



# 2017-2020

## TRAUMA REGISTRY REPORT

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Central Ohio  
Trauma System

An affiliate of the Columbus Medical Association

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## Introduction/Timeline

The Trauma Division of the Central Ohio Trauma System (COTS) functions as a Regional Trauma Organization (RTO). We are a group of dedicated individuals working together to provide optimal care to trauma patients within Central, Southeast, and Southeast Central Ohio. Our partnership includes eight trauma centers verified by the American College of Surgeons (ACS), thirty two acute care hospitals, fifteen free-standing emergency departments, one alternate care facility, emergency preparedness experts, and emergency medical services (EMS).

### Mission

The Central Ohio Trauma System (COTS) is a group of physicians, healthcare professionals, and other experts working together to improve the health and safety of our communities.

### Vision

Access to the best care and outcomes through collaboration, coordination, education, and prevention.

### Values

- Optimistic – we have a positive and uplifting attitude and are open to new challenges
- Good people, doing good things – we aim to be principled in all aspects of our work
- Trustworthy – we have caring and personal attitudes toward building our partner relations
- Practiced – we are knowledgeable, experienced, and able to carry out our assigned work/projects
- Collaborative – we support the diverse nature of our regional partners, and we are unbiased and collegial
- Engaged – we are proactive and responsive to our customer’s needs

The Central Ohio Trauma System is a voluntary, cooperative, self-regulatory organization and maintains a 501(c)(3) Internal Revenue status for charitable, educational, and scientific intent.

## The following timeline demonstrates the development and growth of the Central Ohio Trauma System from 1998-2021.

The Central Ohio Trauma System was established in 1998 with the following committees: Clinical Trauma, Executive, Finance, Injury Prevention, Pre-Hospital, and Registry. In 1999, the Trauma Registrar was hired, and the Trauma Regional Registry was implemented with data submitted from 11 Franklin County hospitals.

### 1999- 2005

- Trauma Nurse Educator hired part time (2004)
- Education Coordinator full time (2005)
- Administrative Assistant full time (2005)

### Committees

- Diversion Committee (1999)
- Regional Hospital Incident Commend System (2000)
- STEMI Committee (2004)

### Protocols/Guidelines/Education

- EMS Field Triage (1999)
- Columbus Metropolitan Medical Strike Team (CMMST) Plan (1999)
- Regional Level I and II Criteria Alert criteria (1999)
- Emergency Patient Transport Plan (1999)
- Real Time Activity Status (RTAS) (2001)
- Centralized coordination of education classes began for ATLS®, TNCC™, ENPC™ (2001)
- EMS Infectious Exposure (2001)
- ED care protocols (2001)
- Transfer agreements (2001)
- Family Violence and Screening Protocols (2001)
- Performance Improvement (2001)
- Regional Guidelines for Patients with Concealed Carry Weapons (2004)

### 2006-2010

- 4 emergency preparedness staff hired

### Committees

- Stroke Committee (2007)
- STEMI Task Force (2009)

### Protocols/Guidelines/Education

- MOUs for shared services personnel during a disaster for Central Ohio
- Regional EMS/hospital communication tool (2004)
- Hospital Resource Attestation Guide for EMS (2009)
- Publish Injury Report with Columbus Public Health

## 2011-2015

- Trauma performance improvement (PI) nurse hired

### Committees

- Aeromedical Committee (2011)
- First Research Symposium (2011)
- Medical Review Executive Committee (MREC) initiates PI with Trauma Registry data (2013-2014)

### Protocols/Guidelines/Education

- Burn Emergency Preparedness Plan (2011)
- Regional Hospital Pediatric Surge Plan (2011)
- Surgical Emergency Response Team (SERT) (2011)
- Expanded Pre-hospital Trauma Triage Guidelines to include Adult, Geriatric, and Pediatric (2012)
- Aeromedical Transport Communication Guide (2013)
- Guidelines for EMS Multi Casualty Trauma Scenes (2014)
- Spinal Immobilization Guideline (2015)

## 2016-2021

- 2018 – 2 new staff hired for Southeast /Southeast Central Regional Emergency Preparedness development and began the work to develop the Southeast/Southeast Central Healthcare Coalition in 2019.
- March 2020 – COTS coordinated the COVID -19 response for regions 4,7,8 known in Ohio as Zone 2

### Committees

- Emergency Services Workgroup (2018)
- New organizational structure that includes a COTS Board of Trustees and three advisory boards: Trauma, Emergency Services, and Emergency Preparedness. Updated Mission, vision, values statements (2019)
- Diversity Task Force and created a diversity statement and IDEA principles (2019)
- American College of Surgeons - Regional Trauma Quality Improvement Program – (TQIP) (2020)

### Protocols/Guidelines/Education

- Spinal Motion Restriction Guidelines (2016)
- EMS Medical Director Guidelines (2016)
- The Trauma in the First 48 hours Course© (2016)
- Standard Objectives for the Trauma Nurse and Process Objectives for the Advanced Practice Provider (2016)
- The COTS Trauma Data Registry Validation Program (2016)
- EMS Resource for the Identification and Care of Human Trafficking Victims (2017)
- Tranexamic Acid (TXA) Guideline (2017)
- Disaster Management and Emergency Preparedness (DMEP™) Course started at COTS (2017)
- “Stop the Bleed®” Campaign for central Ohio (2018)
- Reviewed/updated the SERT protocol (2018)
- Regional Concealed Carry Guidelines for Patients and Law Enforcement Officers (LEO) (2019)
- Regional Helicopter Air Ambulance Communication and Safety Guideline (2020)
- Guideline for The Pre-Arrival Notification of Detainee or LEO escort (2021)
- Blood Conservation Guidelines (2021)

Today, COTS is a significant force in the Central, Southeast, and Southeast Central Ohio communities around issues of trauma, emergency services, and emergency preparedness. The Central Ohio Trauma System is THE organization where patient care issues affecting more than one stakeholder group can be brought and addressed in a neutral forum. It is the one place in Central, Southeast, and Southeast Central Ohio where no matter which stakeholder

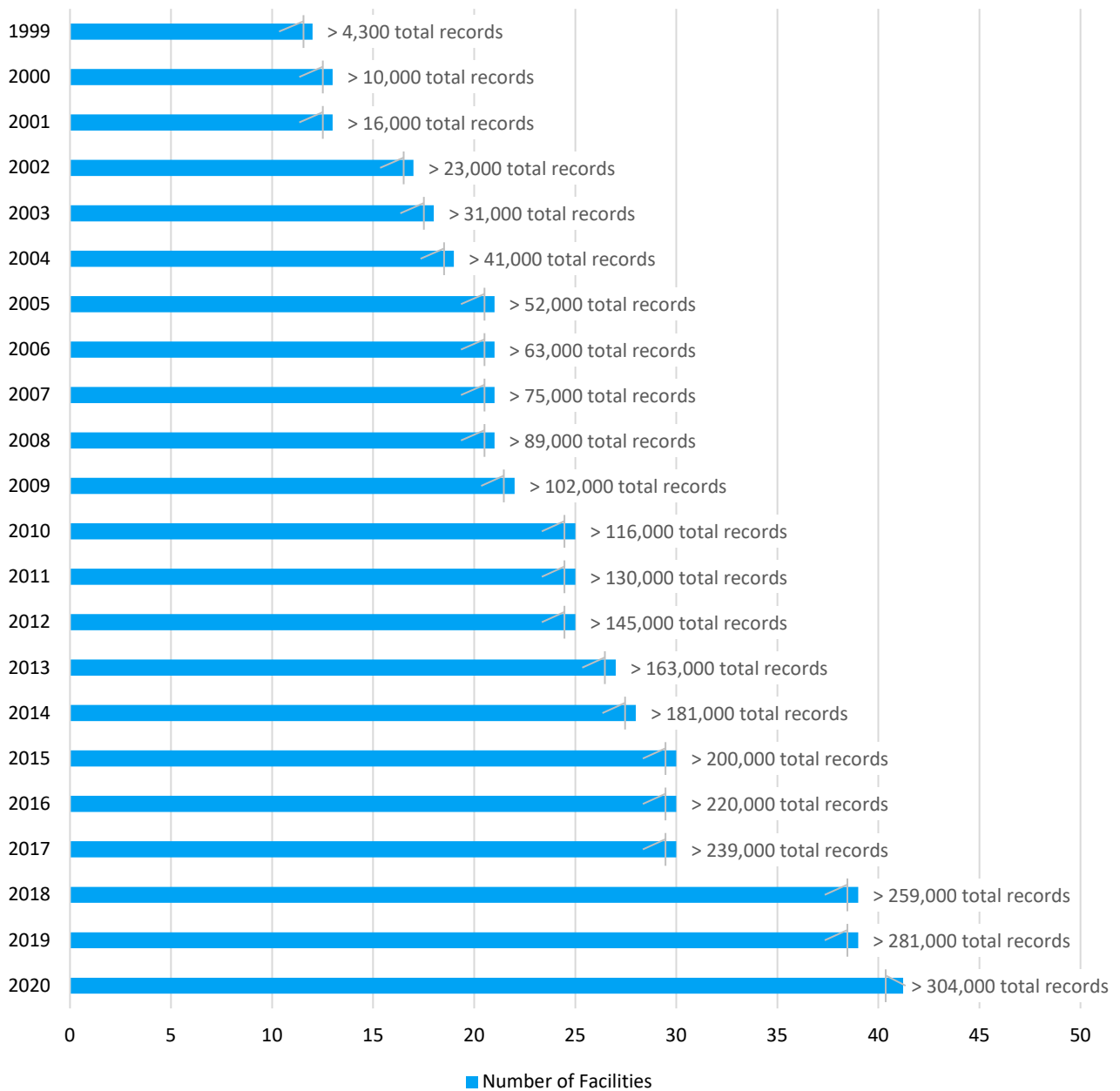
groups are involved in addressing the issue, the PATIENT is always at the center of decisions being made. The work done by COTS stakeholders ultimately benefits the patient even though no direct patient care services are provided through COTS.

The success of COTS is due to the tireless dedication of many stakeholders---physicians, nurses, EMS providers, public health experts, emergency response personnel, registrars, program coordinators, administrators, and countless others. Without these unsung heroes, a regionalized system of care could not be possible.

### Published Research Papers & Presentations

- Burt, J., Cookman K., Giambri, R., Harrison, K., Houck, O., & Moore, D. (2020, August 18). *Collaborate to validate: A region-led statewide data validation project* [Virtual poster session]. Trauma Center Association of America Virtual 2020 Best Practice Poster Event, Mooresville, NC, United States.
- Curcio, J.E. & Ferretti, N. (2021, November). Ohio Diversion Plan Keeps Emergency Patients Moving. *EMS World*. 50(11). Retrieved from <https://www.hmpgloballearningnetwork.com/site/emsworld/original-contribution/ohio-diversion-plan-keeps-emergency-patients-moving>
- Gascon, G.M., Steinberg, S., Kovach, S., & Falcone, R.E. (2021, July 25-27). *A mixed methods approach to understanding the influence of changes in successive versions of the Advanced Trauma Life Support program on student performance* [Conference presentation]. Central Surgical Association & Midwest Surgical Association 2021 Annual Meeting, Chicago, IL, United States.
- Gascon, G.M., Steinberg, S., Kovach, S., & Falcone, R.E. (2021, December 7). Mixed methods approach to understanding the influence of changes in successive versions of the Advanced Trauma Life Support program on student performance. *Surgery*. <https://doi.org/10.1016/j.surg.2021.08.064>
- Keller, J., Kovach, S., Gascon G.M., & Falcone, R.E. (2020, Fall). A regional trauma organization as a coordinating body for a regional pandemic response: A brief report. *Am J Disaster Med*. 15(4):227-232. <https://doi.org/10.5055/ajdm.2020.0372>
- Kovach, S., Shaffer, J., Gascon, G.M., & Falcone, R.E. (2020, August 20). Deployment of a shared alternative care site during the COVID-19 pandemic. *JEMS*. Retrieved from <https://www.jems.com/best-practices/deployment-of-a-shared-alternative-care-site-during-the-covid-19-pandemic/>
- McElroy, J.A., Steinberg, S., Keller, J., & Falcone, R.E. (2019, October). Operation continued care: a large mass-casualty, full-scale exercise as a test of regional preparedness. *Surgery*. 166(4):591-592. <https://doi.org/10.1016/j.surg.2019.05.045>
- The Joint Commission. (2021, September). Training health care staff for emergencies. *Environment of Care® News*. 24(9):pp. 9-14.
- Wilson, J., Schano, G., Panchal, A., Kovach, S., Treinish, M., Holden, L., Graymire, V., & Huckaby, M.A. (2020, June 23). Collaboration: The key to a successful patient care hand-off. *JEMS*. Retrieved from <https://www.jems.com/operations/the-key-to-a-successful-patient-care-hand-off/>

## Total number of facilities reporting by year and running total of records to COTS Registry



## Considerations

- For this report:
  - 2017 data was defined as records that had an arrival date between 1/1/2017 and 12/31/2017 from 30 reporting facilities;
  - 2018 data was defined as records that had an arrival date between 1/1/2018 and 12/31/2018 from 39 reporting facilities;
  - 2019 data was defined as records that had an arrival date between 1/1/2019 and 12/31/2019 from 39 reporting facilities; and
  - 2020 data was defined as records that had an arrival date between 1/1/2020 and 12/31/2020 from 43 reporting facilities

These data are intended for descriptive purposes only and includes major trauma and minor single system trauma. ISS scores range between 1-75.

- The data utilized for this report was extracted on 8/5/2021. Any data received and processed for calendar year 2017 – 2020 after this date were not included in this summary.
- Region 7 and 8 officially joined COTS during 2019 and 2020. Spring 2020 regions 4, 7, 8 were consolidated into Zone 2 during the COVID-19 Pandemic by Governor DeWine. Not every hospital or free-standing emergency department (FSED) is included in the COTS registry from these regions. (See Appendix E)
- When specifically identified, Region 4, 7, and 8 data are included and compromise all of Zone 2 in Ohio.
- The figures in this COTS Trauma Registry Report are in some instances followed by tables with the actual data. Not all tables are associated with a Figure.
- For tables that have percentages, the percentages may not add up to 100% due to rounding.
- Throughout this document all trauma centers regardless of level were combined for reporting of 2017 and 2018 data. For 2019 and 2020 data, Level I and II trauma centers were reported together and Level IIIs were reported as their own category.
  - For 2017 and 2018, The Ohio State University Hospital East was categorized as an acute care hospital; 2019 and 2020 it was captured as a Level III trauma center.
  - For 2017 and 2018, Mount Carmel West was categorized as a trauma center; January – April 2019 an acute care hospital when the trauma center was relocated to Mount Carmel East hospital, the West campus became a FSED in May 2019 when it stopped admitted patients. Mount Carmel East was an acute care hospital in 2017 and 2018 and a Level II trauma center in 2019 and 2020.
- Patients with the following isolated ICD-10-CM codes are EXCLUDED from COTS:
  - S72.00-S72.14, fracture of head/neck of femur ONLY IF age >70 AND it resulted from slipping, tripping, stumbling or a same level fall (W01.0, W18.30, W18.31, W18.39);
  - S00, S10, S20, S30, S40, S50, S60, S70, S80, S90, patients with abrasion or contusion injuries that were transferred in/out for treatment of injuries or died because of injuries would be included.
- It is important to note that when “region” is referenced in the data, Ohio Homeland Security Regions as displayed on the map in Appendix C, and not Ohio’s various regional trauma systems in Appendix D.
- Considerations should be made when evaluating the number of injuries and deaths that are reported for counties near and on the border with other states. These patients could have been transported out of Ohio where the injury occurred to be treated by a closer facility in a neighboring state. These injuries and any deaths resulting from these injuries would not be reflected in this report.



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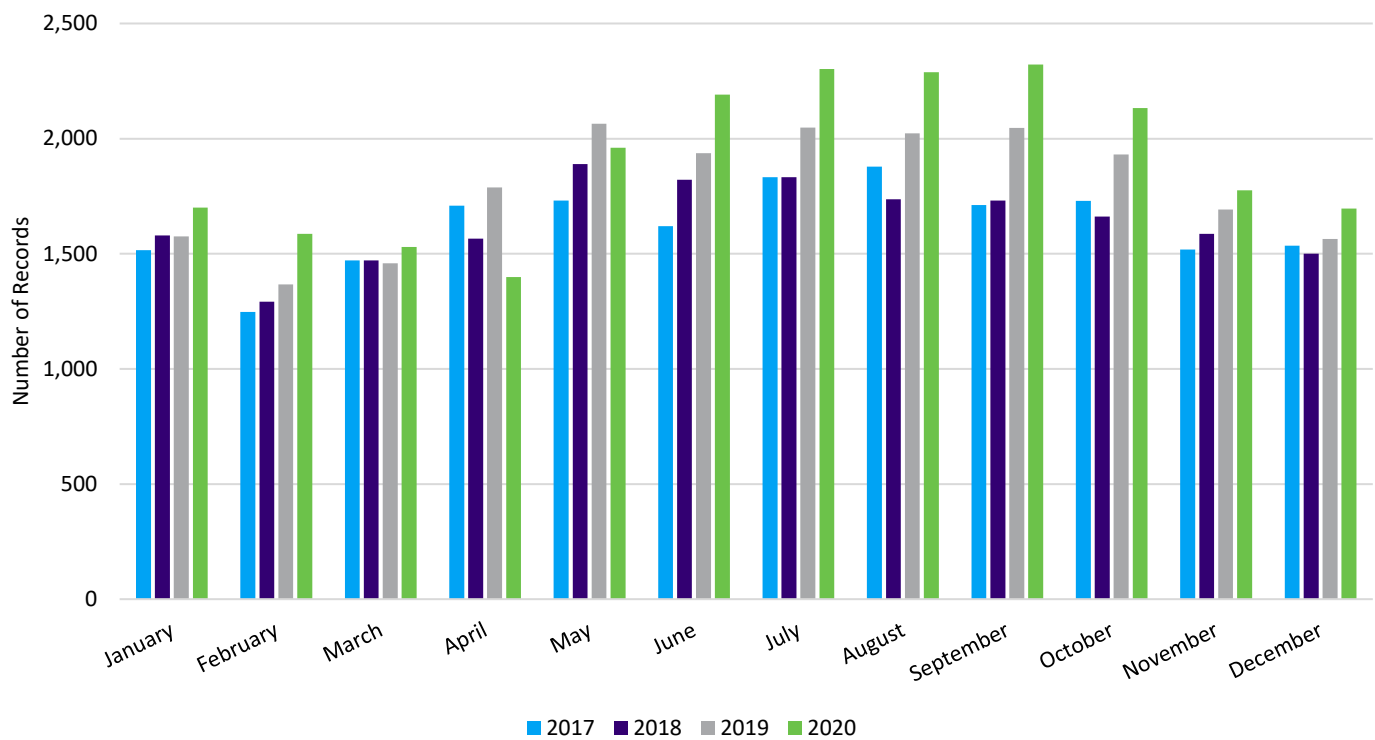
Figure 10. Emergency department deaths by hospital type

## Section 1: Records Submitted

The data has been collated to assure that at least three trauma centers are always included in aggregate representation of the data. In 2017 and 2018, the data includes two adult and one pediatric Level I center, two adult Level II trauma centers and two adult Level III trauma centers. In 2019 and 2020, with the addition of The Ohio State University Hospital East as a Level III, the three Level I centers (Adult and Pediatric) were combined with the two Level II trauma centers and the three Level III centers were reported together as their own category.

**Figure 1. Total records submitted to the COTS Trauma Registry by month of arrival and year**

This figure displays the number of trauma records submitted to the COTS trauma registry by month/year of patient arrival. Since all records are counted this may include two records for some patients if they were treated at more than one facility due to being transferred out for a higher level of care.

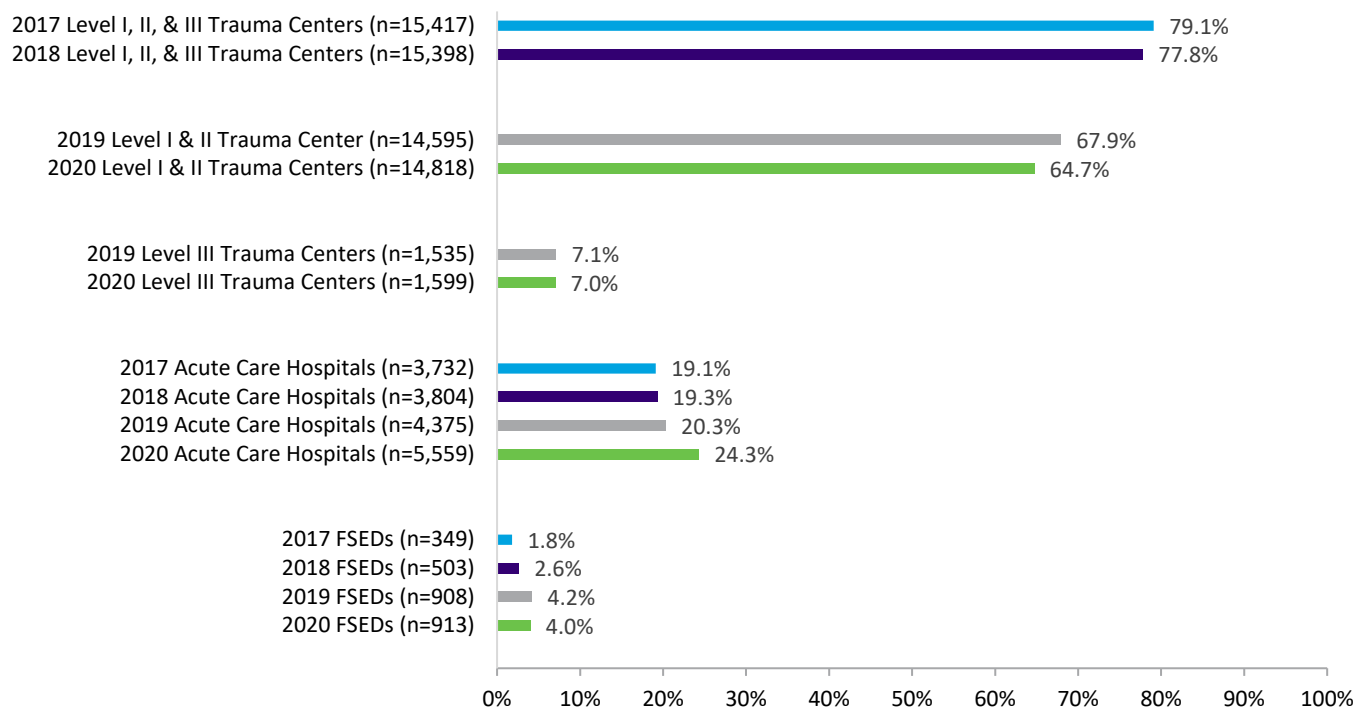


**Table 1. Total records submitted to the COTS Trauma Registry by month of arrival and year**

Month	2017		2018		2019		2020	
	#	%	#	%	#	%	#	%
January	1,515	7.8	1,580	8.0	1,574	7.3	1,700	7.4
February	1,248	6.4	1,292	6.6	1,367	6.4	1,587	6.9
March	1,471	7.5	1,471	7.5	1,458	6.8	1,529	6.7
April	1,709	8.8	1,565	7.9	1,788	8.3	1,399	6.1
May	1,731	8.9	1,889	9.6	2,065	9.6	1,960	8.6
June	1,620	8.3	1,822	9.2	1,937	9.0	2,191	9.6
July	1,832	9.4	1,832	9.3	2,048	9.5	2,302	10.1
August	1,878	9.6	1,737	8.8	2,023	9.4	2,288	10.0
September	1,711	8.8	1,731	8.8	2,047	9.5	2,322	10.1
October	1,729	8.9	1,662	8.4	1,931	9.0	2,133	9.3
November	1,519	7.8	1,586	8.0	1,692	7.9	1,776	7.8
December	1,535	7.9	1,550	7.9	1,564	7.3	1,696	7.4
<b>Total</b>	<b>19,498</b>	<b>100.0</b>	<b>19,717</b>	<b>100.0</b>	<b>21,494</b>	<b>100.0</b>	<b>22,883</b>	<b>100.0</b>

**Figure 2. Total records submitted to the COTS Trauma Registry by facility type and year**

This figure displays the number of trauma records submitted to the COTS trauma registry by year of patient arrival and facility type. Since all records are counted this may include two records for some patients if they were treated at more than one facility due to being transferred out for a higher level of care. Over the last few years several acute care hospitals and FSEDs have joined COTS adding additional data to these types of facilities. Since the trauma numbers have gone up at acute care hospitals and FSEDs the percentages within the trauma centers decreased although the total numbers stayed relatively stable.



**Table 2. Total records submitted to the COTS Trauma Registry by facility type and year**

Hospital Type	2017		2018		2019		2020	
	#	%	#	%	#	%	#	%
Trauma Centers Level I, II, & III	15,417	79.1	15,338	77.8	Not Available	Not Available	Not Available	Not Available
Trauma Centers Level I & II	Not Available	Not Available	Not Available	Not Available	14,595	67.9	14,818	64.7
Trauma Centers Level III	Not Available	Not Available	Not Available	Not Available	1,535	7.1	1,599	7.0
FSEDs	349	1.8	503	2.6	994	4.2	913	4.0
Acute Care Hospitals	3,732	19.1	3,878	19.7	4,375	20.7	5,559	24.3
<b>Total</b>	<b>19,498</b>	<b>100.0</b>	<b>19,719</b>	<b>100.0</b>	<b>21,499</b>	<b>100.0</b>	<b>22,889</b>	<b>100.0</b>

**Table 3. Duration of hospital stay by top mechanism of injury (MOI)**

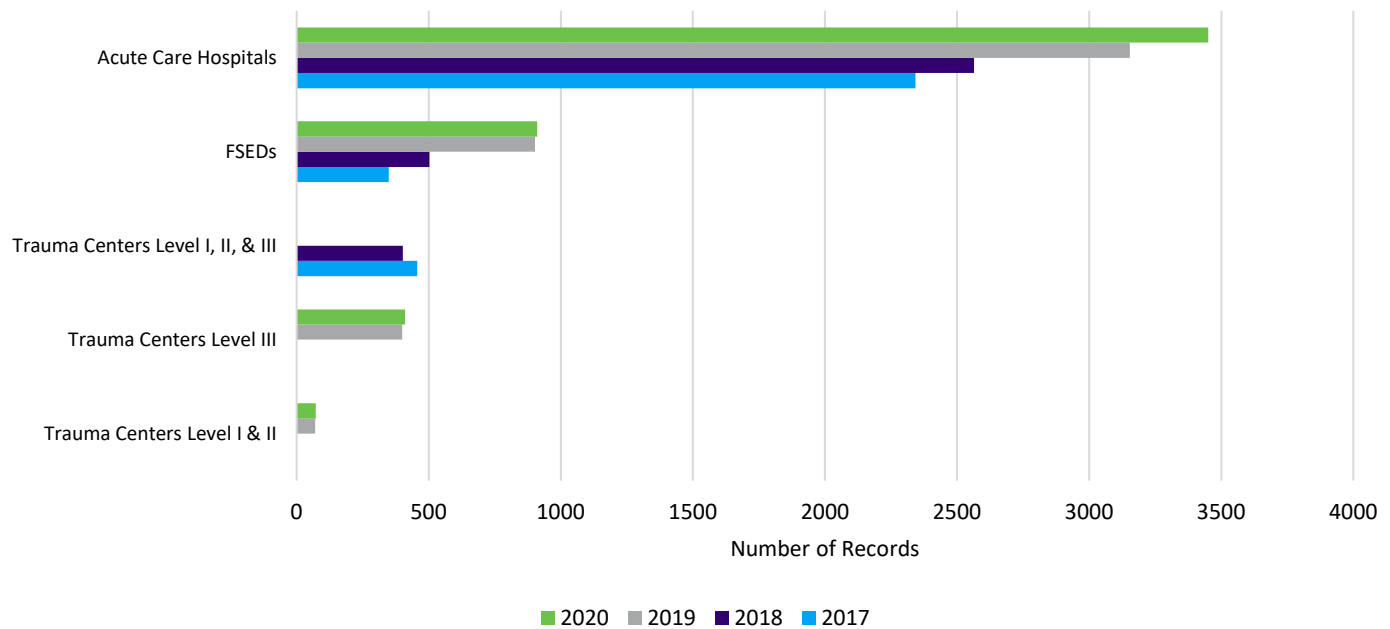
The table below only includes admitted patients. ED deaths, ED transfers out, left against medical advice from ED, or discharged from the ED are excluded. A review of this data demonstrates an increase in falls from 7,918 (51.4%) in 2017 to 9,609 (56.3%) in 2020. The firearms data demonstrates the highest number (579) in 2020, although overall the percentages only changed by 0.5% over the last four years.

<b>Mechanism of Injury</b>	<b>≤ 5 days</b>	<b>≥ 6 days</b>	<b>Total Count</b>	<b>Total %</b>
<b>2017</b>				
Fall	6,061	1,857	7,918	51.4
MVC – Occupant, Motorcyclist, Pedal Cyclist, Pedestrian, Other, Unspecified	1,888	565	2,453	15.9
Struck by or Against	1,185	120	1,305	8.5
Other Land Transport	879	246	1,125	7.3
Firearm	332	130	462	3.0
Cut/Pierce	299	46	345	2.2
All Other/Unk MOIs	1,410	378	1,788	11.6
<b>Total</b>	<b>12,054</b>	<b>3,342</b>	<b>15,396</b>	<b>100.0</b>
<b>2018</b>				
Fall	6,296	1,934	8,230	53.3
MVC – Occupant, Motorcyclist, Pedal Cyclist, Pedestrian, Other, Unspecified	1,938	551	2,489	16.1
Struck by or Against	1,200	108	1,308	8.5
Other Land Transport	774	211	985	6.4
Cut/Pierce	382	54	436	2.8
Firearm	252	110	362	2.3
All Other/Unk MOIs	1,324	312	1,636	10.6
<b>Total</b>	<b>12,166</b>	<b>3,280</b>	<b>15,446</b>	<b>100.0</b>
<b>2019</b>				
Fall	6,659	2,114	8,773	54.5
MVC – Occupant, Motorcyclist, Pedal Cyclist, Pedestrian, Other, Unspecified	1,963	545	2,508	15.6
Struck by or Against	1,149	125	1,274	7.9
Other Land Transport	756	158	914	5.7
Cut/Pierce	352	60	412	2.6
Firearm	287	103	390	2.4
All Other/Unk MOIs	1,488	334	1,822	11.3
<b>Total</b>	<b>12,654</b>	<b>3,439</b>	<b>16,093</b>	<b>100.0</b>
<b>2020</b>				
Fall	7,151	2,458	9,609	56.3
MVC – Occupant, Motorcyclist, Pedal Cyclist, Pedestrian, Other, Unspecified	1,949	509	2,458	14.4
Struck by or Against	991	91	1,082	6.3
Other Land Transport	837	178	1,015	5.9
Firearm	429	168	597	3.5
Cut/Pierce	401	59	460	2.7
All Other/Unk MOIs	1,521	325	1,846	10.8
<b>Total</b>	<b>13,279</b>	<b>3,788</b>	<b>17,067</b>	<b>100.0</b>

### Figure 3. Number of transfers out of emergency departments by hospital type

This table looks at the number of instances where a patient was transferred out of a hospital based on the hospital type. The table below identifies the destination by hospital type for these transfers.

Most transfers out of the hospital were by acute care hospitals. Among the trauma centers, most of the transfers out came from Level III Trauma Centers.



**Table 4. Number of transfers out of emergency departments by hospital type**

Hospital Type	2017 Transfers		2018 Transfers		2019 Transfers		2020 Transfers	
	#	%	#	%	#	%	#	%
Trauma Centers Level I, II, & III	457	14.5	402	11.5	Not Available	Not Available	Not Available	Not Available
Trauma Centers Level I & II	Not Available	Not Available	Not Available	Not Available	70	1.5	73	1.5
Trauma Centers Level III	Not Available	Not Available	Not Available	Not Available	399	8.7	411	8.5
FSEDs	349	11.1	503	14.4	902	19.8	911	18.8
Acute Care Hospitals	2,342	74.4	2,580	73.7	3,194	70.0	3,451	71.2
<b>Total</b>	<b>3,148</b>	<b>100.0</b>	<b>3,485</b>	<b>100.0</b>	<b>4,565</b>	<b>100.0</b>	<b>4,846</b>	<b>100.0</b>

**Table 4a. Destinations of emergency department transfers out of Level I Trauma Centers**

There are a small number of transfers from emergency departments that come from Level I Trauma Centers. The table below identifies the destination by hospital type for these transfers.

Of the 117 emergency department transfers that came from Level I Trauma Centers, 92 went to other Level I Trauma Centers (78.6%). Most of these patients consisted of burn injuries, and adult and pediatric patients who needed transferred to the appropriate level of care.

The other patients were transferred to Level II and III trauma centers due to single system orthopedic, hand, and neurosurgical injuries and the majority (88.0%) had an ISS between 1 and 9.

Hospital Type	2017 Transfers		2018 Transfers		2019 Transfers		2020 Transfers	
	#	%	#	%	#	%	#	%
Trauma Centers	34	91.9	24	96.0	30	96.8	29	100.0
Acute Care Hospitals	1	2.7	0	0.0	1	3.2	0	0.0
Out of State	1	2.7	0	0.0	0	0.0	0	0.0
Other	1	2.7	1	4.0	0	0.0	0	0.0
<b>Total</b>	<b>37</b>	<b>100.0</b>	<b>25</b>	<b>100.0</b>	<b>31</b>	<b>100.0</b>	<b>29</b>	<b>100.0</b>

**Table 4b. Destinations of emergency department transfers out of acute care hospitals**

The majority of emergency department transfers out of acute care hospitals are transferred to Level I Trauma Centers. The table below identifies the destination by hospital type for these transfers.

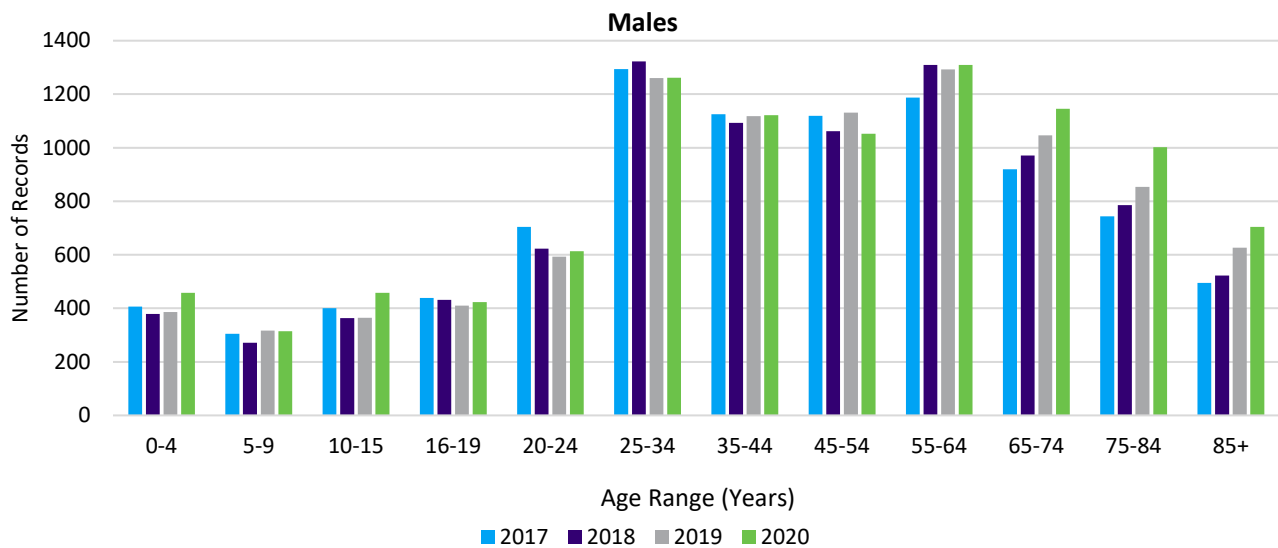
While the number of transfers from acute care hospitals to Level I and II Trauma Centers has steadily increased over the four years, the number transferred to Level III Trauma Centers has stayed relatively stable. The patients transferred from an acute care hospital to another acute care hospital are mainly transferred within a hospital system for single system injuries. There are very few patients transferred out of state.

Hospital Type	2017 Transfers		2018 Transfers		2019 Transfers		2020 Transfers	
	#	%	#	%	#	%	#	%
Level I Trauma Centers	1,563	66.7	1,681	65.5	1,998	63.3	2,267	65.7
Level II Trauma Centers	654	27.9	771	30.0	1,030	32.7	1,022	29.6
Level III Trauma Centers	59	2.5	39	1.5	55	1.7	57	1.7
Acute Care Hospitals	53	2.3	64	2.5	67	2.1	97	2.8
FSEDs	0	0.0	0	0.0	1	0.0	0	0.0
Other	0	0.0	0	0.0	1	0.0	0	0.0
Out of State	1	0.0	4	0.2	0	0.0	6	0.2
Unknown	12	0.5	8	0.3	2	0.1	2	0.1
<b>Total</b>	<b>2,342</b>	<b>100.0</b>	<b>2,567</b>	<b>100.0</b>	<b>3,154</b>	<b>100.0</b>	<b>3,451</b>	<b>100.0</b>

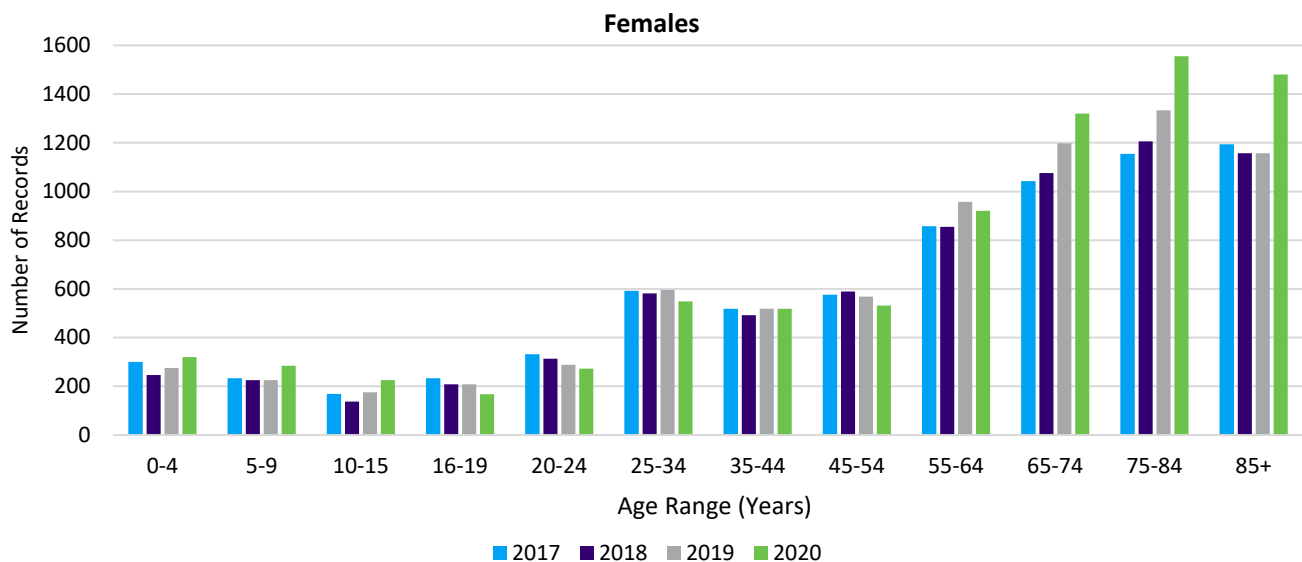
## Section 2: Patient Characteristics

**Figure 4. Demographic by sex and age group**

Figure 4, along with Table 5 below, look at the demographics of the records submitted to the trauma registry by sex and age group. From birth to age 64, males outnumbered females in each age group. Females accounted for a larger number of records compared to males from age 65 and older. The most common age group among males was 55 – 64. The least common age group overall was 5-9. The most common age group among females was 75-84 except for 2017 when it was 85 and over. ED transfers out excluded.



*1 male in 2017 and 1 male in 2018 excluded from chart due to missing age*



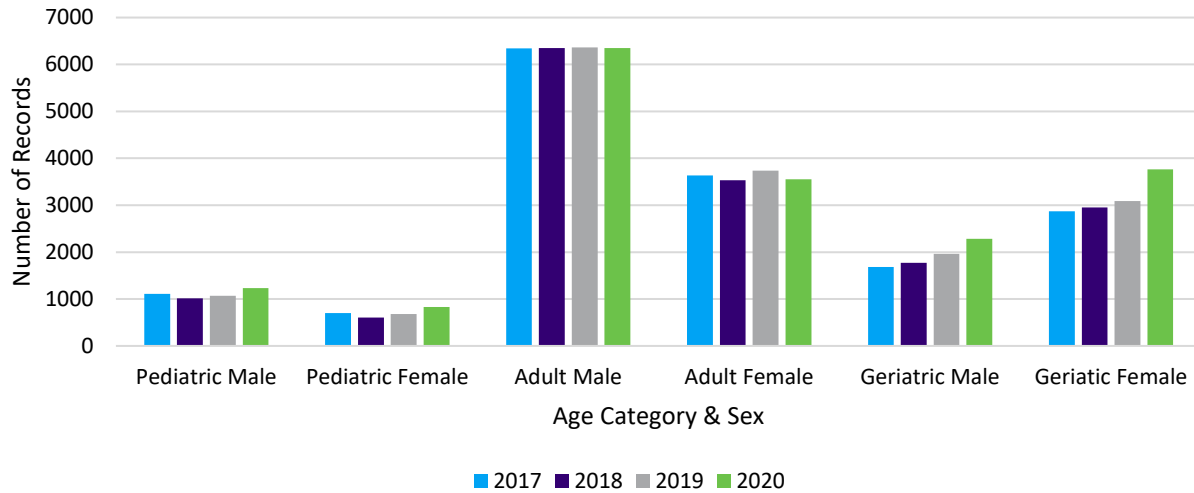


**Table 5. Demographics by sex and age group**

Year	Age Range (Years)	Male		Female		Total	
		#	%	#	%	#	%
<b>2017</b>	0 - 4	407	4.5	301	4.2	708	4.3
	5-9	305	3.3	233	3.2	538	3.3
	10-14	400	4.4	169	2.3	569	3.5
	15 - 19	439	4.8	234	3.2	673	4.1
	20 - 24	704	7.7	332	4.6	1,036	6.3
	25 - 34	1,294	14.2	592	8.2	1,886	11.5
	35 - 44	1,125	12.3	519	7.2	1,644	10.1
	45 - 54	1,119	12.2	576	8.0	1,695	10.4
	55 - 64	1,187	13.0	858	11.9	2,045	12.5
	65 - 74	919	10.1	1,043	14.5	1,962	12.0
	75 - 84	744	8.1	1,155	16.0	1,899	11.6
	85 and over	495	5.4	1,194	16.6	1,689	10.3
	Not Valued	1	0.0	0	0.0	1	0.0
	<b>Total</b>		<b>9,139</b>	<b>100.0</b>	<b>7,206</b>	<b>100.0</b>	<b>16,345</b>
<b>2018</b>	0 - 4	379	4.1	246	3.5	625	3.9
	5-9	272	3.0	225	3.2	497	3.1
	10-14	363	4.0	137	1.9	500	3.1
	15 - 19	432	4.7	209	2.9	641	4.0
	20 - 24	623	6.8	314	4.4	937	5.8
	25 - 34	1,323	14.5	582	8.2	1,905	11.7
	35 - 44	1,093	12.0	492	6.9	1,585	9.8
	45 - 54	1,062	11.6	590	8.3	1,652	10.2
	55 - 64	1,309	14.3	855	12.1	2,164	13.3
	65 - 74	971	10.6	1,076	15.2	2,047	12.6
	75 - 84	786	8.6	1,206	17.0	1,992	12.3
	85 and over	522	5.7	1,157	16.3	1,679	10.3
	Not Valued	0	0.0	0	0.0	0	0.0
	<b>Total</b>		<b>9,135</b>	<b>100.0</b>	<b>7,089</b>	<b>100.0</b>	<b>16,224</b>
<b>2019</b>	0 - 4	386	4.1	276	3.7	662	3.9
	5-9	317	3.4	226	3.0	543	3.2
	10-14	365	3.9	176	2.3	541	3.2
	15 - 19	410	4.4	208	2.8	618	3.7
	20 - 24	593	6.3	289	3.9	882	5.2
	25 - 34	1,260	13.4	596	7.9	1,856	11.0
	35 - 44	1,118	11.9	518	6.9	1,636	9.7
	45 - 54	1,131	12.0	568	7.6	1,699	10.1
	55 - 64	1,293	13.8	958	12.8	2,251	13.3
	65 - 74	1,046	11.1	1,198	16.0	2,244	13.3
	75 - 84	854	9.1	1,333	17.8	2,187	12.9
	85 and over	627	6.7	1,157	15.4	1,784	10.6
	Not Valued	0	0.0	0	0.0	0	0.0
	<b>Total</b>		<b>9,400</b>	<b>100.0</b>	<b>7,503</b>	<b>100.0</b>	<b>16,903</b>
<b>2020</b>	0 - 4	458	4.6	320	3.9	778	4.3
	5-9	314	3.2	285	3.5	599	3.3
	10-14	458	4.6	226	2.8	684	3.8
	15 - 19	423	4.3	167	2.0	590	3.3
	20 - 24	614	6.2	273	3.4	887	4.9
	25 - 34	1,262	12.8	549	6.7	1,811	10.1
	35 - 44	1,122	11.4	519	6.4	1,641	9.1
	45 - 54	1,052	10.7	532	6.5	1,584	8.8
	55 - 64	1,309	13.3	921	11.3	2,230	12.4
	65 - 74	1,146	11.6	1,320	16.2	2,466	13.7
	75 - 84	1,002	10.2	1,555	19.1	2,557	14.2
	85 and over	704	7.1	1,480	18.2	2,184	12.1
	Not Valued	1	0.0	0	0.0	1	0.0
	<b>Total</b>		<b>9,865</b>	<b>100.0</b>	<b>8,147</b>	<b>100.0</b>	<b>18,012</b>

### Figure 5. Demographics by patient type and sex

This analysis defines pediatric patients as those between the ages of 0 to 15 years, adult patients as those between the ages of 16 to 69 years, and geriatric patients as those ages 70 and older. The chart below shows the number of records based on type of patient (i.e., pediatric, adult, or geriatric) and patient sex. Adult males outnumber females in all categories except geriatric patients. The number of injuries in the geriatric patients for both sexes progressively increase over the four years.



2017 & 2020: 1 male excluded from chart due to no age value.

Table 6. Demographics by patient type and sex

Sex	Type of Patient									
	Pediatric		Adult		Geriatric		Not Valued		Total	
	#	%	#	%	#	%	#	%	#	%
<b>2017</b>										
Male	1,112	61.3	6,344	63.6	1,682	37.0	1	100.0	9,139	55.9
Female	703	38.7	3,635	36.4	2,868	63.0	0	0.0	7,206	44.1
<b>Total</b>	<b>1,815</b>	<b>100.0</b>	<b>9,979</b>	<b>100.0</b>	<b>4,550</b>	<b>100.0</b>	<b>1</b>	<b>100.0</b>	<b>16,345</b>	<b>100.0</b>
<b>2018</b>										
Male	1,014	62.5	6,351	64.3	1,770	37.5	0	0.0	9,135	56.3
Female	608	37.5	3,530	35.7	2,951	62.5	0	0.0	7,089	43.7
<b>Total</b>	<b>1,622</b>	<b>100.0</b>	<b>9,881</b>	<b>100.0</b>	<b>4,721</b>	<b>100.0</b>	<b>0</b>	<b>0.0</b>	<b>16,224</b>	<b>100.0</b>
<b>2019</b>										
Male	1,068	61.2	6,366	63.0	1,966	38.9	0	100.0	9,400	55.6
Female	678	38.8	3,737	37.0	3,088	61.1	0	0.0	7,503	44.4
<b>Total</b>	<b>1,746</b>	<b>100.0</b>	<b>10,103</b>	<b>100.0</b>	<b>5,054</b>	<b>100.0</b>	<b>0</b>	<b>100.0</b>	<b>16,903</b>	<b>100.0</b>
<b>2020</b>										
Male	1,230	59.7	6,352	64.2	2,282	37.7	1	100.0	9,865	54.8
Female	831	40.3	3,549	35.8	3,767	62.3	0	0.0	8,147	45.2
<b>Total</b>	<b>2,061</b>	<b>100.0</b>	<b>9,901</b>	<b>100.0</b>	<b>6,049</b>	<b>100.0</b>	<b>1</b>	<b>100.0</b>	<b>18,012</b>	<b>100.0</b>

## Figure 6. Demographics by race

The largest incidence is in Whites, followed by Blacks.

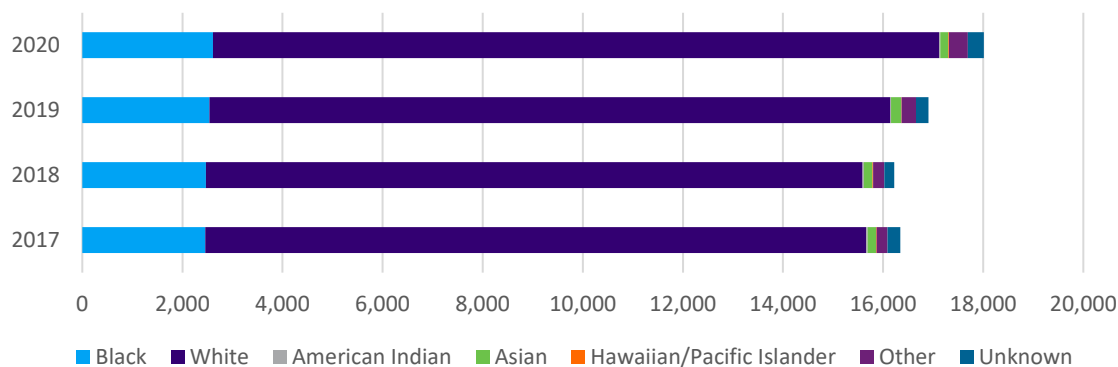


Table 7. Demographics by race

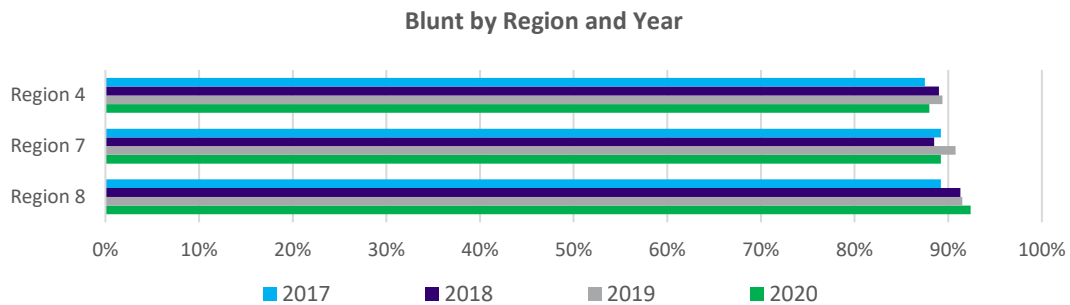
Race	2017		2018		2019		2020	
	#	%	#	%	#	%	#	%
American Indian	29	0.2	28	0.2	12	0.1	21	0.1
Asian	166	1.0	169	1.0	202	1.2	164	0.9
Black	2,460	15.1	2,471	15.2	2,541	15.0	2,612	14.5
Hawaiian/Pacific Islander	13	0.1	14	0.1	10	0.1	7	0.0
White	13,202	80.8	13,118	80.9	13,606	80.5	14,508	80.5
Other	220	1.3	224	1.4	287	1.7	378	2.1
Unknown	255	1.6	200	1.2	245	1.4	322	1.8
<b>Total</b>	<b>16,345</b>	<b>100.0</b>	<b>16,224</b>	<b>100.0</b>	<b>16,903</b>	<b>100.0</b>	<b>18,012</b>	<b>100.0</b>

## Section 3: Injury Characteristics

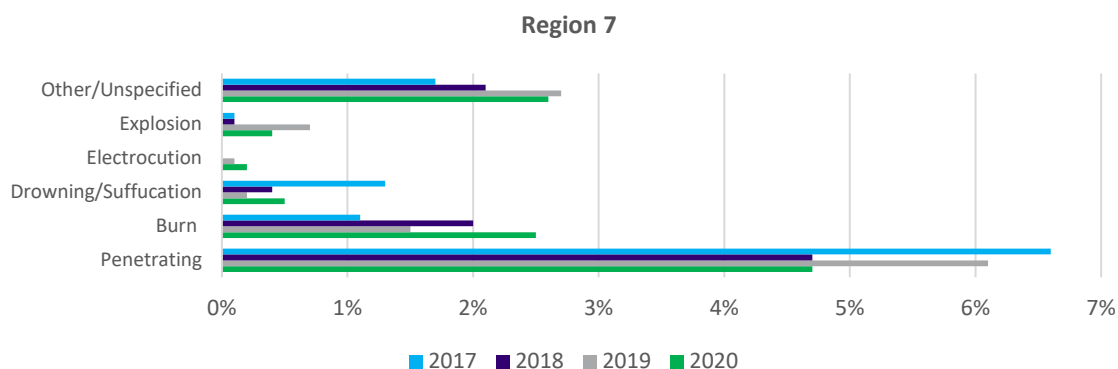
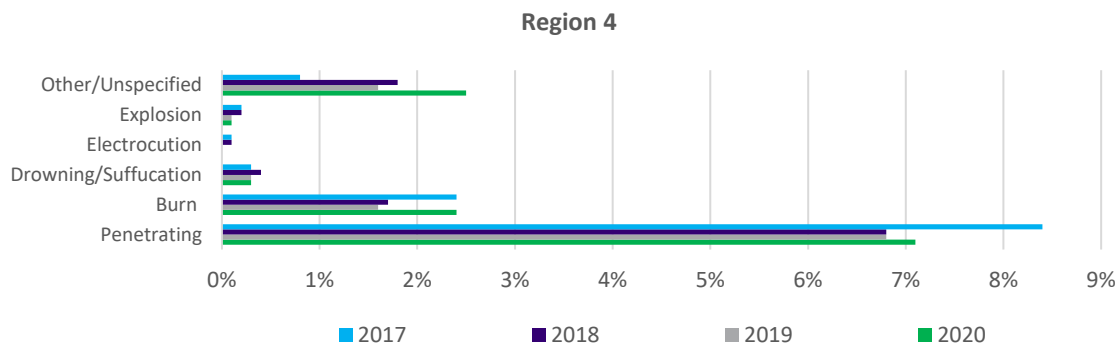
**Figure 7. Types of injuries by year and region (4, 7, and 8)**

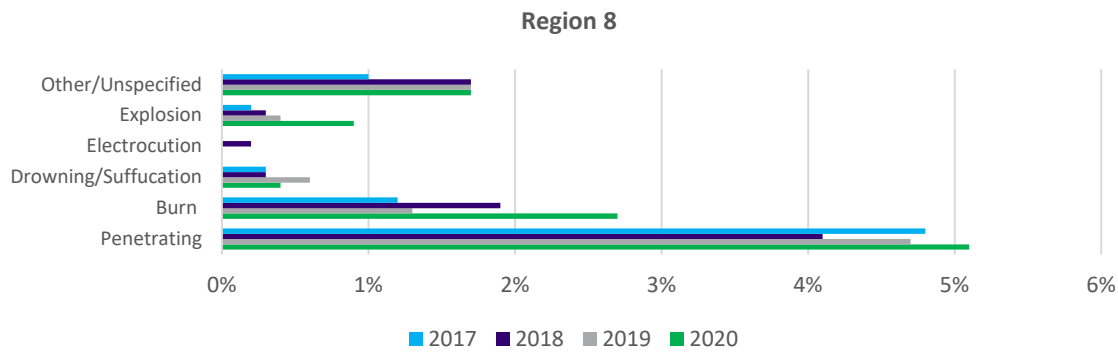
Figure 7 demonstrates the types of injuries sustained yearly from 2017 through 2020 by specific regions. The type of injury is based on the reported ICD-10 code. Blunt injuries were the most common injury type identified all four years, comprising 87.5% - 92.4% of all injury types depending on the year and region.

The figure below only includes blunt injuries to allow for better visualization of the other injury types in later charts.



The figures below do not include blunt injuries to allow for better visualization of the other injury types.



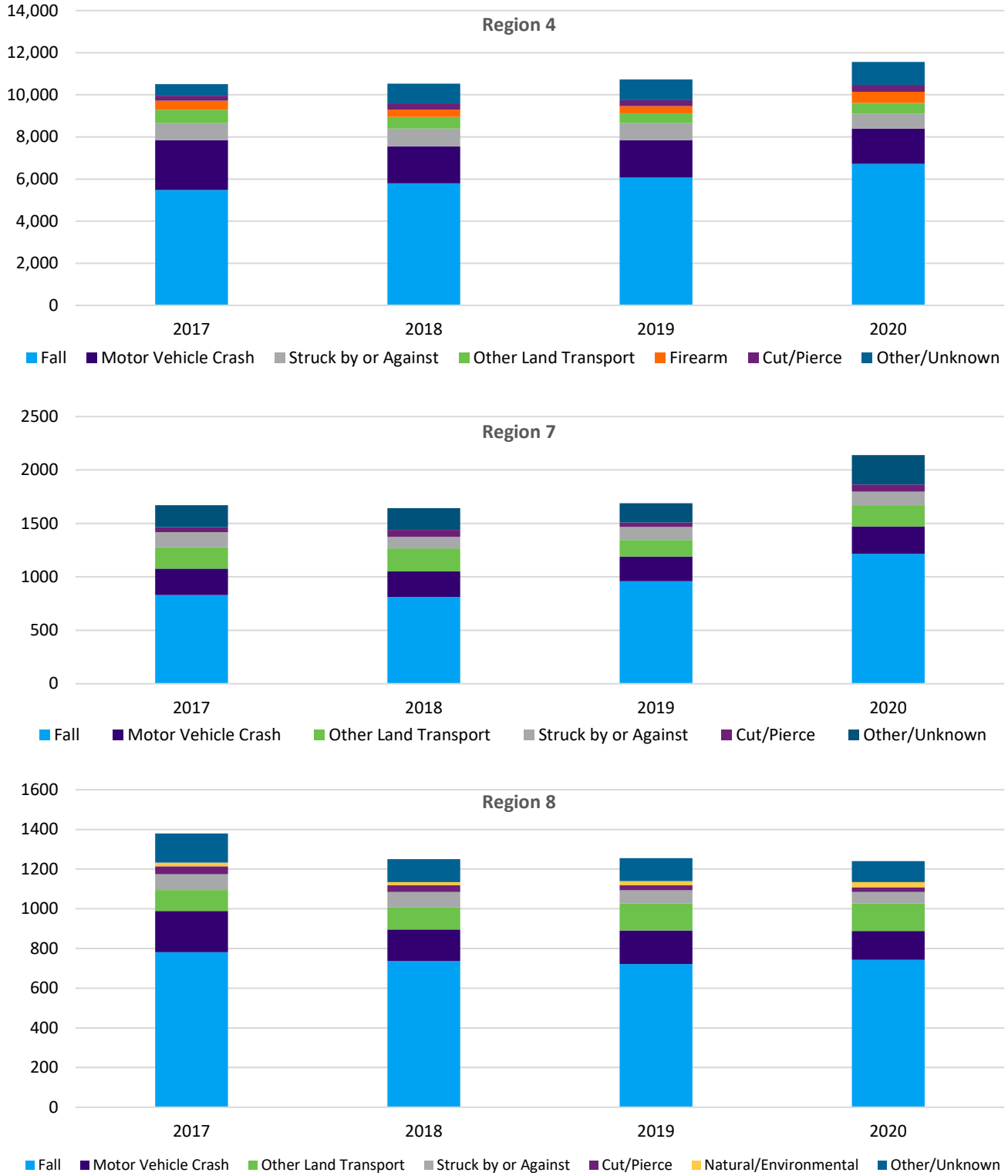


**Table 8. Type of injuries by year and region (4, 7, and 8)**

	2017		2018		2019		2020	
	#	%	#	%	#	%	#	%
<b>Region 4</b>								
Blunt	9,188	87.5	9,369	89.0	9,594	89.4	10,266	88.8
Penetrating	744	7.1	714	6.8	734	6.8	970	8.4
Burn	250	2.4	182	1.7	172	1.6	187	1.6
Drowning/Suffocation	27	0.3	46	0.4	37	0.3	33	0.3
Electrocution	8	0.1	11	0.1	3	0.0	2	0.0
Explosion	25	0.2	21	0.2	13	0.1	10	0.1
Other/Unspecified	263	2.5	186	1.8	173	1.6	97	0.8
<b>Total</b>	<b>10,505</b>	<b>100.0</b>	<b>10,529</b>	<b>100.0</b>	<b>10,726</b>	<b>100.0</b>	<b>11,565</b>	<b>100.0</b>
<b>Region 7</b>								
Blunt	1,490	89.2	1,455	88.5	1,533	90.8	1,907	89.2
Penetrating	78	4.7	101	6.1	80	4.7	142	6.6
Burn	42	2.5	25	1.5	33	2.0	23	1.1
Drowning/Suffocation	8	0.5	4	0.2	7	0.4	27	1.3
Electrocution	3	0.2	2	0.1	0	0.0	0	0.0
Explosion	7	0.4	12	0.7	1	0.1	3	0.1
Other/Unspecified	43	2.6	45	2.7	35	2.1	37	1.7
<b>Total</b>	<b>1,671</b>	<b>100.0</b>	<b>1,644</b>	<b>100.0</b>	<b>1,689</b>	<b>100.0</b>	<b>2,139</b>	<b>100.0</b>
<b>Region 8</b>								
Blunt	1,231	89.2	1,141	91.3	1,148	91.5	1,146	92.4
Penetrating	70	5.1	59	4.7	51	4.1	60	4.8
Burn	37	2.7	16	1.3	24	1.9	15	1.2
Drowning/Suffocation	5	0.4	8	0.6	4	0.3	4	0.3
Electrocution	0	0.0	0	0.0	3	0.2	0	0.0
Explosion	13	0.9	5	0.4	4	0.3	2	0.2
Other/Unspecified	24	1.7	21	1.7	21	1.7	13	1.0
<b>Total</b>	<b>1,380</b>	<b>100.0</b>	<b>1,250</b>	<b>100.0</b>	<b>1,255</b>	<b>100.0</b>	<b>1,240</b>	<b>100.0</b>

**Figure 8. Mechanism of injury by year and region (4, 7, and 8)**

A review of the data demonstrates that in region 4 and 7, injuries have increased from 2017 through 2020, but in Region 8 they have decreased. Falls are the major mechanism of injuries in all three regions.



**Table 9. Mechanism of injury by year and region (4, 7, and 8)**

	2017		2018		2019		2020	
	#	%	#	%	#	%	#	%
<b>Region 4</b>								
Fall	5,473	52.1	5,792	55.0	6,077	56.7	6,718	58.1
MVC – Occupant, Motorcyclist, Pedal Cyclist, Pedestrian, Other, Unspecified	2,379	22.6	1,762	16.7	1,770	16.4	1,678	14.5
Struck by or Against	809	7.7	843	8.0	807	7.5	704	6.1
Other Land Transport	628	6.0	551	5.2	469	4.4	512	4.4
Firearm	439	4.2	349	3.3	347	3.2	532	4.6
Cut/Pierce	233	2.2	299	2.8	279	2.6	326	2.8
Other/Unknown	544	5.2	933	8.9	977	9.2	1095	9.5
<b>Total</b>	<b>10,505</b>	<b>100.0</b>	<b>10,529</b>	<b>100.0</b>	<b>10,726</b>	<b>100.0</b>	<b>11,565</b>	<b>100.0</b>
<b>Region 7</b>								
Fall	830	49.7	811	49.3	960	56.8	1,216	56.8
MVC – Occupant, Motorcyclist, Pedal Cyclist, Pedestrian, Other, Unspecified	247	14.8	240	14.6	230	13.6	257	12.0
Other Land Transport	201	12.0	215	13.1	155	9.2	198	9.3
Struck by or Against	141	8.4	110	6.7	123	7.3	126	5.9
Cut/Pierce	47	2.8	64	3.9	42	2.5	69	3.2
Other/Unknown	205	12.3	204	12.4	179	10.6	273	12.8
<b>Total</b>	<b>1,671</b>	<b>100.0</b>	<b>1,644</b>	<b>100.0</b>	<b>1,689</b>	<b>100.0</b>	<b>2,139</b>	<b>100.0</b>
<b>Region 8</b>								
Fall	781	56.6	736	58.9	722	57.5	743	59.9
MVC – Occupant, Motorcyclist, Pedal Cyclist, Pedestrian, Other, Unspecified	208	15.1	160	12.8	169	13.5	145	11.7
Other Land Transport	106	7.7	110	8.8	135	10.8	139	11.2
Struck by or Against	80	5.8	79	6.3	68	5.4	58	4.7
Cut/Pierce	39	2.8	33	2.6	25	2.0	23	1.9
Natural/Environmental	19	1.4	16	1.3	21	1.7	26	2.1
Other/Unknown	147	10.7	116	9.3	115	9.2	106	8.5
<b>Total</b>	<b>1,380</b>	<b>100.0</b>	<b>1,250</b>	<b>100.0</b>	<b>1,255</b>	<b>100.0</b>	<b>1,240</b>	<b>100.0</b>

**Table 10. Intent of injury**

This table shows the intent of the injury sustained yearly from 2017 to 2020. The categories of intent of injury were based on the reported ICD-10 code. Most of the injuries were unintentional.

Intent of Injury	2017 Injuries		2018 Injuries		2019 Injuries		2020 Injuries	
	#	%	#	%	#	%	#	%
<b>Region 4</b>								
Unintentional	9,151	87.1	9,218	87.5	9,488	88.5	10,215	88.3
Self-inflicted	118	1.1	131	1.2	119	1.1	133	1.2
Assault	1,168	11.1	1,120	10.6	1,073	10.0	1,162	10.0
Undetermined	48	0.5	36	0.3	39	0.4	44	0.4
Other	14	0.1	19	0.2	5	0.1	11	0.1
Not Valued	6	0.1	5	0.0	2	0.0	0	0.0
<b>Total</b>	<b>10,505</b>	<b>100.0</b>	<b>10,529</b>	<b>100.0</b>	<b>10,726</b>	<b>100.0</b>	<b>11,565</b>	<b>100.0</b>
<b>Region 7</b>								
Unintentional	1,527	91.4	1,500	91.2	1,541	91.2	1,993	93.2
Self-inflicted	24	1.4	18	1.1	18	1.1	14	0.7
Assault	115	6.9	117	7.1	126	7.5	127	5.9
Undetermined	3	0.2	5	0.3	3	0.2	3	0.1
Other	2	0.1	2	0.1	0	0.0	2	0.1
Not Valued	0	0.0	2	0.1	1	0.1	0	0.0
<b>Total</b>	<b>1,671</b>	<b>100.0</b>	<b>1,644</b>	<b>100.0</b>	<b>1,689</b>	<b>100.0</b>	<b>2,139</b>	<b>100.0</b>
<b>Region 8</b>								
Unintentional	1,289	93.4	1,158	92.6	1,181	94.1	1,174	94.7
Self-inflicted	18	1.3	20	1.6	12	1.0	11	0.9
Assault	68	4.9	71	5.7	58	4.6	50	4.0
Undetermined	4	0.3	1	0.1	3	0.2	2	0.2
Other	0	0.0	0	0.0	1	0.1	0	0.0
Not Valued	1	0.1	0	0.0	0	0.0	3	0.2
<b>Total</b>	<b>1,380</b>	<b>100.0</b>	<b>1,250</b>	<b>100.0</b>	<b>1,255</b>	<b>100.0</b>	<b>1,240</b>	<b>100.0</b>



## Section 4: Outcome Measures

Outcome measures as defined by the World Health Organization are the “change in the health of an individual, group of people, or population that is attributable to an intervention or series of interventions.” For the purposes of this report, outcome measures include but are not limited to a patient’s initial disposition on arrival, final discharge disposition, and mortality (Ohio Department of Public Safety, Division of EMS 2019 Ohio Trauma Registry Annual Report).

**Table 11. Emergency department disposition of trauma cases**

These tables show the disposition of patients after arriving at the emergency department. The most frequent ED disposition for trauma centers was being admitted to the floor. For acute care hospitals and FSEDs the most frequent ED disposition was being transferred to another hospital. The tables count every record and may include two records for some patients if they were treated at more than one facility due to being transferred out for a higher level of care.

ED Disposition	2017 Injuries		2018 Injuries		2019 Injuries		2020 Injuries	
	#	%	#	%	#	%	#	%
<b>Trauma Centers Level I, II, III</b>								
Floor	6,098	39.6	5,965	38.9	Not available	Not available	Not available	Not available
Transfer To Another Hospital	457	3.0	402	2.6	Not available	Not available	Not available	Not available
Intensive Care Unit (ICU)	1,707	11.1	2,015	13.1	Not available	Not available	Not available	Not available
Telemetry/Step-Down Unit	2,115	13.7	2,285	14.9	Not available	Not available	Not available	Not available
Operating Room	1,190	7.7	1,104	7.2	Not available	Not available	Not available	Not available
Observation Unit	2,645	17.2	2,492	16.2	Not available	Not available	Not available	Not available
Home without Services	788	5.1	607	4.0	Not available	Not available	Not available	Not available
Morgue	101	0.7	117	0.8	Not available	Not available	Not available	Not available
Left Against Medical Advice	36	0.2	29	0.2	Not available	Not available	Not available	Not available
Other (Out of Hospital)	4	0.0	9	0.1	Not available	Not available	Not available	Not available
Home with Services	0	0.0	0	0.0	Not available	Not available	Not available	Not available
Direct Admissions to Hospital	276	1.8	313	2.0	Not available	Not available	Not available	Not available
Not Valued	0	0.0	0	0.0	Not available	Not available	Not available	Not available
<b>Total</b>	<b>15,417</b>	<b>100.0</b>	<b>15,338</b>	<b>100.0</b>	<b>Not available</b>	<b>Not available</b>	<b>Not available</b>	<b>Not available</b>
<b>Trauma Centers Level I &amp; II</b>								
Floor	Not available	Not available	Not available	Not available	5,321	36.5	5,687	38.4
Transfer To Another Hospital	Not available	Not available	Not available	Not available	70	0.5	73	0.5
Intensive Care Unit (ICU)	Not available	Not available	Not available	Not available	1,978	13.6	1,916	12.9
Telemetry/Step-Down Unit	Not available	Not available	Not available	Not available	2,675	18.3	3,019	20.4
Operating Room	Not available	Not available	Not available	Not available	1,130	7.7	1,192	8.0
Observation Unit	Not available	Not available	Not available	Not available	2,439	16.7	1,831	12.4
Home without Services	Not available	Not available	Not available	Not available	646	4.4	768	5.2
Morgue	Not available	Not available	Not available	Not available	95	0.7	134	0.9
Left Against Medical Advice	Not available	Not available	Not available	Not available	24	0.2	5	0.0
Other (Out of Hospital)	Not available	Not available	Not available	Not available	7	0.0	2	0.0
Home with Services	Not available	Not available	Not available	Not available	0	0.0	1	0.0
Direct Admissions to Hospital	Not available	Not available	Not available	Not available	210	1.4	190	1.3
Not Valued	Not available	Not available	Not available	Not available	0	0.0	0	0.0
<b>Total</b>	<b>Not available</b>	<b>Not available</b>	<b>Not available</b>	<b>Not available</b>	<b>14,595</b>	<b>100.0</b>	<b>14,818</b>	<b>100.0</b>

ED Disposition	2017 Injuries		2018 Injuries		2019 Injuries		2020 Injuries	
	#	%	#	%	#	%	#	%
<b>Trauma Centers Level III</b>								
Floor	Not available	Not available	Not available	Not available	770	50.2	791	49.5
Transfer To Another Hospital	Not available	Not available	Not available	Not available	399	26.0	411	25.7
Intensive Care Unit (ICU)	Not available	Not available	Not available	Not available	70	4.6	75	4.7
Telemetry/Step-Down Unit	Not available	Not available	Not available	Not available	68	4.4	110	6.9
Operating Room	Not available	Not available	Not available	Not available	55	3.6	69	4.3
Observation Unit	Not available	Not available	Not available	Not available	46	3.0	29	1.8
Home without Services	Not available	Not available	Not available	Not available	10	0.7	0	0.0
Morgue	Not available	Not available	Not available	Not available	15	1.0	14	0.9
Left Against Medical Advice	Not available	Not available	Not available	Not available	0	0.0	0	0.0
Other (Out of Hospital)	Not available	Not available	Not available	Not available	1	0.1	0	0.0
Home with Services	Not available	Not available	Not available	Not available	0	0.0	0	0.0
Direct Admissions to Hospital	Not available	Not available	Not available	Not available	101	6.6	100	6.3
Not Valued	Not available	Not available	Not available	Not available	0	0.0	0	0.0
<b>Total</b>	Not available	Not available	Not available	Not available	<b>1,535</b>	<b>100.0</b>	<b>1,599</b>	<b>100.0</b>
<b>Acute Care Hospital</b>								
Floor	1,126	30.2	1,044	26.9	1,005	22.5	1,555	28.0
Transfer To Another Hospital	2,342	62.8	2,580	66.5	3,194	71.6	3,451	62.1
Intensive Care Unit (ICU)	33	0.9	25	0.6	12	0.3	57	1.0
Telemetry/Step-Down Unit	94	2.5	60	1.5	38	0.9	186	3.3
Operating Room	24	0.6	45	1.2	17	0.4	31	0.6
Observation Unit	26	0.7	42	1.1	37	0.8	34	0.6
Home without Services	0	0.0	3	0.1	6	0.1	34	0.6
Morgue	24	0.6	24	0.6	20	0.4	22	0.4
Left Against Medical Advice	0	0.0	0	0.0	7	0.2	7	0.1
Other (Out of Hospital)	1	0.0	1	0.0	23	0.5	29	0.5
Home with Services	0	0.0	0	0.0	1	0.0	1	0.0
Direct Admissions to Hospital	61	1.6	54	1.4	99	2.2	152	2.7
Not Valued	1	0.0	0	0.0	2	0.0	0	0.0
<b>Total</b>	<b>3,732</b>	<b>100.0</b>	<b>3,878</b>	<b>100.0</b>	<b>4,461</b>	<b>100.0</b>	<b>5,559</b>	<b>100.0</b>
<b>FSEDs</b>								
Floor	0	0.0	0	0.0	6	0.7	2	0.2
Transfer To Another Hospital	349	100.0	503	100.0	902	99.3	911	99.8
Intensive Care Unit (ICU)	0	0.0	0	0.0	0	0.0	0	0.0
Telemetry/Step-Down Unit	0	0.0	0	0.0	0	0.0	0	0.0
Operating Room	0	0.0	0	0.0	0	0.0	0	0.0
Observation Unit	0	0.0	0	0.0	0	0.0	0	0.0
Home without Services	0	0.0	0	0.0	0	0.0	0	0.0
Morgue	0	0.0	0	0.0	0	0.0	0	0.0
Left Against Medical Advice	0	0.0	0	0.0	0	0.0	0	0.0
Other (Out of Hospital)	0	0.0	0	0.0	0	0.0	0	0.0
Home with Services	0	0.0	0	0.0	0	0.0	0	0.0
Direct Admissions to Hospital	0	0.0	0	0.0	0	0.0	0	0.0
Not Valued	0	0.0	0	0.0	0	0.0	0	0.0
<b>Total</b>	<b>349</b>	<b>100.0</b>	<b>503</b>	<b>100.0</b>	<b>908</b>	<b>100.0</b>	<b>913</b>	<b>100.0</b>

**Table 12. Hospital inpatient discharge disposition**

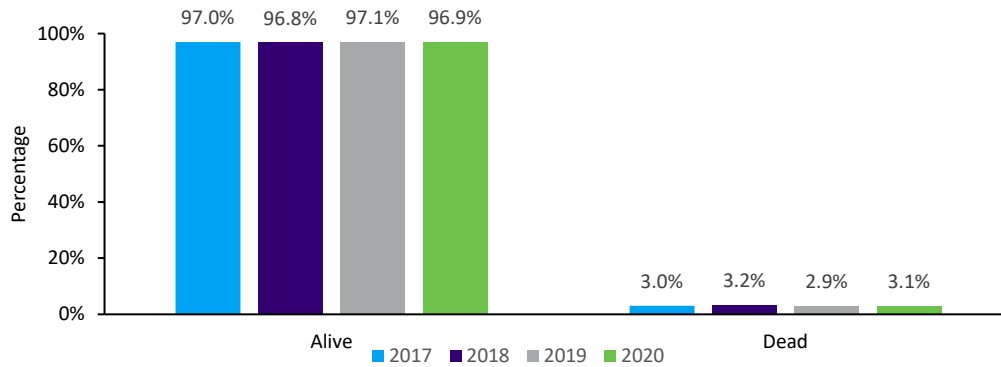
This table shows the disposition of patients at the time of their discharge and only includes patient admitted. For trauma centers the most common hospital discharge disposition was home. At acute care hospitals discharged to a skilled nursing facility was most frequent.

Discharge Disposition	2017 Injuries		2018 Injuries		2019 Injuries		2020 Injuries	
	#	%	#	%	#	%	#	%
<b>Trauma Centers Level I, II, III</b>								
Home	8,746	62.3	8,805	62.1	Not available	Not available	Not available	Not available
Skilled Nursing Facility	2,116	15.1	2,195	15.5	Not available	Not available	Not available	Not available
Home with Services	1,438	10.2	1,400	9.9	Not available	Not available	Not available	Not available
Inpatient Rehab or Designated Unit	597	4.2	675	4.8	Not available	Not available	Not available	Not available
Expired	349	2.5	358	4.8	Not available	Not available	Not available	Not available
Left AMA/Discontinued Care	221	1.6	241	2.5	Not available	Not available	Not available	Not available
Hospice	118	0.8	133	1.7	Not available	Not available	Not available	Not available
Transferred to Another Hospital	67	0.5	59	0.4	Not available	Not available	Not available	Not available
Long Term Care Hospital (LTCH)	84	0.6	93	0.7	Not available	Not available	Not available	Not available
Psychiatric Hospital (Inpatient)	89	0.6	99	0.7	Not available	Not available	Not available	Not available
Court/Law Enforcement	80	0.6	102	0.7	Not available	Not available	Not available	Not available
Intermediate Care Facility	74	0.5	6	0.0	Not available	Not available	Not available	Not available
Inpatient Facility Not Defined Elsewhere	50	0.4	8	0.1	Not available	Not available	Not available	Not available
Not Valued	2	0.0	0	0.0	Not available	Not available	Not available	Not available
<b>Total</b>	<b>14,031</b>	<b>100.0</b>	<b>14,174</b>	<b>100.0</b>	Not available	Not available	Not available	Not available
<b>Trauma Centers Level I &amp; II</b>								
Home	Not available	Not available	Not available	Not available	8,705	63.3	8,593	62.1
Skilled Nursing Facility	Not available	Not available	Not available	Not available	1,962	14.3	1,917	13.9
Home with Services	Not available	Not available	Not available	Not available	1,461	10.6	1,661	12.0
Inpatient Rehab or Designated Unit	Not available	Not available	Not available	Not available	665	4.8	632	4.6
Expired	Not available	Not available	Not available	Not available	345	2.5	343	2.5
Left AMA/Discontinued Care	Not available	Not available	Not available	Not available	209	1.5	230	1.7
Hospice	Not available	Not available	Not available	Not available	145	1.1	175	1.3
Transferred to Another Hospital	Not available	Not available	Not available	Not available	35	0.3	39	0.3
Long Term Care Hospital (LTCH)	Not available	Not available	Not available	Not available	66	0.5	77	0.6
Psychiatric Hospital (Inpatient)	Not available	Not available	Not available	Not available	86	0.6	87	0.6
Court/Law Enforcement	Not available	Not available	Not available	Not available	70	0.5	69	0.5
Intermediate Care Facility	Not available	Not available	Not available	Not available	1	0.0	2	0.0
Inpatient Facility Not Defined Elsewhere	Not available	Not available	Not available	Not available	3	0.1	10	0.1
Not Valued	Not available	Not available	Not available	Not available	0	0.0	0	0.0
<b>Total</b>	Not available	Not available	Not available	Not available	<b>13,753</b>	<b>100.0</b>	<b>13,835</b>	<b>100.0</b>

Discharge Disposition	2017 Injuries		2018 Injuries		2019 Injuries		2020 Injuries	
	#	%	#	%	#	%	#	%
<b>Trauma Centers Level III</b>								
Home	Not available	Not available	Not available	Not available	512	46.1	544	46.3
Skilled Nursing Facility	Not available	Not available	Not available	Not available	298	26.8	286	24.4
Home with Services	Not available	Not available	Not available	Not available	190	17.3	203	17.3
Inpatient Rehab or Designated Unit	Not available	Not available	Not available	Not available	17	1.5	20	1.6
Expired	Not available	Not available	Not available	Not available	10	0.9	18	1.2
Left AMA/Discontinued Care	Not available	Not available	Not available	Not available	9	0.8	22	1.4
Hospice	Not available	Not available	Not available	Not available	14	01.3	25	1.7
Transferred to Another Hospital	Not available	Not available	Not available	Not available	45	4.1	41	3.8
Long Term Care Hospital (LTCH)	Not available	Not available	Not available	Not available	2	0.2	2	0.2
Psychiatric Hospital (Inpatient)	Not available	Not available	Not available	Not available	8	0.7	10	0.8
Court/Law Enforcement	Not available	Not available	Not available	Not available	4	0.4	3	0.3
Intermediate Care Facility	Not available	Not available	Not available	Not available	1	0.1	0	0.0
Inpatient Facility Not Defined Elsewhere	Not available	Not available	Not available	Not available	0	0.0	0	0.0
Not Valued	Not available	Not available	Not available	Not available	0	0.0	0	0.0
<b>Total</b>	Not available	Not available	Not available	Not available	<b>1,110</b>	<b>100.0</b>	<b>1,174</b>	<b>100.0</b>
<b>Acute Care Hospital</b>								
Home	389	28.5	384	30.2	328	26.8	468	22.8
Skilled Nursing Facility	630	46.2	580	45.6	570	46.6	893	43.4
Home with Services	218	16.0	203	15.9	216	17.6	447	21.7
Inpatient Rehab or Designated Unit	26	1.9	31	2.4	17	1.4	51	2.5
Expired	22	1.6	18	1.4	11	0.9	35	1.7
Left AMA/Discontinued Care	4	0.3	6	0.5	18	1.5	22	1.1
Hospice	11	0.8	8	0.6	8	0.7	38	1.8
Transferred to Another Hospital	41	3.0	25	2.0	44	3.6	64	3.1
Long Term Care Hospital (LTCH)	2	0.1	3	0.2	0	0.0	7	0.3
Psychiatric Hospital (Inpatient)	8	0.6	7	0.5	3	0.2	15	0.7
Court/Law Enforcement	1	0.1	1	0.1	1	0.1	0	0.0
Intermediate Care Facility	5	0.4	4	0.3	6	0.5	3	0.1
Inpatient Facility Not Defined Elsewhere	7	0.5	2	0.2	0	0.0	2	0.1
Not Valued	1	0.1	0	0.0	2	0.2	11	0.5
<b>Total</b>	<b>1,365</b>	<b>100.0</b>	<b>1,272</b>	<b>100.0</b>	<b>1,224</b>	<b>100.0</b>	<b>2,056</b>	<b>100.0</b>
<b>FSEDs</b>								
Home	0	0.0	0	0.0	6	100.0	2	100.0
Skilled Nursing Facility	0	0.0	0	0.0	0	0.0	0	0.0
Home with Services	0	0.0	0	0.0	0	0.0	0	0.0
Inpatient Rehab or Designated Unit	0	0.0	0	0.0	0	0.0	0	0.0
Expired	0	0.0	0	0.0	0	0.0	0	0.0
Left AMA/Discontinued Care	0	0.0	0	0.0	0	0.0	0	0.0
Hospice	0	0.0	0	0.0	0	0.0	0	0.0
Transferred to Another Hospital	0	0.0	0	0.0	0	0.0	0	0.0
Long Term Care Hospital (LTCH)	0	0.0	0	0.0	0	0.0	0	0.0
Psychiatric Hospital (Inpatient)	0	0.0	0	0.0	0	0.0	0	0.0
Court/Law Enforcement	0	0.0	0	0.0	0	0.0	0	0.0
Intermediate Care Facility	0	0.0	0	0.0	0	0.0	0	0.0
Inpatient Facility Not Defined Elsewhere	0	0.0	0	0.0	0	0.0	0	0.0
Not Valued	0	0.0	0	0.0	0	0.0	0	0.0
<b>Total</b>	<b>0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>6</b>	<b>100.0</b>	<b>2</b>	<b>100.0</b>

### Figure 9. Discharge status of reported trauma cases

This figure shows the percentage of records with reported traumatic injuries by outcome by year from 2017 to 2020. Patients transferred out are not included in this data



### Table 13. Discharge status of reported trauma cases

This table shows the discharge status (i.e., alive or dead) of records with reported traumatic injuries from 2017 to 2020. Patients transferred out are not included in this data.

Year	Discharge Status					
	Alive		Dead		Total	
	#	%	#	%	#	%
2017	15,851	97.0	494	3.0	16,345	100.0
2018	15,709	96.8	515	3.2	16,224	100.0
2019	16,409	97.1	494	2.9	16,903	100.0
2020	17,448	96.9	564	3.1	18,012	100.0

### Figure 10. Emergency department deaths by hospital type

This graph shows the number and percentage of emergency department deaths by hospital type. Most deaths occurred at Level I and II Trauma Centers. Level I Trauma Centers receive the most critical trauma cases therefore would have the most deaths. In 2019 and 2020, there were more deaths reported at acute care hospitals than at Level III Trauma Centers although this represents emergency department deaths only. There were no deaths at FSEDs.

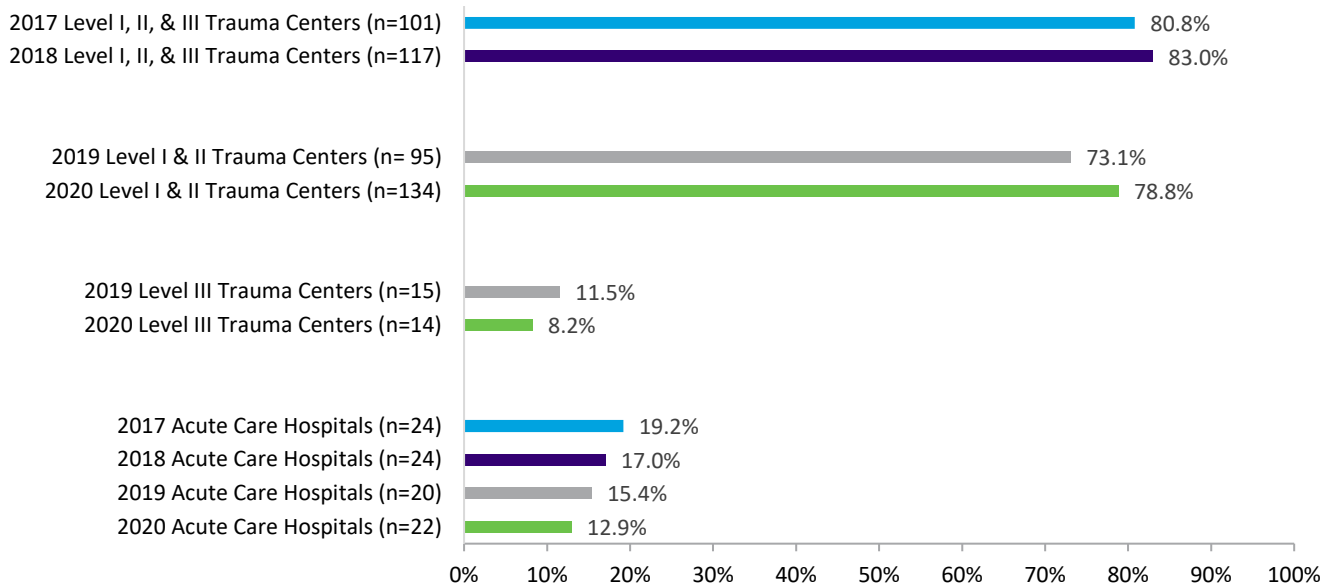


Table 14. Emergency department deaths by hospital type

Hospital Type	2017 Transfers		2018 Transfers		2019 Transfers		2020 Transfers	
	#	%	#	%	#	%	#	%
Trauma Centers Level I, II, & III	101	80.8	117	83.0	Not Available	Not Available	Not Available	Not Available
Trauma Centers Level I & II	Not Available	Not Available	Not Available	Not Available	95	73.1	134	78.8
Trauma Centers Level III	Not Available	Not Available	Not Available	Not Available	15	11.5	14	8.2
FSEDs	0	0.0	0	0.0	0	0.0	0	0.0
Acute Care Hospitals	24	19.2	24	17.0	20	15.4	22	12.9
<b>Total</b>	<b>125</b>	<b>100.0</b>	<b>141</b>	<b>100.0</b>	<b>130</b>	<b>100.0</b>	<b>170</b>	<b>100.0</b>

## Section 5: Four-Year Trend of Gunshot Wounds

**Table 15. Gunshot wounds by region of occurrence**

This table shows the distribution of gunshot wounds by region where the injury occurred by year. This table excludes ED transfers out to not double count patients. In 2020 there was an increase in gunshot wounds, mainly reflected by the increase in Region 4. It should be noted that in Region 7 the number of GSW doubled from 2019 to 2020.

Region	2017		2018		2019		2020	
	#	%	#	%	#	%	#	%
Region 4	432	82.4	341	81.4	333	77.8	524	79.0
Region 7	19	3.6	23	5.5	19	4.4	40	6.0
Region 8	20	3.8	16	3.8	14	3.3	17	2.6
Other Regions/Not Valued	53	10.1	39	9.3	62	14.5	82	12.4
<b>Total</b>	<b>524</b>	<b>100.0</b>	<b>419</b>	<b>100.0</b>	<b>428</b>	<b>100.0</b>	<b>663</b>	<b>100.0</b>

**Table 16. Gunshot wounds by region of occurrence and intent**

This table shows the distribution of gunshot wounds by region and intent by year. This table excludes ED transfers out to not double count patients treated at two facilities. In 2020 in Region 4 the assault category increased to the highest number of occurrences, 401. Additionally in 2020, in Region 7 the number of assaults doubled to 20 and the overall total doubled to 40.

Intent	2017		2018		2019		2020	
	#	%	#	%	#	%	#	%
<b>Region 4</b>								
Unintentional	50	11.6	29	8.5	39	11.7	61	11.6
Self-Inflicted	35	8.1	22	6.5	26	7.8	26	5.0
Assault	314	72.7	253	74.2	241	72.4	401	76.5
Undetermined	26	6.0	25	7.3	25	7.5	29	5.5
Other	7	1.6	12	3.5	2	0.6	7	1.3
<b>Total</b>	<b>432</b>	<b>100.0</b>	<b>341</b>	<b>100.0</b>	<b>333</b>	<b>100.0</b>	<b>524</b>	<b>100.0</b>
<b>Region 7</b>								
Unintentional	9	47.4	13	56.5	5	26.3	16	40.0
Self-Inflicted	9	47.4	3	13.0	5	26.3	4	10.0
Assault	1	5.3	6	26.1	9	47.4	20	50.0
Undetermined	0	0.0	1	4.3	0	0.0	0	0.0
Other	0	0.0	0	0.0	0	0.0	0	0.0
<b>Total</b>	<b>19</b>	<b>100.0</b>	<b>23</b>	<b>100.0</b>	<b>19</b>	<b>100.0</b>	<b>40</b>	<b>100.0</b>
<b>Region 8</b>								
Unintentional	10	50.0	6	37.5	4	28.6	4	23.5
Self-Inflicted	5	25.0	8	50.0	3	21.4	6	35.3
Assault	5	25.0	2	12.5	6	42.9	7	41.2
Undetermined	0	0.0	0	0.0	1	7.1	0	0.0
Other	0	0.0	0	0.0	0	0.0	0	0.0
<b>Total</b>	<b>20</b>	<b>100.0</b>	<b>16</b>	<b>100.0</b>	<b>14</b>	<b>100.0</b>	<b>17</b>	<b>100.0</b>

**Table 17. Gunshot wounds by region of occurrence and ISS range**

This table shows the distribution of gunshot wounds by region where the injury occurred by ISS range and year. This table excludes ED transfers out to not double count patients treated at two facilities. The majority of GSW injuries had an ISS between 1-9 for all three regions.

ISS Range	2017		2018		2019		2020	
	#	%	#	%	#	%	#	%
<b>Region 4</b>								
1-9	260	60.2	169	49.6	161	48.3	279	53.2
10-14	47	10.9	61	17.9	57	17.1	77	14.7
15-24	40	9.3	41	12.0	43	12.9	59	11.3
≥ 25	83	19.2	70	20.5	71	21.3	106	20.2
Not Valued	2	0.5	0	0.0	1	0.6	3	0.4
<b>Total</b>	<b>432</b>	<b>100.0</b>	<b>341</b>	<b>100.0</b>	<b>333</b>	<b>100.0</b>	<b>524</b>	<b>100.0</b>
<b>Region 7</b>								
1-9	10	52.6	17	73.9	14	73.7	28	70.0
10-14	3	15.8	1	4.3	2	10.5	5	12.5
15-24	0	0.0	3	13.0	0	0.0	4	10.0
≥ 25	6	31.6	2	8.7	3	15.8	3	7.5
Not Valued	0	0.0	0	0.0	0	0.0	0	0.0
<b>Total</b>	<b>19</b>	<b>100.0</b>	<b>23</b>	<b>100.0</b>	<b>19</b>	<b>100.0</b>	<b>40</b>	<b>100.0</b>
<b>Region 8</b>								
1-9	10	50.0	7	43.8	6	42.9	7	41.2
10-14	2	10.0	3	18.8	5	35.7	3	17.6
15-24	2	10.0	0	0.0	1	7.1	2	11.8
≥ 25	6	30.0	6	37.5	2	14.3	5	29.4
Not Valued	0	0.0	0	0.0	0	0.0	0	0.0
<b>Total</b>	<b>20</b>	<b>100.0</b>	<b>16</b>	<b>100.0</b>	<b>14</b>	<b>100.0</b>	<b>17</b>	<b>100.0</b>

**Table 18. Gunshot wounds by region of occurrence and outcome**

This table shows the distribution of gunshot wounds by region where the injury occurred by year and outcome. This table excludes ED transfers out to not double count patients treated at two facilities. Although the number of GSW increased in Region 4 in 2020, the overall percentage of mortality did not change. The mortality rate in Region 7 decreased over the 4 years and fluctuated in Region 8.

Outcome	2017		2018		2019		2020	
	#	%	#	%	#	%	#	%
<b>Region 4</b>								
Alive	346	80.1	274	80.4	266	79.9	422	80.5
Dead	86	19.9	67	19.6	67	20.1	102	19.5
<b>Total</b>	<b>432</b>	<b>100.0</b>	<b>341</b>	<b>100.0</b>	<b>333</b>	<b>100.0</b>	<b>524</b>	<b>100.0</b>
<b>Region 7</b>								
Alive	13	68.4	19	82.6	17	89.5	36	90.0
Dead	6	31.6	4	17.4	2	10.5	4	10.0
<b>Total</b>	<b>19</b>	<b>100.0</b>	<b>23</b>	<b>100.0</b>	<b>19</b>	<b>100.0</b>	<b>40</b>	<b>100.0</b>
<b>Region 8</b>								
Alive	15	75.0	11	68.8	12	85.7	12	70.6
Dead	5	25.0	5	31.3	2	14.3	5	29.4
<b>Total</b>	<b>20</b>	<b>100.0</b>	<b>16</b>	<b>100.0</b>	<b>14</b>	<b>100.0</b>	<b>17</b>	<b>100.0</b>



**Table 19. Length of stay for firearm injuries**

A majority of GSW in all three regions have a less than 5-day length of stay but does include ED deaths.

Length of Stay	2017		2018		2019		2020	
	#	%	#	%	#	%	#	%
<b>Region 4</b>								
≤ 5	321	74.3	241	70.7	247	74.2	388	74.0
≥ 6	111	25.7	100	29.3	86	25.8	136	26.0
<b>Total</b>	<b>432</b>	<b>100.0</b>	<b>341</b>	<b>100.0</b>	<b>333</b>	<b>100.0</b>	<b>524</b>	<b>100.0</b>
<b>Region 7</b>								
≤ 5	13	68.4	22	95.7	15	78.9	32	80.0
≥ 6	6	31.6	1	4.3	4	21.1	8	20.0
<b>Total</b>	<b>19</b>	<b>100.0</b>	<b>23</b>	<b>100.0</b>	<b>19</b>	<b>100.0</b>	<b>40</b>	<b>100.0</b>
<b>Region 8</b>								
≤ 5	17	85.0	14	87.5	11	78.6	12	70.6
≥ 6	3	15.0	2	12.5	3	21.4	5	29.4
<b>Total</b>	<b>20</b>	<b>100.0</b>	<b>16</b>	<b>100.0</b>	<b>14</b>	<b>100.0</b>	<b>17</b>	<b>100.0</b>

**Table 20. Gunshot wounds by age group**

Historically the most GSW are found in the 25-34 age range within our regions.

Age Range	2017		2018		2019		2020	
	#	%	#	%	#	%	#	%
0-4	3	0.6	1	0.2	1	0.2	9	1.4
5-9	1	0.2	1	0.2	1	0.2	5	0.8
10-15	14	2.7	13	3.1	17	4.0	37	5.6
16-19	68	13.0	52	12.4	68	15.9	105	15.8
20-24	113	21.6	82	19.6	76	17.8	120	18.1
25-34	144	27.5	134	32.0	128	29.9	188	28.4
35-44	93	17.7	63	15.0	55	12.9	101	15.2
45-54	38	7.3	38	9.1	37	8.6	41	6.2
55-64	31	5.9	18	4.3	22	5.1	31	4.7
65-74	11	2.1	11	2.6	17	2.7	18	2.7
75-84	6	1.1	5	1.2	5	4.0	4	0.6
≥85	1	0.2	1	0.2	1	1.2	3	0.5
Not Valued	1	0.2	0	0.0	0	0.0	1	0.2
<b>Total</b>	<b>524</b>	<b>100.0</b>	<b>419</b>	<b>100.0</b>	<b>428</b>	<b>100.0</b>	<b>663</b>	<b>100.0</b>

## COTS Member Hospitals & Free-Standing Emergency Departments

Adena Greenfield Medical Center, Greenfield, Ohio  
Adena Pike Medical Center, Waverly, Ohio  
Adena Regional Medical Center, Chillicothe, Ohio  
Coshocton Regional Medical Center, Coshocton, Ohio  
Diley Ridge Medical Center, Canal Winchester, Ohio  
East Ohio Regional Hospital, Martins Ferry, Ohio  
Fairfield Medical Center, Lancaster, Ohio  
Fairfield Medical Center River Valley Campus, Lancaster, Ohio  
Genesis Hospital, Zanesville, Ohio  
Harrison Community Hospital, Cadiz, Ohio  
Holzer Gallipolis, Gallipolis, Ohio  
Holzer Medical Center - Jackson, Jackson, Ohio  
Holzer Meigs Emergency Department, Pomeroy, Ohio  
King's Daughters Medical Center, Portsmouth, Ohio  
Knox Community Hospital, Mt. Vernon, Ohio  
Licking Memorial Hospital, Newark, Ohio  
Madison Health, London, Ohio  
Marietta Belpre Medical Campus, Belpre, Ohio  
Marietta Memorial Hospital, Marietta, Ohio  
Marietta Selby General Hospital Campus, Marietta, Ohio  
Mary Rutan Hospital, Bellefontaine, Ohio  
Memorial Health, Marysville, Ohio  
Morrow County Hospital, Mt. Gilead, Ohio  
Mount Carmel East, Columbus, Ohio  
Mount Carmel Franklinton, Columbus, Ohio  
Mount Carmel Grove City, Grove City, Ohio  
Mount Carmel Lewis Center, Delaware, Ohio  
Mount Carmel New Albany, New Albany, Ohio  
Mount Carmel Reynoldsburg, Reynoldsburg, Ohio  
Mount Carmel St. Ann's, Westerville, Ohio  
Nationwide Children's Hospital, Columbus, Ohio  
Nationwide Children's Lewis Center, Delaware, Ohio  
OhioHealth Berger Health System, Circleville, Ohio  
OhioHealth Doctors Hospital, Columbus, Ohio  
OhioHealth Dublin Methodist Hospital, Dublin, Ohio  
OhioHealth Emergency Care - Hilliard, Hilliard, Ohio  
OhioHealth Emergency Care - New Albany, New Albany, Ohio  
OhioHealth Emergency Care - Obetz, Columbus, Ohio  
OhioHealth Emergency Care - Powell, Powell, Ohio  
OhioHealth Emergency Care - Reynoldsburg, Reynoldsburg, Ohio  
OhioHealth Grady Memorial Hospital, Delaware, Ohio  
OhioHealth Grant Medical Center, Columbus, Ohio  
OhioHealth Grove City Methodist Hospital, Grove City, Ohio  
OhioHealth Hardin Memorial Hospital, Kenton, Ohio  
OhioHealth Lewis Center Health Center, Delaware, Ohio  
OhioHealth Marion General Hospital, Marion, Ohio  
OhioHealth O'Bleness Hospital, Athens, Ohio  
OhioHealth Pickerington Emergency Care Center, Pickerington, Ohio

OhioHealth Riverside Methodist Hospital, Columbus, Ohio  
OhioHealth Westerville Emergency Care Center, Westerville, Ohio  
The Ohio State University Wexner Medical Center, Columbus, Ohio  
The Ohio State University Wexner Medical Center East Hospital, Columbus, Ohio  
Southeastern Ohio Regional Medical Center, Cambridge, Ohio  
Southern Ohio Medical Center, Portsmouth, Ohio  
Trinity Medical Center West, Steubenville, Ohio

## **COTS Trauma Staff**

To learn more about the mission of COTS, visit [www.centralohiotraumasystem.org](http://www.centralohiotraumasystem.org) or contact one of our associates.

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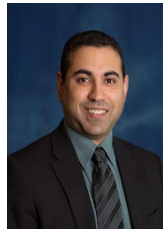
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Ohio Department of Public Safety; Division of EMS, 2019 Ohio Trauma Registry Annual Report - Published data with permission from the ODPS, Division of EMS

## Appendix A: Glossary of Terms

**Abbreviated Injury Scales (AIS)** – is an anatomically-based, global severity scoring system that classifies each injury by body region according to its relative importance. AIS is the basis for the Injury Severity Score (ISS) calculation of the multiply injured patient.

**Acute Care Hospital** – a facility providing a level of health care in which a patient is treated for a brief but severe episode of illness, for conditions that are the result of disease or trauma, and during recovery from surgery.

**Adult** – is defined and used in this report to describe an individual whose age ranges from 16 to 69 years of age.

**Disposition** - The final place or setting to which the patient was discharged on the day of discharge (i.e. home, hospice, acute care facility, etc.)

**Free-standing Emergency Department (FSED)** – is an emergency facility that is structurally separate and distinct from a hospital and provides emergency care.

**Geriatric** – is defined and used in this report to describe an individual whose age is 70 years of age or greater.

**Injury Severity Score (ISS)** - an evaluation system developed to predict the outcomes of traumas, including mortality and length of hospital stay. The score is based on the Abbreviated Injury Scale (AIS), another scoring system for injury severity. When a patient is injured, each area of the body is assigned an AIS score depending on the injury severity. An ISS is calculated by squaring the AIS score from the three most severely injured body areas and adding them together. ISS scores range from 0 to 75<sup>1</sup>. The higher the ISS score, the more severe the injury.

**Mechanism of Injury (MOI)** – refers to the method by which damage (trauma) to the body occurred.

**Motor Vehicle Collision (MVC)** – also referred to as a Motor Vehicle Accident (MVA).

**Outcome measures** – as defined by the World Health Organization are the “change in the health of an individual, group of people, or population that is attributable to an intervention or series of interventions.” For the purposes of this report, outcome measures include but are not limited to a patient’s initial disposition on arrival, transfer between different level facilities, final discharge disposition, and mortality.

**Pediatric** – is defined and used in this report to describe an individual whose age ranges from 0 to 15 years of age.

**Record** – is used to reference an individual incident as reported to the COTS Regional Registry.

**Region** – as defined and used in this report refers to one of eight Ohio Homeland Security Regions a county is assigned. (Appendix C)

**Regional Trauma System** – is an organized, coordinated effort in a defined geographic area that delivers the full range of care to all injured patients and works together with emergency services and emergency preparedness making efficient use of health care resources to improve patient outcomes in the state of Ohio. Membership is voluntary and not generally restricted by facility location.



**Trauma Center** – an emergency medical facility that can provide a higher-level treatment and surgical care to trauma patients than other types of emergency facilities. In Ohio, the designation of “trauma center” and its level of service is based on assessment and verification by the American College of Surgeons (ACS).

The descriptions of Level I, II and III trauma centers can be found in the ACS document, “Resources for Optimal Care of the Injured Patient.”<sup>2</sup>

<sup>1</sup> <http://www.trauma.org/archive/scores/iss.html>

<sup>2</sup> <https://www.facs.org>

# Appendix B: COTS Trauma Registry Inclusion Criteria and Data Dictionary 2020

## TRAUMA PATIENT DEFINITION

To ensure consistent data collection across the Central, Southeast, Southeast Central Ohio and the State of Ohio and to follow the National Trauma Data Standard, a trauma patient is defined as a patient sustaining a traumatic injury and meeting the patient inclusion criteria described below.

## PATIENT INCLUSION CRITERIA

To be included in the Trauma Acute Care Registry (TACR),

1. The patient must have incurred, no more than 30 days prior to presentation for initial treatment, at least one of the injury diagnostic codes defined in the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM):
  - **J70.5 with character modifier of A ONLY** (Respiratory conditions due to smoke inhalation – initial encounter)
  - **S00-S99 with 7th character modifier of A, B or C ONLY** (Injuries to specific body parts – initial encounter)
  - **T07** (Unspecified multiple injuries)
  - **T14** (Injury of unspecified body region)
  - **T20-T28 with 7th character modifier of A ONLY** (Burns by specified body parts – initial encounter)
  - **T30-T32** (Burn by TBSA percentage)
  - **T33 with character modifier of A ONLY** (Superficial frostbite – initial encounter)
  - **T34 with character modifier of A ONLY** (Frostbite with tissue necrosis – initial encounter)
  - **T67 with character modifier of A ONLY** (Effects of heat and light – initial encounter)
  - **T68 with character modifier of A ONLY** (Hypothermia – initial encounter)
  - **T69 with character modifier of A ONLY** (Other effects of reduced temperature – initial encounter)
  - **T70.4 with character modifier of A ONLY** (Effects of high-pressure fluids – initial encounter)
  - **T70.8 with character modifier of A ONLY** (Other effects of air pressure and water pressure – initial encounter)
  - **T70.9 with character modifier of A ONLY** (Effect of air pressure and water pressure, unspecified – initial encounter)
  - **T71 with character modifier of A ONLY** (Asphyxiation – initial encounter)
  - **T74.1 with character modifier of A ONLY** (Physical abuse, confirmed – initial encounter)
  - **T74.4 with character modifier of A ONLY** (Shaken infant syndrome – initial encounter)
  - **T75.0 with character modifier of A ONLY** (Effects of lightning – initial encounter)
  - **T75.1 with character modifier of A ONLY** (Unspecified effects of drowning and nonfatal submersion – initial encounter)
  - **T75.4 with character modifier of A ONLY** (Electrocution – initial encounter)
  - **T79.A1-T79.A9 with 7th character modifier of A ONLY** (Traumatic compartment syndrome – initial encounter)
  - **S00, S10, S20, S30, S40, S50, S60, S70, S80, S90** (Patients with these isolated injuries that were transferred in/out or died.)
2. The patient **MUST ALSO**
  - On initial presentation for treatment of an injury, be admitted to a hospital or hospital observation unit, as defined by a physician order regardless of the length of stay; **AND/OR**
  - Be transferred via EMS transport (including air ambulance) from one hospital (or free-standing emergency department) to another hospital regardless of the patient's length of stay or admission status; **AND/OR**
  - Have an outcome of death resulting from the traumatic injury (independent of hospital admission or hospital transfer status).

## PATIENT EXCLUSION CRITERIA

Patients with the following isolated ICD-10-CM codes are **EXCLUDED** from the TACR:

- **S72.00-S72.14**, fracture of head/neck of femur ONLY IF age >70 AND it resulted from slipping, tripping, stumbling or a same level fall (W01.0, W18.30, W18.31, W18.39);

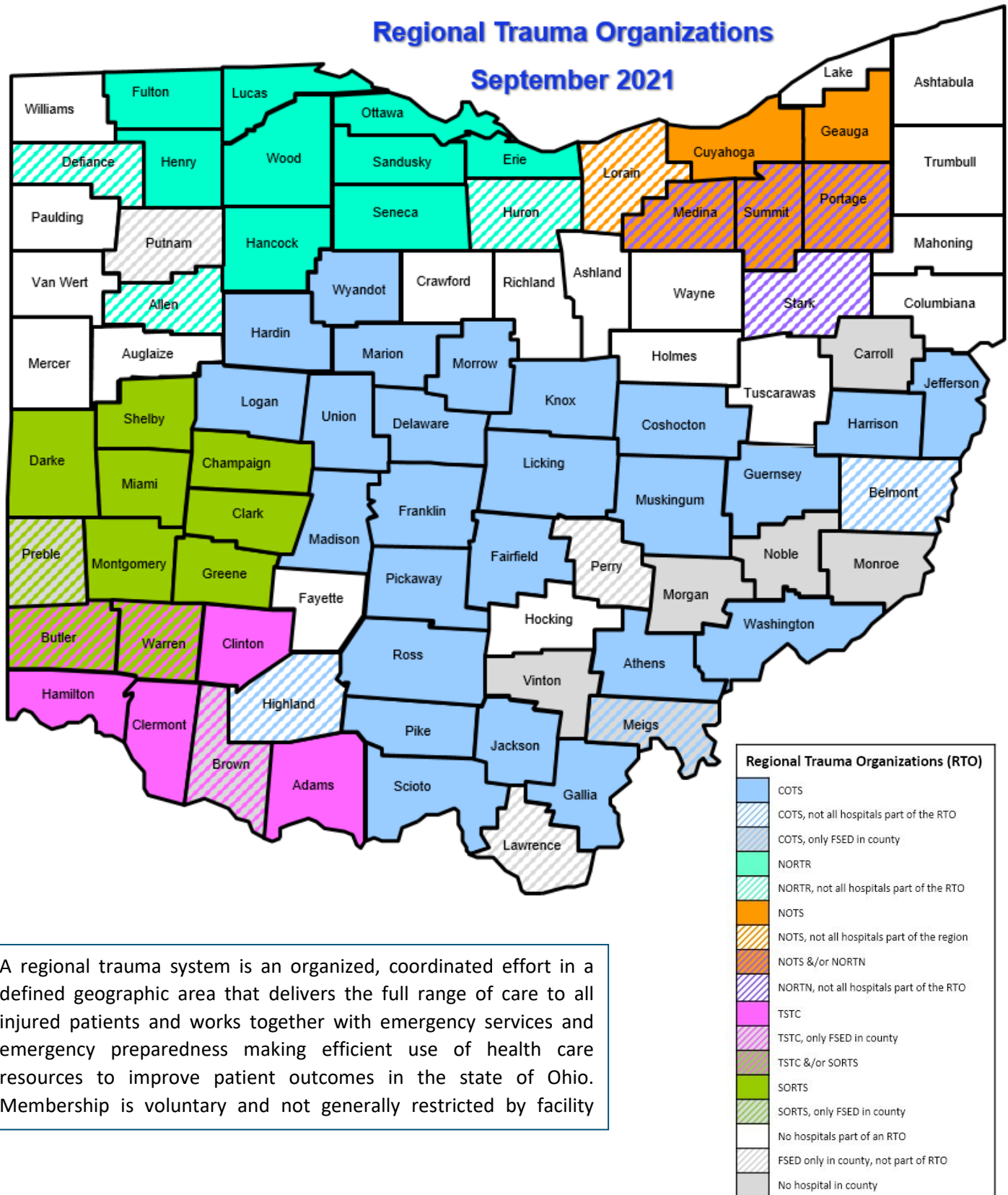
- **S00, S10, S20, S30, S40, S50, S60, S70, S80, S90** (Abrasion or Contusion injuries. Patients with abrasion or contusion injuries that were transferred in/out for treatment of injuries or died because of injuries would be included in the registry)
- 7<sup>th</sup> character modifiers of D through S (Late effects)

More information on the trauma inclusion or exclusion criteria and the full 2020 data dictionary.

## Appendix C: Map of Ohio Homeland Security Regions

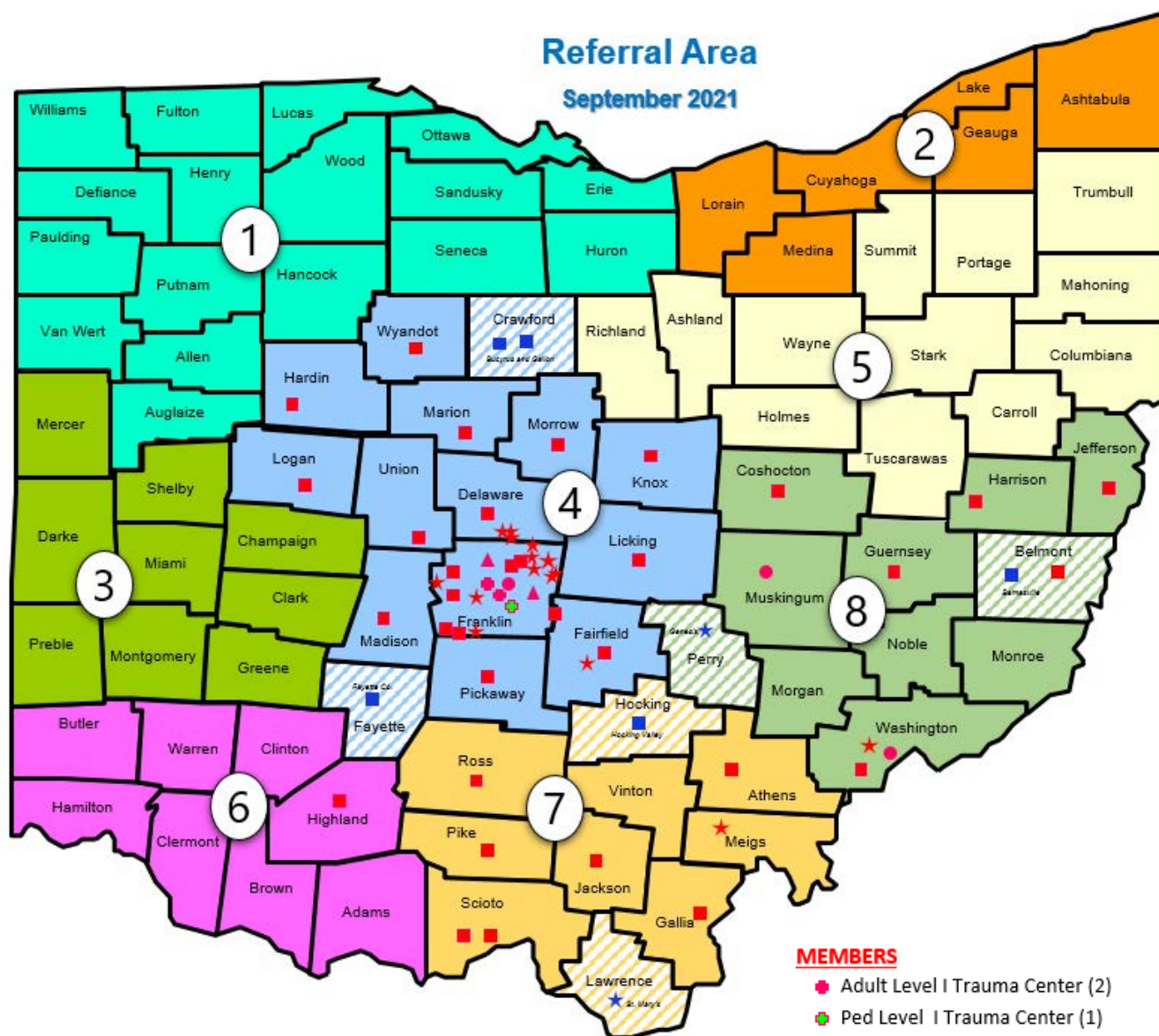


# Appendix D: Ohio Regional Trauma Systems Map



A regional trauma system is an organized, coordinated effort in a defined geographic area that delivers the full range of care to all injured patients and works together with emergency services and emergency preparedness making efficient use of health care resources to improve patient outcomes in the state of Ohio. Membership is voluntary and not generally restricted by facility

## Appendix E: Central Ohio Trauma System Map



Diagonally shaded counties in region 4, 7, & 8 are part of COTS preparedness regions but 1 or more hospital or free-standing ED in the county is not a paying member of COTS.

### MEMBERS

- Adult Level I Trauma Center (2)
- Ped Level I Trauma Center (1)
- ▲ Adult Level II Trauma Center (2)
- Adult Level III Trauma Center (3)
- ★ Free Standing Emergency Dept (15)
- Acute Care Hospital (33)

### NON-MEMBERS

- Acute Care Hospital (5)
- ★ Free Standing Emergency Dept (2)

As of September 2021, COTS has fifty-six member facilities however not all are providing data at the time of this report. In 2017 and 2018 thirty facilities provided data to COTS, in 2019 thirty-seven and in 2020 forty-three.