KENTUCKY TRAUMA REGISTRY

2016 ANNUAL REPORT

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KENTUCKY INJURY PREVENTION
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Forward

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. 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 (NTDB) standards established in the National Trauma Data Standard Data Dictionary. The trauma centers upload their trauma data electronically at least quarterly to the KTR. Clinical Data Management, Inc. (CDM) 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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Introduction

Kentucky law (KRS 311A.010) defines "trauma" as a single or multi-system life-threatening or limb-threatening injury requiring immediate medical or surgical intervention or treatment to prevent death or permanent disability. The body of this report summarizes data on trauma patients cared for during calendar year 2016 at Kentucky trauma centers, both verified and in applicant status, and reported to the Kentucky Trauma Registry as of October 2018. 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 KTR data. Patients transferred between hospitals have separate records for treatment at each reporting facility that cannot be merged in the absence of 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 event is not part of the reported data: KTR data entries are reported by hospital staff 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 under-represented 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.

A broad overview of the hospital care provided to Kentucky residents whose primary diagnosis was some form of physical trauma appears in the Kentucky Inpatient and Emergency Department Traumatic Injury Data Report, available at http://www.kiprc.uky.edu/ projects/trauma/index.html.

Definitions (per **902 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.

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Kentucky's Reporting Trauma Centers, 2016

Trauma Center	Designation/Status
Ephraim McDowell Regional Medical Center	Level III
Ephraim McDowell Fort Logan Hospital	Level IV
Frankfort Regional Medical Center	Level III
Harlan ARH Hospital	Level IV in progress
Harrison Memorial Hospital	Level IV
Hazard ARH	Level III
James B. Haggin Memorial Hospital	Level IV
Kosair Children's Hospital	Level I Pediatric
Livingston Hospital	Level IV
Marcum & Wallace Memorial Hospital	Level IV
McDowell ARH Hospital	Level IV in progress
Methodist Hospital Union County	Level IV
Middlesboro ARH Hospital	Level IV in progress
Morgan County ARH Hospital	Level IV
Owensboro Medical Center	Level III
Pikeville Medical Center	Level II
Rockcastle Regional Hospital	Level IV
Russell County Hospital	Level IV in progress
St. Claire Medical Center	Level IV
St. Joseph Berea	Level IV in progress
St. Joseph Mt. Sterling	Level IV in progress
St. Joseph London	Level IV in progress
Taylor Regional Medical Center	Level III
Trigg County Hospital	Level IV in progress
Tug Valley ARH (formerly Williamson ARH)	Level IV in progress
Twin Lakes Regional Medical Center	Level IV in progress
University of Kentucky – Children's	Level I Pediatric
University of Kentucky Medical Center	Level I
University of Louisville Hospital	Level I
Whitesburg ARH Hospital	Level IV in progress

Kentucky Trauma Registry Records 2008-2016

The Kentucky Trauma Registry has grown from 5 reporting facilities in 2008 to 29 in 2016, although Parkway Regional Hospital in Fulton discontinued inpatient service in early 2015. A total of 13,691 records were reported in 2016, more than double the 2008 total (Figure 1).

Figure 1: Total records, 2008-2016
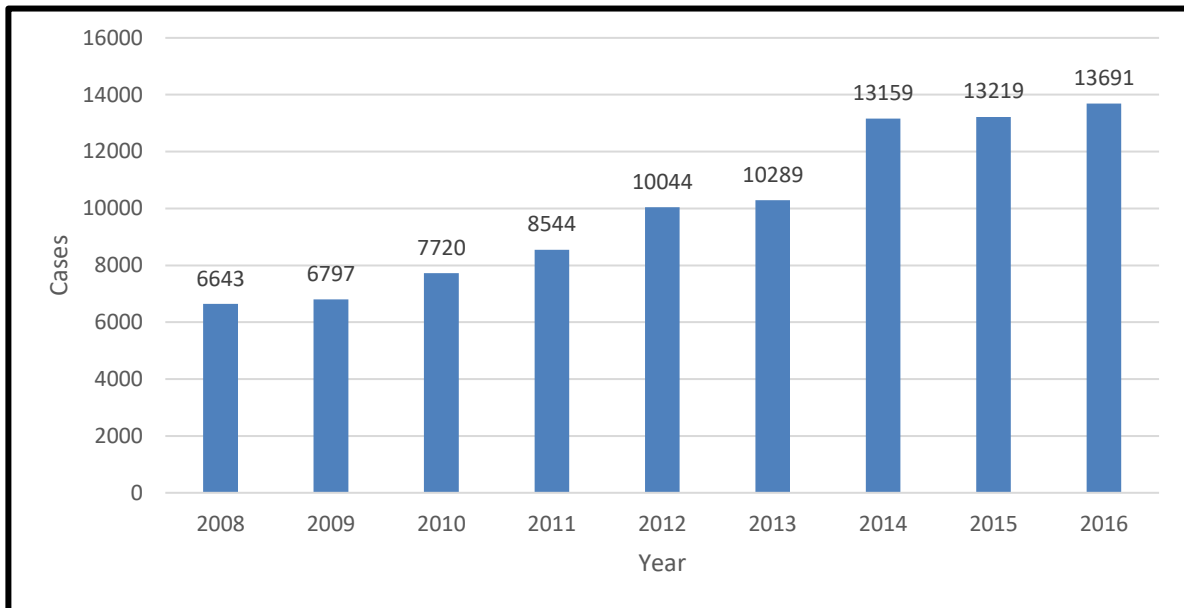
Table 1: Records by reporting trauma center, 2016

Hospital	Records
Ephraim McDowell Regional Medical Center	233
Ephraim McDowell Fort Logan Hospital	70
Frankfort Regional Medical Center	423
Harlan ARH Hospital	202
Harrison Memorial Hospital	120
Hazard ARH	391
James B. Haggin Memorial Hospital	131
Kosair Children's Hospital (now Norton Children's Hospital)	820
Livingston Hospital	53
Marcum Wallace Memorial Hospital	82
McDowell ARH Hospital	71
Methodist Hospital Union County	85
Middlesboro ARH Hospital	166
Morgan County ARH Hospital	37
Owensboro Medical Center	827
Pikeville Medical Center	1,427
Rockcastle Hospital	80
Russell County Hospital	81
St. Claire Medical Center	77
St. Joseph Berea	74
St. Joseph Hospital (Mt. Sterling)	8
St. Joseph London	203
Taylor Regional Medical Center	429
Trigg County Hospital	24
Tug Valley ARH (formerly Williamson ARH)	101
Twin Lakes Regional Medical Center	108
University of Kentucky – Children's	471
University of Kentucky Medical Center	3,261
University of Louisville Hospital	3,478
Whitesburg ARH Hospital	158
Total	13,691

Demographic Information

Gender

Injuries to males comprised 60% of KTR records (Table 2). The ACS trauma classification excludes hip fractures, the most common traumatic injury in older adults, and a category that is predominantly female. Thus, KTR demographics are significantly different from those of the related report on 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). Gender identification was missing for 56 records.

Table 2: Records by gender, 2016

Gender	Number	%
Female	5,454	39.84%
Male	8,181	59.75%
Missing	56	0.41%
Total	13,691	100.0%

Race/Ethnicity

Most (88.2%) of the records reported treatment for white patients, while 6.6% were for black patients (Table 3). Nearly all records list the patient's race, but 3.6% are missing information on ethnicity.

Table 3: Records by race and ethnicity, 2016

Race	Hispanic/ Latino	Non-Hispanic/Latino	Missing	Total
		Ethnicity		
Asian	0	24	*	27
Native Hawaiian or Other Pacific Islander	*	6	*	9
Other Race	111	35	10	156
American Indian	*	*	0	6
Black or African American	0	779	128	907
White	61	11,133	888	12,082
Missing	18	85	401	504
Total	**	**	**	13,691

*Totals less than 5 were suppressed by state data management policy.
**Suppressed totals to maintain censoring.

Age

Inclusion criteria influence the distribution of trauma records by age group. The statewide hospitalization data for traumatic injury is skewed towards older age groups due to inclusion of hip fractures, whereas the KTR records are mainly for working-age adults (Figure 2).

Figure 2: Records by age group, 2016
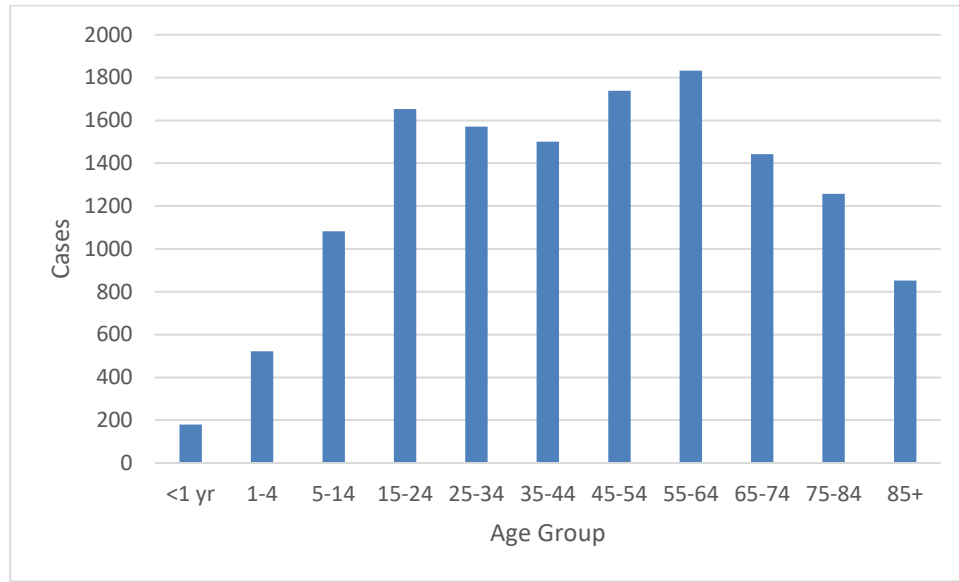
Note: Missing information on age for 8 records.

Patient County of Residence

Table 4 sets out the number and proportion of KTR records for the counties with the highest number of reports. About one-fifth (20.04%) 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. About one in eight (12.49%) of the total KTR records were for out-of-state patients. There were almost as many records from the top 10 counties as from the rest of the state's counties combined (43.09% vs. 44.42%).

Table 4: Records by county of residence, 2016

Top 10 KY counties based on volume	Number	%
Jefferson	1,963	14.34%
Fayette	780	5.70%
Pike	596	4.35%
Daviess	542	3.96%
Taylor	479	3.50%
Franklin	372	2.72%
Perry	329	2.40%
Floyd	297	2.17%
Letcher	275	2.01%
Laurel	266	1.94%
All other KY counties combined	6,082	44.42%
Out-of-state residents	1,710	12.49%

A map of rates per 1,000 residents follows. It must be interpreted with the caveat that it is not an accurate rendering of counties' incidence of trauma: low rates in the counties in the southwest and northern parts of the state reflected the lack of acute care hospitals reporting to the KTR in those regions. It is also possible that the residents of these counties are treated in out-of-state trauma centers such as the University of Cincinnati Hospital, Cincinnati Children's Hospital, or Vanderbilt University Hospital.

Map: Trauma Registry Records per 1,000 County Population in Quintiles

Rate

0.1 - 1.3
1.4 - 2.4
2.5 - 3.4
3.5 - 5.6
5.7 - 18.8
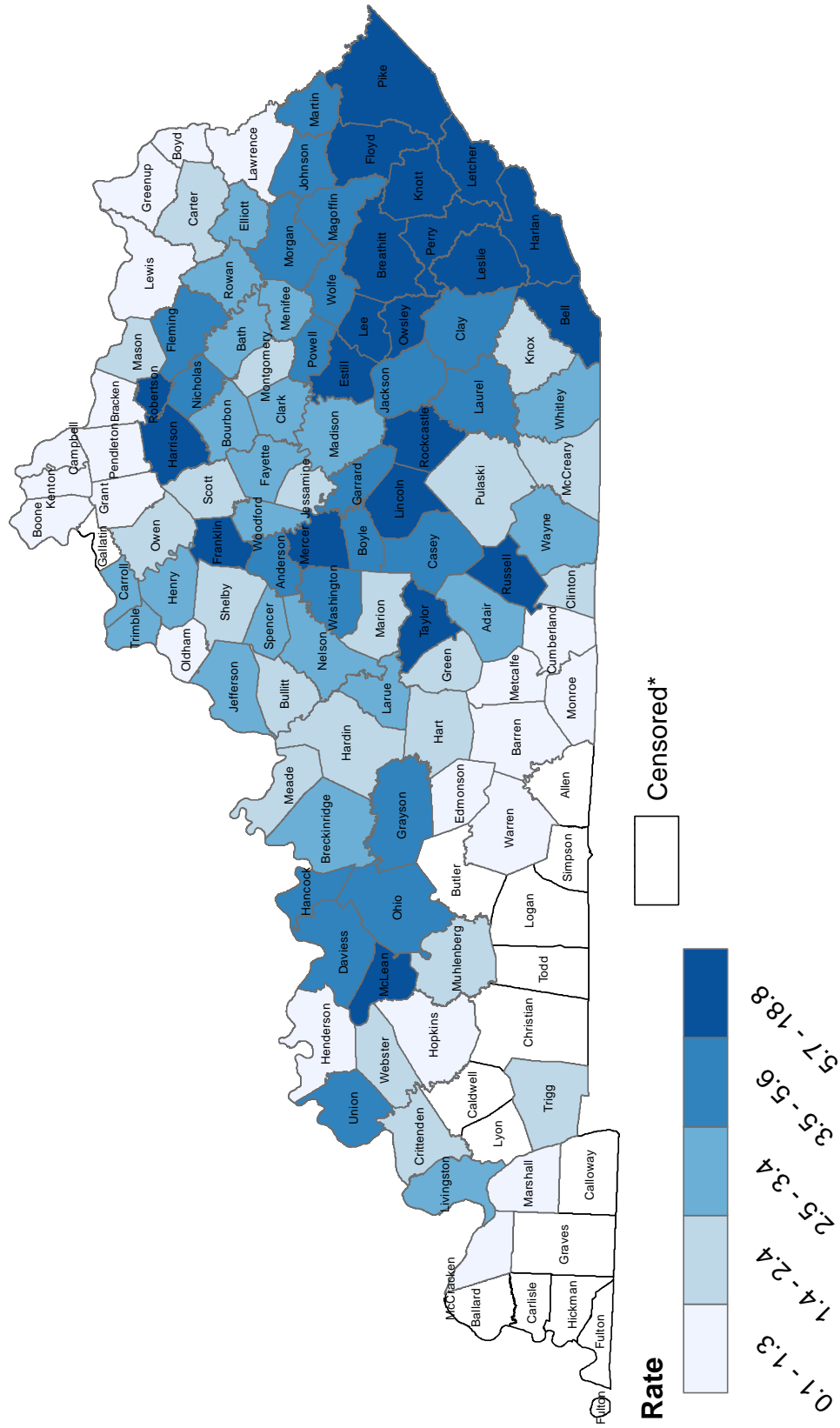
Censored*

*Rates censored for counts <5

Injury Information

Work-related Cases

Work-related trauma is defined as injury that occurs during paid employment. A total of 506 work-related trauma cases were recorded in the KTR dataset in 2016. Falls were the most common cause of injury (Figure 3).

Figure 3: Work-related trauma records by cause of injury, 2016
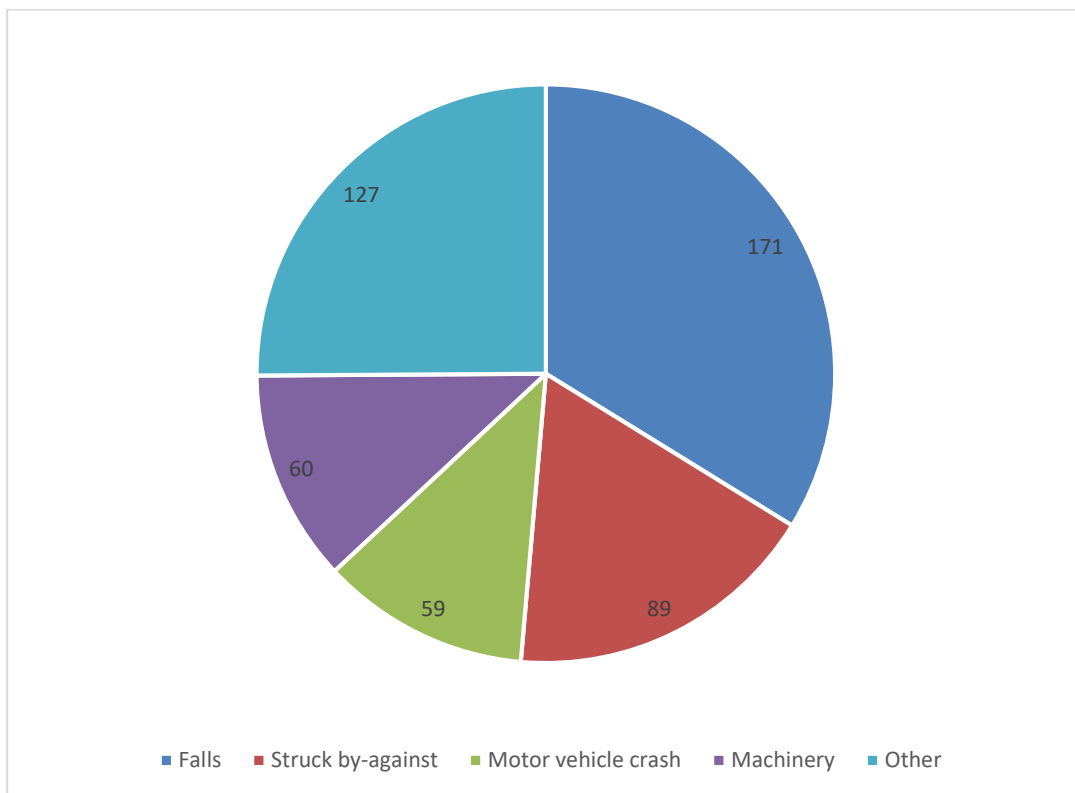
Table 5 shows the industry associated with the patient's work environment for work-related trauma records. Construction and manufacturing are two of the largest industry categories, representing 28.26% of work-related trauma in the KTR.

Table 5: Work-related trauma records by industry, 2016

Industry	Number	%
Other Services	59	11.66%
Construction	100	19.76%
Transportation and Public Utilities	42	8.30%
Manufacturing	43	8.50%
Agriculture, Forestry, Fishing	46	9.09%
Natural Resources and Mining	39	7.71%
Retail Trade	27	5.34%
Education and Health Services	15	2.96%
Government	21	4.15%
Leisure and Hospitality	10	1.98%
Information Services	5	0.99%
Finance, Insurance, and Real Estate	*	*
Wholesale Trade	*	*
Professional and Business Services	*	*
Missing/not available	93	18.38%
Total	506	100%

*Counts less than 5 were suppressed by state data management policy.

Cause and Intent of Injury

E-codes indicating mechanism and intent were provided for nearly all (99.7%) of the records. Unintentional falls (n=5,270) and unintentional motor vehicle traffic collisions (n=3848) were the leading causes of injuries reported to KTR (Tables 6a and 6b). Because of the change in coding, ICD-9-CM and ICD-10-CM data are reported separately.

Table 6a: Records coded in ICD-9-CM by cause and intent of injury, 2016

Cause	Unintentional	Intentional	Other/ Undetermined
Falls	1,674	11	*
Motor vehicle traffic collisions	1,086	5	*
Other transportation	532	0	0
Struck by/against	188	92	*
Fire/burn	82	*	0
Cut/pierce	71	83	*
Machinery	57	0	0
Natural/environmental	42	0	0
Other specified cause	34	68	*
Other pedal cycling	50	0	0
Firearm	53	111	16
Not Specified	*	*	*
Overexertion	10	0	0
Other Pedestrian	28	0	0
Not elsewhere classified	*	*	0
Poisoning	0	*	0
Drowning	0	*	0
Suffocation	0	*	0
Total	3,917	383	29

*Counts less than 5 were suppressed by state data management policy.
Note: Missing information on cause and intent for 120 records.

Table 6b: Records coded in ICD-10-CM by cause and intent of injury, 2016

Cause	Unintentional	Intentional	Other/ Undetermined
Falls	3,596	9	40
Motor vehicle traffic collisions	2,762	*	16
Other transportation	415	0	0
Struck by/against	334	248	0
Fire/burn	259	7	6
Cut/pierce	237	145	*
Machinery	123	0	0
Natural/environmental	98	0	0
Other specified cause	151	40	*
Other pedal cycling	50	0	0
Firearm	97	312	28
Not Specified	*	26	*
Overexertion	10	0	0
Other Pedestrian	38	0	0
Not elsewhere classified	0	17	22
Poisoning	13	*	*
Drowning	*	0	*
Suffocation	0	6	*
Total	8,289	815	119

*Counts less than 5 were suppressed by state data management policy.
Note: Missing information on cause and intent for 21 records.

Cause/Intent of Injury by Age Group

Patients aged 15-24 accounted for nearly one-fifth (19.37%) of motor vehicle crash-related trauma, followed by those aged 25-34 (16.00%). This finding is similar to those of previous years. Falls among those 55 and older accounted for well over half (58.78%) of all unintentional falls treated in trauma centers. Almost two-fifths (38.83%) 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. About half (50.38%) of the assault injuries were to adolescents and adults aged 15-34 (Tables 7a and 7b). Data coded in ICD-9-CM and ICD-10-CM are presented separately.

Table 7a: Records coded in ICD-9-CM by age and major causes of injury, 2016

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	%
Missing	0	0	0	0	*	0.06	0	0	54	9.25	*	0.35	0	0
<1	*	*	0	0.00	17	1.02	*	*	5	0.86	41	13.85	0	0
1-4	31	2.85	*	*	93	5.56	8	4.26	29	4.97	14	4.73	0	0
5-14	73	6.72	45	8.46	159	9.50	36	19.15	75	12.84	*	*	*	*
15-24	186	17.13	116	21.8	63	3.76	37	19.68	61	10.45	51	17.23	15	17.24
25-34	176	16.21	79	14.85	79	4.72	23	12.23	77	13.18	62	20.95	20	22.99
35-44	143	13.17	70	13.16	106	6.33	30	15.96	91	15.58	45	15.2	15	17.24
45-54	166	15.29	92	17.29	172	10.27	20	10.64	57	9.76	42	14.19	8	9.20
55-64	144	13.26	67	12.59	283	16.91	13	6.91	55	9.42	26	8.78	17	19.54
65-74	86	7.92	36	6.77	248	14.81	16	8.51	53	9.08	8	2.70	*	*
75-84	54	4.97	20	3.76	281	16.79	*	*	18	3.08	*	*	*	*
85+	23	2.12	*	*	172	10.27	*	*	9	1.54	0	0.00	*	*

*Counts less than 5 were suppressed by state data management policy.

Table 7b: Records coded in ICD-10-CM by age and major causes of injury, 2016

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	%
Missing	0	0	0	0	*	0.06	0	0	54	9.25	*	0.35	0	0
<1	8	0.29	0	0.00	50	1.39	6	1.89	29	2.19	19	2.8	0	0
1-4	55	1.99	7	1.69	136	3.78	19	5.69	119	9.00	7	1.03	0	0
5-14	157	5.68	58	13.98	262	7.29	43	12.87	158	11.95	10	1.47	*	*
15-24	535	19.37	74	17.83	92	2.56	59	14.97	177	13.39	169	24.93	27	19.71
25-34	442	16.00	48	11.57	146	4.06	46	13.77	169	12.78	172	25.37	32	23.36
35-44	377	13.65	72	17.35	204	5.67	37	11.08	147	11.12	139	20.50	25	18.25
45-54	439	15.89	58	13.98	314	8.73	50	14.97	195	14.75	101	14.90	25	18.25
55-64	353	12.78	60	14.46	556	15.46	33	9.88	168	12.71	44	6.49	14	10.22
65-74	216	7.82	28	6.75	617	17.16	24	7.19	87	6.58	13	1.92	7	5.11
75-84	128	4.63	9	2.17	661	18.38	19	5.69	52	3.93	*	*	*	*
85+	51	0.29	0	0.00	50	1.39	6	1.80	29	2.19	19	2.80	0	0.00

*Counts less than 5 were suppressed by state data management policy.

Motor Vehicle Traffic Collision Involvement

Among the unintentional motor vehicle traffic collision (MVTC) records, 64% were coded as vehicle occupants, 12.49% as motorcyclists, and 6.03% as pedestrians (Table 8).

Table 8: Motor vehicle collision involvement, 2016

Role in motor vehicle traffic collision	Number	%
Motor vehicle occupant	2,475	64.00%
Motorcyclist	483	12.49%
Pedestrian	233	6.03%
Unknown	172	4.45%
Other	446	11.53%
Pedal cyclist	58	1.50%
Total	3,867	100.00%

Protective Devices

There were 3,688 records for vehicle occupants injured in motor vehicle traffic collision. Protective devices were not used in 23.44% of the cases. Information on the use of protective devices was not available to the registrars in 3.83% of the cases (Table 9). It is notable that this proportion of missing information decreased from the previous year, indicating data quality improvements.

Table 9: Use of occupant protective devices in motor vehicle traffic collisions, 2016

Protective device	Use of protective devices by occupants in unintentional MVTC	
	Number	%
Shoulder and Lap belt	1,105	41.51%
Shoulder belt only	9	0.34%
Lap belt only	432	16.23%
Child restraint	80	3.01%
Airbag	1,336	50.19%
Available but not used	624	23.44%
Missing information on protective device use	102	3.83%

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 inter-facility transfers are presented in Table 10. The inter-facility transfer variable indicates whether the patient was transferred to the reporting facility from another acute care facility. Helicopter ambulance was used in 729 (18.6%) of the 3,924 inter-facility transfers and in 1,133 (11.6%) of the 9,762 non-transfer records. Ground ambulance was listed in 8,787 (64.2%) of all KTR cases. Transportation mode was not identified in 5 cases.

Table 10: Transportation mode, 2016

Transportation mode	Inter-facility Transfer		
	Yes	No	Total
Missing	11	105	116
Ground Ambulance	3,010	5,774	8,787
Helicopter Ambulance	729	1,133	1,864
Fixed-wing Ambulance	7	*	**
Private/Public Vehicle/Walk-in	163	2,705	2,868
Police	*	40	**
Other	*	*	**
Total	3,924	9,762	13,691

*Cells with counts of less than 5 were suppressed by state data management policy.
Note: Missing information on inter-facility transfer for 5 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, however, that EMS information will be available for patients who were not inter-facility transferees and were transported to the trauma facility by ground ambulance (n=8,787) or air ambulance (n=1,873) (Table 10).

Emergency Department Information

Month of Arrival at ED/Hospital

Trauma volume varies by season, with a higher volume during summer months (Figure 4), mainly due to the increased number of motor vehicle traffic collision injuries and falls.
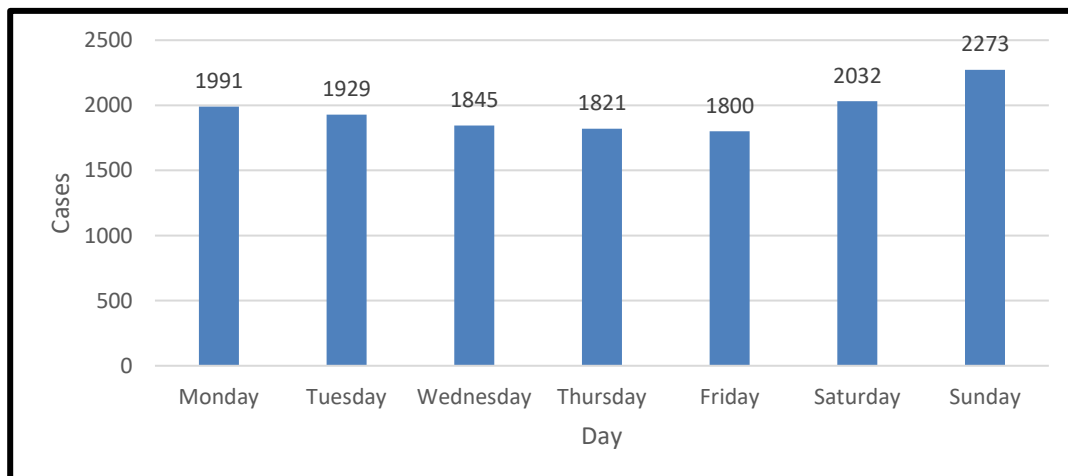
Figure 4: Month of ED/hospital arrival, 2016
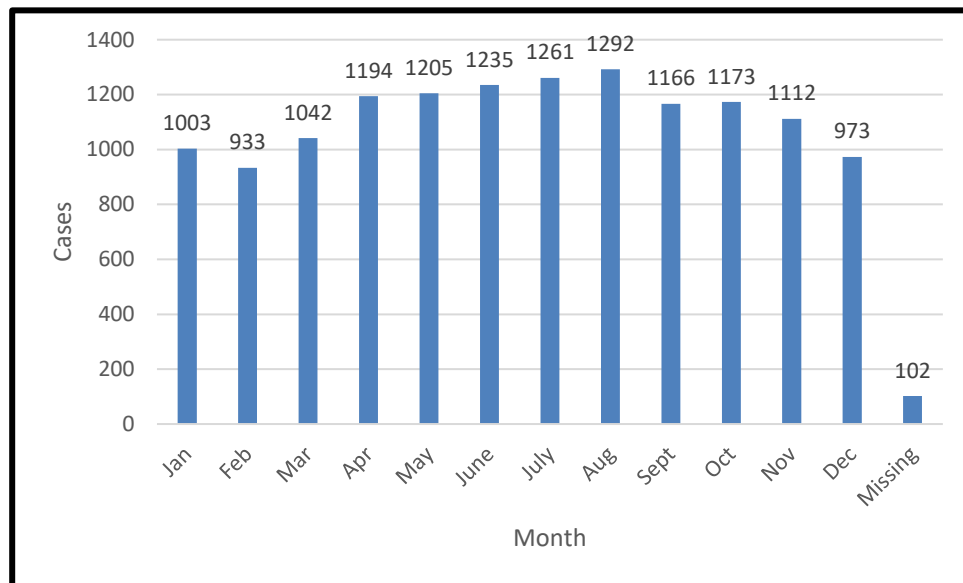
Weekday of Arrival to ED/Hospital

A higher volume of trauma cases was recorded on weekend days (Figure 5).

Figure 5: Day of ED/hospital arrival, 2016

Time to ED/Hospital Arrival

The distribution of KTR records by time from the injury incident to hospital arrival and inter-facility transfer status is presented in Table 11. Patients are considered inter-facility transfers if they 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 nearly one-third of cases.

Table 11: Time to ED/hospital arrival, 2016

Time to hospital	Inter-facility Transfer	
	Yes	No
<1 hour	11	2,589
1-2 hours	134	2,021
2-5 hours	1,096	733
5-12 hours	1,062	242
12-24 hours	141	162
24+ hours	305	376
Same day (exact incident time unknown)	874	3,228
Next day or later (exact incident time unknown)	283	238
Incorrect (negative, zero, missing time)	18	177
Total	3,924	9,762

Note: Missing information on inter-facility transfer for 5 records.

Alcohol Use Indicators

Alcohol use beyond legal limits was confirmed by test for 858 (6.27%) of all records (Table 12). Over 56% of cases were not tested for alcohol use, so the true extent of this problem is unknown.

Table 12: Alcohol use indicators, 2014Q4-2015Q3

Alcohol Use Indicators	Number	%
No (not tested)	7,701	56.25%
No (confirmed by test)	3,261	23.82%
Yes (confirmed by test [trace levels])	220	1.61%
Yes (confirmed by test [beyond legal limit])	858	6.27%
Not Applicable	1,184	8.65%
Not documented	234	1.71%
Missing	233	1.70%
Total	13,691	100.0%

Drug Use Indicators

Illegal use of illicit or prescription drugs was confirmed in 1,144 (8.36%) of the records (Table 13). However, it is again important to note that 59% of cases were not tested for drug use, so the true extent to which drug use is involved in trauma is unknown.

Table 13: Drug use indicators, 2016

	Number	%
No (not tested)	8,129	59.37%
No (confirmed by test)	1,635	11.94%
Yes (confirmed by test [prescription drug])	1,088	7.95%
Yes (confirmed by test [illegal use of prescription drug])	111	0.81%
Yes (confirmed by test [illegal use drug])	1,033	7.55%
Not Applicable	1,276	9.32%
Not documented	419	3.06%
Total	13,691	100.0%

Locally Calculated 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, about two-thirds (65.33%) of trauma registry injuries were mild, 15% moderate, 10% severe and 7% very severe. ISS was missing for over 2% of the records (Table 14).

Table 14: Records by ISS, 2016

Injury Severity Score Range	Category	Number	%
1-9	Mild	8,945	65.33
10-15	Moderate	2,110	15.41
16-24	Severe	1,376	10.05
25-75	Very Severe	920	6.72
Missing	Missing	340	2.48
Total		13,691	100

Outcome Information

Table 15: Discharge status, 2016

Hospital	ED Discharge Number (% hospital)	Inpatient Discharge Number (% hospital)
Ephraim McDowell Regional Medical Center	86 (36.9%)	147 (63.1%)
Fort Logan Hospital	70 (100%)	0 (0%)
Frankfort Regional Medical Center	210 (49.6%)	213 (50.4%)
Harlan ARH Hospital	130 (64.4%)	72 (35.6%)
Harrison Memorial Hospital	87 (72.5%)	33 (27.5%)
Hazard ARH	108 (27.6%)	283 (72.4%)
James B. Haggin Memorial Hospital	131 (100%)	0 (0%)
Kosair Children's Hospital	10 (1.2%)	810 (98.8%)
Livingston Hospital	21 (39.6%)	32 (60.4%)
Marcum Wallace Memorial Hospital	80 (97.6%)	2 (2.4%)
McDowell ARH Hospital	69 (97.2%)	2 (2.8%)
Methodist Hospital Union County	53 (62.4%)	32 (37.6%)
Middlesboro ARH Hospital	142 (85.5%)	24 (14.5%)
Morgan County ARH Hospital	37 (100%)	0 (0%)
Owensboro Medical Center	83 (10%)	744 (90%)
Pikeville Medical Center	118 (8.3%)	1309 (91.7%)
Rockcastle Hospital	78 (97.5%)	2 (2.5%)
Russell County Hospital	81 (100%)	0 (0%)
St. Claire Medical Center	69 (89.6%)	8 (10.4%)
St. Joseph Berea	74 (100%)	0 (0%)
St. Joseph Hospital Mt. Sterling	8 (100%)	0 (0%)
St. Joseph London	119 (58.6%)	84 (41.4%)
Taylor Regional Medical Center	371 (86.5%)	58 (13.5%)
Trigg County Hospital	24 (100%)	0 (0%)
Tug Valley ARH (formerly Williamson ARH)	92 (91.1%)	9 (8.9%)
Twin Lakes Regional Medical Center	40 (37%)	68 (63%)
University of Kentucky – Children's	29 (6.2%)	442 (93.8%)
University of Kentucky Medical Center	532 (16.3%)	2729 (83.7%)
University of Louisville Hospital	87 (2.5%)	3391 (97.5%)
Whitesburg ARH Hospital	149 (94.3%)	9 (5.7%)
Total	3188 (23.3%)	10503 (76.7%)

Note: Totals less than 5 were suppressed in keeping with state data management policy.

Over three-quarters (75.41%) of the ED records indicated discharge from the ED to a bed or operating room in the same hospital, while 14,77% were transferred to another hospital. Deaths are recorded for 177 (1.29%) of ED patients (Table 16).

Table 16: ED discharge disposition, 2016

	Number	%
Same hospital	10,324	75.41
Non-specialty unit bed)	5,733	41.87
Operating room	1,919	14.02
Transferred to another hospital	2,022	14.77
Intensive Care Unit	2,104	15.37
Home without services	883	6.45
Telemetry/step-down unit	524	3.83
Observation unit (< 24 hour stays)	44	0.32
Died	177	1.29
Home with services	16	0.12
Other (jail, institutional care, mental health, etc.)	23	0.17
Left against medical advice	23	0.17
Missing	223	1.63
Total		

Inpatient Hospital Discharge

Patients discharged from inpatient care were most likely (47.02%) to go home without further need for services, but over one in four required some kind of post-acute care. In-hospital deaths were recorded for 410 (2.99%) patients (Table 17). The proportion of records missing any indication of discharge disposition (23.98%) points to this variable as a target for quality improvement.

Table 17: Inpatient Discharge Disposition, 2016

Discharge Destination	Number	%
Home with self-care	6,437	47.02%
Home health	975	7.12%
Inpatient rehab	1,299	9.49%
Skilled Nursing Facility & Intermediate Care Facility	897	6.55%
Died	410	2.99%
Another acute care hospital (Long Term Care Hospital, Inpatient, Psychiatric)	163	1.19%
Other	227	1.66%
Missing data	3,283	23.98%
Total	13,691	100.00%

Financial Information

The expected source of payment was not reported for 345 records, about 2.5% of the total KTR volume. Among the encounters listing expected payer, commercial insurance (36.64%) was the leader, followed by Medicaid (26.04%), and Medicare (25.48%) (Fig. 6). The proportion of "self-pay" (i.e., uninsured) patients in 2016, 7.5%, is strikingly lower than the 10.5% in this category in 2015. Both reflect the impact of Medicaid expansion, as the "self-pay" category was in the 40% range before 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 is being reduced under the Affordable Care Act.

Figure 6: Primary source of payment, 2016
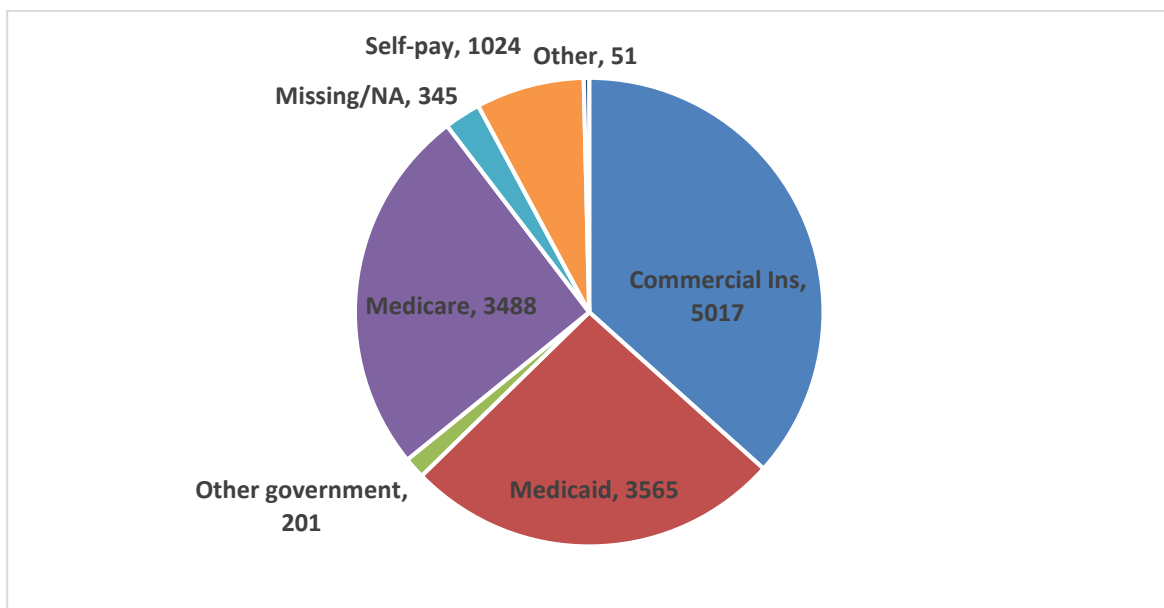
Conclusion

As the proportion of Kentucky hospitals in the Kentucky Trauma Registry grows, it will become more representative of major trauma in the state as a whole. The state Trauma Advisory Council continues to work closely with candidate facilities as they progress towards state or national verification, and 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 their first year in the KTR. Thanks to the Kentucky Commissioner of Public Health, funding was made available during the 2015-2016 state fiscal year to support extensive educational programming and a full system-wide evaluation (summary available at http://www.mc.uky.edu/kiprc/programs/trauma-registry/Kentucky-trauma-system-evaluation-2016.pdf). 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 and 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 policy makers 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.

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