

Japan Trauma Data Bank Report 2018 (2013-2017)

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)**



Figure
1A

Names of All Hospitals Submitting Data to the JTDB. (N=272, Part 1)

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

Figure
1B

Names of All Hospitals Submitting Data to the JTDB. (N=272, Part 2)

Shizuoka Tokushukai Hospital
 Chutoen General Medical Center
 Fujieda Municipal General Hospital
 Toyohashi Municipal Hospital
 Daiyukai General Hospital
 Fujita Health University Hospital
 Nagoya City University Hospital
 Handa City Hospital
 Aichi Medical University Hospital
 Nagoya Ekisaikai Hospital
 Social Insurance Chukyo Hospital
 Okazaki City Hospital
 Kasugai Municipal Hospital
 Komaki City Hospital
 Nagoya Medical Hospital
 Mie University Hospital
 Kouseiren Takaoka Hospital
 Tonami General Hospital
 Toyama Prefectural Central Hospital
 Toyama University Hospital
 Kanazawa University Hospital
 Ishikawa Prefectural Central Hospital
 Fukui Prefectural Hospital
 University of Fukui Hospital
 Omihachiman Community Medical Center
 Saiseikai Shigaken Hospital
 Kyoto Daini Red Cross Hospital
 Kyoto Medical Center
 Rakuwakai Otowa Hospital
 Fukuchiyama City Hospital
 Kyoto Daiichi Red Cross Hospital
 Uji-Tokushukai Medical Center
 Kyoto Prefectural University of Medicine
 Kyoto Okamoto Memorial Hospital
 Rinku General Medical Center
 Saiseikai Senri Hospital
 Osaka General Medical Center
 Hanwa Memorial Hospital
 Osaka Medical Center
 Nakawachi Medical Center of Acute Medicine
 Osaka Mishima Emergency Medical Center
 Kinki University Hospital
 Kishiwada Tokushukai Hospital
 Osaka University Hospital

Osaka City General Hospital
 Kansai Medical University Takii Hospital
 Osaka City University Hospital
 Kansai Medical University Hirakata Hospital
 Sakai City Medical Center
 Osaka Police Hospital
 Hyogo Prefectural Nishinomiya Hospital
 Hyogo Prefectural Kakogawa Medical Center
 Hyogo Prefectural Awaji Hospital
 Hospital of Hyogo College of Medicine
 Kobe City Medical Center General Hospital
 Kobe University Hospital
 Hyogo Emergency Medical Center
 Toyooka Hospital
 Tajima Emergency & Critical Care Medical Center
 Public Muraoka Hospital
 Kansai Rosai Hospital
 Steel Memorial Hirohata Hospital
 Himeji Emergency, Trauma and Critical Center
 Nara Prefectural General Medical Center
 Nara Medical University Hospital
 Wakayama Medical University Hospital
 Japanese Red Cross Wakayama Medical Center
 Tottori University Hospital
 Shimane University Hospital
 Shimane Prefectural Central Hospital
 Tsuyama Chuo Hospital
 Kawasaki Medical School Hospital
 Kurashiki Central Hospital
 Okayama University Hospital
 Hiroshima University Hospital
 Kure Medical Center
 Fukuyama City Hospital
 Hiroshima Prefectural Hospital
 Chugoku Rosai Hospital
 Kanmon Medical Center
 Tokuyama Central Hospital
 Yamaguchi Grand Medical Center
 Yamaguchi University Hospital
 Tokushima Prefectural Kaifu Hospital
 Tokushima Prefectural Central Hospital
 Tokushima Prefectural Miyoshi Hospital
 Tokushima Red Cross Hospital

Taoka Hospital
 Kagawa University Hospital
 Kagawa Prefectural Central Hospital
 Ehime Prefectural Central Hospital
 Ehime University Hospital
 Ehime Prefectural Niihama Hospital
 Kochi Medical Center
 Chikamori Hospital
 Kochi Red Cross Hospital
 Kurume University Hospital
 Iizuka Hospital
 Ohtemachi Hospital
 Kitakyushu Municipal Yahata Hospital
 Kyushu University Hospital
 Kitakyushu General Hospital
 Kokura Memorial Hospital
 Fukuoka Wajiro Hospital
 Fukuoka Red Cross Hospital
 Fukuoka Higashi Medical Center
 Saiseikai Fukuoka General Hospital
 Fukuoka University Hospital
 St. Maria's Hospital
 Shinyukhashi Hospital
 Kyushu Medical Center
 Saga University Hospital
 Saga-ken Medical Center Koseikan
 Ureshino Medical Center
 Nagasaki University Hospital
 Nagasaki Medical Center
 Arao Municipal Hospital
 Kumamoto Red Cross Hospital
 Kumamoto Medical Center
 Saiseikai Kumamoto Hospital
 Oita University Hospital
 Almeida Memorial Hospital
 Miyazaki Prefectural Miyazaki Hospital
 Miyazaki University Hospital
 Miyazaki Zenjinkai Hospital
 Miyakonojo Regional Medical Center

**Figure
1C****Names of All Hospitals Submitting Data to the JTDB. (N=272, Part 3)**

Osumikanoya Hospital
Kagoshima City Hospital
Yonemori Hospital
Okinawa Prefectural Chubu Hospital
Okinawa Prefectural Hokubu Hospital
Ryukyu University Hospital
Urasoe General Hospital
Nakagami Hospital
Tomishiro Central Hospital
Okinawa Prefectural Nanbu Medical Center / Nanbu Child
Medical Center

The JTDB report 2018 was published using cases of all registered hospitals from 2004 to 2015 and using cases registered in 2016 and 2017 at only 102 hospitals which accepted trauma patients' registry in each ethical committee before Sep. 10th, 2018.

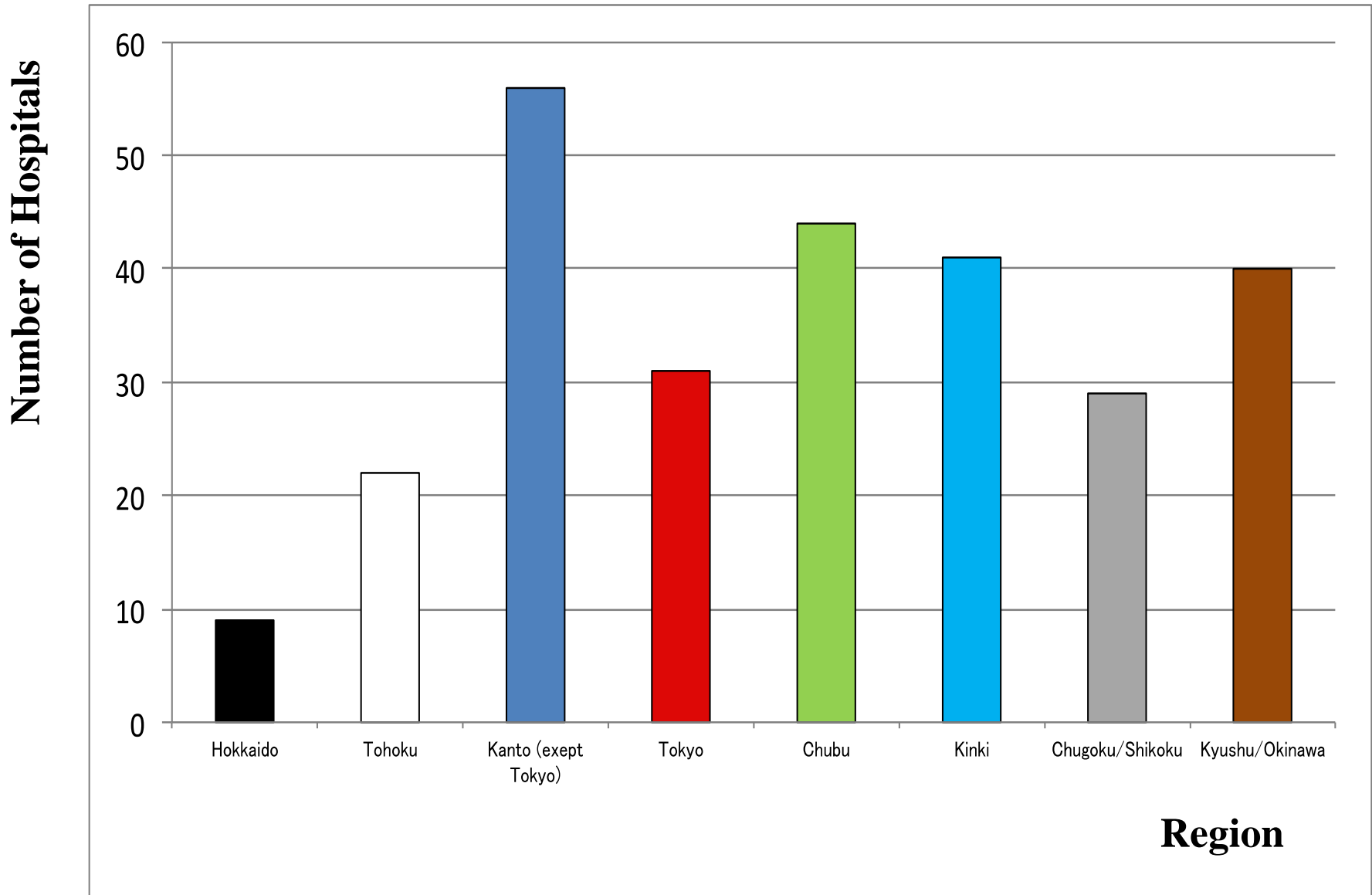
Figure
2**Number of Hospitals Submitting to the JTDB by Region.**

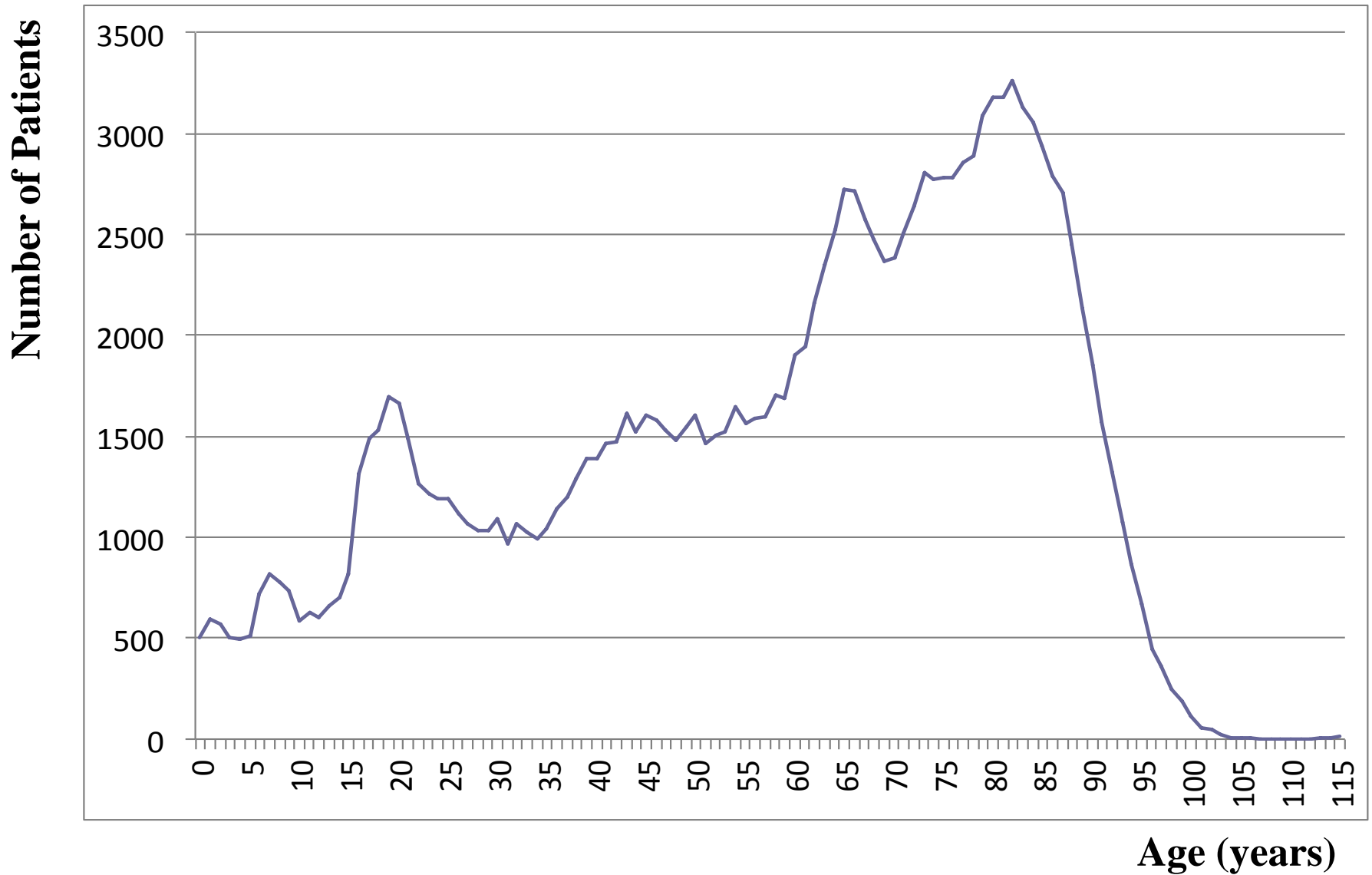
Figure
3**Number of Patients by Age.**

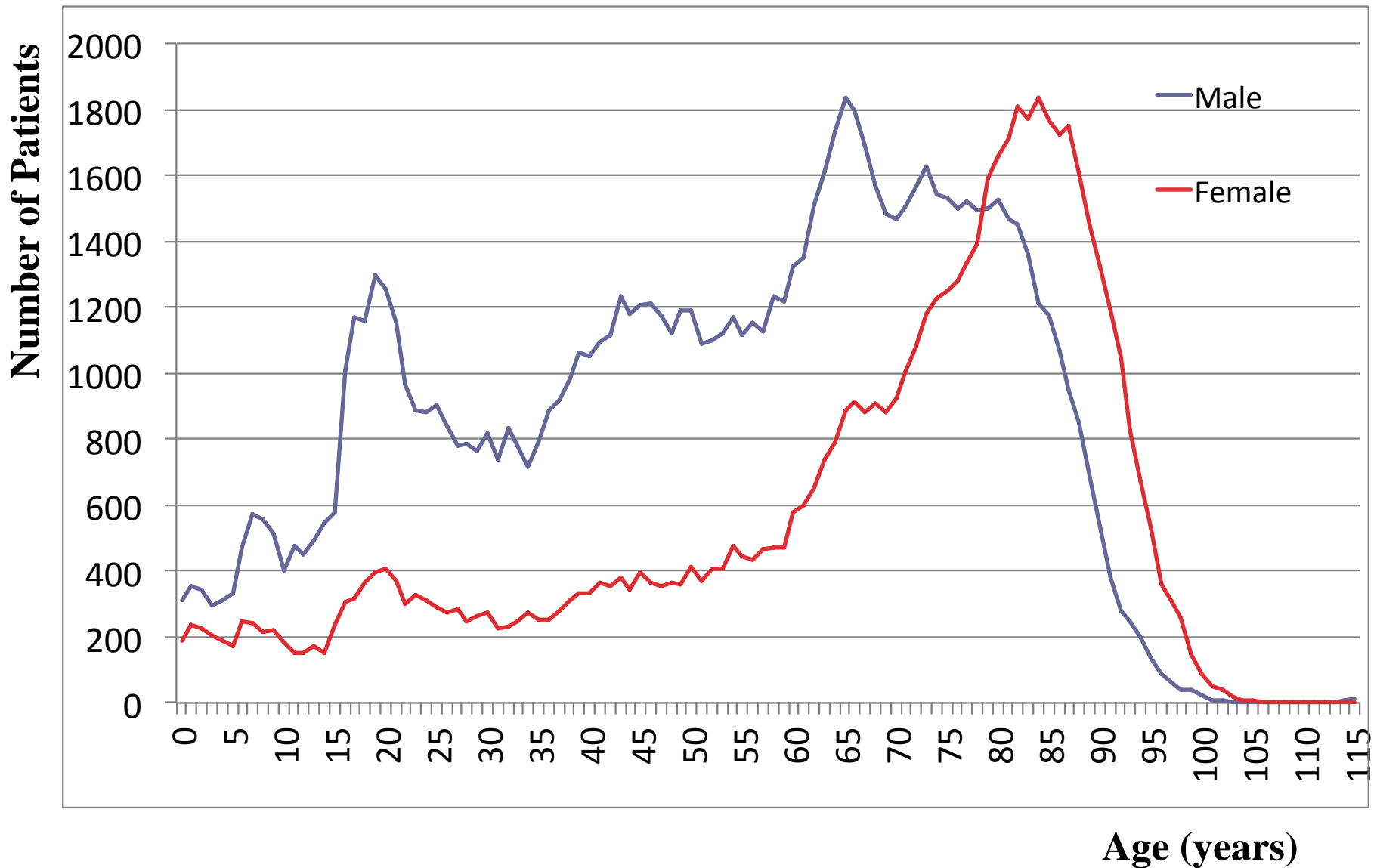
Figure
4**Patients by Age and Gender.**

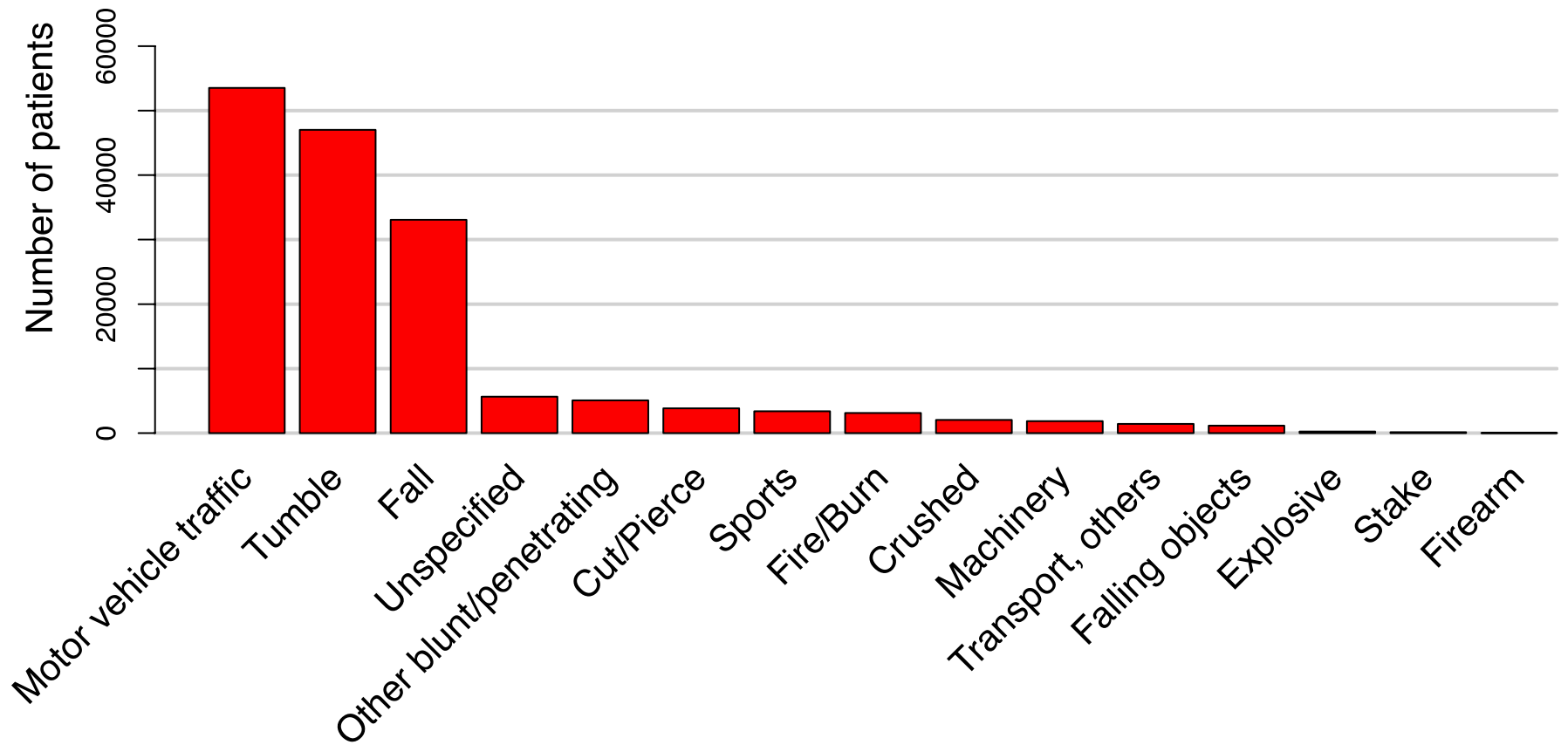
Figure
5**Patients by mechanism of injury**

Table
5**Patients by mechanism of injury**

Mechanism of injury	Patients (n)	Patients by mechanism of injury (%)
Motor vehicle traffic	53521	33.1
Tumble	47012	29.1
Fall	33074	20.5
Unspecified	5637	3.5
Others	5069	3.1
Cut/Pierce	3856	2.4
Sports	3397	2.1
Fire/Burn	3112	1.9
Crushed	2033	1.3
Machinery	1871	1.2
Transport, others	1417	0.9
Falling objects	1162	0.7
Explosive	258	0.2
Stake	133	0.1
Firearm	34	0.0

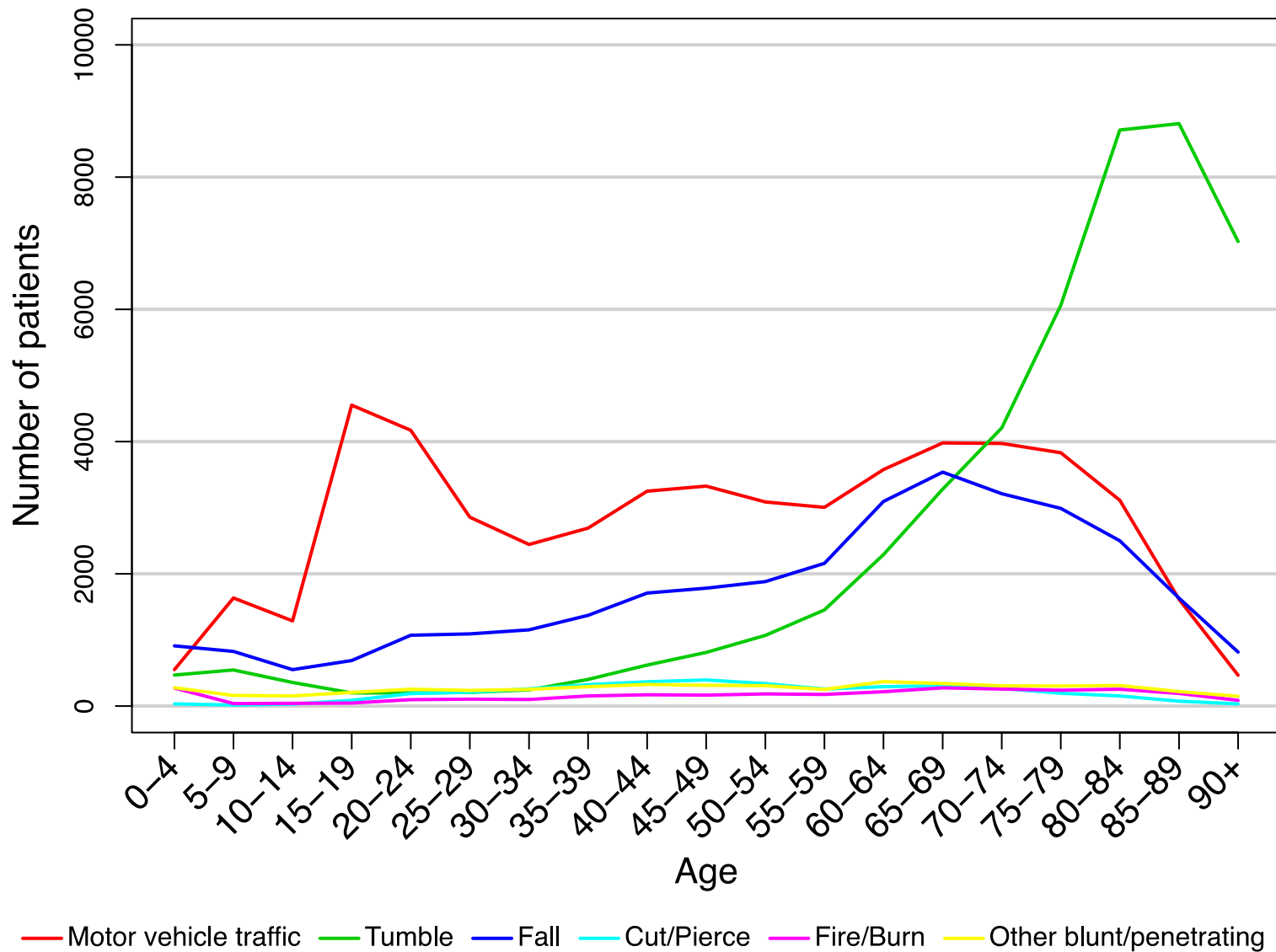
Figure
6**Mechanism of injury by age**

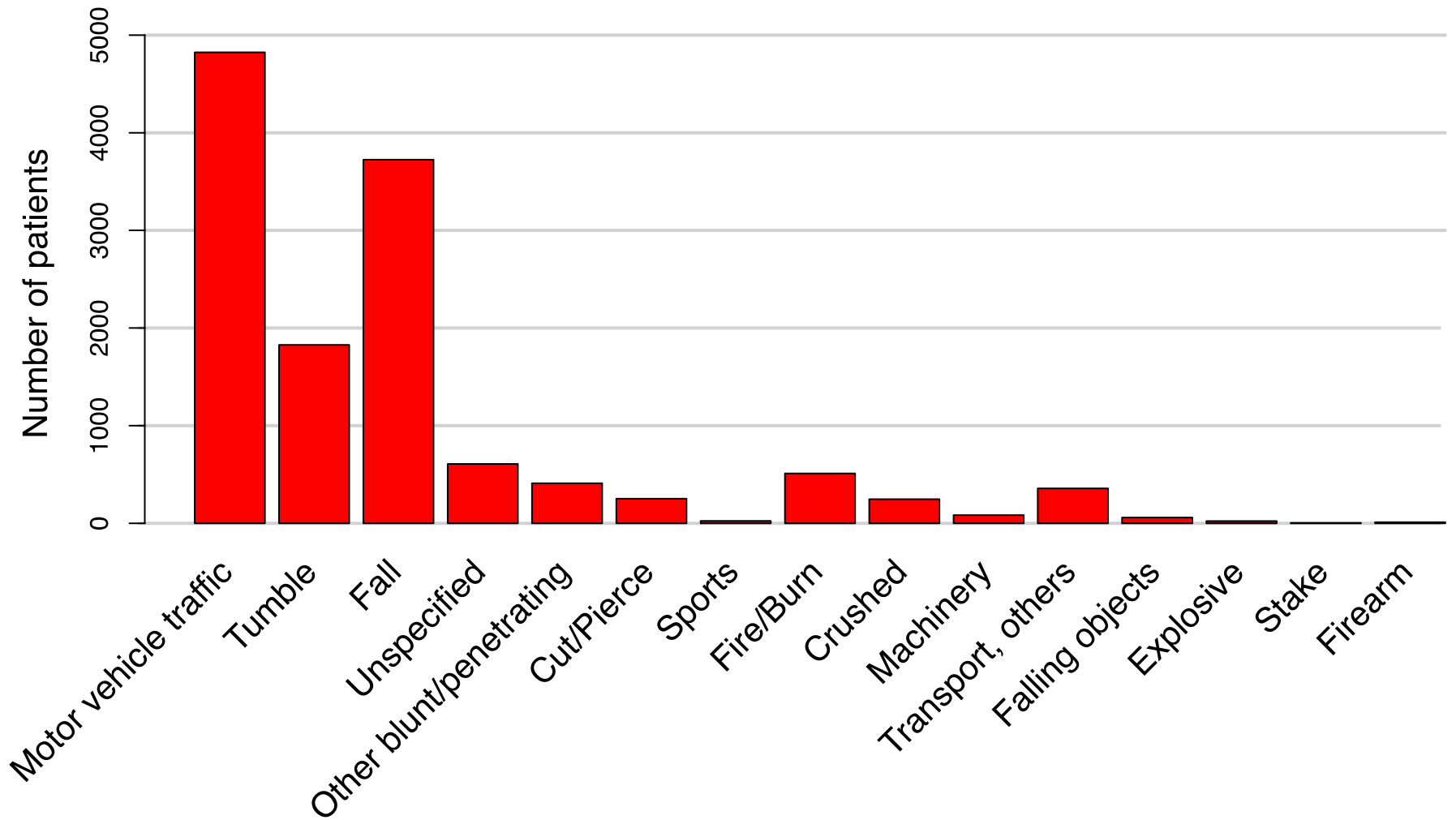
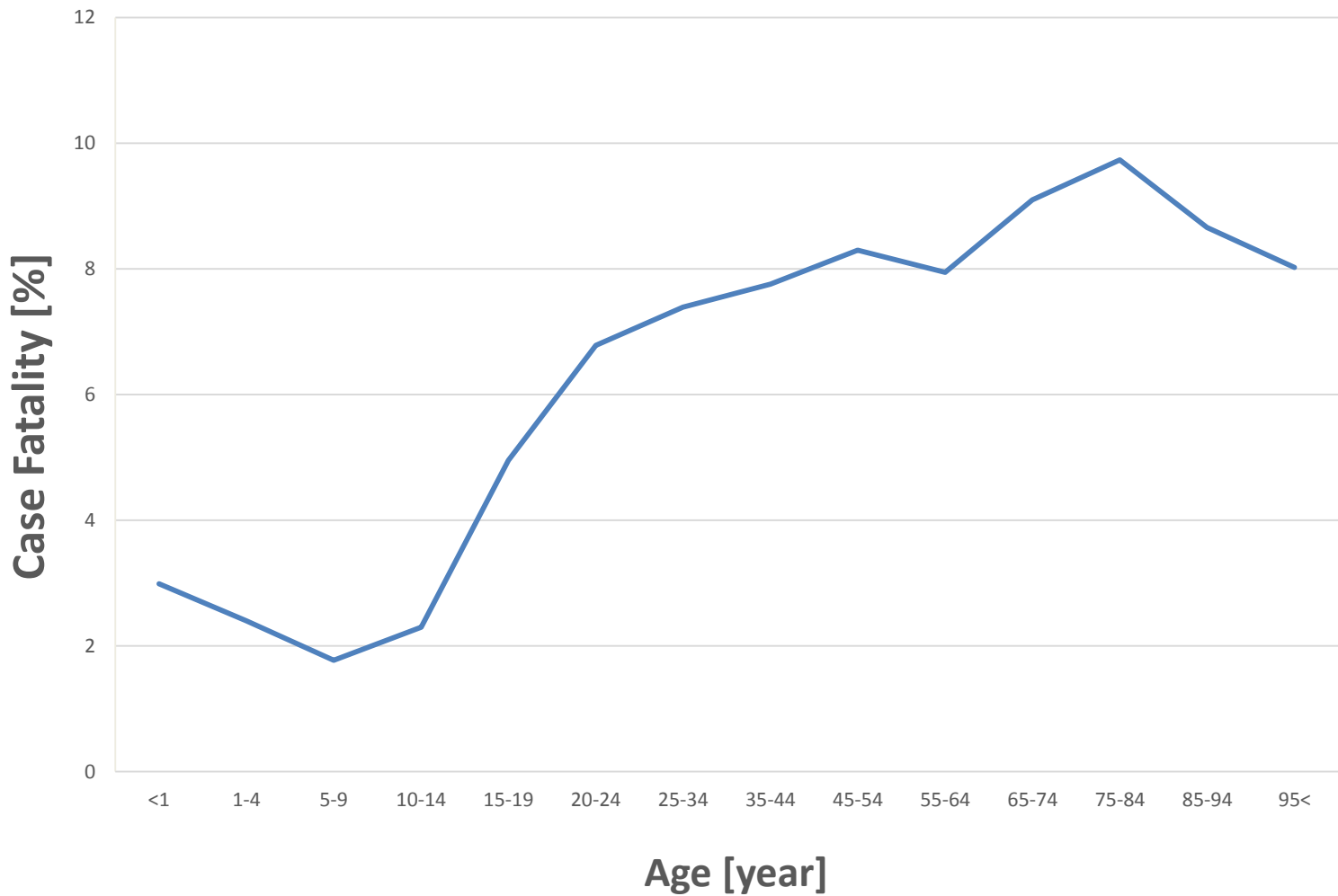
Figure
7**Death by mechanism of injury**

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 x 100 by age)

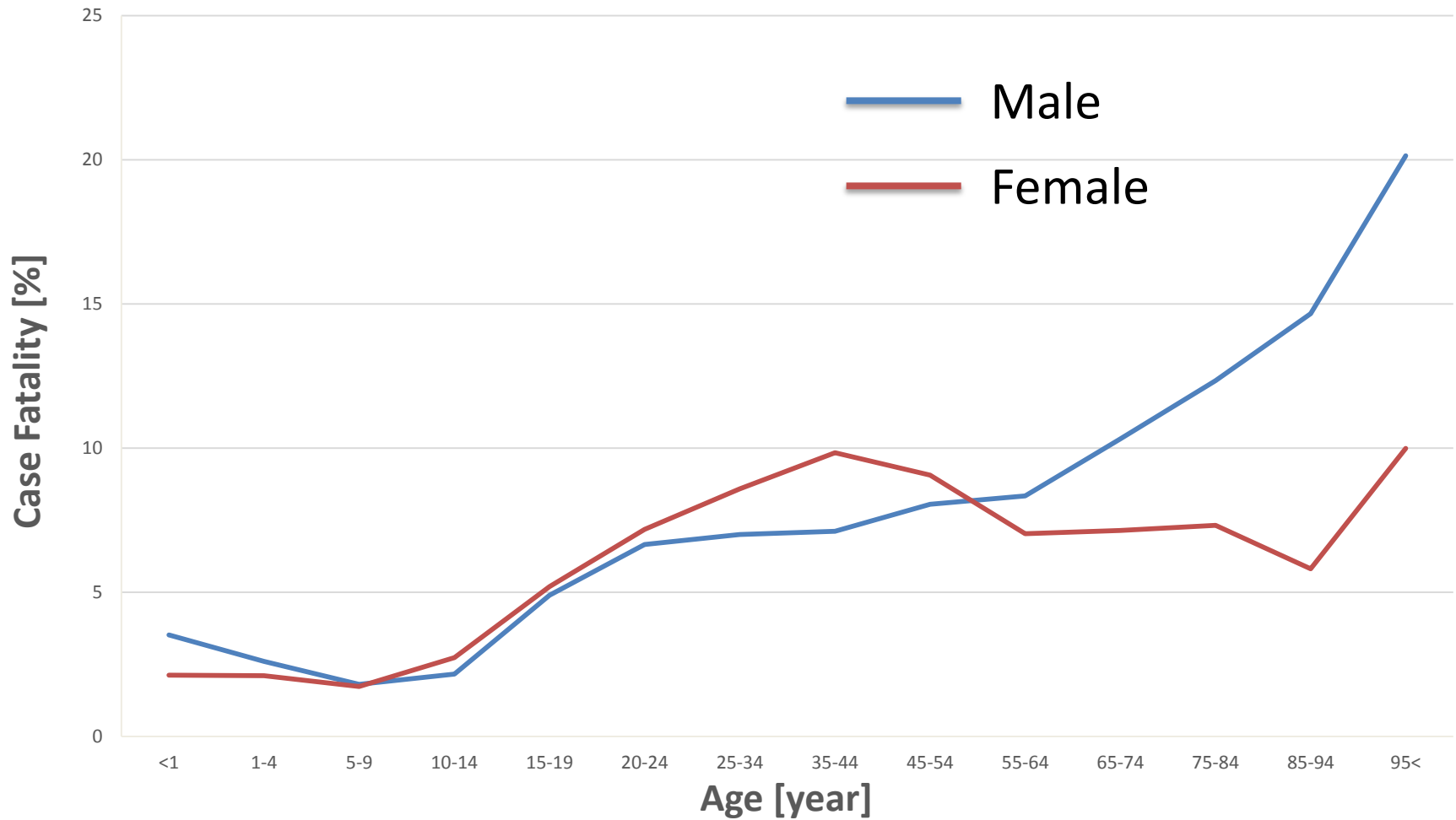
Figure
9**Case Fatality by age and gender**

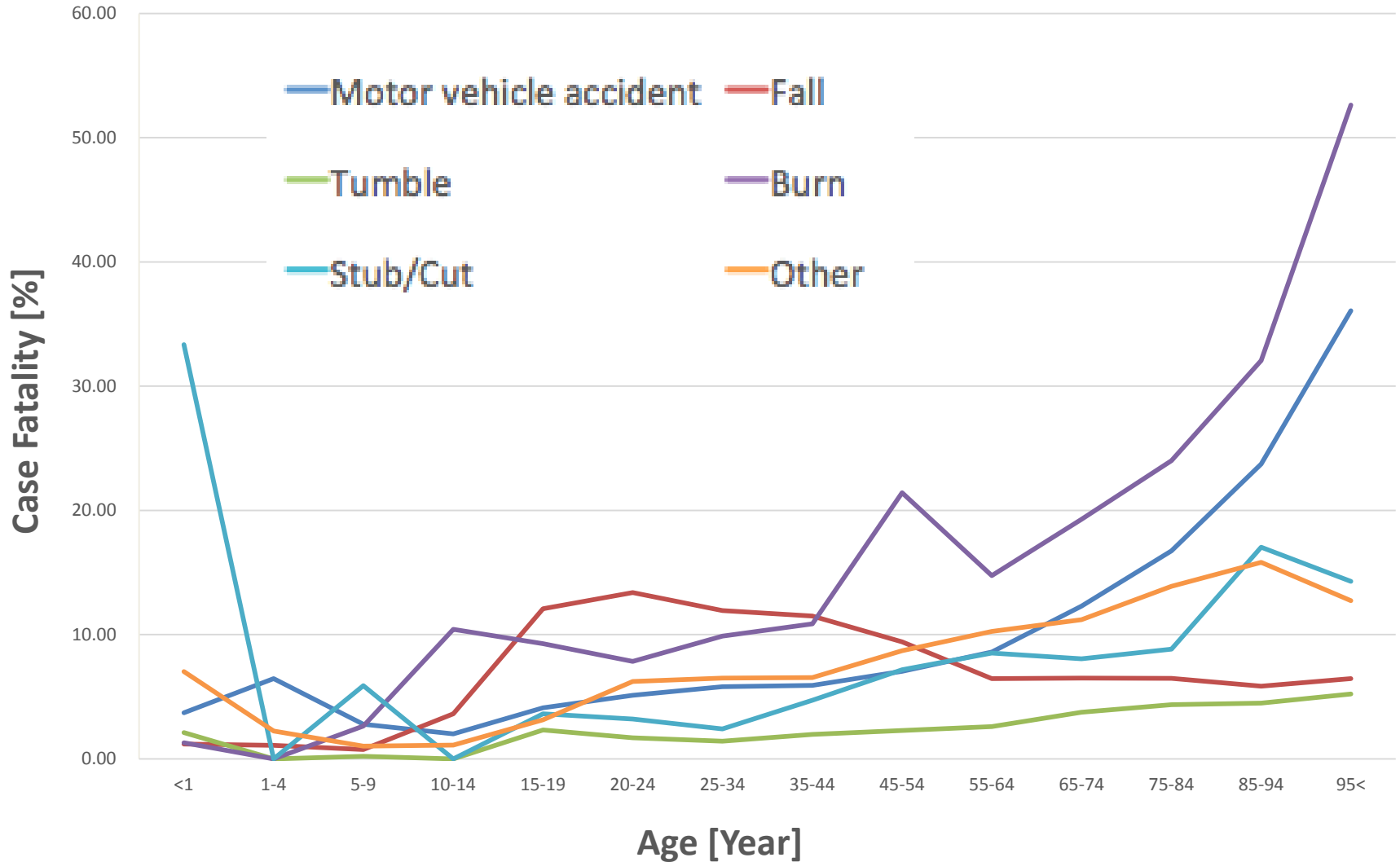
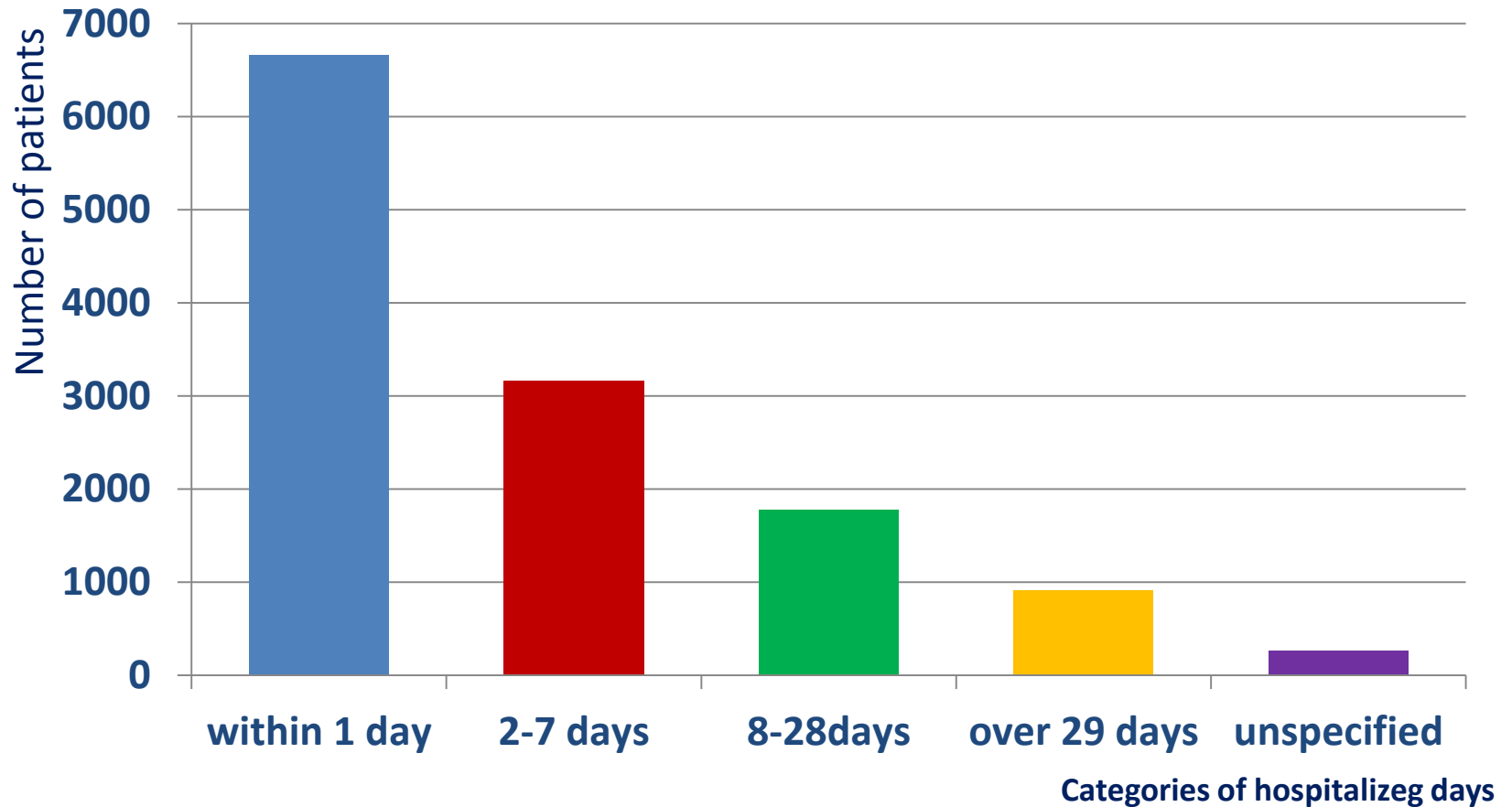
Figure
10**Case Fatality by mechanism of injury and age**

Figure
11A

Proportional distribution of hospitalized days in death cases n =12,751



The category within 1 day includes CPAOA patients.

Figure
11B

Proportional distribution of hospitalized days by mechanism of injury in death cases n =12,751

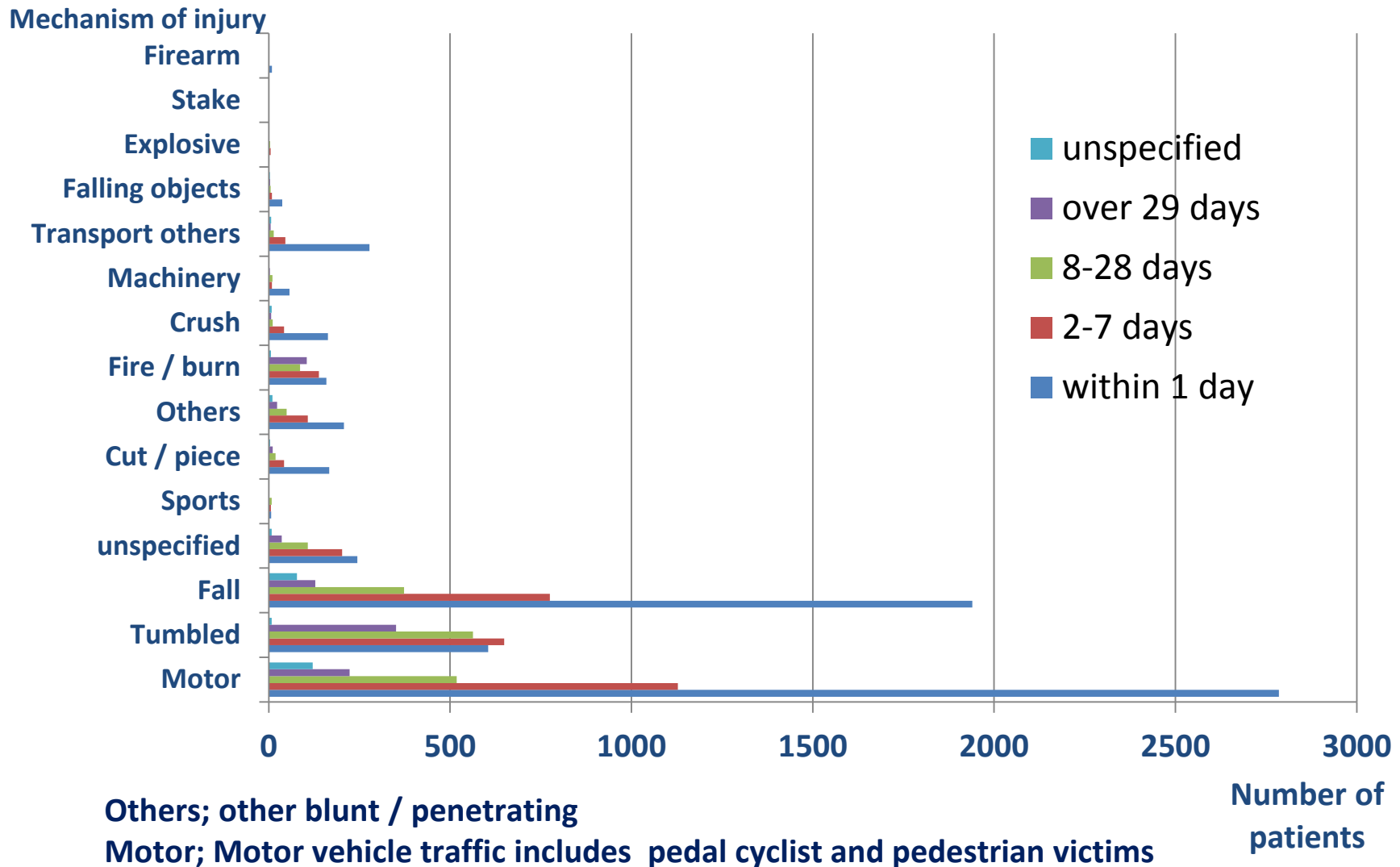
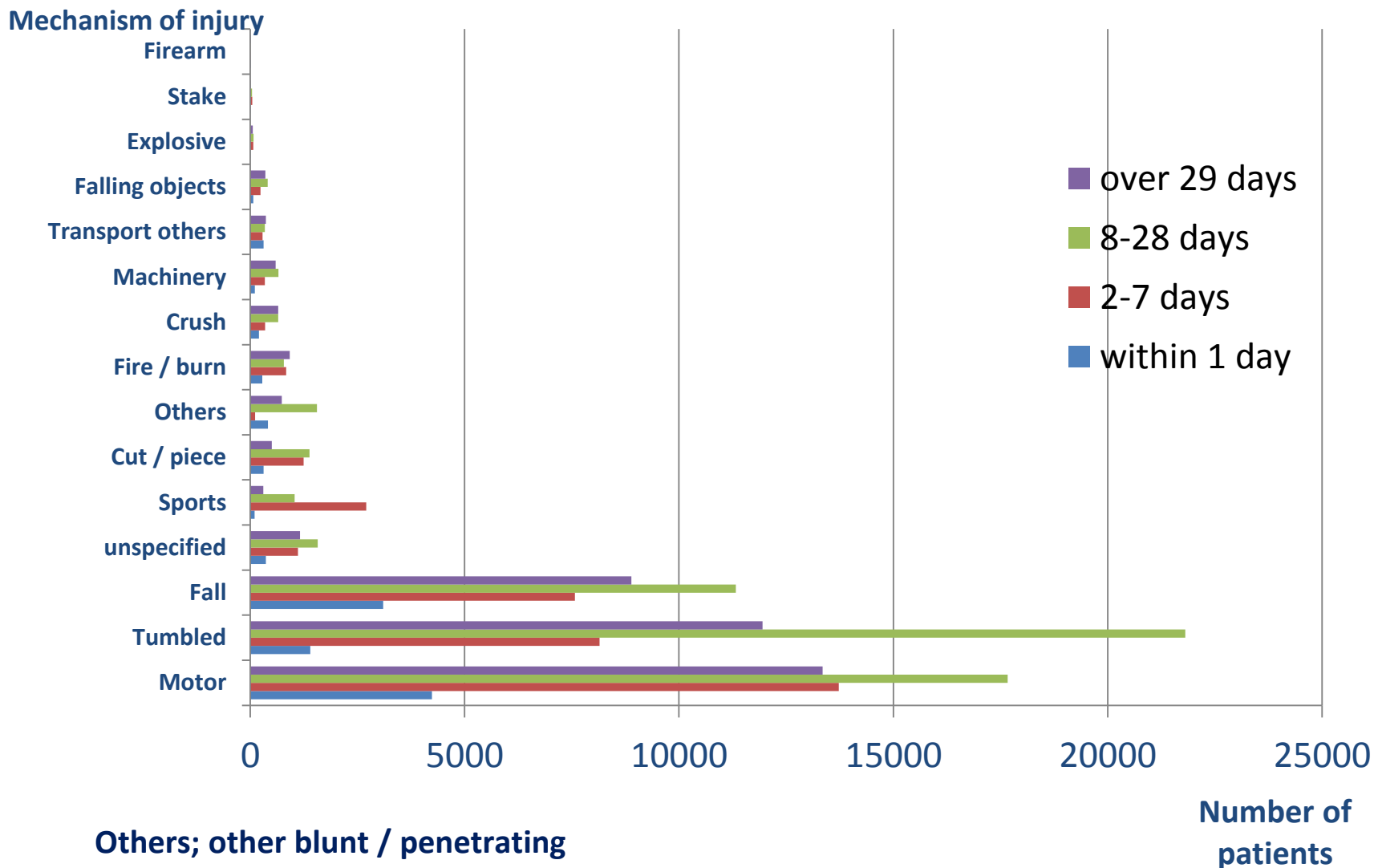


Figure
12

Proportional distribution of hospitalized days, grouped by mechanism of injury n =146,890



Others; other blunt / penetrating

Motor; Motor vehicle traffic includes pedal cyclist and pedestrian victims.

Table
12

Proportional distribution of hospitalized days, grouped by mechanism of injury. n = 146,890

Mechanism Length of Hospital days	Motor Vehicle traffic	Tumbled	Fall	unspecified	Sports	Cut / piece	Other blunt/penet rating	Fire / burn
within 1 day	4241	1403	3103	367	101	312	415	279
2-7days	13726	8149	7574	1114	2707	1245	112	835
8-28days	17665	21806	11327	1576	1036	1384	1554	782
over 29 days	13352	11948	8887	1160	302	504	737	920
Total	48984	43306	30891	4217	4146	3445	2818	2816

	Crush	Machinery	Transport others	Falling objects	Explosive	Stake	Firearm	Total
within 1 day	204	105	310	70	6	5	9	10930
2-7days	346	338	286	240	70	46	5	36793
8-28days	650	656	341	409	77	42	5	59310
over 29 days	654	592	367	353	60	12	9	39857
Total	1854	1691	1304	1072	213	105	28	146890

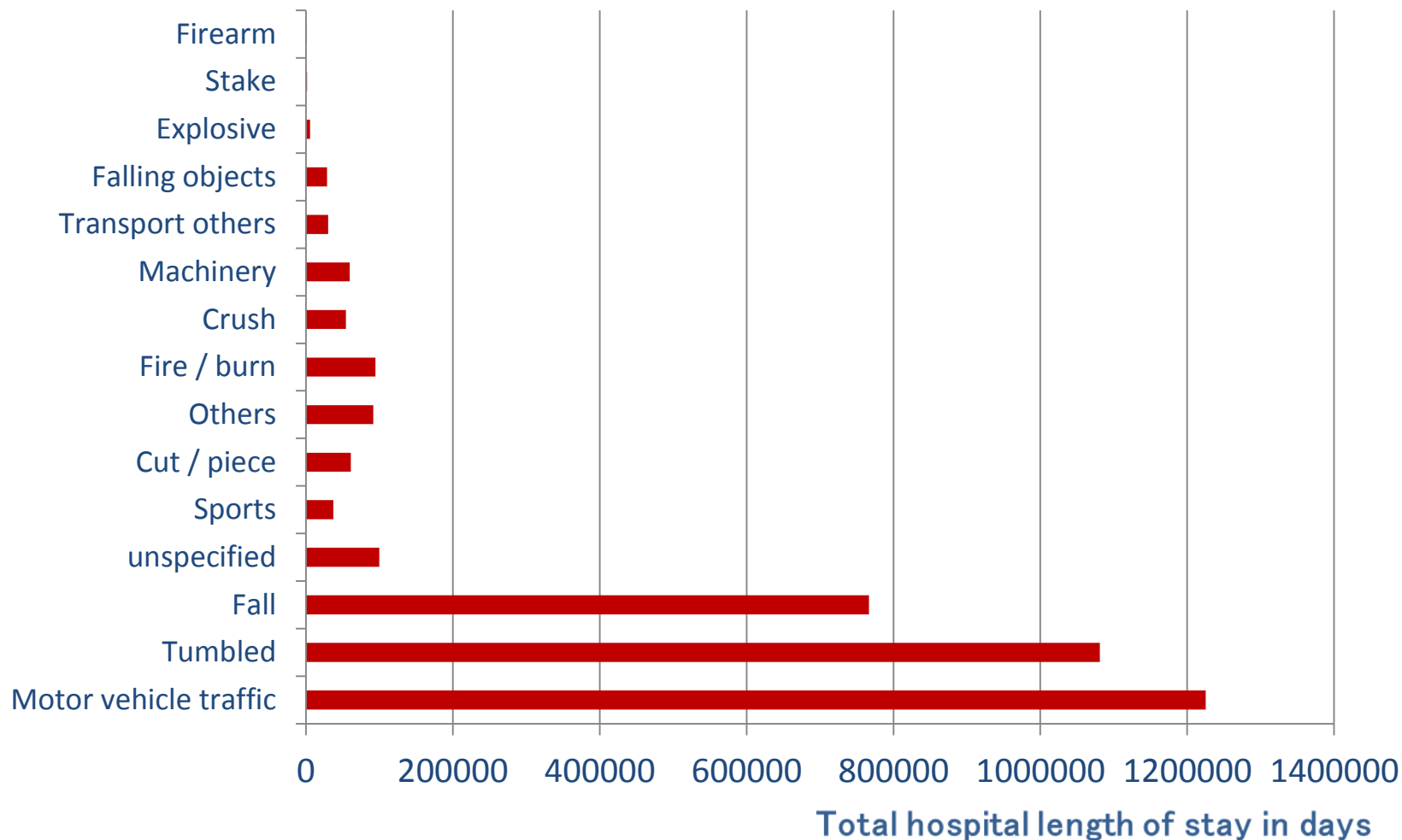
Figure
13A**Total hospital length of stay by mechanism of Injury****n = 146,890 Over all total hospital length of stay was 3,639,788 days.****Mechanism of injury**

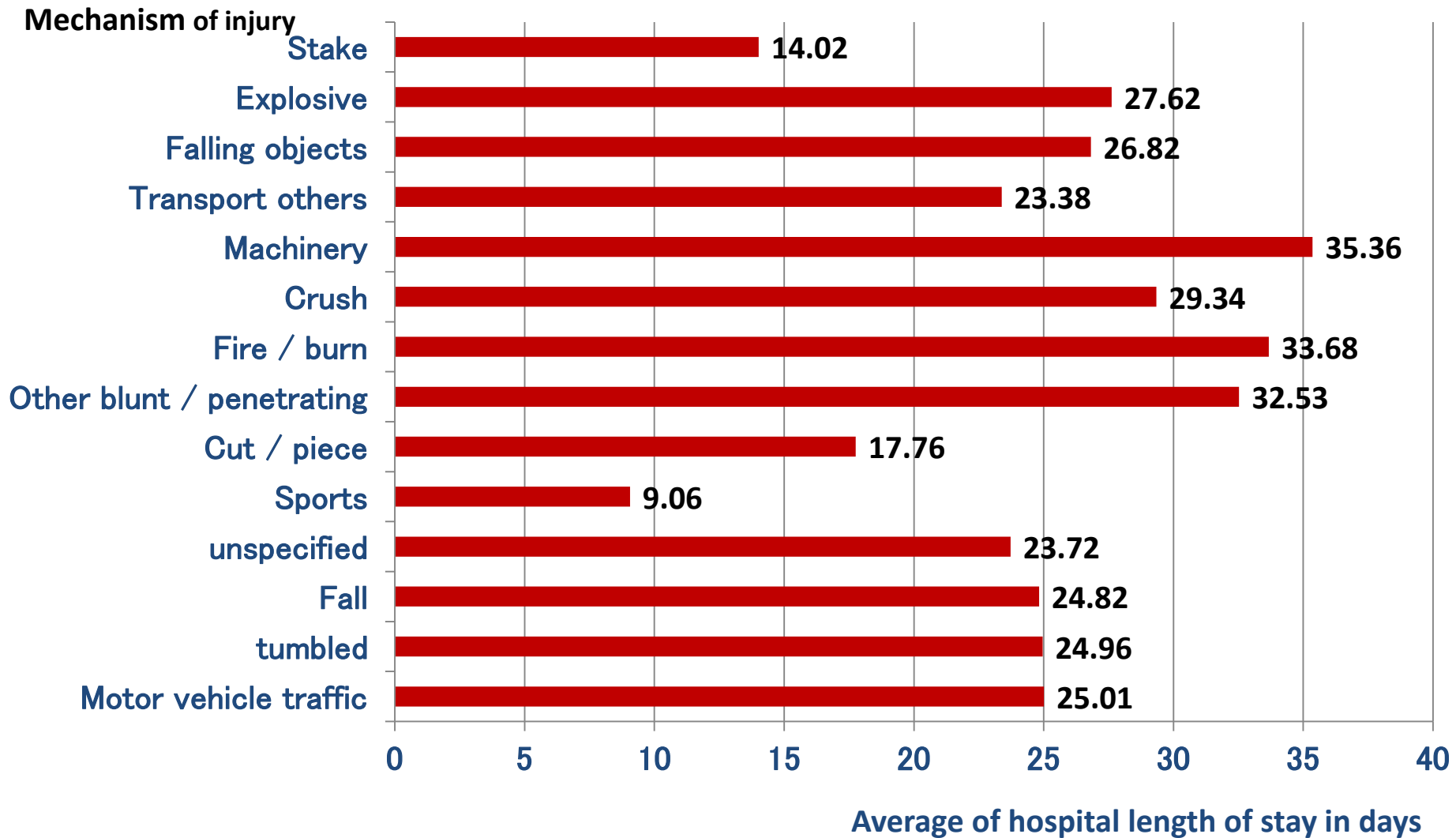
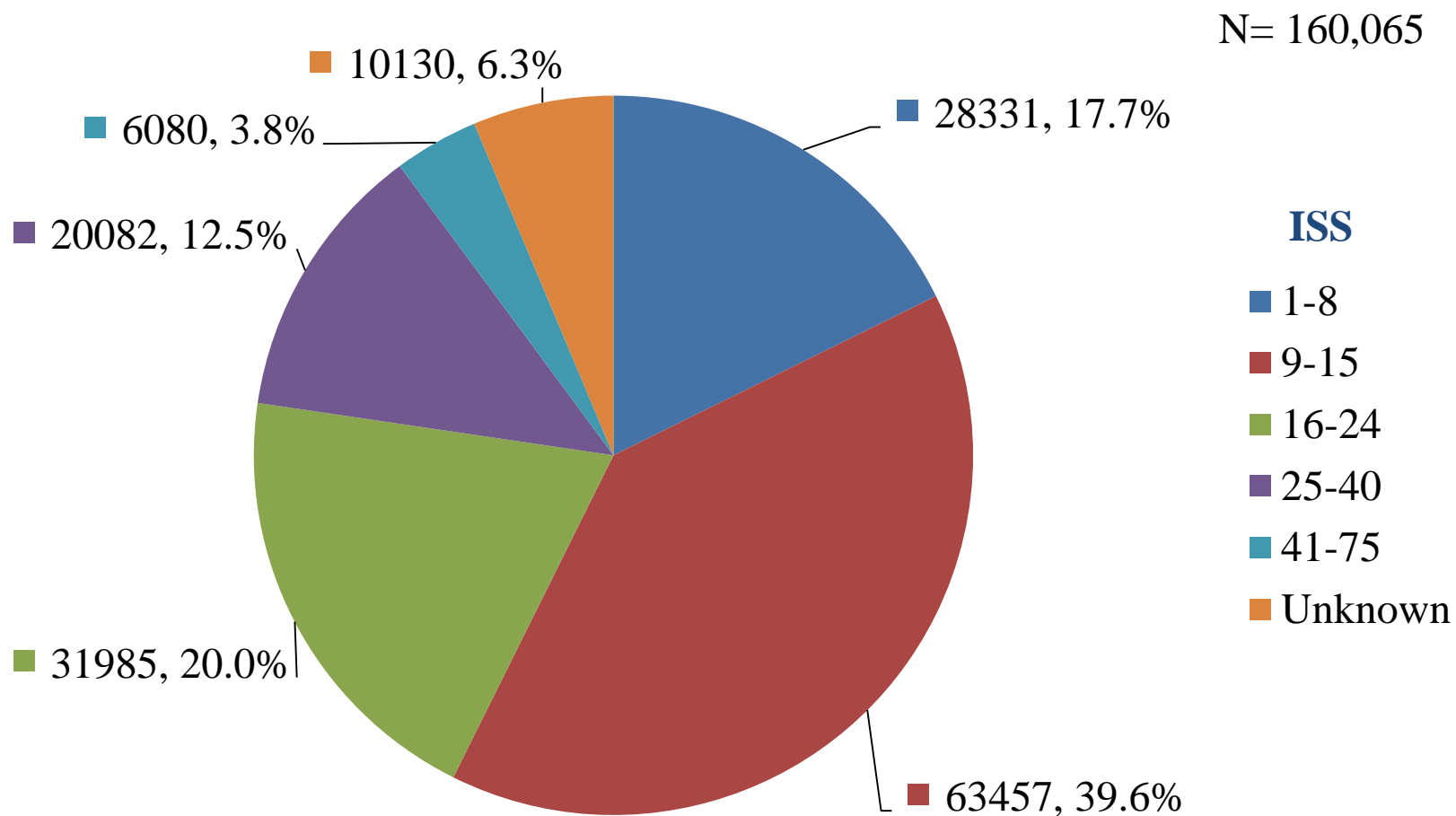
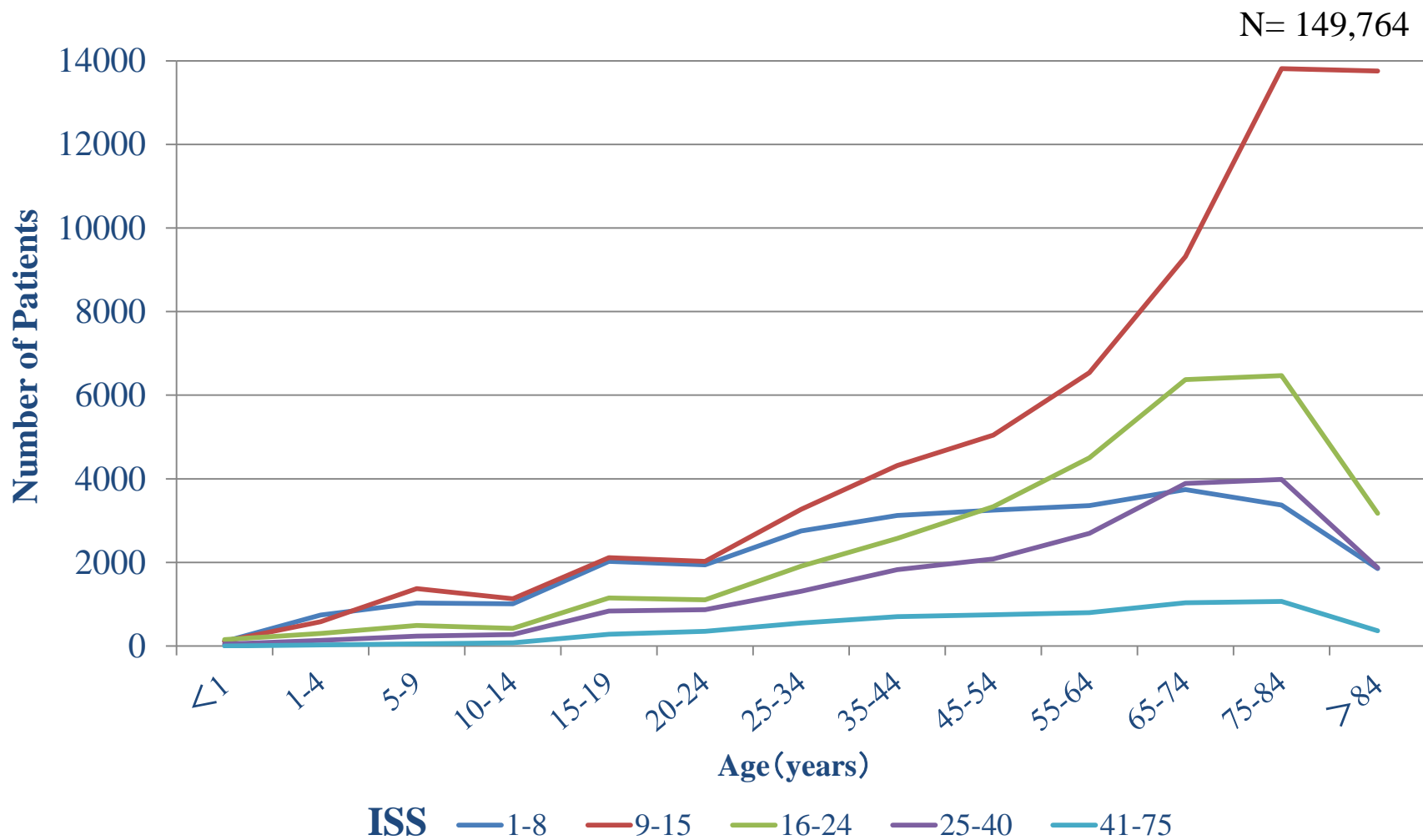
Figure
13B**Average hospital length of stay by mechanism of injury n = 146,890**

Table
13**Total and average hospital length of stay by mechanism of injury n = 146,890**

Mechanism of injury	Number of patients / %		Total hospital LOS in days	Average of hospital LOS in days
Motor vehicle traffic	48,984	33.35%	1,225,150	25.01
tumbled	43,306	29.48%	1,081,065	24.96
Fall	30,891	21.03%	766,712	24.82
unspecified	4,217	2.87%	100,027	23.72
Sports	4,146	2.82%	37,545	9.06
Cut / piece	3,445	2.35%	61,193	17.76
Other blunt / penetrating	2,818	1.92%	91,661	32.53
Fire / burn	2,816	1.92%	94,844	33.68
Crush	1,854	1.26%	54,392	29.34
Machinery	1,691	1.15%	59,799	35.36
Transport others	1,304	0.89%	30,489	23.38
Falling objects	1,072	0.89%	28,755	26.82
Explosive	213	0.15%	5,883	27.62
Stake	105	0.07%	1,472	14.02
Firearm	28	0.02%	801	28.61
Total	146,890	100%	3,639,788	24.78

Figure
14**Patients and Injury Severity Score (ISS)**

**Proportional distribution of patients grouped by categories of the ISS range.
The number of patients of ISS 9-15 category was the most of all categories.**

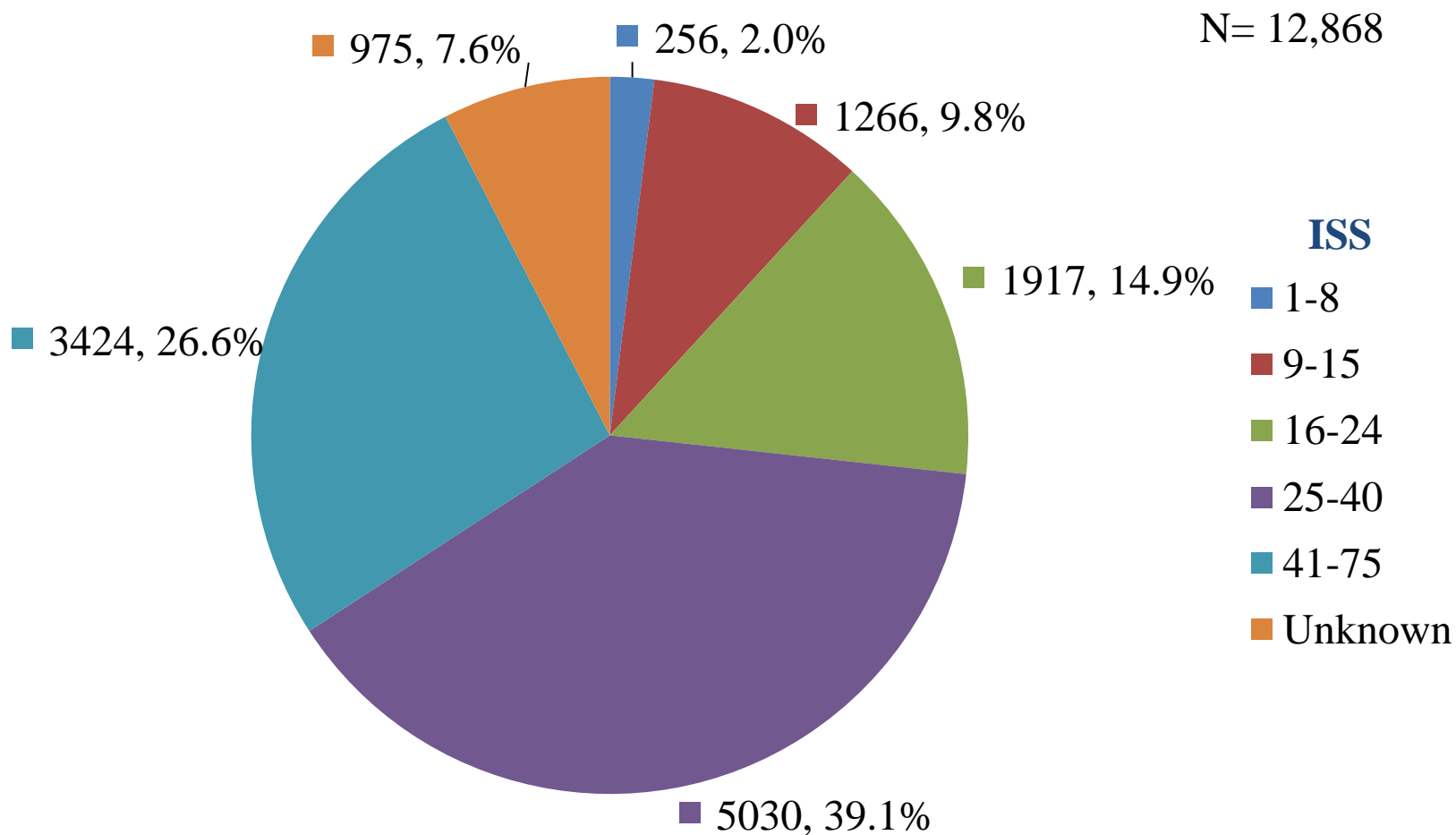
Figure
15**Patients by ISS and Age**

Number of injured patients grouped by ISS range at each age.

The peaks of the number of patients based on age distribution were seen at over 75 ages of ISS 9-15, and at 65-84 ages of another ISS categories.

Table
15**Patients by ISS and Age**

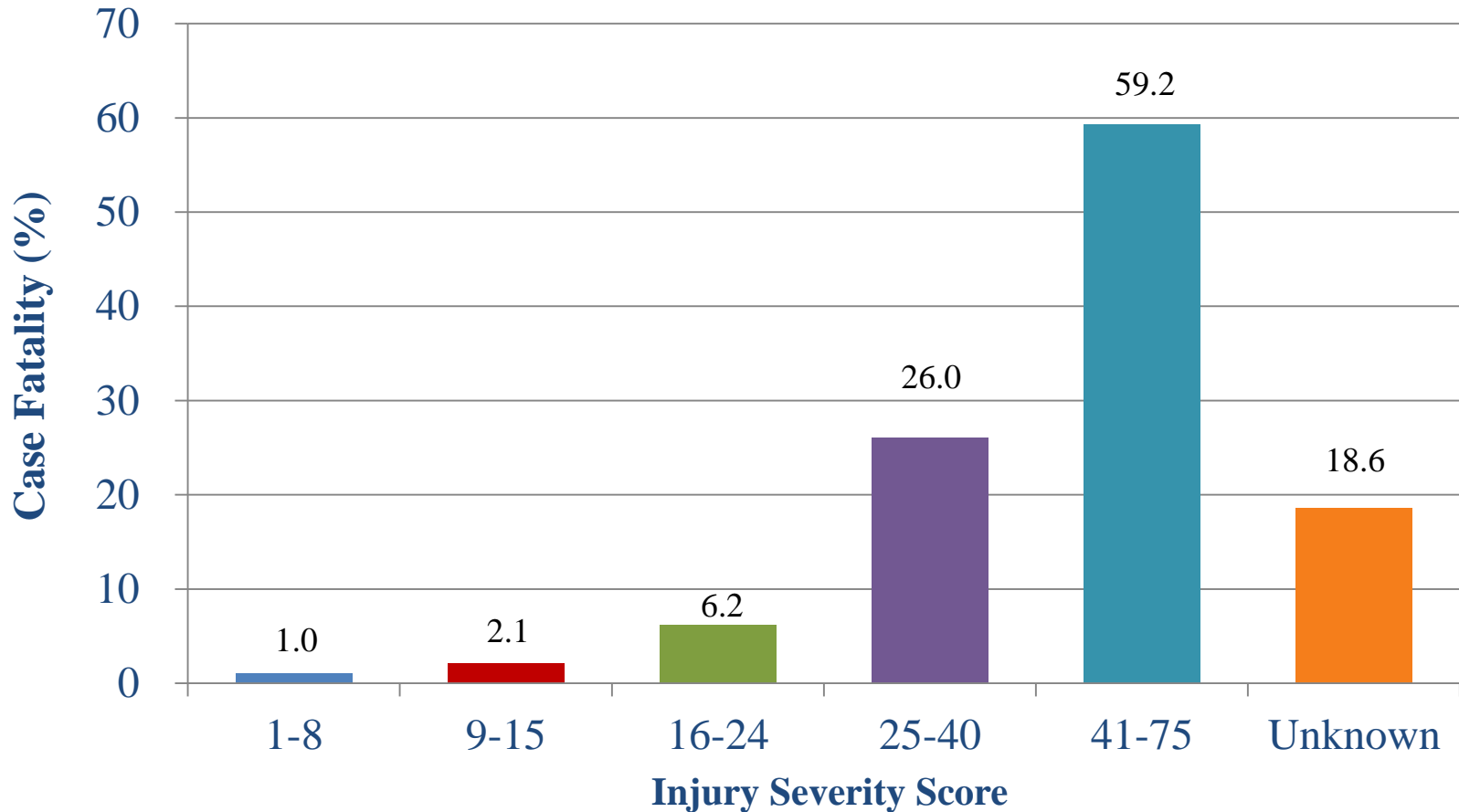
Age ISS	0	1-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85-	Unknown	Total
1-8	106	743	1031	1009	2026	1939	2750	3124	3250	3361	3740	3370	1853	29	28331
9-15	114	582	1372	1128	2112	2024	3268	4314	5047	6539	9320	13815	13758	64	63457
16-24	151	303	492	420	1151	1105	1909	2576	3333	4499	6376	6471	3172	27	31985
25-40	48	132	238	272	836	869	1308	1827	2085	2698	3888	3985	1869	27	20082
41-75	2	28	54	79	278	352	547	703	747	796	1036	1069	365	24	6080
Unknown	81	380	371	270	440	538	810	981	1037	1135	1618	1522	918	29	10130
Total	502	2168	3558	3178	6843	6827	10592	13525	15499	19028	25978	30232	21935	200	160065

Figure
16A**Deaths and Injury Severity Score (ISS)**

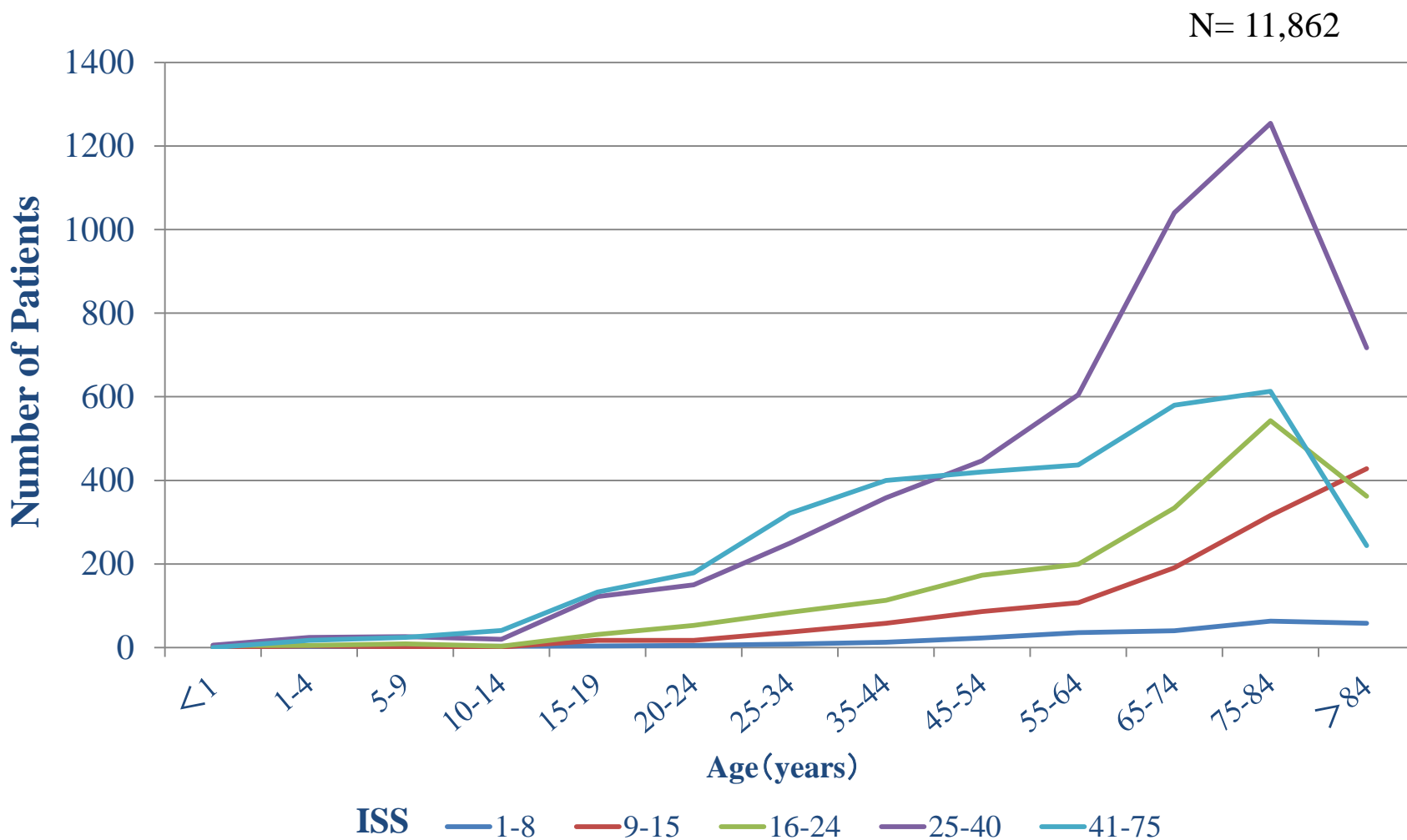
**Proportional distribution of deaths grouped by categories of ISS range.
Deaths in ISS 25-40 category were the highest.**

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

N= 12,868



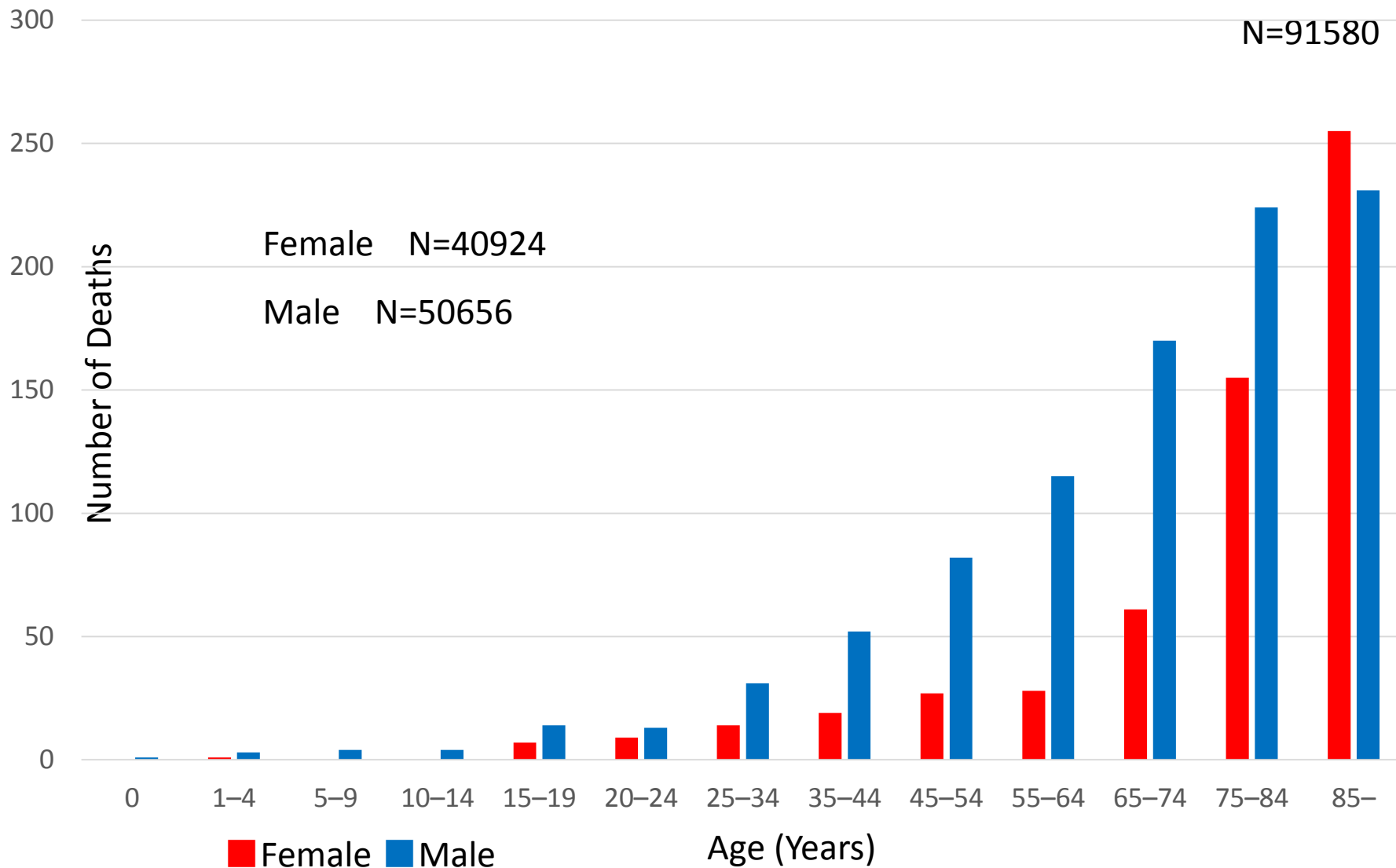
Case fatality grouped by ISS range was higher in severe trauma category.
(Case fatality = number of deaths divided by the number of patients \times 100 by ISS range).

Figure
17**Deaths by ISS and Age**

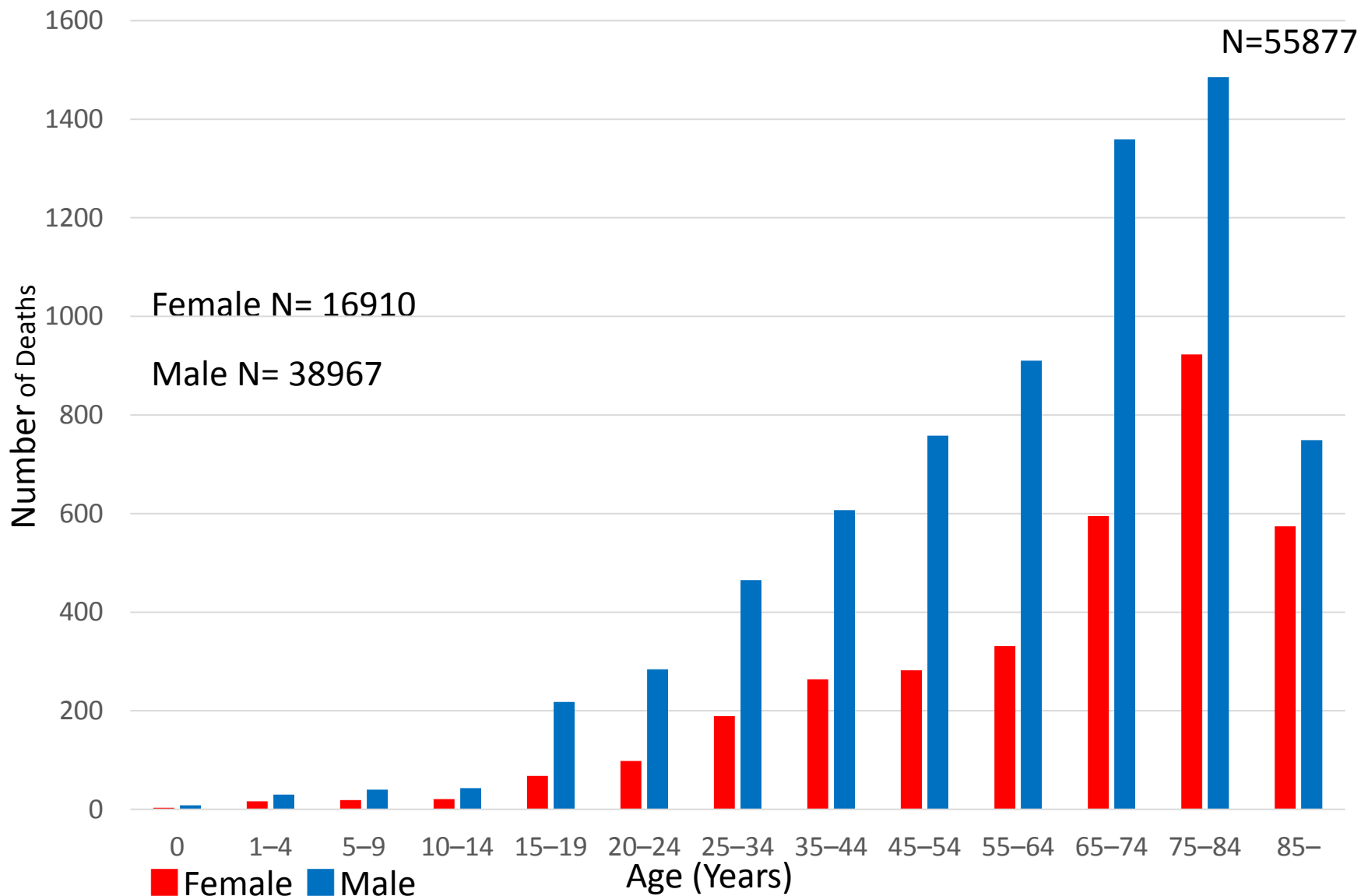
The peak was seen at elderly ages in all ISS categories.

Table
17**Deaths by ISS and Age**

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	1	0	2	3	4	5	8	13	23	36	40	63	58	0	256
9-15	0	4	2	1	17	17	37	58	86	107	191	316	428	2	1266
16-24	5	5	9	3	31	53	84	113	173	199	334	543	362	3	1917
25-40	6	24	26	20	122	150	250	358	447	605	1040	1254	717	11	5030
41-75	0	17	24	41	133	179	321	400	420	437	580	613	244	15	3424
Unknown	3	2	0	5	32	59	83	106	138	128	178	154	76	11	975
Total	15	52	63	73	339	463	783	1048	1287	1512	2363	2943	1885	42	12868

Figure
18**Deaths by Age and Gender (ISS≤15)**

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

Figure
19**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)**

N=141598

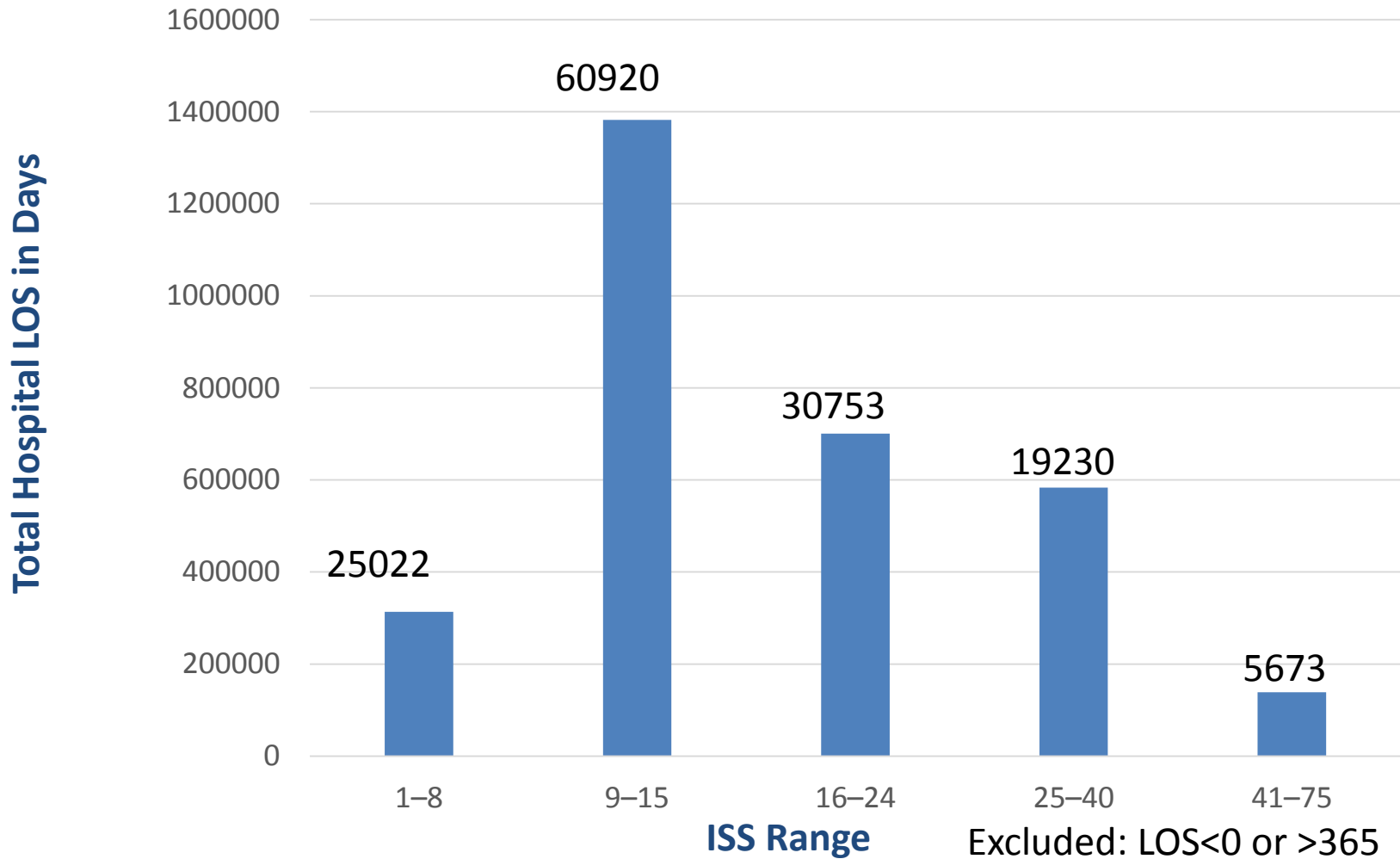
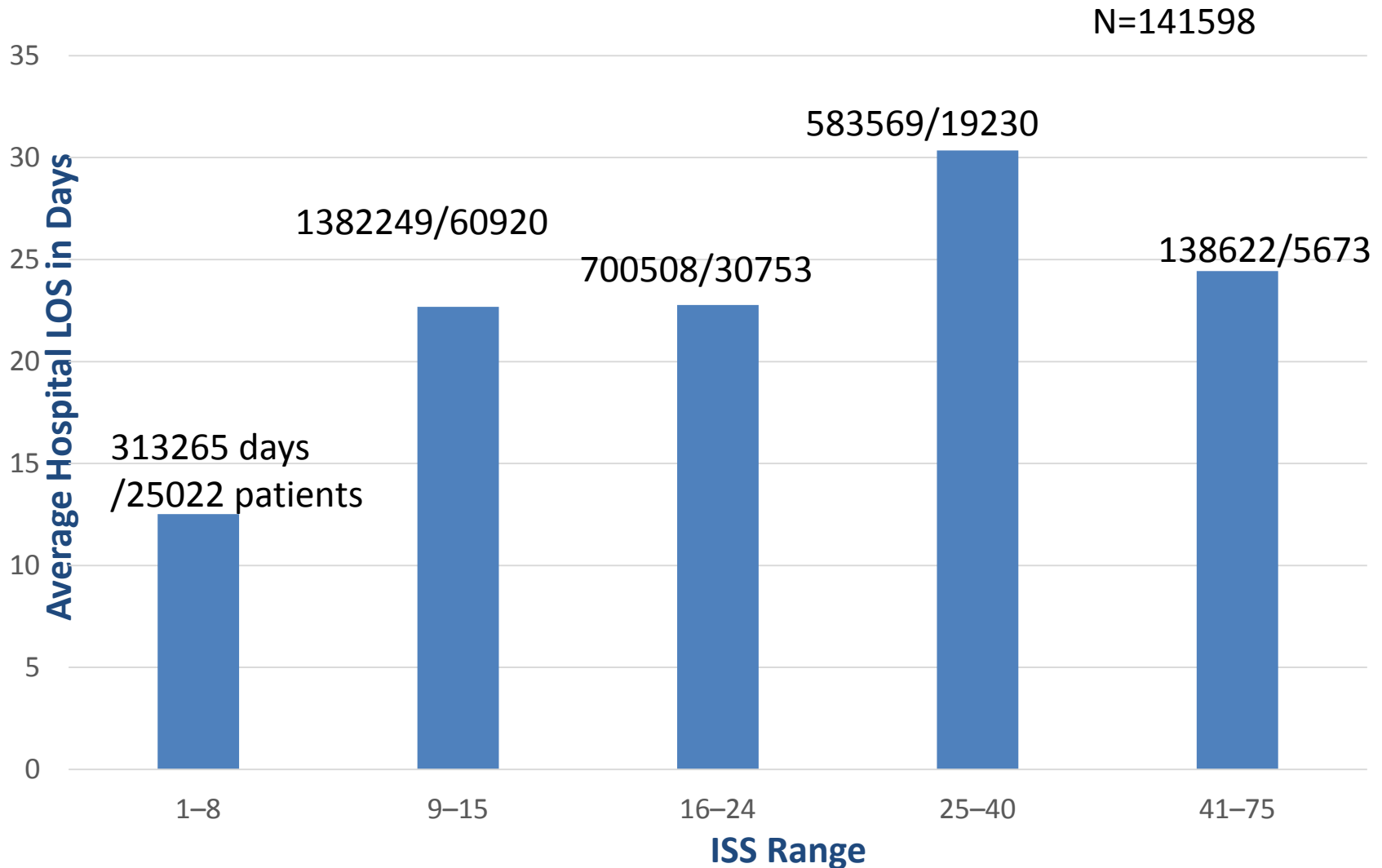
**Proportional distribution of total hospital length of stay for patients, grouped by ISS range.**

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).

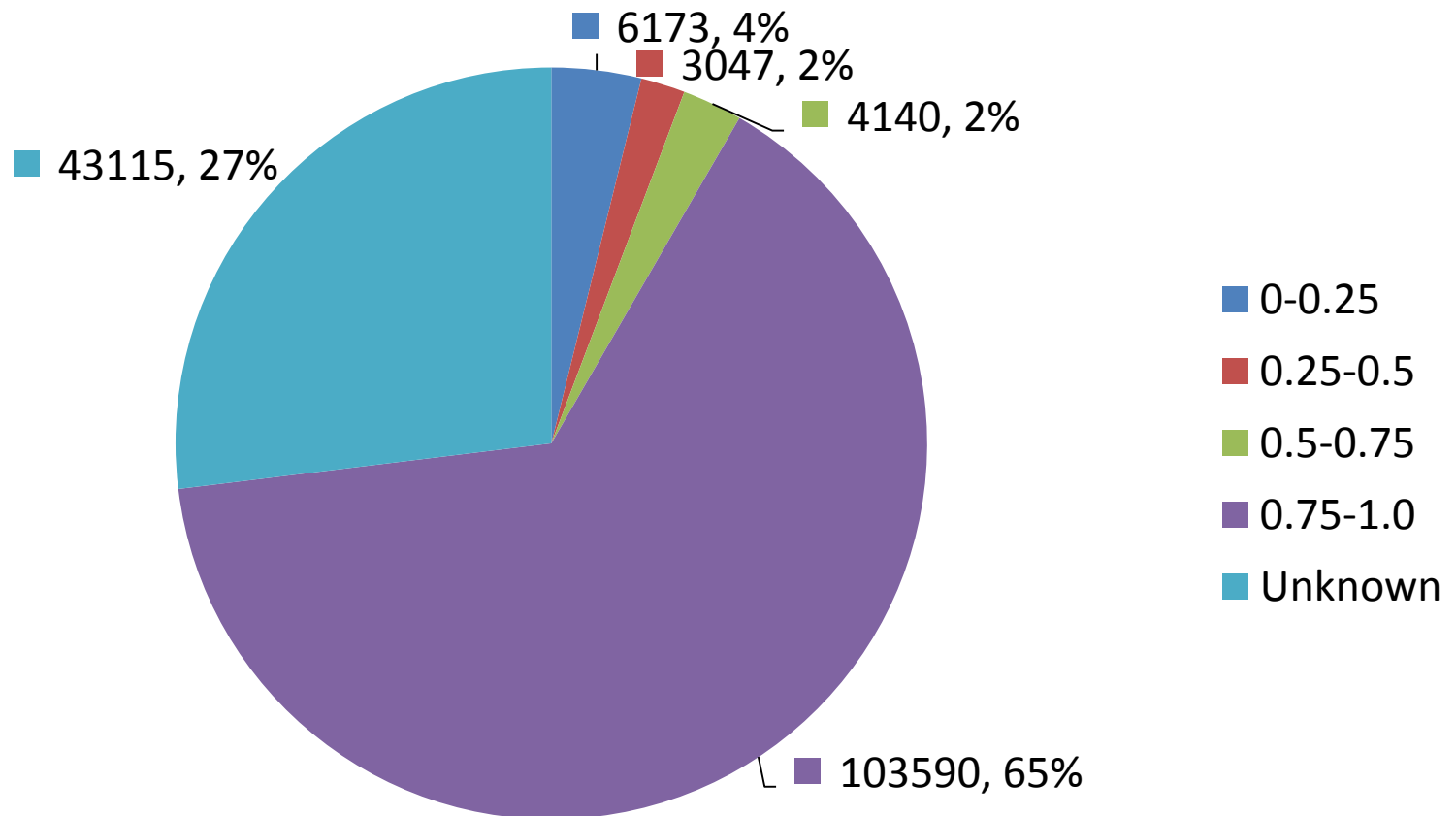
Figure
21**Distribution of patients by probability of survival (Ps)**

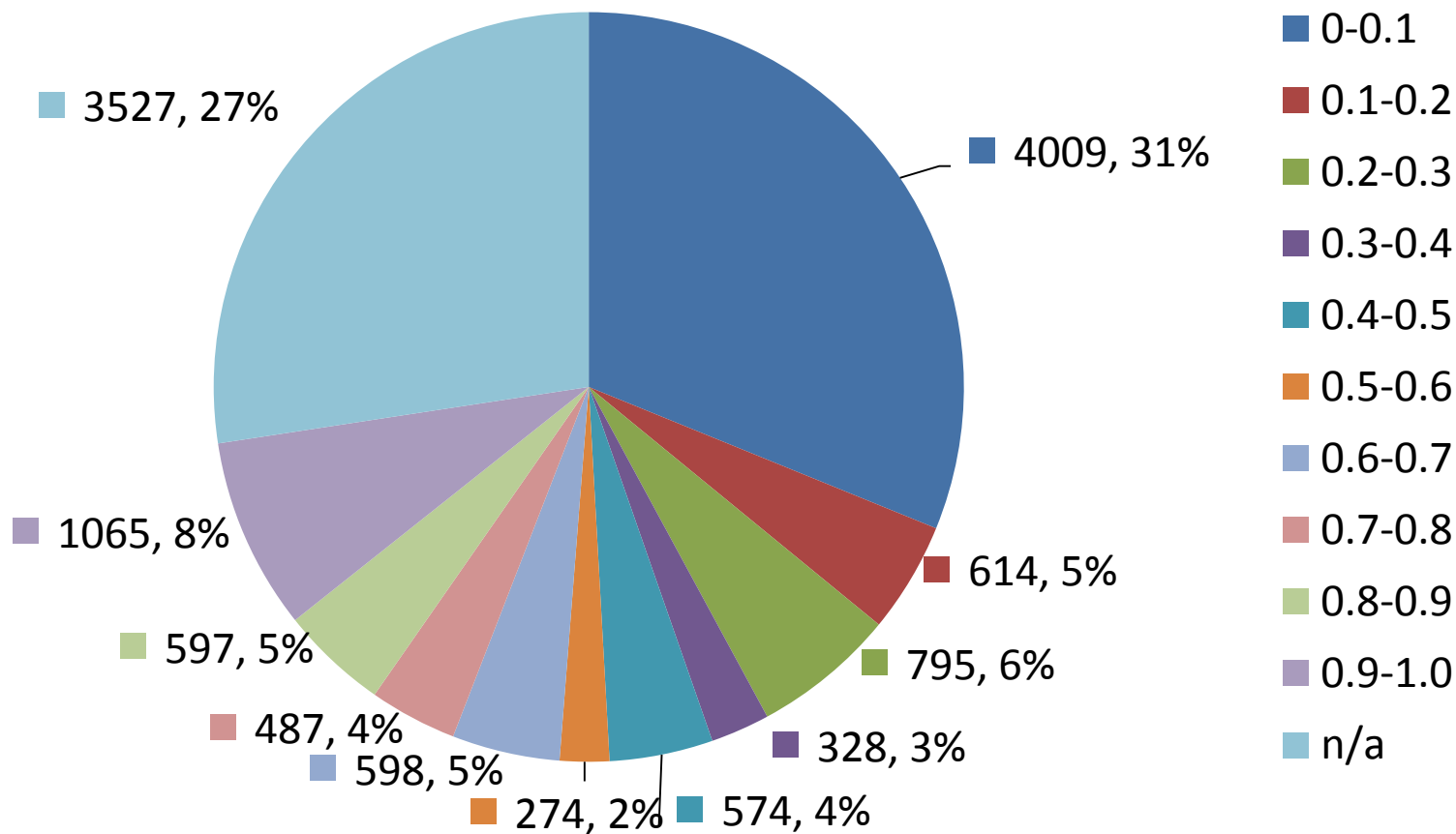
Figure
22A**Distribution of deaths by probability of survival (Ps)**

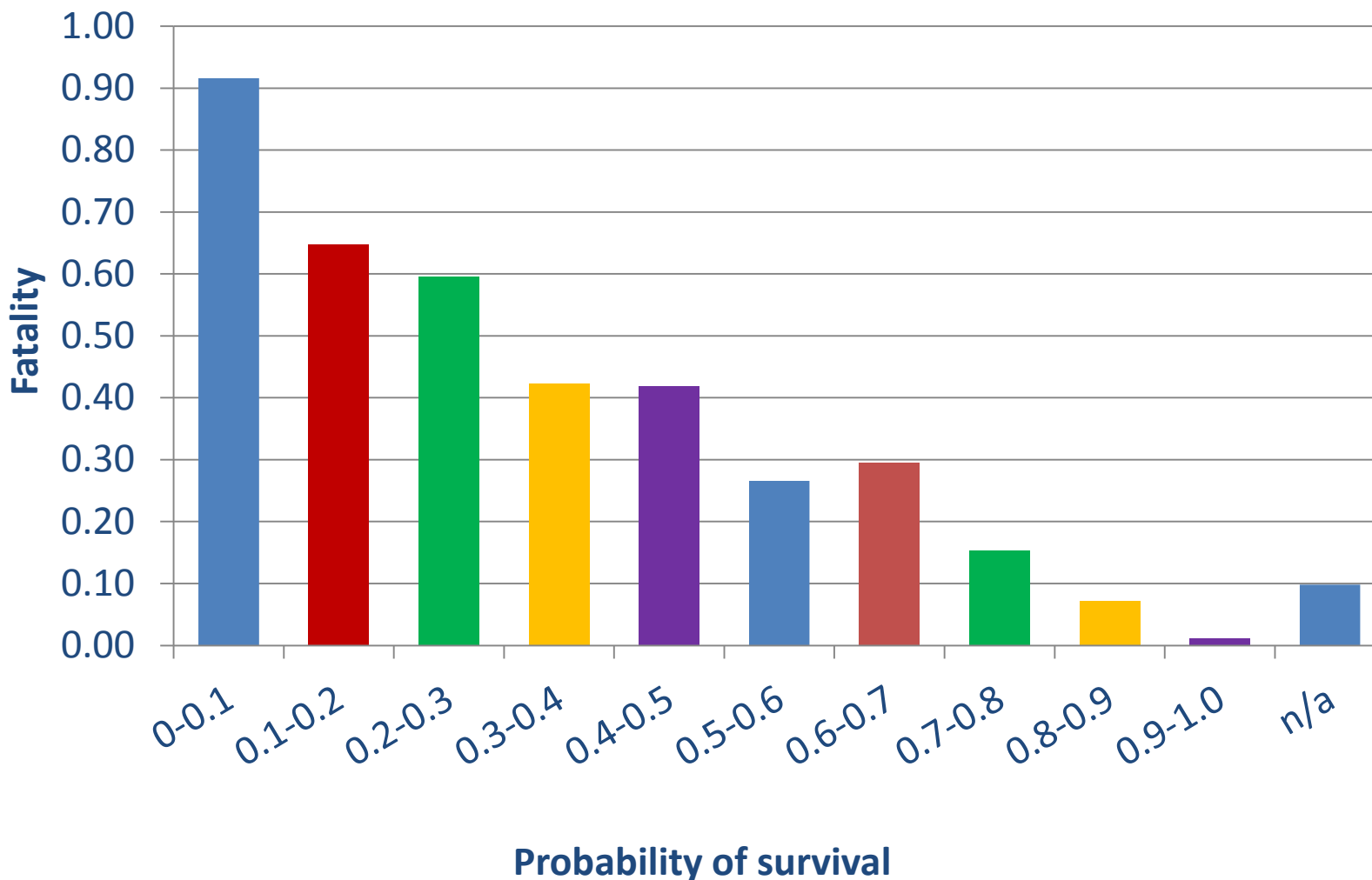
Figure
22B**Case fatality by probability of survival (Ps)**

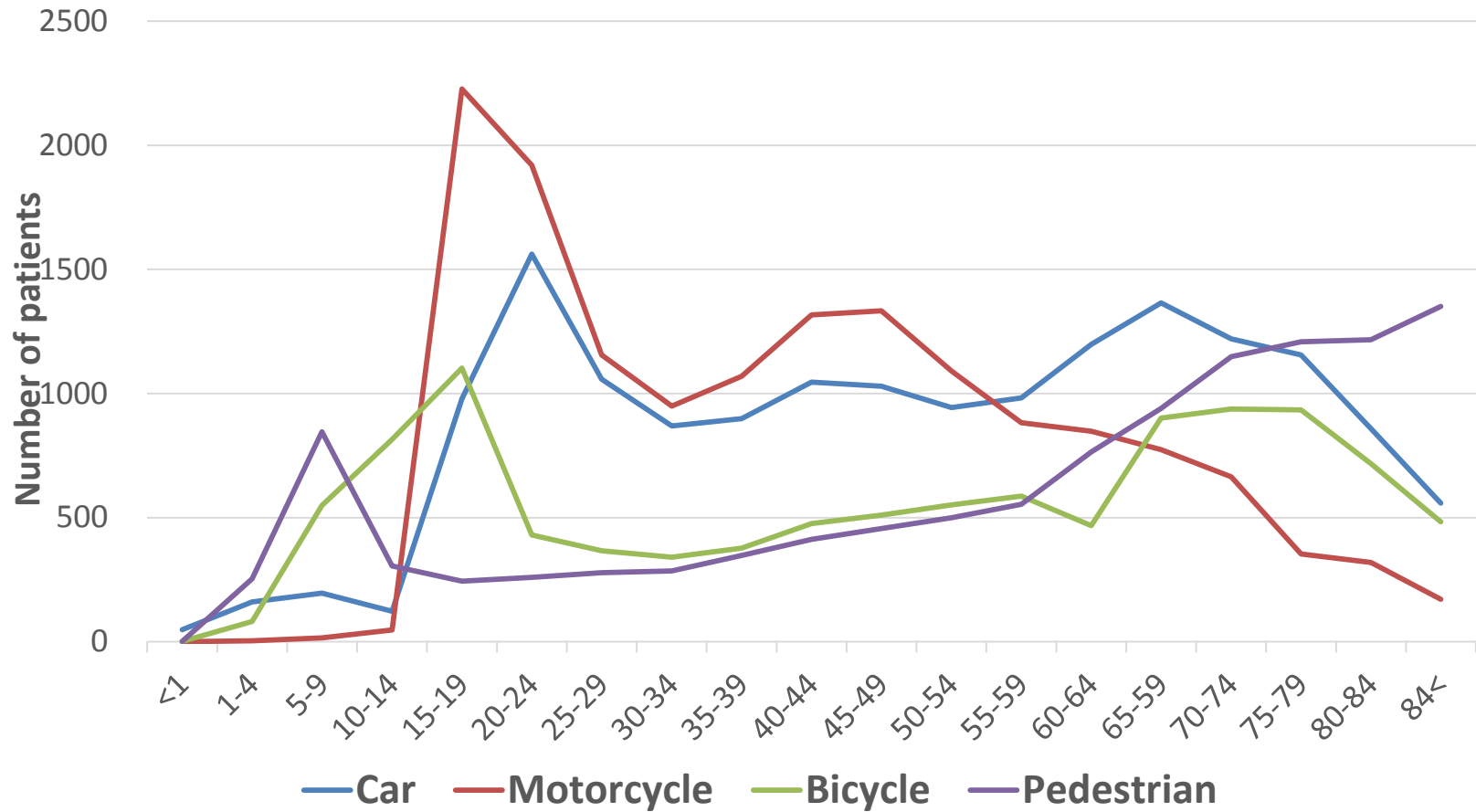
Figure
23**The number of patients in traffic accidents by types of vehicle and age**

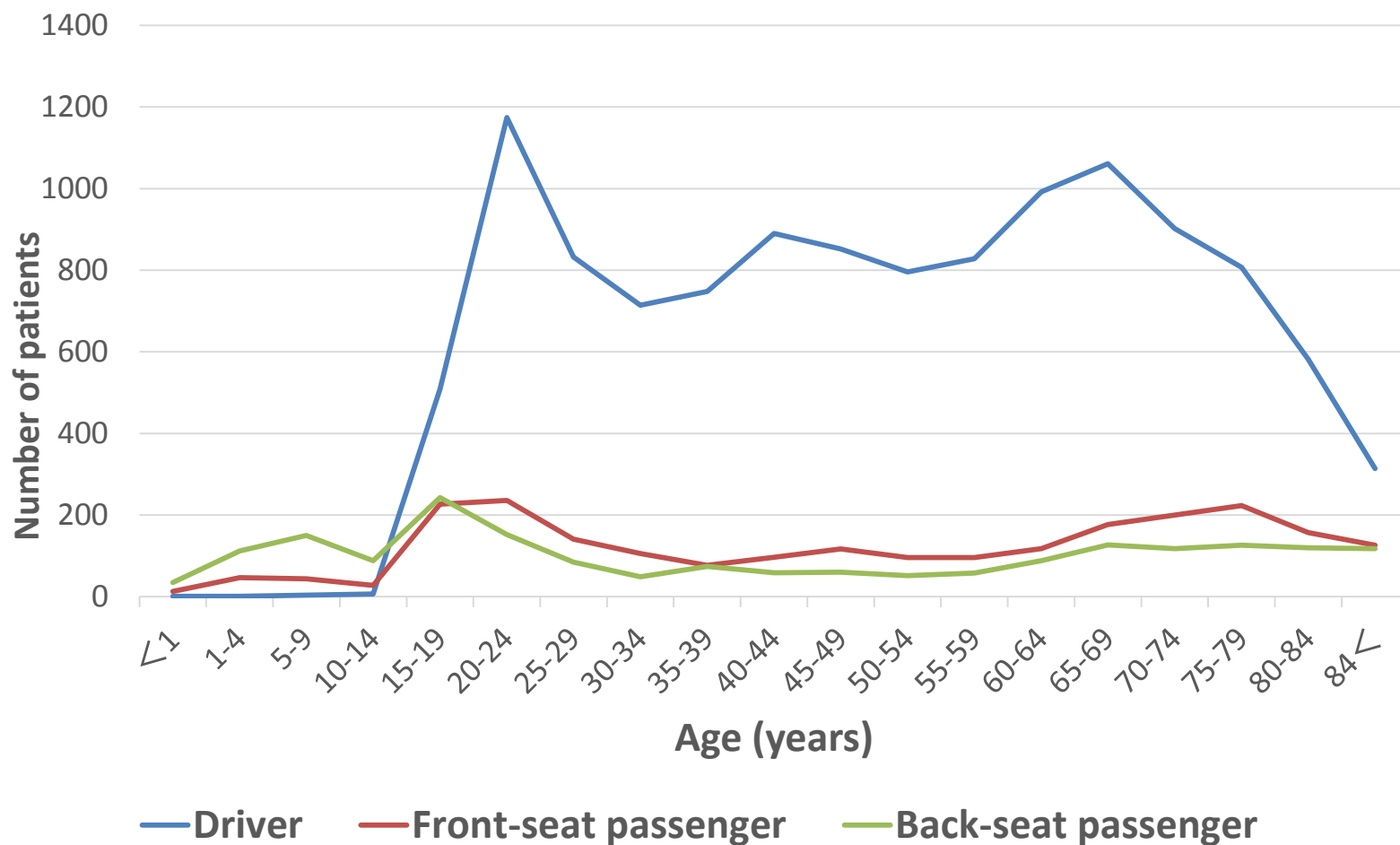
Figure
24**The number of patients in car accident by drivers and passengers and age**

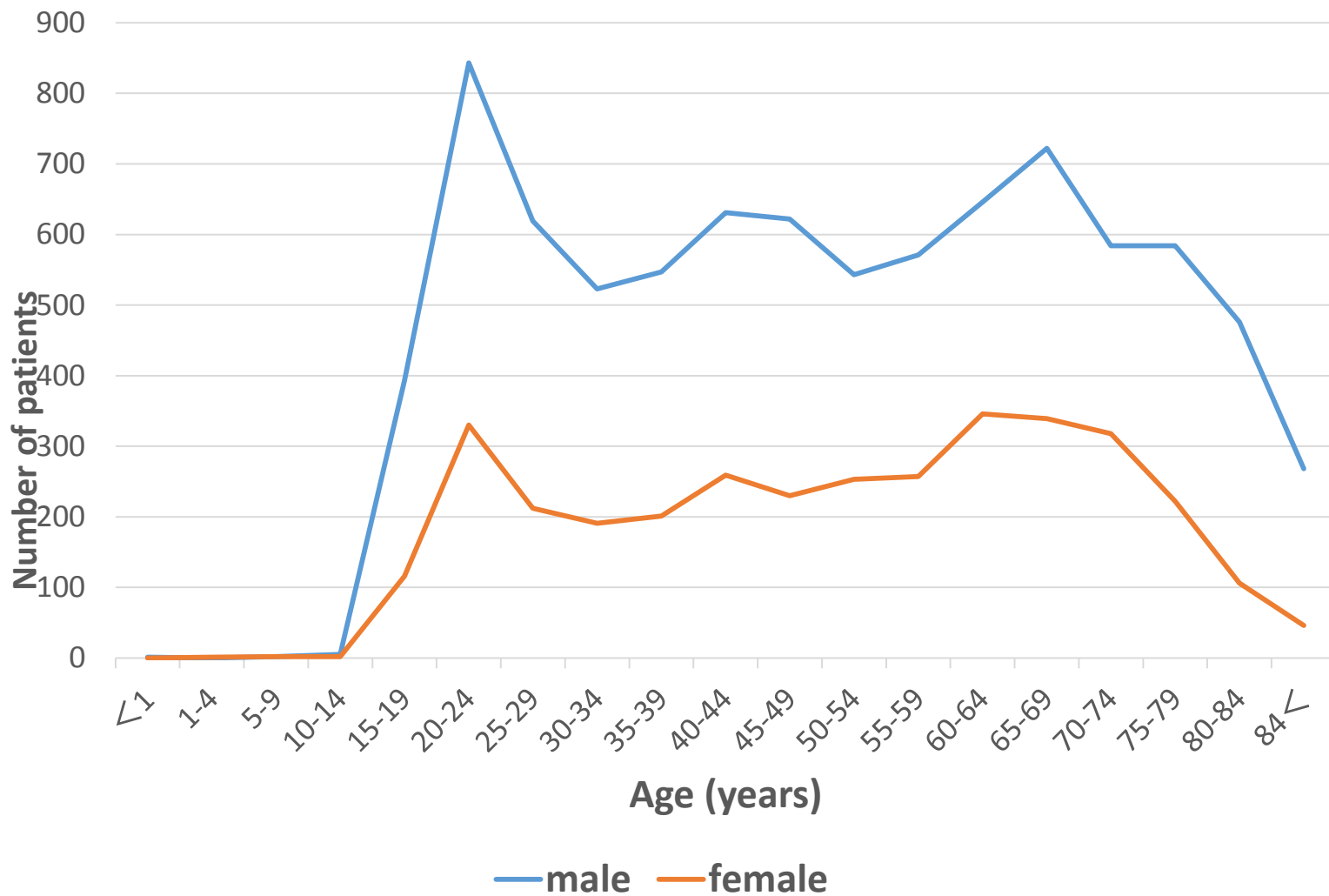
Figure
25**The number of patients in car accident (driver) by gender and age**

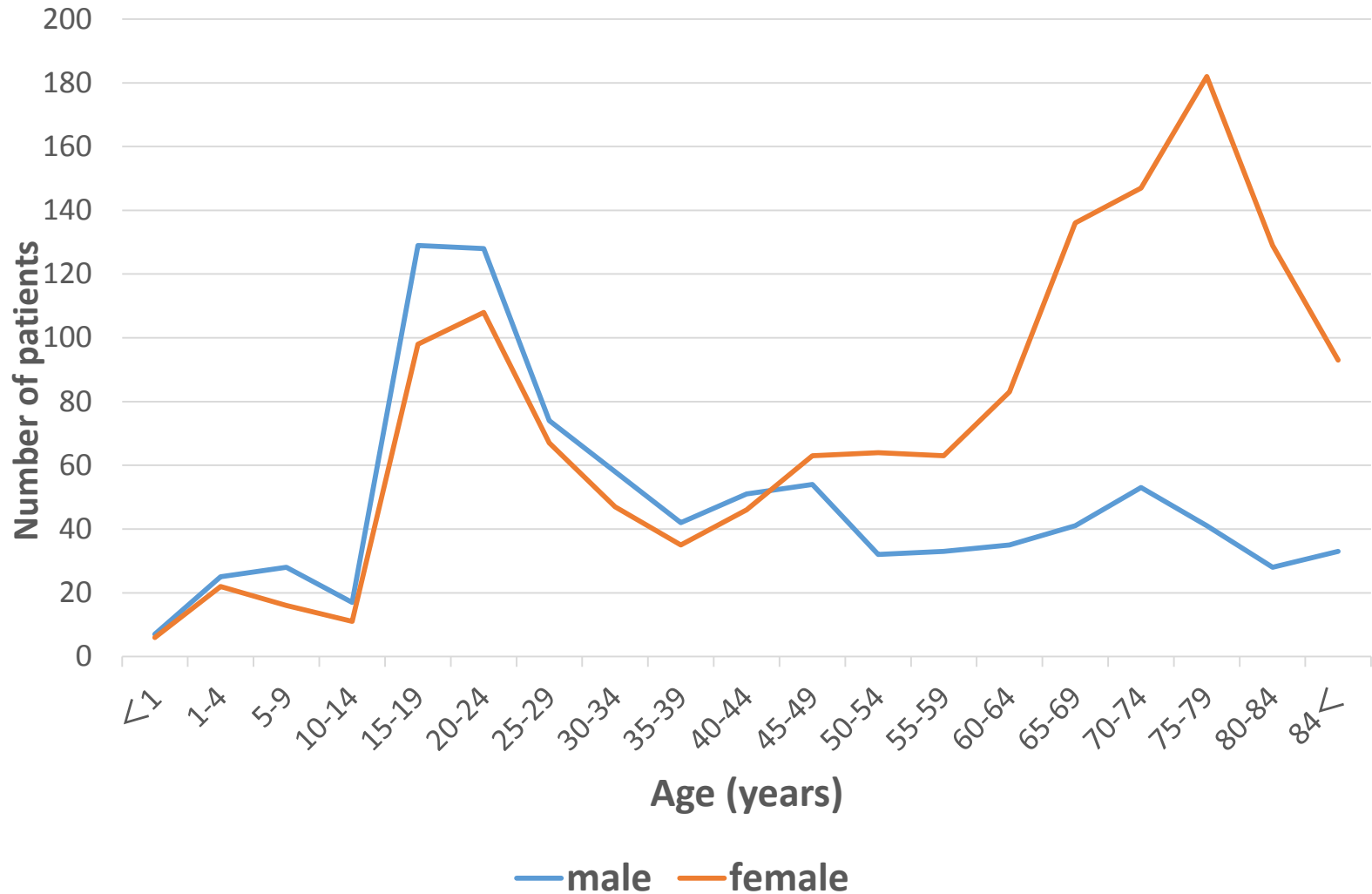
Figure
26**The number of patients in car accident (passenger) by gender and age**

Figure 27

Number of Deaths and Fatalities of Motor Vehicular Drivers by Age

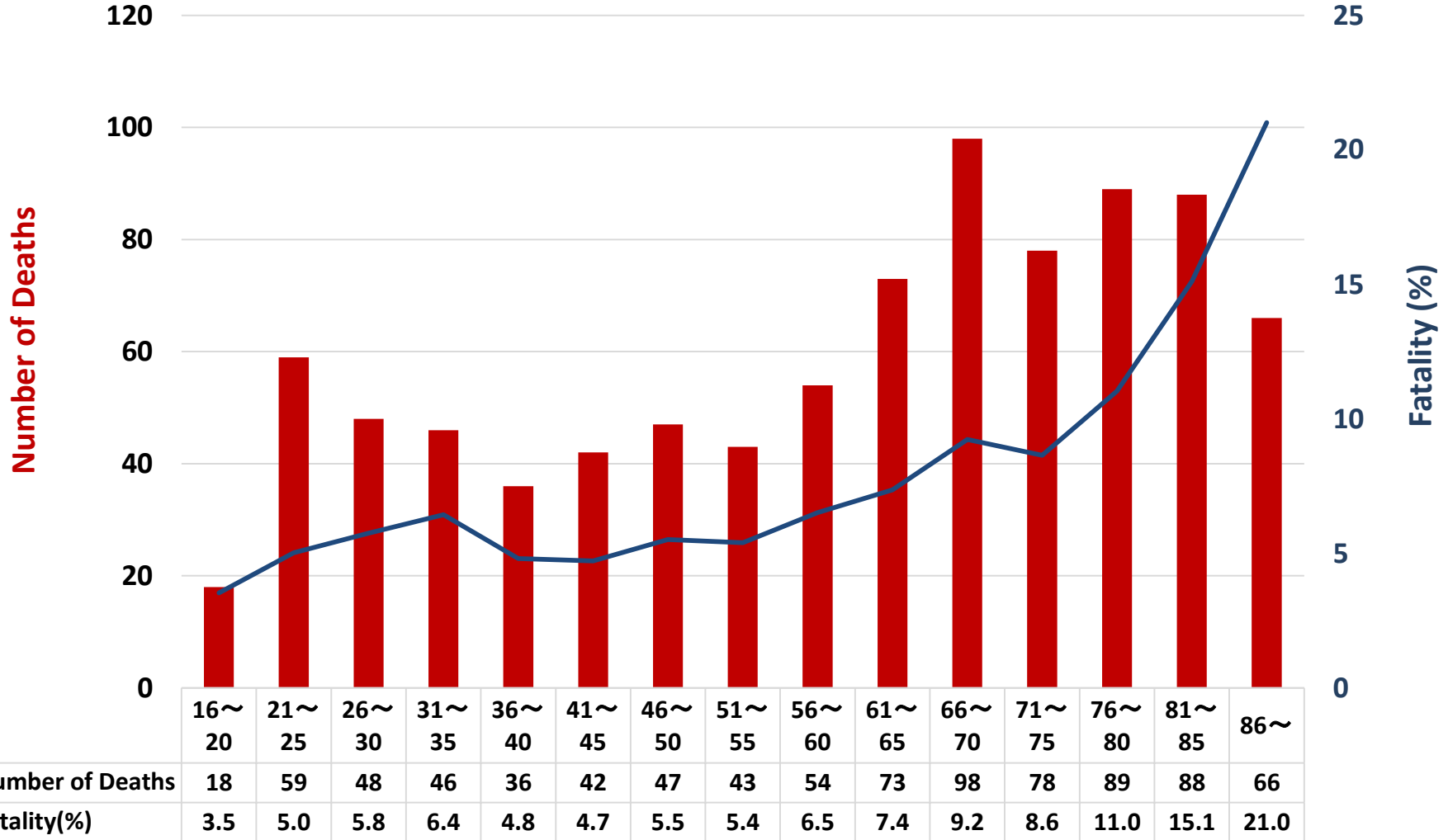


Figure 28

Number of Deaths of Motor Vehicular Drivers by Age and Genders

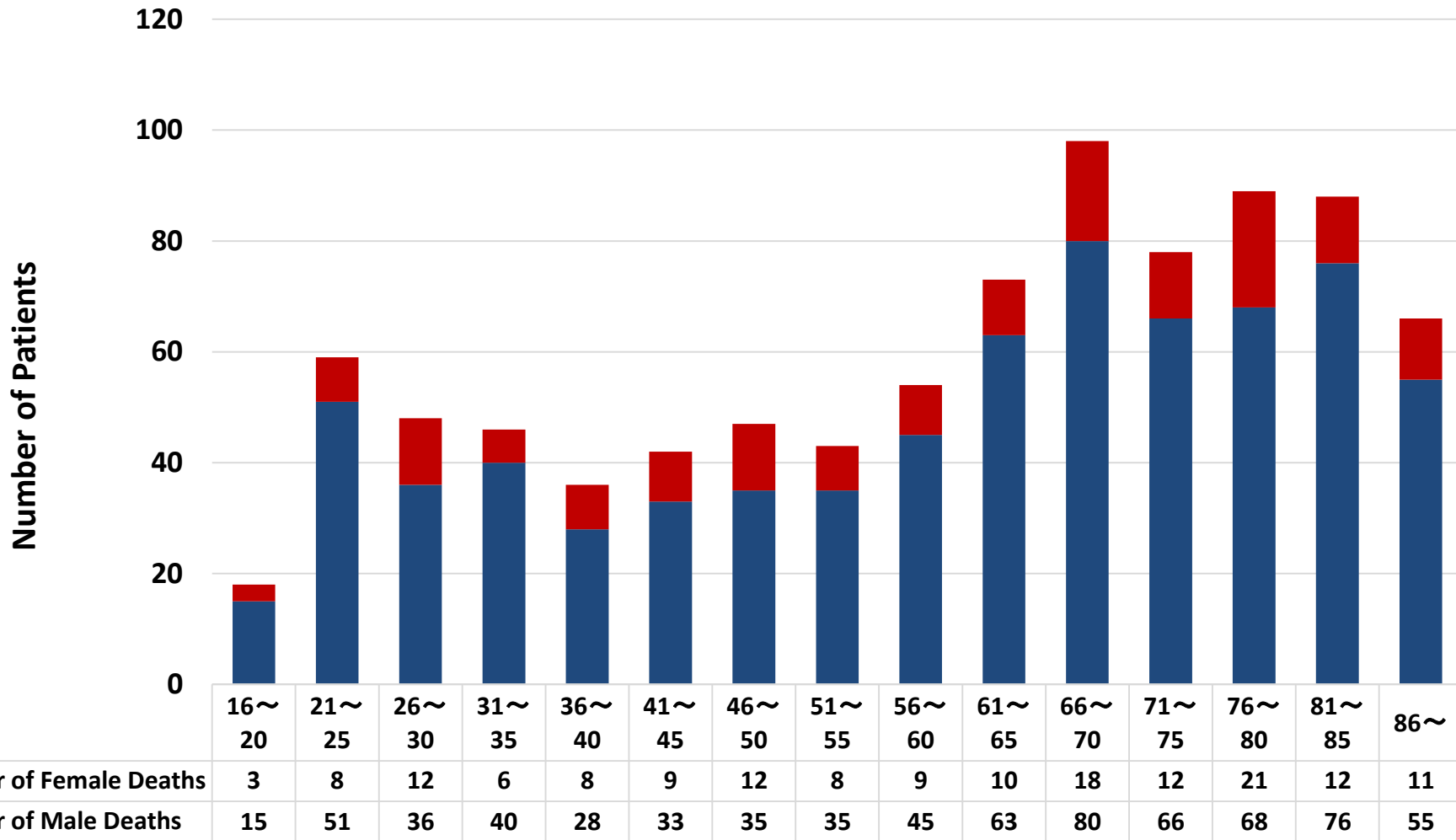


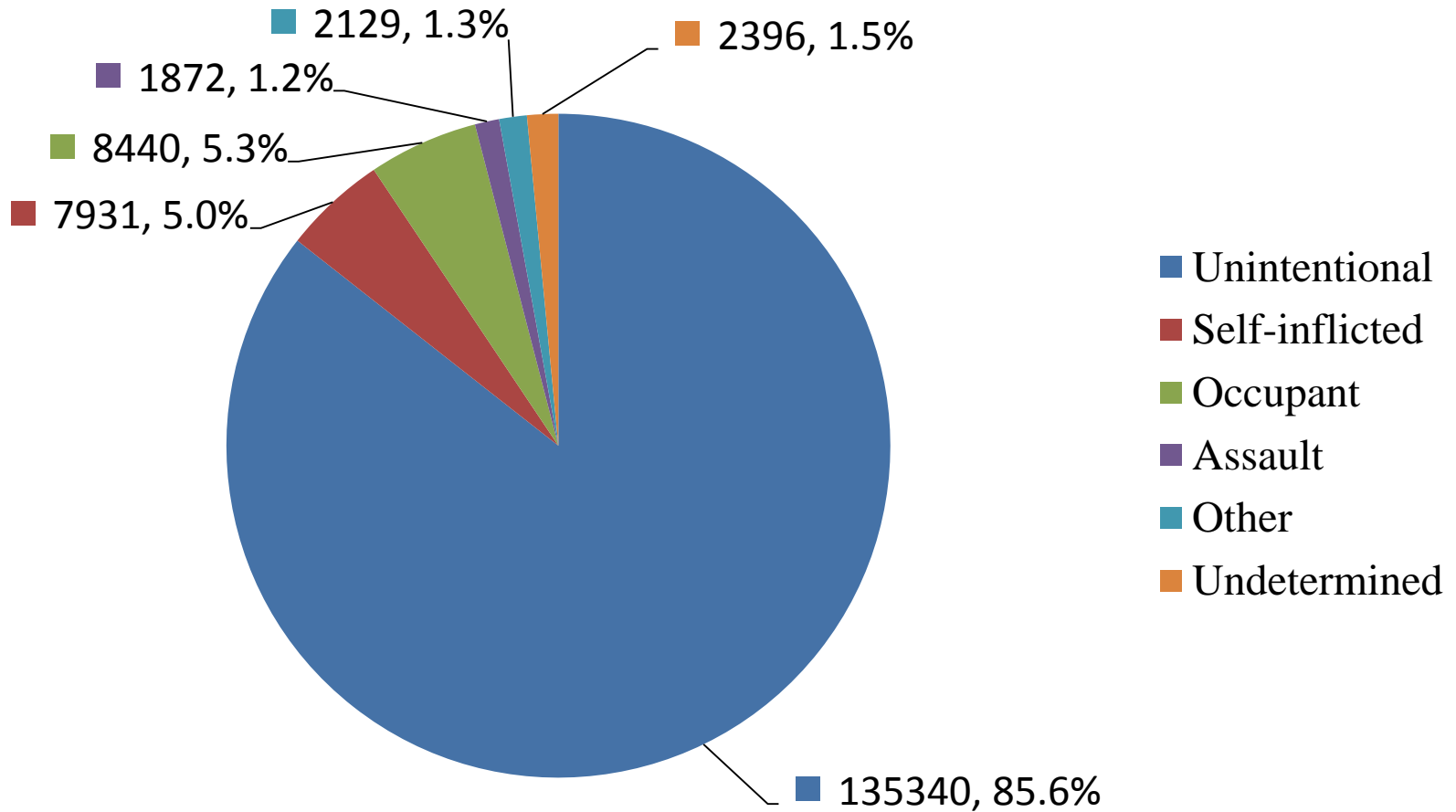
Figure
29**Proportional distribution of registered patients, grouped by intent**

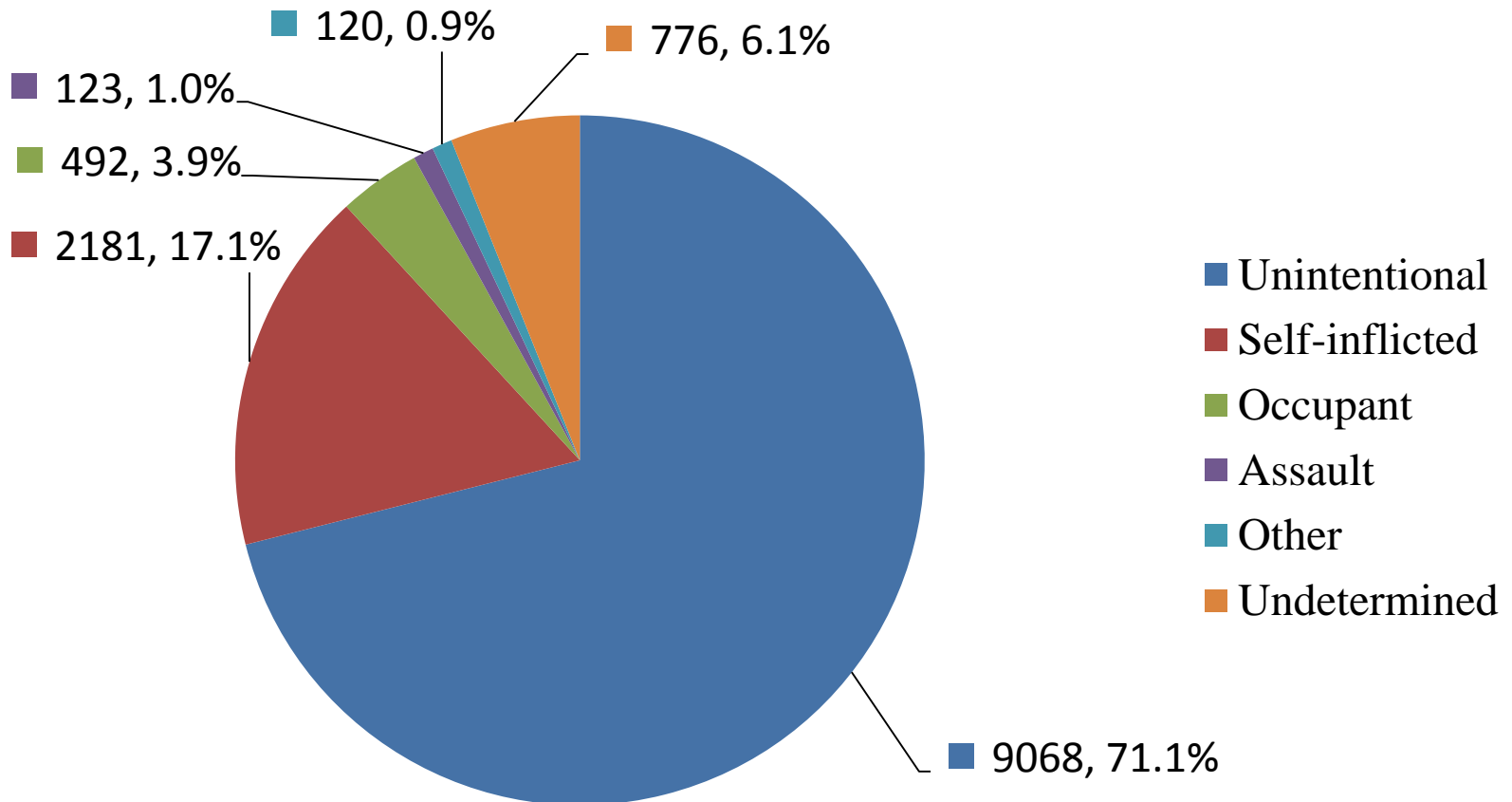
Figure
30**Proportional distribution of deaths, grouped by intent**

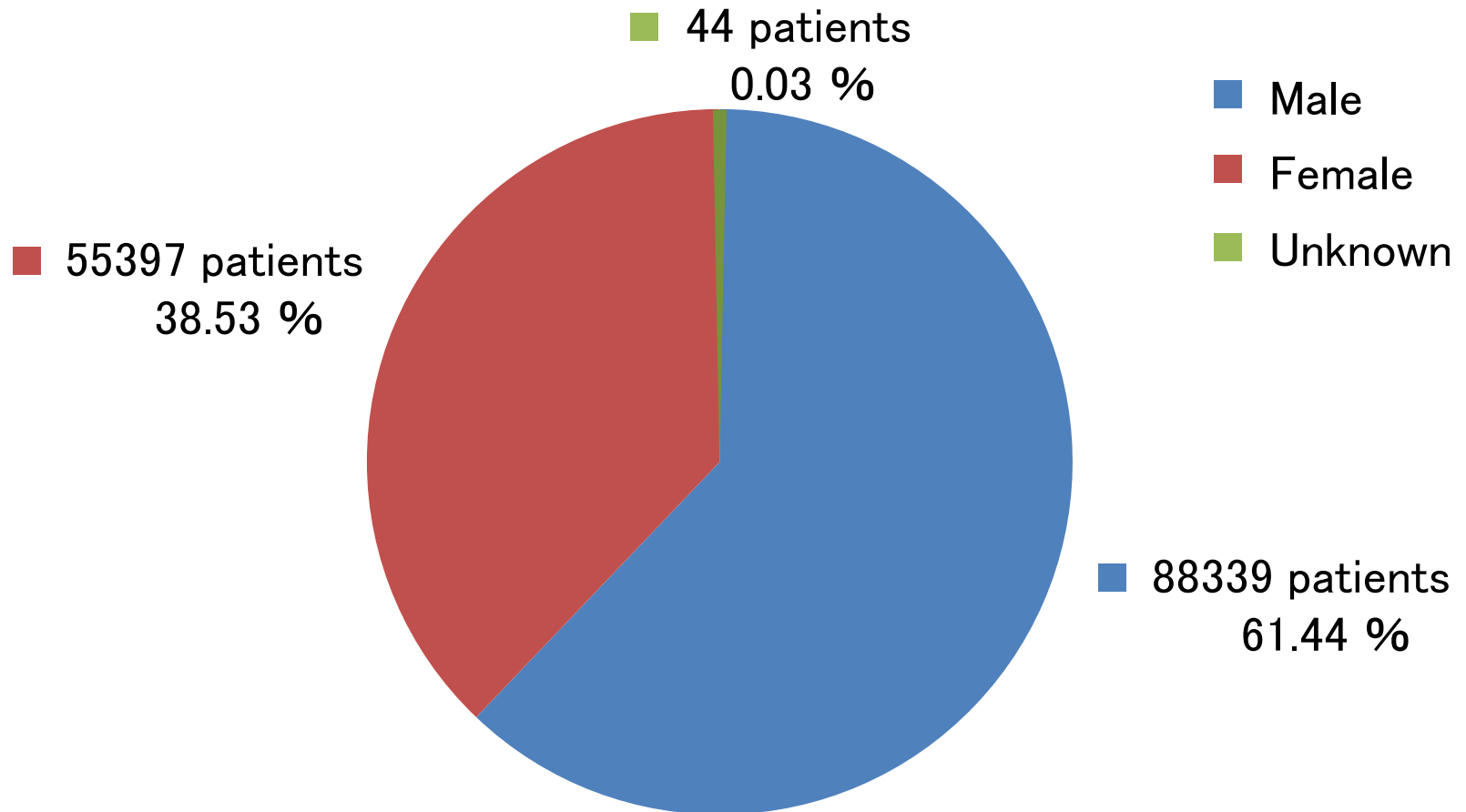
Figure
31**Gender proportion of Unintentional and Occupant**

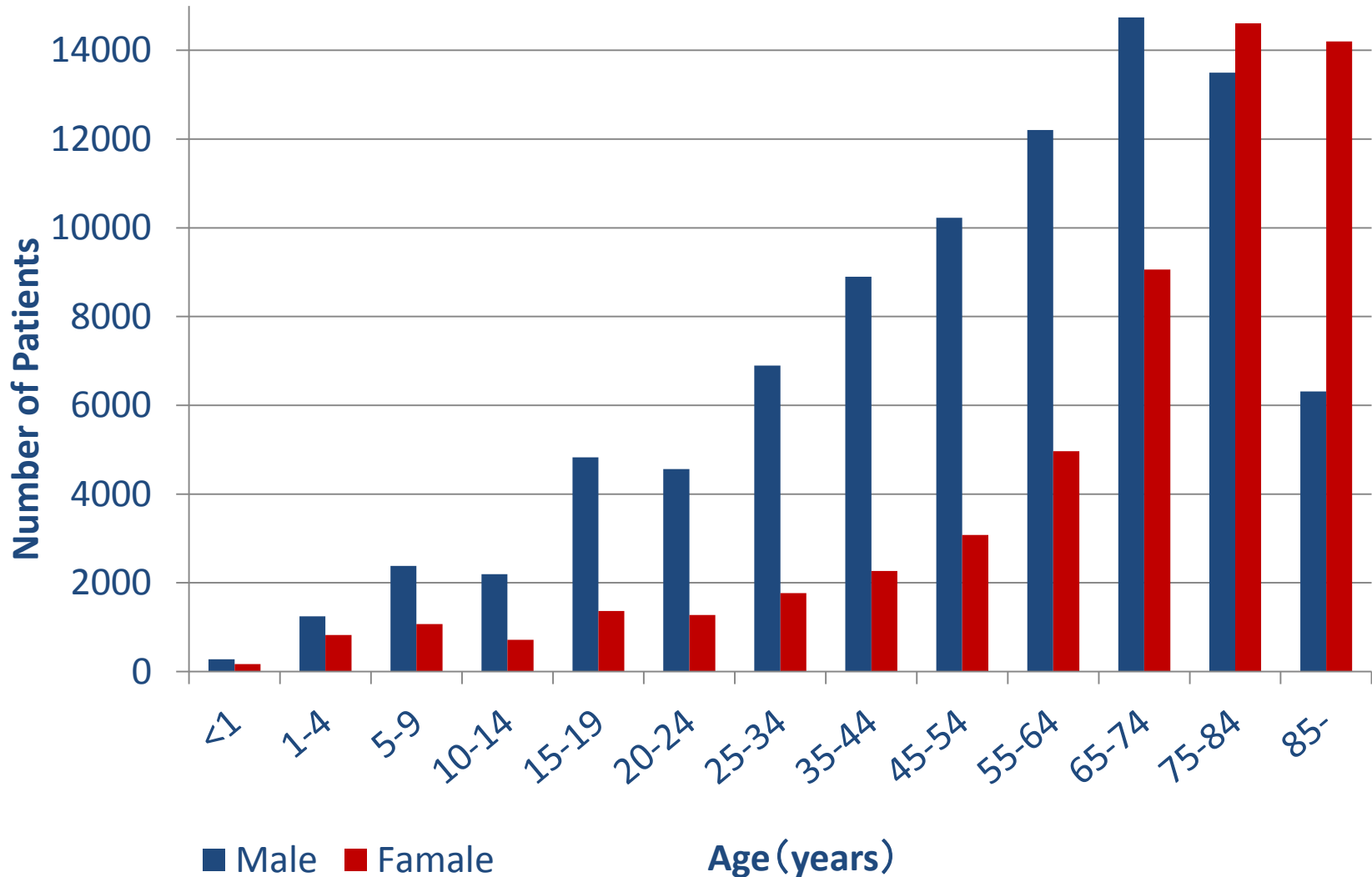
Figure
32**Unintentional and Occupant by Age and Gender**

Table
32**Unintentional and Occupant by Age and Gender**

Age	Male	Female	Total
< 1	275	167	442
1- 4	1244	825	2069
5- 9	2380	1071	3451
10-14	2194	716	2910
15-19	4827	1366	6193
20-24	4563	1274	5837
25-34	6894	1769	8663
35-44	8896	2263	11159
45-54	10228	3078	13306
55-64	12206	4964	17170
65-74	14741	9058	23799
75-84	13449	14610	28109
85-	6311	14198	20509
Unknown	81	38	119
Total	88339	55397	143736

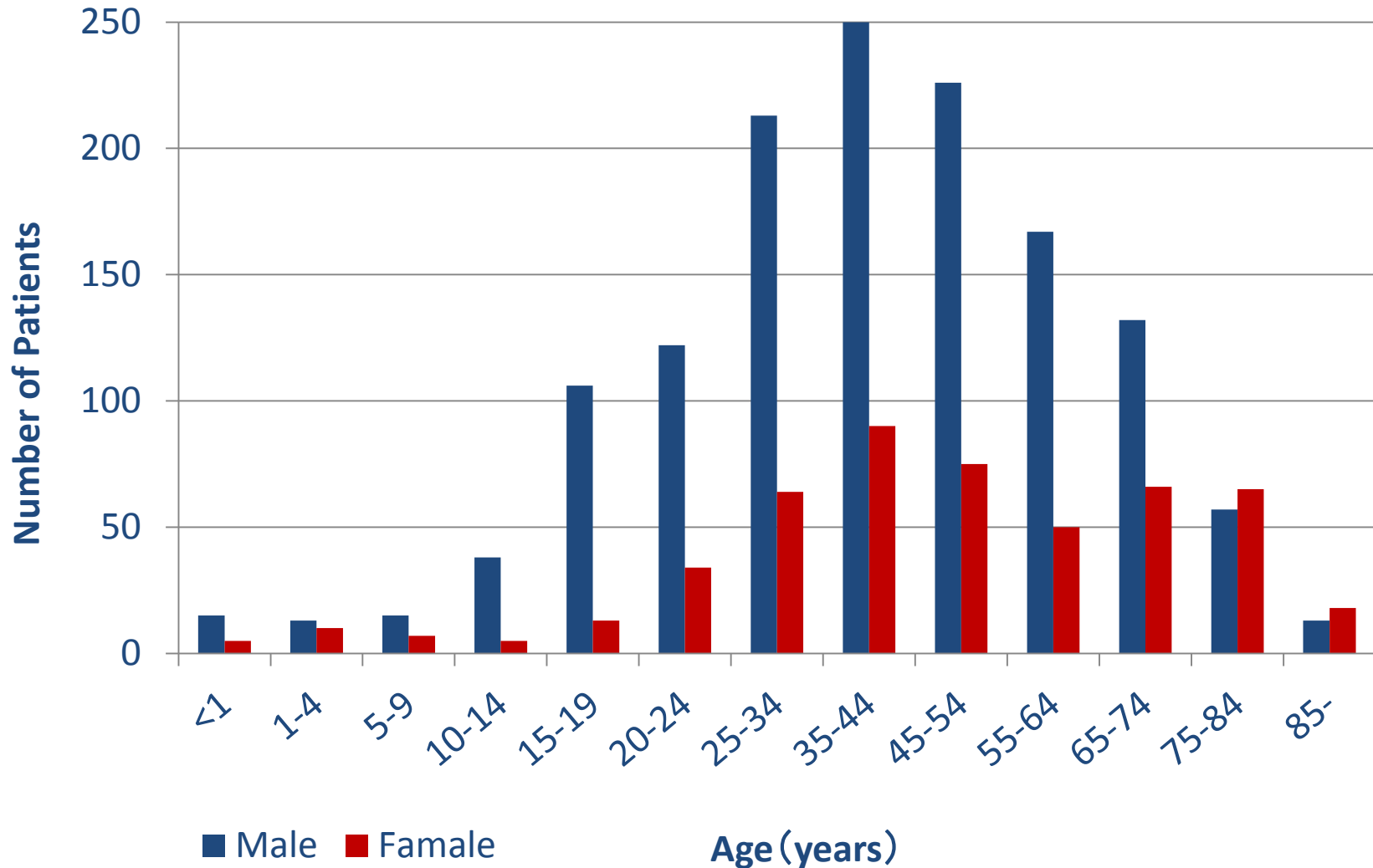
Figure
33**Assault by Age and Gender**

Table
33**Assault by Age and Gender**

Age	Male	Female	Total
< 1	15	5	20
1- 4	13	10	23
5- 9	15	7	22
10-14	38	5	43
15-19	106	13	119
20-24	122	34	156
25-34	213	64	277
35-44	250	90	340
45-54	226	75	301
55-64	167	50	217
65-74	132	66	198
75-84	57	65	122
85-	13	18	31
Unknown	8	0	3
Total	1370	502	1872

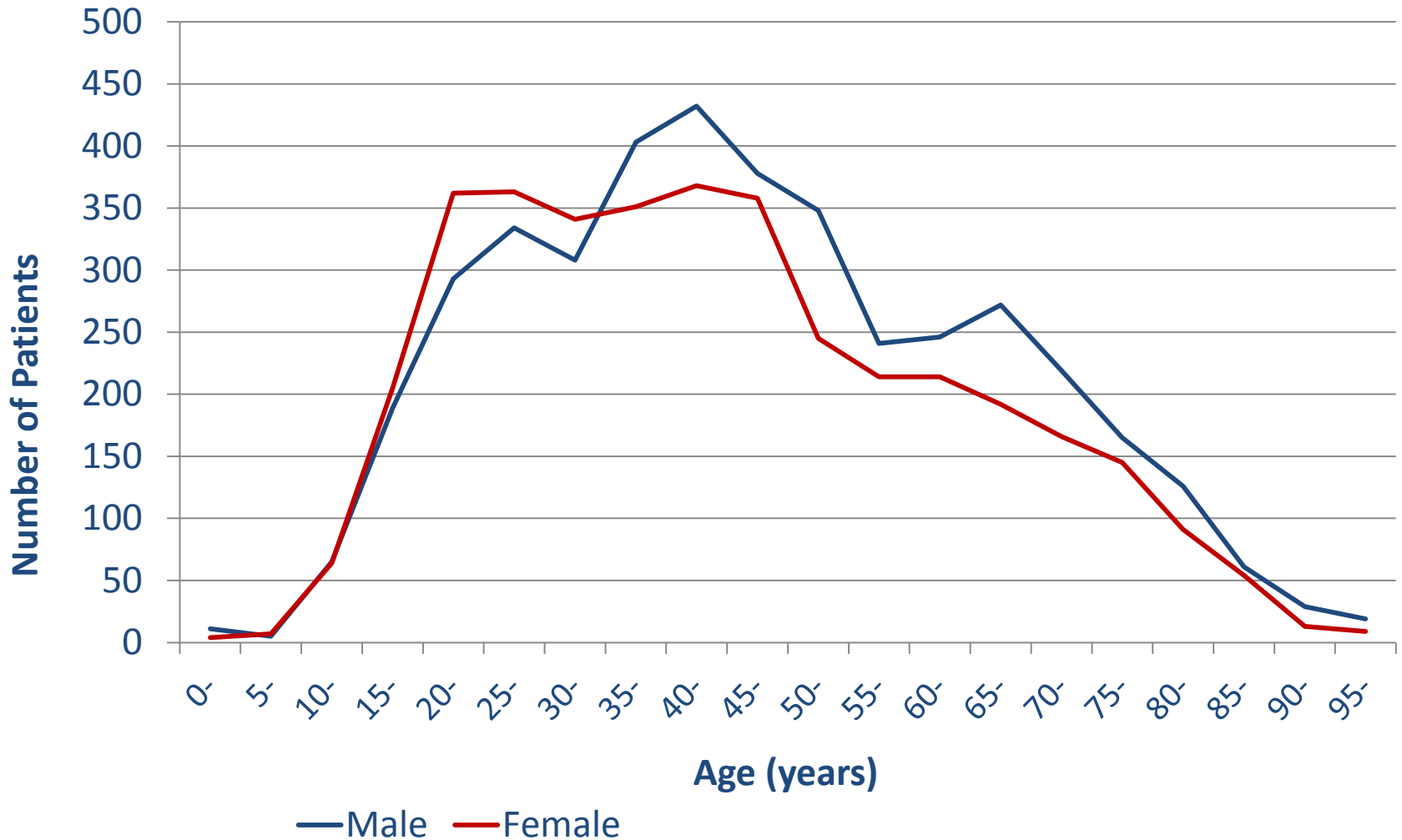
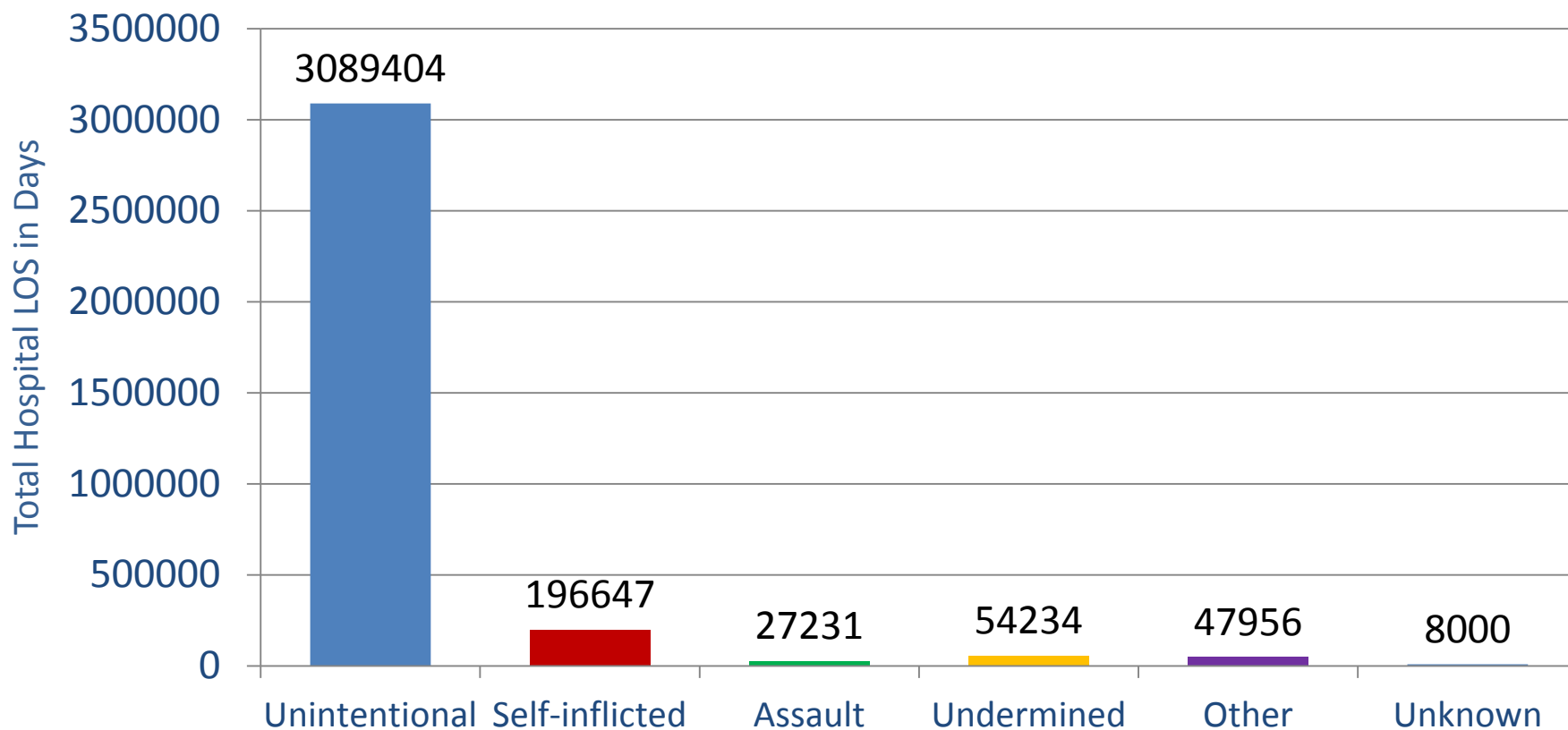
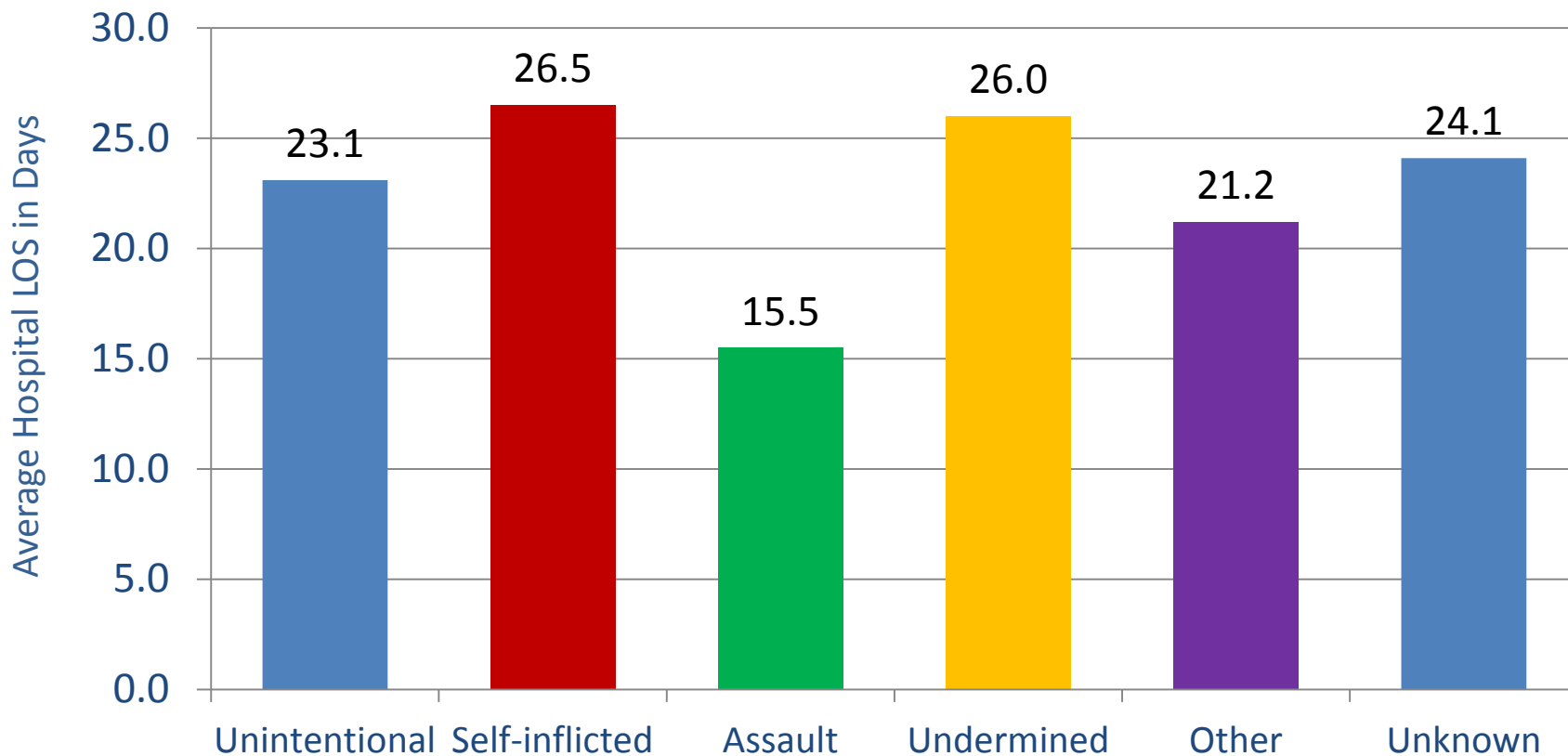
Figure
34**Self-inflicted by Age and Gender**

Table
34**Self-inflicted by Age and Gender**

Age Sex	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-	Unkn wn	Total
Female	4	7	64	205	362	363	341	351	368	358	245	214	214	192	166	145	91	54	13	9	6	3772
Male	11	5	65	189	293	334	308	403	432	378	348	241	246	272	219	165	126	61	29	19	14	4158
Total	15	12	129	394	655	697	649	754	800	736	593	455	460	464	385	310	217	115	42	28	20	7930

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.

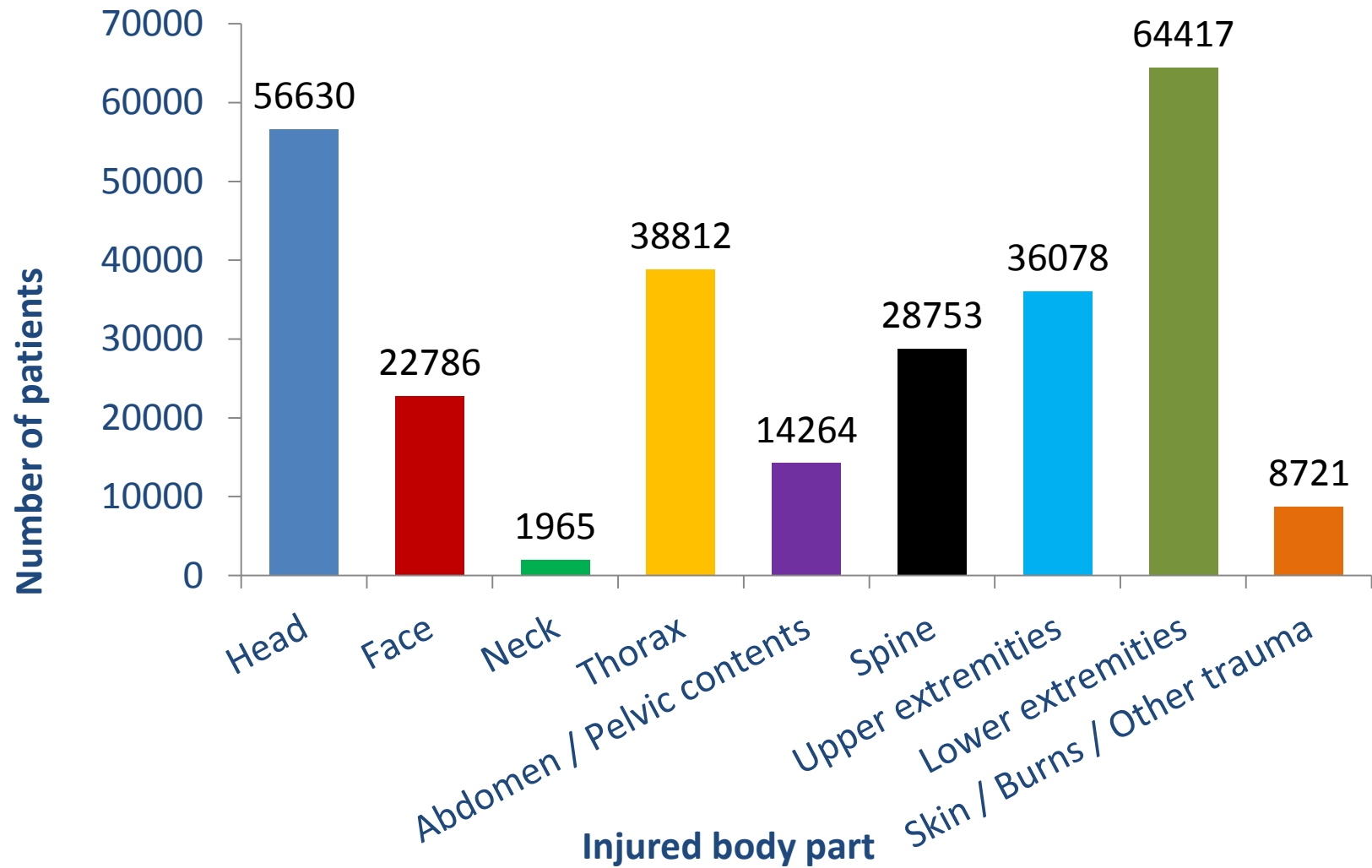
Figure
36**Number of patients with Injured Body Parts based on AIS**

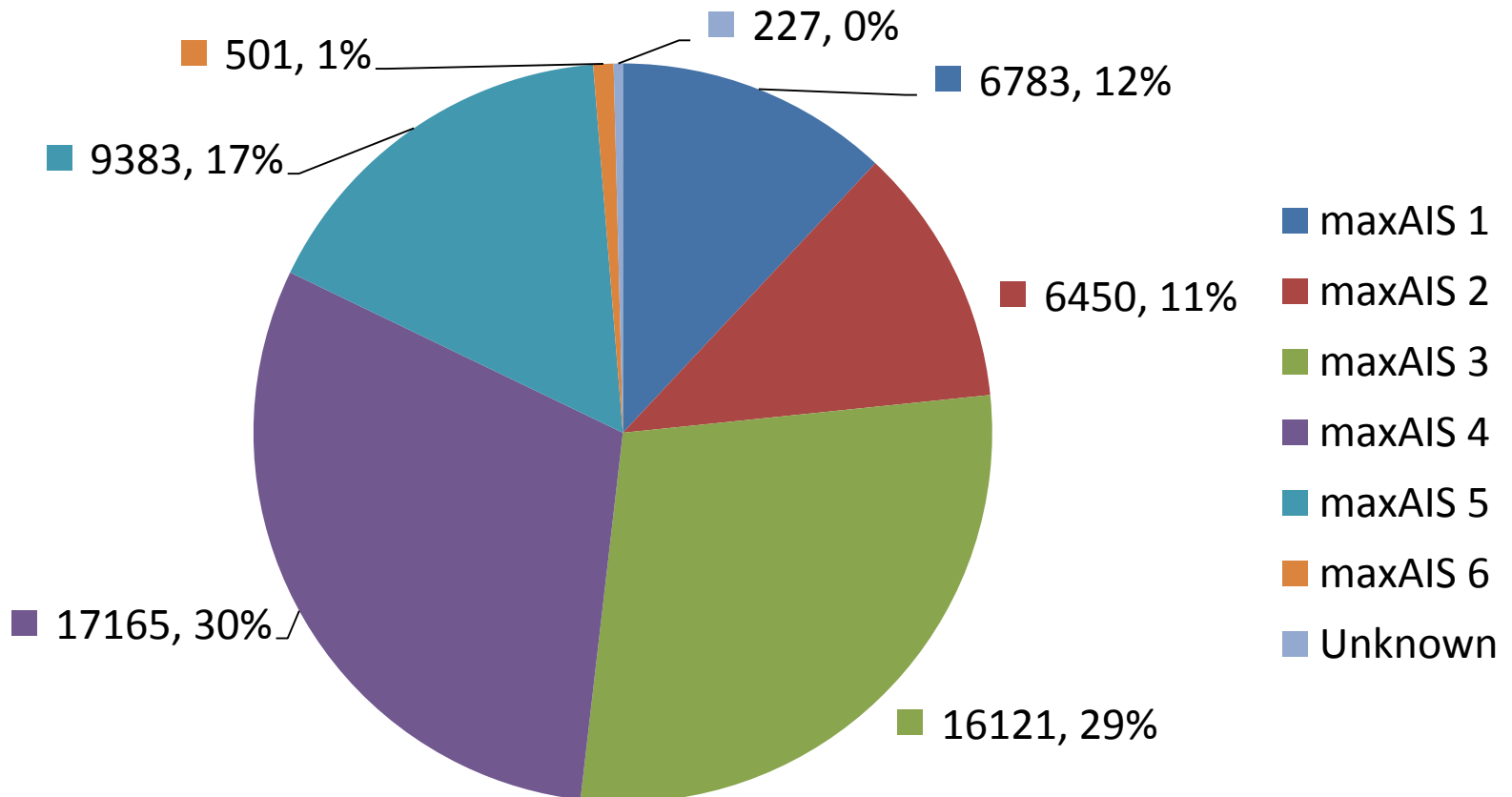
Figure
37A**Head Injury and max AIS Score**

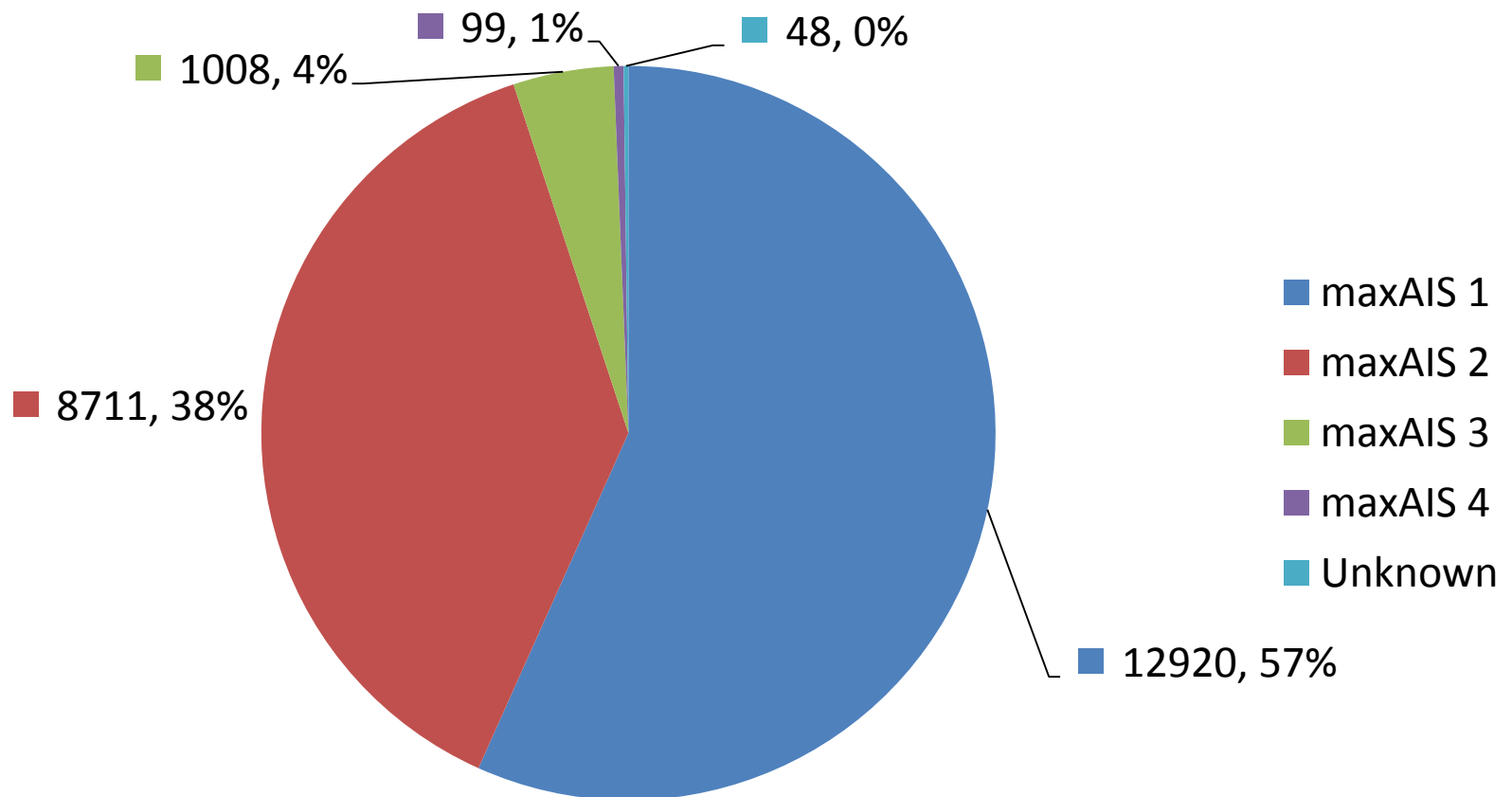
Figure
37B**Facial Injury and max AIS Score**

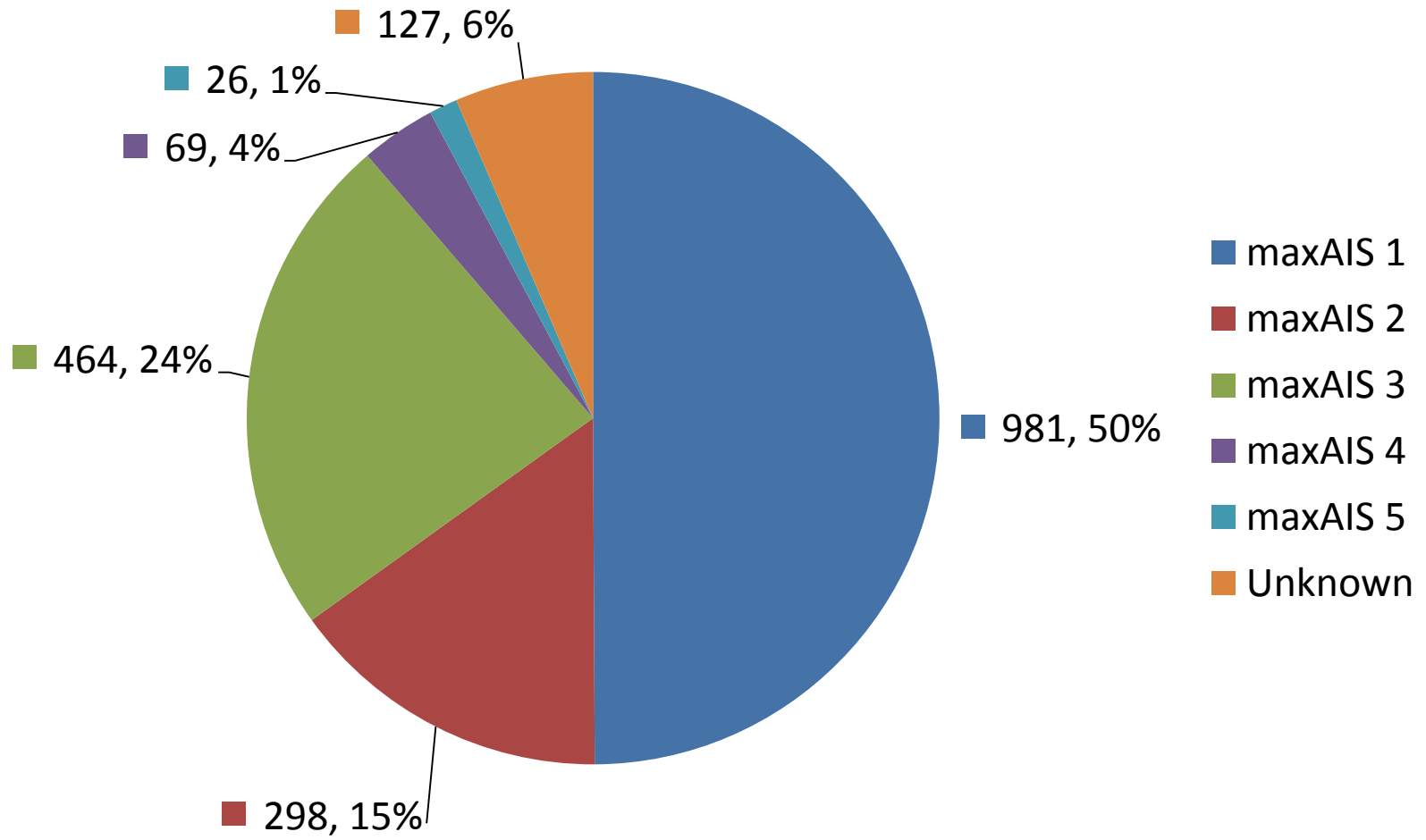
Figure
37C**Neck Injury and max AIS Score**

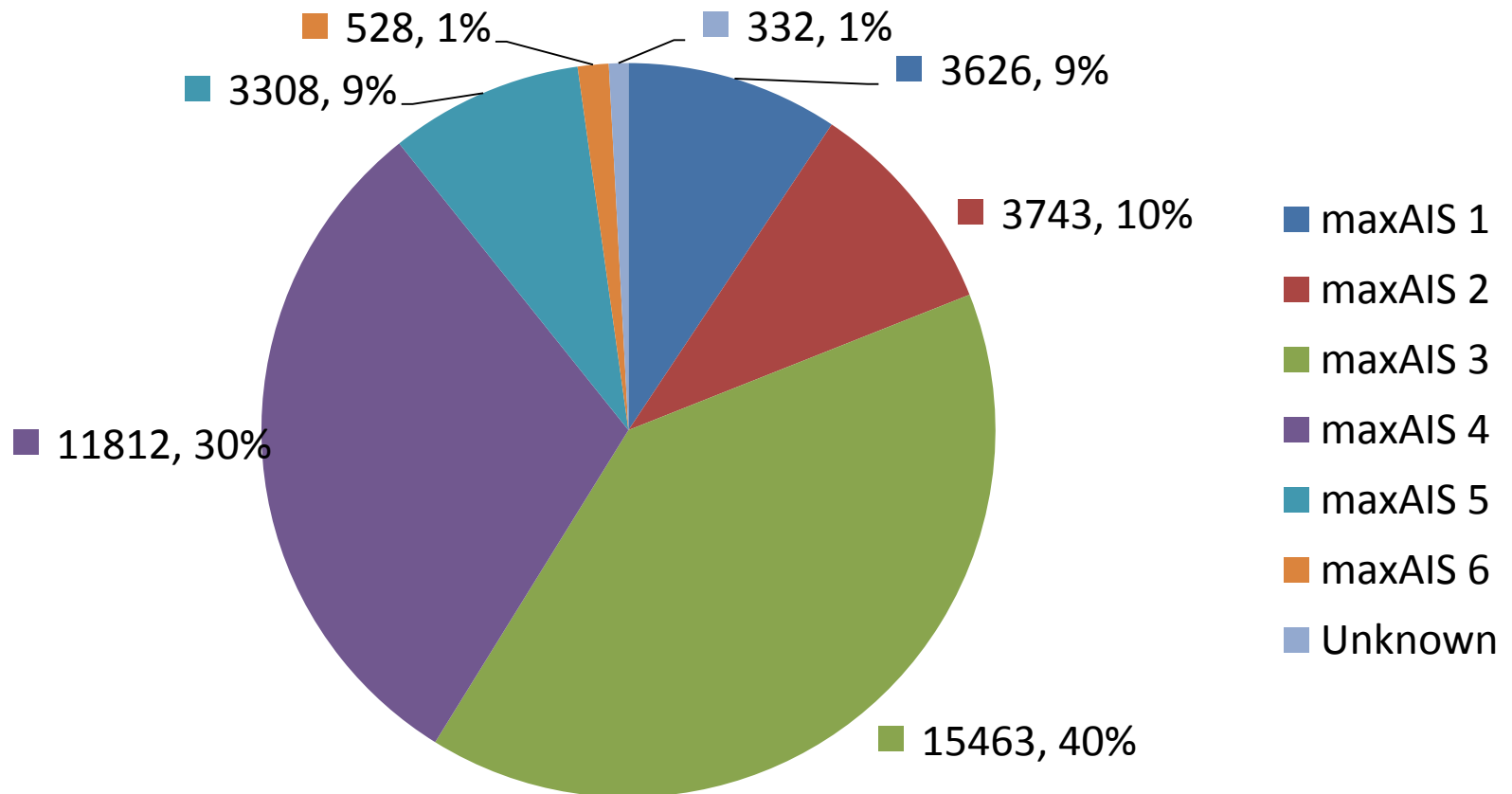
Figure
37D**Thoracic Injury and max AIS Score**

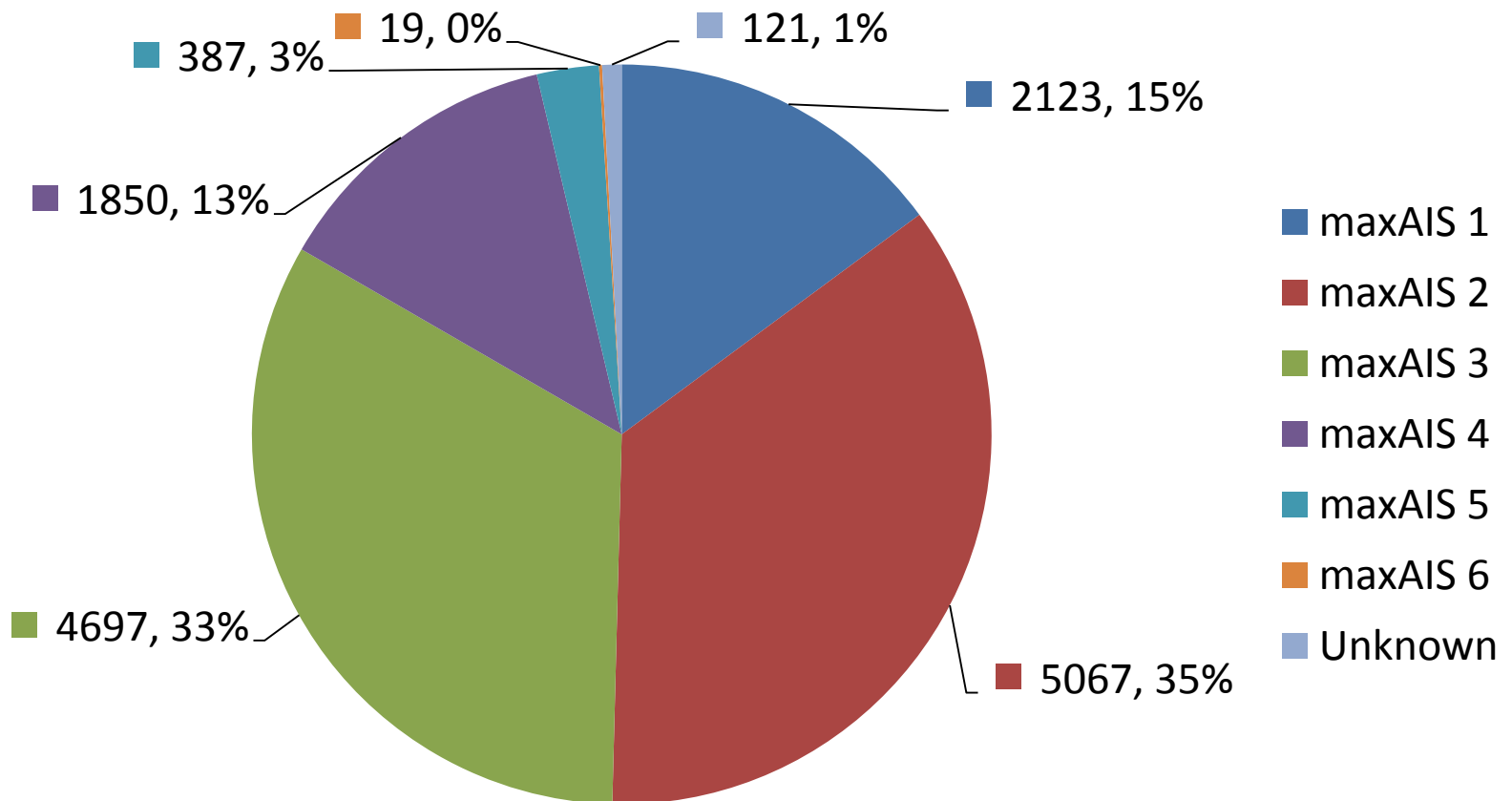
Figure
37E**Injury of Abdomen/Pelvic Contents and max AIS Score**

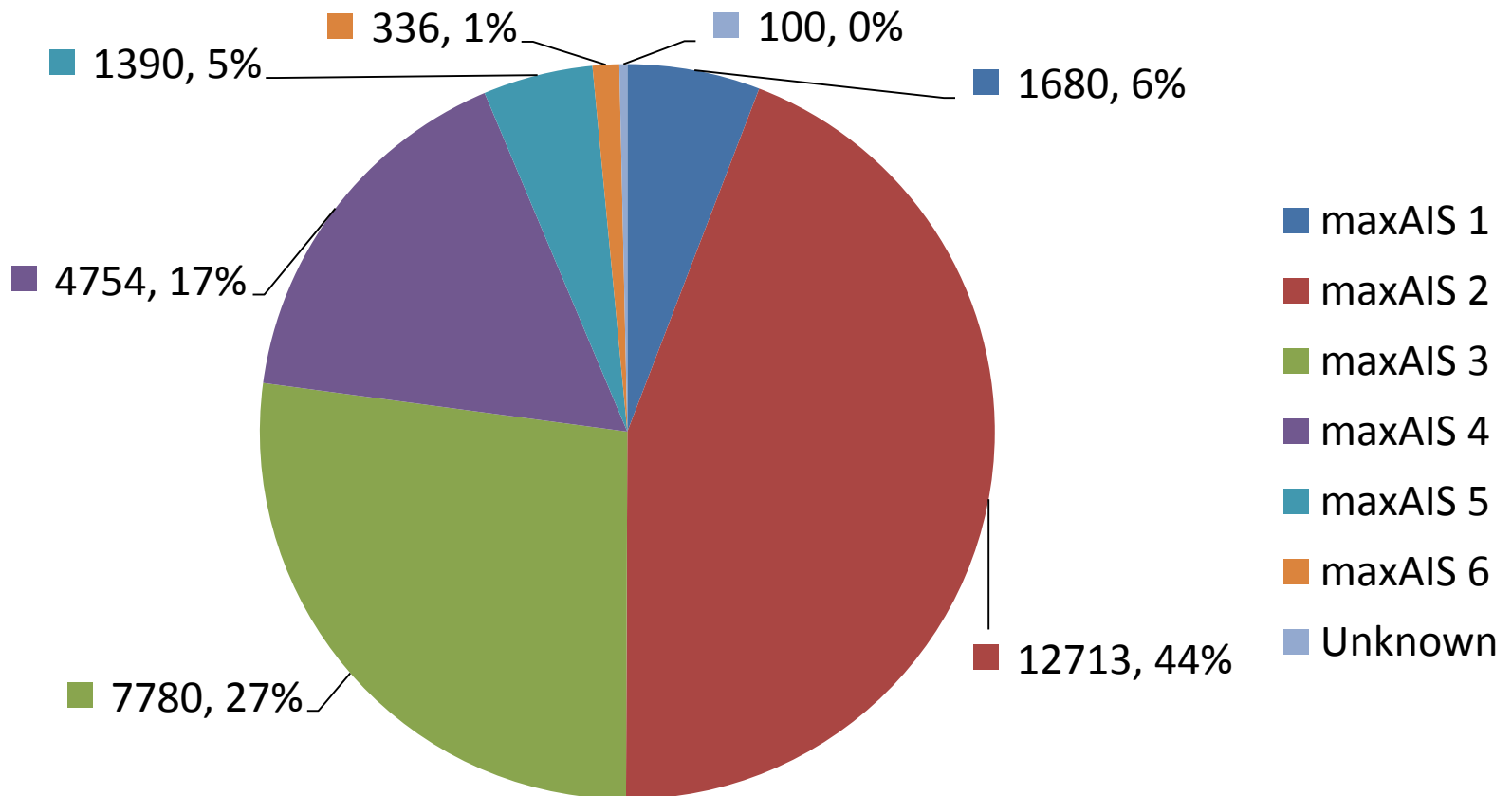
Figure
37F**Spinal Injury and max AIS Score**

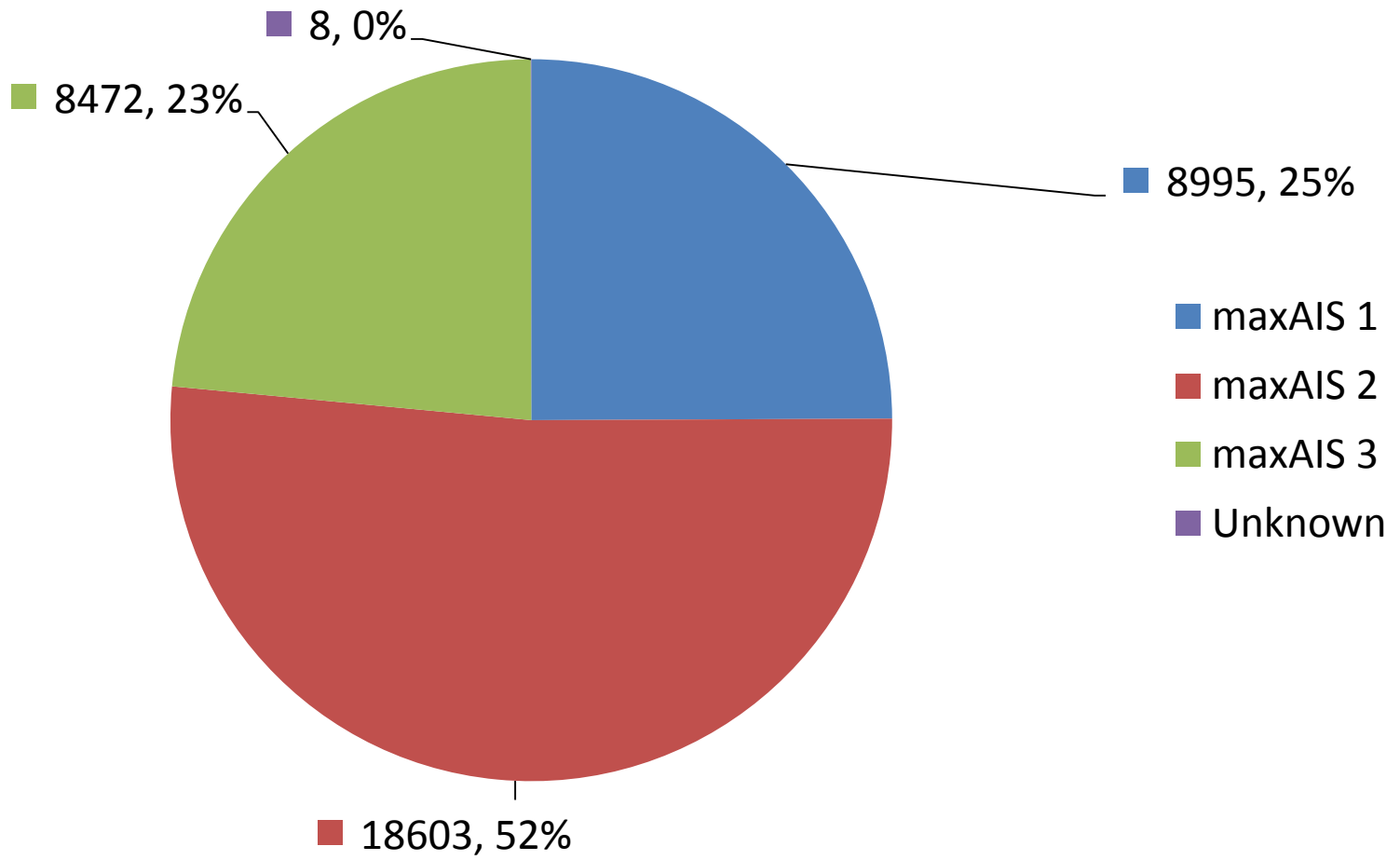
Figure
37G**Injury of Upper Extremities and max AIS Score**

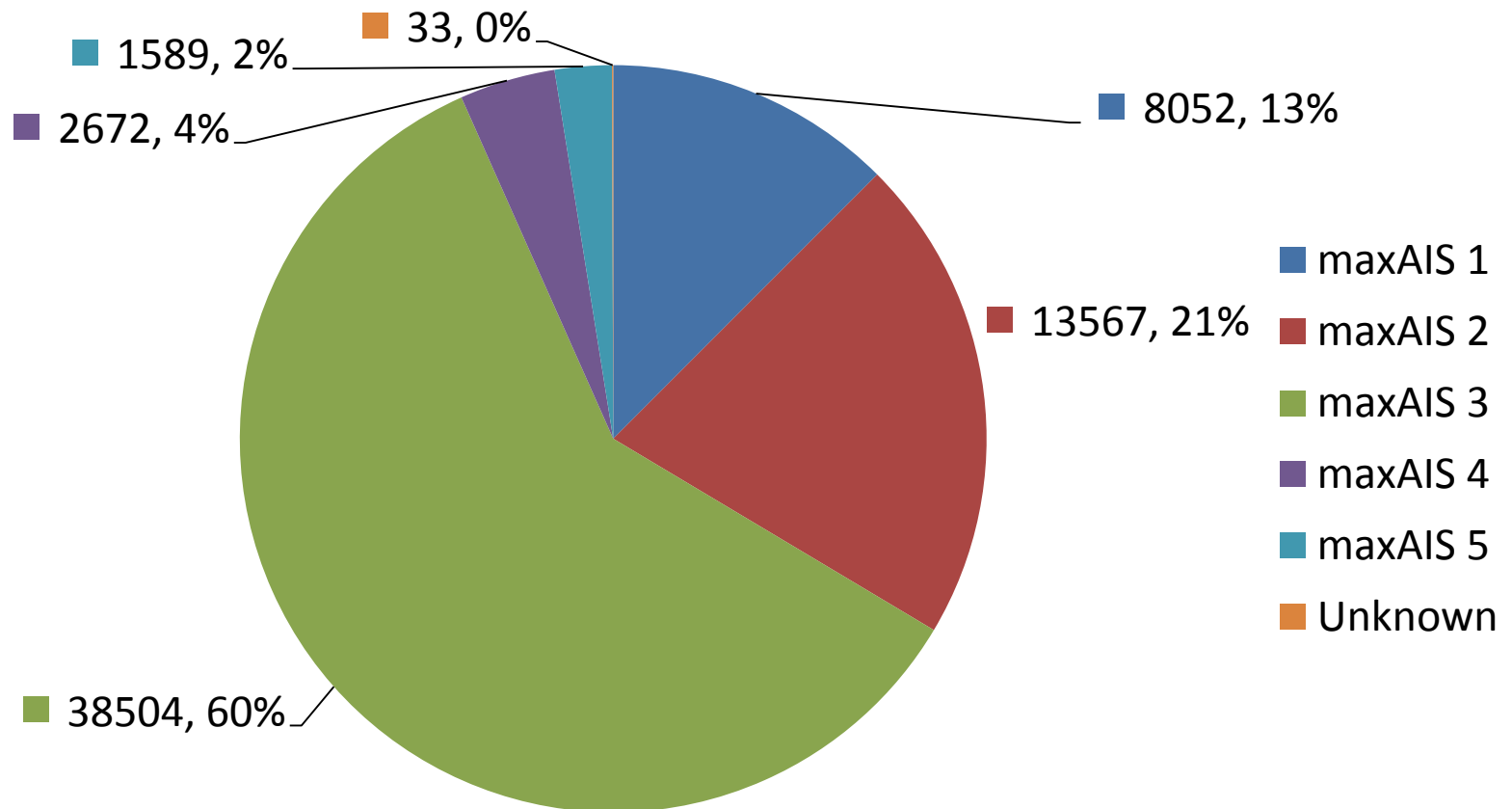
Figure
37H**Injury of Lower Extremities and max AIS Score**

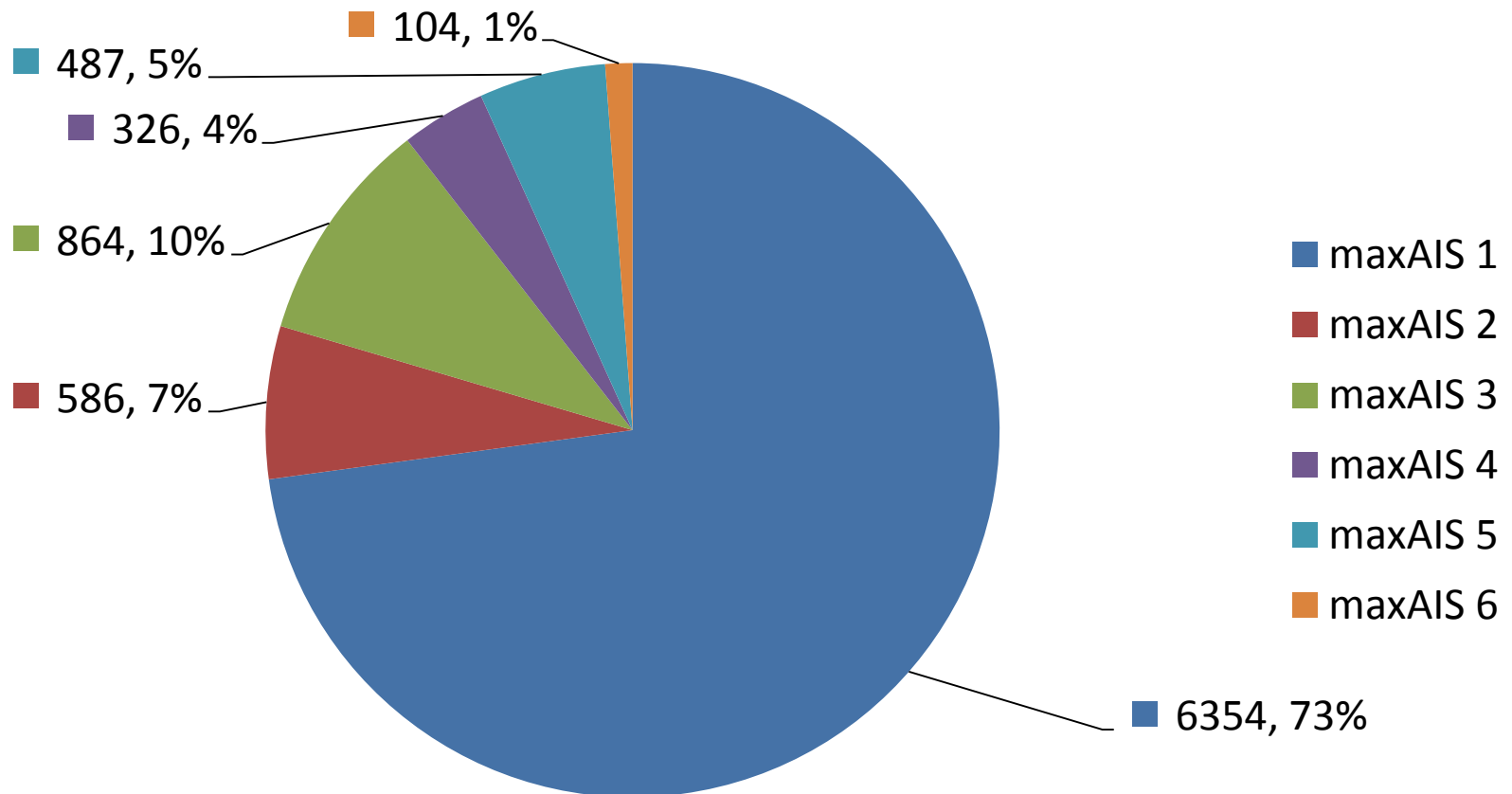
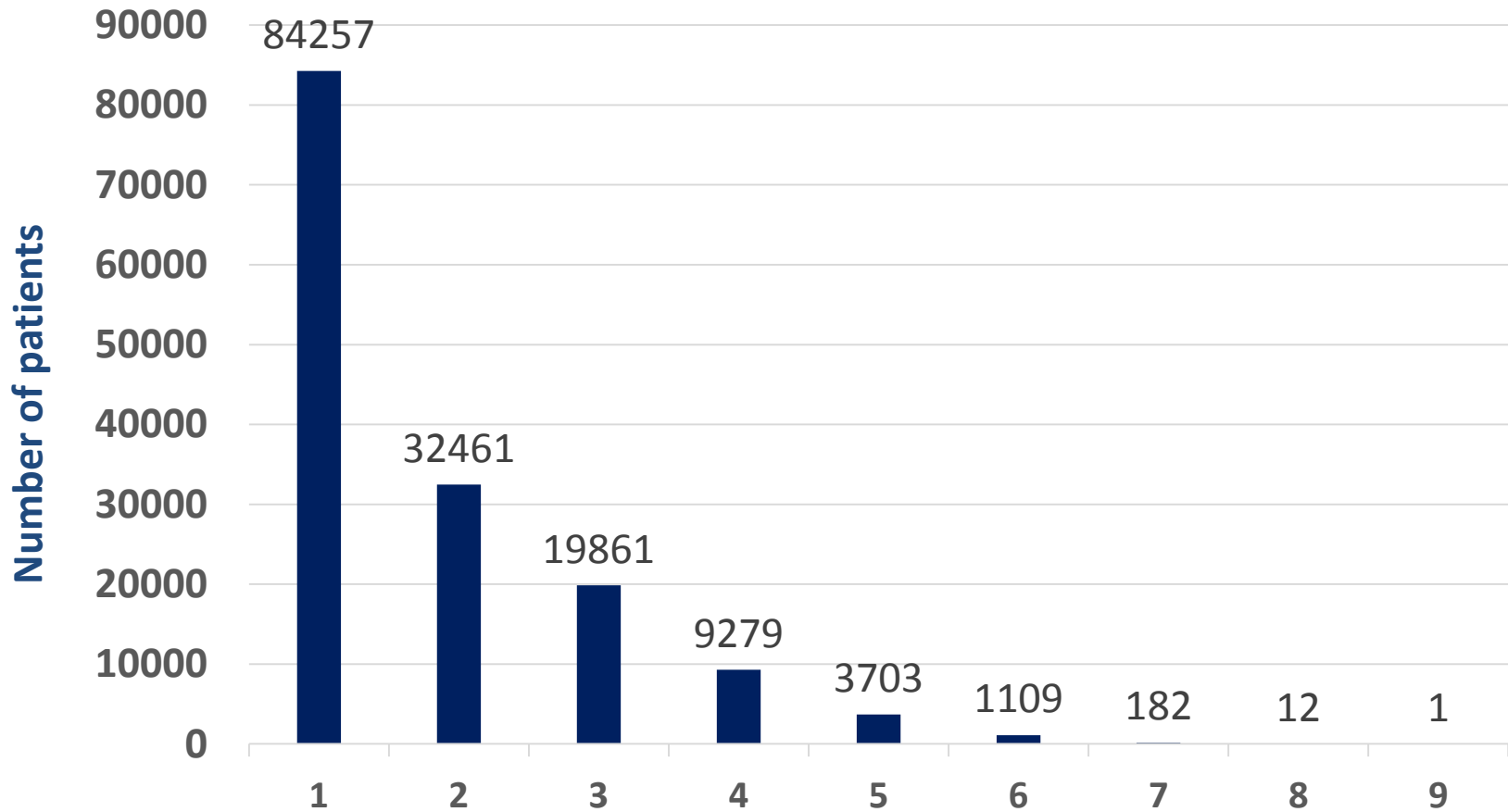
Figure
37I**Skin/Burns/Other Trauma and max AIS Score**

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

December 17, 2018

**JAPAN TRAUMA DATA BANK
REPORT 2018 (2013-2017)**



The Japanese Association for Acute Medicine

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Chairman: Naoto Morimura, MD



The Japanese Association for the Surgery of Trauma

Chairman: Daizoh Saitoh, MD

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