

CENTRAL NERVOUS SYSTEM INJURY IN KENTUCKY

Emergency Department Visits and Hospitalizations 2015

Prepared by: the Kentucky Injury Prevention and Research Center, University of Kentucky
Funded by the Kentucky Traumatic Brain Injury Trust Fund under the Cabinet for Health and Family Services,
Department of Aging and Independent Living.

FOR MORE INFORMATION

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This report presents basic data about emergency department (ED) visits, hospitalizations, and hospital deaths for the calendar year 2015 for central nervous system injuries (CNSI) that include traumatic brain injuries (TBI), acquired brain injuries (ABI), spinal cord injuries (SCI) and cerebrovascular disease (stroke). **The aggregate numbers found in this report should not be used in comparison with previous years of this report due to the transition from the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) to the most recent Tenth Revision (ICD-10-CM).** ED visits represent approximately 90% of all TBIs. This report will illustrate the leading causes of central nervous system injuries in Kentucky, what age groups are affected, and who pays for care received. The report is intended as a reference for policy makers, service providers, educators, researchers, advocates, and others interested in knowing more about the impact of central nervous system injuries with a focus on TBI.

Introduction

Awareness of traumatic brain injury (TBI) is fairly limited in the general public because the complications and issues related to TBI are often not visible to others. Symptoms of brain injury cover a wide range of issues and can include:

Mild TBI

- Fatigue
- Headaches
- Seizures
- Emotional disturbances
- Balance issues
- Memory loss
- Impulsive Behavior

Severe TBI

- Amnesia
- Paralysis
- Loss of limb, bladder and/or bowel control
- Aggressiveness
- Speech, language and/or vision problems
- Respiratory issues
- Mood, personality, or behavioral changes

These issues very often are not physically visible yet can have a devastating impact on day to day life of the injured person as well as their family, friends and colleagues. Even minor TBI may have serious, long term consequences.

Understanding how and who brain and spinal cord injuries affect is crucial to understanding the resources need to educate, prevent, and respond as a society to those with brain and spinal cord injuries.

Major sections of this report include:

- Non-Fatal TBI, ABI and SCI demographics, causes and outcomes
- TBI and ABI frequencies and rates at the county level
- SCI demographics, causes and outcomes

Later reports will include trends.

Also, this report does not include TBIs from federal, military, or Veterans' Administration hospitals. Data regarding deaths due to TBI, ABI, SCI and stroke only include deaths treated or seen in an ED or admitted as an inpatient to an acute care hospital. Deaths that occur due to BI, SCI or stroke outside of the hospital environment are not included in this analysis due to unavailable data. Deaths that occur in the hospital setting will be noted when included in analysis in this report.

Purpose of the Report

This report answers a wide range of important questions about how many CNSIs occur each year in the Commonwealth, who is affected, and how these CNSIs occur. This report is intended as a reference for policy makers, service providers, educators, researchers, advocates, and others interested in knowing more about the impact of CNSI in Kentucky. This information can be used to document the need for prevention, to identify priorities for research, and to support the need for services among those living with CNSI-related impairment and disability.

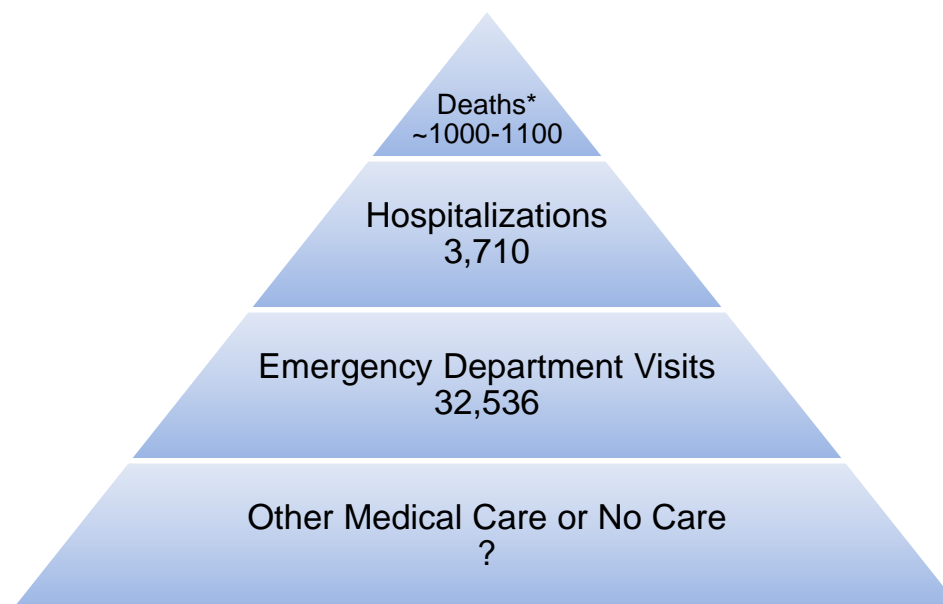
Contents and Organization

This report describes CNSI-related ED visits and hospitalizations in Kentucky for the calendar year 2015. The numbers show the magnitude of the problem, but the rates are also important. Rates show how a certain group is affected by CNSI by relating the number of CNSIs to the size of the population. For example, a relatively small number of TBIs occurring in a small population (e.g., persons ages 65 years or older) would result in a higher TBI rate than if the same number of TBIs occurred in a larger population (e.g., persons ages 25 to 44 years). The report findings are organized into two main sections. The Overview summarizes and interprets some key findings. The Appendices present more detailed data tables, along with a description of the methods and limitations.

Overview of TBI in Kentucky

In Kentucky, it is estimated that over 35,000 traumatic brain injuries and deaths occur each year. In 2015, 32,536 (89.8%) ED discharges (non-fatal) and 3,673 (10.2%) hospitalization discharges were recorded in Kentucky hospitals. Due to mortality data being several years behind available hospital discharge data, the number of deaths is only an estimate at this time and expected to be in the range of 1,000 TBI related deaths. The following figure is a pyramid depicting the estimated average annual number of TBI-related ED visits, hospitalizations, and estimated deaths in Kentucky for 2015. The number of individuals with a TBI that treat themselves at home (estimated to be close to 25% of all mild to moderate TBIs) or by seeking other means of medical care are unknown and will not be included in this report.

Figure 1: Number of Traumatic Brain Injury-Related Emergency Department Visits, Hospitalizations, and Estimated Deaths*, Kentucky, 2015



*Data not currently available, will update

TBI in Kentucky, 2015:

- Over 36,000 people visited Kentucky hospitals with a TBI related injury. Of those, 32,536 were treated and released from an ED, 3,710 were hospitalized, and an estimated 1,000 died.
- 6,547 TBIs occurred among children ages 0 to 14 years; ED visits accounted for more than 96% of the TBIs in this age group.
- Falls were the leading cause of TBI for both ED visits as well as hospitalizations. Rates were highest for children ages 0 to 4 years and for adults 65 years or older.
- Falls resulted in the greatest number of TBI-related hospitalizations with a rate almost 2.5 times motor vehicle traffic crashes.
- Adults ages 65 years or older had the highest rates of TBI-related hospitalization with a rate higher than all other ages combined.
- Falls accounted for over twice as many TBI injuries as motor vehicle traffic crashes (MVTC).
- Data indicates that TBIs led to over 89 state residents per day being treated in Kentucky hospitals (ED and hospitalization).

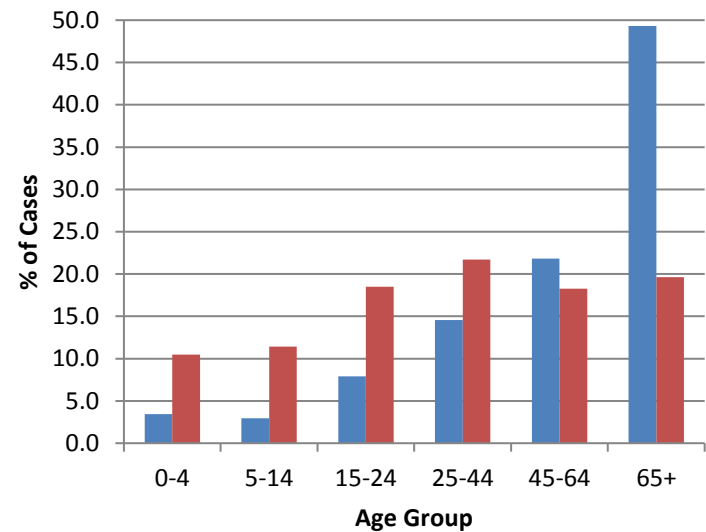
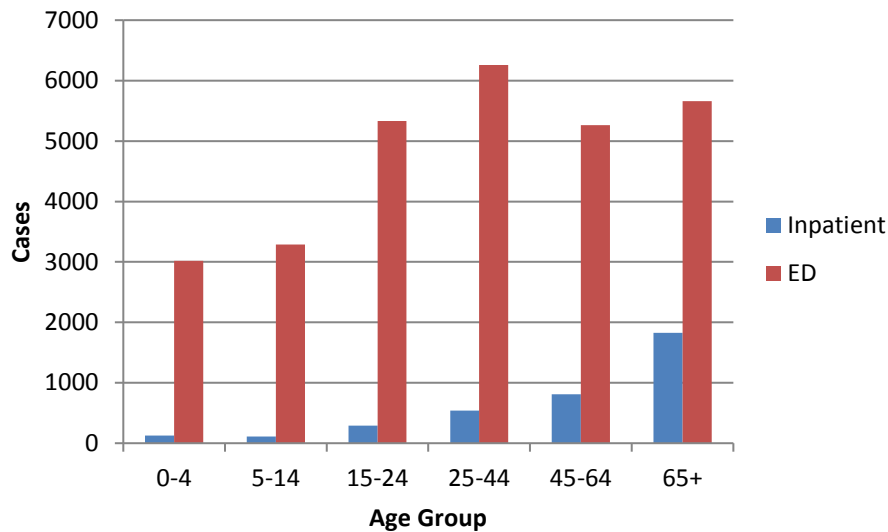
Our results indicate a need to focus prevention efforts on the following causes and target populations:

- Motor vehicle traffic crashes (TBI and SCI), especially among ages 15-24
- Falls (TBI and SCI), especially among ages 0-14 and 65 and older
- Anoxia (ABI), especially among ages 45 and older
- Exposure to toxic substances (ABI), especially among ages 45 and older

TBI by Age: Comparing the Numbers

Figure 2: Numbers of Non-Fatal Traumatic Brain Injury-Related Emergency Department Visits, and Hospitalizations, by Age Group, Kentucky, 2015

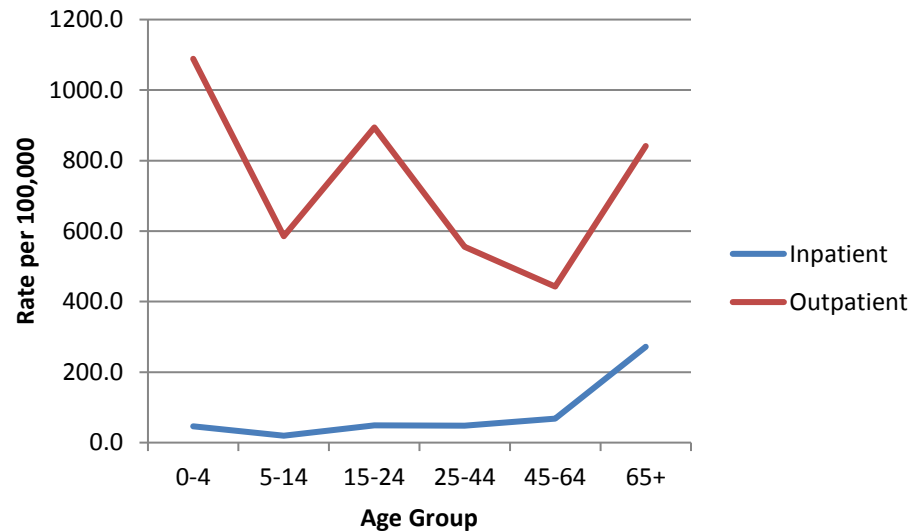
A non-fatal TBI related injury treated at a Kentucky hospital results in an *inpatient* admission for almost one quarter of older adults (65 and older) TBI related injuries while 95.9% of TBI related injuries in children (under the age of 15) are treated and released in the ED.



TBI by Age: Comparing the Rates

The following figure, **Figure 3**, is a graph depicting the annual rate of TBI-related ED visits and hospitalizations by age groups in Kentucky for 2015. The y axis represents the rate per 100,000 population. During 2015, very young children ages 0 to 4 years had the highest rate of non-fatal TBI-related ED visits, 1,089 per 100,000 population, followed by older adolescents ages 15 to 24 years, 894 per 100,000. From age 25 to age 64 the rates for ED visits decline, then begin to rise again for those ages 65 and over. The highest rates of non-fatal TBI-related hospitalization occurred among adults age 65 years or older (272 per 100,000).

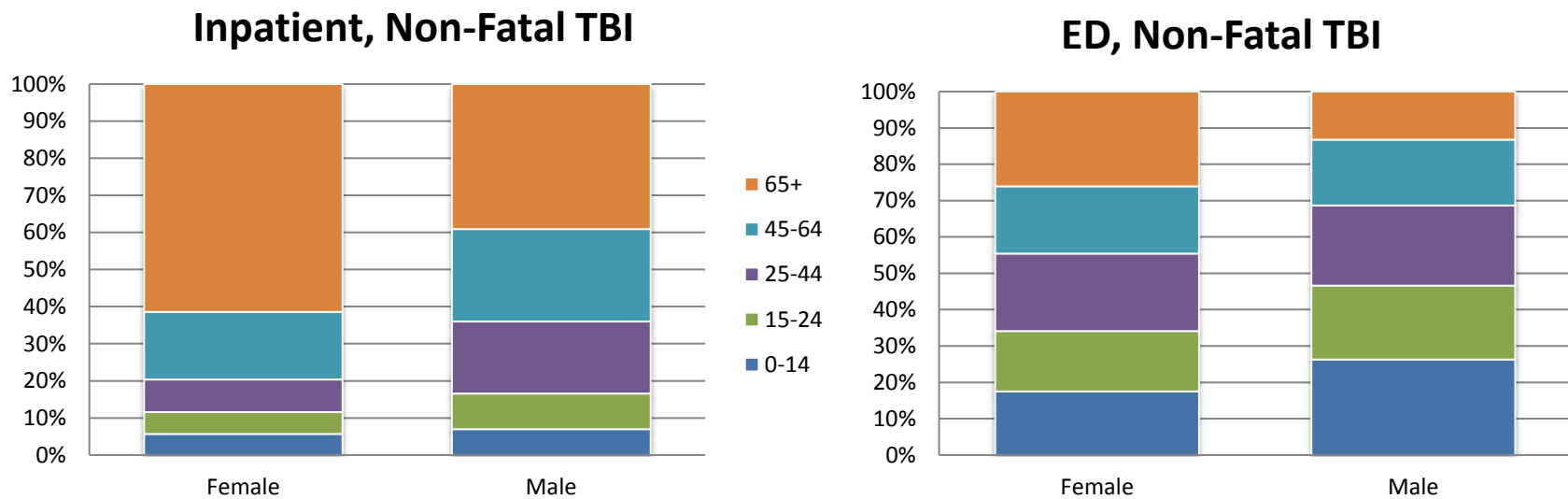
Figure 3: Rates of Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2015



TBI by Gender: Comparing the Numbers

The following figure represents the estimated average annual numbers of TBI-related ED visits and hospitalizations, by gender and age, in the Commonwealth for 2015. Overall 16,472 non-fatal TBIs occurred among males compared with 16,064 among females.

Figure 4: Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by Age Group and Gender, Kentucky, 2015



Over half of female, non-fatal TBI related inpatient admissions were over the age of 64 while men over 64 made up just over one third of non-fatal inpatient admissions for males.

TBI by Sex: Comparing the Rates

The following figure, **Figure 5**, is a graph depicting the rates of TBI-related ED visits and hospitalizations by sex. The y axis represents the rate per 100,000 population. Males from 0 to 4 years of age had the highest rates for TBI-related ED visits, 1,211 per 100,000. Rates were also high for females from 0 to 4 years of age, 960 per 100,000. Both males and females had high rates for ages 65 and older inpatient visits, 266 per 100,000 for males and 277 per 100,000 for females.

Figure 5: Rates of Non-Fatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by Sex, Kentucky, 2015

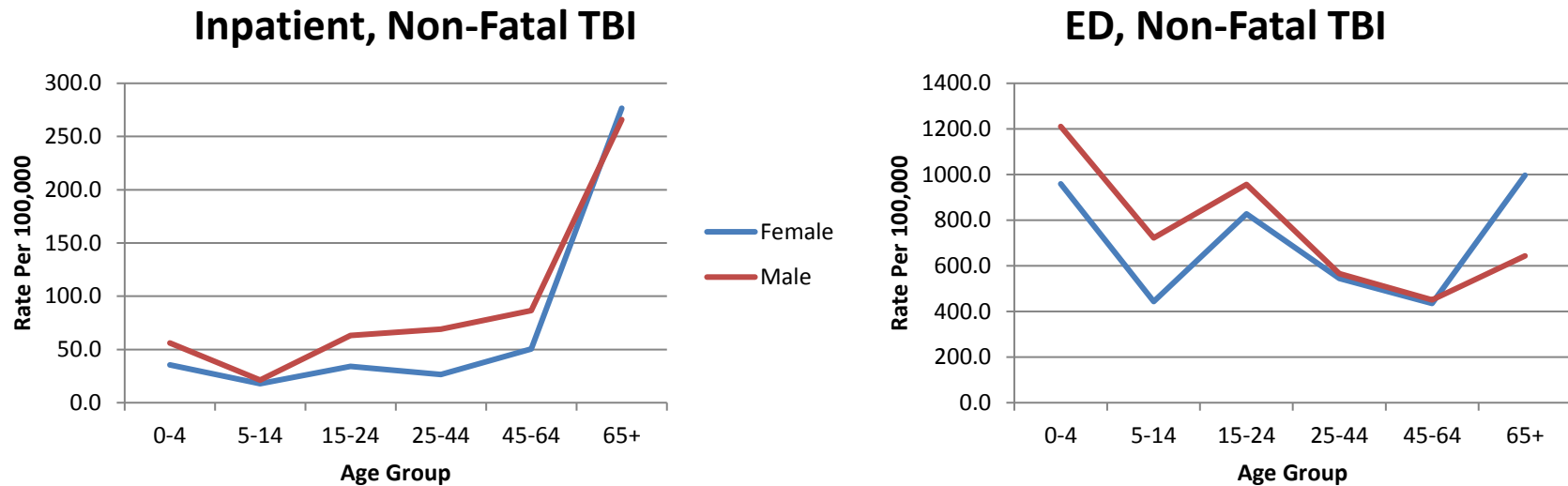
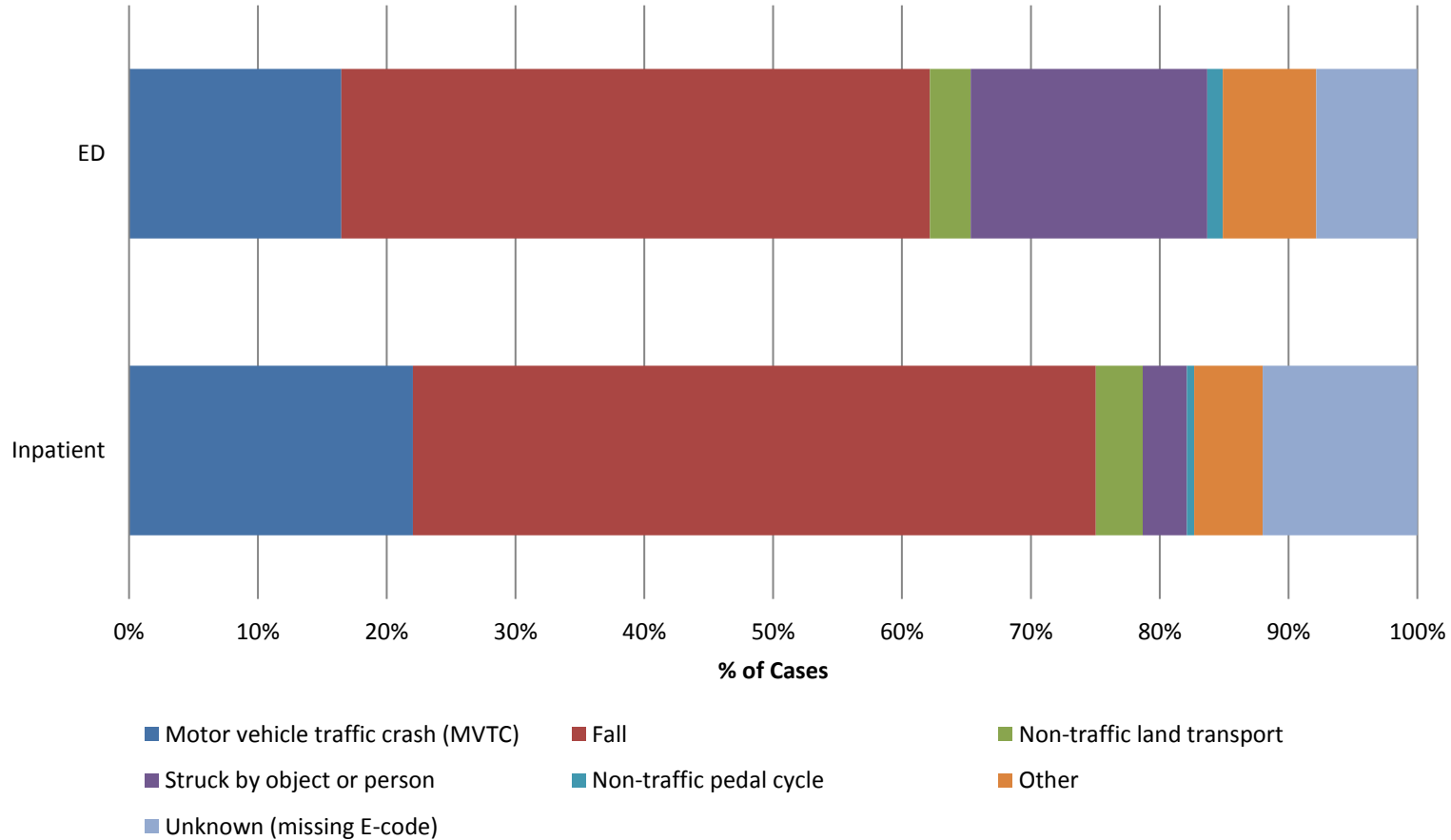


Figure 6: Non-Fatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, Kentucky, 2015

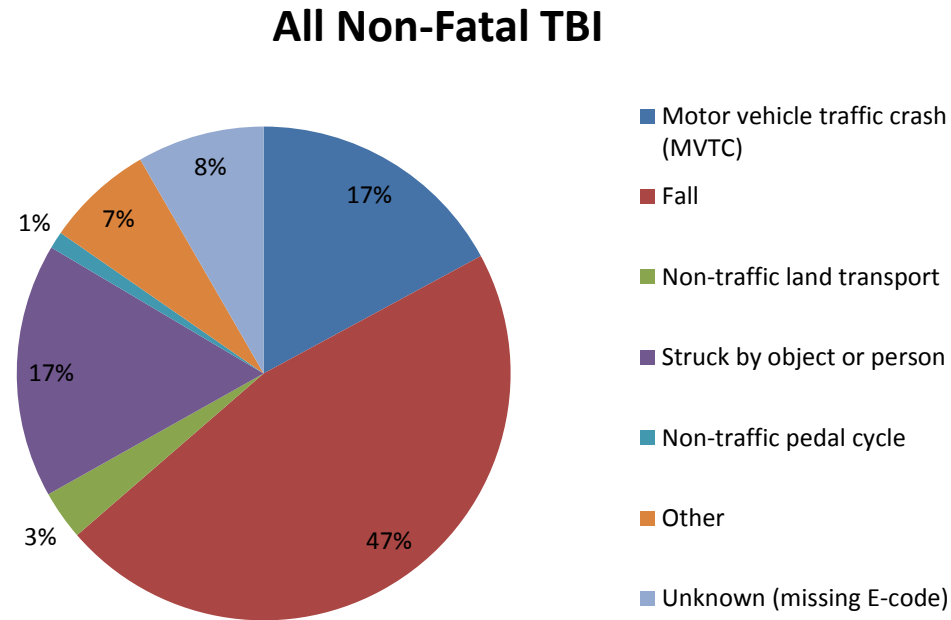
Mechanism of Injury, Non-Fatal TBI



TBI by External Cause: Comparing the Percentages

Following is a pie chart depicting the percentage of TBI-related ED visits and hospitalizations, combined, by external cause of injury. Falls were the leading known cause of TBI covering almost half (47%) of all non-fatal TBI in Kentucky in 2015. The second leading known causes were Struck by/Against and Motor Vehicle Traffic Crashes (MVTC) with each contributing 17% of all non-fatal TBI. In past years, and while looking only at inpatient data, MVTC were the leading cause of TBI with Falls being a close second. In 2007, MVTC numbers were first noticed to drop below Falls as leading cause of TBI. This drop and continued lower rates are thought to be a direct result of the primary seat belt law enacted towards the end of 2006.

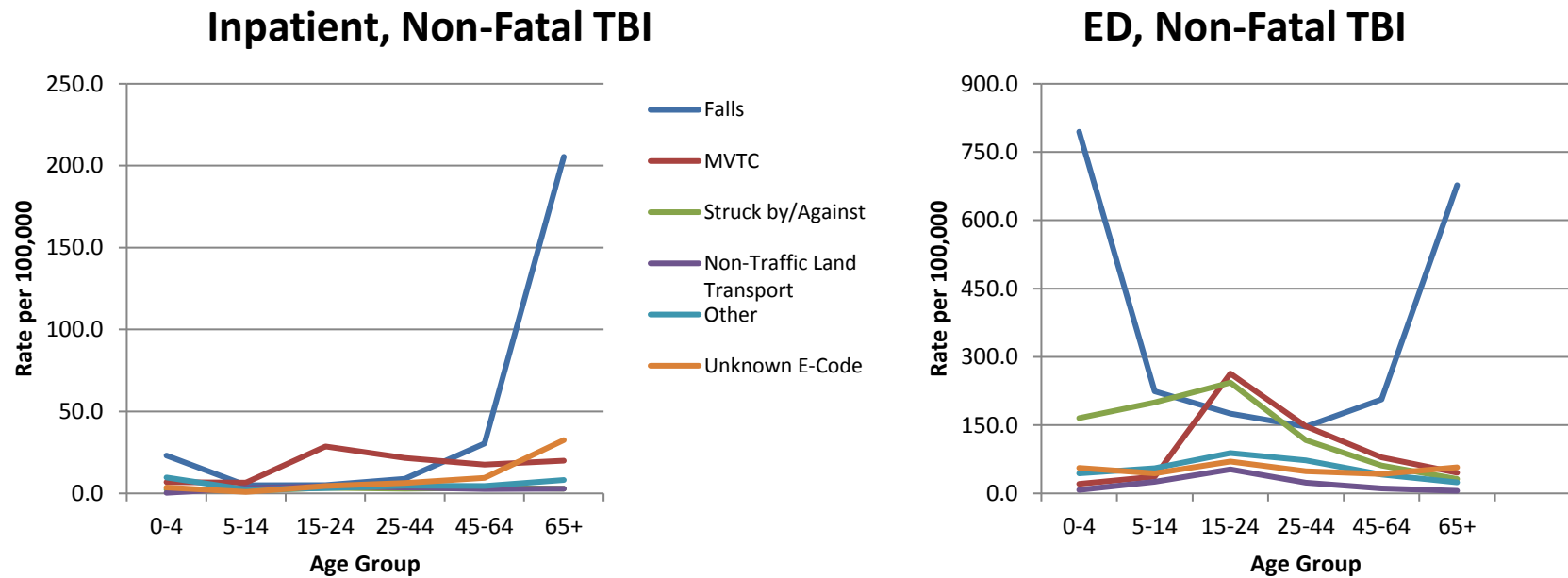
Figure 7: Percentage of Traumatic Brain Injury-Combined Emergency Department Visits and Hospitalizations, by External Cause, Kentucky, 2015



The following figure, **Figure 8**, is a graph depicting the rates of TBI-related ED visits and hospitalizations by external cause. The y axis represents the rate per 100,000 population.

The data indicate that Falls were the leading cause of TBI in Kentucky. Rates were highest among ages 0-4 years and 65 years and older. The rates for motor vehicle crash related TBI were highest among young adults ages 15 to 24 years with MVTC causing the largest proportion of TBI in this age group.

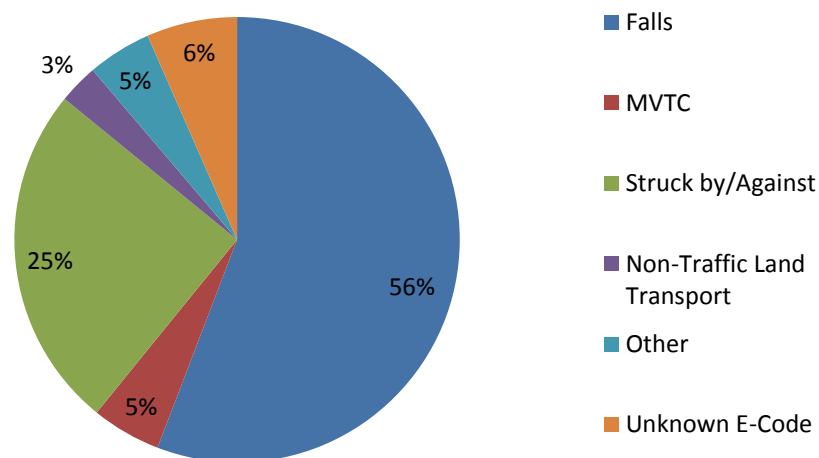
Figure 8: Rates of Non-Fatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by External Cause, Kentucky, 2015



TBI by External Cause: Comparing the Percentages by Age Groups

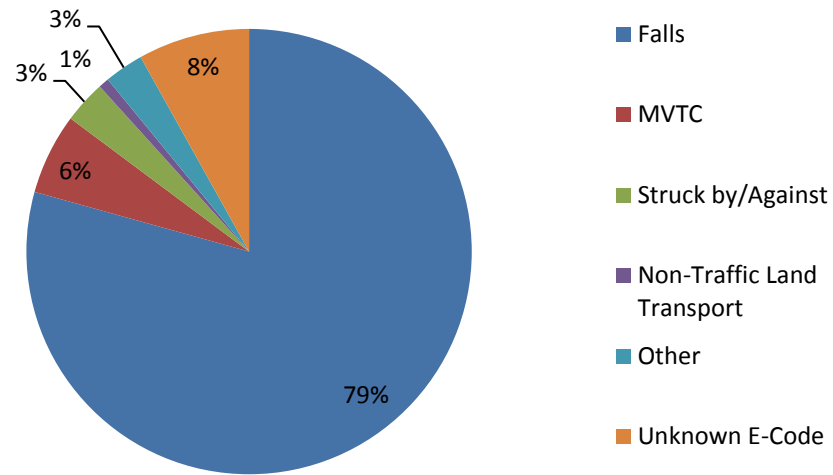
The following two figures depict the percentage of non-fatal TBI-related ED visits and hospitalizations by external cause for specific age groups. Figure 9 presents data for children ages 0 to 14 years. Figure 10 presents data for adults age 65 or older.

Figure 9: Percentage of Traumatic Brain Injury-Combined Emergency Department Visits and Hospitalizations Among Children 0 to 14 Years, by External Cause, Kentucky, 2015



For children ages 0 to 14 years, falls were the leading known external cause of non-fatal TBI, contributing to over half of all TBIs in this age group. The second leading known external cause was struck by or against events which accounted for a quarter of injuries.

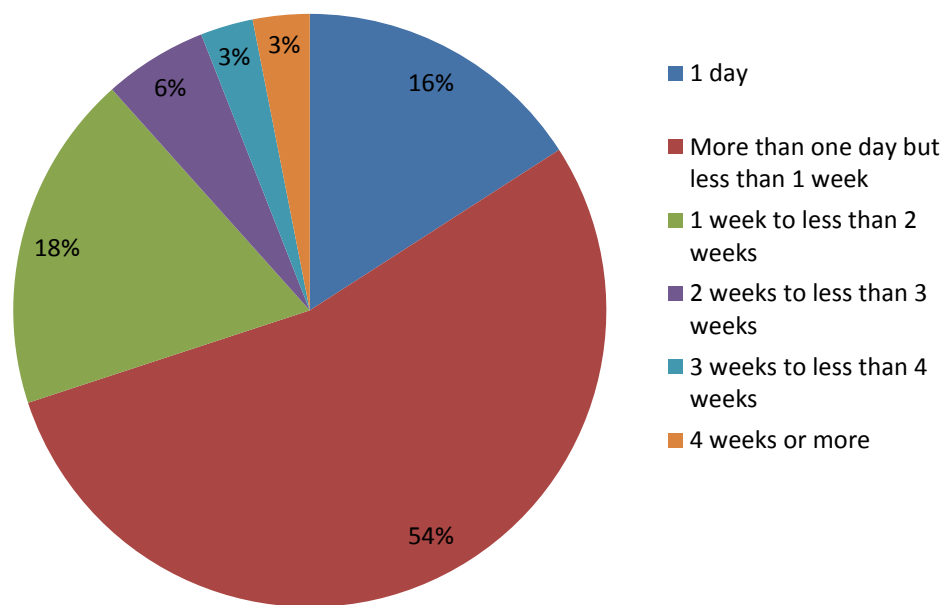
Figure 10: Percentage of Non-Fatal Traumatic Brain Injury-Combined Emergency Department Visits and Hospitalizations Among Older Adults 65 Years or Older, by External Cause, Kentucky, 2015



Falls were also the leading cause of non-fatal TBI for adults age 65 years or older and contributed to almost 8 out of 10 non-fatal TBI injuries.

The length of stay (LOS) for hospitalized, non-fatal TBI (n=3,710) ranged from 1 day to 139 days. The mean LOS was 6.9 days with a median LOS of 4 days. Figure 11 shows the distribution of stays for those hospitalized with a TBI. Almost three quarters of admitted TBI injuries stayed for less than 1 week.

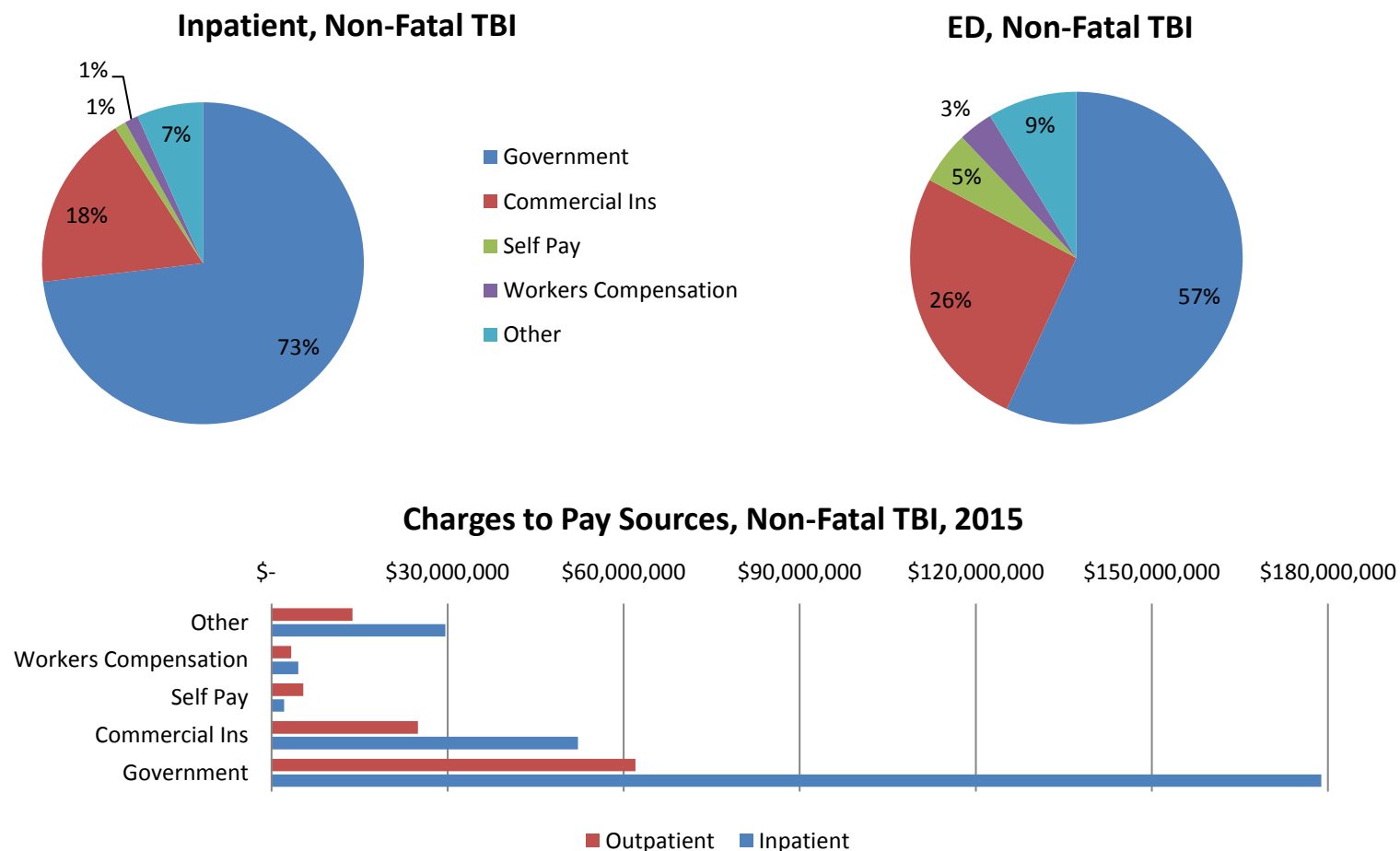
Figure 11: Non-Fatal Traumatic Brain Injury-Hospitalization Length of Stay, Kentucky, 2015



For non-fatal inpatient TBIs, 1,900 (51.2%) had a disposition other than “routine”. The three most frequent non-routine discharges were “skilled nursing facility”, “home health”, and “rehabilitation”. A total of 1,531 inpatient discharges had one of these three dispositions. ED discharges were nearly always (90.3%) to home or self care (routine) with “inpatient – other short term hospital” being the most frequent non-routine discharge.

Government sources were the primary payers billed for inpatient care charges in almost three quarters (73.2%) of non-fatal TBI as well as ED care charges (56.9%). Please note that the amount billed by the hospital will generally be larger than the amount actually paid after adjudication of the claim.

Figure 12: Non-Fatal Traumatic Brain Injury-Emergency Department and Hospitalizations, Payer Source and Charges, Kentucky, 2015



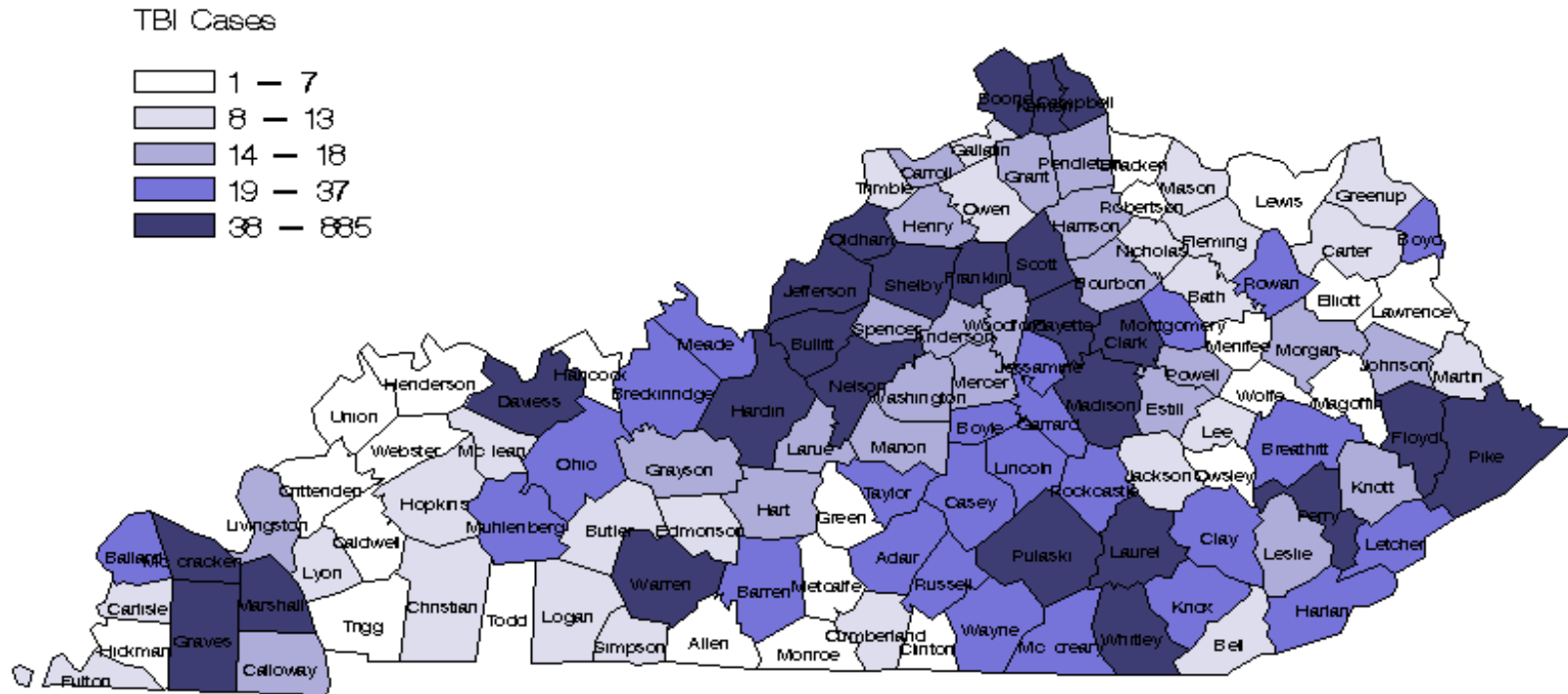
As one would expect, the incidence of TBI was highest in the larger counties. The top three in overall (inpatient and ED combined) TBI incidence (Jefferson, Fayette, and Hardin) are among the top most populous counties in Kentucky. McCracken County makes the top four in incidence while only being 12th in population rank in the state. Another notable exception was Whitley County, which was 14th in TBI incidence but 30th in population. Unsurprisingly, McCracken and Whitley County had the first and second highest age-adjusted rates in the state, respectively. Clay, Owen, Lee and Livingston also stood out by being in the top 10 age-adjusted rate while ranking 53rd, 98th, 111th and 102nd in population size. Clay has consistently been one of the highest rated counties in Kentucky since 2001. In the past when data was available, it was noted that several southern border counties have significant numbers of residents treated in Tennessee hospitals. Prominent examples include Christian, Whitley, Warren, Bell, Harlan, Graves, Logan, and McCracken. This illustrates an important point: *if this report shows a county to have a high rate of TBI, we can be confident that this is a county in need. Conversely, however, if a county is shown to have a low rate we cannot conclude that there is not a significant problem in that county, particularly if it is located on or near the state border.*

The following illustrations map both the frequency of TBI in Kentucky counties (Figures 13 and 14) as well as the age adjusted rate of TBI in each county (Figures 15 and 16) for inpatient and outpatient TBIs. It should be noted that these mappings include ALL inpatient TBI cases (Figures 13 and 15) as well as ALL ED TBI cases (Figures 14 and 16) – including those that died at the hospital. Fatalities are not included in other analysis in this report unless noted but are included here to capture a visual representation of the magnitude of the problem of TBI in each county. These numbers DO NOT include those that died before admission to an acute care hospital. Due to mortality data being several years behind available hospital discharge data, accurate numbers of deaths outside those within the hospital system can only be estimated and are not included in the mapping of actual data.

Multiple tables can be found in the Appendix detailing specific rates and frequencies by county, frequency, and age adjusted rates for both inpatient and ED TBIs.

Figure 13:

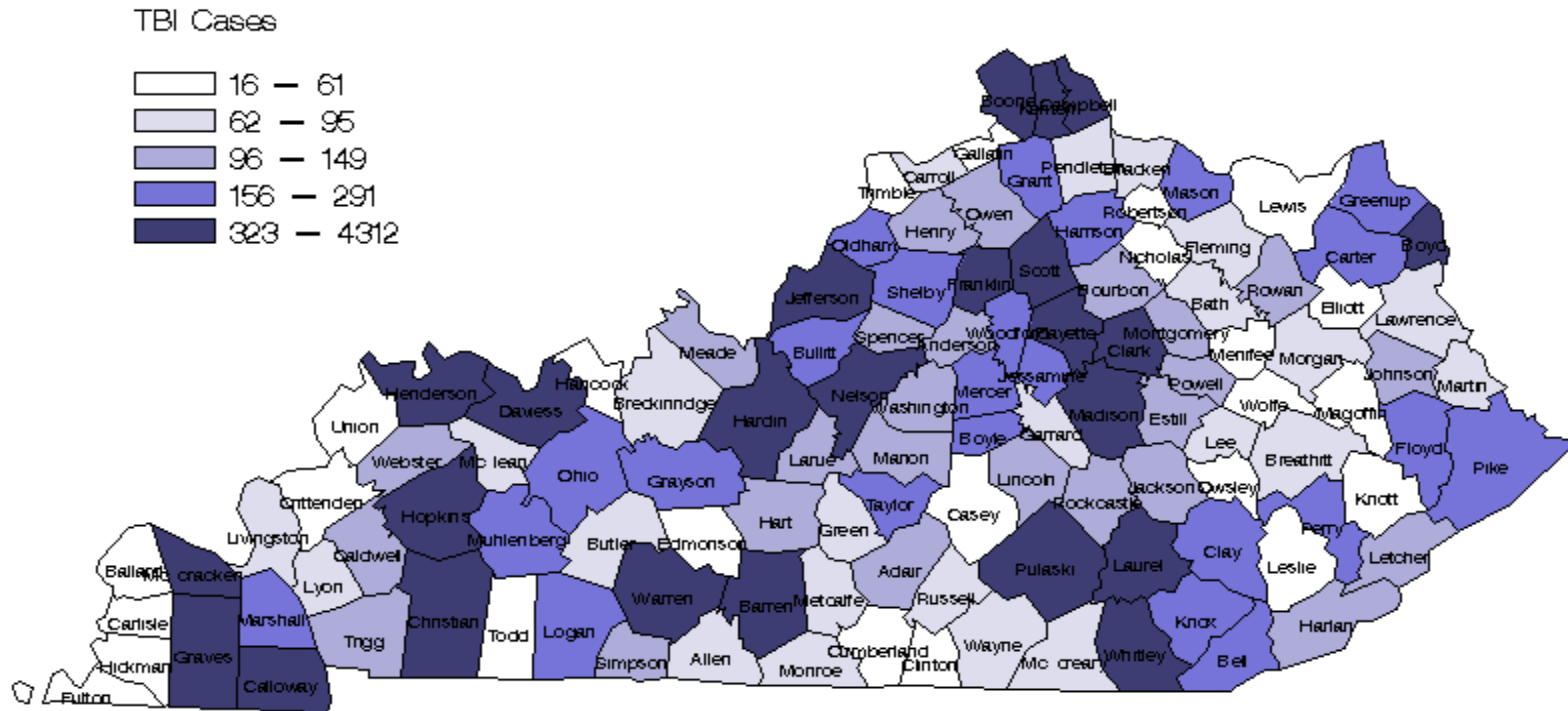
TBI Hospitalization Cases by County, Kentucky 2015



Source: Kentucky TBI Surveillance Project 2015.

Figure 14:

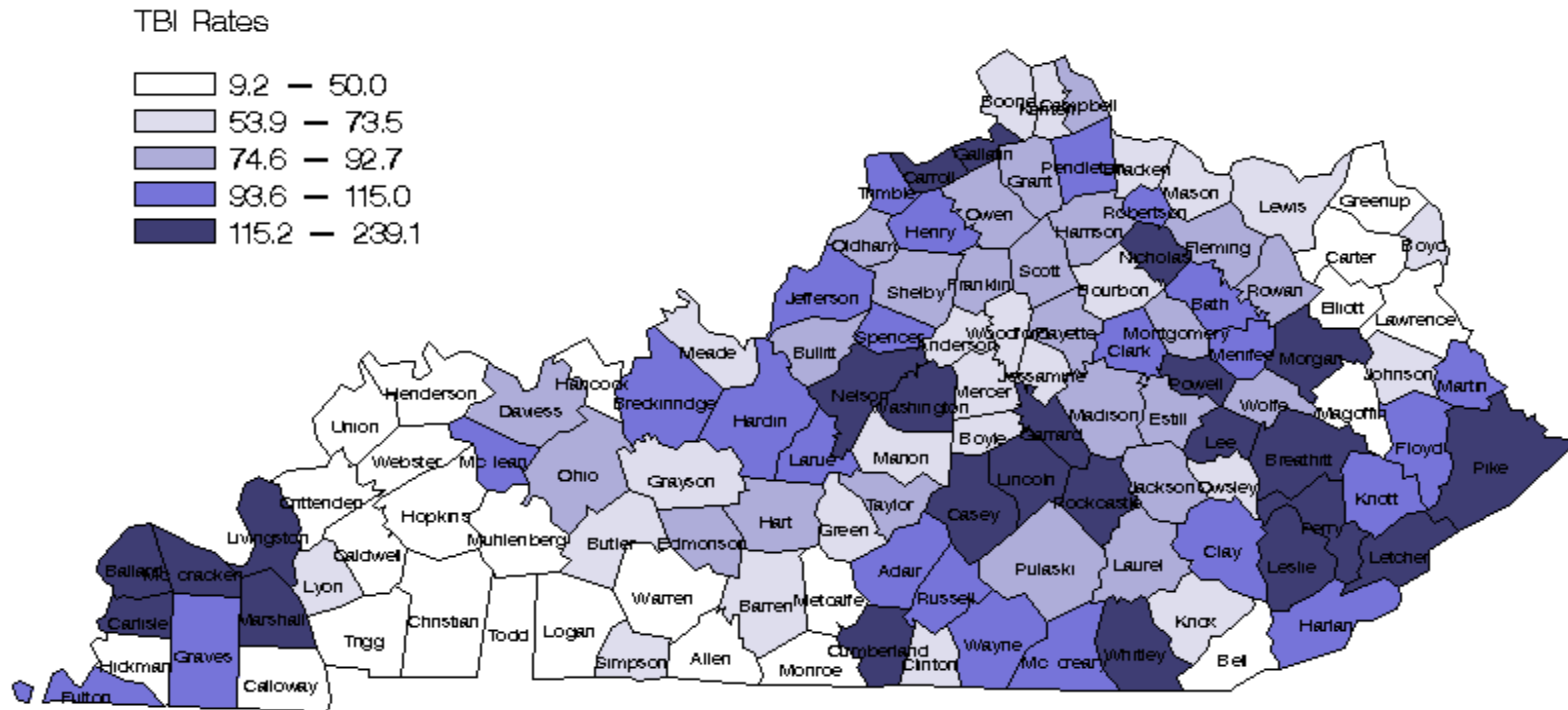
TBI ED Cases by County, Kentucky 2015



Source: Kentucky TBI Surveillance Project 2015.

Figure 15:

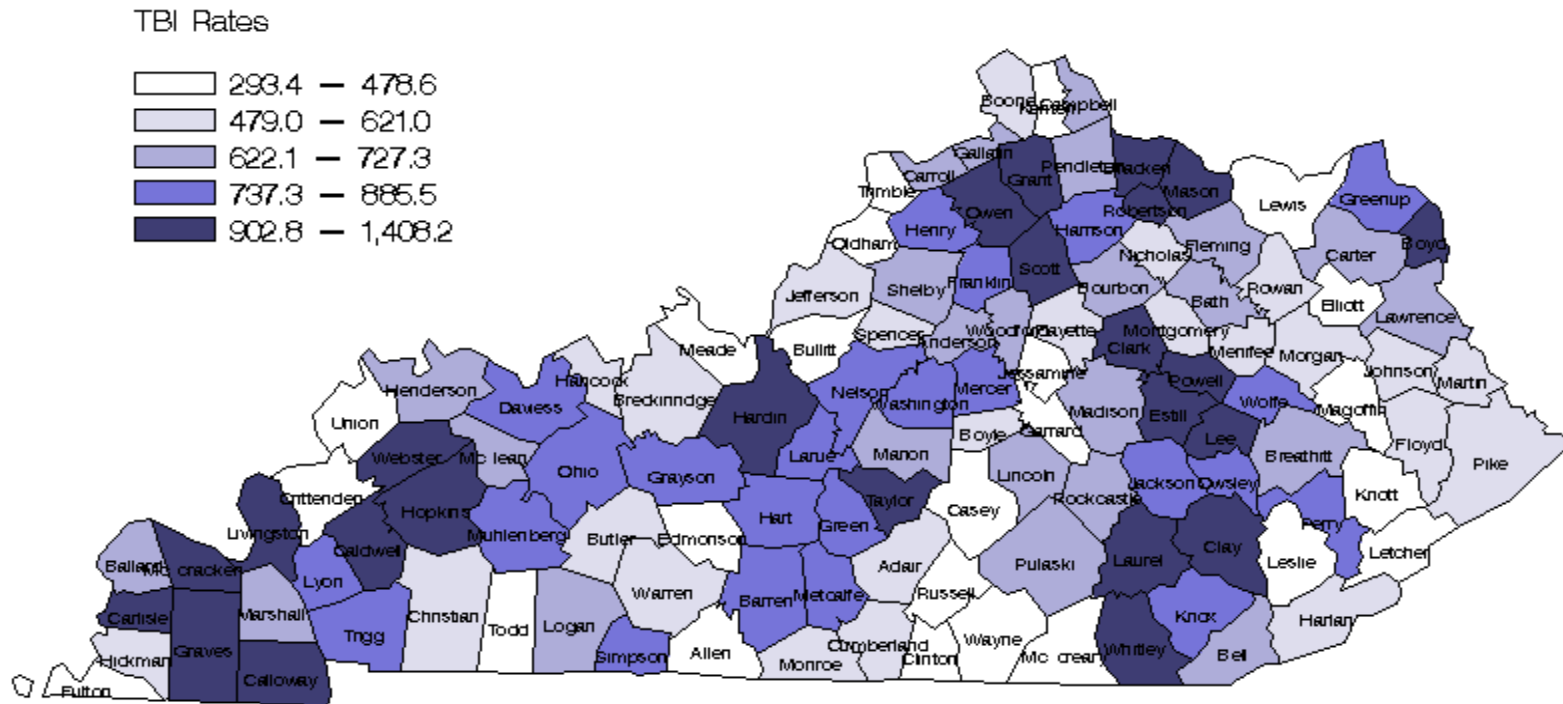
Age-Adjusted TBI Hospitalization Rates by County, Kentucky 2015



Source: Kentucky TBI Surveillance Project 2015.

Figure 16:

Age-Adjusted TBI ED Rates by County, Kentucky 2015



Source: Kentucky TBI Surveillance Project 2015.

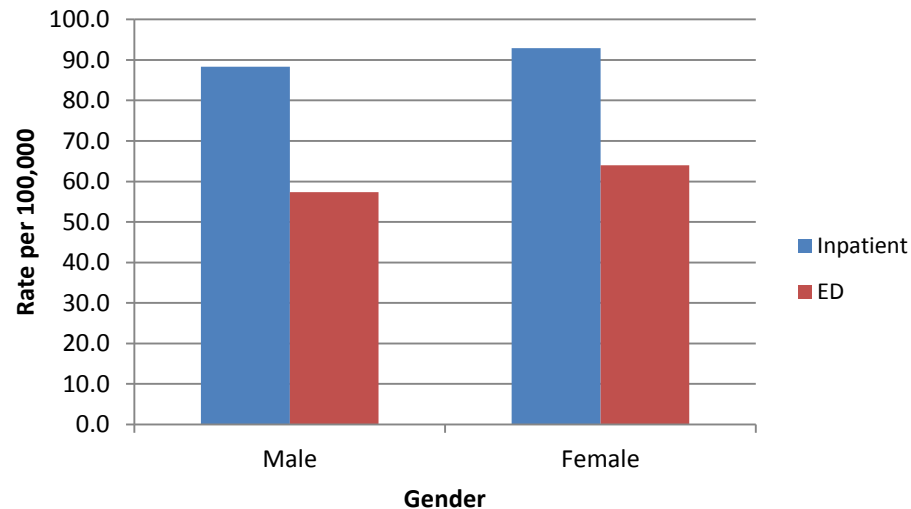
Acquired Brain Injury in Kentucky

In addition to CDC-defined TBI, there are many brain injuries that have non-traumatic etiologies. These we have classified as ABI. (See Appendix for diagnosis codes.) Because these diagnoses are not included in the CDC definition of TBI, they have been analyzed separately. There were 6,698 non-fatal ABI cases for Kentucky residents identified in 2015. This includes both inpatient (4,011) and ED (2,687) cases. The crude incidence rate for 2015 was 151 per 100,000 population.

ABI by Sex: Comparing the Rates

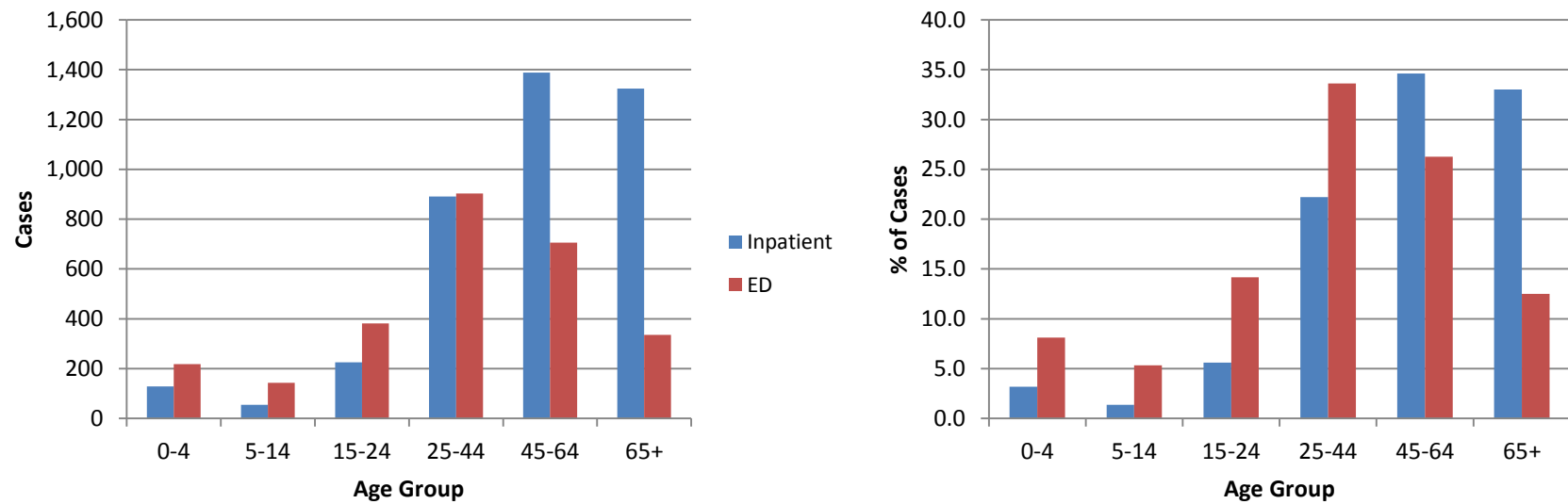
The following figure, **Figure 17**, is a graph depicting the rates of non-fatal ABI-related ED visits and hospitalizations by sex. The y axis represents the rate per 100,000 population. Rates were slightly higher for females in both ED and inpatient ABI cases.

Figure 17: Rates of Non-Fatal Acquired Brain Injury-Related Emergency Department Visits and Hospitalizations, by Gender, Kentucky, 2015



ABI by Age: Comparing the Numbers

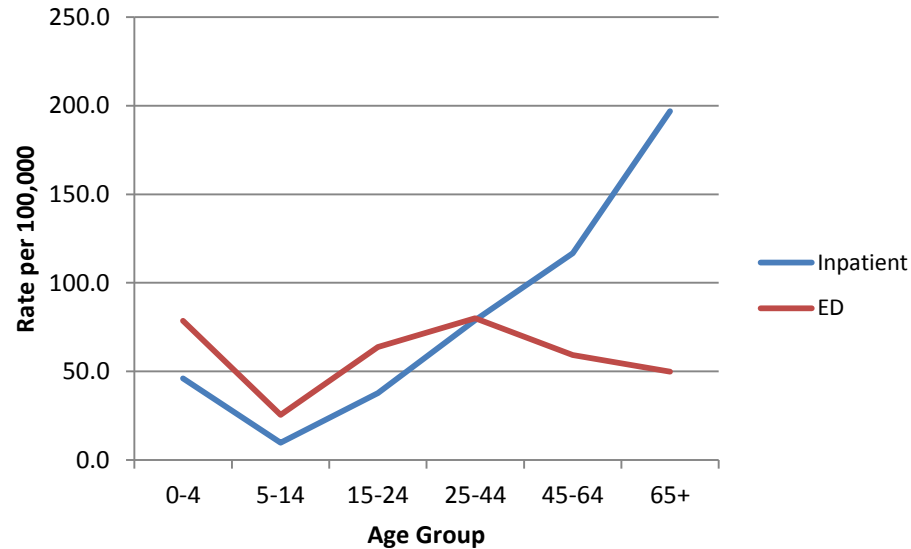
Figure 18: Numbers of Non-Fatal Acquired Brain Injury-Related Emergency Department Visits, and Hospitalizations, by Age Group, Kentucky, 2015



ABI by Age: Comparing the Rates

The following figure, **Figure 19**, is a graph depicting the annual rate of ABI-related ED visits and hospitalizations by age groups in Kentucky for 2015. The y axis represents the rate per 100,000 population. During 2015, the highest rate of non-fatal ABI-related ED visits at 80 per 100,000 population were those in the 25-44. The highest rates of non-fatal ABI-related hospitalization occurred among adults age 65 years or older (197 per 100,000).

Figure 19: Rates of Acquired Brain Injury-Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2015



ABI by Age and Type: Comparing the Rates

Nearly all ABI (89.8% of inpatient and 81.5% of ED) were a result of either exposure to toxic substances (ETS) or anoxia. Just over half of all ETS cases included poisoning by sedatives, hypnotics, central nervous system depressants/anesthetics and toxic effects of alcohol. Over two thirds of all anoxia cases were due to anoxic brain damage related to hereditary and degenerative disease of the central nervous system. In non-fatal ABI inpatient visits, anoxia tends to affect older people (ages 45 and over) considerably more often than younger people, whereas ETS affects persons 15 and older. In general, very young children, 0-4, always have one of the highest rates of non-fatal ABI related ED visits.

Figure 20: Rates of Non-Fatal Acquired Brain Injury-Related Emergency Department Visits, and Hospitalizations, by Age Group and Type, Kentucky, 2015

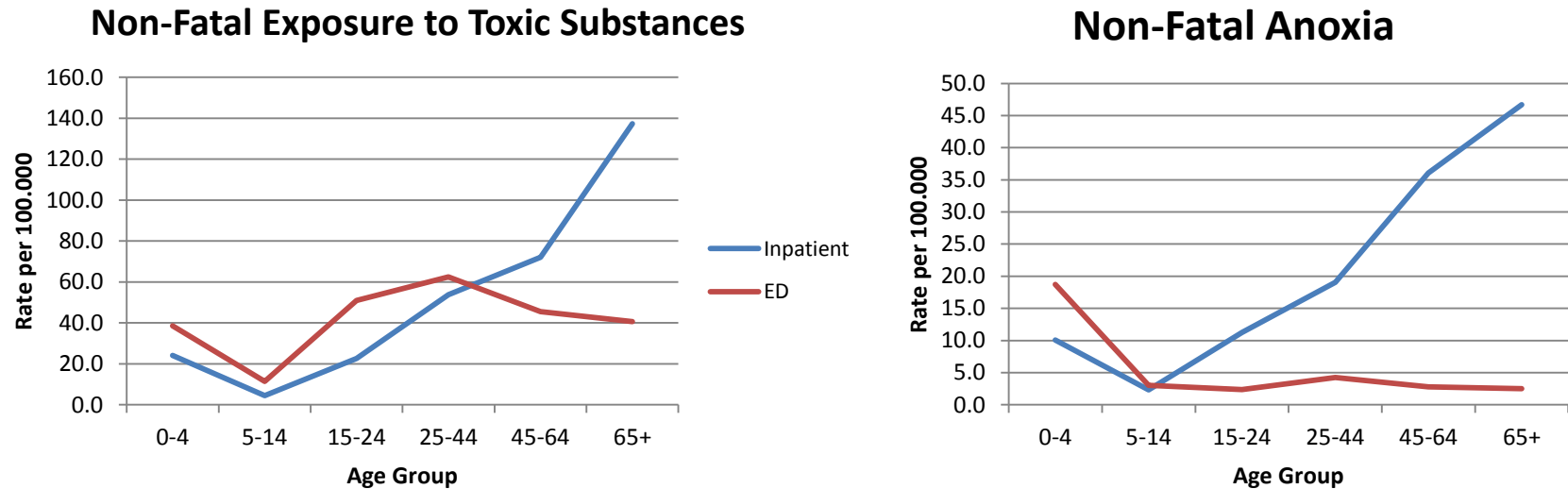
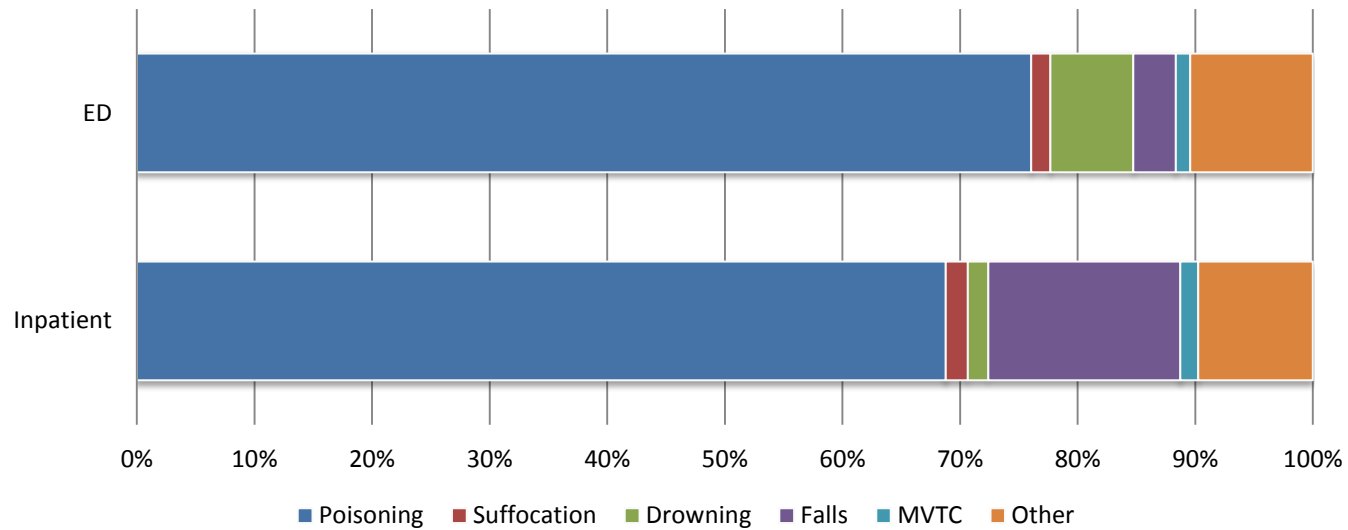


Figure 21: Non-Fatal Acquired Brain Injury-Related Emergency Department Visits and Hospitalizations by External Cause*, Kentucky, 2015



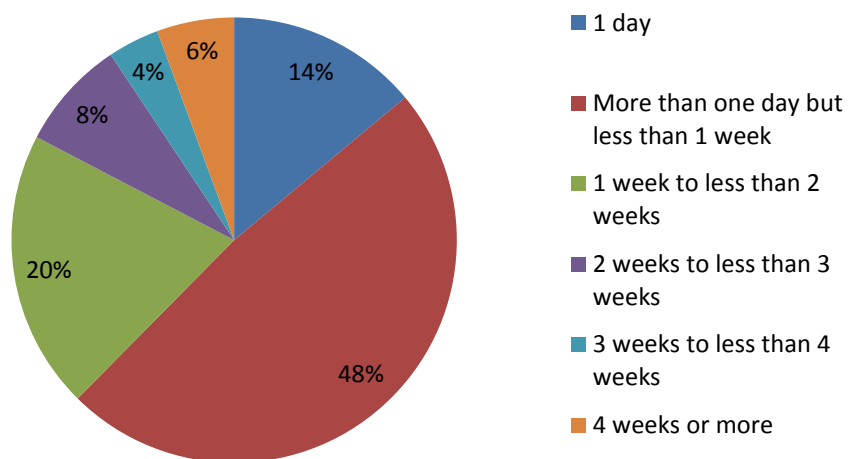
Among those ABI discharges that were reported to have some relationship with an injury (i.e. included an external cause of injury code), 68.8% of inpatient and 76.1% of ED cases were related to poisonings.

ABI is, by the statutory definition, non-traumatic, and many ABI cases do not include an external cause of injury code. Note that we are making a distinction between “injury-related” and “traumatic”, with trauma being considered one of several forms of injury. 77.2% of inpatient cases and 66.1% of ED cases did not include an external cause of injury code.

*Where external cause was reported.

The length of stay (LOS) for hospitalized, non-fatal ABI (n=4,011) ranged from 1 day to 260 days. The mean LOS was 9 days with a median LOS of 5 days. Figure 22 shows the distribution of stays for those hospitalized with ABI. Over one third of admitted (inpatient) ABI injuries stayed for 1 week or longer.

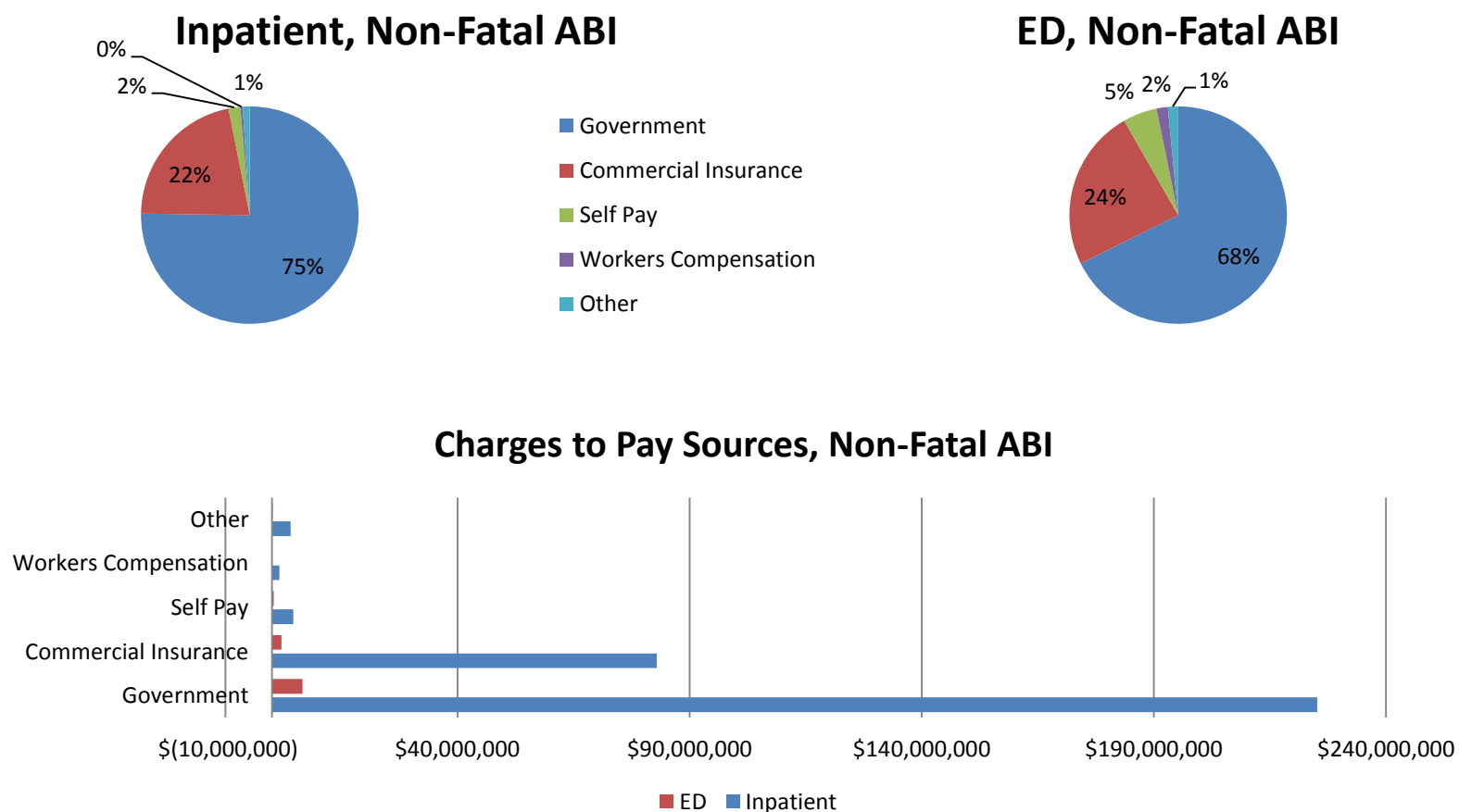
Figure 22: Non-Fatal Acquired Brain Injury-Hospitalization Length of Stay, Kentucky, 2015



For non-fatal inpatient ABIs, 1,979 (49.3%) had a disposition other than “routine”. The three most frequent non-routine discharges were “skilled nursing facility”, “home health”, and “rehabilitation”. A total of 1,176 inpatient discharges had one of these three dispositions. ED discharges were most likely (81.1%) routinely discharged to home or self care (routine) with “inpatient – other short term hospital” being the most frequent non-routine discharge.

Government sources were the most often primary payers billed for both inpatient (75.2%) and ED (67.7%) cases for non-fatal ABI. Please note that the amount billed by the hospital will generally be larger than the amount actually paid after adjudication of the claim.

Figure 23: Non-Fatal Acquired Brain Injury-Emergency Department and Hospitalizations, Payer Source and Charges, Kentucky, 2015



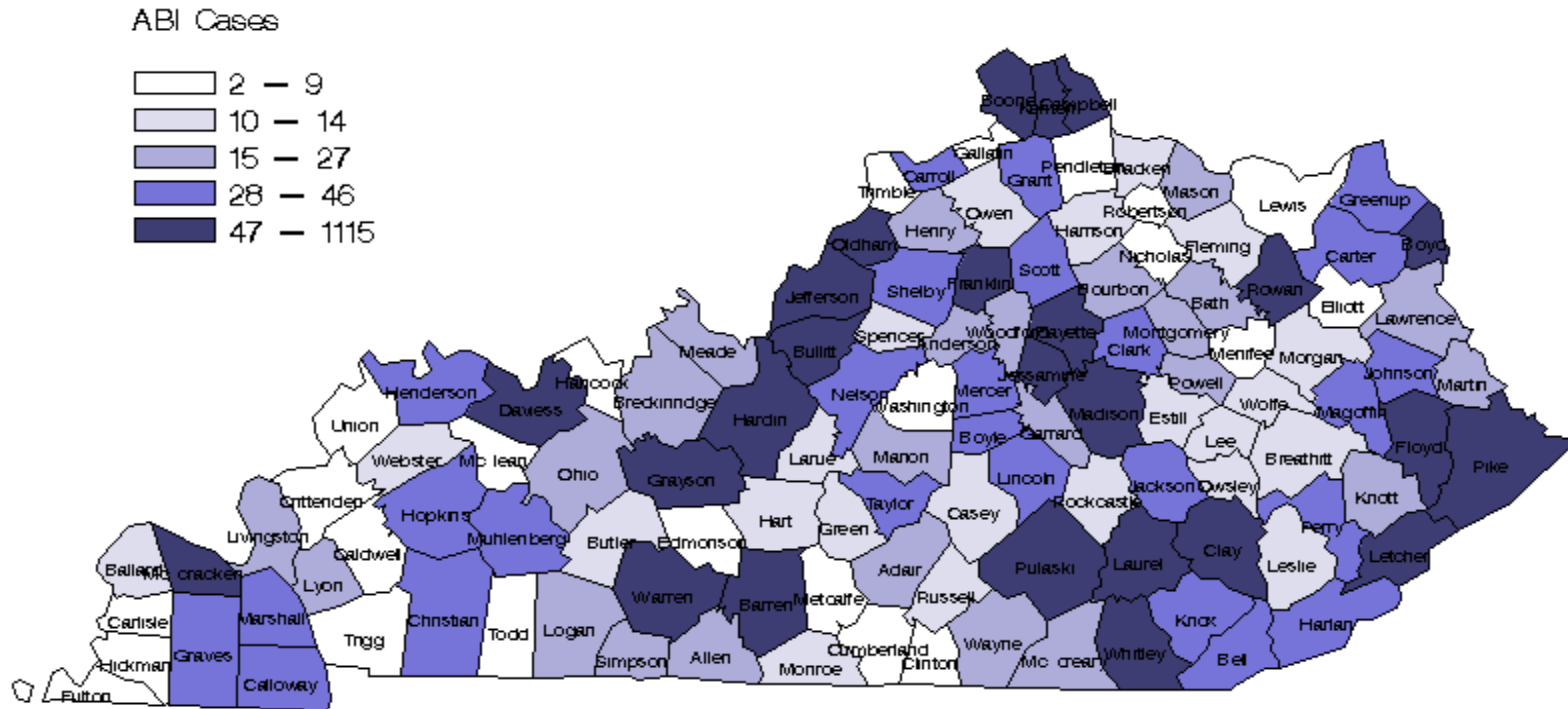
In general, as with TBI, the more populous counties had high numbers of ABI. However, once again, the ten most populous counties did not appear in the top thirty counties when ranked by age-adjusted rate for ED cases. Only Jefferson County (ranked 1st in population and 23rd in age adjusted rate) kept this from being true for non-fatal hospitalized ABI cases. Carroll, which ranks 98th with respect to county population, had the highest age adjusted rate of inpatient ABI in the state. Leading the state for age adjusted rate for ED cases was Robertson County, the 120th (least populated) county when ranked by population size. Robertson County also had the 14th highest age adjusted rate of inpatient ABI in the state. The counties with the highest inpatient rates were concentrated in eastern Kentucky with another cluster showing in the western region (Figure 26).

The following figures map both the frequency of ABI in Kentucky counties (Figures 24 and 25) as well as the age adjusted rate of ABI in each county (Figures 26 and 27) for inpatient and outpatient ABIs. It should be noted that these mappings include ALL inpatient ABI cases (Figures 24 and 26) as well as ALL ED ABI cases (Figures 25 and 27) – including those that died at the hospital. Fatalities are not included in other analysis in this report unless noted but are included here to capture a visual representation of the magnitude of the problem of ABI in each county. These numbers DO NOT include those that died before admission to an acute care hospital. Due to mortality data being several years behind available hospital discharge data, accurate numbers of deaths outside those within the hospital system can only be estimated and are not included in the mapping of actual data.

Multiple tables can be found in the Appendix detailing specific rates and frequencies by county, frequency, and age adjusted rates for both inpatient and ED ABIs.

Figure 24.

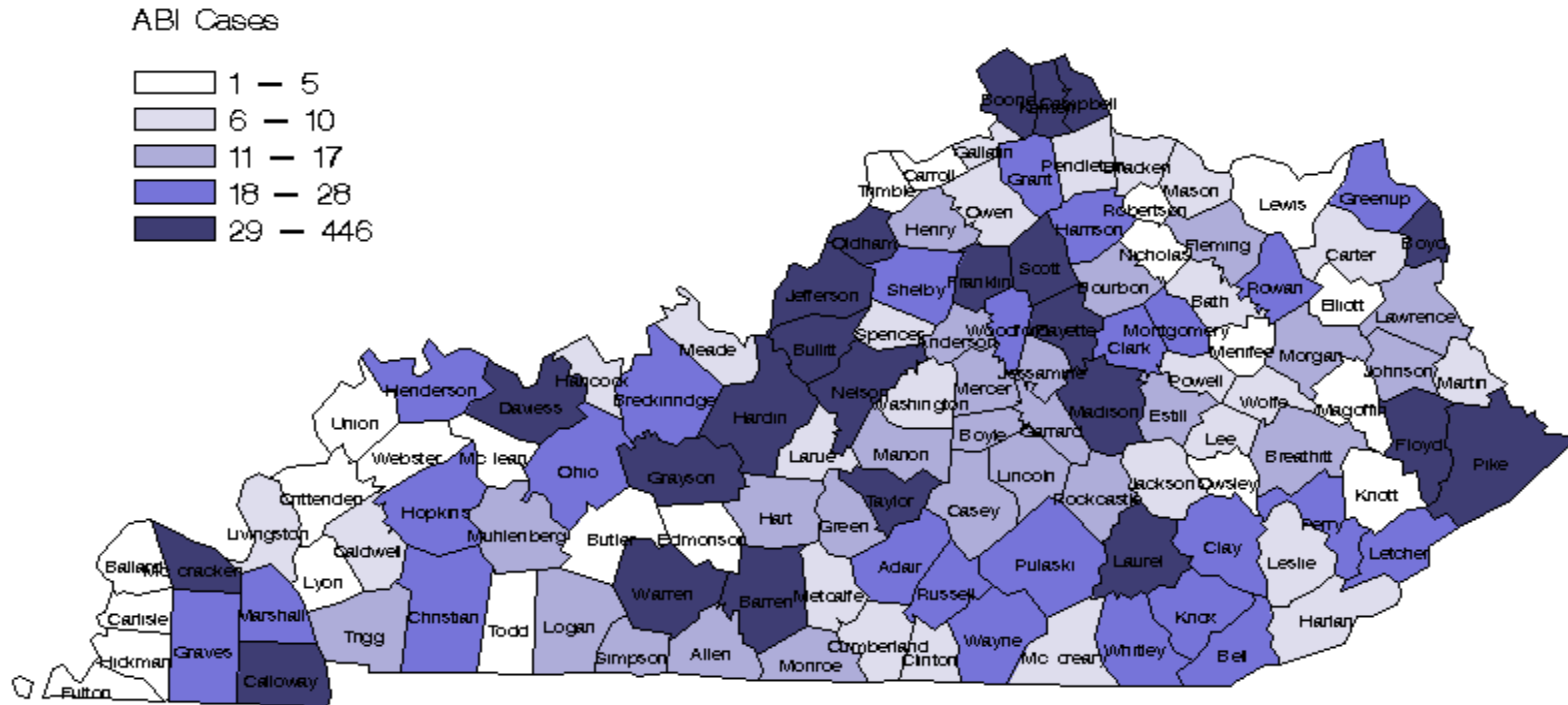
ABI Hospitalization Cases by County, Kentucky 2015



Source: Kentucky TBI Surveillance Project 2015.

Figure 25.

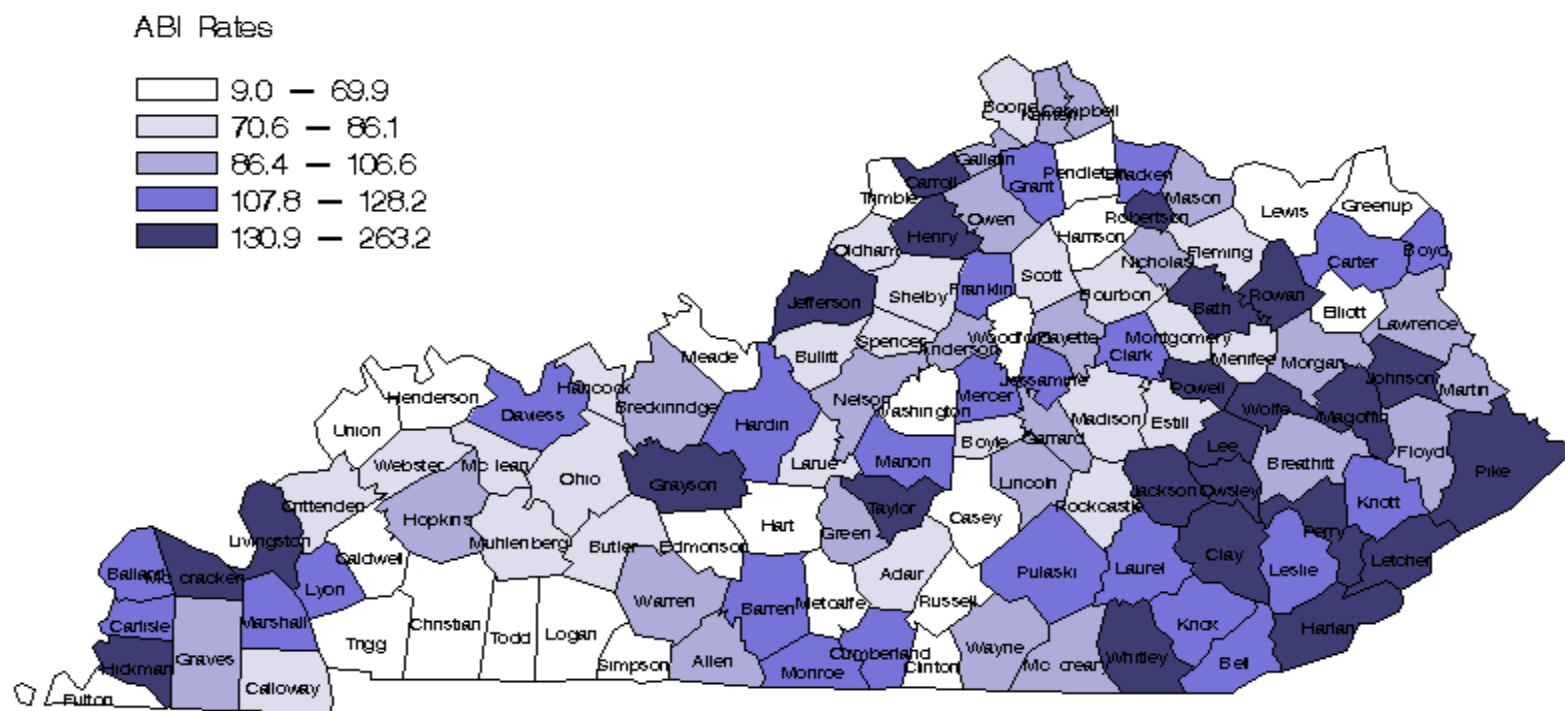
ABI ED Cases by County, Kentucky 2015



Source: Kentucky TBI Surveillance Project 2015.

Figure 26.

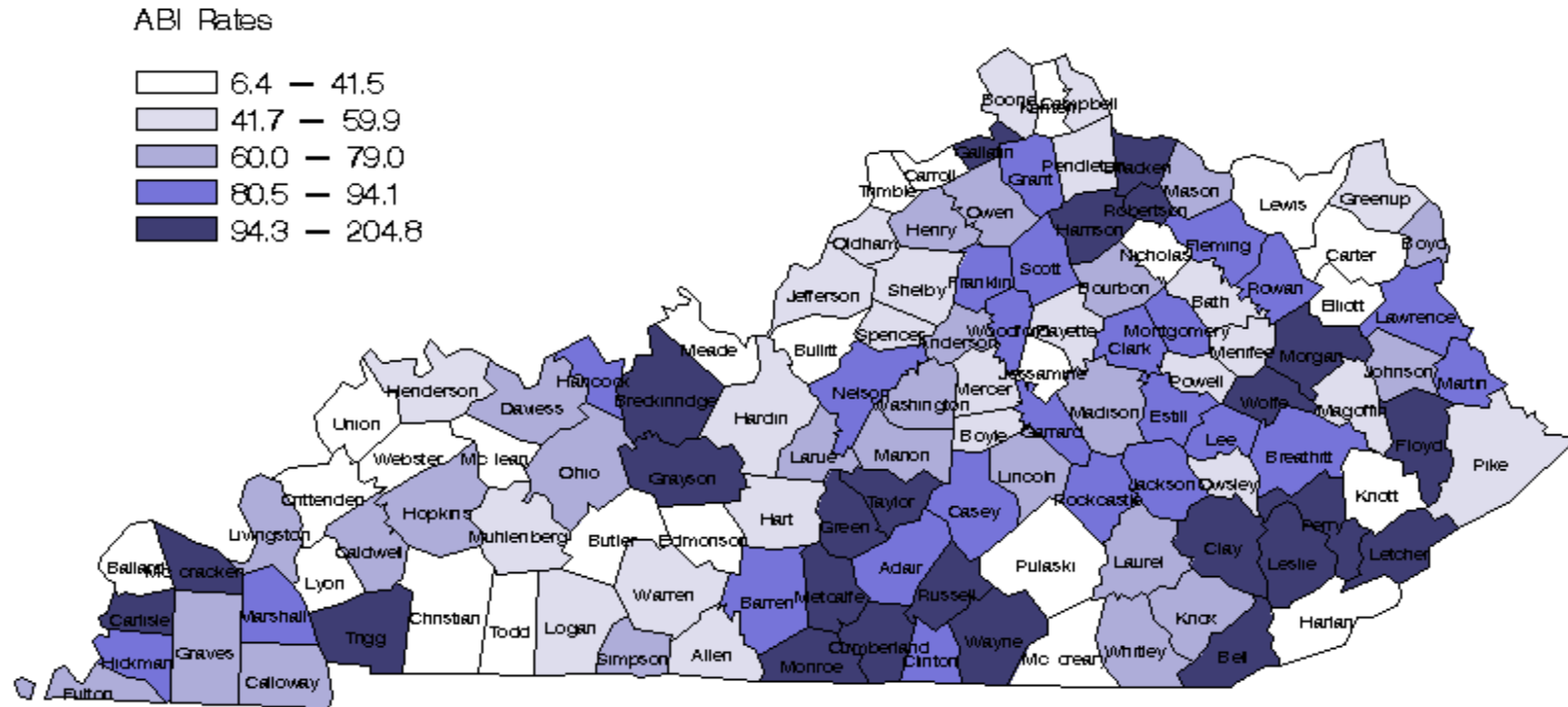
Age—Adjusted ABI Hospitalization Rates by County, Kentucky 2015



Source: Kentucky TBI Surveillance Project 2015.

Figure 27.

Age-Adjusted ABI ED Rates by County, Kentucky 2015



Source: Kentucky TBI Surveillance Project 2015.

Spinal Cord Injury in Kentucky

SCI patients often are readmitted for problems stemming from the original injury. In an effort to avoid double counting in such cases, for SCI we looked only at the first three listed diagnosis codes. There were 189 non-fatal inpatient SCI cases for Kentucky residents identified in 2015 as well as 113 non-fatal ED cases. The crude incidence rate of any non-fatal SCI was 6.8 per 100,000 population.

SCI by Sex: Comparing the Rates

Figure 28: Rates of Non-Fatal Spinal Cord Injury-Related Emergency Department Visits and Hospitalizations, by Gender, Kentucky, 2015

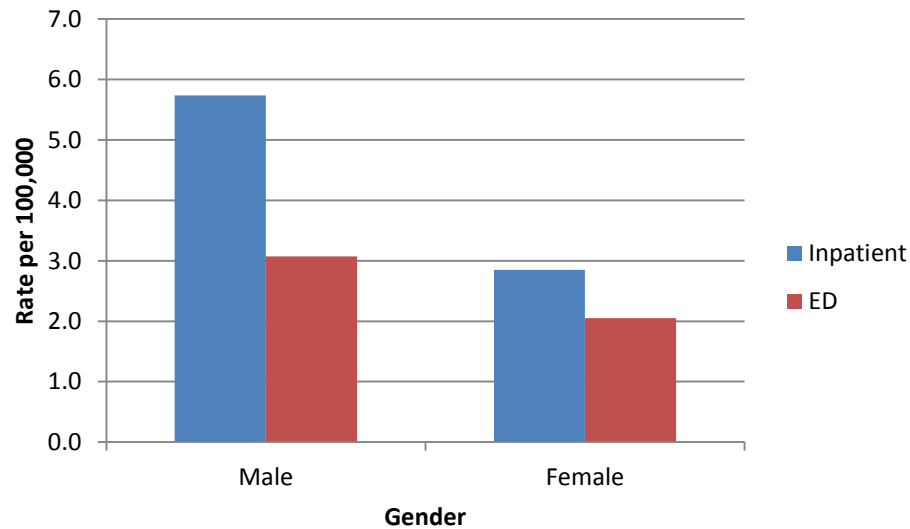
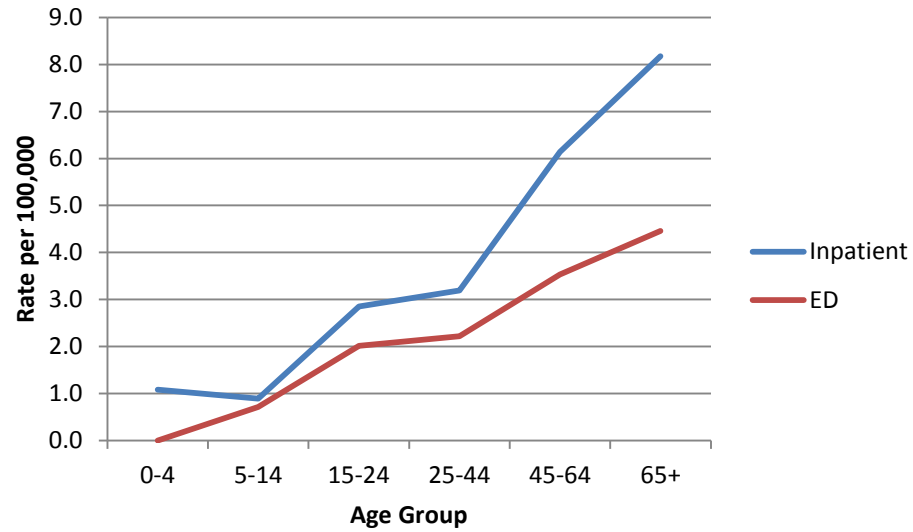
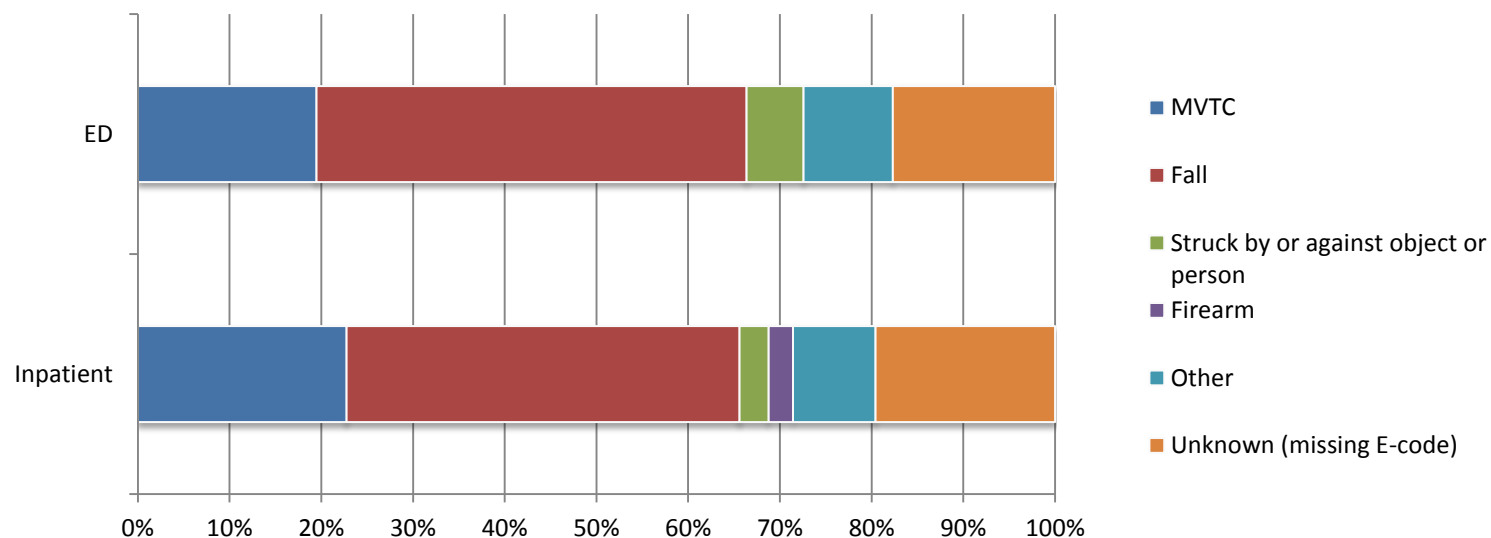


Figure 29: Rates of Spinal Cord Injury-Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2015



The highest age-specific rates were found in the 65 or older age group for both non-fatal inpatient and ED SCI.

Figure 30: Non-Fatal Spinal Cord Injury-Related Emergency Department Visits and Hospitalizations by External Cause, Kentucky, 2015

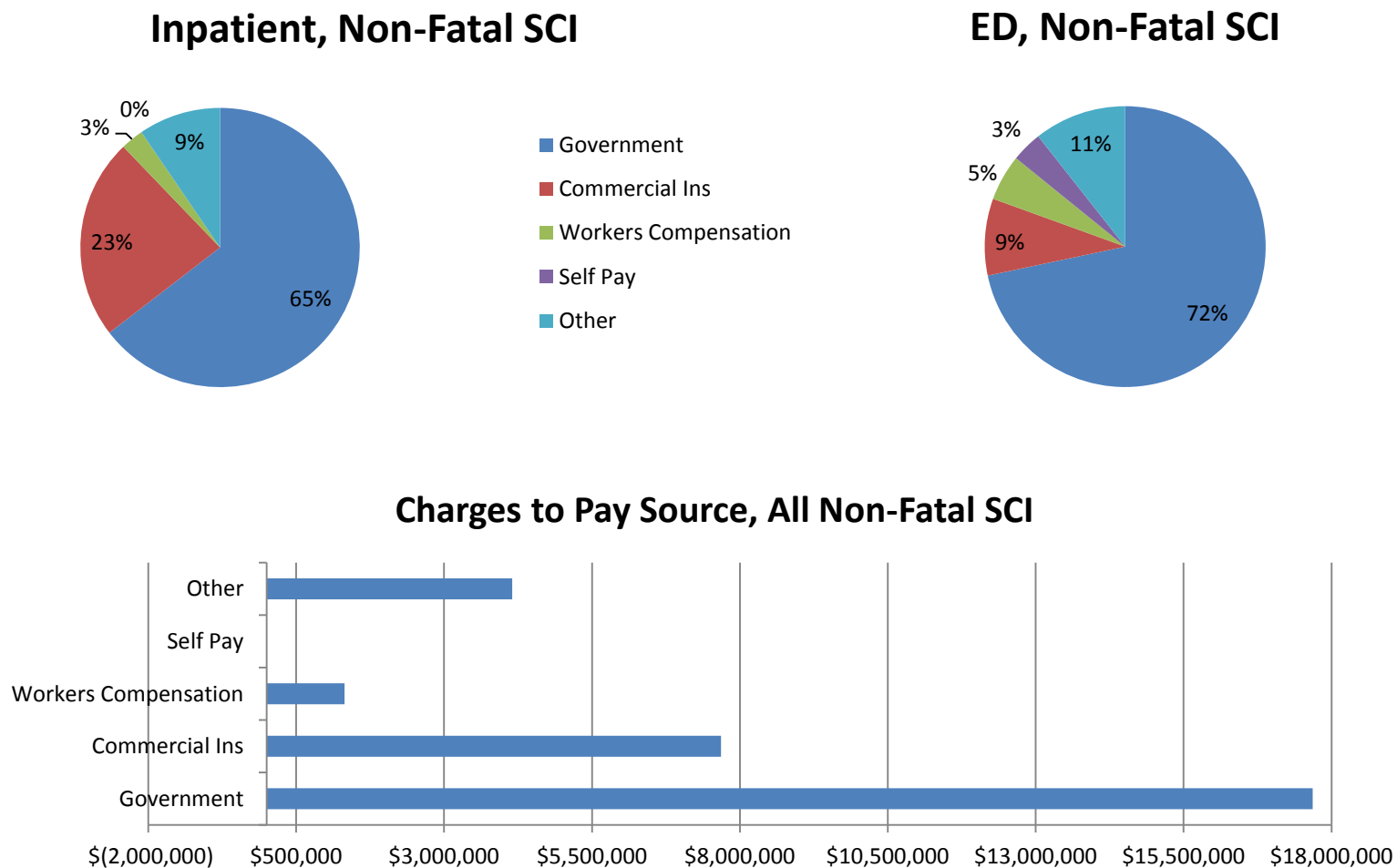


Among non-fatal SCI's for which an E-code was reported, falls were the leading mechanisms of injury for both inpatient and ED SCI visits. Unfortunately, almost one out of five of the inpatient SCI discharges had no E-code reported.

Hospitalized SCI patients had a length of stay (LOS) varying from 1 day to 63 days. The mean LOS was 11.2 days with a median of 8 days. Almost 3 out of 4 (73.0%) of the non-fatal inpatient SCI discharges had dispositions other than "routine", while 42.5% of ED discharges were non-routine. In total, over 6 out of 10 of all SCI non-fatal discharges went on to receive further care. In comparison, non-fatal TBI inpatient visits were routinely discharged almost 50% of the time and TBI visits to the ED were routinely discharged over 90% of the time. Overall, almost 9 out of 10 non-fatal TBI discharges were discharged to home or self care (routine).

Government sources were the primary payer billed for acute care charges in over two thirds of all non-fatal SCI. Government payers were billed almost \$17.7 million in 2015, and commercial payers almost \$7.7 million.

Figure 31: Non-Fatal Spinal Cord Injury-Emergency Department and Hospitalizations, Payer Source and Charges, Kentucky, 2015



Cerebrovascular Disease in Kentucky

The highest death rates for cerebrovascular disease (stroke) occur in the southeastern US which has been dubbed the “stroke belt”. This region consists of a group of 11 southeastern states that have an age-adjusted stroke mortality rate more than 10% above the national average. Kentucky is included in this region. In 2015, over 37,000 non-fatal hospital visits by Kentucky residents were coded with stroke related ICD-9 or ICD-10 codes in one or more diagnosis fields. Of these, 48.9% listed stroke as the principal diagnosis. There were 25,737 non-fatal inpatient stroke cases for Kentucky residents identified in 2015 as well as 11,738 non-fatal ED cases. The crude incidence rate was 847 per 100,000 population.

Stroke by Sex: Comparing the Rates

Figure 32: Rates of Non-Fatal Stroke Related Emergency Department Visits and Hospitalizations, by Gender, Kentucky, 2015

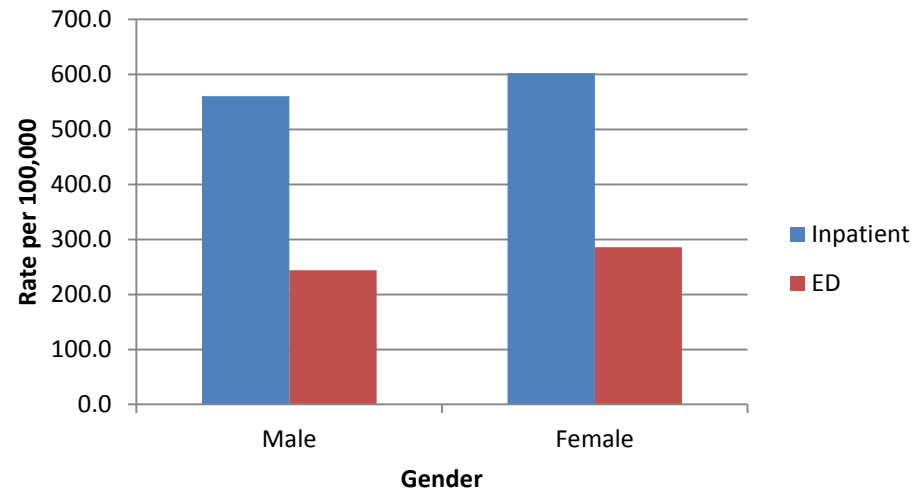
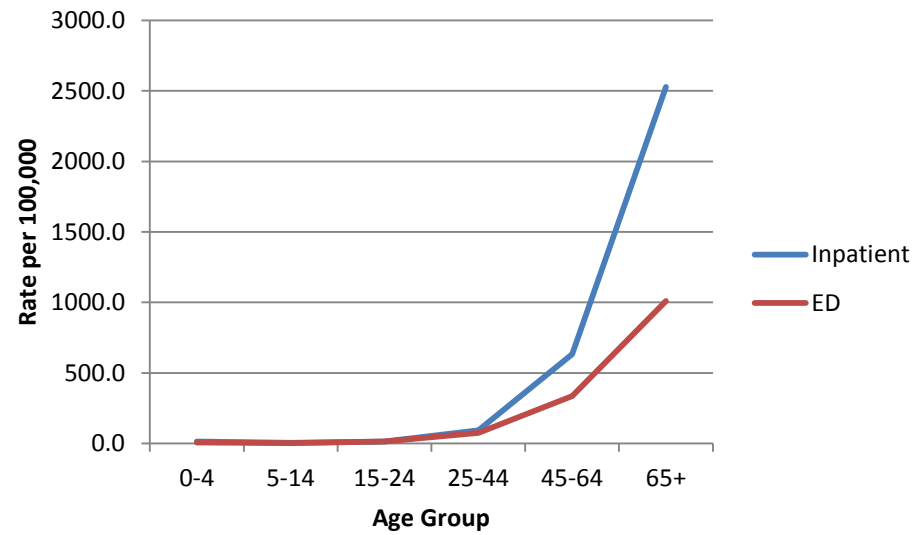


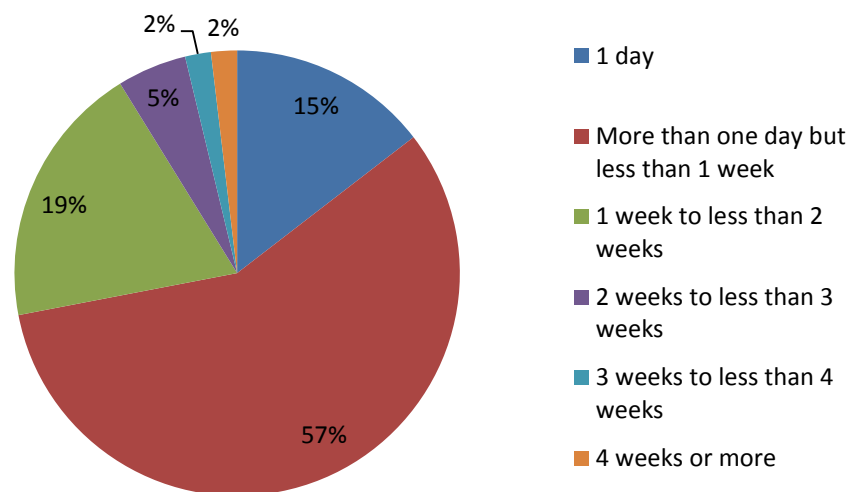
Figure 33: Rates of Stroke Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2015



The highest age-specific rates were found in the 65 or older age group for both non-fatal inpatient and ED stroke cases.

The length of stay (LOS) for non-fatal stroke related hospitalizations (n=25,737) ranged from 1 day to 345 days. The mean LOS was 6 days with a median LOS of 4 days. Figure 34 shows the distribution of stays for those hospitalized with a stroke diagnosis. Almost one in three admitted (inpatient) stroke related hospitalizations stayed for 1 week or longer.

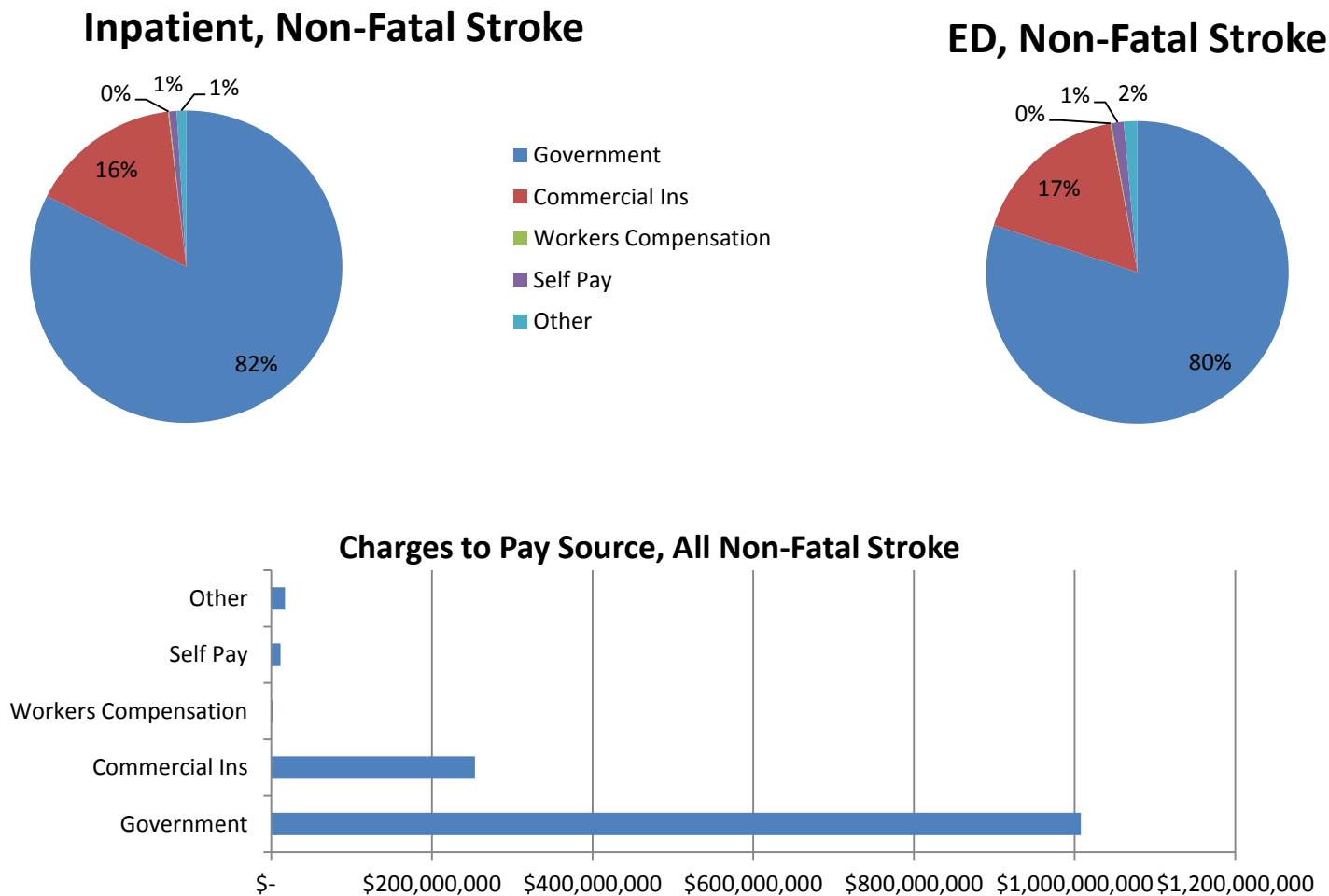
Figure 34: Non-Fatal Stroke Related Hospitalization Length of Stay, Kentucky, 2015



For non-fatal stroke related hospitalizations, 14,268 (55.4%) had a disposition other than “routine”. The three most frequent non-routine discharges were “skilled nursing facility”, “home health”, and “rehabilitation”. A total of 11,447 inpatient discharges had one of these three dispositions. ED discharges were more likely (55.6%) routinely discharged to home or self care (routine) with “inpatient – other” being the most frequent non-routine discharge.

Government sources were the primary payer billed for acute care charges in over 8 out of 10 of all non-fatal stroke related hospital visits. Government payers were billed over \$1 billion in 2015, and commercial payers over \$253 million.

Figure 35: Non-Fatal Stroke Related Emergency Department Visits and Hospitalizations, Payer Source and Charges, Kentucky, 2015



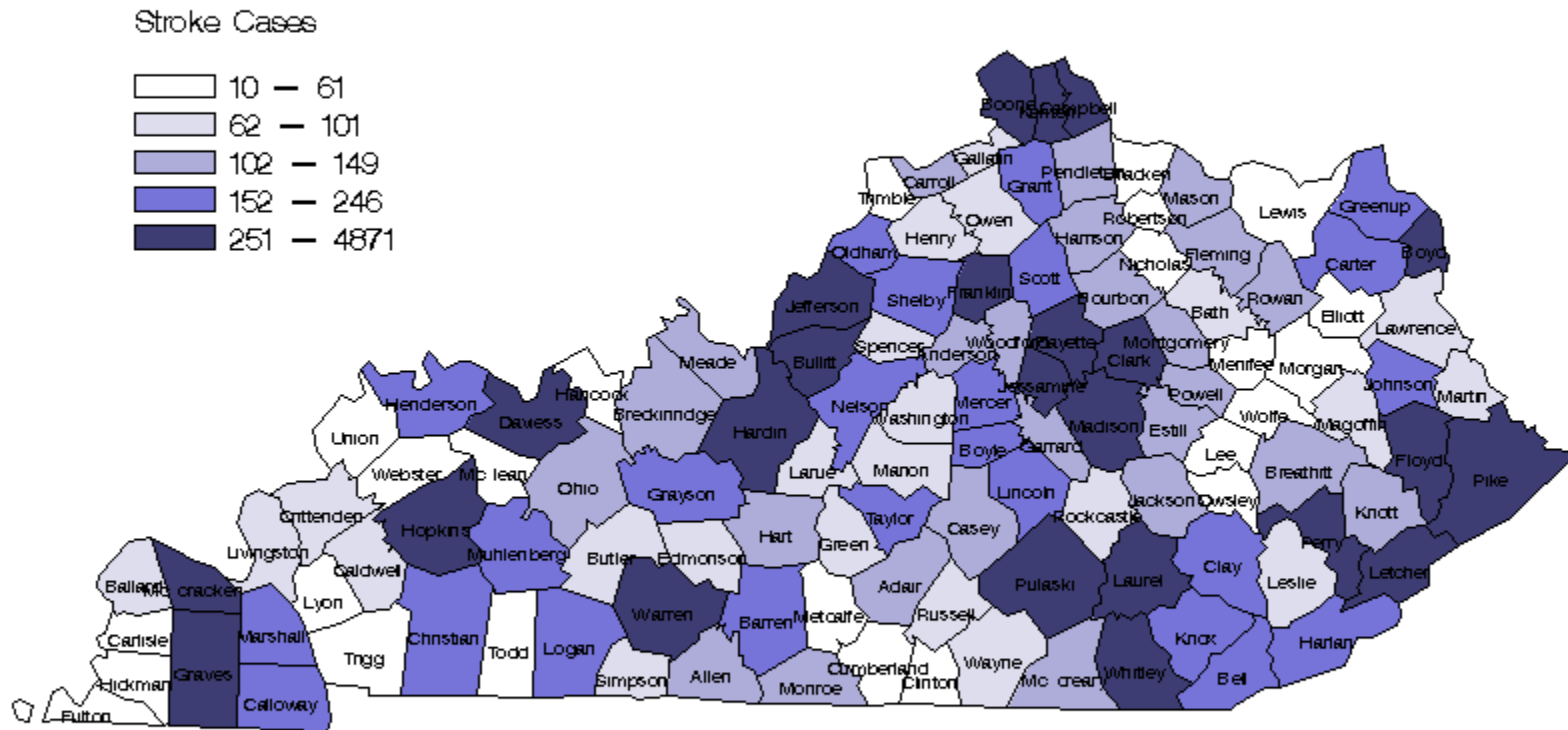
As one would expect, the incidence of stroke was highest in the larger counties. The top four in overall (inpatient and ED combined) stroke incidence (Jefferson, Fayette, Kenton and Daviess) are the four of the seven most populous counties in Kentucky. Notable exceptions include Owsley and Gallatin Counties, which were ranked 3rd and 4th in age adjusted rate for stroke but were 119th and 106th in population (respectively). Leslie (95th in population) and Wolfe (112th) are also in the top fifteen counties with highest age adjusted rates despite their smaller populations. Several southern border counties may have significant numbers of residents treated in Tennessee hospitals. Prominent examples include Christian, Whitley, Warren, Bell, Harlan, Graves, Logan, and McCracken. This illustrates an important point: *if this report shows a county to have a high rate of stroke, we can be confident that this is a county in need. Conversely, however, if a county is shown to have a low rate we cannot conclude that there is not a significant problem in that county, particularly if it is located on or near the state border.*

The following illustrations map both the frequency of stroke hospital visits in Kentucky counties (Figures 36 and 37) as well as the age adjusted rate of stroke in each county (Figures 38 and 39) for inpatient and outpatient stroke records. It should be noted that these mappings include ALL inpatient stroke cases (Figures 36 and 38) as well as ALL ED stroke cases (Figures 37 and 39) – including those that died at the hospital. Fatalities are not included in other analysis in this report unless noted but are included here to capture a visual representation of the magnitude of the problem of stroke in each county. These numbers DO NOT include those that died before admission to an acute care hospital. Due to mortality data being several years behind available hospital discharge data, accurate numbers of deaths outside those within the hospital system can only be estimated and are not included in the mapping of actual data.

Multiple tables can be found in the Appendix detailing specific rates and frequencies by county, frequency, and age adjusted rates for both inpatient and ED stroke records

Figure 36.

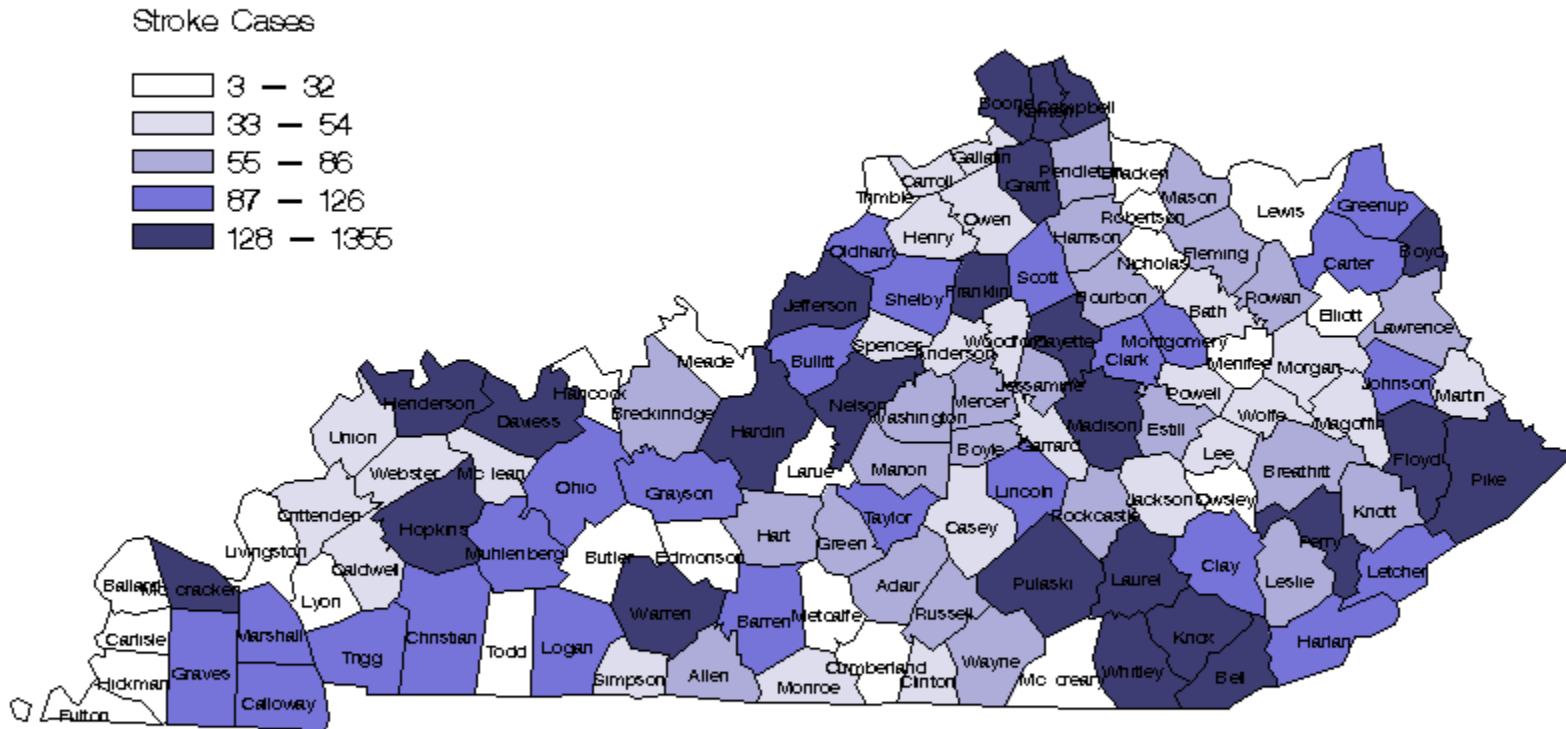
Stroke Hospitalization Cases by County, Kentucky 2015



Source: Kentucky TBI Surveillance Project 2015.

Figure 37.

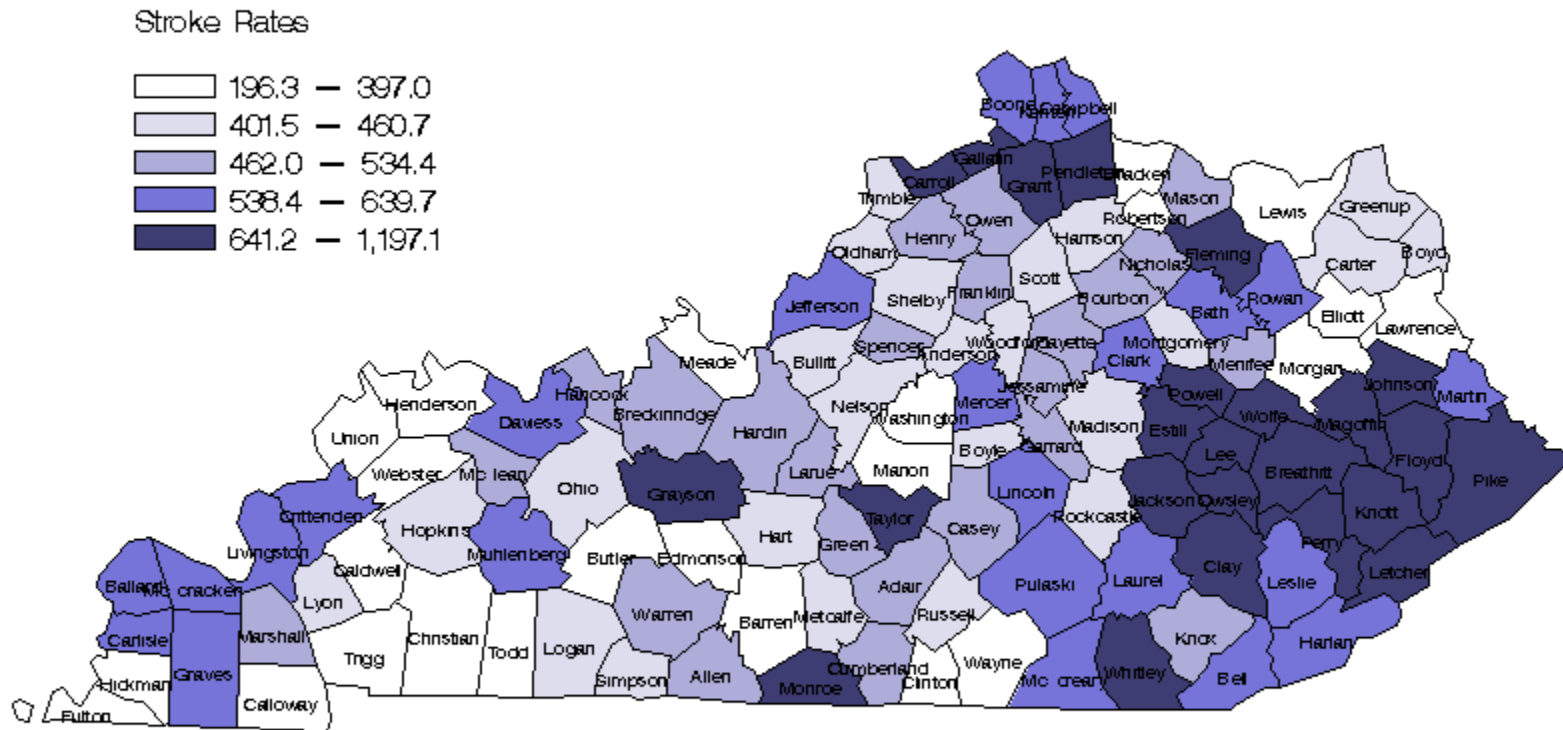
Stroke ED Cases by County, Kentucky 2015



Source: Kentucky TBI Surveillance Project 2015.

Figure 38.

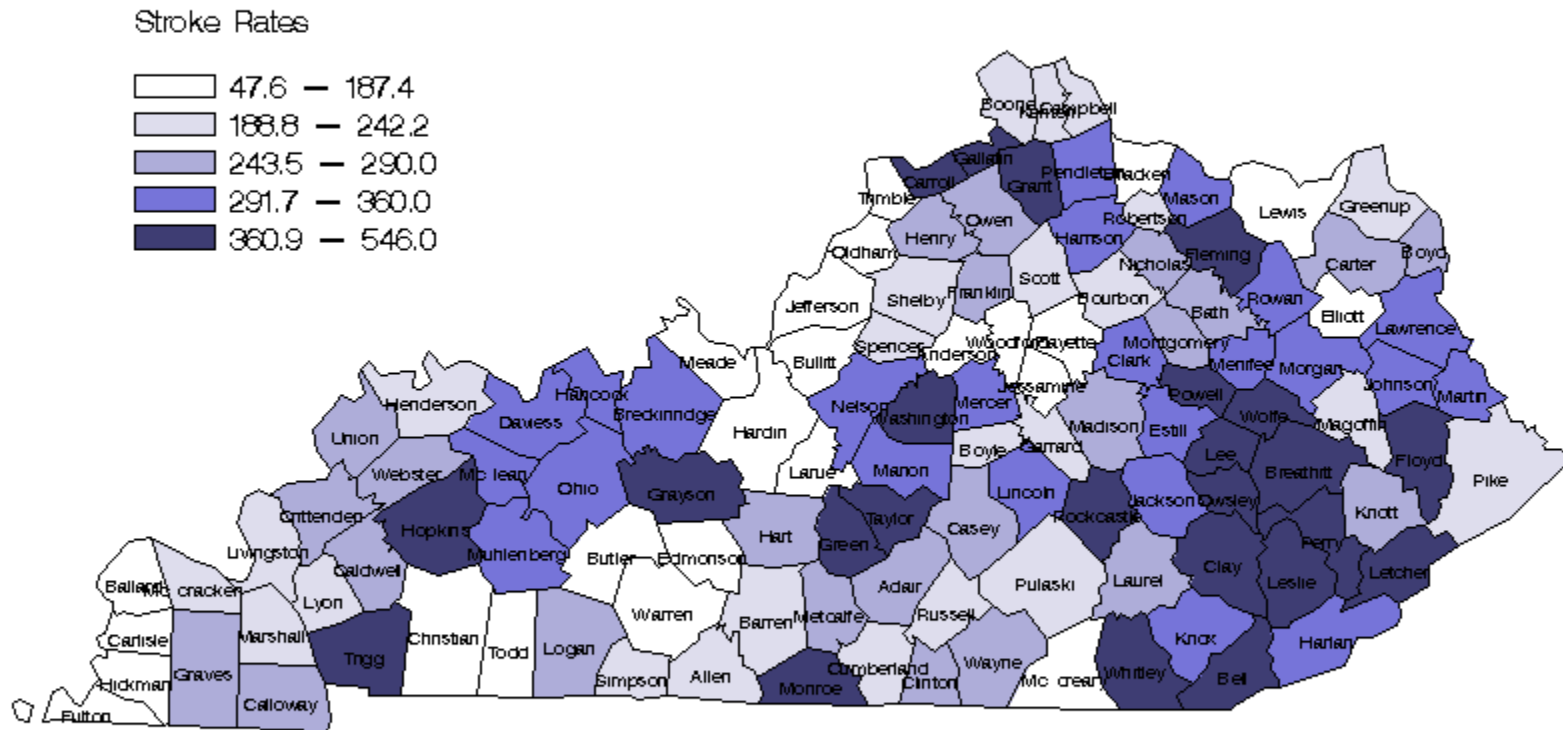
Age-Adjusted Stroke Hospitalization Rates by County, Kentucky 2015



Source: Kentucky TBI Surveillance Project 2015.

Figure 39.

Age-Adjusted Stroke ED Rates by County, Kentucky 2015



Source: Kentucky TBI Surveillance Project 2015.

Conclusion

Over 77,000 non-fatal central nervous system injury-related ED visits and hospitalizations occurred in Kentucky in 2015. The findings show the importance of including ED visits because of the large number of TBIs seen only in that setting, especially among children. Although this report provides data on a wide range of CNSI occurring in Kentucky, it still does not capture all of them. It does not include those treated by emergency medical services that refused transport to a hospital, or those hospitalized outside of Kentucky nor does it include those seen by non-hospital medical services or who sought no care at all. While the 2015 data is not recommended for use in comparisons with years past due to coding changes made mid-year causing fluctuations in how cases are counted, the data is still important when discussing the larger issue of brain injury in Kentucky. Many people recover from their injuries, but in 2015 alone, almost 211 Kentuckians per day received either inpatient or ED care for a CNSI, many of which will result in some long term disability. Thus, brain and spinal cord injury prevention, improved acute care and rehabilitation to reduce the likelihood of injury-related disability, and also increased access to services for those who do not fully recover are critical to improving quality of life of persons following a CNSI.

Appendix A: Tables and Figures

For the following tables: Unless otherwise noted, persons who were hospitalized or died were excluded from the data for ED Visits. For Hospitalizations, in-hospital deaths were excluded. The average annual rate is per 100,000 population. Rates calculated using the most recent available Kentucky population estimates (2015) and are per 100,000.

Table 1: Non-Fatal TBI ED Visits and Hospitalizations by Age Group, Kentucky, 2015

Age	Inpatient			Outpatient			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	128	4.1	46.1	3020	95.9	1088.7	3,148	100.0	1134.9
5-14	110	3.2	19.6	3289	96.8	585.8	3,399	100.0	605.3
15-24	293	5.2	49.1	5331	94.8	893.6	5,624	100.0	942.7
25-44	540	7.9	47.9	6260	92.1	555.2	6,800	100.0	603.1
45-64	810	13.3	68.1	5265	86.7	442.6	6,075	100.0	510.7
65+	1,829	24.4	271.9	5661	75.6	841.5	7,490	100.0	1113.3
Total	3,710	11.4	83.8	28,826	88.6	651.4	32,536	100.0	735.3

Table 2: Non-Fatal TBI ED Visits and Hospitalizations by Gender, Kentucky, 2015

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	2,016	12.2	92.5	14,456	87.8	663.4	16,472	100.0	755.9
Female	1,694	10.5	75.4	14,370	89.5	639.8	16,064	100.0	715.2
Total	3,710	11.4	83.8	28,826	88.6	651.4	32,536	100.0	735.3

Table 3: Non-Fatal TBI ED Visits and Hospitalizations by External Cause of Injury, Kentucky, 2015

Mechanism of Injury	Inpatient			ED			Total		
	Number	Pct.	Rate	Number	Pct.	Rate	Number	Pct.	Rate
Motor vehicle traffic crash	817	14.7	18.5	4,750	85.3	107.3	5,567	100.0	125.8
Fall	1,967	13.0	44.5	13,171	87.0	297.6	15,138	100.0	342.1
Firearm	21	60.0	0.5	14	40.0	0.3	35	100.0	0.8
Non-traffic land transport	135	12.9	3.1	913	87.1	20.6	1,048	100.0	23.7
Struck by object or person	127	2.3	2.9	5,294	97.7	119.6	5,421	100.0	122.5
Non-traffic pedal cycle	21	5.8	0.5	343	94.2	7.8	364	100.0	8.2
Machinery	4	9.3	0.1	39	90.7	0.9	43	100.0	1.0
Other	173	7.8	3.9	2,038	92.2	46.1	2,211	100.0	50.0
Unknown (missing E-code)	445	16.4	10.1	2,264	83.6	51.2	2,709	100.0	61.2
Total	3,710	11.4	83.8	28,826	88.6	651.4	32,536	100.0	735.3

Table 4: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 00-04, Kentucky, 2015

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Fall	64	50.0	2,204	73.0	2,268	72.0
Motor vehicle traffic crash	19	14.8	58	1.9	77	2.4
Struck by or against object or person	7	5.5	458	15.2	465	14.8
Non-traffic land transportation	1	0.8	22	0.7	23	0.7
Other (including non-specific codes)	27	21.1	123	4.1	150	4.8
Unknown (missing E-code)	10	7.8	155	5.1	165	5.2
Total	128	100.0	3,020	100.0	3,148	100.0

Table 5: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 05-14, Kentucky, 2015

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Motor vehicle traffic crash	37	33.6	207	6.3	244	7.2
Fall	28	25.5	1,259	38.3	1,287	37.9
Non-traffic land transportation	18	16.4	142	4.3	160	4.7
Other pedal cycle	7	6.4	171	5.2	178	5.2
Struck by or against object or person	9	8.2	1,121	34.1	1,130	33.2
Other (including non-specific codes)	6	5.5	140	4.3	146	4.3
Unknown (missing E-code)	5	4.5	249	7.6	254	7.5
Total	110	100.0	3,289	100.0	3,399	100.0

Table 6: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 15-24, Kentucky, 2015

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Motor vehicle traffic crash	171	58.4	1,571	29.5	1,742	31.0
Firearm	5	1.7	2	0.0	7	0.1
Non-traffic land transportation	26	8.9	315	5.9	341	6.1
Fall	30	10.2	1,046	19.6	1,076	19.1
Struck by or against object or person	20	6.8	1,452	27.2	1,472	26.2
Other (including non-specific codes)	14	4.8	527	9.9	541	9.6
Unknown (missing E-code)	27	9.2	418	7.8	445	7.9
Total	293	100.0	5,331	100.0	5,624	100.0

Table 7: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 25-44, Kentucky, 2015

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Motor vehicle traffic crash	245	45.4	1,664	26.6	1,909	28.1
Firearm	9	1.7	5	0.1	14	0.2
Fall	100	18.5	1,653	26.4	1,753	25.8
Struck by or against object or person	32	5.9	1,317	21.0	1,349	19.8
Non-traffic land transportation	40	7.4	263	4.2	303	4.5
Machinery	2	0.4	13	0.2	15	0.2
Other (including non-specific codes)	41	7.6	797	12.7	838	12.3
Unknown (missing E-code)	71	13.1	548	8.8	619	9.1
Total	540	100.0	6,260	100.0	6,800	100.0

Table 8: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 45-64, Kentucky, 2015

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Fall	363	44.8	2,454	46.6	2,817	46.4
Motor vehicle traffic crash	210	25.9	945	17.9	1,155	19.0
Firearm	4	0.5	5	0.1	9	0.1
Struck by or against object or person	40	4.9	733	13.9	773	12.7
Non-traffic land transportation	31	3.8	133	2.5	164	2.7
Other (including non-specific codes)	49	6.0	488	9.3	537	8.8
Unknown (missing E-code)	113	14.0	507	9.6	620	10.2
Total	810	100.0	5,265	100.0	6,075	100.0

Table 9: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 65 or Over, Kentucky, 2015

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Fall	1,382	75.6	4,555	80.5	5,937	79.3
Motor vehicle traffic crash	135	7.4	305	5.4	440	5.9
Firearm	3	0.2	2	0.0	5	0.1
Struck by or against object or person	19	1.0	213	3.8	232	3.1
Non-traffic land transportation	19	1.0	38	0.7	57	0.8
Other (including non-specific codes)	52	2.8	161	2.8	213	2.8
Unknown (missing E-code)	219	12.0	387	6.8	606	8.1
Total	1,829	100.0	5,661	100.0	7,490	100.0

Table 10: Hospital Discharges by Disposition for Non-Fatal TBI ED Visits and Hospitalizations, Kentucky, 2015

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	1,810	48.8	26,034	90.3
Skilled nursing facility (SNF)	671	18.1	294	1.0
Home health	317	8.5	25	0.1
Inpatient-other short-term hospital	63	1.7	1,565	5.4
Intermediate care facility (ICF)	21	0.6	41	0.1
Rehab	543	14.6	21	0.1
Other	285	7.7	846	2.9
Total	3,710	100.0	28,826	100.0

Table 11: Incidence of All Inpatient TBI* by County, Sorted by County, Kentucky, 2015

*Includes inpatient deaths as well as non-fatal inpatient cases

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude Rate		Freq	Percent	Rate	Crude Rate		Freq	Percent	Rate	Crude Rate
Adair	19	0.5	103.1	99.9	Grant	18	0.4	80.8	72.7	McLean	11	0.3	103.2	115.6
Allen	7	0.2	34.0	33.9	Graves	47	1.2	106.1	125.6	Meade	19	0.5	68.8	68.0
Anderson	16	0.4	71.1	72.8	Grayson	15	0.4	56.6	57.2	Menifee	7	0.2	98.8	110.1
Ballard	22	0.5	216.3	267.9	Green	7	0.2	64.5	63.6	Mercer	15	0.4	65.6	70.1
Barren	34	0.8	73.5	78.0	Greenup	10	0.2	19.8	27.7	Metcalfe	5	0.1	43.8	50.5
Bath	13	0.3	106.1	106.3	Hancock	*	-	-	-	Monroe	7	0.2	50.0	65.6
Bell	11	0.3	39.4	40.2	Hardin	118	2.9	110.9	110.9	Montgomery	26	0.6	87.2	94.2
Boone	70	1.7	64.5	54.8	Harlan	26	0.6	96.9	93.9	Morgan	16	0.4	123.1	120.5
Bourbon	15	0.4	65.8	74.6	Harrison	17	0.4	83.2	90.6	Muhlenberg	19	0.5	49.7	60.9
Boyd	37	0.9	63.5	76.6	Hart	14	0.3	76.5	75.9	Nelson	59	1.5	131.2	130.7
Boyle	29	0.7	69.7	97.3	Henderson	7	0.2	13.4	15.1	Nicholas	10	0.2	137.9	140.2
Bracken	7	0.2	62.2	84.1	Henry	18	0.4	108.2	115.2	Ohio	20	0.5	74.6	82.6
Breathitt	19	0.5	127.7	140.9	Hickman	*	-	-	-	Oldham	50	1.2	92.3	77.1
Breckinridge	23	0.6	113.8	114.9	Hopkins	13	0.3	26.8	28.1	Owen	12	0.3	92.6	111.8
Bullitt	64	1.6	80.5	81.3	Jackson	12	0.3	87.9	89.9	Owsley	*	-	-	-
Butler	8	0.2	55.6	61.8	Jefferson	885	22.0	106.1	115.9	Pendleton	14	0.3	97.4	97.2
Caldwell	5	0.1	23.1	39.4	Jessamine	32	0.8	57.0	61.6	Perry	68	1.7	239.1	246.7
Calloway	18	0.4	45.3	46.9	Johnson	17	0.4	60.1	73.4	Pike	104	2.6	154.5	168.3
Campbell	81	2.0	78.3	88.0	Kenton	113	2.8	68.5	68.5	Powell	15	0.4	116.8	122.3
Carlisle	8	0.2	127.2	164.1	Knott	18	0.4	114.0	114.7	Pulaski	61	1.5	85.8	95.6
Carroll	16	0.4	142.4	149.5	Knox	21	0.5	64.6	66.2	Robertson	*	-	-	-
Carter	12	0.3	36.0	44.2	Larue	16	0.4	104.4	112.4	Rockcastle	20	0.5	116.0	118.1
Casey	26	0.6	136.0	164.5	Laurel	57	1.4	88.2	94.9	Rowan	22	0.5	90.9	92.1
Christian	12	0.3	18.5	16.4	Lawrence	5	0.1	28.9	31.8	Russell	21	0.5	101.4	118.9
Clark	38	0.9	106.4	106.3	Lee	11	0.3	156.7	162.9	Scott	42	1.0	88.8	80.1
Clay	21	0.5	100.2	99.9	Leslie	16	0.4	127.4	149.4	Shelby	40	1.0	85.2	87.7
Clinton	7	0.2	60.9	68.8	Letcher	33	0.8	139.8	142.7	Simpson	11	0.3	53.9	61.1
Crittenden	*	-	-	-	Lewis	7	0.2	55.8	51.2	Spencer	18	0.4	97.8	100.6
Cumberland	12	0.3	133.5	177.5	Lincoln	30	0.7	123.5	122.6	Taylor	23	0.6	80.5	90.5
Daviess	104	2.6	92.7	104.8	Livingston	18	0.4	148.3	193.2	Todd	0	0.0	0.0	0.0
Edmonson	11	0.3	80.6	91.6	Logan	12	0.3	36.6	44.6	Trigg	7	0.2	50.0	49.2
Elliott	*	-	-	-	Lyon	10	0.2	70.2	120.4	Trimble	8	0.2	103.9	91.2
Estill	14	0.3	90.6	97.4	Madison	74	1.8	88.6	84.3	Union	*	-	-	-
Fayette	234	5.8	75.9	74.4	Magoffin	6	0.1	44.7	46.8	Warren	56	1.4	48.3	45.6
Fleming	12	0.3	79.5	82.0	Marion	14	0.3	71.5	72.3	Washington	18	0.4	130.6	149.2
Floyd	40	1.0	97.4	105.9	Marshall	53	1.3	127.8	170.4	Wayne	20	0.5	99.6	97.7
Franklin	44	1.1	76.5	87.3	Martin	13	0.3	93.6	105.6	Webster	*	-	-	-
Fulton	8	0.2	107.6	128.2	Mason	13	0.3	67.1	76.0	Whitley	53	1.3	137.0	146.7
Gallatin	9	0.2	123.2	104.2	McCracken	118	2.9	142.0	181.5	Wolfe	6	0.1	85.7	82.7
Garrard	20	0.5	115.2	116.0	McCreary	20	0.5	113.4	111.9	Woodford	18	0.4	60.4	69.8

* At least one but fewer than five

- Percentage or rate suppressed to prevent disclosure of the value on which it was based

Table 12: Incidence of All ED TBI* by County, Sorted by County, Kentucky, 2015

*Includes ED deaths as well as non-fatal ED cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude				Rate	Crude				Rate	Crude
Adair	96	0.3	526.7	504.6	Grant	250	0.9	1042.6	1009.8	McLean	62	0.2	698.9	651.8
Allen	87	0.3	447.2	421.5	Graves	340	1.2	921.9	908.6	Meade	103	0.4	379.8	368.9
Anderson	133	0.5	642.6	605.1	Grayson	189	0.7	750.1	720.8	Menifee	33	0.1	590.5	519.0
Ballard	51	0.2	643.1	621.0	Green	74	0.3	739.4	672.1	Mercer	174	0.6	862.5	812.8
Barren	323	1.1	747.6	741.3	Greenup	291	1.0	784.3	806.8	Metcalfe	73	0.3	767.8	736.7
Bath	75	0.3	624.4	613.4	Hancock	39	0.1	494.3	448.7	Monroe	63	0.2	605.9	590.6
Bell	180	0.6	697.4	658.5	Hardin	1029	3.6	975.5	966.8	Montgomery	149	0.5	554.1	539.7
Boone	755	2.6	621.0	591.2	Harlan	136	0.5	506.9	490.9	Morgan	66	0.2	534.4	497.2
Bourbon	124	0.4	646.6	616.4	Harrison	156	0.5	885.5	831.4	Muhlenberg	227	0.8	754.9	728.0
Boyd	632	2.2	1318.0	1307.8	Hart	131	0.5	763.8	709.9	Nelson	323	1.1	741.8	715.8
Boyle	165	0.6	554.7	553.5	Henderson	323	1.1	726.1	696.0	Nicholas	43	0.1	582.3	603.0
Bracken	79	0.3	1027.4	949.4	Henry	121	0.4	799.5	774.7	Ohio	173	0.6	740.8	714.4
Breathitt	92	0.3	727.3	682.3	Hickman	28	0.1	532.2	607.1	Oldham	256	0.9	438.8	394.6
Breckinridge	94	0.3	494.5	469.6	Hopkins	419	1.5	930.3	906.5	Owen	109	0.4	1110.0	1015.8
Bullitt	216	0.7	293.4	274.5	Jackson	110	0.4	872.4	823.9	Owsley	30	0.1	737.8	672.5
Butler	66	0.2	531.0	510.1	Jefferson	4312	14.9	554.7	564.7	Pendleton	91	0.3	661.6	631.6
Caldwell	120	0.4	976.3	946.3	Jessamine	179	0.6	346.0	344.5	Perry	209	0.7	795.4	758.2
Calloway	510	1.8	1348.1	1330.1	Johnson	115	0.4	513.8	496.2	Pike	275	1.0	479.0	445.0
Campbell	581	2.0	633.6	631.1	Kenton	746	2.6	463.8	452.1	Powell	107	0.4	902.8	872.1
Carlisle	50	0.2	978.0	1025.9	Knott	54	0.2	355.2	344.1	Pulaski	379	1.3	633.9	594.2
Carroll	70	0.2	686.2	654.3	Knox	228	0.8	752.3	718.6	Robertson	16	0.1	903.6	748.4
Carter	172	0.6	640.8	633.3	Larue	116	0.4	834.4	814.6	Rockcastle	115	0.4	690.3	678.8
Casey	61	0.2	405.5	385.9	Laurel	536	1.9	924.3	891.9	Rowan	122	0.4	516.7	510.6
Christian	426	1.5	585.8	581.1	Lawrence	95	0.3	644.1	603.4	Russell	71	0.2	428.8	402.0
Clark	349	1.2	1016.0	976.0	Lee	70	0.2	1067.8	1036.7	Scott	570	2.0	1130.1	1087.4
Clay	227	0.8	1097.7	1080.3	Leslie	51	0.2	418.3	476.2	Shelby	281	1.0	629.6	615.8
Clinton	49	0.2	478.6	481.6	Letcher	101	0.3	443.0	436.8	Simpson	147	0.5	831.4	816.4
Crittenden	37	0.1	451.9	402.9	Lewis	53	0.2	418.5	387.4	Spencer	99	0.3	575.0	553.3
Cumberland	36	0.1	528.6	532.6	Lincoln	145	0.5	622.1	592.7	Taylor	249	0.9	954.2	979.5
Daviess	805	2.8	835.4	811.0	Livingston	93	0.3	1117.7	998.3	Todd	49	0.2	389.7	391.0
Edmonson	38	0.1	332.9	316.5	Logan	190	0.7	720.4	706.1	Trigg	98	0.3	742.9	688.5
Elliott	31	0.1	433.7	405.3	Lyon	63	0.2	779.4	758.5	Trimble	35	0.1	401.3	399.1
Estill	124	0.4	909.7	862.6	Madison	599	2.1	699.4	682.1	Union	55	0.2	377.8	365.5
Fayette	1740	6.0	565.4	553.3	Magoffin	46	0.2	391.7	359.2	Warren	599	2.1	482.7	487.6
Fleming	94	0.3	661.6	642.2	Marion	123	0.4	648.9	635.2	Washington	96	0.3	818.7	795.8
Floyd	202	0.7	575.4	535.0	Marshall	215	0.7	714.6	691.3	Wayne	89	0.3	470.4	434.9
Franklin	419	1.5	867.9	831.8	Martin	63	0.2	512.9	511.9	Webster	130	0.5	1048.6	987.1
Fulton	22	0.1	363.4	352.7	Mason	156	0.5	933.2	912.3	Whitley	492	1.7	1363.9	1361.8
Gallatin	55	0.2	653.7	636.9	McCracken	905	3.1	1408.2	1391.9	Wolfe	52	0.2	737.3	716.4
Garrard	77	0.3	467.5	446.7	McCreary	69	0.2	409.9	386.0	Woodford	160	0.6	672.6	620.3

Table 13: Incidence of All Inpatient TBI* by County, Sorted by Frequency, Kentucky, 2015

*Includes inpatient deaths as well as non-fatal inpatient cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude				Rate	Crude				Rate	Crude
Jefferson	885	22.0	106.1	115.9	Russell	21	0.5	101.4	118.9	Fleming	12	0.3	79.5	82.0
Fayette	234	5.8	75.9	74.4	Garrard	20	0.5	115.2	116.0	Jackson	12	0.3	87.9	89.9
Hardin	118	2.9	110.9	110.9	McCreary	20	0.5	113.4	111.9	Logan	12	0.3	36.6	44.6
McCracken	118	2.9	142.0	181.5	Ohio	20	0.5	74.6	82.6	Owen	12	0.3	92.6	111.8
Kenton	113	2.8	68.5	68.5	Rockcastle	20	0.5	116.0	118.1	Bell	11	0.3	39.4	40.2
Daviess	104	2.6	92.7	104.8	Wayne	20	0.5	99.6	97.7	Edmonson	11	0.3	80.6	91.6
Pike	104	2.6	154.5	168.3	Adair	19	0.5	103.1	99.9	Lee	11	0.3	156.7	162.9
Campbell	81	2.0	78.3	88.0	Breathitt	19	0.5	127.7	140.9	McLean	11	0.3	103.2	115.6
Madison	74	1.8	88.6	84.3	Meade	19	0.5	68.8	68.0	Simpson	11	0.3	53.9	61.1
Boone	70	1.7	64.5	54.8	Muhlenberg	19	0.5	49.7	60.9	Greenup	10	0.2	19.8	27.7
Perry	68	1.7	239.1	246.7	Calloway	18	0.4	45.3	46.9	Lyon	10	0.2	70.2	120.4
Bullitt	64	1.6	80.5	81.3	Grant	18	0.4	80.8	72.7	Nicholas	10	0.2	137.9	140.2
Pulaski	61	1.5	85.8	95.6	Henry	18	0.4	108.2	115.2	Gallatin	9	0.2	123.2	104.2
Nelson	59	1.5	131.2	130.7	Knott	18	0.4	114.0	114.7	Butler	8	0.2	55.6	61.8
Laurel	57	1.4	88.2	94.9	Livingston	18	0.4	148.3	193.2	Carlisle	8	0.2	127.2	164.1
Warren	56	1.4	48.3	45.6	Spencer	18	0.4	97.8	100.6	Fulton	8	0.2	107.6	128.2
Marshall	53	1.3	127.8	170.4	Washington	18	0.4	130.6	149.2	Trimble	8	0.2	103.9	91.2
Whitley	53	1.3	137.0	146.7	Woodford	18	0.4	60.4	69.8	Allen	7	0.2	34.0	33.9
Oldham	50	1.2	92.3	77.1	Harrison	17	0.4	83.2	90.6	Bracken	7	0.2	62.2	84.1
Graves	47	1.2	106.1	125.6	Johnson	17	0.4	60.1	73.4	Ciinton	7	0.2	60.9	68.8
Franklin	44	1.1	76.5	87.3	Anderson	16	0.4	71.1	72.8	Green	7	0.2	64.5	63.6
Scott	42	1.0	88.8	80.1	Carroll	16	0.4	142.4	149.5	Henderson	7	0.2	13.4	15.1
Floyd	40	1.0	97.4	105.9	Larue	16	0.4	104.4	112.4	Lewis	7	0.2	55.8	51.2
Shelby	40	1.0	85.2	87.7	Leslie	16	0.4	127.4	149.4	Menifee	7	0.2	98.8	110.1
Clark	38	0.9	106.4	106.3	Morgan	16	0.4	123.1	120.5	Monroe	7	0.2	50.0	65.6
Boyd	37	0.9	63.5	76.6	Bourbon	15	0.4	65.8	74.6	Trigg	7	0.2	50.0	49.2
Barren	34	0.8	73.5	78.0	Grayson	15	0.4	56.6	57.2	Magoffin	6	0.1	44.7	46.8
Letcher	33	0.8	139.8	142.7	Mercer	15	0.4	65.6	70.1	Wolfe	6	0.1	85.7	82.7
Jessamine	32	0.8	57.0	61.6	Powell	15	0.4	116.8	122.3	Caldwell	5	0.1	23.1	39.4
Lincoln	30	0.7	123.5	122.6	Estill	14	0.3	90.6	97.4	Lawrence	5	0.1	28.9	31.8
Boyle	29	0.7	69.7	97.3	Hart	14	0.3	76.5	75.9	Metcalfe	5	0.1	43.8	50.5
Casey	26	0.6	136.0	164.5	Marion	14	0.3	71.5	72.3	Crittenden	*	-	-	-
Harlan	26	0.6	96.9	93.9	Pendleton	14	0.3	97.4	97.2	Elliott	*	-	-	-
Montgomery	26	0.6	87.2	94.2	Bath	13	0.3	106.1	106.3	Webster	*	-	-	-
Breckinridge	23	0.6	113.8	114.9	Hopkins	13	0.3	26.8	28.1	Hancock	*	-	-	-
Taylor	23	0.6	80.5	90.5	Martin	13	0.3	93.6	105.6	Owsley	*	-	-	-
Ballard	22	0.5	216.3	267.9	Mason	13	0.3	67.1	76.0	Robertson	*	-	-	-
Rowan	22	0.5	90.9	92.1	Carter	12	0.3	36.0	44.2	Union	*	-	-	-
Clay	21	0.5	100.2	99.9	Christian	12	0.3	18.5	16.4	Hickman	*	-	-	-
Knox	21	0.5	64.6	66.2	Cumberland	12	0.3	133.5	177.5	Todd	0	0.0	0.0	0.0

* At least one but fewer than five

- Percentage or rate suppressed to prevent disclosure of the value on which it was based

Table 14: Incidence of All ED TBI* by County, Sorted by Frequency, Kentucky, 2015

*Includes ED deaths as well as non-fatal ED cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Jefferson	4312	14.9	554.7	564.7	Jessamine	179	0.6	346.0	344.5	Allen	87	0.3	447.2	421.5
Fayette	1740	6.0	565.4	553.3	Mercer	174	0.6	862.5	812.8	Bracken	79	0.3	1027.4	949.4
Hardin	1029	3.6	975.5	966.8	Ohio	173	0.6	740.8	714.4	Garrard	77	0.3	467.5	446.7
McCracken	905	3.1	1408.2	1391.9	Carter	172	0.6	640.8	633.3	Bath	75	0.3	624.4	613.4
Daviess	805	2.8	835.4	811.0	Boyle	165	0.6	554.7	553.5	Green	74	0.3	739.4	672.1
Boone	755	2.6	621.0	591.2	Woodford	160	0.6	672.6	620.3	Metcalfe	73	0.3	767.8	736.7
Kenton	746	2.6	463.8	452.1	Harrison	156	0.5	885.5	831.4	Russell	71	0.2	428.8	402.0
Boyd	632	2.2	1318.0	1307.8	Mason	156	0.5	933.2	912.3	Carroll	70	0.2	686.2	654.3
Madison	599	2.1	699.4	682.1	Montgomery	149	0.5	554.1	539.7	Lee	70	0.2	1067.8	1036.7
Warren	599	2.1	482.7	487.6	Simpson	147	0.5	831.4	816.4	McCreary	69	0.2	409.9	386.0
Campbell	581	2.0	633.6	631.1	Lincoln	145	0.5	622.1	592.7	Butler	66	0.2	531.0	510.1
Scott	570	2.0	1130.1	1087.4	Harlan	136	0.5	506.9	490.9	Morgan	66	0.2	534.4	497.2
Laurel	536	1.9	924.3	891.9	Anderson	133	0.5	642.6	605.1	Lyon	63	0.2	779.4	758.5
Calloway	510	1.8	1348.1	1330.1	Hart	131	0.5	763.8	709.9	Martin	63	0.2	512.9	511.9
Whitley	492	1.7	1363.9	1361.8	Webster	130	0.5	1048.6	987.1	Monroe	63	0.2	605.9	590.6
Christian	426	1.5	585.8	581.1	Bourbon	124	0.4	646.6	616.4	McLean	62	0.2	698.9	651.8
Franklin	419	1.5	867.9	831.8	Estill	124	0.4	909.7	862.6	Casey	61	0.2	405.5	385.9
Hopkins	419	1.5	930.3	906.5	Marion	123	0.4	648.9	635.2	Gallatin	55	0.2	653.7	636.9
Pulaski	379	1.3	633.9	594.2	Rowan	122	0.4	516.7	510.6	Union	55	0.2	377.8	365.5
Clark	349	1.2	1016.0	976.0	Henry	121	0.4	799.5	774.7	Knott	54	0.2	355.2	344.1
Graves	340	1.2	921.9	908.6	Caldwell	120	0.4	976.3	946.3	Lewis	53	0.2	418.5	387.4
Barren	323	1.1	747.6	741.3	Larue	116	0.4	834.4	814.6	Wolfe	52	0.2	737.3	716.4
Henderson	323	1.1	726.1	696.0	Johnson	115	0.4	513.8	496.2	Ballard	51	0.2	643.1	621.0
Nelson	323	1.1	741.8	715.8	Rockcastle	115	0.4	690.3	678.8	Leslie	51	0.2	418.3	476.2
Greenup	291	1.0	784.3	806.8	Jackson	110	0.4	872.4	823.9	Carlisle	50	0.2	978.0	1025.9
Shelby	281	1.0	629.6	615.8	Owen	109	0.4	1110.0	1015.8	Ciinton	49	0.2	478.6	481.6
Pike	275	1.0	479.0	445.0	Powell	107	0.4	902.8	872.1	Todd	49	0.2	389.7	391.0
Oldham	256	0.9	438.8	394.6	Meade	103	0.4	379.8	368.9	Magoffin	46	0.2	391.7	359.2
Grant	250	0.9	1042.6	1009.8	Letcher	101	0.3	443.0	436.8	Nicholas	43	0.1	582.3	603.0
Taylor	249	0.9	954.2	979.5	Spencer	99	0.3	575.0	553.3	Hancock	39	0.1	494.3	448.7
Knox	228	0.8	752.3	718.6	Trigg	98	0.3	742.9	688.5	Edmonson	38	0.1	332.9	316.5
Clay	227	0.8	1097.7	1080.3	Adair	96	0.3	526.7	504.6	Crittenden	37	0.1	451.9	402.9
Muhlenberg	227	0.8	754.9	728.0	Washington	96	0.3	818.7	795.8	Cumberland	36	0.1	528.6	532.6
Bullitt	216	0.7	293.4	274.5	Larrence	95	0.3	644.1	603.4	Trimble	35	0.1	401.3	399.1
Marshall	215	0.7	714.6	691.3	Breckinridge	94	0.3	494.5	469.6	Menifee	33	0.1	590.5	519.0
Perry	209	0.7	795.4	758.2	Fleming	94	0.3	661.6	642.2	Elliott	31	0.1	433.7	405.3
Floyd	202	0.7	575.4	535.0	Livingston	93	0.3	1117.7	998.3	Owsley	30	0.1	737.8	672.5
Logan	190	0.7	720.4	706.1	Breathitt	92	0.3	727.3	682.3	Hickman	28	0.1	532.2	607.1
Grayson	189	0.7	750.1	720.8	Pendleton	91	0.3	661.6	631.6	Fulton	22	0.1	363.4	352.7
Bell	180	0.6	697.4	658.5	Wayne	89	0.3	470.4	434.9	Robertson	16	0.1	903.6	748.4

Table 15: Incidence of All Inpatient TBI* by County, Sorted by Age Adjusted Rate, Kentucky, 2015

*Includes inpatient deaths as well as non-fatal inpatient cases

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude Rate		Freq	Percent	Rate	Crude Rate		Freq	Percent	Rate	Crude Rate
Perry	68	1.7	239.1	246.7	Clay	21	0.5	100.2	99.9	Bourbon	15	0.4	65.8	74.6
Ballard	22	0.5	216.3	267.9	Wayne	20	0.5	99.6	97.7	Mercer	15	0.4	65.6	70.1
Lee	11	0.3	156.7	162.9	Menifee	7	0.2	98.8	110.1	Knox	21	0.5	64.6	66.2
Pike	104	2.6	154.5	168.3	Spencer	18	0.4	97.8	100.6	Green	7	0.2	64.5	63.6
Livingston	18	0.4	148.3	193.2	Pendleton	14	0.3	97.4	97.2	Boone	70	1.7	64.5	54.8
Carroll	16	0.4	142.4	149.5	Floyd	40	1.0	97.4	105.9	Boyd	37	0.9	63.5	76.6
McCracken	118	2.9	142.0	181.5	Harlan	26	0.6	96.9	93.9	Bracken	7	0.2	62.2	84.1
Letcher	33	0.8	139.8	142.7	Martin	13	0.3	93.6	105.6	Clinton	7	0.2	60.9	68.8
Nicholas	10	0.2	137.9	140.2	Daviess	104	2.6	92.7	104.8	Woodford	18	0.4	60.4	69.8
Whitley	53	1.3	137.0	146.7	Owen	12	0.3	92.6	111.8	Johnson	17	0.4	60.1	73.4
Casey	26	0.6	136.0	164.5	Oldham	50	1.2	92.3	77.1	Owsley	*	-	-	-
Cumberland	12	0.3	133.5	177.5	Rowan	22	0.5	90.9	92.1	Jessamine	32	0.8	57.0	61.6
Nelson	59	1.5	131.2	130.7	Estill	14	0.3	90.6	97.4	Grayson	15	0.4	56.6	57.2
Washington	18	0.4	130.6	149.2	Scott	42	1.0	88.8	80.1	Lewis	7	0.2	55.8	51.2
Marshall	53	1.3	127.8	170.4	Madison	74	1.8	88.6	84.3	Butler	8	0.2	55.6	61.8
Breathitt	19	0.5	127.7	140.9	Laurel	57	1.4	88.2	94.9	Simpson	11	0.3	53.9	61.1
Leslie	16	0.4	127.4	149.4	Jackson	12	0.3	87.9	89.9	Monroe	7	0.2	50.0	65.6
Carlisle	8	0.2	127.2	164.1	Montgomery	26	0.6	87.2	94.2	Trigg	7	0.2	50.0	49.2
Lincoln	30	0.7	123.5	122.6	Pulaski	61	1.5	85.8	95.6	Muhlenberg	19	0.5	49.7	60.9
Gallatin	9	0.2	123.2	104.2	Wolfe	6	0.1	85.7	82.7	Warren	56	1.4	48.3	45.6
Morgan	16	0.4	123.1	120.5	Shelby	40	1.0	85.2	87.7	Calloway	18	0.4	45.3	46.9
Powell	15	0.4	116.8	122.3	Harrison	17	0.4	83.2	90.6	Magoffin	6	0.1	44.7	46.8
Rockcastle	20	0.5	116.0	118.1	Grant	18	0.4	80.8	72.7	Elliott	*	-	-	-
Garrard	20	0.5	115.2	116.0	Edmonson	11	0.3	80.6	91.6	Metcalfe	5	0.1	43.8	50.5
Robertson	*	-	-	-	Bullitt	64	1.6	80.5	81.3	Bell	11	0.3	39.4	40.2
Knott	18	0.4	114.0	114.7	Taylor	23	0.6	80.5	90.5	Hancock	*	-	-	-
Breckinridge	23	0.6	113.8	114.9	Fleming	12	0.3	79.5	82.0	Logan	12	0.3	36.6	44.6
McCreary	20	0.5	113.4	111.9	Campbell	81	2.0	78.3	88.0	Carter	12	0.3	36.0	44.2
Hardin	118	2.9	110.9	110.9	Franklin	44	1.1	76.5	87.3	Allen	7	0.2	34.0	33.9
Henry	18	0.4	108.2	115.2	Hart	14	0.3	76.5	75.9	Crittenden	*	-	-	-
Fulton	8	0.2	107.6	128.2	Fayette	234	5.8	75.9	74.4	Lawrence	5	0.1	28.9	31.8
Clark	38	0.9	106.4	106.3	Ohio	20	0.5	74.6	82.6	Hopkins	13	0.3	26.8	28.1
Bath	13	0.3	106.1	106.3	Barren	34	0.8	73.5	78.0	Webster	*	-	-	-
Graves	47	1.2	106.1	125.6	Marion	14	0.3	71.5	72.3	Caldwell	5	0.1	23.1	39.4
Jefferson	885	22.0	106.1	115.9	Anderson	16	0.4	71.1	72.8	Greenup	10	0.2	19.8	27.7
Larue	16	0.4	104.4	112.4	Lyon	10	0.2	70.2	120.4	Christian	12	0.3	18.5	16.4
Trimble	8	0.2	103.9	91.2	Boyle	29	0.7	69.7	97.3	Union	*	-	-	-
McLean	11	0.3	103.2	115.6	Meade	19	0.5	68.8	68.0	Henderson	7	0.2	13.4	15.1
Adair	19	0.5	103.1	99.9	Kenton	113	2.8	68.5	68.5	Hickman	*	-	-	-
Russell	21	0.5	101.4	118.9	Mason	13	0.3	67.1	76.0	Todd	0	0.0	0.0	0.0

* At least one but fewer than five

- Percentage or rate suppressed to prevent disclosure of the value on which it was based

Table 16: Incidence of All ED TBI* by County, Sorted by Age Adjusted Rate, Kentucky, 2015

*Includes ED deaths as well as non-fatal ED cases

County	Age-Adjusted Crude				County	Age-Adjusted Crude				County	Age-Adjusted Crude			
	Freq	Percent	Rate	Rate		Freq	Percent	Rate	Rate		Freq	Percent	Rate	Rate
McCracken	905	3.1	1408.2	1391.9	Grayson	189	0.7	750.1	720.8	Boyle	165	0.6	554.7	553.5
Whitley	492	1.7	1363.9	1361.8	Barren	323	1.1	747.6	741.3	Jefferson	4312	14.9	554.7	564.7
Calloway	510	1.8	1348.1	1330.1	Trigg	98	0.3	742.9	688.5	Montgomery	149	0.5	554.1	539.7
Boyd	632	2.2	1318.0	1307.8	Nelson	323	1.1	741.8	715.8	Morgan	66	0.2	534.4	497.2
Scott	570	2.0	1130.1	1087.4	Ohio	173	0.6	740.8	714.4	Hickman	28	0.1	532.2	607.1
Livingston	93	0.3	1117.7	998.3	Green	74	0.3	739.4	672.1	Butler	66	0.2	531.0	510.1
Owen	109	0.4	1110.0	1015.8	Owsley	30	0.1	737.8	672.5	Cumberland	36	0.1	528.6	532.6
Clay	227	0.8	1097.7	1080.3	Wolfe	52	0.2	737.3	716.4	Adair	96	0.3	526.7	504.6
Lee	70	0.2	1067.8	1036.7	Breathitt	92	0.3	727.3	682.3	Rowan	122	0.4	516.7	510.6
Webster	130	0.5	1048.6	987.1	Henderson	323	1.1	726.1	696.0	Johnson	115	0.4	513.8	496.2
Grant	250	0.9	1042.6	1009.8	Logan	190	0.7	720.4	706.1	Martin	63	0.2	512.9	511.9
Bracken	79	0.3	1027.4	949.4	Marshall	215	0.7	714.6	691.3	Harlan	136	0.5	506.9	490.9
Clark	349	1.2	1016.0	976.0	Madison	599	2.1	699.4	682.1	Breckinridge	94	0.3	494.5	469.6
Carlisle	50	0.2	978.0	1025.9	McLean	62	0.2	698.9	651.8	Hancock	39	0.1	494.3	448.7
Caldwell	120	0.4	976.3	946.3	Bell	180	0.6	697.4	658.5	Warren	599	2.1	482.7	487.6
Hardin	1029	3.6	975.5	966.8	Rockcastle	115	0.4	690.3	678.8	Pike	275	1.0	479.0	445.0
Taylor	249	0.9	954.2	979.5	Carroll	70	0.2	686.2	654.3	Clinton	49	0.2	478.6	481.6
Mason	156	0.5	933.2	912.3	Woodford	160	0.6	672.6	620.3	Wayne	89	0.3	470.4	434.9
Hopkins	419	1.5	930.3	906.5	Pendleton	91	0.3	661.6	631.6	Garrard	77	0.3	467.5	446.7
Laurel	536	1.9	924.3	891.9	Fleming	94	0.3	661.6	642.2	Kenton	746	2.6	463.8	452.1
Graves	340	1.2	921.9	908.6	Gallatin	55	0.2	653.7	636.9	Crittenden	37	0.1	451.9	402.9
Estill	124	0.4	909.7	862.6	Marion	123	0.4	648.9	635.2	Allen	87	0.3	447.2	421.5
Robertson	16	0.1	903.6	748.4	Bourbon	124	0.4	646.6	616.4	Letcher	101	0.3	443.0	436.8
Powell	107	0.4	902.8	872.1	Lawrence	95	0.3	644.1	603.4	Oldham	256	0.9	438.8	394.6
Harrison	156	0.5	885.5	831.4	Ballard	51	0.2	643.1	621.0	Elliott	31	0.1	433.7	405.3
Jackson	110	0.4	872.4	823.9	Anderson	133	0.5	642.6	605.1	Russell	71	0.2	428.8	402.0
Franklin	419	1.5	867.9	831.8	Carter	172	0.6	640.8	633.3	Lewis	53	0.2	418.5	387.4
Mercer	174	0.6	862.5	812.8	Pulaski	379	1.3	633.9	594.2	Leslie	51	0.2	418.3	476.2
Daviess	805	2.8	835.4	811.0	Campbell	581	2.0	633.6	631.1	McCreary	69	0.2	409.9	386.0
Larue	116	0.4	834.4	814.6	Shelby	281	1.0	629.6	615.8	Casey	61	0.2	405.5	385.9
Simpson	147	0.5	831.4	816.4	Bath	75	0.3	624.4	613.4	Trimble	35	0.1	401.3	399.1
Washington	96	0.3	818.7	795.8	Lincoln	145	0.5	622.1	592.7	Magoffin	46	0.2	391.7	359.2
Henry	121	0.4	799.5	774.7	Boone	755	2.6	621.0	591.2	Todd	49	0.2	389.7	391.0
Perry	209	0.7	795.4	758.2	Monroe	63	0.2	605.9	590.6	Meade	103	0.4	379.8	368.9
Greenup	291	1.0	784.3	806.8	Menifee	33	0.1	590.5	519.0	Union	55	0.2	377.8	365.5
Lyon	63	0.2	779.4	758.5	Christian	426	1.5	585.8	581.1	Fulton	22	0.1	363.4	352.7
Metcalfe	73	0.3	767.8	736.7	Nicholas	43	0.1	582.3	603.0	Knott	54	0.2	355.2	344.1
Hart	131	0.5	763.8	709.9	Floyd	202	0.7	575.4	535.0	Jessamine	179	0.6	346.0	344.5
Muhlenberg	227	0.8	754.9	728.0	Spencer	99	0.3	575.0	553.3	Edmonson	38	0.1	332.9	316.5
Knox	228	0.8	752.3	718.6	Fayette	1740	6.0	565.4	553.3	Bullitt	216	0.7	293.4	274.5

Table 17: Length of Stay for Non-Fatal Inpatient TBI, Kentucky, 2015

Length of Stay	Number	Percent*
1 day	509	15.9
More than one day but less than 1 week	1731	54.1
1 week to less than 2 weeks	590	18.4
2 weeks to less than 3 weeks	181	5.7
3 weeks to less than 4 weeks	92	2.9
4 weeks or more	99	3.1
Total	3202	100.0

*Percent of hospitalized TBI

Table 18: Work Related Non-Fatal TBI, Kentucky 2015

Inpatient Work TBI (n=51)	LOS Days	Cost
Mean	5.9	\$89,557
Median	3	\$36,598
Min, Max	1, 29	\$78, \$629,820
Sum of Charges		\$4,567,412

ED Work TBI (n=975)	Cost
Mean	\$3,415
Median	\$2,339
Min, Max	\$2, \$52368
Sum of Charges	\$3,329,412

Table 19: Primary Payer and Charges for Non-Fatal Inpatient TBI, Kentucky, 2015

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	2,714	73.2	\$ 178,880,124
Commercial Ins	656	17.7	\$ 52,189,095
Self Pay	42	1.1	\$ 2,116,389
Workers Compensation	51	1.4	\$ 4,567,412
Other	247	6.7	\$ 29,624,794
Total	3,710	100.0	\$ 267,377,814

Table 20: Primary Payer and Charges for Non-Fatal ED TBI, Kentucky, 2015

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	16,397	56.9	\$ 62,020,916
Commercial Ins	7,464	25.9	\$ 24,954,103
Self Pay	1,485	5.2	\$ 5,399,269
Workers Compensation	975	3.4	\$ 3,329,412
Other	2,505	8.7	\$ 13,792,334
Total	28,826	100.0	\$ 109,496,035

Table 21: Non-Fatal ABI by Age Group, Kentucky, 2015

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	128	37.0	46.1	218	63.0	78.6	346	100.0	124.7
5-14	55	27.8	9.8	143	72.2	25.5	198	100.0	35.3
15-24	225	37.1	37.7	381	62.9	63.9	606	100.0	101.6
25-44	891	49.7	79.0	903	50.3	80.1	1,794	100.0	159.1
45-64	1,388	66.3	116.7	706	33.7	59.4	2,094	100.0	176.0
65+	1,324	79.8	196.8	336	20.2	49.9	1,660	100.0	246.7
Total	4,011	59.9	90.6	2,687	40.1	60.7	6,698	100.0	151.4

Table 22: Non-Fatal ABI by Gender, Kentucky, 2015

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	1,925	60.6	88.3	1,249	39.4	57.3	3,174	100.0	145.7
Female	2,086	59.2	92.9	1,438	40.8	64.0	3,524	100.0	156.9
Total	4,011	59.9	90.6	2,687	40.1	60.7	6,698	100.0	151.4

Table 23: Incidence of All Inpatient ABI* by County, Sorted by County, Kentucky, 2015

*Includes inpatient deaths as well as non-fatal inpatient cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Adair	17	0.3	84.3	89.3	Grant	28	0.5	116.0	113.1	McLean	9	0.2	77.2	94.6
Allen	21	0.4	89.4	101.7	Graves	38	0.7	88.5	101.5	Meade	15	0.3	47.0	53.7
Anderson	23	0.4	90.1	104.6	Grayson	47	0.9	166.7	179.2	Menifee	5	0.1	73.2	78.6
Ballard	10	0.2	109.4	121.8	Green	13	0.3	99.5	118.1	Mercer	30	0.6	123.7	140.1
Barren	56	1.1	112.4	128.5	Greenup	32	0.6	66.7	88.7	Metcalfe	9	0.2	69.9	90.8
Bath	22	0.4	150.2	179.9	Hancock	8	0.2	80.0	92.0	Monroe	14	0.3	128.2	131.2
Bell	33	0.6	108.0	120.7	Hardin	118	2.3	107.8	110.9	Montgomery	27	0.5	85.2	97.8
Boone	99	1.9	80.5	77.5	Harlan	38	0.7	139.0	137.2	Morgan	13	0.3	94.4	97.9
Bourbon	17	0.3	70.6	84.5	Harrison	12	0.2	51.6	64.0	Muhlenberg	29	0.6	73.5	93.0
Boyd	68	1.3	125.5	140.7	Hart	13	0.3	59.1	70.4	Nelson	46	0.9	96.1	101.9
Boyle	28	0.5	85.0	93.9	Henderson	32	0.6	60.3	69.0	Nicholas	7	0.1	86.4	98.2
Bracken	11	0.2	111.7	132.2	Henry	27	0.5	143.4	172.9	Ohio	18	0.4	74.4	74.3
Breathitt	14	0.3	97.6	103.8	Hickman	6	0.1	149.0	130.1	Oldham	53	1.0	85.6	81.7
Breckinridge	23	0.4	101.5	114.9	Hopkins	43	0.8	87.4	93.0	Owen	10	0.2	93.7	93.2
Bullitt	72	1.4	84.5	91.5	Jackson	31	0.6	221.8	232.2	Owsley	11	0.2	210.3	246.6
Butler	11	0.2	75.2	85.0	Jefferson	1115	21.8	133.0	146.0	Pendleton	8	0.2	45.2	55.5
Caldwell	*	-	-	-	Jessamine	58	1.1	108.1	111.6	Perry	46	0.9	149.8	166.9
Calloway	30	0.6	75.0	78.2	Johnson	37	0.7	140.6	159.7	Pike	100	2.0	149.1	161.8
Campbell	101	2.0	105.1	109.7	Kenton	178	3.5	103.1	107.9	Powell	20	0.4	156.5	163.0
Carlisle	7	0.1	119.0	143.6	Knott	19	0.4	118.1	121.1	Pulaski	91	1.8	123.0	142.7
Carroll	28	0.5	263.2	261.7	Knox	41	0.8	111.3	129.2	Robertson	*	-	-	-
Carter	36	0.7	118.6	132.6	Larue	11	0.2	73.8	77.2	Rockcastle	14	0.3	71.7	82.6
Casey	13	0.3	67.8	82.2	Laurel	82	1.6	125.9	136.5	Rowan	52	1.0	242.2	217.6
Christian	28	0.5	43.5	38.2	Lawrence	16	0.3	88.7	101.6	Russell	14	0.3	67.6	79.3
Clark	46	0.9	111.7	128.6	Lee	13	0.3	164.6	192.5	Scott	41	0.8	82.1	78.2
Clay	48	0.9	210.0	228.4	Leslie	14	0.3	127.2	130.7	Shelby	41	0.8	86.1	89.8
Clinton	*	-	-	-	Letcher	49	1.0	177.9	211.9	Simpson	15	0.3	68.4	83.3
Crittenden	8	0.2	85.2	87.1	Lewis	8	0.2	58.0	58.5	Spencer	13	0.3	78.0	72.7
Cumberland	9	0.2	113.2	133.2	Lincoln	28	0.5	97.4	114.5	Taylor	39	0.8	137.2	153.4
Daviess	125	2.4	121.3	125.9	Livingston	15	0.3	130.9	161.0	Todd	*	-	-	-
Edmonson	8	0.2	66.3	66.6	Logan	16	0.3	46.8	59.5	Trigg	5	0.1	30.0	35.1
Elliott	5	0.1	62.6	65.4	Lyon	15	0.3	119.3	180.6	Trimble	5	0.1	46.4	57.0
Estill	13	0.3	81.6	90.4	Madison	70	1.4	78.5	79.7	Union	*	-	-	-
Fayette	322	6.3	101.9	102.4	Magoffin	29	0.6	213.3	226.4	Warren	107	2.1	89.0	87.1
Fleming	14	0.3	79.4	95.6	Marion	24	0.5	113.5	123.9	Washington	9	0.2	56.7	74.6
Floyd	47	0.9	106.0	124.5	Marshall	44	0.9	121.9	141.5	Wayne	24	0.5	98.7	117.3
Franklin	62	1.2	111.9	123.1	Martin	15	0.3	104.6	121.9	Webster	11	0.2	74.4	83.5
Fulton	*	-	-	-	Mason	20	0.4	91.9	117.0	Whitley	72	1.4	186.7	199.3
Gallatin	8	0.2	86.7	92.6	McCracken	118	2.3	155.2	181.5	Wolfe	13	0.3	182.3	179.1
Garrard	19	0.4	86.4	110.2	McCreary	20	0.4	106.6	111.9	Woodford	18	0.4	67.1	69.8

* At least one but fewer than five

- Percentage or rate suppressed to prevent disclosure of the value on which it was based

Table 24: Incidence of All ED ABI* by County, Sorted by County, Kentucky, 2015

*Includes ED deaths as well as non-fatal ED cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Adair	18	0.7	89.6	94.6	Grant	22	0.8	94.1	88.9	McLean	*	-	-	-
Allen	11	0.4	54.4	53.3	Graves	27	1.0	73.6	72.2	Meade	7	0.3	24.0	25.1
Anderson	13	0.5	65.4	59.1	Grayson	29	1.1	115.4	110.6	Menifee	*	-	-	-
Ballard	*	-	-	-	Green	14	0.5	142.1	127.2	Mercer	12	0.4	53.1	56.1
Barren	39	1.4	92.6	89.5	Greenup	18	0.7	48.7	49.9	Metcalfe	10	0.4	105.1	100.9
Bath	7	0.3	59.4	57.2	Hancock	8	0.3	89.6	92.0	Monroe	15	0.6	135.6	140.6
Bell	28	1.0	109.3	102.4	Hardin	60	2.2	56.3	56.4	Montgomery	24	0.9	84.8	86.9
Boone	51	1.9	41.7	39.9	Harlan	8	0.3	31.0	28.9	Morgan	17	0.6	122.7	128.1
Bourbon	11	0.4	63.2	54.7	Harrison	23	0.8	131.7	122.6	Muhlenberg	16	0.6	47.6	51.3
Boyd	31	1.1	61.9	64.1	Hart	11	0.4	54.4	59.6	Nelson	37	1.4	85.5	82.0
Boyle	15	0.6	51.1	50.3	Henderson	22	0.8	49.5	47.4	Nicholas	*	-	-	-
Bracken	7	0.3	102.2	84.1	Henry	11	0.4	66.6	70.4	Ohio	18	0.7	71.5	74.3
Breathitt	11	0.4	88.9	81.6	Hickman	*	-	-	-	Oldham	34	1.3	58.9	52.4
Breckinridge	22	0.8	110.7	109.9	Hopkins	28	1.0	63.1	60.6	Owen	8	0.3	69.9	74.6
Bullitt	29	1.1	37.0	36.8	Jackson	10	0.4	81.7	74.9	Owsley	*	-	-	-
Butler	*	-	-	-	Jefferson	446	16.4	59.4	58.4	Pendleton	6	0.2	46.1	41.6
Caldwell	7	0.3	60.1	55.2	Jessamine	16	0.6	30.7	30.8	Perry	27	1.0	103.7	98.0
Calloway	32	1.2	77.5	83.5	Johnson	15	0.6	62.2	64.7	Pike	35	1.3	58.7	56.6
Campbell	45	1.7	50.7	48.9	Kenton	59	2.2	37.0	35.8	Powell	6	0.2	48.7	48.9
Carlisle	5	0.2	135.5	102.6	Knott	*	-	-	-	Pulaski	24	0.9	37.4	37.6
Carrroll	*	-	-	-	Knox	19	0.7	61.6	59.9	Robertson	*	-	-	-
Carter	8	0.3	30.2	29.5	Larue	9	0.3	68.3	63.2	Rockcastle	14	0.5	84.4	82.6
Casey	14	0.5	83.9	88.6	Laurel	40	1.5	68.1	66.6	Rowan	19	0.7	85.3	79.5
Christian	27	1.0	40.6	36.8	Lawrence	14	0.5	84.7	88.9	Russell	19	0.7	102.8	107.6
Clark	28	1.0	80.5	78.3	Lee	6	0.2	82.3	88.9	Scott	46	1.7	86.8	87.8
Clay	21	0.8	97.5	99.9	Leslie	10	0.4	97.5	93.4	Shelby	27	1.0	59.5	59.2
Clinton	9	0.3	84.5	88.5	Letcher	26	1.0	124.5	112.4	Simpson	15	0.6	76.4	83.3
Crittenden	*	-	-	-	Lewis	*	-	-	-	Spencer	9	0.3	53.1	50.3
Cumberland	9	0.3	128.3	133.2	Lincoln	15	0.6	66.8	61.3	Taylor	30	1.1	122.5	118.0
Daviess	72	2.7	73.0	72.5	Livingston	6	0.2	65.0	64.4	Todd	*	-	-	-
Edmonson	*	-	-	-	Logan	17	0.6	59.9	63.2	Trigg	15	0.6	115.1	105.4
Elliott	*	-	-	-	Lyon	*	-	-	-	Trimble	*	-	-	-
Estill	12	0.4	85.9	83.5	Madison	60	2.2	67.9	68.3	Union	*	-	-	-
Fayette	150	5.5	46.4	47.7	Magoffin	5	0.2	41.8	39.0	Warren	65	2.4	53.4	52.9
Fleming	12	0.4	82.6	82.0	Marion	14	0.5	75.3	72.3	Washington	7	0.3	69.8	58.0
Floyd	35	1.3	98.4	92.7	Marshall	24	0.9	85.8	77.2	Wayne	19	0.7	100.7	92.8
Franklin	39	1.4	80.5	77.4	Martin	10	0.4	84.5	81.3	Webster	5	0.2	40.5	38.0
Fulton	*	-	-	-	Mason	10	0.4	66.9	58.5	Whitley	28	1.0	79.0	77.5
Gallatin	8	0.3	98.4	92.6	McCracken	59	2.2	94.3	90.7	Wolfe	8	0.3	129.5	110.2
Garrard	14	0.5	83.4	81.2	McCreary	7	0.3	41.5	39.2	Woodford	20	0.7	84.8	77.5

* At least one but fewer than five

- Percentage or rate suppressed to prevent disclosure of the value on which it was based

Table 25: Incidence of All Inpatient ABI* by County, Sorted by Frequency, Kentucky, 2015

*Includes inpatient deaths as well as non-fatal inpatient cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude				Rate	Crude				Rate	Crude
Jefferson	1115	21.8	133.0	146.0	Henderson	32	0.6	60.3	69.0	Russell	14	0.3	67.6	79.3
Fayette	322	6.3	101.9	102.4	Jackson	31	0.6	221.8	232.2	Casey	13	0.3	67.8	82.2
Kenton	178	3.5	103.1	107.9	Calloway	30	0.6	75.0	78.2	Estill	13	0.3	81.6	90.4
Daviess	125	2.4	121.3	125.9	Mercer	30	0.6	123.7	140.1	Green	13	0.3	99.5	118.1
Hardin	118	2.3	107.8	110.9	Magoffin	29	0.6	213.3	226.4	Hart	13	0.3	59.1	70.4
McCracken	118	2.3	155.2	181.5	Muhlenberg	29	0.6	73.5	93.0	Lee	13	0.3	164.6	192.5
Warren	107	2.1	89.0	87.1	Boyle	28	0.5	85.0	93.9	Morgan	13	0.3	94.4	97.9
Campbell	101	2.0	105.1	109.7	Carroll	28	0.5	263.2	261.7	Spencer	13	0.3	78.0	72.7
Pike	100	2.0	149.1	161.8	Christian	28	0.5	43.5	38.2	Wolfe	13	0.3	182.3	179.1
Boone	99	1.9	80.5	77.5	Grant	28	0.5	116.0	113.1	Harrison	12	0.2	51.6	64.0
Pulaski	91	1.8	123.0	142.7	Lincoln	28	0.5	97.4	114.5	Bracken	11	0.2	111.7	132.2
Laurel	82	1.6	125.9	136.5	Henry	27	0.5	143.4	172.9	Butler	11	0.2	75.2	85.0
Bullitt	72	1.4	84.5	91.5	Montgomery	27	0.5	85.2	97.8	Larue	11	0.2	73.8	77.2
Whitley	72	1.4	186.7	199.3	Marion	24	0.5	113.5	123.9	Owsley	11	0.2	210.3	246.6
Madison	70	1.4	78.5	79.7	Wayne	24	0.5	98.7	117.3	Webster	11	0.2	74.4	83.5
Boyd	68	1.3	125.5	140.7	Anderson	23	0.4	90.1	104.6	Ballard	10	0.2	109.4	121.8
Franklin	62	1.2	111.9	123.1	Breckinridge	23	0.4	101.5	114.9	Owen	10	0.2	93.7	93.2
Jessamine	58	1.1	108.1	111.6	Bath	22	0.4	150.2	179.9	Cumberland	9	0.2	113.2	133.2
Barren	56	1.1	112.4	128.5	Allen	21	0.4	89.4	101.7	McLean	9	0.2	77.2	94.6
Oldham	53	1.0	85.6	81.7	Mason	20	0.4	91.9	117.0	Metcalfe	9	0.2	69.9	90.8
Rowan	52	1.0	242.2	217.6	McCreary	20	0.4	106.6	111.9	Washington	9	0.2	56.7	74.6
Letcher	49	1.0	177.9	211.9	Powell	20	0.4	156.5	163.0	Crittenden	8	0.2	85.2	87.1
Clay	48	0.9	210.0	228.4	Garrard	19	0.4	86.4	110.2	Edmonson	8	0.2	66.3	66.6
Floyd	47	0.9	106.0	124.5	Knott	19	0.4	118.1	121.1	Gallatin	8	0.2	86.7	92.6
Grayson	47	0.9	166.7	179.2	Ohio	18	0.4	74.4	74.3	Hancock	8	0.2	80.0	92.0
Clark	46	0.9	111.7	128.6	Woodford	18	0.4	67.1	69.8	Lewis	8	0.2	58.0	58.5
Nelson	46	0.9	96.1	101.9	Adair	17	0.3	84.3	89.3	Pendleton	8	0.2	45.2	55.5
Perry	46	0.9	149.8	166.9	Bourbon	17	0.3	70.6	84.5	Carlisle	7	0.1	119.0	143.6
Marshall	44	0.9	121.9	141.5	Larrence	16	0.3	88.7	101.6	Nicholas	7	0.1	86.4	98.2
Hopkins	43	0.8	87.4	93.0	Logan	16	0.3	46.8	59.5	Hickman	6	0.1	149.0	130.1
Knox	41	0.8	111.3	129.2	Livingston	15	0.3	130.9	161.0	Elliott	5	0.1	62.6	65.4
Scott	41	0.8	82.1	78.2	Lyon	15	0.3	119.3	180.6	Menifee	5	0.1	73.2	78.6
Shelby	41	0.8	86.1	89.8	Martin	15	0.3	104.6	121.9	Trigg	5	0.1	30.0	35.1
Taylor	39	0.8	137.2	153.4	Meade	15	0.3	47.0	53.7	Trimble	5	0.1	46.4	57.0
Graves	38	0.7	88.5	101.5	Simpson	15	0.3	68.4	83.3	Todd	*	-	-	-
Harlan	38	0.7	139.0	137.2	Breathitt	14	0.3	97.6	103.8	Caldwell	*	-	-	-
Johnson	37	0.7	140.6	159.7	Fleming	14	0.3	79.4	95.6	Clinton	*	-	-	-
Carter	36	0.7	118.6	132.6	Leslie	14	0.3	127.2	130.7	Fulton	*	-	-	-
Bell	33	0.6	108.0	120.7	Monroe	14	0.3	128.2	131.2	Robertson	*	-	-	-
Greenup	32	0.6	66.7	88.7	Rockcastle	14	0.3	71.7	82.6	Union	*	-	-	-

* At least one but fewer than five

- Percentage or rate suppressed to prevent disclosure of the value on which it was based

Table 26: Incidence of All ED ABI* by County, Sorted by Frequency, Kentucky, 2015

*Includes ED deaths as well as non-fatal ED cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Jefferson	446	16.4	59.4	58.4	Woodford	20	0.7	84.8	77.5	Larue	9	0.3	68.3	63.2
Fayette	150	5.5	46.4	47.7	Knox	19	0.7	61.6	59.9	Spencer	9	0.3	53.1	50.3
Daviess	72	2.7	73.0	72.5	Rowan	19	0.7	85.3	79.5	Carter	8	0.3	30.2	29.5
Warren	65	2.4	53.4	52.9	Russell	19	0.7	102.8	107.6	Gallatin	8	0.3	98.4	92.6
Hardin	60	2.2	56.3	56.4	Wayne	19	0.7	100.7	92.8	Hancock	8	0.3	89.6	92.0
Madison	60	2.2	67.9	68.3	Adair	18	0.7	89.6	94.6	Harlan	8	0.3	31.0	28.9
Kenton	59	2.2	37.0	35.8	Greenup	18	0.7	48.7	49.9	Owen	8	0.3	69.9	74.6
McCracken	59	2.2	94.3	90.7	Ohio	18	0.7	71.5	74.3	Wolfe	8	0.3	129.5	110.2
Boone	51	1.9	41.7	39.9	Logan	17	0.6	59.9	63.2	Bath	7	0.3	59.4	57.2
Scott	46	1.7	86.8	87.8	Morgan	17	0.6	122.7	128.1	Bracken	7	0.3	102.2	84.1
Campbell	45	1.7	50.7	48.9	Jessamine	16	0.6	30.7	30.8	Caldwell	7	0.3	60.1	55.2
Laurel	40	1.5	68.1	66.6	Muhlenberg	16	0.6	47.6	51.3	McCreary	7	0.3	41.5	39.2
Barren	39	1.4	92.6	89.5	Boyle	15	0.6	51.1	50.3	Meade	7	0.3	24.0	25.1
Franklin	39	1.4	80.5	77.4	Johnson	15	0.6	62.2	64.7	Washington	7	0.3	69.8	58.0
Nelson	37	1.4	85.5	82.0	Lincoln	15	0.6	66.8	61.3	Lee	6	0.2	82.3	88.9
Floyd	35	1.3	98.4	92.7	Monroe	15	0.6	135.6	140.6	Livingston	6	0.2	65.0	64.4
Pike	35	1.3	58.7	56.6	Simpson	15	0.6	76.4	83.3	Pendleton	6	0.2	46.1	41.6
Oldham	34	1.3	58.9	52.4	Trigg	15	0.6	115.1	105.4	Powell	6	0.2	48.7	48.9
Calloway	32	1.2	77.5	83.5	Casey	14	0.5	83.9	88.6	Carlisle	5	0.2	135.5	102.6
Boyd	31	1.1	61.9	64.1	Garrard	14	0.5	83.4	81.2	Magoffin	5	0.2	41.8	39.0
Taylor	30	1.1	122.5	118.0	Green	14	0.5	142.1	127.2	Webster	5	0.2	40.5	38.0
Bullitt	29	1.1	37.0	36.8	Lawrence	14	0.5	84.7	88.9	Butler	*	-	-	-
Grayson	29	1.1	115.4	110.6	Marion	14	0.5	75.3	72.3	Carroll	*	-	-	-
Bell	28	1.0	109.3	102.4	Rockcastle	14	0.5	84.4	82.6	Fulton	*	-	-	-
Clark	28	1.0	80.5	78.3	Anderson	13	0.5	65.4	59.1	Hickman	*	-	-	-
Hopkins	28	1.0	63.1	60.6	Estill	12	0.4	85.9	83.5	Robertson	*	-	-	-
Whitley	28	1.0	79.0	77.5	Fleming	12	0.4	82.6	82.0	Todd	*	-	-	-
Christian	27	1.0	40.6	36.8	Mercer	12	0.4	53.1	56.1	Crittenden	*	-	-	-
Graves	27	1.0	73.6	72.2	Allen	11	0.4	54.4	53.3	Edmonson	*	-	-	-
Perry	27	1.0	103.7	98.0	Bourbon	11	0.4	63.2	54.7	Lyon	*	-	-	-
Shelby	27	1.0	59.5	59.2	Breathitt	11	0.4	88.9	81.6	Menifee	*	-	-	-
Letcher	26	1.0	124.5	112.4	Hart	11	0.4	54.4	59.6	Trimble	*	-	-	-
Marshall	24	0.9	85.8	77.2	Henry	11	0.4	66.6	70.4	Ballard	*	-	-	-
Montgomery	24	0.9	84.8	86.9	Jackson	10	0.4	81.7	74.9	Knott	*	-	-	-
Pulaski	24	0.9	37.4	37.6	Leslie	10	0.4	97.5	93.4	Nicholas	*	-	-	-
Harrison	23	0.8	131.7	122.6	Martin	10	0.4	84.5	81.3	Owsley	*	-	-	-
Breckinridge	22	0.8	110.7	109.9	Mason	10	0.4	66.9	58.5	Union	*	-	-	-
Grant	22	0.8	94.1	88.9	Metcalf	10	0.4	105.1	100.9	Elliott	*	-	-	-
Henderson	22	0.8	49.5	47.4	Clinton	9	0.3	84.5	88.5	Lewis	*	-	-	-
Clay	21	0.8	97.5	99.9	Cumberland	9	0.3	128.3	133.2	McLean	*	-	-	-

* At least one but fewer than five

- Percentage or rate suppressed to prevent disclosure of the value on which it was based

Table 27: Incidence of All Inpatient ABI* by County, Sorted by Age Adjusted Rate, Kentucky, 2015

*Includes inpatient deaths as well as non-fatal inpatient cases

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude Rate		Freq	Percent	Rate	Crude Rate		Freq	Percent	Rate	Crude Rate
Carroll	28	0.5	263.2	261.7	Franklin	62	1.2	111.9	123.1	Estill	13	0.3	81.6	90.4
Rowan	52	1.0	242.2	217.6	Bracken	11	0.2	111.7	132.2	Boone	99	1.9	80.5	77.5
Jackson	31	0.6	221.8	232.2	Clark	46	0.9	111.7	128.6	Hancock	8	0.2	80.0	92.0
Magoffin	29	0.6	213.3	226.4	Knox	41	0.8	111.3	129.2	Fleming	14	0.3	79.4	95.6
Owsley	11	0.2	210.3	246.6	Ballard	10	0.2	109.4	121.8	Madison	70	1.4	78.5	79.7
Clay	48	0.9	210.0	228.4	Jessamine	58	1.1	108.1	111.6	Spencer	13	0.3	78.0	72.7
Whitley	72	1.4	186.7	199.3	Bell	33	0.6	108.0	120.7	McLean	9	0.2	77.2	94.6
Wolfe	13	0.3	182.3	179.1	Hardin	118	2.3	107.8	110.9	Butler	11	0.2	75.2	85.0
Letcher	49	1.0	177.9	211.9	McCreary	20	0.4	106.6	111.9	Calloway	30	0.6	75.0	78.2
Grayson	47	0.9	166.7	179.2	Floyd	47	0.9	106.0	124.5	Webster	11	0.2	74.4	83.5
Lee	13	0.3	164.6	192.5	Campbell	101	2.0	105.1	109.7	Ohio	18	0.4	74.4	74.3
Powell	20	0.4	156.5	163.0	Martin	15	0.3	104.6	121.9	Larue	11	0.2	73.8	77.2
McCracken	118	2.3	155.2	181.5	Kenton	178	3.5	103.1	107.9	Muhlenberg	29	0.6	73.5	93.0
Robertson	*	-	-	-	Fayette	322	6.3	101.9	102.4	Menifee	5	0.1	73.2	78.6
Bath	22	0.4	150.2	179.9	Breckinridge	23	0.4	101.5	114.9	Rockcastle	14	0.3	71.7	82.6
Perry	46	0.9	149.8	166.9	Green	13	0.3	99.5	118.1	Bourbon	17	0.3	70.6	84.5
Pike	100	2.0	149.1	161.8	Wayne	24	0.5	98.7	117.3	Metcalfe	9	0.2	69.9	90.8
Hickman	6	0.1	149.0	130.1	Breathitt	14	0.3	97.6	103.8	Simpson	15	0.3	68.4	83.3
Henry	27	0.5	143.4	172.9	Lincoln	28	0.5	97.4	114.5	Casey	13	0.3	67.8	82.2
Johnson	37	0.7	140.6	159.7	Nelson	46	0.9	96.1	101.9	Russell	14	0.3	67.6	79.3
Harlan	38	0.7	139.0	137.2	Morgan	13	0.3	94.4	97.9	Woodford	18	0.4	67.1	69.8
Taylor	39	0.8	137.2	153.4	Owen	10	0.2	93.7	93.2	Greenup	32	0.6	66.7	88.7
Jefferson	1115	21.8	133.0	146.0	Mason	20	0.4	91.9	117.0	Edmonson	8	0.2	66.3	66.6
Livingston	15	0.3	130.9	161.0	Anderson	23	0.4	90.1	104.6	Elliott	5	0.1	62.6	65.4
Monroe	14	0.3	128.2	131.2	Allen	21	0.4	89.4	101.7	Henderson	32	0.6	60.3	69.0
Leslie	14	0.3	127.2	130.7	Warren	107	2.1	89.0	87.1	Hart	13	0.3	59.1	70.4
Laurel	82	1.6	125.9	136.5	Larrence	16	0.3	88.7	101.6	Lewis	8	0.2	58.0	58.5
Boyd	68	1.3	125.5	140.7	Graves	38	0.7	88.5	101.5	Washington	9	0.2	56.7	74.6
Mercer	30	0.6	123.7	140.1	Hopkins	43	0.8	87.4	93.0	Harrison	12	0.2	51.6	64.0
Pulaski	91	1.8	123.0	142.7	Gallatin	8	0.2	86.7	92.6	Meade	15	0.3	47.0	53.7
Marshall	44	0.9	121.9	141.5	Garrard	19	0.4	86.4	110.2	Logan	16	0.3	46.8	59.5
Daviess	125	2.4	121.3	125.9	Nicholas	7	0.1	86.4	98.2	Trimble	5	0.1	46.4	57.0
Lyon	15	0.3	119.3	180.6	Shelby	41	0.8	86.1	89.8	Pendleton	8	0.2	45.2	55.5
Carlisle	7	0.1	119.0	143.6	Oldham	53	1.0	85.6	81.7	Christian	28	0.5	43.5	38.2
Carter	36	0.7	118.6	132.6	Crittenden	8	0.2	85.2	87.1	Fulton	*	-	-	-
Knott	19	0.4	118.1	121.1	Montgomery	27	0.5	85.2	97.8	Clinton	*	-	-	-
Grant	28	0.5	116.0	113.1	Boyle	28	0.5	85.0	93.9	Trigg	5	0.1	30.0	35.1
Marion	24	0.5	113.5	123.9	Bullitt	72	1.4	84.5	91.5	Todd	*	-	-	-
Cumberland	9	0.2	113.2	133.2	Adair	17	0.3	84.3	89.3	Caldwell	*	-	-	-
Barren	56	1.1	112.4	128.5	Scott	41	0.8	82.1	78.2	Union	*	-	-	-

* At least one but fewer than five

- Percentage or rate suppressed to prevent disclosure of the value on which it was based

Table 28: Causes of Non-Fatal ABI, Kentucky, 2015

ABI Category	Inpatient		ED	
	Number	Percent	Number	Percent
Anoxia	1066	26.0	181	6.8
Exposure to toxic substances	2614	63.8	1994	74.7
Allergy/anaphylaxis	231	5.6	471	17.7
Acute medical clinical incidents	189	4.6	22	0.8

* Because there are multiple diagnoses and/or causes of death listed for each individual, it is possible for the same case to fall into more than one ABI category. Therefore, the column sums in this table are slightly higher than the total number of ABI cases shown in previous tables.

Table 29: Injury-Related Causes of Non-Fatal ABI, Kentucky, 2015

Mechanism of Injury	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Poisoning	628	47.6	14.2	692	52.4	15.6	1,320	100.0	29.8
Suffocation	17	53.1	0.4	15	46.9	0.3	32	100.0	0.7
Drowning	16	20.0	0.4	64	80.0	1.4	80	100.0	1.8
Falls	149	81.9	3.4	33	18.1	0.7	182	100.0	4.1
Motor vehicle traffic crash	14	56.0	0.3	11	44.0	0.2	25	100.0	0.6
Fire/burn	4	28.6	0.1	10	71.4	0.2	14	100.0	0.3
Other	85	50.0	1.9	85	50.0	1.9	170	100.0	3.8
Unknown or Non-Injury Related	3,098	63.5	70.0	1,777	36.5	40.2	4,875	100.0	110.2
Total	4,011	59.9	90.6	2,687	40.1	60.7	6,698	100.0	151.4

Table 30: Non-Fatal Anoxia by Age Group, Kentucky, 2015

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	28	35.0	10.1	52	65.0	18.7	80	100.0	28.8
5-14	13	43.3	2.3	17	56.7	3.0	30	100.0	5.3
15-24	67	82.7	11.2	14	17.3	2.3	81	100.0	13.6
25-44	215	81.7	19.1	48	18.3	4.3	263	100.0	23.3
45-64	429	92.9	36.1	33	7.1	2.8	462	100.0	38.8
65+	314	94.9	46.7	17	5.1	2.5	331	100.0	49.2
Total	1,066	85.5	24.1	181	14.5	4.1	1,247	100.0	28.2

Table 31: Diagnosis Distribution for Non-Fatal Anoxia, Kentucky, 2015

Diagnosis	Description	Inpatient		ED	
		Number	Percent	Number	Percent
348.1	Anoxic brain damage (related to hereditary and degenerative diseases of the central nervous system)	724	67.9	58	32.0
997.0	Nervous system complications (related to medical care)	254	23.8	14	7.7
	- Anoxic brain damage				0.0
	- Cerebral hypoxia				0.0
	- Postoperative stroke				0.0
	- Other				0.0
669.4	Cerebral anoxia following cesarean	55	5.2	12	6.6
994.1	Drowning and nonfatal submersion	16	1.5	73	40.3
768 (.1,.5,.6,.9)	Birth asphyxia	7	0.7	0	0.0
799.0, 994.7	Asphyxia	10	0.9	24	13.3
Total		1,066	100.0	181	100.0

Table 32: Non-Fatal Exposure to Toxic Substances by Age Group, Kentucky, 2015

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	67	38.5	24.2	107	61.5	38.6	174	100.0	62.7
5-14	25	28.1	4.5	64	71.9	11.4	89	100.0	15.9
15-24	135	30.8	22.6	304	69.2	51.0	439	100.0	73.6
25-44	606	46.2	53.8	705	53.8	62.5	1,311	100.0	116.3
45-64	857	61.3	72.0	541	38.7	45.5	1,398	100.0	117.5
65+	924	77.2	137.3	273	22.8	40.6	1,197	100.0	177.9
Total	2,614	56.7	59.1	1,994	43.3	45.1	4,608	100.0	104.1

Table 33: Diagnosis Distribution for Non-Fatal Exposure to Toxic Substances, Kentucky, 2015

Diagnosis	Description	Inpatient		ED	
		Number	Percent	Number	Percent
967, T42	Poisoning by sedatives and hypnotics	937	35.8	769	38.6
980, T51	Toxic effect of alcohol	311	11.9	242	12.1
968, T41	Poisoning by other central nervous system depressants and anesthetics	91	3.5	48	2.4
964.2, T455	Poisoning by anticoagulants	686	26.2	233	11.7
998, T81.1	Post-operative shock	290	11.1	1	0.1
986, T58	Toxic effect of carbon monoxide	56	2.1	169	8.5
985, T56, T57	Toxic effect of other metals	24	0.9	39	2.0
988.0-988.2, T62	Toxic effect of noxious substances eaten as food	12	0.5	79	4.0
995.4, T88.2	Shock due to anesthesia	3	0.1	0	0.0
Other*	Includes meningitis, reaction to lumbar puncture, poisoning by cocaine, other substances	206	7.9	414	20.8
Total		2616	100.0	1994	100.0

Table 34: Length of Stay for Non-Fatal Inpatient ABI, Kentucky, 2015

Length of Stay	Number	Percent*
1 day	559	13.9
More than one day but less than 1 week	1944	48.5
1 week to less than 2 weeks	812	20.2
2 weeks to less than 3 weeks	321	8.0
3 weeks to less than 4 weeks	150	3.7
4 weeks or more	225	5.6
Total	4011	100.0

*Percent of hospitalized ABI

Table 35: Discharge Disposition for Non-Fatal ABI, Kentucky, 2015

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	2,032	50.7	2,179	81.1
Skilled nursing facility (SNF)	530	13.2	26	1.0
Home health	401	10.0	8	0.3
Inpatient-other type facility	23	0.6	24	0.9
Inpatient-other short-term hospital	167	4.2	201	7.5
Intermediate care facility (ICF)	22	0.5	4	0.1
Rehab	245	6.1	0	0.0
Other	591	14.7	245	9.1
Total	4,011	100.0	2,687	100.0

Table 36: Primary Payer and Charges for Non-Fatal Inpatient ABI, Kentucky, 2015

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	3,017	75.2	\$ 225,169,169
Commercial Insurance	868	21.6	\$ 82,883,269
Self Pay	70	1.7	\$ 4,605,986
Workers Compensation	14	0.3	\$ 1,606,498
Other	42	1.0	\$ 4,052,368
Total	4,011	100.0	\$ 318,317,289

Table 37: Primary Payer and Charges for Non-Fatal ED ABI, Kentucky, 2015

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	1,818	67.7	\$ 6,595,309
Commercial Insurance	647	24.1	\$ 2,062,281
Self Pay	136	5.1	\$ 405,824
Workers Compensation	45	1.7	\$ 51,100
Other	41	1.5	\$ 156,870
Total	2,687	100.0	\$ 9,271,384

Table 38: Non-Fatal SCI by Age Group, Kentucky, 2015

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	3	0.0	1.1	0	0.0	0.0	3	100.0	1.1
5-14	5	125.0	0.9	4	44.4	0.7	9	100.0	1.6
15-24	17	58.6	2.8	12	41.4	2.0	29	100.0	4.9
25-44	36	59.0	3.2	25	41.0	2.2	61	100.0	5.4
45-64	73	63.5	6.1	42	36.5	3.5	115	100.0	9.7
65+	55	64.7	8.2	30	35.3	4.5	85	100.0	12.6
Total	189	62.6	4.3	113	37.4	2.6	302	100.0	6.8

Table 39: Non-Fatal SCI by Gender, Kentucky, 2015

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	125	65.1	5.7	67	34.9	3.1	192	100.0	8.8
Female	64	58.2	2.8	46	41.8	2.0	110	100.0	4.9
Total	189	62.6	4.3	113	37.4	2.6	302	100.0	6.8

Table 40: Leading Causes of Non-Fatal SCI, Kentucky, 2015

Mechanism of Injury	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Motor vehicle traffic crash	43	66.2	1.0	22	33.8	0.5	65	100.0	1.5
Fall	81	60.4	1.8	53	39.6	1.2	134	100.0	3.0
Non-traffic land transportation	4	57.1	0.1	3	42.9	0.1	7	100.0	0.2
Struck by or against object or person	6	46.2	0.1	7	53.8	0.2	13	100.0	0.3
Firearm	5	100.0	0.1	0	0.0	0.0	5	100.0	0.1
Other	13	61.9	0.3	8	38.1	0.2	21	100.0	0.5
Unknown (missing E-code)	37	64.9	0.8	20	35.1	0.5	57	100.0	1.3
Total	189	62.6	4.3	113	37.4	2.6	302	100.0	6.8

Table 41: Length of Stay for Non-Fatal Inpatient SCI, Kentucky, 2015

Length of Stay	Number	Percent*
1 day	7	3.7
More than one day but less than 1 week	64	33.9
1 week to less than 2 weeks	70	37.0
2 weeks to less than 3 weeks	20	10.6
3 weeks to less than 4 weeks	12	6.3
4 weeks or more	16	8.5
Total	189	100.0

Table 42: Discharge Disposition for Non-Fatal SCI, Kentucky, 2015

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	51	27.0	65	57.5
Home health	10	5.3	0	0.0
Skilled nursing facility (SNF)	26	13.8	1	0.9
Inpatient-other	3	1.6	37	32.7
Rehab	82	43.4	0	0.0
Other	17	9.0	10	8.8
Total	189	100.0	113	100.0

Table 43: Primary Payer and Charges for Non-Fatal Inpatient SCI, Kentucky, 2015

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	122	64.6	\$ 17,175,867
Commercial Ins	44	23.3	\$ 7,610,317
Workers Compensation	5	2.6	\$ 1,293,150
Self Pay	0	0.0	\$ -
Other	18	9.5	\$ 4,059,543
Total	189	100.0	\$30,138,876

Table 44: Primary Payer and Charges for Non-Fatal ED SCI, Kentucky, 2015

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	81	71.7	\$ 506,847
Commercial Ins	10	8.8	\$ 72,586
Workers Compensation	6	5.3	\$ 24,347
Self Pay	4	3.5	\$ 8,369
Other	12	10.6	\$ 92,510
Total	113	100.0	\$704,658

Table 45: Non-Fatal Stroke by Age Group, Kentucky, 2015

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	35	0.0	12.6	16	0.0	5.8	51	100.0	18.4
5-14	27	192.9	4.8	14	34.1	2.5	41	100.0	7.3
15-24	83	48.8	13.9	87	51.2	14.6	170	100.0	28.5
25-44	1,047	55.6	92.9	835	44.4	74.1	1,882	100.0	166.9
45-64	7,540	65.4	633.9	3,991	34.6	335.5	11,531	100.0	969.4
65+	17,005	71.4	2527.6	6,795	28.6	1010.0	23,800	100.0	3537.6
Total	25,737	68.7	581.6	11,738	31.3	265.3	37,475	100.0	846.9

Table 46: Non-Fatal Stroke by Gender, Kentucky, 2015

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	12,213	69.7	560.5	5,313	30.3	243.8	17,526	100.0	804.3
Female	13,524	67.8	602.1	6,425	32.2	286.1	19,949	100.0	888.2
Total	25,737	68.7	581.6	11,738	31.3	265.3	37,475	100.0	846.9

Table 47: Length of Stay for Non-Fatal Inpatient Stroke, Kentucky, 2015

Length of Stay	Number	Percent*
1 day	3745	14.6
More than one day but less than 1 week	14780	57.4
1 week to less than 2 weeks	4946	19.2
2 weeks to less than 3 weeks	1299	5.0
3 weeks to less than 4 weeks	482	1.9
4 weeks or more	485	1.9
Total	25737	100.0

Table 48: Discharge Disposition for Non-Fatal Stroke, Kentucky, 2015

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	11,469	44.6	7,355	55.6
Home health	3,533	13.7	197	0.0
Skilled nursing facility (SNF)	5,218	20.3	321	0.0
Inpatient-other	782	3.0	3,004	38.3
Intermediate Care Facility	258	1.0	31	2.5
Rehab	2,696	10.5	60	0.5
Other	1,781	6.9	770	3.7
Total	25,737	100.0	11738	100.0

Table 49: Primary Payer and Charges for Non-Fatal Inpatient Stroke, Kentucky, 2015

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	21225	82.5	\$ 931,208,567
Commercial Ins	4032	15.7	\$ 235,318,037
Workers Compensation	29	0.1	\$ 1,225,667
Self Pay	199	0.8	\$ 10,169,759
Other	252	1.0	\$ 16,024,190
Total	25,737	100.0	\$1,193,946,220

Table 50: Primary Payer and Charges for Non-Fatal ED Stroke, Kentucky, 2015

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	9397	80.1	\$ 76,463,649
Commercial Ins	2002	17.1	\$ 18,275,719
Workers Compensation	16	0.1	\$ 132,984
Self Pay	153	1.3	\$ 1,330,501
Other	170	1.4	\$ 1,159,080
Total	11,738	100.0	\$97,361,932

Table 51: Incidence of All Inpatient Stroke* by County, Sorted by County, Kentucky, 2015

*Includes inpatient deaths as well as non-fatal inpatient cases

County	Age-Adjusted Crude				County	Age-Adjusted Crude				County	Age-Adjusted Crude			
	Freq	Percent	Rate	Rate		Freq	Percent	Rate	Rate		Freq	Percent	Rate	Rate
Adair	115	0.4	484.7	604.4	Grant	234	0.9	947.6	945.2	McLean	60	0.2	491.1	630.8
Allen	120	0.4	491.3	581.4	Graves	284	1.0	581.5	758.9	Meade	116	0.4	390.1	415.4
Anderson	107	0.4	413.6	486.8	Grayson	241	0.9	739.7	919.1	Menifee	41	0.2	462.0	644.9
Ballard	64	0.2	563.0	779.4	Green	84	0.3	521.0	762.9	Mercer	153	0.6	542.0	714.7
Barren	214	0.8	383.4	491.2	Greenup	223	0.8	433.1	618.3	Metcalfe	60	0.2	458.8	605.5
Bath	97	0.4	639.7	793.3	Hancock	51	0.2	496.4	586.8	Monroe	111	0.4	771.6	1040.6
Bell	224	0.8	615.8	819.4	Hardin	526	1.9	474.6	494.2	Montgomery	145	0.5	445.8	525.2
Boone	685	2.5	604.2	536.4	Harlan	212	0.8	613.4	765.3	Morgan	55	0.2	349.4	414.3
Bourbon	127	0.5	479.4	631.3	Harrison	106	0.4	433.1	564.9	Muhlenberg	222	0.8	538.4	711.9
Boyd	282	1.0	423.8	583.6	Hart	107	0.4	460.8	579.8	Nelson	226	0.8	449.9	500.8
Boyle	161	0.6	417.9	540.1	Henderson	177	0.6	317.8	381.4	Nicholas	48	0.2	489.3	673.1
Bracken	39	0.1	385.6	468.7	Henry	87	0.3	485.1	557.0	Ohio	140	0.5	446.6	578.1
Breathitt	104	0.4	677.1	771.3	Hickman	32	0.1	397.0	693.8	Oldham	246	0.9	420.0	379.2
Breckinridge	133	0.5	485.3	664.4	Hopkins	258	0.9	425.8	558.2	Owen	73	0.3	522.8	680.3
Bullitt	344	1.3	412.3	437.1	Jackson	105	0.4	641.2	786.4	Owsley	55	0.2	985.6	1232.9
Butler	66	0.2	395.4	510.1	Jefferson	4871	17.9	544.5	637.9	Pendleton	119	0.4	737.9	825.9
Caldwell	66	0.2	369.0	520.5	Jessamine	299	1.1	518.8	575.4	Perry	398	1.5	1197.1	1443.9
Calloway	155	0.6	347.5	404.3	Johnson	234	0.9	817.6	1009.7	Pike	526	1.9	667.7	851.2
Campbell	638	2.3	609.4	693.0	Kenton	1091	4.0	634.9	661.2	Powell	102	0.4	691.7	831.4
Carlisle	41	0.2	555.4	841.2	Knox	149	0.5	778.4	949.5	Pulaski	456	1.7	545.1	714.9
Carroll	102	0.4	826.8	953.4	Laurel	194	0.7	497.1	611.4	Robertson	10	0.0	334.2	467.7
Carter	154	0.6	457.1	567.1	Lawrence	72	0.3	390.9	457.3	Rockcastle	91	0.3	444.6	537.1
Casey	114	0.4	522.2	721.2	Lee	60	0.2	662.0	888.6	Rowan	137	0.5	557.5	573.4
Christian	237	0.9	362.0	323.3	Leslie	85	0.3	601.3	793.6	Russell	98	0.4	402.1	554.9
Clark	257	0.9	578.2	718.7	Letcher	251	0.9	856.5	1085.5	Scott	195	0.7	412.3	372.0
Clay	202	0.7	852.6	961.3	Lewis	50	0.2	283.7	365.4	Shelby	228	0.8	449.8	499.7
Clinton	46	0.2	334.0	452.1	Lincoln	171	0.6	549.1	699.0	Simpson	89	0.3	414.8	494.3
Crittenden	76	0.3	566.3	827.6	Livingston	81	0.3	589.5	869.5	Spencer	86	0.3	512.7	480.6
Cumberland	49	0.2	480.8	725.0	Logan	152	0.6	459.9	564.9	Taylor	220	0.8	681.6	865.5
Daviess	734	2.7	598.8	739.5	Lyon	61	0.2	432.1	734.4	Todd	32	0.1	223.2	255.4
Edmonson	67	0.2	384.4	558.0	Madison	406	1.5	460.0	462.3	Trigg	46	0.2	227.4	323.2
Elliott	32	0.1	319.4	418.4	Magoffin	98	0.4	687.7	765.2	Trimble	43	0.2	401.5	490.4
Estill	137	0.5	737.2	953.0	Marion	83	0.3	351.2	428.6	Union	34	0.1	196.4	225.9
Fayette	1447	5.3	472.8	460.1	Marshall	246	0.9	523.6	791.0	Warren	608	2.2	505.9	494.9
Fleming	134	0.5	776.3	915.5	Martin	85	0.3	625.2	690.7	Washington	62	0.2	389.9	514.0
Floyd	367	1.3	784.2	972.0	Mason	103	0.4	469.2	602.4	Wayne	94	0.3	354.3	459.3
Franklin	295	1.1	465.6	585.6	McCracken	574	2.1	626.0	882.8	Webster	58	0.2	354.0	440.4
Fulton	29	0.1	357.5	464.9	McCreary	113	0.4	565.2	632.1	Whitley	384	1.4	935.4	1062.9
Gallatin	88	0.3	1069.9	1019.0						Wolfe	59	0.2	650.6	812.8
Garrard	111	0.4	507.2	644.0						Woodford	128	0.5	414.9	496.3

Table 52: Incidence of All ED Stroke* by County, Sorted by County, Kentucky, 2015

*Includes ED deaths as well as non-fatal ED cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Adair	71	0.6	289.2	373.2	Grant	128	1.1	524.5	517.0	McLean	47	0.4	349.6	494.1
Allen	55	0.5	228.7	266.5	Graves	122	1.0	256.5	326.0	Meade	19	0.2	64.5	68.0
Anderson	46	0.4	187.4	209.3	Grayson	120	1.0	381.6	457.6	Menifee	28	0.2	308.0	440.4
Ballard	16	0.1	146.4	194.8	Green	61	0.5	429.2	554.0	Mercer	83	0.7	305.7	387.7
Barren	120	1.0	220.2	275.4	Greenup	107	0.9	214.1	296.7	Metcalfe	32	0.3	252.2	322.9
Bath	43	0.4	290.0	351.7	Hancock	31	0.3	305.9	356.7	Monroe	48	0.4	360.9	450.0
Bell	151	1.3	447.9	552.4	Hardin	205	1.7	180.7	192.6	Montgomery	92	0.8	289.8	333.2
Boone	259	2.2	223.4	202.8	Harlan	114	1.0	339.2	411.5	Morgan	51	0.4	316.2	384.2
Bourbon	60	0.5	240.7	298.3	Harrison	79	0.7	321.5	421.0	Muhlenberg	110	0.9	291.8	352.8
Boyd	169	1.4	270.9	349.7	Hart	58	0.5	251.9	314.3	Nelson	169	1.4	348.4	374.5
Boyle	86	0.7	227.2	288.5	Henderson	129	1.1	220.9	278.0	Nicholas	25	0.2	265.1	350.6
Bracken	18	0.2	171.4	216.3	Henry	51	0.4	280.8	326.5	Ohio	90	0.8	291.7	371.7
Breathitt	77	0.7	477.4	571.0	Hickman	*	-	-	-	Oldham	91	0.8	154.7	140.3
Breckinridge	79	0.7	299.1	394.6	Hopkins	220	1.9	377.2	476.0	Owen	33	0.3	253.3	307.5
Bullitt	91	0.8	107.7	115.6	Jackson	53	0.4	336.6	396.9	Owsley	27	0.2	482.2	605.2
Butler	28	0.2	181.8	216.4	Jefferson	1355	11.5	154.2	177.4	Pendleton	58	0.5	344.6	402.6
Caldwell	45	0.4	249.0	354.9	Jessamine	56	0.5	98.3	107.8	Perry	176	1.5	539.9	638.5
Calloway	124	1.1	278.5	323.4	Johnson	94	0.8	353.8	405.6	Pike	147	1.2	193.6	237.9
Campbell	213	1.8	201.4	231.4	Kenton	334	2.8	189.1	202.4	Powell	54	0.5	405.5	440.1
Carlisle	6	0.1	107.5	123.1	Knott	57	0.5	289.7	363.2	Pulaski	166	1.4	204.3	260.3
Carroll	49	0.4	414.3	458.0	Knox	135	1.1	360.0	425.5	Robertson	8	0.1	233.7	374.2
Carter	87	0.7	274.5	320.3	Larue	31	0.3	179.1	217.7	Rockcastle	78	0.7	386.9	460.4
Casey	54	0.5	267.6	341.6	Laurel	173	1.5	248.6	287.9	Rowan	78	0.7	318.3	326.5
Christian	119	1.0	184.1	162.3	Lawrence	62	0.5	327.7	393.8	Russell	55	0.5	235.5	311.4
Clark	125	1.1	293.4	349.6	Lee	37	0.3	441.2	548.0	Scott	101	0.9	206.4	192.7
Clay	126	1.1	528.4	599.6	Leslie	74	0.6	526.6	690.9	Shelby	102	0.9	201.6	223.5
Clinton	34	0.3	255.3	334.2	Letcher	116	1.0	406.2	501.7	Simpson	48	0.4	227.3	266.6
Crittenden	33	0.3	258.5	359.4	Lewis	28	0.2	179.3	204.6	Spencer	34	0.3	203.3	190.0
Cumberland	22	0.2	229.0	325.5	Lincoln	103	0.9	340.7	421.0	Taylor	118	1.0	376.6	464.2
Daviess	432	3.7	348.0	435.2	Livingston	25	0.2	188.8	268.4	Todd	21	0.2	151.0	167.6
Edmonson	16	0.1	94.4	133.3	Logan	89	0.8	266.8	330.7	Trigg	106	0.9	546.0	744.7
Elliott	8	0.1	84.9	104.6	Lyon	30	0.3	215.3	361.2	Trimble	17	0.1	157.8	193.9
Estill	56	0.5	307.9	389.6	Madison	255	2.2	288.6	290.4	Union	46	0.4	274.1	305.6
Fayette	409	3.5	134.1	130.1	Magoffin	36	0.3	242.2	281.1	Warren	161	1.4	131.8	131.1
Fleming	68	0.6	368.5	464.6	Marion	70	0.6	292.4	361.5	Washington	58	0.5	374.8	480.8
Floyd	169	1.4	372.7	447.6	Marshall	107	0.9	241.7	344.0	Wayne	67	0.6	243.5	327.4
Franklin	180	1.5	289.4	357.3	Martin	43	0.4	313.7	349.4	Webster	44	0.4	274.7	334.1
Fulton	10	0.1	143.5	160.3	Mason	66	0.6	314.1	386.0	Whitley	157	1.3	385.2	434.6
Gallatin	33	0.3	388.2	382.1	McCracken	159	1.3	190.6	244.5	Wolfe	43	0.4	474.5	592.4
Garrard	43	0.4	197.1	249.5	McCreary	28	0.2	144.3	156.6	Woodford	46	0.4	144.8	178.3

* At least one but fewer than five

- Percentage or rate suppressed to prevent disclosure of the value on which it was based

Table 53: Incidence of All Inpatient Stroke* by County, Sorted by Frequency, Kentucky, 2015

*Includes inpatient deaths as well as non-fatal inpatient cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude				Rate	Crude				Rate	Crude
Jefferson	4871	17.9	544.5	637.9	Knox	194	0.7	497.1	611.4	Gallatin	88	0.3	1069.9	1019.0
Fayette	1447	5.3	472.8	460.1	Henderson	177	0.6	317.8	381.4	Henry	87	0.3	485.1	557.0
Kenton	1091	4.0	634.9	661.2	Lincoln	171	0.6	549.1	699.0	Spencer	86	0.3	512.7	480.6
Daviess	734	2.7	598.8	739.5	Boyle	161	0.6	417.9	540.1	Leslie	85	0.3	601.3	793.6
Boone	685	2.5	604.2	536.4	Calloway	155	0.6	347.5	404.3	Martin	85	0.3	625.2	690.7
Campbell	638	2.3	609.4	693.0	Carter	154	0.6	457.1	567.1	Green	84	0.3	521.0	762.9
Warren	608	2.2	505.9	494.9	Mercer	153	0.6	542.0	714.7	Marion	83	0.3	351.2	428.6
McCracken	574	2.1	626.0	882.8	Logan	152	0.6	459.9	564.9	Livingston	81	0.3	589.5	869.5
Hardin	526	1.9	474.6	494.2	Knott	149	0.5	778.4	949.5	Crittenden	76	0.3	566.3	827.6
Pike	526	1.9	667.7	851.2	Montgomery	145	0.5	445.8	525.2	Owen	73	0.3	522.8	680.3
Pulaski	456	1.7	545.1	714.9	Ohio	140	0.5	446.6	578.1	Larrence	72	0.3	390.9	457.3
Madison	406	1.5	460.0	462.3	Estill	137	0.5	737.2	953.0	Edmonson	67	0.2	384.4	558.0
Perry	398	1.5	1197.1	1443.9	Rowan	137	0.5	557.5	573.4	Butler	66	0.2	395.4	510.1
Laurel	396	1.5	564.5	659.0	Fleming	134	0.5	776.3	915.5	Caldwell	66	0.2	369.0	520.5
Whitley	384	1.4	935.4	1062.9	Breckinridge	133	0.5	485.3	664.4	Ballard	64	0.2	563.0	779.4
Floyd	367	1.3	784.2	972.0	Woodford	128	0.5	414.9	496.3	Washington	62	0.2	389.9	514.0
Bullitt	344	1.3	412.3	437.1	Bourbon	127	0.5	479.4	631.3	Lyon	61	0.2	432.1	734.4
Jessamine	299	1.1	518.8	575.4	Allen	120	0.4	491.3	581.4	Lee	60	0.2	662.0	888.6
Franklin	295	1.1	465.6	585.6	Pendleton	119	0.4	737.9	825.9	McLean	60	0.2	491.1	630.8
Graves	284	1.0	581.5	758.9	Meade	116	0.4	390.1	415.4	Metcalfe	60	0.2	458.8	605.5
Boyd	282	1.0	423.8	583.6	Adair	115	0.4	484.7	604.4	Wolfe	59	0.2	650.6	812.8
Hopkins	258	0.9	425.8	558.2	Casey	114	0.4	522.2	721.2	Webster	58	0.2	354.0	440.4
Clark	257	0.9	578.2	718.7	McCreary	113	0.4	565.2	632.1	Morgan	55	0.2	349.4	414.3
Letcher	251	0.9	856.5	1085.5	Garrard	111	0.4	507.2	644.0	Owsley	55	0.2	985.6	1232.9
Marshall	246	0.9	523.6	791.0	Monroe	111	0.4	771.6	1040.6	Hancock	51	0.2	496.4	586.8
Oldham	246	0.9	420.0	379.2	Anderson	107	0.4	413.6	486.8	Lewis	50	0.2	283.7	365.4
Grayson	241	0.9	739.7	919.1	Hart	107	0.4	460.8	579.8	Cumberland	49	0.2	480.8	725.0
Christian	237	0.9	362.0	323.3	Harrison	106	0.4	433.1	564.9	Nicholas	48	0.2	489.3	673.1
Grant	234	0.9	947.6	945.2	Jackson	105	0.4	641.2	786.4	Clinton	46	0.2	334.0	452.1
Johnson	234	0.9	817.6	1009.7	Breathitt	104	0.4	677.1	771.3	Trigg	46	0.2	227.4	323.2
Shelby	228	0.8	449.8	499.7	Mason	103	0.4	469.2	602.4	Trimble	43	0.2	401.5	490.4
Nelson	226	0.8	449.9	500.8	Carrroll	102	0.4	826.8	953.4	Carlisle	41	0.2	555.4	841.2
Bell	224	0.8	615.8	819.4	Powell	102	0.4	691.7	831.4	Menifee	41	0.2	462.0	644.9
Greenup	223	0.8	433.1	618.3	Larue	101	0.4	534.4	709.2	Bracken	39	0.1	385.6	468.7
Muhlenberg	222	0.8	538.4	711.9	Magoffin	98	0.4	687.7	765.2	Union	34	0.1	196.4	225.9
Taylor	220	0.8	681.6	865.5	Russell	98	0.4	402.1	554.9	Elliott	32	0.1	319.4	418.4
Barren	214	0.8	383.4	491.2	Bath	97	0.4	639.7	793.3	Hickman	32	0.1	397.0	693.8
Harlan	212	0.8	613.4	765.3	Wayne	94	0.3	354.3	459.3	Todd	32	0.1	223.2	255.4
Clay	202	0.7	852.6	961.3	Rockcastle	91	0.3	444.6	537.1	Fulton	29	0.1	357.5	464.9
Scott	195	0.7	412.3	372.0	Simpson	89	0.3	414.8	494.3	Robertson	10	0.0	334.2	467.7

Table 54: Incidence of All ED Stroke* by County, Sorted by Frequency, Kentucky, 2015

*Includes ED deaths as well as non-fatal ED cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Jefferson	1355	11.5	154.2	177.4	Scott	101	0.9	206.4	192.7	McLean	47	0.4	349.6	494.1
Daviess	432	3.7	348.0	435.2	Johnson	94	0.8	353.8	405.6	Anderson	46	0.4	187.4	209.3
Fayette	409	3.5	134.1	130.1	Montgomery	92	0.8	289.8	333.2	Union	46	0.4	274.1	305.6
Kenton	334	2.8	189.1	202.4	Bullitt	91	0.8	107.7	115.6	Woodford	46	0.4	144.8	178.3
Boone	259	2.2	223.4	202.8	Oldham	91	0.8	154.7	140.3	Caldwell	45	0.4	249.0	354.9
Madison	255	2.2	288.6	290.4	Ohio	90	0.8	291.7	371.7	Webster	44	0.4	274.7	334.1
Hopkins	220	1.9	377.2	476.0	Logan	89	0.8	266.8	330.7	Bath	43	0.4	290.0	351.7
Campbell	213	1.8	201.4	231.4	Carter	87	0.7	274.5	320.3	Garrard	43	0.4	197.1	249.5
Hardin	205	1.7	180.7	192.6	Boyle	86	0.7	227.2	288.5	Martin	43	0.4	313.7	349.4
Franklin	180	1.5	289.4	357.3	Mercer	83	0.7	305.7	387.7	Wolfe	43	0.4	474.5	592.4
Perry	176	1.5	539.9	638.5	Breckinridge	79	0.7	299.1	394.6	Lee	37	0.3	441.2	548.0
Laurel	173	1.5	248.6	287.9	Harrison	79	0.7	321.5	421.0	Magoffin	36	0.3	242.2	281.1
Boyd	169	1.4	270.9	349.7	Rockcastle	78	0.7	386.9	460.4	Clinton	34	0.3	255.3	334.2
Floyd	169	1.4	372.7	447.6	Rowan	78	0.7	318.3	326.5	Spencer	34	0.3	203.3	190.0
Nelson	169	1.4	348.4	374.5	Breathitt	77	0.7	477.4	571.0	Crittenden	33	0.3	258.5	359.4
Pulaski	166	1.4	204.3	260.3	Leslie	74	0.6	526.6	690.9	Gallatin	33	0.3	388.2	382.1
Warren	161	1.4	131.8	131.1	Adair	71	0.6	289.2	373.2	Owen	33	0.3	253.3	307.5
McCracken	159	1.3	190.6	244.5	Marion	70	0.6	292.4	361.5	Metcalfe	32	0.3	252.2	322.9
Whitley	157	1.3	385.2	434.6	Fleming	68	0.6	368.5	464.6	Hancock	31	0.3	305.9	356.7
Bell	151	1.3	447.9	552.4	Wayne	67	0.6	243.5	327.4	Larue	31	0.3	179.1	217.7
Pike	147	1.2	193.6	237.9	Mason	66	0.6	314.1	386.0	Lyon	30	0.3	215.3	361.2
Knox	135	1.1	360.0	425.5	Lawrence	62	0.5	327.7	393.8	Butler	28	0.2	181.8	216.4
Henderson	129	1.1	220.9	278.0	Green	61	0.5	429.2	554.0	Lewis	28	0.2	179.3	204.6
Grant	128	1.1	524.5	517.0	Bourbon	60	0.5	240.7	298.3	McCreary	28	0.2	144.3	156.6
Clay	126	1.1	528.4	599.6	Hart	58	0.5	251.9	314.3	Menifee	28	0.2	308.0	440.4
Clark	125	1.1	293.4	349.6	Pendleton	58	0.5	344.6	402.6	Owsley	27	0.2	482.2	605.2
Calloway	124	1.1	278.5	323.4	Washington	58	0.5	374.8	480.8	Livingston	25	0.2	188.8	268.4
Graves	122	1.0	256.5	326.0	Knott	57	0.5	289.7	363.2	Nicholas	25	0.2	265.1	350.6
Barren	120	1.0	220.2	275.4	Estill	56	0.5	307.9	389.6	Cumberland	22	0.2	229.0	325.5
Grayson	120	1.0	381.6	457.6	Jessamine	56	0.5	98.3	107.8	Todd	21	0.2	151.0	167.6
Christian	119	1.0	184.1	162.3	Allen	55	0.5	228.7	266.5	Meade	19	0.2	64.5	68.0
Taylor	118	1.0	376.6	464.2	Russell	55	0.5	235.5	311.4	Bracken	18	0.2	171.4	216.3
Letcher	116	1.0	406.2	501.7	Casey	54	0.5	267.6	341.6	Trimble	17	0.1	157.8	193.9
Harlan	114	1.0	339.2	411.5	Powell	54	0.5	405.5	440.1	Ballard	16	0.1	146.4	194.8
Muhlenberg	110	0.9	291.8	352.8	Jackson	53	0.4	336.6	396.9	Edmonson	16	0.1	94.4	133.3
Greenup	107	0.9	214.1	296.7	Henry	51	0.4	280.8	326.5	Fulton	10	0.1	143.5	160.3
Marshall	107	0.9	241.7	344.0	Morgan	51	0.4	316.2	384.2	Elliott	8	0.1	84.9	104.6
Trigg	106	0.9	546.0	744.7	Carroll	49	0.4	414.3	458.0	Robertson	8	0.1	233.7	374.2
Lincoln	103	0.9	340.7	421.0	Monroe	48	0.4	360.9	450.0	Carlisle	6	0.1	107.5	123.1
Shelby	102	0.9	201.6	223.5	Simpson	48	0.4	227.3	266.6	Hickman	*	-	-	-

* At least one but fewer than five

- Percentage or rate suppressed to prevent disclosure of the value on which it was based

Appendix B: Methods, Abbreviations, Definitions and Data

Methods

Data used for surveillance were received electronically. Hospital Discharge Data (HDD) files from the Kentucky Office of Health Policy are routinely received by the Kentucky Injury Prevention and Research Center (KIPRC) for surveillance purposes. These files now include both emergency department billing data as well as inpatient hospitalization billing data. The calendar year of 2015 marks the initial use of new ICD-10-CM coding on hospital medical records. This new coding began 10/2015, leaving the year with three quarters of the old coding and a final quarter with the new coding. General equivalency mappings (GEMs) have been used to translate ICD-9 coding to ICD-10 coding but further discussion and exploration is needed to ascertain the coding going forward.

Crude incidence rates were calculated for each injury type by dividing the number of injuries by 4,425,092, the most recent estimated population of Kentucky according to the Kentucky State Data Center, and then multiplying by 100,000. This figure represents the number of TBI, ABI, SCI or stroke that occurred per 100,000 residents of Kentucky. Age-adjusted rates were calculated using the Year 2000 Standard Population. Data analysis, including mapping, was performed using SAS Version 9.2.

Abbreviations

- TBI – Traumatic Brain Injury
- ABI – Acquired Brain Injury
- SCI – Spinal Cord Injury
- CNSI – Central Nervous System Injury
- MVTC – Motor Vehicle Traffic Crash
- ETS – Exposure to Toxic Substances
- KIPRC – Kentucky Injury Prevention and Research Center

Identification of Cases

Traumatic brain injury case definition

The Centers for Disease Control and Prevention (CDC) have established standards for TBI case identification (CDC, 1995). Hospitals commonly use ICD-9 codes for injury coding. Definitions are being developed using the new ICD-10 coding. The following ICD-9 diagnosis codes (n-codes) were used for identifying TBI in HDD:

- Fracture of vault or base of skull: 800.0-801.9
- Other, unqualified, and multiple fractures of skull: 803.0-804.9
- Intracranial injury, including concussion, cerebral laceration, subdural hemorrhage, unspecified intracranial injury, etc: 850.0-854.1
- Head injury, unspecified: 959.01

With the inclusion of the following ICD-10 codes to identify records coded after 09/2016:

- Fracture of vault or base of skull: S02.0 - S02.1
- Fractures of other specified skull and facial bones or unspecified fracture of skull: S02.8, S02.91
- Intracranial injury, including concussion, cerebral edema, diffuse and focal traumatic brain injury, epidural/subdural/subarachnoid hemorrhage and unspecified intracranial injury: S06.0-S06.9
- Crushing injury of skull: S07.1
- Shaken infant syndrome: T74.4

If one or more of these codes was found in any of the diagnosis code fields in the HDD, the record was determined to be a TBI.

Acquired brain injury case definition

In addition to CDC-defined TBI, there are many brain injuries that have non-traumatic etiologies. These we have classified as ABI. Because these diagnoses are not included in the CDC definition of TBI, they have been linked and analyzed separately. These conditions were also identified by ICD-9 diagnosis codes, as follows:

- Anoxia: 348.1, 668.2, 669.4, 768.1, 768.5, 768.6, 768.9, 799.01, 994.1, 994.7, 997.0
- Allergy/Anaphylaxis: 995.0, 999.4, 999.5
- Acute Medical Clinical Incidents: 320.0-320.9, 321.0-321.8
- Toxic Substances: 964.2, 967.0-967.9, 968.0-968.9, 980.0-980.9, 985, 986, 988.0-988.2, 989.0, 995.4, 995.55, 998.0

With the inclusion of the following ICD-10 codes to identify records coded after 09/2016:

- Anoxia: G93, O29.1, O74.3, O75.4, O89.2, P21.0, P21.1, P21.9, T71, T751
- Allergy/Anaphylaxis: T78.0, T78.2, T80.5, T80.6, T88.1, T88.6
- Acute Medical Clinical Incidents: G00.0-G00.3, G00.8, G01, G07, G02.0, G02.1, G02.8, G04.2, G04.8, G05.0, G05.1, G06.2
- Toxic Substances: G03.8, G03.9, G97.1, G97.2, G97.8, G97.9, N14.3, R29.1, T40.5, T41.0-T41.4, T42.3, T42.4, T42.6, T42.7, T45.5, T49.0, T51.0-T51.3, T51.8, T51.9, T56.1-T56.8, T57.0, T57.2, T57.3, T57.8, T58, T60.4, T61.9, T62.0-T62.2, T62.8, T62.9, T64, T65.0, T65.8, T65.9, T81.1, T88.2, T88.5

Anoxia includes but is not limited to:

- brain damage related to hereditary and degenerative diseases of the central nervous system
- nervous system complications (related to medical care)
- drowning and nonfatal submersion
- asphyxia

If one or more of these codes was found in any of the diagnosis code fields in the HDD, the record was classified as an ABI.

Spinal cord injury case definition

The CDC defines SCI by the following ICD-9 diagnosis codes (CDC, 1995):

- Fracture of vertebral column with spinal cord injury: 806.0-806.9
- Spinal cord injury without evidence of spinal bone injury: 952.0-952.9

With the inclusion of the following ICD-10 codes to identify records coded after 09/2016:

- Concussion and edema of cervical/thoracic/lumbar and sacral spinal cord or other and unspecified injuries: S14.0, S14.1, S24.0, S24.1, S34.0, S34.1
- Injury of cauda equina: S34.3

For this report, SCI records had to contain one of these codes in one of the first three diagnosis code fields in the HDD.

Stroke case definition

The following ICD-9 diagnosis codes (n-codes) were used for identifying stroke cases in HDD:

- Hemorrhages (subarachnoid, intracerebral and other/unspecified): 430.0-432.9
- Occlusion (and stenosis) of cerebral and precerebral arteries: 433.0-434.9
- Transient cerebral ischemia: 435.0-435.9
- Acute, ill defined or late effects of cerebrovascular disease: 436.0-438.9

With the inclusion of the following ICD-10 codes to identify records coded after 09/2016:

- Hemorrhages (subarachnoid, intracerebral): I60, I61
- Cerebral infarction: I63
- Occlusion and stenosis of precerebral arteries (not resulting in cerebral infarction): I65
- Transient cerebral ischemic attacks: G45

If one or more of these codes was found in any of the diagnosis code fields in the HDD, the record was determined to be a stroke related hospital visit. It is anticipated that this definition will be fine tuned in future reports.

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