

U.S. Army Injury Surveillance 2021 Summary



U.S. ARMY PUBLIC HEALTH CENTER



Clinical Public Health and Epidemiology Directorate
Injury Prevention Branch

Website:

<https://phc.amedd.army.mil/topics/discond/ptsaip/Pages/default.aspx>

Email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

The views expressed in this presentation are those of the author(s) and do not necessarily reflect the official policy of the Department of Defense, Department of the Army, U.S. Army Medical Department or the U.S. Government.

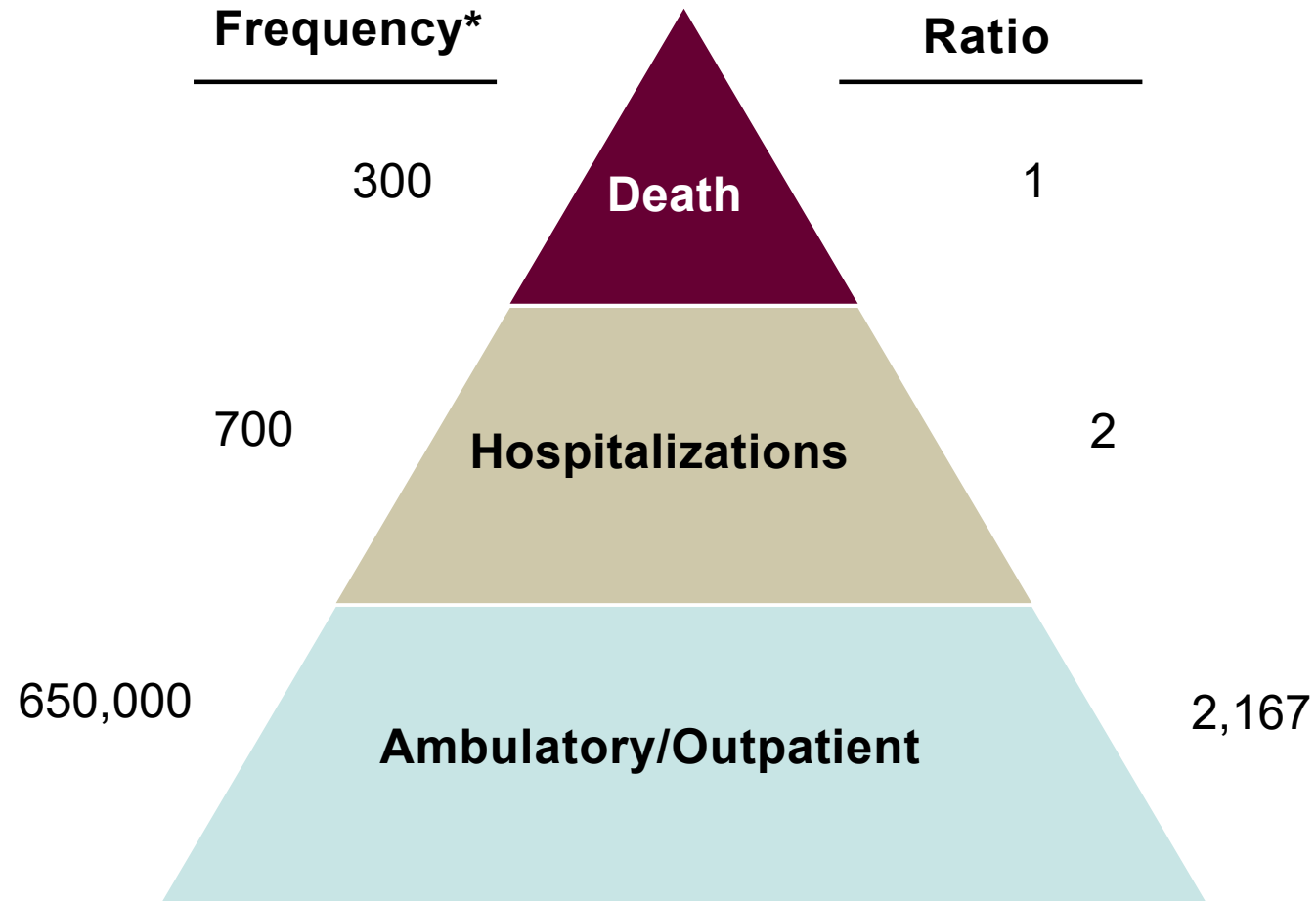
The mention of any non-federal entity and/or its products is not to be construed or interpreted, in any manner, as federal endorsement of that non-federal entity or its products.

- This presentation provides a summary of injury medical encounter surveillance data for Active Duty Soldiers from Calendar Year (CY) 2021
- Injuries are defined using the U.S. Army Public Health Center (APHC) Taxonomy of Injuries¹
- This summary highlights Army Active Duty injury rates and distribution of injuries resulting from the applied Taxonomy of Injuries
- For additional details about data contained in these slides, please see the associated Technical Information Paper

¹APHC. 2017. Public Health Information Paper (PHIP) No. 12-01-0717: A Taxonomy of Injuries for Public Health Monitoring & Reporting. December 2017. <http://www.dtic.mil/docs/citations/AD1039481>

Injury Pyramid

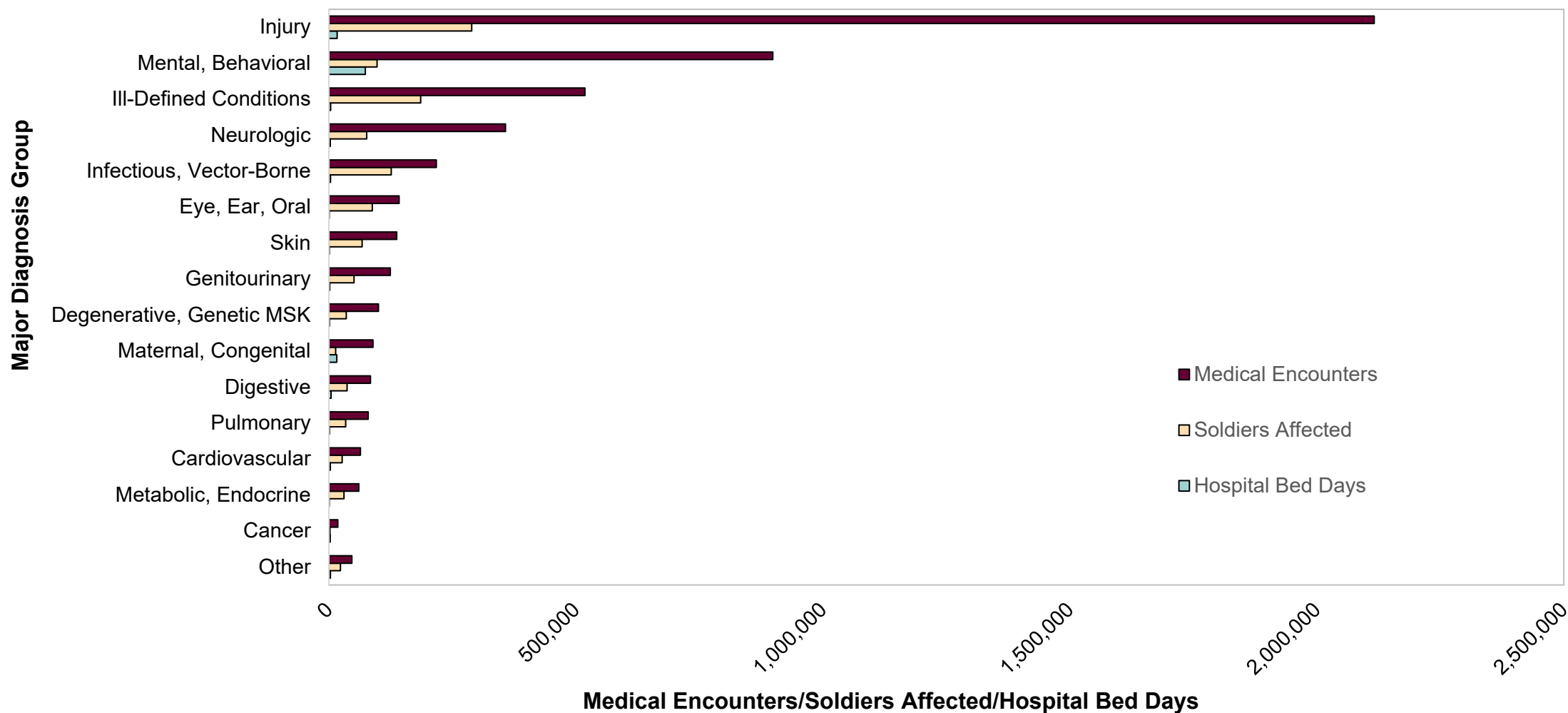
U.S. Army Active Duty, 2021



*Frequencies are rounded and represent incident injury visits

Data source: Military Health System Data Repository (MDR) and Armed Forces Medical Examiner System (AFMES); injuries defined using the APHC Taxonomy of Injuries
 DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

Relative Burden of Injuries and Diseases U.S. Army Active Duty, 2021



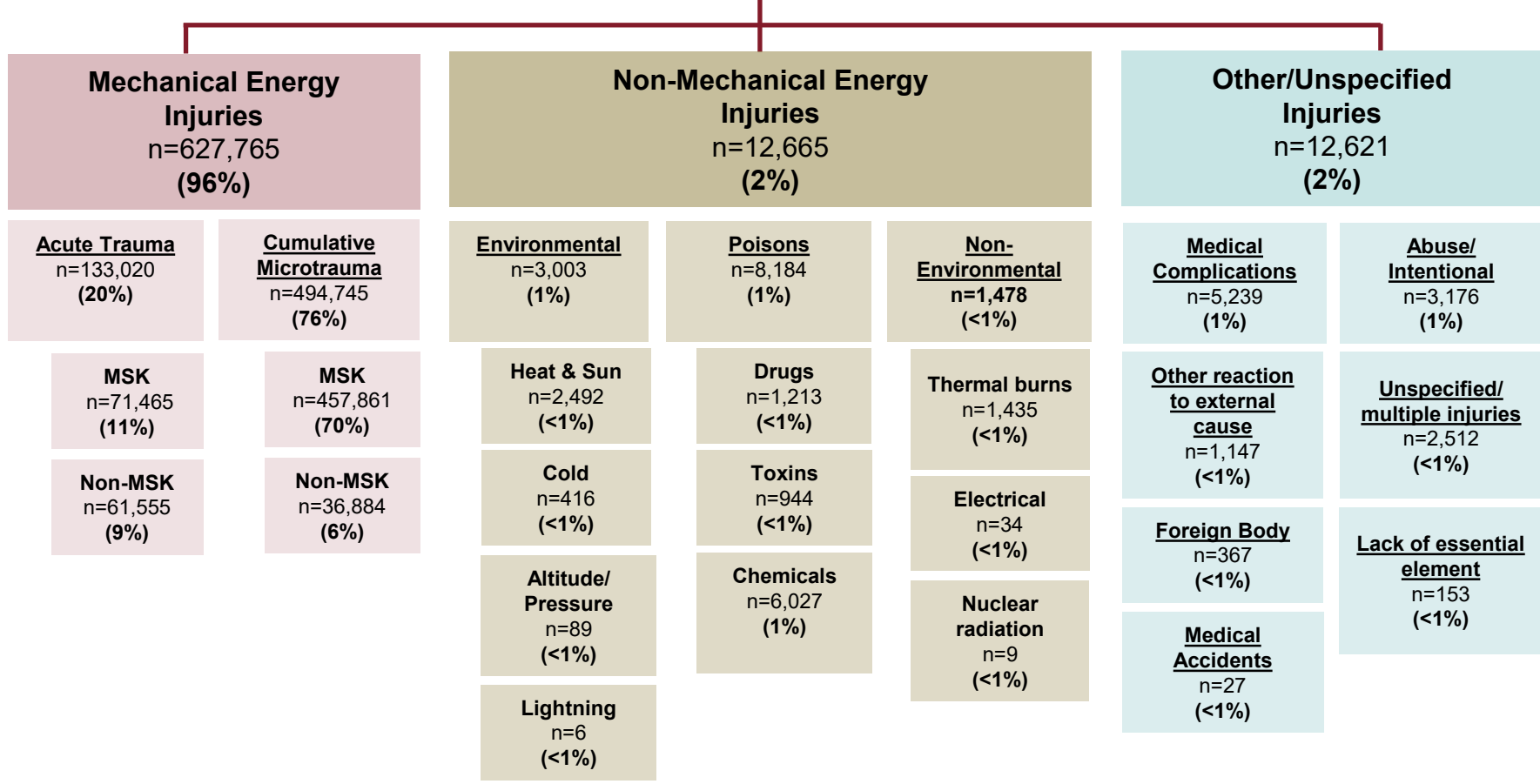
Diagnosis group "Other" includes adverse effects of drugs, blood disorders, and other neoplasms (not cancer)
 Data source: Military Health System Data Repository (MDR); injuries defined using the APHC Taxonomy of Injuries
 DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

Taxonomy Distribution of Injuries

U.S. Army Active Duty, 2021

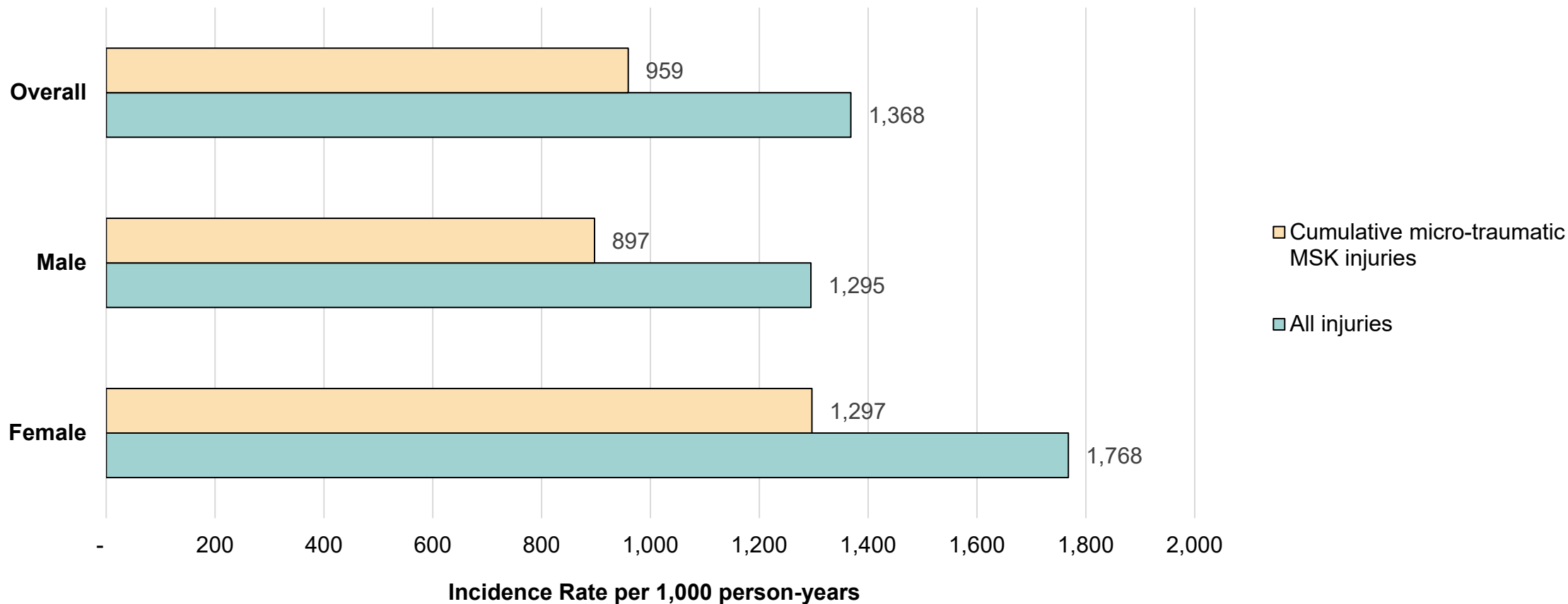


ALL ACTIVE DUTY ARMY INITIAL INJURIES, N = 653,051



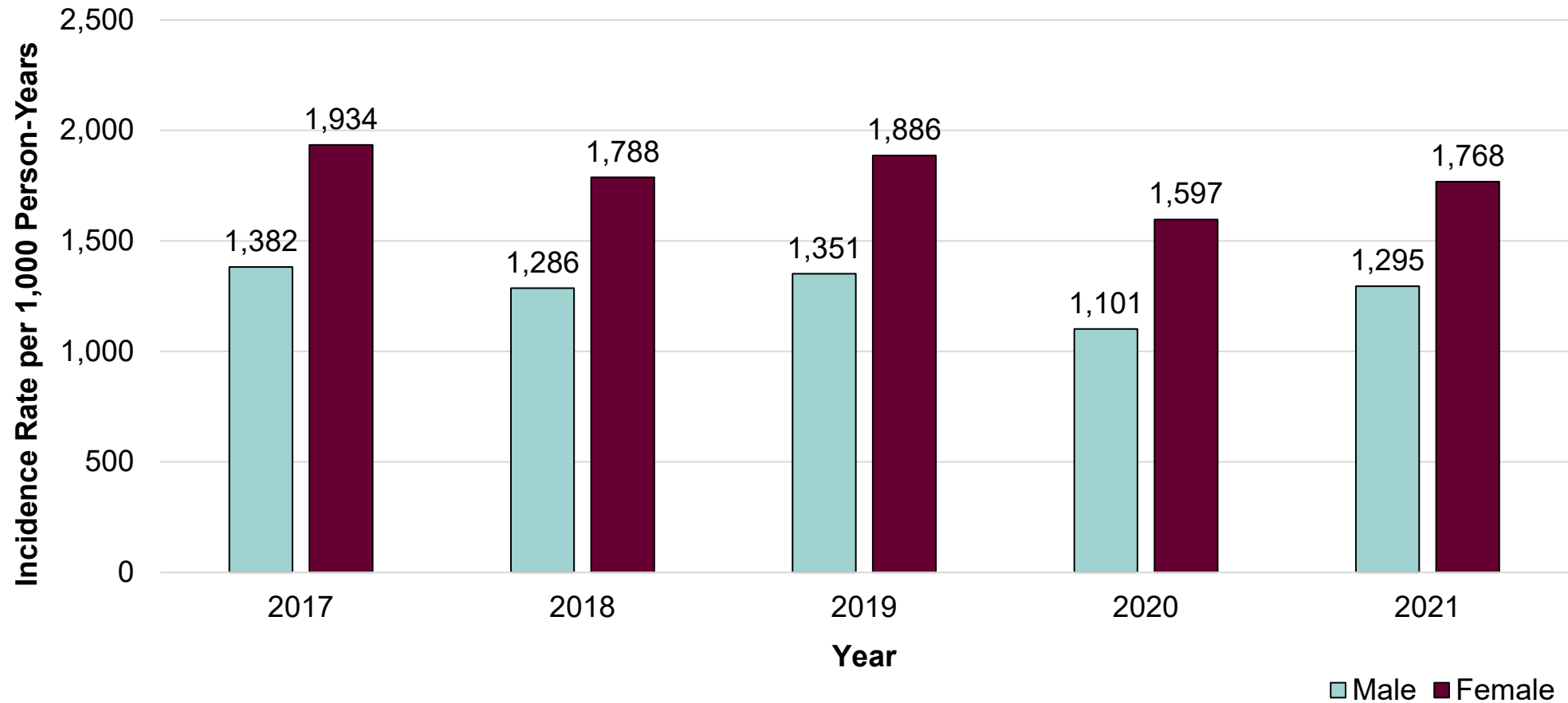
*MSK = damage to tissue(s) of the musculoskeletal system (i.e., bone, cartilage, muscle, tendon, fascia, joint, ligament, bursa, or synovium)
 Data source: Military Health System Data Repository (MDR); injuries defined using the APHC Taxonomy of Injuries
 DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

All Injury and Cumulative Micro-traumatic Musculoskeletal (MSK) Incident Injury Visit Rates by Sex U.S. Army Active Duty, 2021



Rates for all injuries and cumulative micro-traumatic MSK injuries were both significantly higher among females ($p < 0.001$).
 Data source: Military Health System Data Repository (MDR); injuries defined using the APHC Taxonomy of Injuries
 DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

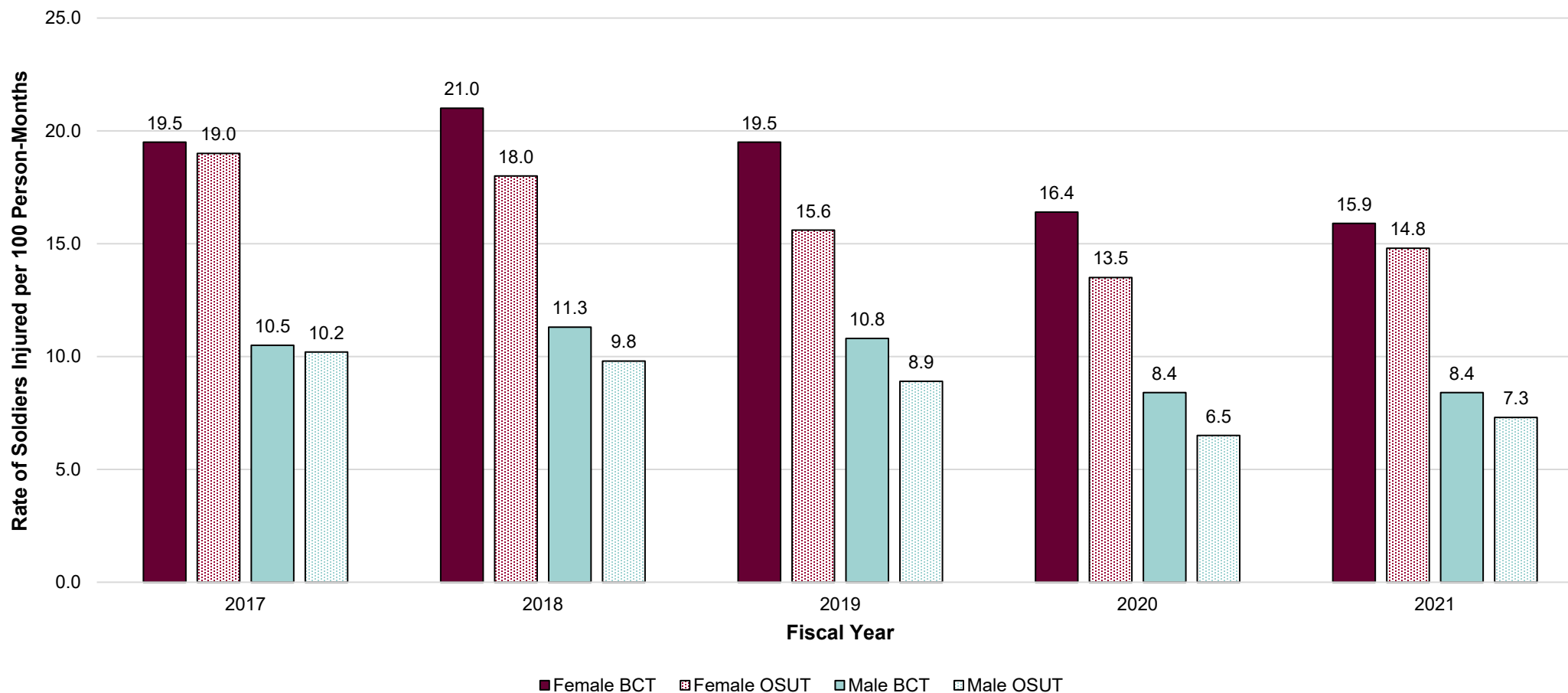
Incident Injury Visit Rates by Sex U.S. Army Active Duty, 2017–2021



The rates of incident injuries among female Soldiers were consistently and significantly higher than male Soldiers from 2017 to 2021 ($p < 0.001$). Rates were significantly lower in 2020 compared to previous years, and 2021 ($p < 0.001$).

Data source: Military Health System Data Repository (MDR); injuries defined using the APHC Taxonomy of Injuries
DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

Incident Injury Visit Rates by Sex U.S. Army Trainees, FY2017–FY2021



For all years 2017-2021, incident injury rates among female trainees in Basic Combat Training (BCT) and One Station Unit Training (OSUT) were significantly higher than male trainees ($p < 0.05$). Injury rates during BCT were higher than rates during OSUT for both males and females ($p < 0.05$) for all years, except for females in 2017. Most trainee injury rates were significantly lower in 2021 when compared to 2017-2019 ($p < 0.05$), except 2021 rates for OSUT females were only significantly lower than 2017-2018.

Reference: APHC. 2022. Injury Surveillance and Longitudinal Studies for Gender Integration in the Army: Seventh Annual Assessment, 2022.

Data source: Defense Medical Surveillance System (DMSS); injuries defined using the Army Public Health Center (APHC) Taxonomy of Injuries

DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil



Incident Mechanical Injuries by Body Region and Acute/Overuse* U.S. Army Active Duty, 2021



Body Region	Acute Traumatic n,%	Cumulative Micro-traumatic (Overuse) n,%	All n,%
Lower Extremity	49,111 (7.7)	211,081 (33.2)	260,192 (41.5)
Spine & Back	9,703 (1.5)	167,915 (26.4)	177,618 (28.3)
Upper Extremity	40,133 (6.3)	87,372 (13.8)	127,505 (20.3)
Head, Face, & Neck	24,523 (3.9)	15,768 (2.5)	40,291 (6.4)
Torso	8,011 (1.3)	668 (0.1)	8,679 (1.4)
Other	653 (0.1)	11,941 (1.9)	12,594 (2.0)
Total	132,134 (21.1)	494,745 (78.9)	626,879 (100)

*In order of most frequently injured body region
 Injuries defined using the APHC Injury Taxonomy; Acute traumatic and cumulative micro-traumatic (Overuse) injuries
 Data source: Military Health System Data Repository (MDR); injuries defined using the APHC Taxonomy of Injuries
 DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil



Incident Mechanical Injury Diagnoses by Body Region

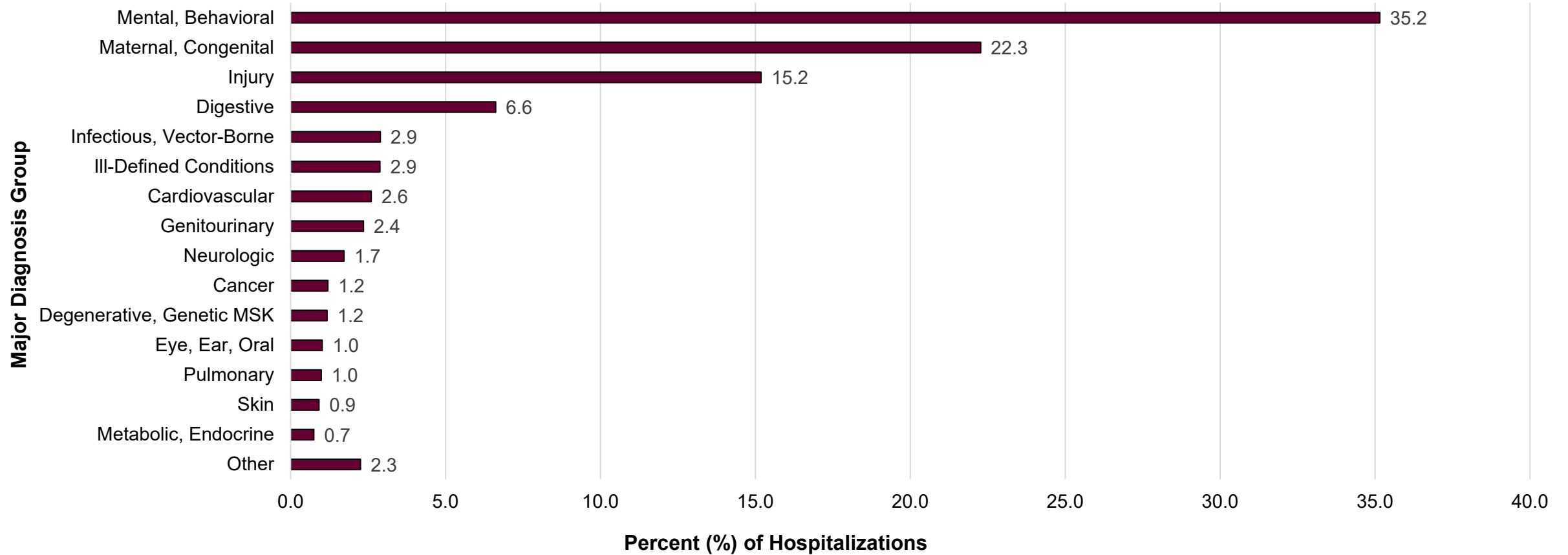
U.S. Army Active Duty, 2021



Diagnosis	Head, Face, and Neck		Spine and Back		Torso		Upper Extremity		Lower Extremity		Other		Total	Percent Total (%)
	Acute (ACT)	Cumulative (CMT)	ACT	CMT	ACT	CMT	ACT	CMT	ACT	CMT	ACT	CMT		
MSK Tissue Damage, Other	26	231	2,714	153,996	176	3	3,974	80,295	7,123	203,217	126	11,751	463,632	73.9
Tissue Damage, Other	8,843	15,518	1,405	0	2,109	0	4,524	0	3,648	0	465	0	36,512	5.8
Sprain/Joint Damage	14	0	1,253	0	483	0	4,893	453	17,466	2,247	34	57	26,900	4.3
Nerve	40	0	24	13,887	8	474	3,473	3,647	960	716	0	0	23,229	3.7
Strain/Tear	1,840	0	3,553	0	1,817	0	3,852	2,878	6,313	5	28	22	20,308	3.2
Contusion/Superficial	4,421	19	0	0	1,853	13	5,090	92	5,823	2,518	0	0	19,829	3.2
Fracture	1,102	0	541	32	606	178	5,427	7	4,904	2,378	0	111	15,286	2.4
Open Wound	3,373	0	0	0	360	0	7,185	0	2,321	0	0	0	13,239	2.1
Internal Organ and Blood Vessel	4,822	0	184	0	540	0	52	0	25	0	0	0	5,623	0.9
Dislocation	42	0	29	0	59	0	1,663	0	528	0	0	0	2,321	0.4
Crush	7	0	0	0	8	0	540	0	194	0	0	0	749	0.1
Amputation	2	0	0	0	1	0	109	0	25	0	0	0	137	0.0
Total	24,532	15,768	9,703	167,915	8,020	668	40,782	87,372	49,330	211,081	653	11,941	627,765	100.0
Percent Total (%)	3.9	2.5	1.5	26.7	1.3	0.1	6.5	13.9	7.9	33.6	0.1	1.9		100.0

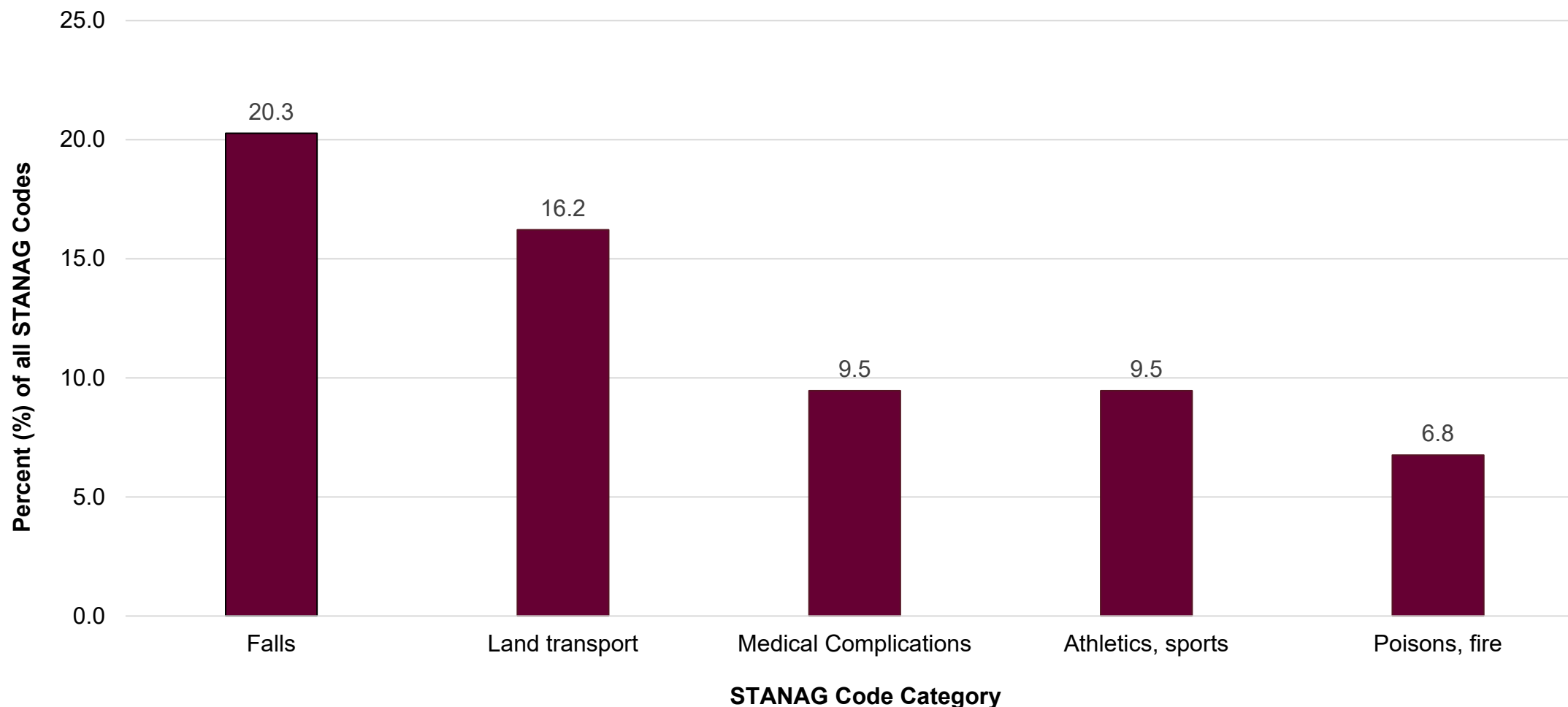
Injuries defined using the APhC Injury Taxonomy; Acute traumatic and cumulative micro-traumatic (overuse) injuries
 Data source: Military Health System Data Repository (MDR); injuries defined using the APhC Taxonomy of Injuries
 DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

Major Diagnosis Groups Resulting in Hospitalizations U.S. Army Active Duty, 2021



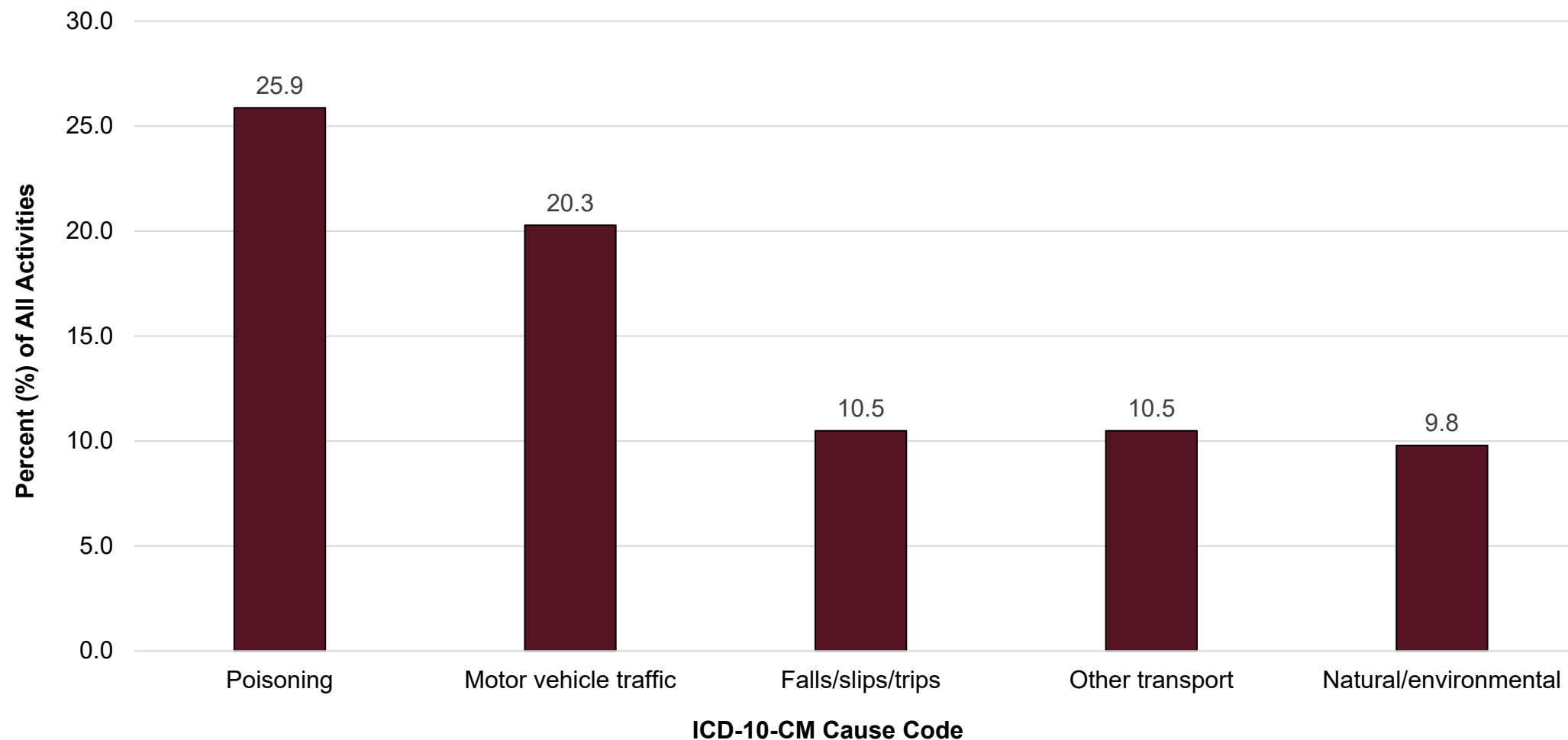
Total number of hospitalizations = 19,204
 Diagnosis group "Other" includes adverse effects of drugs, blood disorders, and other neoplasms (not cancer)
 Data source: Military Health System Data Repository (MDR); injuries defined using the APHC Taxonomy of Injuries
 DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

Leading Standardized Agreement (STANAG) Cause Codes for Injury Hospitalizations U.S. Army Active Duty, 2021



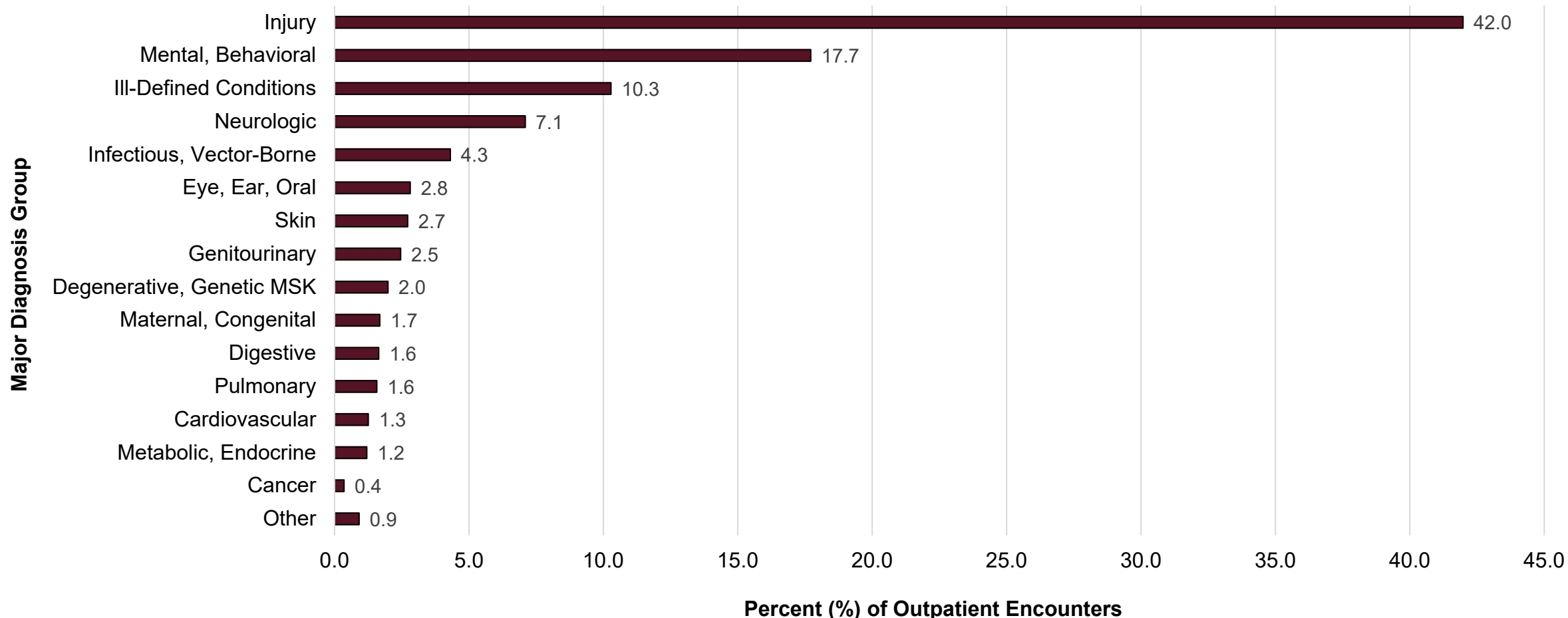
Total number of STANAG-coded injury hospitalizations = 74(11%); may not be representative of the distribution of causes for all incident injuries
Data source: Military Health System Data Repository (MDR); injuries defined using the APHC Taxonomy of Injuries
DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

Leading Causes of Unintentional Injury Hospitalizations U.S. Army Active Duty, 2021



Total number of cause-coded unintentional injury hospitalizations = 143 (20%) ; may not be representative of the distribution of causes for all incident injuries
 Data source: Military Health System Data Repository (MDR); injuries defined using the APHC Taxonomy of Injuries
 DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

Major Diagnosis Groups Resulting in Outpatient Visits U.S. Army Active Duty, 2021



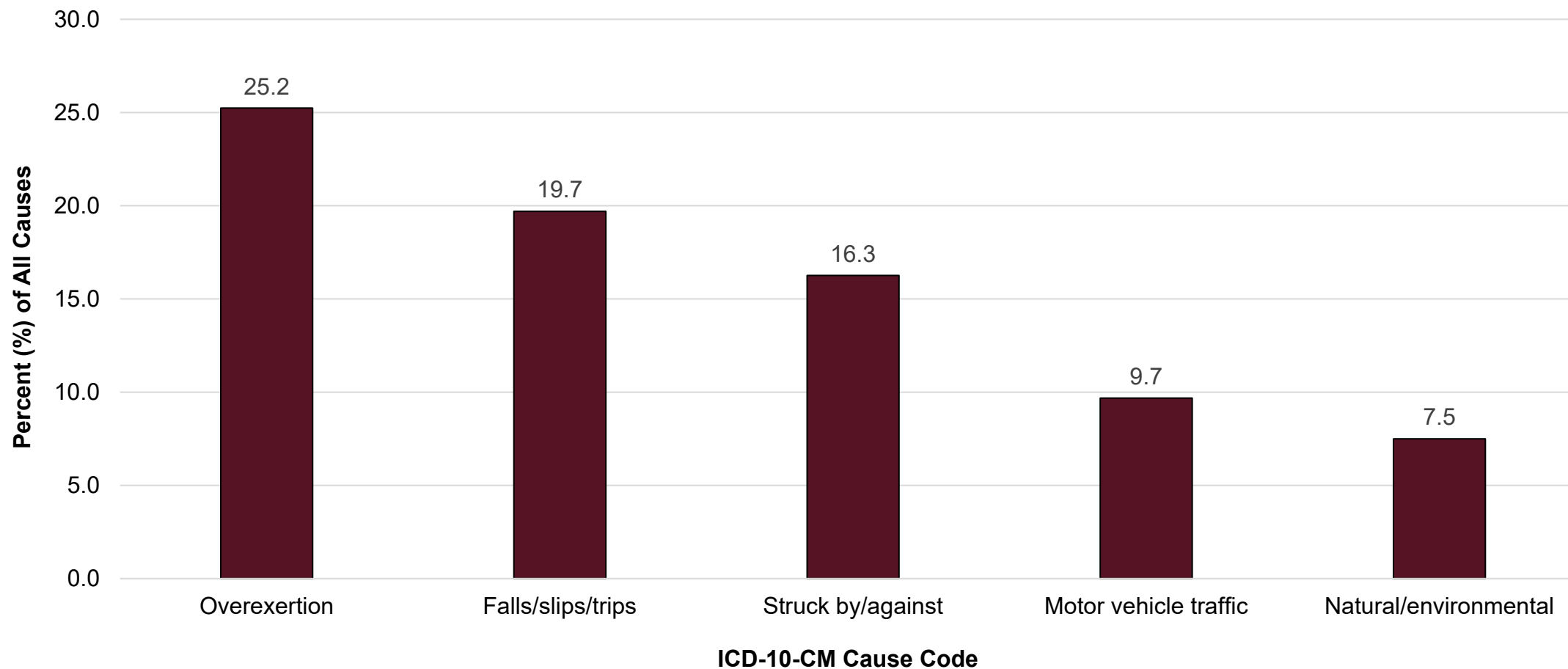
Total number of outpatient visits = 5,034,156

Diagnosis group "Other" includes adverse effects of drugs, blood disorders, and other neoplasms (not cancer)

Data source: Military Health System Data Repository (MDR); injuries defined using the APHC Taxonomy of Injuries

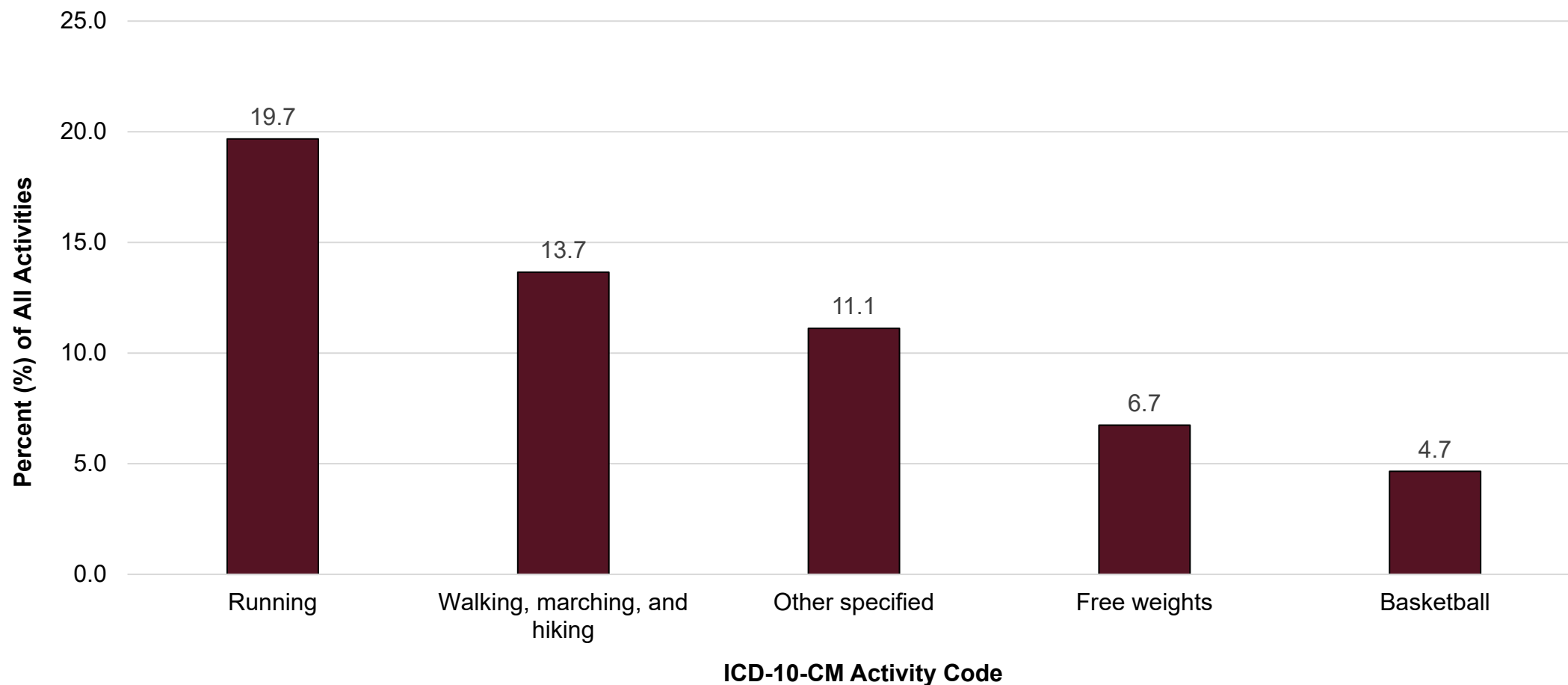
DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

Leading Causes of Unintentional Injury Outpatient Visits, U.S. Army Active Duty, 2021



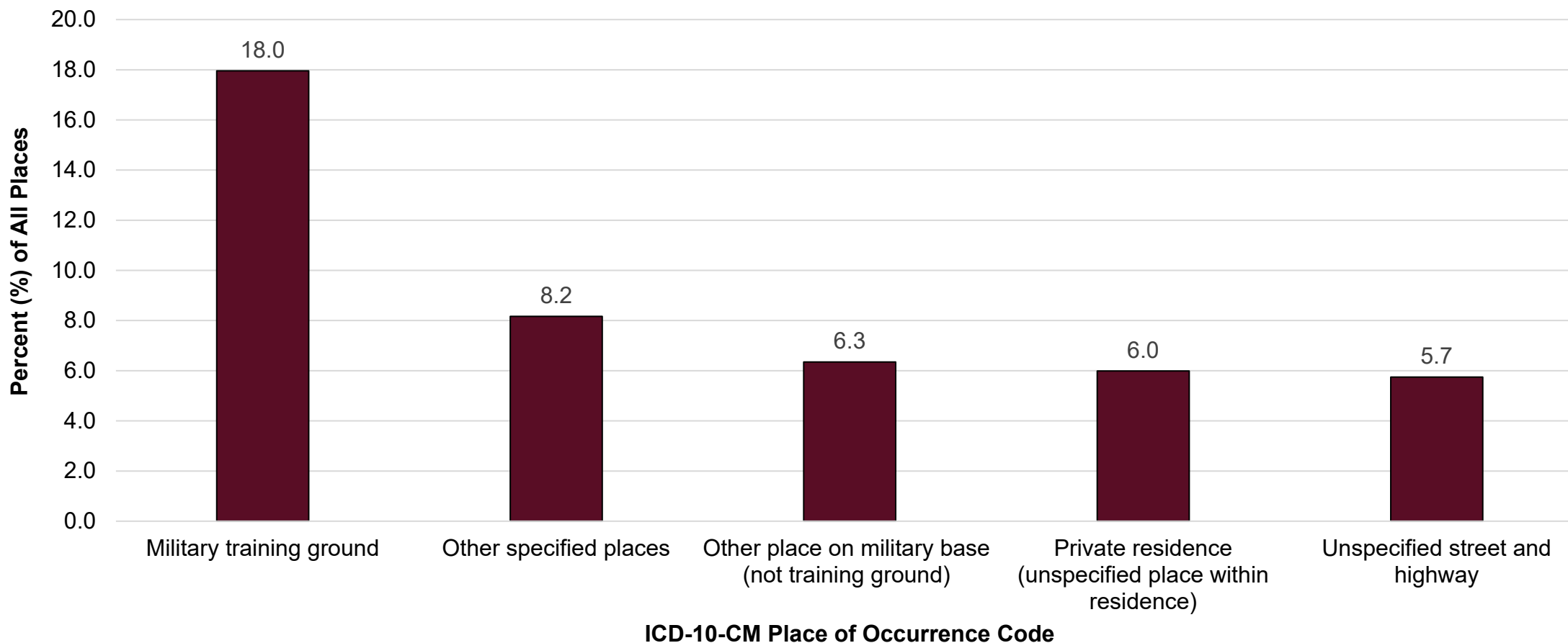
Total number of unintentional injury outpatient visits with cause codes =55,208 (9%); may not be representative of the distribution of causes for all incident injuries
Data source: Military Health System Data Repository (MDR); injuries defined using the APHC Taxonomy of Injuries
DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

Leading Activities Associated with Unintentional Injury Outpatient Visits, 2021



Total number of unintentional outpatient encounters with activity codes = 26,513 (4%); may not be representative of the distribution of activities for all incident injuries
 Data source: Military Health System Data Repository (MDR); injuries defined using the APHC Taxonomy of Injuries
 DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

Leading Places Associated with Unintentional Injury Outpatient Visits, 2021



Total number of unintentional outpatient encounters with place of occurrence codes = 17,852 (3%); may not be representative of the distribution of places for all incident injuries
 Data source: Military Health System Data Repository (MDR); injuries defined using the APHC Taxonomy of Injuries
 DCPH-A Injury Prevention, email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

Prepared by:

- Olivia Mahlmann, MPH,¹
- Anna Schuh-Renner, PhD²
- Michelle Canham-Chervak, PhD, MPH²

¹**Defense Health Agency, Armed Forces Health Surveillance Division – Army Satellite**

²**Defense Centers for Public Health-Aberdeen, Injury Prevention Branch**

Website: <https://phc.amedd.army.mil/topics/discond/ptsaip/Pages/default.aspx>

Email: usarmy.apg.medcom-aphc.mbx.injuryprevention@health.mil

Additional details and interpretation are available in an accompanying 2021 Technical Information Paper. See <https://phc.amedd.army.mil/news/Pages/PeriodicPublications.aspx>; select Active Duty Army Injury Surveillance Summary.