

KENTUCKY TRAUMA REGISTRY

2019 ANNUAL REPORT

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Foreword

The Kentucky Trauma Registry (KTR) was established by state law (KRS 211.490 et seq.; 902 KAR 28:040) to be the statewide repository for trauma data. It is housed administratively in the Kentucky Department for Public Health and managed by the Kentucky Injury Prevention and Research Center (KIPRC), a unit of the University of Kentucky's College of Public Health and a bona fide agent of the Kentucky Department for Public Health. All trauma centers designated by the Commissioner of Public Health in the Kentucky Trauma Care System maintain trauma registries that are compatible with the National Trauma Data Bank standards established in the National Trauma Data Standard Data Dictionary. The same standards apply to trauma centers in the process of applying for designation. The trauma centers upload their trauma data electronically at least quarterly to the KTR. ESO is the vendor that manages the downloading and compilation of data from participating trauma centers, including unverified facilities that report to the registry, and supplies the data to the Kentucky Injury Prevention and Research Center.

With support from the National Highway Traffic Safety Administration through the Kentucky Transportation Cabinet, KIPRC analyzes the statewide trauma registry data and provides a detailed profile of the traumatic injuries treated in the state's trauma facilities.

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This report and previous trauma reports are posted on the KIPRC website:

<http://www.mc.uky.edu/kiprc/projects/trauma/index.html>

Introduction

Kentucky law (Kentucky Revised Statute (KRS) 311A.010) defines “trauma” as a single or multi-system injury requiring immediate medical or surgical intervention or treatment to prevent death or permanent disability. The body of this report summarizes data reported to the Kentucky Trauma Registry as of July 2020 on trauma patients cared for at Kentucky trauma centers, both verified and in applicant status, during calendar year 2019. A list of these facilities appears on the next page.

It is important to note several characteristics of the data reported here:

- Governing state law (KRS 211.490 (6)) protects patient privacy by forbidding the identification of individual trauma patients in Kentucky Trauma Registry (KTR) data. Patients transferred between hospitals have separate records for treatment at each reporting facility that cannot be merged because they lack personal identifiers. Thus, the number of records in KTR reflects total episodes of care in reporting facilities and is greater than the number of patients treated. The rest of this report refers to each episode of trauma care as a “case”.
- These data represent the most serious injuries—those that meet national inclusion criteria—rather than all traumatic injuries in the state.
- Trauma that results in death at the scene of the injury event is not part of the reported data. Hospital trauma registrars report KTR data only for patients who reach a hospital.
- If a traumatic injury occurs in Kentucky but the patient is treated in an out-of-state facility, the case is not included in KTR data. Border areas are thus underrepresented in this report.

On October 1, 2015, U.S. hospitals were required to switch from the International Classification of Diseases, 9th edition, Clinical Modification, to the 10th edition (ICD-9-CM to ICD-10-CM). One prominent feature of ICD-10-CM is a much more nuanced array of injury diagnoses. While trauma registries do not rely on ICD coding to the same extent as broader hospital and emergency department datasets, the implementation of ICD-10-CM was disruptive and may have led to some inconsistencies in coding across reporting facilities and periods of time.

Definitions (per 902 Kentucky Administrative Regulation (KAR) 28:010):

- (18) “Level I trauma center” means a regional trauma center that
 - (a) provides total care of every aspect of injury from prevention through rehabilitation and
 - (b) meets the requirements established in 902 KAR 28:020.
- (19) “Level II trauma center” means a regional trauma center that
 - (a) provides screening and initial trauma care of the injured patient regardless of the severity of injury and
 - (b) meets the requirements established in 902 KAR 28:020.
- (20) “Level III trauma center” means a regional trauma center that
 - (a) provides prompt assessment, resuscitation, emergency operations, and stabilization;
 - (b) arranges for transfer to a facility that can provide trauma care at a higher level;
 - (c) serves communities that do not have immediate access to a Level I or Level II trauma center; and
 - (d) meets the requirements established in 902 KAR 28:020.
- (21) “Level IV trauma center” means a regional trauma center that
 - (a) provides advanced trauma life support before a patient is transferred to a higher level of care;
 - (b) is located in a hospital emergency department; and
 - (c) meets the requirements established in 902 KAR 28:030.

Kentucky's Reporting Trauma Centers, 2019

Trauma Center	Designation/Status
1 Ephraim McDowell Regional Medical Center	Level III
2 Ephraim McDowell Fort Logan Hospital	Level IV
3 Frankfort Regional Medical Center	Level III
4 Harlan ARH Hospital	Level IV
5 Harrison Memorial Hospital	Level IV
6 Hazard ARH	Level IV in progress
7 Highlands Regional Medical Center	Level IV in progress
8 James B. Haggin Memorial Hospital	Level IV
9 Livingston Hospital	Level IV
10 Marcum & Wallace Memorial Hospital	Level IV
11 Methodist Hospital Union County	Level IV
12 Middlesboro ARH Hospital	Level IV
13 Morgan County ARH Hospital	Level IV
14 Norton Children's Hospital	Level I Pediatric
15 Owensboro Medical Center	Level III
16 Pikeville Medical Center	Level II
17 Rockcastle Regional Hospital	Level IV
18 St. Joseph Berea	Level IV in progress
19 St. Joseph Hospital (Mt. Sterling)	Level IV in progress
20 St. Joseph London	Level IV in progress
21 Taylor Regional Medical Center	Level IV in progress
22 Tug Valley ARH (formerly Williamson ARH)	Level IV
23 Twin Lakes Regional Medical Center	Level IV in progress
24 University of Kentucky Children's Hospital	Level I Pediatric
25 University of Kentucky Medical Center	Level I
26 University of Louisville Hospital	Level I
27 Whitesburg ARH Hospital	Level IV

Kentucky Trauma Registry Records 2008–2019

The Kentucky Trauma Registry has grown from five reporting facilities in 2008 to 27 in 2019, although some smaller hospitals have left the trauma system in recent years. A total of 14,172 records were reported in 2019, more than double the 2008 total (Figure 1) and a small increase from 2018. The 2017–2018 decline reflects gaps in reporting from smaller facilities and better alignment with National Trauma Data Bank standards with regard to reporting low-acuity injuries (see Tables 1 and 15).

Figure 1: Total records, 2008–2019

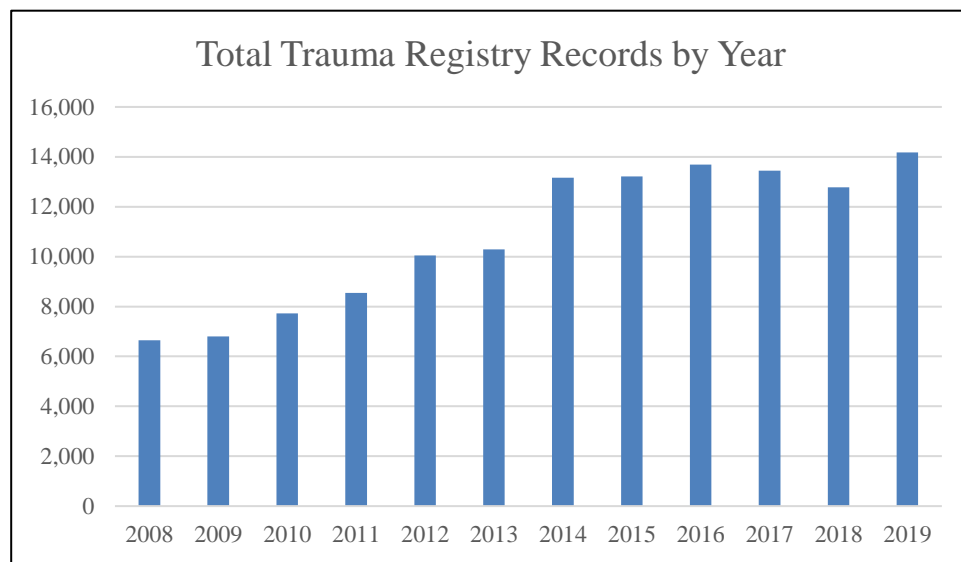


Table 1: Records by reporting trauma center, 2019

Hospital	Records
1 Ephraim McDowell Regional Medical Center	1,005
2 Ephraim McDowell Fort Logan Hospital	64
3 Frankfort Regional Medical Center	394
4 Harlan ARH Hospital	180
5 Harrison Memorial Hospital	89
6 Hazard ARH Hospital	278
7 Highlands Regional Medical Center	7
8 James B. Haggin Memorial Hospital	86
9 Livingston Hospital	15
10 Marcum & Wallace Memorial Hospital	48
11 Methodist Hospital Union County	75
12 Middlesboro ARH Hospital	142
13 Morgan County ARH Hospital	40
14 Norton Children's Hospital	742
15 Owensboro Medical Center	1,165
16 Pikeville Medical Center	1,243
17 Rockcastle Regional Hospital	86
18 St. Joseph Berea	37
19 St. Joseph Hospital (Mt. Sterling)	135
20 St. Joseph London	362
21 Taylor Regional Medical Center	119
22 Twin Lakes Regional Medical Center	213
23 Tug Valley ARH (formerly Williamson ARH)	91
24 University of Kentucky Children's Hospital	459
25 University of Kentucky Medical Center	3,290
26 University of Louisville Hospital	3,655
27 Whitesburg ARH Hospital	152
Total	14,172

Demographic Information

Gender

Injuries to males comprised nearly 60% of KTR records (Table 2). The American College of Surgeons trauma classification excludes isolated hip fractures, the most common traumatic injury in older adults and a category in which women are overrepresented because of their greater longevity. KTR demographics are thus significantly different from those of the related report on Kentucky injuries as a whole, in which males and females are roughly equally represented (see Kentucky Inpatient and Emergency Department Traumatic Injury Data Reports, <http://www.mc.uky.edu/kiprc/projects/trauma/index.html>).

Table 2: Records by gender*, 2019

Gender	Number	%
Female	5,981	42.20
Male	8,188	57.78
Total	14,172	100.00

*Information about gender was missing for three records.

Race/Ethnicity

Most (88.82%) of the records reported treatment for white patients, reflecting Kentucky's largely white population, while 7.93% were for black patients (Table 3). Information on patient's race was missing in 1.55% of cases, and 3.76% of cases are missing information on ethnicity.

Table 3: Records by race and ethnicity, 2019

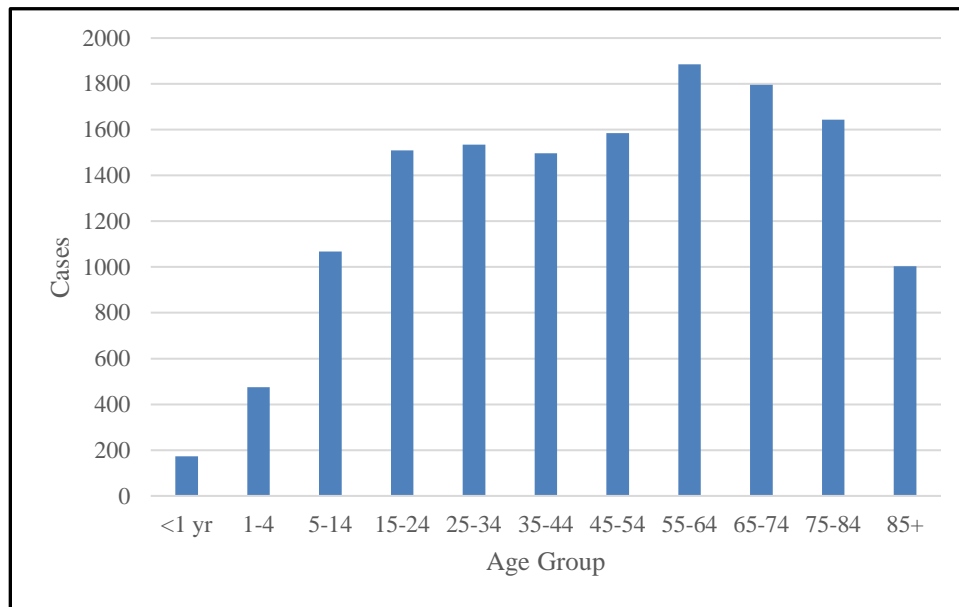
Race	Ethnicity			
	Hispanic/ Latino	Non- Hispanic/Latino	Missing	Total
Asian	*	45	*	47
Native Hawaiian or Other Pacific Islander	0	7	0	7
Other Race	128	39	5	172
American Indian	0	14	0	14
Black or African American	*	1,118	*	1,124
White	97	12,081	410	12,588
Missing	10	97	113	220
Total	238	13,401	533	14,172

*Totals less than five were suppressed in accordance with state data management policy.

Age

Inclusion criteria influence the distribution of trauma records by age group. The statewide hospitalization data for traumatic injury are skewed toward older age groups due to inclusion of hip fractures, whereas 67.4% of KTR records are for adults under 65 years of age (Figure 2).

Figure 2: Records by age group, 2019



Patient County of Residence

Table 4 includes the number and proportion of KTR records for the counties with the highest number of reports. About one-fifth (20.18%) of the records were for patients residing in Jefferson or Fayette counties, which is expected as these are the most populous counties in the state. Over one in seven (11.78%) of the total KTR records were for out-of-state patients. Over half (55.39%) of in-state records were from the top 10 counties.

Table 4: Records by county of residence, 2019

Top 10 KY counties based on volume	Number	%
Jefferson	2,091	14.75
Fayette	769	5.43
Daviess	744	5.25
Pike	569	4.01
Boyle	514	3.63
Franklin	358	2.53
Laurel	357	2.52
Lincoln	277	1.95
Hardin	263	1.86
Harlan	245	1.73
All other KY counties combined	6,316	44.61
Out-of-state residents	1,669	11.78

A recent map of travel times to the state's trauma facilities follows.

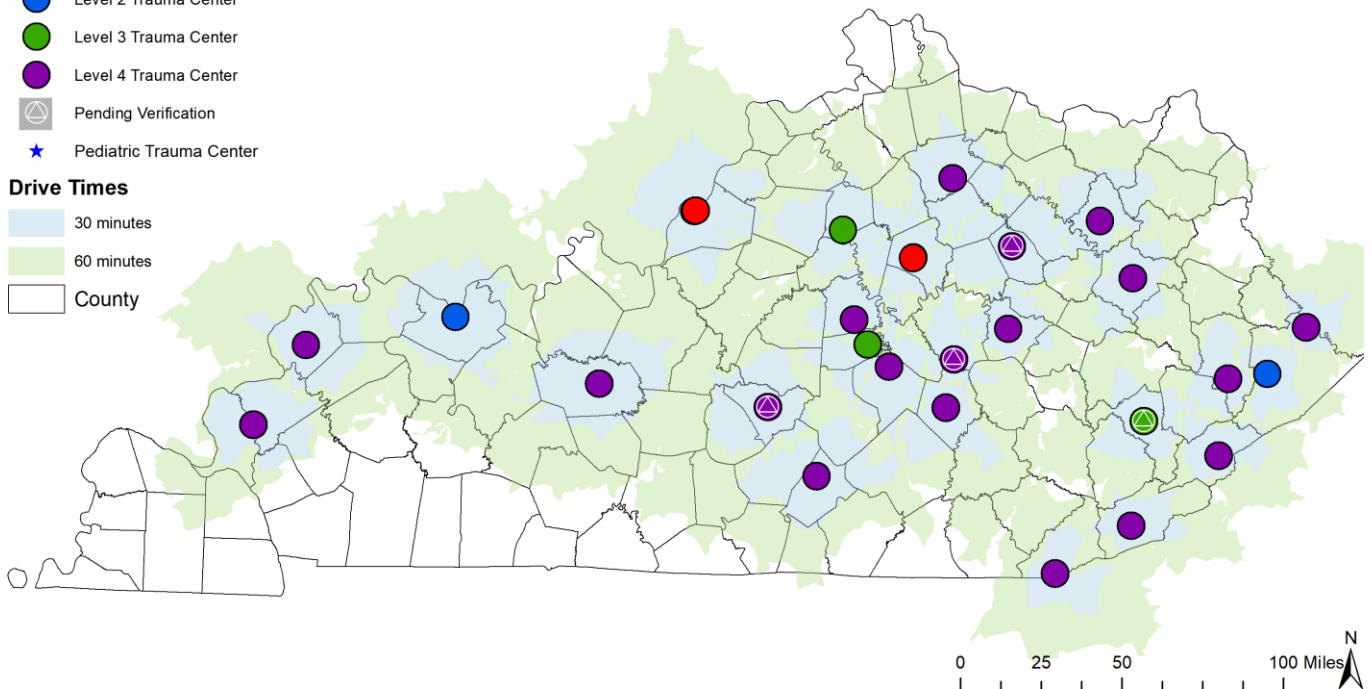
2019 Trauma Registry Facilities for Kentucky with 30/60 Minute Drive-Time Coverage

Verified Trauma Centers

- Level 1 Trauma Center
- Level 2 Trauma Center
- Level 3 Trauma Center
- Level 4 Trauma Center
- Pending Verification
- ★ Pediatric Trauma Center

Drive Times

- 30 minutes
- 60 minutes
- County



Injury Information

Work-Related Cases

Work-related trauma is defined as injury that occurs during paid employment. A total of 469 work-related trauma cases were recorded in the KTR dataset in 2019. Falls were the most common cause of injury (Figure 3).

Figure 3: Work-related trauma records by cause of injury, 2019

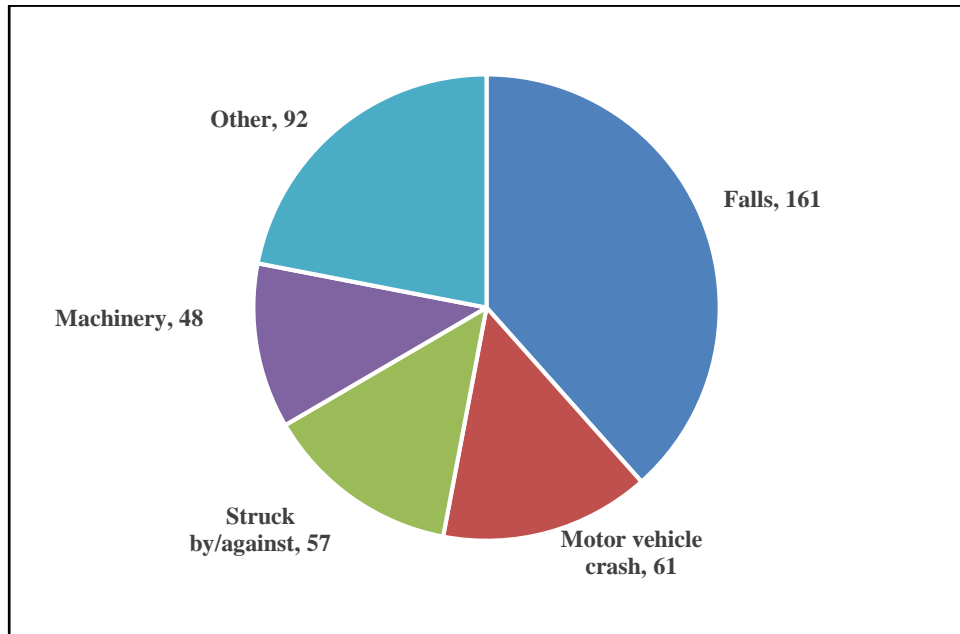


Table 5 shows the industry associated with the patient's work environment for work-related trauma records. Construction and manufacturing are two of the largest industry categories, representing 27.91% of work-related trauma in the KTR.

Table 5: Work-related trauma records by industry, 2019

Industry	Number	%
Other Services	91	19.24
Construction	89	18.82
Missing	53	11.2
Manufacturing	43	9.09
Agriculture, Forestry, Fishing	40	8.46
Transportation and Public Utilities	40	8.46
Natural Resources and Mining	35	7.40
Retail Trade	27	5.71
Government	18	3.81
Education and Health Services	14	2.96
Professional and Business Services	12	2.54
Leisure and Hospitality	6	1.27
Wholesale Trade	*	*
Finance, Insurance, and Real Estate	*	*
Information Services	*	*
Total	473	100.00

*Counts less than five were suppressed in accordance with state data management policy.

Cause and Intent of Injury

Codes indicating mechanism and intent were provided for nearly all (99.5%) of the records. Unintentional falls (n=6,003) and unintentional motor vehicle traffic collisions (n=3,731) were the leading causes of injuries reported to KTR (Table 6).

Table 6: Records by cause and intent of injury, 2019

Cause	Unintentional		Intentional		Other/ Undetermined		Total	
	Count	%	Count	%	Count	%	Count	%
Fall	6,003	42.36	13	0.09	48	0.34	6,064	42.79
Motor Vehicle Traffic	3,731	26.33	11	0.08	15	0.11	3,757	26.51
Motor Vehicle Non-Traffic	554	3.91	0	0.00	0	0.00	554	3.91
Struck By/Against	460	3.25	359	2.53	4	0.03	823	5.81
Firearm	174	1.23	461	3.25	41	0.29	676	4.77
Cut/Pierce	222	1.57	233	1.64	10	0.07	465	3.28
Other Specified	176	1.24	57	0.40	2	0.01	235	1.66
Other Land Transport	223	1.57	0	0.00	0	0.00	223	1.57
Fire/Flame	174	1.23	2	0.01	3	0.02	179	1.26
Hot Object/Substance	193	1.36	2	0.01	7	0.05	202	1.43
Bite/Sting	150	1.06	0	0.00	0	0.00	150	1.06
Machinery	143	1.01	0	0.00	0	0.00	143	1.01
Pedal Cyclist, Other	109	0.77	0	0.00	0	0.00	109	0.77
Unspecified	71	0.50	37	0.26	1	0.01	109	0.77
Overexertion	81	0.57	0	0.00	0	0.00	81	0.57
Pedestrian, Other	76	0.54	0	0.00	0	0.00	76	0.54
Child/Adult Abuse	0	0.00	73	0.52	0	0.00	73	0.52
Natural/ Environmental	64	0.45	0	0.00	0	0.00	64	0.45
Poisoning	20	0.14	2	0.02	0	0.00	22	0.15
Suffocation	4	0.03	5	0.04	1	0.01	10	0.07
Drowning/ Submersion	8	0.06	1	0.01	0	0.00	9	0.06
Foreign Body	6	0.04	0	0.00	0	0.00	6	0.04
Other Specified, Not Elsewhere Classifiable	0	0.00	22	0.16	29	0.20	51	0.36
Other Transport	15	0.11	0	0.00	0	0.00	15	0.11
Missing	0	0.00	0	0.00	0	0.00	76	0.54
Total	12,657	89.00	1,278	9.00	161	1.00	14,172	100.00

*Counts less than five were suppressed in accordance with state data management policy.

Cause/Intent of Injury by Age Group

Patients aged 15–24 accounted for nearly one-sixth (16.85%) of motor vehicle crash-related trauma, followed by those aged 25–34 (15.59%). This finding is similar to those of previous years. Falls among those 55 and older accounted for over two-thirds (70.39%) of all unintentional falls treated in trauma centers. Almost two-fifths (33.92%) of the injuries attributed to being unintentionally struck by or against an object were experienced by patients 5–24 years of age. An earlier review of the struck by/against injuries in this group found that more than half of these injuries were sport-related. Two-thirds (66.42%) of the assault injuries were to adolescents and young adults aged 15–44 (Table 7).

Table 7: Records by age and major causes of injury, 2019

Age	Unintentional Injuries										Intentional Injuries			
	Motor vehicle traffic collisions		Other transport Injuries		Falls		Struck by/against		All other unintentional		Assault		Self-harm	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
<1	5	0.12	1	0.42	76	1.27	4	0.87	23	1.25	61	5.57	0	0.00
1–4	70	1.63	8	3.36	190	3.17	22	4.78	153	8.32	28	2.55	0	0.00
5–14	302	7.05	58	24.37	400	6.66	74	16.09	204	11.10	18	1.64	2	1.10
15–24	722	16.85	37	15.55	152	2.53	82	17.83	239	13.00	242	22.08	27	14.84
25–34	668	15.59	26	10.92	189	3.15	53	11.52	242	13.17	293	26.73	50	27.47
35–44	632	14.75	27	11.34	291	4.85	51	11.09	252	13.71	193	17.61	42	23.08
45–54	606	14.14	36	15.13	478	7.96	57	12.39	240	13.06	136	12.41	27	14.84
55–64	548	12.79	27	11.34	910	15.16	45	9.78	240	13.06	91	8.30	20	10.99
65–74	402	9.38	15	6.30	1,151	19.17	39	8.48	150	8.16	26	2.37	11	6.04
75–84	254	5.93	3	1.26	1,277	21.27	24	5.22	69	3.75	5	0.46	3	1.65
85+	76	1.77	0	0.00	888	14.79	9	1.96	25	1.36	2	0.18	0	0.00

*Counts less than five were suppressed in accordance with state data management policy.

Motor Vehicle Traffic Collision Involvement

Among the unintentional motor vehicle traffic collision (MVTC) records, 67.90% were coded as vehicle occupants and 12.29% as motorcyclists (Table 8). Pedestrians and pedal cyclists accounted for another 6.45%.

Table 8: Motor vehicle collision involvement, 2019

Role in motor vehicle traffic collision	Number	%
Motor vehicle occupant	2,927	67.9
Motorcyclist	530	12.29
Pedal Cyclist	50	1.16
Pedestrian	228	5.29
Unknown	15	0.35
Other	561	13.01
Total	4,311	100

Protective Devices

There were 3,890 records for vehicle occupants injured in motor vehicle traffic collisions. Protective devices were available but not used in over one-fifth (20.46%) of reported cases. Information on the use of protective devices was available to the registrars in nearly all (95.63%) of cases (Table 9).

Table 9: Use of occupant protective devices in motor vehicle traffic collisions, 2019

Protective device	Use of protective devices by occupants in unintentional MVTC	
	Number	%
Shoulder and lap belt	1,390	52.53
Shoulder belt only	49	1.67
Lap belt only	329	11.24
Child restraint	54	1.84
Airbag	1,713	58.50
Available but not used	599	20.46
Missing information on protective device use	128	4.37

Note: In some records, two or more protective devices were listed; therefore, counts do not add up to the total number of MVTC cases.

Pre-Hospital Information

Transportation Mode

The mode of transportation and interfacility transfers are presented in Table 10. The interfacility transfer variable indicates whether the patient was transferred to the reporting facility from another acute care facility. Helicopter ambulance was used in 666 (16.52%) of the 4,031 interfacility transfers and in 829 (8.22%) of the 10,086 non-transfer records. Ground ambulance was listed in 9,288 (65.54%) of all KTR cases.

Table 10: Transportation mode, 2019

Transportation Mode	Interfacility Transfer	Not Transferred	Missing	Total
Missing	8	120	1	129
Ground Ambulance	3,143	6,096	49	9,288
Helicopter Ambulance	666	829	5	1,500
Fixed-Wing Ambulance	*	*	0	**
Private/Public Vehicle/Walk-in	209	2,988	0	3,197
Police	*	46	*	50
Other	*	*	*	**
Total	4,031	10,086	55	14,172

*Cells with counts of less than five were suppressed in accordance with state data management policy.

Note: Information on interfacility transfers is missing for eight records.

EMS Information

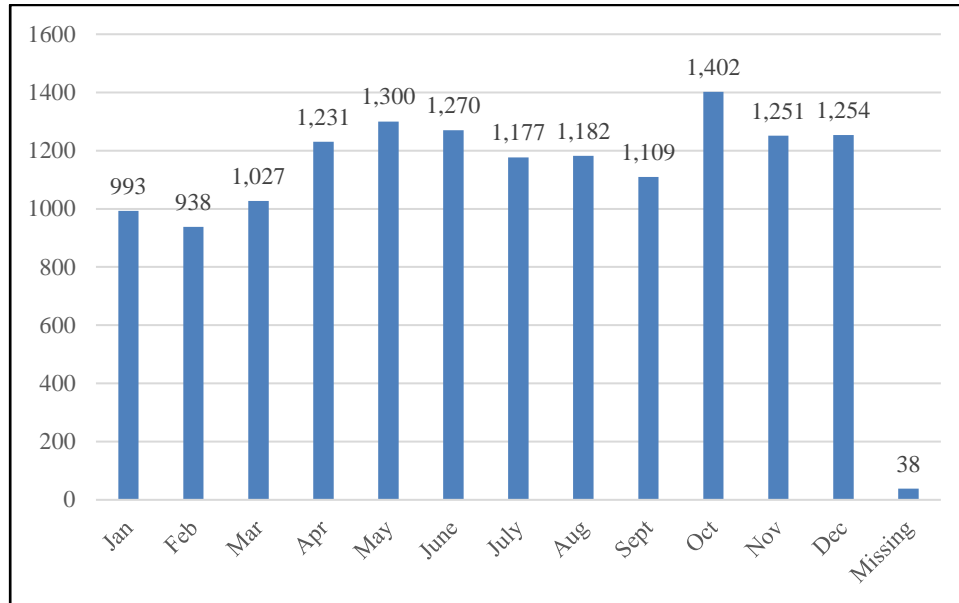
EMS notification, departure, and arrival times are not applicable data elements for patients who arrived at the trauma facility by private vehicle, and they may not be known for patients transferred from another acute care facility. It is reasonable to expect that EMS information will be available for patients who were not interfacility transferees and were transported to the trauma facility by ground ambulance (n=6,096) or air ambulance (n=829) (Table 10). Work is ongoing to integrate these data elements with future KTR reports.

Emergency Department (ED) Information

Month of Arrival at ED/Hospital

Trauma volume typically varies by season, with a higher volume during summer months, but this pattern did not emerge in 2019 data. Anecdotally, this shift may reflect an increased proportion of injuries in residences and other indoor settings.

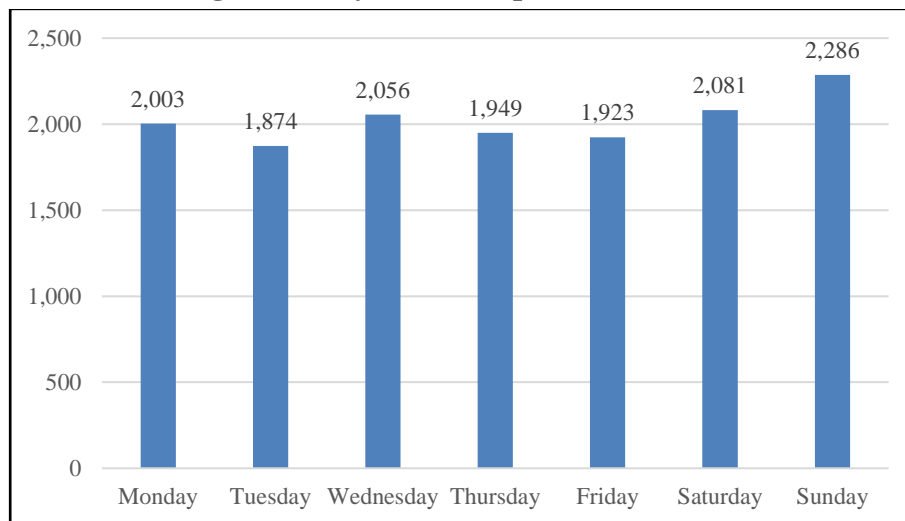
Figure 4: Month of ED/hospital arrival, 2019



Weekday of Arrival to ED/Hospital

Weekend days see larger volumes of ED trauma cases (Figure 5).

Figure 5: Day of ED/hospital arrival, 2019



Time to ED/Hospital Arrival

The distribution of KTR records by time from the injury incident to hospital arrival and interfacility transfer status is presented in Table 11. Interfacility transfers are patients who are transferred to the reporting facility from another acute care facility. Due to the lack of personal identifiers in trauma registry data collection, we cannot track specific patients from one facility to another. The incident time is unknown in 41.64% of cases. This lack of information hinders efforts to assess the critical metric of timely transportation to definitive care for trauma patients.

Table 11: Time to ED/hospital arrival, 2019

Time to hospital	Interfacility Transfer	
	Yes	No
<1 hour	15	2,229
1–2 hours	85	1,692
2–5 hours	852	678
5–12 hours	1,083	270
12–24 hours	185	218
24+ hours	336	449
Same day (exact incident time unknown)	1,116	4,103
Next day or later (exact incident time unknown)	350	288
Incorrect (negative, zero, missing time)	9	159
Total	4,031	10,086

Note: Information on interfacility transfer is missing for 55 records.

Alcohol Use Indicators

Alcohol use beyond legal limits was confirmed by test for 271 (1.91%) of all records (Table 12). One third (33.35%) of cases were not tested for alcohol use, so the true extent of this problem is unknown.

Table 12: Alcohol use indicators, 2019

Alcohol Use Indicators	Number	%
No (not tested)	3,148	22.21
No (confirmed by test)	1,155	8.15
Yes (confirmed by test [trace levels])	81	0.57
Yes (confirmed by test [beyond legal limit])	271	1.91
Not applicable	739	5.21
Not documented	4,052	28.59
Missing	4,726	33.35
Total	14,172	100.00

Drug Use Indicators

Illegal use of illicit or prescription drugs was confirmed in 964 (6.80%) of the records (Table 13). However, it is again important to note that 77.01% of cases either were not tested for drug use or did not document whether testing was performed, so the extent of this relationship is unknown. The number of cases in which drug use indicators were not documented increased significantly, from 501 in 2018 to 3,856 in 2019. This is another area where the ability to link law enforcement and emergency medical services records with hospital records will enhance the accuracy of reporting.

Table 13: Drug use indicators, 2019

Drug Use Indicators	Number	%
No (not tested)	7,057	49.80
No (confirmed by test)	1,368	9.65
Yes (confirmed by test [prescription drug])	298	2.10
Yes (confirmed by test [illegal use of prescription drug])	13	0.09
Yes (confirmed by test [illegal use drug])	951	6.71
Not applicable	629	4.44
Not documented	3,856	27.21
Total	14,172	100.00

Injury Severity Scores

The Injury Severity Score (ISS) is an anatomical rating system that provides numerical values for patients with multiple and varying injuries. The National Trauma Data Bank characterizes ISS scores of 1–9 as mild, 10–15 as moderate, 16–24 as severe, and over 24 as very severe. Using this metric, more than two-thirds (68.31%) of trauma registry injuries were mild, 14.07% were moderate, 10.30% were severe and 6.49% were very severe. ISS was missing for less than one percent of the records (Table 14).

Table 14: Records by ISS, 2019

Injury Severity Score Range	Category	Number	%
1–9	Mild	9,681	68.31
10–15	Moderate	1,994	14.07
16–24	Severe	1,460	10.30
25–75	Very Severe	920	6.49
Missing	Missing	117	0.83
Total		14,172	100.00

Outcome Information

Table 15: Discharge type by facility, 2019

Facility	ED Discharge	Inpatient Discharge
	Number (% of type)	Number (% of type)
Ephraim McDowell Regional Medical Center	784 (78.01)	221 (21.99)
Fort Logan Hospital	* (*)	* (*)
Frankfort Regional Medical Center	158 (40.10)	236 (59.90)
Harlan ARH Hospital	87 (48.33)	93 (51.67)
Harrison Memorial Hospital	89 (100.00)	0 (0.00)
Hazard ARH	62 (22.30)	216 (77.70)
Highlands Regional Medical Center	7 (100.00)	0 (0.00)
James B. Haggin Memorial Hospital	* (*)	* (*)
Kosair Children's Hospital	188 (25.34)	554 (74.66)
Livingston Hospital	6 (40.00)	9 (60.00)
Marcum Wallace Memorial Hospital	48 (100.00)	0 (0.00)
Methodist Hospital Union County	47 (62.67)	28 (37.33)
Middlesboro ARH Hospital	120 (84.51)	22 (15.49)
Morgan County ARH Hospital	40 (100.00)	0 (0.00)
Owensboro Medical Center	100 (8.58)	1065 (91.42)
Pikeville Medical Center	170 (13.68)	1073 (86.32)
Rockcastle Hospital	* (*)	* (*)
St. Joseph Berea	37 (100.00)	0 (0.00)
St. Joseph Mt. Sterling	135 (100.00)	0 (0.00)
Taylor Regional Medical Center	108 (90.76)	11 (9.24)
Tug Valley ARH (formerly Williamson ARH)	* (*)	* (*)
Twin Lakes Regional Medical Center	118 (55.40)	95 (44.60)
University of Kentucky – Children's	41 (8.93)	418 (91.07)
University of Kentucky Medical Center	706 (21.46)	2,584 (78.54)
University of Louisville Hospital	85 (2.33)	3,570 (97.67)
Whitesburg ARH Hospital	* (*)	* (*)
Williamson ARH	* (*)	* (*)
Total	3,919 (27.65)	10,253 (72.35)

Note: Totals less than five were suppressed in accordance with state data management policy.

Emergency Department Discharges

Nearly three-quarters (71.22%) of the ED records indicated discharge from the ED to a bed or operating room in the same hospital, while 12.21% were transferred to another hospital. Deaths are recorded for 173 (1.22%) of ED patients (Table 16). Typically, about one-eighth (12%) of Kentucky's deaths from traumatic injury occur at hospitals, while the balance of deaths occur at the scene of the traumatic injury (see <https://www.cdc.gov/injury/wisqars/fatal.html>).

Table 16: ED discharge disposition, 2019

	Number	%
Same hospital	10,092	71.22
Non-specialty unit bed	5,622	39.67
Operating room	1,981	13.98
Observation unit (< 24-hour stays)	20	0.14
Intensive Care Unit	1,941	13.70
Telemetry/step-down unit	528	3.73
Died	173	1.22
Transferred to another hospital	1,730	12.21
Home with services	33	0.23
Home without services	1,884	13.29
Other (jail, institutional care, mental health, etc.)	34	0.24
Left against medical advice	34	0.24
Missing	192	1.36
Total	14,172	100.00

Inpatient Hospital Discharges

A majority (58.82%) of trauma registry records on patients discharged from inpatient care indicated that the patient was well enough to go home without formal home health services, but nearly one-third (30.94%) required some kind of post-acute care. In-hospital deaths were recorded for 450 (4.39%) patients (Table 17).

Table 17: Inpatient hospital discharge destination*

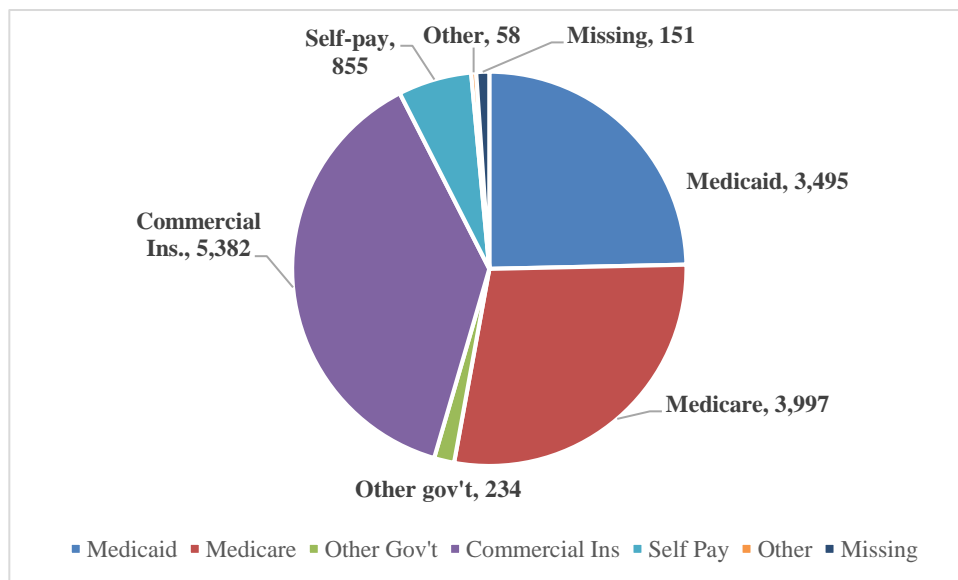
	Number	%
Home with self-care	6,025	58.82
Home health	753	7.35
Inpatient rehab	1,300	12.69
Skilled nursing facility/ICF	1,201	11.73
Died	450	4.39
Another acute care hospital	72	0.70%
Other	345	3.37%
Left against medical advice	97	0.95%
Total	10,243	100.00

Note: Inpatient discharge destination information was missing for 10 records.

Financial Information

Among the encounters listing expected payer, commercial insurance (37.98%) was the leader, followed by Medicare (28.20%) and Medicaid (24.66%) (Figure 6). The proportion of “self-pay” (i.e., uninsured) patients in 2019, 6.03%, continues to reflect the impact of Medicaid expansion; the “self-pay” category was in the 40% range before 2014, when Medicaid coverage became available to new categories and income levels of Kentuckians. This decline is important because “self-pay” patients are rarely able to pay for their trauma care, and the federal funding that has historically provided some offset to uncompensated care will be reduced in future years. The expected source of payment was missing for 151 (1.06%) records.

Figure 6: Primary source of payment, 2019



Conclusion

As the proportion of Kentucky hospitals reporting to the Kentucky Trauma Registry grows, the registry will become more representative of major trauma in the state as a whole. In a voluntary system like Kentucky's, growth is inevitably slow. The state Trauma Advisory Council continues to work closely with candidate facilities as they progress toward state or national verification and designation. Funding from the National Highway Traffic Safety Administration, made available through a grant from the Kentucky Office of Highway Safety, supports software or portal activation costs for a facility's first year in the KTR as well as the compilation of this report and other initiatives. We look forward to increasing the value of KTR data for system wide and facility-specific quality improvement initiatives through the addition of new variables.

The progress made by Kentucky's trauma system is particularly noteworthy because during the time covered by this report the system had no state funding. The system itself would not have existed without the professionalism and dedication of clinical and support staff. The sustainability of statewide trauma care on this tenuous basis is a constant concern that has been brought before state policymakers repeatedly. The value added by the state's trauma system—saving lives and avoiding catastrophic trauma-related disability—must be recognized and given proportionate support if the state trauma system is to continue its record of growth and effectiveness.

Acknowledgments:

In addition to the invaluable support from Trauma Advisory Council leadership and our grant funders, KTR facilities' trauma registrars have worked diligently to assure continuous quality improvement for KTR data as well as trauma care across the state.