

# Japan Trauma Data Bank Report 2017 (2012-2016)

# 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)







### Names of All Hospitals Submitting Data to the JTDB. (N=264, Part 1)

Teine Keijinkai Hospital Hokkaido University Hospital **Hokuto Hospital** Hokkaido Medical Center Sapporo City General Hospital Nikko Memorial Hospital Sapporo Medical University Hospital Asahikawa Red Cross Hospital Sapporo Tokushukai Hospital Hirosaki University School of Medicine & Hospital **Aomori Prefectural Central Hospital** Hachinohe City 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 Fukushima Medical University Hospital **Ohta Nishinouchi Hospital** Aizu Central Hospital Niigata City General Hospital Niigata University Medical & Dental Hospital Niigata Prefectural Shibata Hospital Ibaraki Seinan Medical Hospital **Mito Medical Center** University of Tsukuba Hospital Tsukuba Medical Center 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 Saitama Medical University International Medical Center Saitama Medical University Medical Center Kuki General Hospital Kawaguchi Municipal Medical Center

Dokkyo Medical University Koshigaya Hospital National Defense Medical College Hospital Fukaya Red Cross Hospital Funabashi Municipal Medical Center Juntendo University Urayasu Hospital Asahi General Hospital Nippon Medical School Chiba Hokusoh Hospital **Chiba University Hospital Chiba Emergency Medical Center** Matsudo City Hospital Kameda General Hospital Kimitsu Chuou Hospital Jikei University Kashiwa Hospital Tokyo Women's Medical University Yachiyo Medical Center Tokyobay UrayasuIchikawa Medical Center Chiba Rosai Hospital Showa University Hospital **Tokyo Medical Center** Department of Social Medicine, School of Medicine, Nihon Umversity National Disaster Medical Center **Tokyo Metropolitan Hiroo Hospital Musashino Red Cross Hospital** Nippon Medical School Tama Nagayama Hospital **Tokyo Medical University Hospital** Tokyo Medical University Hachioji Medical Center **Keio University Hospital** St. Luke's International Hospital **Teikyo University Hospital Toho University Omori Medical Center** National Center for Global Health and Medicine University of Tokyo Hospital Showa General Hospital **Tokyo Women's Medical University Medical Center East** Nippon Medical School Hospital **Kvorin 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 Saiseikai Central Hospital National Center for Child Health and Development Japanese Red Cross Medical Center Shirahigebashi Hospital X 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 Shonan Kamakura General Hospital Yokohama Municipal Citizens Hospital **Odawara Municipal Hospital** Yokosuka Kyosai Hospital Hiratsuka City Hospital Fujisawa City Hospital Kanto Rosai Hospital Yokohama 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 Yokohama Sakae Kyosai Hospital Ebina General Hospital Shin-Yurigaoka General Hospital Yamanashi Prefectural Central Hospital **Aizawa Hospital** Suwa Red Cross Hospital **Iida Municipal Hospital** Ina Central Hospital Saku Central Hospital Advanced Care Center Shinshu University Hospital Nagano Red Cross Hospital Nagano Municipal Hospital Gero City Kanayama Hospital Chuno Kosei Hospital **Gifu University Hospital** Takayama Red Cross Hospital **Ogaki Municipal Hospital** Numazu City Hospital Shizuoka Red Cross Hospital Shizuoka Saiseikai General Hospital Juntendo University Shizuoka Hospital Seirei Mikatahara General Hospital Shizuoka General Hospital Shizuoka Tokushukai Hospital **Chutoen General Medical Center Fujieda Municipal General Hospital** 

The JTDB report 2017 was published using cases of only 61 hospitals which accepted trauma patients' registry in each ethical committee before Sep. 1<sup>st</sup>, 2017.





### Names of All Hospitals Submitting Data to the JTDB. (N=264, Part 2)

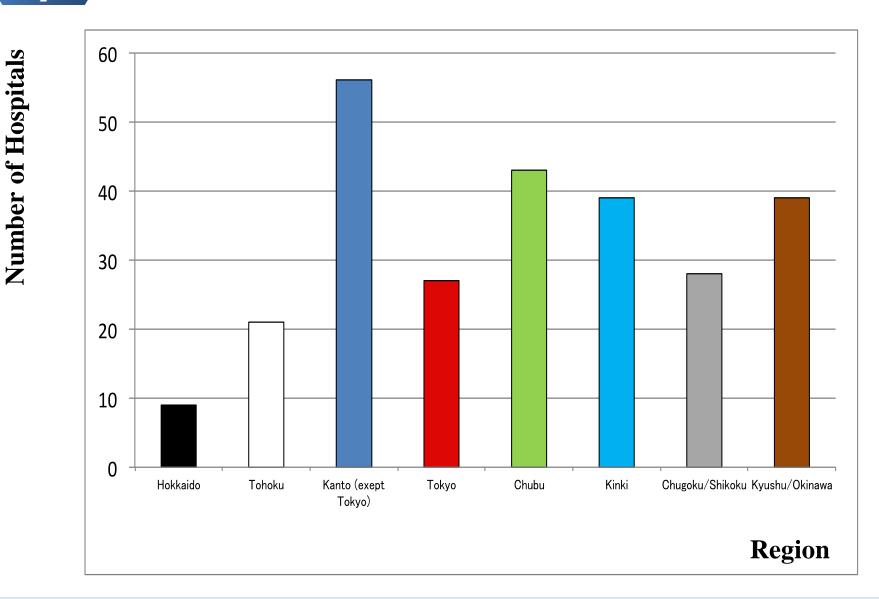
Toyohashi Municipal Hospital Daiyukai General Hospital Fujita Health University Hospital Nagoya City University Hospital Handa City Hospital Aichi Medical University Hospital Nagoya Ekisaikai Hospital Social Insurance Chukyo Hospital Okazaki City Hospital Kasugai Municipal Hospital Komaki City Hospital **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 **Kvoto Medical Center** Rakuwakai Otowa Hospital **Fukuchiyama City Hospital** Kvoto Daiichi Red Cross Hospital Uji-Tokushukai Medical Center **Kyoto Prefectural University of Medicine** Osaka Prefectural Senshu Critical Medical Care Center Saiseikai Senri Hospital **Osaka General Medical Center** Hanwa Memorial Hospital **Osaka Medical Center** Nakakawachi 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 Nara Hospital Nara Medical University Hospital Wakayama Medical University Hospital **Tottori University Hospital** Shimane University 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 Shinyukuhashi Hospital 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 **Osumikanova Hospital** Kagoshima City Hospital **Yonemori Hospital Okinawa Prefectural Chubu Hospital Okinawa Prefectural Hokubu Hospital Rvukvu University Hospital Urasoe General Hospital** Nakagami Hospital **Tomishiro Central Hospital** Okinawa Prefectural Nanbu Medical Center / Nanbu Child Medical Center

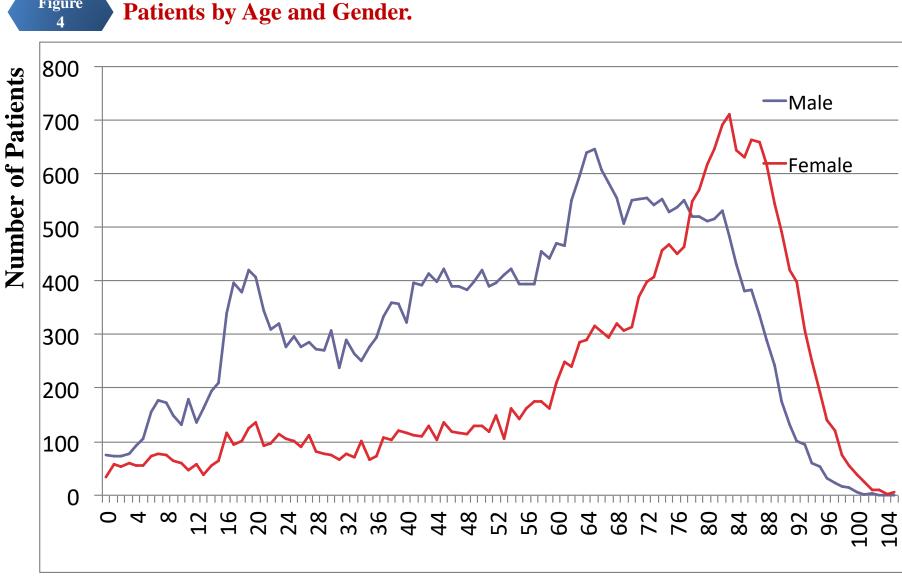


# **Figure** 2 Number of Hospitals Submitting to the JTDB by Region.





Figure



Age (years)

## 🛢 JT DB

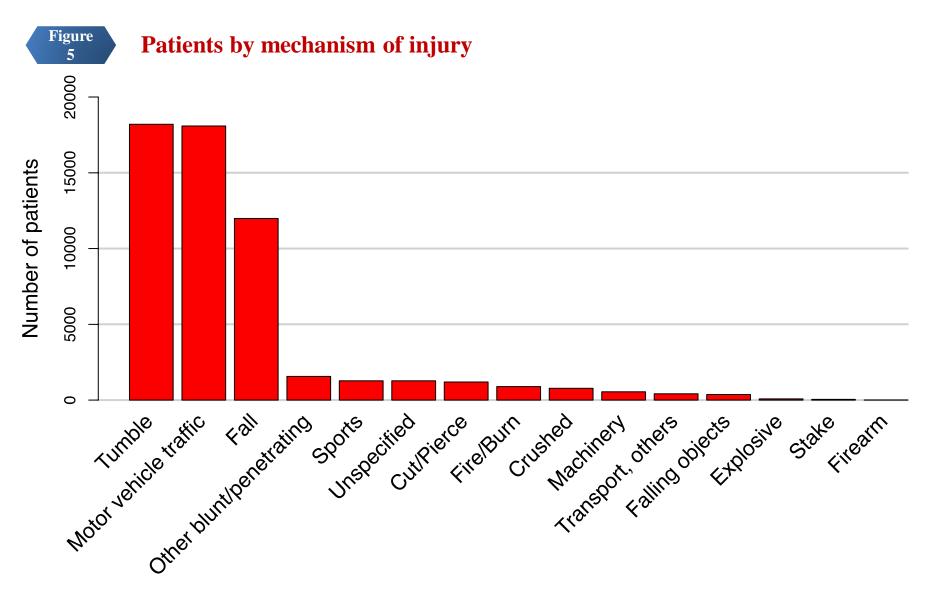


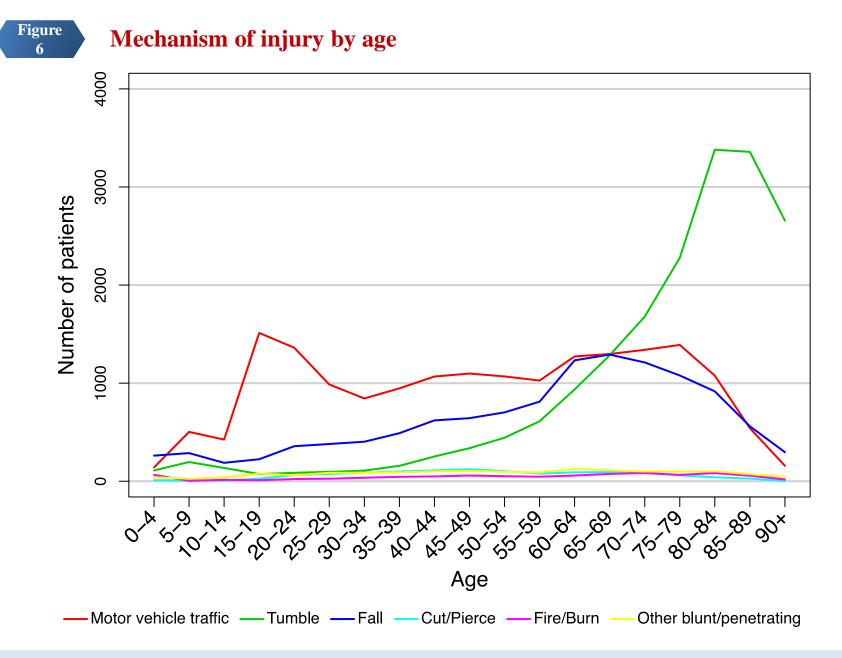


Figure 5

## Patients by mechanism of injury

Mechanism of injury	Patients (n)	Patients by mechanism of injury (%)
Tumble	18199	32.1
Motor vehicle traffic	18089	31.9
Fall	11985	21.1
Unspecified	1561	2.8
Sports	1271	2.2
Others	1267	2.2
Cut/Pierce	1193	2.1
Fire/Burn	886	1.6
Crushed	773	1.4
Machinery	548	1.0
Transport, others	413	0.7
Falling objects	368	0.6
Explosive	75	0.1
Stake	41	0.1
Firearm	7	0.0





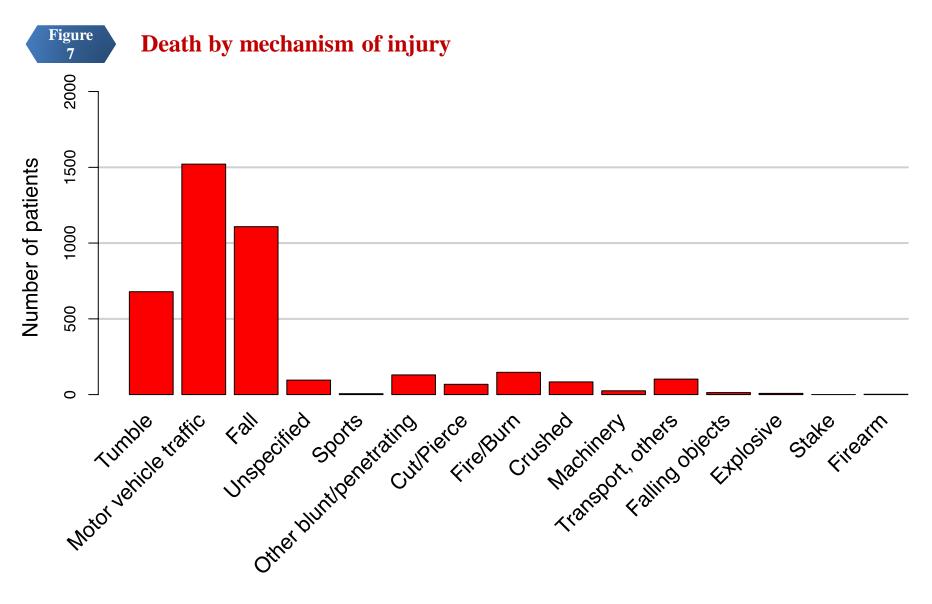
© Japan Trauma Care and Research 2017. All Rights Reserved Worldwide



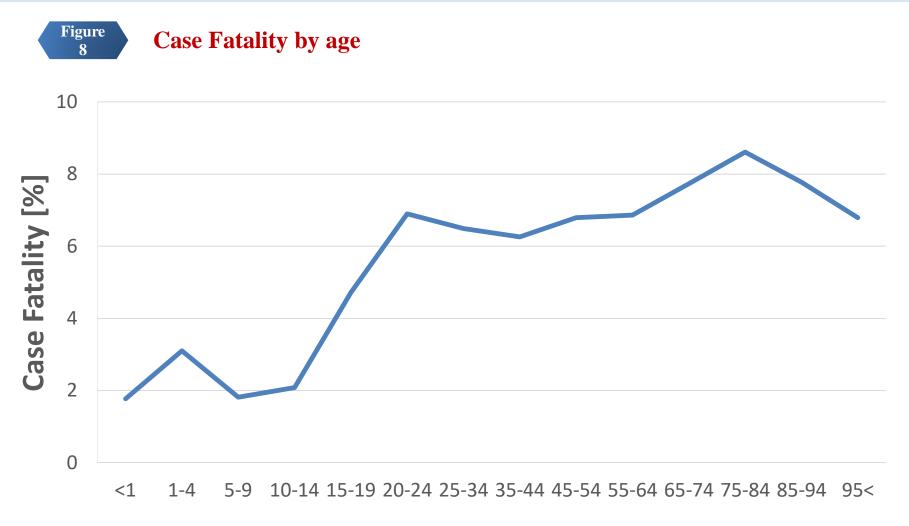
## Mechanism of injury by age

Range of age, yr	Motor vehicle traffic, n (%)	Tumble, n (%)	Fall, n (%)	Cut/Pierce, n (%)	Fire/Burn, n (%)	Others, n (%)
0-4	141 (0.8)	111 (0.6)	262 (2.2)	12 (1.0)	65 (7.3)	41 (2.6)
5-9	503 (2.8)	196 (1.1)	287 (2.4)	7 (0.6)	5 (0.6)	26 (1.7)
10-14	425 (2.3)	136 (0.7)	188 (1.6)	9 (0.8)	15 (1.7)	39 (2.5)
15-19	1513 (8.4)	74 (0.4)	225 (1.9)	26 (2.2)	11 (1.2)	78 (5.0)
20-24	1362 (7.5)	86 (0.5)	358 (3.0)	63 (5.3)	23 (2.6)	62 (4.0)
25-29	987 (5.5)	96 (0.5)	380 (3.2)	74 (6.2)	26 (2.9)	86 (5.5)
30-34	844 (4.7)	109 (0.6)	404 (3.4)	88 (7.4)	36 (4.1)	87 (5.6)
35-39	947 (5.2)	158 (0.9)	490 (4.1)	100 (8.4)	45 (5.1)	91 (5.8)
40-44	1068 (5.9)	252 (1.4)	621 (5.2)	111 (9.3)	49 (5.5)	100 (6.4)
45-49	1098 (6.1)	337 (1.9)	643 (5.4)	123 (10.3)	59 (6.7)	106 (6.8)
50-54	1069 (5.9)	444 (2.4)	702 (5.9)	103 (8.6)	51 (5.8)	97 (6.2)
55-59	1027 (5.7)	612 (3.4)	812 (6.8)	78 (6.5)	46 (5.2)	89 (5.7)
60-64	1273 (7.0)	936 (5.1)	1233 (10.3)	91 (7.6)	59 (6.7)	128 (8.2)
65-69	1297 (7.2)	1285 (7.1)	1291 (10.8)	93 (7.8)	75 (8.5)	113 (7.2)
70-74	1340 (7.4)	1679 (9.2)	1212 (10.1)	84 (7.0)	84 (9.5)	99 (6.3)
75-79	1390 (7.7)	2278 (12.5)	1079 (9.0)	61 (5.1)	66 (7.4)	99 (6.3)
80-84	1077 (6.0)	3380 (18.6)	917 (7.7)	40 (3.4)	83 (9.4)	101 (6.5)
85-89	541 (3.0)	3359 (18.5)	561 (4.7)	27 (2.3)	56 (6.3)	73 (4.7)
90+	158 (0.9)	2658 (14.6)	296 (2.5)	3 (0.3)	19 (2.1)	44 (2.8)
Unspecified	29 (0.2)	13 (0.1)	24 (0.2)	0 (0.0)	13 (1.5)	2 (0.1)
Total	18089 (100.0)	18199 (100.0)	11985 (100.0)	1193 (100.0)	886 (100.0)	1561 (100.0)





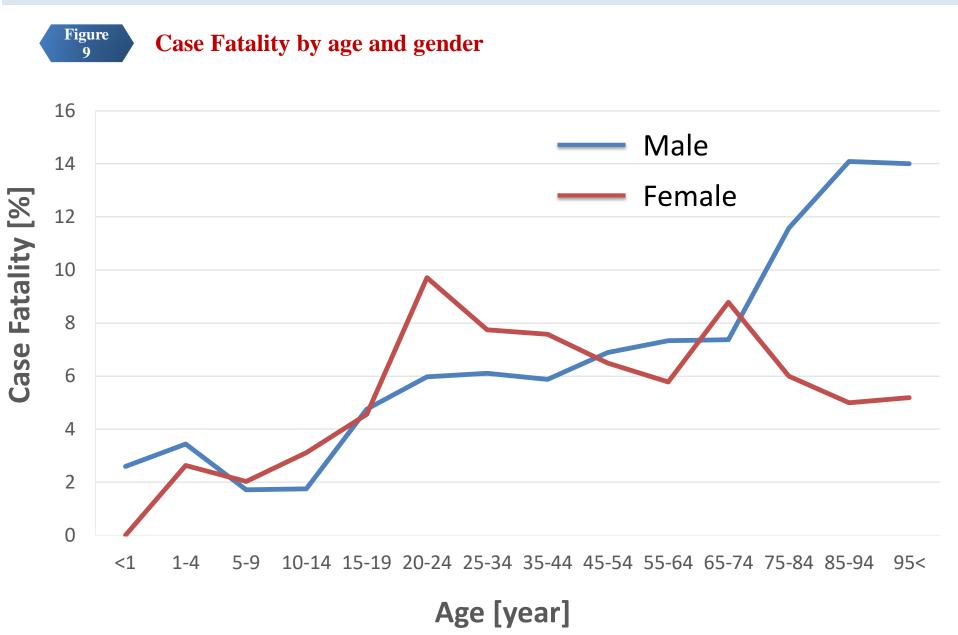




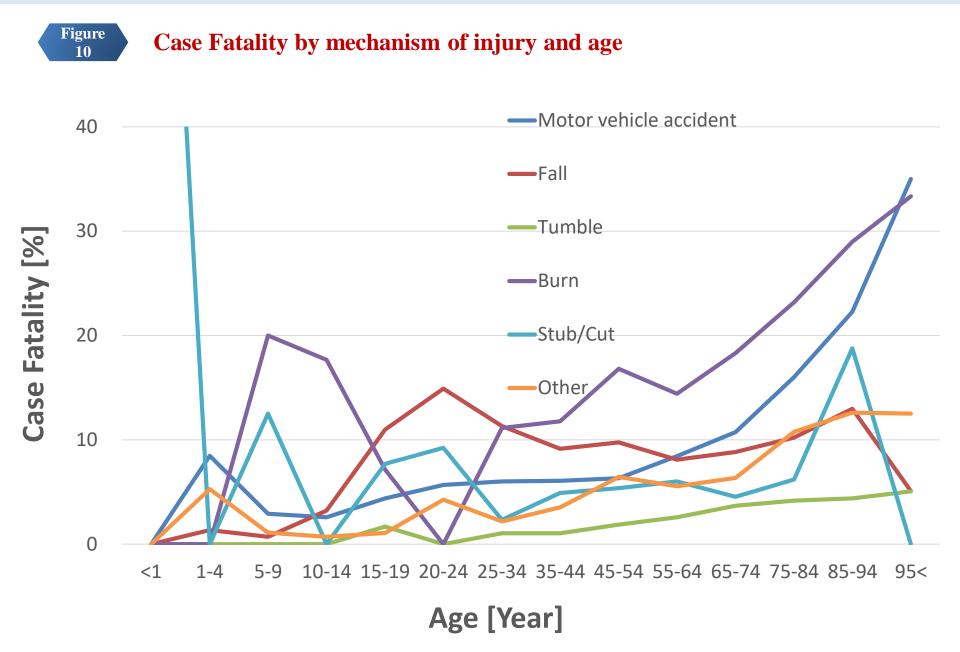
# Age [year]

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





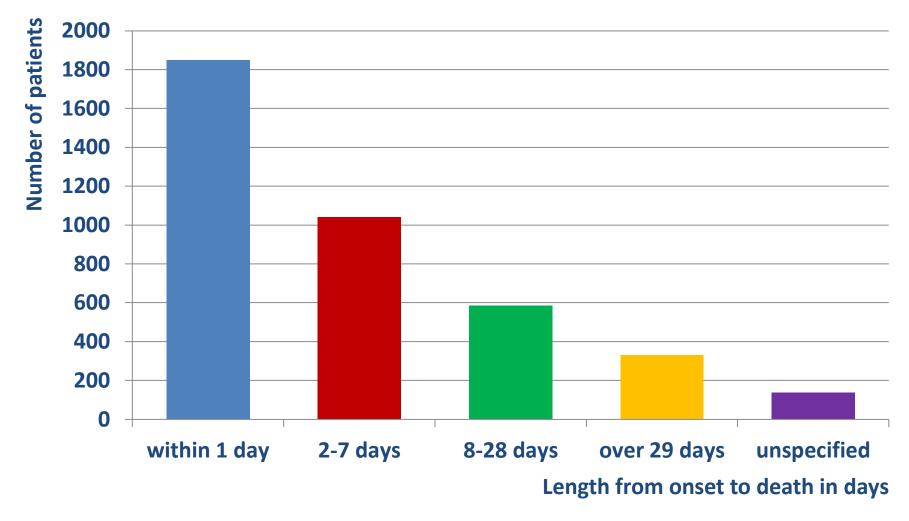






11A

#### Figure **Proportional distribution of length from onset to facility** n = 3,946

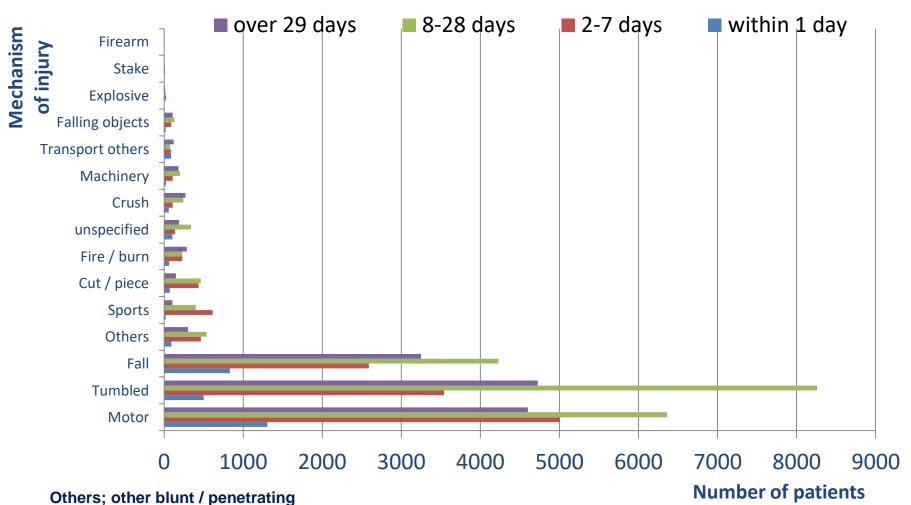


The category within 1 day after onset includes CPAOA patients.



Figure 11B

# Proportional distribution of length from onset to fatality, grouped by mechanism of injury. n = 52,815



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



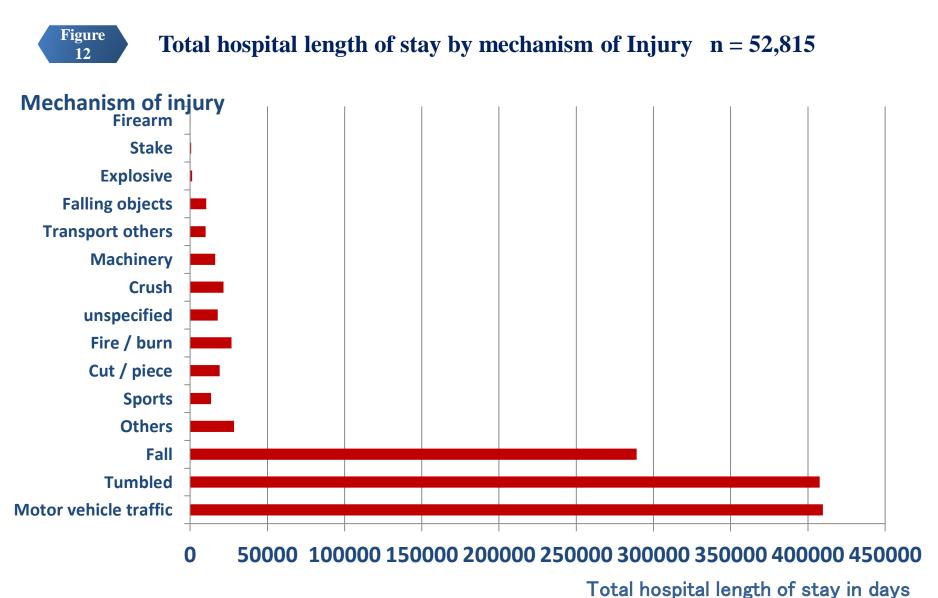
Table 11B

# Proportional distribution of length from onset to fatality, grouped by mechanism of injury. n = 52,815

Mechanism Length of hospital days	Motor vehicle traffic	Tumbled	Fall	Other blunt/penet rating	Sports	Cut / piece	Fire / burn	unspecified
within 1 day	1308	502	834	91	21	72	65	103
2 - 7 days	5007	3540	2950	466	616	436	229	137
8 – 28 days	6361	8260	4228	536	401	463	228	339
over 29 days	4601	4729	3251	303	103	151	288	190
Total	17277	17031	11263	1396	1141	1122	810	769

	Crush	Machinery	Transport others	Falling objects	Explosive	Stake	Firearm	Total
within 1 day	59	22	89	18	2	0	2	3188
2 - 7 days	110	107	85	87	23	12	1	13806
8 – 28 days	242	203	77	128	21	13	2	21502
over 29 days	271	181	121	110	13	5	2	14319
Total	682	513	372	343	59	30	7	52815





Total hospital length of stay of patients are 1,272,680 days.

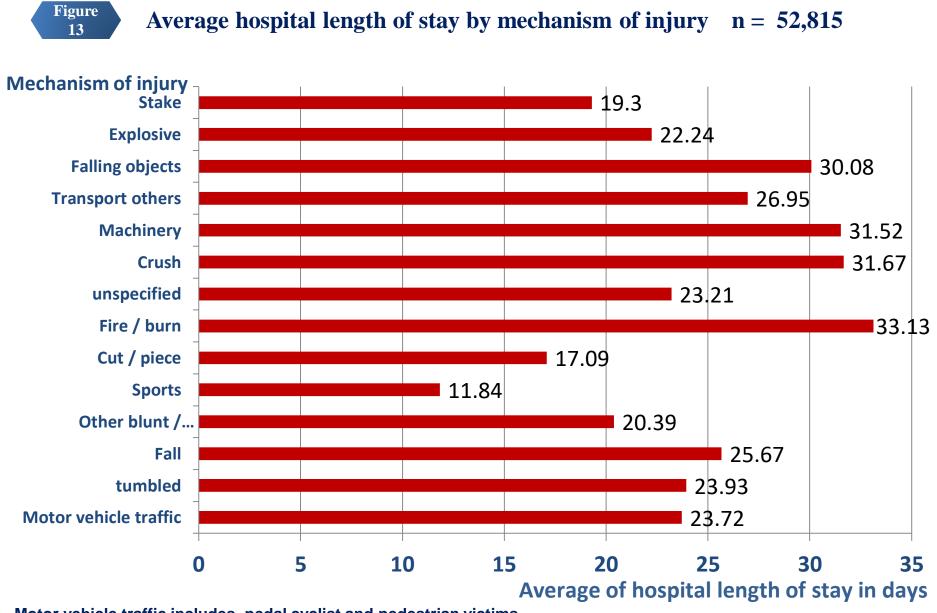


12

#### Table Total and average hospital length of stay by mechanism of injury n = 52,815

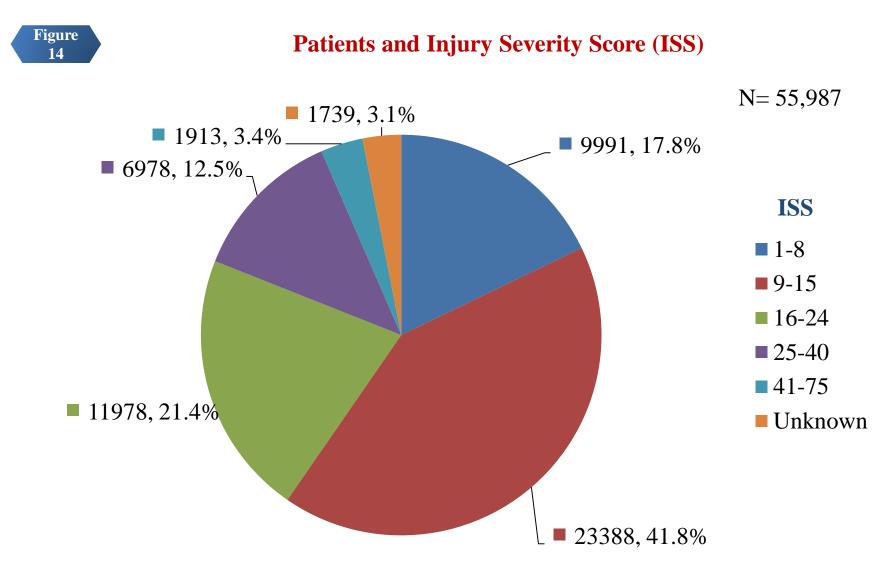
Mechanism of injury	Number of p	atients / %	Total hospital LOS in days	Average of hospital LOS in days
Motor vehicle traffic	17,277	32.71%	409,810	23.72
tumbled	17,031	32.25%	407,584	23.93
Fall	11,263	21.33%	289,160	25.67
Other blunt / penetrating	1,396	2.64%	28,456	20.39
Sports	1,141	2.16%	13,514	11.84
Cut / piece	1,122	2.12%	19,178	17.09
Fire / burn	810	1.53%	26,834	33.13
unspecified	769	1.46%	17,849	23.21
Crush	682	1.29%	21,601	31.67
Machinery	513	0.97%	16,172	31.52
Transport others	372	0.70%	10.025	26.95
Falling objects	343	0.65%	10,317	30.08
Explosive	59	0.11%	1,312	22.24
Stake	30	0.06%	579	19.30
Firearm	7	0.01%	286	40.86
Total	52,815	100%	1,272,680	24.10





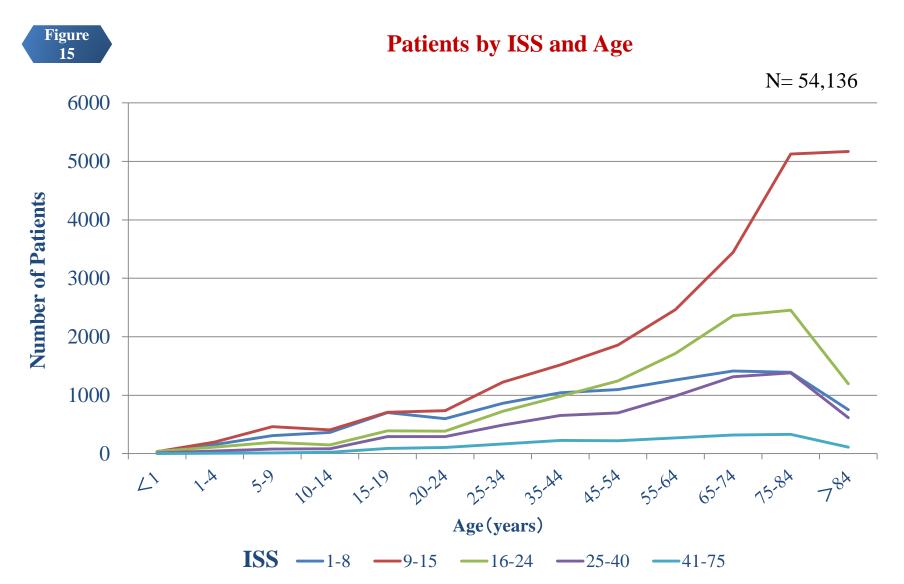
Motor vehicle traffic includes pedal cyclist and pedestrian victims.





**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.** 





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 over 75 ages of ISS 9-15, and at 65-84 ages of another ISS categories.



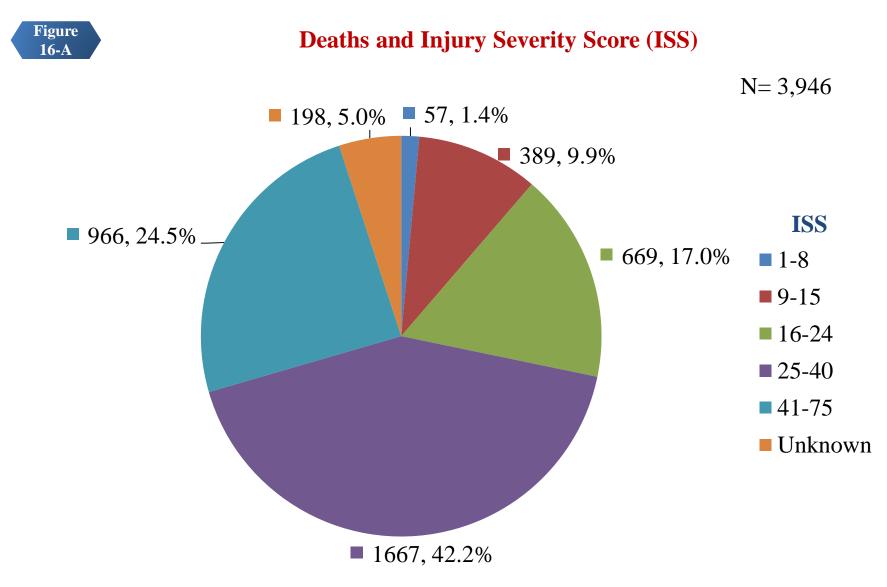
Japan Trauma Data Bank Report 2012-2016



### 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	20	156	311	363	704	601	864	1041	1099	1259	1416	1391	752	14	9991
9-15	37	197	464	407	706	735	1224	1519	1860	2466	3446	5127	5170	30	23388
16-24	41	110	193	152	391	388	726	981	1247	1715	2363	2454	1196	21	11978
25-40	12	47	80	84	293	291	488	655	700	987	1317	1381	615	28	6978
41-75	1	9	15	25	88	107	167	228	223	273	318	329	111	19	1913
Unknown	2	29	52	32	78	85	140	169	185	206	292	288	176	5	1739
Total	113	548	1115	1063	2260	2207	3609	4593	5314	6906	9152	10970	8020	117	55987





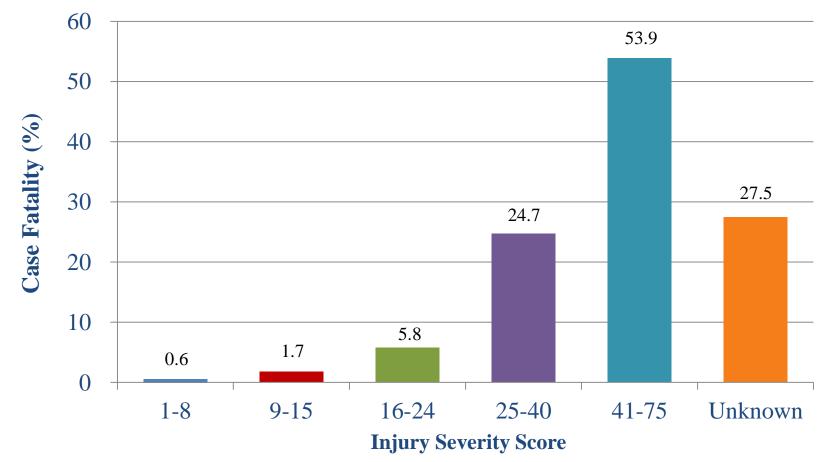
Proportional distribution of deaths grouped by categories of ISS range. Deaths in ISS 25-40 category were the highest.





### **Case Fatality by Injury Severity Score (ISS) Range**

N= 3,946



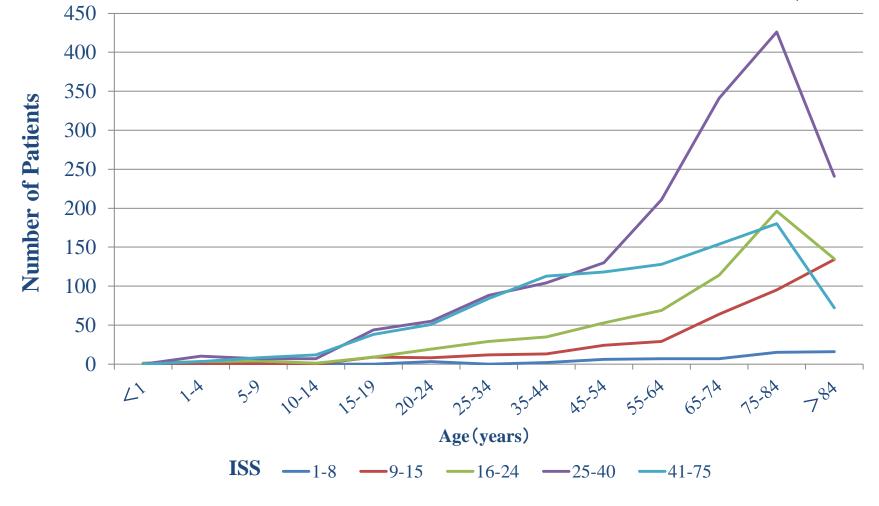
Case fatality grouped by ISS range was higher in severe trauma category. (Case fatality = number of deaths divided by the number of patients × 100 by ISS range).





### **Deaths by ISS and Age**

N= 3,739



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



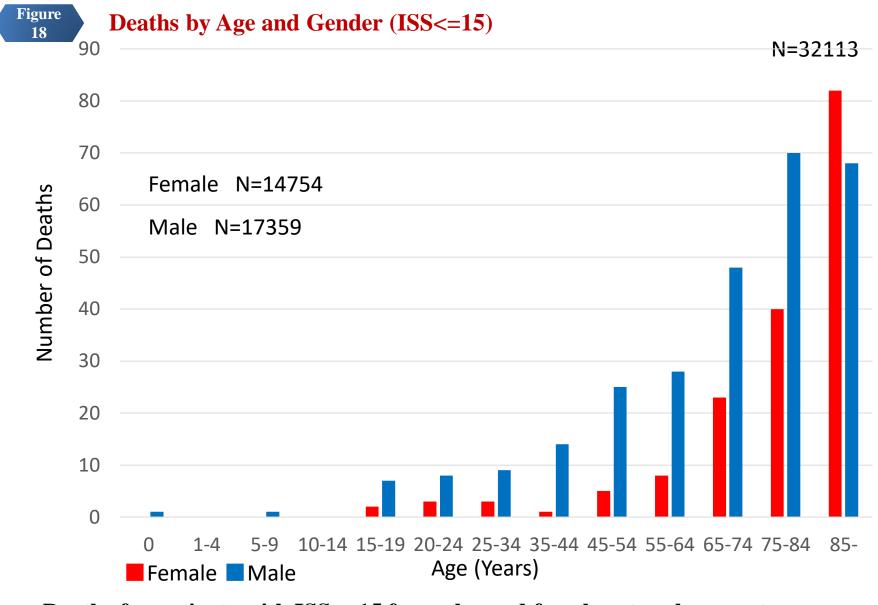
Japan Trauma Data Bank Report 2012-2016



**Deaths by ISS and Age** 

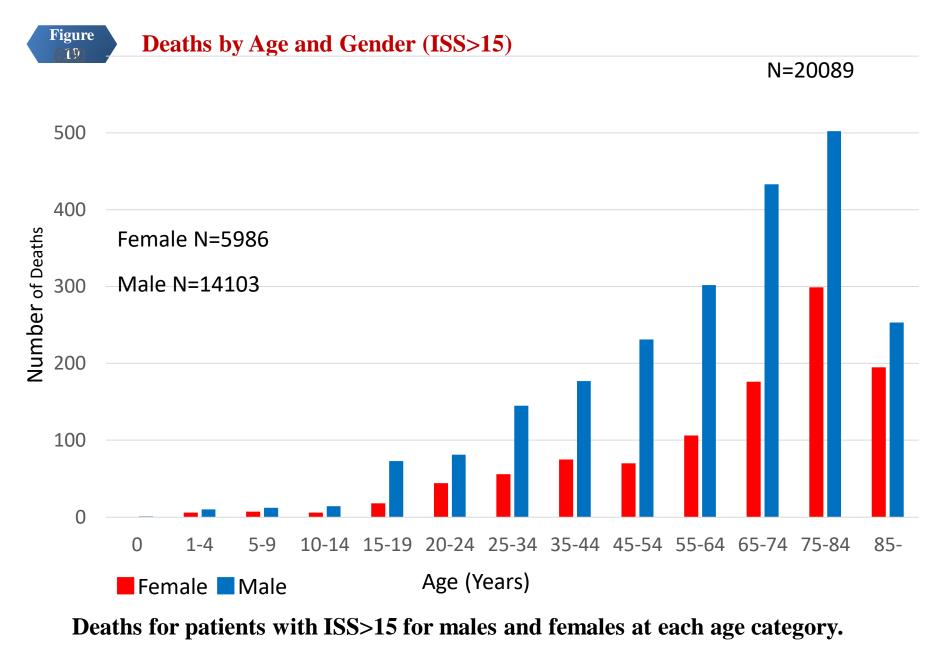
Age ISS	0	1-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85-	Unknown	Total
1-8	0	0	1	0	0	3	0	2	6	7	7	15	16	0	57
9-15	1	0	0	0	9	8	12	13	24	29	64	95	134	0	389
16-24	1	3	4	1	9	19	29	35	53	69	114	196	135	1	669
25-40	0	10	7	7	44	55	88	104	130	211	341	426	241	3	1667
41-75	0	3	8	12	38	51	84	113	118	128	154	180	72	5	966
Unknown	0	1	0	2	6	16	21	20	29	29	24	31	16	3	198
Total	2	17	20	22	106	152	234	287	360	473	704	943	614	12	3946



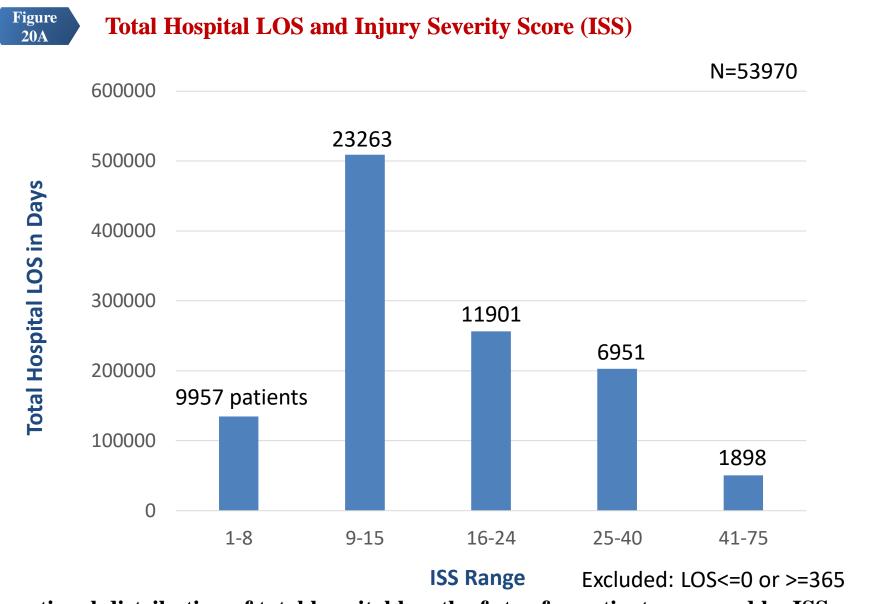


**Deaths for patients with ISS<=15 for males and females at each age category.** 



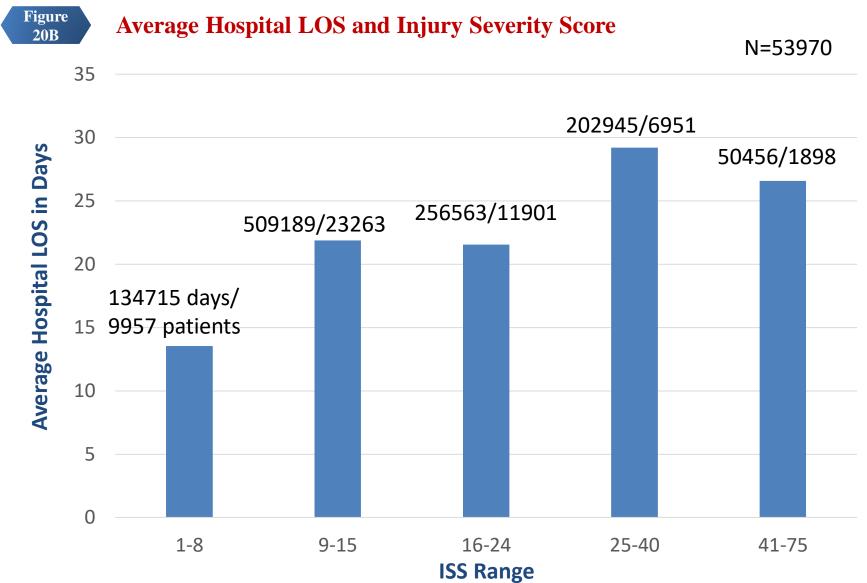






Proportional distribution of total hospital length of stay for patients, grouped by ISS range.

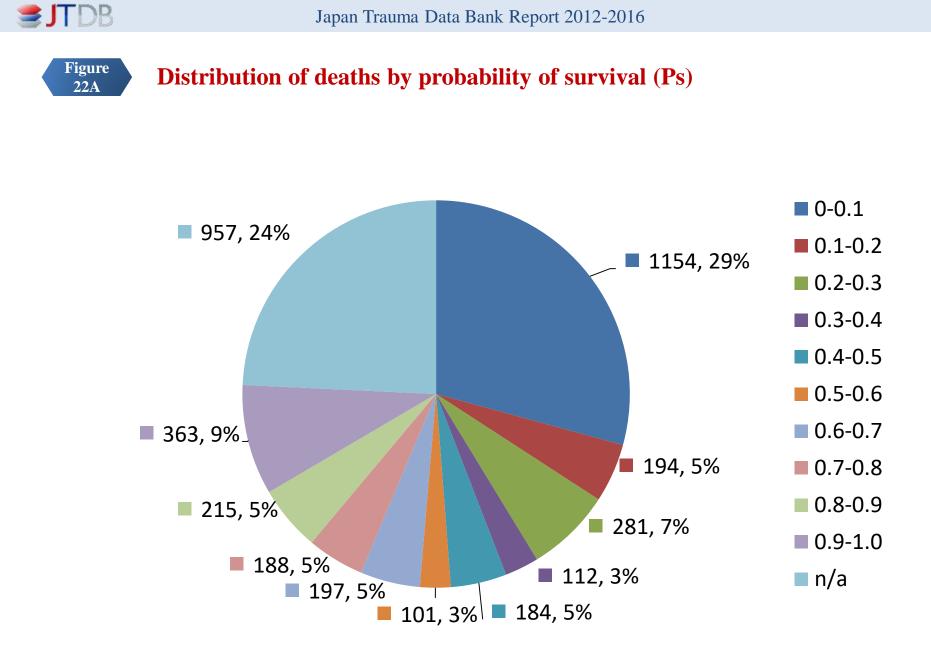




Average hospital length of stay for each category of ISS range. (Average hospital length of stay = total hospital length of stay for each ISS range divided by the total number of patients).

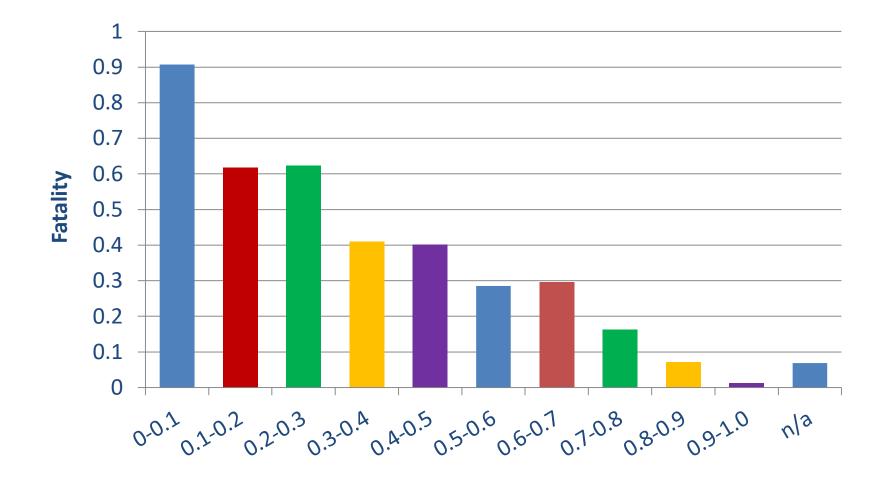


Figure 21 **Distribution of patients by probability of survival (Ps)** ■ 1896, 3% ■ 1029, 2% 1388, 3% 15375, 27% 0-0.25 0.25-0.5 0.5-0.75 0.75-1.0 Unknown **36299, 65%** 









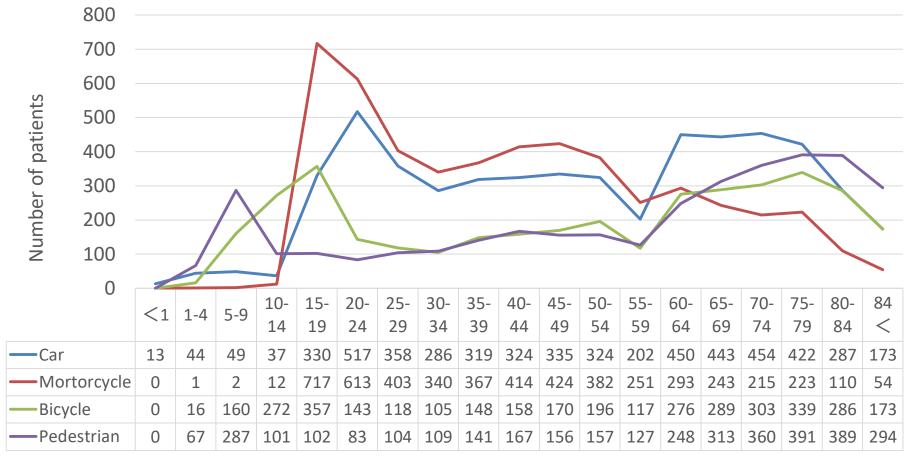
### **Probability of survival**



Figure

23

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



Age(years)

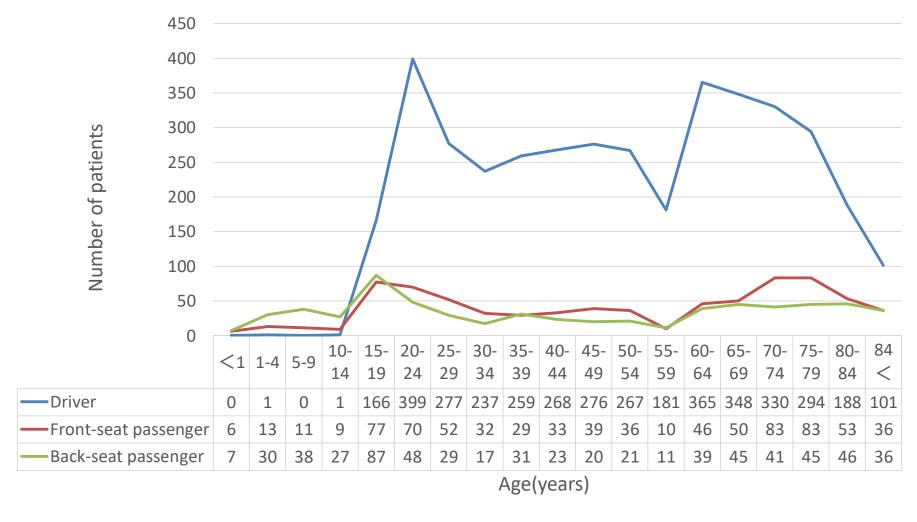
-Car -Mortorcycle -Bicycle -Pedestrian

© Japan Trauma Care and Research 2017. All Rights Reserved Worldwide



Figure 24

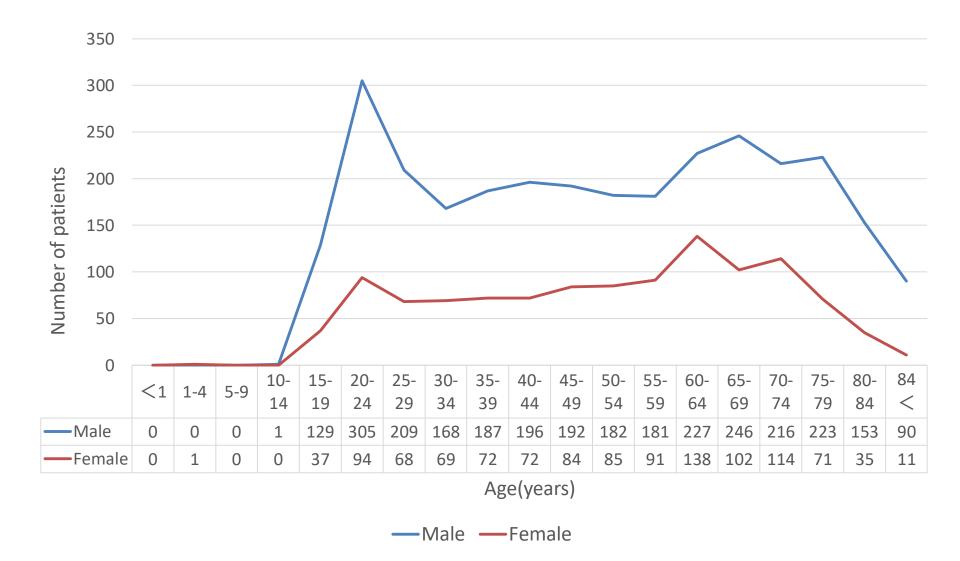
### The number of patients in car accident by drivers and passengers and age



-Driver -Front-seat passenger -Back-seat passenger

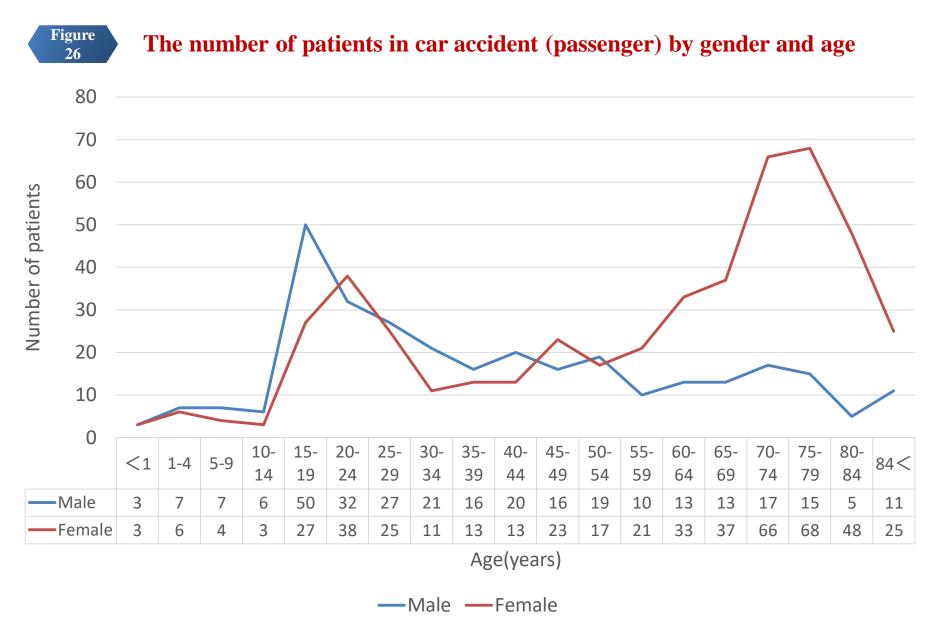


# **Figure** 25 The number of patients in car accident (driver) by gender and age

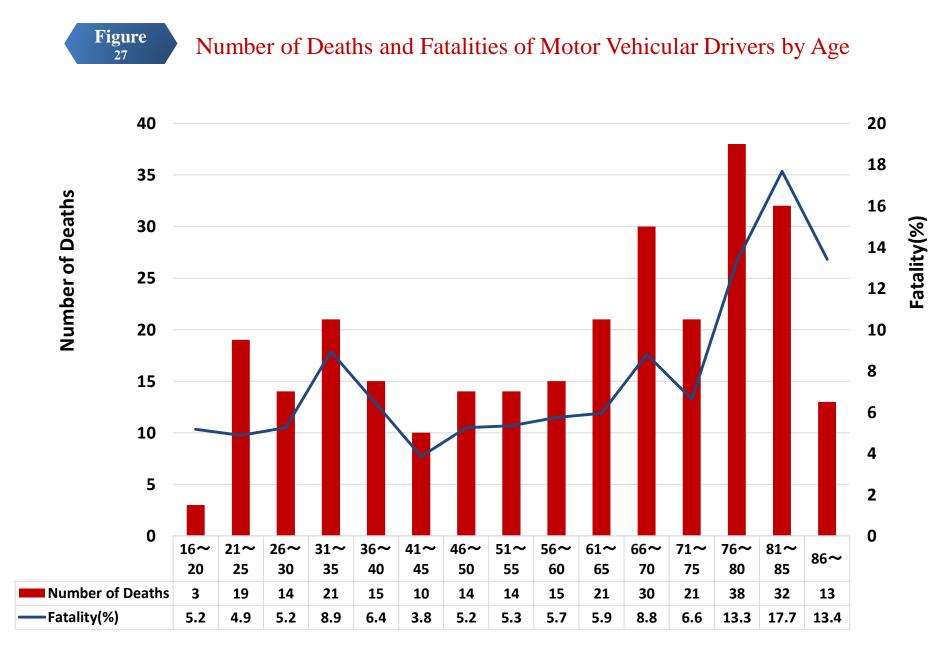


© Japan Trauma Care and Research 2017. All Rights Reserved Worldwide

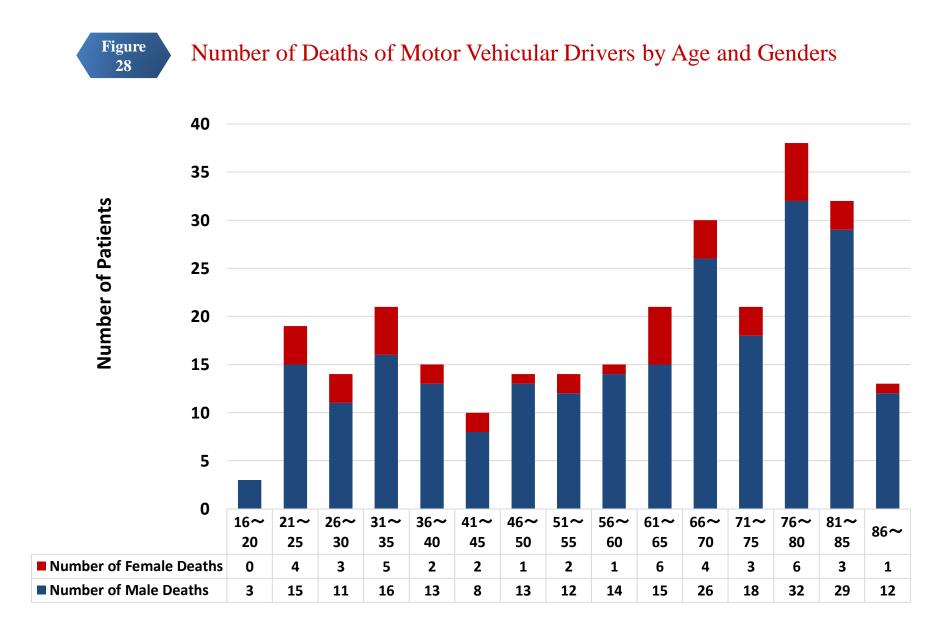








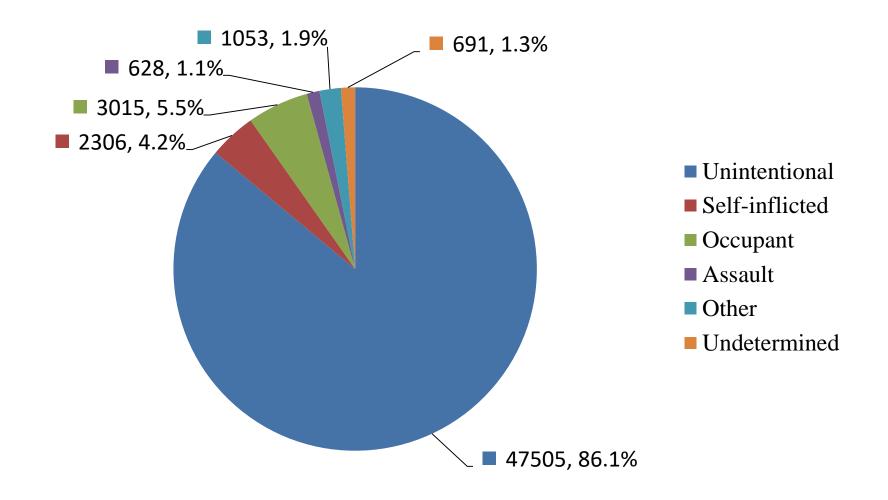






29

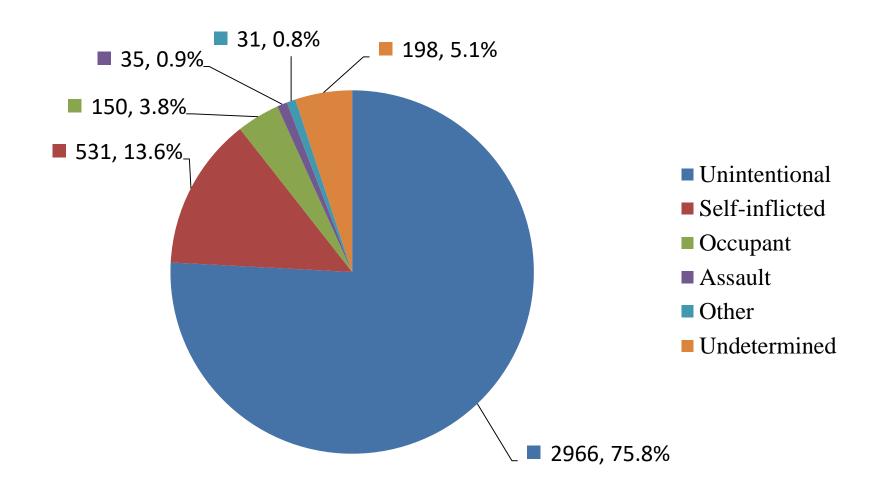
#### Figure Proportional distribution of registered patients, groped by intent



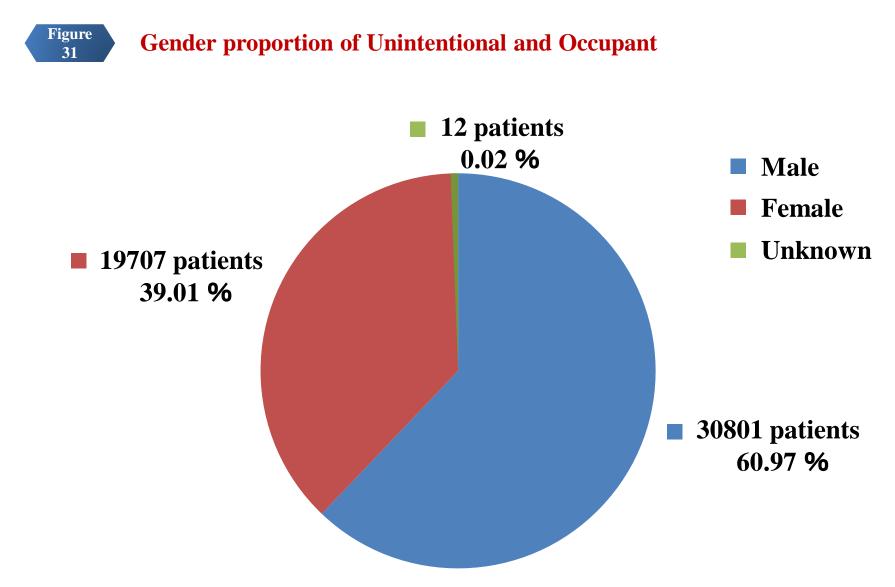


30

#### Figure Proportional distribution of deaths, grouped by intent



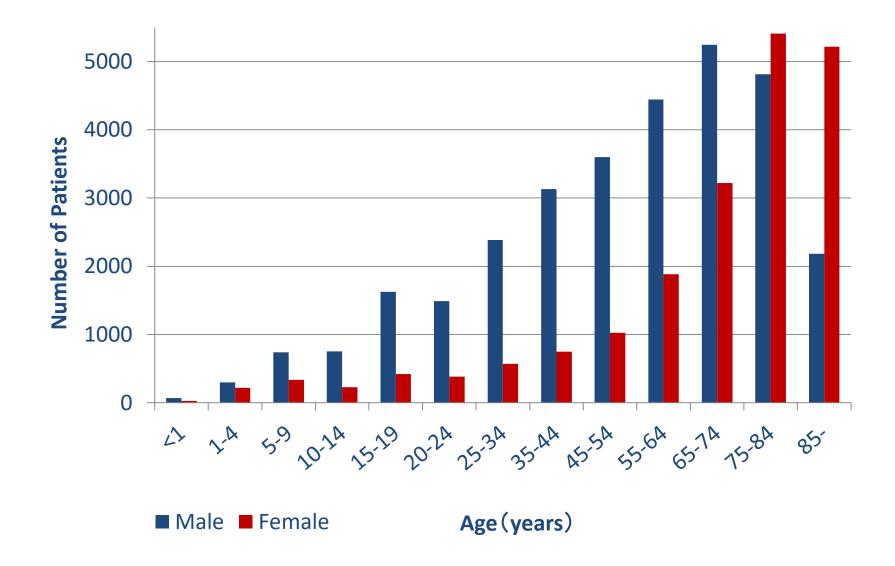






32

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







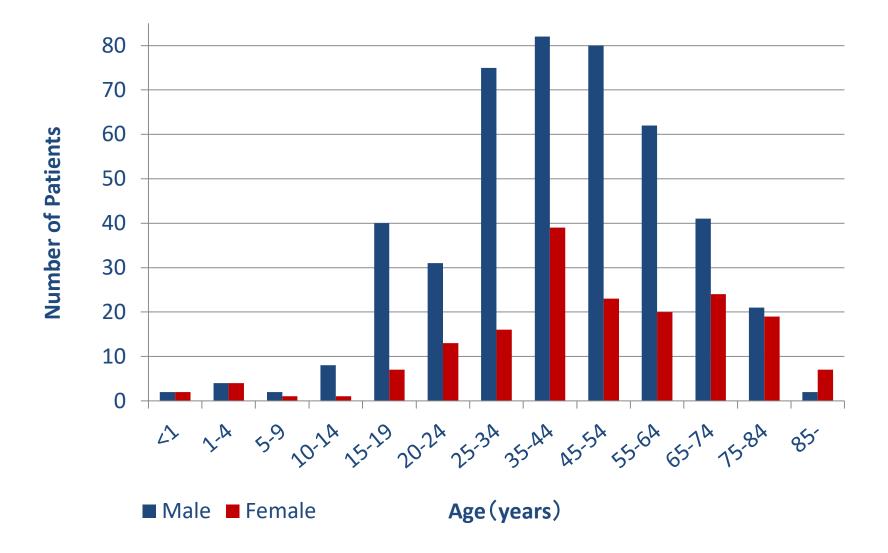
# Unintentional and Occupant by Age and Gender

Age	Male	Female	Total				
< 1	68	29	97				
1-4	300	221	521				
5-9	740	335	1075				
10-14	752	228	980				
15-19	1627	422	2049				
20-24	1489	384	1873				
25-34	2386	572	2958				
35-44	3130	748	3878				
45-54	3598	1026	4624				
55-64	4444	1883	6327				
65-74	5246	3222	8468				
75-84	4813	5408	10221				
85-	2185	5215	7400				
Unknown	23	14	37				
Total	30801	19707	50508				





## Assault by Age and Gender







# Assault by Age and Gender

Age	Male	Female	Total
< 1	2	2	4
1-4	4	4	8
5-9	2	1	3
10-14	8	1	9
15-19	40	7	47
20-24	31	13	44
25-34	75	16	91
35-44	82	39	121
45-54	80	23	103
55-64	62	20	82
65-74	41	24	65
75-84	21	19	40
85-	2	7	9
Unknown	2	0	2
Total	452	176	628







<sup>©</sup> Japan Trauma Care and Research 2017. All Rights Reserved Worldwide



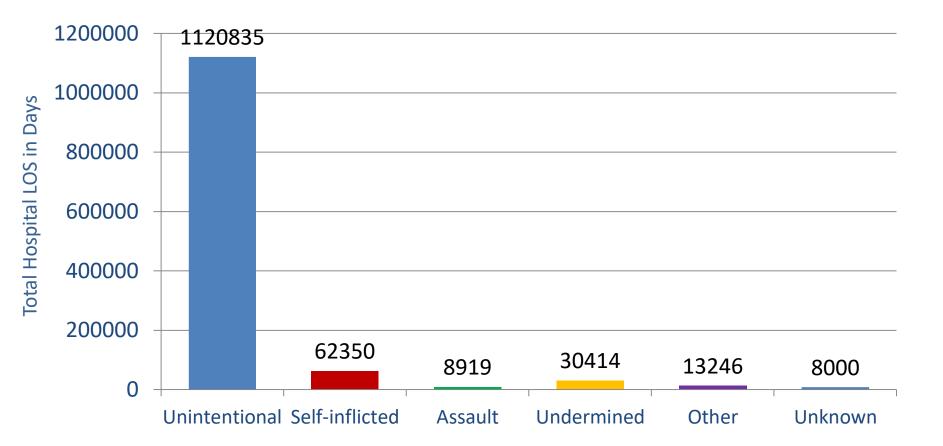


# Self-inflicted by Age and Gender

Se	Age	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
Ferr	nale	0	1	20	59	115	123	97	108	88	95	63	51	56	48	35	38	16	11	3		2	1029
Ma	ale	1	1	13	48	92	87	106	100	98	98	105	54	54	58	60	35	25	10	5		2	1052
Tot	tal	1	2	33	107	207	210	213	208	186	193	168	105	110	106	95	73	41	21	8		4	2082



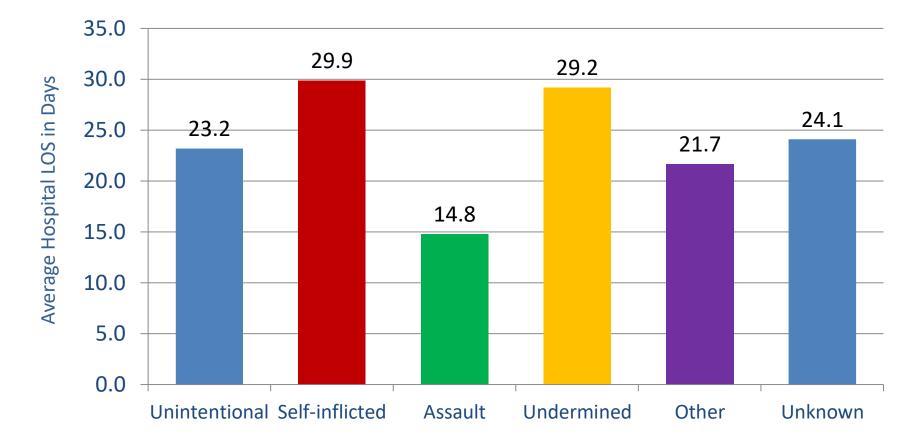




# Industrial accident was included in the category of "Unintentional".



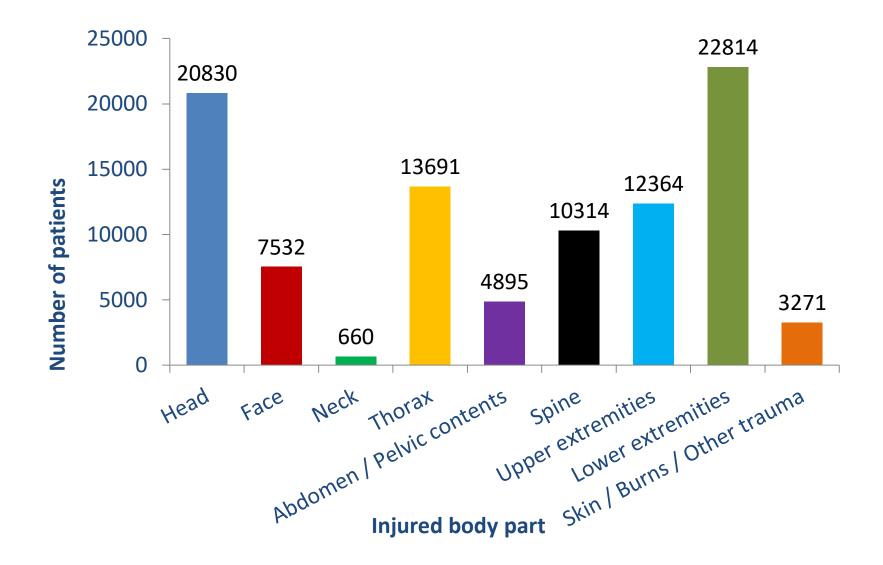




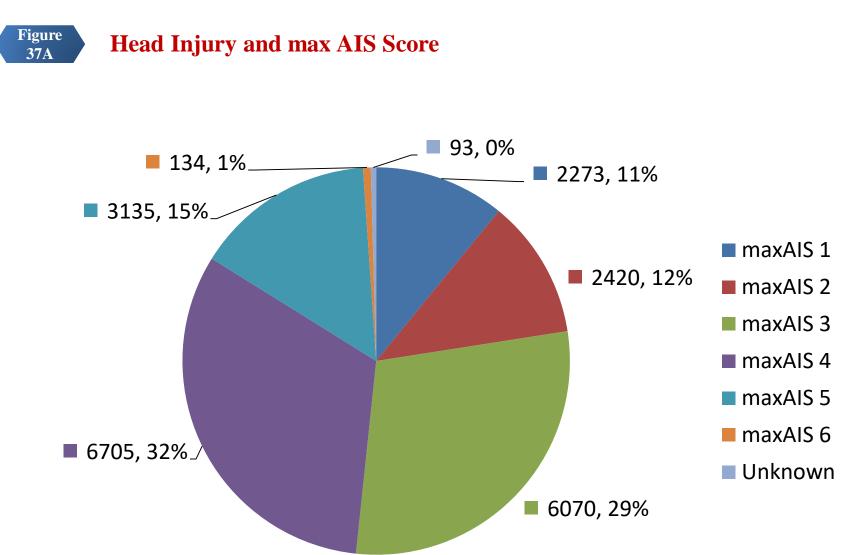
Average hospital length of stay in days = total hospital length of stay divided by the number of patients by intent.



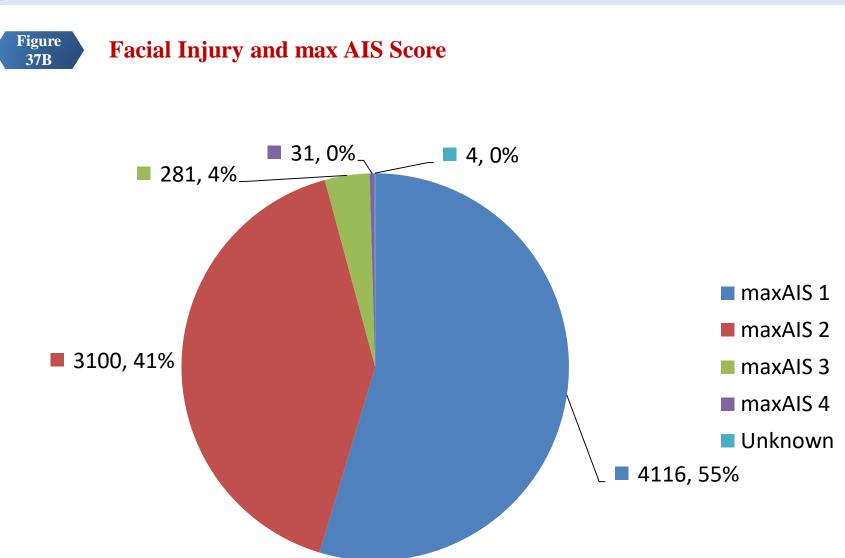
**Figure** 36 Number of patients with Injured Body Parts based on AIS



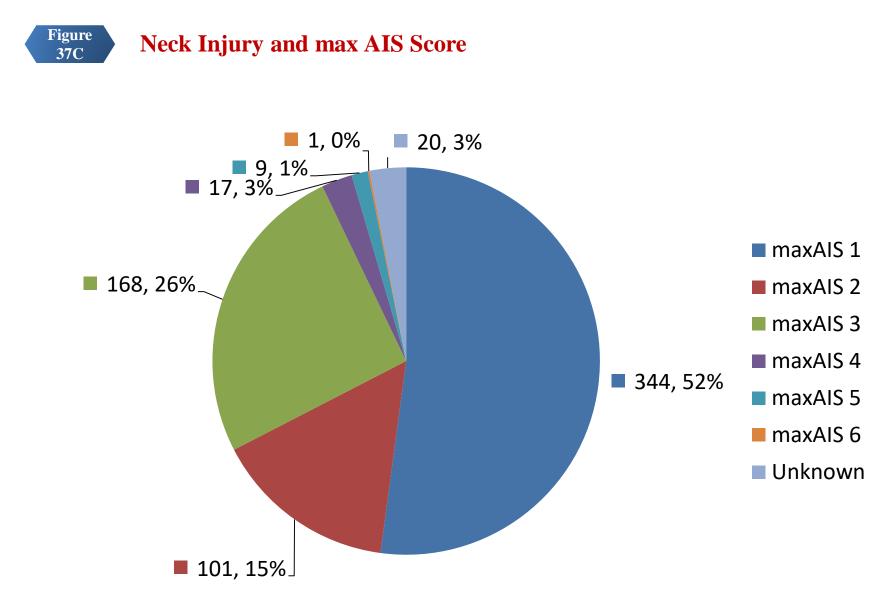






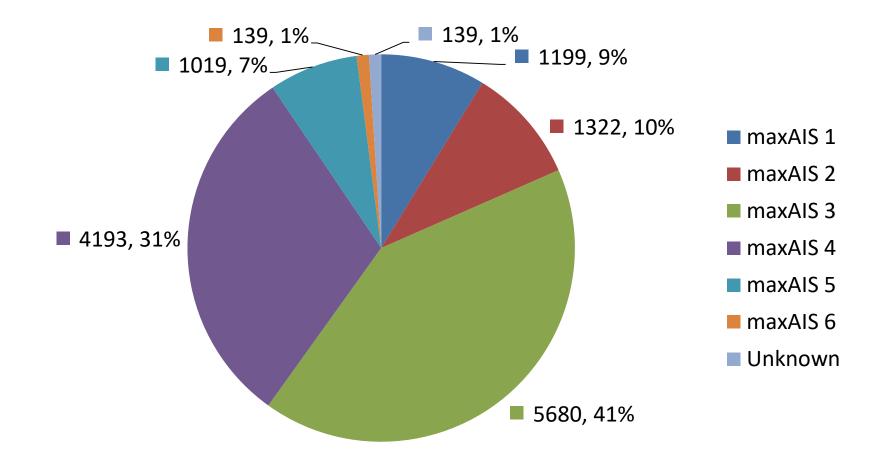




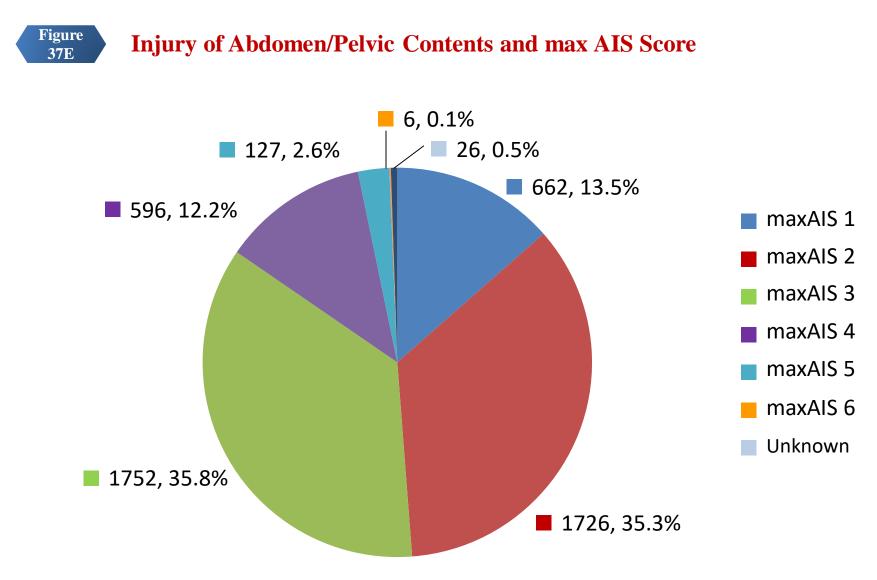




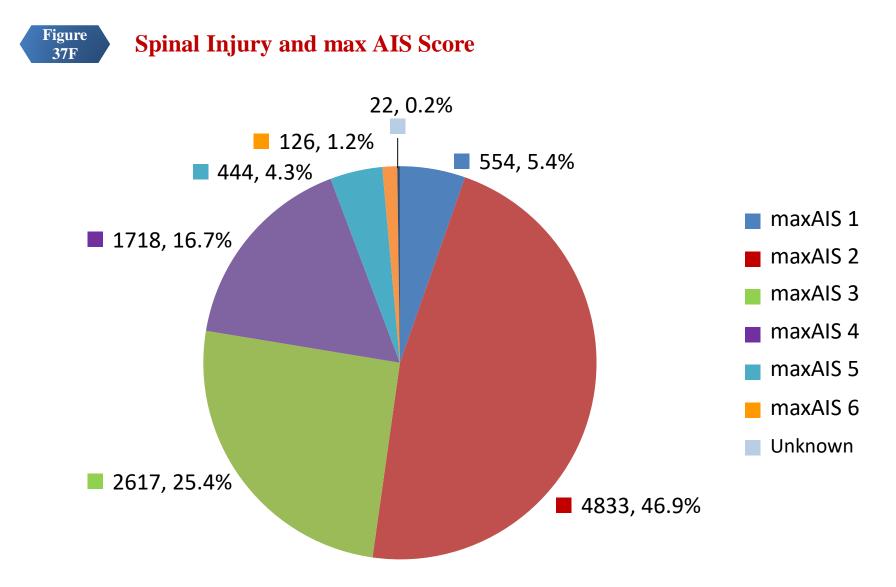




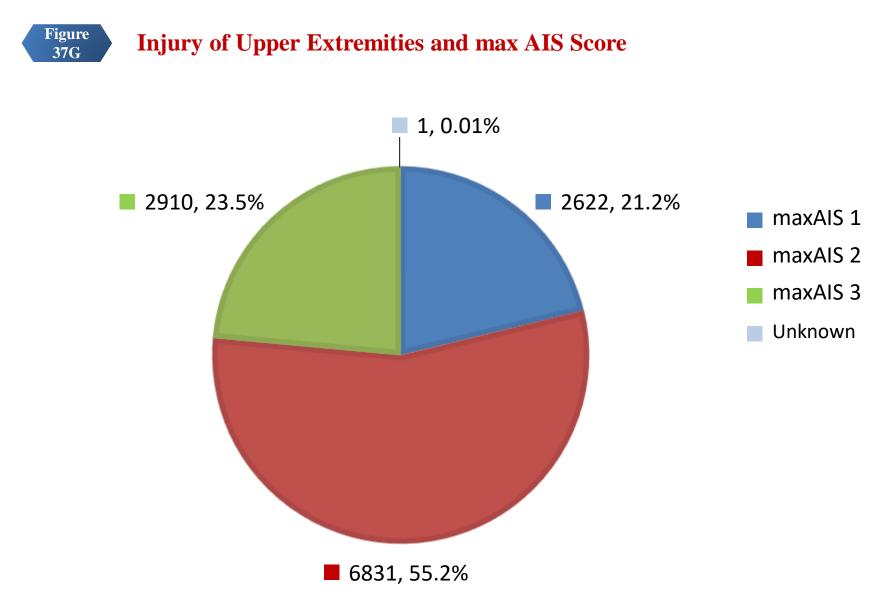






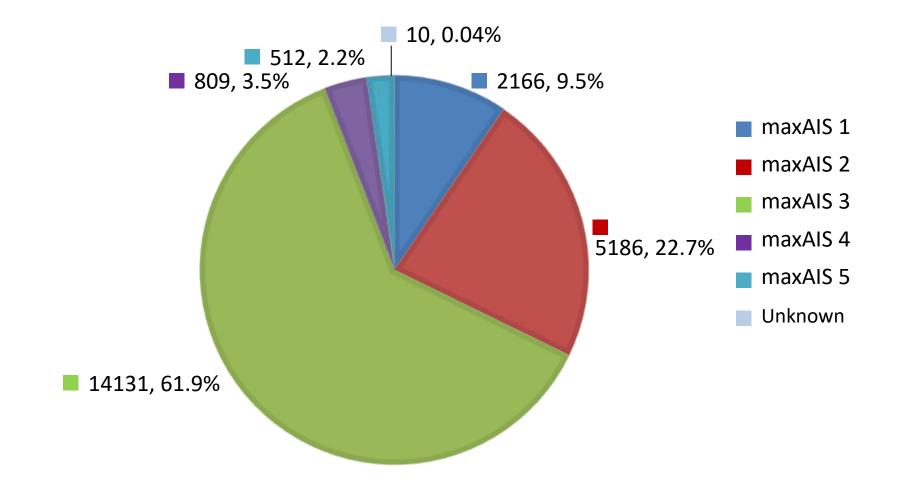








Figure<br/>37HInjury of Lower Extremities and max AIS Score







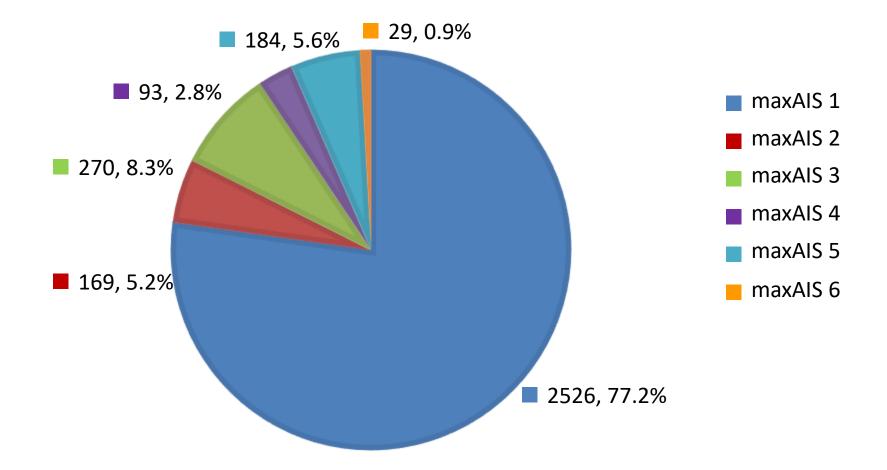
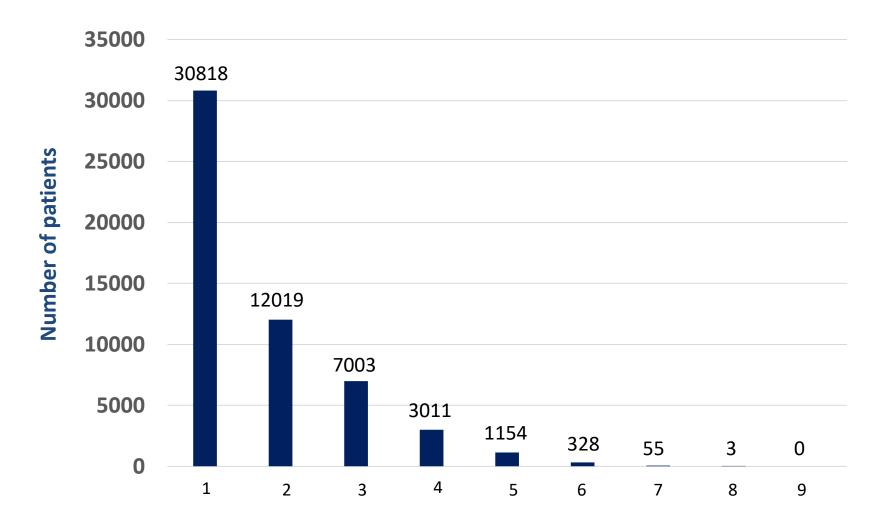




Figure 38

Number of Patients and Injured Body Parts based on AIS





## JAPAN TRAUMA DATA BANK REPORT 2017 (2012-2016)

## December 18, 2017



The Japanese Association for Acute Medicine Trustee: Tetsuya Sakamoto, MD Chairman: Naoto Morimura, MD The Japanese Association for the Surgery of Trauma Trustee: Tetsuya Sakamoto, MD Chairman: Daizoh Saitoh, MD

Task Force:Masato Ueno, MD<br/>Yasuyuki Uchida, MD<br/>Jun Oda, MD<br/>Akio Kimura, MD<br/>Yuichiro Sakamoto, MD<br/>Atsushi Shiraishi, MD<br/>Keiji Tanaka, MD<br/>Hideo Tohira, MD<br/>Shinji Nakahara, MD<br/>Munetaka Hayashi, MD<br/>Atsuhiro Fukuda, MD<br/>Tomohiko Masuno, MD<br/>Yoshihiro Yamaguchi, MD