2020

OHIO TRAUMA REGISTRY ANNUAL REPORT

Ohio Department of Public Safety
Division of Emergency Medical Services

April 22, 2022

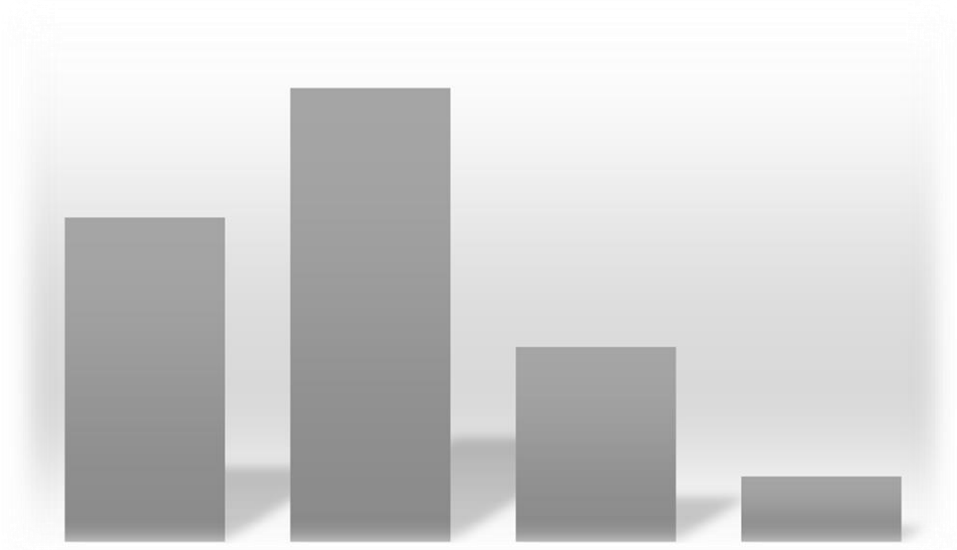

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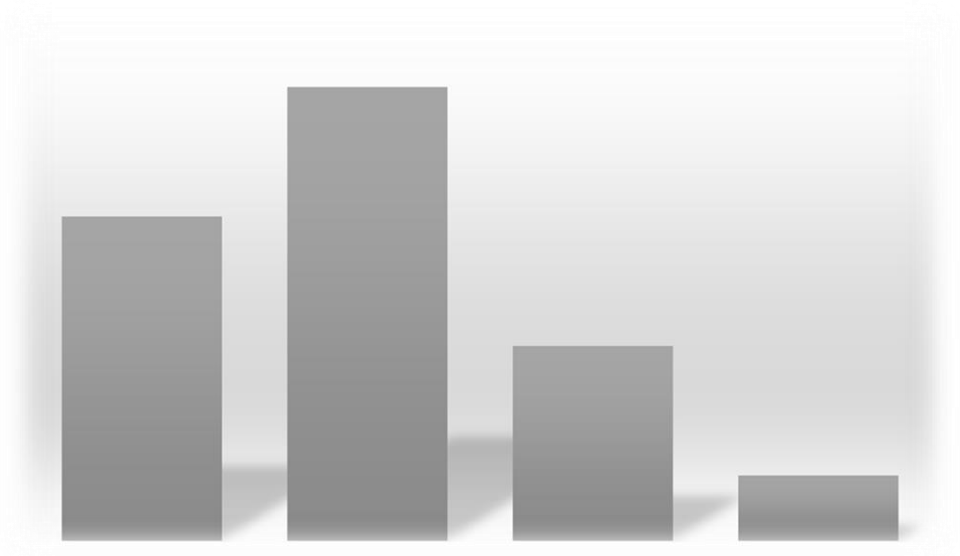
TABLE OF CONTENTS

Page



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FOREWORD

The year 2020 will always be associated with emergence of the COVID-19 pandemic. It seemed our entire nation, and the entire world, turned their focus to this virus in an effort to stop its life-altering and life-threatening effects. Nevertheless, behind the national headlines and press conferences, behind the masks and vaccines, traumatic injuries were still occurring. Did this illness, as overwhelming as it was, influence the type and frequency of these injuries in this dubious year?

Without a few essentials, we would be left with wild speculation to answer these questions. Fortunately, the state of Ohio has some robust tools in the toolbox to help us analyze them. It's called the Trauma Acute Care Registry (TACR), and in conjunction with the Emergency Medical Services Incident Reporting System (EMSIRS), we get a picture of the cause, the care, and the condition of every victim who sustains significant injuries and seeks care in the state's trauma facilities. With data derived from every hospital in Ohio, from the smallest critical access facility to the largest Level I trauma center, we can put together trends and analyses regarding trauma care from regional and statewide perspectives.

If evaluating the trauma system in Ohio were a construction site, then we have a good crew working the high steel. Since tools cannot get the job done alone, we have placed them in the hands of the experts who know how best to operate these instruments. Enter the State Trauma Committee, a dedicated, diversified group of individuals who represent the best of trauma care in Ohio. Their expertise is invaluable in all realms of traumatic injuries, from out-of-hospital to hospital, from blunt to penetrating, from burns to brain injuries. Our state is blessed to have access to such dedicated talent.

Every good crew needs some hardworking peers, and walking beside the State Trauma Committee is the incredible staff of the Ohio Department of Public Safety. From the Executive Director to the Data Administration Manager and the compliment of data analysts and administrative professionals, the teamwork is seamless and the professionalism is impeccable. We owe you a ton of thanks for the heavy lifting.

All construction projects require the planning of an architect, and manhandling our blueprints is the capable hands of the Emergency Medical, Fire, and Transportation Services (EMFTS) Board. Their guidance and direction keeps us on track and their continued support helps us reach new heights. We truly appreciate the tremendous oversight and the accomplishments that result from it.

Finally, to the Trauma Medical Directors and surgeons, to the Trauma Program Managers and nurses, to the Data Managers and analysts, and to the Chiefs and the EMS professionals in the street, you reside in this building. You are passionate in all aspects of trauma care that you provide every day. Moreover, because you do, the residents of this great state and all its visitors have improved chances for survival from accidents and traumatic injuries that occur every day. Thank you for the vital role you play in the trauma systems of care and for helping to build a better, safer Ohio!

Diane Simon RN, CEN

Diane Simon RN, CEN

Chair, State Trauma Committee

INTRODUCTION

The 2020 Ohio Trauma Registry (OTR) Annual Report presents an overview of data collected from patients who sustained traumatic injuries and arrived at an Ohio facility in Calendar Year (CY) 2020. The purpose of this report is to provide relevant information to healthcare professionals and to the public which describes Ohio's trauma patient load and an analysis of the traumatic injuries seen during this period.

In accordance with Ohio Revised Code (ORC) 4765.06(B), the State Board of Emergency Medical, Fire, and Transportation Services (Board) has the statutory authority to establish a state trauma registry to be used for the collection of information regarding the care of adult and pediatric trauma victims in Ohio. The registry provides for the reporting of adult and pediatric trauma-related deaths, identification of adult and pediatric trauma patients, monitoring of adult and pediatric trauma patient care data, determination of the total amount of uncompensated adult and pediatric trauma care provided annually by each facility that provides care to trauma victims, and collection of any other information specified by the Board. The Board has authority over the OTR, specifications for information that may be collected (ORC 4765.11(B) (1)), and supervision of its operation via the Board's Trauma Committee and associated workgroups.

The Board's Trauma Committee and composition is outlined in ORC 4765.04(B) (1 – 22). A total of twenty-four (24) members, representing a diverse group of stakeholders from urban and rural areas, various geographical areas of the state, and various schools of training who are involved with oversight and care of Ohio's trauma patients, are nominated by their respective organizations and appointed by the Director of the Ohio Department of Public Safety. Currently, no more than one Committee member who is employed by or practices at the same hospital, health system, or emergency medical service organization may be appointed to this Committee. The Committee advises and assists the Board in matters related to adult and pediatric trauma care and the establishment and operation of the OTR. In matters relating to the OTR, the Board and the Committee can consult with trauma registrars from adult and pediatric trauma centers in the state. The Committee may appoint subcommittees and create workgroups to advise and assist with the OTR. Under the general direction of the Committee these additional groups may include persons with expertise relevant to the OTR who are not members of the Board or Committee.

The OTR is operated and maintained by the Ohio Department of Public Safety, Division of Emergency Medical Services (EMS). This report was produced by the Ohio Department of Public Safety, Division of EMS, Trauma and Research Team, in conjunction with the Trauma Committee and its Performance Improvement Workgroup. The information contained herein is based on data that were reported for trauma patients who arrived at a facility in 2020. It is intended for descriptive purposes only. The inclusion requirements for the trauma registry and the associated data dictionary can be found in Appendix B. Questions or comments concerning the report should be directed to EMSData@dps.ohio.gov.

CONSIDERATIONS

- For this report, 2020 data were defined as records that had an arrival date between 1/1/2020 and 12/31/2020. These data are intended for descriptive purposes only.

- The data utilized for this report was extracted on 9/18/2021. Any data received and processed for calendar year 2020 after this date was not included in this annual summary.

- In the OTR, we do receive records where the injury occurred out of state. For the figures and tables that look at health outcomes/injury information by county or region, these records are not included. The other figures and tables do include records where the injury may have occurred out of state. This can help provide an overall picture of the type of injuries that come to and the care that is provided at hospitals and freestanding emergency departments in Ohio.

- For calculations involving state and county populations, this analysis used the 2020 population estimates provided from the census website (https://www.census.gov/).

- If a table or figure has a label of "Not Recorded," that means that the corresponding records were blank for that field. If a table or figure has a label of "Not Valued," that means that the corresponding records were populated with something that could not be attributed to a recognized value for that variable. For each table/graph where "Not Valued" is listed, there is a description of what those records were populated with.

- For tables that have percentages, the percentages may not add up to 100% due to rounding.

- Patients with the following isolated ICD-10-CM codes are EXCLUDED from the OTR: S00, S10, S20, S30, S40, S50, S60, S70, S80, S90

- It is important to note that when "region" is referenced in the data, the Division of EMS is referring to the Ohio Homeland Security Regions as displayed on the map in Appendix L, and not Ohio's various regional trauma systems.

- 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.

SECTION 1: STATE DEMOGRAPHICS

Geography

The State of Ohio encompasses a land area of 40,952.6 square miles. Land usage is predominantly farmland with 36.7% used for cultivated crops and an additional 13.3% used for hay and pasture land. Another 32.4% is forested land. Developed land usage is divided into 2.49% lower intensity and 11.3% higher intensity categories. The population is distributed across Ohio with 80% of Ohioans living in metropolitan areas.

Population

Based on a 2018 and 2019 reports from the Ohio Department of Development (ODD), Office of Research, Ohio's population was 11,689,442. Population growth in Ohio began to slow in the 1970s, increasing by only 2.7% since 2000 while the U.S. population has increased by 15.7% during the same timeframe. Ohio is the seventh most populous state and accounts for 3.6% of the nation's population (327,167,434). The median age of Ohio's population is 39.4 years of age and slightly higher than the nation's median age of 38.2 years. Since 2000, Ohio's median age has increased 3.2 years. Children ranging from 0 – 17 years of age make up 22.6% of the population. Adults ages 18 – 64 constitute 61.4% of the population and adults age 65 and older account for 17%. According to the Ohio Department of Development the birthrate for women ages 15 – 44 is 62 per 1,000. Teen births for females ages 15 – 19 is 20.8 per 1,000. The death rate is 1065.4 per 100,000 population.

Education and Income

Based on 2018 statistics from the ODD, 10.2% did not complete high school while 33.6% graduated high school before discontinuing formal education. Nationally, 27.1% completed high school or equivalency before discontinuing their formal education. An additional 20.5% have some college education without degree completion. Another 8.5% obtained an Associate degree, 17% obtained a Bachelor's degree, slightly lower than the 19.7% national average. Lastly, 10.2% Ohioans have obtained a Master's degree or higher compared to 12.3% nationally.

The median annual income of Ohio households is $52,407. Approximately 23.6 % of Ohioans are below 150% of the Federal Poverty Level (FPL).

Healthcare

There were approximately 226 registered hospitals totaling 39,336 beds. In addition to hospitals, there were approximately 980 nursing homes and 771 residential care facilities. Of these, 101 acute care facilities and another 50 freestanding emergency departments contributed data to the OTR. Of the 46 hospitals that met the American College of Surgeons Committee on Trauma criteria for registered trauma centers that are equipped to handle the more extreme traumatic injury cases, all 46 submitted data to the OTR. In Ohio there were 11 Level I Trauma Centers, 10 Level II Trauma Centers, and 20 Level III Trauma Centers (Appendix C). There were also 4 Level I Pediatric Trauma Centers and 4 Level II Pediatric Trauma Centers serving the state, three of which reside in the same facility as an adult trauma center (Appendix D). These registered trauma centers are located in the metropolitan areas of Akron, Cincinnati, Columbus, Cleveland, Dayton, and Toledo. Of the total registered hospitals, 33 are identified as critical access hospitals that provide care in primarily rural areas of Ohio (Appendix F).

Emergency Medical Services

As of the end of December 2020, there were 42,972 individuals holding an active EMS provider certificate as either an Emergency Medical Responder, Emergency Medical Technician, Advanced Emergency Medical Technician, or Paramedic.

EMS coverage throughout Ohio included a mixture of Emergency Medical Responder (5%), Emergency Medical Technician (46%), Advanced Emergency Medical Technician (4%), Paramedic (45%), and additional protocols for invasive skills/interventions/advanced life support procedures beyond Paramedic level services based on the highest level of approved operational protocols. Of these providers, 20.2% worked primarily in a volunteer service, 17.7% worked primary as part-time, and 62.1% worked in a full-time capacity.

A total of 18 air medical service providers, many of which have one or more satellite locations, currently serve Ohio patients. The majority of air medical services are located in Ohio with a few having headquarter or satellite locations in Indiana, Kentucky, Michigan, Pennsylvania, and West Virginia. The system is comprised of 78 aircraft total, of which seven aircraft are fixed wing and 71 are rotor. Some headquarter locations and each satellite location have at least one aircraft stationed at their facility. The Ohio Department of Public Safety Division of EMS inspects and licenses all air medical aircraft on an annual basis. Appendix J identifies the location of these aircraft.

There were a total of 1,830,143 EMS calls reported to the Ohio EMS Incident Reporting System (EMSIRS) in 2020. Of those records 258,168 were categorized as injuries based on an assigned mechanism of injury within EMSIRS.

Trauma Services

Of all injuries treated by an emergency facility, 80,316 records met the inclusion criteria for submission to the, OTR. The inclusion criteria can be found in the "Trauma Acute Care Registry Data Dictionary," prepared by the Ohio Department of Public Safety (http://www.publicsafety.ohio.gov/links/ems_OTR-TACR-Data-Dictionary-2020.pdf). For additional reference and context of these data, the Ohio Department of Health Injury Related Death Data, including a focus on the "External Injury Mechanism," is included in this report (Appendix K).

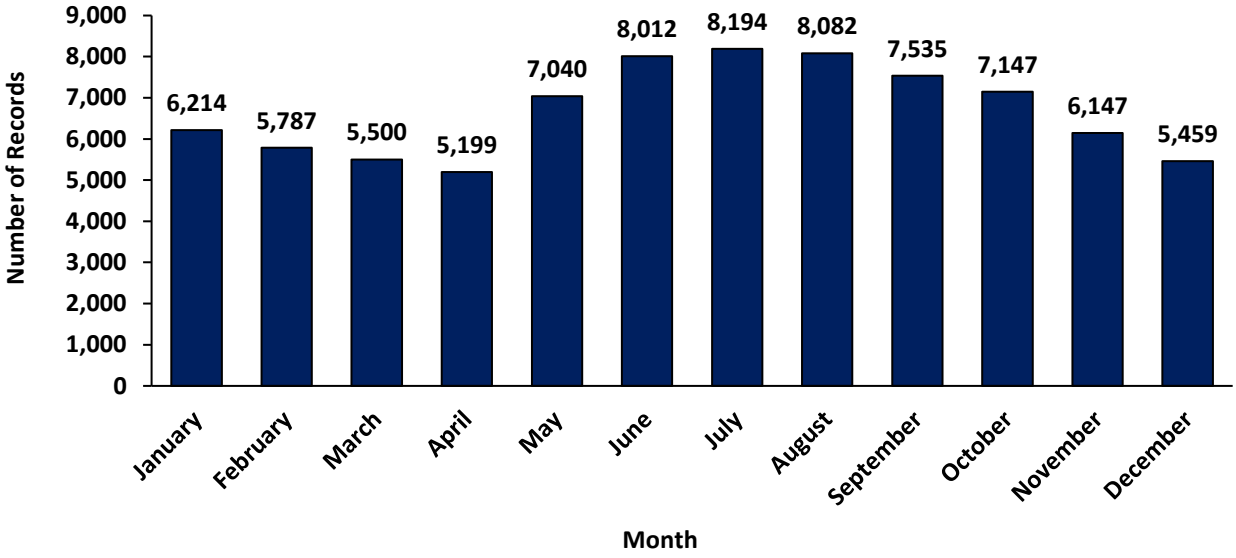
Regional Trauma Systems

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 disaster 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.

SECTION 2: RECORDS OF HOSPITAL PATIENT CONTACT

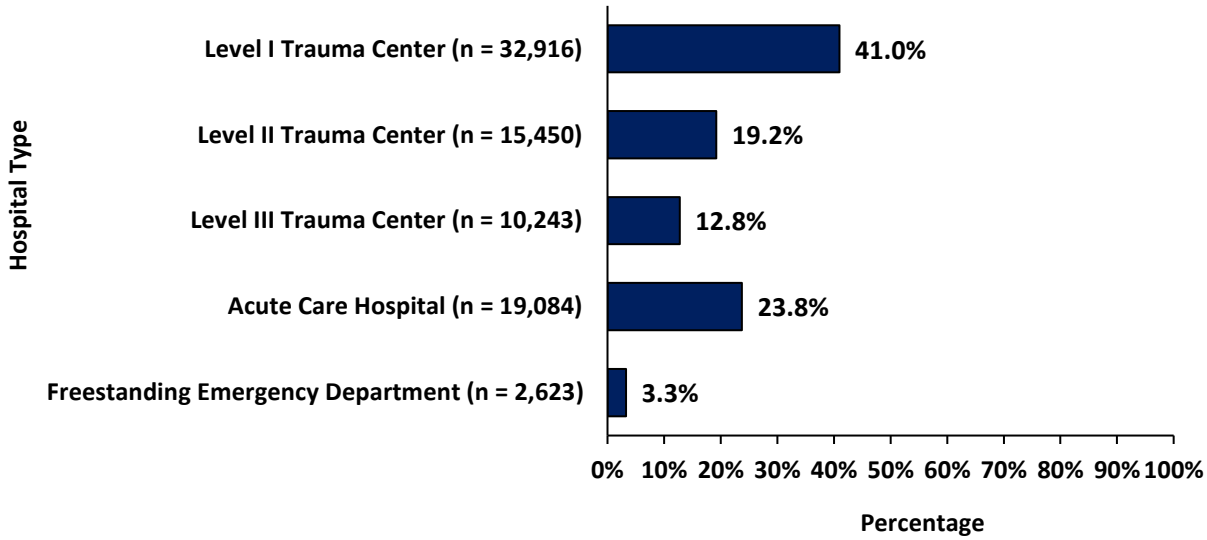
❖ Figure 1. Total records submitted to the Ohio Trauma Registry by month of arrival, 2020

This figure displays the number of trauma records submitted to the OTR by month of patient arrival during 2020. A total of 80,316 records met the inclusion criteria based on date of arrival in 2020. An average of 6,693 records were received by the OTR each month.



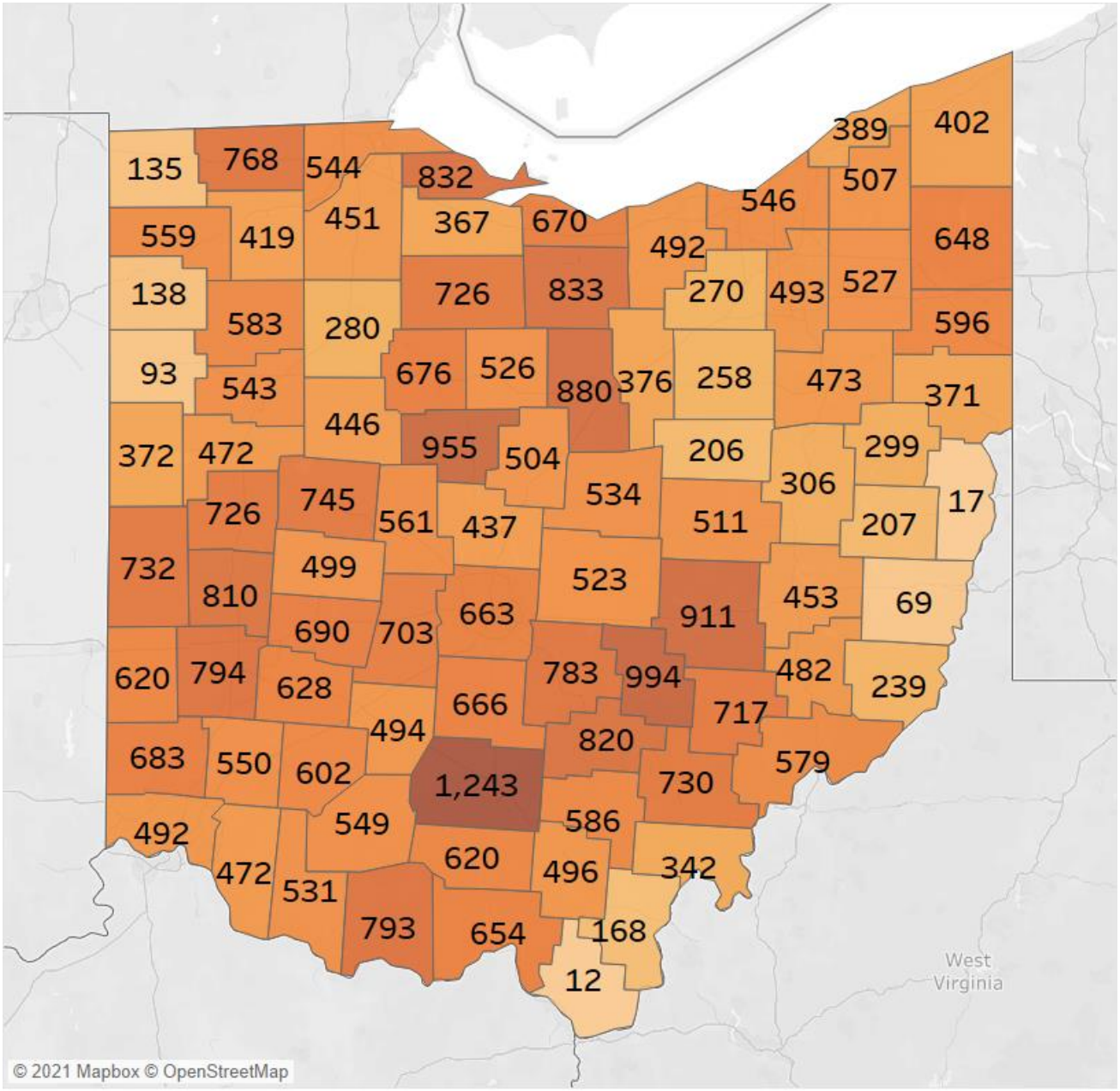
❖ Figure 2. Total records submitted to the Ohio Trauma Registry by hospital type, 2020

This figure shows the number and percentage of records that were submitted to the OTR by hospital type. The records most frequently came from Level I Trauma Centers (32,916; 41.0%).



❖ **Figure 3. Rate of injuries by county of injury, Ohio, 2020**

This map displays the rate of injury per 100,000 population based on the county where the injury occurred. The Ohio counties with the highest rates of injury per 100,000 residents in 2020 were Ross (1,242.7 per 100,000) and Perry (994.1 per 100,000) counties. The Ohio counties with the lowest rates of injury per 100,000 residents in 2020 were Jefferson (16.9 per 100,000) and Lawrence (12.0 per 100,000) counties. There were 5,488 records where the county of injury was not recorded. These records are not represented in this figure. Records where the injury occurred outside of Ohio were also not included in the analysis for this figure.



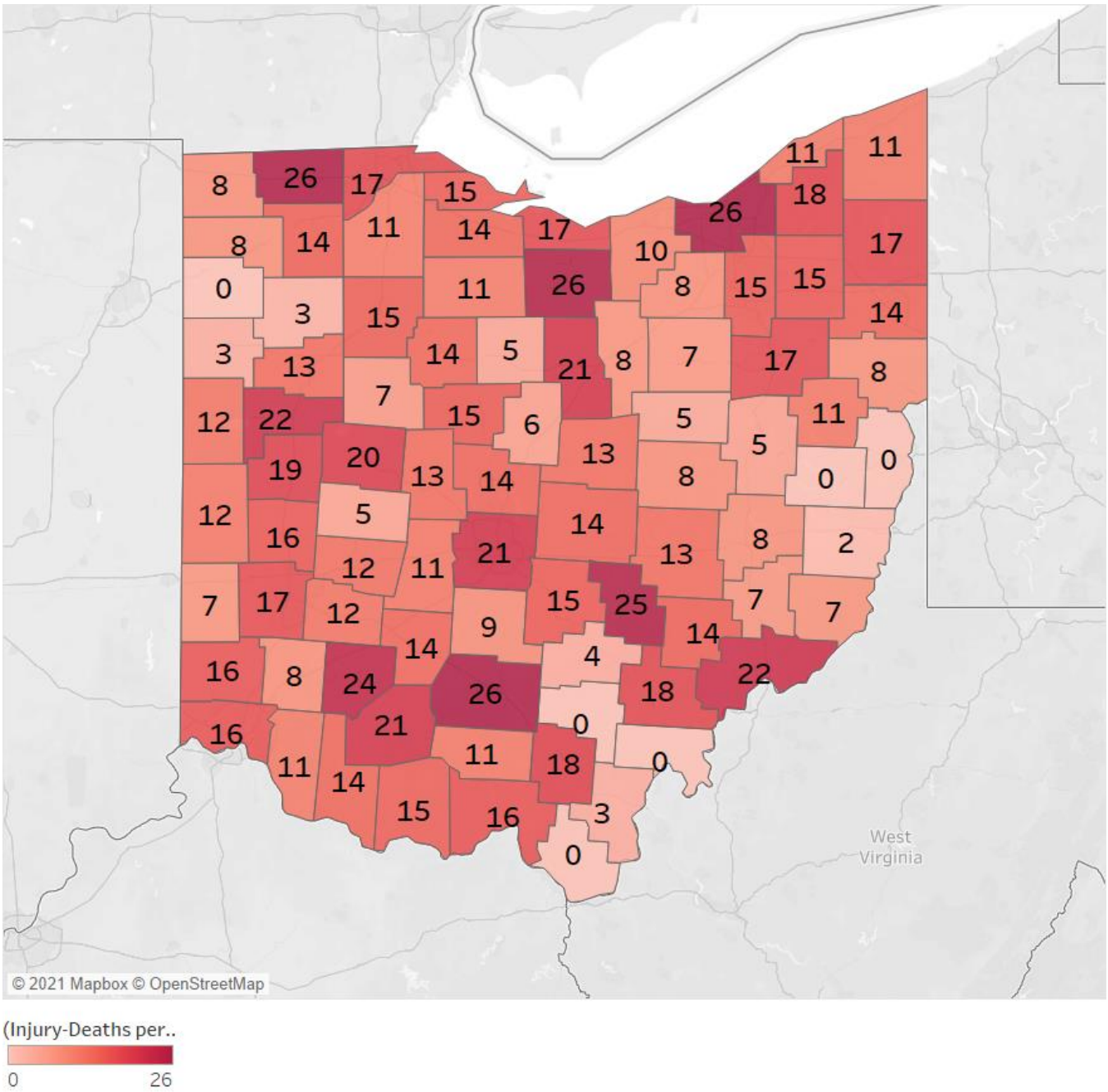
❖ Table 1. Rates of injuries by county of injury, Ohio, 2020

This table displays the rate of injuries by the county where the injury occurred. Ross (1,242.7 per 100,000 residents) and Perry (994.1 per 100,000 residents) counties reported the highest rates of injuries. For this table, records where the injuries occurred out of state were not included in the analysis.

County	Count	Population	Rate per 100,000	County	Count	Population	Rate per 100,000
Adams	218	27,477	793.4	Logan	344	46,150	745.4
Allen	555	102,206	543.0	Lorain	1,540	312,964	492.1
Ashland	197	52,447	375.6	Lucas	2,346	431,279	544.0
Ashtabula	392	97,574	401.7	Madison	308	43,824	702.8
Athens	456	62,431	730.4	Mahoning	1,363	228,614	596.2
Auglaize	219	46,422	471.8	Marion	624	65,359	954.7
Belmont	46	66,497	69.2	Medina	493	182,470	270.2
Brown	232	43,676	531.2	Meigs	76	22,210	342.2
Butler	2,668	390,357	683.5	Mercer	158	42,528	371.5
Carroll	80	26,721	299.4	Miami	881	108,774	809.9
Champaign	193	38,714	498.5	Monroe	32	13,385	239.1
Clark	939	136,001	690.4	Montgomery	4,265	537,309	793.8
Clermont	985	208,601	472.2	Morgan	99	13,802	717.3
Clinton	253	42,018	602.1	Morrow	176	34,950	503.6
Columbiana	378	101,877	371.0	Muskingum	787	86,410	910.8
Coshocton	187	36,612	510.8	Noble	68	14,115	481.8
Crawford	221	42,025	525.9	Ottawa	336	40,364	832.4
Cuyahoga	6,904	1,264,817	545.8	Paulding	26	18,806	138.3
Darke	380	51,881	732.4	Perry	352	35,408	994.1
Defiance	214	38,286	559.0	Pickaway	390	58,539	666.2
Delaware	936	214,124	437.1	Pike	168	27,088	620.2
Erie	507	75,622	670.4	Portage	853	161,791	527.2
Fairfield	1,244	158,921	782.8	Preble	254	40,999	619.5
Fayette	143	28,951	493.9	Putnam	201	34,451	583.4
Franklin	8,775	1,323,807	662.9	Richland	1,099	124,936	879.7
Fulton	328	42,713	767.9	Ross	958	77,093	1,242.7
Gallia	49	29,220	167.7	Sandusky	216	58,896	366.7
Geauga	484	95,397	507.4	Scioto	484	74,008	654.0
Greene	1,054	167,966	627.5	Seneca	400	55,069	726.4
Guernsey	174	38,438	452.7	Shelby	350	48,230	725.7
Hamilton	4,086	830,639	491.9	Stark	1,772	374,853	472.7
Hancock	210	74,920	280.3	Summit	2,662	540,428	492.6
Hardin	137	30,696	446.3	Trumbull	1,309	201,977	648.1
Harrison	30	14,483	207.1	Tuscarawas	285	93,263	305.6
Henry	116	27,662	419.3	Union	352	62,784	560.7
Highland	238	43,317	549.4	Van Wert	27	28,931	93.3
Hocking	230	28,050	820.0	Vinton	75	12,800	585.9
Holmes	91	44,223	205.8	Warren	1,333	242,337	550.1
Huron	488	58,565	833.3	Washington	346	59,771	578.9
Jackson	162	32,653	496.1	Wayne	302	116,894	258.4
Jefferson	11	65,249	16.9	Williams	50	37,102	134.8
Knox	335	62,721	534.1	Wood	596	132,248	450.7
Lake	904	232,603	388.6	Wyandot	148	21,900	675.8
Lawrence	7	58,240	12.0	Not Recorded	5,488		
Licking	934	178,519	523.2	Out of Ohio	--		

❖ **Figure 4. Rate of injuries resulting in death by county of injury, Ohio, 2020**

This map displays the rate of injuries resulting in death per 100,000 population by the county where the injury occurred. The Ohio counties with the highest number of injuries that resulted in death per 100,000 residents in 2020 were Ross (25.9 per 100,000 residents), Fulton (25.8 per 100,000 residents), and Cuyahoga (25.7 per 100,000 residents) counties. There are 62 records where the county of injury was not valued. These records are not represented in this figure. Records where the injury occurred outside of Ohio were also not included in this analysis for this figure.



❖ Table 2. Rates of injuries resulting in death by county of injury, Ohio, 2020

This table displays the rate of injuries resulting in death by the county where the injury occurred. Ross (25.9 per 100,000 residents), Fulton (25.8 per 100,000 residents), and Cuyahoga (25.7 per 100,000 residents) counties reported the highest rates of injuries resulting in deaths in 2020. For this table, records where the injuries occurred out of state were not included in the analysis.

County	Number of Fatal Injuries	Population	Rate per 100,000	County	Number of Fatal Injuries	Population	Rate per 100,000
Adams	4	27,477	14.6	Logan	9	46,150	19.5
Allen	13	102,206	12.7	Lorain	30	312,964	9.6
Ashland	4	52,447	7.6	Lucas	75	431,279	17.4
Ashtabula	11	97,574	11.3	Madison	5	43,824	11.4
Athens	11	62,431	17.6	Mahoning	32	228,614	14.0
Auglaize	10	46,422	21.5	Marion	10	65,359	15.3
Belmont	1	66,497	1.5	Medina	15	182,470	8.2
Brown	6	43,676	13.7	Meigs	0	22,210	0.0
Butler	62	390,357	15.9	Mercer	5	42,528	11.8
Carroll	3	26,721	11.2	Miami	17	108,774	15.6
Champaign	2	38,714	5.2	Monroe	1	13,385	7.5
Clark	17	136,001	12.5	Montgomery	91	537,309	16.9
Clermont	23	208,601	11.0	Morgan	2	13,802	14.5
Clinton	10	42,018	23.8	Morrow	2	34,950	5.7
Columbiana	8	101,877	7.9	Muskingum	11	86,410	12.7
Coshocton	3	36,612	8.2	Noble	1	14,115	7.1
Crawford	2	42,025	4.8	Ottawa	6	40,364	14.9
Cuyahoga	325	1,264,817	25.7	Paulding	0	18,806	0.0
Darke	6	51,881	11.6	Perry	9	35,408	25.4
Defiance	3	38,286	7.8	Pickaway	5	58,539	8.5
Delaware	30	214,124	14.0	Pike	3	27,088	11.1
Erie	13	75,622	17.2	Portage	25	161,791	15.5
Fairfield	24	158,921	15.1	Preble	3	40,999	7.3
Fayette	4	28,951	13.8	Putnam	1	34,451	2.9
Franklin	278	1,323,807	21.0	Richland	26	124,936	20.8
Fulton	11	42,713	25.8	Ross	20	77,093	25.9
Gallia	1	29,220	3.4	Sandusky	8	58,896	13.6
Geauga	17	95,397	17.8	Scioto	12	74,008	16.2
Greene	20	167,966	11.9	Seneca	6	55,069	10.9
Guernsey	3	38,438	7.8	Shelby	9	48,230	18.7
Hamilton	134	830,639	16.1	Stark	65	374,853	17.3
Hancock	11	74,920	14.7	Summit	81	540,428	15.0
Hardin	2	30,696	6.5	Trumbull	35	201,977	17.3
Harrison	0	14,483	0.0	Tuscarawas	5	93,263	5.4
Henry	4	27,662	14.5	Union	8	62,784	12.7
Highland	9	43,317	20.8	Van Wert	1	28,931	3.5
Hocking	1	28,050	3.6	Vinton	0	12,800	0.0
Holmes	2	44,223	4.5	Warren	20	242,337	8.3
Huron	15	58,565	25.6	Washington	13	59,771	21.7
Jackson	6	32,653	18.4	Wayne	8	116,894	6.8
Jefferson	0	65,249	0.0	Williams	3	37,102	8.1
Knox	8	62,721	12.8	Wood	14	132,248	10.6
Lake	26	232,603	11.2	Wyandot	3	21,900	13.7
Lawrence	0	58,240	0.0	Not Recorded	62		
Licking	25	178,519	14.0	Out of Ohio	--		

❖ Table 3. Duration of hospital stay by mechanism of injury, Ohio Trauma Registry, 2020

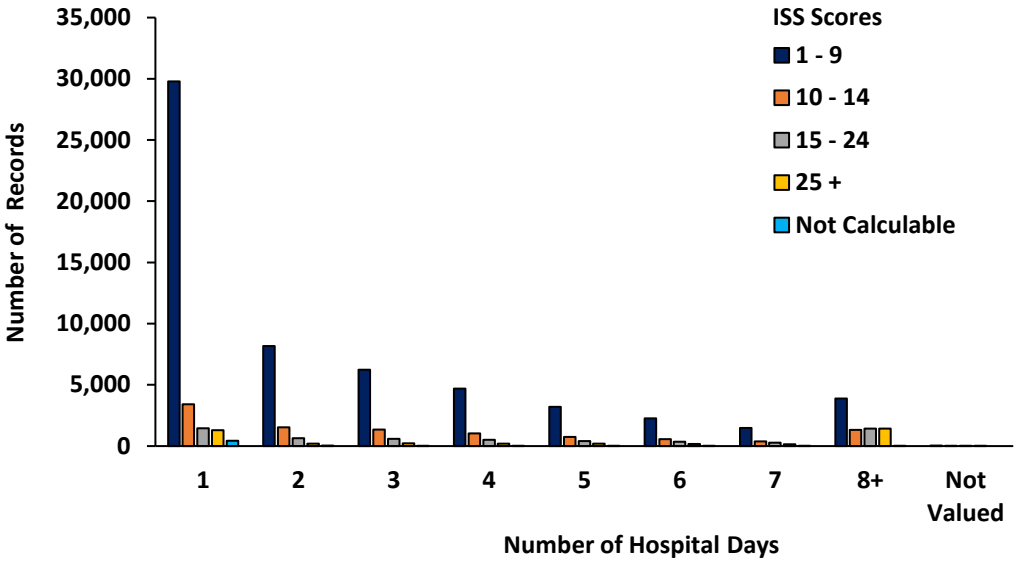
This table shows the distribution of the length of hospital stay (in days) by the mechanism of injury. The mechanism of injury is based on the reported ICD-10 code. Among all injury mechanisms reported, falls resulted in the greatest total number of days hospitalized, for a total of 45,936 days and 57.2% of the total hospitalized days. Case fatality rate data are presented later in this report. Records labeled as "Not Classified" were populated with that text. Records labeled as "Not Valued" were populated with "-".

	Duration of Hospital Stay (Days)										
Mechanism of Injury	**1 day**	**2 days**	**3 days**	**4 days**	**5 days**	**6 days**	**7 days**	**8 + days**	**Not Recorded**	**Total Count**	**Total %**
Abuse	169	56	22	22	8	6	4	35	0	**322**	**0.4**
Cut or Pierce	1,478	272	119	79	63	37	32	84	1	**2,165**	**2.7**
Drowning or Submersion	51	3	3	1	0	2	2	5	0	**67**	**0.1**
Electrical	36	8	0	0	1	1	1	4	1	**52**	**0.1**
Explosion	127	14	19	7	5	7	3	22	0	**204**	**0.3**
Fall	16,967	5,949	5,840	4,835	3,448	2,472	1,676	4,717	32	**45,936**	**57.2**
Fire or Flame	434	48	37	24	16	13	16	135	1	**724**	**0.9**
Firearm	1,720	343	225	138	111	94	88	509	5	**3,233**	**4.0**
Hot Object or Substance	418	61	40	22	6	13	7	73	0	**640**	**0.8**
Machinery	422	90	27	17	5	6	7	27	0	**601**	**0.7**
Mechanical	351	42	24	9	13	4	5	19	0	**467**	**0.6**
MVC** - Motorcyclist	738	279	201	117	94	83	38	338	0	**1,888**	**2.4**
MVC** - Occupant	4,492	1,325	776	543	390	318	232	1,071	6	**9,153**	**11.4**
MVC** - Other	12	2	4	0	1	0	0	1	0	**20**	**0.0**
MVC** - Pedal Cyclist	178	56	31	20	11	7	7	32	0	**342**	**0.4**
MVC** - Pedestrian	343	120	68	49	39	46	28	173	0	**866**	**1.1**
MVC** - Unspecified	317	72	48	36	23	17	6	53	0	**572**	**0.7**
Natural or Environmental	858	106	64	32	19	16	8	37	2	**1,142**	**1.4**
Other Land Transport	1,980	566	288	163	101	96	48	319	1	**3,562**	**4.4**
Other Specified, Classifiable	95	24	14	13	8	7	6	15	0	**182**	**0.2**
Other Specified, Not Elsewhere Classifiable	298	71	41	25	19	14	10	45	0	**523**	**0.7**
Other Transport	52	20	8	4	6	2	2	10	0	**104**	**0.1**
Overexertion	153	58	29	20	12	13	7	14	0	**306**	**0.4**
Pedal Cyclist, Other	832	177	88	40	25	19	14	48	0	**1,243**	**1.5**
Pedestrian Conveyance	578	112	56	23	10	11	10	25	1	**826**	**1.0**
Pedestrian, Other	149	55	30	28	16	7	11	39	1	**336**	**0.4**
Poisoning	46	5	3	2	5	0	2	6	0	**69**	**0.1**
Struck by or Against	2,900	614	307	176	108	65	33	158	1	**4,362**	**5.4**
Suffocation/Asphyxiation	48	12	5	11	6	5	3	6	0	**96**	**0.1**
Not Classified	100	17	11	13	7	2	2	15	0	**167**	**0.2**
Not Valued	79	12	17	11	6	2	2	17	0	**146**	**0.2**
TOTAL	**36,421**	**10,589**	**8,445**	**6,480**	**4,582**	**3,385**	**2,310**	**8,052**	**52**	**80,316**	**100.0**

** MVC is an abbreviation for Motor Vehicle Collision

❖ Figure 5. Duration of hospital stay by Injury Severity Score (ISS), Ohio Trauma Registry, 2020

The Injury Severity Score (ISS) is an assessment of the patient's injury severity. ISS scores range from 0 to 75, where a higher ISS score indicates a more severe injury. This graph displays the duration of hospital stays (in days) based on the ISS. A description on how the ISS is calculated is located in the Glossary. Records labeled as "Not Valued" were populated with "-".



❖ Table 4. Duration of hospital stay by Injury Severity Score (ISS), Ohio Trauma Registry, 2020

Records labeled as "Not Valued" were populated with "-". Persons with an ISS score between 01 and 09 were more likely to spend one day at the hospital following injury compared to other hospital stay durations. Persons with an ISS score of 25+ were most likely to spend eight days or more at the hospital following injury compared to other hospital stay durations. Case fatality rate data are presented later in this report.

	Injury Severity Score (ISS)					
Hospital Days	**1 - 9**	**10 - 14**	**15 - 24**	**25 +**	**Not Calculable**	**Total**
1	29,801	3,406	1,460	1,311	443	**36,421**
2	8,183	1,527	635	206	38	**10,589**
3	6,235	1,357	603	224	26	**8,445**
4	4,692	1,048	513	210	17	**6,480**
5	3,195	757	409	211	10	**4,582**
6	2,267	570	368	176	4	**3,385**
7	1,479	386	281	157	7	**2,310**
8+	3,875	1,332	1,416	1,416	13	**8,052**
Not Valued	42	4	3	3	0	**52**
Total	**59,769**	**10,387**	**5,688**	**3,914**	**558**	**80,316**

❖ Table 5. Number of transfers out of emergency departments by hospital type, Ohio Trauma Registry, 2020

This table looks at the number of instances where a patient was transferred out of a hospital based on the hospital type. This report looks at five different hospital types: Level I, II, and III Trauma Centers; freestanding emergency departments; and acute care hospitals.

The majority (63.9%) of transfers out of the hospital were by acute care hospitals. Among the trauma centers, most (2,204) of the transfers out came from Level III Trauma Centers.

Hospital Type	Transfers	
	#	%
Level I Trauma Center	178	1.2
Level II Trauma Center	582	3.8
Level III Trauma Center	2,204	14.3
Free Standing Emergency Department	2,597	16.9
Acute Care Hospital	9,845	63.9
Total	**15,406**	**100.0**

❖ Table 5a. Destinations of emergency department transfers out of Level I Trauma Centers, Ohio Trauma Registry, 2020

Though comprising the smallest percentage, 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 178 emergency department transfers that came from Level I Trauma Centers, most went to other Level I Trauma Centers (74, 41.6%).

Hospital Type	Transfers	
	#	%
Level I Trauma Center	74	41.6
Level II Trauma Center	51	28.7
Level III Trauma Center	7	3.9
Acute Care Hospital	11	6.2
Out of State	24	13.5
Other or Unknown	11	6.2
Total	**178**	**100.0**

❖ Table 5b. Destinations of emergency department transfers out of acute care hospitals, Ohio Trauma Registry, 2020

The majority of emergency department transfers came from acute care hospitals. The table below identifies the destination by hospital type for these transfers.

The majority of emergency department transfers that came from acute care hospitals went to Level I Trauma Centers (6,627, 67.3%).

Hospital Type	Transfers	
	#	%
Level I Trauma Center	6,627	67.3
Level II Trauma Center	2,188	22.3
Level III Trauma Center	395	4.0
Acute Care Hospital	527	5.4
Free Standing Emergency Department	3	0.0
Out of State	62	0.6
Other or Unknown	43	0.4
Total	**9,845**	**100.3**

❖ Table 5c. Destinations of pediatric emergency department transfers out of acute care hospitals, Ohio Trauma Registry, 2020

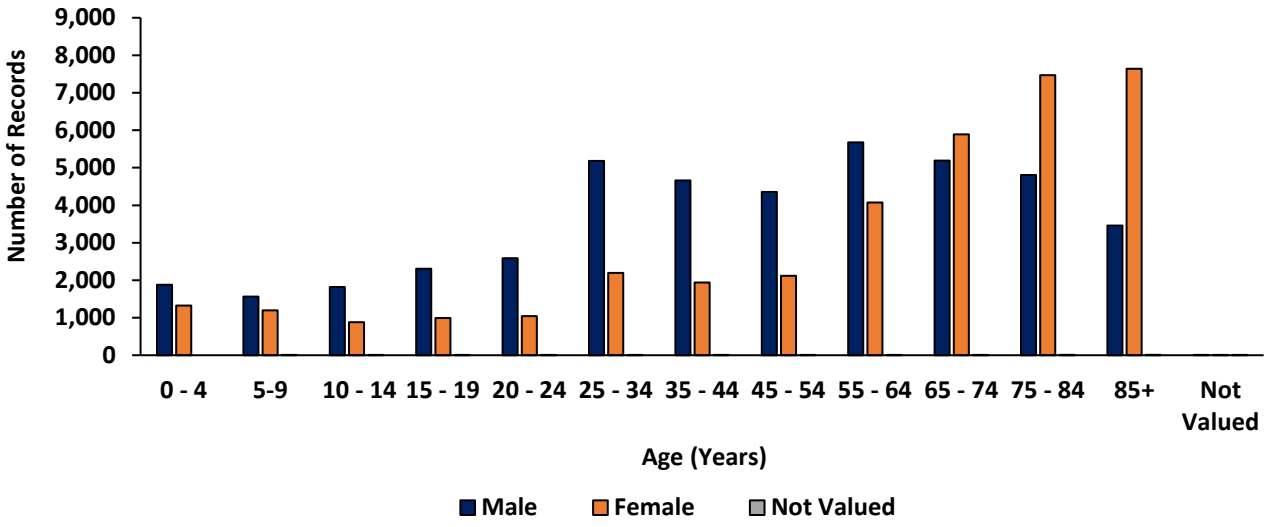
The table below identifies the destination by hospital type for pediatric transfer cases that come from acute care hospitals. The majority (78.9%) of pediatric transfer cases from acute care hospitals went to pediatric level I trauma centers.

Hospital Type	Transfers	
	#	%
Pediatric Level I Trauma Center	1,247	78.9
Pediatric Level II Trauma Center	259	16.4
Adult Level I Trauma Center	24	1.5
Adult Level II Trauma Center	7	0.4
Adult Level III Trauma Center	4	0.3
Acute Care Hospital	29	1.8
Free Standing Emergency Department	0	0.0
Out of State	3	0.2
Other or Unknown	7	0.4
Total	**1,580**	**100.0**

SECTION 3: PATIENT CHARACTERISTICS

❖ Figure 6. Demographics by sex and age group, Ohio Trauma Registry, 2020

This graph, along with Table 6 below, looks 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. Records where gender is labeled as "Not Valued" were populated with "U". Records where the age category is labeled as "Not Valued" were populated with "-".



❖ Table 6. Demographics by sex and age group, Ohio Trauma Registry, 2020

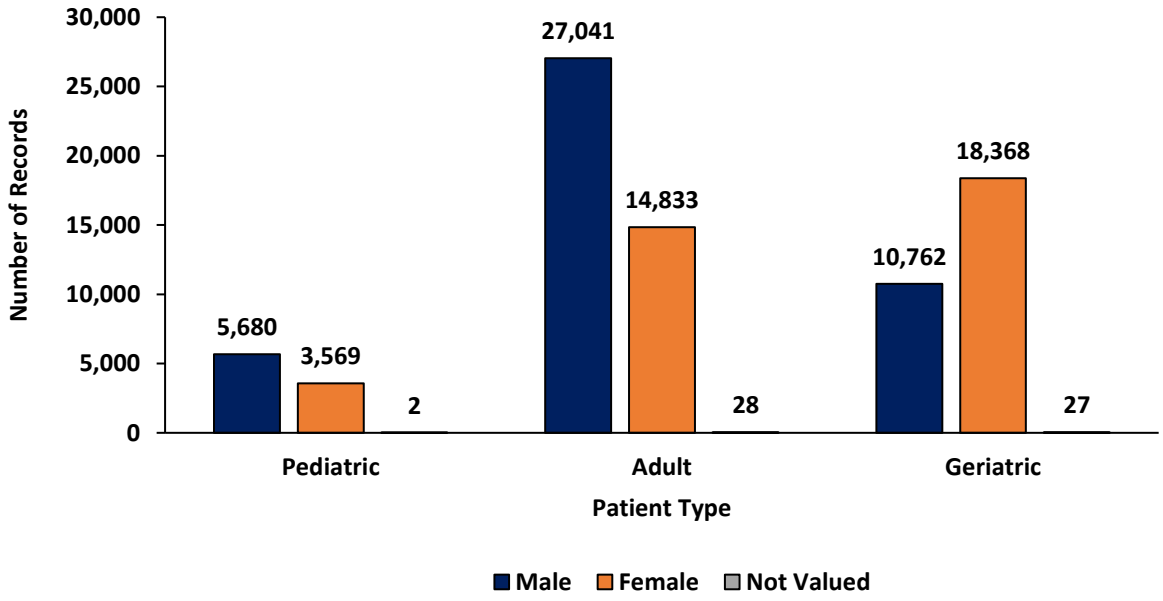
The most common age group among males was 55 – 64. The most common age group among females was ≥ 85. Records where gender is labeled as "Not Valued" were populated with "U". Records where the age category is labeled as "Not Valued" were populated with "-".

Age (Years)	Male		Female		Not Valued		Total	
	#	%	#	%	#	%	#	%
0 - 4	1,878	4.3	1,321	3.6	0	0.0	**3,199**	**4.0**
5-9	1,567	3.6	1,201	3.3	1	1.7	**2,769**	**3.4**
10-14	1,821	4.2	880	2.4	1	1.7	**2,702**	**3.4**
15 - 19	2,309	5.3	991	2.7	5	8.6	**3,305**	**4.1**
20 - 24	2,588	6.0	1,045	2.8	3	5.2	**3,636**	**4.5**
25 - 34	5,180	11.9	2,199	6.0	7	12.1	**7,386**	**9.2**
35 - 44	4,658	10.7	1,940	5.3	4	6.9	**6,602**	**8.2**
45 - 54	4,351	10.0	2,117	5.8	1	1.7	**6,469**	**8.1**
55 - 64	5,675	13.1	4,076	11.1	5	8.6	**9,756**	**12.1**
65 - 74	5,193	11.9	5,890	16.0	7	12.1	**11,090**	**13.8**
75 - 84	4,804	11.0	7,470	20.3	9	15.5	**12,283**	**15.3**
85 and over	3,459	8.0	7,640	20.8	14	24.1	**11,113**	**13.8**
Not Valued	3	0.0	2	0.0	1	1.7	**6**	**0.0**
Total	**43,486**	**100.0**	**36,772**	**100.0**	**58**	**100.0**	**80,316**	**100.0**

❖ Figure 7. Demographics by patient type and sex, Ohio Trauma Registry, 2020

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 graph below shows the number of records based on type of patient (i.e. pediatric, adult, or geriatric) and patient sex. There were six records where age was not valued (records were populated with "-") and therefore patient type could not be calculated. These records were not included in this analysis. Records where gender is labeled as "Not Valued" were populated with "U".



❖ Table 7. Demographics by patient type and sex, Ohio Trauma Registry, 2020

The table below shows the number of patients based on type of patient (i.e. pediatric, adult, or geriatric) and patient sex. There were six records where age was not valued (records were populated with "-") and patient type could not be determined. These records were not included in the table. Records where gender is labeled as "Not Valued" were populated with "U".

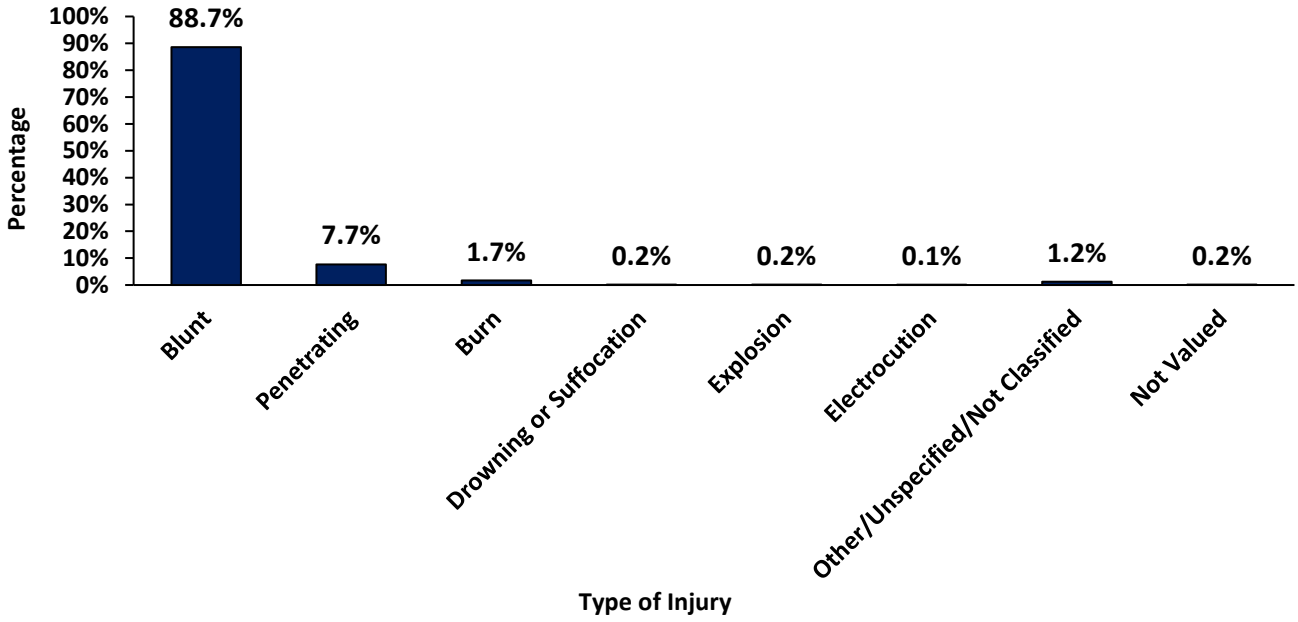
The majority of pediatric (61.4%) and adult (64.5%) records involved males. The majority (63.0%) of geriatric records involved females.

Sex	Type of Patient							
	Pediatric		Adult		Geriatric		Total	
	#	%	#	%	#	%	#	%
Male	5,680	61.4	27,041	64.5	10,762	36.9	43,483	54.1
Female	3,569	38.6	14,833	35.4	18,368	63.0	36,770	45.8
Not Valued	2	0.0	28	0.1	27	0.1	57	0.1
Total	**9,251**	**100.0**	**41,902**	**100.0**	**29,157**	**100.0**	**80,310**	**100.0**

SECTION 4: INJURY CHARACTERISTICS

❖ Figure 8. Types of injuries, Ohio Trauma Registry, 2020

This graph shows the types of injuries sustained in 2020. The type of injury is based on the reported ICD-10 code. Records where the type of injury was labeled as "Not Valued" were populated with "-". Blunt injuries were the most common injury type identified, comprising 88.7% of the reported injuries.



❖ Table 8. Types of injuries, Ohio Trauma Registry, 2020

This table shows the types of injuries sustained by the patient in 2020. Records where the type of injury was labeled as "Not Valued" were populated with "-". The most common type of injury was blunt (88.7%), followed by penetrating (7.7%).

Type of Injury	Injuries	
	#	%
Blunt	71,204	88.7
Penetrating	6,209	7.7
Burn	1,396	1.7
Drowning or Suffocation	199	0.2
Explosion	121	0.2
Electrocution	52	0.1
Other/Unspecified/Not Classified	989	1.2
Not Valued	146	0.2
Total	**80,316**	**100.0**

❖ Table 9. Intent of injury, Ohio Trauma Registry, 2020

This table shows the intent of the injury sustained in 2020. The categories of intent of injury were based on the reported ICD-10 code. Records where the intent of injury was labeled as "Not Valued" were populated with "-". The majority (90.8%) of the injuries were unintentional.

Intent of Injury	Injuries	
	#	%
Unintentional	72,962	90.8
Self-inflicted	847	1.1
Assault	5,634	7.0
Undetermined	339	0.4
Other	78	0.1
Not Valued	456	0.6
Total	**80,316**	**100.0**

❖ Table 10. Intent of injury by patient type, Ohio Trauma Registry, 2020

This table shows the intent of injury sustained by patient type (i.e. pediatric, adult, geriatric). This analysis defines pediatric patients as being between the ages of 0 and 15 years, adult patients as being between the ages of 16 and 69 years, and geriatric patients as being ages 70 and older. There were six records where age was not valued (records were populated with "-") and patient type could not be calculated. These records were not included in the table. Records where the intent of injury was labeled as "Not Valued" were populated with "-".

Across all patient types, the majority (Pediatric: 93.1%; Adult: 84.5%; Geriatric: 99.3%; Overall: 90.8%) of the injuries were unintentional.

Intent of Injury	Patient Type							
	Pediatric		Adult		Geriatric		Total	
	#	%	#	%	#	%	#	%
Unintentional	8,617	93.1	35,401	84.5	28,940	99.3	72,958	**90.8**
Self-inflicted	50	0.5	747	1.8	50	0.2	847	**1.1**
Assault	200	2.2	5,346	12.8	86	0.3	5,632	**7.0**
Undetermined	65	0.7	254	0.6	20	0.1	339	**0.4**
Other	3	0.0	69	0.2	6	0.0	78	**0.1**
Not Valued	316	3.4	85	0.2	55	0.2	456	**0.6**
Total	**9,251**	**100.0**	**41,902**	**100.0**	**29,157**	**100.0**	**80,310**	**100.0**

❖ Table 11. Intent of injury by region, Ohio, 2020

This table shows the intent of the injuries sustained in 2020 based on region where the injury occurred. Regions were based on the eight out-of-hospital emergency medical services regions that the State Board of Emergency Medical, Fire, and Transportation Services geographically divided the state for purposes of overseeing the delivery of adult and pediatric out-of-hospital emergency medical services. A state map of these eight Homeland Security regions is located in Appendix L. For this table, records where the injuries occurred out of state were not included in the analysis. Records where the intent of injury was labeled as "Not Valued" were populated with "-".

Across all regions, the majority (93.5% in Region 1; 87.3% in Region 2; 93.2% in Region 3; 88.9% in Region 4; 93.3% in Region 5; 92.1% in Region 6; 91.9% in Region 7; 93.9% in Region 8) of the injuries were unintentional.

Intent	Region 1		Region 2		Region 3		Region 4		Region 5	
	#	%	#	%	#	%	#	%	#	%
Unintentional	6,537	93.5	8,921	87.3	7,750	93.2	13,402	88.9	10,150	93.3
Self-Inflicted	76	1.1	96	0.9	62	0.7	167	1.1	118	1.1
Assault	318	4.5	1,071	10.5	388	4.7	1,323	8.8	542	5.0
Undetermined	15	0.2	54	0.5	56	0.7	74	0.5	17	0.2
Other	9	0.1	6	0.1	10	0.1	15	0.1	7	0.1
Not Valued	38	0.5	76	0.7	50	0.6	86	0.6	50	0.5
Total	**6,993**	**100.0**	**10,224**	**100.0**	**8,316**	**100.0**	**15,067**	**100.0**	**10,884**	**100.0**

Intent	Region 6		Region 7		Region 8		Not Recorded		Total	
	#	%	#	%	#	%	#	%	#	%
Unintentional	9,224	92.1	2,773	91.9	1,672	93.9	4,880	88.9	65,309	91.0
Self-Inflicted	134	1.3	34	1.1	18	1.0	57	1.0	762	1.1
Assault	551	5.5	167	5.5	74	4.2	476	8.7	4,910	6.8
Undetermined	48	0.5	9	0.3	5	0.3	37	0.7	315	0.4
Other	13	0.1	5	0.2	1	0.1	5	0.1	71	0.1
Not Valued	43	0.4	29	1.0	10	0.6	33	0.6	415	0.6
Total	**10,013**	**100.0**	**3,017**	**100.0**	**1,780**	**100.0**	**5,488**	**100.0**	**71,782**	**100.0**

❖ Table 12. Rates of injury intent by region of injury, Ohio, 2020

This table displays the rates of different intents of injury per 100,000 population by the region where the injury occurred. A state map of these eight Homeland Security regions is located in Appendix L. For this table, records where the injuries occurred out of state were not included in the analysis. Records where the county of injury was not valued (and so a region of injury could not be determined) were not included in this analysis. Records where the intent of injury was labeled as "Not Valued" were populated with "-".

Across all regions, the highest rates of injury intent were for unintentional injuries. The highest rate of unintentional injury was in Region 3, whereas the highest rate of injury by assault was in Region 4.

Region	Unintentional		Self-Inflicted		Assault		Undetermined	
	Number of Injuries	Rate per 100,000	Number of Injuries	Rate per 100,000	Number of Injuries	Rate per 100,000	Number of Injuries	Rate per 100,000
Region 1	6,537	485.6	76	5.6	318	23.6	15	1.1
Region 2	8,921	445.3	96	4.8	1071	53.5	54	2.7
Region 3	7,750	685.9	62	5.5	388	34.3	56	5.0
Region 4	13,402	564.7	167	7.0	1,323	55.7	74	3.1
Region 5	10,150	451.0	118	5.2	542	24.1	17	0.8
Region 6	9,224	504.5	134	7.3	551	30.1	48	2.6
Region 7	2,773	603.9	34	7.4	167	36.4	9	2.0
Region 8	1,672	409.0	18	4.4	74	18.1	5	1.2
Total	**60,429**	**512.1**	**705**	**6.0**	**4,434**	**37.6**	**278**	**2.4**

Region	Other		Not Valued		Total	
	Number of Injuries	Rate per 100,000	Number of Injuries	Rate per 100,000	Number of Injuries	Rate per 100,000
Region 1	9	0.7	38	2.8	6,993	519.5
Region 2	6	0.3	76	3.8	10,224	510.3
Region 3	10	0.9	50	4.4	8,316	736.0
Region 4	15	0.6	86	3.6	15,067	634.9
Region 5	7	0.3	50	2.2	10,884	483.6
Region 6	13	0.7	43	2.4	10,013	547.6
Region 7	5	1.1	29	6.3	3,017	657.0
Region 8	1	0.2	10	2.4	1,780	435.5
Total	**66**	**0.6**	**382**	**3.2**	**66,294**	**561.8**

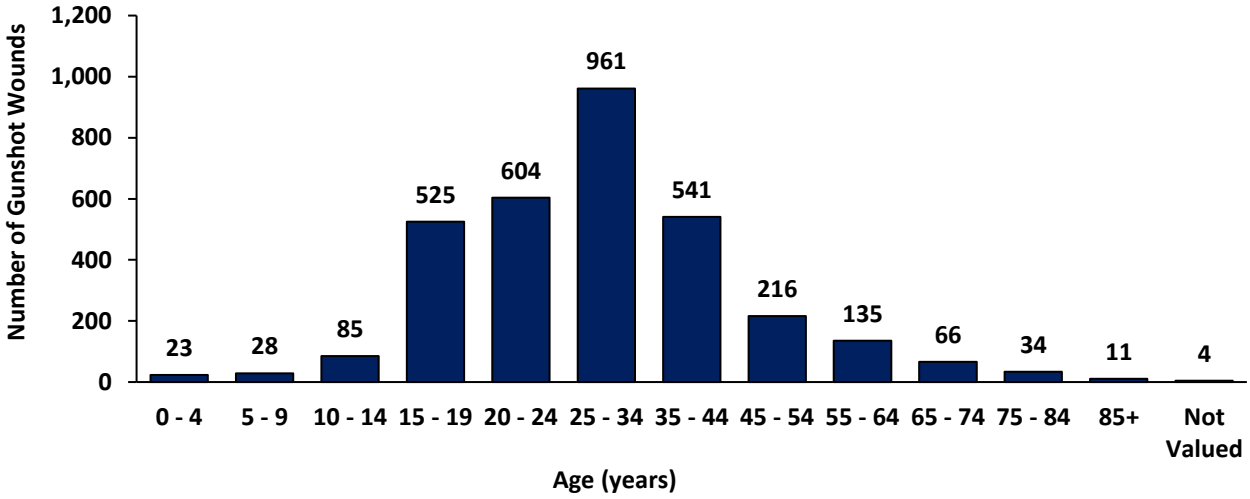
❖ Table 13. Intent of injury by urban and rural areas, Ohio, 2020

This table shows the intent of injuries sustained in 2020 by urban and rural areas. For this table, records where the injuries occurred out of state were not included in the analysis. Records where the intent of injury was labeled as "Not Valued" were populated with "-". Counties in Ohio were assigned an urban or rural classification based on the 2013 National Center for Health Statistics Urban-Rural Classification Scheme for Counties (Appendix M). Unintentional injuries were the most common intent of injury in both rural and urban areas. A higher percentage of assaults occurred in urban areas compared to the percentage in rural areas.

Intent	Rural		Urban		Not Recorded		Total	
	#	%	#	%	#	%	#	%
Unintentional	12,079	94.4	48,350	90.4	4,880	88.9	65,309	91.0
Self-Inflicted	140	1.1	565	1.1	57	1.0	762	1.1
Assault	458	3.6	3,976	7.4	476	8.7	4,910	6.8
Undetermined	32	0.2	246	0.5	37	0.7	315	0.4
Other	8	0.1	58	0.1	5	0.1	71	0.1
Not Valued	85	0.7	297	0.6	33	0.6	415	0.6
Total	**12,802**	**100.0**	**53,492**	**100.0**	**5,488**	**100.0**	**71,782**	**100.0**

❖ Figure 9. Gunshot wounds by age group, Ohio Trauma Registry, 2020

This graph shows the distribution of gunshot wounds in Ohio by age group. Records where the age category is labeled as "Not Valued" were populated with "-". In 2020, gunshot wounds occurred most frequently among persons 25 – 34 years of age. Air guns were included in the ICD-10 codes that defined gunshot wounds for this analysis. This analysis only includes gunshot wounds that were sent to a facility.



❖ Table 14. Gunshot wounds by region, Ohio, 2020

This table shows the distribution of gunshot wounds where the injury occurred by Ohio Homeland Security Region. A state map of these eight regions is located in Appendix L. For this table, records where the injuries occurred out of state were not included in the analysis. This analysis only includes gunshot wounds that were sent to a facility. Gunshot wounds occurred most frequently in Region 2 (812, 28.3%).

Region	#	%
Region 1	201	7.0
Region 2	812	28.3
Region 3	214	7.5
Region 4	603	21.0
Region 5	325	11.3
Region 6	353	12.3
Region 7	73	2.5
Region 8	27	0.9
Not Recorded	258	9.0
Total	**2,866**	**100.0**

❖ Table 15. Rate of gunshot wounds by county of injury, Ohio, 2020

This table displays the rate of gunshot wounds by the county where the injury occurred. For this table, records where the injuries occurred out of state were not included in the analysis. This analysis only includes gunshot wounds that were sent to a facility. Cuyahoga County (with 58.0 per 100,000 population) and Ross County (with 49.3 per 100,000 population) reported the highest rates of gunshot wounds during this reporting period. Among the injuries with identified counties, the statewide rate of gunshot wounds was 32.1 per 100,000 residents. Gunshot wounds were most commonly reported within the 25 – 34 age group.

County	Number of gunshot wounds	Population	Rate per 100,000	County	Number of gunshot wounds	Population	Rate per 100,000
Adams	8	27,477	29.1	Logan	2	46,150	4.3
Allen	19	102,206	18.6	Lorain	47	312,964	15.0
Ashland	0	52,447	0.0	Lucas	120	431,279	27.8
Ashtabula	8	97,574	8.2	Madison	2	43,824	4.6
Athens	6	62,431	9.6	Mahoning	50	228,614	21.9
Auglaize	3	46,422	6.5	Marion	16	65,359	24.5
Belmont	1	66,497	1.5	Medina	7	182,470	3.8
Brown	5	43,676	11.4	Meigs	1	22,210	4.5
Butler	57	390,357	14.6	Mercer	0	42,528	0.0
Carroll	2	26,721	7.5	Miami	4	108,774	3.7
Champaign	4	38,714	10.3	Monroe	0	13,385	0.0
Clark	46	136,001	33.8	Montgomery	138	537,309	25.7
Clermont	7	208,601	3.4	Morgan	0	13,802	0.0
Clinton	5	42,018	11.9	Morrow	4	34,950	11.4
Columbiana	4	101,877	3.9	Muskingum	10	86,410	11.6
Coshocton	3	36,612	8.2	Noble	0	14,115	0.0
Crawford	4	42,025	9.5	Ottawa	2	40,364	5.0
Cuyahoga	734	1,264,817	58.0	Paulding	0	18,806	0.0
Darke	7	51,881	13.5	Perry	4	35,408	11.3
Defiance	1	38,286	2.6	Pickaway	4	58,539	6.8
Delaware	3	214,124	1.4	Pike	6	27,088	22.2
Erie	27	75,622	35.7	Portage	7	161,791	4.3
Fairfield	18	158,921	11.3	Preble	0	40,999	0.0
Fayette	0	28,951	0.0	Putnam	3	34,451	8.7
Franklin	528	1,323,807	39.9	Richland	35	124,936	28.0
Fulton	2	42,713	4.7	Ross	38	77,093	49.3
Gallia	0	29,220	0.0	Sandusky	5	58,896	8.5
Geauga	7	95,397	7.3	Scioto	6	74,008	8.1
Greene	10	167,966	6.0	Seneca	1	55,069	1.8
Guernsey	6	38,438	15.6	Shelby	5	48,230	10.4
Hamilton	251	830,639	30.2	Stark	62	374,853	16.5
Hancock	6	74,920	8.0	Summit	119	540,428	22.0
Hardin	5	30,696	16.3	Trumbull	33	201,977	16.3
Harrison	2	14,483	13.8	Tuscarawas	3	93,263	3.2
Henry	0	27,662	0.0	Union	0	62,784	0.0
Highland	4	43,317	9.2	Van Wert	0	28,931	0.0
Hocking	5	28,050	17.8	Vinton	1	12,800	7.8
Holmes	1	44,223	2.3	Warren	16	242,337	6.6
Huron	6	58,565	10.2	Washington	5	59,771	8.4
Jackson	6	32,653	18.4	Wayne	2	116,894	1.7
Jefferson	0	65,249	0.0	Williams	2	37,102	5.4
Knox	5	62,721	8.0	Wood	4	132,248	3.0
Lake	16	232,603	6.9	Wyandot	2	21,900	9.1
Lawrence	0	58,240	0.0	Not Recorded	258		
Licking	10	178,519	5.6	Out of Ohio	--		

The national average rate of fatal firearm injuries from CY 2010 – 2012 was 10.23 per 100,000, and the average rate of non-fatal firearm injuries was 21.6 per 100,000. [1] Fatal firearm injuries were most commonly reported within the 25 – 34 age group, while those ages 15 – 24 were the most common age group in which non-fatal firearm injuries occurred. [1]

In 2017, the age-adjusted death rate for firearm-related injuries in the United States was 12.0 per 100,000. The highest death rate was reported in the 25 – 34 age group (18.5 per 100,000), followed by the 15 – 24 age group (17.7 per 100,000). [2]

Sources:

[1] Fowler KA, Dahlberg LL, Haileyesus T, Annest JL. Firearm injuries in the United States. Prev Med. 2015 Oct;79:5-14. doi: 10.1016/j.ypmed.2015.06.002. Epub 2015 Jun 24. PMID: 26116133; PMCID: PMC4700838.

[2] Kochanek KD, Murphy SL, Xu J, Arias E. Deaths: Final Data for 2017. Natl Vital Stat Rep. 2019 Jun;68(9):1-77. PMID: 32501199.

SECTION 5: 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, transfer between different level facilities, final discharge disposition, and mortality.

❖ Table 16. Emergency department disposition of trauma cases, Ohio Trauma Registry, 2020

This table shows the disposition of patients after arriving at the emergency department. The most frequent ED disposition was being admitted to the floor (40.5%).

Emergency Department Disposition	Patients	
	#	%
Floor	32,527	40.5
Transferred To Another Hospital	15,406	19.2
Intensive Care Unit (ICU)	9,014	11.2
Telemetry/Step-Down Unit	7,436	9.3
Operating Room	4,846	6.0
Observation Unit	3,433	4.3
Home without Services	4,128	5.1
Morgue	668	0.8
Left Against Medical Advice	101	0.1
Other (Out of Hospital)	123	0.2
Home with Services	11	0.0
Direct Admissions to Hospital	2,623	3.3
Total	**80,316**	**100.0**

❖ Table 17. Emergency department disposition of trauma cases by region, Ohio, 2020

This table shows the disposition of patients after arriving at the emergency department by the region where the injury occurred. A state map of these eight Homeland Security regions is located in Appendix L. For this table, records where the injuries occurred out of state were not included in the analysis. Across all regions, the most frequent emergency department disposition was being admitted to the floor (43.7% in Region 1; 48.1% in Region 2; 34.5% in Region 3; 35.1% in Region 4; 43.8% in Region 5; 49.9% in Region 6; 27.0% in Region 7; 42.5% in Region 8).

Emergency Department Disposition	Region 1		Region 2		Region 3		Region 4		Region 5	
	#	%	#	%	#	%	#	%	#	%
Floor	3,054	43.7	4,913	48.1	2,865	34.5	5,287	35.1	4,764	43.8
Transferred To Another Hospital	1,234	17.6	1,485	14.5	1,927	23.2	3,282	21.8	1,700	15.6
Intensive Care Unit (ICU)	1,031	14.7	1,607	15.7	819	9.8	1,310	8.7	1,206	11.1
Telemetry/Step-Down Unit	592	8.5	68	0.7	1,160	13.9	2,290	15.2	1,254	11.5
Operating Room	340	4.9	799	7.8	386	4.6	867	5.8	612	5.6
Observation Unit	319	4.6	353	3.5	399	4.8	1,266	8.4	100	0.9
Home without Services	153	2.2	562	5.5	87	1.0	384	2.5	748	6.9
Morgue	53	0.8	178	1.7	32	0.4	139	0.9	96	0.9
Left Against Medical Advice	5	0.1	23	0.2	5	0.1	4	0.0	22	0.2
Other (Out of Hospital)	20	0.3	27	0.3	1	0.0	6	0.0	22	0.2
Home with Services	1	0.0	1	0.0	2	0.0	1	0.0	2	0.0
Direct Admissions to Hospital Upon Arrival	191	2.7	208	2.0	633	7.6	231	1.5	358	3.3
Total	**6,993**	**100.0**	**10,224**	**100.0**	**8,316**	**100.0**	**15,067**	**100.0**	**10,884**	**100.0**

Emergency Department Disposition	Region 6		Region 7		Region 8		Not Recorded		Total	
	#	%	#	%	#	%	#	%	#	%
Floor	4,993	49.9	816	27.0	756	42.5	1,822	33.2	29,270	40.8
Transferred To Another Hospital	1,801	18.0	779	25.8	435	24.4	1,429	26.0	14,072	19.6
Intensive Care Unit (ICU)	985	9.8	277	9.2	140	7.9	572	10.4	7,947	11.1
Telemetry/Step-Down Unit	358	3.6	392	13.0	146	8.2	268	4.9	6,528	9.1
Operating Room	681	6.8	128	4.2	82	4.6	296	5.4	4,191	5.8
Observation Unit	188	1.9	319	10.6	74	4.2	78	1.4	3,096	4.3
Home without Services	596	6.0	164	5.4	75	4.2	726	13.2	3,495	4.9
Morgue	95	0.9	11	0.4	9	0.5	18	0.3	631	0.9
Left Against Medical Advice	6	0.1	7	0.2	0	0.0	15	0.3	87	0.1
Other (Out of Hospital)	9	0.1	9	0.3	4	0.2	11	0.2	109	0.2
Home with Services	0	0.0	0	0.0	1	0.1	2	0.0	10	0.0
Direct Admissions to Hospital Upon Arrival	301	3.0	115	3.8	58	3.3	251	4.6	2,346	3.3
Total	**10,013**	**100.0**	**3,017**	**100.0**	**1,780**	**100.0**	**5,488**	**100.0**	**71,782**	**100.0**

❖ Table 18. Hospital inpatient discharge disposition, Ohio Trauma Registry, 2020

This table shows the disposition of patients at the time of their discharge. The most common hospital discharge disposition was going home or doing self-care as a routine discharge (37.2%). Records labeled as "Not Valued" were populated with "Unknown".

Discharge Disposition	Patients	
	#	%
Home without Services	29,847	37.2
Skilled Nursing Facility	12,894	16.1
Home with Services	7,512	9.4
Inpatient Rehab or Designated Unit	4,594	5.7
Expired	1,469	1.8
Left Against Medical Advice or Discontinued Care	797	1.0
Hospice	859	1.1
Transferred to Another Hospital	686	0.9
Long Term Care Hospital (LTCH)	462	0.6
Psychiatric Hospital or Psychiatric Distinct Part of a Hospital	426	0.5
Court/Law Enforcement	196	0.2
Intermediate Care Facility	69	0.1
Another Type of Inpatient Facility Not Defined Elsewhere	66	0.1
Discharged from Emergency Department After Arrival	20,437	25.4
Not Valued	2	0.0
Total	**80,316**	**100.0**

❖ Table 19. Hospital inpatient discharge disposition by region, Ohio, 2020

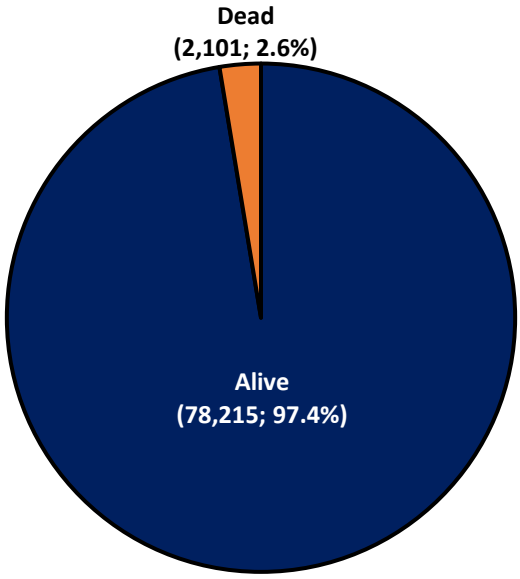
This table looks at the disposition of patients at the time of their discharge by the region where the injury occurred. A state map of these eight Homeland Security regions is located in Appendix L. Records where the injuries occurred out of state were not included in the analysis. Records labeled as "Not Valued" were populated with "Unknown".

Discharge Disposition	Region 1		Region 2		Region 3		Region 4		Region 5	
	#	%	#	%	#	%	#	%	#	%
Home or Self Care (Routine Discharge)	2,500	35.8	3,245	31.7	2,981	35.8	6,187	41.1	4,055	37.3
Skilled Nursing Facility	1,440	20.6	2,173	21.3	1,344	16.2	2,056	13.6	2,003	18.4
Home with Services	568	8.1	1,043	10.2	1,009	12.1	1,594	10.6	822	7.6
Inpatient Rehab or Designated Unit	460	6.6	798	7.8	433	5.2	477	3.2	729	6.7
Expired	146	2.1	227	2.2	135	1.6	277	1.8	224	2.1
Left Against Medical Advice or Discontinued Care	60	0.9	98	1.0	80	1.0	185	1.2	86	0.8
Hospice	98	1.4	97	0.9	126	1.5	156	1.0	116	1.1
Transferred to Another Hospital	79	1.1	110	1.1	75	0.9	94	0.6	108	1.0
Long Term Care Hospital (LTCH)	92	1.3	38	0.4	30	0.4	61	0.4	67	0.6
Psychiatric Hospital or Psychiatric Distinct Part of a Hospital	50	0.7	57	0.6	23	0.3	85	0.6	57	0.5
Court/Law Enforcement	10	0.1	36	0.4	23	0.3	57	0.4	7	0.1
Intermediate Care Facility	3	0.0	12	0.1	0	0.0	8	0.1	19	0.2
Another Type of Inpatient Facility Not Defined Elsewhere	21	0.3	14	0.1	2	0.0	13	0.1	1	0.0
Discharged from Emergency Department After Arrival	1,466	21.0	2,276	22.3	2,054	24.7	3,816	25.3	2,590	23.8
Not Valued	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0
Total	**6,993**	**100.0**	**10,224**	**100.0**	**8,316**	**100.0**	**15,067**	**100.0**	**10,884**	**100.0**

Discharge Disposition	Region 6		Region 7		Region 8		Not Recorded		Total	
	#	%	#	%	#	%	#	%	#	%
Home or Self Care (Routine Discharge)	2,900	29.0	1,044	34.6	651	36.6	2,068	37.7	25,631	35.7
Skilled Nursing Facility	2,125	21.2	417	13.8	286	16.1	354	6.5	12,198	17.0
Home with Services	977	9.8	289	9.6	179	10.1	369	6.7	6,850	9.5
Inpatient Rehab or Designated Unit	835	8.3	115	3.8	43	2.4	269	4.9	4,159	5.8
Expired	196	2.0	52	1.7	25	1.4	45	0.8	1,327	1.8
Left Against Medical Advice or Discontinued Care	72	0.7	30	1.0	10	0.6	67	1.2	688	1.0
Hospice	149	1.5	36	1.2	21	1.2	14	0.3	813	1.1
Transferred to Another Hospital	75	0.7	34	1.1	27	1.5	32	0.6	634	0.9
Long Term Care Hospital (LTCH)	76	0.8	12	0.4	3	0.2	27	0.5	406	0.6
Psychiatric Hospital or Psychiatric Distinct Part of a Hospital	58	0.6	9	0.3	5	0.3	27	0.5	371	0.5
Court/Law Enforcement	29	0.3	2	0.1	4	0.2	12	0.2	180	0.3
Intermediate Care Facility	12	0.1	7	0.2	2	0.1	1	0.0	64	0.1
Another Type of Inpatient Facility Not Defined Elsewhere	2	0.0	0	0.0	0	0.0	2	0.0	55	0.1
Discharged from Emergency Department After Arrival	2,507	25.0	970	32.2	524	29.4	2,201	40.1	18,404	25.6
Not Valued	0	0.0	0	0.0	0	0.0	0	0.0	2	0.0
Total	**10,013**	**100.0**	**3,017**	**100.0**	**1,780**	**100.0**	**5,488**	**100.0**	**71,782**	**100.0**

❖ Figure 10. Discharge status of all reported trauma cases, Ohio Trauma Registry, 2020

This pie chart shows the discharge status (i.e. alive or dead) of records with reported traumatic injuries.



❖ Table 20. Discharge status of all reported trauma cases, Ohio Trauma Registry, 2020

This table shows the discharge status (i.e. alive or dead) of records with reported traumatic injuries. The majority (97.4%) were alive at the time of discharge. The case fatality rate is 2.6%. A table of case fatality rates across multiple demographic, injury, and patient disposition variables can be found on page 33.

Discharge Status	Patients	
	#	%
Alive	78,215	97.4
Dead	2,101	2.6
Total	**80,316**	**100.0**

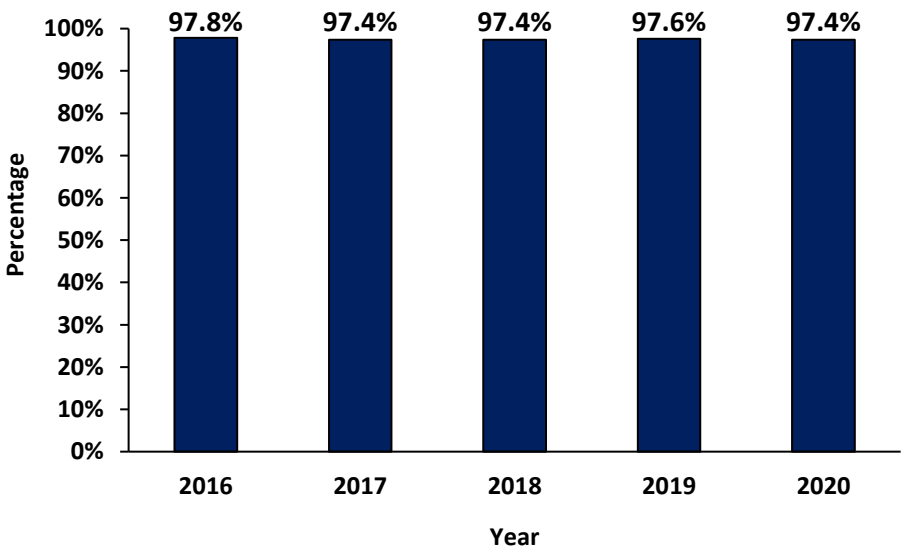
❖ Table 21. Discharge status of all reported trauma cases, Ohio Trauma Registry, 2016-2020

This table shows the discharge status (i.e. alive or dead) of records with reported traumatic injuries from 2016 to 2020.

Year	Discharge Status		
	Alive	Dead	Total
2016	70,358	1,583	71,941
2017	66,550	1,758	68,308
2018	66,629	1,773	68,402
2019	70,316	1,762	72,078
2020	78,215	2,101	80,316

❖ Figure 11. Percentage of reported trauma cases discharged alive, Ohio Trauma Registry, 2016-2020

This table shows the percentage of records with reported traumatic injuries that were discharged alive from 2016 to 2020. 2016-2020 discharge data were extracted from the Ohio Trauma Registry on 10/19/2020. 2018 discharge data were reported in the 2018 Ohio Trauma Registry Annual Report. 2019 discharge data were reported in the 2019 Ohio Trauma Registry Annual Report.



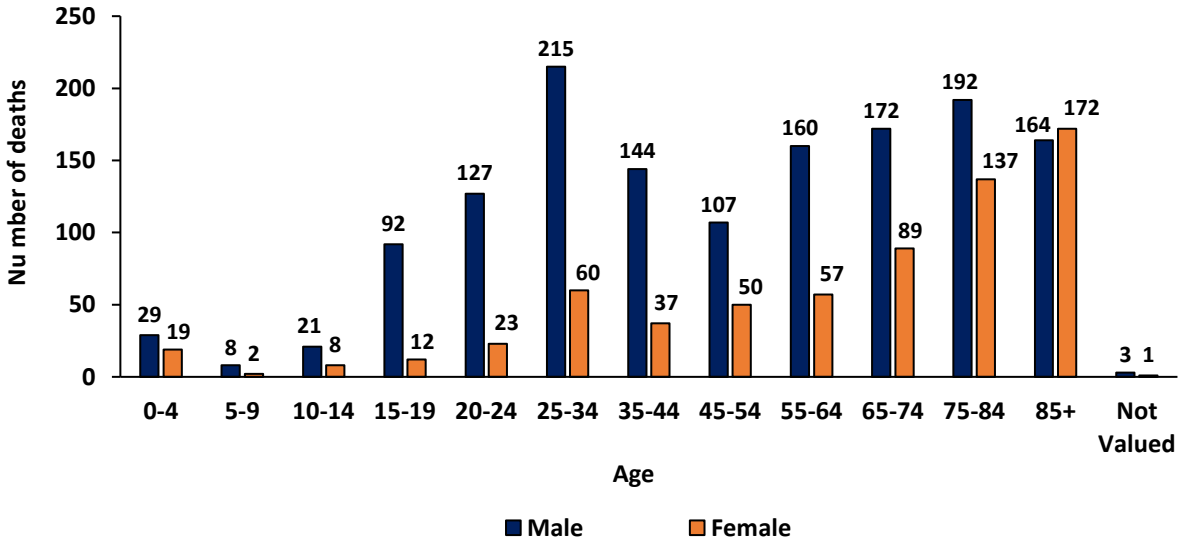
❖ Table 22. Discharge status of all reported trauma cases by region, Ohio, 2020

This table shows the discharge status of patients by region where the injury occurred. A state map of these eight Homeland Security regions is located in Appendix L. These regions are also used by the Regional Physician Advisory Board (RPAB). For this table, records where the injuries occurred out of state were not included in the analysis. Region 2 had the highest percentage of patients discharged deceased.

Region	Alive	Dead	Total	% Discharged Dead
Region 1	6,794	199	6,993	2.8
Region 2	9,815	409	10,224	4.0
Region 3	8,151	165	8,316	2.0
Region 4	14,652	415	15,067	2.8
Region 5	10,575	309	10,884	2.8
Region 6	9,745	268	10,013	2.7
Region 7	2,954	63	3,017	2.1
Region 8	1,745	35	1,780	2.0
Not Recorded	5,426	62	5,488	1.1
Total	**69,857**	**1,925**	**71,782**	**2.7**

❖ Figure 12. Number of injury related deaths by age group and sex, Ohio Trauma Registry, 2020

This graph shows the number of deaths related to injuries sustained by patients in 2020 by age group and sex. Records where the age category is labeled as "Not Valued" were populated with "-". Deaths were more likely to occur among males particularly from ages 15 – 84.



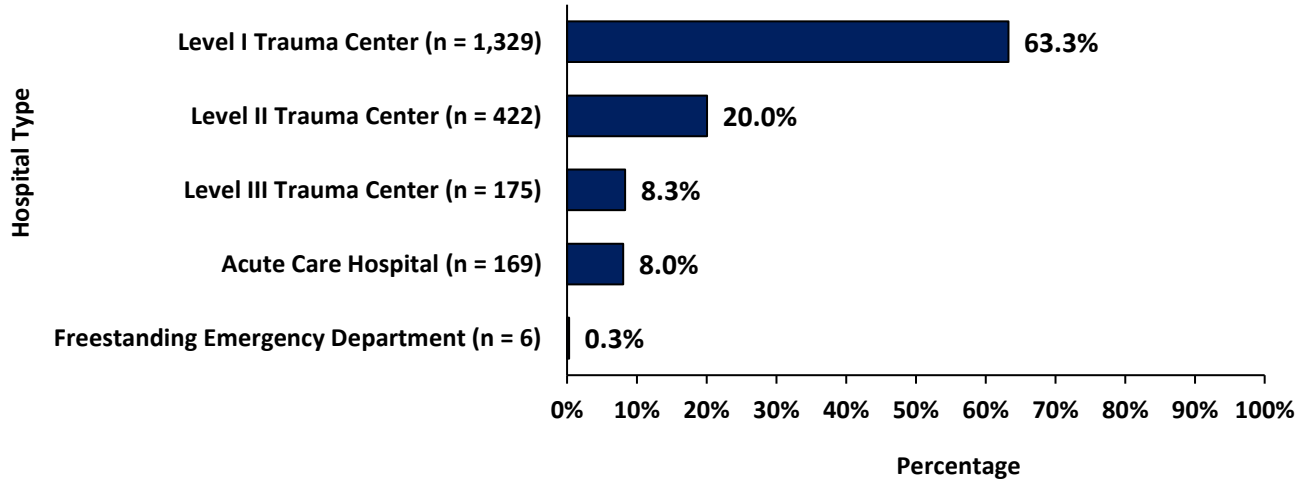
❖ Table 23. GCS Documentation of head injuries with an Abbreviated Injury Scale (AIS) ≥ 3, Ohio Trauma Registry, 2020

This table shows the number and percentages of patients with an AIS ≥ 3 who had a Glasgow Coma Scale (GCS) score reported prior to arrival at the hospital and once in the facility. Records where the GCS scores were labeled as "Not Valued or Recorded" were populated with "II", "UU", or nothing. Of the 9,372 records who had an AIS ≥ 3, 59.5% did not have a valued GCS score prior to arrival at the hospital, while 40.5% did have a GCS score documented prior to arrival at the facility. Of all patients, 8.2% did not have a valued GCS score in the hospital.

	Out of-Hospital GCS		In-Hospital GCS	
	#	%	#	%
GCS 3	472	5.0	1071	11.4
GCS 4	38	0.4	61	0.7
GCS 5	44	0.5	61	0.7
GCS 6	71	0.8	134	1.4
GCS 7	47	0.5	106	1.1
GCS 8	82	0.9	80	0.9
GCS 9	73	0.8	71	0.8
GCS 10	70	0.7	108	1.2
GCS 11	70	0.7	120	1.3
GCS 12	119	1.3	124	1.3
GCS 13	217	2.3	308	3.3
GCS 14	502	5.4	1,200	12.8
GCS 15	1,994	21.3	5,157	55.0
Not Valued or Recorded	5,573	59.5	771	8.2
Total	**9,372**	**100.0**	**9,372**	**100.0**

❖ Figure 13. Emergency department deaths by hospital type, Ohio Trauma Registry, 2020

This graph shows the number and percentage of emergency department deaths by hospital type. The majority (63.3%) of deaths occurred at Level I Trauma Centers. This is likely due to the fact that by their nature, Level I Trauma Centers receive the most critical trauma cases.



SECTION 6: CASE FATALITY RATES

The Case Fatality Rate (CFR) is the proportion of deaths within a designated population or grouping of "cases" (people with a particular medical condition or hospital disposition) over the course of the disease. A CFR is conventionally expressed as a percentage.

❖ Table 24. Case Fatality Rate (CFR) by age group and sex, Ohio Trauma Registry, 2020

The table below looks at case fatality rates by age group and sex among the records submitted to the registry. Records where age was not valued (populated with "-") were not included in this analysis. The case fatality rates were higher among males compared to females. Among the records with a specified age category, the highest case fatality rate was among the 20 –24 age group (4.1%).

	CFR (%)			
Age Group	**Male**	**Female**	**Not Reported**	**Total**
0-4	1.5	1.4	--	1.5
5-9	0.5	0.2	0.0	0.4
10-14	1.2	0.9	0.0	1.1
15-19	4.0	1.2	0.0	3.1
20-24	4.9	2.2	0.0	4.1
25-34	4.2	2.7	0.0	3.7
35-44	3.1	1.9	0.0	2.7
45-54	2.5	2.4	0.0	2.4
55-64	2.8	1.4	0.0	2.2
65-74	3.3	1.5	0.0	2.4
75-84	4.0	1.8	0.0	2.7
85+	4.7	2.3	0.0	3.0
Not Valued	100.0	50.0	0.0	66.7
Statewide	3.3	1.8	0.0	2.6

❖ Table 25. Case Fatality Rate (CFR) by Injury Severity Score (ISS), Ohio Trauma Registry, 2020

The table below looks at case fatality rates by age group and sex among the records submitted to the registry. In 2020, the case fatality rate was the highest among those with an ISS of ≥ 25 (28.1%).

ISS	**CFR (%)**
1-9	0.9
10-14	1.9
15-24	4.7
25+	28.1
Not Calculable	0.5
Total	**2.6**

❖ Table 26. Case Fatality Rate (CFR) by duration of hospital stay for Injury Severity Score (ISS) ≥ 25, Ohio Trauma Registry, 2020

This table looks at case fatality rates for injuries with ISS ≥ 25 by duration of hospital days. Records labeled as "Not Valued" were populated with "-". For patients with an ISS ≥ 25, the case fatality rate decreased the longer they were hospitalized. The CFR was the highest (55.0%) for patients that stayed in the hospital for one day.

	Hospital stay (days)								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8+**	**Not Valued**
CFR (%)	55.0	35.9	23.7	14.8	17.5	16.5	15.9	9.0	66.7

❖ Table 27. Case Fatality Rate (CFR) by intent of injury, Ohio Trauma Registry, 2020

This table looks at case fatality rates by intent of injury. Records where the intent of injury was labeled as "Not Valued" were populated with "-". In 2020, the case fatality rate was the highest among those with self-inflicted injuries (19.4%).

Intent	**CFR (%)**
Unintentional	2.1
Self-Inflicted	19.4
Assault	6.3
Undetermined	6.8
Other	9.0
Not Valued	3.3
Total	**2.6**

❖ Table 28. Case Fatality Rate (CFR) by hospital type, Ohio Trauma Registry, 2020

This table looks at case fatality rates by hospital type. In 2020, the case fatality rate was the highest in Level I Trauma Centers (4.0%).

Hospital Type	**CFR (%)**
Level I Trauma Center	4.0
Level II Trauma Center	2.7
Level III Trauma Center	1.7
Free Standing Emergency Department	0.2
Acute Care Hospital	0.9
Statewide	**2.6**

❖ Table 29. Case Fatality Rate (CFR) by mechanism of injury, Ohio Trauma Registry, 2020

This table looks at case fatality rates by mechanism of injury. Records labeled as "Not Classified" were populated with that text. Records labeled as "Not Valued" were populated with "-". In 2020, the case fatality rate was the highest among those who died by suffocation/asphyxiation (30.2%) and drowning/submersion (25.4%).

Mechanism of Injury	CFR (%)
Abuse	3.4
Cut or Pierce	1.3
Drowning/Submersion	25.4
Electrical	3.8
Explosion	1.5
Fall	1.9
Fire or Flame	3.9
Firearm	15.3
Hot Object or Substance	0.2
Machinery	0.3
Mechanical	1.1
MVC* - Motorcyclist	4.7
MVC* - Occupant	2.9
MVC* - Other	5.0
MVC* - Pedal Cyclist	2.6
MVC* - Pedestrian	7.6
MVC* - Unspecified	1.9
Natural or Environmental	0.3
Other Land Transport	1.5
Other Specified, Classifiable	15.9
Other Specified, Not Elsewhere Classifiable	2.3
Other Transport	5.8
Overexertion	0.0
Pedal Cyclist, Other	0.3
Pedestrian, Other	5.4
Pedestrian Conveyance	1.0
Poisoning	1.4
Struck by or Against	0.4
Suffocation/Asphyxiation	30.2
Not Classified/Not Valued	1.9
Statewide	**2.6**

*MVC refers to Motor Vehicle Collision

❖ Table 30. Case Fatality Rate (CFR) by county, Ohio, 2020

This table displays the case fatality rate by the county where the injury occurred. For this table, records where the injuries occurred out of state were not included in the analysis. The statewide CFR is 2.7%. Williams (6.0%) and Hancock (5.2%) counties reported the highest CFRs in 2020.

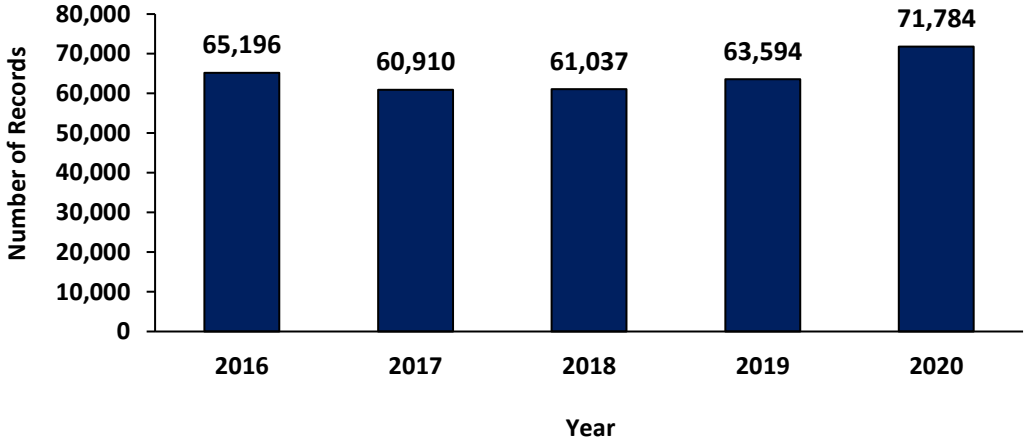
County	Number of Deaths	CFR (%)	County	Number of Deaths	CFR (%)
Adams	4	1.8	**Logan**	9	2.6
Allen	13	2.3	**Lorain**	30	1.9
Ashland	4	2.0	**Lucas**	75	3.2
Ashtabula	11	2.8	**Madison**	5	1.6
Athens	11	2.4	**Mahoning**	32	2.3
Auglaize	10	4.6	**Marion**	10	1.6
Belmont	1	2.2	**Medina**	15	3.0
Brown	6	2.6	**Meigs**	0	0.0
Butler	62	2.3	**Mercer**	5	3.2
Carroll	3	3.8	**Miami**	17	1.9
Champaign	2	1.0	**Monroe**	1	3.1
Clark	17	1.8	**Montgomery**	91	2.1
Clermont	23	2.3	**Morgan**	2	2.0
Clinton	10	4.0	**Morrow**	2	1.1
Columbiana	8	2.1	**Muskingum**	11	1.4
Coshocton	3	1.6	**Noble**	1	1.5
Crawford	2	0.9	**Ottawa**	6	1.8
Cuyahoga	325	4.7	**Paulding**	0	0.0
Darke	6	1.6	**Perry**	9	2.6
Defiance	3	1.4	**Pickaway**	5	1.3
Delaware	30	3.2	**Pike**	3	1.8
Erie	13	2.6	**Portage**	25	2.9
Fairfield	24	1.9	**Preble**	3	1.2
Fayette	4	2.8	**Putnam**	1	0.5
Franklin	278	3.2	**Richland**	26	2.4
Fulton	11	3.4	**Ross**	20	2.1
Gallia	1	2.0	**Sandusky**	8	3.7
Geauga	17	3.5	**Scioto**	12	2.5
Greene	20	1.9	**Seneca**	6	1.5
Guernsey	3	1.7	**Shelby**	9	2.6
Hamilton	134	3.3	**Stark**	65	3.7
Hancock	11	5.2	**Summit**	81	3.0
Hardin	2	1.5	**Trumbull**	35	2.7
Harrison	0	0.0	**Tuscarawas**	5	1.8
Henry	4	3.4	**Union**	8	2.3
Highland	9	3.8	**Van Wert**	1	3.7
Hocking	1	0.4	**Vinton**	0	0.0
Holmes	2	2.2	**Warren**	20	1.5
Huron	15	3.1	**Washington**	13	3.8
Jackson	6	3.7	**Wayne**	8	2.6
Jefferson	0	0.0	**Williams**	3	6.0
Knox	8	2.4	**Wood**	14	2.3
Lake	26	2.9	**Wyandot**	3	2.0
Lawrence	0	0.0	**Not Recorded**	62	1.1
Licking	25	2.7	**Statewide**	1,925	2.7

SECTION 7: ANNUAL FOCUS – TRAUMATIC INJURIES DURING THE COVID-19 PANDEMIC AND OHIO'S STAY AT HOME ORDER

The Division of EMS has added a section to this report to look at a specific topic in more detail. This report will look at the traumatic injuries sustained during the COVID-19 pandemic, particularly during the duration of Ohio Stay at Home orders from March 24, 2020 to May 1, 2020 (see Appendix P). The epidemiology of traumatic injuries during Ohio's stay at home order in 2020 will be compared to same time periods in previous years to see if there is any difference in health outcomes. Records where the injuries occurred out of state were not included in the analysis.

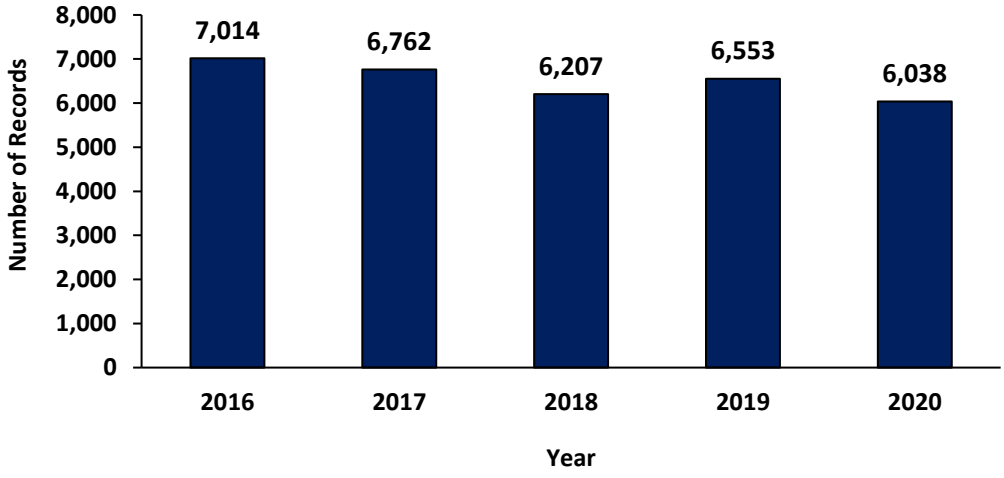
❖ Figure 14. Number of reported traumatic injuries, Ohio, 2016-2020

This graph looks at the number of traumatic injuries reported from 2016 – 2020. Overall in 2020, there were a larger number of traumatic injuries reported compared to previous years.



❖ Figure 15. Number of traumatic injuries reported from March 24 – May 1, Ohio, 2016-2020

This graph looks at the number of traumatic injuries reported during the March 24 – May 1 time period from 2016 – 2020. Compared to previous years, there were a smaller number of traumatic injuries reported from March 24 – May 1 in 2020.



❖ Table 31. Mechanisms of Injury, Ohio, March 24 – May 1, 2020

This table looks at the number and percentage of traumatic injuries by mechanism of injury from March 24 – May 1, 2020. Records labeled as "Not Classified" were populated with that text. Records labeled as "Not Valued" were populated with "-". From March 24 – May 1, 2020, the most common mechanism of injury was falls (60.8%).

Mechanism of Injury	#	%
Fall	3,673	60.8
MVC** - Occupant	526	8.7
Struck by or Against	283	4.7
Other Land Transport	270	4.5
Firearm	266	4.4
Cut or Pierce	166	2.7
MVC** - Motorcyclist	102	1.7
Pedal Cyclist, Other	117	1.9
Natural or Environmental	96	1.6
Hot Object or Substance	52	0.9
Machinery	50	0.8
Pedestrian Conveyance	68	1.1
Fire or Flame	51	0.8
Mechanical	44	0.7
Other Specified, Not Elsewhere Classified	46	0.8
Pedestrian, Other	30	0.5
MVC** - Pedestrian	43	0.7
Abuse	30	0.5
MVC** - Unspecified	25	0.4
MVC** - Pedal Cyclist	16	0.3
Other Specified, Classifiable	15	0.2
Not Classified	12	0.2
Overexertion	21	0.3
Explosion	11	0.2
Not Valued	11	0.2
Drowning/Submersion	3	0.0
Other Transport	4	0.1
Poisoning	4	0.1
Suffocation/Asphyxiation	3	0.0
Total	**6,038**	**100.0**

**MVC refers to Motor Vehicle Collision

❖ Table 32. Number and percentage of traumatic injuries caused by motor vehicle collisions reported from March 24 – May 1, Ohio, 2016-2020

This table looks at the number and percentage of traumatic injuries caused by motor vehicle collisions during the March 24 – May 1 time period from 2016 – 2020. Compared to the other years, a smaller percentage of traumatic injuries reported in 2020 during this timeframe were caused by motor vehicle collisions.

Year	Motor Vehicle Collision Injuries	Number of Traumatic Injuries	% of Traumatic Injuries due to Motor Vehicle Collisions
2016	1,321	7,014	18.8
2017	1,158	6,762	17.1
2018	1,005	6,207	16.2
2019	1,005	6,553	15.3
2020	712	6,038	11.8

❖ Table 33. Number and percentage of traumatic injuries caused by firearm injuries reported from March 24 – May 1, Ohio, 2016-2020

This table looks at the number and percentage of firearm injuries during the March 24 – May 1 time period from 2016 – 2020. Compared to the other years, a larger percentage of traumatic injuries reported in 2020 during this timeframe were caused by firearms.

Year	Firearm Injuries	Number of Traumatic Injuries	% of Traumatic Injuries due to Firearm Injuries
2016	281	7,014	4.0
2017	230	6,762	3.4
2018	181	6,207	2.9
2019	167	6,553	2.5
2020	266	6,038	4.4

❖ Table 34. Number and percentage of traumatic injuries caused by abuse encounters reported from March 24 – May 1, Ohio, 2016-2020

This table looks at the number and percentage of traumatic injuries caused by abuse during the March 24 – May 1 time period from 2016 – 2020. Compared to the other years, a larger percentage of traumatic injuries reported in 2020 during this timeframe were caused by abuse encounters.

Year	Abuse Injuries	Number of Traumatic Injuries	% of Traumatic Injuries due to Abuse Encounters
2016	3	7,014	0.04
2017	0	6,762	0.00
2018	1	6,207	0.02
2019	2	6,553	0.03
2020	30	6,038	0.50

❖ Table 35. Number and percentage of traumatic injuries admitted to the floor from the emergency department from March 24 – May 1, Ohio, 2016-2020

This table looks at the number and percentage of traumatic injuries admitted to the floor from the emergency department during the March 24 – May 1 time period from 2016 – 2020. Compared to the other years, a slightly higher percentage of traumatic injuries reported in 2020 during this timeframe were admitted to the floor.

Year	Number of Floor Admissions	Number of Traumatic Injuries	% of Traumatic Injuries Admitted to the Floor
2016	2,673	7,014	38.1
2017	2,713	6,762	40.1
2018	2,419	6,207	39.0
2019	2,636	6,553	40.2
2020	2,468	6,038	40.9

❖ Table 36. Number and percentage of traumatic injuries from March 24 – May 1 by ISS, Ohio, 2016-2020

This table looks at the number and percentage of traumatic injuries that occurred during the March 24 – May 1 time period from 2016 – 2020 broken down by ISS categories. Across all calendar years during this time period, the majority of traumatic injuries have an ISS between 1 and 9.

ISS Category	Year									
	2016		2017		2018		2019		2020	
	#	%	#	%	#	%	#	%	#	%
1-9	5,143	73.3	5,010	74.1	4,536	73.1	4,882	74.5	4,524	74.9
10-14	828	11.8	922	13.6	866	14.0	817	12.5	767	12.7
15-24	429	6.1	436	6.4	498	8.0	458	7.0	401	6.6
25+	239	3.4	324	4.8	258	4.2	339	5.2	305	5.1
Not Calculable	375	5.3	70	1.0	49	0.8	57	0.9	41	0.7
Total	**7,014**	**100.0**	**6,762**	**100.0**	**6,207**	**100.0**	**6,553**	**100.0**	**6,038**	**100.0**

Table 37. Number and percentage of traumatic injuries that occurred at home from March 24 – May 1, Ohio, 2016-2020

This table looks at the number and percentage of traumatic injuries that occurred at home during the March 24 – May 1 time period from 2016 – 2020. Compared to the other years, a larger percentage of traumatic injuries reported in 2020 during this timeframe occurred at the patient's home.

Year	Traumatic Injuries that Occurred at Home	Number of Traumatic Injuries	% of Traumatic Injuries that Occurred at Home
2016	2,326	7,014	33.2
2017	3,312	6,762	49.0
2018	3,086	6,207	49.7
2019	3,254	6,553	49.7
2020	3,528	6,038	58.4

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.

Case Fatality Rate (CFR) – the case fatality rate is the calculation derived from dividing the number of deaths from a specific injury over a defined period of time by the total number of individuals diagnosed with the same injury during the same time period; the resulting ratio is then multiplied by 100 to yield a percentage.

Critical Access Hospital – is a designation given to eligible rural hospitals by the Centers for Medicare and Medicaid Services (CMS). See Appendix F for locations of Ohio's Critical Access Hospitals.

Dataset – a collection of related sets of information that are composed of separate elements but can be manipulated as a group to display relational information.

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.)

Division of Emergency Medical Services (DEMS) – the division where the State Board of Emergency Medical, Fire, and Transportation Services is housed within the Ohio Department of Public Safety.

Emergency Medical, Fire and Transportation Services Board – The state board responsible for: Establishing training and certification standards for emergency medical services personnel; accreditation of EMS training programs; approval of EMS continuing education sites; oversight of Ohio's trauma system; oversight of the EMS grant program; providing grants for training, equipment and research; EMS for Children (EMSC) program coordination; licensing of Ohio's medical transportation services; coordination of the Regional Physician Advisory Boards (RPABs); collection and analysis of data submitted to the EMS Incident Reporting System and the Ohio Trauma Registry and investigations to ensure compliance with the Ohio Revised and Administrative Codes.

Emergency Medical Services Incident Reporting System (EMSIRS) – the system used to collect out-of-hospital care data reported by Emergency Medical Service (EMS) providers to the State of Ohio.

Freestanding 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.

Glasgow Coma Scale (GCS) – an evaluation system developed to assess impairment and conscious levels in response to defined stimuli.

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 [1]. 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).

Ohio Trauma Registry (OTR) – the system used to collect trauma-related patient data reported by emergency facilities and trauma centers to the State of Ohio.

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 Ohio Trauma Acute Care Registry.

Region – as defined and used in this report refers to one of eight Ohio Homeland Security Regions a county is assigned. The Regional Physician Advisory Board (RPAB) utilizes this same regional mapping. See Appendix L.

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 disaster 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. See Appendix O.

Rural – a county designation based on lower population densities and larger amounts of agricultural and undeveloped land. See Appendix M.

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). See Appendix C and D for locations of Ohio's Trauma Centers.

Level I Trauma Centers are a comprehensive regional resource that is a tertiary care facility central to the trauma system. A Level I Trauma Center is capable of providing total care for every aspect of injury – from prevention through rehabilitation.

Level II Trauma Centers are able to initiate definitive care for all injured patients.

Level III Trauma Centers have demonstrated an ability to provide prompt assessment, resuscitation, surgery, intensive care and stabilization of injured patients and emergency operations.

These descriptions above are provided by the American Trauma Society. A detailed description of the patient care offered at each service level can be found in the ACS document, "Resources for Optimal Care of the Injured Patient." [2]

Urban – a county designation based on higher population densities. See Appendix M.

[1] http://www.trauma.org/archive/scores/iss.html

[2] https://www.facs.org

Appendix B: Ohio Trauma Registry Inclusion Criteria and Data Dictionary

TRAUMA PATIENT DEFINITION

To ensure consistent data collection across the State of Ohio and to follow the National Trauma Data Standard, a trauma patient is defined as a patient sustaining a traumatic injury within 14 days of initial hospital encounter and meeting the following:

PATIENT INCLUSION CRITERIA

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

The patient must have incurred 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.)

THE PATIENT MUST ALSO IN ADDITION TO THE ABOVE INCLUSION CRITERIA

- Death resulting from the traumatic injury (independent of hospital admission or hospital transfer status);

  OR
- Patient transfer from one acute care hospital* to another acute care hospital;

  OR
- Patients directly admitted to your hospital (exclude patients with isolated injuries admitted for elective and/or planned surgical intervention);

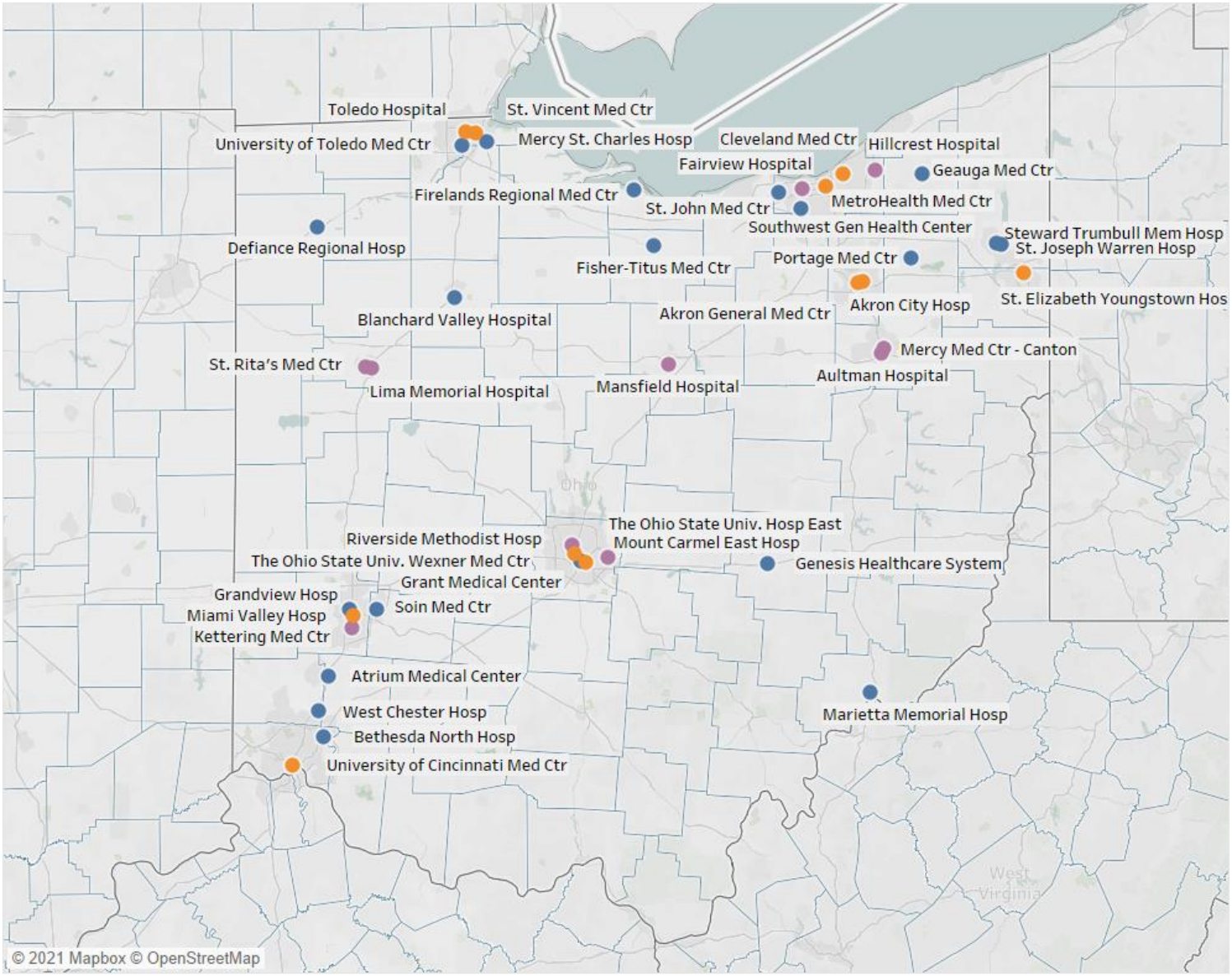
  OR
- Patients who were an in-patient admission and/or observed.

PATIENT EXCLUSION CRITERIA

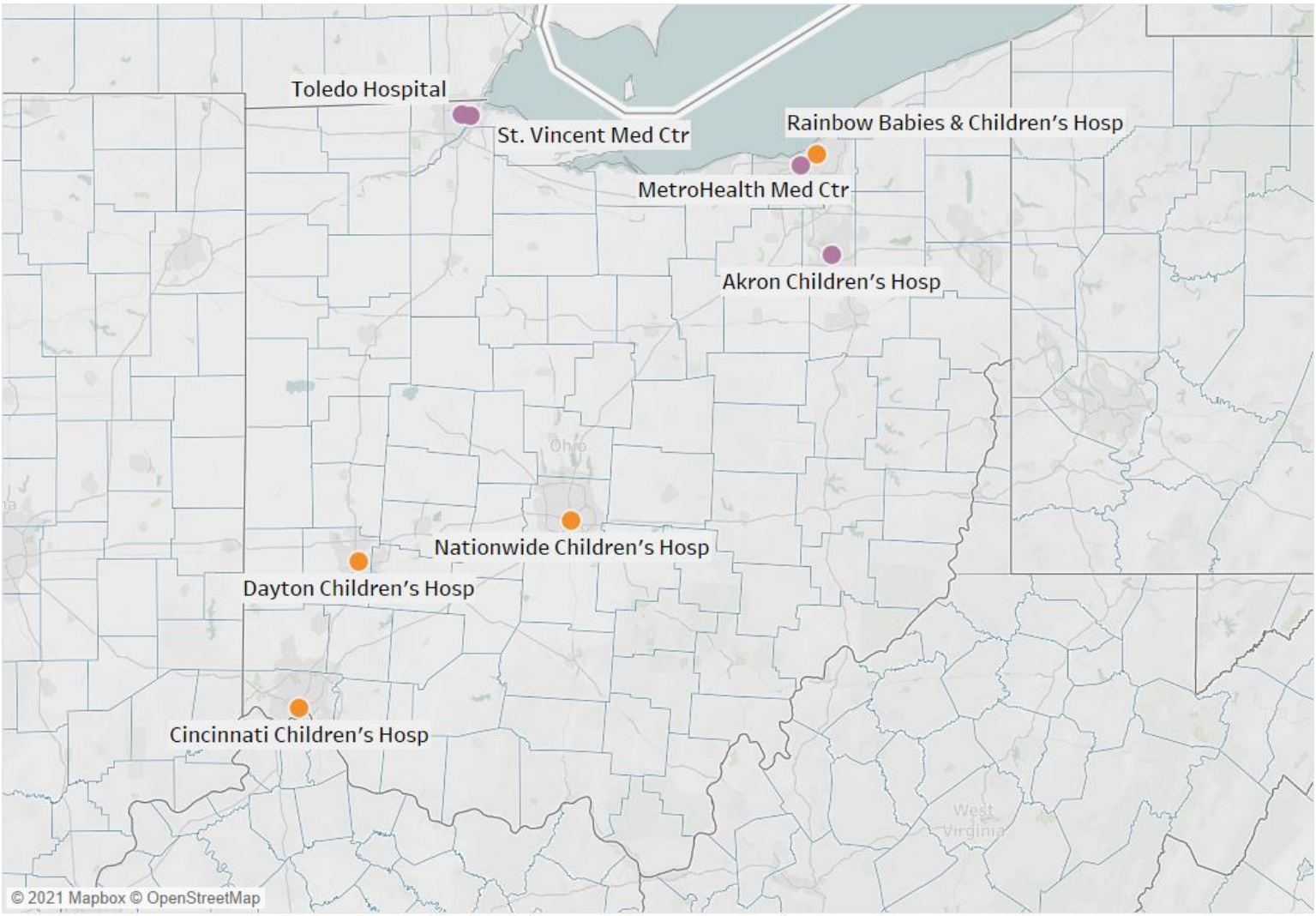
Patients with the following isolated ICD-10-CM codes are **EXCLUDED** from the TACR:

- **S00, S10, S20, S30, S40, S50, S60, S70, S80, S90** (Patients with these isolated injuries that were not transferred in/out or died would be excluded.);
- **7th character modifiers of D through S** (Late effects)
- More information on the trauma inclusion or exclusion criteria and the full 2020 data dictionary can be found at http://www.ems.ohio.gov/links/ems_OTR-TACR-Data-Dictionary-2020.pdf .

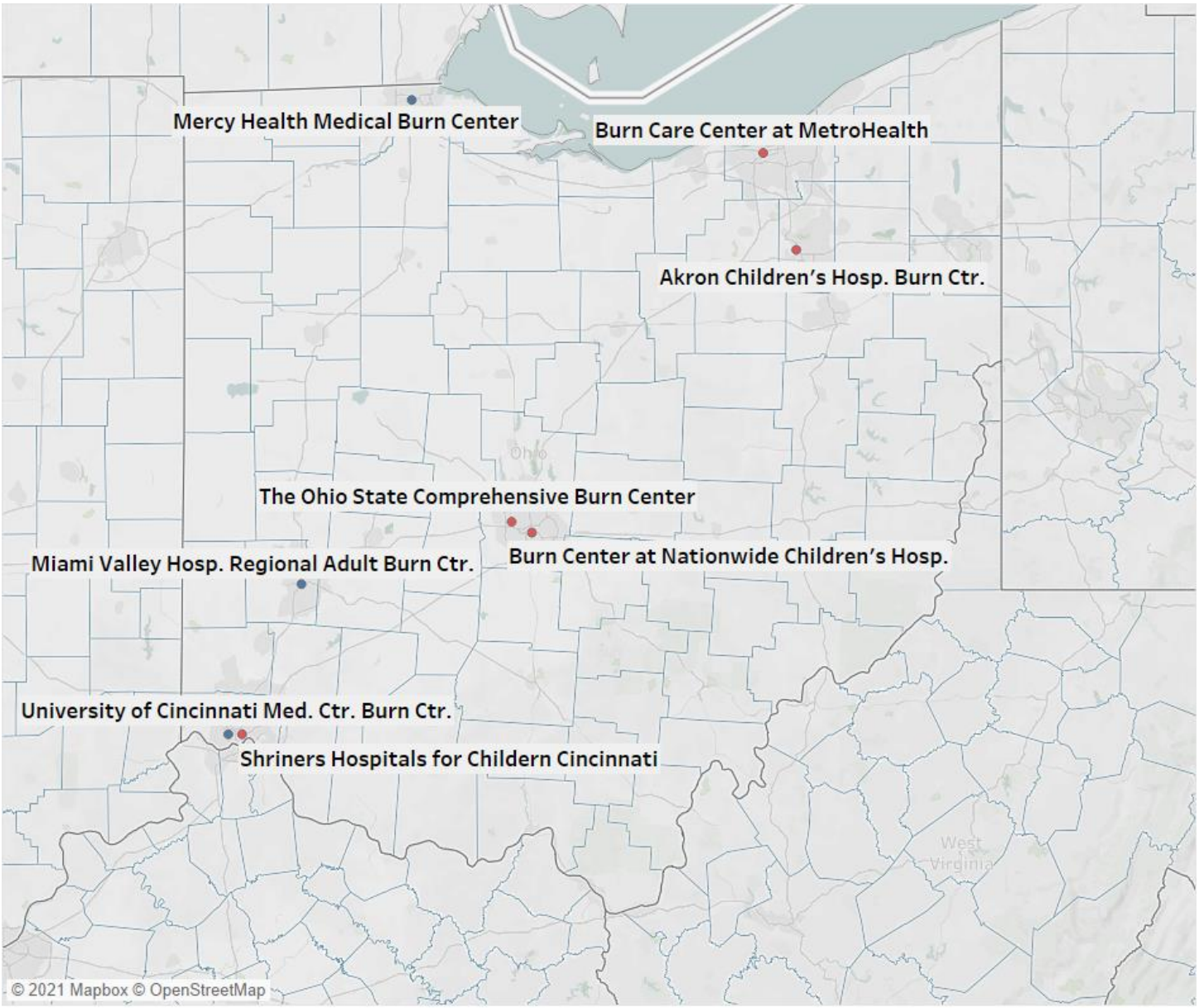
Appendix C: Map of Ohio Adult Trauma Centers in 2020



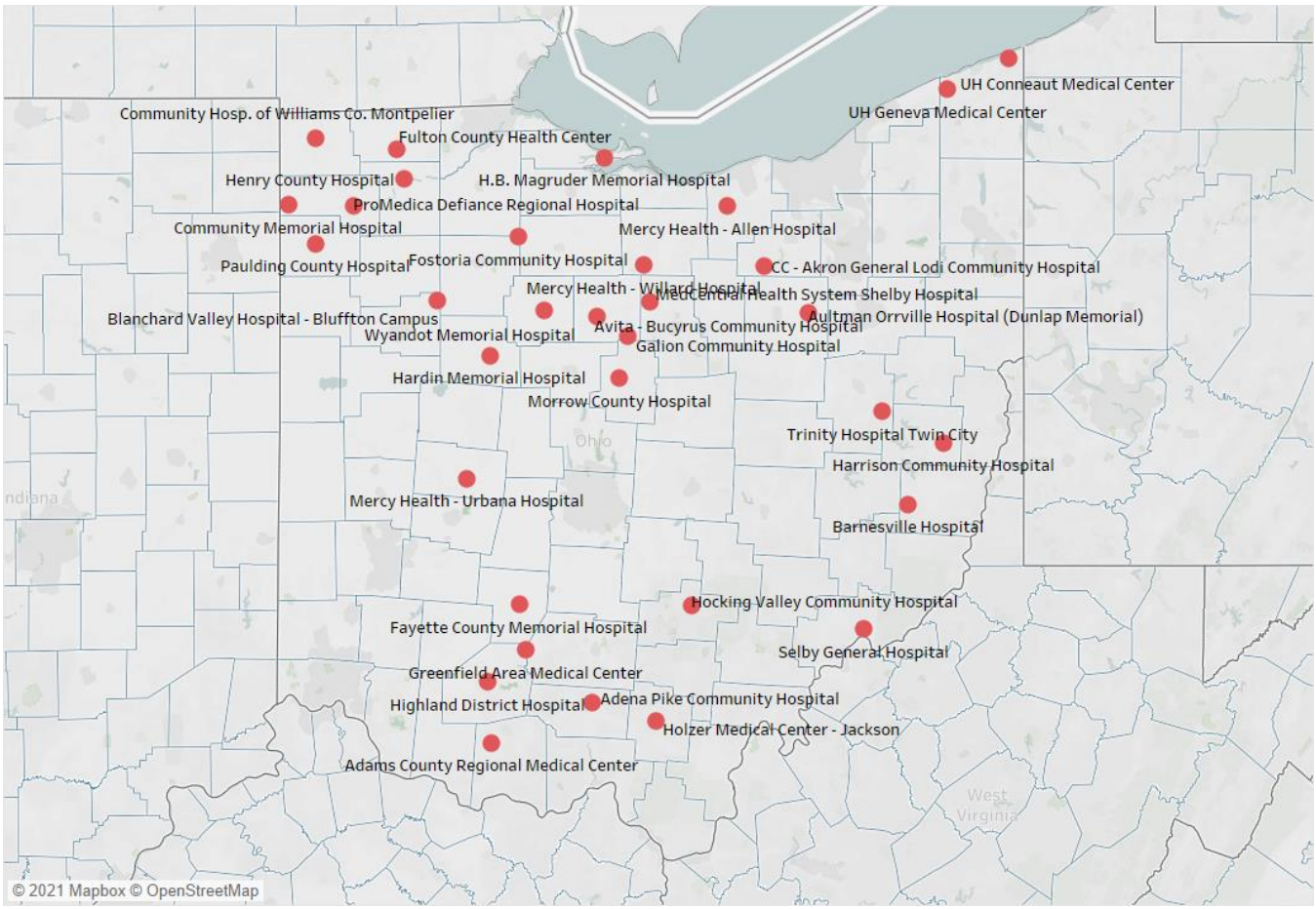
Appendix D: Map of Ohio Pediatric Trauma Centers in 2020



Appendix E: Map of Ohio Burn Centers in 2020

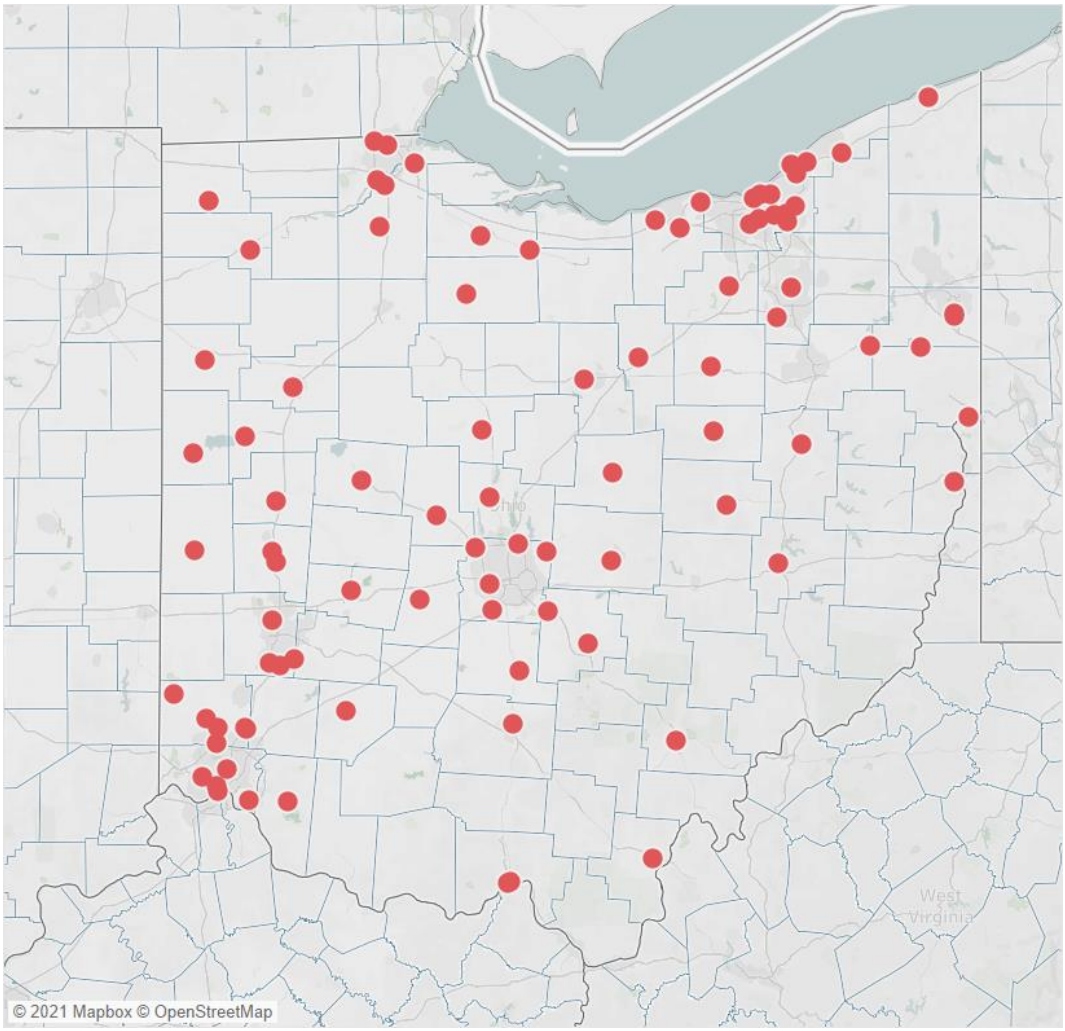


Appendix F: Map of Ohio Critical Access Hospitals in 2020



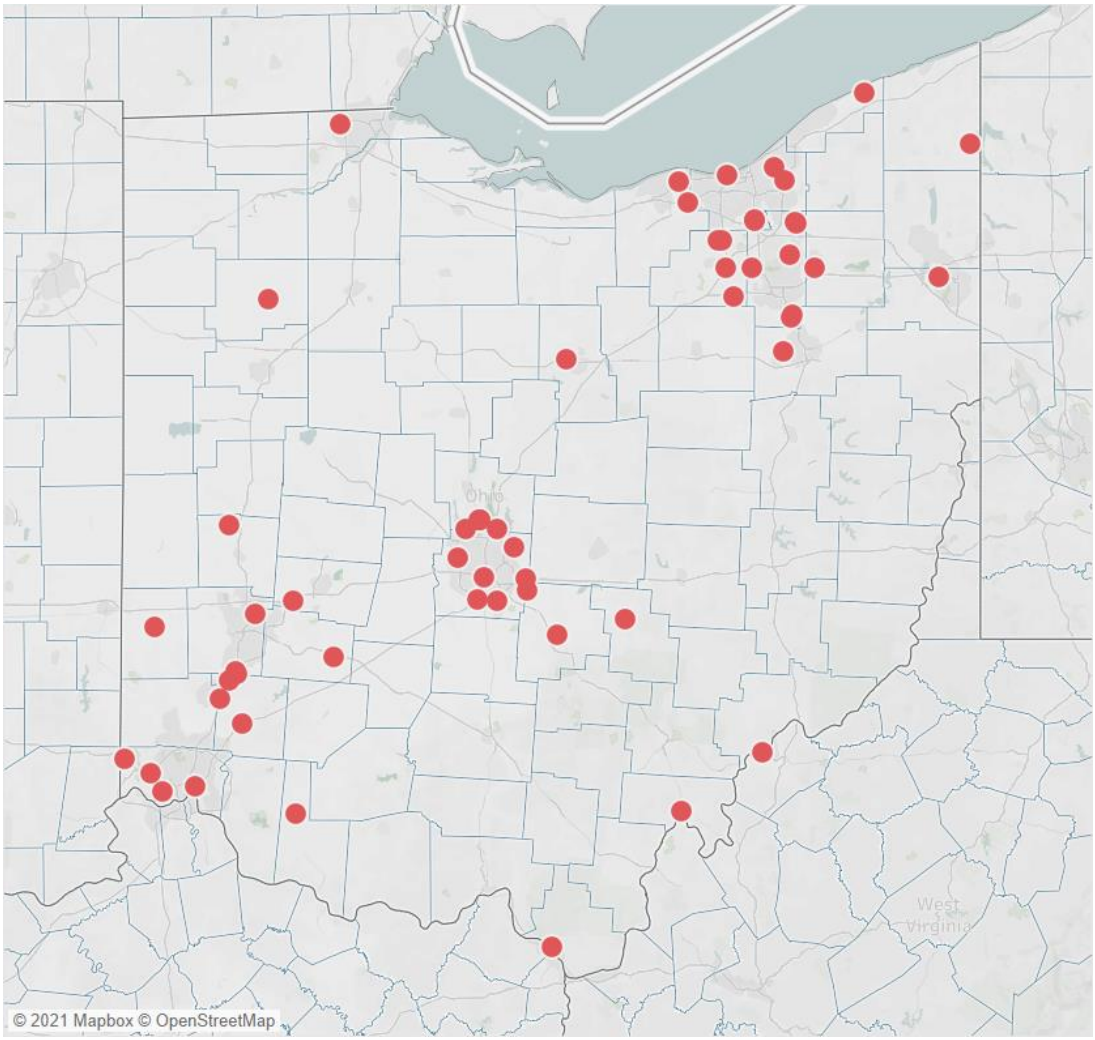
Adams County Regional Medical Center, Adena Pike Community Hospital, Aultman Orrville Hospital (Dunlap Memorial), Avita - Bucyrus Community Hospital, Barnesville Hospital, Blanchard Valley Hospital - Bluffton Campus, CC - Akron General Lodi Community Hospital, Community Hosp. of Williams Co. Montpelier, Community Memorial Hospital, Fayette County Memorial Hospital, Fostoria Community Hospital, Fulton County Health Center, Galion Community Hospital, Greenfield Area Medical Center, H.B. Magruder Memorial Hospital, Hardin Memorial Hospital, Harrison Community Hospital, Henry County Hospital, Highland District Hospital, Hocking Valley Community Hospital, Holzer Medical Center – Jackson, MedCentral Health System Shelby Hospital, Mercy Health - Allen Hospital, Mercy Health - Urbana Hospital, Mercy Health - Willard Hospital, Morrow County Hospital, Paulding County Hospital, ProMedica Defiance Regional Hospital, Selby General Hospital, Trinity Hospital Twin City, UH Conneaut Medical Center, UH Geneva Medical Center, and Wyandot Memorial Hospital.

Appendix G: Map of Acute Care Hospitals in 2020



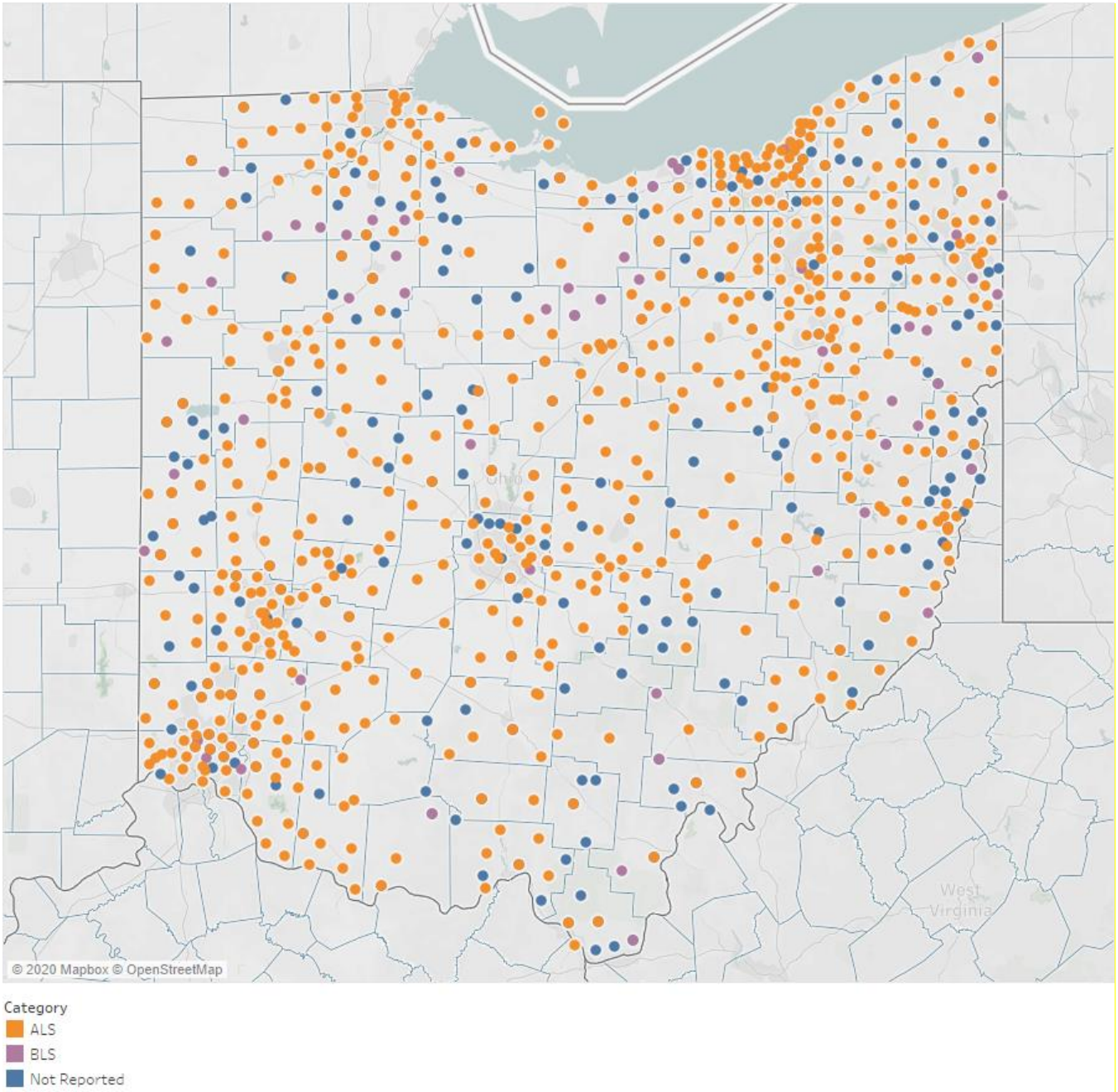
Adena Regional Medical Center, Akron Children's Hosp Mahoning Valley Beeghly Campus, Alliance Community Hospital, Avita - Ontario Hospital, Bay Park Community Hospital, Berger Health System, CC - Ashtabula County Medical Center, CC - Avon Hospital, CC - Euclid Hospital, CC - Lutheran Hospital, CC - Marymount Hospital, CC - Medina Hospital, CC - South Pointe Hospital, CC - Cleveland Clinic Main Campus, Cincinnati Children's Hospital - Liberty Campus, Clinton Memorial Hospital, Community Hospitals and Wellness Bryan, Coshocton Regional Medical Center, Diley Ridge Medical Center, East Liverpool City Hospital, Fairfield Medical Center, Fort Hamilton Hospital, Holzer Medical Center, Joint Twp. District Memorial Hospital, Kettering Health Network - Troy Hospital, Kindred Hospital Lima, King's Daughters Medical Center – Ohio, Knox Community Hospital, Licking Memorial Hospital, Madison County Hospital, Mary Rutan Hospital, Mc Cullough-Hyde Memorial Hospital, Memorial Hospital, Mercer County Community Hospital, Mercy Emergency Services – Perrysburg, Mercy Health - Anderson Hospital, Mercy Health - Clermont Hospital, Mercy Health - Defiance Hospital, Mercy Health - Fairfield Hospital, Mercy Health - Springfield Regional Medical Center, Mercy Health - St. Elizabeth Boardman, Mercy Health - West Hospital, Mercy Hospital – Tiffin, Mercy St. Anne Hospital, MetroHealth Parma Hospital, Miami Valley Hospital – North, Miami Valley Hospital – South, Mount Carmel Grove City, Mount Carmel New Albany, Mount Carmel St. Ann's, OhioHealth Doctor's Hospital, OhioHealth Dublin Methodist Hospital, OhioHealth Grady Memorial Hospital, OhioHealth Marion General Hospital, OhioHealth O'Bleness Hospital, Pomerene Hospital, Promedica Flower Hospital, ProMedica Memorial Hospital – Fremont, Salem Community Hospital, Southeastern Ohio Regional Medical Center, Southern Ohio Medical Center, Southview Hospital, St. Luke's Hospital – Toledo, St. Vincent Charity Hospital, Summa Health Barberton Hospital, Sycamore Hospital, The Bellevue Hospital, The Christ Hospital, The Christ Hospital Medical Center, The Jewish Hospital - Mercy Health, TriHealth - Bethesda Butler Hospital, TriHealth - Good Samaritan Hospital (Cincinnati), Trinity Medical Center – West, TriPoint Medical Center, UH Ahuja Medical Center, UH Amherst Health Center, UH Bedford Medical Center, UH Elyria Medical Center, UH Parma Medical Center, UH Richmond Medical Center, UH Samaritan Medical Center, Union Hospital, Upper Valley Medical Center, Van Wert County Hospital, Wayne Hospital, West Hospital - Lake Health, Western Reserve Hospital, Wilson Hospital, Wood County Hospital, Wooster Community Hospital, and UH Parma Medical Center.

Appendix H: Map of Freestanding Emergency Departments in 2020



Aultman Massillon, Brunswick Medical Center, CC - Lakewood Emergency Department, CC - Twinsburg Fam Health & Surg Ctr, CC - Akron General H&W Ctr – Green, CC - Akron General H&W Ctr – North, CC- Akron General H&W Ctr – West, Cleveland Clinic Brunswick Family Health Center, Dayton Children's South Campus Emergency Room, Dayton Springfield Emergency Center, Fairfield Medical Ctr. - River Valley, Genesis Perry County Medical Center, Holzer Emergency Department – Meigs, Kettering Health - Huber Emergency Department, Kettering Health - Preble County Medical Center, Kettering Health Network - Franklin ED, Kettering Health Network - Middletown ED, Ketterting Health Network – Piqua, Lake Health Beachwood Medical Center, Madison Medical Campus, Marietta Memorial - Belpre Medical Campus, Mercy Health - Harrison Medical Center, Mercy Health - Mt. Orab Medical Center, Mercy Health - Queen City Medical Center ED, Mercy Health - Rookwood Medical Center, Mercy Health - Sylvania Medical Center, MercyHealth - Putnam County Ambulatory Care Center, MetroHealth Brecksville Health Center, MetroHealth Cleveland Heights Medical Center, Miami Valley Hospital - Austin Blvd – FSED, Miami Valley Hospital - Jamestown ED, Mount Carmel Fitness and Health - Lewis Center, Mount Carmel Franklinton, Nationwide Children's Lewis Center ED, OhioHealth Emergency Care - Reynoldsburg, OhioHealth Emergency Care – Powell, OhioHealth Grove City, OhioHealth Hilliard, OhioHealth Lewis Center Health Center, OhioHealth New Albany, OhioHealth Obetz, OhioHealth Ontario, OhioHealth Pickerington Emergency Care Center, OhioHealth Westerville Emergency Care Center, St. Elizabeth Emergency & Diagnostic Center, St. Joseph Emergency and Diagnostic Center, St. Mary's Medical Center - Ironton Campus, Summa Health Green Medical Center, Summa Health Medina Medical Center, Summa Health Wadsworth-Rittman ED, TriHealth - Bethesda Arrow Springs, TriHealth - Good Samaritan Western Ridge, UH Avon Health Center Emergency Room, UH Broadview Heights Health Center, UH Kent Health Center, UH North Ridgeville Health Center, and UH Twinsburg Health Center.

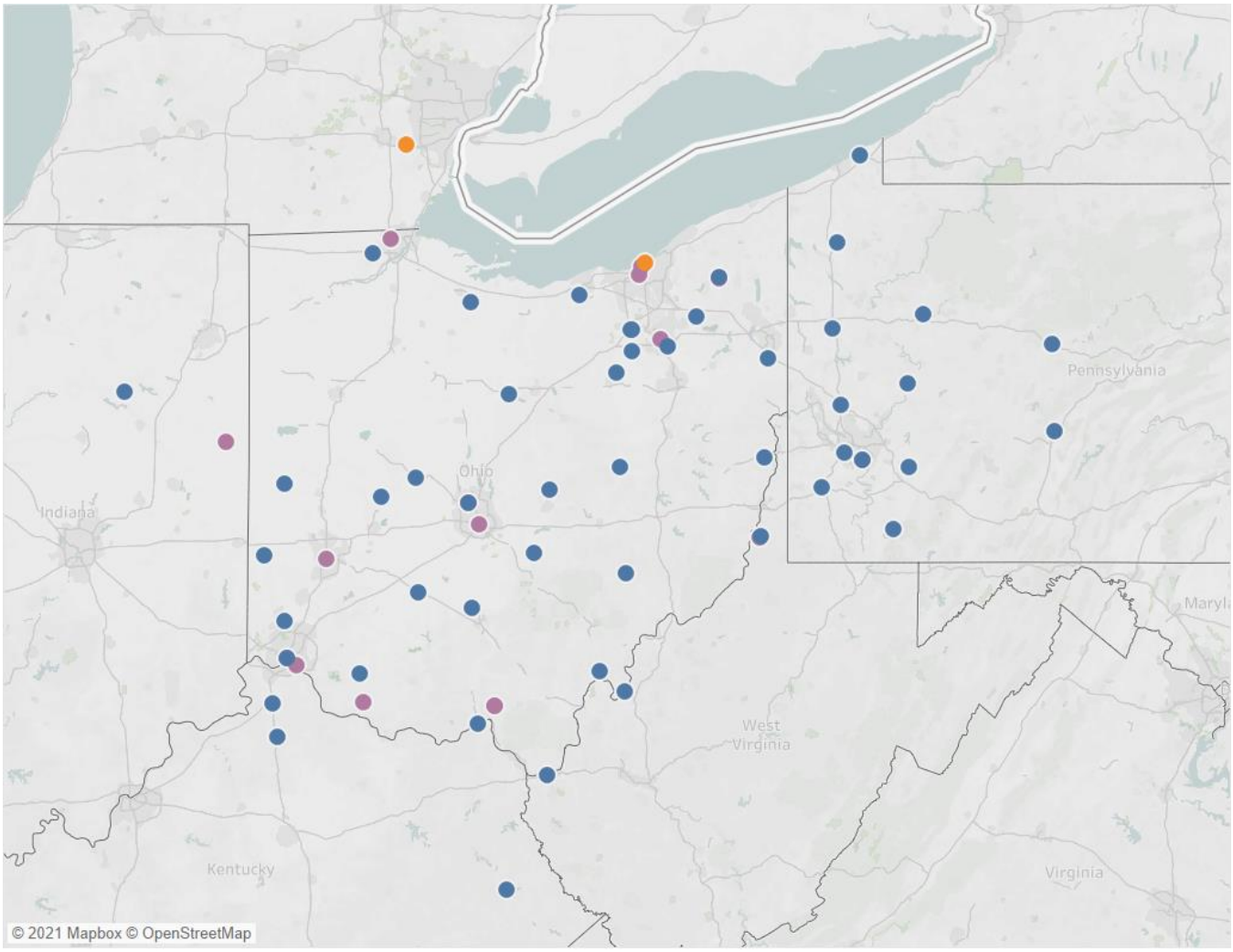
Appendix I: Map of EMS Units Serving Trauma Patients in Ohio by BLS and ALS in 2020



- **Basic Life Support (BLS)** – EMS units with the required definitive care equipment onboard and the necessary certificate level of staff to provide basic life support services.

- **Advanced Life Support (ALS)** – EMS units with the required definitive care equipment onboard and the necessary certificate level of staff to provide advanced life support services.

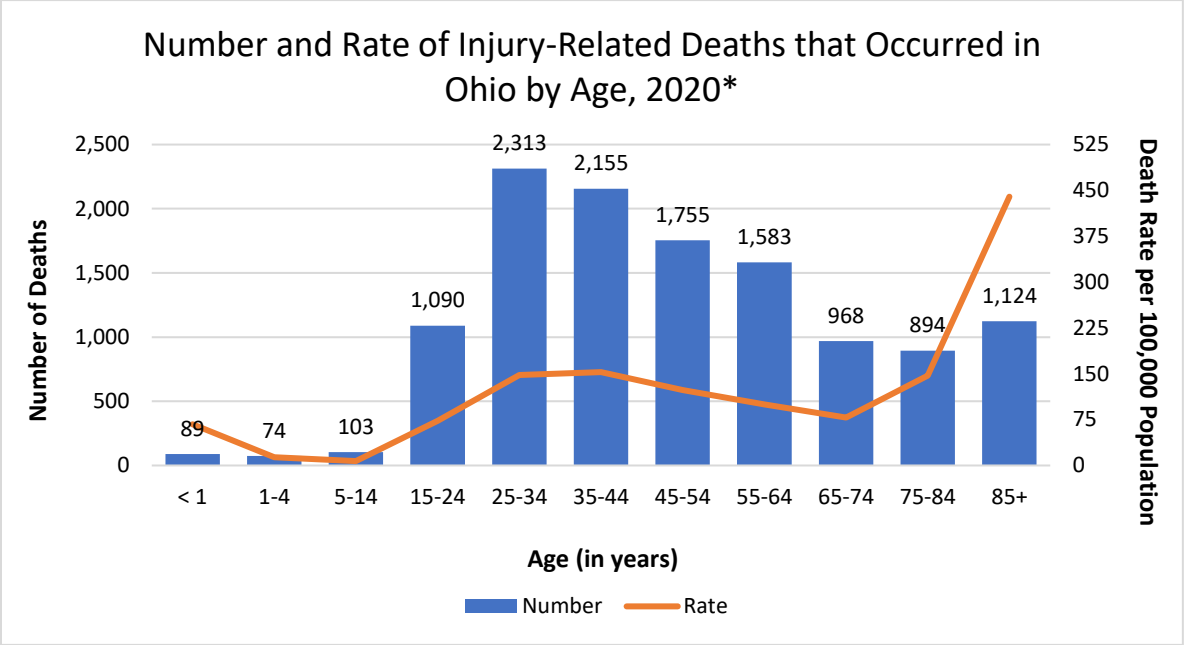
Appendix J: Map of Air Medical Services Available to Ohio Trauma Patients in 2020



A total of 18 air medical service providers, many of which have one or more satellite locations, currently serve Ohio patients. The majority of air medical services are located in Ohio with a few having headquarter or satellite locations in Indiana, Kentucky, Michigan, Pennsylvania, and West Virginia. The system is comprised of 78 aircraft total, of which seven aircraft are fixed wing and 71 are rotor.

Each satellite location and some headquarter locations will have at least one aircraft stationed at its facility. Due to the frequent relocation of aircraft between satellite locations, helicopter resources in neighboring states represent transportation services that are registered service providers of Ohio.

Appendix K: Ohio Department of Health Injury-Related Death Data



* Data are considered partial and may be incomplete.
Source: Ohio Department of Health (ODH) Bureau of Vital Statistics; analysis conducted by ODH Violence and Injury Prevention Section.

Number and Age-Adjusted Rate of Injury-Related Deaths that Occurred in Ohio by Sex, 2007-2020*

	Female		Male		Total	
Year	**Number**	**Age- Adjusted Rate**	**Number**	**Age- Adjusted Rate**	**Number**	**Age- Adjusted Rate**
2007	2,232	33.9	4,559	83.0	**6,791**	**57.5**
2008	2,430	36.9	4,756	86.3	**7,186**	**60.5**
2009	2,328	35.5	4,566	82.2	**6,894**	**57.9**
2010	2,417	36.6	4,739	85.2	**7,156**	**59.9**
2011	2,556	38.7	4,940	88.2	**7,496**	**62.6**
2012	2,608	39.8	5,120	91.2	**7,728**	**64.6**
2013	2,596	39.3	5,138	91.3	**7,734**	**64.4**
2014	2,809	42.8	5,545	98.2	**8,354**	**69.6**
2015	3,027	47.1	6,200	109.2	**9,227**	**77.3**
2016	3,469	53.7	7,088	124.7	**10,557**	**88.3**
2017	3,806	59.7	7,886	140.0	**11,692**	**98.9**
2018	3,427	52.9	7,049	123.4	**10,476**	**87.2**
2019	3,565	54.6	7,378	128.5	**10,943**	**90.7**
2020*	3,934	61.1	8,215	144.1	**12,149**	**101.7**

Includes injury-related deaths of individuals that died in Ohio regardless of their state of residence (underlying cause of death ICD-10 codes *U01-*U03, V01-Y36, Y85-Y87, Y89).
* Data are considered partial and may be incomplete.
Age-adjusted rates are based on the 2000 U.S. standard population and are calculated per 100,000 population.
Source: ODH Bureau of Vital Statistics; analysis conducted by ODH Violence and Injury Prevention Section.

Number and Age-Adjusted Rate of Injury-Related Deaths that Occurred in Ohio by Mechanism, All Intent, 2020*

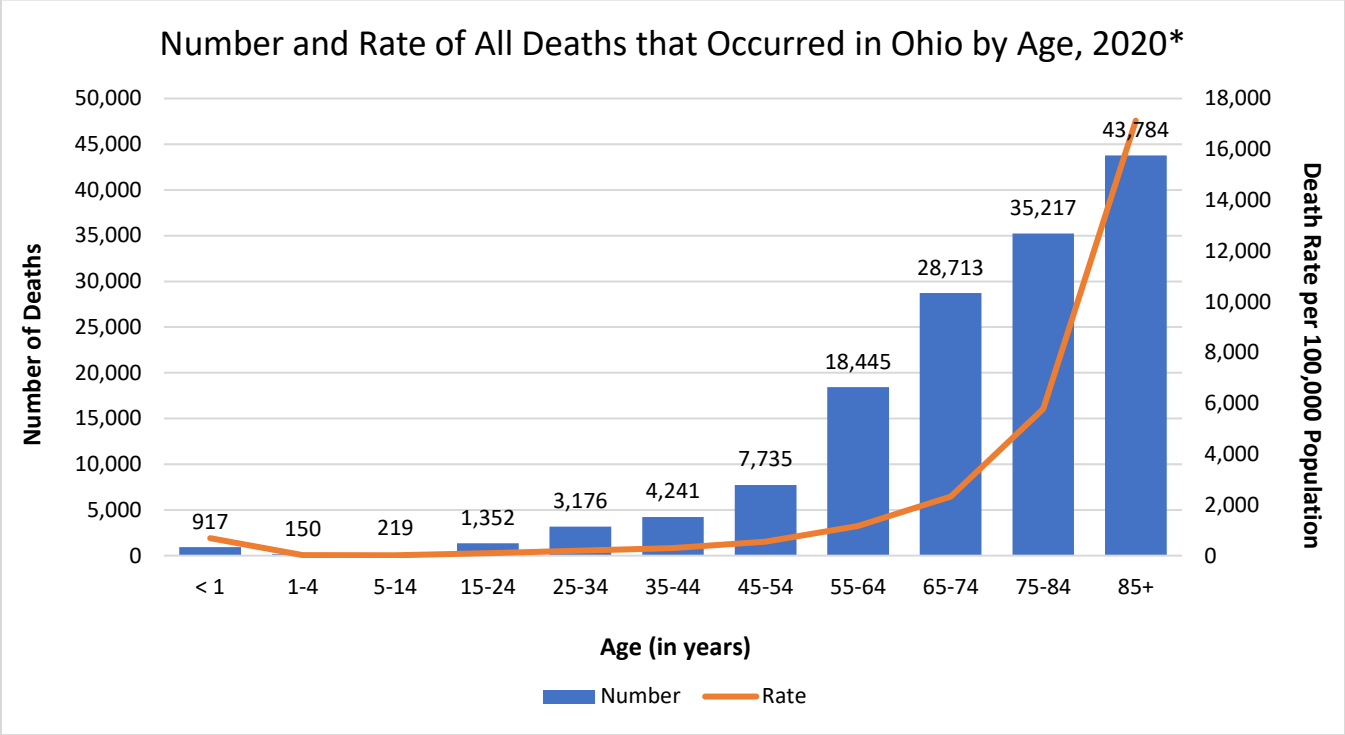
	Female		Male		Total	
External Injury Mechanism	**Number**	**Age-Adjusted Rate**	**Number**	**Age-Adjusted Rate**	**Number**	**Age-Adjusted Rate**
Cut or Pierce	32	0.5	76	1.3	**108**	**0.9**
Drowning	43	0.7	104	1.8	**147**	**1.2**
Drug Poisoning	1,680	30.3	3,536	64.5	**5,216**	**47.3**
Fall	934	10.1	864	13.8	**1,798**	**11.7**
Fire or Flame	50	0.7	69	1.1	**119**	**0.9**
Firearm	244	4.3	1,525	26.6	**1,769**	**15.2**
Hot Object or Substance	1	--	4	--	**5**	**--**
Machinery	1	--	19	0.3	**20**	**0.1**
MV-Motorcyclist	21	0.3	166	2.8	**187**	**1.5**
MV-Occupant	102	1.6	193	3.4	**295**	**2.5**
MV-Pedal Cyclist	2	--	14	0.2	**16**	**0.1**
MV-Pedestrian	49	0.8	115	1.9	**164**	**1.3**
MV-Unspecified	222	3.7	417	7.3	**639**	**5.4**
Natural or Environmental	16	0.2	33	0.5	**49**	**0.4**
Non-Drug Poisoning	50	0.9	124	2.1	**174**	**1.5**
Other Land Transport	7	--	48	0.8	**55**	**0.5**
Other Specified, classifiable and NEC	57	0.8	127	2.1	**184**	**1.4**
Other Transport	1	--	19	0.3	**20**	**0.2**
Overexertion	0	--	0	--	**0**	**--**
Pedal Cyclist, Other	1	--	12	0.2	**13**	**0.1**
Pedestrian, Other	8	--	9	--	**17**	**0.1**
Struck by or against	9	--	43	0.7	**52**	**0.4**
Suffocation	226	3.5	504	9.0	**730**	**6.2**
Unspecified	178	2.1	194	3.1	**372**	**2.6**
Total	**3,934**	**61.1**	**8,215**	**144.1**	**12,149**	**101.7**

Includes injury-related deaths of individuals that died in Ohio regardless of their state of residence (underlying cause of death ICD-10 codes *U01-*U03, V01-Y36, Y85-Y87, Y89).
All intent includes unintentional, suicide, homicide, legal intervention or war, and undetermined.
--Age-adjusted rates are suppressed when the death count is less than 10. Age-adjusted rates are based on the 2000 U.S. standard population and calculated per 100,000 population.
* Data are considered partial and may be incomplete.
MV – motor vehicle crash
NEC – Not elsewhere classifiable
Source: ODH Bureau of Vital Statistics; analysis conducted by ODH Violence and Injury Prevention Section.

Number of Injury-Related Deaths that Occurred in Ohio by Mechanism and Intent, 2020*

External Injury Mechanism	Intent					Total
	Unintentional	Suicide	Homicide	Legal Intervention or War	Undetermined	
Cut or Pierce	6	29	73	0	0	**108**
Drowning	129	13	0	…	5	**147**
Drug Poisoning	5,033	134	1	…	48	**5,216**
Fall	1,760	33	0	…	5	**1,798**
Fire or Flame	107	7	4	…	1	**119**
Firearm	17	909	821	10	12	**1,769**
Hot Object or Substance	5	0	0	…	0	**5**
Machinery	20	…	…	…	…	**20**
MV-Motorcyclist	187	…	…	…	…	**187**
MV-Occupant	295	…	…	…	…	**295**
MV-Pedal Cyclist	16	…	…	…	…	**16**
MV-Pedestrian	164	…	…	…	…	**164**
MV-Unspecified	639	…	…	…	…	**639**
Natural or Environmental	49	…	…	…	…	**49**
Non-Drug Poisoning	125	46	0	0	3	**174**
Other Land Transport	42	8	3	…	2	**55**
Other Specified, classifiable and NEC	125	22	26	2	9	**184**
Other Transport	20	…	0	0	…	**20**
Overexertion	0	…	…	…	…	**0**
Pedal Cyclist, Other	13	…	…	…	…	**13**
Pedestrian, Other	17	…	…	…	…	**17**
Struck by or against	46	0	6	0	0	**52**
Suffocation	280	430	16	…	4	**730**
Unspecified	304	6	50	0	12	**372**
Total	**9,399**	**1,637**	**1,000**	**12**	**101**	**12,149**

Includes injury-related deaths of individuals that died in Ohio regardless of their state of residence (underlying cause of death ICD-10 codes *U01-*U03, V01-Y36, Y85-Y87, Y89).
* Data are considered partial and may be incomplete.
... Category not applicable.
MV – motor vehicle traffic
NEC – Not elsewhere classifiable
Source: ODH Bureau of Vital Statistics; analysis conducted by ODH Violence and Injury Prevention Section.



* Data are considered partial and may be incomplete.
Source: ODH Bureau of Vital Statistics; analysis conducted by ODH Violence and Injury Prevention Section.

Number and Age-Adjusted Rate of All Deaths that Occurred in Ohio by Sex, 2007-2020*

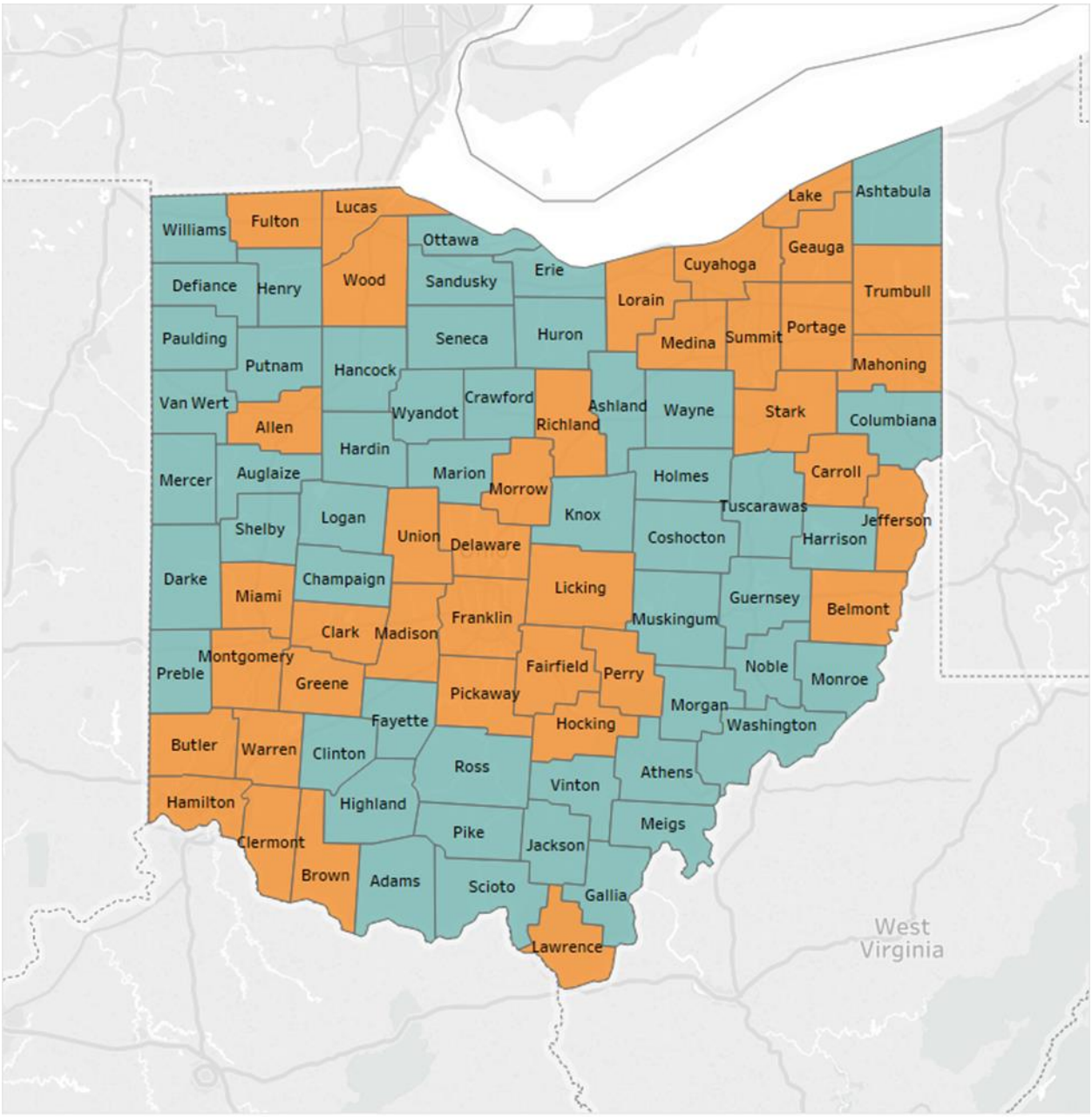
	Female		Male		Total†	
Year	**Number**	**Age- Adjusted Rate**	**Number**	**Age- Adjusted Rate**	**Number**	**Age- Adjusted Rate**
2007	54,837	709.5	51,749	990.3	**106,586**	**831.6**
2008	56,495	721.5	53,209	1,001.5	**109,704**	**843.8**
2009	54,836	696.6	52,395	968.1	**107,231**	**815.1**
2010	55,767	697.3	52,865	960.9	**108,632**	**812.7**
2011	57,341	710.6	54,221	970.4	**111,564**	**825.4**
2012	57,831	709.1	54,975	961.4	**112,808**	**820.7**
2013	57,843	699.6	55,510	953.4	**113,353**	**812.9**
2014	57,592	689.8	57,012	959.1	**114,607**	**810.6**
2015	59,631	710.3	58,491	971.5	**118,124**	**828.0**
2016	59,590	706.2	60,042	981.1	**119,632**	**830.6**
2017	61,516	724.0	62,374	1,005.8	**123,892**	**852.6**
2018	61,593	714.2	63,037	999.5	**124,632**	**843.5**
2019	61,108	703.5	62,582	978.7	**123,694**	**828.7**
2020*	70,338	803.8	73,611	1,138.1	**143,950**	**956.0**

Includes all deaths of individuals that died in Ohio regardless of their state of residence.
* Data are considered partial and may be incomplete.
† Includes deaths with unknown sex.
Age-adjusted rates are based on the 2000 U.S. standard population and are calculated per 100,000 population.
Source: ODH Bureau of Vital Statistics; analysis conducted by ODH Violence and Injury Prevention Section.

Appendix L: Map of Ohio Homeland Security Regions Utilized by the Regional Physician Advisory Board (RPAB)

* Unless otherwise stated, the Ohio Homeland Security Regions shown in the map above are the 'regions' referred to in this annual report. These are the same regions utilized by the Regional Physician Advisory Board (RPAB).

Appendix M: Map of Ohio Counties, Urban and Rural Designations



Source: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2013 NCHS Urban-Rural Classification Scheme for Counties.

There are minor classification changes from the 2017 annual report where the USDA Economic Research Service classification system was used. Erie, Ottawa, Preble and Washington counties are reclassified from “urban” to “rural.” Hocking and Perry counties are reclassified from “rural” to “urban.”

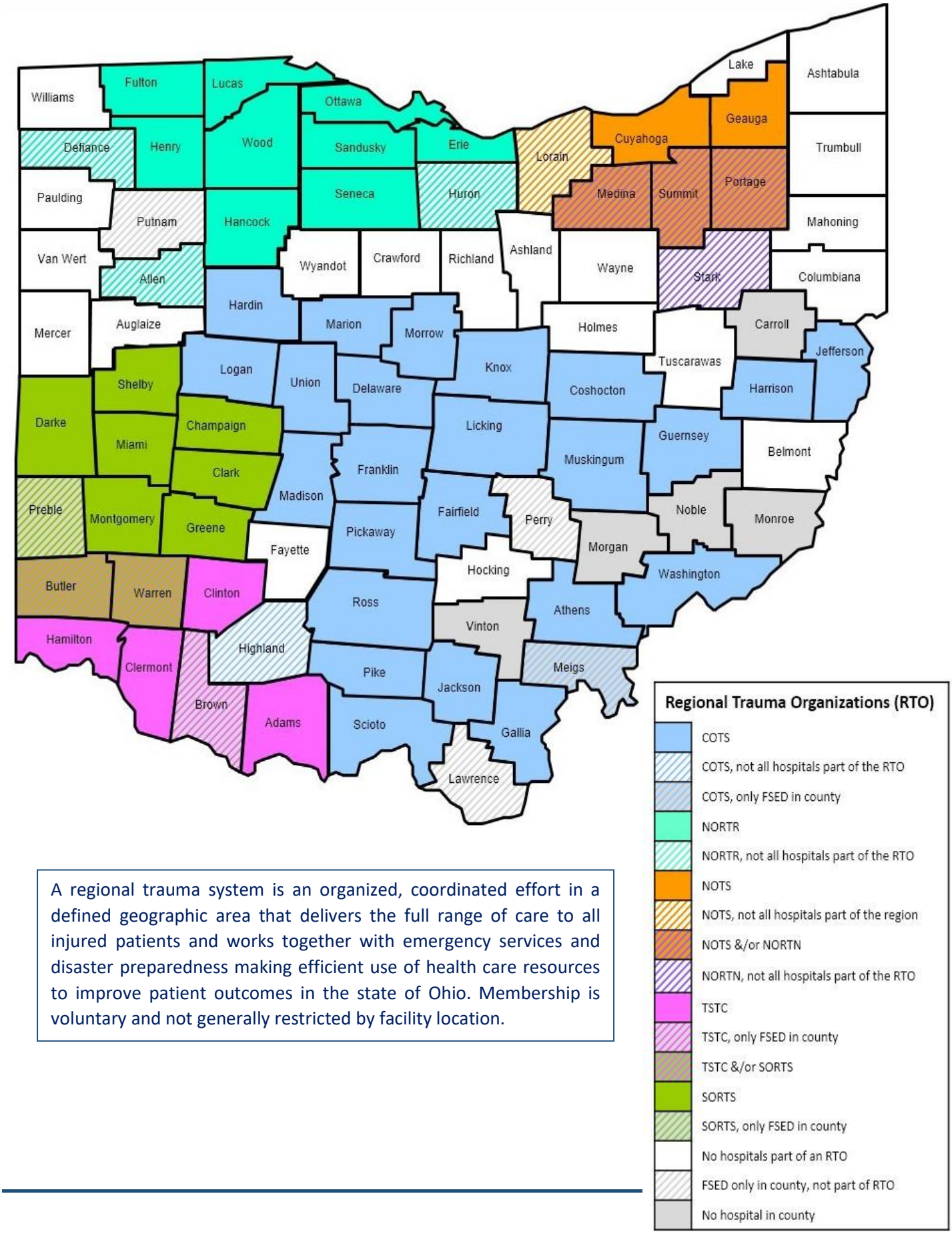
APPENDIX N: Summary of 2019 – 2020 Trauma Related EMS Grants

2019-2020 Priority 2-5 RFP Research Proposal Recommendations		
Recommended Projects for Funding	**Requested Amount**	**Recommended Amount**
Store It Safe Firearm Safety Project *(American Academy of Pediatrics)*	$75,000	$75,000
Development, Implementation, and Evaluation of an Innovative Pediatric Simulation-Based Curriculum for Emergency Medical Services *(Cincinnati Children's Hospital Medical Center)*	$70,000	$75,000
Trauma Cost vs. Care: Estimations for Ohio's Current Trauma System and Evaluation of Alternative Configurations *(Wright State University)*	$84,504	$75,000
Total	$229,504	$225,000

2019-2020 Priority 2-5 Research Proposal Recommendations			
Recommended Projects for Funding	**Priority**	**Requested Amount**	**Recommended Amount**
Engaging Key Stakeholders to Improve Rehabilitation Care *(Ohio State University)*	4	$48,709	$48,709
Mobile Phone Virtual Reality Game for Pediatric Home Burn Dressing Pain Management *(Nationwide Children's Hospital)*	2	$105,061	$75,000
Total		$153,770	$123,709

2020-2021 Priority 2-5 Research Proposal Recommendations			
Recommended projects for funding	**Priority**	**Requested Amount**	**Requested Amount**
The Impact of Ohio's Opioid Prescriptions Law on Opioid Use and Outcomes in Pediatric Patients	2	$129,723	$129,723
Using Place-based indicators to identify injury patterns and improve outcomes: A statewide review		$68,462	$68,462
Total		$198,185	$198,185

APPENDIX O: Ohio Regional Trauma Systems Map 2020



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 disaster 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.

APPENDIX P: Ohio Department of Health's Stay at Home Orders

- Original Ohio Department of Health's "Stay at Home", dated March 22, 2020.
  - https://coronavirus.ohio.gov/static/publicorders/DirectorsOrderStayAtHome.pdf
  - *Document includes "Memorandum of Identification of Essential Critical Infrastructure Worker During COVID-19 Response", US Department of Homeland Security – CISA, March 19, 2020.*

- Amended Ohio Department of Health's "Stay at Home", dated April 2, 2020.
  - *https://coronavirus.ohio.gov/static/publicorders/Directors-Stay-At-Home-Order-Amended-04-02-20.pdf*

APPENDIX Q: Members of the Board, Trauma Committee, Trauma Registry Advisory Workgroup (TRAW), Performance Improvement (PI) Workgroup, and EMS Prehospital Workgroup

Board

Dudley H.A. Wright II (Chair)
Kent Appelhans (Vice Chair)
Thomas Allenstein
Karen Beavers
Herb de la Porte
David DeVore
Geoffrey J. Dutton
Patrick Ferguson
Richard George, MD
Jeffery Jackson
Ruda Jenkins
Susan Kearns
Mark Marchetta
Stacey Martin
Amy Raubenolt, MD
Mark N. Resanovich
Julie Rose
Hamilton P. Schwartz, MD
George B. Snyder
Glen Tinkoff, MD
Kevin Uhl

Trauma Committee

Diane Simon (Chair)
Laurie Johnson, MD (Vice Chair)
Michael Beltran, MD
Marco Bonta, MD
Sara Brokaw
Joyce Burt
Jeffrey Claridge, MD
Herb de la Porte
Erik Evans, MD
Dave Freeman
Kathy Haley
Ryan Harrison, MD
Kent Harshbarger, MD
Patricia Hightower
Fran Lauriha
Joseph Natko
Travis Perry, MD
James Sauto, Jr., MD
Angela Schetter
Avraham Schlager, MD
Michael Shannon, MD
Rachel Velasquez
Howard Werman, MD
Tammy Wilkes

Trauma Registry Advisory Workgroup (TRAW)

Joyce Burt (Chair)
Deanah Moore (Co-Chair)
Kathy Cookman
Wendi Dean
Roxanna Giambri
Kelly Harrison
Lita Holdeman
Olivia Houck
Jessica Johnson
Erika Joos
Anne Moss
Pam Owen
Diane Simon
Pamela Tanner
Richard Treat, M.D.

Performance Improvement (PI) Workgroup

Anne Moss (Chair)
Richard George, MD (Co-Chair)
Jenifer Brodsky
Joyce Burt
Shannon Camick
Melody Campbell
Alex Carpenter
Roxanna Giambri
Vickie Graymire
Kelly Harrison
Erika Joos
Maria Penrose
Diane Simon

EMS Prehospital Workgroup

Ashish Panchal, M.D.
Brian Anderson
Brian Bemiller
Herb de la Porte
Joel Dickinson
Mark Huckaby
James Sauto, M.D.
Tammy Wilkes
Jamie Wilson
Paul Zeeb, M.D.

ODPS/Division of EMS

Carol A. Cunningham, MD,
State Medical Director
Robert L. Wagoner, Executive Director
Eric M. Mays,
Chief, Research & Analysis Section
Sahithi Aurand, MPH,
Epidemiology Investigator
Natalie Haslage, MCHES,
Human Services Program Consultant
Sue A. Morris, BA, Paramedic, CEI,
Human Services Program Consultant

Ohio Department of Public Safety
Division of Emergency Medical Services

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