

Japan Trauma Data Bank Report 2020 (2019.1 – 2019.12)

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=288, Part 1)**

Sapporo City General Hospital
 Nikko Memorial Hospital
 Sapporo Medical University Hospital
 Teine Keijinkai Hospital
 Hokkaido University Hospital
 Hokuto Hospital
 Hokkaido Medical Center
 Asahikawa Red Cross Hospital
 Sapporo Tokushukai Hospital
 Hakodate Municipal Hospital
 Sapporo Higashi Tokushukai Hospital
 Kushiro City General Hospital
 Hachinohe City Hospital
 Hirosaki University School of Medicine & Hospital
 Aomori Prefectural Central Hospital
 Iwate Medical University Hospital
 Iwate Prefectural Kuji Hospital
 Iwate Prefectural Central Hospital
 Osaki Citizen Hospital
 Tohoku University Hospital
 Sendai City Hospital
 Ishinomaki Red Cross Hospital
 Sendai Medical Center
 South Miyagi Medical Center
 Akita Red Cross Hospital
 Akita University Hospital
 Yamagata Prefectural Central Hospital
 Nihonkai General Hospital
 Ohta Nishinouchi Hospital
 Aizu Central Hospital
 Fukushima Medical University Hospital
 Niigata City General Hospital
 Niigata University Medical & Dental Hospital
 Niigata Prefectural Shibata Hospital
 Uonuma Kikan Hospital
 Tsukuba Medical Center Hospital
 Ibaraki Seinan Medical Hospital
 Mito Medical Center
 University of Tsukuba Hospital
 Ibaraki Prefectural Central Hospital
 Mito Saiseikai General Hospital
 Dokkyo Medical University Hospital
 Jichi Medical University Hospital
 Saiseikai Utunomiya Hospital
 Gunma University Hospital
 Maebashi Red Cross Hospital
 Takasaki General Medical Center

Ota Memorial Hospital
 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
 Fukaya Red Cross Hospital
 Jichi Medical University Saitama Medical Center
 Saitama City Hospital
 Funabashi Municipal Medical Center
 Asahi General Hospital
 Nippon Medical School Chiba Hokusoh Hospital
 Chiba Emergency Medical Center
 Kameda General Hospital
 Kimitsu Chuou Hospital
 Juntendo University Urayasu Hospital
 Chiba University Hospital
 Matsudo City General Hospital
 Jikei University Kashiwa Hospital
 Tokyo Women's Medical University Yachiyo Medical Center
 Tokyo Bay Urayasu Ichikawa Medical Center
 Chiba Rosai Hospital
 Eastern Chiba Medical Center
 Showa University Hospital
 Tokyo Medical Center
 Department of Social Medicine, School of Medicine, Nihon University
 National Disaster Medical Center
 Musashino Red Cross Hospital
 Nippon Medical School Tama Nagayama Hospital
 Teikyo University Hospital
 National Center for Global Health and Medicine
 Tokyo Women's Medical University Medical Center East
 Nippon Medical School 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 Metropolitan Hiroo Hospital
 Tokyo Medical University Hospital
 Tokyo Medical University Hachioji Medical Center
 Keio University Hospital

St. Luke's International Hospital
 Toho University Omori Medical Center
 University of Tokyo Hospital
 Showa General Hospital
 Tokyo Saiseikai Central Hospital
 National Center for Child Health and Development
 Shirahigebashi Hospital
 Japanese Red Cross Medical Center
 Tokyo Metropolitan Tama Medical Center
 Kokushikan University
 Juntendo University Nerima Hospital
 Showa University Northern Yokohama Hospital
 Yokohama Medical Center
 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
 Yokohama City Minato Red Cross Hospital
 Nippon Medical School Musashikosugi Hospital
 Saiseikai Yokohama-city East Hospital
 Shonan Kamakura General Hospital
 Yokohama Municipal Citizens Hospital
 Odawara Municipal Hospital
 Yokosuka Kyosai Hospital
 Hiratsuka City Hospital
 Fujisawa City Hospital
 Yokohama Rosai Hospital
 Yokohama Sakae Kyosai Hospital
 Shin-Yurigaoka General Hospital
 Ebina General Hospital
 Kawasaki Municipal Hospital
 Saiseikai Yokohama-shi Nanbu Hospital
 Yamanashi Prefectural Central Hospital
 Saku Central Hospital Advanced Care Center
 Shinshu University Hospital
 Aizawa Hospital
 Suwa Red Cross Hospital
 Iida Municipal Hospital
 Ina Central Hospital
 Nagano Red Cross Hospital
 Nagano Municipal Hospital
 Chuno Kosei Hospital
 Gifu University Hospital
 Takayama Red Cross Hospital

Figure
1B**Names of all hospitals submitting data to the JTDB. (N=288, Part 2)**

Ogaki Municipal Hospital	Kyoto Prefectural University of Medicine	Kurashiki Central Hospital
Gero City Kanayama Hospital	Kyoto Okamoto Memorial Hospital	Hiroshima Prefectural Hospital
Seirei Mikatahara General Hospital	Kyoto University Hospital	Chugoku Rosai Hospital
Numazu City Hospital	Rinku General Medical Center	Hiroshima University Hospital
Shizuoka Red Cross Hospital	Osaka Mishima Emergency Medical Center	Kure Medical Center
Shizuoka Saiseikai General Hospital	Kinki University Hospital	Fukuyama City Hospital
Juntendo University Shizuoka Hospital	Kishiwada Tokushukai Hospital	Yamaguchi University Hospital
Shizuoka General Hospital	Osaka University Hospital	Kanmon Medical Center
Shizuoka Tokushukai Hospital	Osaka City General Hospital	Tokuyama Central Hospital
Chutoen General Medical Center	Kansai Medical University Takii Hospital	Yamaguchi Grand Medical Center
Fujieda Municipal General Hospital	Osaka City University Hospital	Tokushima Prefectural Miyoshi Hospital
Hamamatsu University Hospital	Saiseikai Senri Hospital	Tokushima Prefectural Kaifu Hospital
Seirei Hamatsu General Hospital	Osaka General Medical Center	Tokushima Prefectural Central Hospital
Aichi Medical University Hospital	Osaka Medical Center	Taoka Hospital
Nagoya Ekisaikai Hospital	Nakakawachi Medical Center of Acute Medicine	Tokushima Red Cross Hospital
Social Insurance Chukyo Hospital	Kansai Medical University Hirakata Hospital	Kagawa University Hospital
Okazaki City Hospital	Sakai City Medical Center	Kagawa Prefectural Central Hospital
Toyohashi Municipal Hospital	Osaka Police Hospital	Ehime Prefectural Central Hospital
Daiyukai General Hospital	Osaka Red Cross Hospital	Ehime University Hospital
Fujita Health University Hospital	Kobe University Hospital	Ehime Prefectural Niihama Hospital
Nagoya City University Hospital	Hyogo Emergency Medical Center	Kochi Medical Center
Handa City Hospital	Toyooka Hospital	Chikamori Hospital
Kasugai Municipal Hospital	Tajima Emergency & Critical Care Medical Center	Kochi Red Cross Hospital
Komaki City Hospital	Public Muraoka Hospital	Kitakyushu General Hospital
Nagoya Medical Hospital	Kansai Rosai Hospital	Kokura Memorial Hospital
Japanese Red Cross Nagoya Daini Hospital	Hyogo Prefectural Nishinomiya Hospital	Saiseikai Fukuoka General Hospital
Ichinomiya Municipal Hospital	Hyogo Prefectural Kakogawa Medical Center	Fukuoka University Hospital
Mie University Hospital	Hyogo Prefectural Awaji Hospital	St. Maria's Hospital
Mie Prefectural General Medical Center	Hospital of Hyogo College of Medicine	Kurume University Hospital
Toyama Prefectural Central Hospital	Kobe City Medical Center General Hospital	Iizuka Hospital
Toyama University Hospital	Steel Memorial Hirohata Hospital	Ohtemachi Hospital
Kouseiren Takaoka Hospital	Himeji Emergency, Trauma and Critical Center	Kitakyushu Municipal Yahata Hospital
Tonami General Hospital	Nara Prefectural General Medical Center	Kyushu University Hospital
Ishikawa Prefectural Central Hospital	Nara Medical University Hospital	Fukuoka Wajiro Hospital
Fukui Prefectural Hospital	Kindai University Nara Hospital	Fukuoka Red Cross Hospital
University of Fukui Hospital	Wakayama Medical University Hospital	Fukuoka Higashi Medical Center
Omihachiman Community Medical Center	Japanese Red Cross Wakayama Medical Center	Shinyukhashi Hospital
Saiseikai Shigaken Hospital	Tottori University Hospital	Kyushu Medical Center
Kyoto Daini Red Cross Hospital	Shimane University Hospital	Saga-ken Medical Center Koseikan
Kyoto Medical Center	Shimane Prefectural Central Hospital	Saga University Hospital
Rakuwakai Otowa Hospital	Okayama University Hospital	Ureshino Medical Center
Fukuchiyama City Hospital	Tsuyama Chuo Hospital	Nagasaki Medical Center
Kyoto Daiichi Red Cross Hospital	Kawasaki Medical School Hospital	Nagasaki University Hospital
Uji-Tokushukai Medical Center		

**Figure
1C****Names of all hospitals submitting data to the JTDB. (N=288, Part 3)**

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

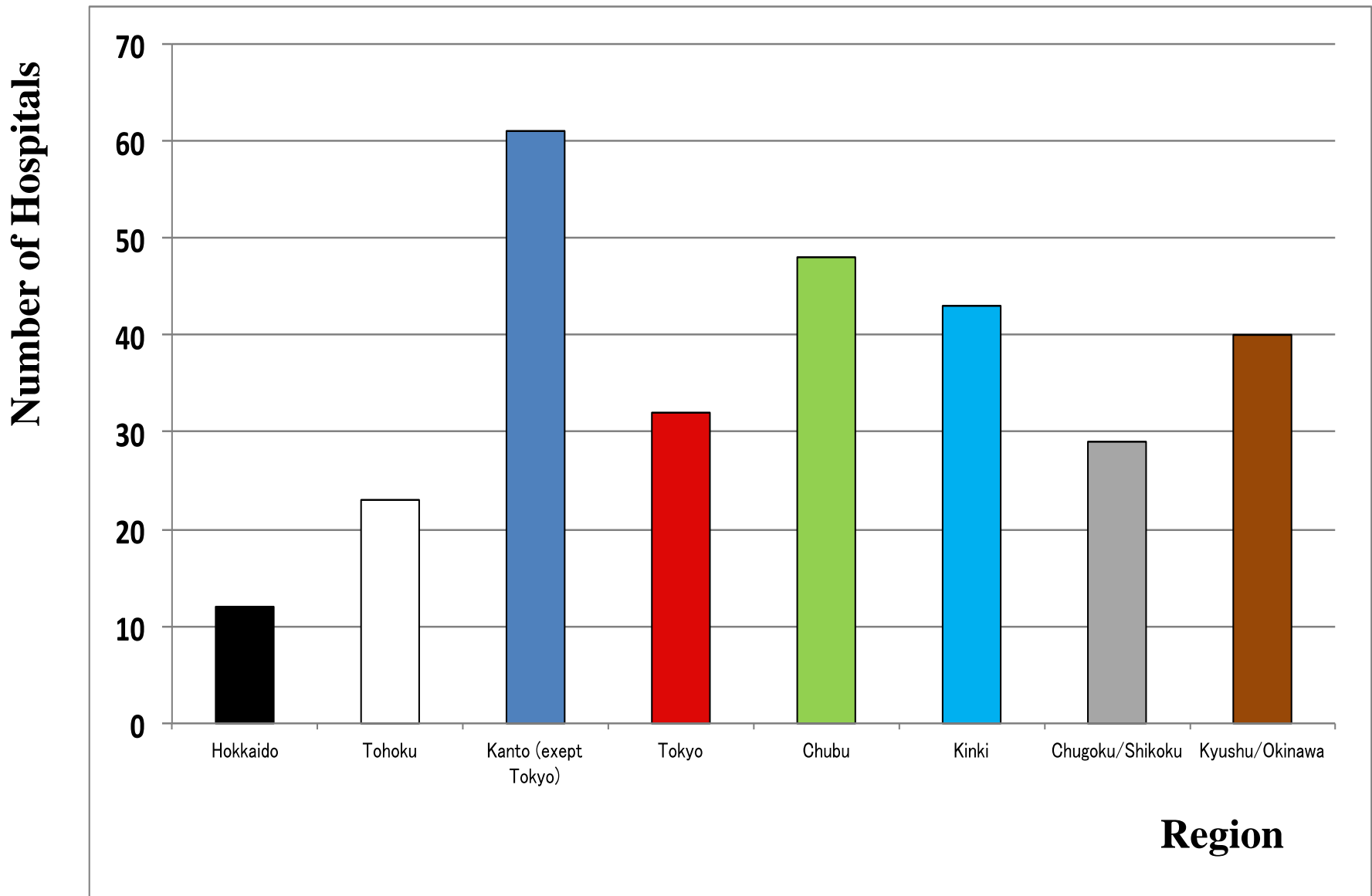
**Figure
2****Number of hospitals submitting to the JTDB by region.**

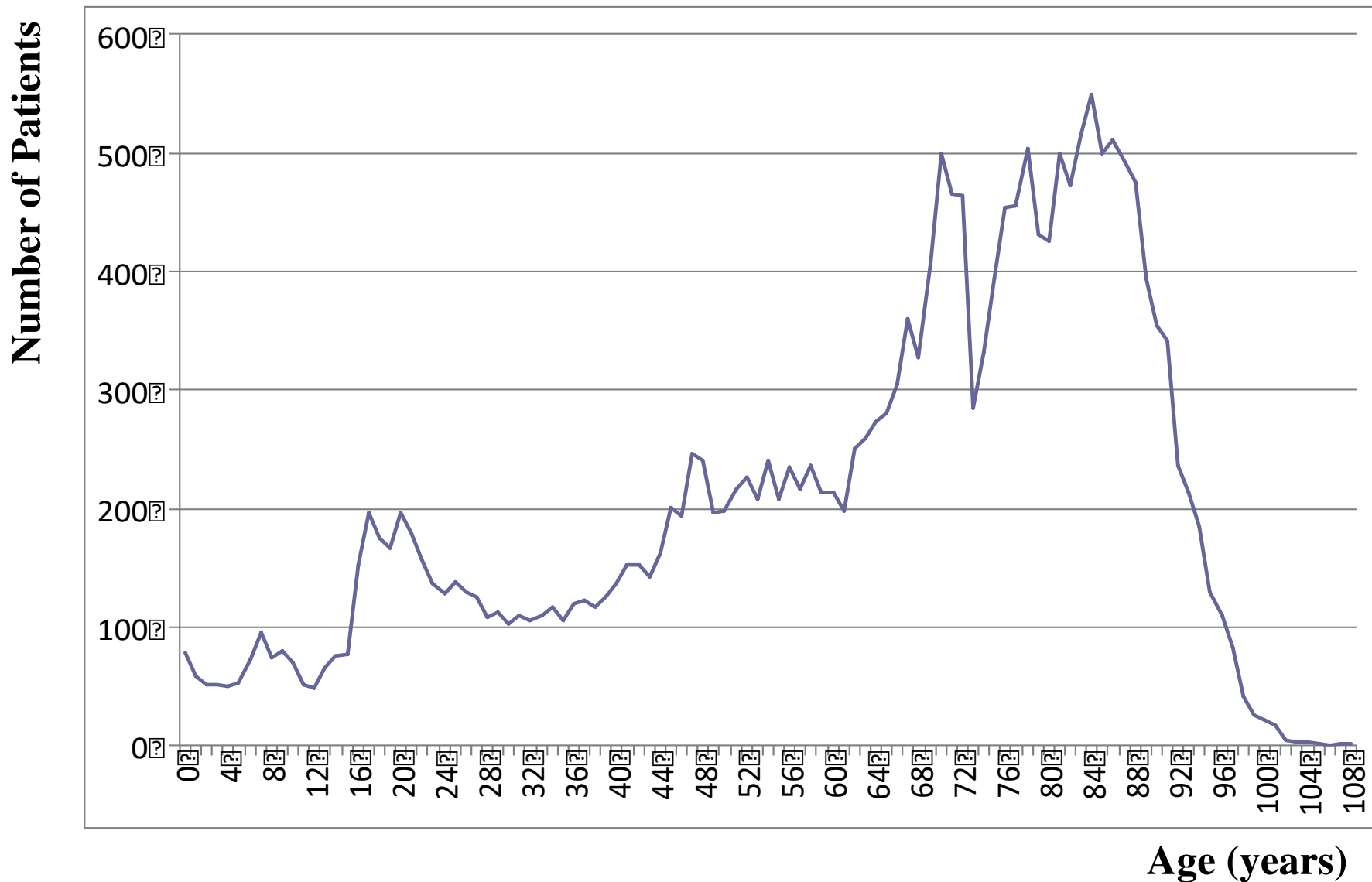
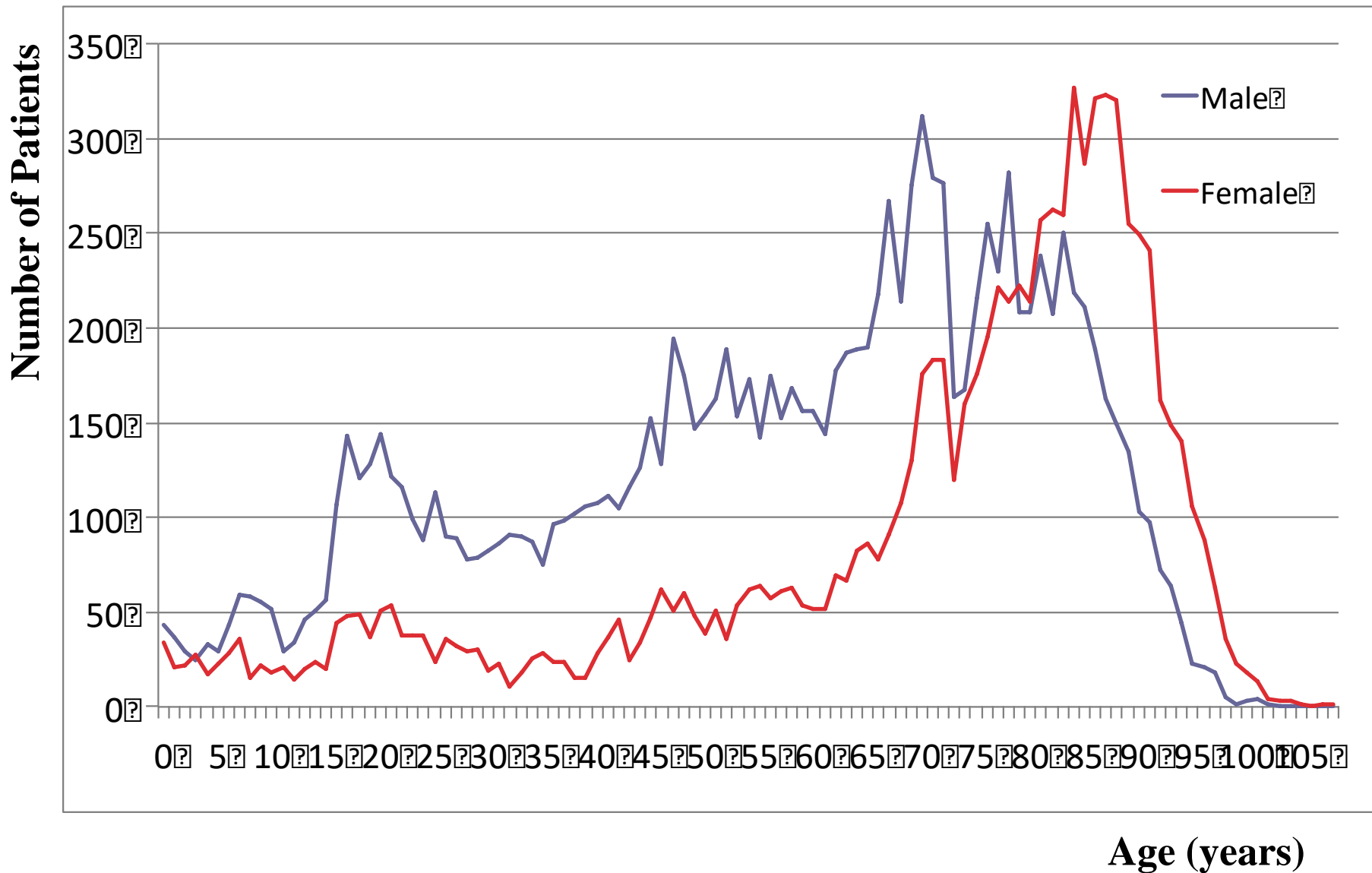
Figure
3**Number of patients by age.**

Figure
4**Patients by age and gender.**

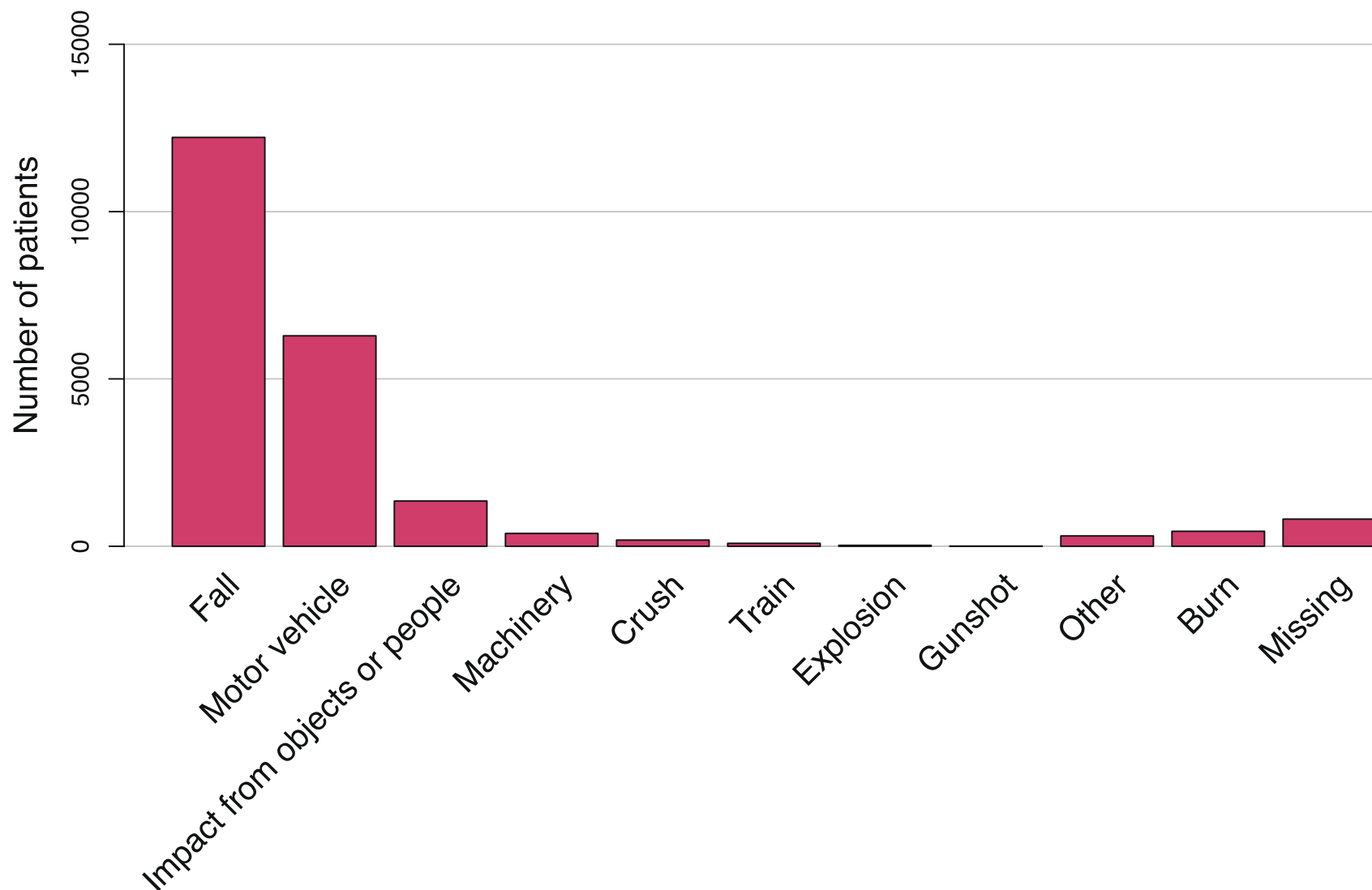
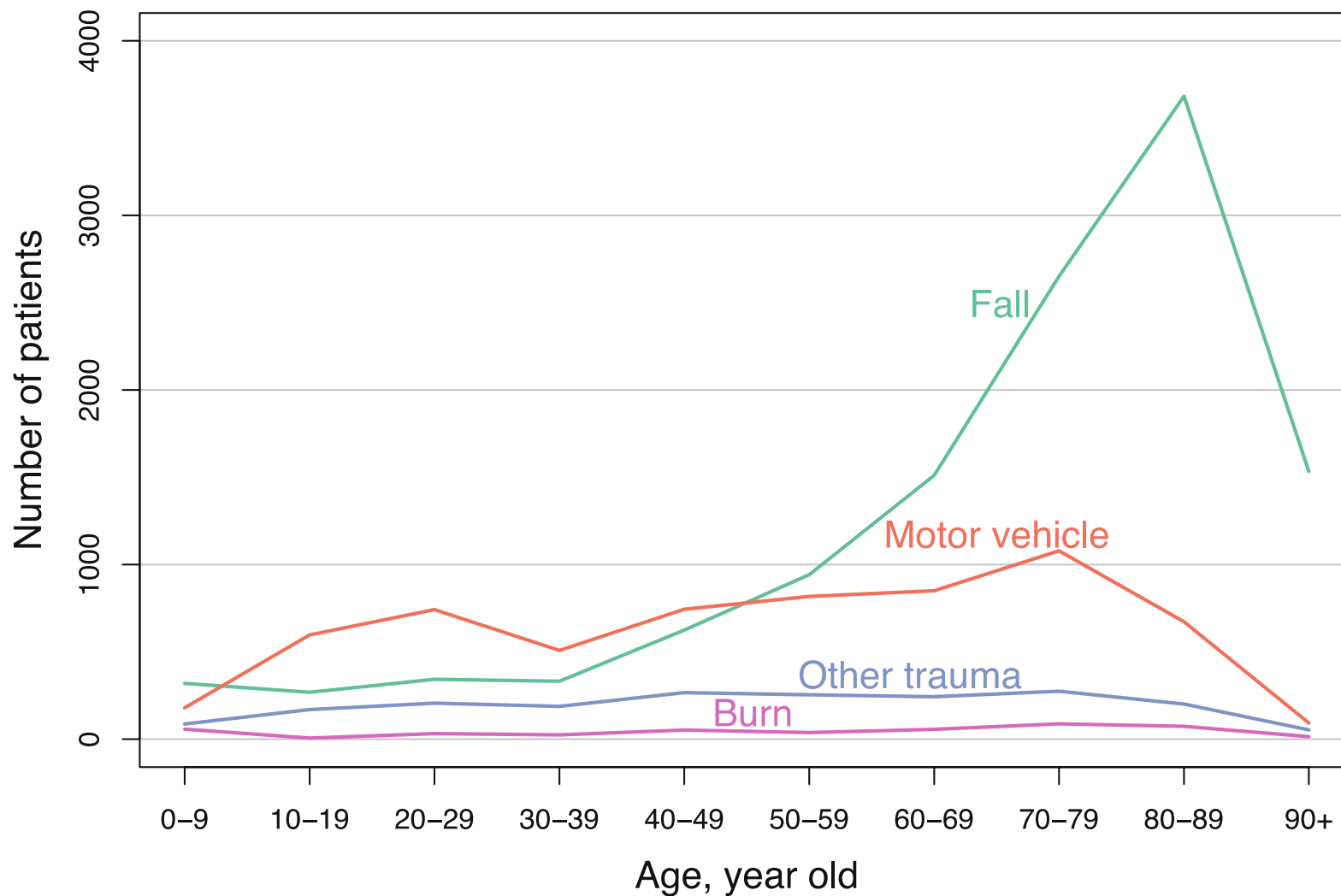
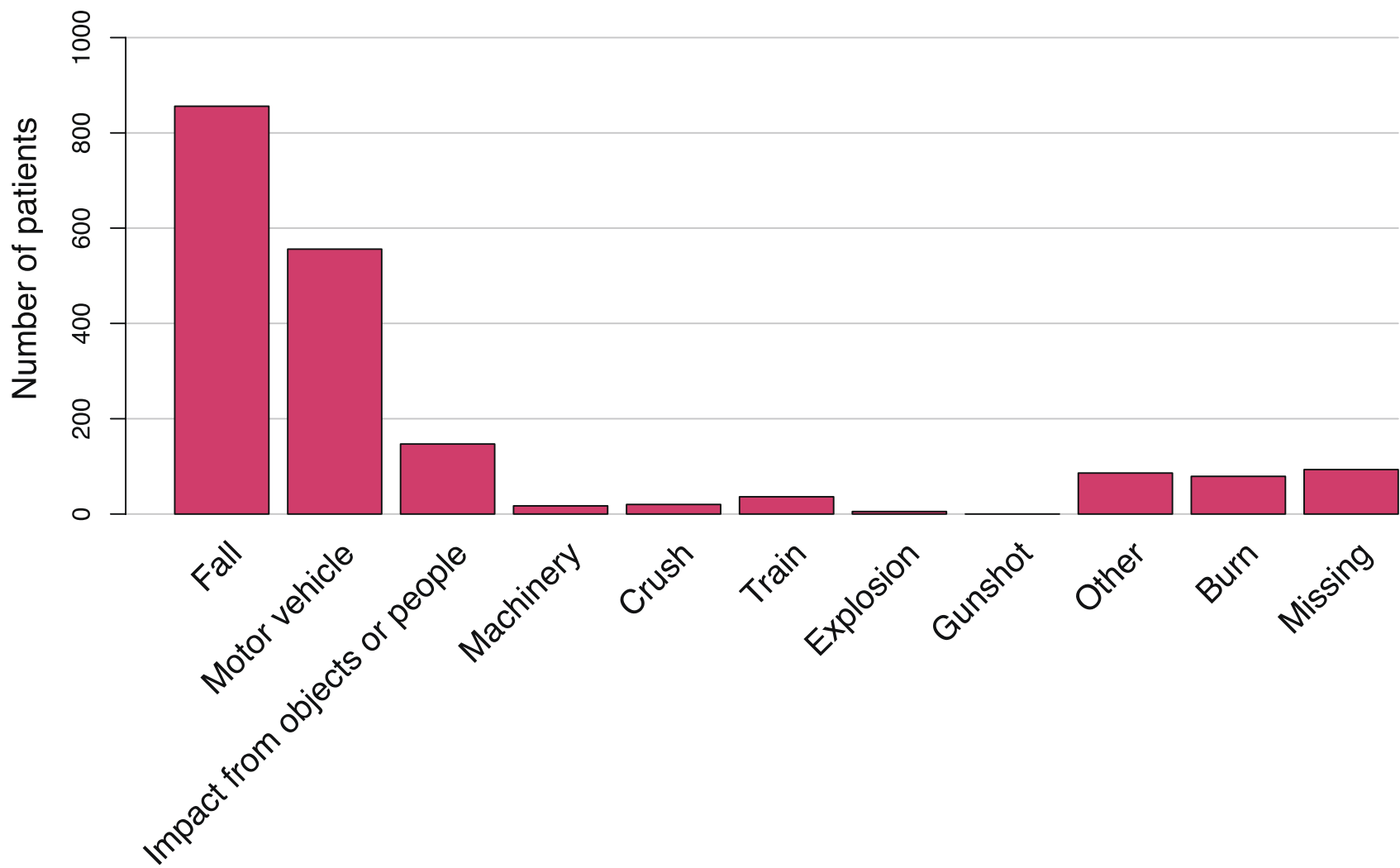
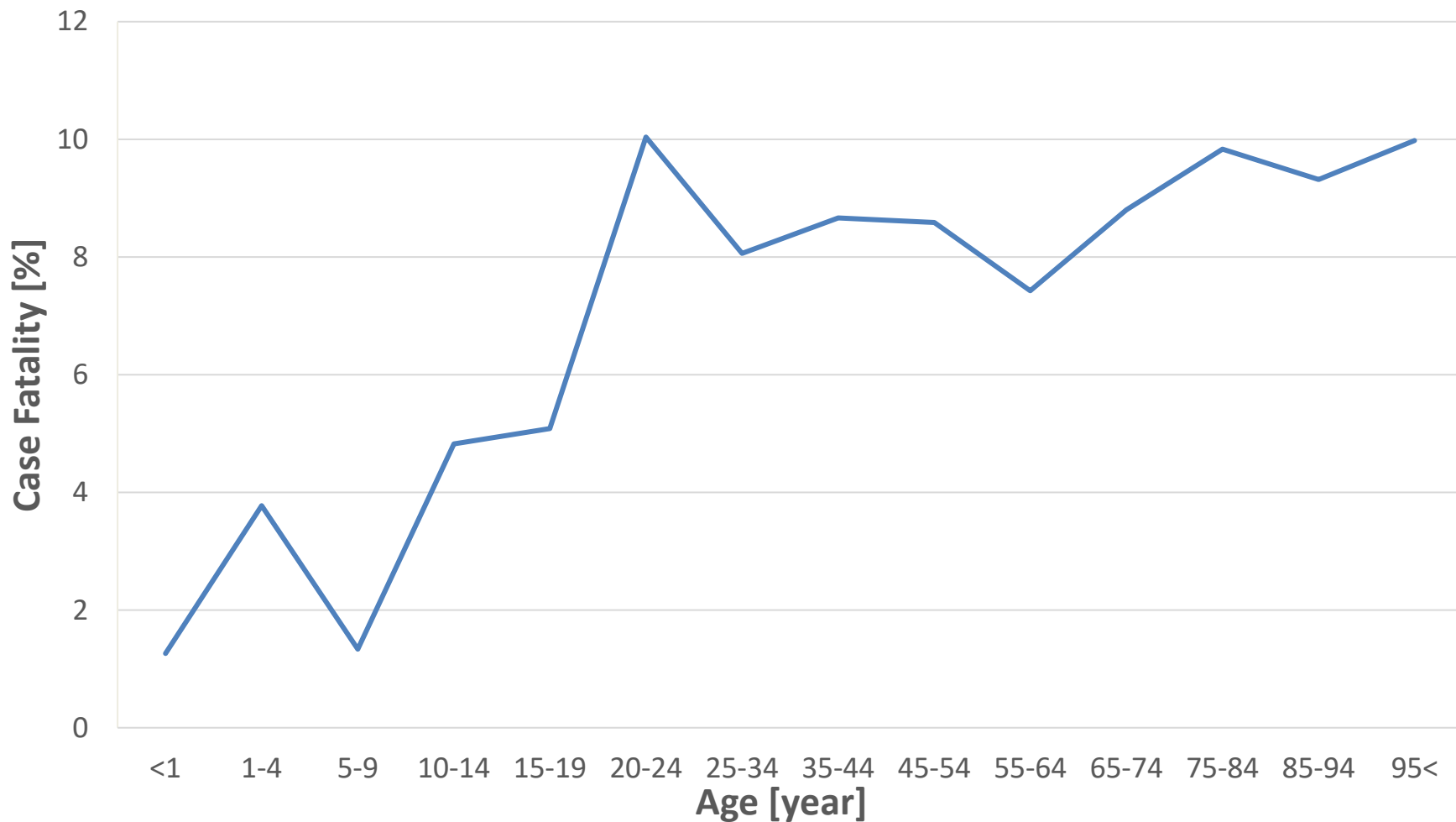
**Figure
5****Patients by mechanism of injury**

Table
5**Patients by mechanism of injury**

Mechanism of injury	Patients (n)	Patients by mechanism of injury (%)
Fall	12217	55.3
Motor vehicle	6289	28.5
Impact from objects or people	1348	6.1
Machinery	379	1.7
Crush	182	0.8
Train	84	0.4
Explosion	27	0.1
Gunshot	1	0.0
Other	305	1.4
Burn	447	2.0
Missing	811	3.7

**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)

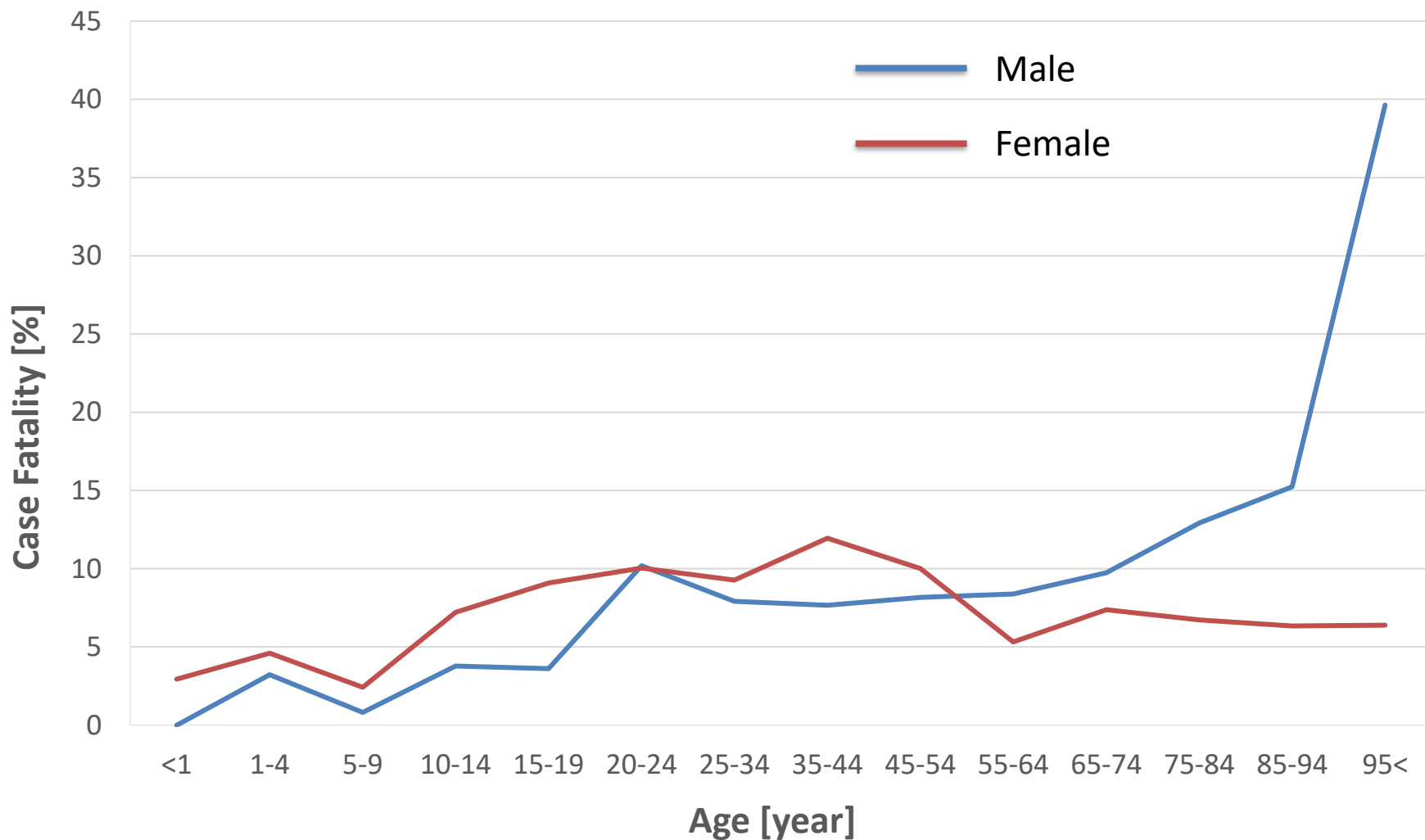
Figure
9**Case fatality by age and gender**

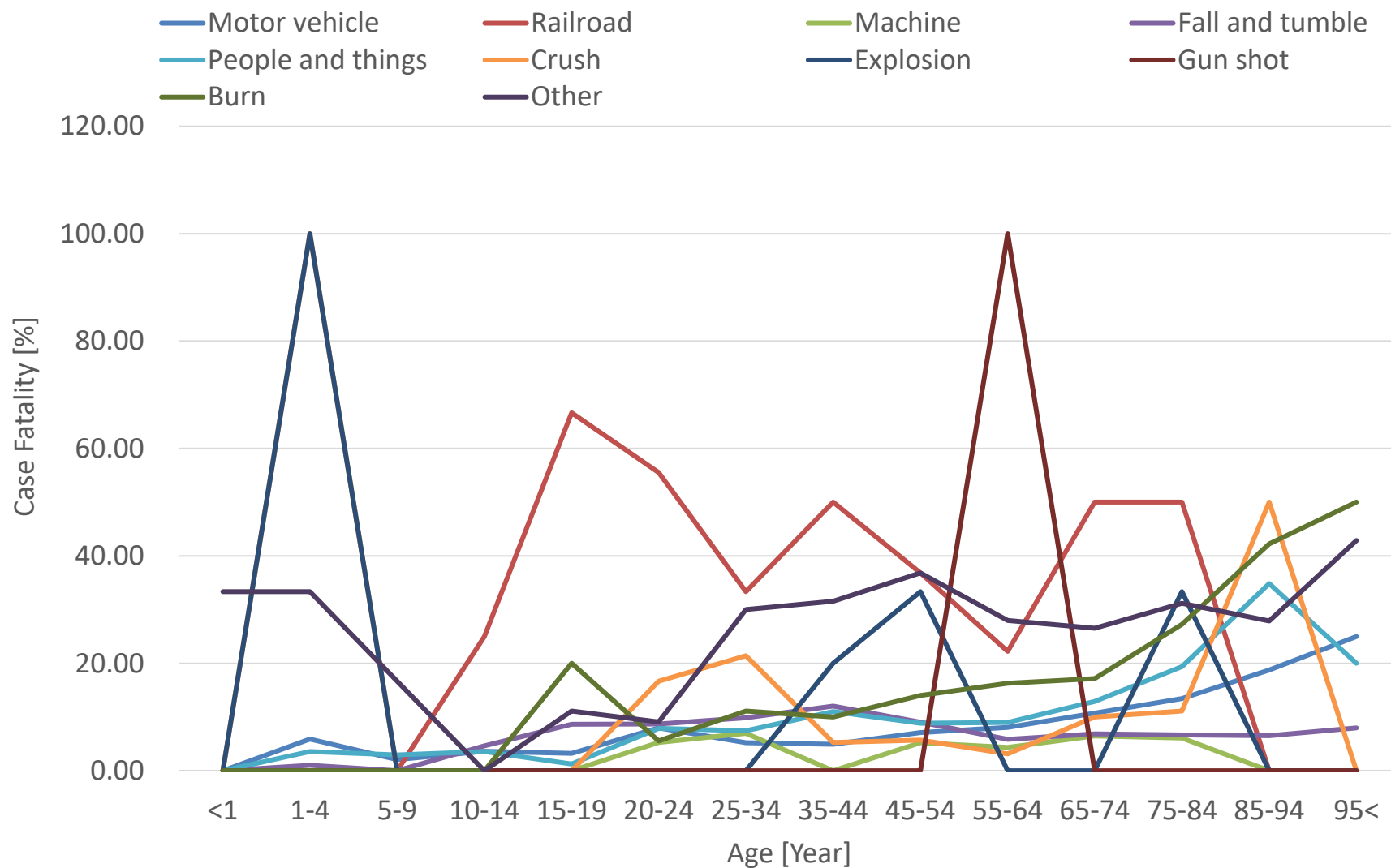
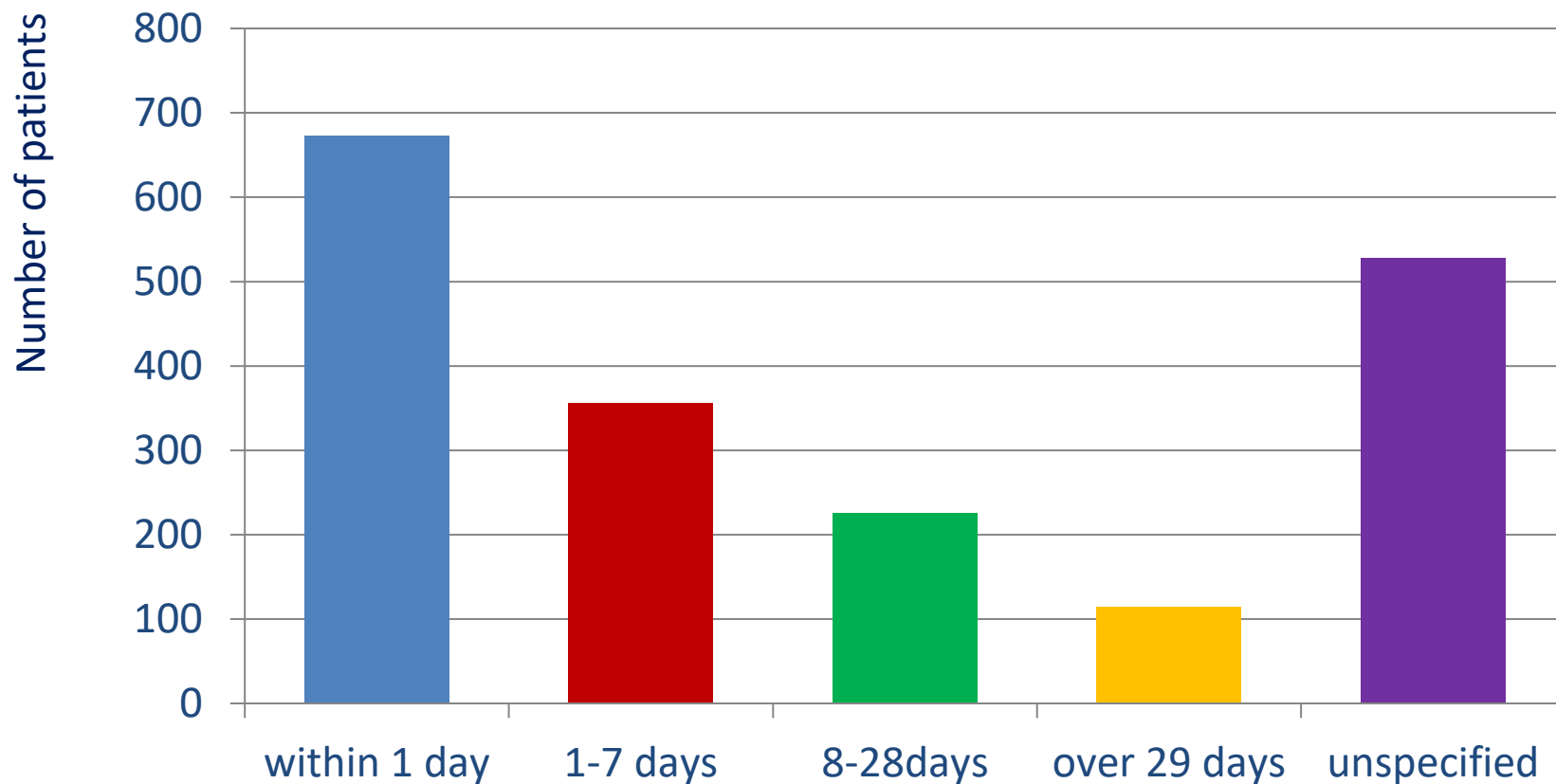
Figure
10**Case fatality by mechanism of injury and age**

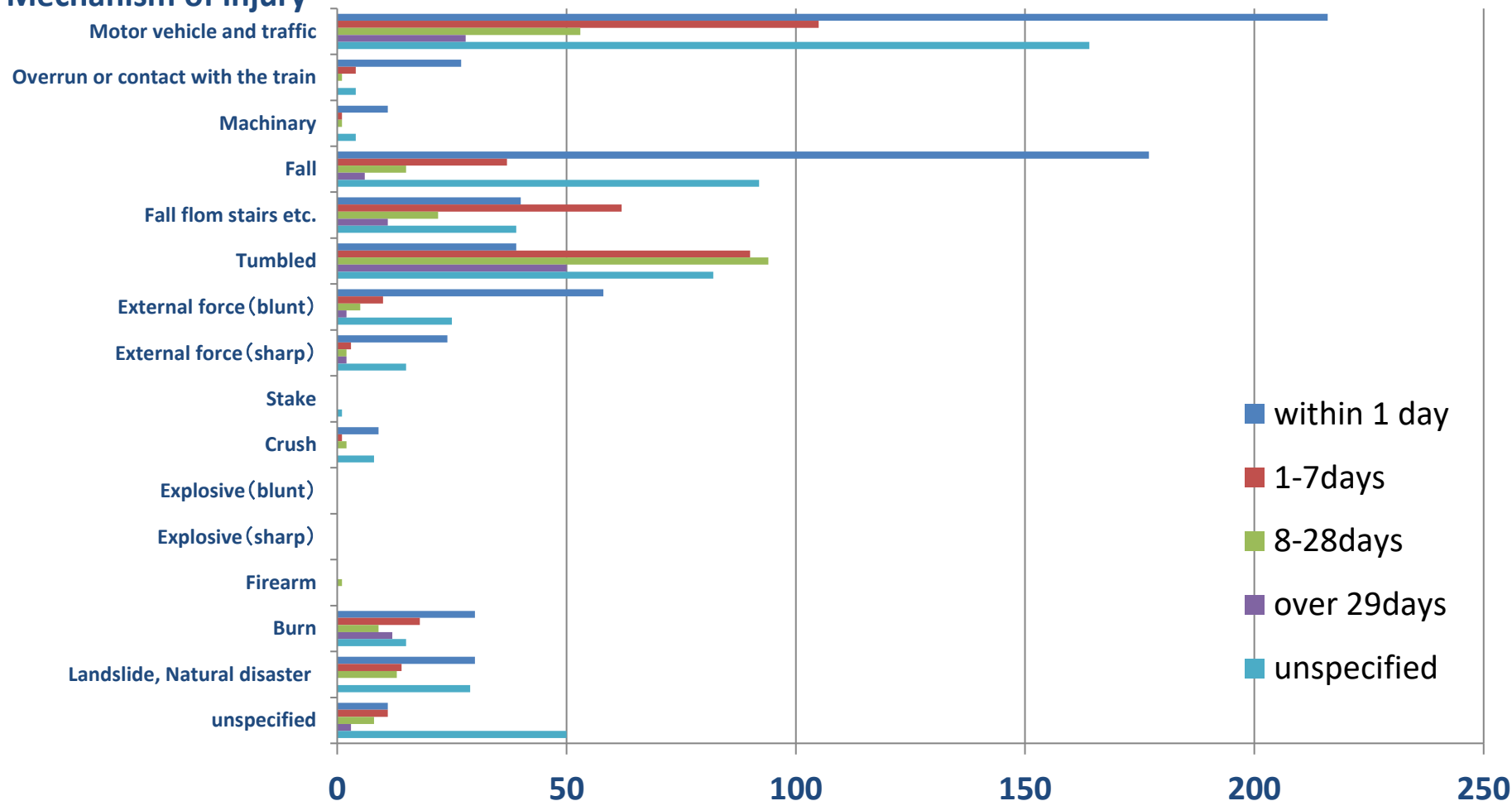
Figure
11A**Proportional distribution of hospitalized days in death cases** n =1,896

The category within 1 day includes CPAOA patients.

Figure
11B

Proportional distribution of hospitalized days, grouped by mechanism of injury n =1,896

Mechanism of injury



▪ Motor vehicle and traffic; Motor vehicle including pedal cyclist and pedestrian victims, and other traffic vehicle.

▪ Stake, only one patient was included “unspecified”.



Table
12**Proportional distribution of hospitalized days, grouped by mechanism of injury.****n =21,385**

	Motor vehicle and traffic	Overrun or contact with the train	Machinery	Fall	Fall from stairs etc.	Tumbled	External force (blunt)	External force (sharp)
Within 1 day	423	30	23	205	125	191	103	47
1~7 days	1876	6	110	37	834	1476	292	180
8~28 days	2194	11	146	15	485	4062	280	159
Over 29 days	1625	17	94	6	523	1676	102	76
unspecified	289	6	6	92	134	168	42	29
total	6407	70	379	327	1671	7573	819	491

	Stake	Crush	Explosive (blunt)	Explosive (sharp)	Firearm	Burn	Landslide, Natural disaster etc.	total
Within 1 day	3	15	0	0	0	49	44	1258
1~7 days	17	28	1	0	1	135	89	5369
8~28 days	11	61	4	0	2	129	89	8870
Over 29 days	4	67	1	0	0	131	48	5069
unspecified	3	11	0	0	0	24	35	819
total	38	182	6	0	3	468	305	21385

Figure
13A

Total hospital length of stay by mechanism of Injury n = 20,777
Over all total hospital length of stay was 44,139 days.

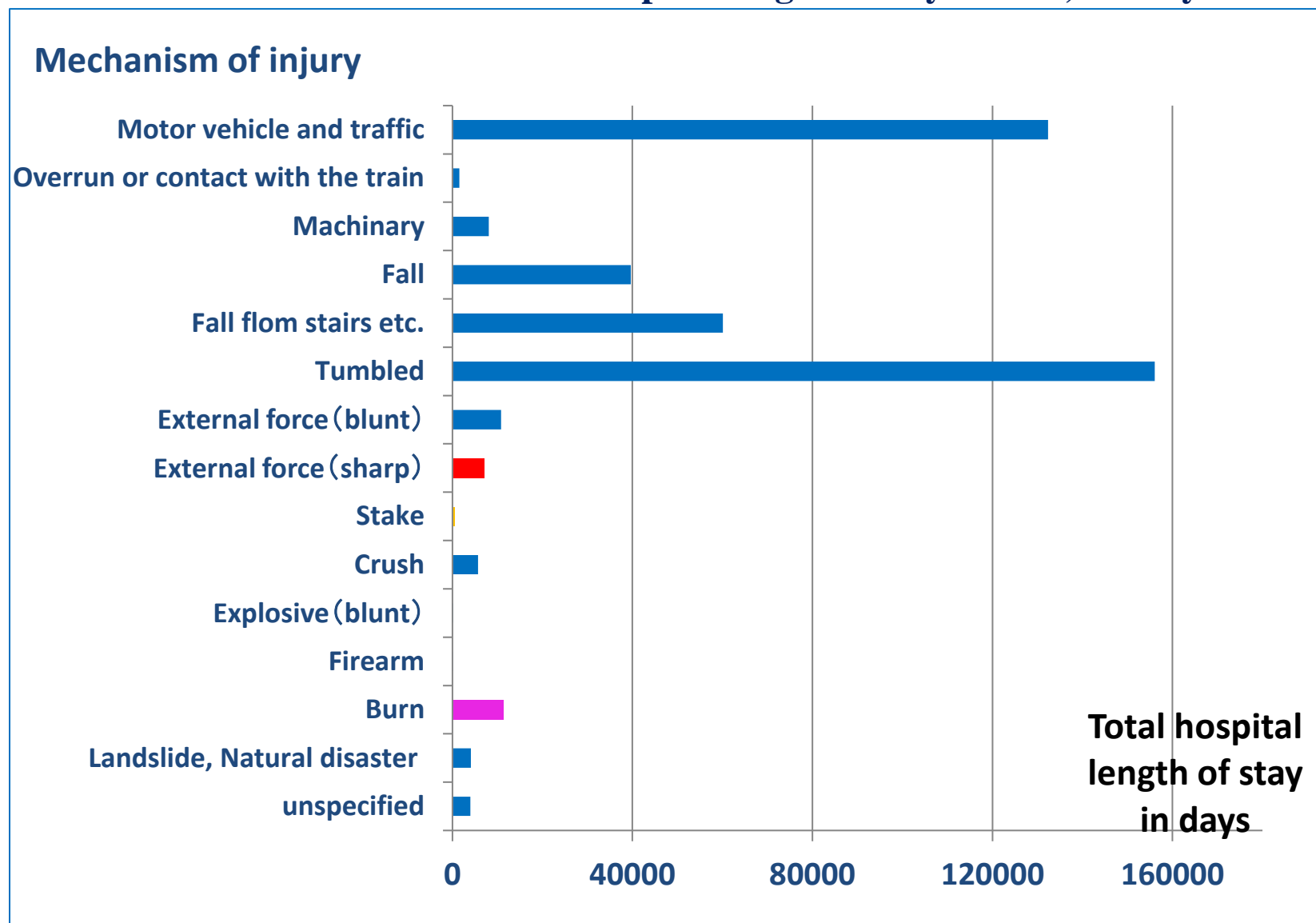
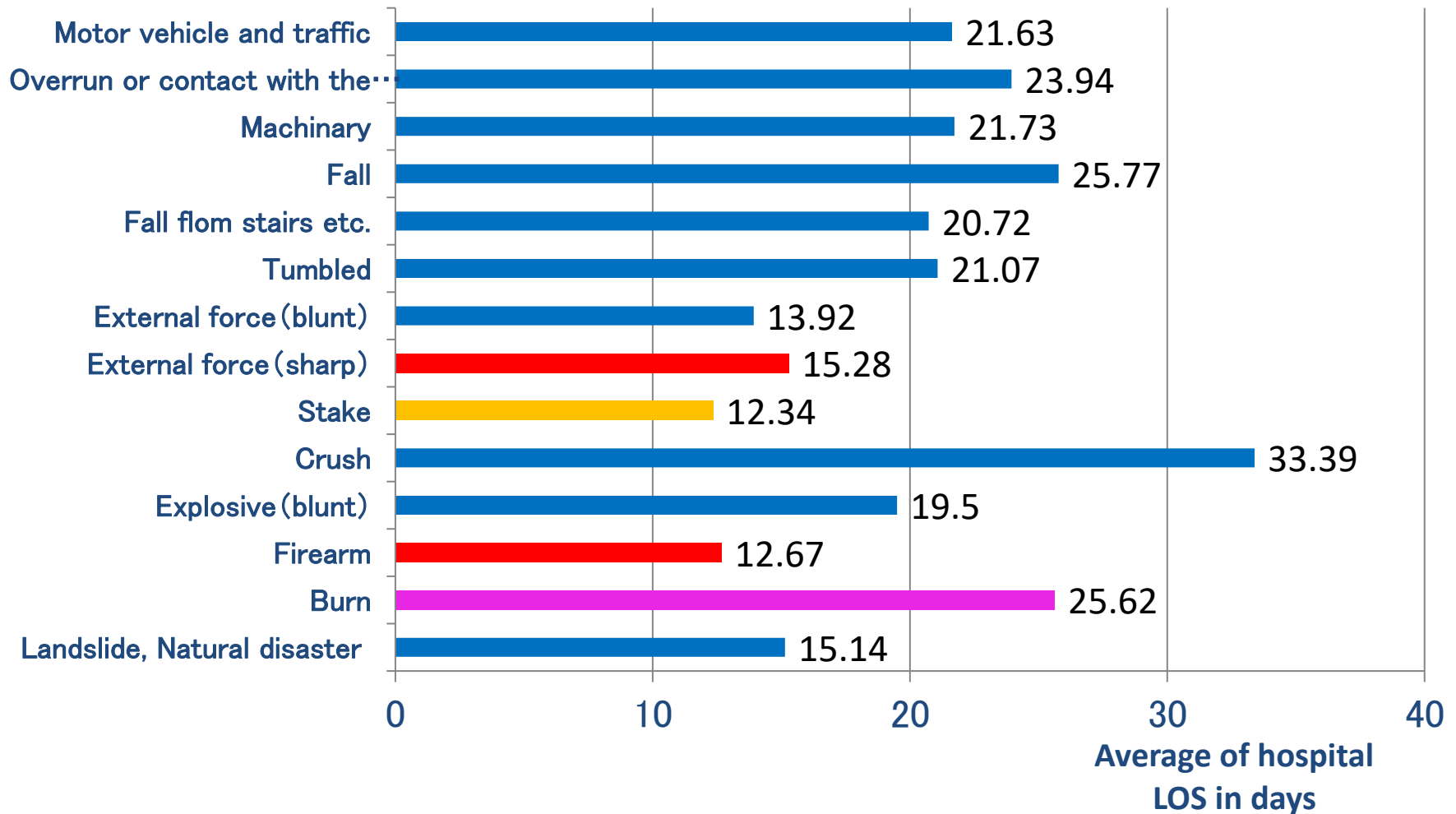


Figure
13B**Average hospital length of stay by mechanism of injury** n = 20,777**Mechanism of injury**

"hospitalization within 1 day" is set as "0", the average length of hospitalization may be underestimated.

Table
13**Total and average hospital length of stay by mechanism of injury n = 20,777**

Mechanism of injury	Number of patients / %		Total hospital LOS in days	Average of hospital LOS in days
Motor vehicle and traffic	6,118	29.45	132,344	21.63
Overrun or contact with the train	64	0.31	1,532	23.94
Machinery	373	1.80	8,107	21.73
Fall	1,537	7.40	39,616	25.77
Fall from stairs etc.	2,901	13.96	60,121	20.72
tumbled	7,405	35.64	156,056	21.07
External force (blunt)	777	3.74	10,812	13.92
External force (sharp)	462	2.22	7,061	15.28
Stake	35	0.17	432	12.34
Crush	171	0.82	5709	33.39
Explosive (blunt)	6	0.03	117	19.50
Explosive (sharp)	0	0.00	0	0.00
Firearm	3	0.01	38	12.67
Burn	444	2.14	11,377	25.62
Landslide, Natural disaster etc.	270	1.30	4,087	15.14
unspecified	211	1.02	3,982	18.87
total	20,777	100%	4,049,382	23.81

"hospitalization within 1 day" is set as "0", the average length of hospitalization may be underestimated.

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

N= 22,089

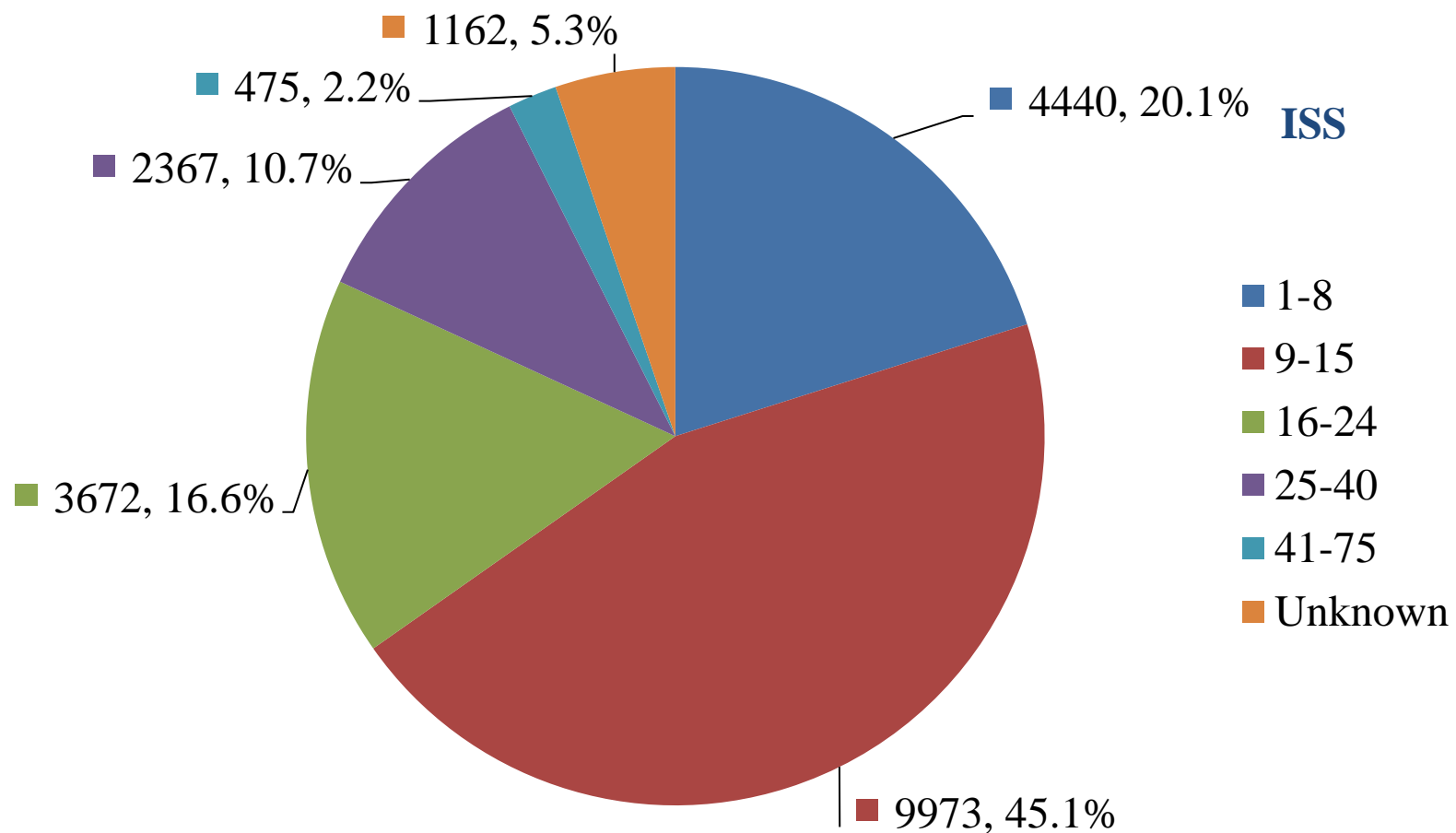


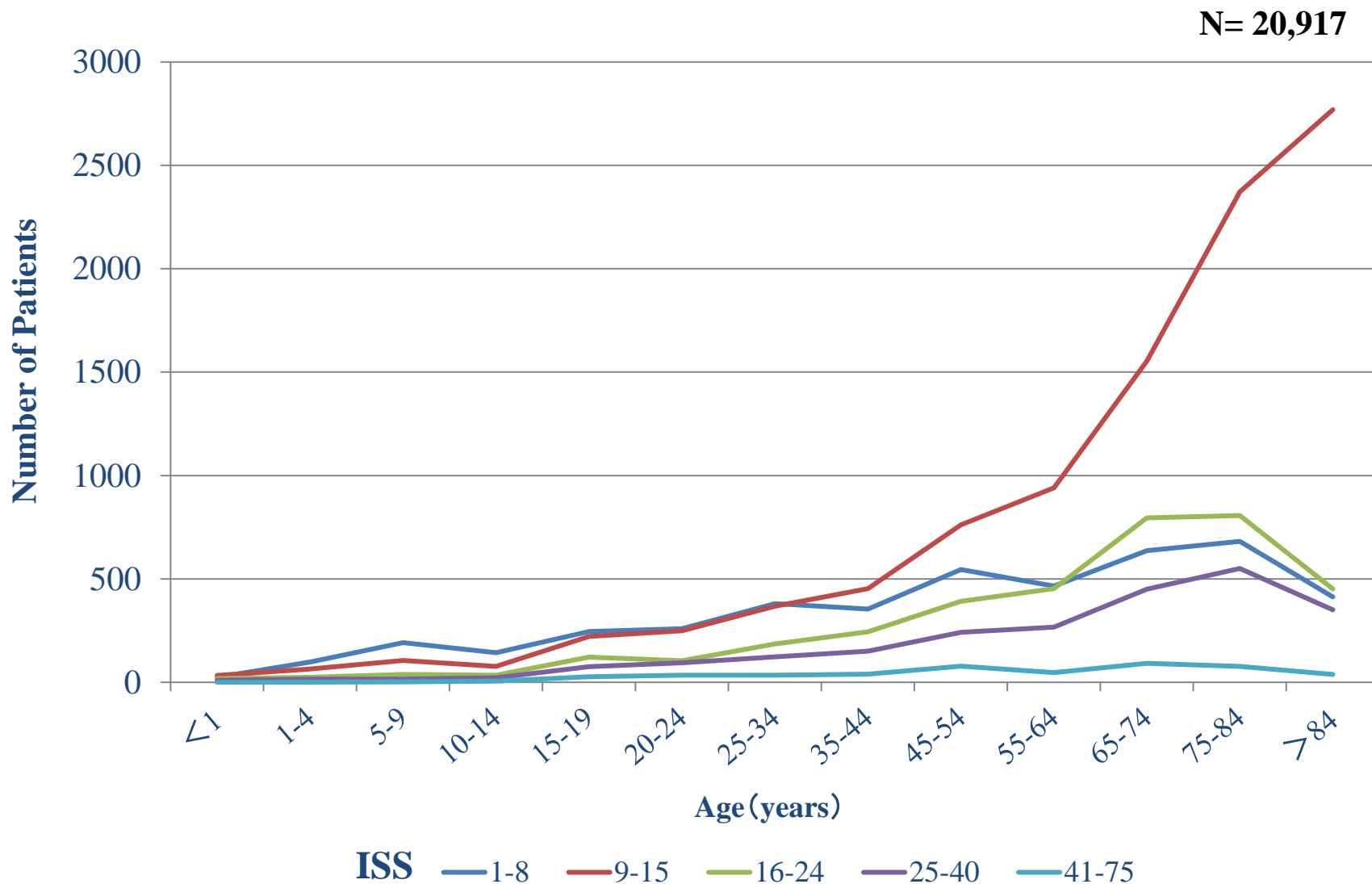
Figure
15**Patients by ISS and age**

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	24	98	192	143	246	259	380	354	545	465	637	681	413	3	4440
9-15	33	64	106	77	222	250	368	453	762	940	1553	2372	2769	4	9973
16-24	18	24	38	35	122	104	186	245	392	453	795	806	452	2	3672
25-40	9	16	16	22	76	94	123	151	242	267	450	550	350	1	2367
41-75	0	1	2	6	27	34	34	39	78	47	92	77	38	0	475
Unknown	1	9	20	28	74	56	63	97	147	131	200	213	122	1	1162
Total	85	212	374	311	767	797	1154	1339	2166	2303	3727	4699	4144	11	22089

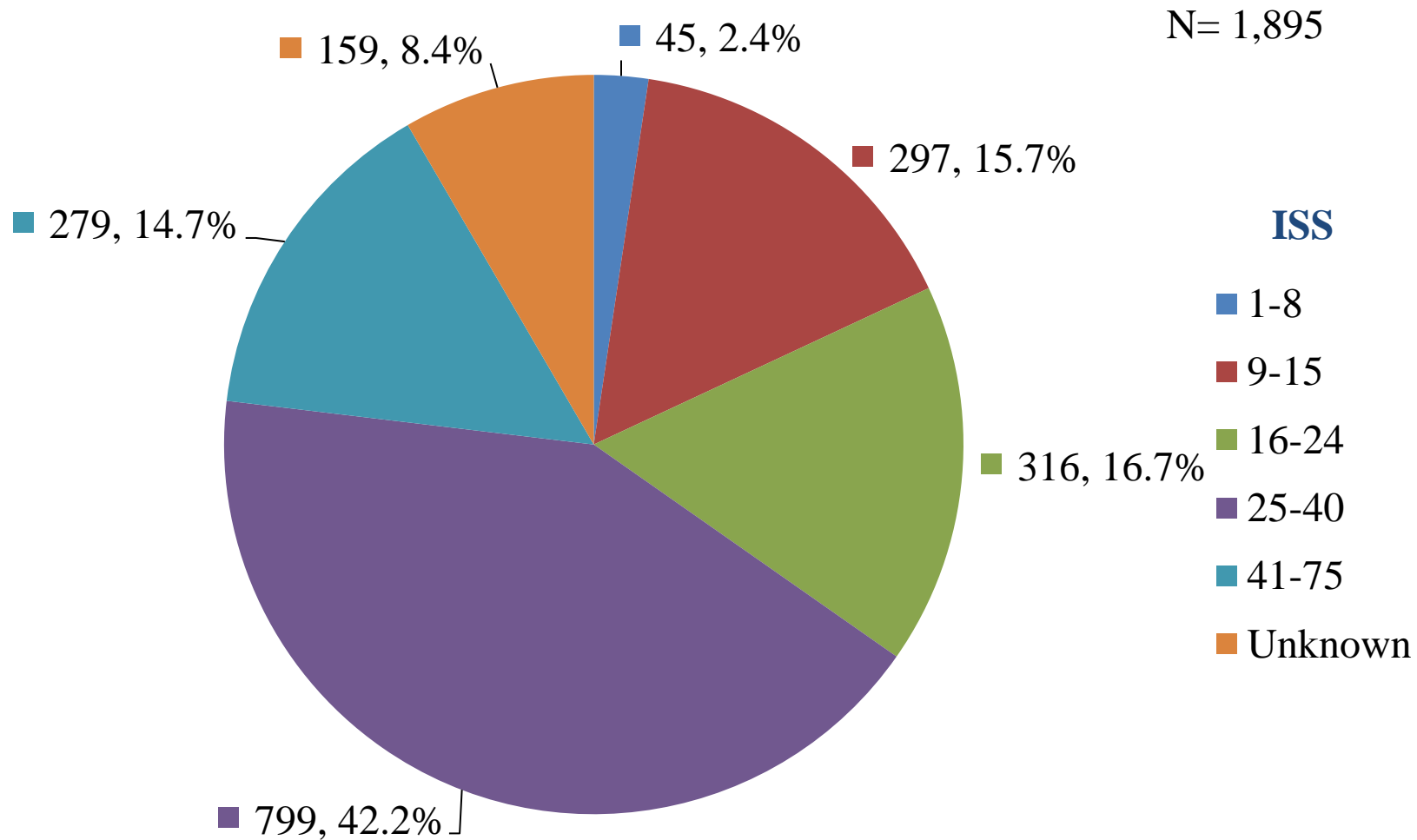
Figure
16A**Deaths and Injury Severity Score (ISS)**

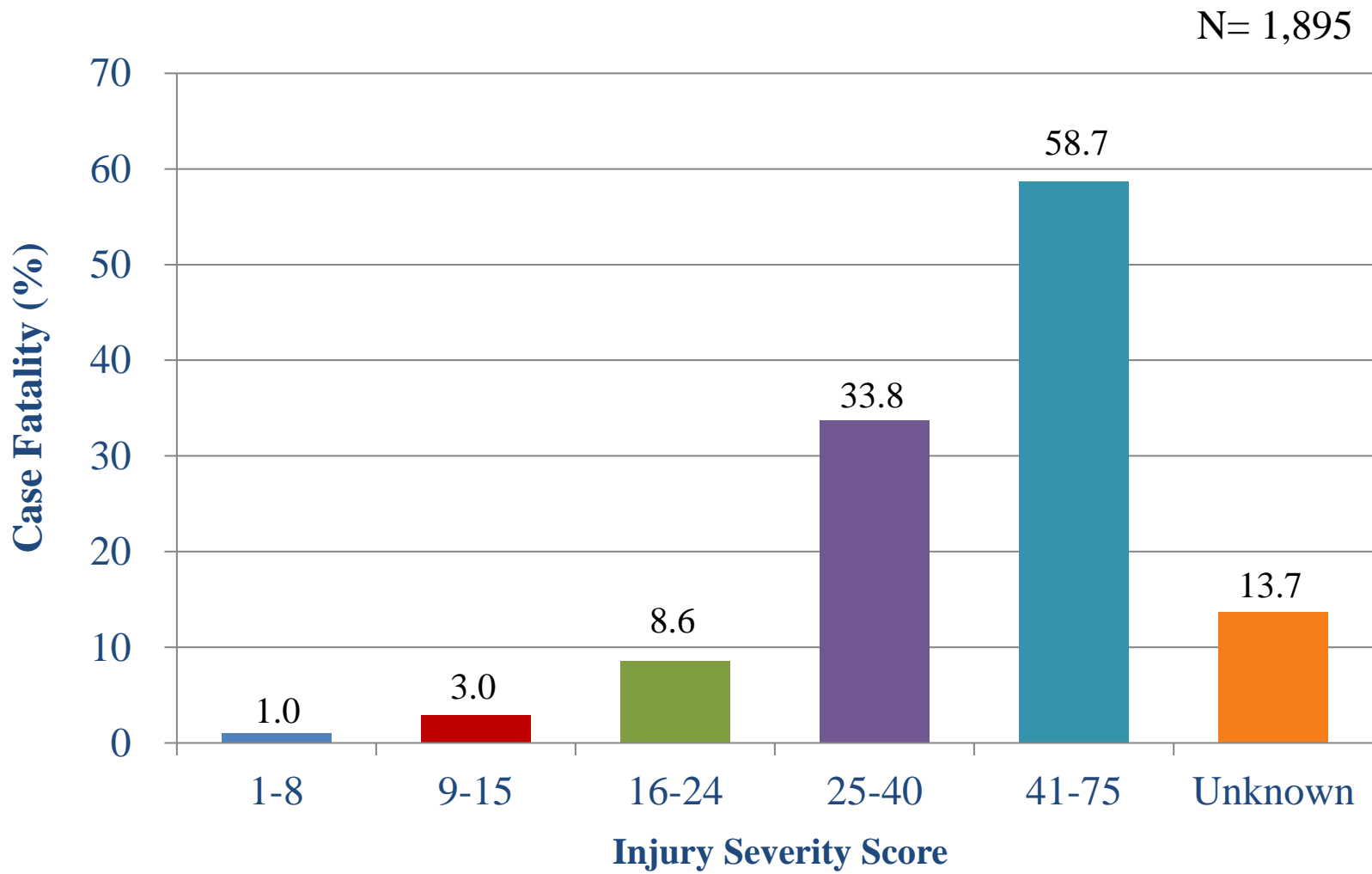
Figure
16B**Case fatality by Injury Severity Score (ISS) range**

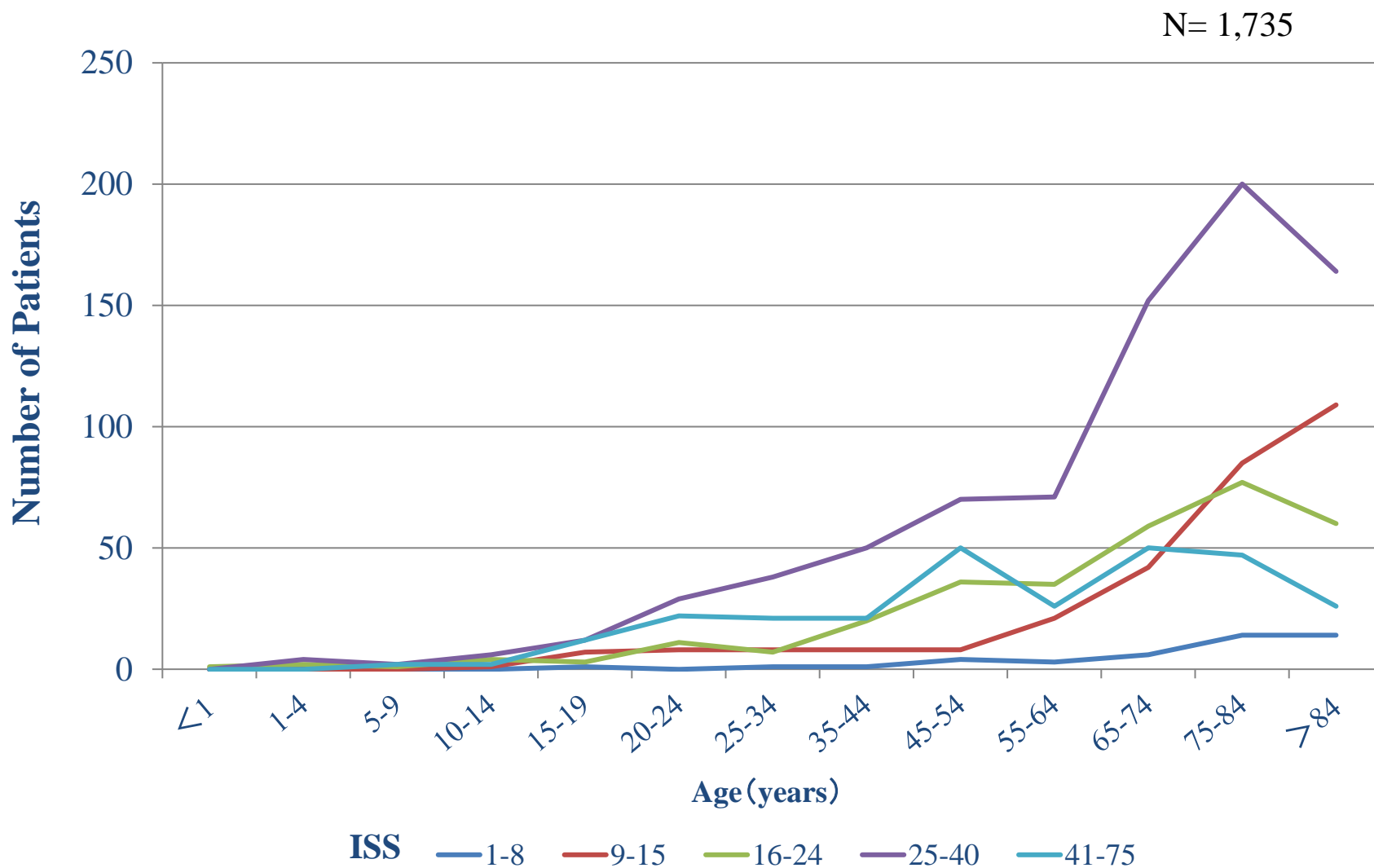
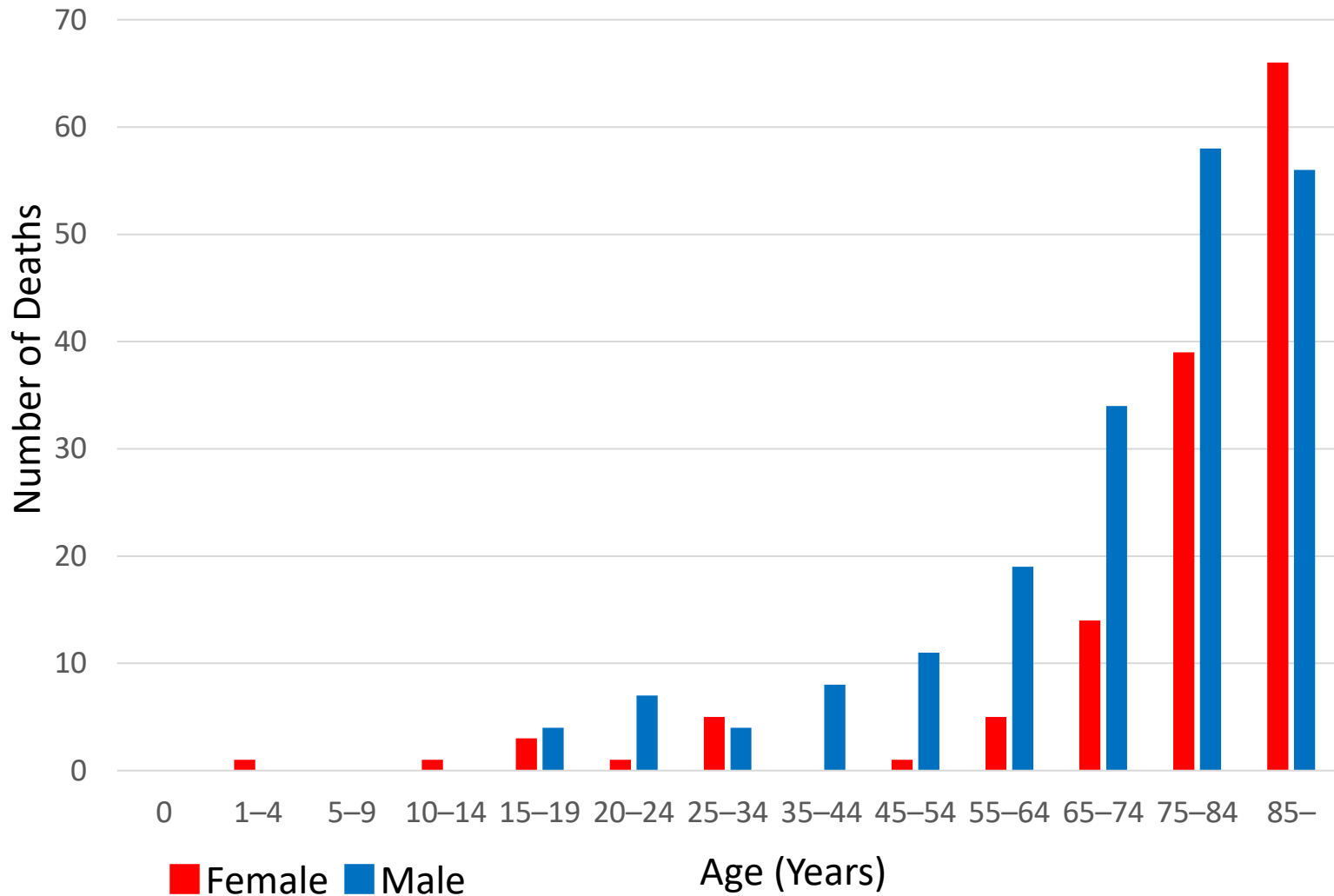
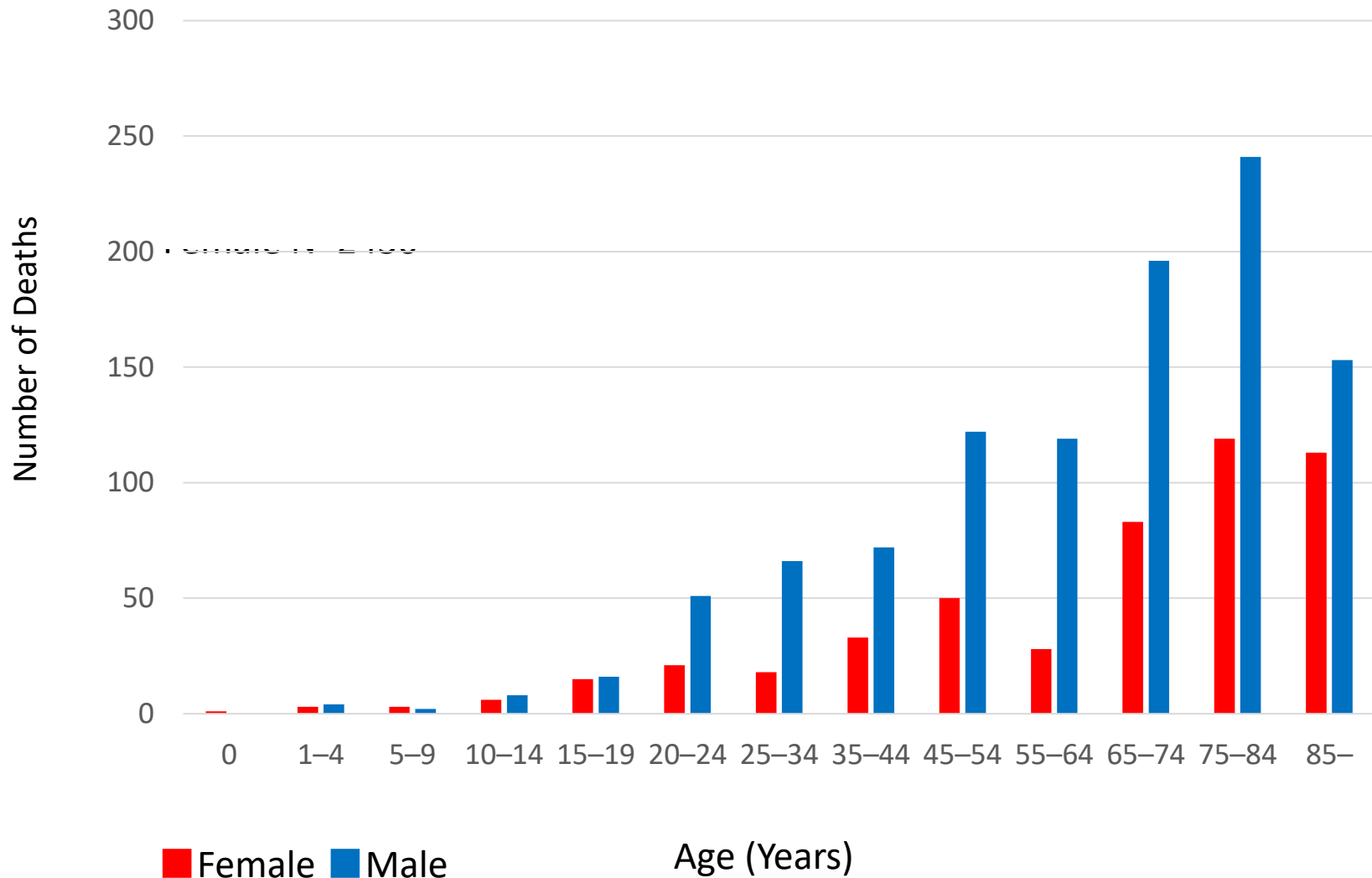
Figure
17**Deaths by ISS and age**

Table
17**Deaths by ISS and age**

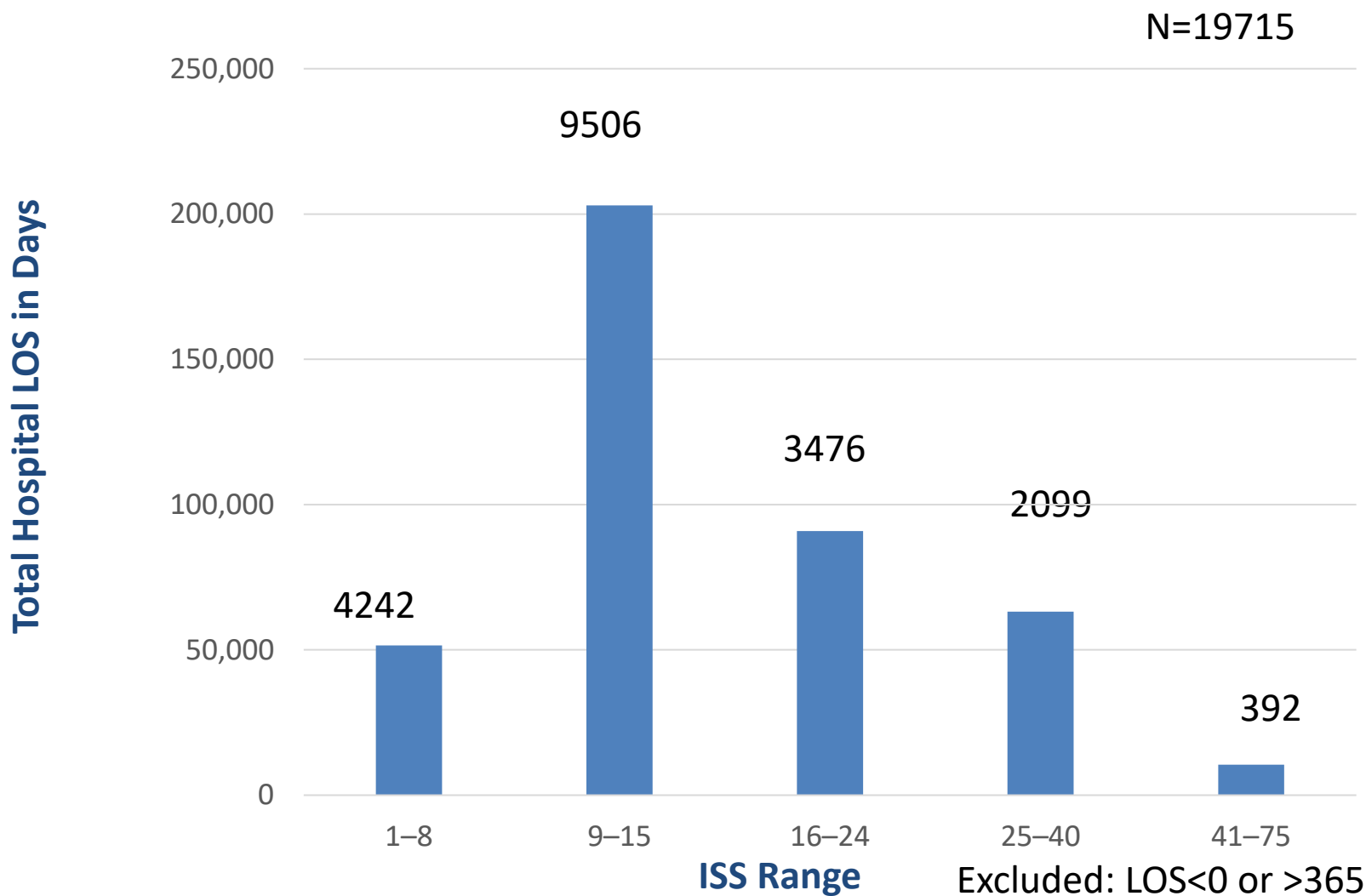
Age ISS	0	1-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85-	Unknown	Total
1-8	0	1	0	0	1	0	1	1	4	3	6	14	14	0	45
9-15	0	0	0	1	7	8	8	8	8	21	42	85	109	0	297
16-24	1	2	1	4	3	11	7	20	36	35	59	77	60	0	316
25-40	0	4	2	6	12	29	38	50	70	71	152	200	164	1	799
41-75	0	0	2	2	12	22	21	21	50	26	50	47	26	0	279
Unknown	0	1	0	2	4	10	18	16	18	15	19	39	16	1	159
Total	1	8	5	15	39	80	93	116	186	171	328	462	389	2	1895

Figure
18**Deaths by age and gender (ISS \leq 15)**

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

Figure
19**Deaths by age and gender (ISS>15)**

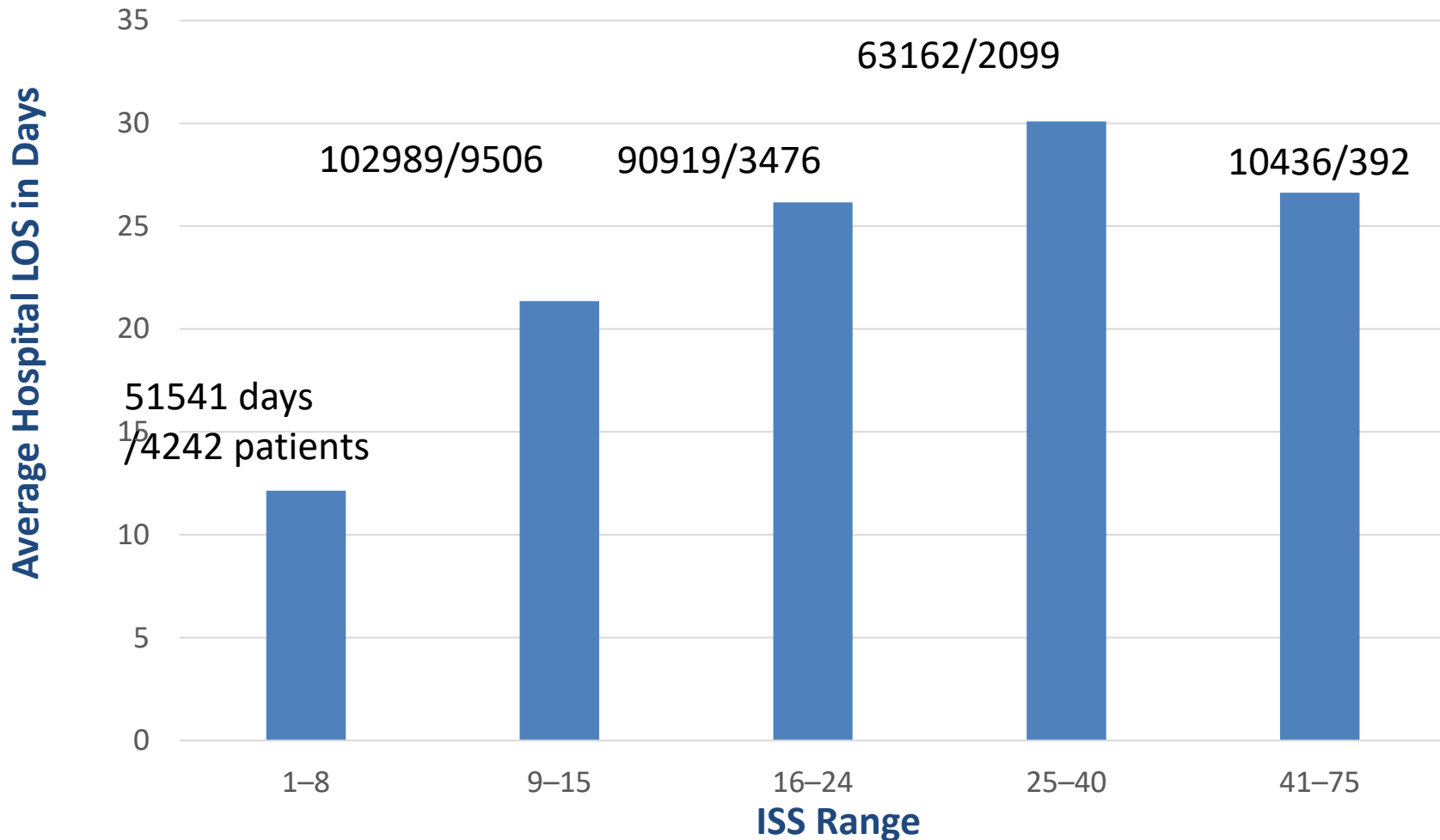
Deaths for patients with ISS>15 for males and females at each age category.

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

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

Figure
20B**Average hospital LOS and Injury Severity Score**

N=19715



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).

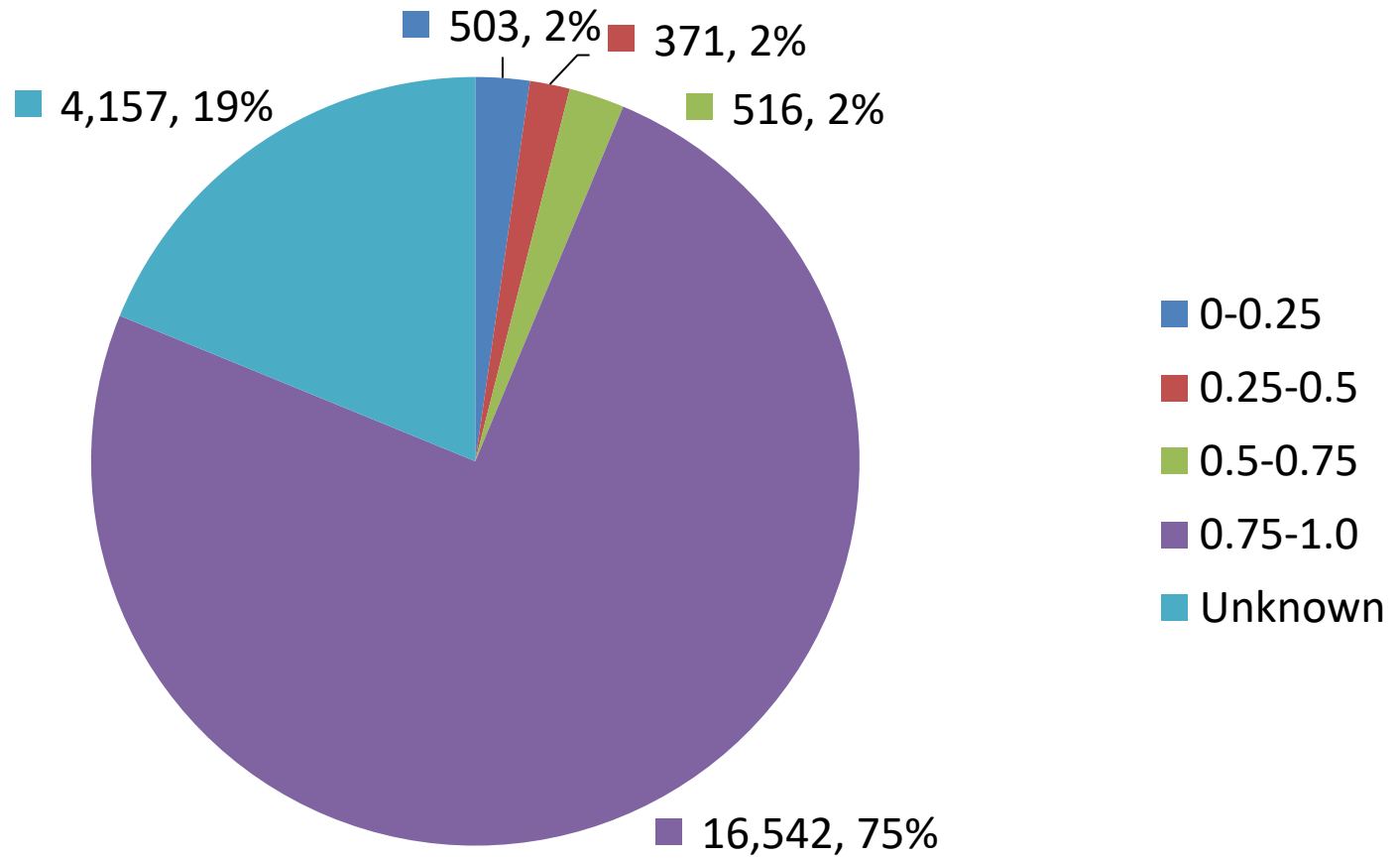
**Figure
21****Distribution of patients by probability of survival (Ps)**

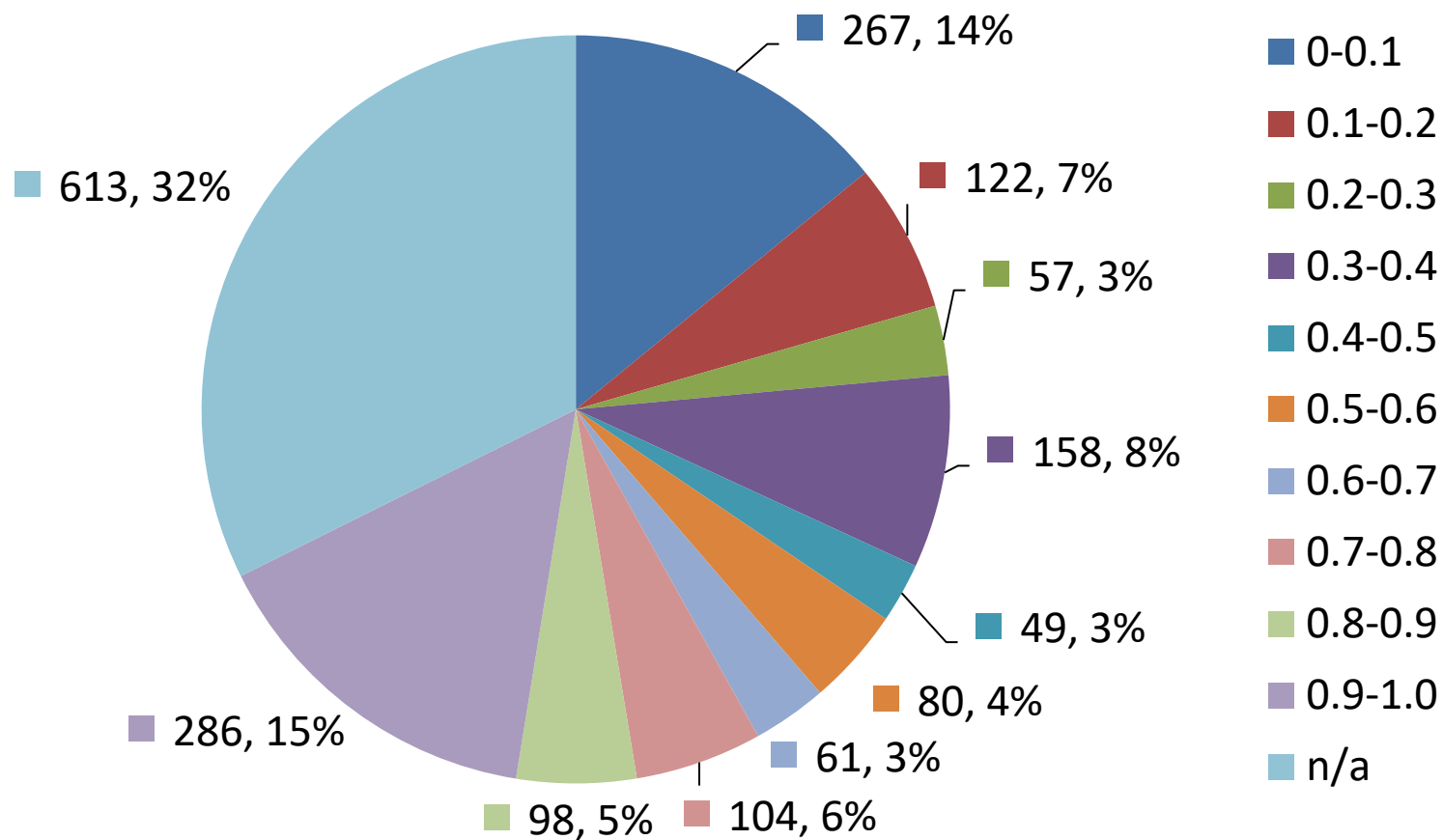
Figure
22A**Distribution of deaths by probability of survival (Ps)**

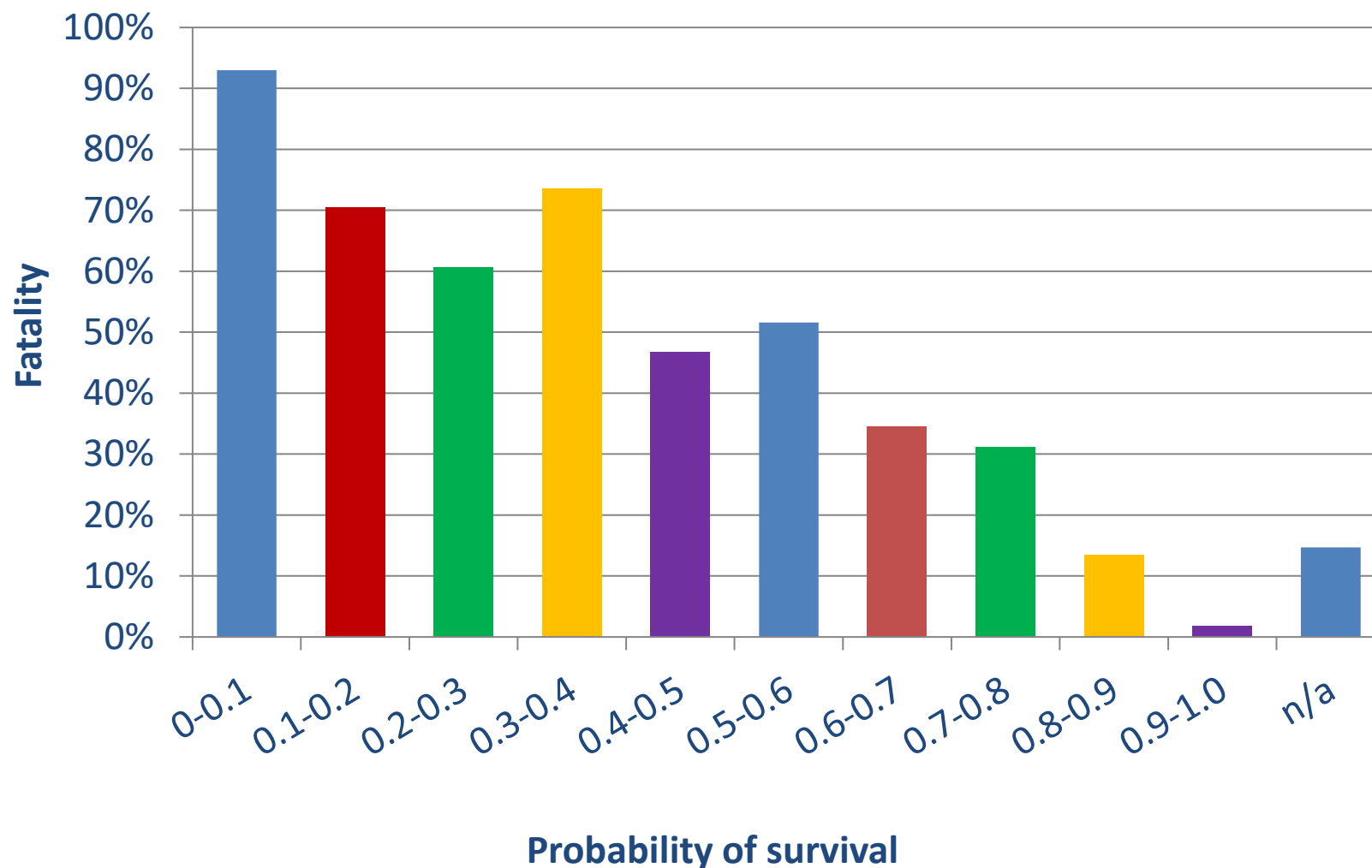
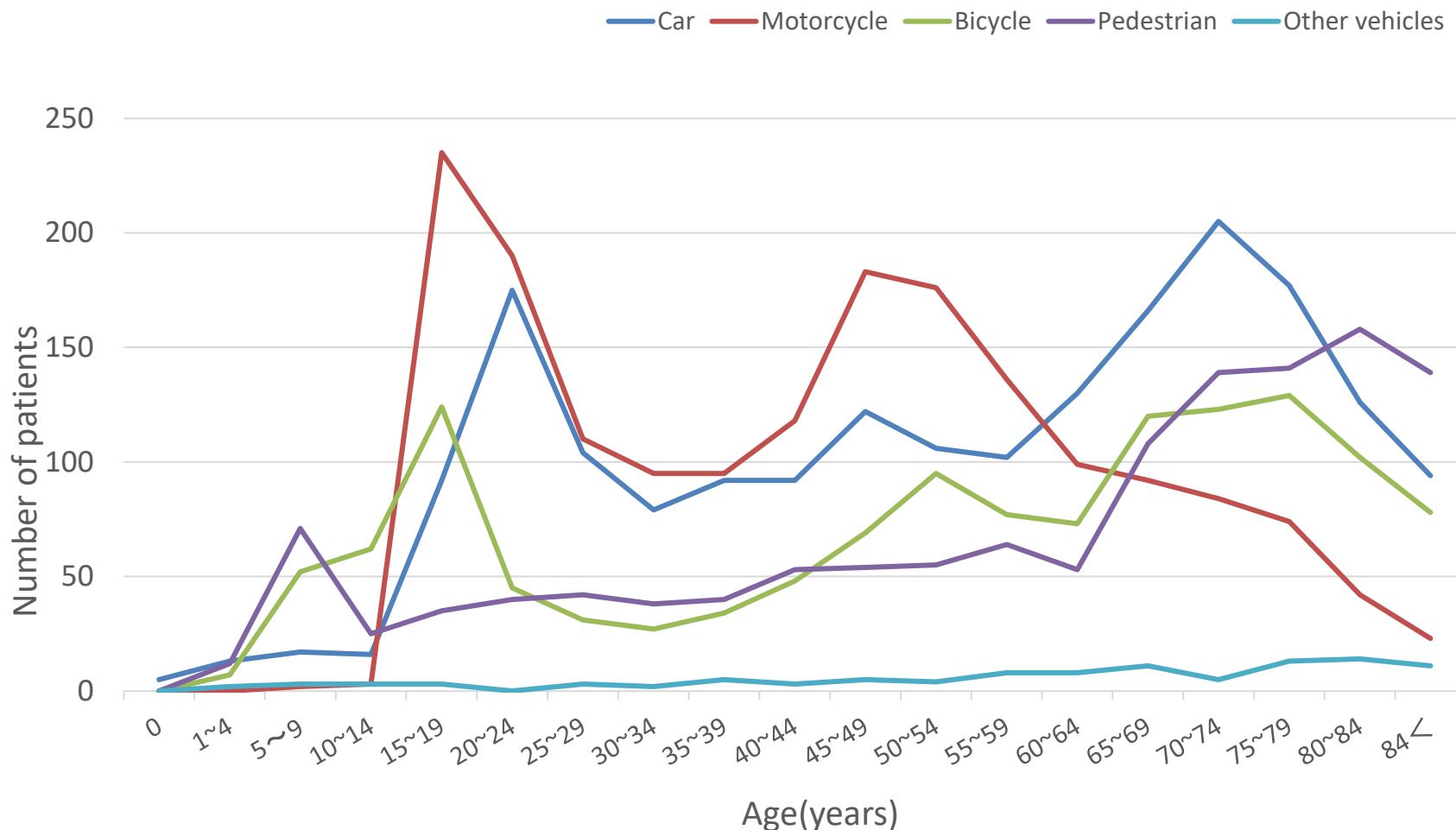
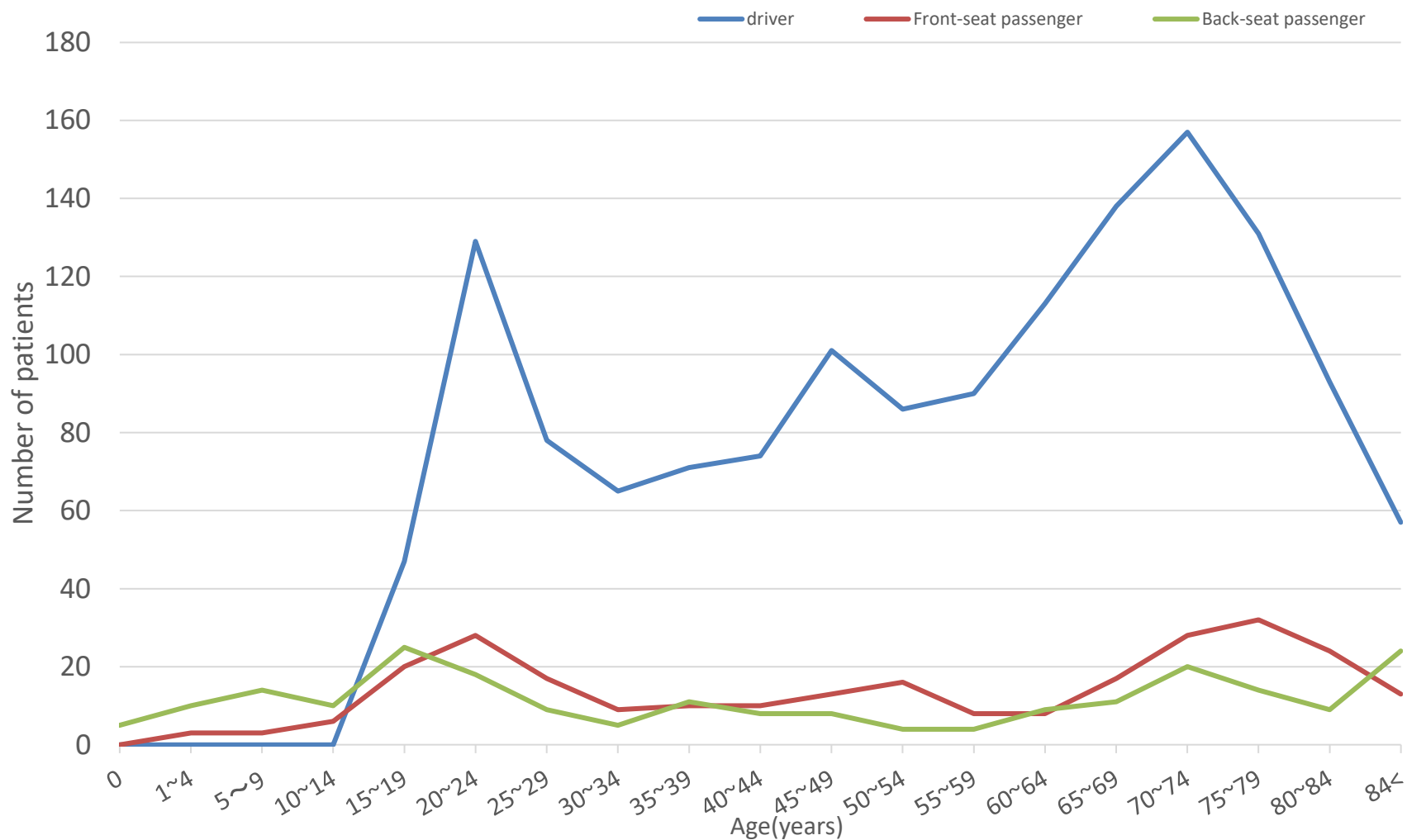
Figure
22B**Case fatality by probability of survival (Ps)**

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 driver and passengers and age**

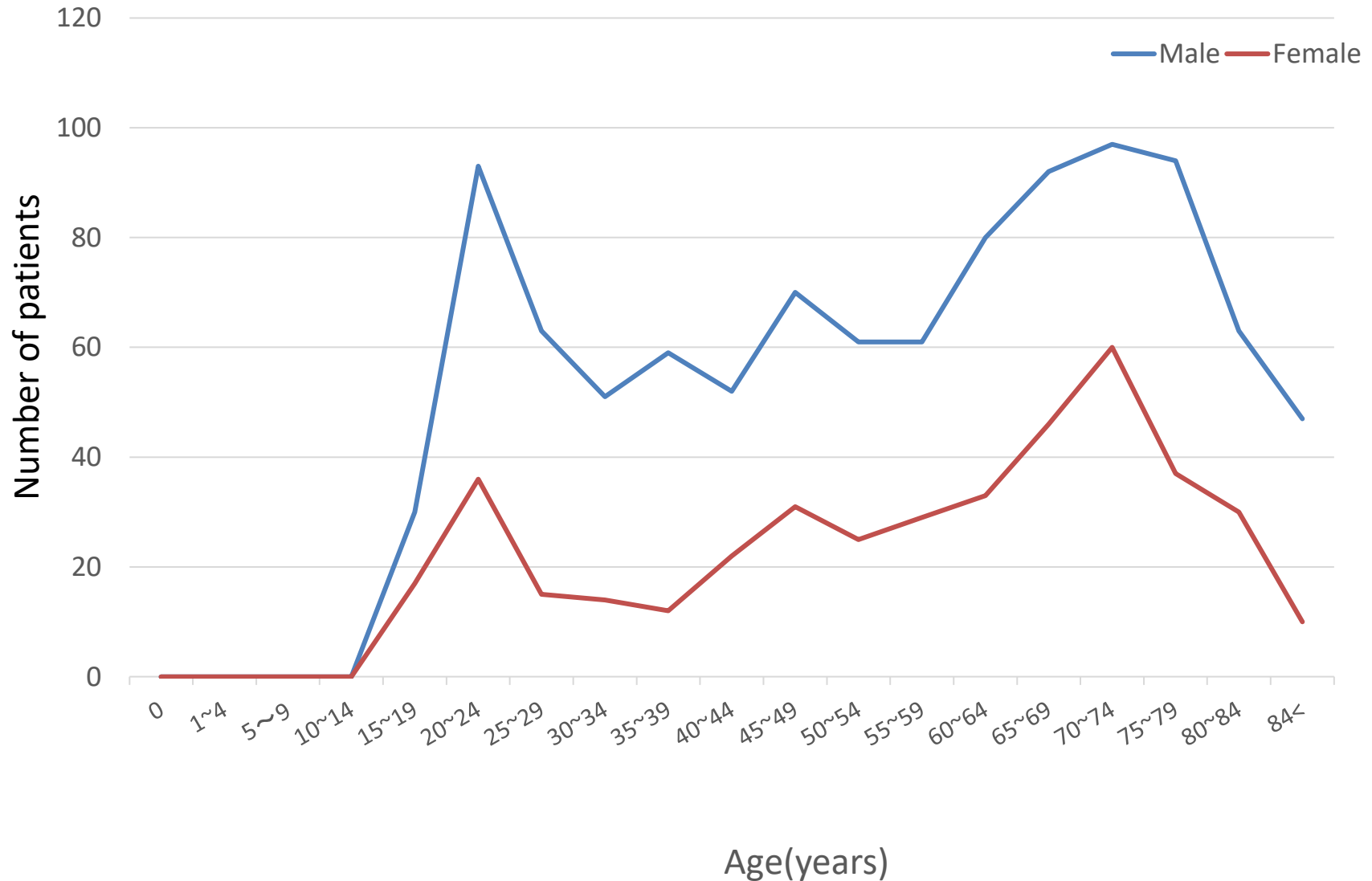
**Figure
25****The number of patients in car accident (driver) by gender and age**

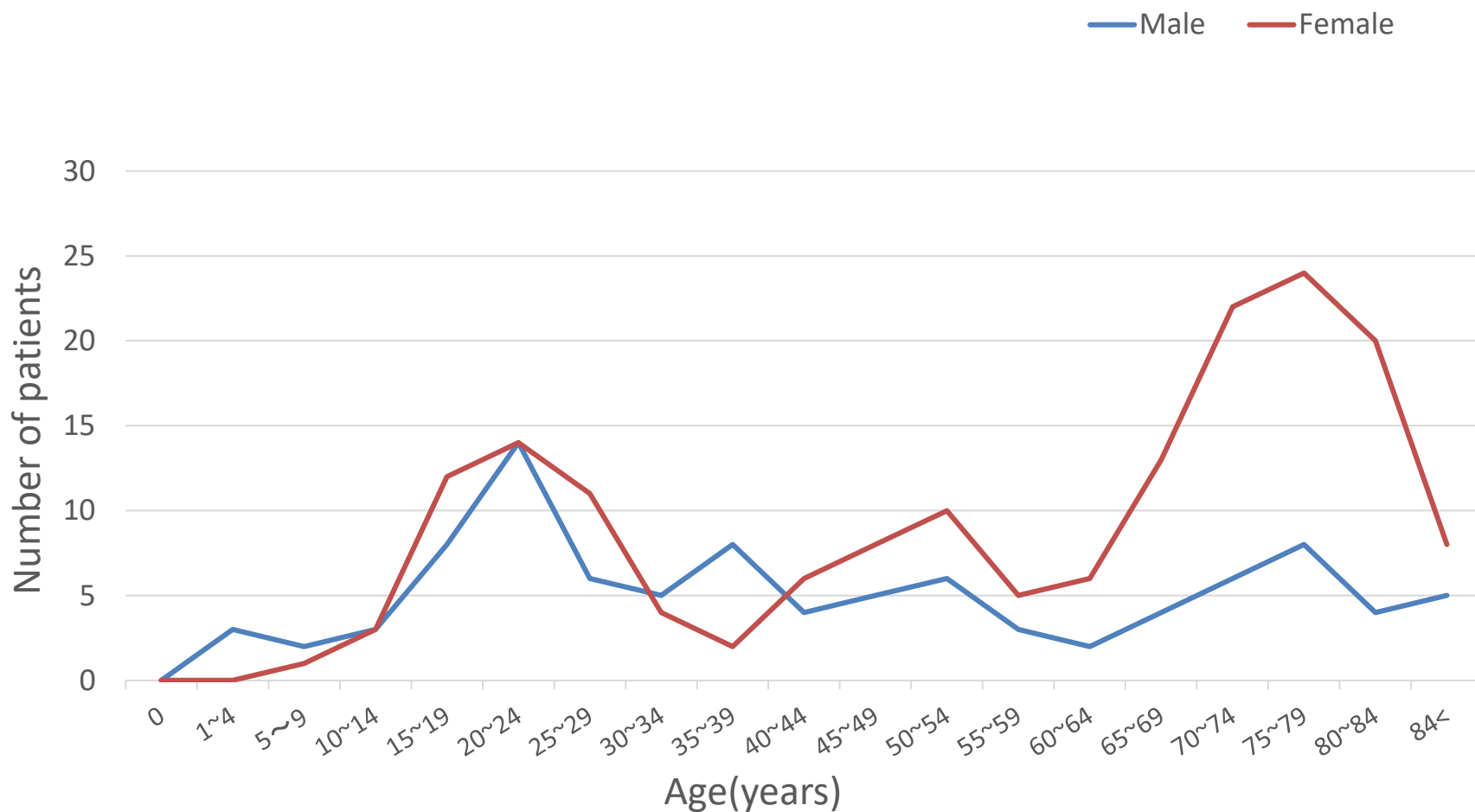
Figure
26**The number of patients in car accident (passenger) by gender and age**

Figure
27

Number of deaths and fatalities of motor vehicular drivers by age

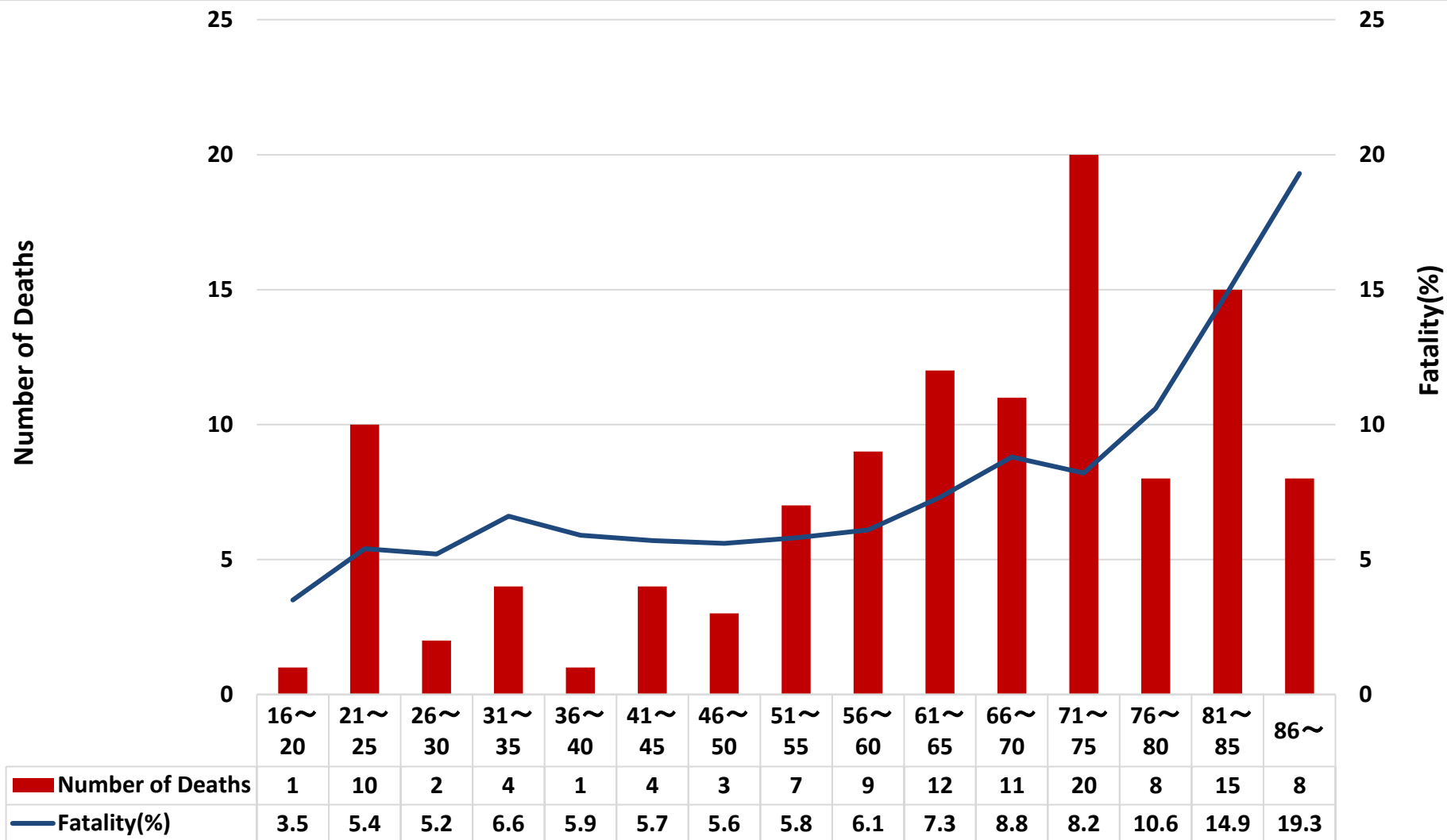


Figure
28

Number of deaths of motor vehicular drivers by age and genders

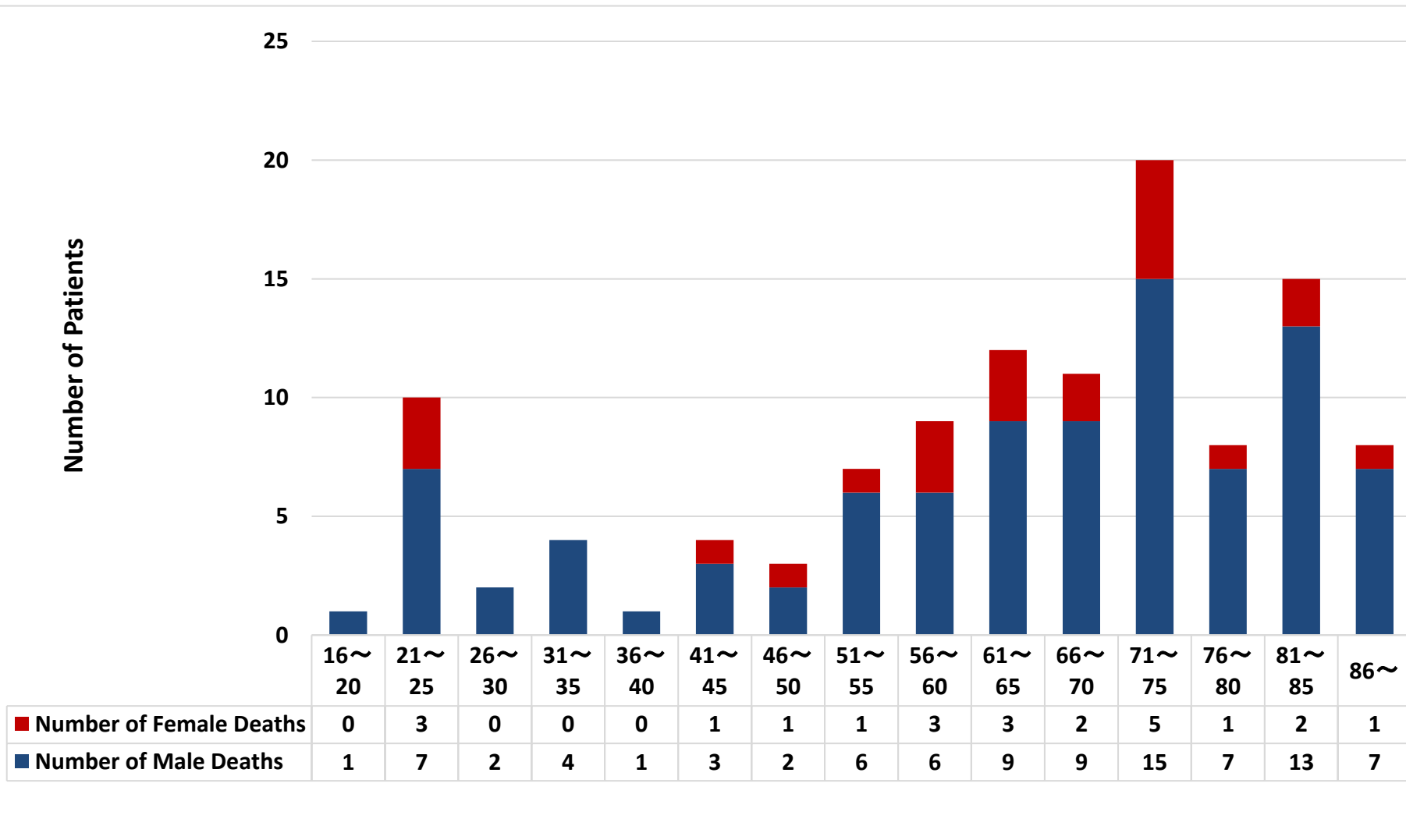


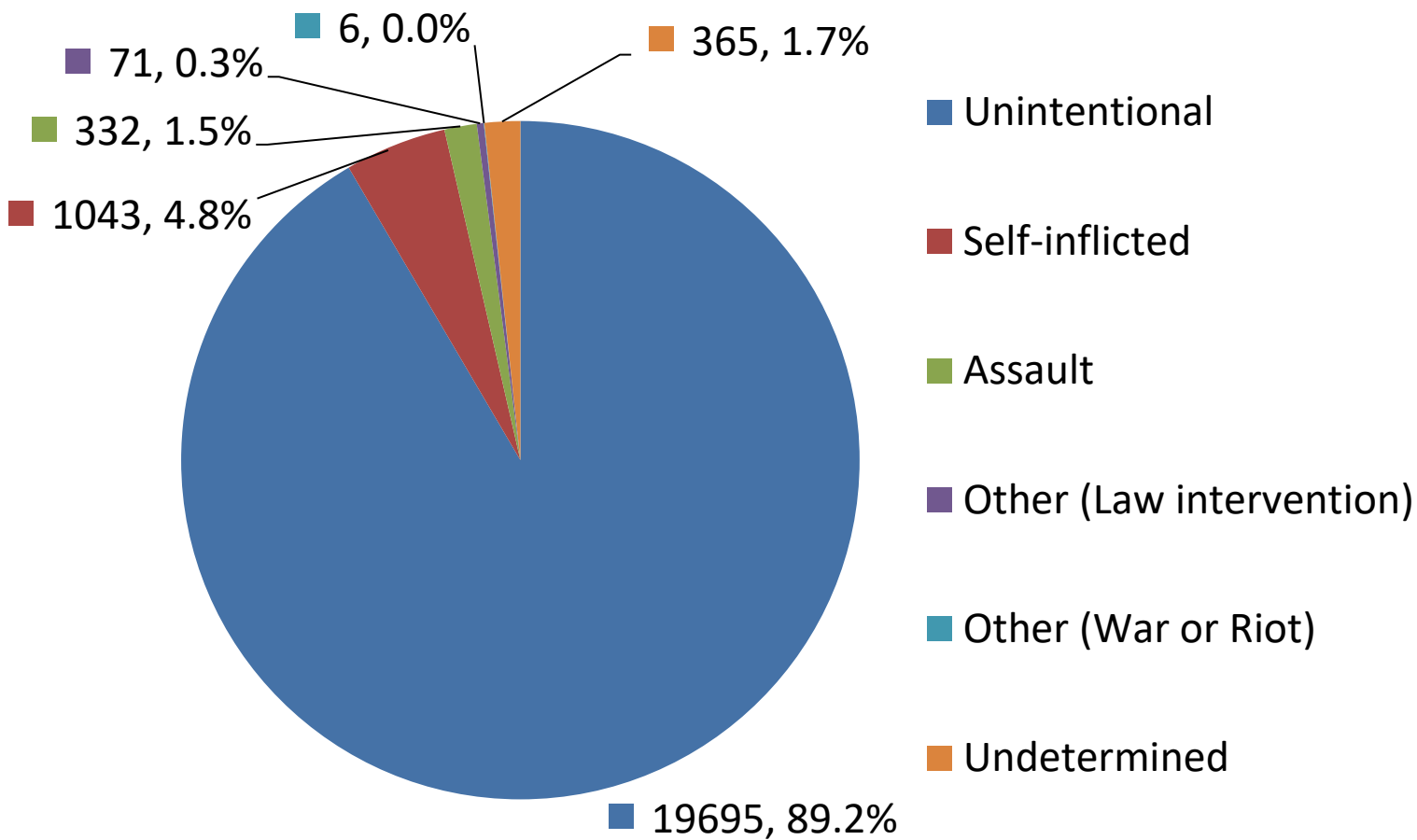
Figure
29**Proportional distribution of registered patients, groped by intent**

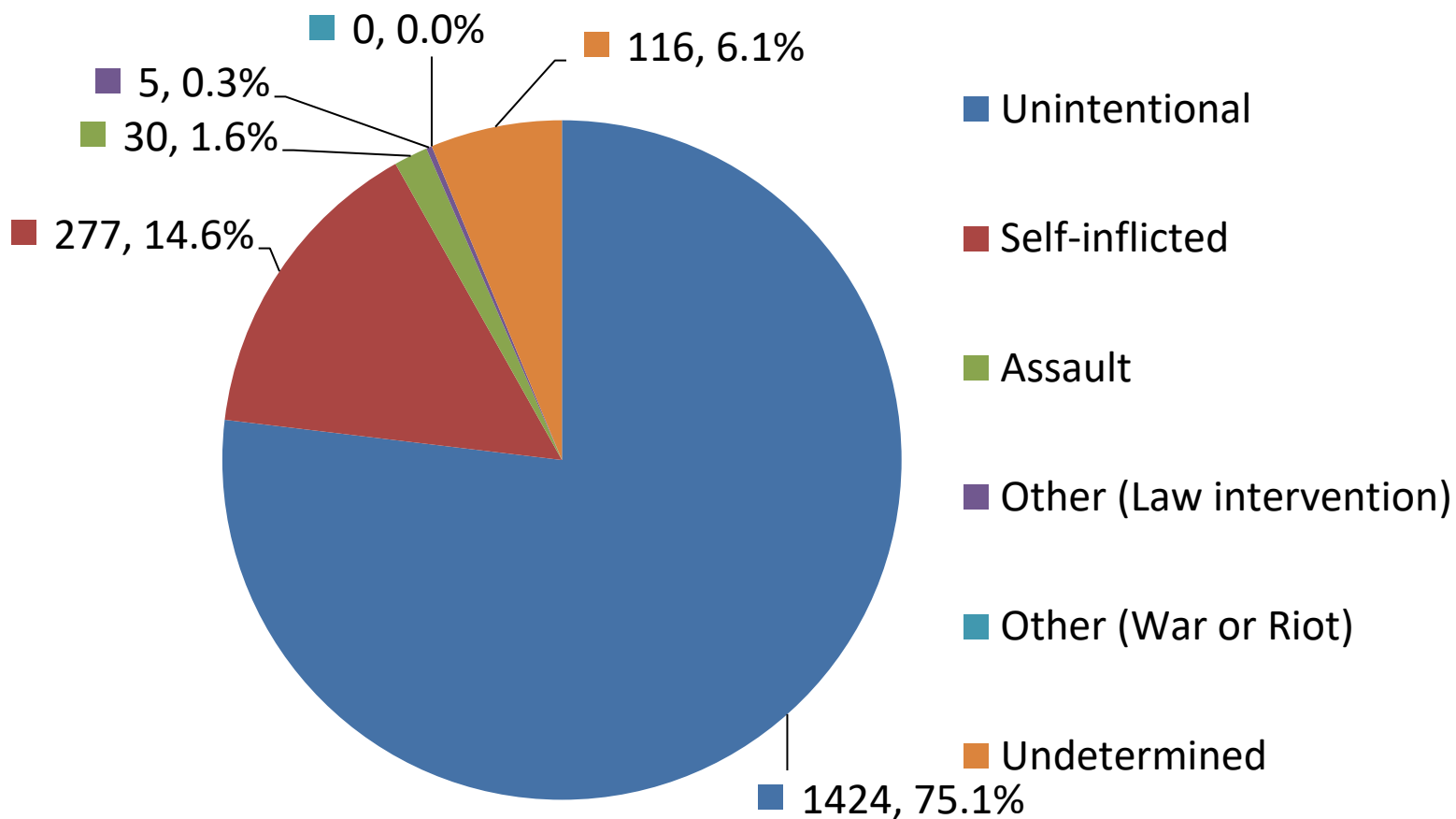
Figure
30**Proportional distribution of deaths, grouped by intent**

Figure
31

Gender proportion of unintentional

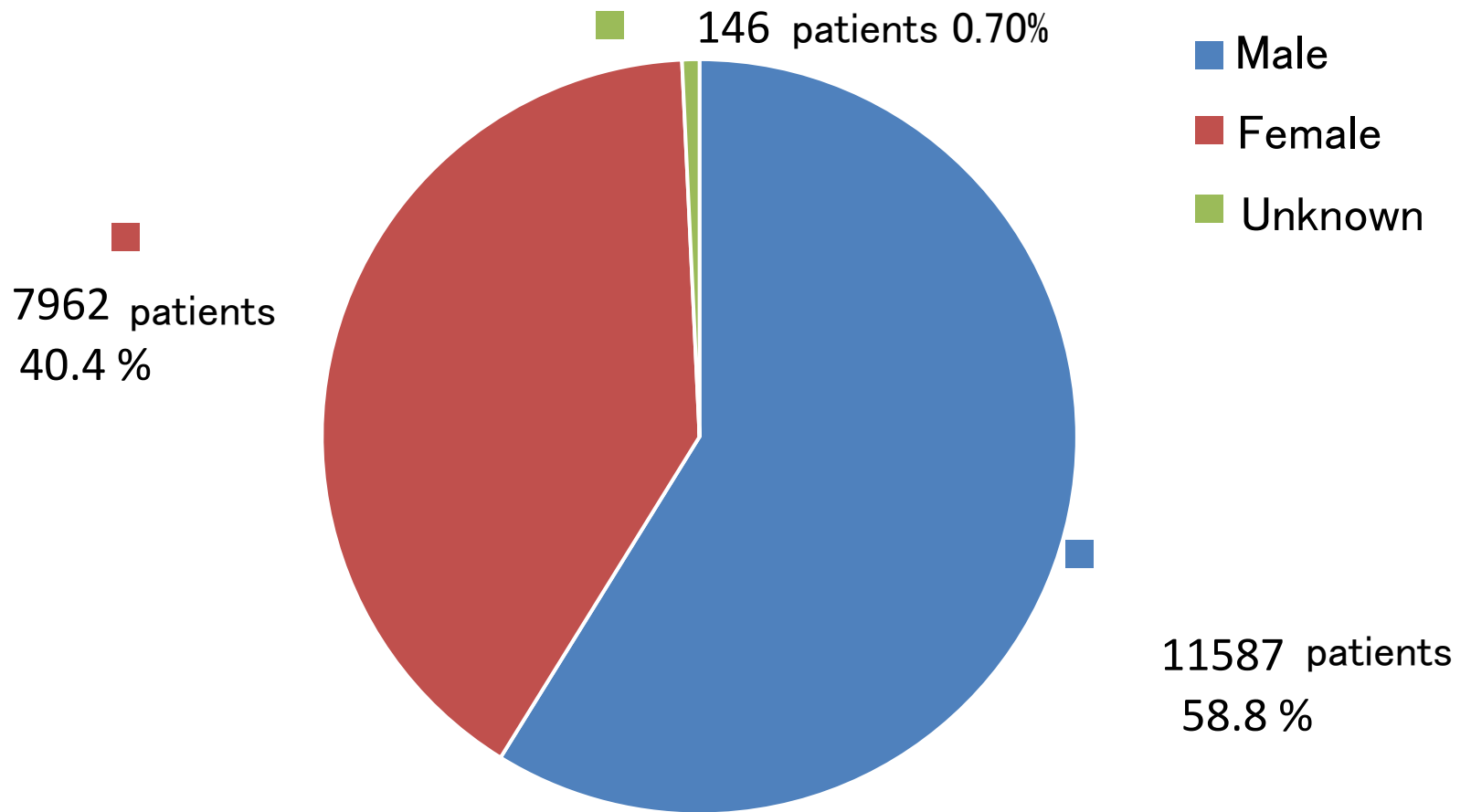


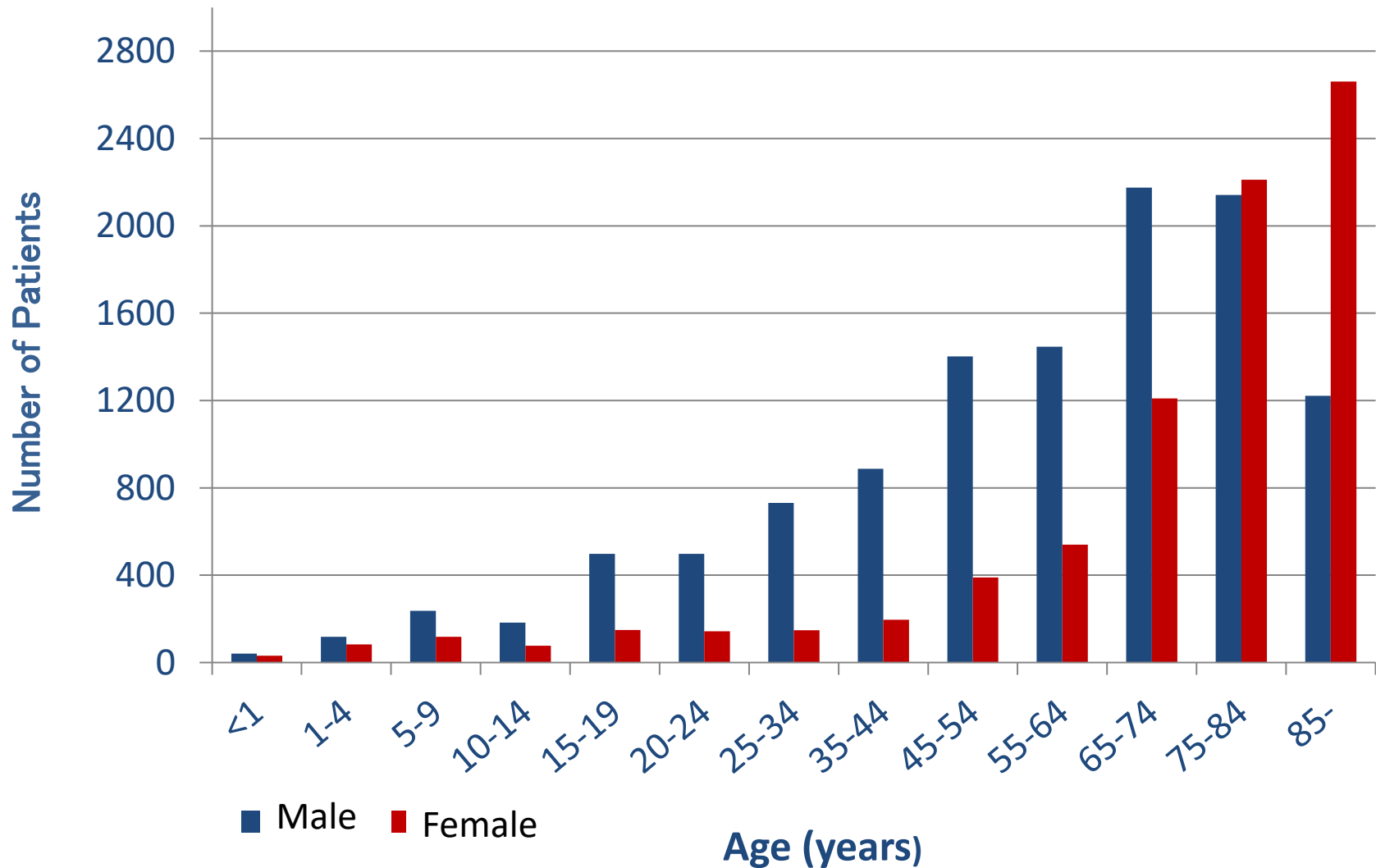
Figure
32**Unintentional by age and gender**

Table
32**Unintentional by age and gender**

Age	Male	Female	total
< 1	41	31	72
1- 4	117	83	200
5- 9	237	117	354
10-14	182	77	259
15-19	498	149	647
20-24	498	143	641
25-34	731	148	879
35-44	887	196	1083
45-54	1402	389	1791
55-64	1446	540	1986
65-74	2175	1210	3385
75-84	2142	2211	4353
85-	1222	2661	3883
unknown	9	7	16
total	11587	7692	19549

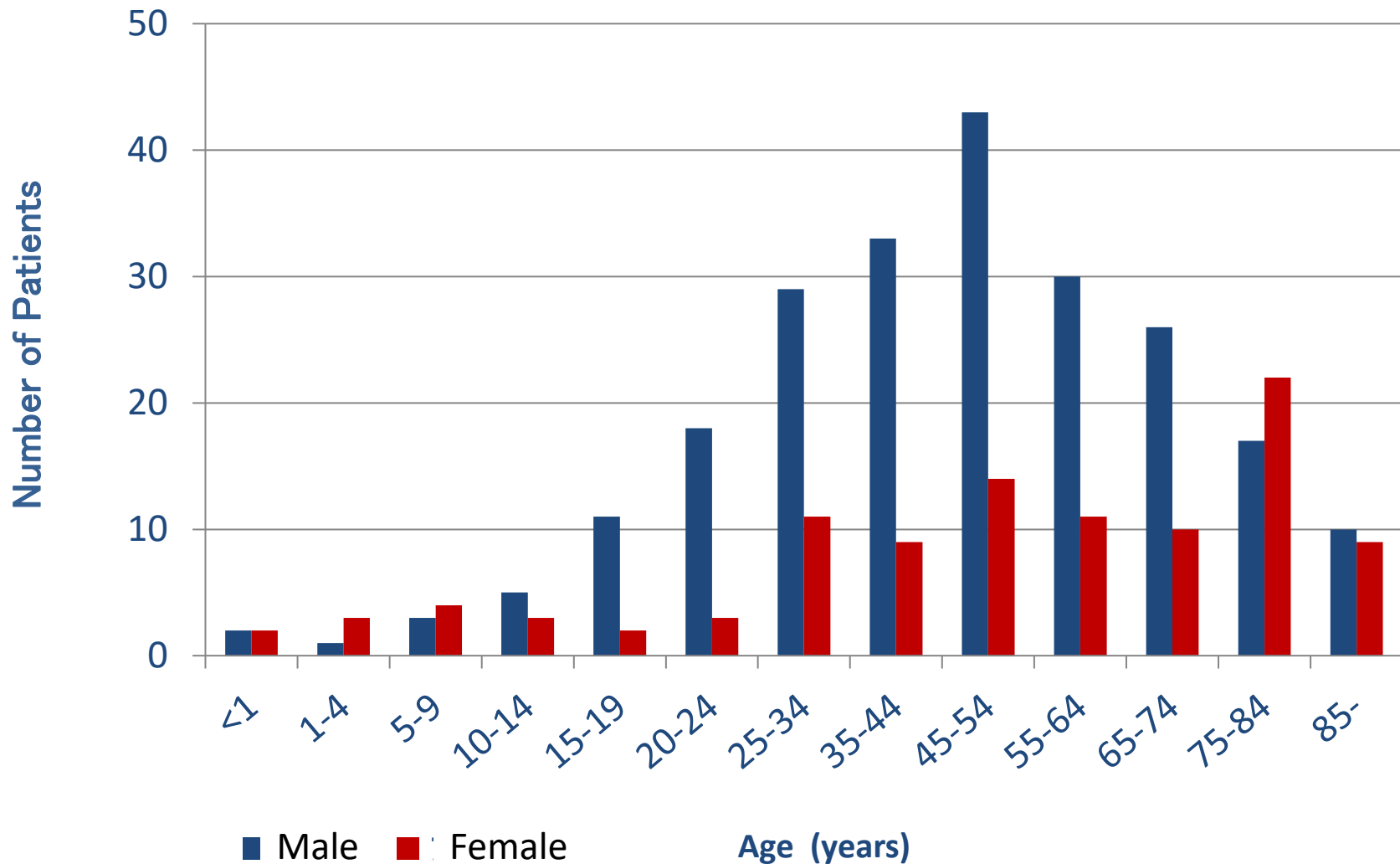
Figure
33**Assault by age and gender**

Table
33**Assault by age and gender**

Age	Male	Female	total
< 1	2	2	4
1- 4	1	3	4
5- 9	3	4	7
10-14	5	3	8
15-19	11	2	13
20-24	18	3	21
25-34	29	11	40
35-44	33	9	42
45-54	43	14	57
55-64	30	11	41
65-74	26	10	36
75-84	17	22	39
85-	10	9	19
total	228	103	331

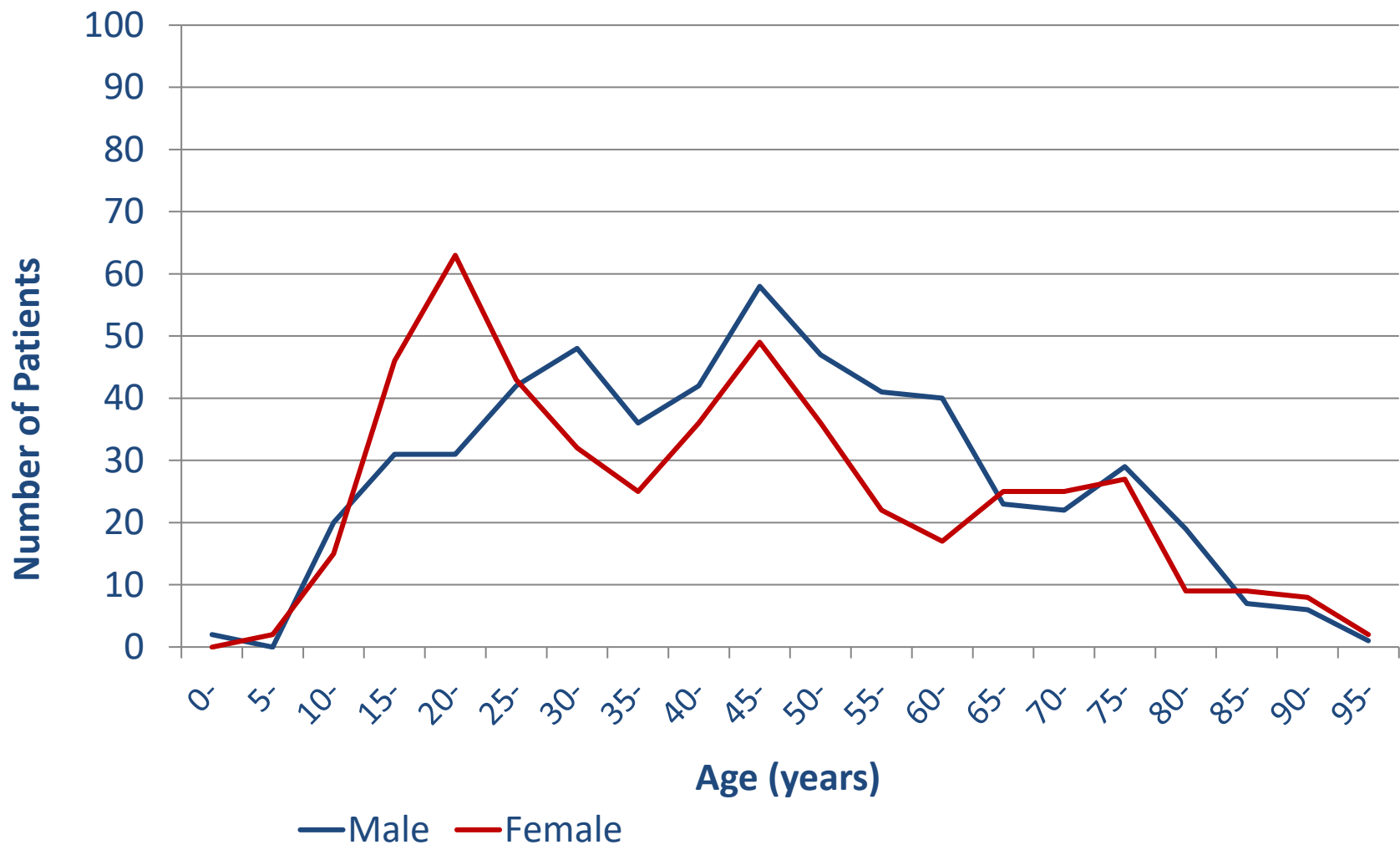
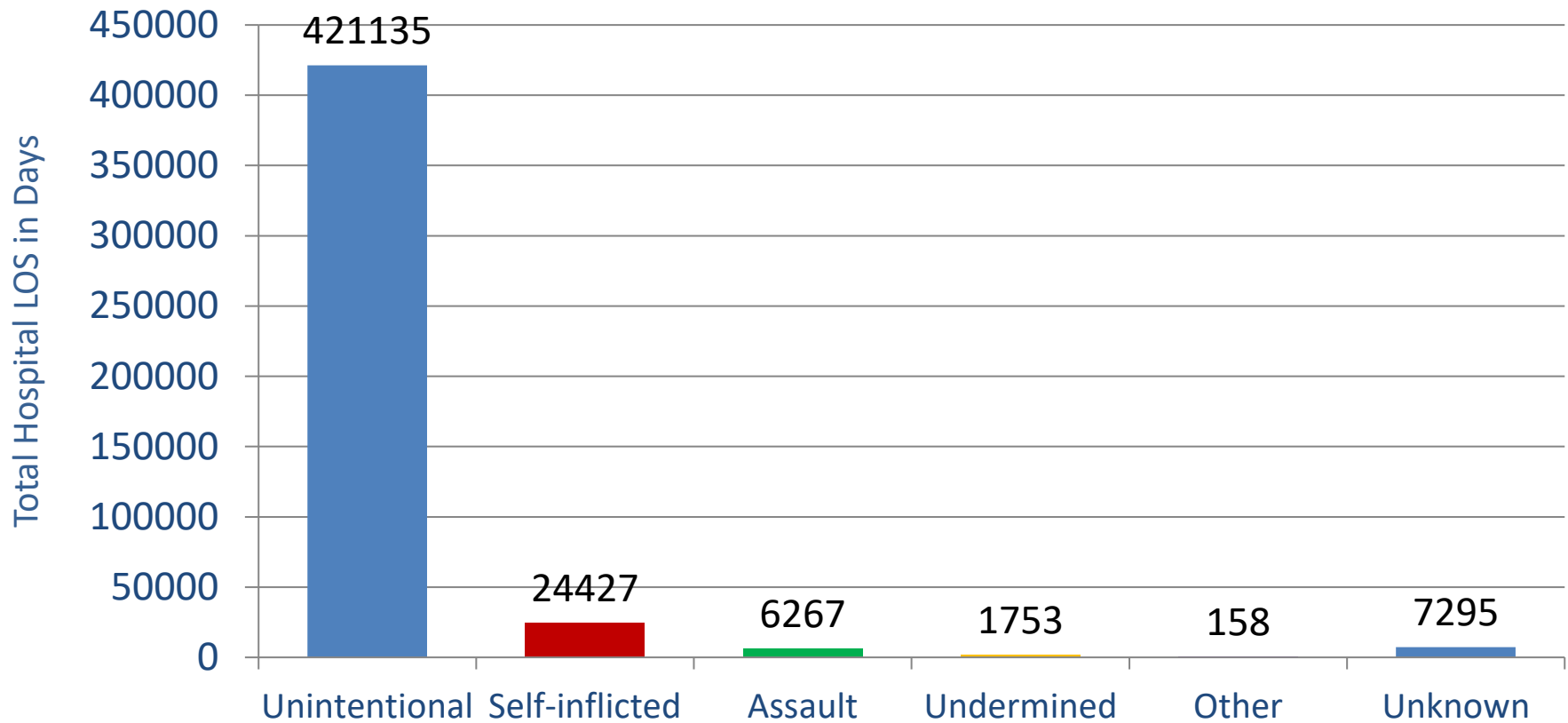
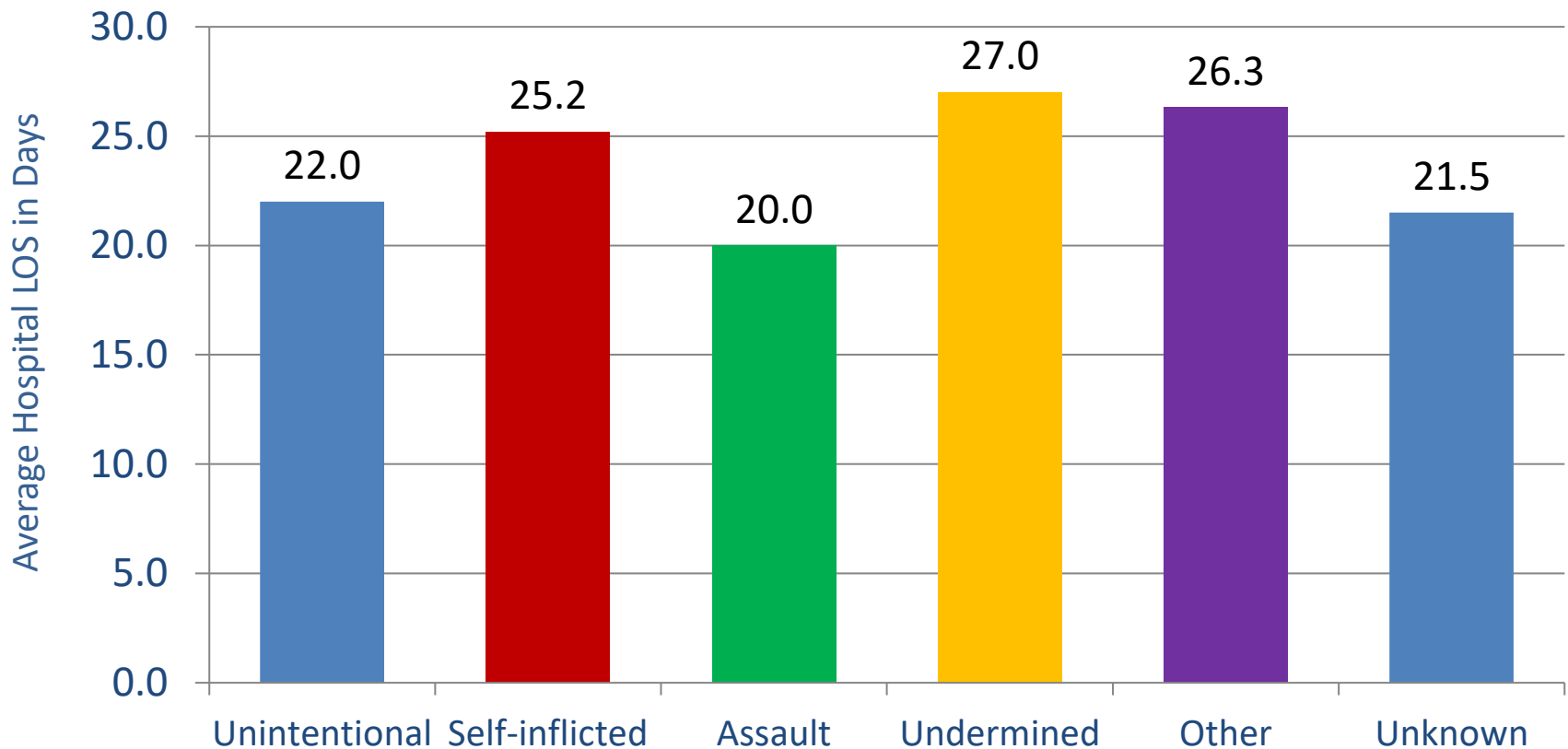
Figure
34**Self-inflicted by age and gender**

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-	Unkno wn	Total
Female	0	2	15	46	63	43	32	25	36	49	36	22	17	25	25	27	9	9	8	2	6	491
Male	2	0	20	31	31	42	48	36	42	58	47	41	40	23	22	29	19	7	6	1	1	546
Total	37	29	168	505	770	808	684	806	841	825	707	591	530	592	512	396	319	176	69	17	42	1037

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.

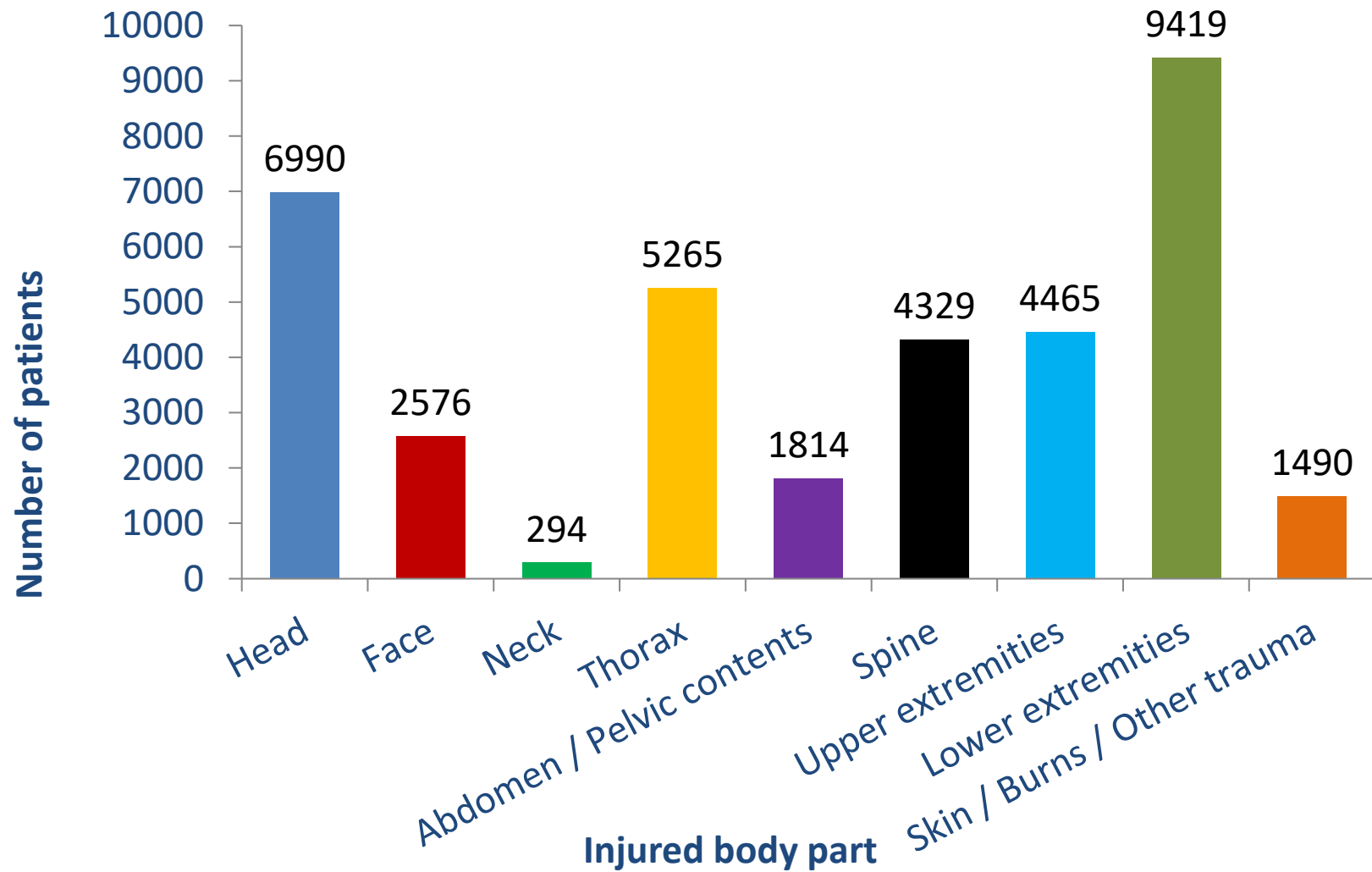
Figure
36**Number of patients with injured body parts based on AIS**

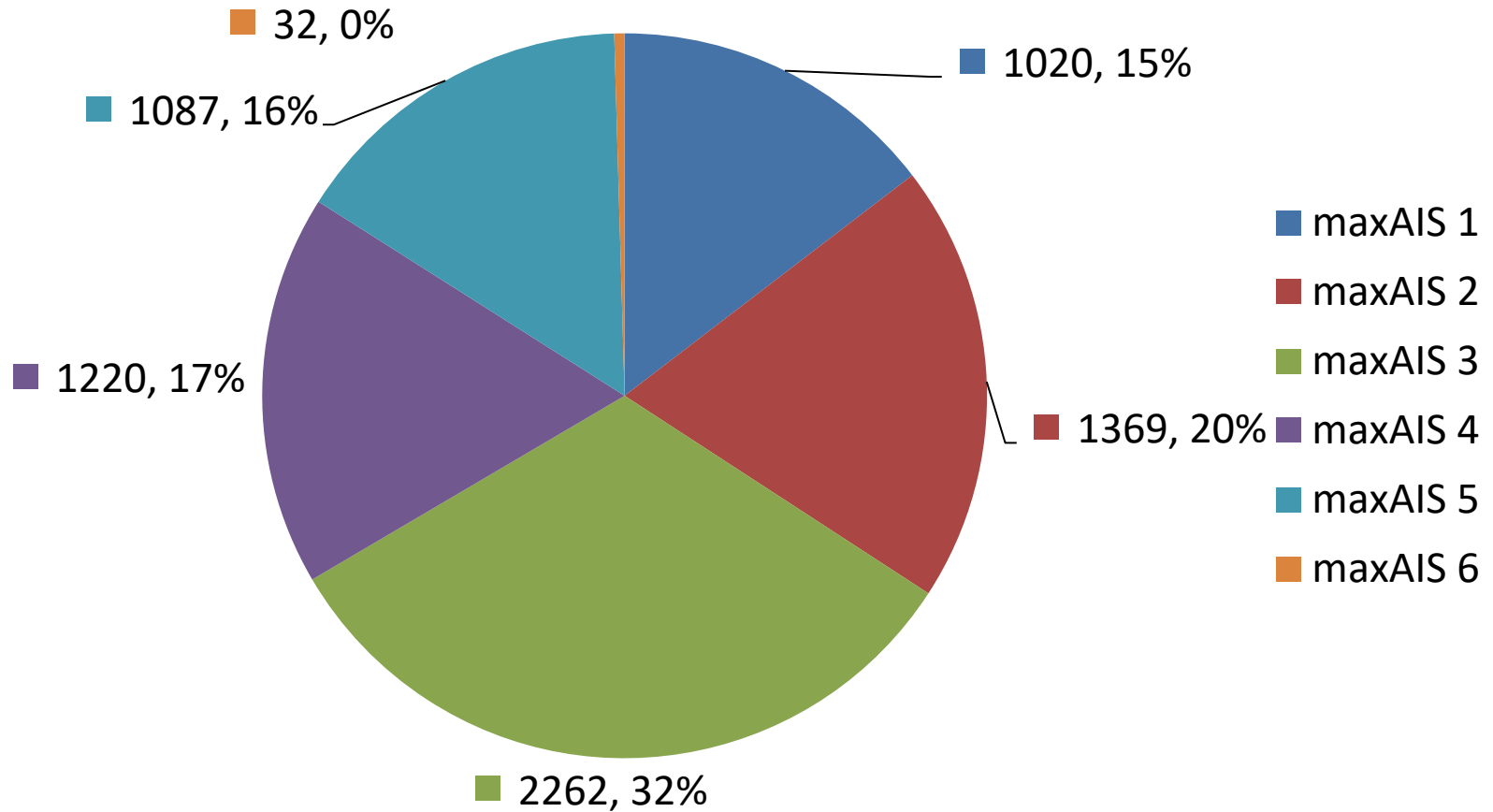
Figure
37A**Head injury and max AIS score**

Figure
37B

Facial injury and max AIS score

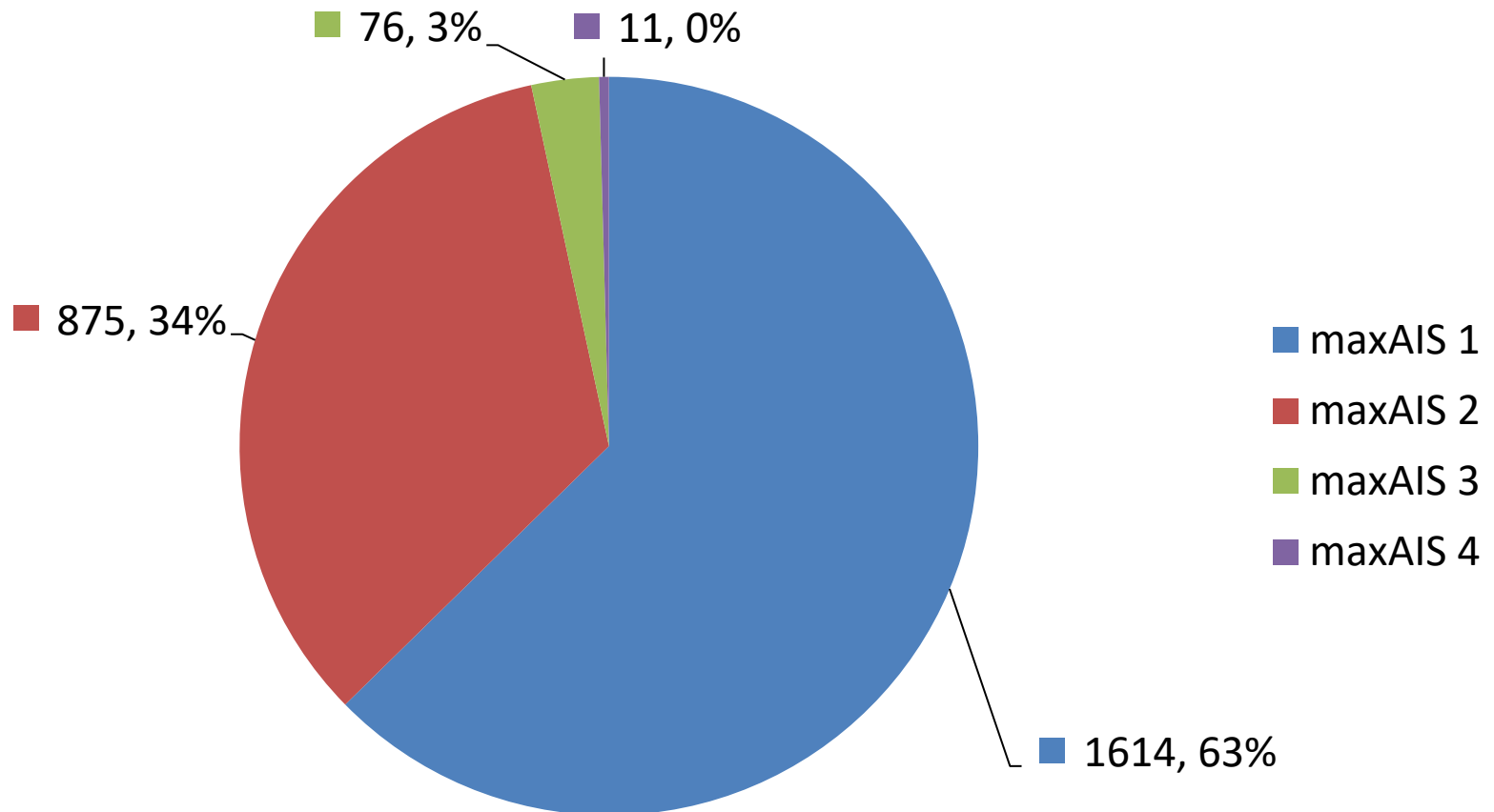


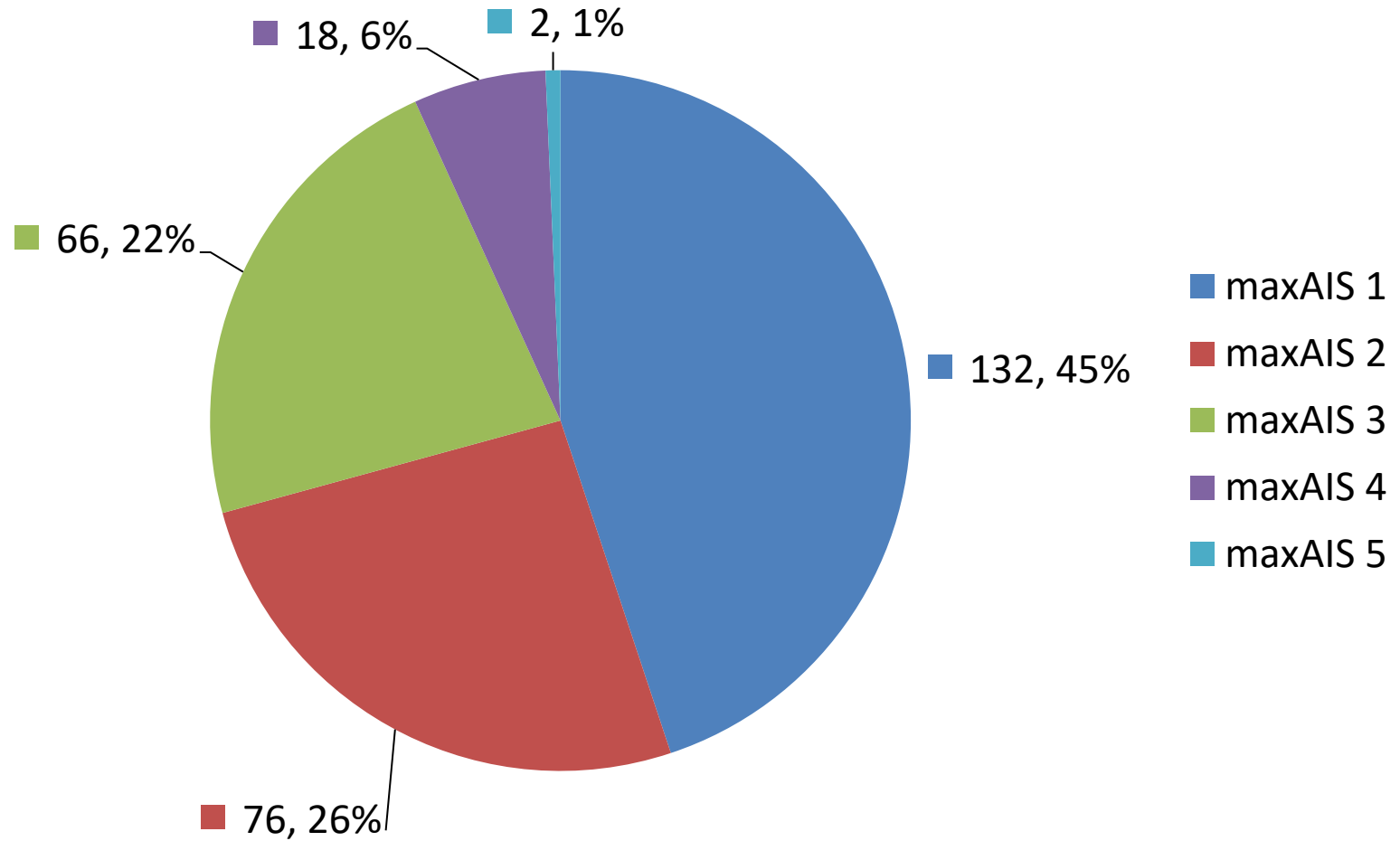
Figure
37C**Neck injury and max AIS score**

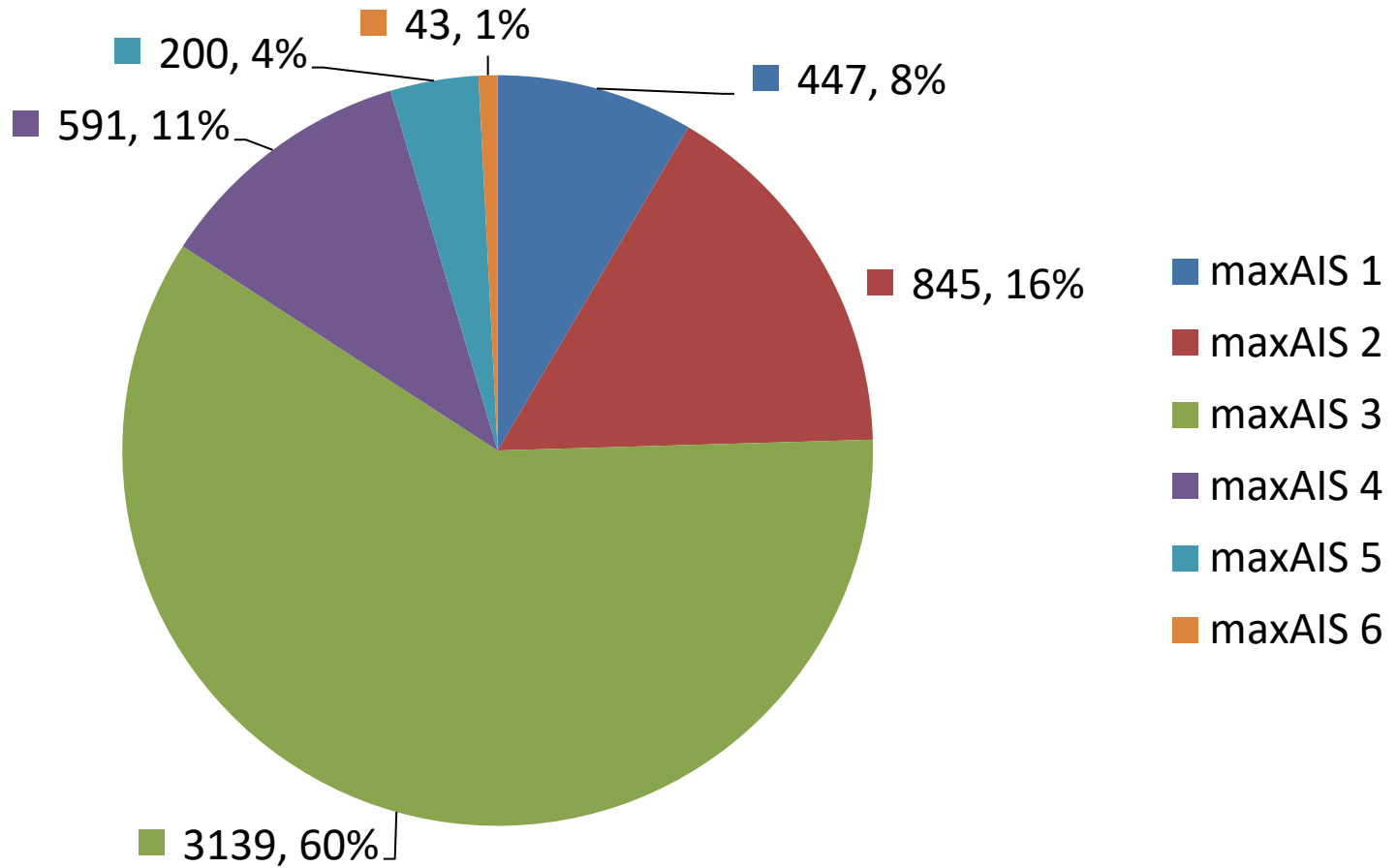
Figure
37D**Thoracic injury and max AIS score**

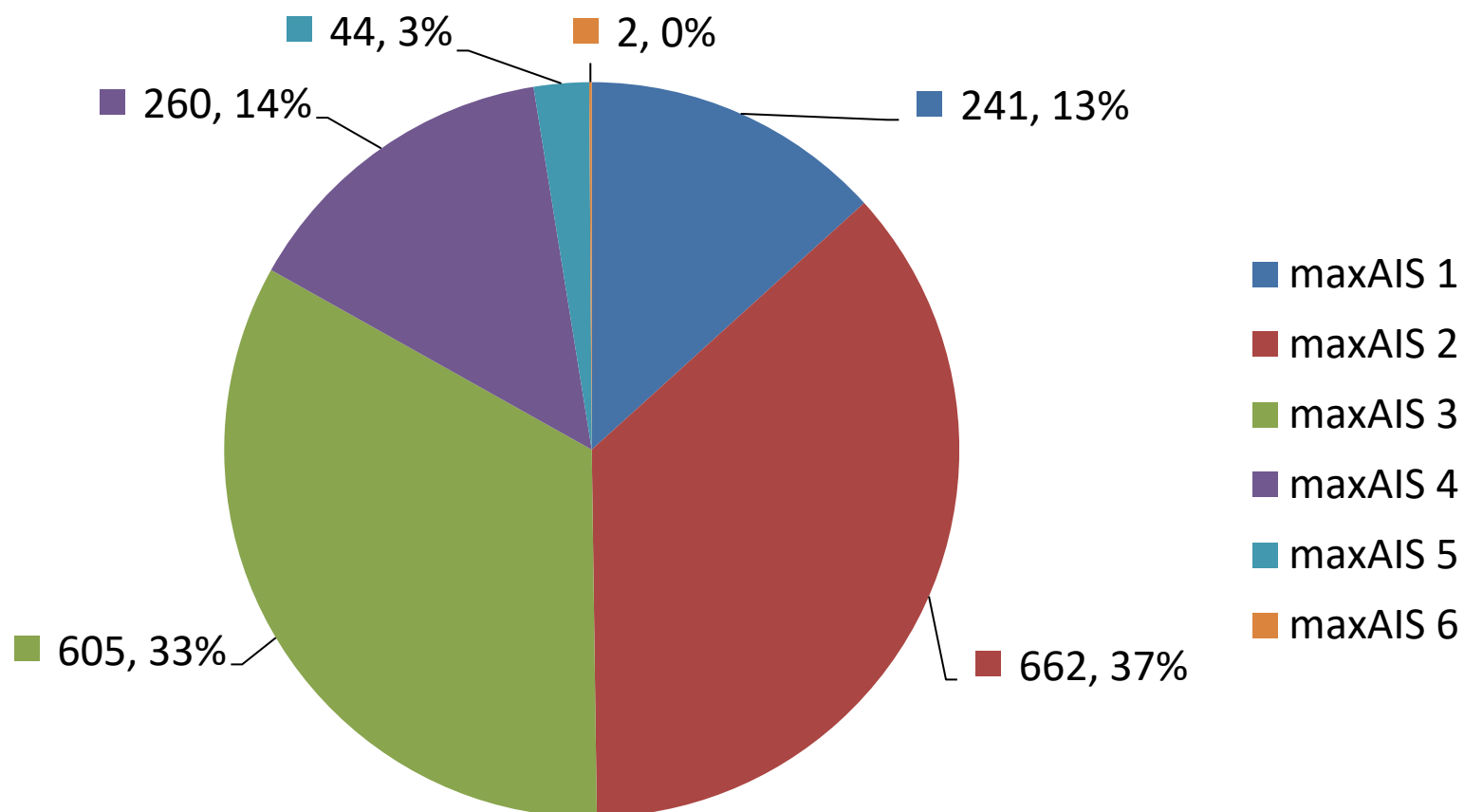
Figure
37E**Injury of abdomen/pelvic contents and max AIS score**

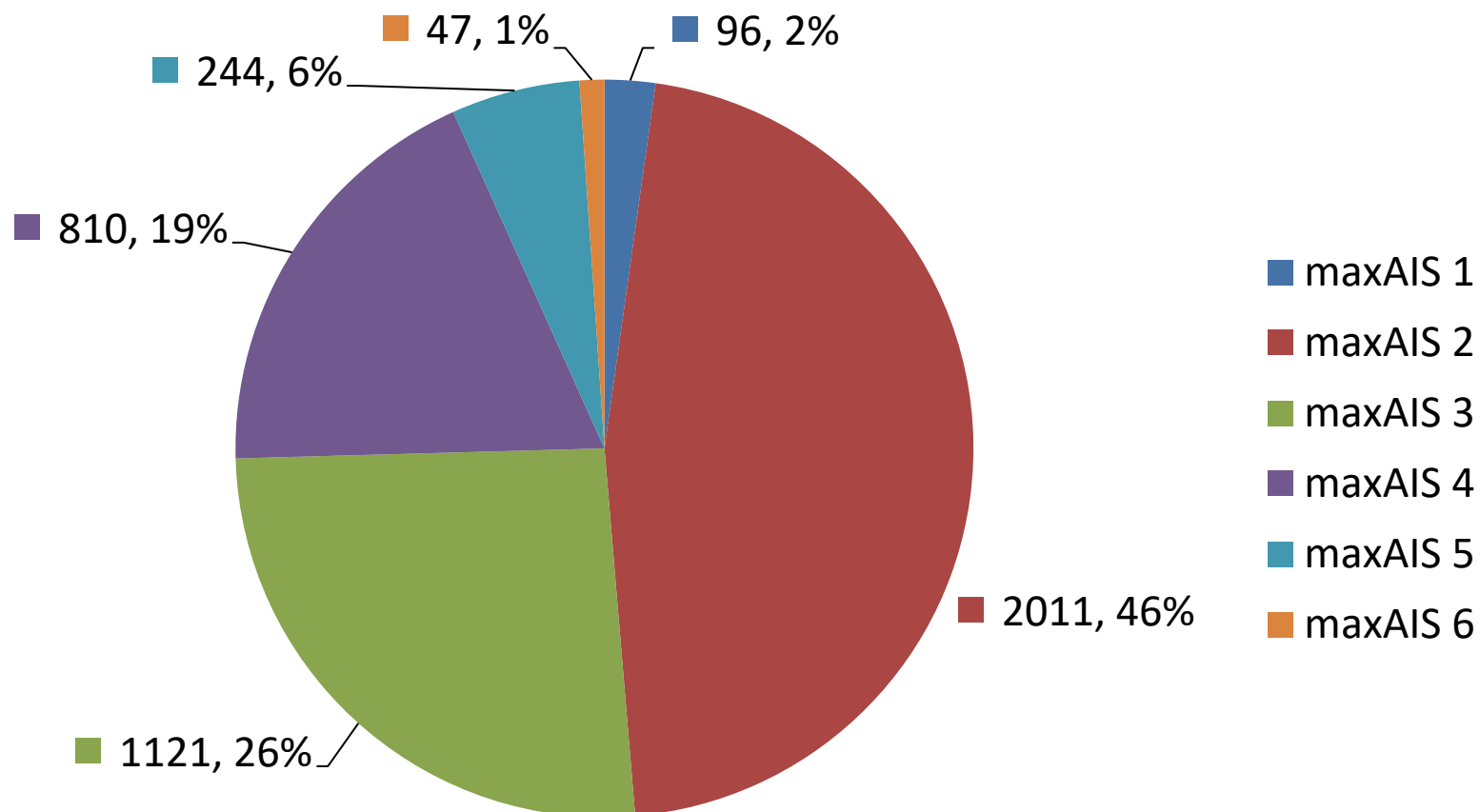
Figure
37F**Spinal injury and max AIS score**

Figure
37G

Injury of upper extremities and max AIS score

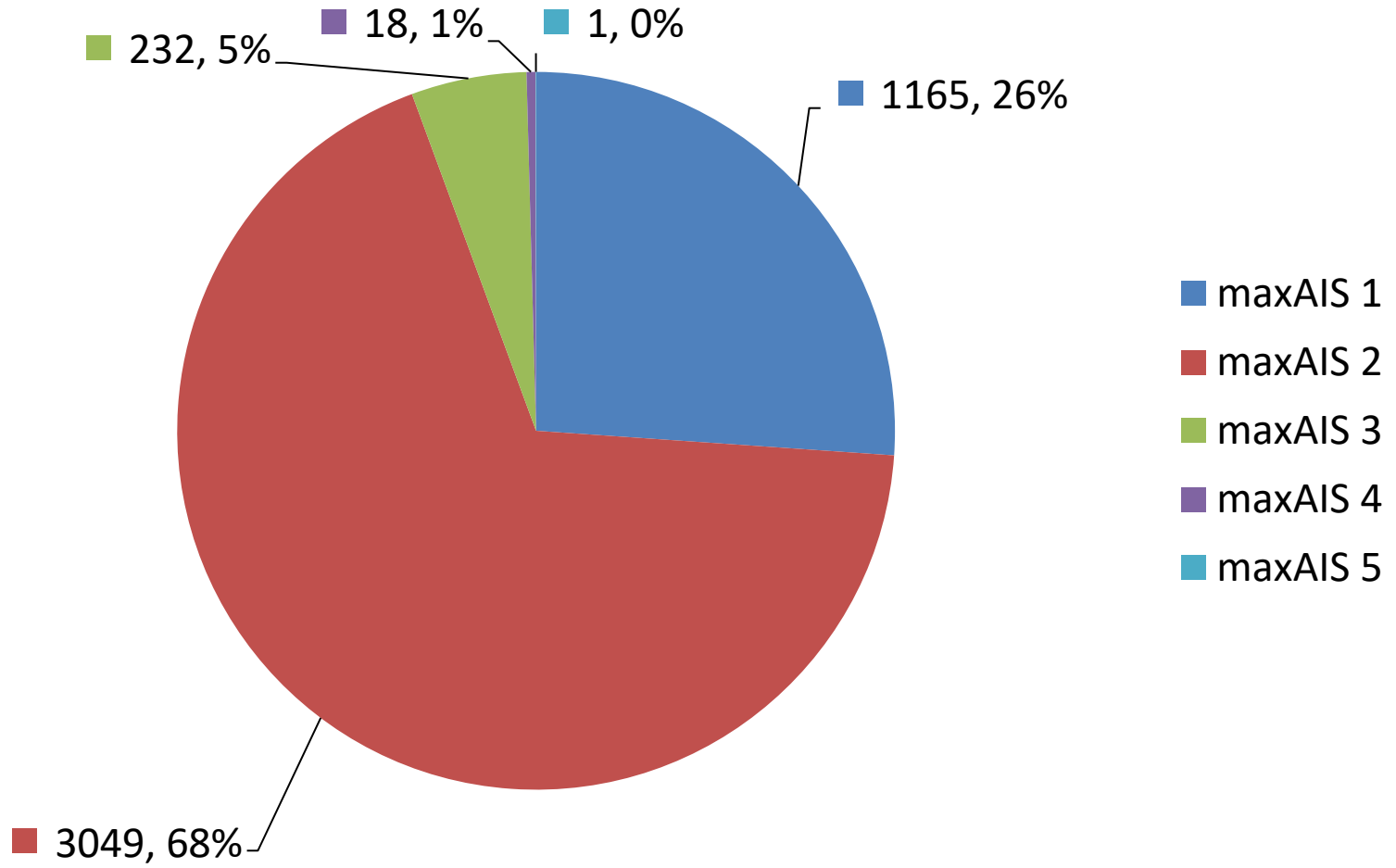


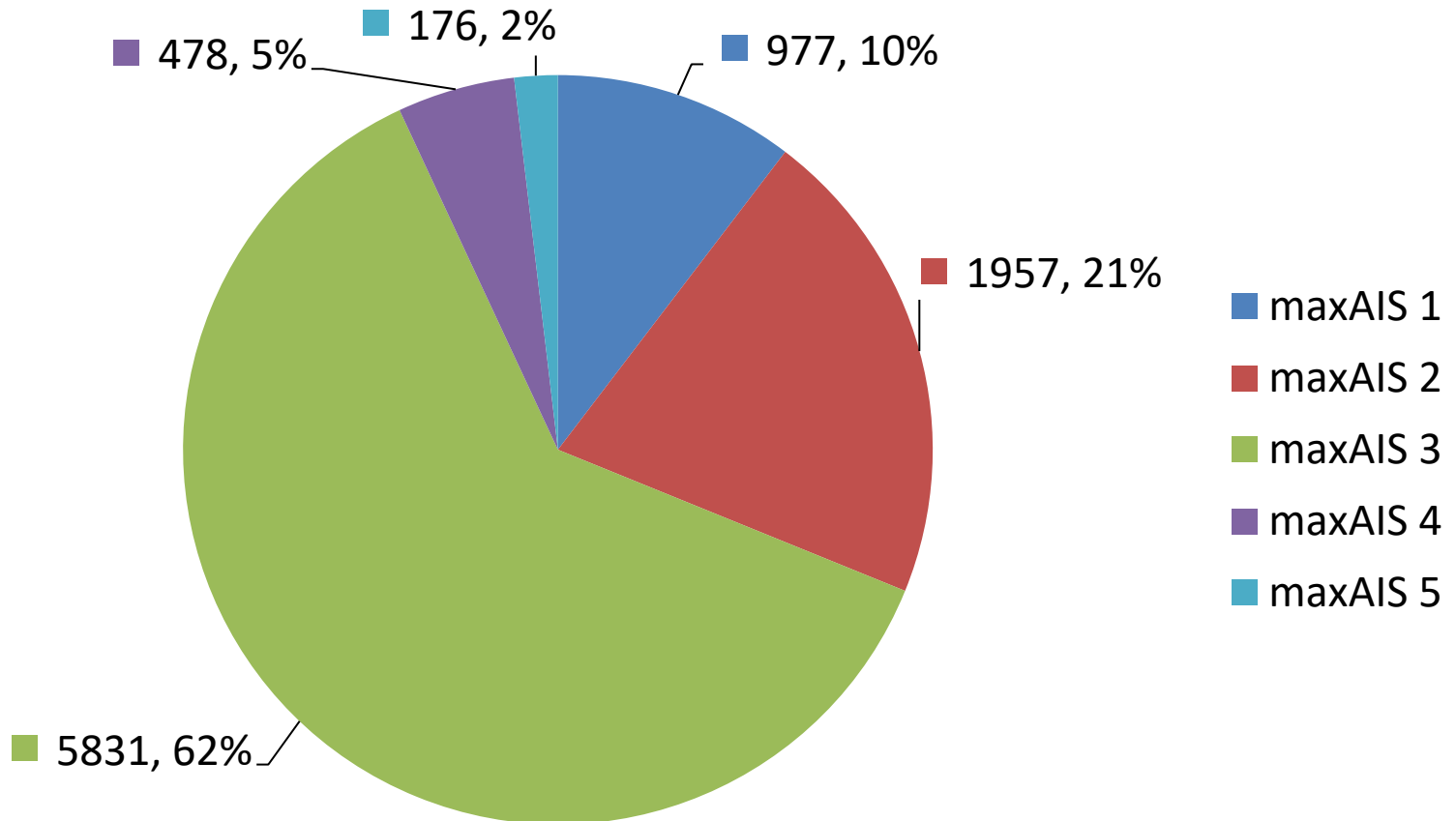
Figure
37H**Injury of lower extremities and max AIS score**

Figure
37I

Skin/burns/other trauma and max AIS score

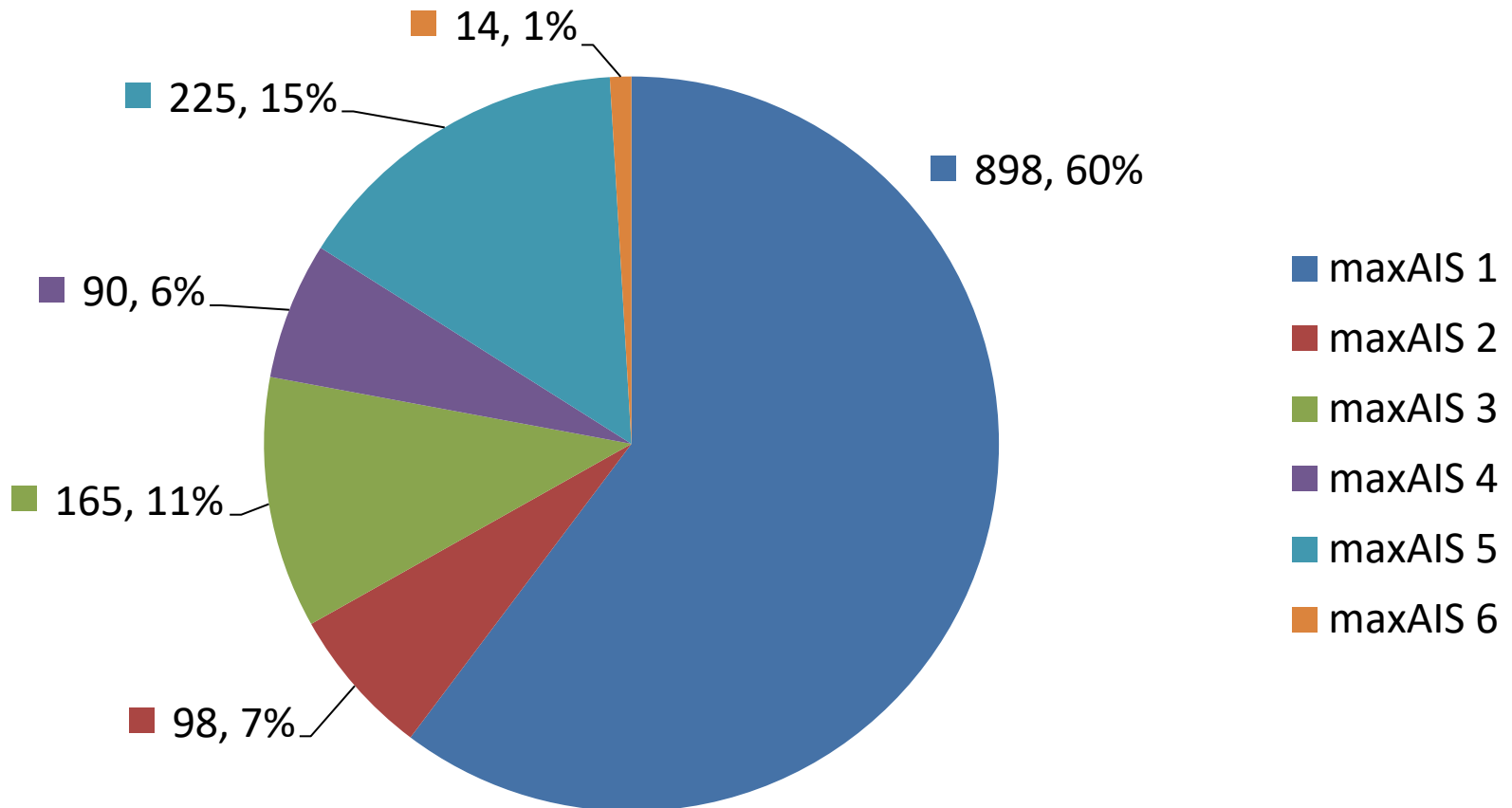
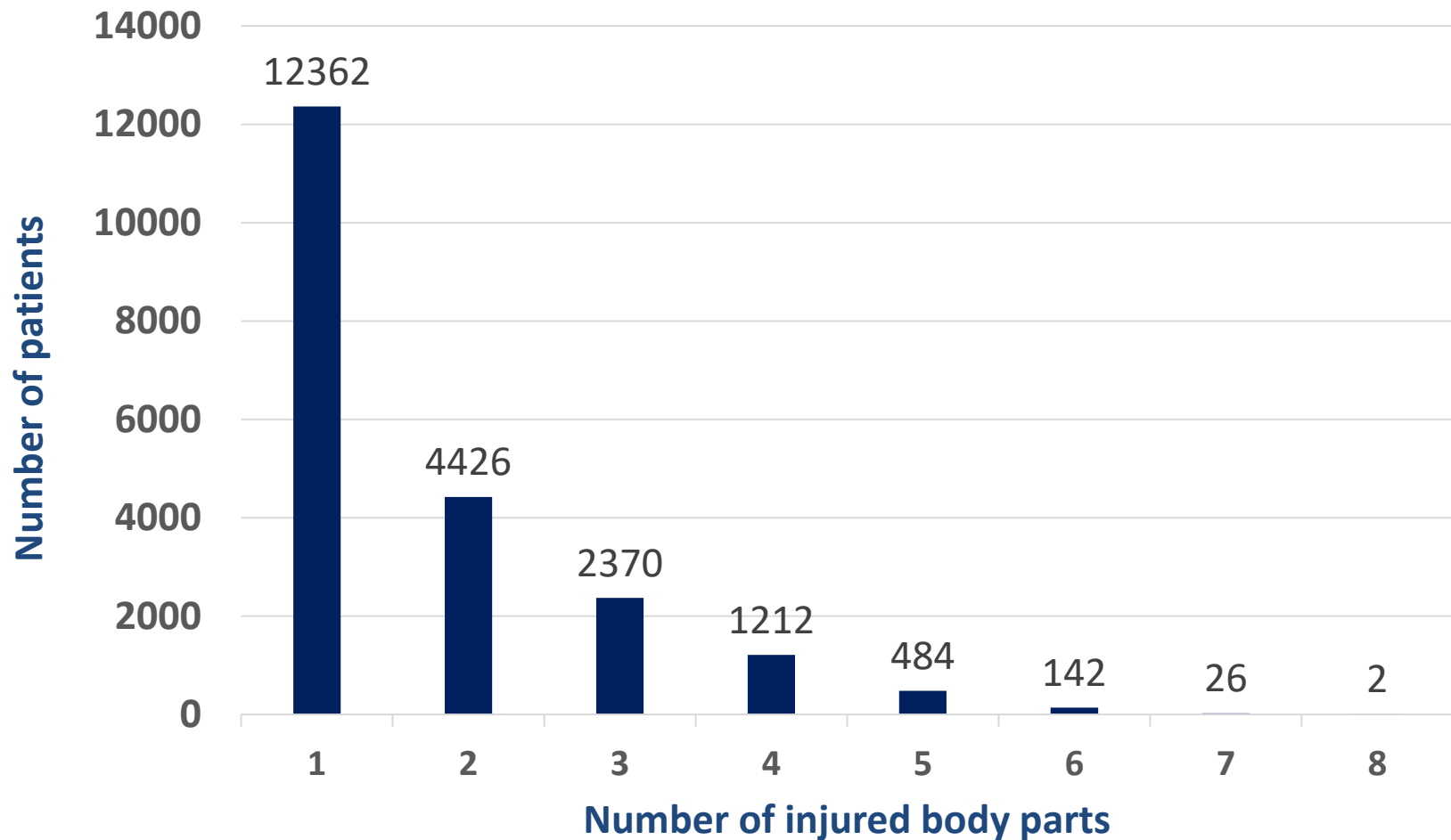


Figure
38**Number of patients and injured body parts based on AIS**

January, 2021

**JAPAN TRAUMA DATA BANK
REPORT 2020 (2019.1-2019.12)**



The Japanese Association for Acute Medicine

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Chairman: Naoto Morimura, MD



The Japanese Association for the Surgery of Trauma

Trustee: Daizoh Saitoh, MD

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