

Ohio
Trauma
Registry

2011

Trauma Acute Care Registry Annual Data Report
Published: July 2013

Contents

Appendices.....	4
Introduction.....	5
Executive Summary	6
Limitations of the Data	7
Registry Characteristics	8
Records by Calendar Year: 1999 - 2011.....	9
Records by Trauma Center Type	10
Patient Characteristics.....	11
Patients by Month: 2011	12
Patients by Age Group: 2011	13
Adult, Pediatric, and Geriatric Count: 2011	14
Patients by Age & Sex: 2011	15
Patients by Trauma Center Level.....	16
Number of Patients by Population Density: 2011.....	17
Transfers by Trauma Center Level	18
Injury Characteristics	19
Injury Type: 2011	20
Intent of Injury: 2011	21
Payor Mix: 2011	22
Mechanisms of Injury: 2011	23
Outcomes	24
Patient Outcome: 2011.....	25
Number of Deaths by Age: 2011	26
Case Fatality Rate by Age: 2011	27
Case Fatality Rate by Age and Sex: 2011.....	28
Mechanisms of Injury for Deaths: 2011	29
Case Fatality Rate by Mechanism of Injury: 2011	30
Case Fatality Rate by Injury Severity Score: 2011	31
Case Fatality Rate by Intent of Injury: 2011.....	32
Hospital Days by Mechanism of Injury: 2011	33
Hospital Days by Mechanism of Injury: 2011	34
Hospital Days by Injury Severity Score: 2011	35
Hospital Days by Injury Severity Score: 2011	36
Emergency Department Disposition: 2011.....	37
Hospital Discharge Disposition: 2011	38

Case Fatality Rate by Population Density: 2011 39

Overall Case Fatality Rate by Year: 1999-2011 40

Trauma Center Case Fatality Rate by Year: 2000-2011 41

Non-Trauma Center Case Fatality Rate by Year: 2000-2011 42

ED Deaths at Trauma Centers..... 43

ED Deaths at Level 1 Trauma Centers 44

ED Deaths at Level 2 Trauma Centers 45

ED Deaths at Level 3 Trauma Centers 46

ED Deaths at Non-Trauma Centers 47

Geographic Characteristics 48

Number of Injuries by County 49

Incidence of Injuries by County..... 50

Number of Injury Deaths by County 51

Incidence of Injury Deaths by County 52

Appendices

- Appendix A: OTR Inclusion/Exclusion Criteria
- Appendix B: Ohio County Map with EMS Regions
- Appendix C: E-Code Groupings
- Appendix D: Barell Matrix
- Appendix E: Members of the EMS Board, Trauma Committee, and Trauma Registry Advisory Subcommittee (TRAS)
- Appendix F: Reporting Facilities
- Appendix G: Ohio Trauma Registry Data Element List
- Appendix H: Glossary
- Appendix I: Ohio Revised Code
- Appendix J: Counties by Population Density Designation

Introduction

This annual report from the Ohio Trauma Registry (OTR) presents an overview of the data about traumatic injuries in Ohio in 2011. The purpose of this report is to provide information to healthcare professionals as well as to the public about the current state of care for seriously injured patients treated at hospitals throughout Ohio. Information regarding the full criteria for data included in this report can be found in Appendix A.

The OTR is operated and maintained by the Ohio Department of Public Safety, Division of Emergency Medical Services. The State of Ohio's Emergency Medical Services (EMS) Board has statutory authority over the OTR and supervises its operation via the EMS Board's Trauma Committee and the Trauma Registry Advisory Subcommittee.

This report was produced by the Ohio Department of Public Safety, Division of Emergency Medical Services, Office of Research and Analysis. Questions or comments concerning the report should be directed to the Office of Research and Analysis at 800-233-0785 (toll free) or EMSData@dps.state.oh.us.

Executive Summary

The Ohio Trauma Registry (OTR) began collecting data on January 1, 1999. This report represents data from the year 2011. This report is intended to give the reader a strong sense of the type and amount of data available in the OTR. The Ohio Revised Code and the Ohio Administrative Code prohibit the release of data that would identify or tend to identify a provider or recipient of trauma care.

- The data in the OTR are prescribed by the Patient Inclusion Criteria (Appendix A). To be included in the OTR, patients must be admitted to the hospital for at least 48 hours or transferred into the hospital, with an injury-related ICD-9 code. Patients who die after receiving any evaluation or treatment while on hospital premises, as well as patients who are transferred out of the hospital, are also included.
- Between January 1, 1999 and December 31, 2011, a total of 442,601 records were submitted to the OTR. This report includes the 42,160 records that were submitted in 2011. Because patients who are transferred between hospitals generate multiple records, the number of records submitted to the OTR is greater than the number of individual patients.
- Of the 32,437 patients included in this report, 95.5% survived to discharge.
- 30.8% of the patients included in this report were geriatric patients (age 70 or older), while 12.7% of the patients were pediatric patients (age 15 or younger).
- 54.1% of the total trauma patients in 2011 were males while 45.9% were females.
- Except for the 0-4 age range, males had a higher case fatality rate than females of the same age.
- 90.3% of the injuries reported to the OTR in 2011 were the result of blunt trauma.
- 54.0% of the injuries reported to the OTR in 2011 were caused by falls, while an additional 15.0% were caused by motor vehicle collisions. Of the injuries reported to the OTR that resulted in in-hospital death in 2011, 41.4% were caused by falls, 17.0% were caused by motor vehicle collisions, and 13.0% were caused by assault.
- Injuries caused by firearms or drowning/submersion had the highest case fatality rate of 31.5 per 100 patients and 27.4 per 100 patients respectively.
- 89.2% of the injuries reported to the OTR in 2011 were unintentional. Self-inflicted injuries had the highest case fatality rate at 23.3%.
- Over time, the overall mortality for patients included in the OTR has remained steady around 4%. After a small drop from 6% in 2003, mortality among patients treated in a trauma center in Ohio has since remained steady around 5%, and was 4.9% in 2011. Mortality among patients treated at non-trauma centers in Ohio has been steadily trending downward from 2.5% in 2000 to 2.3% in 2011. Increased mortality rates in trauma centers are expected, as these facilities treat the most severe trauma cases.

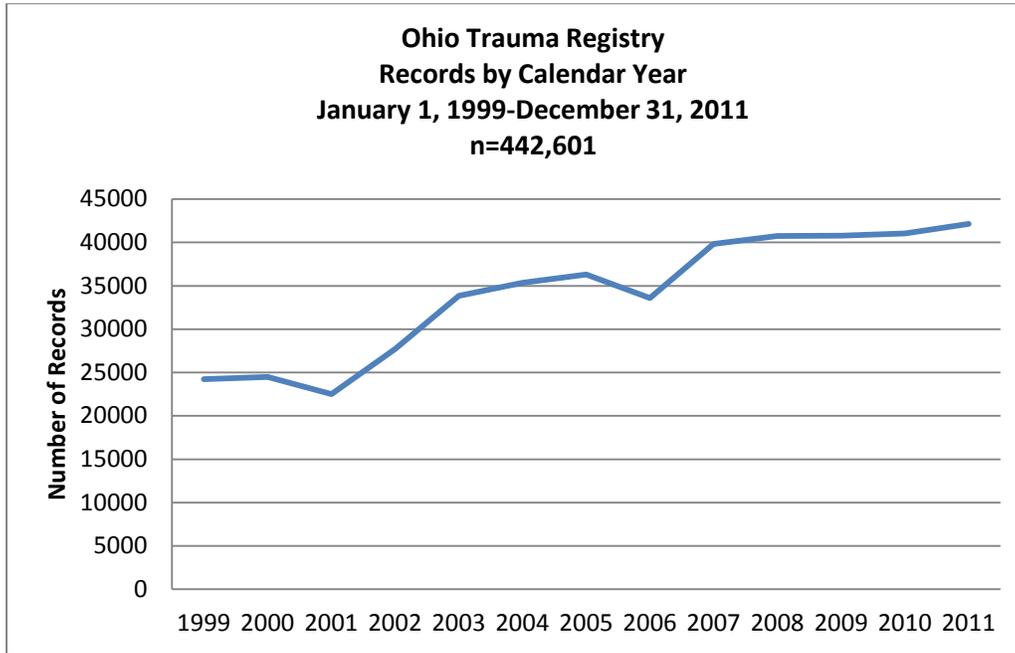
Limitations of the Data

There are a number of issues that need to be considered when reading this report. These are listed here in no specific order.

- **48-Hour Rule**: To be included in the OTR, patients must be admitted to the hospital for at least 48 hours or transferred into the hospital with an injury-related ICD-9 code. Patients that die after receiving any evaluation or treatment while on hospital premises, as well as patients who transfer out of the hospital, are also included.
- **Accuracy**: External validation of the data in OTR has not been performed; therefore, the accuracy of the data contained in this report is limited to the accuracy of the data submitted to OTR by the individual hospitals.
- **Age**: Patient date of birth is reported to OTR, age is not. Age is calculated by the Office of Research and Analysis using the difference between date of birth and date of arrival at the hospital. A very small number of records (n=7) do not have a date of birth recorded. Age is therefore not calculable on these records. Date of arrival at hospital is chosen for this calculation as a substantially larger number of records (n = 86) do not have a date of injury recorded.
- **Death Data**: In OTR, data on patients who die as a result of their injuries is limited to in-hospital deaths. Persons pronounced dead at the scene and not transported to the hospital are not reported to OTR.
- **OTR participation**: Submission of trauma patient data to OTR is statutorily required by Ohio Revised Code §4765.06. However, a small number of hospitals did not contribute data to this report. A list of contributing hospitals can be found in Appendix F.
- **Out-of-state patients**: OTR data includes patients who were injured in neighboring states and transported to an Ohio hospital. These records do not include county of injury data.
- **Records vs. Patients**: Because patients who are transferred between hospitals generate a separate trauma record at each hospital in which they receive treatment, the number of records submitted to the OTR will be greater than the number of individual trauma patients. To account for some patients having multiple records for the same incident, care has been taken to note whether a graph or table is using records or patients as the population.
- **Rounding**: Because of rounding, percentages displayed in graphs and tables will not always total 100%.
- **Trauma Center vs. Non-Trauma Center Data**: This report contains data submitted by all hospitals, regardless of whether or not the hospital is a trauma center. Because they employ specially trained trauma registry personnel, trauma center data tends to be more detailed and precise. However, the data from non-trauma centers gives a broader view of trauma care in Ohio and adds richness and depth to this report. This additional data is something many other states lack; therefore, comparisons with other states should be undertaken with caution.

Registry Characteristics

Records by Calendar Year: 1999 - 2011



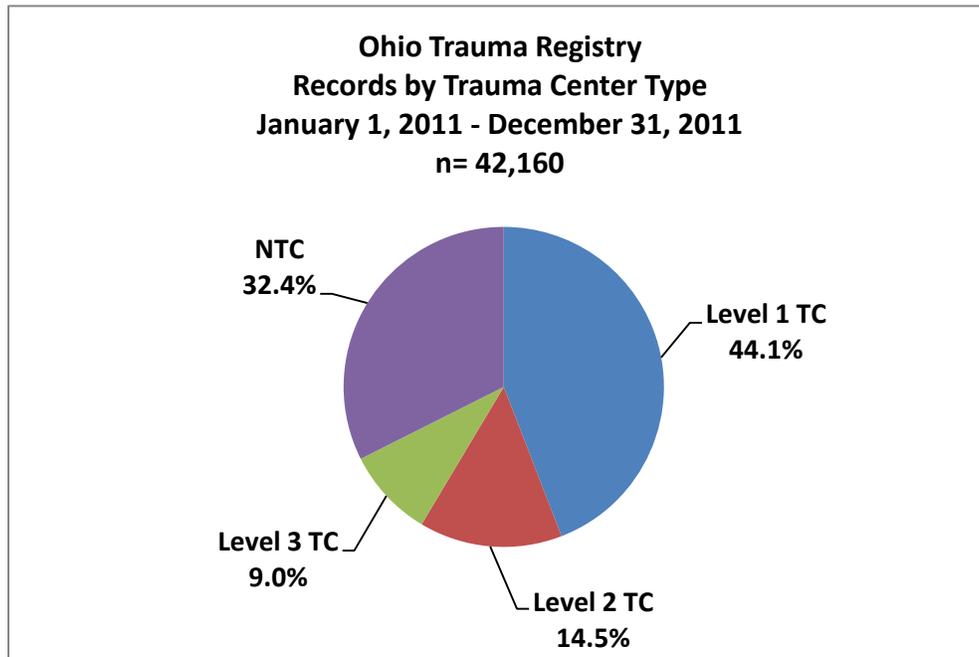
1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
27,224	24,490	22,516	27,733	33,044	35,347	36,296	33,587	39,820	40,756	40,800	41,028	42,160	442,601

Trauma Records by Year

The total number of records reported to the Ohio Trauma Registry (OTR) has increased over time from 24,224 records in 1999 to 42,160 in 2011. As of December 31, 2011, a total of 442,061 records had been submitted to the OTR.

The overall annual increase in records submitted to OTR is thought to be a result of system maturation, increased hospital participation, as well as increasing computerization of hospital medical records. Such computerization allows for easier and more accurate identification of eligible patients. This supposition has not been verified and requires further study.

Records by Trauma Center Type



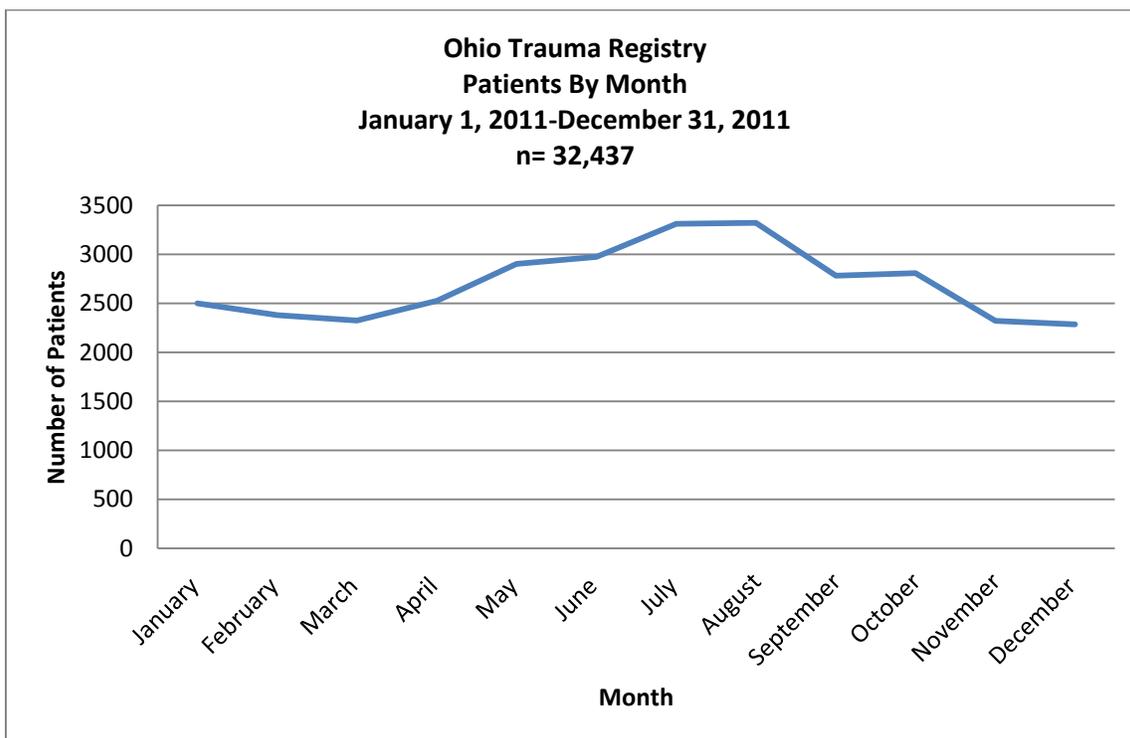
2011		
	# of Records	% of Records
Level 1 TC	18,600	44.1%
Level 2 TC	6,094	14.5%
Level 3 TC	3,798	9.0%
NTC	13,668	32.4
Total	42,160	100.0%

Records by Trauma Center Type:

In 2011, non-trauma centers accounted for 32.4% of records submitted to the Ohio Trauma Registry. Level 1 trauma centers accounted for the largest portion of records submitted to the Ohio Trauma Registry with 44.1%, a 2.1% increase from 2010.

Patient Characteristics

Patients by Month: 2011



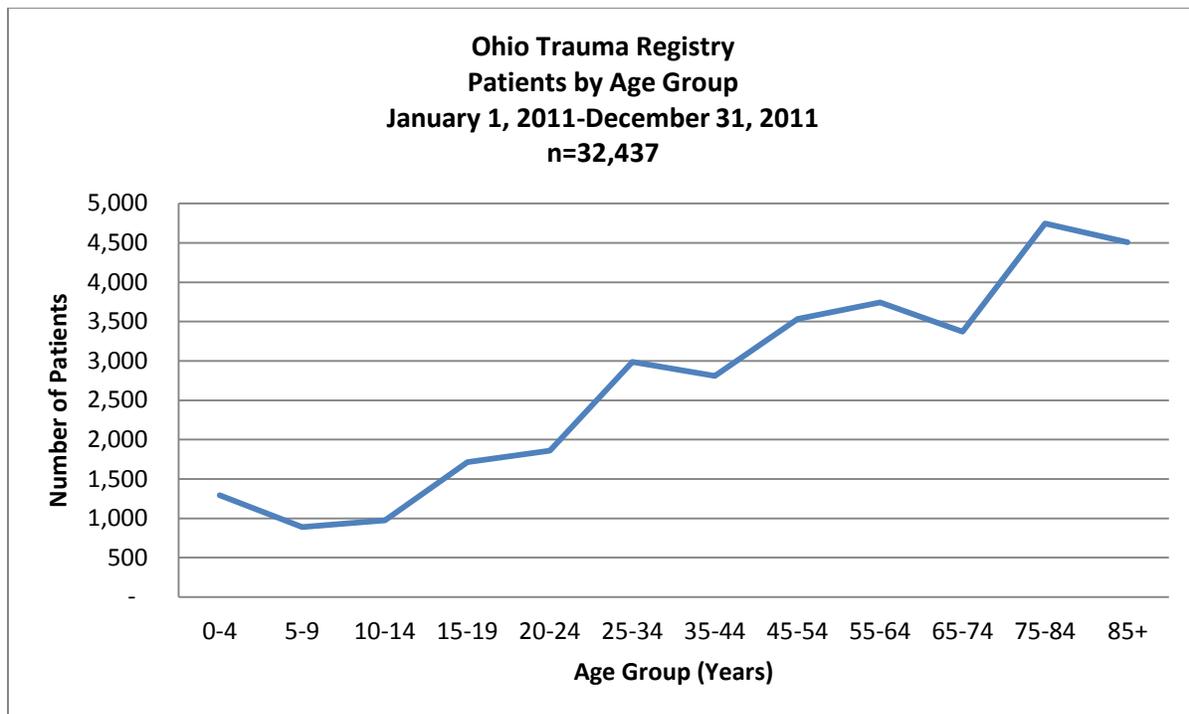
2011		
	# of Patients	% of Patients
January	2501	7.7%
February	2379	7.3%
March	2325	7.2%
April	2527	7.8%
May	2902	8.9%
June	2973	9.2%
July	3311	10.2%
August	3322	10.2%
September	2784	8.6%
October	2807	8.7%
November	2320	7.2%
December	2286	7.0%
Total	32,437	100.0%

Patients by Month:

The month listed in this chart reflects the month that the patient arrived at the hospital and not necessarily the month during which the injury occurred. The number of patients admitted to the hospital in 2011 peaked in July and August and was lowest in December. The number of patients was calculated by subtracting the number of records with the following two classifications from the total number of records submitted:

1. "ED Disposition" equal to "Transfer to another Ohio hospital" or "Transfer to an out-of-state hospital"
2. "Discharge Disposition" equal to "Transfer to another Ohio hospital" or "Transfer to an out-of-state hospital"

Patients by Age Group: 2011



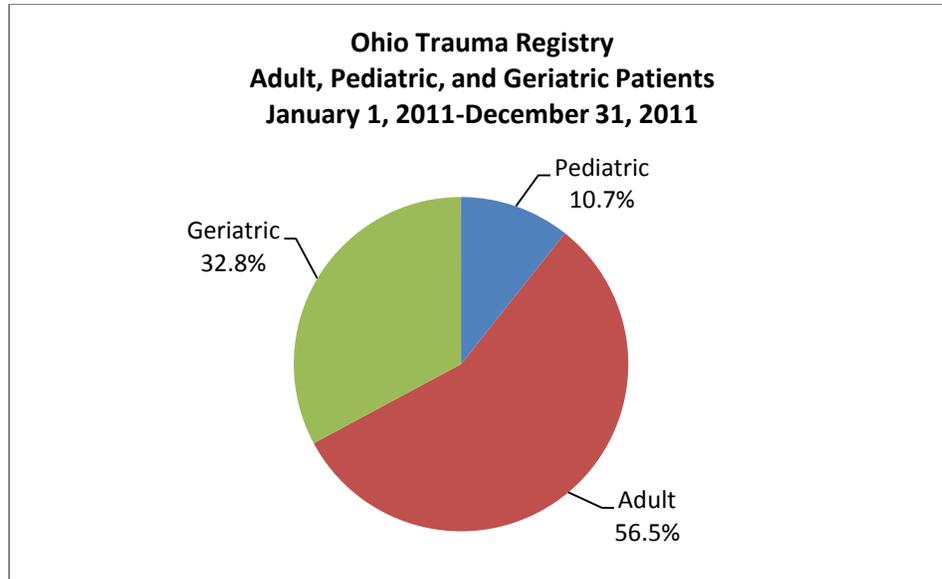
**7 patients were excluded due to lack of calculable age*

2011		
Age	# of Patients	% of Patients
0-4	1,292	4.0%
5-9	888	2.7%
10-14	975	3.0%
15-19	1,714	5.3%
20-24	1,861	5.7%
25-34	2,988	9.2%
35-44	2,808	8.7%
45-54	3,535	11.0%
55-64	3,744	11.5%
65-74	3,370	10.4%
75-84	4,747	14.6%
85+	4,508	13.9%
Unknown	7	0.0%
Total	32,437	100.0%

Number of Patients by Age

The 75-84 year old age group, which included 4,747 patients (14.6%), had the most patients reported. As a group, patients 0-14 years of age accounted for 3,155 (9.7%) of the overall patients reported.

Adult, Pediatric, and Geriatric Count: 2011



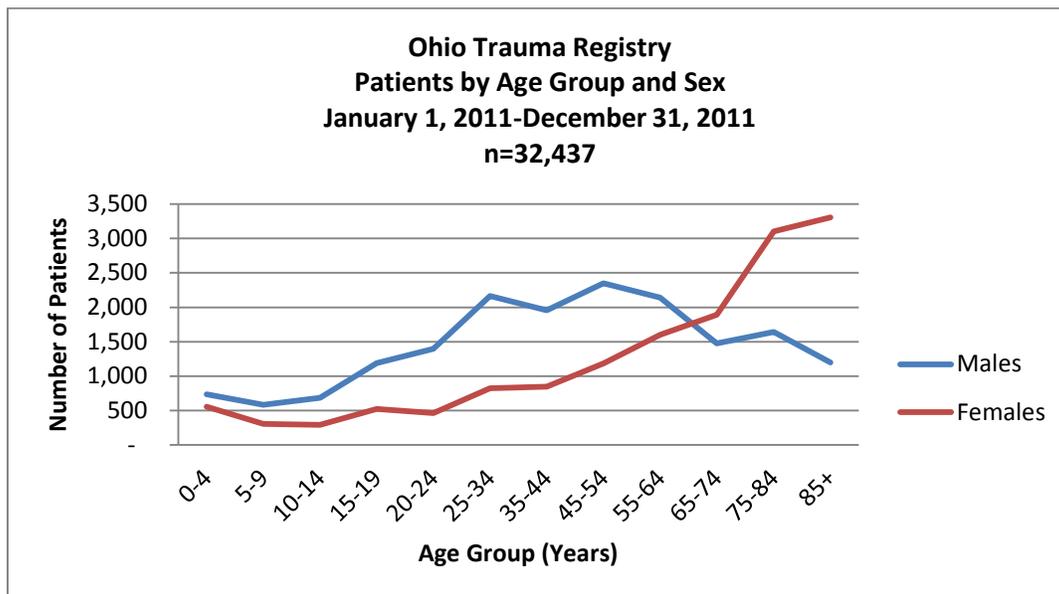
**7 patients were excluded due to lack of a calculable age*

2011		
Age Group	# of Patients	% of Patients
Pediatric	3,462	10.7%
Adult	18,320	56.5%
Geriatric	10,648	32.8%
Unknown	7	0.0%
Total	32,437	100.0%

Adult vs Pediatric vs Geriatric Patients

The Ohio Revised Code has established that pediatric trauma patients are those age 15 or younger and that geriatric patients are those age 70 and older. Trauma patients age 16-69 are considered adults. In 2011, 10.7% of the patients reported were age 15 or younger and 32.8% were age 70 and older.

Patients by Age & Sex: 2011



**9 patients were excluded due to unknown sex*

**7 patients were excluded due to unknown age*

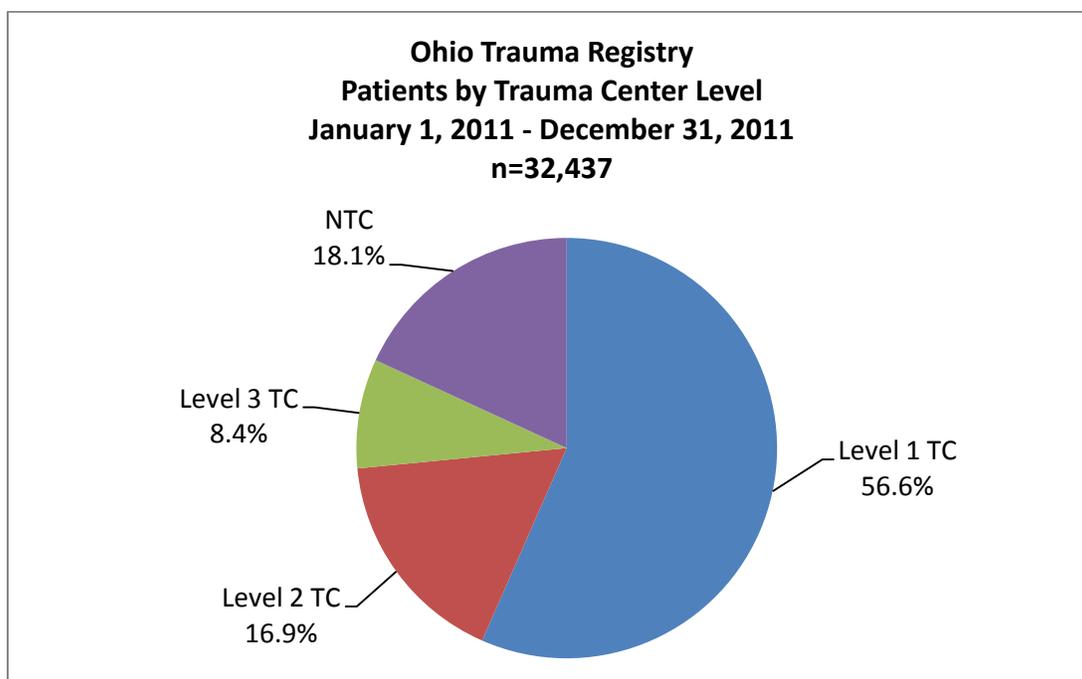
2011

Age Group	Males	Females	Unknown	Male %	Female %	Total # Pts
0-4	736	556	-	57.0%	43.0%	1,292
5-9	582	306	-	65.5%	34.5%	888
10-14	685	290	-	70.3%	29.7%	975
15-19	1,189	525	-	69.4%	30.6%	1,714
20-24	1,396	465	-	75.0%	25.0%	1,861
25-34	2,165	822	1	72.5%	27.5%	2,987
35-44	1,958	846	4	69.8%	30.2%	2,804
45-54	2,351	1,184	-	66.5%	33.5%	3,535
55-64	2,143	1,599	2	57.3%	42.7%	3,742
65-74	1,477	1,892	1	43.8%	56.2%	3,369
75-84	1,644	3,102	1	34.6%	65.4%	4,746
85+	1,200	3,308	-	26.6%	73.4%	4,508
Unknown	5	2	-	71.4%	28.6%	7
Total	17,531	14,897	9	54.1%	45.9%	32,437

Patients by Age and Sex

Overall, 54.1% of the patients reported were male, while 45.9% were female. Males accounted for more than 50% of the patients reported up until age 65. At ages greater than 65, females accounted for the majority of the patient population.

Patients by Trauma Center Level

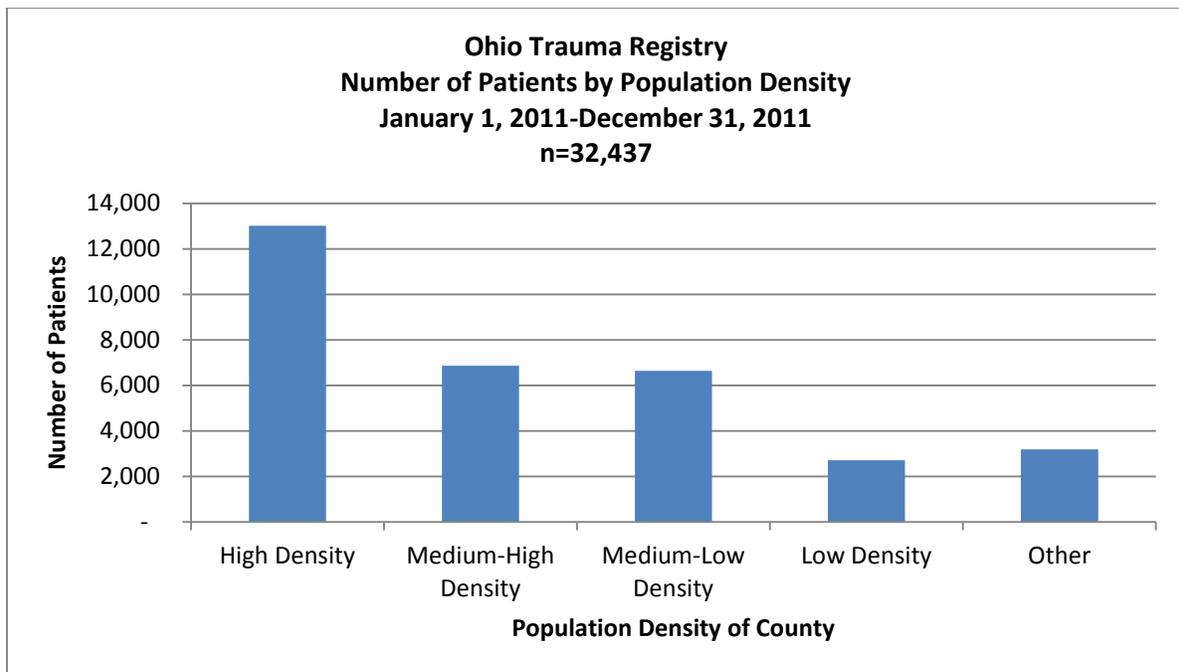


2011					
	Level 1 TC	Level 2 TC	Level 3 TC	NTC	Total
# of Pts.	18,355	5,471	2,731	5,880	32,437

Patients by Trauma Center Level:

In 2011, 81.9% of trauma patients received definitive care at a trauma center. Level 1 trauma centers provided definitive care for 18,355 patients, representing 56.6% of all trauma patients in Ohio in 2011.

Number of Patients by Population Density: 2011



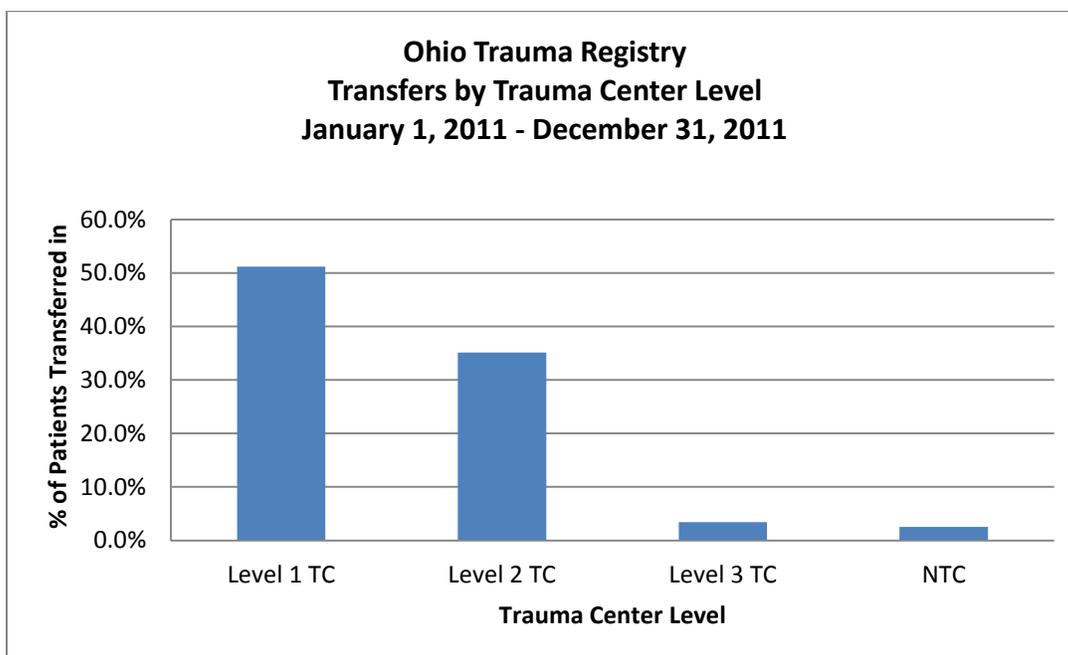
2011	
Population Density	Number of Patients
High Density	13,030
Medium-High Density	6,872
Medium-Low Density	6,638
Low Density	2,705
Other	3,192
Total	32,437

Patients by Population Density:

Counties with a population density >1000 people per square mile were considered “High Density.” Counties with a population density between 300 and 999 people per square mile were considered “Medium-High Density.” Counties with a population density between 100 and 299 people per square mile were considered “Medium-Low Density.” Counties with a population density <100 people per square mile were considered “Low Density.” The “Other” category includes any records with missing county data or out-of-state county data. As expected, the majority of patients come from highly populated counties, while more sparsely populated counties contribute relatively few patients.

The list of counties by population density can be found in Appendix J.

Transfers by Trauma Center Level



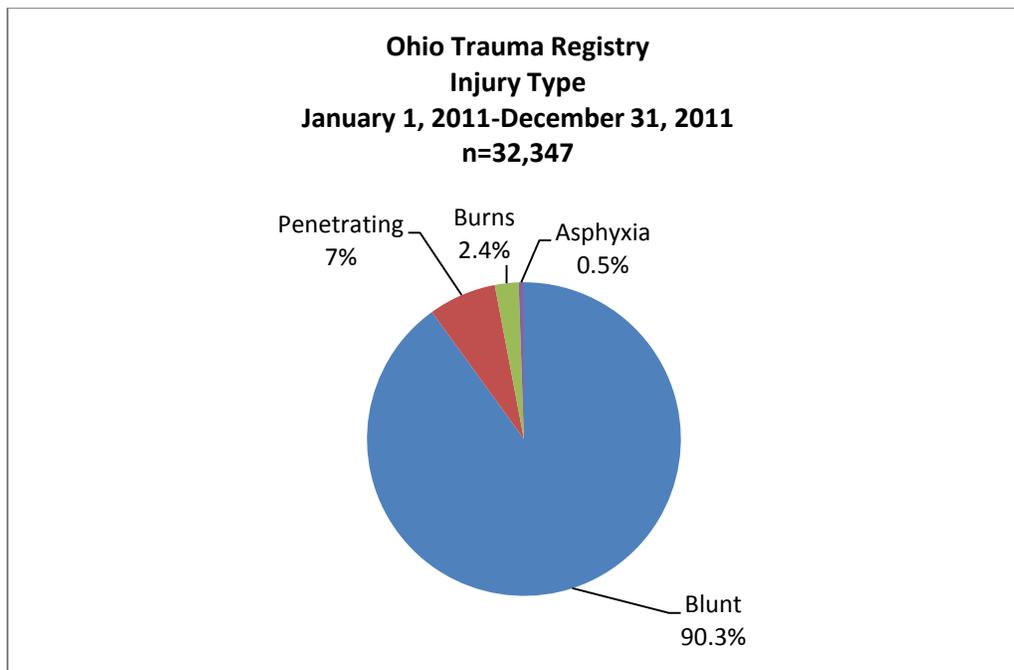
2011				
	Scene	Transfer	Total	% Transferred In
Level 1 TC	8,955	9,400	18,355	51.2%
Level 2 TC	3,550	1,921	5,471	35.1%
Level 3 TC	2,637	94	2,731	3.4%
NTC	5,731	149	5,880	2.5%
Total	20,873	11,564	32,437	35.7%

Transfers by Trauma Center Level:

Slightly over half of the trauma patients seen at level 1 trauma centers were transferred from another facility (51.2%). Overall, 35.7% of trauma patients were transferred at least once before receiving definitive care.

Injury Characteristics

Injury Type: 2011

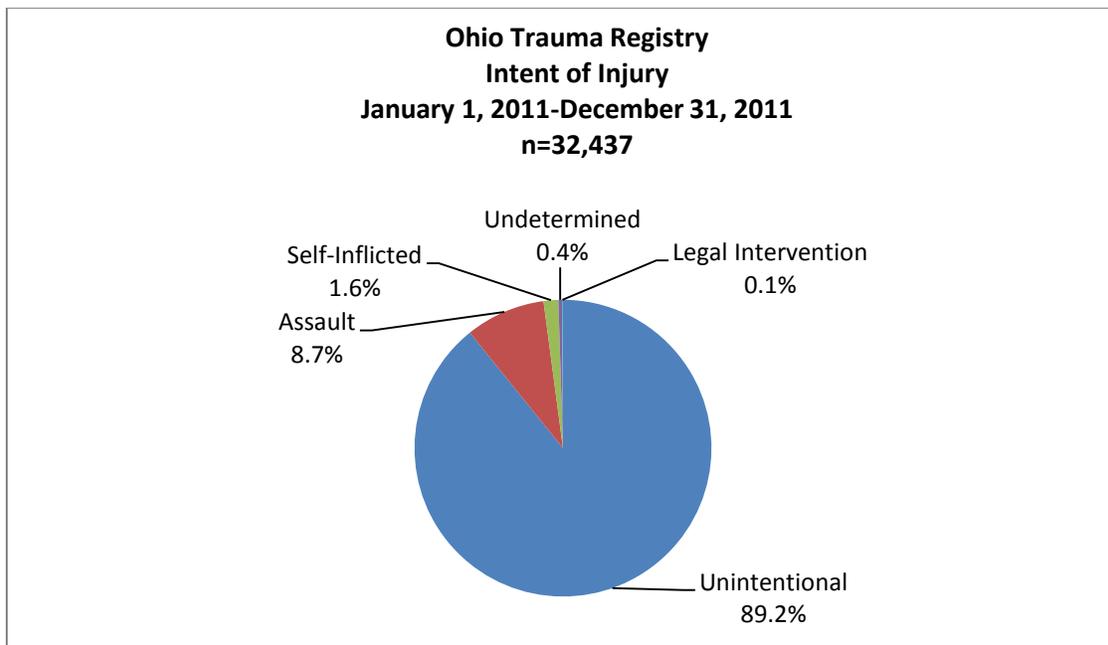


2011		
Injury Type	# of Patients	% of Patients
Blunt	29,203	90.3%
Penetrating	2,266	7.0%
Burns	792	2.4%
Asphyxia	176	0.5%
Total	32,347	100.0%

Injury Type

Blunt injuries accounted for the vast majority of injuries reported to the OTR in 2011 (90.3%), while penetrating injuries only accounted for 7.0% of all injuries and burns accounted for an additional 2.4%.

Intent of Injury: 2011

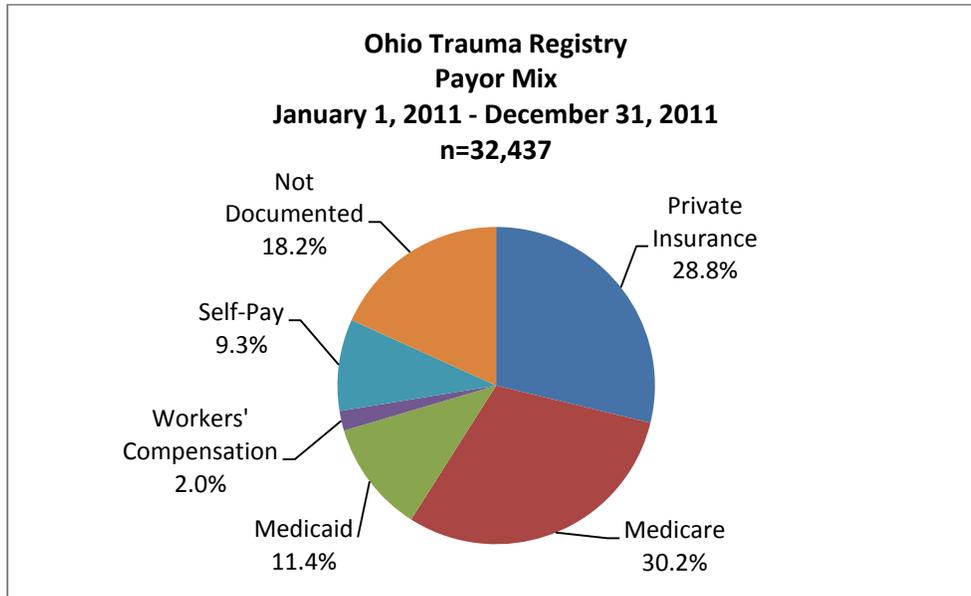


2011		
Intent	# of Patients	% of Patients
Unintentional	28,929	89.2%
Assault	2,808	8.7%
Self-Inflicted	543	1.6%
Undetermined	119	0.4%
Legal Intervention	38	0.1%
Total	32,437	100.0%

Intent of Injury

The intent by which the injury was sustained is derived from the ICD-9-CM *External Cause of Injury Codes* (E-codes) (see Appendix C). Within the total number of patients reported to the OTR in 2011, 89.2% were injured unintentionally.

Payor Mix: 2011

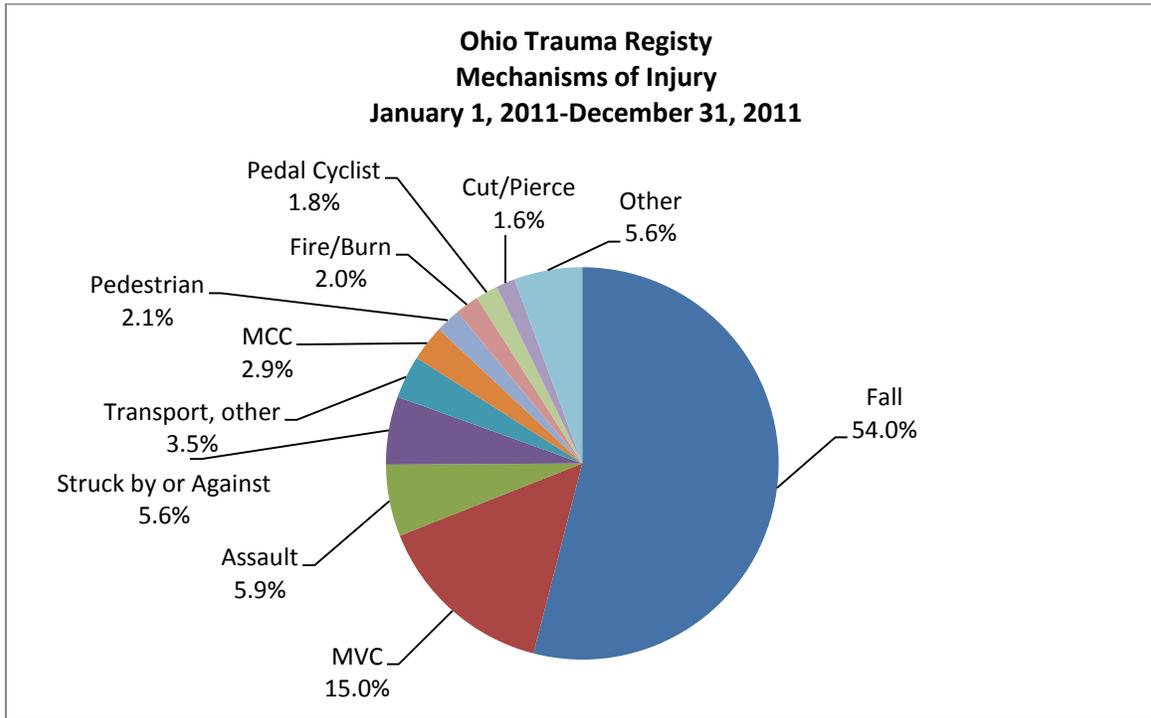


2011		
Payment Source	# of Patients	% of Patients
Private Insurance	9,337	28.8%
Medicare	9,800	30.2%
Medicaid	3,702	11.4%
Workers' Compensation	653	2.0%
Self-pay	3,032	9.3%
Not Documented	5,913	18.2%
Total	32,437	100.0%

Payor Mix

Payor mix is reported as the primary source of payment documented during the patient's hospitalization. It can give a rough estimate of how trauma care is reimbursed, but it does not reflect the final source of revenue to the hospital, as this is sometimes not known for many months post-discharge. Of the total number of records reported to the OTR, 28.8% had commercial insurance coverage. In terms of anticipated reimbursement, 43.6% of the hospitals expected payment from Medicare, Medicaid, or Worker's Compensation, with the vast majority of these reported as Medicare.

Mechanisms of Injury: 2011



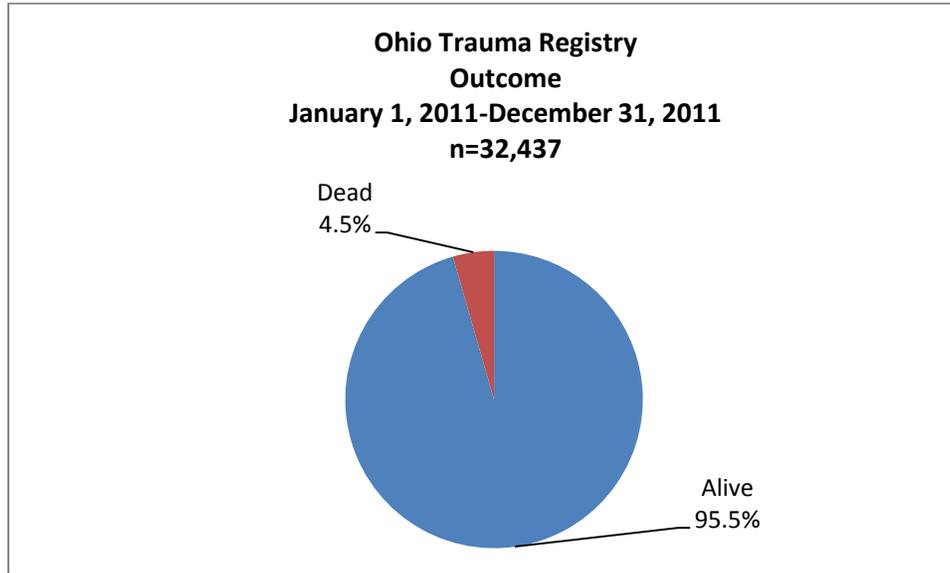
2011		
Mechanism of Injury	# of Patients	% of Patients
Fall	17,514	54.0%
Motor Vehicle Collision (MVC)	4,863	15.0%
Assault	1,918	5.9%
Struck by or against	1,819	5.6%
Transport, other	1,146	3.5%
Motorcycle Collision (MCC)	952	2.9%
Pedestrian	666	2.1%
Pedal Cyclist	635	2.0%
Fire/Burn	594	1.8%
Cut/Pierce	508	1.6%
Other	1,822	5.6%
Total	32,437	100.0%

Mechanism of Injury

Of the patient records submitted, 54.0% of all patients suffered injury due to a fall and 15.0% were injured as a result of a motor vehicle collision. In this graph, the mechanism of injury is reported as the External Cause of Injury code or E-code. The Centers for Disease Control and Prevention place E-codes into groupings reflective of similar causes of injury. More information about E-codes and E-code groupings can be found in Appendix C. The “Other” category consists of a large number of E-codes, including such things as injuries sustained on a train and boating injuries.

Outcomes

Patient Outcome: 2011

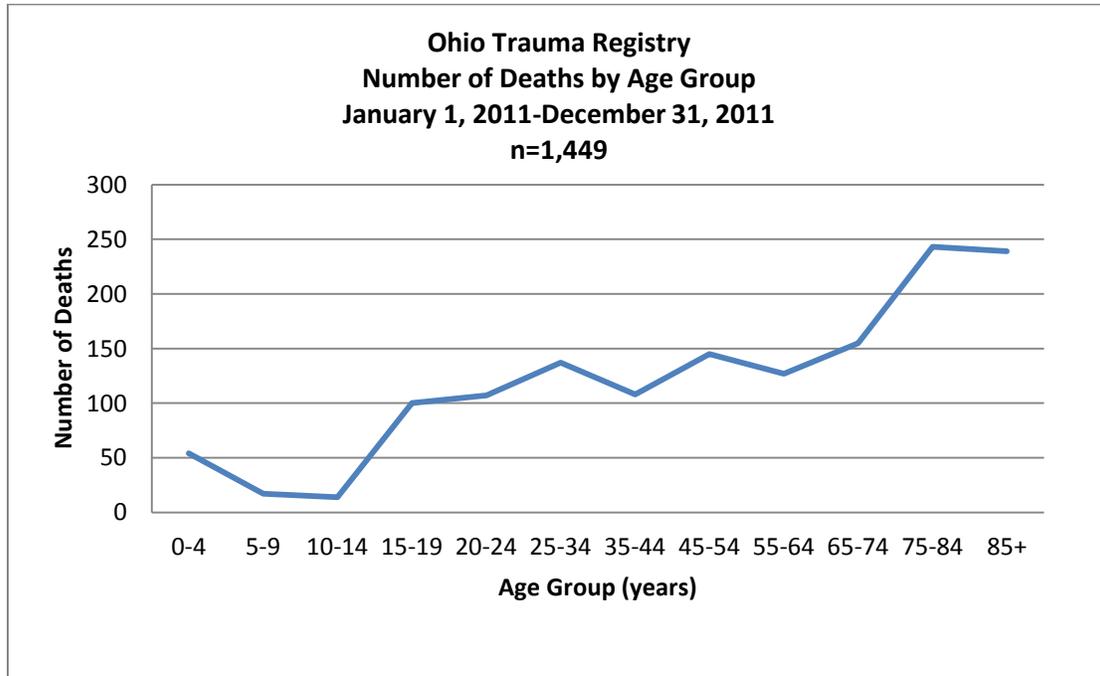


2011		
Outcome	# of Patients	% of Patients
Alive	30,988	95.5%
Dead	1,449	4.5%
Total	32,437	100.0%

Outcome

In 2011, 4.5% of the patients reported to the OTR died. Please note that these data only reflect patients treated in the hospital; deaths occurring outside a medical facility are not included in this analysis.

Number of Deaths by Age: 2011



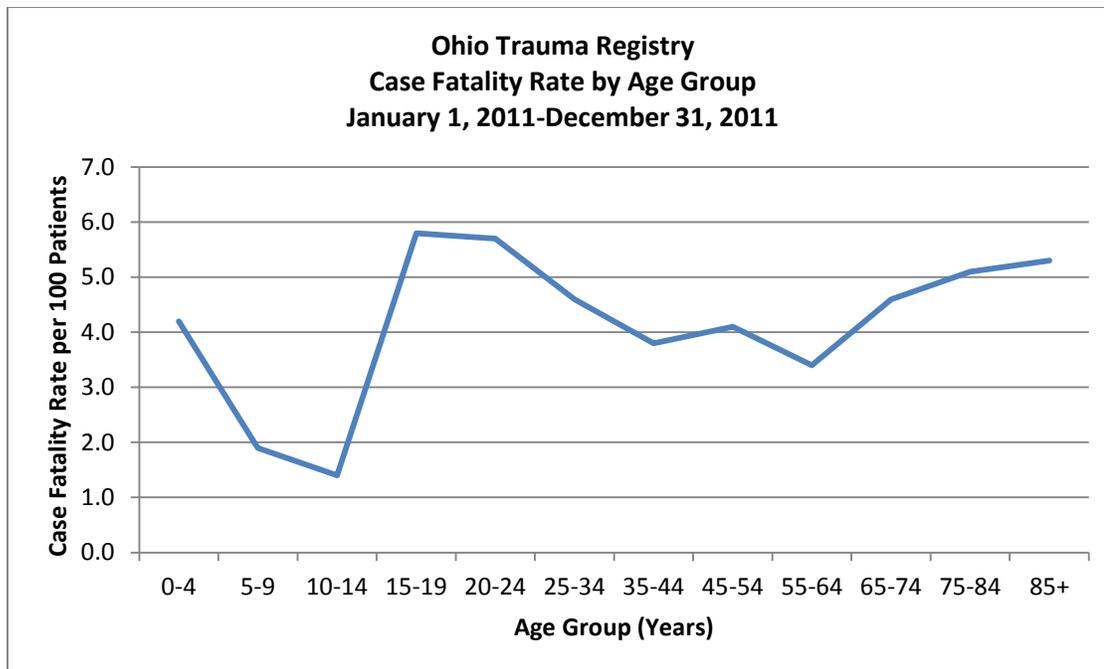
**2 patients were excluded due to lack of a calculable age*

2011		
Age Group	# of Deaths	Total # Patients
0-4	54	1,292
5-9	17	888
10-14	14	975
15-19	100	1,714
20-24	107	1,861
25-34	137	2,988
35-44	108	2,808
45-54	145	3,535
55-64	128	3,744
65-74	155	3,370
75-84	243	4,747
85+	239	4,508
Unknown	2	7
Total	1,449	32,437

Deaths by Age

More patients (243) died in the 75-84 year old age group than in any other group. This represents 16.8% of all deaths reported. It should be noted that this data reflects deaths occurring in the hospital setting (ED or inpatient). Trauma patients that die at the scene of an injury or following discharge from the hospital are not included in this report.

Case Fatality Rate by Age: 2011



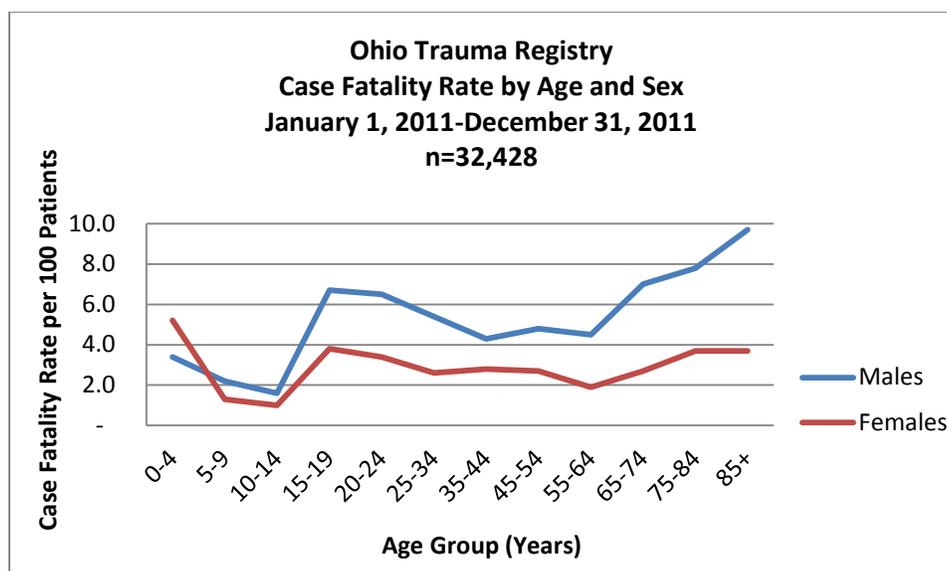
**7 patients were excluded due to lack of a calculable age*

2011			
Age Group	# of Deaths	Total # Patients	Case Fatality Rate
0-4	54	1,292	4.2
5-9	17	888	1.9
10-14	14	975	1.4
15-19	100	1,714	5.8
20-24	107	1,861	5.7
25-34	137	2,988	4.6
35-44	108	2,808	3.8
45-54	145	3,535	4.1
55-64	128	3,744	3.4
65-74	155	3,370	4.6
75-84	243	4,747	5.1
85+	239	4,508	5.3
Unknown	2	7	28.6
Total	1,449	32,437	4.5

Case Fatality Rate:

The case fatality rate is calculated as the number of deaths in each age group divided by the total number of patients in each age group, and then multiplied by 100. The case fatality rate represents the number of deaths for every 100 patients. The 10-14 year old age group had the lowest case fatality rate (1.4) while the 15-19 year old age group had the highest case fatality rate (5.8).

Case Fatality Rate by Age and Sex: 2011



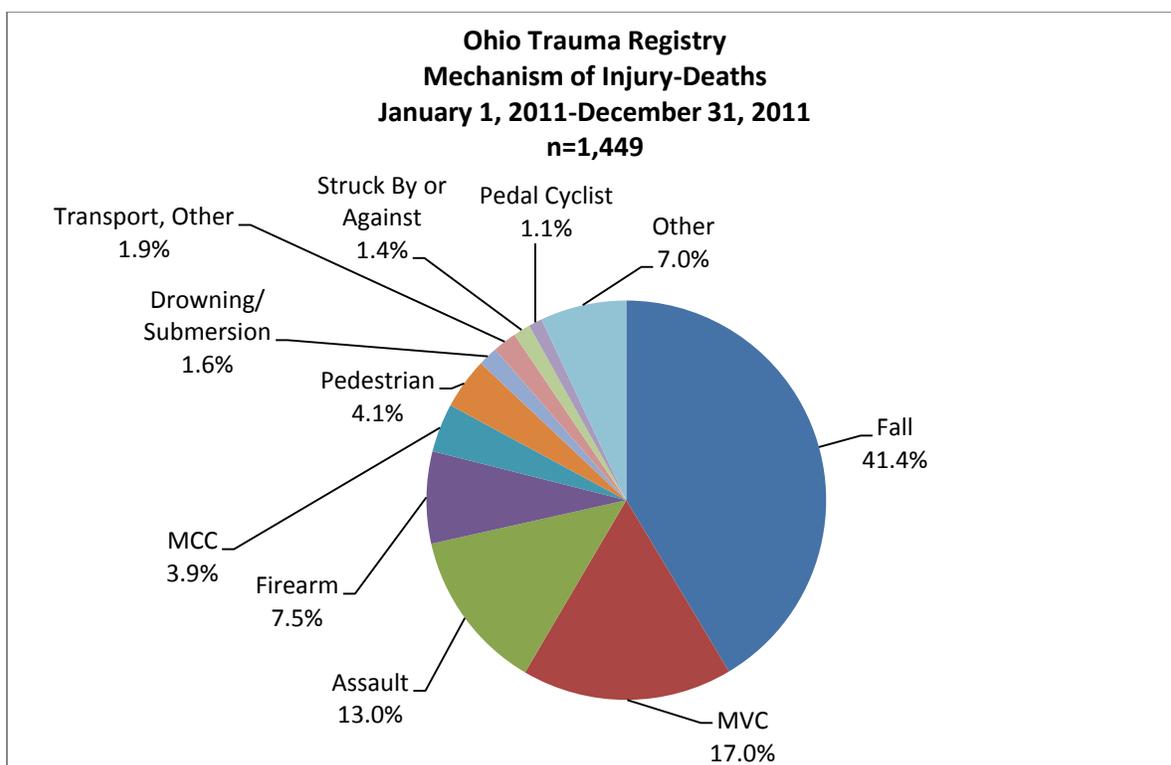
*7 patients were excluded due to unknown age and/or sex

2011									
Age Group	Males			Females			Total		
	Lived	Died	CFR	Lived	Died	CFR	Lived	Died	CFR
0-4	711	25	3.4	527	29	5.2	1,238	54	4.2
5-9	569	13	2.2	302	4	1.3	871	17	1.9
10-14	674	11	1.6	287	3	1.0	961	14	1.4
15-19	1,109	80	6.7	505	20	3.8	1,614	100	5.8
20-24	1,305	91	6.5	449	16	3.4	1,754	107	5.7
25-34	2,049	116	5.4	801	21	2.6	2,850	137	4.6
35-44	1,874	84	4.3	822	24	2.8	2,696	108	3.9
45-54	2,238	113	4.8	1,152	32	2.7	3,390	145	4.1
55-64	2,046	97	4.5	1,568	31	1.9	3,614	128	3.4
65-74	1,374	103	7.0	1,840	52	2.7	3,214	155	4.6
75-84	1,516	128	7.8	2,987	115	3.7	4,503	243	5.1
85+	1,084	116	9.7	3,185	123	3.7	4,269	239	5.3
Unknown	3	2	40.0	2	0	-	5	2	28.6
Total	16,552	979	5.6	14,427	470	3.2	30,979	1,449	4.7

Case Fatality Rate:

After age 14, males tend to have a higher case fatality rate, which increases sharply starting at age 45. Women tend to have a lower case fatality rate which remains static until age 74, after which it increases sharply. The case fatality rate presented is a crude rate and does not adjust for any other factors such as injury severity or type.

Mechanisms of Injury for Deaths: 2011

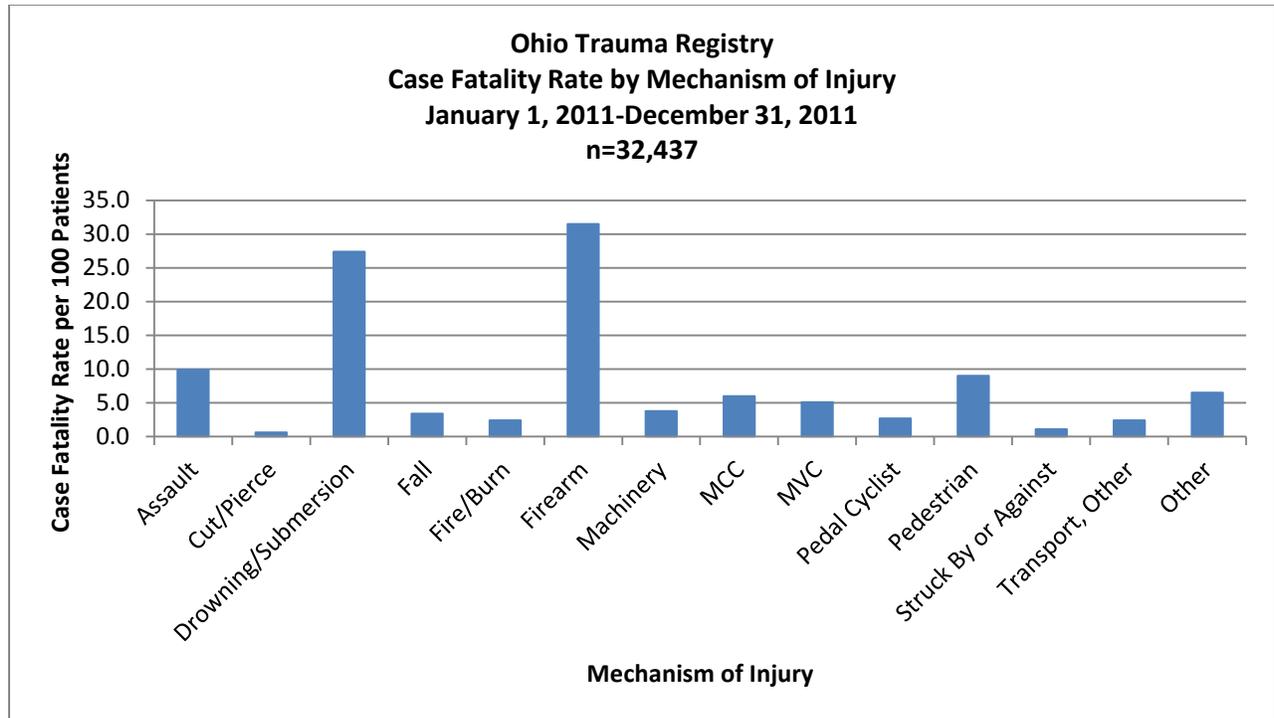


2011		
Mechanism of Injury	# of Patients	% of Patients
Fall	600	41.4%
Motor Vehicle Collision (MVC)	247	17.0%
Assault	189	13.0%
Firearm	108	7.5%
Motorcycle Collision (MCC)	57	3.9%
Pedestrian	60	4.1%
Drowning/Submersion	23	1.6%
Transport, Other	28	1.9%
Struck By or Against	20	1.4%
Fire/Burn	16	1.1%
Other	101	7.0%
Total	1449	100.0%

Deaths by Mechanism of Injury

Analysis of the patients who died in the hospital in 2011 shows that falls were responsible for 41.4% of in-hospital mortality. Motor vehicle collisions were responsible for 17.0% of in-hospital deaths, and 13.0% of in-hospital mortality was due to assault. It is important to recognize that patients who die at the scene are not reported by the hospitals. These data reflect only patients who died in the hospital.

Case Fatality Rate by Mechanism of Injury: 2011



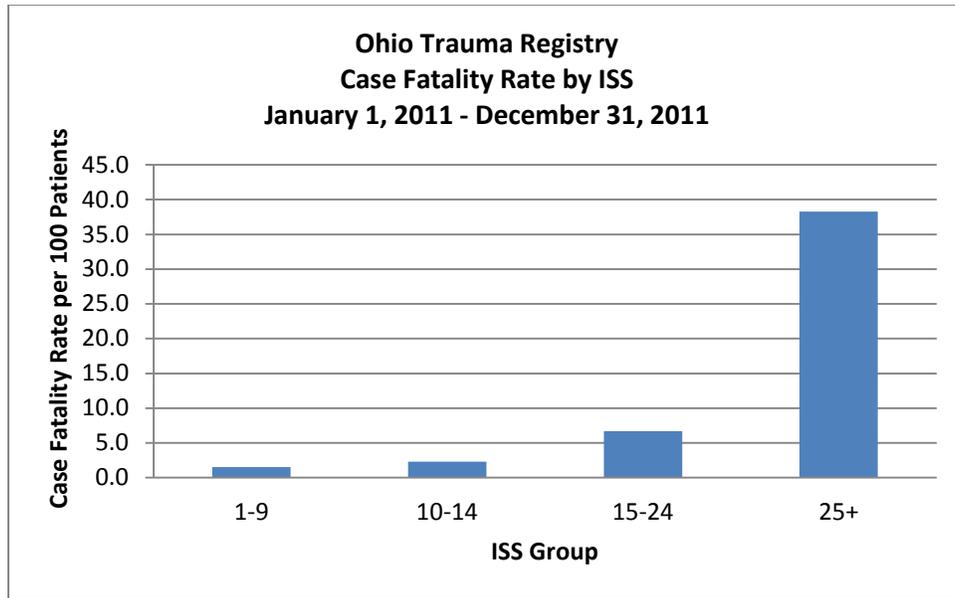
2011

Mechanism of Injury	Lived	Died	Total	Case Fatality Rate
Assault	1,729	189	1,918	9.9
Cut/Pierce	505	3	508	0.6
Drowning/Submersion	61	23	84	27.4
Fall	16,914	600	17,514	3.4
Fire/Burn	620	15	635	2.4
Firearm	235	108	343	31.5
Machinery	277	11	288	3.8
Motorcycle Collision (MCC)	895	57	952	6.0
Motor Vehicle Collision (MVC)	4,616	247	4,863	5.1
Pedal Cyclist	578	16	594	2.7
Pedestrian	606	60	666	9.0
Struck By or Against	1,799	20	1,819	1.1
Transport, Other	1,118	28	1,146	2.4
Other	1,035	72	1,107	6.5
Total	30,988	1,449	32,437	4.5

Case Fatality Rate:

Firearm injuries and injuries due to drowning/submersion had the highest case fatality rates (31.5 per 100 patients and 27.4 per 100 patients respectively). Assault had the next highest case fatality rate (9.9 per 100 patients).

Case Fatality Rate by Injury Severity Score: 2011



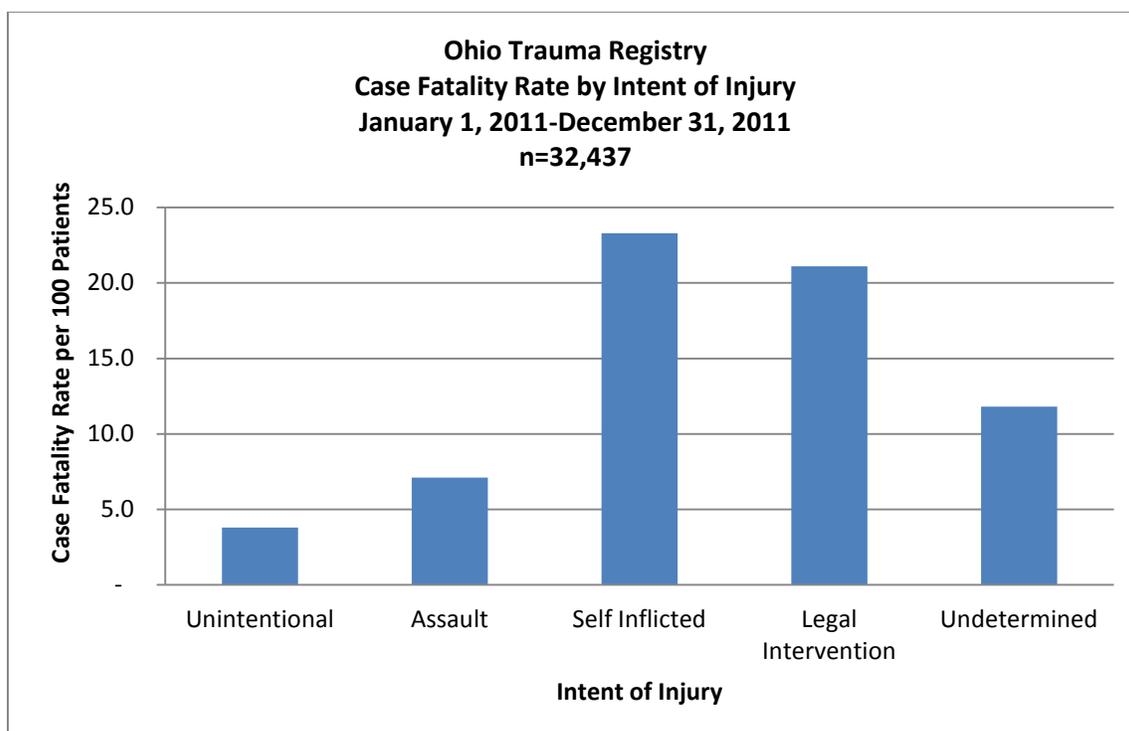
**1880 patients without a reported ISS were excluded*

2011				
ISS	Lived	Died	Total	Case Fatality Rate
1-9	20,799	314	21,113	1.5
10-14	4,377	105	4,482	2.3
15-24	2,724	197	2,921	6.7
25+	1,260	781	2,041	38.3
Unknown	1,828	52	1,880	2.8
Total	30,988	1,449	32,437	4.5

Case Fatality Rate by Injury Severity Score:

This graph primarily reflects patients treated at a trauma center because non-trauma center facilities generally do not report an ISS. As expected, the case fatality rate increases as the severity of the injury increases.

Case Fatality Rate by Intent of Injury: 2011



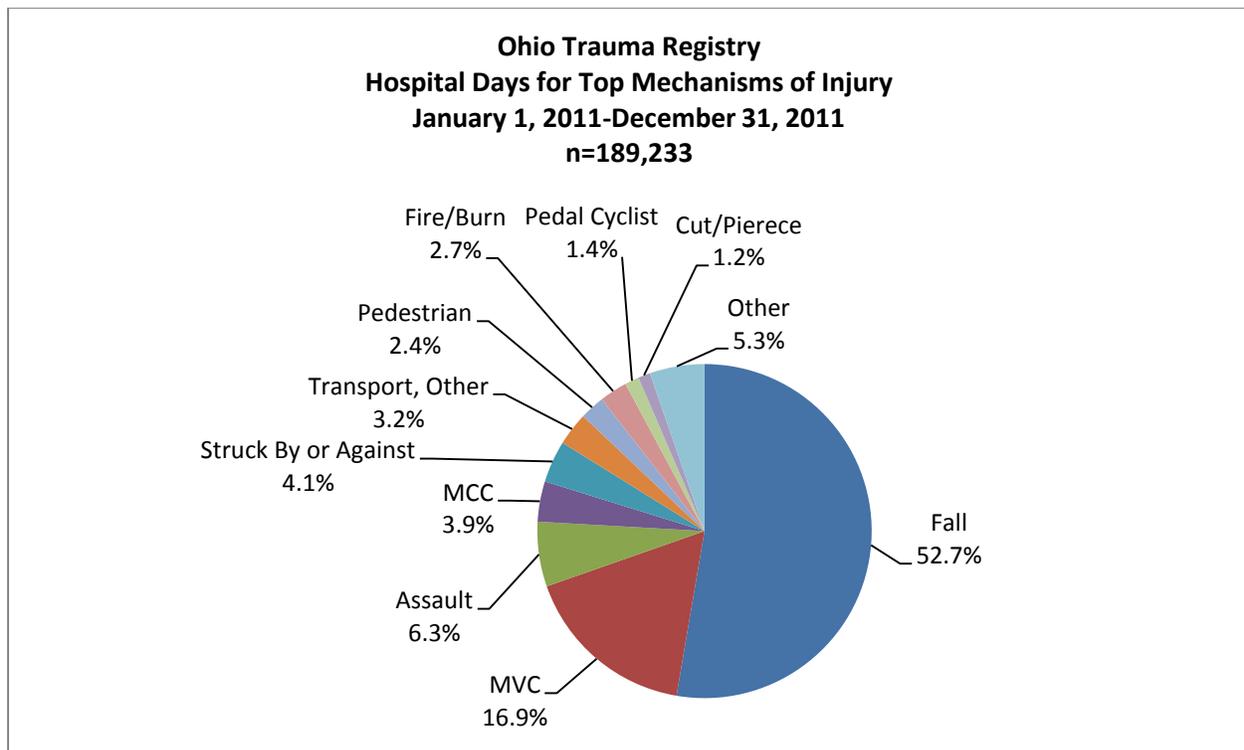
**Legal Intervention*

2011				
Intent	Lived	Died	Total	Case Fatality Rate
Unintentional	27,828	1,101	28,929	3.8
Assault	2,609	199	2,808	7.1
Self-Inflicted	416	127	543	23.3
Legal Intervention	30	8	38	21.1
Undetermined	105	14	119	11.8
Total	30,988	1,449	32,437	4.5

Case Fatality Rate by Intent of Injury:

Self-inflicted injuries had the highest case fatality rate (23.3 per 100 patients) while unintentional injuries had the lowest case fatality rate (3.8 per 100 patients).

Hospital Days by Mechanism of Injury: 2011

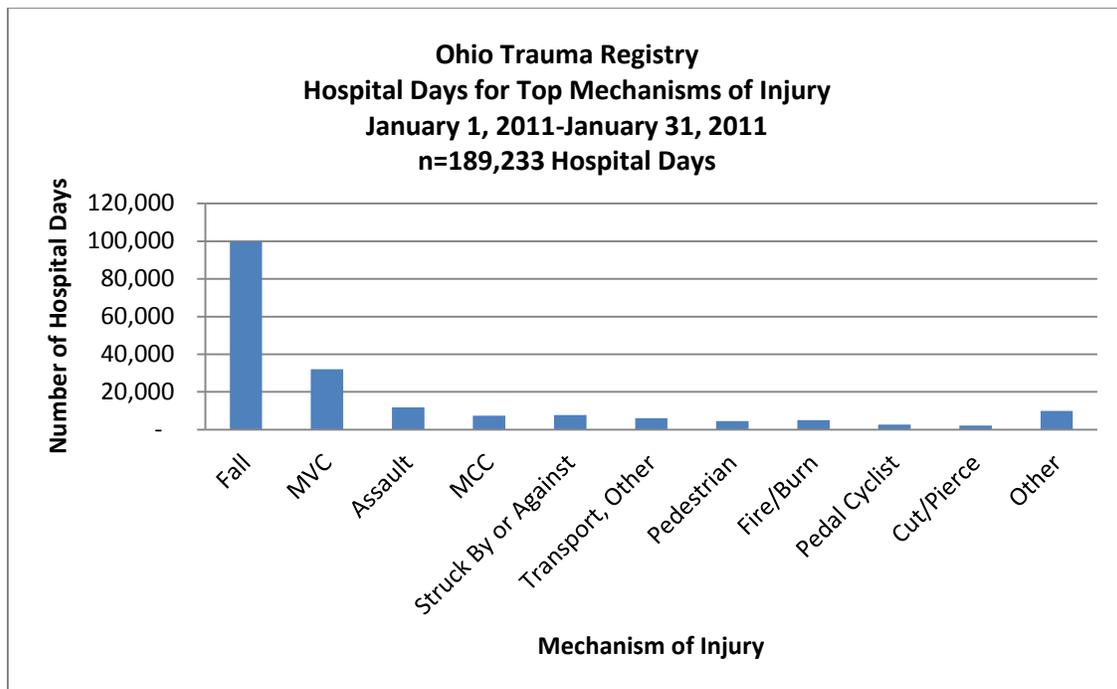


2011		
Mechanism of Injury	# of Hospital Days	% of Total Hospital Days
Fall	99,699	52.7%
MVC	32,069	16.9%
Assault	11,859	6.3%
MCC	7,398	3.9%
Struck By or Against	7,669	4.1%
Transport, Other	6,073	3.2%
Pedestrian	4,539	2.4%
Fire/Burn	5,091	2.7%
Pedal Cyclist	2,600	1.4%
Cut/Pierce	2,215	1.2%
Other	10,021	5.3%
Total	189,233	100%

Hospital Days by Mechanism of Injury

The total number of hospital days reported for patients in 2011 was 189,233. Falls accounted for 52.7% of hospital days reported to the OTR and motor vehicle collisions accounted for 16.9%. There were 10,021 hospital days attributed to patient records that were coded with a variety of other Mechanism of Injury codes, which are aggregated here as “Other.”

Hospital Days by Mechanism of Injury: 2011

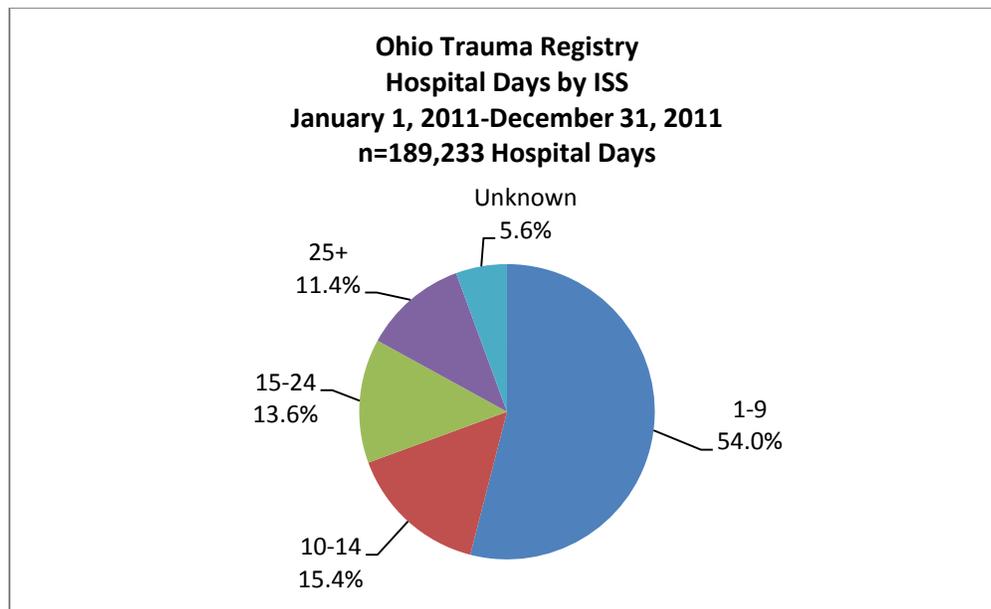


2011		
Mechanism of Injury	# of Hospital Days	% of Total Hospital Days
Fall	99,699	52.7%
MVC	32,069	16.9%
Assault	11,859	6.3%
MCC	7,398	3.9%
Struck By or Against	7,669	4.1%
Transport, Other	6,073	3.2%
Pedestrian	4,539	2.4%
Fire/Burn	5,091	2.7%
Pedal Cyclist	2,600	1.4%
Cut/Pierce	2,215	1.2%
Other	10,021	5.3%
Total	189,233	100%

Hospital Days by Mechanism of Injury:

Falls accounted for the highest percentage of hospital days (52.7%), while motor vehicle collisions accounted for the second highest percentage of hospital days (16.9%).

Hospital Days by Injury Severity Score: 2011

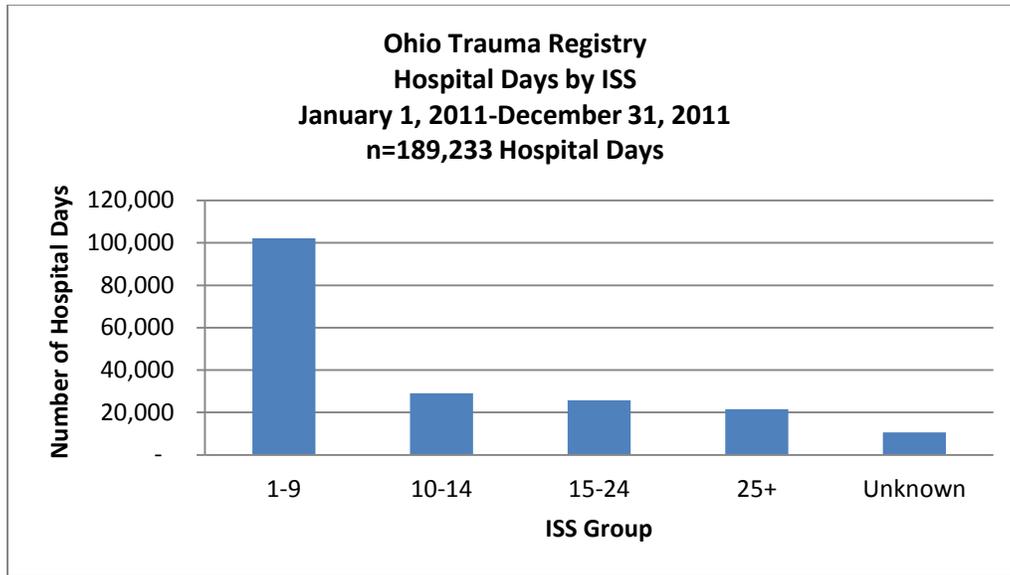


2011		
ISS Group	Hospital Days	% of Total Hospital Days
1-9	102,197	54.0%
10-14	29,086	15.4%
15-24	25,776	13.6%
25+	21,593	11.4%
Unknown	10,581	5.6%
Total	189,233	100.0%

Hospital Days by Injury Severity Score:

Minor injuries accounted for the majority of all hospital days. As the ISS increased, the proportion of total hospital days decreased. There were 1,880 patients for whom an ISS was not recorded, and this accounted for 10,581 hospital days.

Hospital Days by Injury Severity Score: 2011

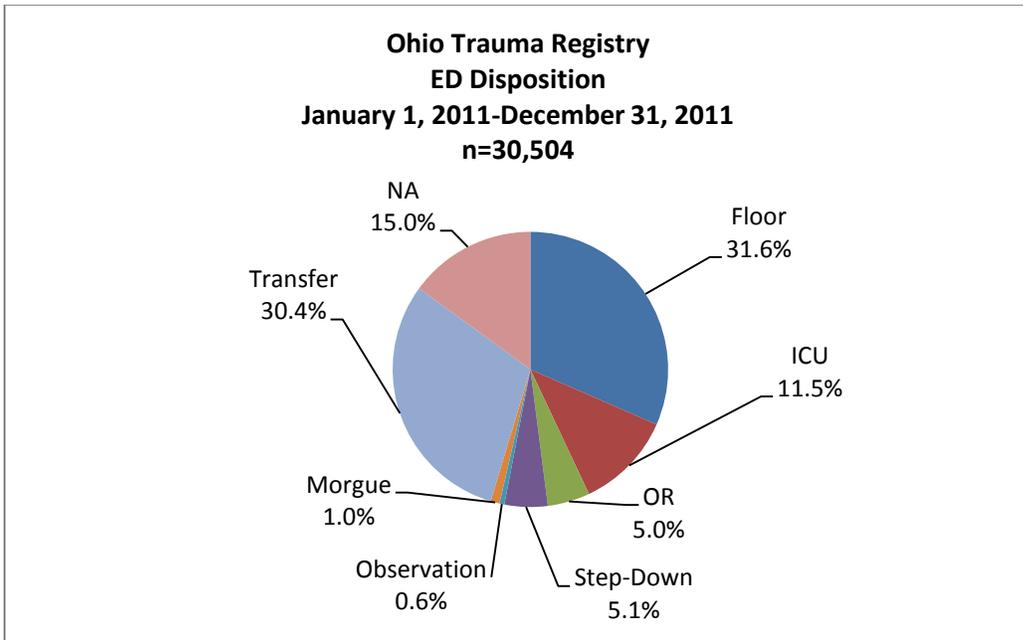


2011		
ISS Group	Hospital Days	% of Total Hospital Days
1-9	102,197	54.0%
10-14	29,086	15.4%
15-24	25,776	13.6%
25+	21,593	11.4%
Unknown	10,581	5.6%
Total	189,233	100.0%

Hospital Length of Stay by Injury Severity Score:

Minor injuries accounted for the majority of all hospital days. As the ISS increased, the proportion of total hospital days decreased.

Emergency Department Disposition: 2011

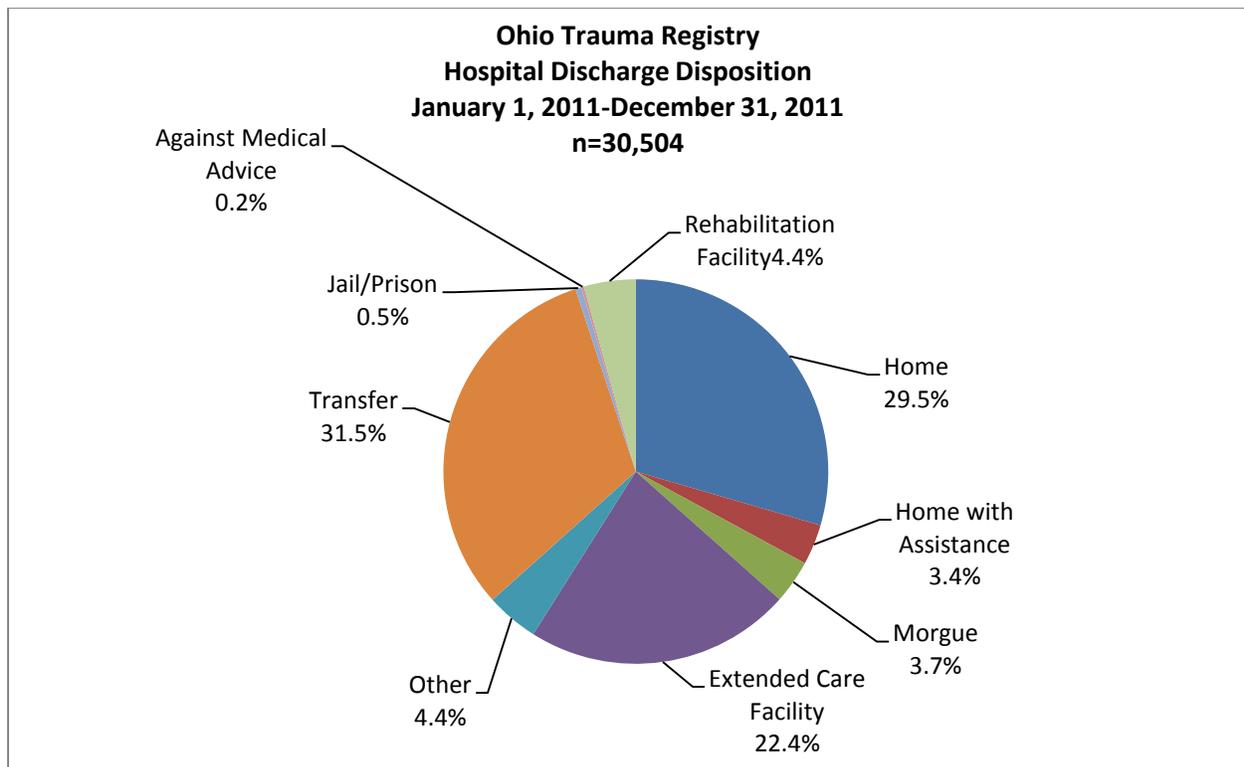


2011		
ED Disposition	# of Patients	% of Patients
Floor	9,625	31.6%
ICU	3,493	11.5%
OR	1,515	5.0%
Step-Down	1,542	5.1%
Observation	177	0.6%
Morgue	319	1.0%
Transfer	9,263	30.4%
NA	4,570	15.0%
Total	30,504	100.0%

Emergency Department Disposition

This chart only includes data for patients who arrived directly from the scene of the injury. It shows the first patient care area to which the patient was sent after they were discharged from the emergency department in the first hospital in which they received treatment. Of the total number of patients, 31.6% were admitted to the floor (i.e. a regular medical/surgical hospital room), 16.5% were sent directly to the operating room or an intensive care unit, and 30.4% were transferred to another hospital. The OTR data reflects that 15.0% were reported as not applicable, indicating that the initial care was not in the emergency department (e.g. a direct admission).

Hospital Discharge Disposition: 2011

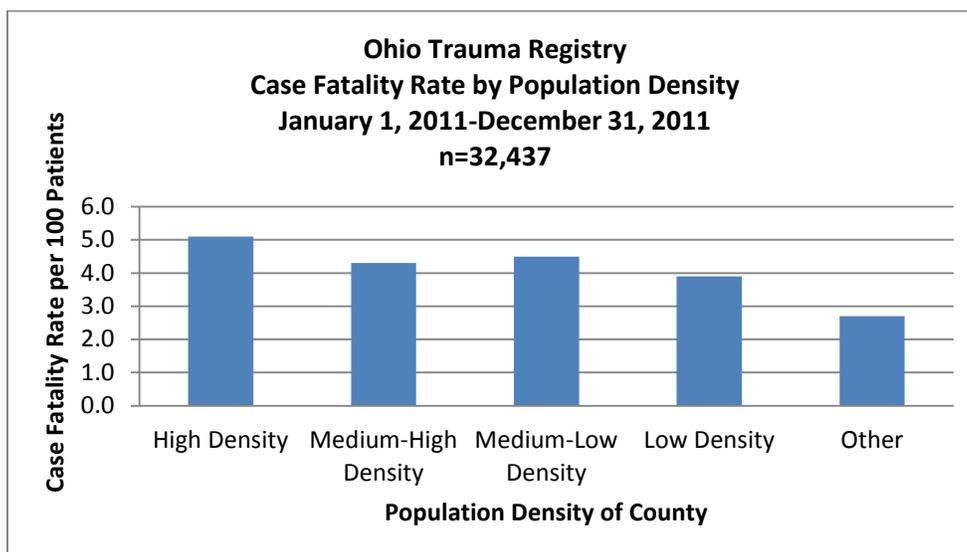


2011		
Discharge Disposition	# of Patients	% of Patients
Home	9,003	29.5%
Home with Assistance	1,037	3.4%
Morgue	1,116	3.7%
Extended Care Facility	6,827	22.4%
Rehabilitation Facility	1,349	4.4%
Transfer	9,620	31.5%
Jail/Prison	155	0.5%
Against Medical Advice	66	0.2%
Other	1,331	4.4%
Total	30,504	100.0%

Hospital Disposition

This reflects hospital disposition from the first hospital that provided treatment to the patient. According to the OTR data, 29.5% of patients were discharged home and 31.5% of patients were transferred to another facility. This data reflects where patients were discharged after being admitted to the hospital, in contrast to the previous page, which reflects where patients were discharged from the emergency department.

Case Fatality Rate by Population Density: 2011



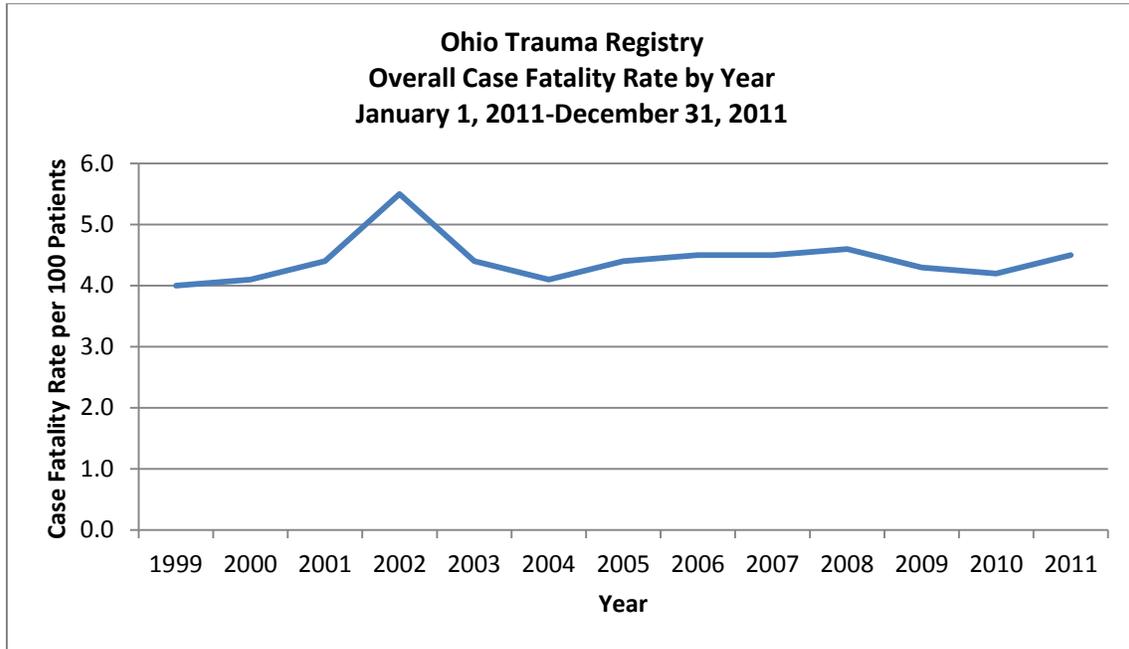
2011				
Population Density	Lived	Died	Total	Case Fatality Rate
High Density	12,362	668	13,030	5.1
Medium-High Density	6,579	293	6,872	4.3
Medium-Low Density	6,342	296	6,638	4.5
Low Density	2,599	106	2,705	3.9
Other	3,106	86	3,192	2.7
Total	30,988	1,449	32,437	4.5

Case Fatality Rate by Population Density:

Patients coming from counties with high population density had the highest case fatality rate (5.1 per 100 patients). Patients coming from counties with medium-low population density had the second highest case fatality rate (4.5 per 100 patients). This chart reflects crude case fatality rates and is unadjusted for severity or any other variables.

The list of counties by population density can be found in Appendix J.

Overall Case Fatality Rate by Year: 1999-2011

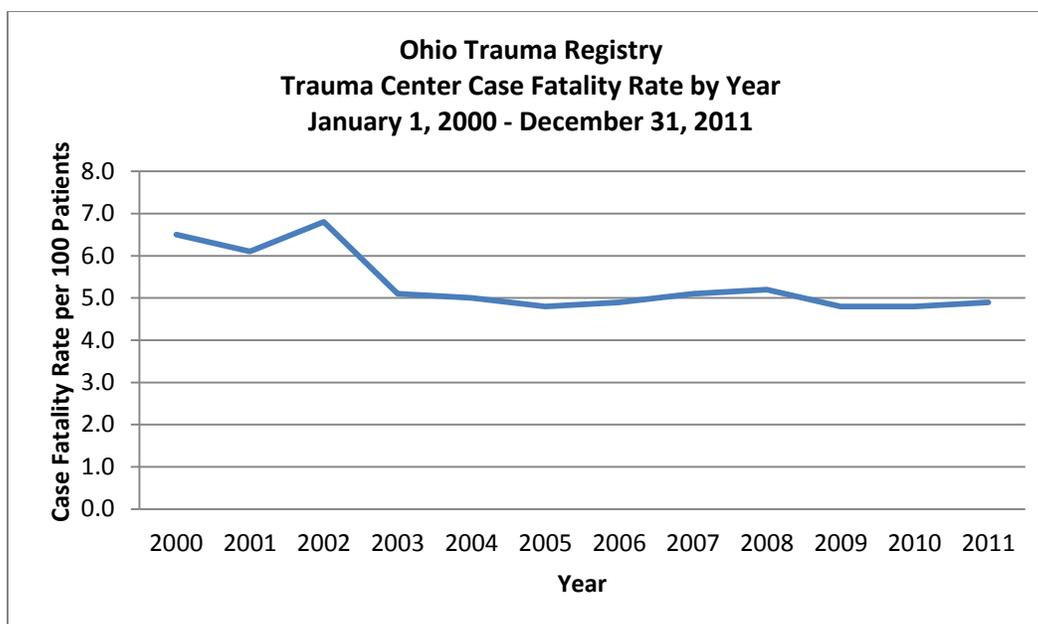


2011				
Year	Lived	Died	Total	Case Fatality Rate
1999	18,750	784	19,534	4.0
2000	19,448	842	20,290	4.1
2001	16,914	770	17,684	4.4
2002	20,860	1,207	22,067	5.5
2003	26,253	1,203	27,456	4.4
2004	26,776	1,143	27,919	4.1
2005	27,151	1,251	28,402	4.4
2006	24,245	1,148	25,393	4.5
2007	29,688	1,401	31,089	4.5
2008	30,603	1,473	32,076	4.6
2009	30,556	1,357	31,910	4.3
2010	30,555	1,345	31,900	4.2
2011	30,988	1,449	32,437	4.5
Total	332,787	15,373	348,157	4.4

Overall Case Fatality Rate by Year:

This graph shows the overall crude case fatality rate by year for patient records contained in the OTR. With the exception of a small escalation in 2002, the case fatality rate for trauma patients in Ohio has remained relatively steady.

Trauma Center Case Fatality Rate by Year: 2000-2011

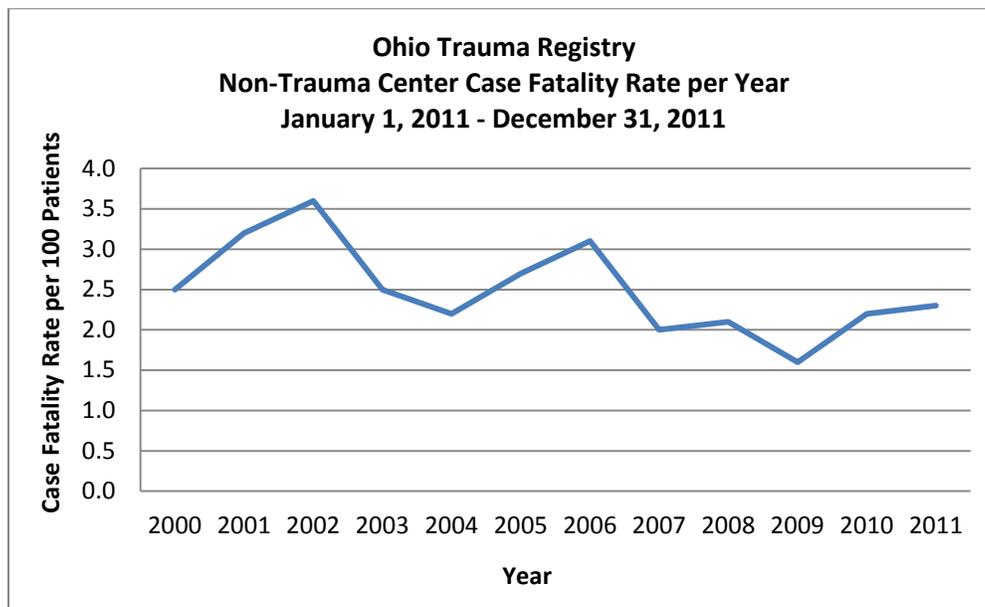


2011				
Year	Lived	Died	Total	Case Fatality Rate
2000	8,008	554	8,562	6.5
2001	6,613	433	7,046	6.1
2002	12,122	879	13,001	6.8
2003	19,071	1,022	20,093	5.1
2004	17,906	941	18,847	5.0
2005	21,597	1,095	22,692	4.8
2006	19,557	997	20,554	4.9
2007	23,592	1,274	24,866	5.1
2008	24,427	1,341	25,768	5.2
2009	24,942	1,265	26,207	4.8
2010	23,609	1,190	24,799	4.8
2011	25,242	1,315	26,557	4.9
Total	226,686	12,306	238,992	5.1

Trauma Center Case Fatality Rate by Year:

This graph reflects the crude case fatality rate for all trauma patients seen at a trauma center between 2000 and 2011. The case fatality rate remained steady from 2000-2002 at slightly above 6 per 100 patients. In 2003 there was a drop to approximately 5 per 100 patients and that rate remained steady through 2011.

Non-Trauma Center Case Fatality Rate by Year: 2000-2011

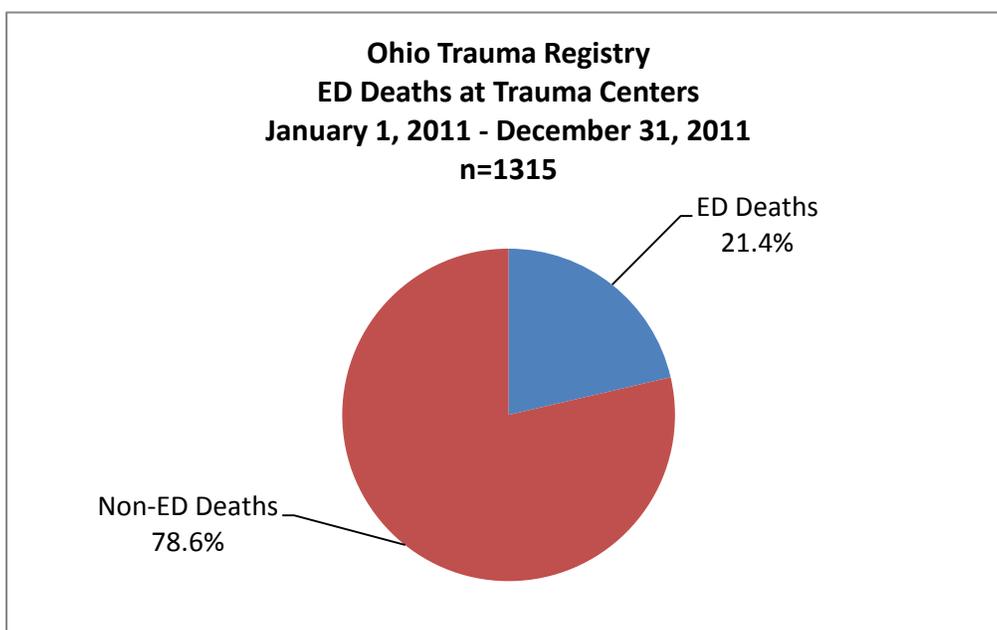


2011				
Year	Lived	Died	Total	Case Fatality Rate
2000	11,440	288	11,728	2.5
2001	10,301	337	10,638	3.2
2002	8,738	328	9,066	3.6
2003	7,182	181	7,363	2.5
2004	8,870	202	9,072	2.2
2005	5,554	156	5,710	2.7
2006	4,688	151	4,839	3.1
2007	6,096	127	6,223	2.0
2008	6,176	132	6,308	2.1
2009	5,614	92	5,706	1.6
2010	6,946	155	7,101	2.2
2011	5,746	134	5,880	2.3
Total	87,351	2,283	83,754	2.7

Non-Trauma Center Case Fatality Rate by Year;

This graph reflects the crude case fatality rate for all trauma patients treated at a non-trauma center from 2000-2011. Over time, the mortality rate for non-trauma centers has declined from 2.5 per 100 patients in 1999 to 2.3 per 100 patients in 2011.

ED Deaths at Trauma Centers - 2011

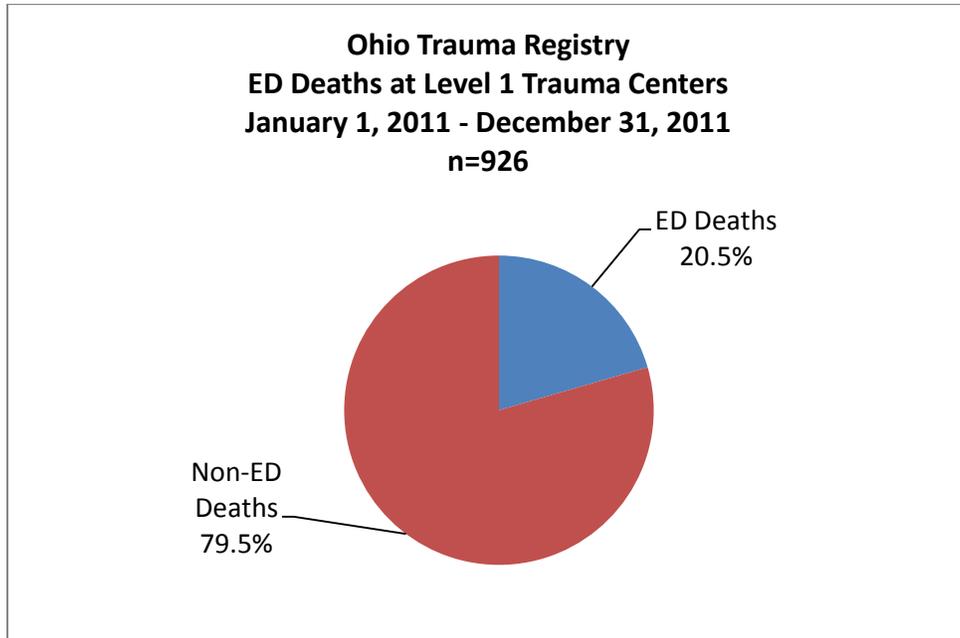


	ED Deaths	Non-ED Deaths	Total Deaths	% Deaths in ED
Level 1 TC	190	736	926	20.5%
Level 2 TC	65	247	312	20.8%
Level 3 TC	26	51	77	33.8%
Total	281	1034	1315	21.4%

ED Deaths at Trauma Centers:

In 2011, 78.6% of inpatient trauma deaths in trauma centers in Ohio occurred outside of the Emergency Department (ED).

ED Deaths at Level 1 Trauma Centers - 2011

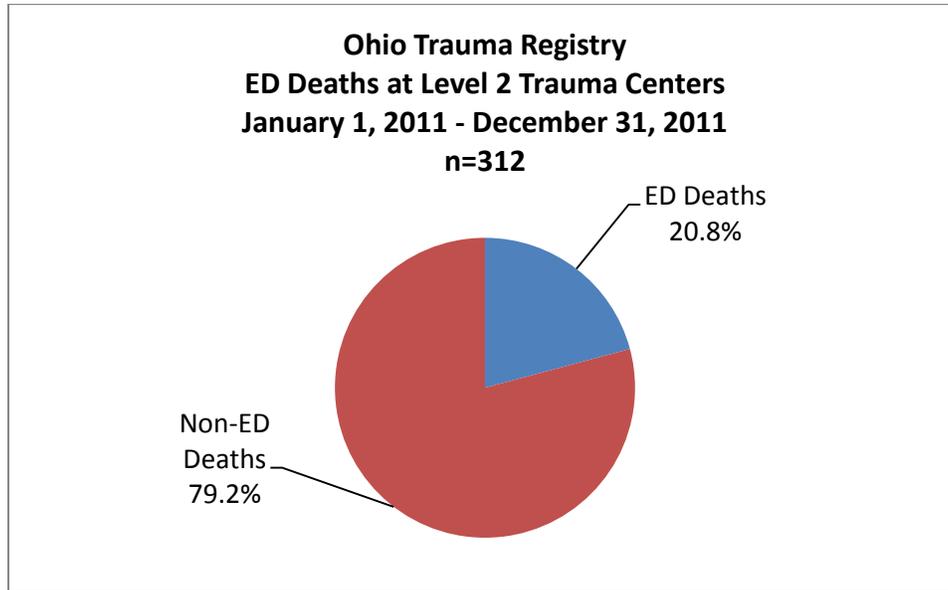


	ED Deaths	Non-ED Deaths	Total Deaths	% Deaths in ED
Level 1 TC	190	736	926	20.5%
Level 2 TC	65	247	312	20.8%
Level 3 TC	26	51	77	33.8%
Total	281	1034	1315	21.4%

ED Deaths at Level 1 Trauma Centers:

In 2011, 79.5% of inpatient trauma deaths that occurred in level 1 trauma centers occurred outside of the ED.

ED Deaths at Level 2 Trauma Centers - 2011

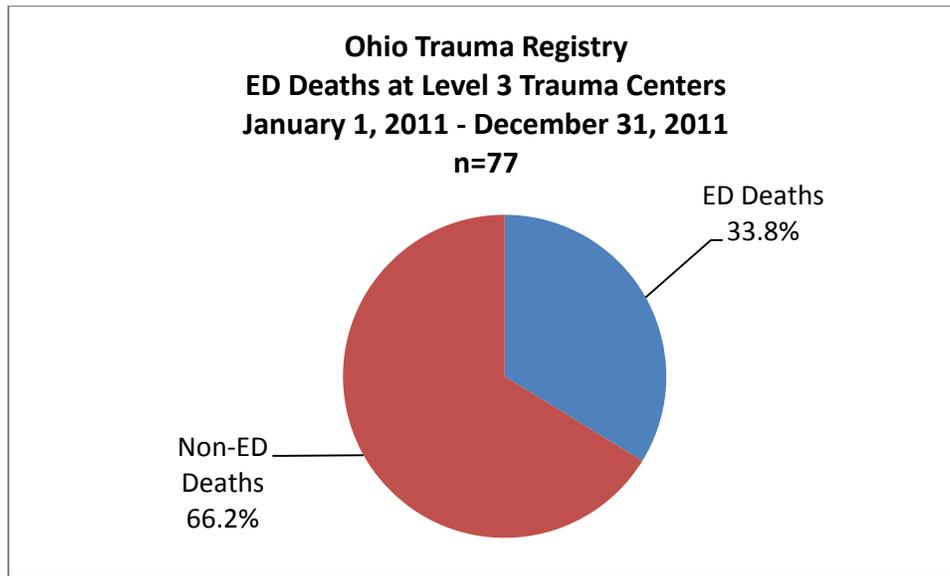


	ED Deaths	Non-ED Deaths	Total Deaths	% Deaths in ED
Level 1 TC	190	736	926	20.5%
Level 2 TC	65	247	312	20.8%
Level 3 TC	26	51	77	33.8%
Total	281	1034	1315	21.4%

ED Deaths at Level 2 Trauma Centers:

In 2011, 79.2% of inpatient trauma deaths that occurred in level 2 trauma centers in Ohio occurred outside of the ED.

ED Deaths at Level 3 Trauma Centers

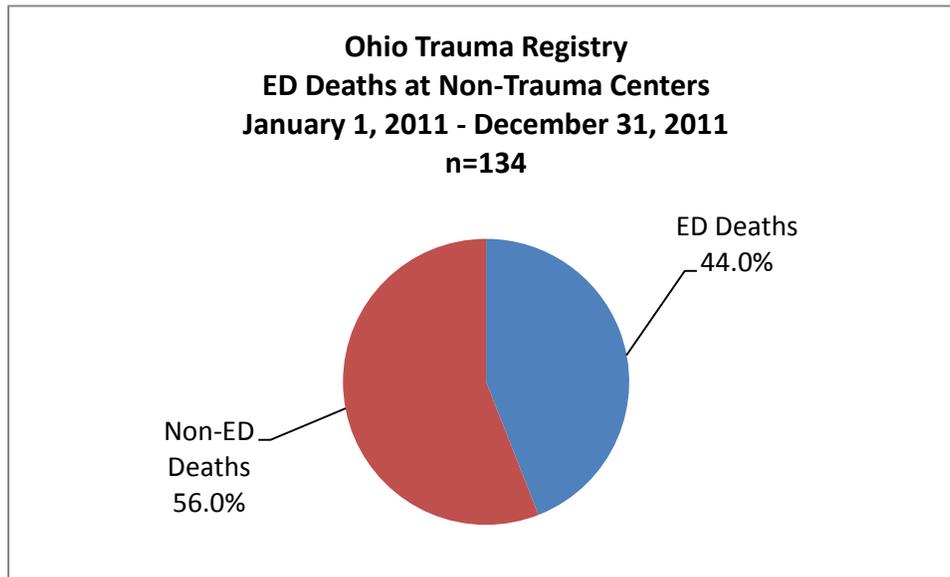


	ED Deaths	Non-ED Deaths	Total Deaths	% Deaths in ED
Level 1 TC	190	736	926	20.5%
Level 2 TC	65	247	312	20.8%
Level 3 TC	26	51	77	33.8%
Total	281	1034	1315	21.4%

ED Deaths at Level 3 Trauma Centers:

In 2011, 66.2% of inpatient trauma deaths that occurred in level 3 trauma centers occurred outside of the ED.

ED Deaths at Non-Trauma Centers - 2011



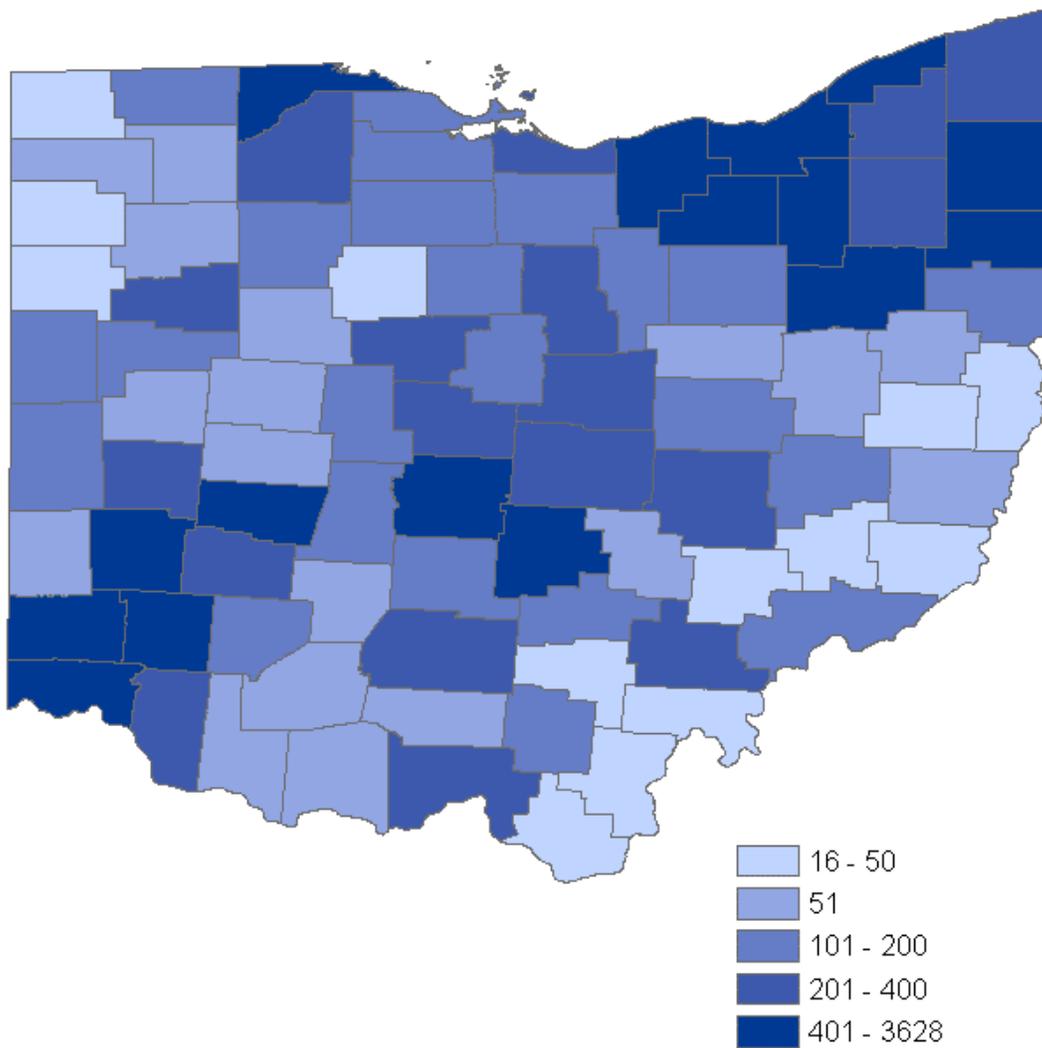
	ED Deaths	Non-ED Deaths	Total Deaths	% Deaths in ED
Level 1 TC	190	736	926	20.5%
Level 2 TC	65	247	312	20.8%
Level 3 TC	26	51	77	33.8%
NTC	59	75	134	44.0%
Total	340	1109	1,449	23.5%

ED Deaths at Non-Trauma Centers:

In 2011, 56.0% of inpatient trauma deaths that occurred in non-trauma centers occurred outside of the ED.

Geographic Characteristics

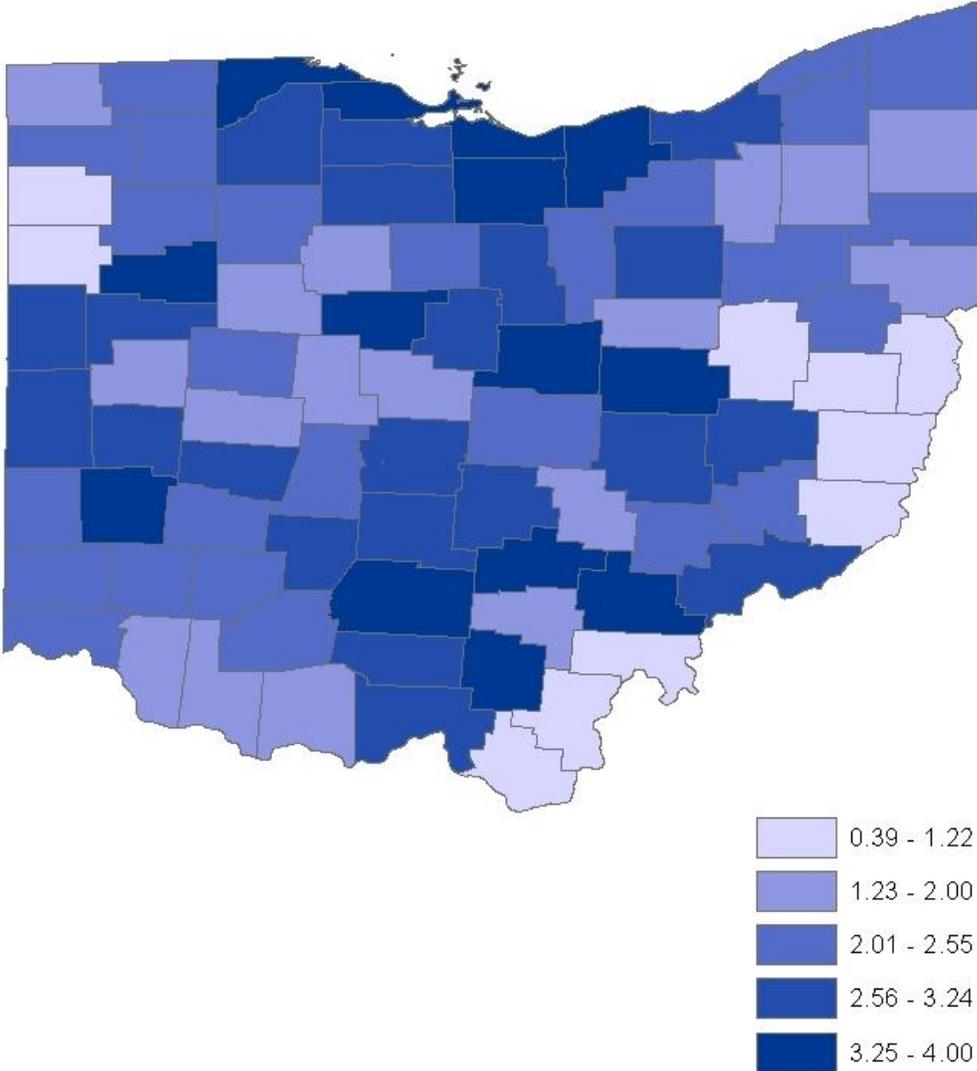
Number of Injuries per County



Number of Injuries by County:

This map reflects a basic count of injuries in each county for 2011. Darker shades of blue reflect a higher number of total injuries.

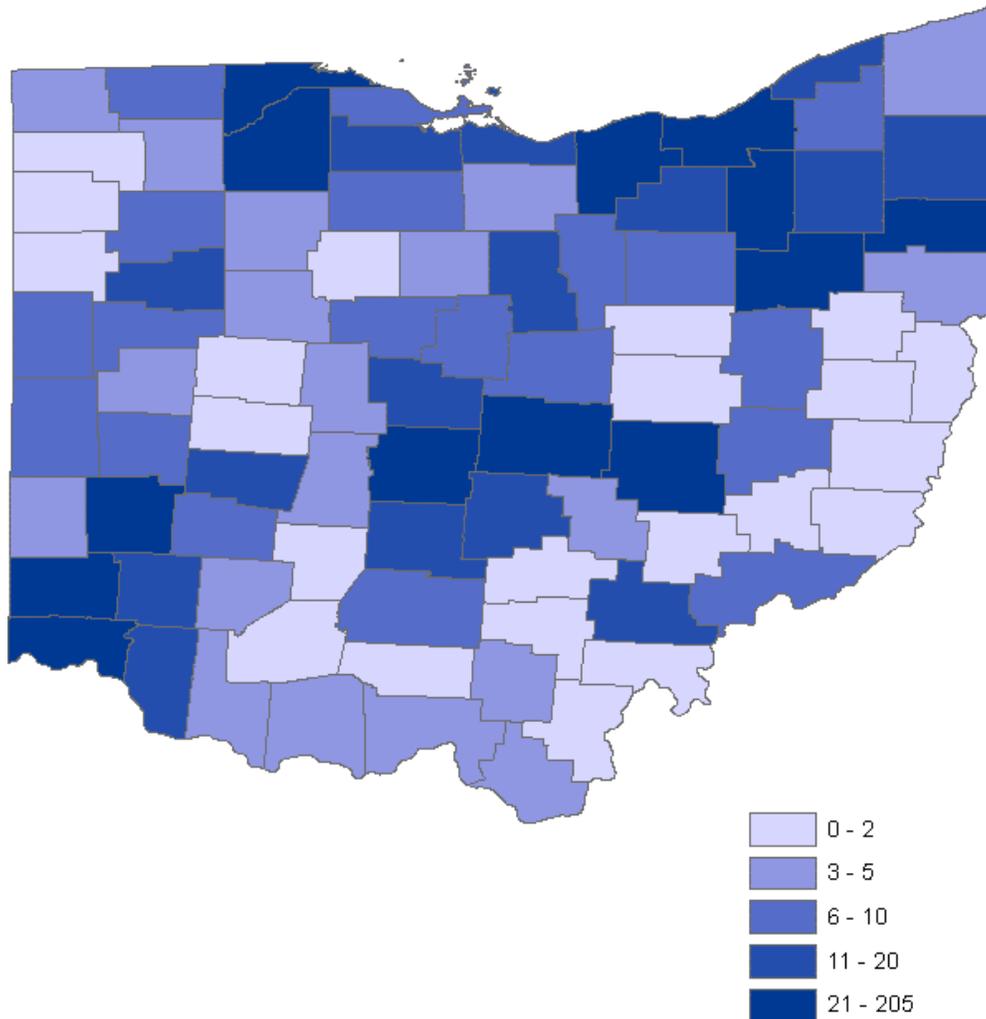
Incidence of Injuries/1,000 Population by County



Incidence of Injuries by County:

This map reflects the crude incidence of injury per 1000 population by county. Darker shades of blue reflect higher incidence rates.

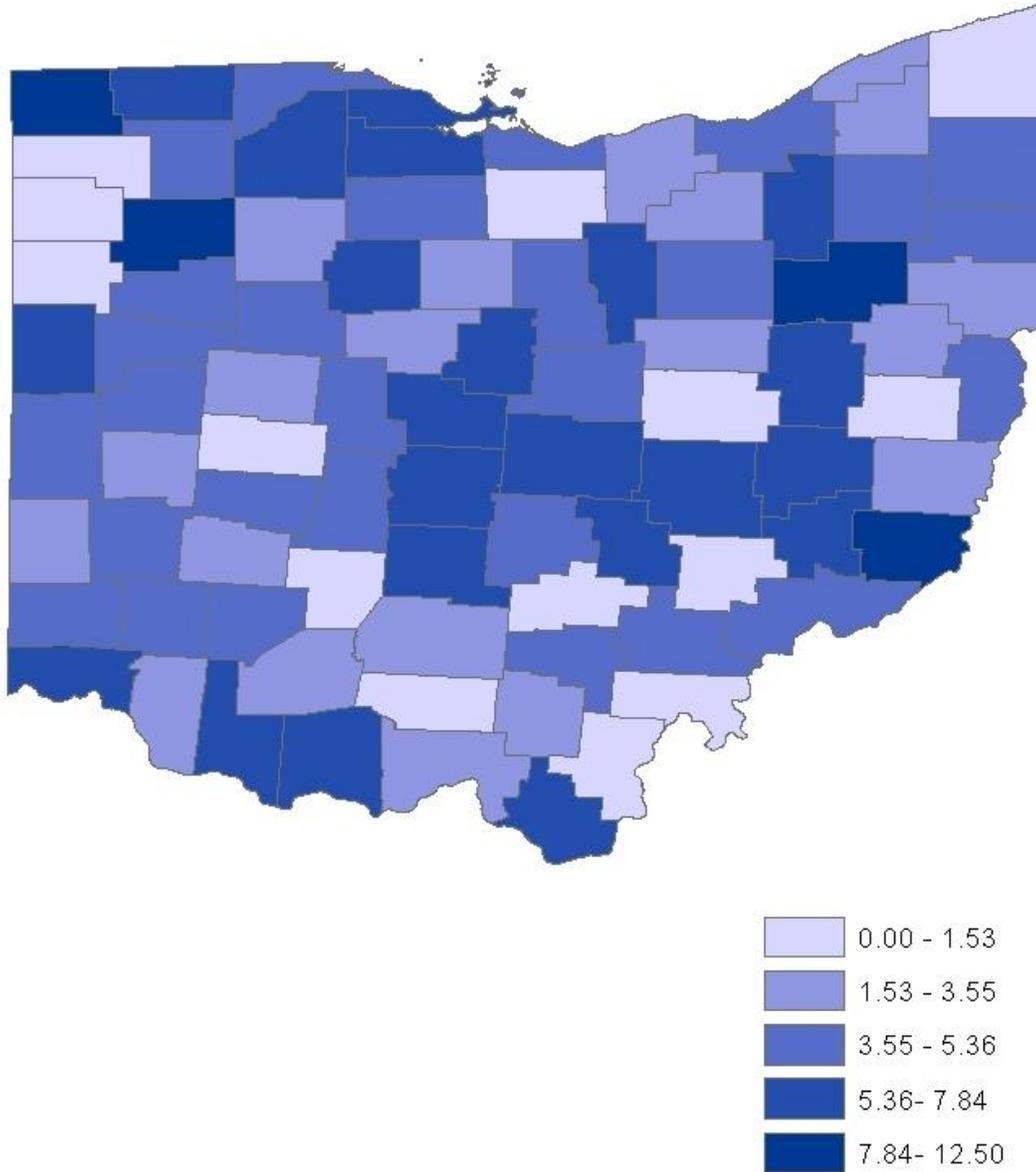
Number of Injury Deaths per County



Number of Injury Deaths:

This map reflects the number of deaths that resulted from injury in each county. Darker shades of blue reflect a higher number of total injury deaths.

Incidence of Death/100 Injuries by County



Incidence of Injury Deaths by County:

This map reflects the crude incidence of death per 100 injuries by county. Darker shades of blue reflect higher death rates.

Appendix A: Patient Inclusion/Exclusion Criteria

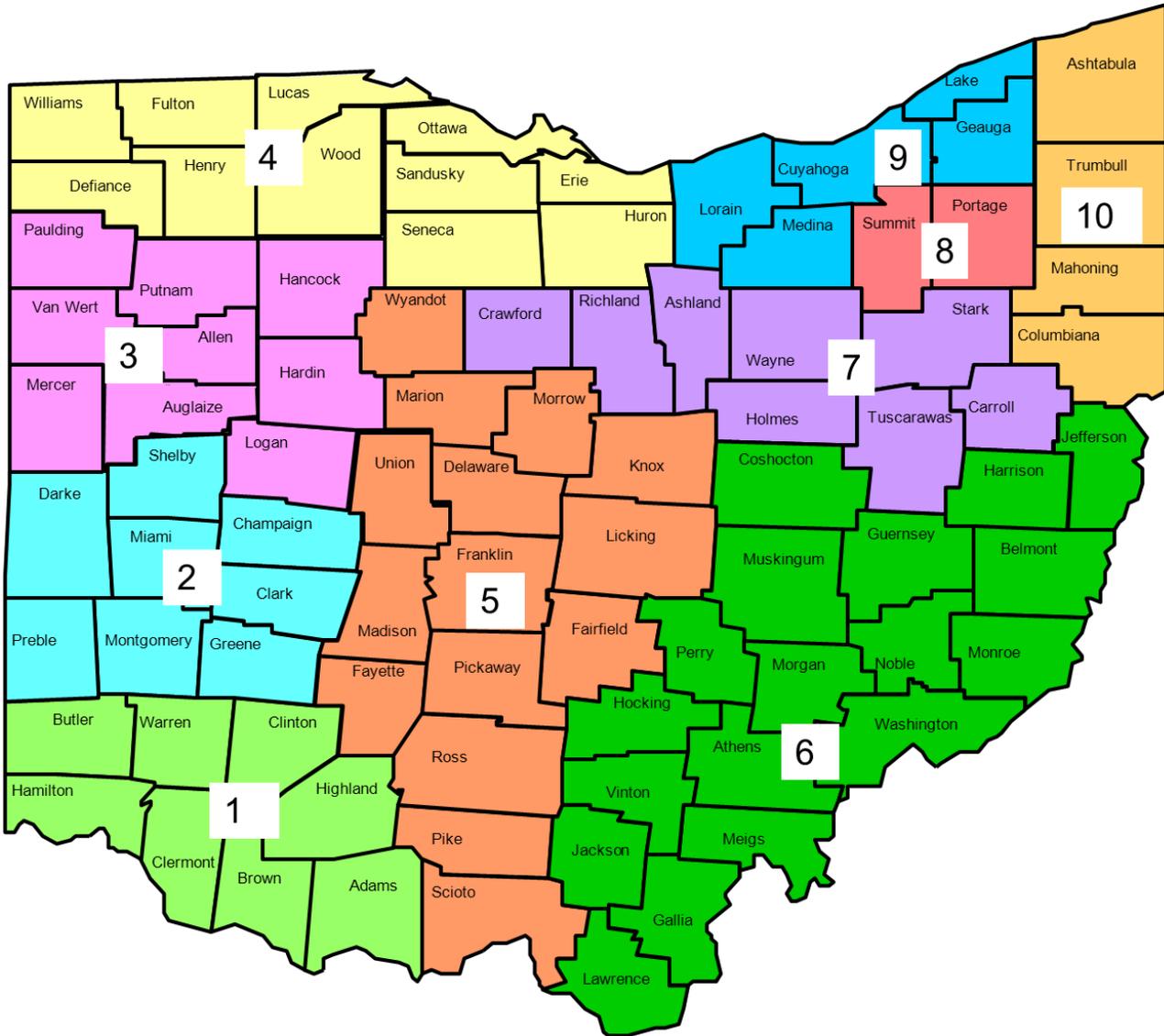
The State Board of EMS has established these criteria for inclusion of records in the OTR:

1. Patient's first or initial admission for at least 48 hours, and who meet one of the following inclusion criteria; **or**
2. Patients who transfer into or out of any hospital, regardless of their length of stay, and who meet one of the following inclusion criteria; **or**
3. Patients that arrive dead on arrival (DOA) and who meet one of the following inclusion criteria; **or**
4. Patients that die after receiving any evaluation or treatment while on hospital premises, **and** who meet one of the following inclusion criteria:

Inclusion Criteria

ICD-9-CM Diagnosis Codes on discharge from acute care hospital		
ICD-9-CM Diagnosis Codes		ICD-9-CM Diagnoses Descriptions
800.00 – 819.1		Fractures
821.00 – 904.9		Fractures, dislocations/sprains, intracranial injury, internal injury of thorax, abdomen and pelvis, open wounds, injury to blood vessels
911.0, 911.1, 912.0, 912.1		Abrasions/friction burns to trunk, shoulder and upper arm
916.0, 916.1, 919.0, 919.1		Abrasions / friction burns hip, thigh, leg, ankle, other or multiple sites
920 – 929.9		Contusions and crush injury
940.0 – 959.9		Burns, injury to nerves and spinal cord, traumatic complications and unspecified injury
987.9		Smoke inhalation
991.0 – 991.6		Frostbite, hypothermia and external effects of cold
994.0, 994.1, 994.7, 994.8		Asphyxiation, strangulation, drowning, and electrocution
995.50 – 995.59		Child maltreatment and abuse
OR		
ICD-9-CM Diagnoses		E-CODE
348.1	Anoxic Brain Injury	AND WITH ANY OF THE FOLLOWING External Cause Codes (E-Codes)
348.4	Uncal herniation	
348.5,	Cerebral Edema	
348.8	Pneumocephalus	
372.72	Subconjunctival hemorrhage	
518.5	Traumatic ARDS	
784.7	Epistaxis	
ICD-9-CM Diagnoses Codes EXCLUDED		
820.00 – 820.9		Isolated hip fracture
905.0 – 909.9		Late effects of injury
910.0 – 910.9, 911.2 – 911.7, 912.2 - 912.9, 913.0 - 913.9, 914.0 - 914.9, 915.0 - 915.9, 916.2 - 916.9, 917.0 - 917.9, 918.0 - 918.9, 919.2 - 919.9		Blisters, insect bites
930 – 939		Foreign bodies
External Cause Codes EXCLUDED		
E849.0 – E849.9	Place of occurrence	
E850.0 – E869.9	Poisonings	
E870.0 – E879.9	Misadventures during surgical and medical care	
E905.1 – E905.9	Venomous animals and plants (except snakes)	
E929.0 – E929.9	Late effects of Accidental Injury	
E930.0 – E949.9	Drugs, medicinal and biological substances causing adverse effects in therapeutic use	
Codes separated by a hyphen indicate a range of codes including both codes AND all codes in between. Example 800.0 – 801.5 Codes separated by a comma indicate a single code. Example 901.1, 901.2, 901.8		

Appendix B: Ohio County Map with EMS Regions



Appendix C: E-Code Groupings

MECHANISM / CAUSE	MANNER / INTENT				Other ¹
	Unintentional	Self-inflicted	Assault	Undetermined	
Cut/pierce	E920.0-9	E956	E966	E986	E974
Drowning/submersion	E830.0-9, E832.0-9, E910.0-9	E954	E964	E984	
Fall	E880.0-E886.9, E888	E957.0-9	E968.1	E987.0-9	
Fire/burn	E890.0-E899, E924.0-9	E958.1, .2, .7	E961, E968.0, .3	E988.1, .2, .7	
Fire/flame	E890.0-E899	E958.1	E968.0	E988.1	
Hot object/substance	E924.0-9	E958.2, .7	E961, E968.3	E988.2, .7	
Fire arm	E922.0-3, .8, .9	E955.0-4	E965.0-4	E985.0-4	E970
Machinery	E919 (0-9)				
Motor vehicle traffic ^{2,3}	E810-E819 (0-9)	E958.5	E968.5	E988.5	
Occupant	E810-E819 (0, .1)				
Motorcyclist	E810-E819 (2, .3)				
Pedal cyclist	E810-E819 (.6)				
Pedestrian	E810-E819 (.7)				
Unspecified	E810-E819 (.9)				
Pedal cyclist, other	E800-E807(.3), E820-E825(.6), E826.1, .9, E827-E829(.1)				
Pedestrian, other	E800-E807(.2), E820-E825(.7), E826-E829(.0)				
Transport, other	E800-E807(.0, .1, .8, .9) E820-E825(.0-5, .8, .9) E826.2-8 E827-E829(.2-9) E831.0-9, E833.0-E845.9	E958.6		E988.6	
Natural/environmental	E900.0-E909, E928.0-2	E958.3		E988.3	
Bites/stings ³	E905.0-6, .9 E906.0-4, .5, .9				
Overexertion	E927				
Poisoning	E850.0-869.9	E950.0-E952.9	E962.0-9	E980.0-E982.9	E972
Struck by, against	E916-E917.9		E960.0; E968.2		E973, E975
Suffocation	E911-E913.9	E953.0-9	E963	E983.0-9	
Other specified, classifiable ⁴	E846-E848, E914-E915, E918, E921.0-9, E922.4, E923.0-9, E925.0-E926.9, E928.3, E929.0-5	E955.5, .6, .9, E958.0, .4	E960.1, E965.5-9, E967.0-9, E968.4, .6, .7	E985.5, .6, E988.0, .4	E971, E978, E990-E994, E996, E997.0-2
Other specified, NEC	E928.8, E929.8	E958.8, E959	E968.8, E969	E988.8, E989	E997, E995, E997.8, E998, E999
Unspecified	E887, E928.9, E929.9	E958.9	E968.9	E988.9	E976, E997.9
All injury	E800-E869, E880-E929	E950-E959	E960-E969	E980-E989	E970-E978, E990-E999

¹ Includes legal intervention (E970-E976) and operations of war (E990-E999).

² Three 4th-digit codes (.4 [occupant of streetcar], .5 [rider of animal], .8 [other specified person]) are not presented separately because of small numbers. However, because they are included in the overall motor vehicle traffic category, the sum of these categories can be derived by subtraction.

³ E968.5 (bite from unspecified animal), E922.4 (unintentional injury [gunshot wound] with BB/pellet), E955.6 (suicide attempt/intentionally self-inflicted injury [gunshot wound] with BB/pellet gun), E968.6 (assault [gunshot wound] with BB/pellet gun), E985.6 (undetermined intent injury [gunshot wound] with BB/pellet gun), E928.3 (unintentional human bite), and E968.7 (assault by human bite), are specific to the ICD-9-CM and, therefore, only apply to morbidity coding.

⁴ E849 (place of occurrence) has been excluded from the matrix. For mortality coding, an ICD-9-CM E849 code should never be first-listed E code and should only appear as an additional code to specify the place of occurrence of the injury incident.

E-Code groupings from the Centers for Disease Control and Prevention's National Center for Health Statistics

Appendix D: Barell Injury Diagnosis Matrix

The Barell Injury Diagnosis Matrix (complete name: Barell Injury Diagnosis Matrix, Classification by Body Region and Nature of the Injury) standardizes data selection and reports, using a two dimensional array (matrix) that includes all *International Classification of Diseases (ICD)-9-CM* codes describing trauma. It serves as a basic tool in epidemiological and clinical analyses of injury data.

The matrix displays nature of injury in columns and body region in rows placing each ICD-9-CM code in the range from 800-995 in a unique cell location in the matrix. Each cell includes the codes associated with a given injury. The matrix rows and columns can be easily collapsed to get broader groupings or expanded if more specific sites are required.

The full matrix is too complex to reprint here legibly. It can be found at the website of the Centers for Disease Control and Prevention's National Center for Health Statistics in the section on the International Collaborative Effort on Injury Statistics.

Appendix E: Members of the EMS Board and Trauma Committee

Ohio State Board of Emergency Medical Services—2011

Pamela L. Bradshaw	Daryl McNutt
Dr. Deanna L. Dahl Grove	Dr. John A. Pakiela**
James E. Davis	James R. Parrish
Geoffrey Dutton	Dr. Wendy J. Pomerantz
Joyce Fischer	William E. Quinn, Jr.
Vickie Graymire	Mark N. Resanovich
Deanna Harris	Craig Self*
John A. Kubincanek	Bruce Shade
William Mallory	Dr. Brian L. Springer
Mark Marchetta	Dr. Steven M. Steinberg

Trauma Committee of the EMS Board—2011

Nancie Bechtel	Laurie Johnson	Dr. Kevin Pugh
Ken Beers	Brian Kuntz	John Ross
Ellen Bryan	Dr. Edward Michelson	Dr. Jonathan Saxe**
Dr. John Crow	Dr. Sidney Miller	Dr. Michael Shannon
Vickie Graymire	Debra Myers	Diane Simon
Kathy Haley*	Dr. Greg Nemunaitis	Dr. Howard Werman
Gary Huston	David Pohlman	Michael Winthrop
		Dr. Richard Ziegler

*Chair

** Vice-Chair

Appendix F: Participating Facilities for 2011

Affinity Medical Center, Massillon Campus	Fisher-Titus Medical Center	Mercy Franciscan Hospital – Western Hills	Southview Hospital & Family Health Center
Akron Children’s Hospital at Mahoning Valley	Flower Hospital	Mercy Hospital - Anderson	Southwest General Health Center
Akron Children’s Hospital Medical Center	For Hamilton-Hughes Memorial Hospital	Mercy Hospital – Fairfield	Springfield Regional Medical Center
Akron City Hospital	Fostoria Community Hospital	Mercy Hospital – Tiffin	St. Elizabeth Boardman Health Center
Akron General Medical Center	Fulton County Health Center	Mercy Hospital – Willard	St. Elizabeth Health Center
Alliance Community Hospital	Galion Community Hospital	Mercy Hospital – Clermont	St. John Medical Center
Ashtabula County Medical Center	Genesis Good Samaritan Hospital – Zanesville	Mercy Hospital – Canton	St. Joseph Health Center
Atrium Medical Center	Good Samaritan Hospital – Dayton	Mercy Memorial Hospital	St. Luke’s Hospital – Toledo
Aultman Hospital	Grandview Hospital	Mercy Regional Medical Center	St. Rita’s Medical Center
Barberton Citizen’s Hospital	Grant Medical Center	Mercy St. Anne Hospital	St. Thomas Hospital
Bay Park Community Hospital	Greene Memorial Hospital	Mercy St. Charles Hospital	St. Vincent Charity
Belmont Community Hospital	Henry County Hospital	Mercy St. Vincent Medical Center	Summa Western Reserve Hospital
Berger Hospital	Highland District Hospital	MetroHealth Medical Center	Sycamore Hospital
Bethesda North – Cincinnati	Hillcrest Hospital	Miami Valley Hospital	The Toledo Hospital
Blanchard Valley Hospital	Holzer Medical Center	Miami Valley Hospital South	Tri-Health Good Samaritan Hospital – Cincinnati
Brown Memorial Hospital	Holzer Jackson Medical Center	Mount Carmel East Hospital	TriPoint Medical Center
Cincinnati Children’s Hospital Medical Center	Huron Hospital	Mount Carmel West Hospital	Trumbull Memorial Hospital
Cleveland Clinic Foundation	Jewish Hospital Kenwood	Mt. Carmel St. Ann’s Hospital	UH – University Hospital & Rainbow Babies/Children’s Hospital
Clinton Memorial Hospital	Joint Township District Memorial Hospital	Nationwide Children’s Hospital	UH Ahuja Medical Center
Community Hospitals and Wellness Centers – Bryan	Kettering Memorial Medical Center	Northside Medical Center	UHHS – Bedford Medical Center
Community Memorial Hospital	Licking Memorial Hospital	O’Bleness Memorial Hospital	UHHS – Geauga Regional Hospital
Crystal Clinic Orthopedic Center	Lima Memorial Hospital	Ohio State University Medical Center	University of Cincinnati Medical Center
Dayton Children’s Medical Center	Marion General Hospital	OSU East	University of Toledo Medical Center
Defiance Regional Medical Center	Marymount Hospital	Parma Community General Hospital	Van Wert County Hospital
Dublin Methodist Hospital	McCullough-Hyde Memorial Hospital	Pomerene Hospital	West Chester Hospital
East Ohio Regional Hospital	MedCentral – Mansfield	Richmond Heights Hospital	West Medical Center
EMH Amherst Campus	Medina Hospital	Riverside Methodist Hospital	Wilson Hospital
EMH Regional Medical Center	Memorial Hospital – Fremont	Robinson Memorial Hospital	Wood County Hospital
Euclid Hospital	Memorial Hospital – Geneva	Salem Community Hospital	
Fairview Hospital	Mercer County Joint Twp. Community Hospital	Samaritan Regional Health System	
Firelands Regional Medical Center	Mercy Franciscan Hospital – Mt. Airy	Southern Ohio Medical Center	

Appendix G: Ohio Trauma Registry Data Element List

- Demographics
 - Hospital Code
 - Unique Patient Admission Number
 - Date Exported
 - Zip Code of Residence
 - Patient's Date of Birth
 - Gender
 - Race/Ethnicity
 - Work Relatedness of Injury
 - Safety Equipment
 - Site at Which Injury Occurred
 - E-Code (Description of Injury)
 - Date Injury Occurred
 - State in Which Injury Occurred
 - County in Which Injury Occurred
- Pre-Hospital
 - Glasgow Eye Component at Scene
 - Glasgow Verbal Component at Scene
 - Glasgow Motor Component at Scene
 - GCS Assessment Qualifier at Scene
 - Intubated-Scene
 - CPR-Scene
 - MAST-Scene
 - Fluids-Scene
 - Chest Decompression-Scene
 - Thoracentesis/Thoracostomy-Scene
 - Spinal Immobilization-Scene
- Emergency Department
 - ED Arrival Date
 - ED Arrival Time
 - Systolic Blood Pressure (First)
 - Respiratory Rate (Unassisted)
 - Injury Type
 - Glasgow Eye Component in ED
 - Glasgow Verbal Component in ED
 - Glasgow Motor Component in ED
 - GCS Assessment Qualifier in ED
 - Was Alcohol Present?
 - Alcohol Level Range
 - Were Drugs Present?
 - Drug Category
 - ED Disposition
 - ED Transfer to Hospital
 - ED Transfer Date
 - ED Transfer Time
 - First Temperature in ED
 - Intubated in ED
 - CPR-ED
 - MAST-ED
 - Fluids-ED
 - Chest Decompression-ED
 - Thoracentesis/Thoracostomy-ED
 - Spinal Immobilization-ED
 - Head CT Results-ED

- Abdominal Evaluation-ED
- Inpatient Course
 - Admitting Specialty
 - Total Days in ICU
 - Ventilator Support Days
 - ICD-9-CM Diagnosis Code/Description for Injuries
 - Complications
 - Pre-existing Comorbidity Factors
- OR Visits
 - OR Date
 - OR Time
 - ICD-9 Codes for OR Visit
- Disability Assessment / Discharge
 - Disability Assessment - Self-Feeding
 - Disability Assessment - Locomotion
 - Disability Assessment - Expression
 - Discharge Disposition
 - Transfer to Other Hospital
 - Date of Discharge or Death
 - Discharge Status
 - Billed Hospital Charges
 - Principal Payment Source
 - Length of Stay in Hospital
 - Organs/Tissue Requested
 - Organs/Tissue Granted
 - Organs/Tissue Taken
 - Was an Autopsy Performed?

Appendix H: Glossary

Barell Matrix: A system of classification of injury by body region and the nature of the injury.

CDC: Centers for Disease Control and Prevention

E-Code: External cause of injury code

ED: Emergency Department

EMS: Emergency Medical Services

Floor: A general medical-surgical room or bed in a hospital. Generally advanced patient monitoring is not performed on a floor bed.

GSW: Gunshot Wound

ICD-9-CM: International Classification of Disease, 9th Revision, Clinical Modification.

ICU: Intensive Care Unit

ISS: Injury Severity Score. A system for scoring the overall severity of injuries. Ranging from 1-75, an ISS of greater than 15 is generally considered a severe injury.

LOS: Length of Stay

MCC: Motorcycle Collision

MOI: Mechanism of Injury

MVC: Motor Vehicle Collision

Observation: A level of hospital care most frequently utilized for lower acuity, short stays, or during an intermediate period while a decision is being made to admit or release the patient.

OR: Operating Room.

OTR: Ohio Trauma Registry

Outcome: Used to describe the patient’s outcome; alive or dead.

Step-Down: An intermediate level of care between the “floor” and the ICU.

Appendix I: Ohio Revised Code

§4765.06: Emergency medical services incidence reporting system—state trauma registry.

(B) The board shall establish a state trauma registry to be used for the collection of information regarding the care of adult and pediatric trauma victims in this state. The registry shall provide 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. All persons designated by the board shall submit to the board any information it determines is necessary for maintaining the state trauma registry. At the request of the board any state agency possessing information regarding adult or pediatric trauma care shall provide the information to the board. The board shall maintain the state trauma registry in accordance with rules adopted under section 4765.11 of the Revised Code. Rules relating to the state trauma registry adopted under this section and section 4765.11 of the Revised Code shall not prohibit the operation of other trauma registries and may provide for the reporting of information to the state trauma registry by or through other trauma registries in a manner consistent with information otherwise reported to the state trauma registry. Other trauma registries may report aggregate information to the state trauma registry, provided the information can be matched to the person that reported it. Information maintained by another trauma registry and reported to the state trauma registry in lieu of being reported directly to the state trauma registry is a public record and shall be maintained, made available to the public, held in confidence, risk adjusted, and not subject to discovery or introduction into evidence in a civil action as provided in section 149.43 of the Revised Code and this section. Any person who provides, maintains, or risk adjusts such information shall comply with this section and rules adopted under it in performing that function and has the same immunities with respect to that function as a person who performs that function with respect to the state trauma registry.

(C) The board and any employee or contractor of the board or the department of public safety shall not make public information it receives under Chapter 4765. of the Revised Code that identifies or would tend to identify a specific recipient of emergency medical services or adult or pediatric trauma care.

(D) Not later than two years after the effective date of this amendment, the board shall adopt and implement rules under section 4765.11 of the Revised Code that provide written standards and procedures for risk adjustment of information received by the board under Chapter 4765. of the Revised Code. The rules shall be developed in consultation with appropriate medical, hospital, and emergency medical service organizations and may provide for risk adjustment by a contractor of the board. Before risk adjustment standards and procedures are implemented, no member of the board and no employee or contractor of the board or the department of public safety shall make public information received by the board under Chapter 4765. of the Revised Code that identifies or would tend to identify a specific provider of emergency medical services or adult or pediatric trauma care. After risk adjustment standards and procedures are implemented, the board shall make public such information only on a risk adjusted basis.

(E) The board shall adopt rules under section 4765.11 of the Revised Code that specify procedures for ensuring the confidentiality of information that is not to be made public under this section. The rules shall specify the circumstances in which deliberations of the persons performing risk adjustment functions under this section are not open to the public and records of those deliberations are maintained in confidence. Nothing in this section prohibits the board from making public statistical information that does not identify or tend to identify a specific recipient or provider of emergency medical services or adult or pediatric trauma care.

(F) No provider that furnishes information to the board with respect to any patient the provider examined or treated shall, because of this furnishing, be deemed liable in damages to any person or be held to answer for betrayal of a professional confidence in the absence of willful or wanton misconduct. No such information shall be subject to introduction in evidence in any civil action against the provider. No provider that furnishes information to the board shall be liable for the misuse or improper release of the information by the board or any other person. No person who performs risk adjustment functions under this section shall, because of performing such functions, be held liable in a civil action for betrayal of professional confidence or otherwise in the absence of willful or wanton misconduct.

Effective Date: 11-03-2000

Appendix J: Counties by Population Density Designation

High Density (>1000 people per square mile)	Medium-High Density (300-999 people per square mile)	Medium-Low Density (100-299 people per square mile)	Low Density (<100 people per square mile)
Franklin	Butler	Allen	Preble
Hamilton	Erie	Richland	Washington
Summit	Stark	Fairfield	Defiance
Montgomery	Mahoning	Miami	Williams
Cuyahoga	Warren	Geauga	Champaign
Lucas	Clermont	Licking	Darke
Lake	Medina	Columbiana	Mercer
	Greene	Wayne	Madison
	Delaware	Wood	Brown
	Clark	Jefferson	Perry
	Trumbull	Marion	Guernsey
	Lorain	Ottawa	Morrow
	Portage	Tuscarawas	Jackson
		Sandusky	Highland
		Ashtabula	Carroll
		Lawrence	Van Wert
		Hancock	Putnam
		Belmont	Henry
		Scioto	Fayette
		Muskingum	Hardin
		Ashland	Hocking
		Athens	Gallia
		Huron	Coshocton
		Shelby	Pike
		Crawford	Wyandot
		Auglaize	Meigs
		Ross	Paulding
		Seneca	Adams
		Pickaway	Harrison
		Knox	Morgan
		Fulton	Noble
		Logan	Monroe
		Clinton	Vinton
		Union	
		Holmes	

Population density data from the US Census Bureau, 2010 census
Density designations by the EMS Office of Research and Analysis

