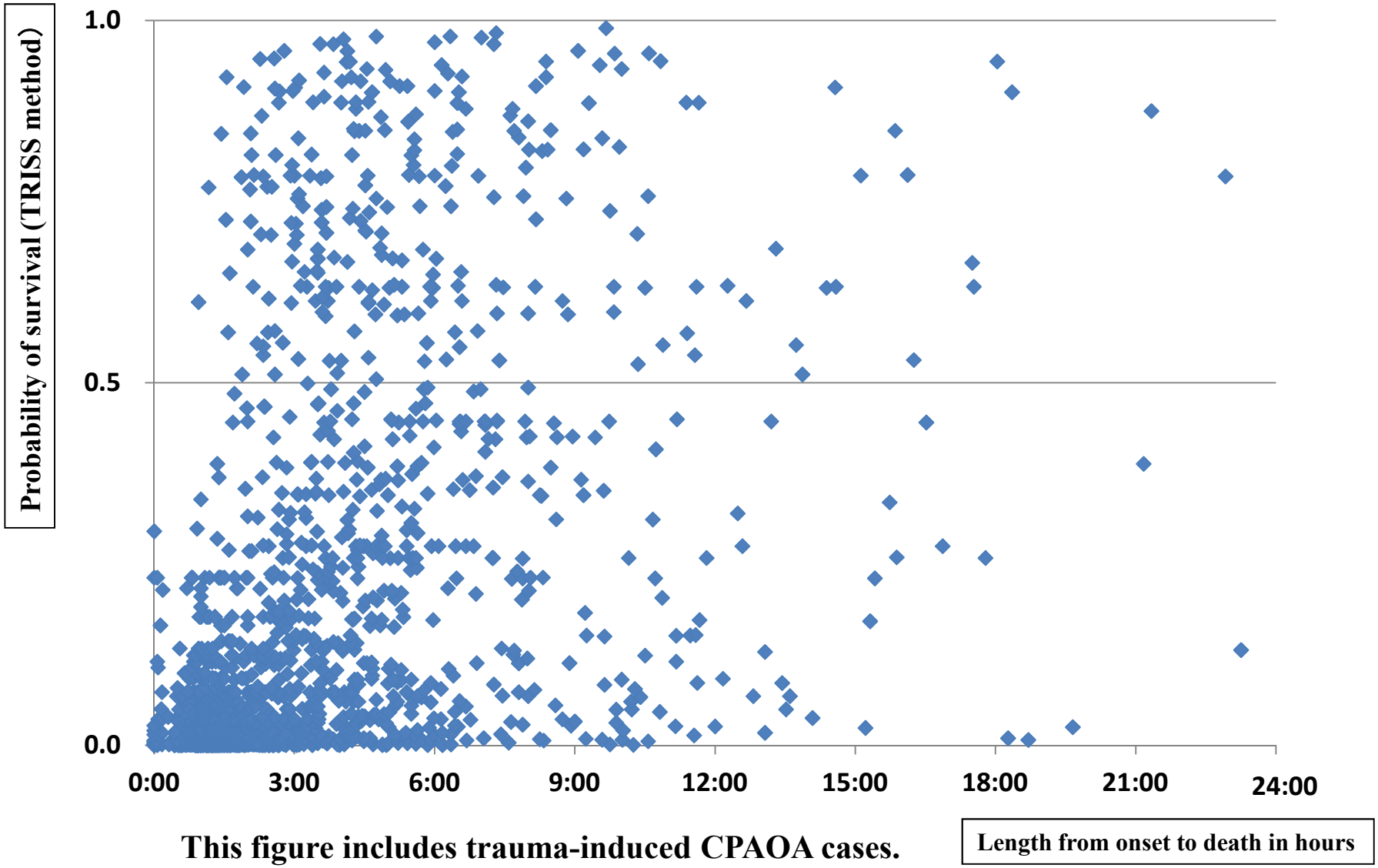
Figure 11B Proportional distribution of length from onset to fatality, grouped by mechanism of injury Total number = 8,703

	Motor vehicle accident	Fall	Tumbled	unspecified	Fire / burn	Cut / piece	Others	Crush
within 1day	1971	1543	83	284	85	142	86	94
2-7days	926	506	242	133	169	37	58	22
8-28days	383	197	224	55	114	17	32	14
over 29days	141	86	164	34	93	12	14	9
unspecified	252	102	25	32	20	9	17	15
Total	3673	2434	738	538	481	217	207	154

	Transport others	Falling objects	Machinery	Sports	Firearm	Explosive	Stake	Total
within 1day	98	27	13	6	13	0	1	4446
2-7days	20	9	2	7	4	6	0	2141
8-28days	6	6	6	5	0	2	0	1061
over 29days	1	3	2	3	1	0	0	563
unspecified	10	4	4	0	1	0	1	492
Total	135	49	27	21	19	8	2	8703

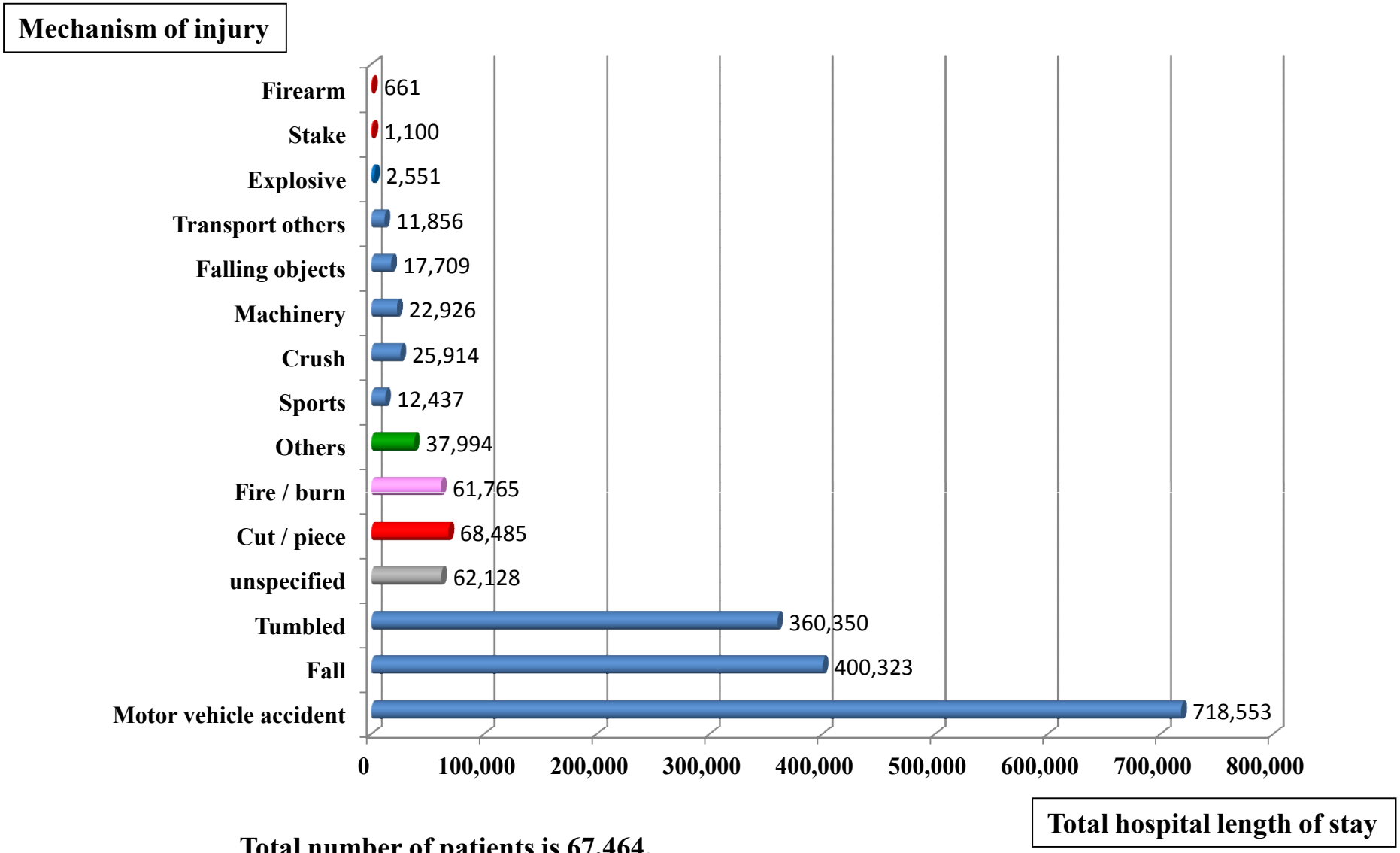
Others; Other specified and classifiable

Table 11B Proportional distribution of length from onset to fatality, grouped by mechanism of injury Total number = 8,703



This figure includes trauma-induced CPAOA cases.
Total number of patients is 1,804.

Figure 11C Probability of Survival and Length from Onset to Death in Hours



Total number of patients is 67,464.
Total hospital length of stay of patients are 1,804,752 days.

Figure12 Total hospital length of stay by mechanism of Injury

	Number of patients	% of total patients	Total hospital LOS in days	Average of hospital LOS in days
Motor vehicle accident	26,343	39.05%	718,553	27.28
Fall	14,459	21.43%	400,323	27.69
Tumbled	14,102	20.90%	360,350	25.55
unspecified	2,954	4.38%	62,128	21.03
Cut / piece	2,058	3.05%	68,485	33.28
Fire / burn	1,993	2.95%	61,765	30.99
Others	1,969	2.92%	37,994	19.30
Sports	895	1.33%	12,437	13.90
Crush	855	1.27%	25,914	30.31
Machinery	738	1.09%	22,926	31.07
Falling objects	562	0.83%	17,709	31.51
Transport, others	329	0.49%	11,856	36.04
Exposive	111	0.16%	2,551	22.98
Stake	65	0.10%	1,100	16.92
Firearm	31	0.05%	661	21.32
Total	67,464		1,804,752	26.75

LOS; length of stay Other; Other specified and classifiable

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

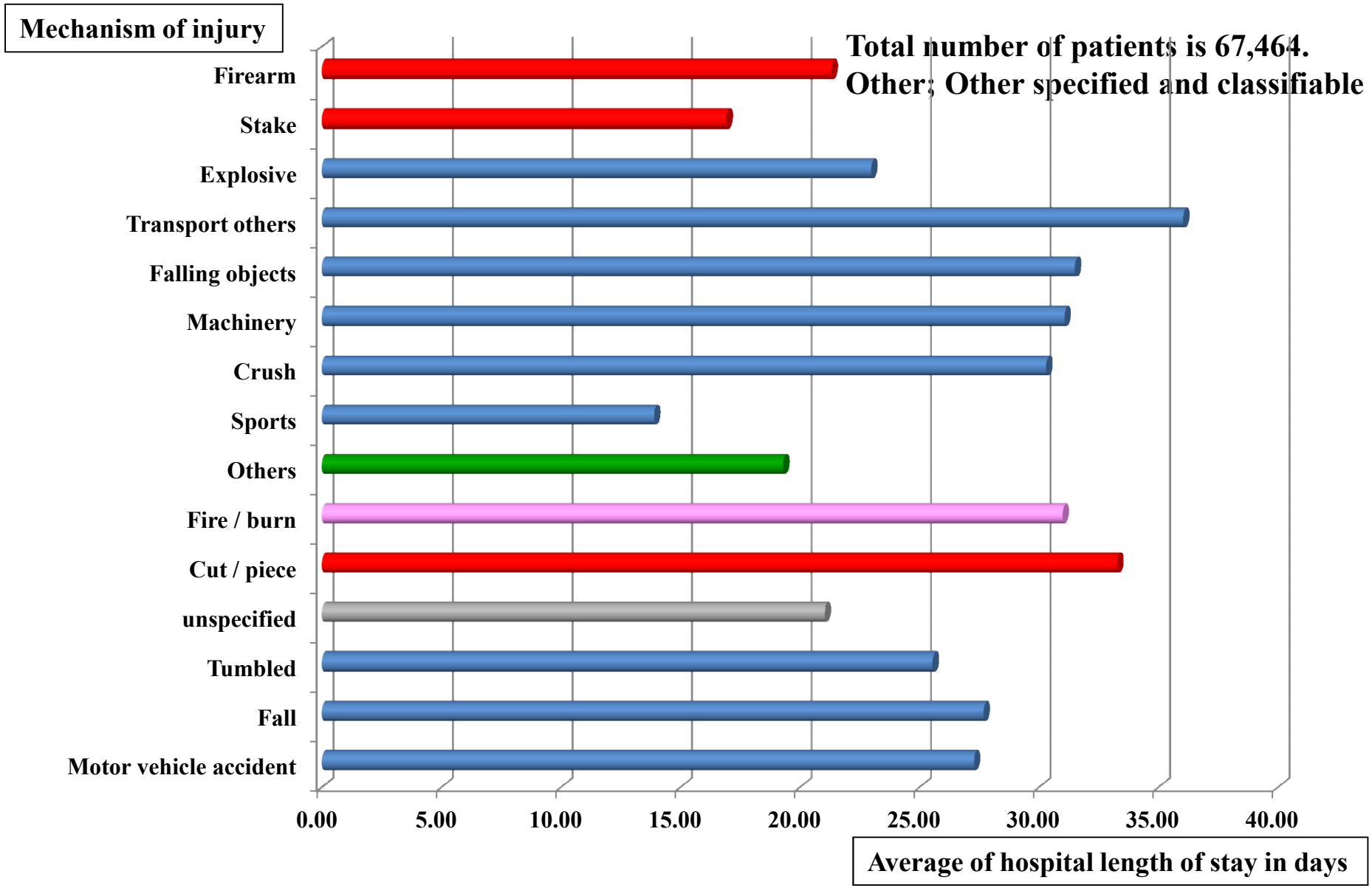


Figure 13 Average Hospital length of stay by mechanism of injury

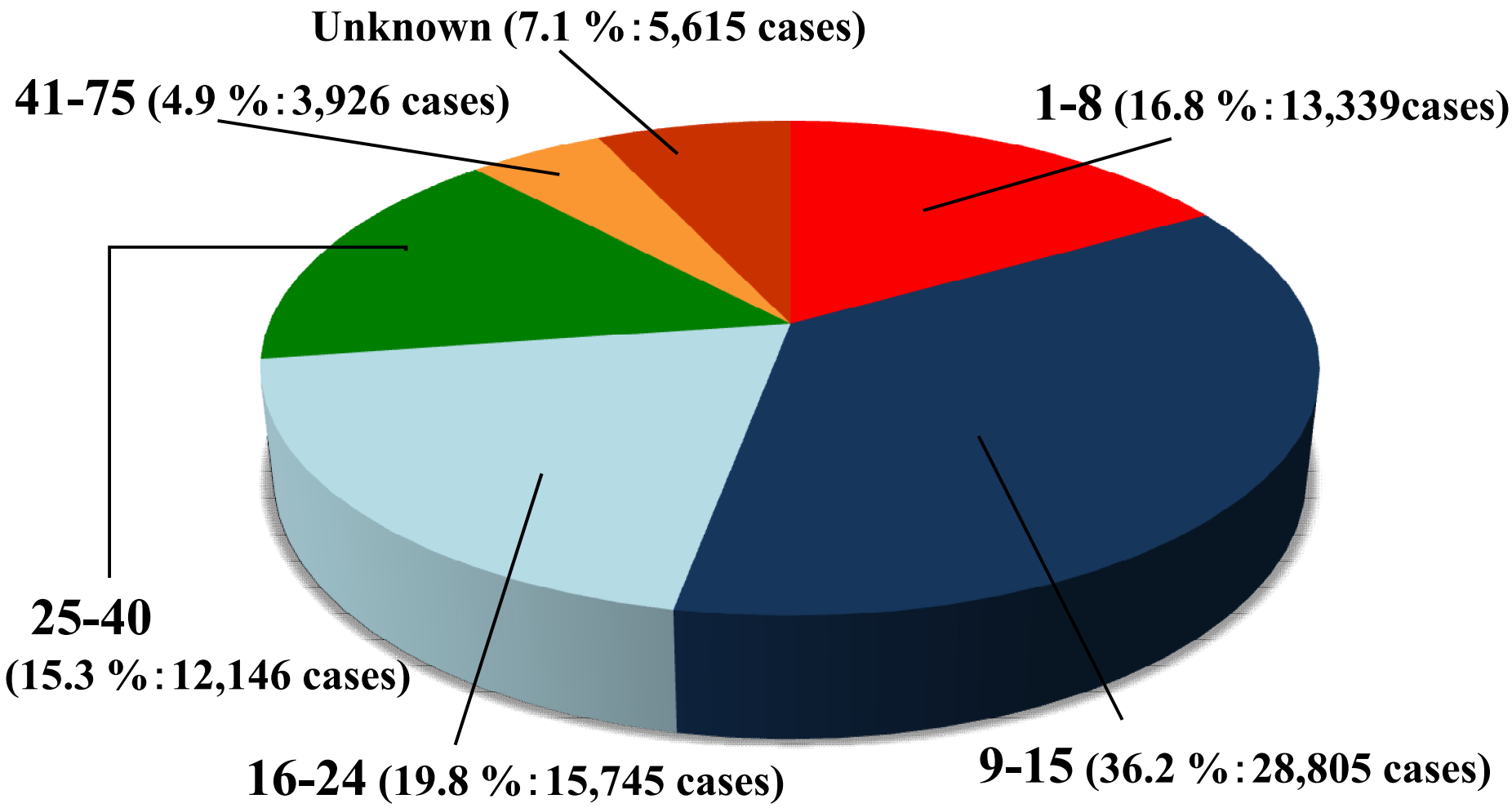


Figure 14 Patients and Injury Severity Score (ISS)

Proportional distribution of patients grouped by categories of the ISS range. Total N=79,576. The number of patients of ISS 9-15 category was the most of all categories.

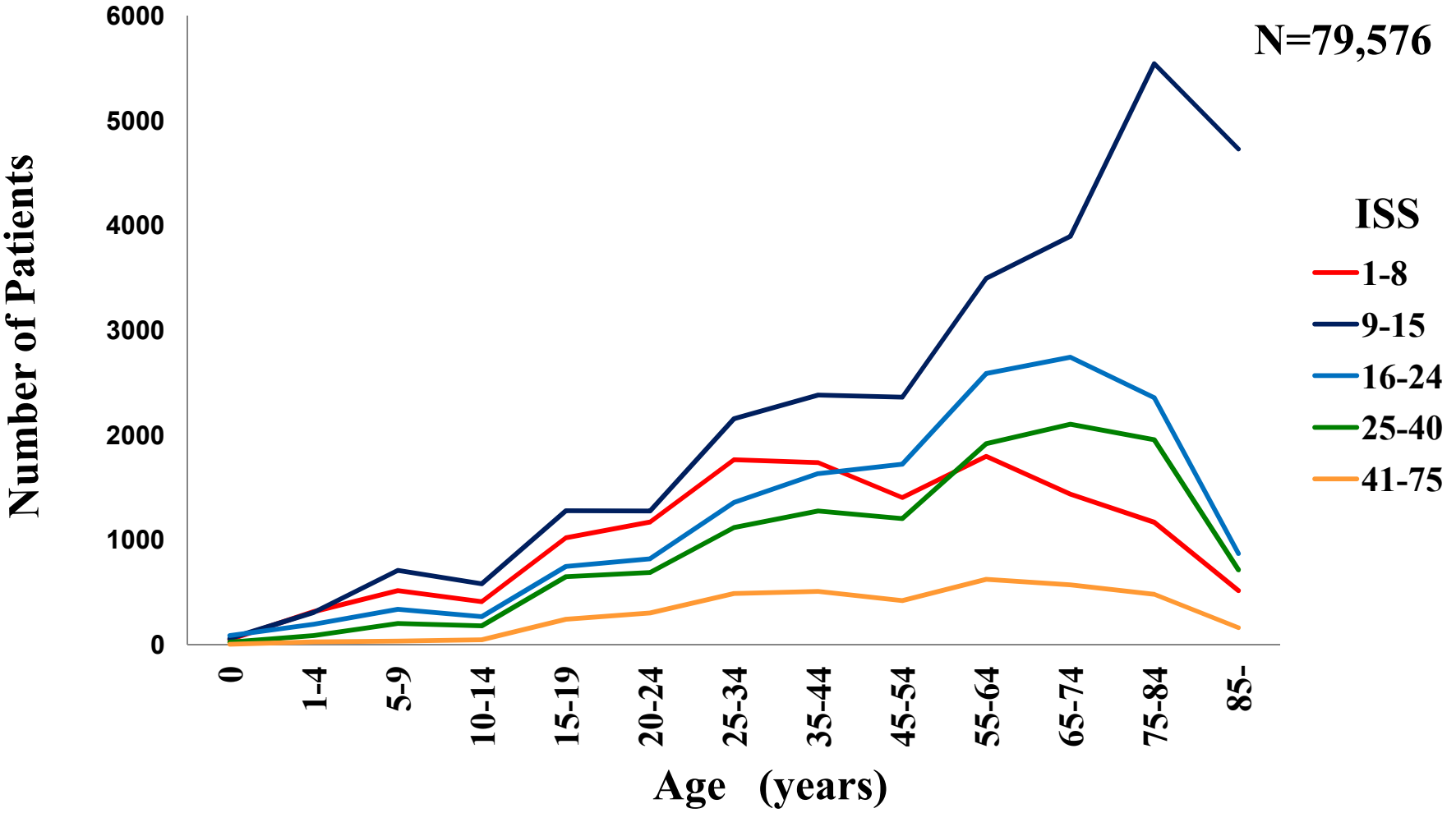


Figure 15 Patients by ISS and Age

Number of injured patients grouped by ISS range, at each age from 0 to 105. The peaks of the number of patients based on age distribution were seen at 25-44 and 55-74 ages of any ISS categories, and at 75-84 ages of ISS 9-15 . Total N=79,576.

ISS \ Age	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	50	314	515	411	1019	1171	1766	1738	1403	1798	1437	1169	515	33	13339
9-15	60	308	708	581	1278	1275	2157	2382	2362	3496	3897	5546	4731	24	28805
16-24	86	195	338	266	747	820	1357	1631	1723	2588	2744	2357	869	24	15745
25-40	24	86	203	180	648	690	1117	1276	1203	1918	2105	1955	715	26	12146
41-75	3	27	33	47	242	302	488	508	420	623	570	480	161	22	3926
Unknown	36	87	98	105	282	360	559	653	577	791	790	764	395	118	5615
Total	259	1017	1895	1590	4216	4618	7444	8188	7688	11214	11543	12271	7386	247	79576

Table 15　Patients by ISS and Age

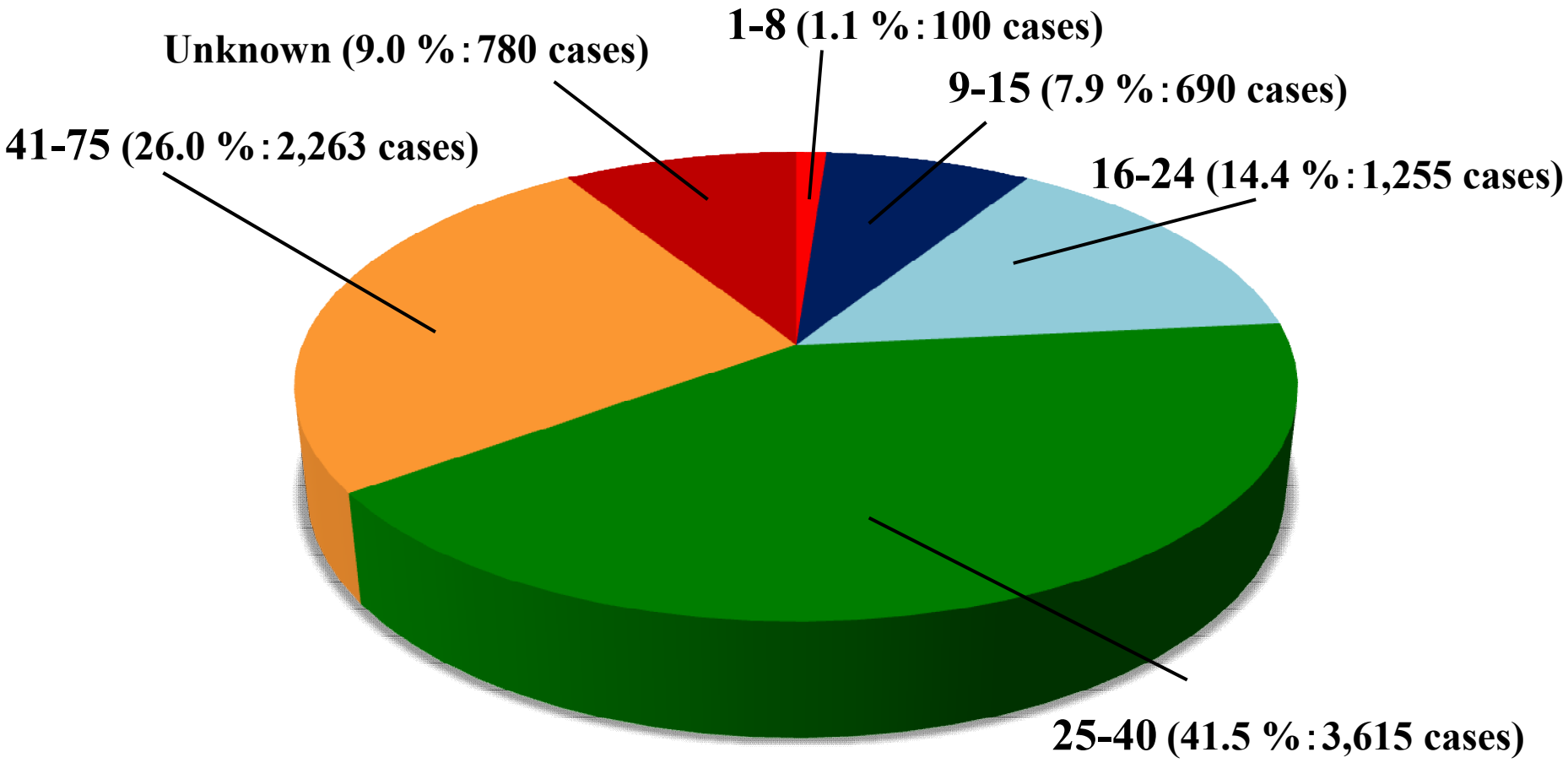


Figure 16A　Deaths and Injury Severity Score (ISS)

Proportional distribution of deaths grouped by categories of ISS range. Total N=8,703. Deaths in ISS 25-40 category were the highest (3,615 cases: 41.5% of all deaths).

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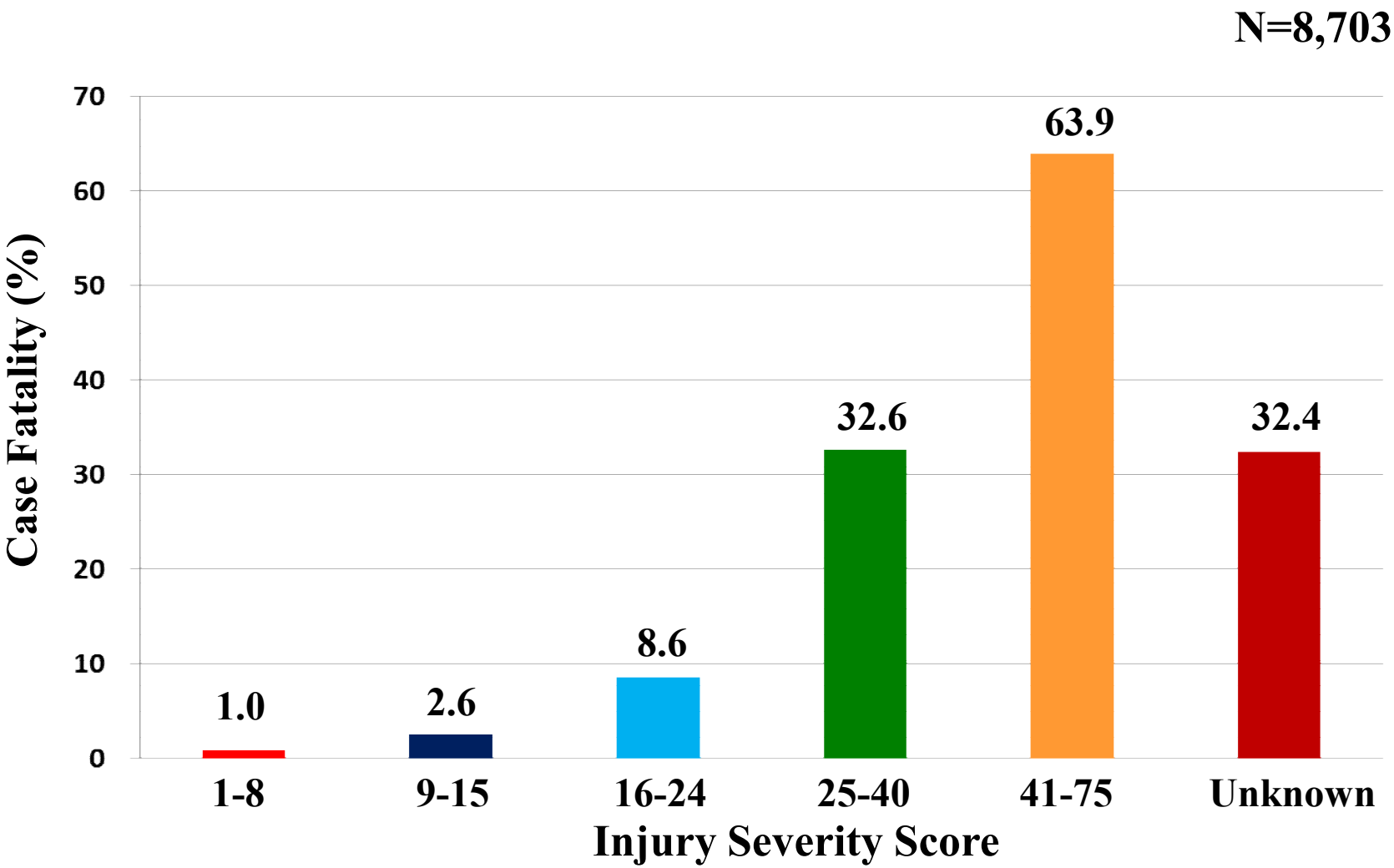


Figure 16B Case Fatality by Injury Severity Score (ISS) Range

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.

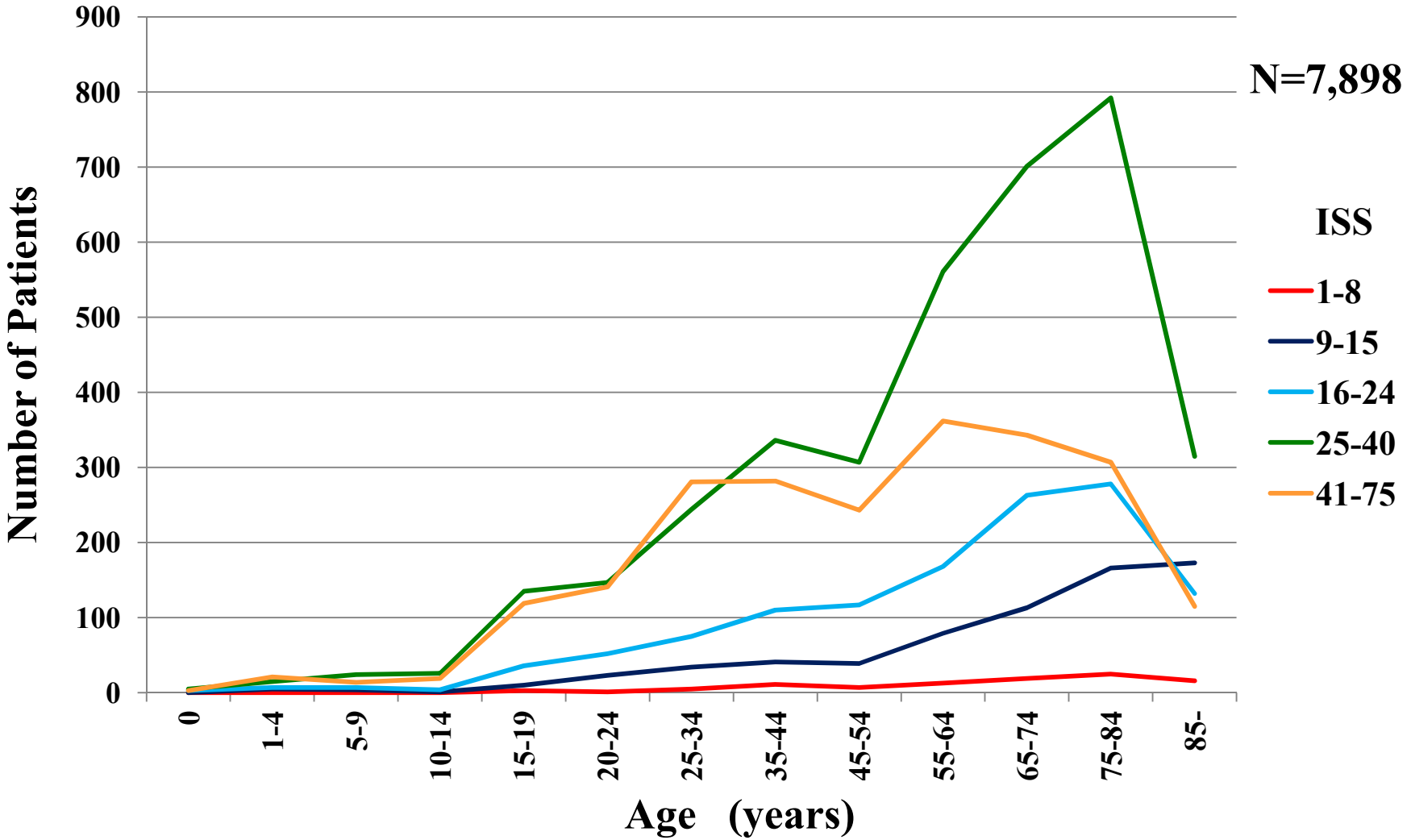


Figure 17 Deaths by ISS and Age

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.

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	1	5	11	7	13	19	25	16	0	100
9-15	0	5	4	1	10	23	34	41	39	79	113	166	173	2	690
16-24	3	7	7	4	36	52	75	110	117	168	263	278	132	3	1255
25-40	5	15	24	26	135	147	244	336	307	561	701	792	315	7	3615
41-75	3	21	14	19	119	141	281	282	243	362	343	307	115	13	2263
Unknown	5	15	10	10	30	57	81	103	92	113	122	98	39	5	780
Total	16	63	59	60	333	421	720	883	805	1296	1561	1666	790	30	8703

Table 17 Deaths by ISS and Age

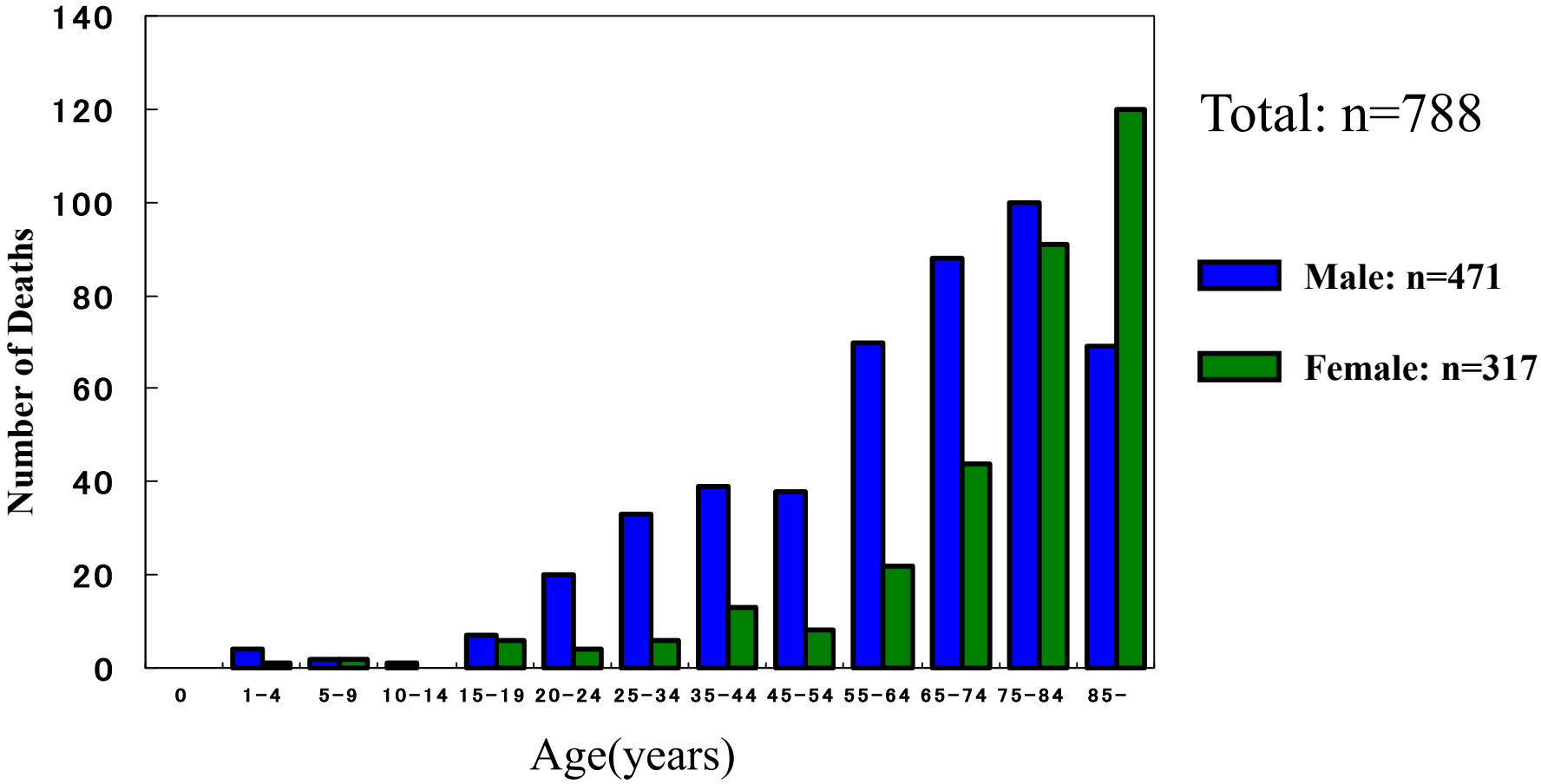


Figure18 Deaths by Age and Gender (ISS<=15)

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

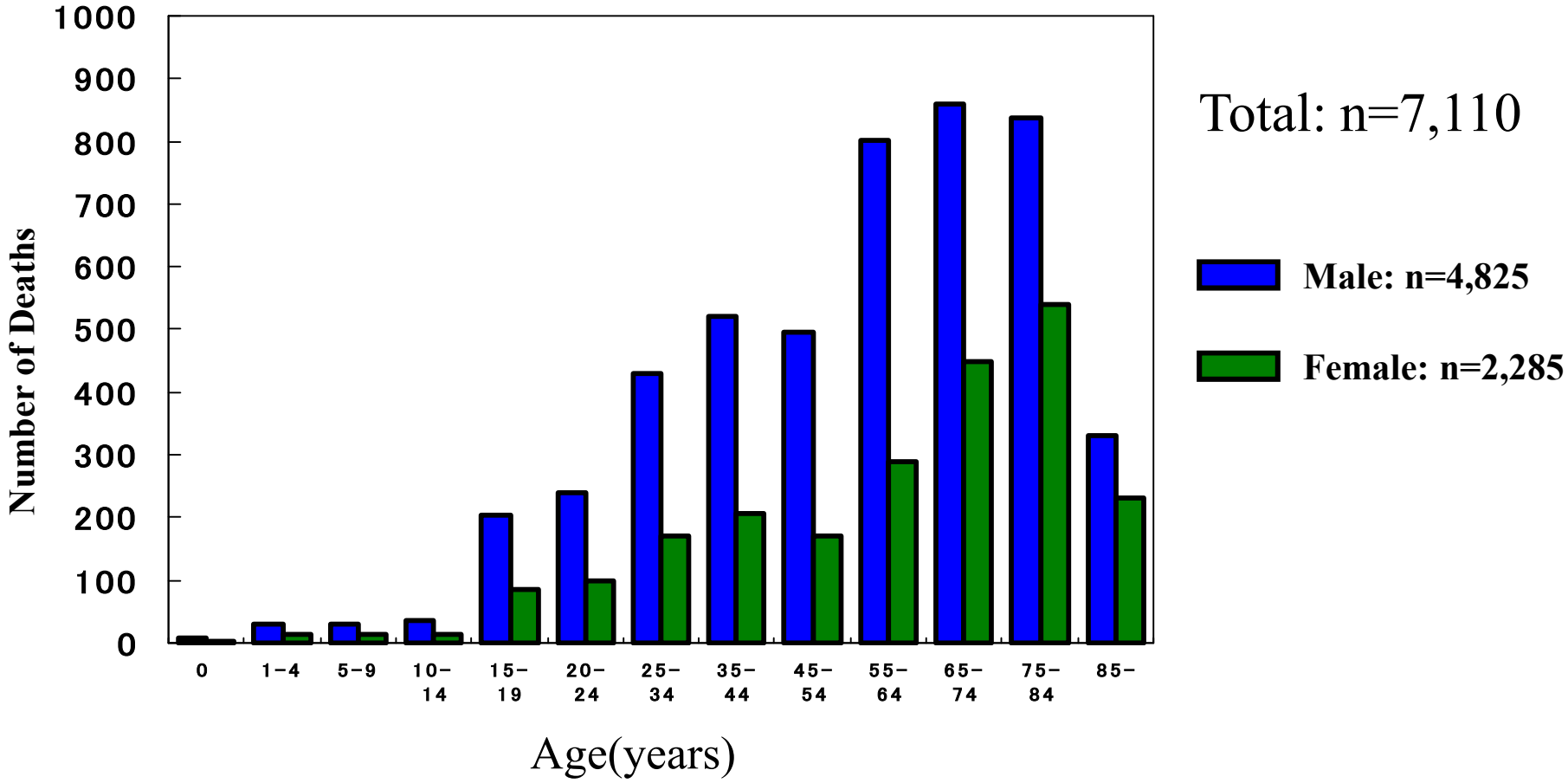


Figure19 Deaths by Age and Gender (ISS>15)

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

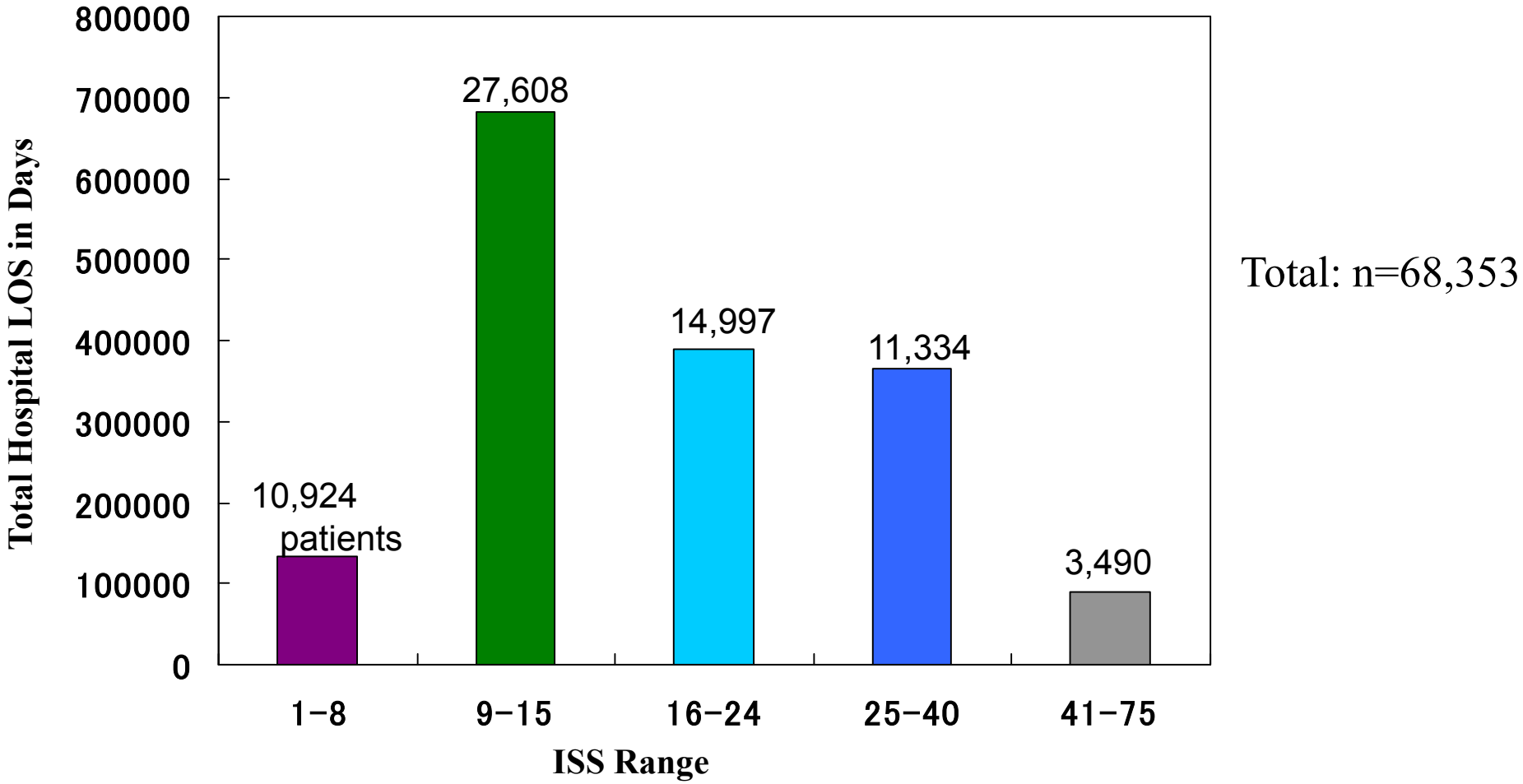


Figure 20A Total Hospital LOS and Injury Severity Score (ISS)

Proportional distribution of total hospital length of stay for patients, grouped by ISS range.

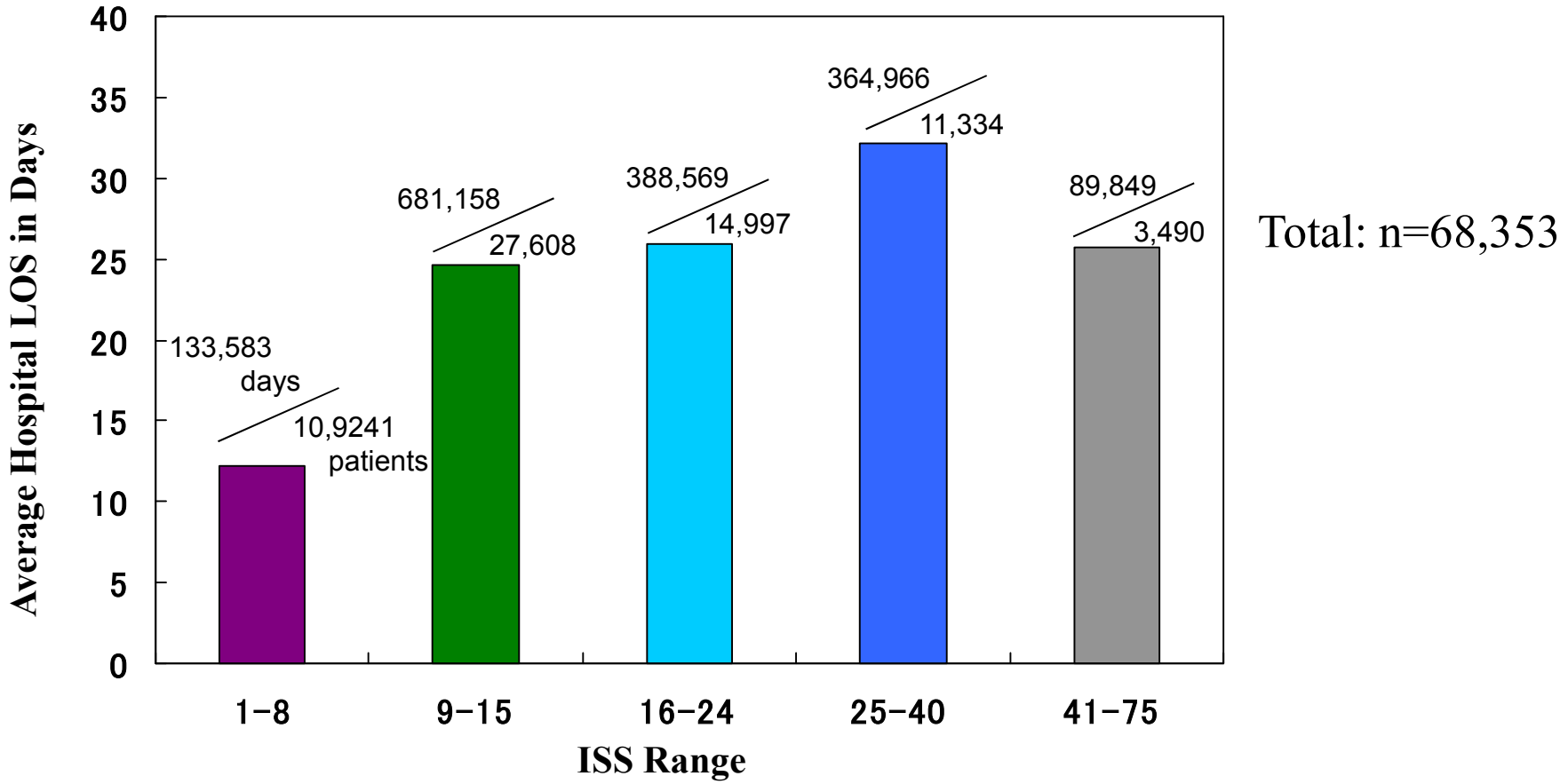


Figure 20B Average Hospital LOS and Injury Severity Score
Average hospital length of stay for each category of ISS range. (Average hospital length of stay = total hospital length of stay for each ISS range divided by the total number of patients).

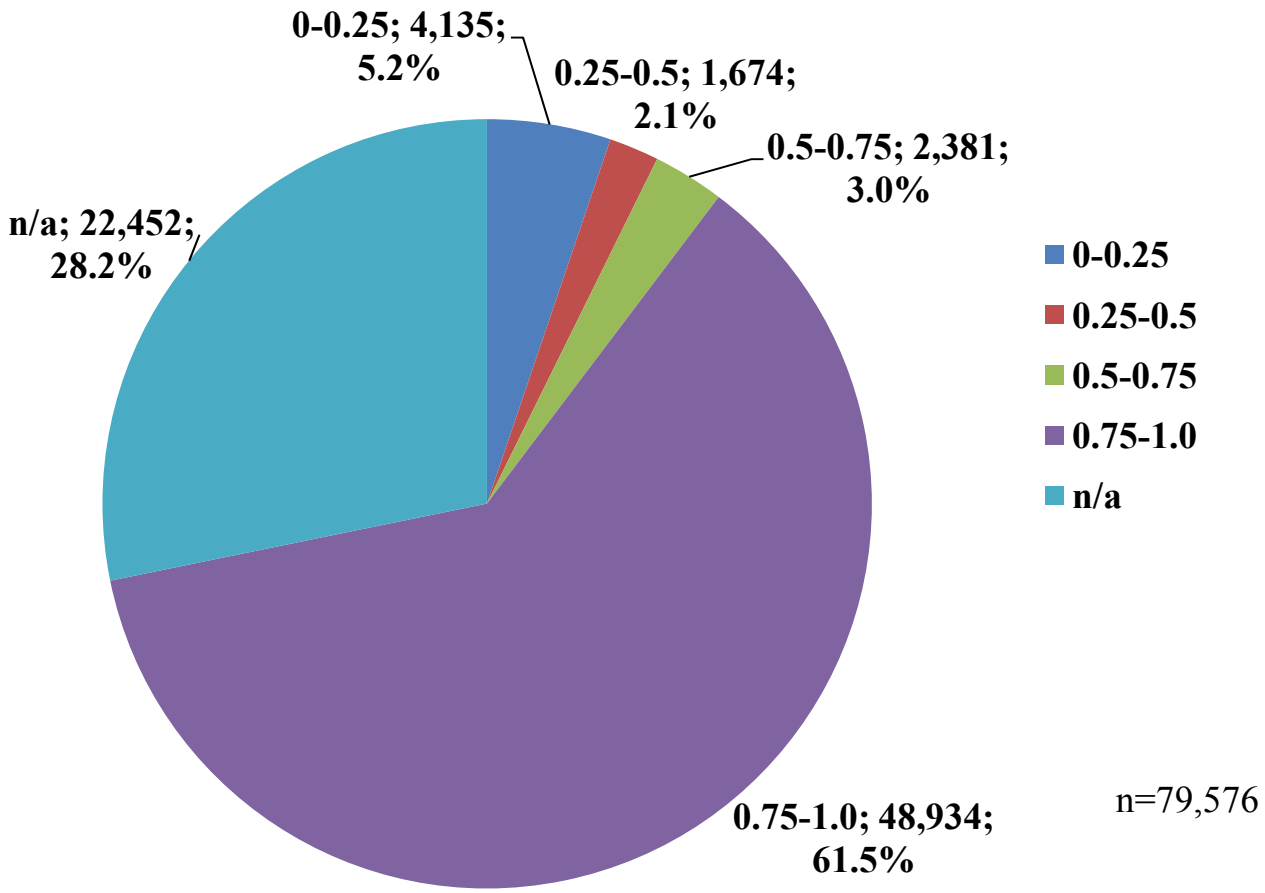


Figure 21 Patients by Probability of Survival (Ps)

Proportional distribution of patients, grouped by each category of Ps. The Ps category(0.75-1.0) accounted for 61.5% of all cases. Twenty eight percent of cases were missing at least one variable required to calculate Ps. n/a: not assessed due to missing data.

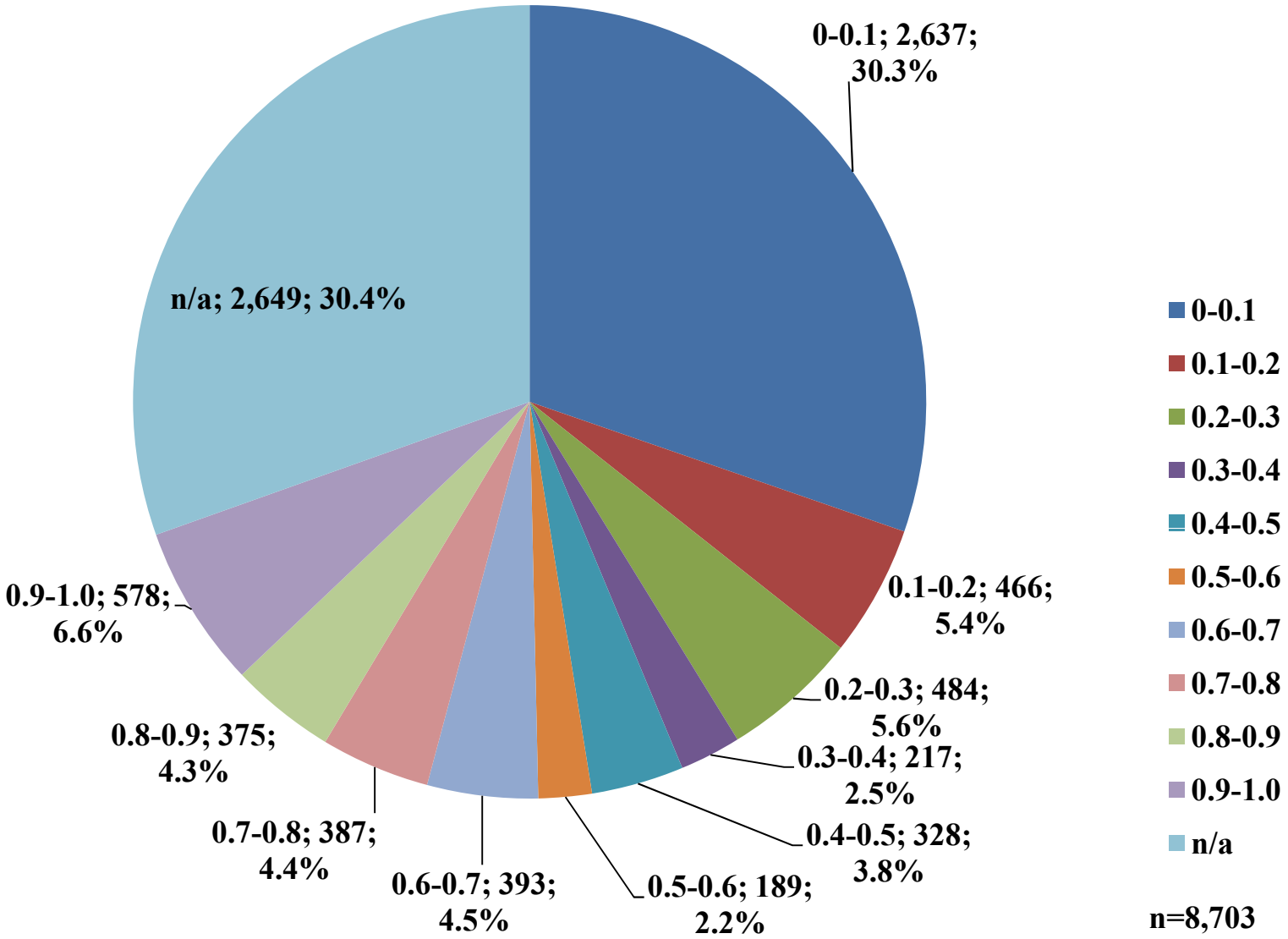


Figure 22-A Deaths by Probability of survival (Ps)

Proportional distribution of deaths, grouped by each category of Ps. The lowest Ps category (0-0.1) accounted for 30.3% of all deaths. n/a: not assessed due to missing values.

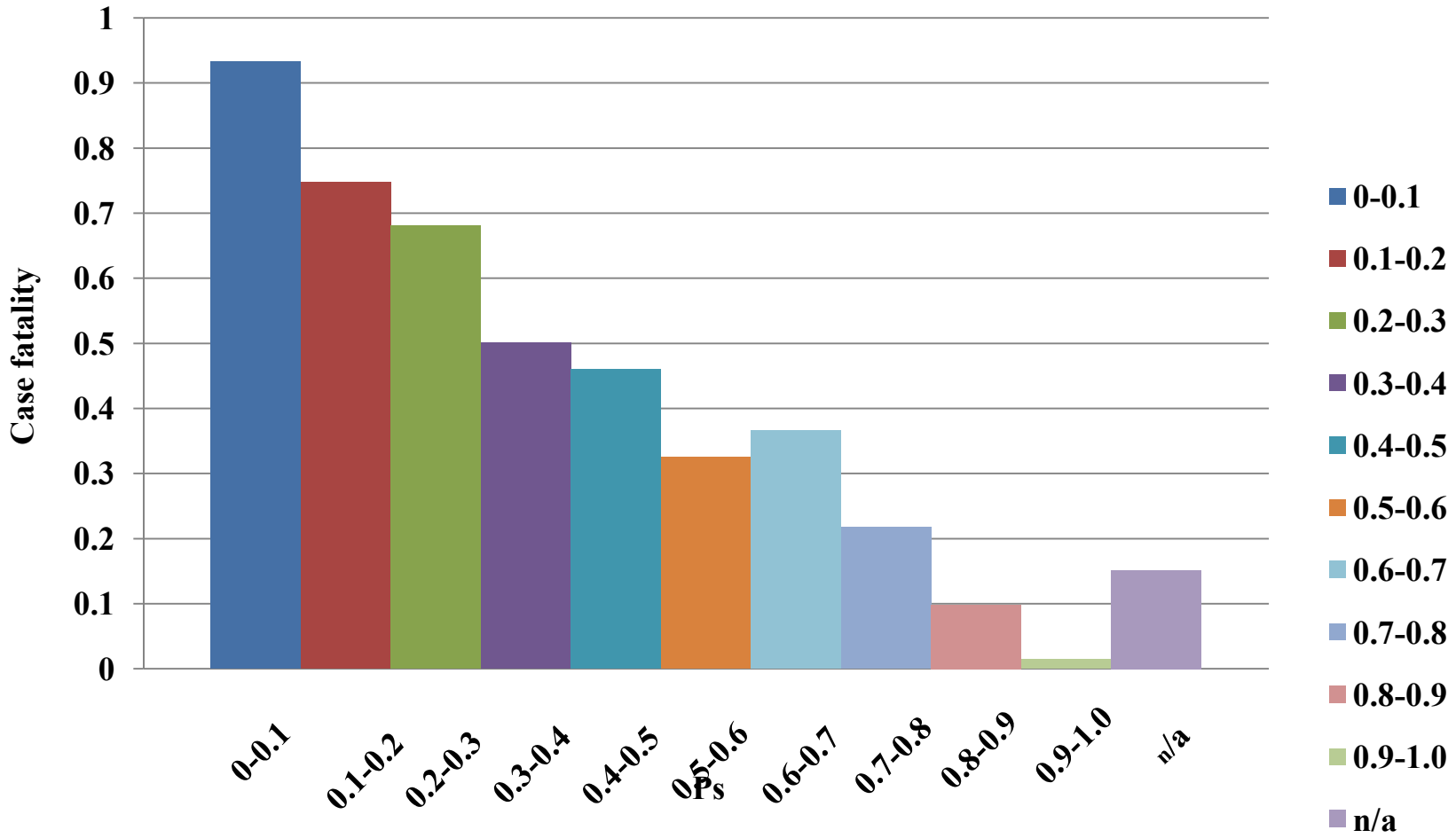


Figure 22-B Case Fatality by Probability of Survival (Ps)

n=69,012

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 93.3% and the lowest fatality 1.5%, 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.

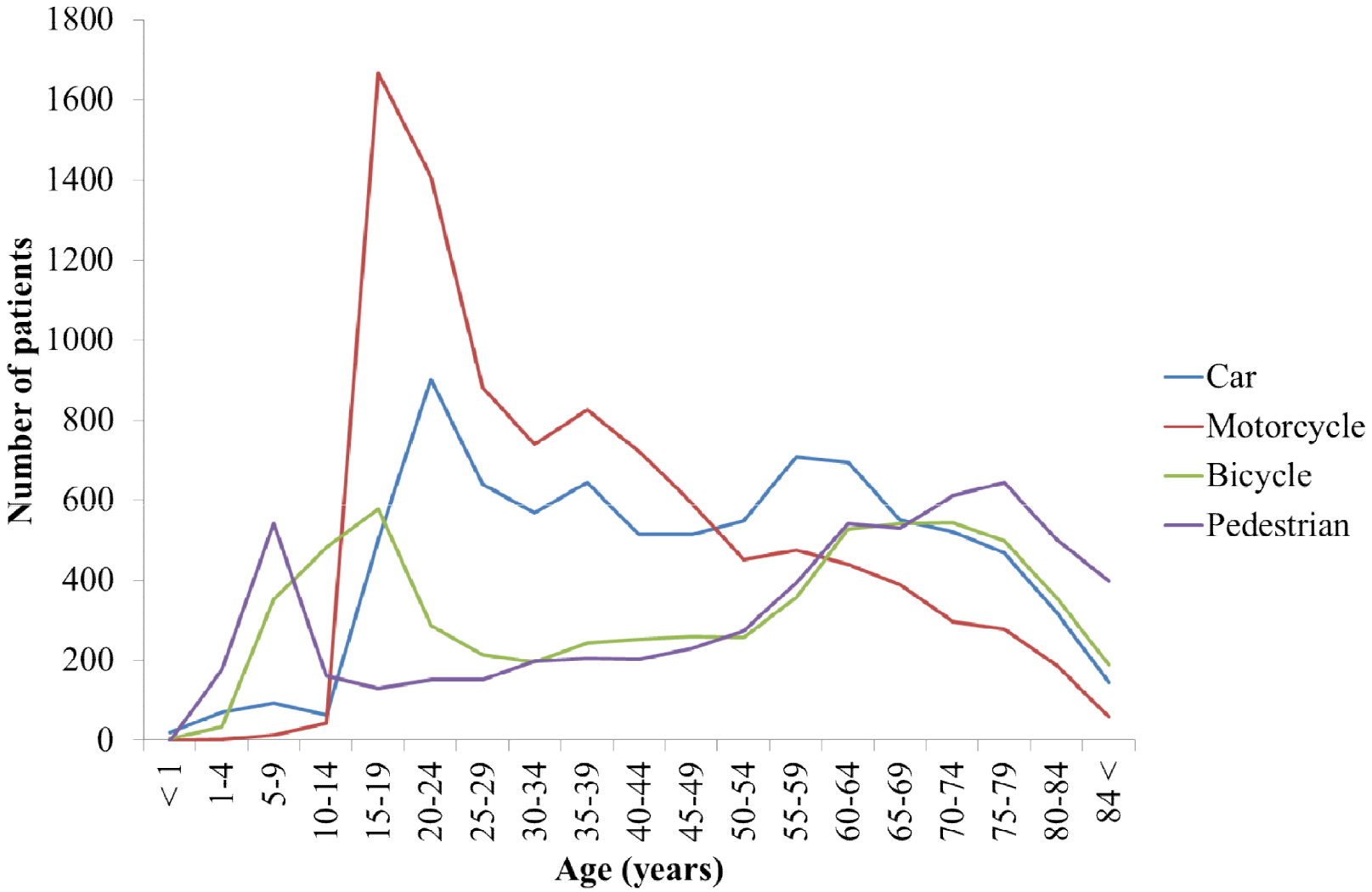


Figure 23 The number of patients in traffic accidents by types of vehicle and age

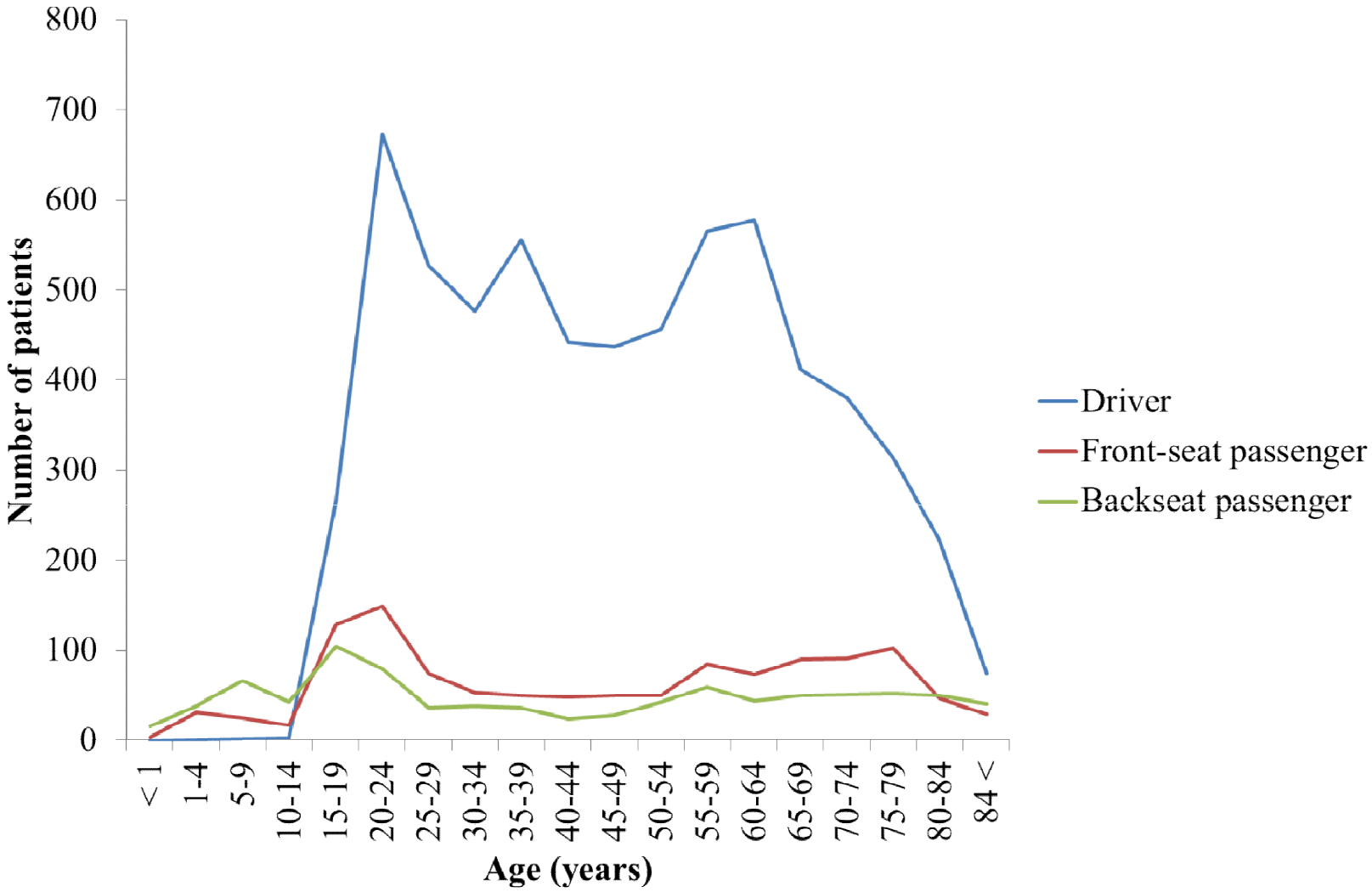


Figure 24 The number of patients in car accident by drivers and passengers and age

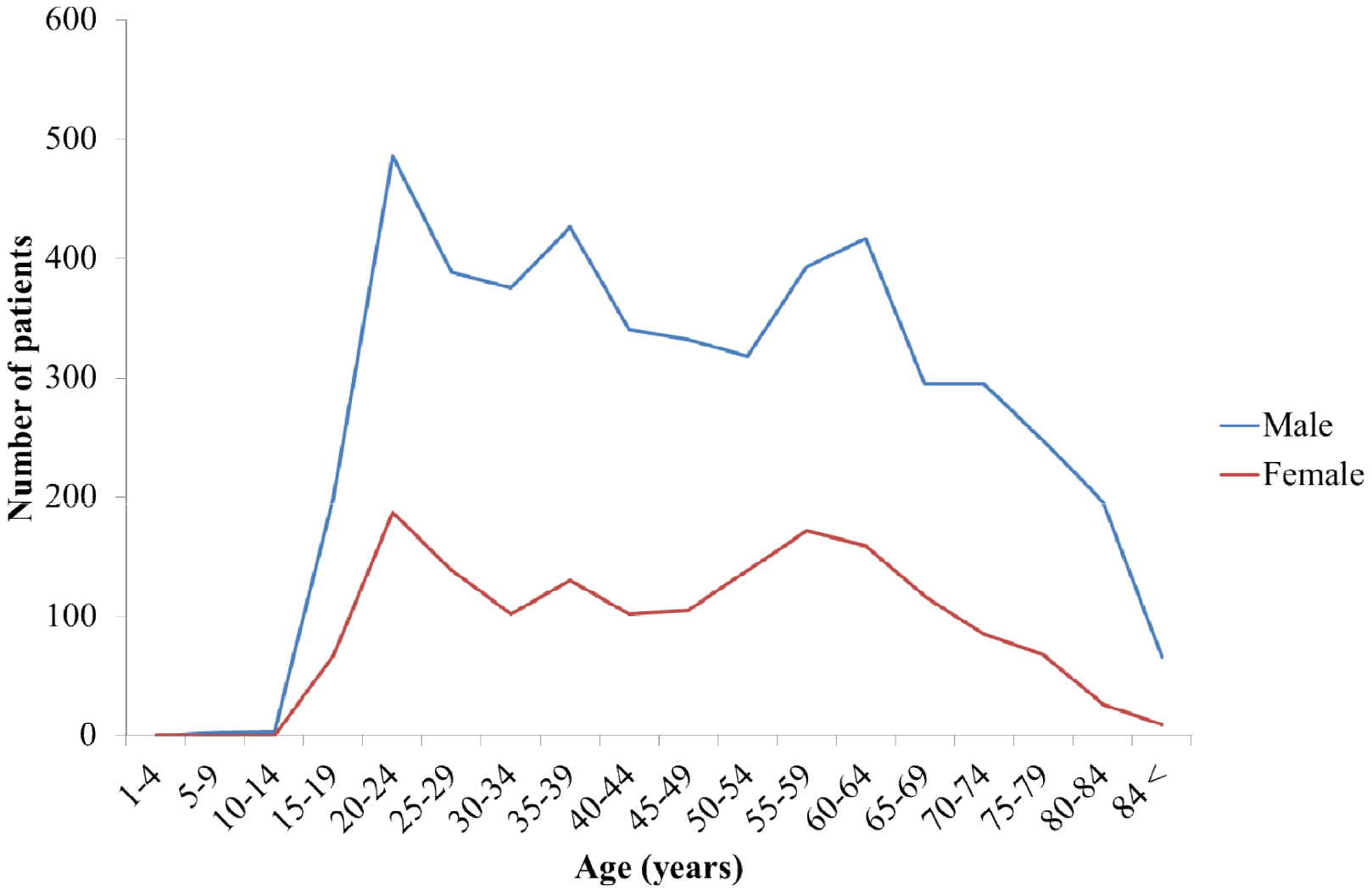


Figure 25 The number of patients in car accident (driver) by gender and age

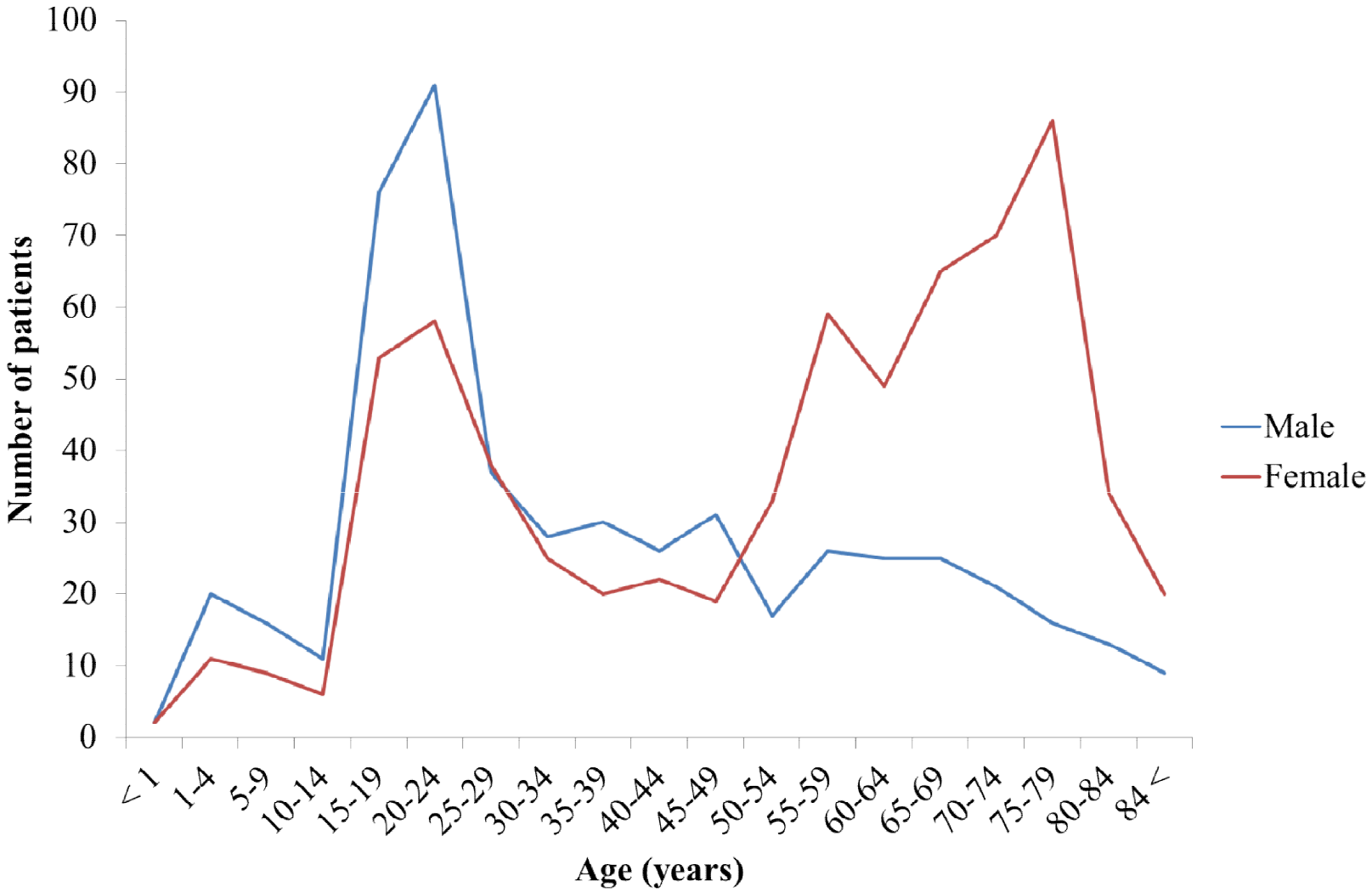
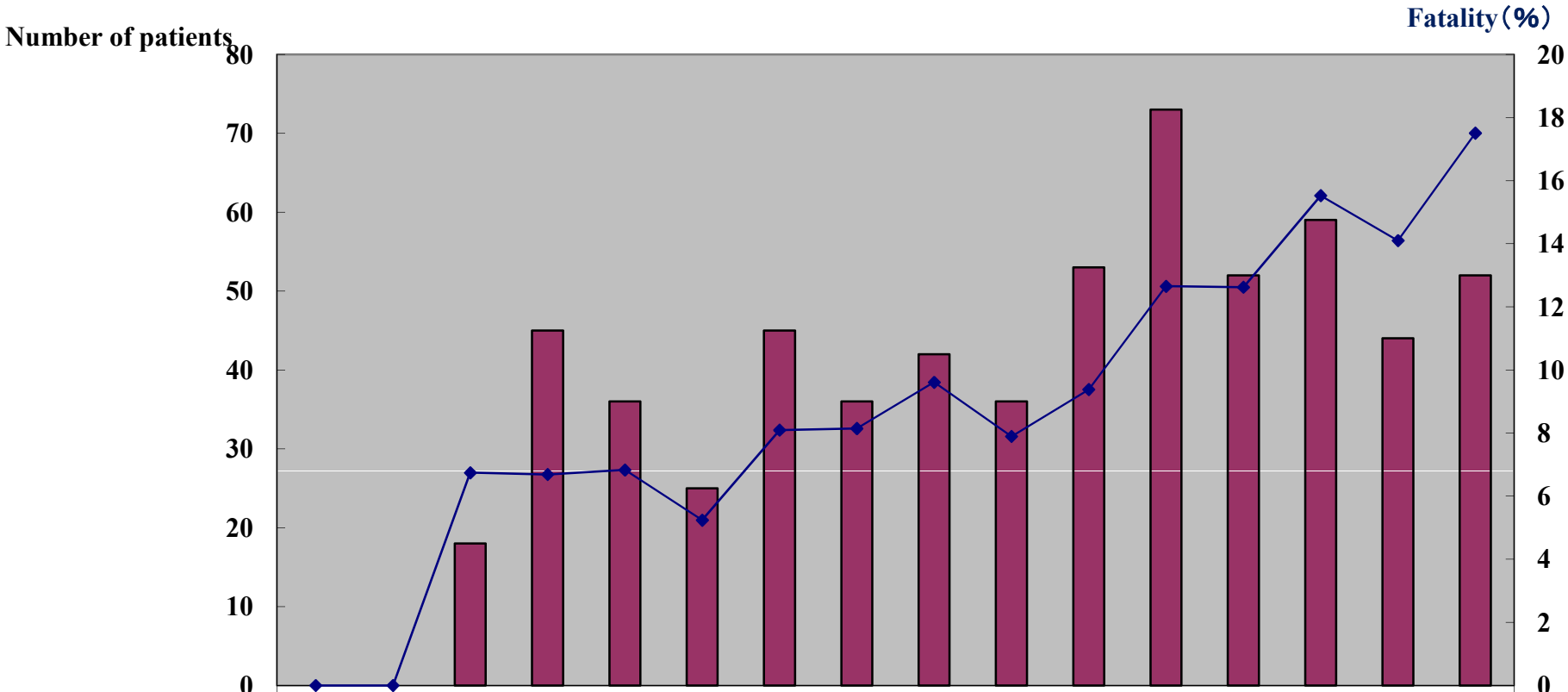
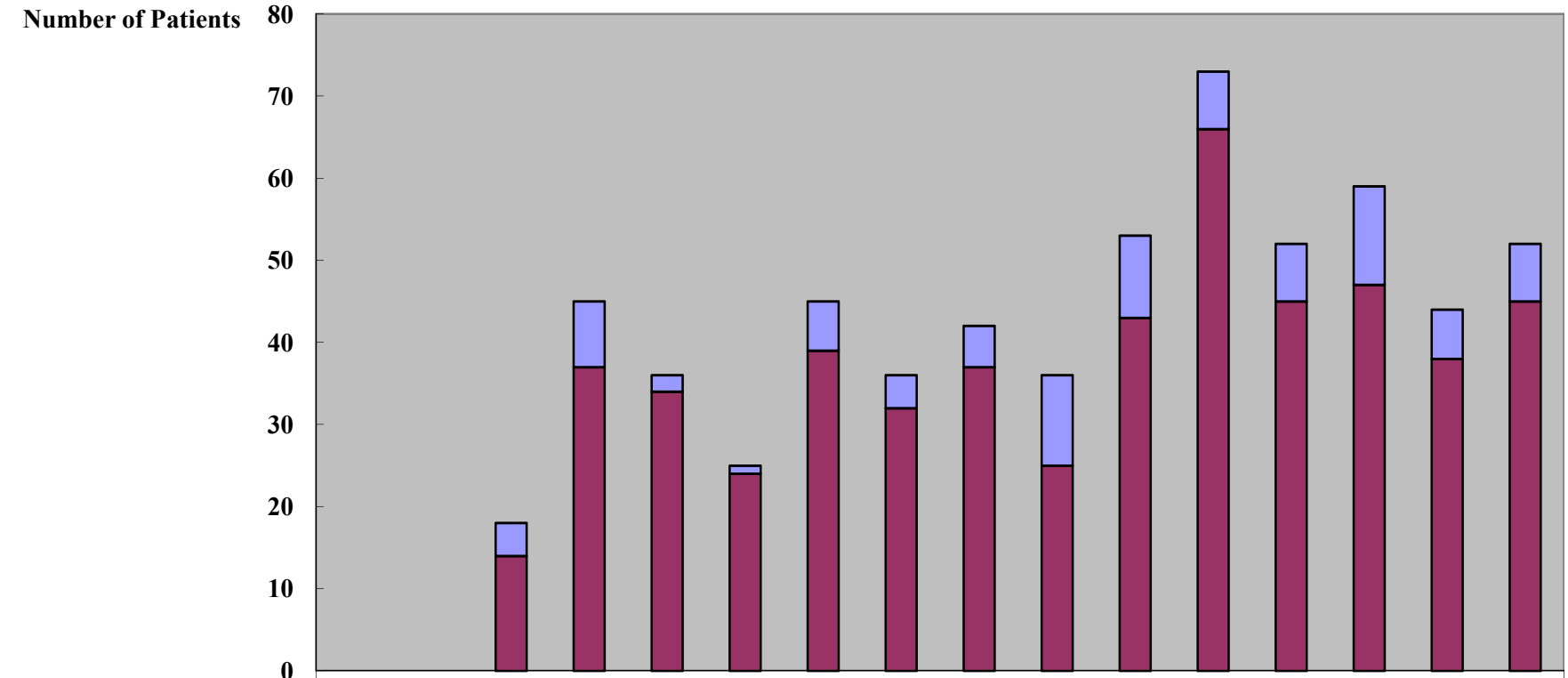


Figure 26 The number of patients in car accident (passenger) by gender and age



Age	～10	11～15	15～20	21～25	26～30	31～35	36～40	41～45	46～50	51～55	56～60	61～65	66～70	71～75	75～80	81～
Number of Deaths	0	0	18	45	36	25	45	36	42	36	53	73	52	59	44	52
Fatality(%)	0	0.0	6.7	6.7	6.8	5.2	8.1	8.1	9.6	7.9	9.4	12.7	12.6	15.5	14.1	17.5

Fig.27　Number of Deaths and Fatalities of Motor Vehicular Drivers by Age



Age	～10	11～15	15～20	21～25	26～30	31～35	36～40	41～45	46～50	51～55	56～60	61～65	66～70	71～75	75～80	81～
Number of Female Deaths	0	0	4	8	2	1	6	4	5	11	10	7	7	12	6	7
Number of Male Deaths	0	0	14	37	34	24	39	32	37	25	43	66	45	47	38	45

Fig. 28　Number of Deaths of Motor Vehicular Drivers by Age and Genders

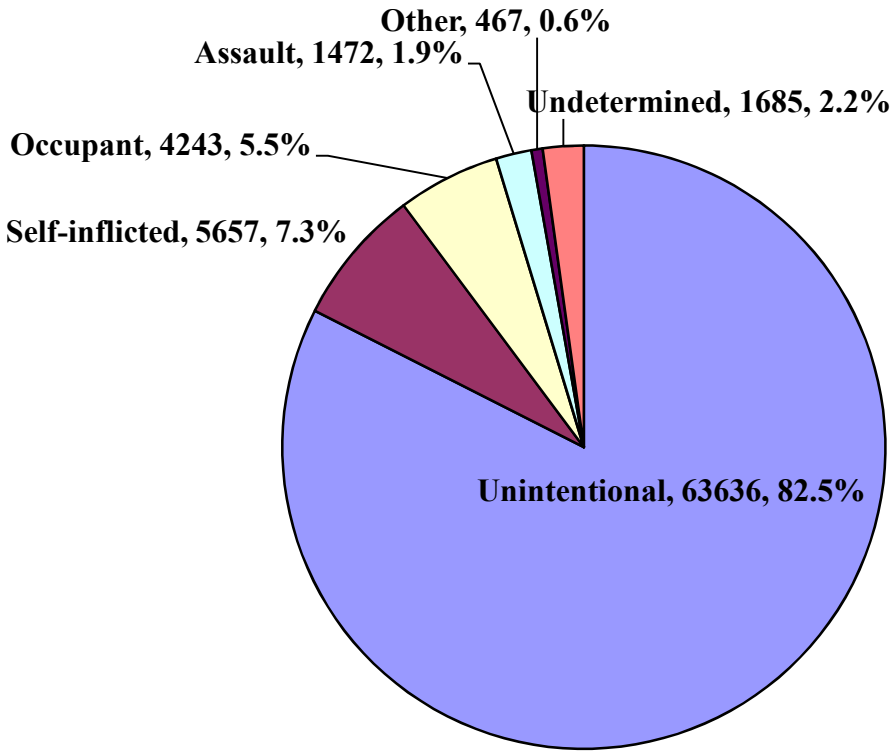


Fig. 29 Proportional distribution of registered patients, groped by intent

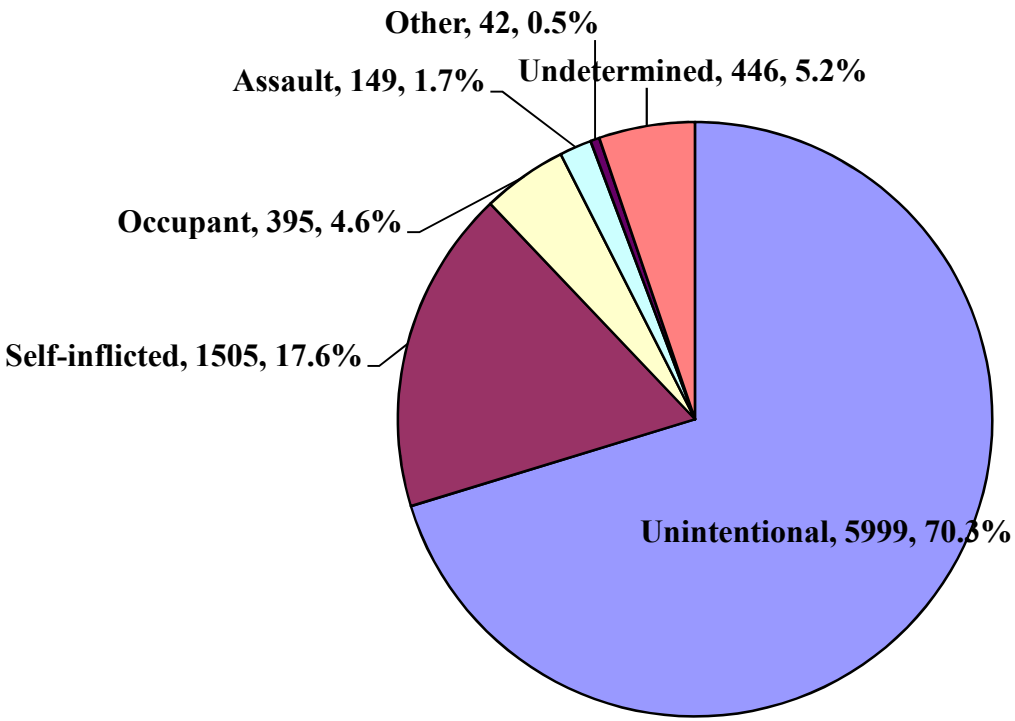


Fig. 30 Proportional distribution of deaths, grouped by intent

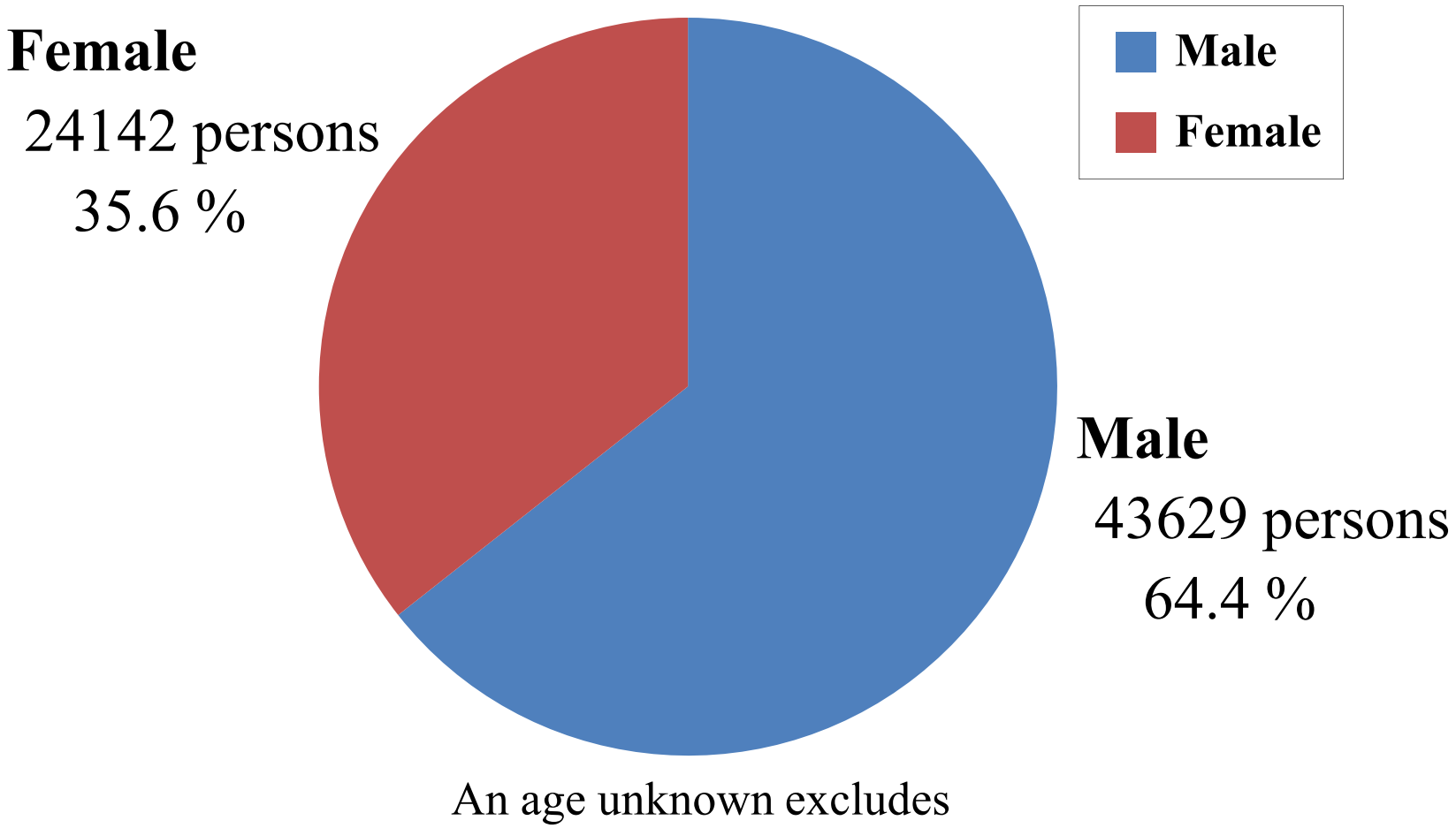


Figure 31 Gender proportion of Unintentional and Occupant

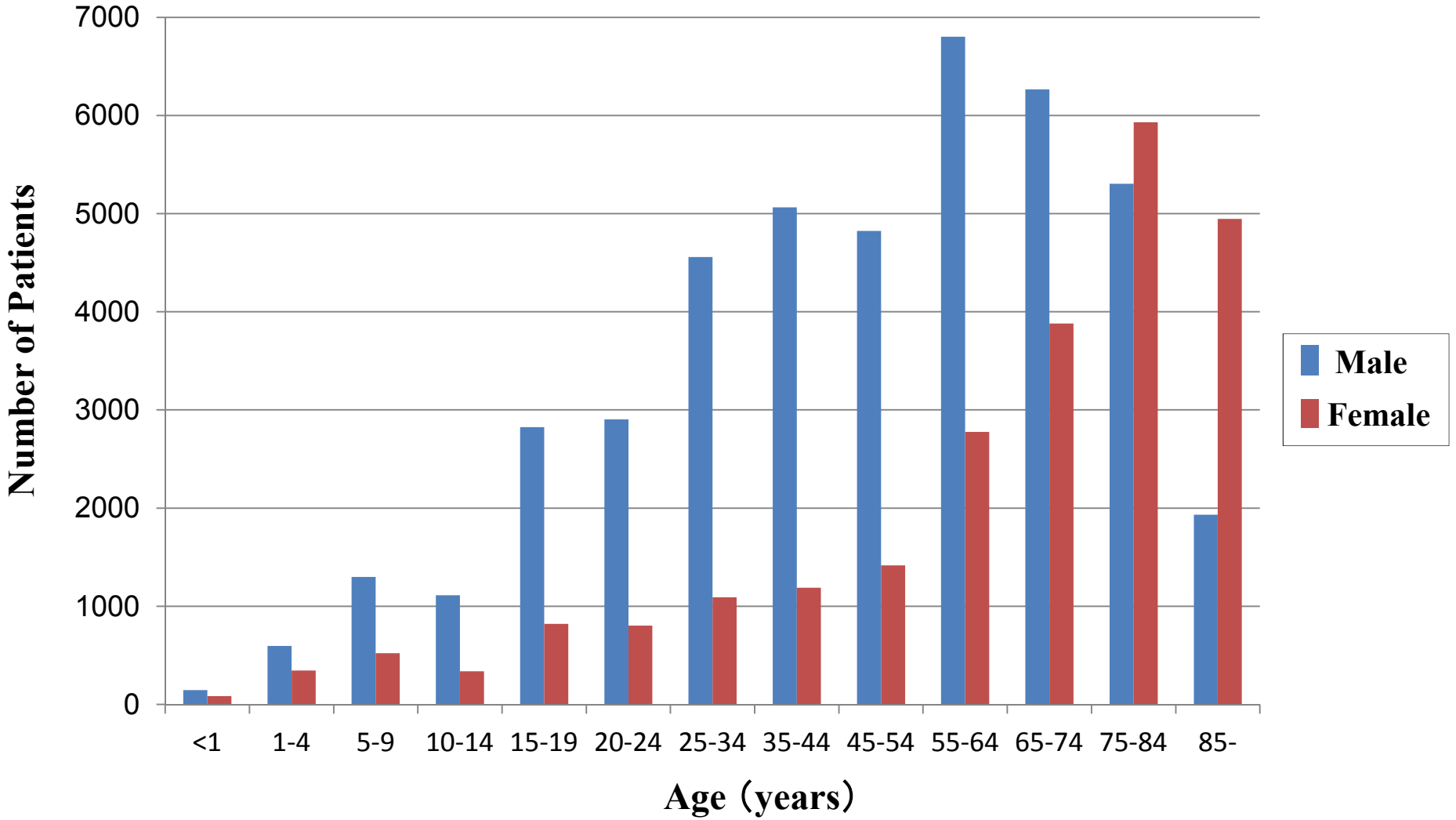


Figure 32 Unintentional and Occupant by Age and Gender

Age	Male	Female	total
＜ 1	146	84	230
1 - 4	595	345	940
5 - 9	1300	521	1821
10 - 14	1111	337	1448
15 - 19	2824	821	3645
20 - 24	2905	803	3708
25 - 34	4557	1092	5649
35 - 44	5064	1188	6252
45 - 54	4824	1417	6241
55 - 64	6801	2776	9577
65 - 74	6265	3881	10146
75 - 84	5305	5931	11236
85 -	1932	4946	6878
	43629	24142	67771

Table 32 Unintentional and Occupant by Age and Gender

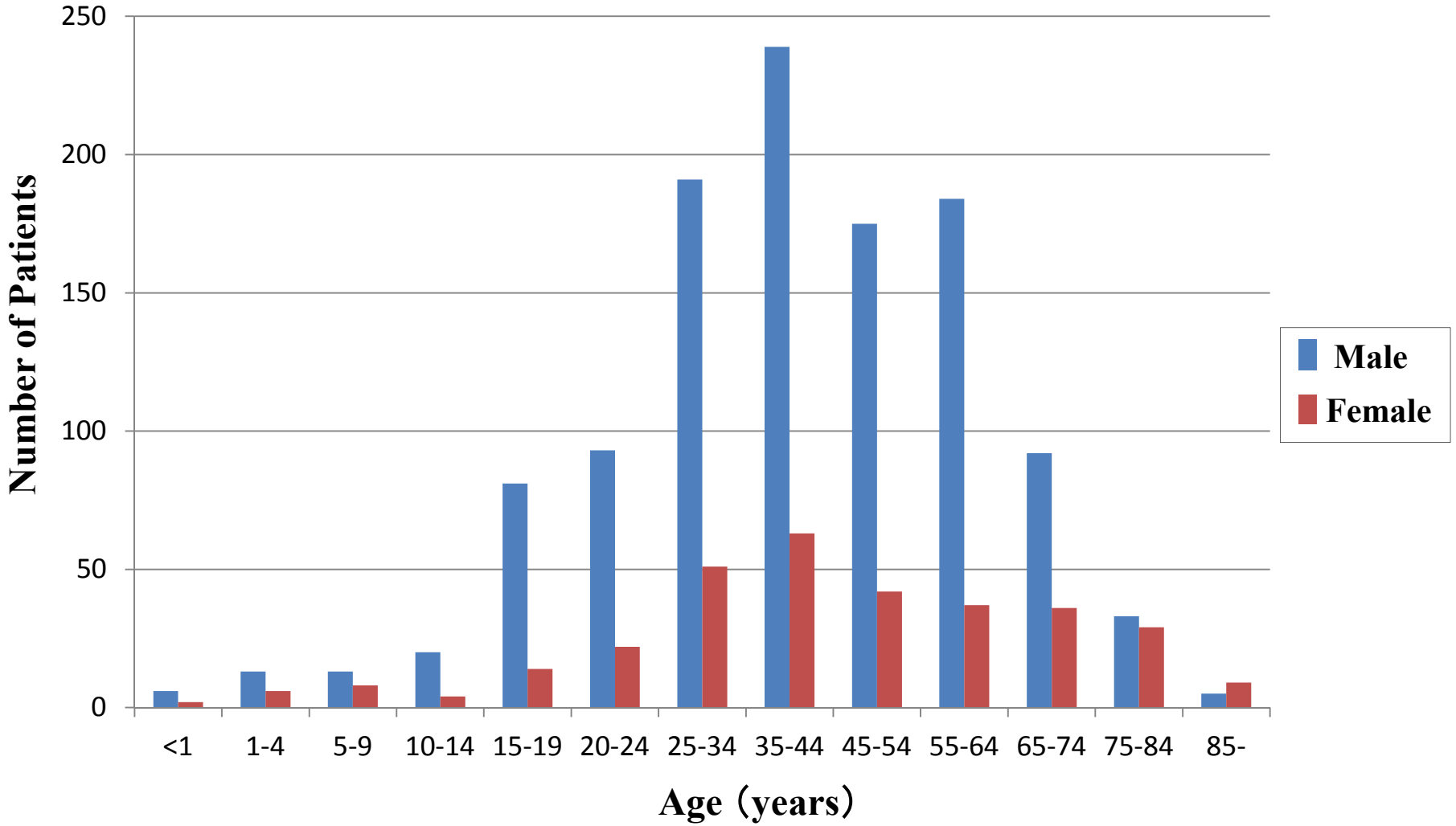


Figure 33 Assault by Age and Gender

Age	Male	Female	total
< 1	6	2	8
1 - 4	13	6	19
5 - 9	13	8	21
10 - 14	20	4	24
15 - 19	81	14	95
20 - 24	93	22	115
25 - 34	191	51	242
35 - 44	239	63	302
45 - 54	175	42	217
55 - 64	184	37	221
65 - 74	92	36	128
75 - 84	33	29	62
85 -	5	9	14
	1145	323	1468

Table 33 Assault by Age and Gender

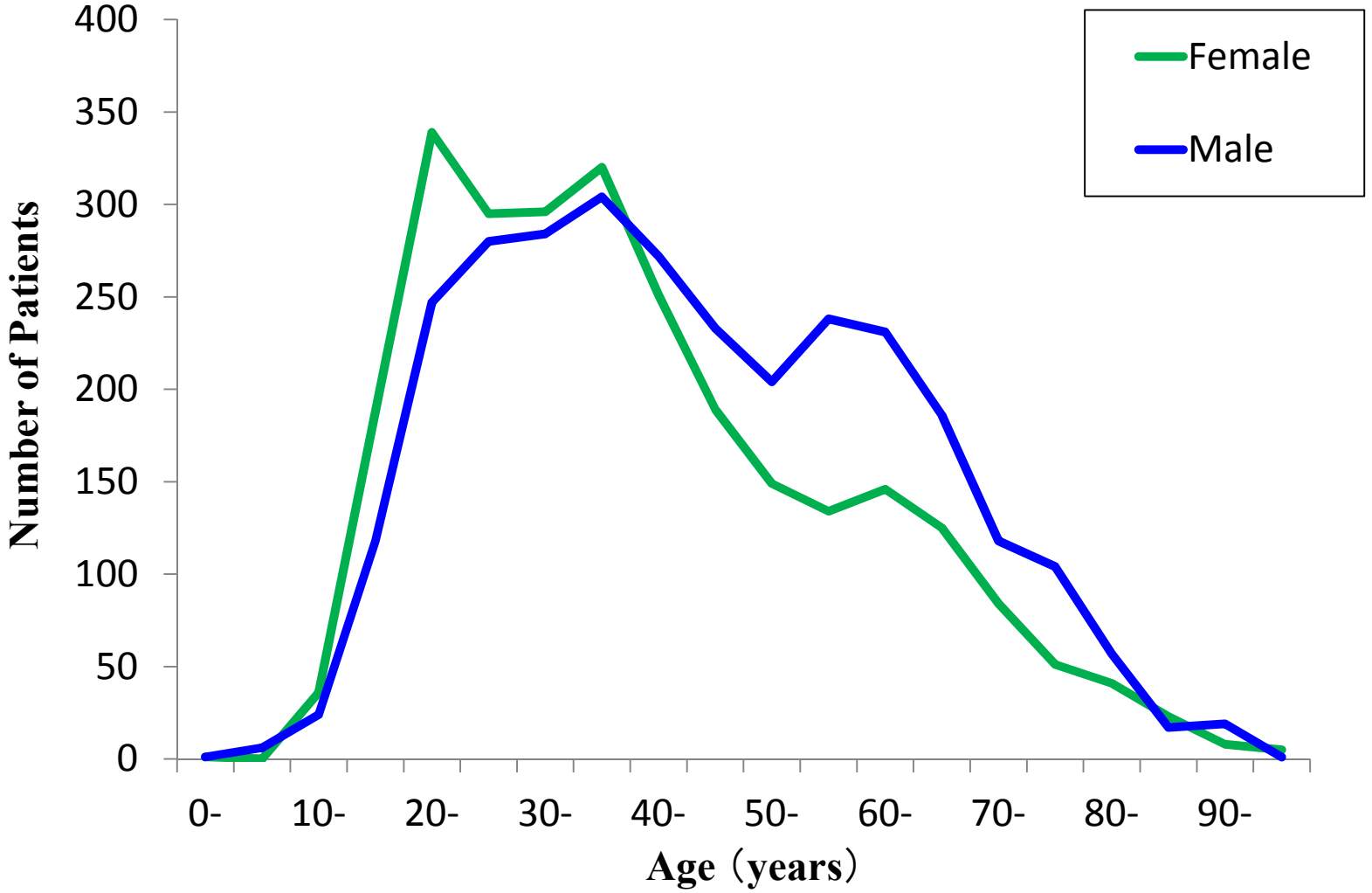


Figure 34 Self-inflicted by Age and Gender

Age	0-	5-	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	unknown	total
female	1	0	36	188	339	295	296	320	251	189	149	134	146	125	84	51	41	23	8	5	14	2695
Male	1	6	24	118	247	280	284	304	272	233	204	238	231	186	118	104	57	17	19	1	19	2963
total	2	6	60	306	586	575	580	624	523	422	353	372	377	311	202	155	98	40	27	6	33	5658

Table 34 Self-inflicted by Age and Gender

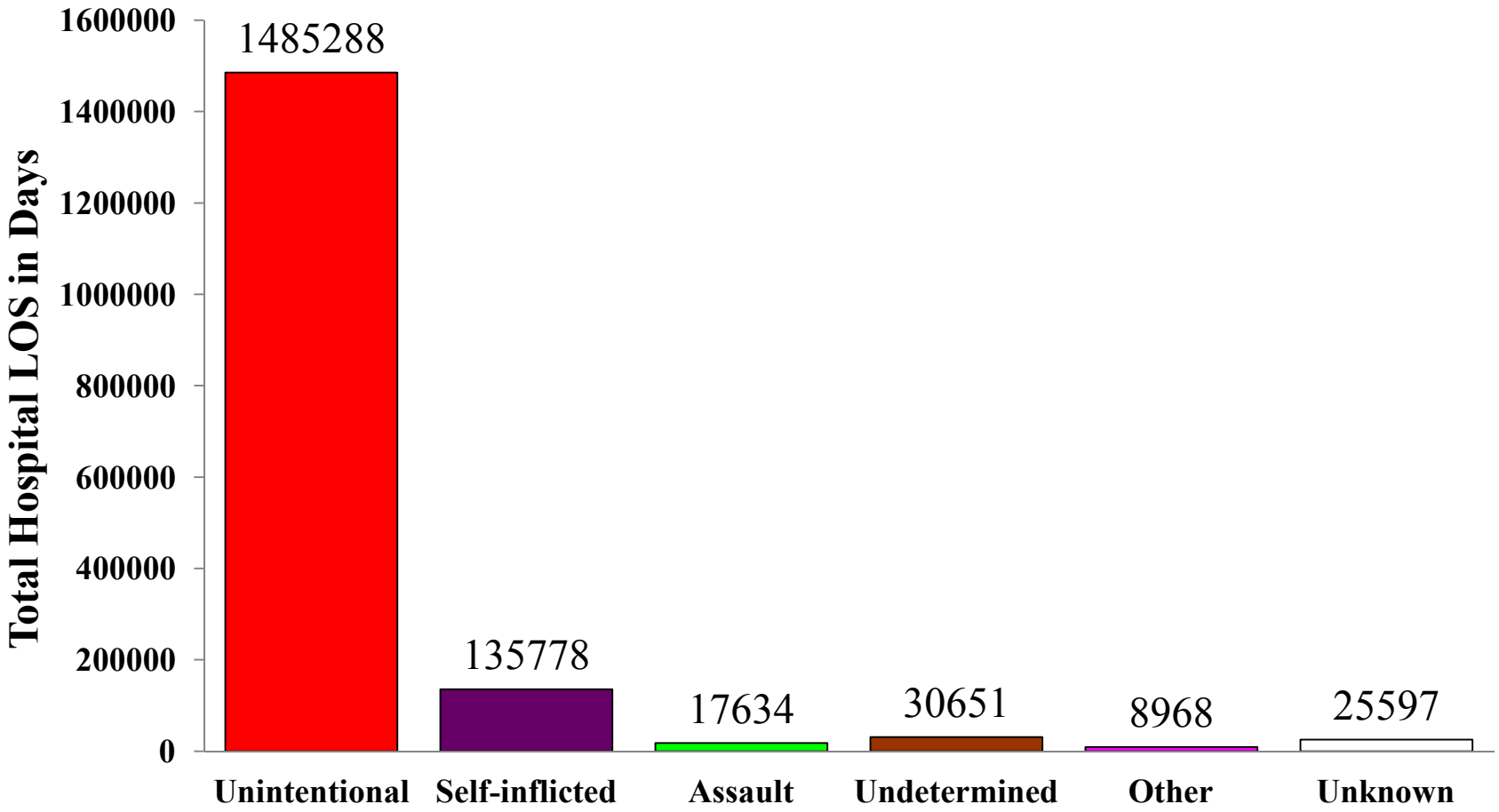


Figure 35A Total Hospital LOS by Intent
Industrial accident was included in the category of "Unintentional".

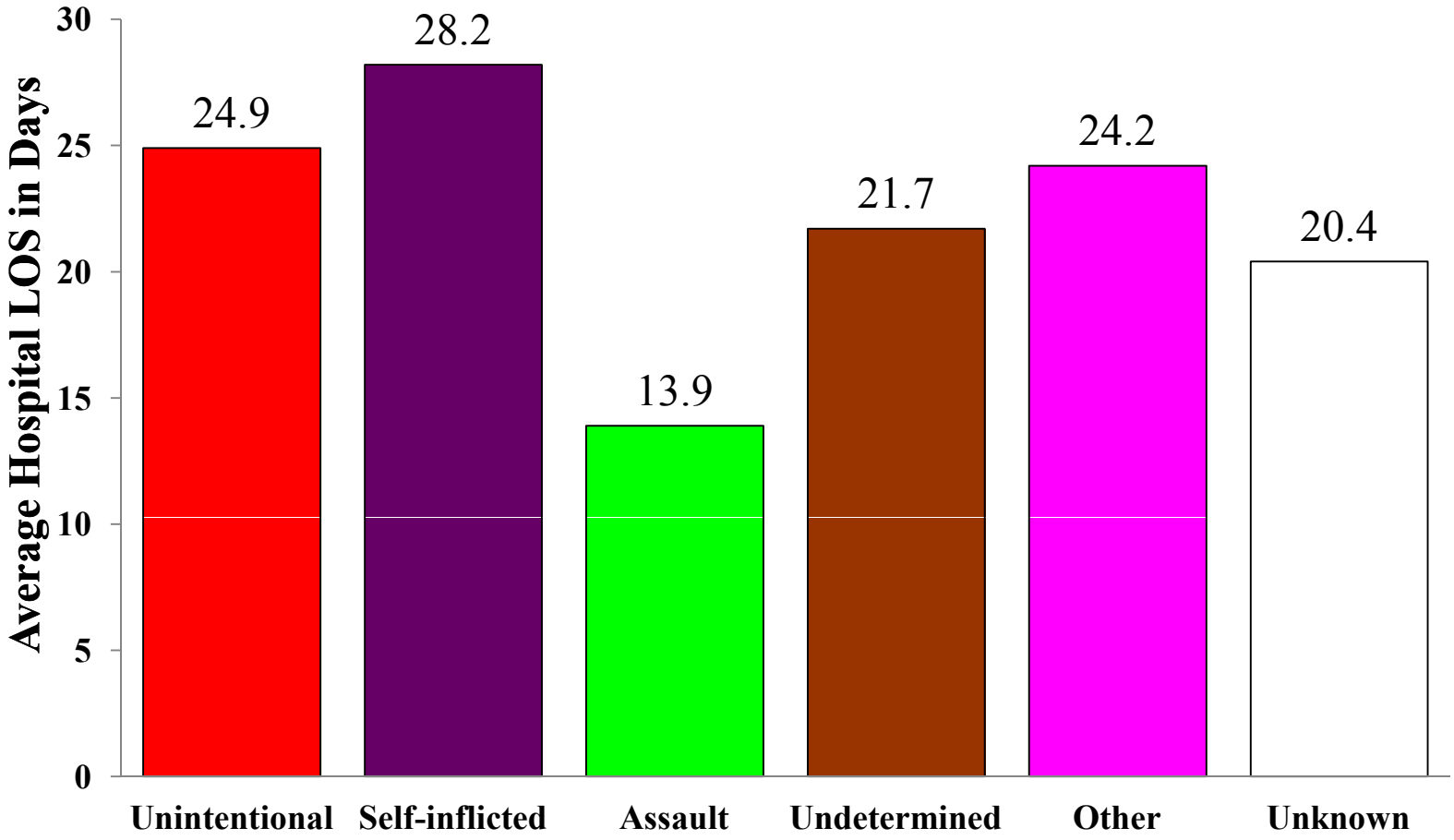


Figure 35B Average Hospital LOS by Intent
Average hospital length of stay in days = total hospital length of stay divided by the number of patients by intent.

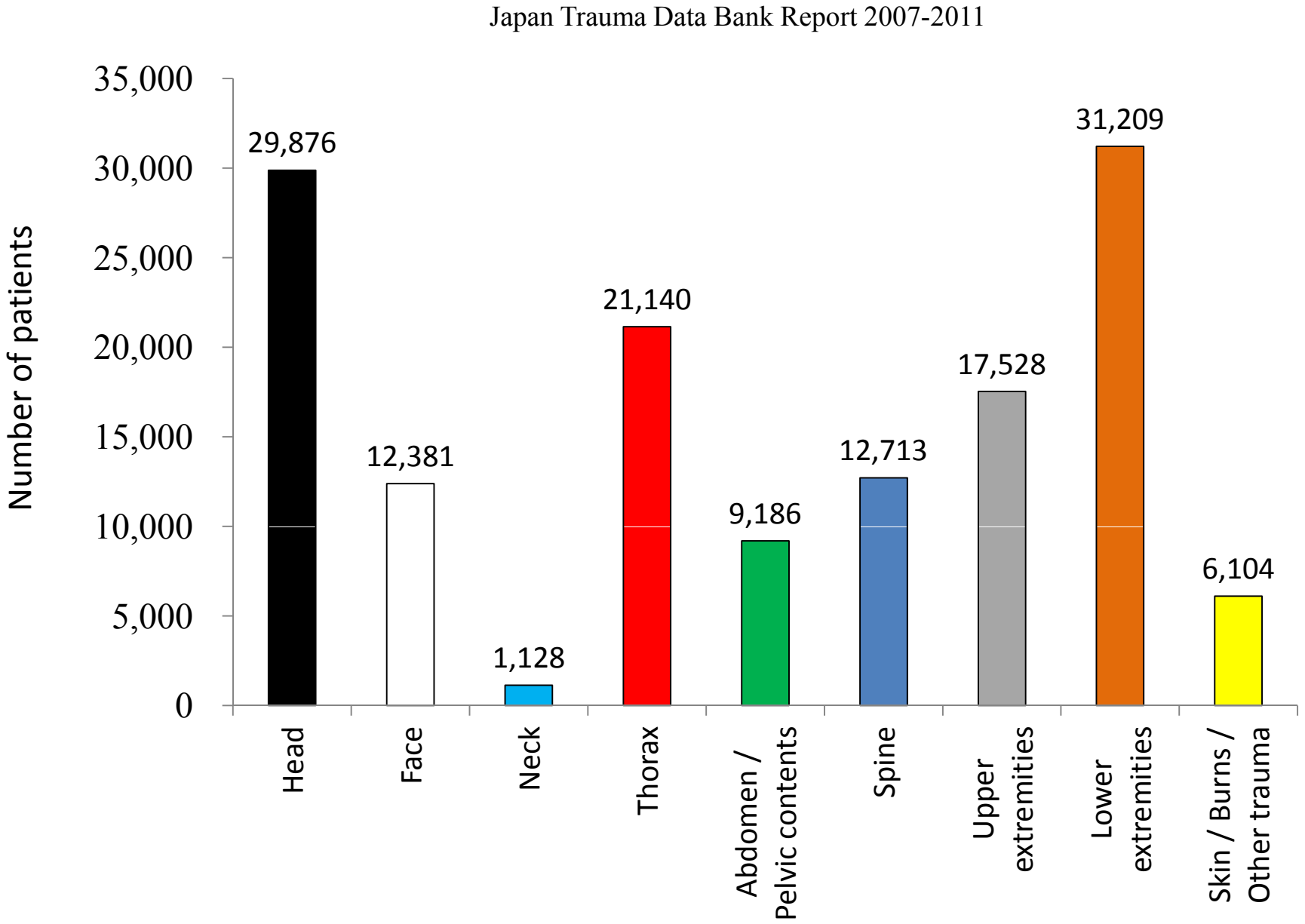


Figure 36 Number of Patients with Injured Body Parts based on AIS

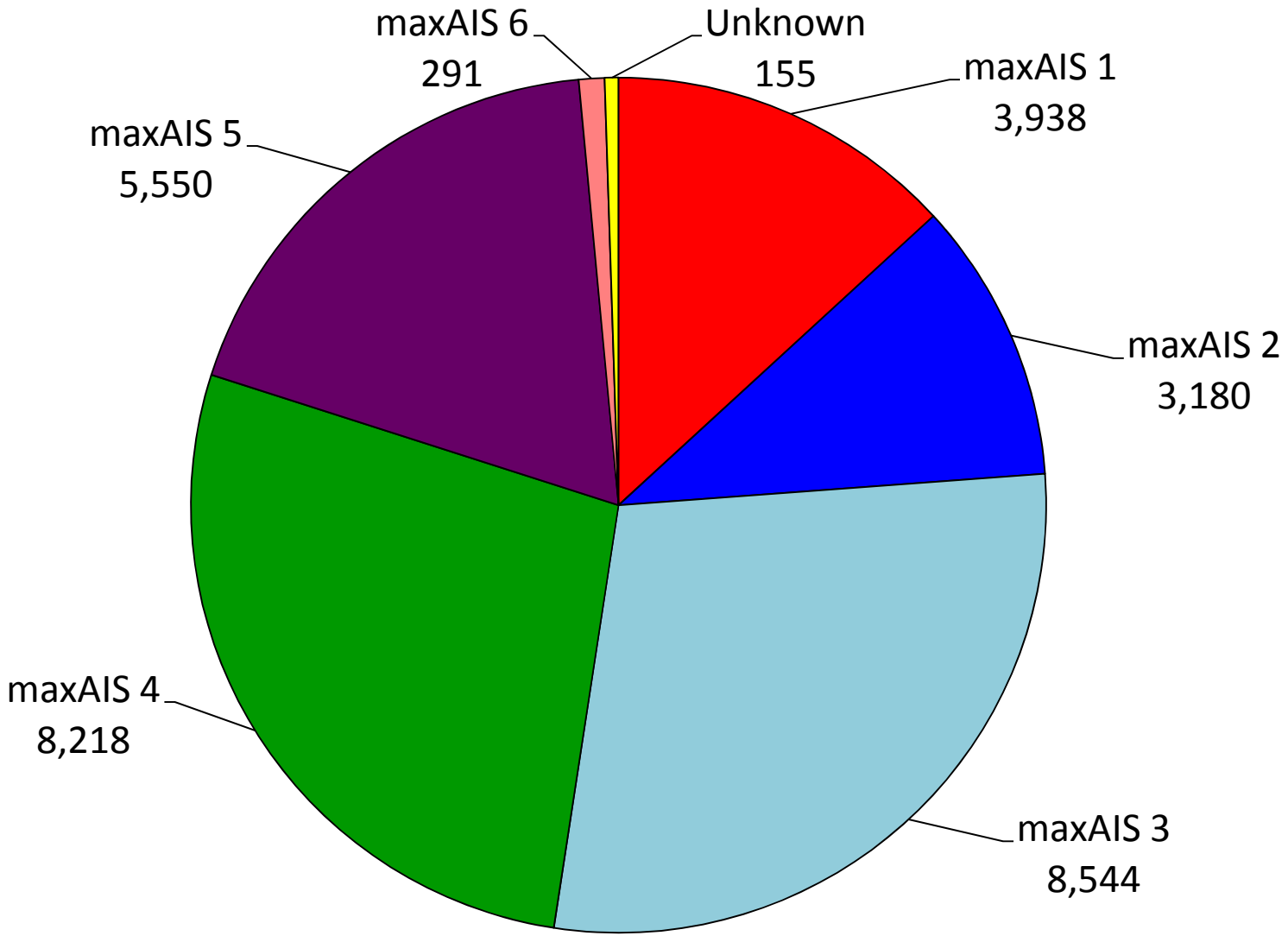


Figure 37A Head Injury and max AIS Score

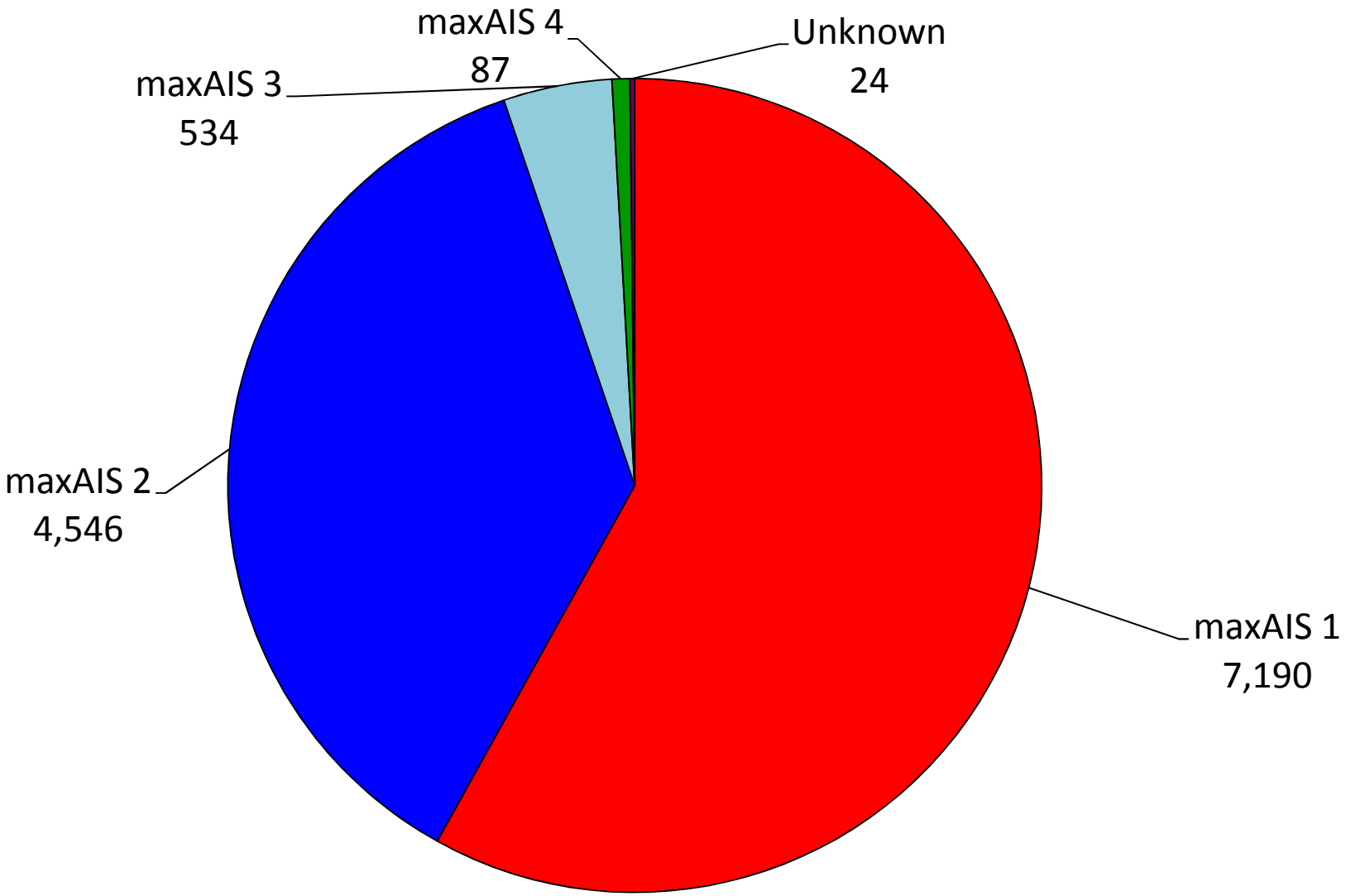


Figure 37B Facial Injury and max AIS Score

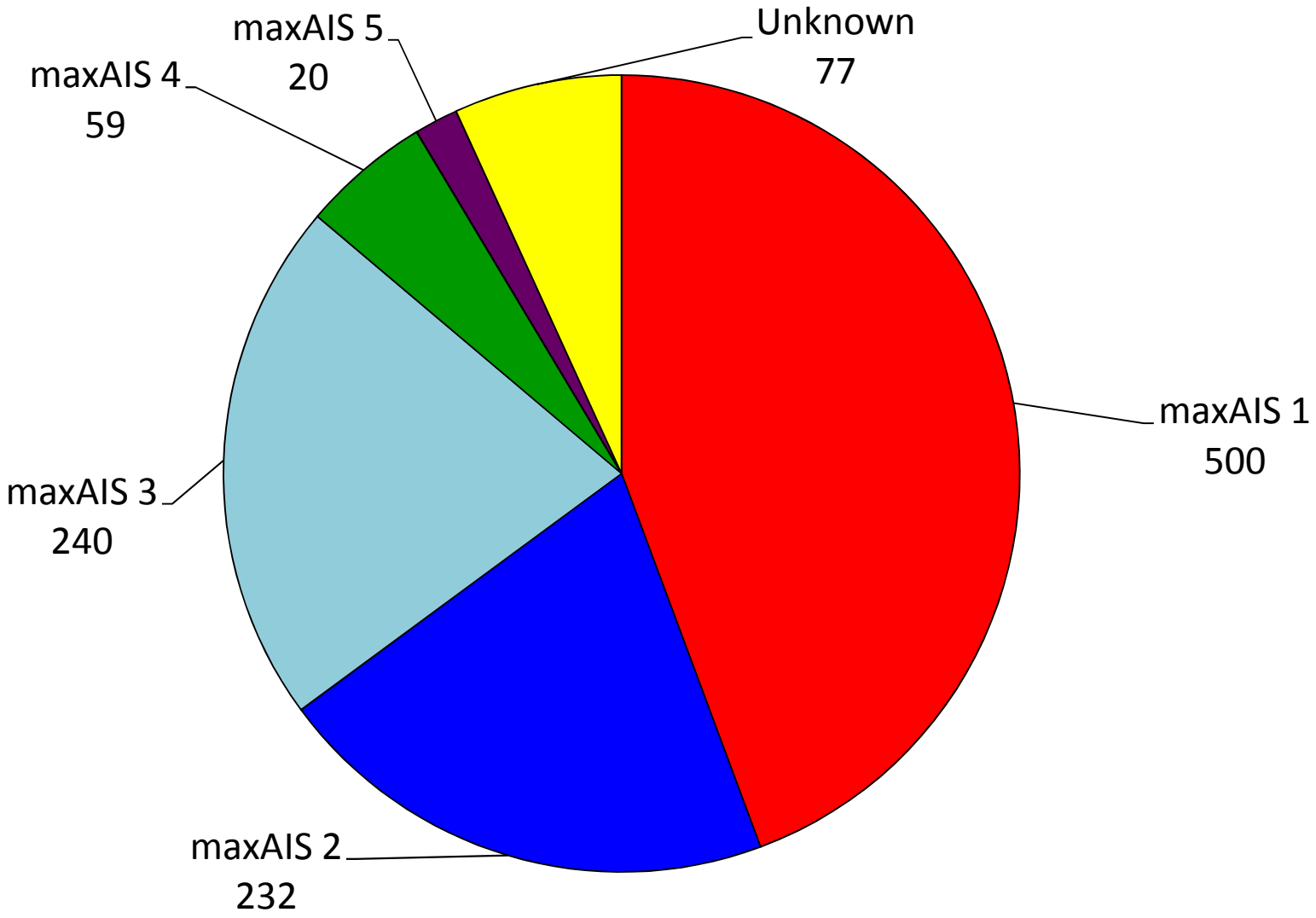


Figure 37C Neck Injury and max AIS Score

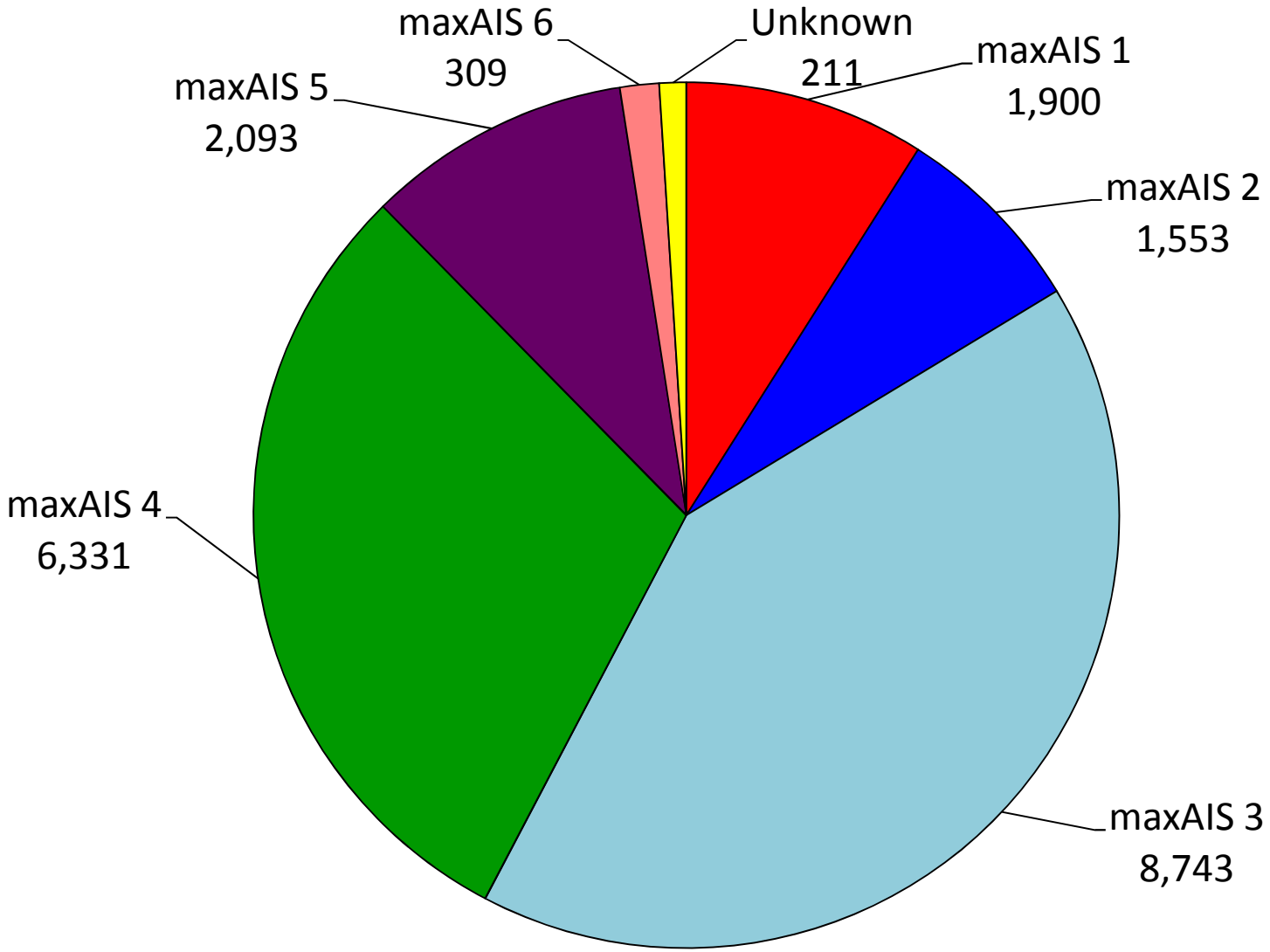


Figure 37D Thoracic Injury and max AIS Score

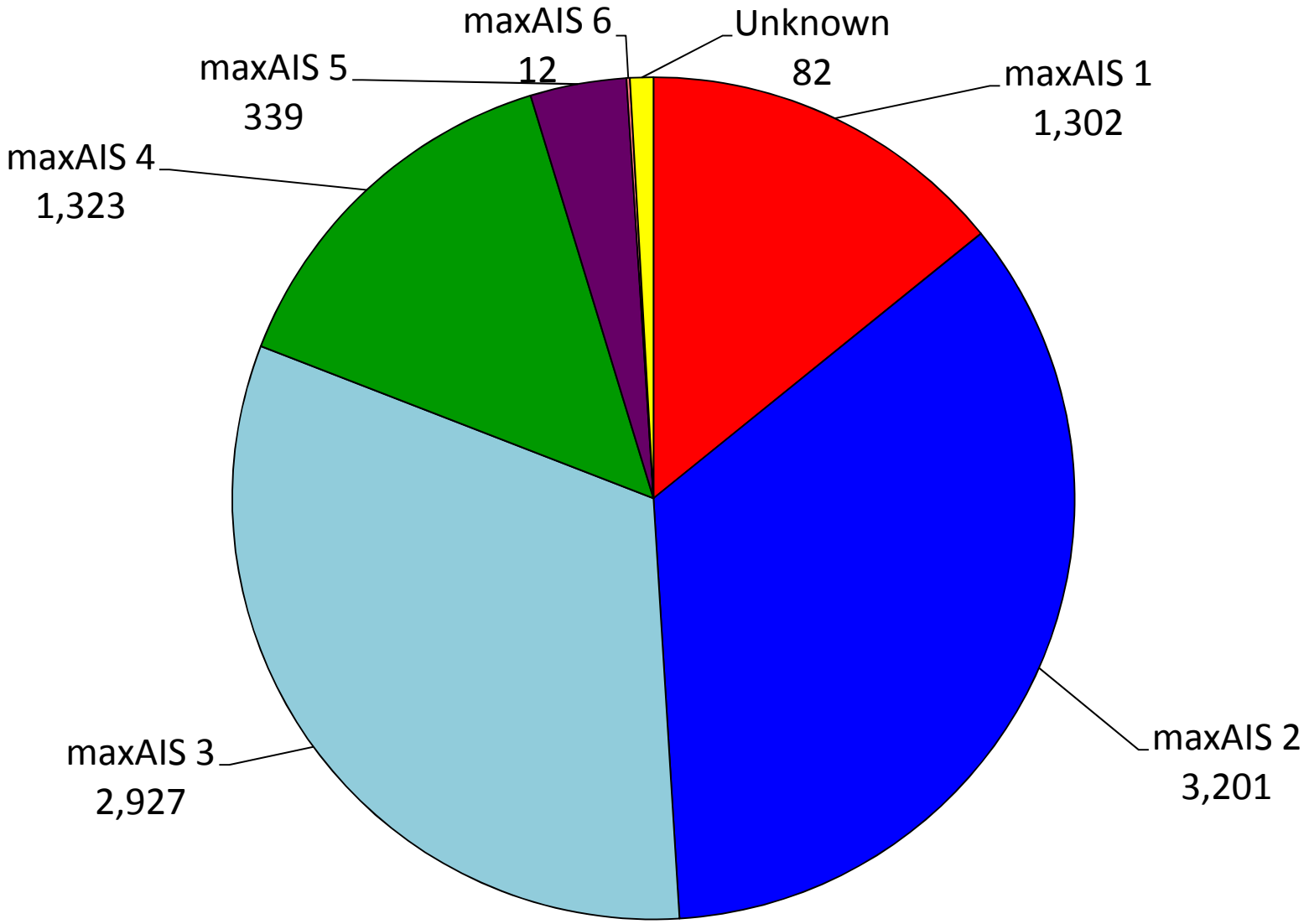


Figure 37E Injury of Abdomen/Pelvic Contents and max AIS Score

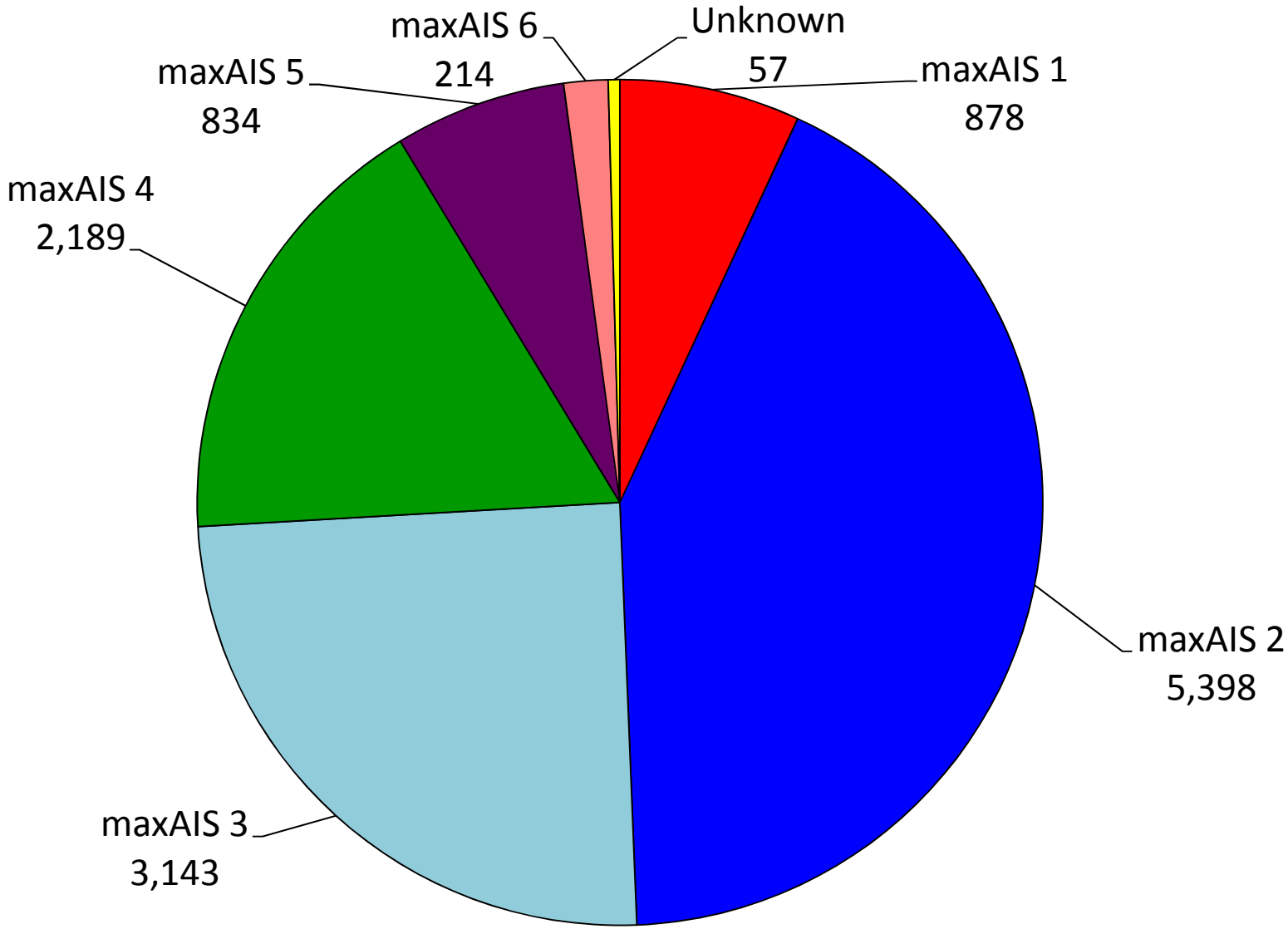


Figure 37F Spinal Injury and max AIS Score

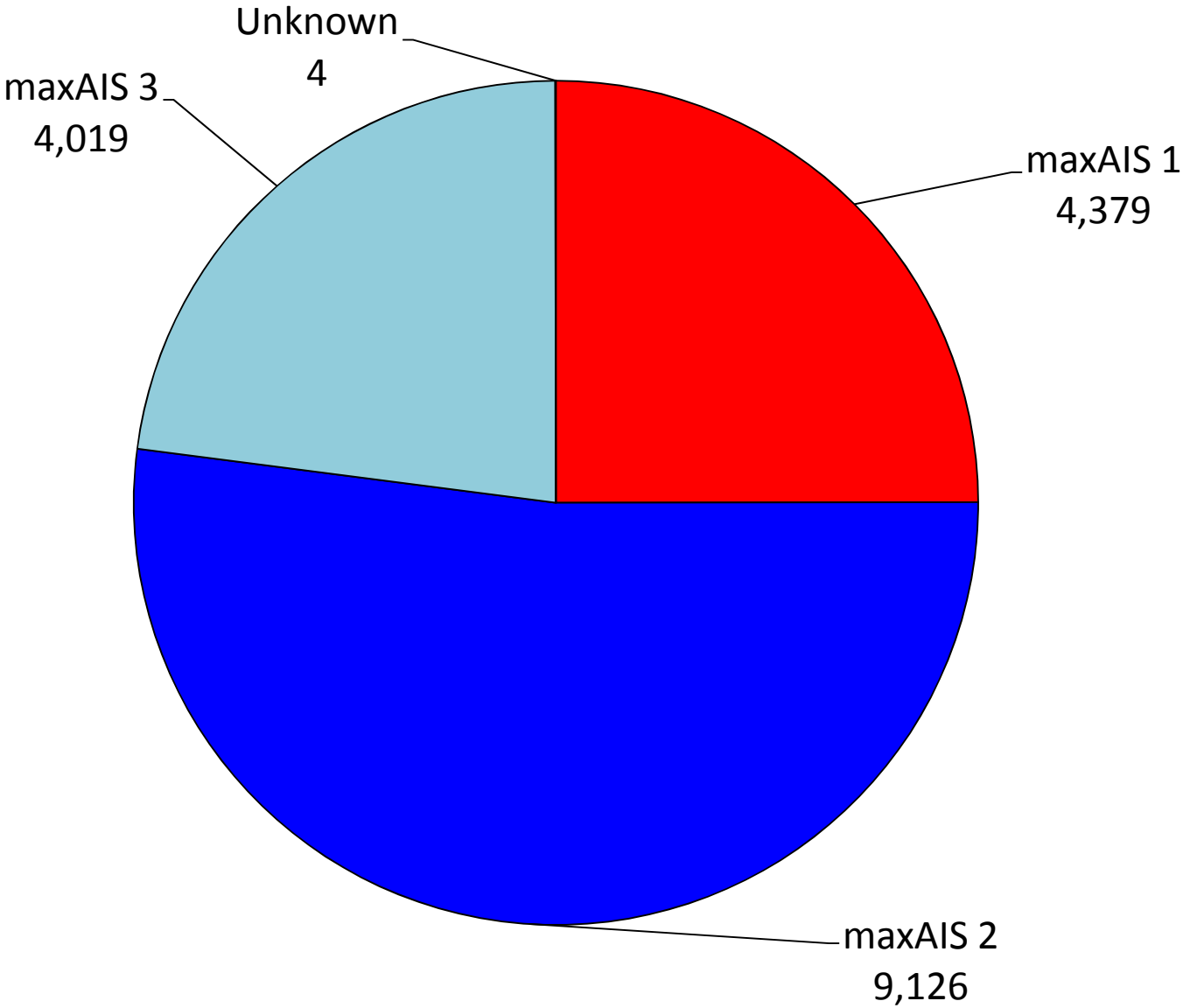


Figure 37G Injury of Upper Extremities and max AIS Score

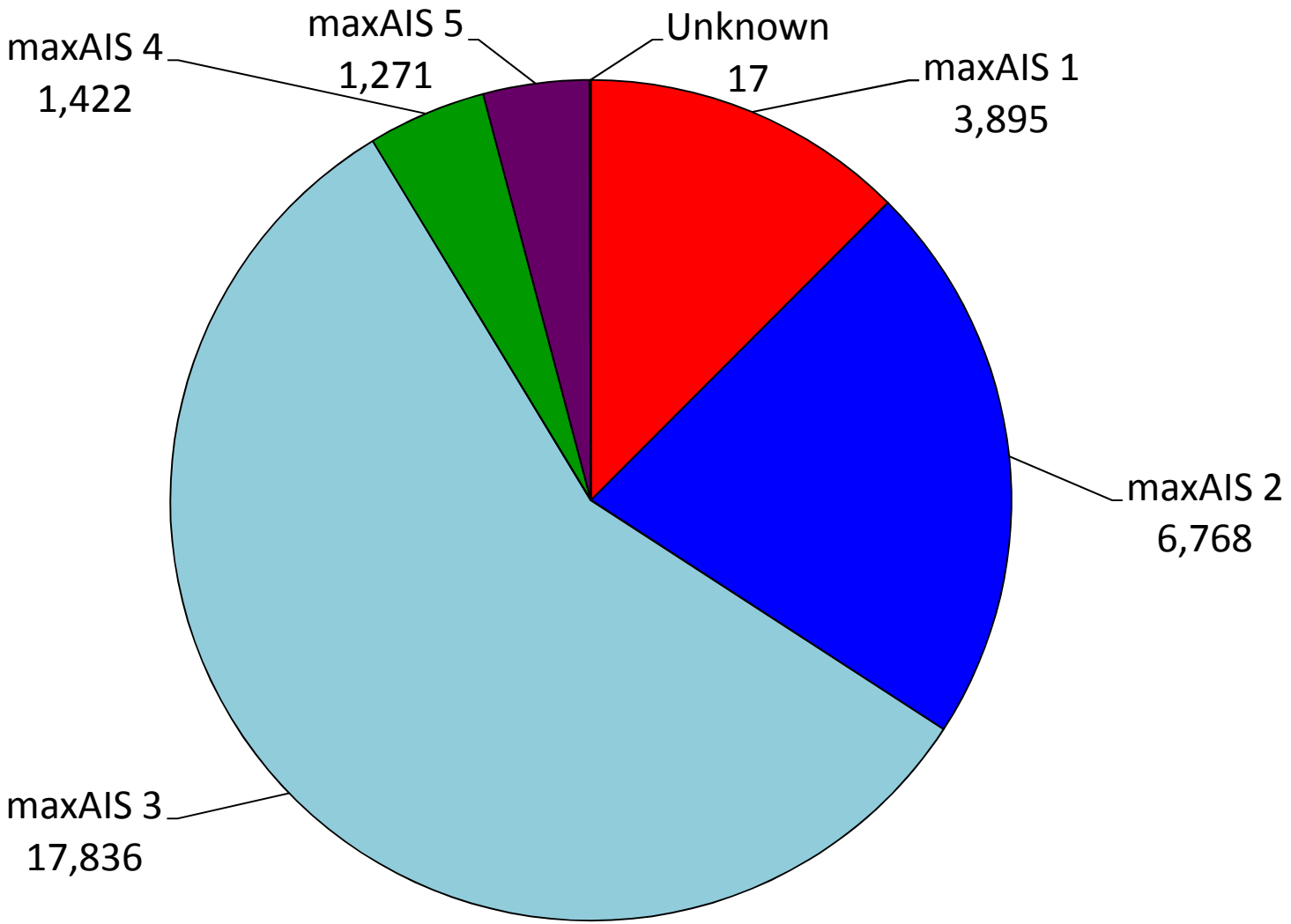


Figure 37H Injury of Lower Extremities and max AIS Score

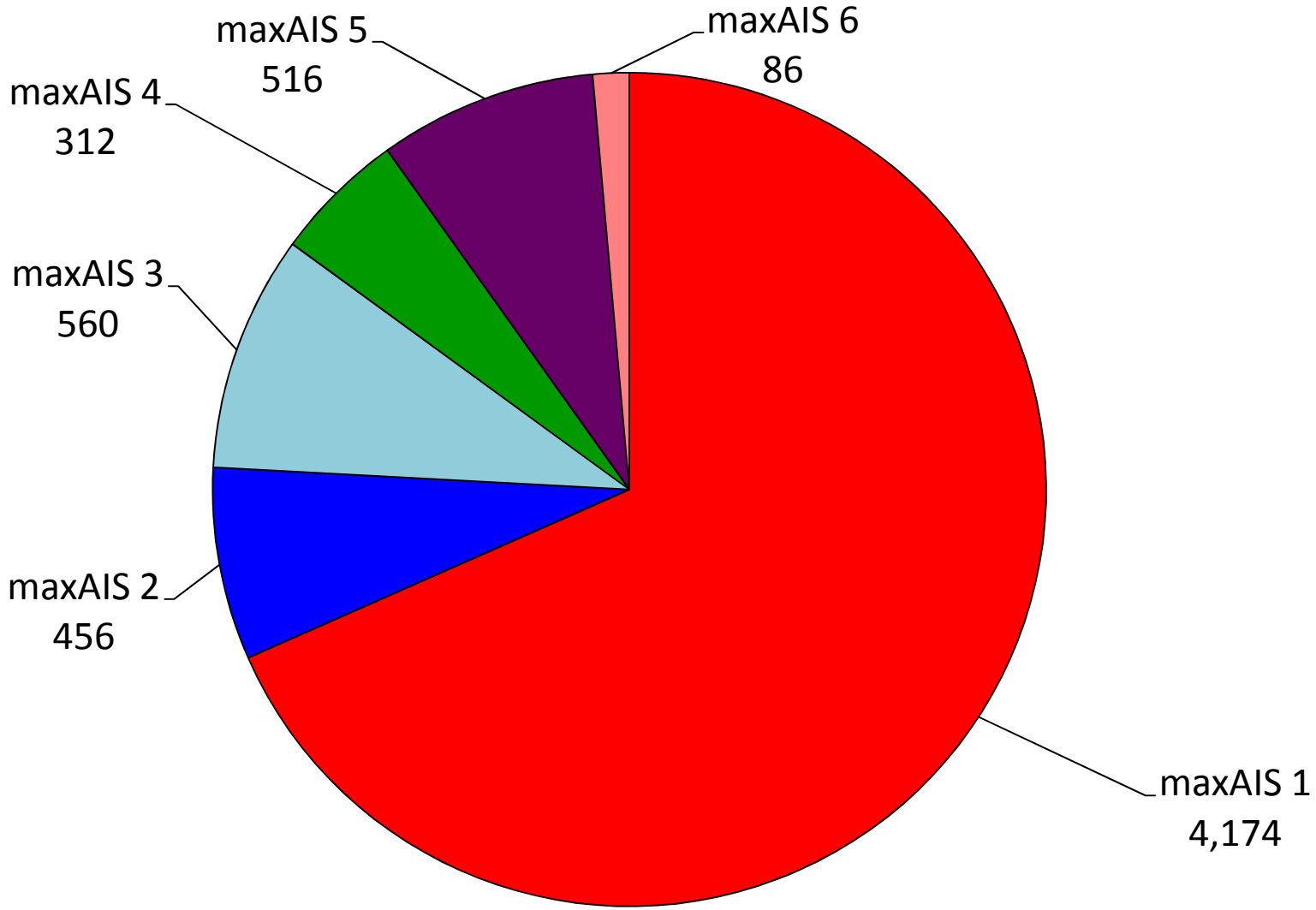


Figure 37I Skin/Burns/Other Trauma and max AIS Score

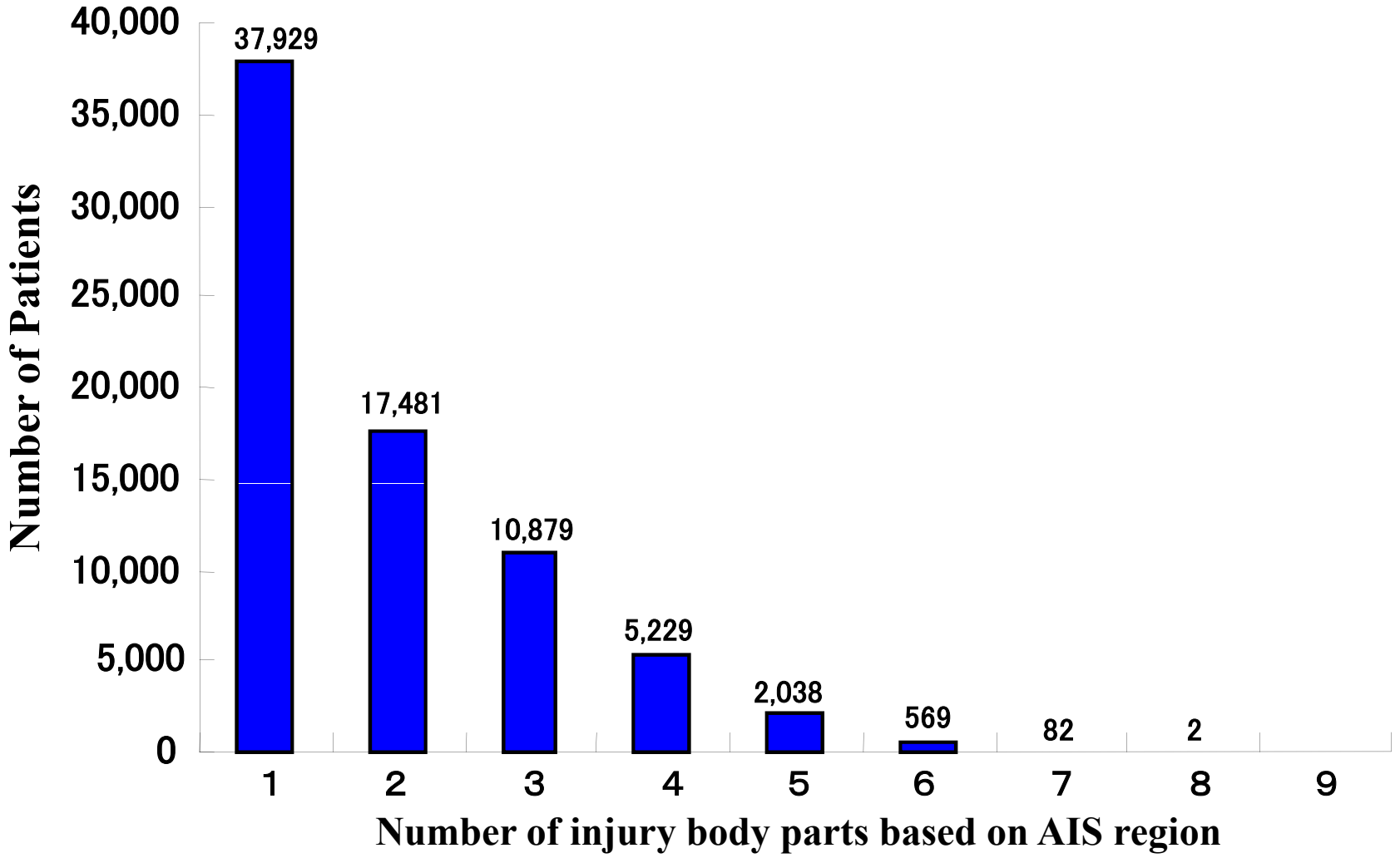


Figure 38 Number of Patients and Injured Body Parts based on AIS

JAPAN TRAUMA DATA BANK REPORT 2012 (2007-2011)

December 15, 2012

The Japanese Association for Acute Medicine
Chairman: Kaoru Koike, MD

The Japanese Association for the Surgery of Trauma
Chairman: Tetsuya Sakamoto, MD

Task Force:
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