# **KENTUCKY TRAUMA REGISTRY**

# **2012 ANNUAL REPORT**

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# **Forward**

Under state administrative regulation (902 KAR 28:040), the Kentucky Department for Public Health established a single statewide Kentucky Trauma Registry (KTR) through the Kentucky Injury Prevention Research Center (KIPRC) to be the statewide repository for trauma data. All trauma centers designated by the Commissioner of Public Health in the Kentucky Trauma Care System maintain a trauma registry that is 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 repository, and supplies the injury data to the Kentucky Injury Prevention and Research Center.

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

Requests for copies of this publication and any other inquiries should be directed to:

Svetla Slavova Kentucky Injury Prevention and Research Center 333 Waller Avenue, Suite 242 Lexington, Kentucky 40504 (859) 323-7873 office (859) 257-3909 fax This report and previous trauma reports are posted on KIPRC website: http://www.mc.uky.edu/kiprc/projects/trauma/index.html

#### **Introduction**

The body of this report summarizes data on trauma\* patients cared for during 2012 at Kentucky trauma centers, both verified and in applicant status, and reported to the Kentucky Trauma Registry as of July 31, 2013. A list of these facilities appears on the next page. It is important to note several characteristics of the data reported here.

a. In order to protect patient privacy, KTR data do not allow identification of individual patients. Patients transferred between hospitals have separate records for treatment at each reporting facility that cannot be merged due to the lack of personal identifiers. Therefore the number of records in KTR reflects total episodes of care in reporting facilities and is greater than the number of distinct patients treated. The rest of this report refers to each episode of trauma care as a "case".

b. These data represent the most serious injuries rather than all traumatic injuries in the state.

c. Trauma that results in death at the scene of the event is not part of the reported data because KTR data entries are for patients who reach the hospital.

d. If a traumatic injury happened in Kentucky but was treated in an out-of-state facility, it was not included in KTR data. Border areas are thus under-represented in this report.

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.

<sup>\*</sup>Kentucky law (KRS 311A.010) defines "trauma" as a single or multi-system life-threatening or limbthreatening injury requiring immediate medical or surgical intervention or treatment to prevent death or permanent disability.

# Kentucky Trauma Centers Reporting to KTR in 2012

| Kentucky Trauma Centers                      | Status*                        |  |  |
|--|--------------------------------|--|--|
| Crittenden County Hospital                   | Level IV – application status  |  |  |
| Ephraim McDowell Regional Medical Center     | Level III                      |  |  |
| Fort Logan Hospital                          | Level IV                       |  |  |
| Frankfort Regional Medical Center            | Level III                      |  |  |
| Harrison Memorial Hospital                   | Level IV - application status  |  |  |
| James B. Haggin Memorial Hospital            | Level IV                       |  |  |
| Kosair Children's Hospital                   | Level I Pediatric              |  |  |
| Livingston Hospital                          | Level IV                       |  |  |
| Marcum Wallace Memorial Hospital             | Level IV                       |  |  |
| Owensboro Medical Center                     | Level III - application status |  |  |
| Pikeville Medical Center                     | Level II - application status  |  |  |
| Spring View Hospital                         | Voluntary submission           |  |  |
| St. Joseph Berea                             | Level IV - application status  |  |  |
| Taylor Regional Medical Center               | Level III                      |  |  |
| Trigg County Hospital                        | Level IV - application status  |  |  |
| University of Kentucky – Children's Hospital | Level I Pediatric              |  |  |
| University of Kentucky Medical Center        | Level I                        |  |  |
| University of Louisville Hospital            | Level I                        |  |  |

\*Definitions (per 902 KAR 28:010):

- (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:

<sup>(18) &</sup>quot;Level I trauma center" means a regional trauma center that:

<sup>(</sup>a) Provides total care of every aspect of injury from prevention through rehabilitation; and

<sup>(</sup>b) Meets the requirements established in 902 KAR 28:020.

<sup>(19) &</sup>quot;Level II trauma center" means a regional trauma center that:

<sup>(</sup>a) Provides advanced trauma life support before a patient is transferred to a higher level of care;

<sup>(</sup>b) Is located in a hospital emergency department; and

<sup>(</sup>c) Meets the requirements established in 902 KAR 28:030

# KTR Reporting Facilities, 2012



KIPRC, 2013

# **KTR Volume**

#### **KTR Records 2008-2012**

The Kentucky Trauma Registry has grown from 5 reporting facilities in 2008 to 18 reporting facilities in 2012. A total of 10,044 records were reported to the Kentucky Trauma Registry in 2012, an increase of 51% (3,401 additional records) compared with 2008 (Figure 1).



Figure 1: KTR records, 2008-2012

Figure 2: KTR records by type of trauma centers, 2012



The level I trauma centers accounted for 71% (n=7,145) of the total KTR records. About 8% (n=839) of the records were submitted by level III centers, 4% (n=434) by level IV centers, and 16% (n=1,626) by trauma centers that are in application process seeking different levels of designation (Figure 2 and Table 1).

|  | Nu<br>Percent of      | umber of records<br>the total facility vol | lume   |
|--|-----------------------|--|--------|
| Facility (level of trauma, verified or in application) | Discharged<br>from ED | Inpatient<br>Discharge                     | Total  |
| Crittenden County Hospital (IV)                        | 37 (84.09%)           | 7 (15.91%)                                 | 44     |
| Ephraim McDowell Regional Medical Center (III)         | 119 (39.80%)          | 180 (60.20%)                               | 299    |
| Fort Logan Hospital (IV)                               | 135 (95.07%)          | 7 (4.93%)                                  | 142    |
| Frankfort Regional Medical Center (III)                | 139 (44.55%)          | 173 (55.45%)                               | 312    |
| Harrison Memorial Hospital (IV)                        | 90 (64.75%)           | 49 (35.25%)                                | 139    |
| James B. Haggin Memorial Hospital (IV)                 | 145 (98.64%)          | 2 (1.36%)                                  | 147    |
| Kosair Children's Hospital (I)                         | 5 (0.58%)             | 859 (99.42%)                               | 864    |
| Livingston Hospital (IV)                               | 31 (62.00%)           | 19 (38.00%)                                | 50     |
| Marcum Wallace Memorial Hospital (IV)                  | 94 (98.95%)           | 1 (1.05%)                                  | 95     |
| Owensboro Medical Center (III)                         | 265 (41.86%)          | 368 (58.14%)                               | 633    |
| Pikeville Medical Center (II)                          | 143 (22.00%)          | 507 (78.00%)                               | 650    |
| Spring View Hospital                                   | 85 (88.54%)           | 11 (11.46%)                                | 96     |
| St. Joseph Berea (IV)                                  | 56 (100.00%)          | 0 (0.00%)                                  | 56     |
| Taylor Regional Medical Center (III)                   | 89 (39.04%)           | 139 (60.96%)                               | 228    |
| Trigg County Hospital (IV)                             | 7 (87.50%)            | 1 (12.50%)                                 | 8      |
| University of Kentucky Medical Center (I)              | 481 (16.73%)          | 2,394 (83.27%)                             | 2,875  |
| University of Kentucky – Children's (I)                | 18 (4.07%)            | 424 (95.93%)                               | 442    |
| University of Louisville Hospital (I)                  | 67 (2.26%)            | 2,897 (97.74%)                             | 2,964  |
| Total  | 2,006                 | 8,038                                      | 10,044 |

Table 1: KTR records by facility, 2012

# **Demographic Information**

#### Gender

Males comprised 62% 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 therefore predominantly female. Thus, KTR demographics are significantly different from those of the related report on traumatic injuries as a whole, in which males and females are roughly equally represented (more information available in the Kentucky Inpatient and Emergency Department Traumatic Injury Data Reports posted here http://www.mc.uky.edu/kiprc/projects/trauma/index.html ).

Table 2: KTR records by gender, 2012

| Gender | Number | %      |  |  |
|--------|--------|--------|--|--|
| Female | 3,834  | 38.17  |  |  |
| Male   | 6,209  | 61.82  |  |  |
| Total  | 10,044 | 100.00 |  |  |

Note: one record was excluded due to missing information on gender

#### Age

The same issue of inclusion criteria influences the distribution of trauma records by age group. Whereas the statewide hospitalization data for traumatic injury is skewed towards older age groups (due to inclusion of hip fractures), the KTR records are mainly for working-age adults (Figure 3 and Table 3).



Figure 3: KTR records by age group, 2012

| E  | NA | <1yr | 1-  | 5-   | 15-<br>24-m | 25-<br>24 | 35-   | 45-<br>54-m | 55-   | 65-<br>74-m | 75-<br>84    | 85+ |
|--|----|------|-----|------|-------------|-----------|-------|-------------|-------|-------------|--------------|-----|
| Facility                                       |    |      | 4уг | 14уг | 24уг        | 34уг      | 44уг  | 54уг        | 04уг  | /4уг        | <b>ð</b> 4уг | уг  |
| Crittenden County<br>Hospital                  | 0  | *    | *   | *    | 6           | *         | 5     | *           | *     | 7           | 9            | 6   |
| Ephraim McDowell<br>Regional Medical<br>Center | 0  | 0    | 6   | 12   | 30          | 27        | 15    | 15          | 25    | 49          | 64           | 56  |
| Fort Logan<br>Hospital                         | 0  | *    | 7   | 16   | 33          | 20        | 18    | 12          | 11    | 7           | 11           | *   |
| Frankfort Regional<br>Medical Center           | 0  | *    | 10  | 25   | 20          | 28        | 27    | 28          | 50    | 38          | 43           | 41  |
| Harrison Memorial<br>Hospital                  | 0  | 0    | 6   | 12   | 10          | 11        | 11    | 15          | 18    | 15          | 18           | 23  |
| James B. Haggin<br>Memorial Hospital           | *  | *    | 5   | 18   | 21          | 23        | 17    | 18          | 15    | 8           | 7            | 12  |
| Kosair Children's<br>Hospital                  | *  | 92   | 212 | 436  | 121         | 0         | 0     | 0           | 0     | 0           | 0            | 0   |
| Livingston Hospital                            | 0  | 0    | 0   | 7    | *           | *         | *     | 7           | 5     | 8           | 7            | 7   |
| Marcum Wallace<br>Memorial Hospital            | 0  | 0    | *   | 8    | 8           | 12        | 19    | 10          | 15    | 7           | 7            | 6   |
| Owensboro<br>Medical Center                    | 14 | 8    | 13  | 40   | 37          | 49        | 53    | 68          | 79    | 85          | 108          | 79  |
| Pikeville Medical<br>Center                    | 0  | *    | 13  | 38   | 66          | 54        | 65    | 80          | 95    | 79          | 105          | 51  |
| Spring View<br>Hospital                        | 0  | 0    | *   | 9    | 11          | 12        | 14    | 12          | 9     | 9           | 12           | *   |
| St. Joseph Berea                               | 0  | *    | 5   | 8    | 8           | 13        | *     | *           | *     | 5           | *            | *   |
| Taylor Regional<br>Medical Center              | 0  | *    | 10  | 9    | 27          | 18        | 13    | 24          | 30    | 36          | 34           | 24  |
| Trigg County<br>Hospital                       | 0  | 0    | 0   | 0    | *           | 0         | *     | 0           | *     | *           | 0            | *   |
| University of<br>Kentucky -<br>Childrens       | 0  | 53   | 123 | 266  | 0           | 0         | 0     | 0           | 0     | 0           | 0            | 0   |
| University of<br>Kentucky Medical<br>Center    | 0  | 0    | 0   | 0    | 540         | 494       | 472   | 468         | 374   | 275         | 170          | 82  |
| University of<br>Louisville Hospital           | 0  | 0    | 0   | 5    | 511         | 558       | 482   | 548         | 370   | 213         | 187          | 90  |
| Total  | 19 | 170  | 418 | 912  | 1,453       | 1,324     | 1,217 | 1,311       | 1,101 | 844         | 785          | 490 |

# Table 3: KTR records by age group, 2012

\*Totals less than 5 were suppressed by state data management policy

#### **Race/Ethnicity**

The completeness of the ethnicity variable continues to improve from 56.3% missing values in 2009, to 18.1% missing ethnicity codes in 2010, 14.2% in 2011, and 5.8% in 2012. The distribution of the records by race did not change significantly from last year: 90% of the records indicated treatment for white patients, 8% for black patients (Table 4).

|   | Ethnicity             |                           |         |        |  |  |  |
|---|-----------------------|---------------------------|---------|--------|--|--|--|
| Race                                      | Hispanic<br>or Latino | Not Hispanic<br>or Latino | Missing | Total  |  |  |  |
| Asian                                     | 0                     | 21                        | 0       | 21     |  |  |  |
| Native Hawaiian or Other Pacific Islander | 10                    | 17                        | 0       | 27     |  |  |  |
| Other Race                                | 125                   | 25                        | 5       | 155    |  |  |  |
| American Indian                           | 0                     | *                         | 0       | *      |  |  |  |
| Black or African American                 | *                     | 749                       | 17      | 767    |  |  |  |
| White                                     | 35                    | 8,481                     | 493     | 9,009  |  |  |  |
| Missing                                   | 20                    | 20                        | 24      | 64     |  |  |  |
| Total                                     | 191                   | 9,314                     | 539     | 10,044 |  |  |  |

Table 4: KTR records by race and ethnicity, 2012

\*Totals less than 5 were suppressed by state data management policy

#### Patient's County of Residence

Figure 4 visually describes the rate of KTR records per 1,000 population by county of residence. The low rates in the counties in the south-west and north part of the state likely reflect the lack of KY acute care hospitals reporting to the KTR. It is also possible that the residents of these counties are treated in out-of-state trauma centers like the University Hospital in Cincinnati, Cincinnati Children's Hospital, or the Vanderbilt University Hospital's Trauma Center.

About one fifth of the records were for patients residing in Jefferson or Fayette counties, which is expected as these are the counties representing the two biggest cities in the state - Louisville and Lexington respectively. About 12% of the total KTR records were for out-of-state patients (Table 5).



Rate of KTR cases per 1,000 population by county of residency, 2012

| Top 10 KY counties based on volume | Number | %     |
|------------------------------------|--------|-------|
| Jefferson                          | 1,672  | 16.65 |
| Fayette                            | 577    | 5.74  |
| Daviess                            | 433    | 4.31  |
| Pike                               | 429    | 4.27  |
| Franklin                           | 289    | 2.88  |
| Taylor                             | 253    | 2.52  |
| Mercer                             | 221    | 2.20  |
| Lincoln                            | 220    | 2.19  |
| Hardin                             | 210    | 2.09  |
| Madison                            | 201    | 2.00  |
| All other KY counties combined     | 4,373  | 43.54 |
| Out-of-state residents             | 1,166  | 11.61 |

Table 5: KTR records by county of residence, 2012

# **Injury Information**

#### **Injury Incident Day of the Week**

There were 1 to 2% more records for the weekend days compared to the weekdays (Figure 5).



Figure 5: Trauma records by injury incident day of the week, 2012

#### **Work-related Cases**

Work-related trauma is defined as injury that occurs during paid employment. A total of 381 work-related trauma cases were recorded in the KTR dataset in 2012. One-third of the injuries were due to falls (Figure 6).

Figure 6: Work-related trauma records by cause of injury, 2012



Table 6 shows the industry associated with patient's work environment for the work-related trauma records.

| Patient Industry                    | Number | %      |
|-------------------------------------|--------|--------|
| Natural Resources and Mining        | 12     | 3.15   |
| Wholesale Trade                     | *      |        |
| Leisure and Hospitality             | *      |        |
| Other Services                      | 95     | 24.93  |
| Manufacturing                       | 42     | 11.02  |
| Retail Trade                        | 13     | 3.41   |
| Transportation and Public Utilities | 32     | 8.4    |
| Agriculture, Forestry, Fishing      | 23     | 6.04   |
| Professional and Business Services  | 17     | 4.46   |
| Education and Health Services       | *      |        |
| Construction                        | 59     | 15.49  |
| Government                          | 13     | 3.41   |
| Not available/missing               | 67     | 17.58  |
| Total                               | 381    | 100.00 |

Table 6: KTR work related trauma records by industry, 2012

\*Totals less than 5 were suppressed by state data management policy

# **Cause and Intent of Injury**

E-codes indicating mechanism and intent were provided for about 98% of the records. Falls (n=3,207) and motor vehicle traffic collisions (n=3,194) were the leading causes of injuries reported to KTR (Table 7).

| Cause                            | Unintentional | Intentional | Other/<br>Undetermined | Total  |
|----------------------------------|---------------|-------------|------------------------|--------|
| Motor vehicle traffic collisions | 3,176         | 8           | 10                     | 3,194  |
| Firearm                          | 75            | 312         | 31                     | 418    |
| Poisoning                        | *             | *           | *                      | 7      |
| Falls                            | 3,194         | 11          | *                      | 3,207  |
| Suffocation                      | *             | *           | *                      | 5      |
| Drowning                         | 13            | 0           | 0                      | 13     |
| Fire/burn                        | 329           | 10          | *                      | 343    |
| Cut/pierce                       | 184           | 211         | 7                      | 402    |
| Struck by/against                | 308           | 244         | 7                      | 559    |
| Machinery                        | 142           | 0           | 0                      | 142    |
| Other pedal cycle                | 103           | 0           | 0                      | 103    |
| Other pedestrian                 | 28            | 0           | 0                      | 28     |
| Other transportation             | 867           | 0           | 0                      | 867    |
| Natural/environmental            | 146           | 0           | *                      | 147    |
| Overexertion                     | 27            | 0           | 0                      | 27     |
| Other specified                  | 115           | 84          | *                      | 201    |
| Not elsewhere classified (NEC)   | 16            | 25          | 5                      | 46     |
| Not specified                    | 39            | 32          | 14                     | 85     |
| Missing E-code                   | -             | -           | -                      | 250    |
| Total                            | 8,769         | 943         | 85                     | 10,044 |

Table 7: KTR records by cause and intent of injury, 2012

\*Totals less than 5 were suppressed by state data management policy

#### **Cause/Intent of Injury by Age Group**

Patients aged 15-24 accounted for 21.3% of the MVTC-related trauma, followed by those ages 25-34 (18%). The trend is similar to those of previous years. Falls among those 75-84 years old accounted for 17% of all unintentional falls treated in trauma centers. Almost one-fourth (77 records) of the injuries attributed to being unintentionally struck by or against an object were experienced by patients 5-14 years of age. The review of the struck by/against injuries in this group showed that more than 53% of these injuries were due to striking against or struck accidentally in sports (E-codes E917.0, E917.5). About half (47.8%) of the assault injuries were among young adults ages 15-34 (Table 8).

|        | Unintentional Injuries  |                          |                      |                      |       |       |                            |       |           | Intentional |         |       |
|--------|-------------------------|--------------------------|----------------------|----------------------|-------|-------|----------------------------|-------|-----------|-------------|---------|-------|
|        | Motor<br>trat<br>collis | vehicle<br>ffic<br>sions | Oth<br>trans<br>inju | ner<br>port.<br>ries | Falls |       | Falls Struck<br>by/against |       | All other |             | Assault |       |
| Age    | Ν                       | %                        | Ν                    | %                    | Ν     | %     | Ν                          | %     | Ν         | %           | Ν       | %     |
| <1yr   | 11                      | 0.35                     | *                    | *                    | 71    | 2.22  | 8                          | 2.6   | 35        | 2.01        | 44      | 5.83  |
| 1-4yr  | 51                      | 1.61                     | 14                   | 1.61                 | 166   | 5.2   | 27                         | 8.77  | 137       | 7.86        | 23      | 3.05  |
| 5-14yr | 211                     | 6.64                     | 89                   | 10.27                | 323   | 10.11 | 77                         | 25    | 205       | 11.75       | 7       | 0.93  |
| 15-24  | 675                     | 21.25                    | 208                  | 23.99                | 131   | 4.1   | 48                         | 15.58 | 227       | 13.02       | 164     | 21.72 |
| 25-34  | 582                     | 18.32                    | 141                  | 16.26                | 140   | 4.38  | 21                         | 6.82  | 243       | 13.93       | 197     | 26.09 |
| 35-44  | 473                     | 14.89                    | 124                  | 14.3                 | 215   | 6.73  | 36                         | 11.69 | 232       | 13.3        | 137     | 18.15 |
| 45-54  | 475                     | 14.96                    | 114                  | 13.15                | 344   | 10.77 | 40                         | 12.99 | 230       | 13.19       | 108     | 14.3  |
| 55-64  | 334                     | 10.52                    | 98                   | 11.3                 | 432   | 13.53 | 25                         | 8.12  | 169       | 9.69        | 43      | 5.7   |
| 65-74  | 210                     | 6.61                     | 46                   | 5.31                 | 424   | 13.27 | 15                         | 4.87  | 129       | 7.4         | 20      | 2.65  |
| 75-84  | 117                     | 3.68                     | 26                   | 3                    | 540   | 16.91 | 8                          | 2.6   | 85        | 4.87        | 9       | 1.19  |
| 85+    | 37                      | 1.16                     | 6                    | 0.69                 | 398   | 12.46 | *                          | *     | 45        | 2.58        | *       | *     |

Table 8: KTR records by age and major causes of injury, 2012

\*Totals less than 5 were suppressed by state data management policy

# **Role in Motor Vehicle Traffic Collisions**

Among the unintentional motor vehicle traffic collision records, 69.9% were coded as vehicle occupants, 17.6% as motorcyclists, and 6.7% as pedestrians (Table 9).

|  | Table 9: I | Role in | motor | vehicle | collisions, | 2012 |
|--|------------|---------|-------|---------|-------------|------|
|--|------------|---------|-------|---------|-------------|------|

| Role in motor vehicle traffic collision | Number | %      |
|---|--------|--------|
| Occupant                                | 2,221  | 69.93  |
| Motorcyclist                            | 559    | 17.6   |
| Pedal cyclist                           | 56     | 1.76   |
| Pedestrian                              | 214    | 6.74   |
| Unknown                                 | 56     | 1.76   |
| Other                                   | 70     | 2.2    |
| Total                                   | 3,176  | 100.00 |

## **Child Specific Restraint**

Table 10 describes the use of protective devices for the pediatric patients injured in motor vehicle traffic collisions. There were 505 records for pediatric patients involved in MVTC. Of those, 200 records (39.6%) indicated that protective devices were not used, and in 27 records (5.4%) the presence or use of a protective device was not documented.

| Protective Device  | Number | %     |
|--|--------|-------|
| None   | 200    | 39.60 |
| None, Airbag Present   | *      |       |
| Lap Belt   | 68     | 13.47 |
| Lap & Shoulder Belt  | 86     | 17.03 |
| Lap Belt, Child Restraint (booster seat, child car seat)   | 12     | 2.38  |
| Lap Belt, Airbag Present   | 12     | 2.38  |
| Lap & Shoulder Belt, Airbag Present  | 21     | 4.16  |
| Child Restraint (booster seat, child car seat)   | 13     | 2.57  |
| Child Restraint (booster seat, child car seat), Airbag Present   | *      |       |
| Helmet (e.g., bicycle, skiing, motorcycle)   | 17     | 3.37  |
| Helmet (e.g., bicycle, skiing, motorcycle), Protective Clothing  | *      |       |
| Airbag Present   | 12     | 2.38  |
| Lap & Shoulder Belt, Airbag Present, Child Restraint   | *      |       |
| Not Applicable   | 32     | 6.34  |
| Not documented   | 27     | 5.35  |
| Total number of KTR records for motor-vehicle traffic collision<br>involving patients 18 years of age or younger | 505    | 100   |

Table 10: Pediatric MVT KTR records by protective device, 2012

\*Totals less than 5 were suppressed by state data management policy

#### **Protective Devices**

Protective devices were not present in 35% of all MVTC injury reports. In the subset of pediatric MVTC, 39.6% of the records listed that no protective device was present (Table 11). The records represent encounters of care (not unique patients) since patients transferred from one trauma facility to another would have two records for the same injury.

| Protective device** | All reco<br>uninter<br>MV<br>(n=3 | ords for<br>ntional<br>TC<br>,176) | Pediatric<br>(age<=18)<br>records for<br>unintentional<br>MVTC<br>(n=505) |       |  |  |
|---------------------|-----------------------------------|------------------------------------|---|-------|--|--|
|                     | Ν                                 | %                                  | Ν   | %     |  |  |
| Lap belt            | 1,276                             | 40.18                              | 199   | 39.48 |  |  |
| Shoulder belt       | 745                               | 23.46                              | 107   | 21.23 |  |  |
| Helmet              | 187                               | 5.89                               | 18  | 3.57  |  |  |
| Child restraint     | 27                                | 0.85                               | 27  | 5.36  |  |  |
| Airbag              | 621                               | 19.55                              | 56  | 11.11 |  |  |
| Other               | 16                                | 0.50                               | *   |       |  |  |
| None                | 1,125                             | 35.42                              | 200   | 39.60 |  |  |
| NA                  | 229                               | 7.21                               | 32  | 6.35  |  |  |

| Table 1 | 1:1 | Use | of | protec | tive | dev | vice | in | motor | vehi | cle | traffic | ir | njury | <sup>v</sup> KTR | recon | ds, | 201 | 2 |
|---------|-----|-----|----|--------|------|-----|------|----|-------|------|-----|---------|----|-------|------------------|-------|-----|-----|---|
|         |     |     |    |        |      |     |      |    |       |      |     |         |    |       |                  |       |     |     |   |

\*Totals less than 5 were suppressed by state data management policy

\*\*In some records two or more protective devices were listed

# **Airbag Deployment**

The information on air bag deployment information was poorly populated and existing for only 673 records. In 658 of those the front airbag deployed.

# **Pre-Hospital Information**

#### **Transportation Mode**

The mode of transportation by inter-facility transfer is presented in Table 12. Inter-facility transfer listed whether the patient was transferred <u>to</u> the reporting facility from another acute care facility. Helicopter ambulance was used in 720 (23.7%) of the inter-facility transfers and in 1,216 (17.4%) of the non-transfer records. Ground ambulance was listed in 6,318 (62.9%) of the records.

| -                              | Inter Facility Transfer |                |        |  |  |  |
|--------------------------------|-------------------------|----------------|--------|--|--|--|
| Transportation mode            | Yes                     | No             | Total  |  |  |  |
| Missing information            | *                       | 104 (1.49%)    |        |  |  |  |
| Ground Ambulance               | 2,170 (71.33%)          | 4,148 (59.24%) | 6,318  |  |  |  |
| Helicopter Ambulance           | 720 (23.67%)            | 1,216 (17.37%) | 1,936  |  |  |  |
| Fixed-wing Ambulance           | *                       | *              | *      |  |  |  |
| Private/Public Vehicle/Walk-in | 144 (4.73%)             | 1507 (21.52%)  | 1,651  |  |  |  |
| Police                         | *                       | 23 (0.33%)     |        |  |  |  |
| Other                          | *                       | *              |        |  |  |  |
| Total                          | 3,042                   | 7,002          | 10,044 |  |  |  |

Table 12: Transportation mode, 2012

\*Cells with less than 5 counts were suppressed by state data management policy

#### **EMS Information**

EMS information was rarely available. The EMS notification date was noted for only 149 records (1.5%). EMS notification time was recorded for 126 cases (1.3%). EMS departure date was reported for 149 cases (1.5%), and EMS departure time for 129 cases (1.3%). EMS arrival date was listed for 149 cases (1.5%), and EMS arrival time 134 cases (1.3%).

With regard to patient status, EMS pulse rate and respiratory rate were reported for about half (51%) of the cases transported by ground ambulance and fewer (43%) of the cases transported by helicopter ambulance. EMS pulse oximetry readings and Glasgow Coma Scale scores were listed for only 38% of the transported by ground ambulance; for helicopter transport, GCS scores were available in 57% of records and pulse oximetry readings in 53%.

# **Emergency Department Information**

# Month of Arrival to ED/Hospital

Trauma volume varies by season, with higher volume of trauma registry records during summer months (Figure 7), mainly due to the increased number of motor vehicle traffic collision injuries and falls.



Figure 7: KTR records by month of hospital arrival, 2012

#### Weekday of Arrival to ED/Hospital

Higher volume of trauma cases was recorded during the weekends (Figure 8).

Figure 8: KTR records by weekday of hospital arrival, 2012



## **Time of ED/Hospital Admission**

Admission shift is a metric that provides evidence for planning prevention initiatives and staffing trauma care facilities. The busiest time of the day is the 3pm to 11pm shift (Table 13).

| , , , , , , , , , , , , , , , , , , ,    | Shift |       |       |  |  |  |
|--|-------|-------|-------|--|--|--|
| Facility                                 | 11pm- | 7am-  | 3pm-  |  |  |  |
|  | 7am   | 3pm   | 11pm  |  |  |  |
| Crittenden County Hospital               | 6     | 20    | 18    |  |  |  |
| Ephraim McDowell Regional Medical Center | 46    | 118   | 135   |  |  |  |
| Fort Logan Hospital                      | 19    | 61    | 62    |  |  |  |
| Frankfort Regional Medical Center        | 52    | 110   | 150   |  |  |  |
| Harrison Memorial Hospital               | 12    | 45    | 82    |  |  |  |
| James B. Haggin Memorial Hospital        | 16    | 54    | 76    |  |  |  |
| Kosair Children's Hospital               | 201   | 158   | 505   |  |  |  |
| Livingston Hospital                      | 7     | 20    | 23    |  |  |  |
| Marcum Wallace Memorial Hospital         | 16    | 37    | 42    |  |  |  |
| Owensboro Medical Center                 | 110   | 245   | 278   |  |  |  |
| Pikeville Medical Center                 | 118   | 189   | 343   |  |  |  |
| Spring View Hospital                     | 20    | 36    | 40    |  |  |  |
| St. Joseph Berea                         | 11    | 9     | 36    |  |  |  |
| Taylor Regional Medical Center           | 36    | 78    | 114   |  |  |  |
| Trigg County Hospital                    | *     | *     | *     |  |  |  |
| University of Kentucky – Children's      | 88    | 73    | 281   |  |  |  |
| University of Kentucky Medical Center    | 716   | 750   | 1,409 |  |  |  |
| University of Louisville Hospital        | 835   | 798   | 1,330 |  |  |  |
| All                                      | 2,310 | 2,803 | 4,928 |  |  |  |

Table 13: KTR records by facility and admission shift, 2012

\*Totals less than 5 were suppressed by state data management policy

#### Time to ED/Hospital Arrival

The exact time from incident to hospital arrival could not be calculated for almost half (40.8%) of the records, primarily because the time of the incident was missing or unknown. The distribution of KTR records by time to hospital arrival and inter-facility transfer status is presented in Table 14. A patient is considered an inter-facility transfer if the patient was transferred to the current facility from another acute care facility. Due to the lack of personal identifiers in the trauma registry data collection, we cannot track patients from one trauma facility to another.

|   | Inter Facilit | ty Transfer |
|---|---------------|-------------|
| Time to hospital                                | Yes           | No          |
|   | Ν             | Ν           |
| <1 hour   | 13            | 1,704       |
| [1-2) hr  | 100           | 1,297       |
| [2-5) hr  | 907           | 404         |
| [5-12) hr                                       | 672           | 135         |
| [12-24) hr                                      | 72            | 79          |
| 24+ hr  | 169           | 208         |
| Same day (exact incident time unknown)          | 828           | 2,790       |
| Next day or later (exact incident time unknown) | 283           | 199         |
| Incorrect (negative, zero, missing)             | 7             | 127         |
| Total   | 3,042         | 7,002       |

Table 14: KTR records by time to hospital arrival, 2012

#### Initial ED or Hospital Glasgow Coma Scale Assessment

The Glasgow Coma Score (GCS) rates patients with regard to the severity of symptoms associated with brain injury. Detailed information on the first recorded eye, verbal, and motor GCS in the ED or hospital is presented in Table 15 for pediatric patients under age of 2 years and in Table 16 for patients older than 2 years.

| Pediatric patients, age≤2 years                            | Number | %     |  |  |  |  |  |
|--|--------|-------|--|--|--|--|--|
| Glasgow Coma Score (Eye)                                   |        |       |  |  |  |  |  |
| 1 (No eye movement when assessed)                          | 16     | 4.65  |  |  |  |  |  |
| 2 (Opens eyes in response to painful stimulation)          | *      |       |  |  |  |  |  |
| <b>3</b> (Opens eyes in response to verbal stimulation)    | *      |       |  |  |  |  |  |
| 4 (Opens eyes spontaneously)                               | 323    | 93.90 |  |  |  |  |  |
| Glasgow Coma Score (Verbal)                                |        |       |  |  |  |  |  |
| 1 (No vocal response)                                      | 14     | 4.07  |  |  |  |  |  |
| 2 (Inconsolable, agitated)                                 | *      |       |  |  |  |  |  |
| 3 (Inconsistently consolable, moaning)                     | <5     |       |  |  |  |  |  |
| 4 (Cries but is consolable, inappropriate interactions)    | 17     | 4.94  |  |  |  |  |  |
| 5 (Smiles, oriented to sounds, follows objects, Interacts) | 306    | 88.95 |  |  |  |  |  |
| Glasgow Coma Score (Motor)                                 |        |       |  |  |  |  |  |
| 1 (No motor response)                                      | 10     | 2.91  |  |  |  |  |  |
| 2 (Extension to pain)                                      | *      |       |  |  |  |  |  |
| 3 (Flexion to pain)  | *      |       |  |  |  |  |  |
| 4 (Withdrawal from pain)                                   | 7      | 2.03  |  |  |  |  |  |
| 5 (Localizing pain)  | 15     | 4.36  |  |  |  |  |  |
| 6 (Appropriate response to stimulation)                    | 307    | 89.24 |  |  |  |  |  |

# Table 15: First recorded Glasgow Coma Score in the ED/hospital (ages ≤2 years)

\*Totals less than 5 were suppressed by state data management policy; 65 records for patients in this age group didn't have GCS scores listed

| Patients, age>2 years                                   | Number                   | %     |  |  |  |  |  |
|---|--------------------------|-------|--|--|--|--|--|
| Glasgow Coma Score (Eye)                                | Glasgow Coma Score (Eye) |       |  |  |  |  |  |
| 1 (No eye movement when assessed)                       | 751                      | 8.65  |  |  |  |  |  |
| 2 (Opens eyes in response to painful stimulation)       | 64                       | 0.74  |  |  |  |  |  |
| <b>3</b> (Opens eyes in response to verbal stimulation) | 251                      | 2.89  |  |  |  |  |  |
| 4 (Opens eyes spontaneously)                            | 7,619                    | 87.73 |  |  |  |  |  |
| Glasgow Coma Score (Verbal)                             |                          |       |  |  |  |  |  |
| 1 (No verbal response)                                  | 830                      | 9.56  |  |  |  |  |  |
| 2 (Incomprehensible sounds)                             | 79                       | 0.91  |  |  |  |  |  |
| 3 (Inappropriate words)                                 | 63                       | 0.73  |  |  |  |  |  |
| 4 (Confused)  | 718                      | 8.27  |  |  |  |  |  |
| 5 (Oriented)  | 6,995                    | 80.54 |  |  |  |  |  |
| Glasgow Coma Score (Motor)                              |                          |       |  |  |  |  |  |
| 1 (No motor response)                                   | 597                      | 5.97  |  |  |  |  |  |
| 2 (Extension to pain)                                   | 36                       | 0.41  |  |  |  |  |  |
| 3 (Flexion to pain)                                     | 27                       | 0.31  |  |  |  |  |  |
| 4 (Withdrawal from pain)                                | 82                       | 0.94  |  |  |  |  |  |
| 5 (Localizing pain)                                     | 271                      | 3.12  |  |  |  |  |  |
| 6 (Obeys commands)                                      | 7,667                    | 88.33 |  |  |  |  |  |

Table 16: First recorded Glasgow Coma Score in the ED/hospital (ages >2years)

Note: 950 records for patients in this age group didn't have GCS scores listed

# **Alcohol Use Indicator**

Alcohol use beyond legal limits was confirmed by test for 776 (7.7%) of all records (Table 17).

| Alcohol Use Indicators                       | Number | %      |
|--|--------|--------|
| No (not tested)                              | 5,707  | 56.82  |
| No (confirmed by test)                       | 2,222  | 22.12  |
| Yes (confirmed by test [trace levels])       | 343    | 3.41   |
| Yes (confirmed by test [beyond legal limit]) | 776    | 7.73   |
| Not Applicable                               | 520    | 5.18   |
| Not documented                               | 41     | 0.41   |
| Missing                                      | 435    | 4.33   |
| Total  | 10,044 | 100.00 |

Table 17: KTR records by alcohol use indicator, 2012

# **Drug Use Indicator**

Illegal drug use was confirmed in 585 (5.8%) of the records. The category "illegal drug use" includes use of illicit drugs or illegal use of a prescription drug according to the National Trauma Data Standard Data Dictionary (Table 18).

Table 18: KTR records by drug use indicator, 2012

| Drug Use Indicator                          | Number | %      |
|---|--------|--------|
| No (not tested)                             | 5,960  | 59.34  |
| No (confirmed by test)                      | 1,015  | 10.11  |
| Yes (confirmed by test [prescription drug]) | 1,585  | 15.78  |
| Yes (confirmed by test [illegal use drug])  | 585    | 5.83   |
| Not Applicable                              | 351    | 3.49   |
| Not documented                              | 548    | 5.46   |
| Total                                       | 10,044 | 100.00 |

# **ED Discharge Information**

Almost half (44.3%) of the records indicated discharge from ED to inpatient bed, about 18% of the cases were discharged from ED to intensive care unit (ICU), 13% were discharged to operating rooms, and 9.5% were transferred to another hospital. There were 135 (1.3%) patients who died according to the ED discharge record (Table 19).

| ED discharge disposition  | Number | %      |
|---|--------|--------|
| Floor bed (general admission, non-specialty unit bed)           | 4,449  | 44.30  |
| <b>Observation unit (unit that provides &lt; 24 hour stays)</b> | 10     | 0.10   |
| Telemetry/step-down unit (less acuity than ICU)                 | 430    | 4.28   |
| Died  | 135    | 1.34   |
| Other (jail, institutional care, mental health, etc.)           | 31     | 0.31   |
| Operating Room  | 1,314  | 13.08  |
| Intensive Care Unit (ICU)                                       | 1,821  | 18.13  |
| Home without services   | 613    | 6.10   |
| Left against medical advice                                     | 13     | 0.13   |
| Transferred to another hospital                                 | 950    | 9.46   |
| Missing   | 278    | 2.77   |
| Total   | 10,044 | 100.00 |

Table 19: ED discharge disposition, 2012

# **Diagnoses Information**

#### Injuries by Nature or Body Region (Based on First Diagnosis Code)

Tables 20 and 21 summarize the injuries by nature and body region, based on the Barell Matrix (http://www.cdc.gov/nchs/data/ice/final\_matrix\_post\_ice.pdf). Head injuries are labeled as Type 1 TBI if the first diagnosis code is for an intracranial injury, moderate/prolonged loss of consciousness, shaken infant syndrome, or injuries to the optic nerve pathways. Type 2 TBI includes head injuries with no intracranial injury coded, and coded with loss of consciousness of less than 1 hour or unknown duration, or unspecified level. Type 3 TBI includes records for patients with no intracranial injury and no loss of consciousness coded. TBI accounted for 24% of all trauma registry records, followed by injuries to the lower extremity (21%), torso (19%), upper extremity (15%), and others (Table 21). More than half of the injuries (54.6%) were fractures (Table 20).

| Nature of Injury           | Number | %      |
|----------------------------|--------|--------|
| Fractures                  | 5,172  | 54.61  |
| Internal Organ             | 2,399  | 25.33  |
| Open Wounds                | 867    | 9.15   |
| Burns                      | 382    | 4.03   |
| Unspecified                | 143    | 1.51   |
| Sprains & Strains          | 117    | 1.24   |
| Dislocation                | 111    | 1.17   |
| Blood Vessels              | 123    | 1.3    |
| Amputations                | 79     | 0.83   |
| Crushing                   | 28     | 0.3    |
| Nerves                     | 33     | 0.35   |
| System Wide & Late Effects | 17     | 0.18   |
| Total                      | 9,471  | 100.00 |

Table 20: KTR records by nature of injury, 2012

Note: Diagnosis codes were missing for 573 records

| Injuries by Body Region <sup>a</sup>               |                             | Number                          | %     |       |
|--|-----------------------------|---------------------------------|-------|-------|
| utic v   |                             | Type 1 TBI                      | 1,381 | 14.58 |
| k<br>1ma<br>jury                                   | ıma<br>rain<br>jury<br>(BI) | Type 2 TBI                      | 745   | 7.87  |
| l Nec<br>Br<br>(1<br>(1                            |                             | Type 3 TBI                      | 159   | 1.68  |
| Head and<br>er head,<br>ee and<br>heck             |                             | Other Head                      | 184   | 1.94  |
|  |                             | Face                            | 524   | 5.53  |
|  |                             | Eye                             | 51    | 0.54  |
|  | the<br>fac                  | Neck                            | 34    | 0.36  |
|  | 0                           | Head, Face and Neck Unspecified | 81    | 0.86  |
|  |                             | Cervical SCI                    | 56    | 0.59  |
| <b>.</b>   | al<br>()                    | Thoracic/ Dorsal SCI            | 27    | 0.29  |
| ach  | oin<br>SC                   | Lumbar SCI                      | 14    | 0.15  |
| d k  | S O S                       | Sacrum Coccyx SCI               | *     |       |
| an(  |                             | Spine+ Back unspecified SCI     | 7     | 0.07  |
| ne   | al<br>n                     | Cervical VCI                    | 287   | 3.03  |
| iqi  | ebr<br>CI)                  | Thoracic /Dorsal VCI            | 181   | 1.91  |
| <b>G</b> 1   | olt<br>V(                   | Lumbar VCI                      | 260   | 2.75  |
|  |                             | Sacrum Coccyx VCI               | 25    | 0.26  |
|  |                             | Chest (Thorax)                  | 1,039 | 10.97 |
| o o  | Abdomen                     | 426                             | 4.50  |       |
| Pelvis and Urogenital<br>Trunk<br>Back and Buttock |                             | Pelvis and Urogenital           | 307   | 3.24  |
|  |                             | Trunk                           | 33    | 0.35  |
|  |                             | 31                              | 0.33  |       |
|  | •.                          | Shoulder and upper arm          | 603   | 6.37  |
| per  |                             | Forearm and elbow               | 371   | 3.92  |
|  | Ū                           | Wrist, hand and fingers         | 332   | 3.51  |
| lies   | -                           | Other and unspecified           | 80    | 0.84  |
| mi   |                             | Hip                             | 574   | 6.06  |
| tre  | •.                          | Upper leg and thigh             | 365   | 3.85  |
| Ex   | wei                         | Knee                            | 35    | 0.37  |
|  | Lov                         | Lower leg and ankle             | 701   | 7.40  |
|  |                             | Foot and toes                   | 165   | 1.74  |
|  |                             | Other and unspecified           | 161   | 1.70  |
| ble  | and<br>ied                  | Other/multiple                  | 8     | 0.08  |
| issifial<br>v site<br>Other<br>un-<br>specifi      |                             | Unspecified site                | 205   | 2.16  |
| Uncl:<br>b   | Sys-<br>tem<br>wide         | System-wide & late effects      | 17    | 0.18  |

Table 21: KTR records by body region, 2012

<sup>a</sup>Based on the first listed diagnosis code Note: Diagnosis codes were missing for 573 records; \*Totals < 5 were suppressed by state data management policy

# **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, 63.7% of trauma registry injuries were mild, 15.2% moderate, 12.8% severe and 8.2% very severe. ISS was missing for 779 records (Table 22).

| Injury Severity Score<br>Range | Category    | Number | %      |
|--------------------------------|-------------|--------|--------|
| 1-9                            | mild        | 5,904  | 63.72  |
| 10-15                          | moderate    | 1,413  | 15.25  |
| 16-24                          | severe      | 1,188  | 12.82  |
| 25-34                          | very severe | 760    | 8.20   |
| Total                          |             | 9,265  | 100.00 |

# Table 22: KTR records by ISS, 2012

\*Injury Severity Scores were missing for 779 records

# **Outcome Information**

# **Hospital Discharge**

The hospital discharge disposition identified 311 records of hospitalized patients who died (Table 23) and 135 patients who died in the ED (Tables 19 and 24).

Table 23: Hospital discharge disposition

| Hospital discharge disposition  | Number | %      |
|---|--------|--------|
| Discharged/Transferred to a short-term general hospital for inpatient care              | 54     | 0.67   |
| Discharged/Transferred to an Intermediate Care Facility (ICF)                           | 50     | 0.62   |
| Discharge/Transferred to home under care of organized home health service               | 540    | 6.72   |
| Left against medical advice or discontinued care  | 36     | 0.45   |
| Expired   | 311    | 3.87   |
| Discharged home with no home services   | 5,570  | 69.30  |
| Discharged/Transferred to Skilled Nursing Facility                                      | 541    | 6.73   |
| Discharged/ Transferred to hospice care   | 10     | 0.12   |
| Discharged/Transferred to another type of rehabilitation or long-<br>term care facility | 926    | 11.52  |
| Total   | 8,038  | 100.00 |

\*Hospital discharge disposition not available/applicable for 2,006 records

|   | ED discharge disposition |   |  |  |      |   |                   |  |
|---|--------------------------|---|--|--|------|---|-------------------|--|
| Hospital discharge disposition  | Missing                  | Floor bed<br>(general<br>admission,<br>non-<br>specialty<br>unit bed) | Observation<br>unit (unit that<br>provides < 24<br>hour stays) | Telemetry/<br>step-down<br>unit (less<br>acuity than<br>ICU) | Died | Other (jail,<br>institu-<br>tional care,<br>mental<br>health, etc.) | Operating<br>Room |  |
| Not Available   | 33                       | 174   | *  | *  | 135  | 31  | 29                |  |
| Discharged/Transferred to a short-term general hospital for inpatient care          | *                        | 27  | 0  | *  | 0    | 0   | 9                 |  |
| Discharged/Transferred to an Intermediate<br>Care Facility (ICF)                    | *                        | 24  | 0  | *  | 0    | 0   | 7                 |  |
| Discharge/Transferred to home under care<br>of organized home health service        | 20                       | 272   | 0  | 48   | 0    | 0   | 118               |  |
| Left against medical advice or discontinued care                                    | 0                        | 21  | 0  | 0  | 0    | 0   | *                 |  |
| Expired   | 6                        | 31  | 0  | 15   | 0    | 0   | 78                |  |
| Discharged home with no home services   | 130                      | 3,258   | 6  | 292  | 0    | 0   | 885               |  |
| Discharged/Transferred to Skilled Nursing<br>Facility                               | 32                       | 390   | 0  | 15   | 0    | 0   | 27                |  |
| Discharged/ Transferred to hospice care   | 0                        | *   | 0  | 0  | 0    | 0   | *                 |  |
| Discharged/Transferred to another type of rehabilitation or long-term care facility | 52                       | 250   | *  | 53   | 0    | 0   | 157               |  |
| Total   | 278                      | 4,449   | 10   | 430  | 135  | 31  | 1,314             |  |

#### Table of hospital discharge disposition by ED discharge disposition – Part I

\*Totals less than 5 were suppressed by state data management policy

# Table 24: Hospital discharge disposition by ED discharge disposition - Part II

| Table of hospital discharge disposition by ED discharge disposition – Part II       |                                 |                             |                                      |   |        |  |
|---|---------------------------------|-----------------------------|--------------------------------------|---|--------|--|
|   | ED discharge disposition        |                             |                                      |   |        |  |
| Hospital discharge disposition  | Intensive<br>Care Unit<br>(ICU) | Home<br>without<br>services | Left<br>against<br>medical<br>advice | Transferre<br>d to<br>another<br>hospital | Total  |  |
| Not Available   | 23                              | 613                         | 13                                   | 950                                       | 2006   |  |
| Discharged/Transferred to a short-term general hospital for inpatient care          | 12                              | 0                           | 0                                    | 0   | 54     |  |
| Discharged/Transferred to an Intermediate Care Facility (ICF)                       | 16                              | 0                           | 0                                    | 0   | 50     |  |
| Discharge/Transferred to home under care of organized home health service           | 82                              | 0                           | 0                                    | 0   | 540    |  |
| Left against medical advice or discontinued care                                    | 12                              | 0                           | 0                                    | 0   | 36     |  |
| Expired   | 181                             | 0                           | 0                                    | 0   | 311    |  |
| Discharged home with no home services   | 999                             | 0                           | 0                                    | 0   | 5570   |  |
| Discharged/Transferred to Skilled Nursing Facility                                  | 77                              | 0                           | 0                                    | 0   | 541    |  |
| Discharged/ Transferred to hospice care   | 7                               | 0                           | 0                                    | 0   | 10     |  |
| Discharged/Transferred to another type of rehabilitation or long-term care facility | 412                             | 0                           | 0                                    | 0   | 926    |  |
| Total   | 1,821                           | 613                         | 13                                   | 950                                       | 10,044 |  |

# Total Intensive Care Unit (ICU) Length of Stay

The total ICU length of stay is the cumulative amount of time spent in the ICU. In keeping with the NTDB data dictionary, each partial or full day is measured as one calendar day. The total days in ICU by facility are shown in Table 25.

| Table 25. Total ICO length of stay       |                             |  |
|--|-----------------------------|--|
| Facility                                 | Total ICU Length<br>of Stay |  |
|  | Number of Days              |  |
| Crittenden County Hospital               | 6                           |  |
| Ephraim McDowell Regional Medical Center | 34                          |  |
| Fort Logan Hospital                      | 0                           |  |
| Frankfort Regional Medical Center        | 162                         |  |
| Harrison Memorial Hospital               | 7                           |  |
| James B. Haggin Memorial Hospital        | 0                           |  |
| Kosair Children's Hospital               | 669                         |  |
| Livingston Hospital                      | 0                           |  |
| Marcum Wallace Memorial Hospital         | 0                           |  |
| Owensboro Medical Center                 | 9                           |  |
| Pikeville Medical Center                 | 410                         |  |
| Spring View Hospital                     | *                           |  |
| St. Joseph Berea                         | 0                           |  |
| Taylor Regional Medical Center           | 22                          |  |
| Trigg County Hospital                    | 0                           |  |
| University of Kentucky – Children's      | 306                         |  |
| University of Kentucky Medical Center    | 5,420                       |  |
| University of Louisville Hospital        | 9,458                       |  |
| All                                      | 16,505                      |  |

Table 25: Total ICU length of stay

\*Totals less than 5 were suppressed by state data management policy

# **Financial Information**

#### **Primary Method of Payment**

The primary expected source of payment was not reported for 861 records, about 9% of the total KTR volume of records. Among the encounters with listed expected payer source, no fault automobile insurance was the leader (22%); more than one fifth (21%) of the records indicated expected "self-pay", which typically ends with little or no compensation to the hospital and physicians providing trauma care. For more details on primary method of payment see Figure 10.

Figure 10: Primary method of payment, 2012



## **Conclusion**

Kentucky's trauma registry continues to grow, both in quantity and in quality of information, but the state is still far from achieving a fully operational system. As the number of reporting hospitals increases, we will have a more nuanced account of traumatic injury in Kentucky. States that mandate universal reporting can use trauma registry data to provide a population-based account of traumatic injury, a goal that we cannot achieve with only about 20 percent of Kentucky's hospitals reporting trauma data. We continue to work towards incorporation of data on Kentuckians who receive trauma care in surrounding states, without which our account of major trauma is incomplete. Future developments may include statewide run reporting for emergency medical services providers, information that would add yet another dimension to the state's ability to address the burden of traumatic injury.

While more complete data are clearly desirable, it is even more important that participating facilities and EMS providers coordinate their care with the state's trauma system as a whole in order to assure the delivery of timely services at appropriate levels of care for patients across the state. Rural providers across the spectrum of care continue to experience the challenges of serving populations with relatively high care needs from a resource base that continues to shrink. More populous parts of the state continue to grapple with large proportions of uninsured trauma patients, although this problem may be mitigated by expansion of health coverage options after January 1, 2014. Kentucky's trauma system is clearly still under development, and continued attention to trauma registry data will point the way forward.