

CENTRAL NERVOUS SYSTEM INJURY IN KENTUCKY

Emergency Department Visits and Hospitalizations 2019

Prepared by: the Kentucky Injury Prevention and Research Center, University of Kentucky

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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 2018 for central nervous system injuries (CNSI) that include traumatic brain injuries (TBI), non-traumatic brain injuries (NTBI), spinal cord injuries (SCI) and cerebrovascular disease (stroke). **The numbers found in this report should only be used in comparison with reports after 2015 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 three out of four 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, NTBI, SCI and stroke case demographics, causes and outcomes
- TBI, NTBI and stroke case 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, NTBI, 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.

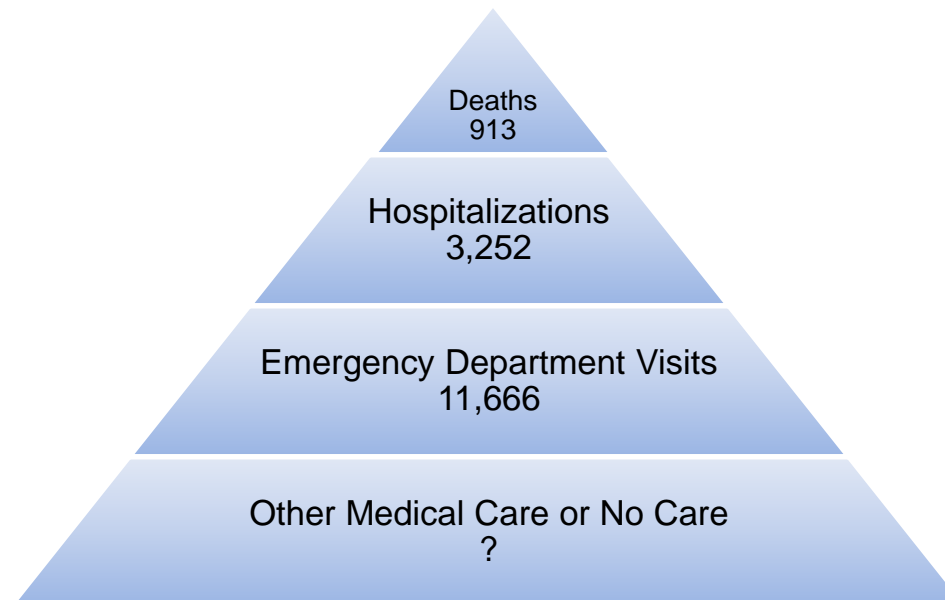
Contents and Organization

This report describes CNSI-related ED visits and hospitalizations in Kentucky for the calendar year 2018. 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 14,000 traumatic brain injuries and deaths occur each year. In 2019, 11,666 (78.2%) ED discharges and 3,252 (21.8%) hospitalization discharges (non-fatal) were recorded in Kentucky hospitals. In addition to these non-fatal incidents, there were 913 Kentucky residents who died from a TBI related injury. The following figure is a pyramid depicting the estimated average annual number of TBI-related ED visits, hospitalizations, and estimated deaths in Kentucky for 2019. 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, 2019



TBI in Kentucky, 2019:

- Almost 15,000 people visited Kentucky hospitals with a TBI related injury. Of those, 11,666 were treated and released from an ED and 3,252 were hospitalized.
- 2,216 TBIs occurred among children ages 0 to 14 years; ED visits accounted for more than 90% 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 (ED visits) and for adults 65 years or older.
- Falls resulted in the greatest number of TBI-related hospitalizations with a rate 2.4 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 almost 41 state residents per day being treated in Kentucky hospitals (ED and hospitalization).

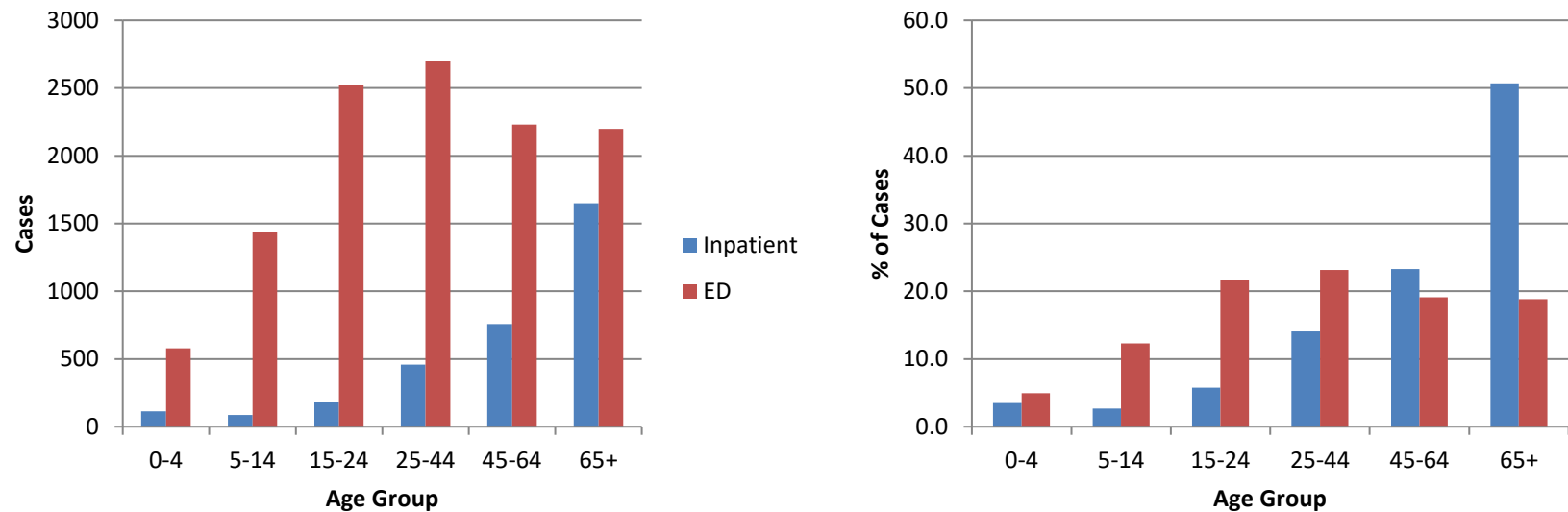
Our results indicate a need to focus prevention efforts on the following causes and target populations:

- Motor vehicle traffic crashes, especially among ages 15-24
- Falls, especially among ages 0-14 and 65 and older
- Anoxia (NTBI), especially among ages 45 and older
- Exposure to toxic substances (NTBI), 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, 2019

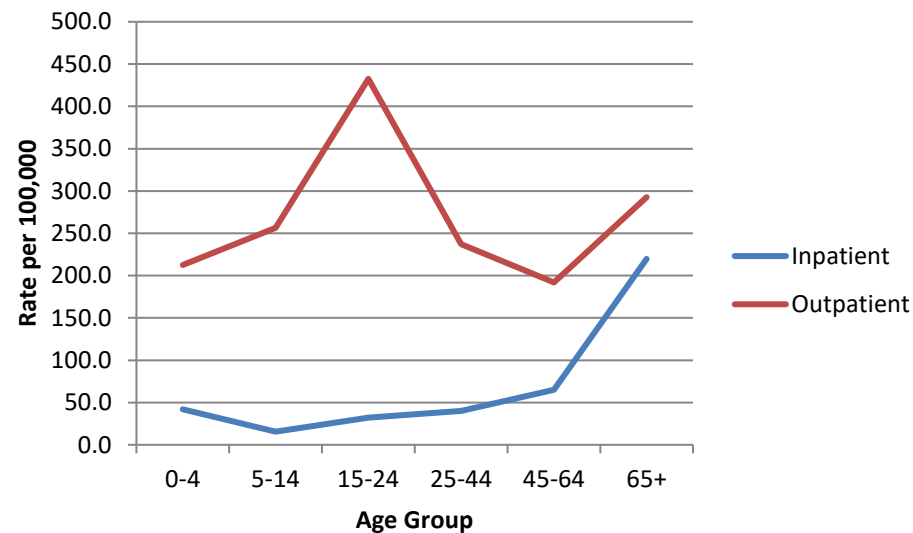
A non-fatal TBI related injury treated at a Kentucky hospital results in an *inpatient* admission for almost half of older adults (65 and older) TBI related injuries while over 9 out of 10 TBI related injuries in children (under the age of 15) are treated and released in the ED.



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 2019. The y axis represents the rate per 100,000 population. During 2019, young adults, ages 15 to 24 years had the highest rate of non-fatal TBI-related ED visits, 433 per 100,000 population. 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 (220 per 100,000).

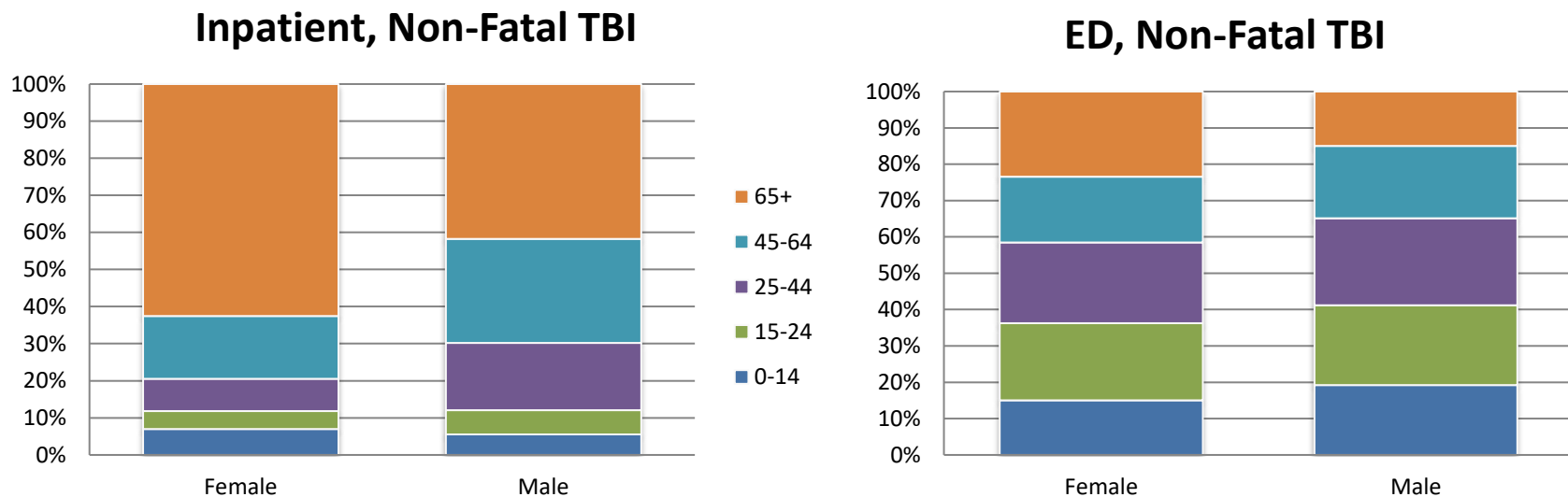
Figure 3: Rates of Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2019



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 2019. Overall 8,180 non-fatal TBIs occurred among males compared with 6,738 among females.

Figure 4: Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by Age Group and Gender, Kentucky, 2019



Over half of female, non-fatal TBI related inpatient admissions were over the age of 64 while 4 out of 10 men admitted for non-fatal hospitalization for TBI were over the age of 64.

TBI by Gender: Comparing the Rates

The following figure, **Figure 5**, is a graph depicting the rates of TBI-related ED visits and hospitalizations by gender. The y axis represents the rate per 100,000 population. Males from 15 to 24 years of age had the highest rates for TBI-related ED visits, 463 per 100,000. Rates were also high for females from 15 to 24 years of age, 401 per 100,000. Both males and females had high rates for ages 65 and older inpatient visits, 232 per 100,000 for males and 210 per 100,000 for females.

Figure 5: Rates of Non-Fatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by Gender, Kentucky, 2019

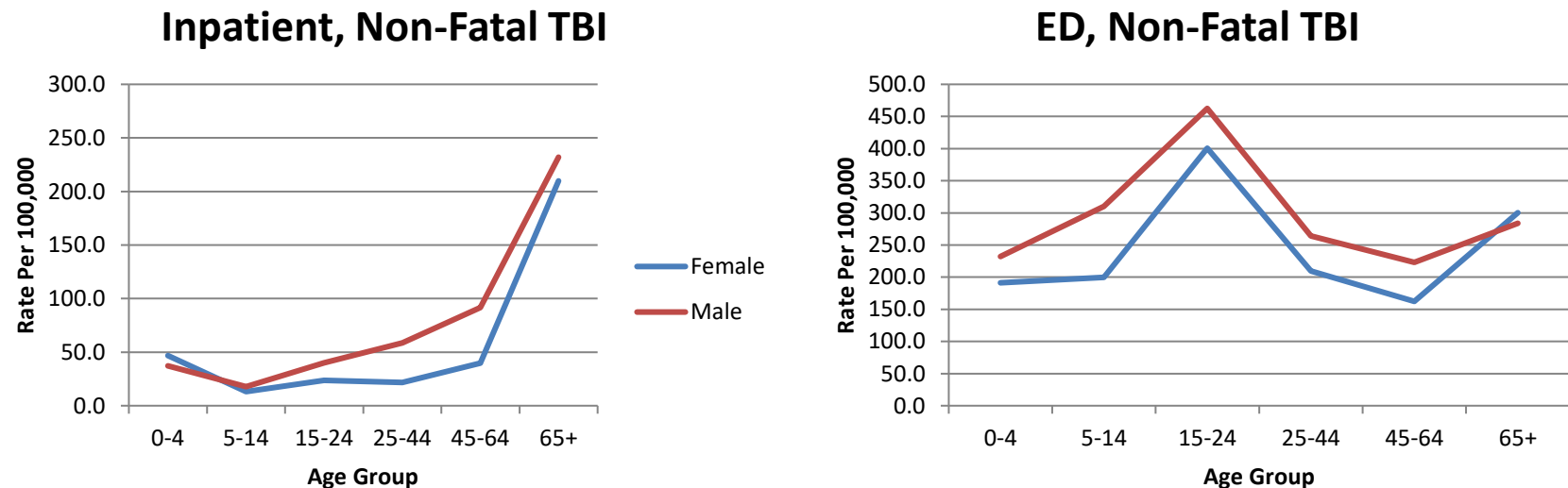
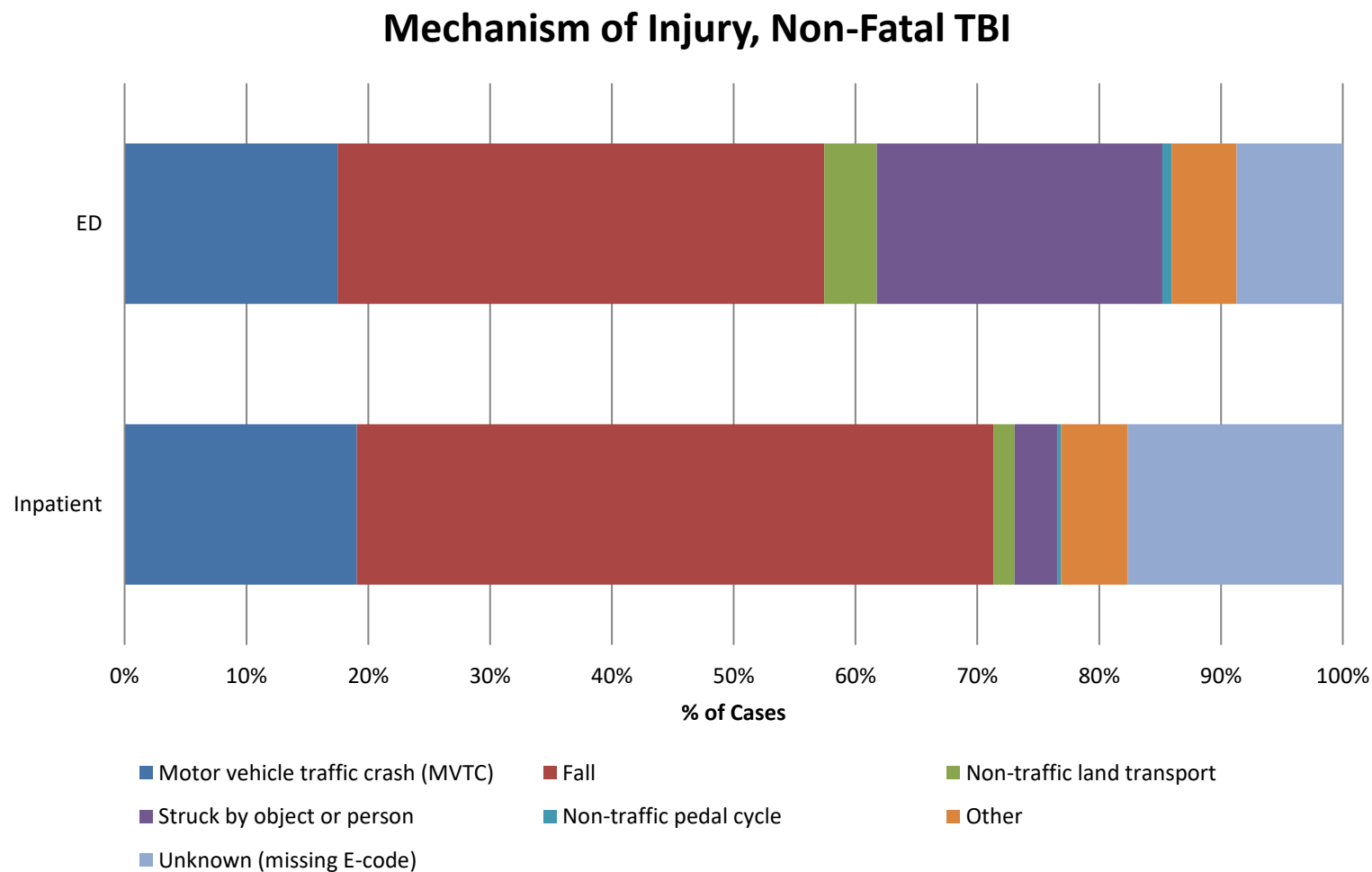


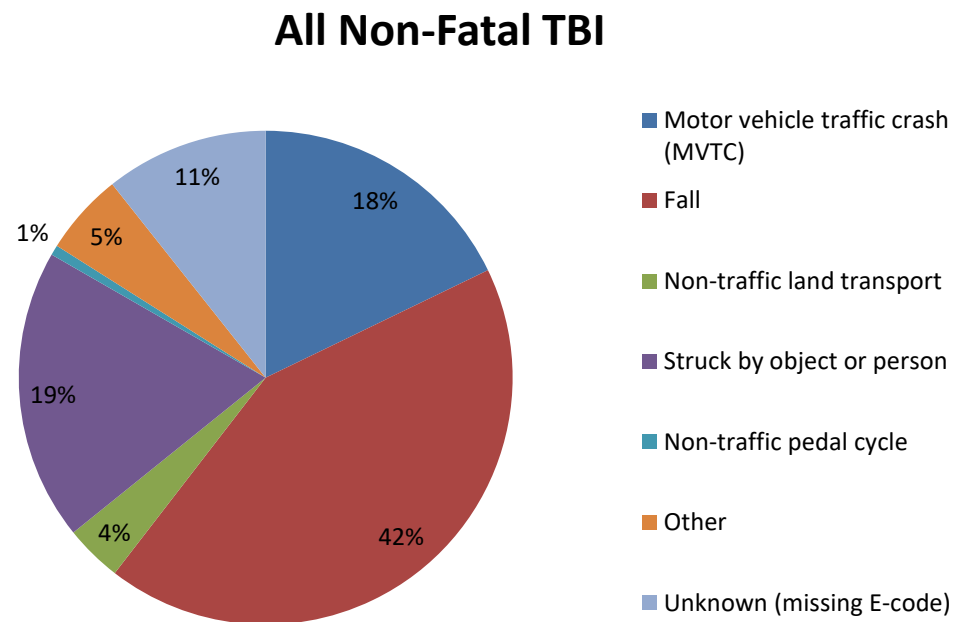
Figure 6: Non-Fatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, Kentucky, 2019



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 42% of all non-fatal TBI in Kentucky in 2019. The second leading known cause was motor vehicle traffic crashes (MVTC) which contributed 18% of all non-fatal TBI. With the change in coding still being translated on the surveillance side, there are a larger number of unknown codes for this year. This number is expected to be reduced and confidence in coding increase as consistent coding crosswalks are generated.

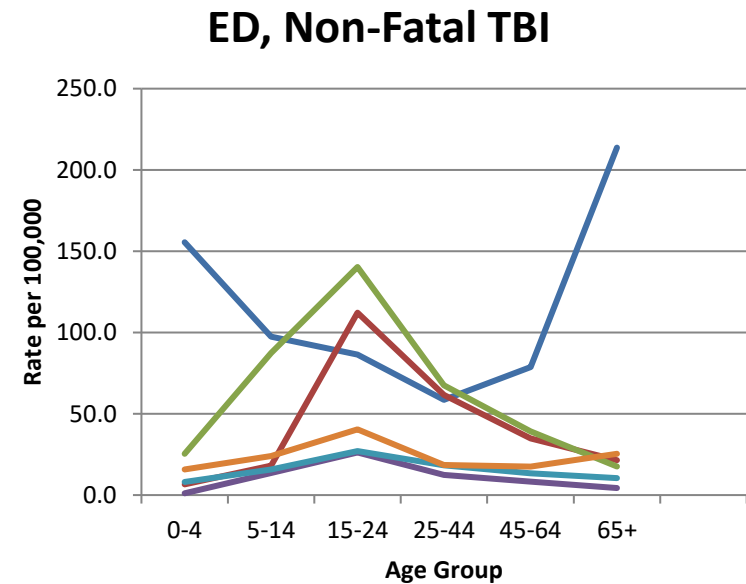
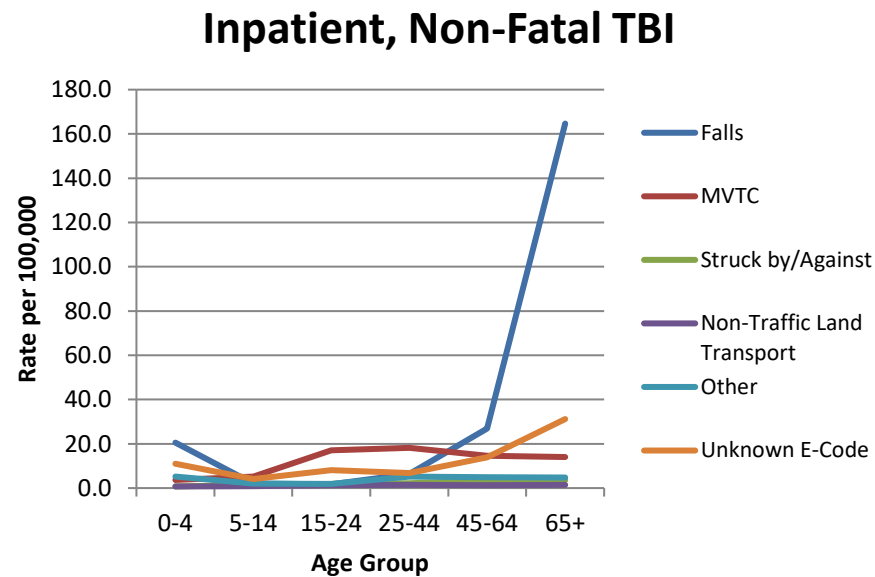
Figure 7: Percentage of Traumatic Brain Injury-Combined Emergency Department Visits and Hospitalizations, by External Cause, Kentucky, 2019



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 (ED) and 65 years and older (both, hospitalizations and ED). The rates for motor vehicle crash related TBI were highest among young adults ages 15 to 24 years.

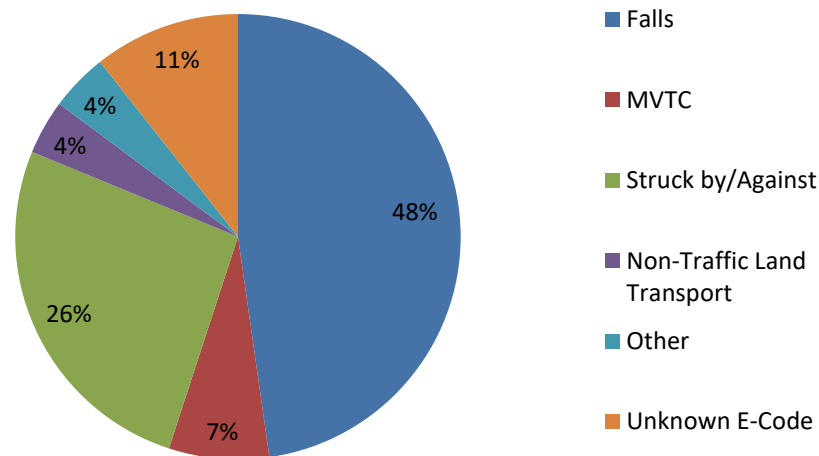
Figure 8: Rates of Non-Fatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by External Cause, Kentucky, 2019



TBI by External Cause: Comparing the Percentages by Age Groups

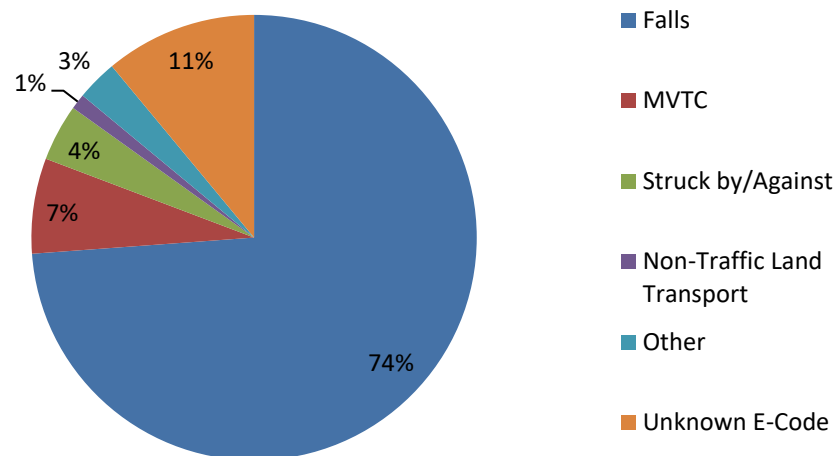
The following two figures depict the percentage of non-fatal TBI-related ED visits and hospitalizations by external cause for specific age groups. Figure 9 presents data for children ages 0 to 14 years. Figure 10 presents data for adults age 65 or older.

Figure 9: Percentage of Traumatic Brain Injury-Combined Emergency Department Visits and Hospitalizations Among Children 0 to 14 Years, by External Cause, Kentucky, 2019



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

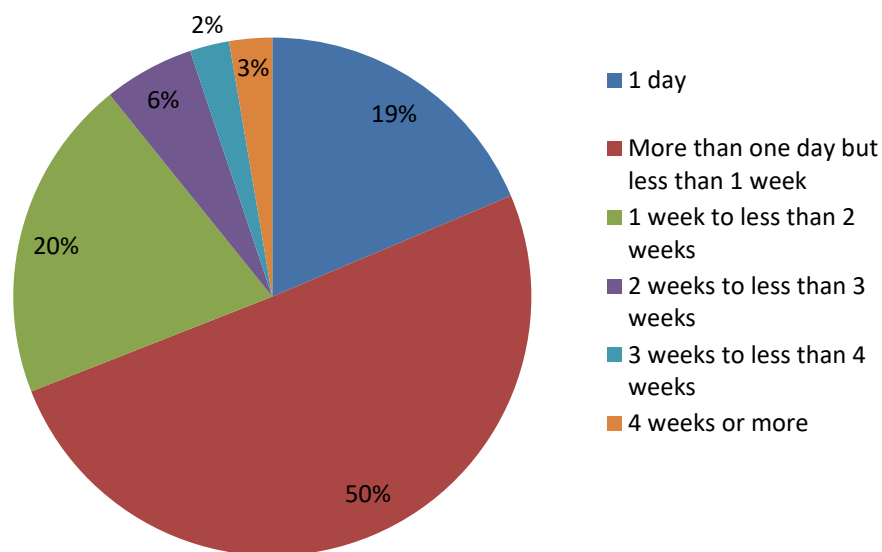
Figure 10: Percentage of Non-Fatal Traumatic Brain Injury-Combined Emergency Department Visits and Hospitalizations Among Older Adults 65 Years or Older, by External Cause, Kentucky, 2019



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

The length of stay (LOS) for hospitalized, non-fatal TBI (n=3,252) ranged from 1 day to 162 days. The mean LOS was 6.5 days with a median LOS of 4 days. Figure 11 shows the distribution of stays for those hospitalized with a TBI. Over two thirds of admitted TBI injuries stayed for less than 1 week.

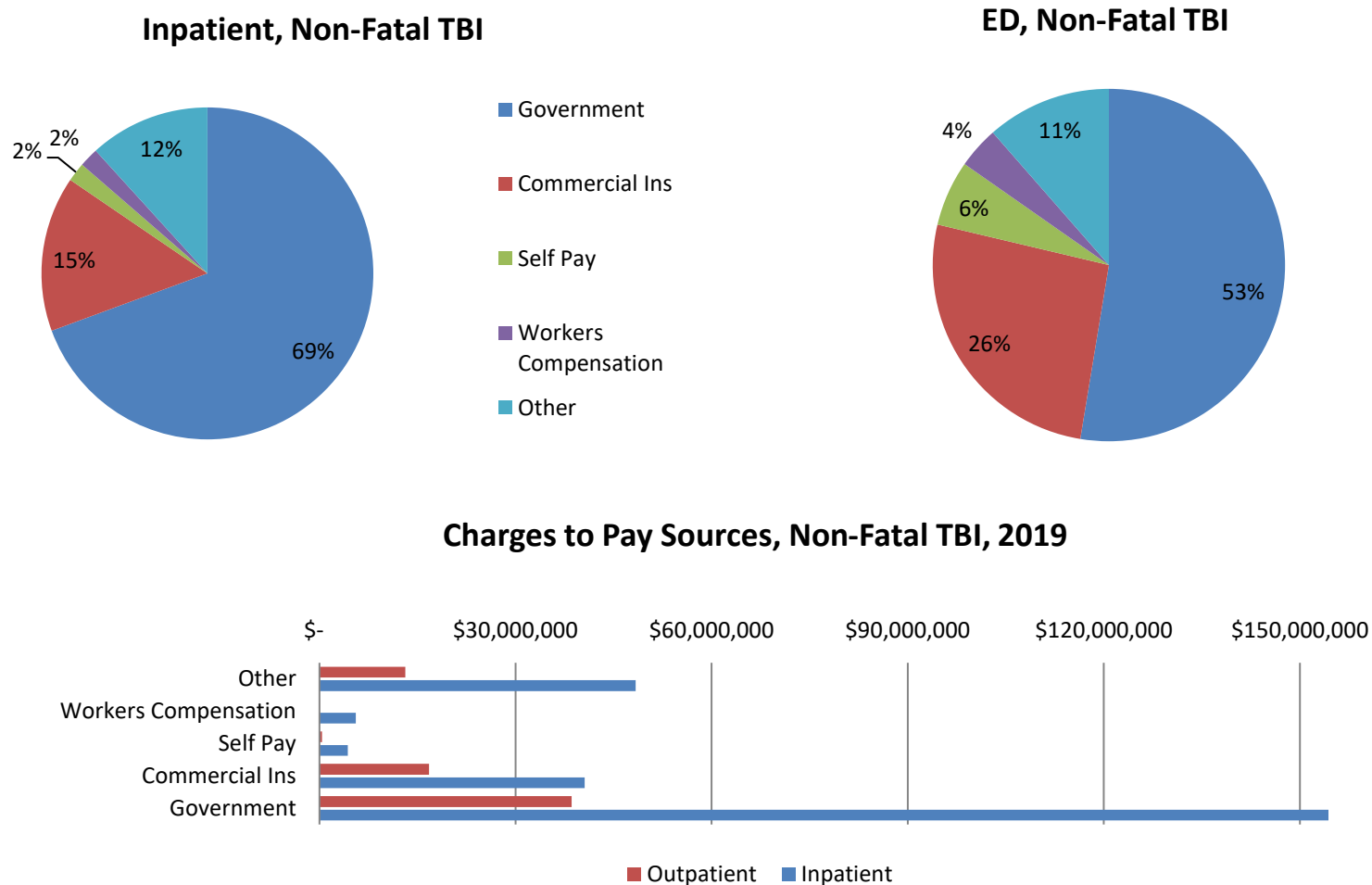
Figure 11: Non-Fatal Traumatic Brain Injury-Hospitalization Length of Stay, Kentucky, 2019



For non-fatal inpatient TBIs, 1,720 (52.9%) had a disposition other than “routine”. The three most frequent non-routine discharges were “skilled nursing facility”, “home health”, and “rehabilitation”. A total of 1,360 inpatient discharges had one of these three dispositions. ED discharges were nearly always (83.1%) 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 7 out of 10 (69.4%) of non-fatal TBI as well as over half ED care charges (52.6%). 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, 2018

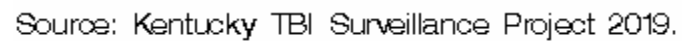


As one would expect, the incidence of TBI was highest in the larger counties. The top three in overall (inpatient and ED combined) TBI incidence (Jefferson, Fayette, and Daviess) are among the top most populous counties in Kentucky. Both Pulaski and Pike County makes the top 7 in incidence while only being 14th and 16th (respectively) in population rank in the state. Another notable exception was Whitley County, which was 13th in TBI incidence but 28th in population. Owsley, Wolfe, Menifee, and Letcher also stood out by being the top 4 age-adjusted rate while ranking 118th, 113th, 115th, and 53rd in population size. Clay County, which has consistently been one of the highest rated counties in Kentucky since 2001, remains in the top 15 again this year. 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.*

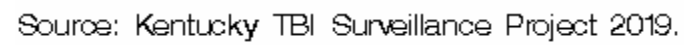
The following illustrations map both the frequency of TBI in Kentucky counties (Figures 13 and 14) as well as the age adjusted rate of TBI in each county (Figures 15 and 16) for inpatient and outpatient TBIs. It should be noted that these mappings include ALL inpatient TBI cases (Figures 13 and 15) as 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.

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.

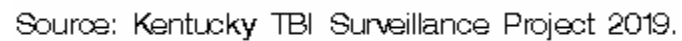
TBI Hospitalization Cases by County, Kentucky 2019



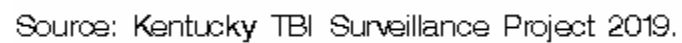
TBI ED Cases by County, Kentucky 2019



Age-Adjusted TBI Hospitalization Rates by County, Kentucky 2019



Age-Adjusted TBI ED Rates by County, Kentucky 2019



Non-Traumatic Brain Injury in Kentucky

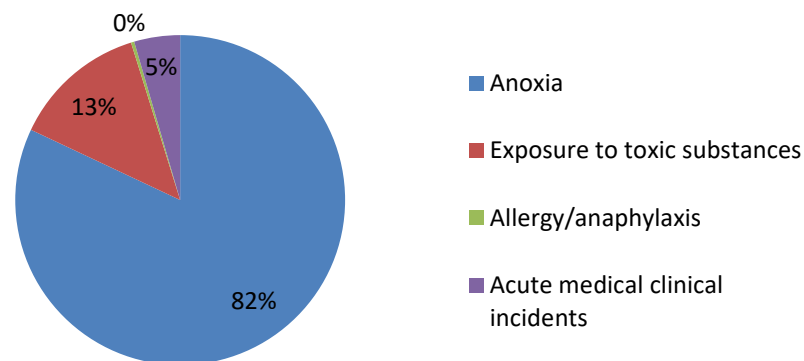
In addition to CDC-defined TBI, there are many brain injuries that have non-traumatic etiologies. These we have classified as NTBI (Non-Traumatic Brain Injuries). (See Appendix for diagnosis codes.) Because these diagnoses are not included in the CDC definition of TBI, they have been analyzed separately. We have broken NTBI into 4 different categories.

These categories of brain injuries caused by non-traumatic incidents and include:

- anoxia/hypoxia
- allergy/anaphylaxis
- acute medical clinical incidents
- toxic substances

This represents a significant widening of our definition from previous years (previously labeled Acquired Brain Injury or ABI). In 2019, there were 114,722 Kentucky residents identified with non-fatal, non-traumatic incidences of brain injury. This includes both inpatient (91,057) and ED (23,665) cases. The crude incidence rate for 2019 was 2,568 per 100,000 population.

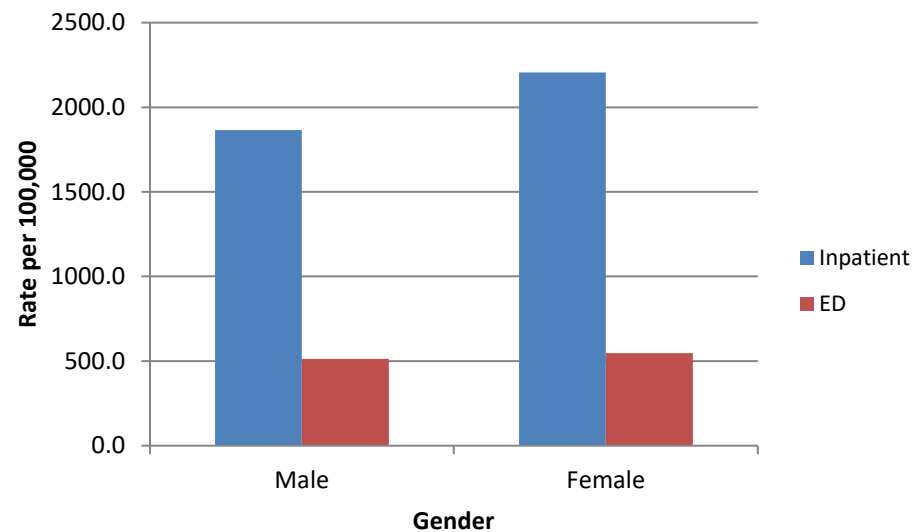
Figure 17: Non-Fatal, Non-Traumatic Brain Injury (NTBI) by Type, Kentucky, 2019



NTBI by Gender: Comparing the Rates

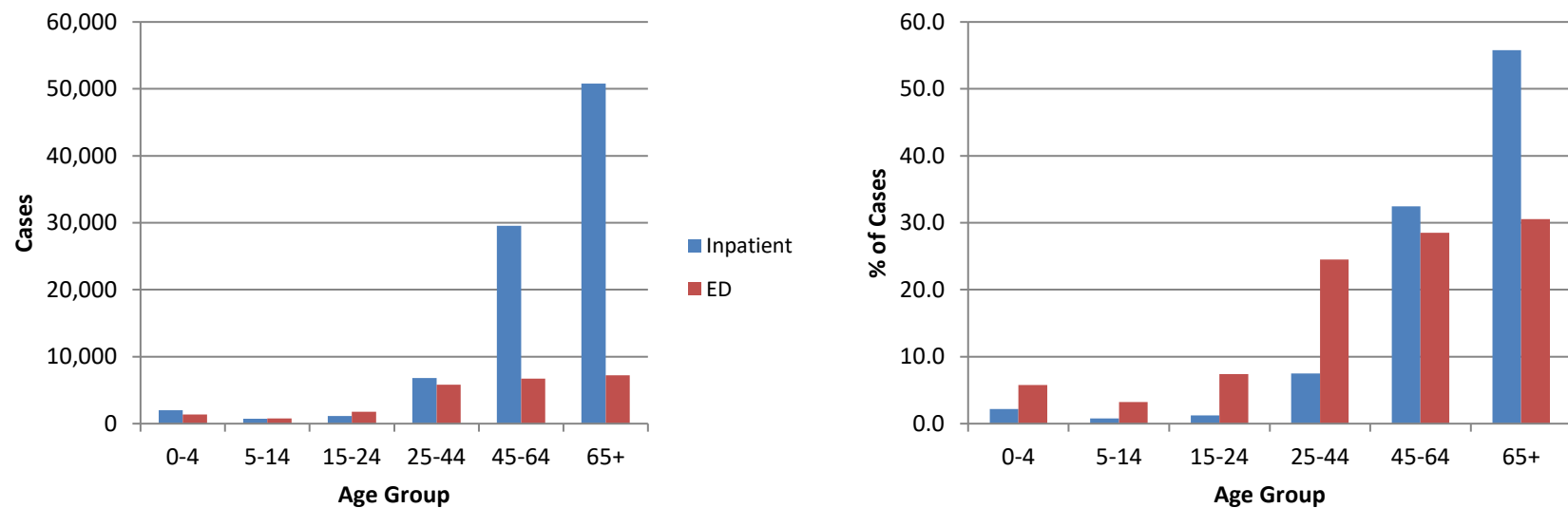
The following figure, **Figure 18**, is a graph depicting the rates of non-fatal NTBI-related ED visits and hospitalizations by gender. The y axis represents the rate per 100,000 population. Rates were slightly higher for females in both ED and inpatient NTBI cases.

Figure 18: Rates of Non-Fatal Acquired Brain Injury-Related Emergency Department Visits and Hospitalizations, by Gender, Kentucky, 2019



NTBI by Age: Comparing the Numbers

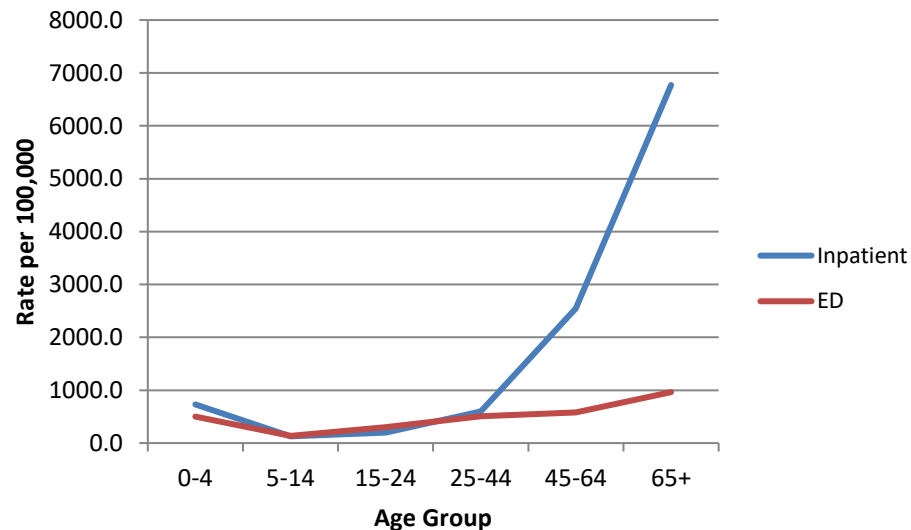
Figure 19: Numbers of Non-Fatal Acquired Brain Injury-Related Emergency Department Visits, and Hospitalizations, by Age Group, Kentucky, 2019



NTBI by Age: Comparing the Rates

The following figure, **Figure 20**, is a graph depicting the annual rate of NTBI-related ED visits and hospitalizations by age groups in Kentucky for 2019. The y axis represents the rate per 100,000 population. During 2019, the highest rate of non-fatal NTBI-related ED visits at 964 per 100,000 population were those in the 65+ age group. The highest rates of non-fatal NTBI-related hospitalization also occurred among adults age 65 years or older (6,770 per 100,000).

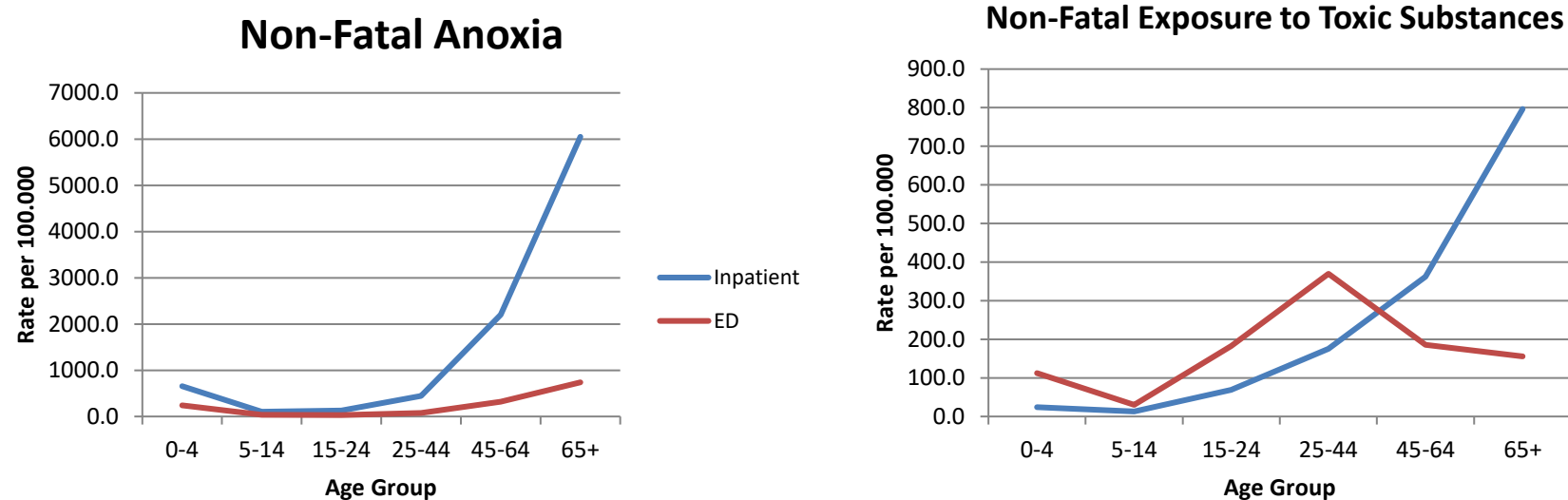
Figure 20: Rates of Non-Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2019



NTBI by Age and Type: Comparing the Rates

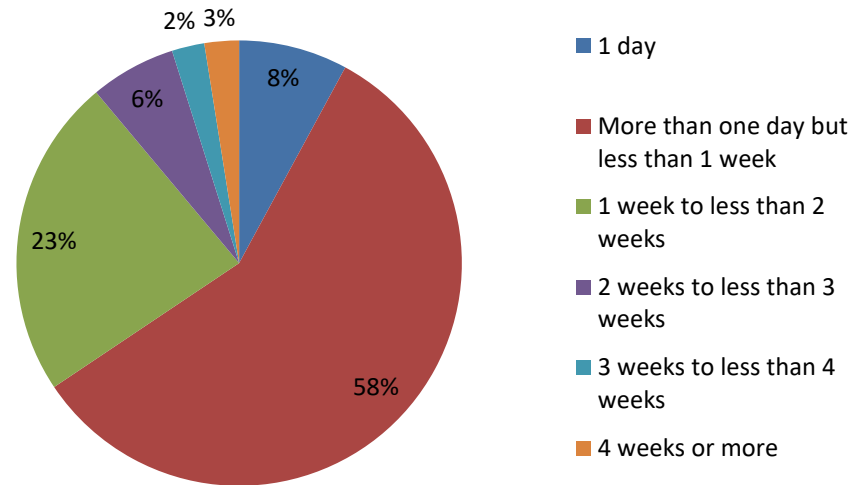
Nearly all inpatient NTBI (82%) were a result of anoxia/hypoxia. Anoxia/hypoxia was also the leading cause of NTBI in ED (46.7%) with exposure to toxic substances (ETS) following (37.91%). Over 6 out of 10 ETS cases included poisoning by narcotics, hallucinogens, sedatives, hypnotics, central nervous system depressants/anesthetics and toxic effects of alcohol. Over 85% of all anoxia cases were due to respiratory failure with hypoxia or hypercapnia. In non-fatal NTBI inpatient visits, anoxia tends to affect older people (ages 45 and over) considerably more often than younger people, whereas ETS affects persons 25 and older.

Figure 21: Rates of Non-Fatal Non-Traumatic Brain Injury-Related Emergency Department Visits, and Hospitalizations, by Age Group and Type, Kentucky, 2019



The length of stay (LOS) for hospitalized, non-fatal NTBI (n=91,057) ranged from 1 day to 416 days. The mean LOS was 7 days with a median LOS of 5 days. Figure 22 shows the distribution of stays for those hospitalized with NTBI. Over one in three admitted (inpatient) NTBI injuries stayed for 1 week or longer.

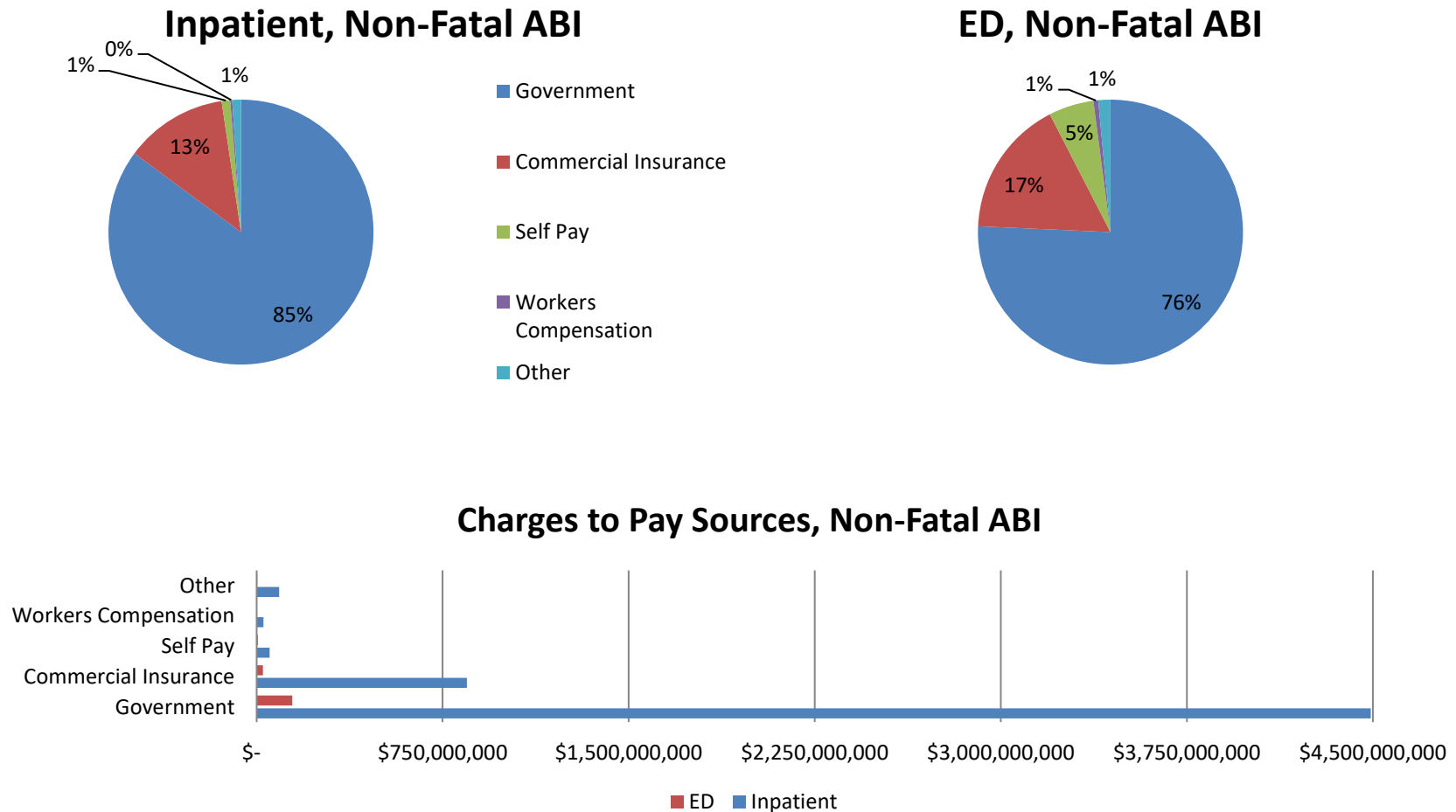
Figure 22: Non-Fatal Non-Traumatic Brain Injury-Hospitalization Length of Stay, Kentucky, 2019



For non-fatal inpatient NTBIs, 47,320 (52.0%) had a disposition other than “routine”. The three most frequent non-routine discharges were “skilled nursing facility”, “home health”, and “rehabilitation”. A total of 33,603 inpatient discharges had one of these three dispositions. ED discharges were most likely (69.8%) 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 (85.1%) and ED (75.7%) cases for non-fatal NTBI. 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 Non-Traumatic Brain Injury-Emergency Department and Hospitalizations, Payer Source and Charges, Kentucky, 2019



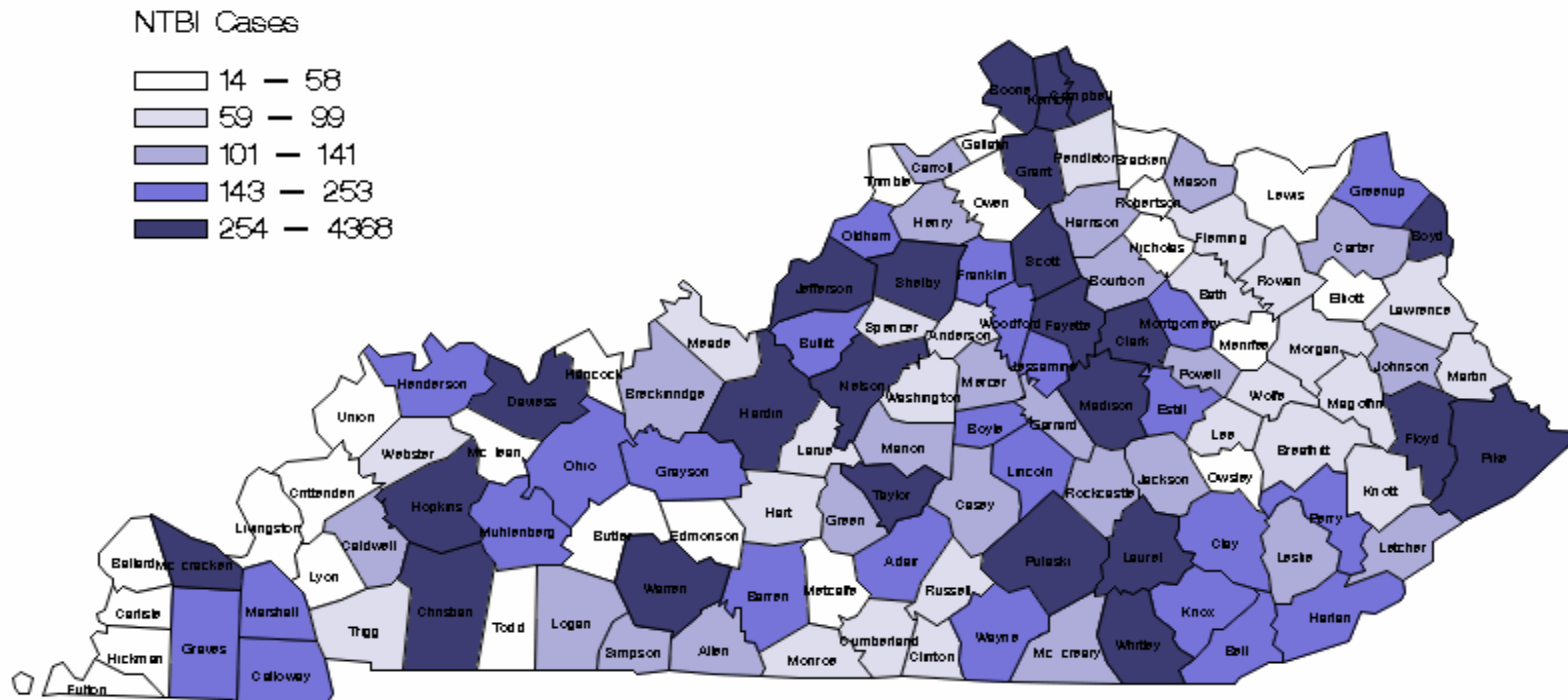
In general, as with TBI, the more populous counties had high numbers of NTBI. However, only two of the 25 most populous counties appeared in the top 25 counties when ranked by age-adjusted rate for hospitalized cases. Whitley, which ranks 29th with respect to county population, had the highest age adjusted rate of inpatient NTBI in the state. Leading the state for age adjusted rate for ED cases was Estill County, the 79th (most populated) county when ranked by population size, followed by Grant, Taylor, and Green counties, which are ranked 46th, 45th, and 90th in population. The counties with the highest inpatient rates were concentrated in eastern Kentucky (Figure 26).

The following figures map both the frequency of NTBI in Kentucky counties (Figures 24 and 25) as well as the age adjusted rate of NTBI in each county (Figures 26 and 27) for inpatient and outpatient NTBIs. It should be noted that these mappings include ALL inpatient NTBI cases (Figures 24 and 26) as well as ALL ED NTBI 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 NTBI in each county. These numbers DO NOT include those that died before admission to an acute care hospital.

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 NTBIs.

Figure 24.

NTBI ED Cases by County, Kentucky 2019



Source: Kentucky TBI Surveillance Project 2019.

NTBI ED Cases by County, Kentucky 2019

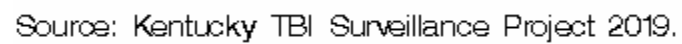
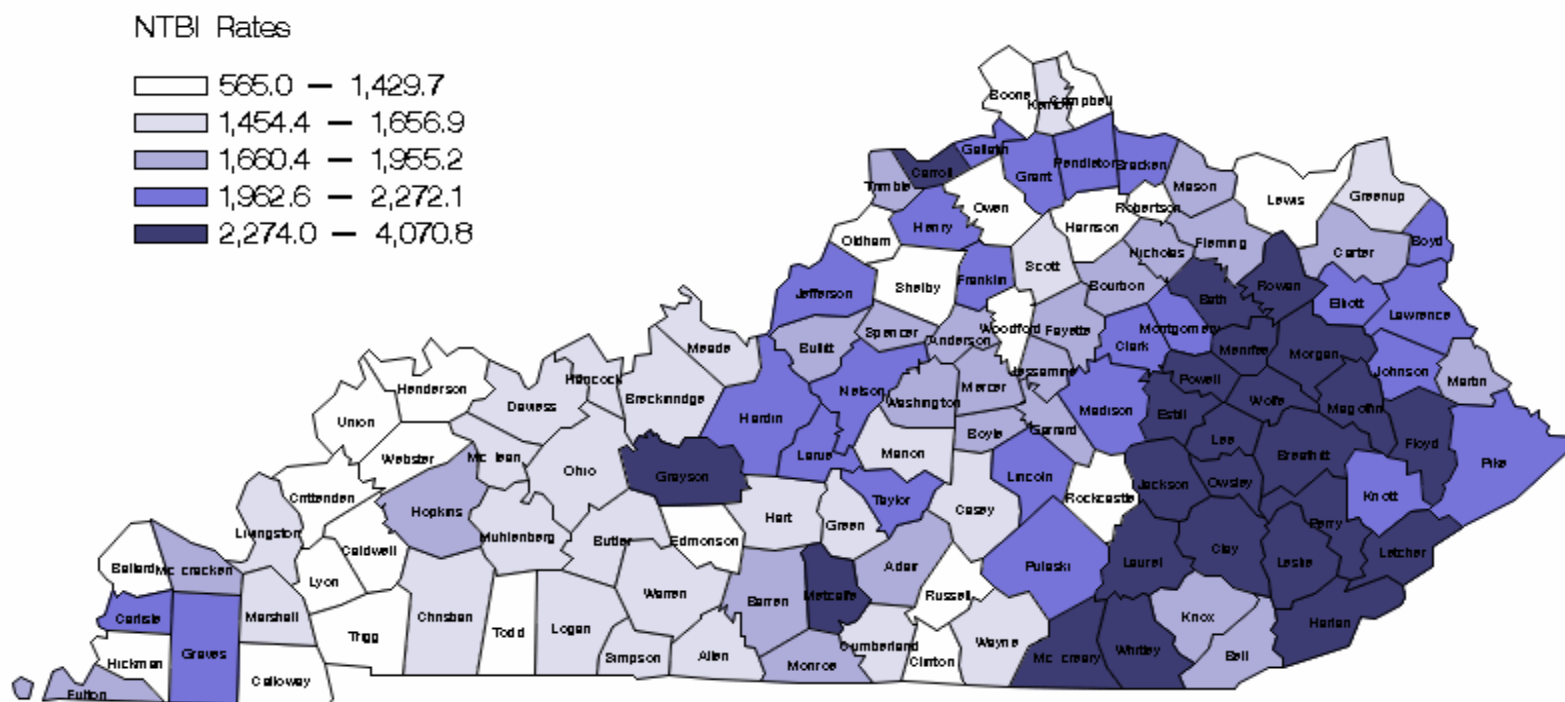


Figure 26.

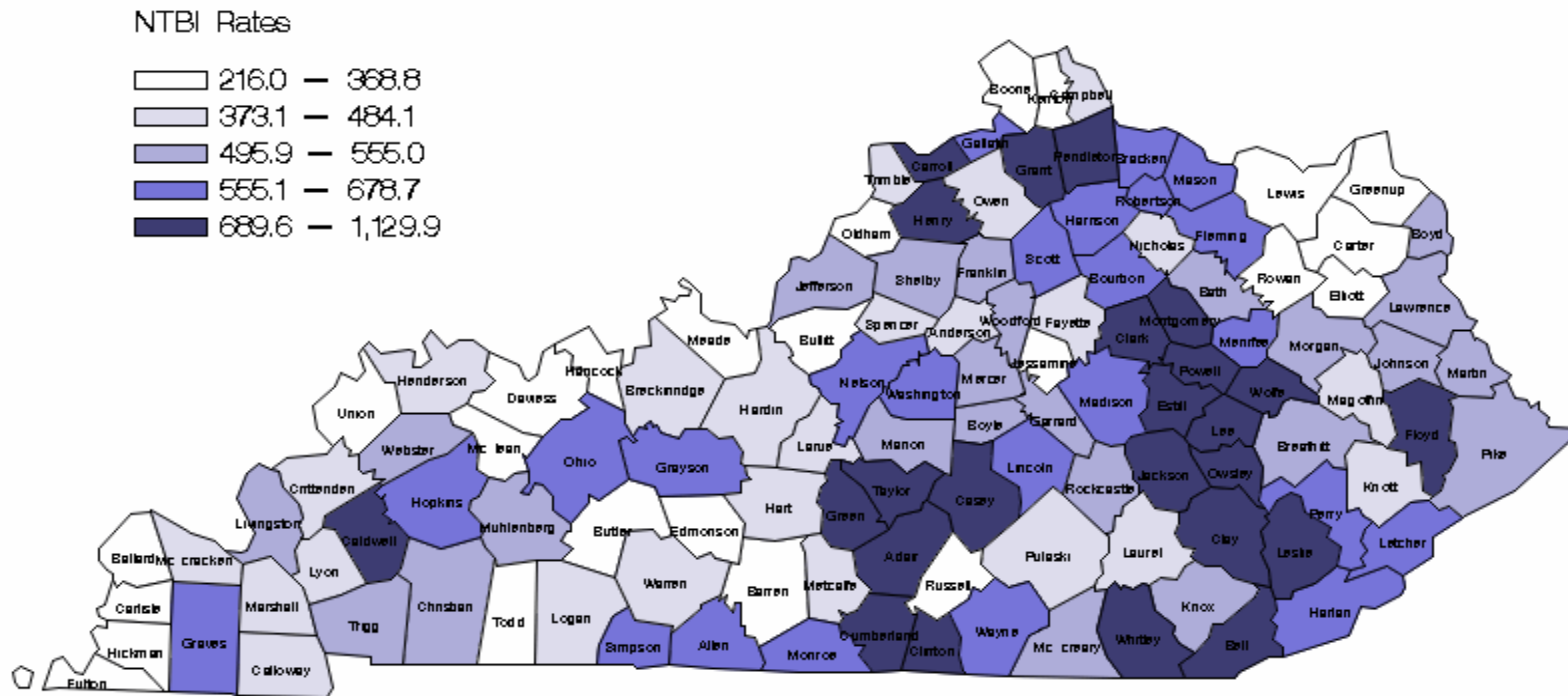
Age—Adjusted NTBI Hospitalization Rates by County, Kentucky 2019



Source: Kentucky TBI Surveillance Project 2019.

Figure 27.

Age-Adjusted NTBI ED Rates by County, Kentucky 2019



Source: Kentucky TBI Surveillance Project 2019.

Spinal Cord Injury in Kentucky

Spinal cord injury (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 176 non-fatal inpatient SCI cases for Kentucky residents identified in 2019 as well as 97 non-fatal ED cases. The crude incidence rate of any non-fatal SCI was 6.1 per 100,000 population.

SCI by Gender: Comparing the Rates

Figure 28: Rates of Non-Fatal Spinal Cord Injury-Related Emergency Department Visits and Hospitalizations, by Gender, Kentucky, 2019

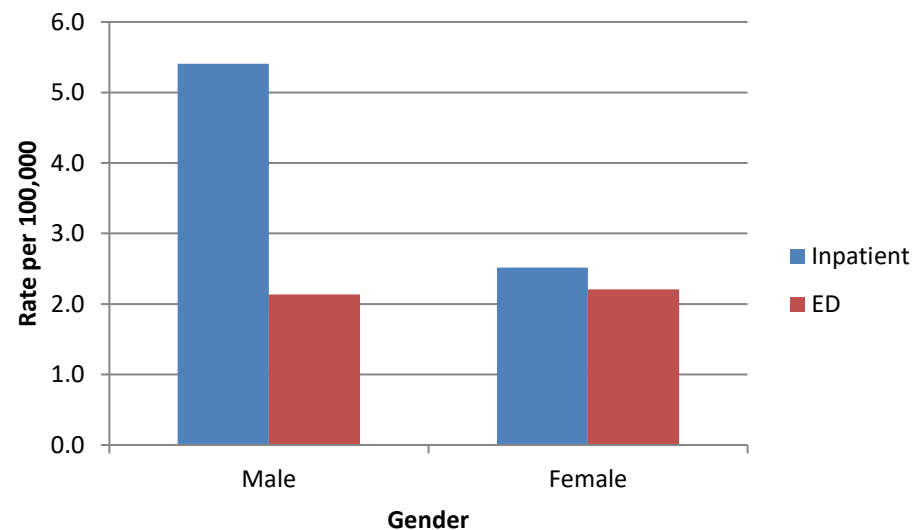
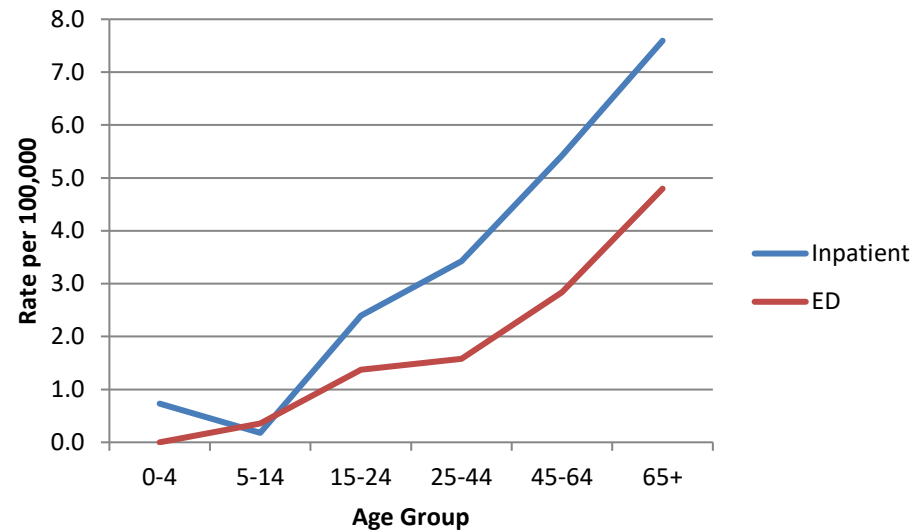
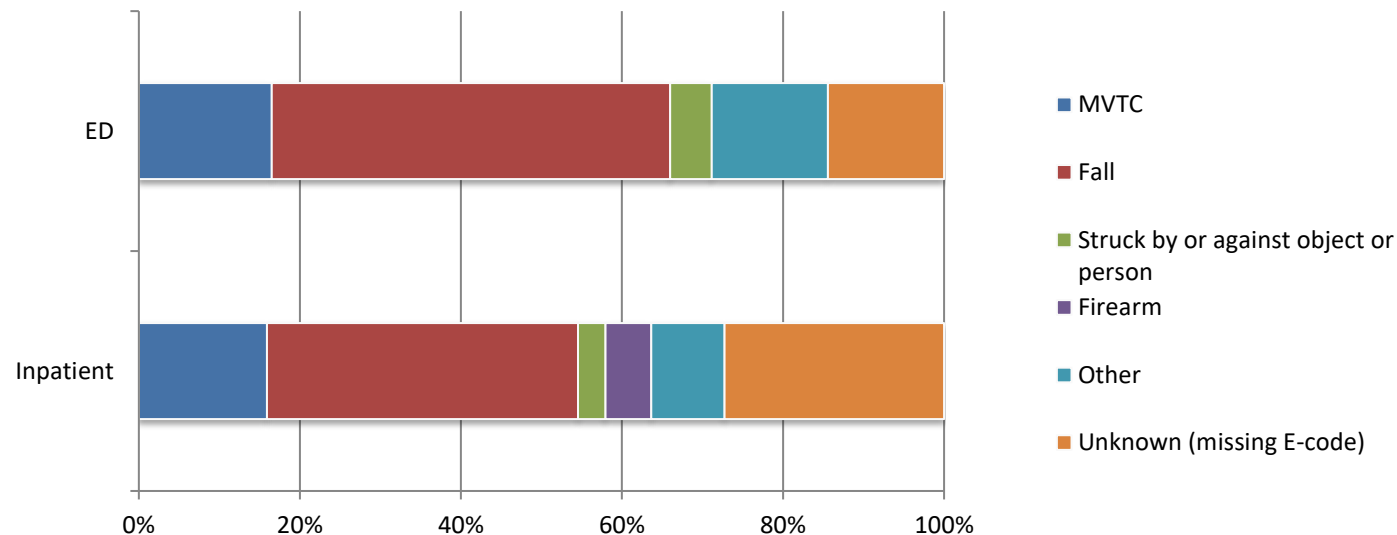


Figure 29: Rates of Spinal Cord Injury-Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2019



The highest age-specific rates were found in 65+ age group for both ED and inpatient admissions.

Figure 30: Non-Fatal Spinal Cord Injury-Related Emergency Department Visits and Hospitalizations by External Cause, Kentucky, 2019

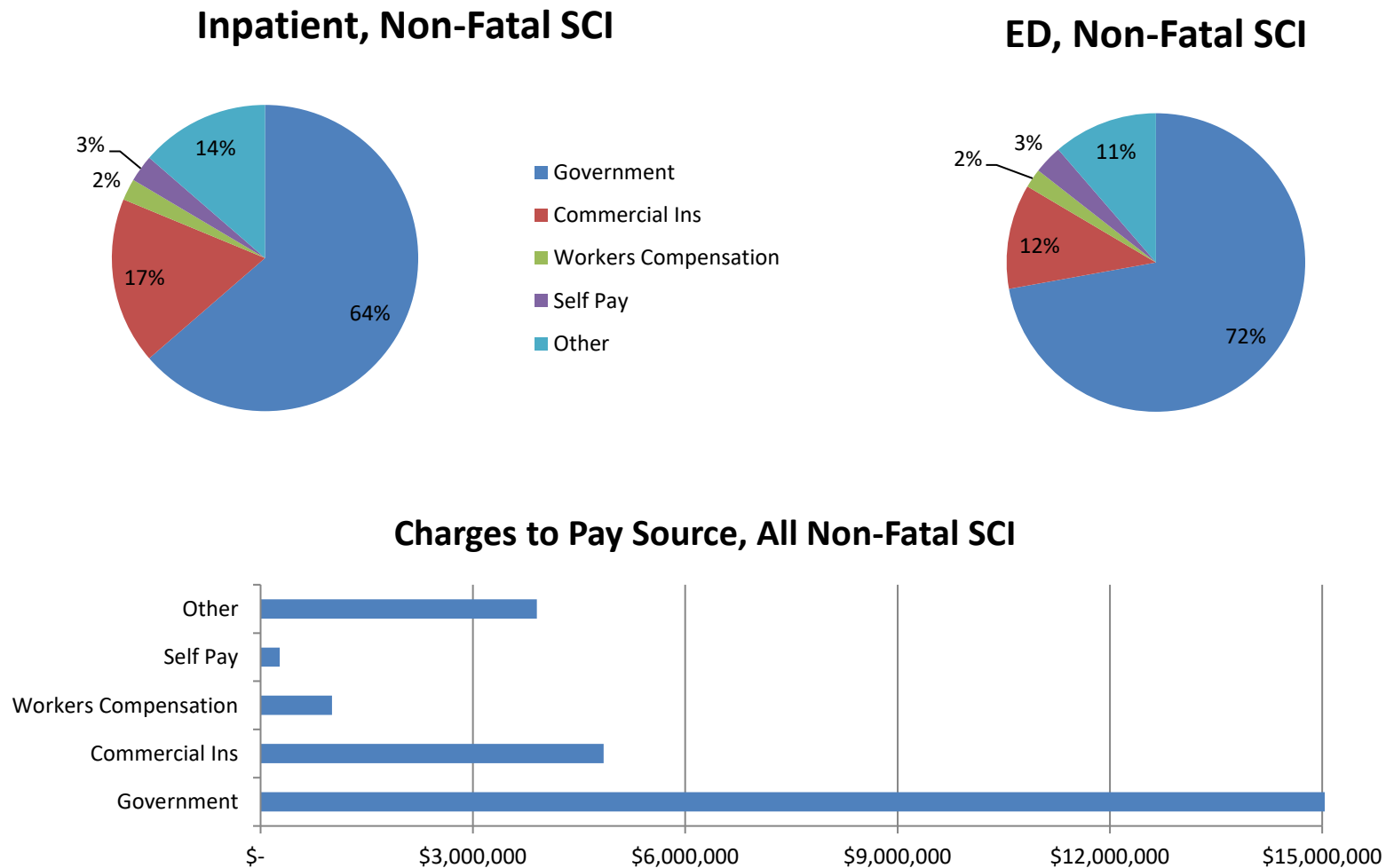


Among non-fatal SCI's for which an E-code was reported, falls were the leading mechanisms of injury for both inpatient and ED SCI visits. Unfortunately, over one out of four of the inpatient SCI discharges had no E-code reported.

Hospitalized SCI patients had a length of stay (LOS) varying from 1 day to 58 days. The mean LOS was 10.6 days with a median of 8 days. Almost 3 out of 4 (70.6%) of the non-fatal inpatient SCI discharges had dispositions other than "routine", while 36.1% of ED discharges were non-routine. In total, almost 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 47% of the time and TBI visits to the ED were routinely discharged about 83% of the time. Overall, 3 out of 4 non-fatal TBI discharges were discharged to home or self care (routine).

Government sources were the primary payer billed for acute care charges in two thirds of all non-fatal SCI. Government payers were billed over \$21.2 million in 2019, and commercial payers over \$4.8 million.

Figure 31: Non-Fatal Spinal Cord Injury-Emergency Department and Hospitalizations, Payer Source and Charges, Kentucky, 2019



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 2019, over 21,000 non-fatal hospital visits by Kentucky residents were coded with stroke related ICD-10-CM codes in one or more diagnosis fields. 76.0% inpatient admissions coded for stroke listed stroke as the principal diagnosis. There were 13,196 non-fatal inpatient stroke cases for Kentucky residents identified in 2019 as well as 7,850 non-fatal ED cases. The crude incidence rate was 471 per 100,000 population.

Stroke by Gender: Comparing the Rates

Figure 32: Rates of Non-Fatal Stroke Related Emergency Department Visits and Hospitalizations, by Gender, Kentucky, 2019

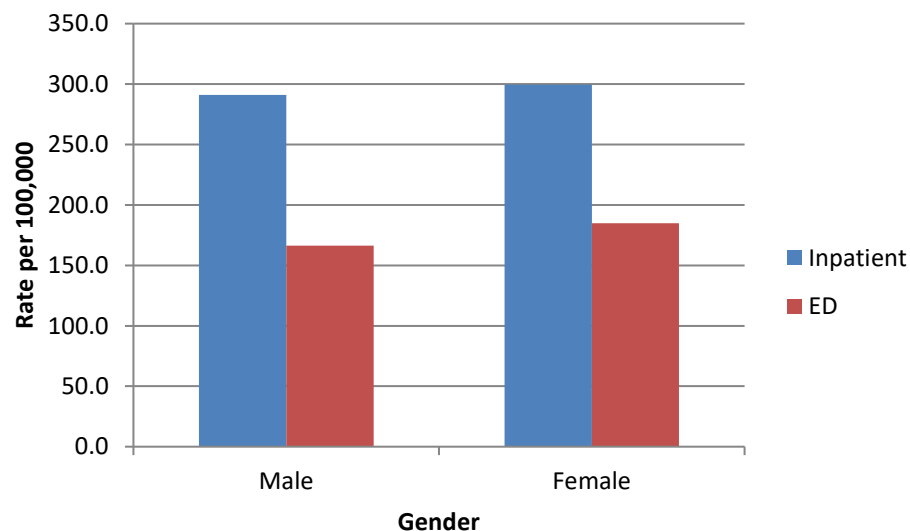
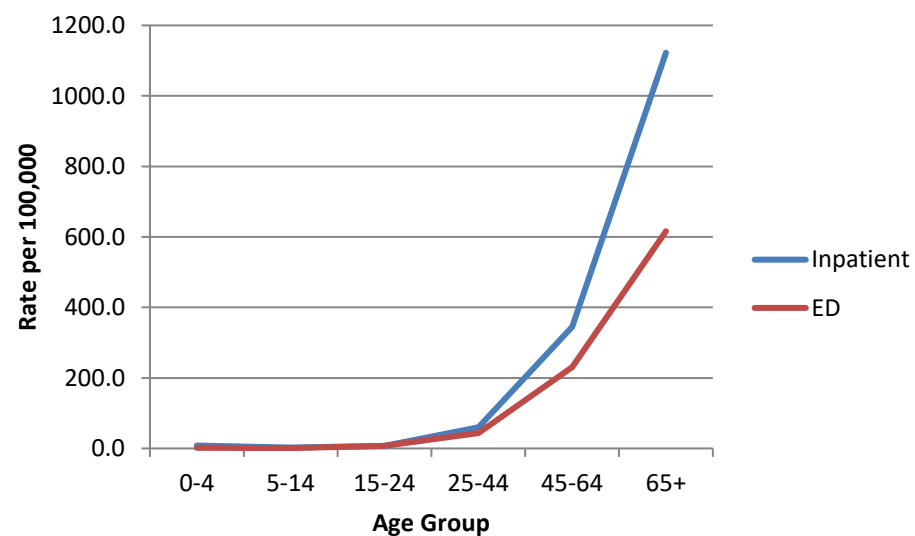


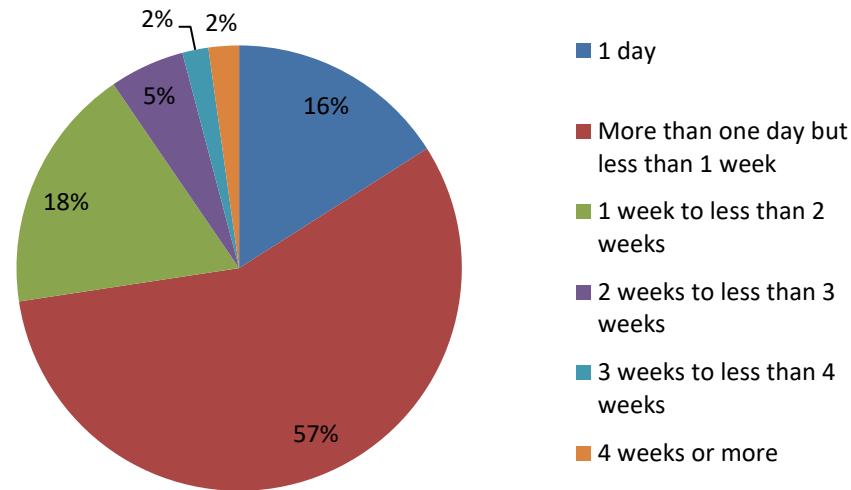
Figure 33: Rates of Stroke Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2019



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=13,196) ranged from 1 day to 283 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. Over one in four admitted (inpatient) stroke related hospitalizations stayed for 1 week or longer.

Figure 34: Non-Fatal Stroke Related Hospitalization Length of Stay, Kentucky, 2019

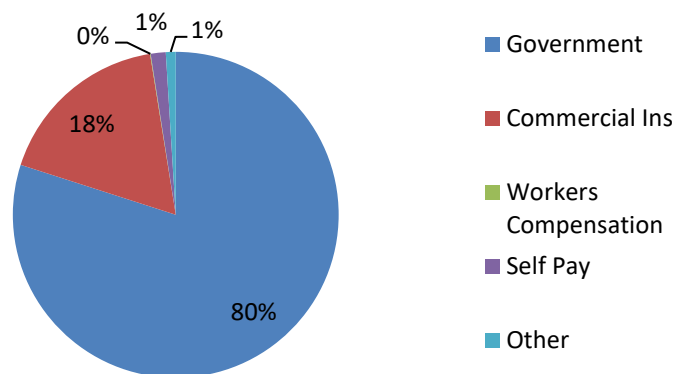


For non-fatal stroke related hospitalizations, 7,893 (59.8%) had a disposition other than “routine”. The three most frequent non-routine discharges were “skilled nursing facility”, “home health”, and “rehabilitation”. A total of 6,059 inpatient discharges had one of these three dispositions. ED discharges were routinely discharged to home or self care (routine) just over half the time (55.6%) with “inpatient – other” being the most frequent non-routine discharge (38.3%).

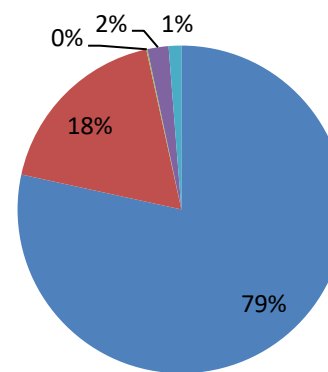
Government sources were the primary payer billed for acute care charges in almost 8 out of 10 of all non-fatal stroke related hospital visits. Government payers were billed over \$750 million in 2019, and commercial payers almost \$210 million.

Figure 35: Non-Fatal Stroke Related Emergency Department Visits and Hospitalizations, Payer Source and Charges, Kentucky, 2019

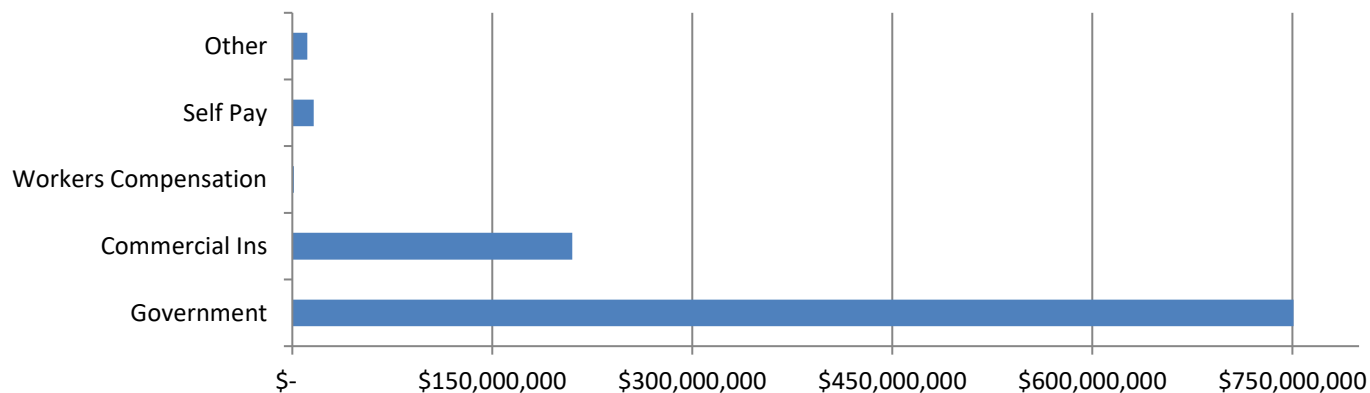
Inpatient, Non-Fatal Stroke



ED, Non-Fatal Stroke



Charges to Pay Source, All Non-Fatal Stroke



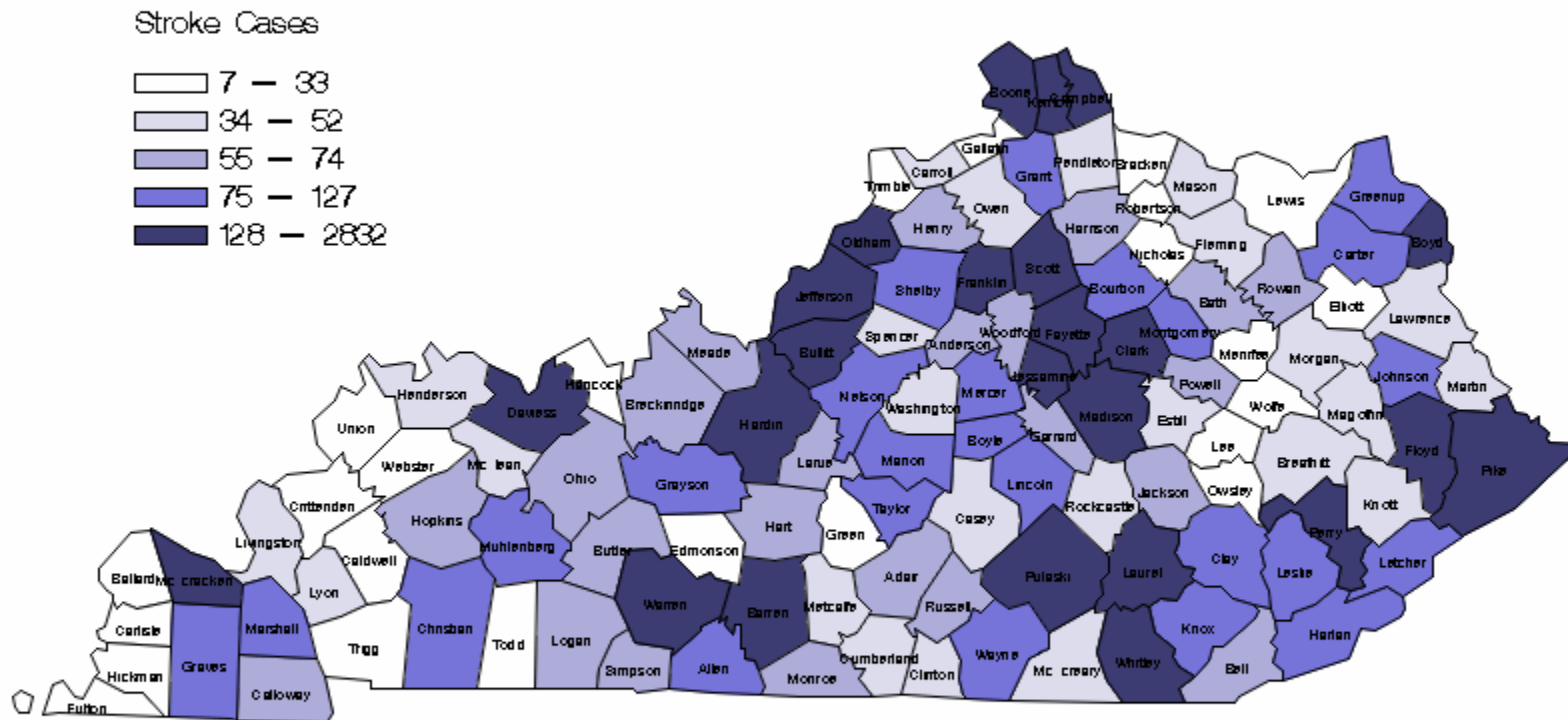
As one would expect, the incidence of stroke was highest in the larger counties. The top four in overall (inpatient and ED combined) stroke incidence (Jefferson, Fayette, Hardin and Warren) are the four of the six most populous counties in Kentucky. Notable exceptions include Leslie, Perry, and Monroe Counties, which were ranked 2nd, 3rd, and 4th in age adjusted rate for stroke but were 100th, 45th, and 96th in population (respectively). McClean (101st) was also in the top ten counties with highest age adjusted rates despite it's smaller population. 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.

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 2019



Source: Kentucky TBI Surveillance Project 2019.

Stroke ED Cases by County, Kentucky 2019

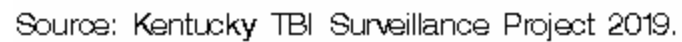
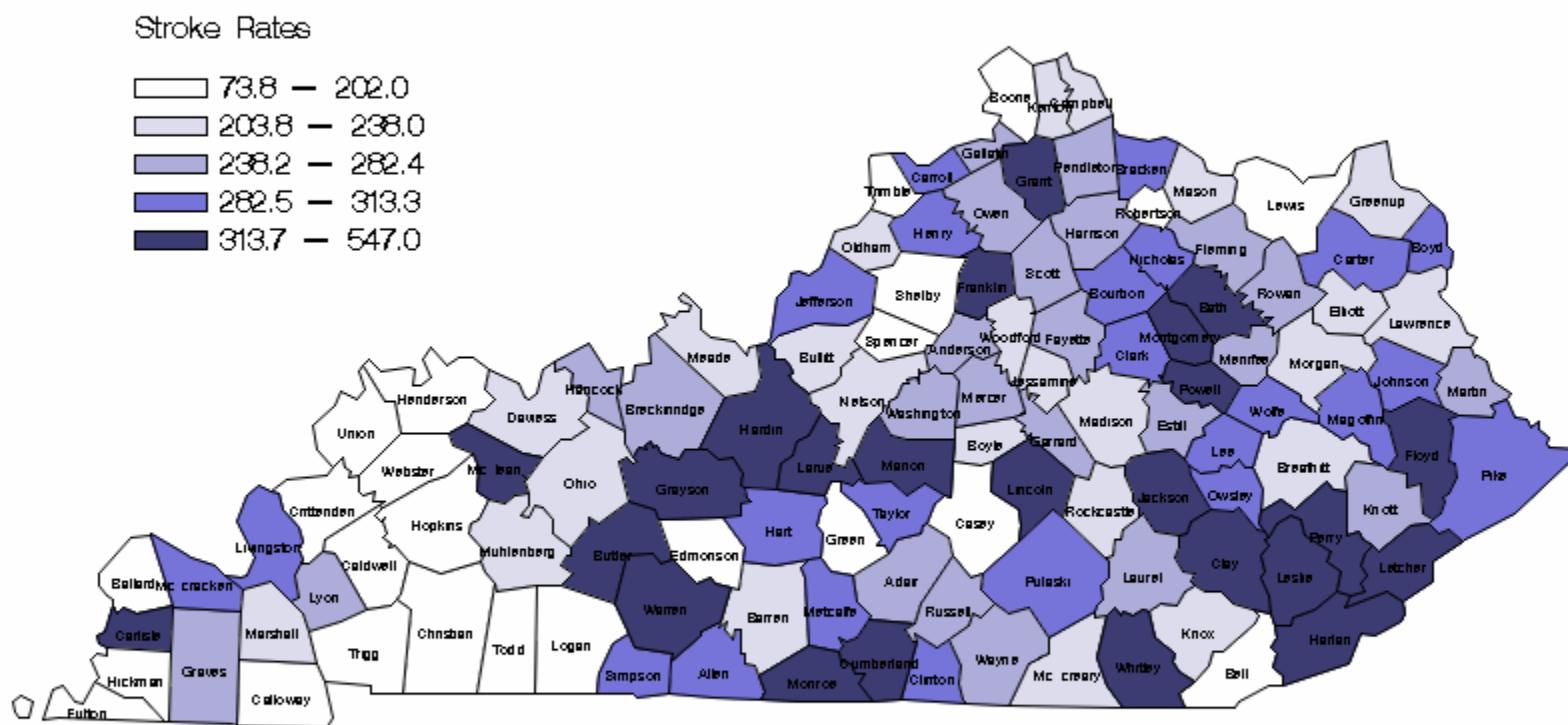


Figure 38.

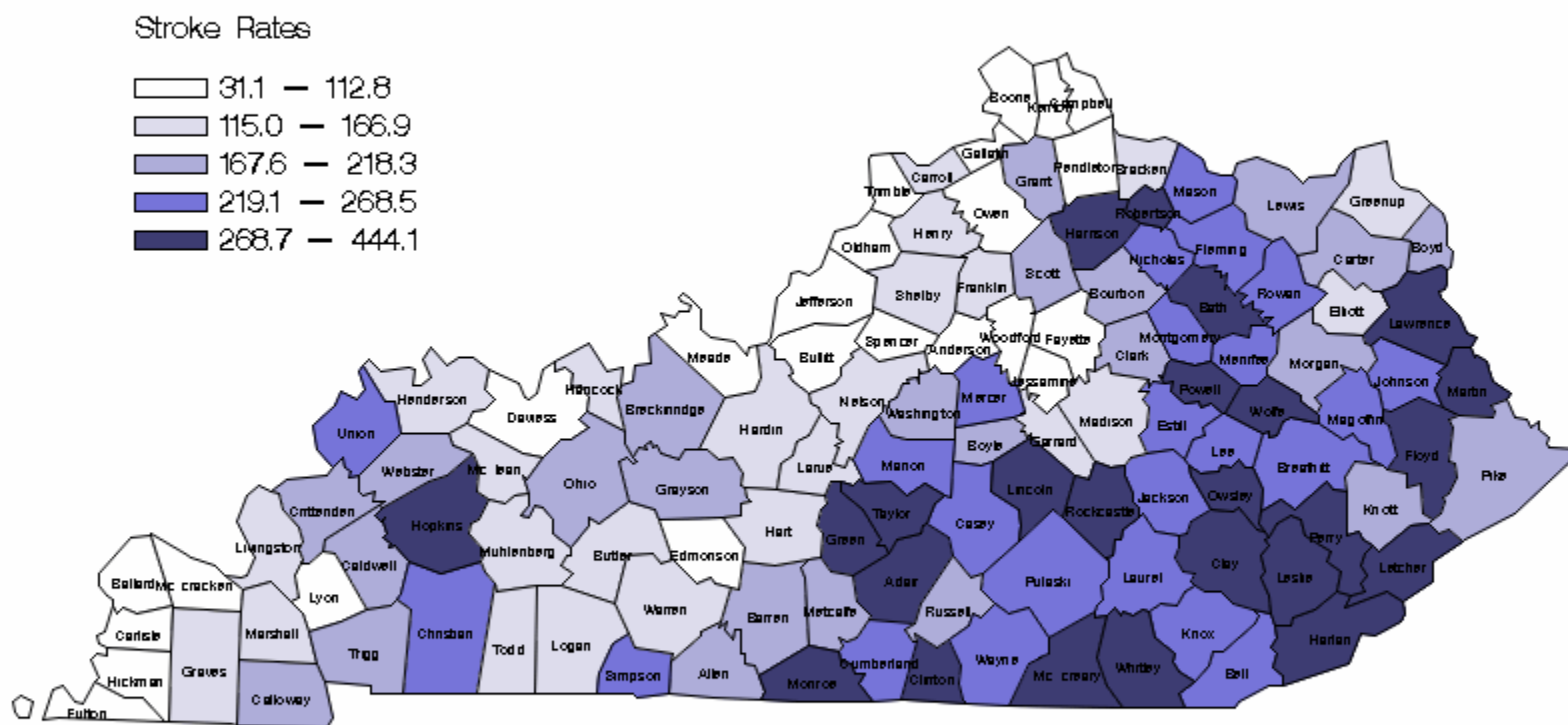
Age—Adjusted Stroke Hospitalization Rates by County, Kentucky 2019



Source: Kentucky TBI Surveillance Project 2019.

Figure 39.

Age—Adjusted Stroke ED Rates by County, Kentucky 2019



Source: Kentucky TBI Surveillance Project 2019.

Conclusion

Over 147k non-fatal central nervous system injury-related ED visits and hospitalizations occurred in Kentucky in 2019. 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 2019 data is not recommended for use in comparisons with pre-2016 reports due to coding changes made in the third quarter of 2015, the data is still important when discussing the larger issue of brain injury in Kentucky. Many people recover from their injuries, but in 2019 alone, over 404 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 (2018) and are per 100,000.

Table 1: Non-Fatal TBI ED Visits and Hospitalizations by Age Group, Kentucky, 2019

Age	Inpatient			Outpatient			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	114	16.5	41.8	579	83.5	212.4	693	100.0	254.2
5-14	87	5.7	15.5	1436	94.3	256.2	1,523	100.0	271.8
15-24	187	6.9	32.0	2525	93.1	432.5	2,712	100.0	464.5
25-44	458	14.5	40.2	2698	85.5	237.0	3,156	100.0	277.2
45-64	757	25.3	65.1	2230	74.7	191.9	2,987	100.0	257.1
65+	1,649	42.9	219.7	2198	57.1	292.8	3,847	100.0	512.5
Total	3,252	21.8	72.8	11,666	78.2	261.1	14,918	100.0	333.9

Table 2: Non-Fatal TBI ED Visits and Hospitalizations by Gender, Kentucky, 2019

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	1,852	22.6	84.1	6,328	77.4	287.5	8,180	100.0	371.6
Female	1,400	20.8	61.8	5,338	79.2	235.5	6,738	100.0	297.3
Total	3,252	21.8	72.8	11,666	78.2	261.1	14,918	100.0	333.9

Table 3: Non-Fatal TBI ED Visits and Hospitalizations by External Cause of Injury, Kentucky, 2019

Mechanism of Injury	Inpatient			ED			Total		
	Number	Pct.	Rate	Number	Pct.	Rate	Number	Pct.	Rate
Motor vehicle traffic crash	620	23.3	13.9	2,040	76.7	45.7	2,660	100.0	59.5
Fall	1,699	26.7	38.0	4,661	73.3	104.3	6,360	100.0	142.4
Firearm	39	75.0	0.9	13	25.0	0.3	52	100.0	1.2
Non-traffic land transport	57	10.2	1.3	502	89.8	11.2	559	100.0	12.5
Struck by object or person	114	4.0	2.6	2,734	96.0	61.2	2,848	100.0	63.7
Non-traffic pedal cycle	10	10.1	0.2	89	89.9	2.0	99	100.0	2.2
Machinery	5	25.0	0.1	15	75.0	0.3	20	100.0	0.4
Other	134	18.4	3.0	594	81.6	13.3	728	100.0	16.3
Unknown (missing E-code)	574	36.1	12.8	1,018	63.9	22.8	1,592	100.0	35.6
Total	3,252	21.8	72.8	11,666	78.2	261.1	14,918	100.0	333.9

Table 4: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 00-04, Kentucky, 2019

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Fall	56	49.1	424	73.2	480	69.3
Motor vehicle traffic crash	10	8.8	18	3.1	28	4.0
Struck by or against object or person	2	1.8	69	11.9	71	10.2
Non-traffic land transportation	2	1.8	3	0.5	5	0.7
Other (including non-specific codes)	14	12.3	22	3.8	36	5.2
Unknown (missing E-code)	30	26.3	43	7.4	73	10.5
Total	114	100.0	579	100.0	693	100.0

Table 5: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 05-14, Kentucky, 2019

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Motor vehicle traffic crash	29	33.3	101	7.0	130	8.5
Fall	11	12.6	546	38.0	557	36.6
Non-traffic land transportation	5	5.7	76	5.3	81	5.3
Other pedal cycle	2	2.3	42	2.9	44	2.9
Struck by or against object or person	8	9.2	490	34.1	498	32.7
Other (including non-specific codes)	9	10.3	46	3.2	55	3.6
Unknown (missing E-code)	23	26.4	135	9.4	158	10.4
Total	87	100.0	1,436	100.0	1,523	100.0

Table 6: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 15-24, Kentucky, 2019

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Motor vehicle traffic crash	100	53.5	655	25.9	755	27.8
Firearm	4	2.1	5	0.2	9	0.3
Non-traffic land transportation	8	4.3	153	6.1	161	5.9
Fall	10	5.3	504	20.0	514	19.0
Struck by or against object or person	11	5.9	819	32.4	830	30.6
Other (including non-specific codes)	7	3.7	153	6.1	160	5.9
Unknown (missing E-code)	47	25.1	236	9.3	283	10.4
Total	187	100.0	2,525	100.0	2,712	100.0

Table 7: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 25-44, Kentucky, 2019

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Motor vehicle traffic crash	207	45.2	701	26.0	908	28.8
Firearm	22	4.8	7	0.3	29	0.9
Fall	73	15.9	667	24.7	740	23.4
Struck by or against object or person	25	5.5	769	28.5	794	25.2
Non-traffic land transportation	16	3.5	142	5.3	158	5.0
Machinery	0	0.0	7	0.3	7	0.2
Other (including non-specific codes)	37	8.1	195	7.2	232	7.4
Unknown (missing E-code)	78	17.0	210	7.8	288	9.1
Total	458	100.0	2,698	100.0	3,156	100.0

Table 8: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 45-64, Kentucky, 2019

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Fall	313	41.3	916	41.1	1,229	41.1
Motor vehicle traffic crash	169	22.3	404	18.1	573	19.2
Firearm	11	1.5	0	0.0	11	0.4
Struck by or against object or person	41	5.4	455	20.4	496	16.6
Non-traffic land transportation	15	2.0	96	4.3	111	3.7
Other (including non-specific codes)	46	6.1	155	7.0	201	6.7
Unknown (missing E-code)	162	21.4	204	9.1	366	12.3
Total	757	100.0	2,230	100.0	2,987	100.0

Table 9: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 65 or Over, Kentucky, 2019

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Fall	1,236	75.0	1,604	73.0	2,840	73.8
Motor vehicle traffic crash	105	6.4	161	7.3	266	6.9
Firearm	0	0.0	1	0.0	1	0.0
Struck by or against object or person	27	1.6	132	6.0	159	4.1
Non-traffic land transportation	11	0.7	32	1.5	43	1.1
Other (including non-specific codes)	36	2.2	78	3.5	114	3.0
Unknown (missing E-code)	234	14.2	190	8.6	424	11.0
Total	1,649	100.0	2,198	100.0	3,847	100.0

Table 10: Hospital Discharges by Disposition for Non-Fatal TBI ED Visits and Hospitalizations, Kentucky, 2019

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	1,532	47.1	9,693	83.1
Skilled nursing facility (SNF)	531	16.3	97	0.8
Home health	244	7.5	31	0.3
Inpatient-other short-term hospital	59	1.8	1,356	11.6
Intermediate care facility (ICF)	24	0.7	12	0.1
Rehab	585	18.0	24	0.2
Other	277	8.5	453	3.9
Total	3,252	100.0	11,666	100.0

Table 11: Incidence of All Inpatient TBI* by County, Sorted by County, Kentucky, 2019

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Adair	18	0.5	83.7	93.7	Grant	15	0.4	61.9	59.7	McLean	11	0.3	118.0	118.9
Allen	17	0.5	69.4	80.5	Graves	26	0.7	53.7	69.7	Meade	26	0.7	93.8	90.5
Anderson	18	0.5	72.4	79.4	Grayson	25	0.7	91.2	95.0	Menifee	11	0.3	143.5	170.5
Ballard	*	-	-	-	Green	7	0.2	60.5	63.4	Mercer	26	0.7	113.1	119.4
Barren	21	0.6	44.3	47.5	Greenup	*	-	-	-	Metcalf	9	0.3	66.0	89.7
Bath	11	0.3	86.4	88.8	Hancock	6	0.2	69.9	68.5	Monroe	10	0.3	73.0	93.3
Bell	12	0.3	40.9	45.2	Hardin	80	2.2	68.8	72.5	Montgomery	32	0.9	108.5	113.5
Boone	82	2.3	64.6	62.3	Harlan	21	0.6	65.7	79.5	Morgan	11	0.3	68.8	82.4
Bourbon	17	0.5	70.9	84.2	Harrison	22	0.6	103.4	117.2	Muhlenberg	29	0.8	79.6	94.2
Boyd	20	0.6	33.4	42.3	Hart	14	0.4	71.8	74.1	Nelson	34	1.0	73.6	74.2
Boyle	30	0.8	79.4	99.7	Henderson	*	-	-	-	Nicholas	7	0.2	91.0	97.7
Bracken	*	-	-	-	Henry	20	0.6	116.0	124.2	Ohio	20	0.6	78.8	83.0
Breathitt	16	0.4	121.5	125.7	Hickman	*	-	-	-	Oldham	47	1.3	77.3	70.7
Breckinridge	19	0.5	84.0	93.2	Hopkins	9	0.3	21.5	20.0	Owen	7	0.2	51.6	64.3
Bullitt	53	1.5	59.1	65.4	Jackson	10	0.3	83.8	74.4	Owsley	9	0.3	161.1	201.3
Butler	11	0.3	73.4	86.1	Jefferson	779	21.9	90.4	101.1	Pendleton	10	0.3	56.3	68.8
Caldwell	8	0.2	43.1	62.9	Jessamine	39	1.1	66.6	72.3	Perry	31	0.9	115.5	118.8
Calloway	32	0.9	68.1	81.8	Johnson	22	0.6	79.4	98.3	Pike	80	2.2	122.7	137.0
Campbell	55	1.5	53.9	59.0	Kenton	115	3.2	64.0	69.3	Powell	13	0.4	99.6	104.5
Carlisle	*	-	-	-	Knott	15	0.4	80.3	99.2	Pulaski	82	2.3	113.5	126.9
Carroll	10	0.3	92.5	93.1	Knox	20	0.6	57.3	63.9	Robertson	0	0.0	0.0	0.0
Carter	15	0.4	42.0	55.5	Larue	18	0.5	124.2	125.8	Rockcastle	12	0.3	58.3	71.6
Casey	16	0.4	87.2	100.7	Laurel	51	1.4	78.1	84.1	Rowan	13	0.4	62.8	52.9
Christian	*	-	-	-	Lawrence	*	-	-	-	Russell	20	0.6	97.7	112.2
Clark	35	1.0	76.9	96.6	Lee	*	-	-	-	Scott	44	1.2	79.9	78.5
Clay	25	0.7	115.9	124.3	Leslie	14	0.4	138.0	138.0	Shelby	33	0.9	67.0	68.0
Clinton	14	0.4	121.8	137.2	Letcher	34	1.0	140.0	155.3	Simpson	7	0.2	35.3	37.8
Crittenden	*	-	-	-	Lewis	*	-	-	-	Spencer	8	0.2	43.2	42.6
Cumberland	5	0.1	56.8	75.1	Lincoln	20	0.6	74.6	81.2	Taylor	29	0.8	101.8	113.5
Daviess	117	3.3	102.4	115.7	Livingston	13	0.4	130.6	140.7	Todd	*	-	-	-
Edmonson	*	-	-	-	Logan	5	0.1	13.5	18.5	Trigg	*	-	-	-
Elliott	6	0.2	68.8	79.9	Lyon	9	0.3	96.9	112.4	Trimble	*	-	-	-
Estill	21	0.6	139.9	147.9	Madison	63	1.8	70.6	68.2	Union	*	-	-	-
Fayette	264	7.4	80.7	81.5	Magoffin	7	0.2	46.1	56.6	Warren	34	1.0	26.6	25.9
Fleming	13	0.4	76.9	90.1	Marion	18	0.5	80.5	92.8	Washington	5	0.1	39.8	41.4
Floyd	38	1.1	91.7	106.0	Marshall	29	0.8	75.2	93.0	Wayne	15	0.4	58.6	73.3
Franklin	46	1.3	80.9	90.5	Martin	10	0.3	94.3	88.3	Webster	*	-	-	-
Fulton	*	-	-	-	Mason	8	0.2	47.7	46.6	Whitley	52	1.5	132.7	143.5
Gallatin	7	0.2	69.2	79.3	McCracken	62	1.7	71.6	94.9	Wolfe	14	0.4	152.3	195.1
Garrard	5	0.1	24.0	28.5	McCreary	14	0.4	83.3	80.4	Woodford	18	0.5	65.9	67.8

* 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, 2019

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Adair	96	0.8	503.0	499.6	Grant	55	0.5	227.2	218.9	McLean	23	0.2	267.3	248.6
Allen	61	0.5	302.9	288.8	Graves	81	0.7	222.0	217.1	Meade	34	0.3	129.5	118.4
Anderson	61	0.5	281.9	269.2	Grayson	101	0.9	393.3	383.7	Menifee	21	0.2	386.1	325.5
Ballard	6	0.1	88.9	75.2	Green	39	0.3	348.8	353.0	Mercer	65	0.6	317.6	298.5
Barren	173	1.5	401.3	391.6	Greenup	47	0.4	130.5	133.3	Metcalfe	60	0.5	577.1	598.2
Bath	43	0.4	351.5	347.3	Hancock	18	0.2	217.8	205.5	Monroe	29	0.2	268.1	270.6
Bell	93	0.8	357.8	350.0	Hardin	446	3.8	410.1	404.1	Montgomery	90	0.8	319.8	319.1
Boone	168	1.4	130.9	127.7	Harlan	71	0.6	280.5	268.8	Morgan	64	0.5	503.0	479.6
Bourbon	58	0.5	294.1	287.4	Harrison	119	1.0	640.4	633.7	Muhlenberg	92	0.8	311.1	299.0
Boyd	113	1.0	238.2	239.2	Hart	68	0.6	370.8	359.7	Nelson	137	1.2	311.3	298.8
Boyle	109	0.9	344.5	362.1	Henderson	100	0.9	230.9	219.3	Nicholas	36	0.3	461.9	502.4
Bracken	24	0.2	288.6	291.3	Henry	79	0.7	525.2	490.5	Ohio	120	1.0	512.9	498.2
Breathitt	28	0.2	228.5	220.0	Hickman	7	0.1	138.5	158.3	Oldham	135	1.2	208.0	203.1
Breckinridge	65	0.6	337.2	318.8	Hopkins	122	1.0	287.5	270.7	Owen	20	0.2	191.9	183.8
Bullitt	111	0.9	136.7	136.9	Jackson	46	0.4	372.2	342.2	Owsley	12	0.1	293.0	268.3
Butler	38	0.3	313.9	297.5	Jefferson	1761	15.0	232.1	228.5	Pendleton	22	0.2	164.8	151.4
Caldwell	23	0.2	184.4	180.9	Jessamine	106	0.9	194.0	196.6	Perry	150	1.3	629.2	574.9
Calloway	101	0.9	265.5	258.1	Johnson	75	0.6	335.1	335.0	Pike	144	1.2	261.0	246.6
Campbell	118	1.0	130.3	126.7	Kenton	177	1.5	108.7	106.6	Powell	38	0.3	326.9	305.4
Carlisle	16	0.1	306.7	335.4	Knott	50	0.4	355.1	330.6	Pulaski	141	1.2	235.3	218.2
Carroll	37	0.3	355.7	344.6	Knox	94	0.8	303.9	300.3	Robertson	10	0.1	484.8	468.4
Carter	41	0.3	153.7	151.8	Larue	62	0.5	455.0	433.4	Rockcastle	87	0.7	543.2	519.4
Casey	48	0.4	300.6	302.1	Laurel	178	1.5	300.9	293.4	Rowan	73	0.6	296.1	297.0
Christian	162	1.4	234.1	226.0	Lawrence	32	0.3	205.6	205.5	Russell	58	0.5	331.8	325.5
Clark	144	1.2	402.4	397.3	Lee	14	0.1	204.8	199.1	Scott	142	1.2	257.5	253.4
Clay	90	0.8	466.1	447.7	Leslie	36	0.3	373.3	354.9	Shelby	109	0.9	231.4	224.7
Clinton	28	0.2	277.4	274.3	Letcher	109	0.9	538.1	497.7	Simpson	70	0.6	373.8	377.8
Crittenden	30	0.3	345.2	336.5	Lewis	23	0.2	192.6	173.5	Spencer	40	0.3	219.6	212.8
Cumberland	20	0.2	304.8	300.3	Lincoln	91	0.8	373.8	369.3	Taylor	130	1.1	478.8	508.8
Daviess	327	2.8	336.0	323.4	Livingston	40	0.3	443.2	432.8	Todd	21	0.2	172.2	170.6
Edmonson	25	0.2	219.1	203.7	Logan	63	0.5	235.7	233.4	Trigg	30	0.3	205.7	204.9
Elliott	18	0.2	238.1	239.7	Lyon	9	0.1	138.0	112.4	Trimble	22	0.2	288.1	258.4
Estill	38	0.3	294.2	267.6	Madison	222	1.9	241.8	240.3	Union	49	0.4	344.0	337.8
Fayette	870	7.4	265.7	268.7	Magoffin	38	0.3	338.7	307.4	Warren	300	2.6	226.9	228.5
Fleming	38	0.3	276.8	263.3	Marion	48	0.4	257.9	247.4	Washington	24	0.2	202.5	198.6
Floyd	151	1.3	429.5	421.3	Marshall	64	0.5	202.2	205.2	Wayne	78	0.7	389.2	381.1
Franklin	134	1.1	269.5	263.7	Martin	28	0.2	267.2	247.3	Webster	38	0.3	294.0	289.8
Fulton	3	0.0	59.8	49.0	Mason	56	0.5	313.6	326.5	Whitley	184	1.6	500.9	507.7
Gallatin	13	0.1	156.6	147.2	McCracken	116	1.0	186.7	177.5	Wolfe	42	0.4	598.6	585.2
Garrard	49	0.4	297.5	279.0	McCreary	32	0.3	188.4	183.8	Woodford	89	0.8	352.9	335.4

* At least one but fewer than five

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

Table 13: Incidence of All Inpatient TBI* by County, Sorted by Frequency, Kentucky, 2019

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Jefferson	779	21.9	90.4	101.1	Harlan	21	0.6	65.7	79.5	Monroe	10	0.3	73.0	93.3
Fayette	264	7.4	80.7	81.5	Boyd	20	0.6	33.4	42.3	Pendleton	10	0.3	56.3	68.8
Daviess	117	3.3	102.4	115.7	Henry	20	0.6	116.0	124.2	Hopkins	9	0.3	21.5	20.0
Kenton	115	3.2	64.0	69.3	Knox	20	0.6	57.3	63.9	Lyon	9	0.3	96.9	112.4
Boone	82	2.3	64.6	62.3	Lincoln	20	0.6	74.6	81.2	Metcalf	9	0.3	66.0	89.7
Pulaski	82	2.3	113.5	126.9	Ohio	20	0.6	78.8	83.0	Owsley	9	0.3	161.1	201.3
Hardin	80	2.2	68.8	72.5	Russell	20	0.6	97.7	112.2	Caldwell	8	0.2	43.1	62.9
Pike	80	2.2	122.7	137.0	Breckinridge	19	0.5	84.0	93.2	Mason	8	0.2	47.7	46.6
Madison	63	1.8	70.6	68.2	Adair	18	0.5	83.7	93.7	Spencer	8	0.2	43.2	42.6
McCracken	62	1.7	71.6	94.9	Anderson	18	0.5	72.4	79.4	Gallatin	7	0.2	69.2	79.3
Campbell	55	1.5	53.9	59.0	Larue	18	0.5	124.2	125.8	Green	7	0.2	60.5	63.4
Bullitt	53	1.5	59.1	65.4	Marion	18	0.5	80.5	92.8	Magoffin	7	0.2	46.1	56.6
Whitley	52	1.5	132.7	143.5	Woodford	18	0.5	65.9	67.8	Nicholas	7	0.2	91.0	97.7
Laurel	51	1.4	78.1	84.1	Allen	17	0.5	69.4	80.5	Owen	7	0.2	51.6	64.3
Oldham	47	1.3	77.3	70.7	Bourbon	17	0.5	70.9	84.2	Simpson	7	0.2	35.3	37.8
Franklin	46	1.3	80.9	90.5	Breathitt	16	0.4	121.5	125.7	Elliott	6	0.2	68.8	79.9
Scott	44	1.2	79.9	78.5	Casey	16	0.4	87.2	100.7	Hancock	6	0.2	69.9	68.5
Jessamine	39	1.1	66.6	72.3	Carter	15	0.4	42.0	55.5	Cumberland	5	0.1	56.8	75.1
Floyd	38	1.1	91.7	106.0	Grant	15	0.4	61.9	59.7	Garrard	5	0.1	24.0	28.5
Clark	35	1.0	76.9	96.6	Knott	15	0.4	80.3	99.2	Logan	5	0.1	13.5	18.5
Letcher	34	1.0	140.0	155.3	Wayne	15	0.4	58.6	73.3	Washington	5	0.1	39.8	41.4
Nelson	34	1.0	73.6	74.2	Clinton	14	0.4	121.8	137.2	Ballard	*	-	-	-
Warren	34	1.0	26.6	25.9	Hart	14	0.4	71.8	74.1	Bracken	*	-	-	-
Shelby	33	0.9	67.0	68.0	Leslie	14	0.4	138.0	138.0	Christian	*	-	-	-
Calloway	32	0.9	68.1	81.8	McCreary	14	0.4	83.3	80.4	Edmonson	*	-	-	-
Montgomery	32	0.9	108.5	113.5	Wolfe	14	0.4	152.3	195.1	Henderson	*	-	-	-
Perry	31	0.9	115.5	118.8	Fleming	13	0.4	76.9	90.1	Hickman	*	-	-	-
Boyle	30	0.8	79.4	99.7	Livingston	13	0.4	130.6	140.7	Trimble	*	-	-	-
Marshall	29	0.8	75.2	93.0	Powell	13	0.4	99.6	104.5	Lee	*	-	-	-
Muhlenberg	29	0.8	79.6	94.2	Rowan	13	0.4	62.8	52.9	Lewis	*	-	-	-
Taylor	29	0.8	101.8	113.5	Bell	12	0.3	40.9	45.2	Trigg	*	-	-	-
Graves	26	0.7	53.7	69.7	Rockcastle	12	0.3	58.3	71.6	Webster	*	-	-	-
Meade	26	0.7	93.8	90.5	Bath	11	0.3	86.4	88.8	Carlisle	*	-	-	-
Mercer	26	0.7	113.1	119.4	Butler	11	0.3	73.4	86.1	Crittenden	*	-	-	-
Clay	25	0.7	115.9	124.3	McLean	11	0.3	118.0	118.9	Greenup	*	-	-	-
Grayson	25	0.7	91.2	95.0	Menifee	11	0.3	143.5	170.5	Lawrence	*	-	-	-
Harrison	22	0.6	103.4	117.2	Morgan	11	0.3	68.8	82.4	Todd	*	-	-	-
Johnson	22	0.6	79.4	98.3	Carroll	10	0.3	92.5	93.1	Union	*	-	-	-
Barren	21	0.6	44.3	47.5	Jackson	10	0.3	83.8	74.4	Fulton	*	-	-	-
Estill	21	0.6	139.9	147.9	Martin	10	0.3	94.3	88.3	Robertson	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, 2019

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

Age-Adjusted Crude					Age-Adjusted Crude					Age-Adjusted Crude				
County	Freq	Percent	Rate	Rate	County	Freq	Percent	Rate	Rate	County	Freq	Percent	Rate	Rate
Jefferson	1761	15.0	232.1	228.5	Lincoln	91	0.8	373.8	369.3	Estill	38	0.3	294.2	267.6
Fayette	870	7.4	265.7	268.7	Clay	90	0.8	466.1	447.7	Fleming	38	0.3	276.8	263.3
Hardin	446	3.8	410.1	404.1	Montgomery	90	0.8	319.8	319.1	Magoffin	38	0.3	338.7	307.4
Daviess	327	2.8	336.0	323.4	Woodford	89	0.8	352.9	335.4	Powell	38	0.3	326.9	305.4
Warren	300	2.6	226.9	228.5	Rockcastle	87	0.7	543.2	519.4	Webster	38	0.3	294.0	289.8
Madison	222	1.9	241.8	240.3	Graves	81	0.7	222.0	217.1	Carroll	37	0.3	355.7	344.6
Whitley	184	1.6	500.9	507.7	Henry	79	0.7	525.2	490.5	Leslie	36	0.3	373.3	354.9
Laurel	178	1.5	300.9	293.4	Wayne	78	0.7	389.2	381.1	Nicholas	36	0.3	461.9	502.4
Kenton	177	1.5	108.7	106.6	Johnson	75	0.6	335.1	335.0	Meade	34	0.3	129.5	118.4
Barren	173	1.5	401.3	391.6	Rowan	73	0.6	296.1	297.0	Lawrence	32	0.3	205.6	205.5
Boone	168	1.4	130.9	127.7	Harlan	71	0.6	280.5	268.8	McCreary	32	0.3	188.4	183.8
Christian	162	1.4	234.1	226.0	Simpson	70	0.6	373.8	377.8	Crittenden	30	0.3	345.2	336.5
Floyd	151	1.3	429.5	421.3	Hart	68	0.6	370.8	359.7	Trigg	30	0.3	205.7	204.9
Perry	150	1.3	629.2	574.9	Breckinridge	65	0.6	337.2	318.8	Monroe	29	0.2	268.1	270.6
Clark	144	1.2	402.4	397.3	Mercer	65	0.6	317.6	298.5	Breathitt	28	0.2	228.5	220.0
Pike	144	1.2	261.0	246.6	Marshall	64	0.5	202.2	205.2	Clinton	28	0.2	277.4	274.3
Scott	142	1.2	257.5	253.4	Morgan	64	0.5	503.0	479.6	Martin	28	0.2	267.2	247.3
Pulaski	141	1.2	235.3	218.2	Logan	63	0.5	235.7	233.4	Edmonson	25	0.2	219.1	203.7
Nelson	137	1.2	311.3	298.8	Larue	62	0.5	455.0	433.4	Bracken	24	0.2	288.6	291.3
Oldham	135	1.2	208.0	203.1	Allen	61	0.5	302.9	288.8	Washington	24	0.2	202.5	198.6
Franklin	134	1.1	269.5	263.7	Anderson	61	0.5	281.9	269.2	Caldwell	23	0.2	184.4	180.9
Taylor	130	1.1	478.8	508.8	Metcalfe	60	0.5	577.1	598.2	Lewis	23	0.2	192.6	173.5
Hopkins	122	1.0	287.5	270.7	Bourbon	58	0.5	294.1	287.4	McLean	23	0.2	267.3	248.6
Ohio	120	1.0	512.9	498.2	Russell	58	0.5	331.8	325.5	Pendleton	22	0.2	164.8	151.4
Harrison	119	1.0	640.4	633.7	Mason	56	0.5	313.6	326.5	Trimble	22	0.2	288.1	258.4
Campbell	118	1.0	130.3	126.7	Grant	55	0.5	227.2	218.9	Menifee	21	0.2	386.1	325.5
McCracken	116	1.0	186.7	177.5	Knott	50	0.4	355.1	330.6	Todd	21	0.2	172.2	170.6
Boyd	113	1.0	238.2	239.2	Garrard	49	0.4	297.5	279.0	Cumberland	20	0.2	304.8	300.3
Bullitt	111	0.9	136.7	136.9	Union	49	0.4	344.0	337.8	Owen	20	0.2	191.9	183.8
Boyle	109	0.9	344.5	362.1	Casey	48	0.4	300.6	302.1	Elliott	18	0.2	238.1	239.7
Letcher	109	0.9	538.1	497.7	Marion	48	0.4	257.9	247.4	Hancock	18	0.2	217.8	205.5
Shelby	109	0.9	231.4	224.7	Greenup	47	0.4	130.5	133.3	Carlisle	16	0.1	306.7	335.4
Jessamine	106	0.9	194.0	196.6	Jackson	46	0.4	372.2	342.2	Lee	14	0.1	204.8	199.1
Calloway	101	0.9	265.5	258.1	Bath	43	0.4	351.5	347.3	Gallatin	13	0.1	156.6	147.2
Grayson	101	0.9	393.3	383.7	Wolfe	42	0.4	598.6	585.2	Owsley	12	0.1	293.0	268.3
Henderson	100	0.9	230.9	219.3	Carter	41	0.3	153.7	151.8	Robertson	10	0.1	484.8	468.4
Adair	96	0.8	503.0	499.6	Livingston	40	0.3	443.2	432.8	Lyon	9	0.1	138.0	112.4
Knox	94	0.8	303.9	300.3	Spencer	40	0.3	219.6	212.8	Hickman	7	0.1	138.5	158.3
Bell	93	0.8	357.8	350.0	Green	39	0.3	348.8	353.0	Ballard	6	0.1	88.9	75.2
Muhlenberg	92	0.8	311.1	299.0	Butler	38	0.3	313.9	297.5	Fulton	*	-	-	-

* At least one but fewer than five

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

Table 15: Incidence of All Inpatient TBI* by County, Sorted by Age Adjusted Rate, Kentucky, 2019

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Owsley	9	0.3	161.1	201.3	Marion	18	0.5	80.5	92.8	Wayne	15	0.4	58.6	73.3
Wolfe	14	0.4	152.3	195.1	Knott	15	0.4	80.3	99.2	Rockcastle	12	0.3372	58.3	71.6
Menifee	11	0.3	143.5	170.5	Scott	44	1.2	79.9	78.5	Knox	20	0.6	57.3	63.9
Letcher	34	1.0	140.0	155.3	Muhlenberg	29	0.8	79.6	94.2	Cumberland	5	0.1	56.8	75.1
Estill	21	0.6	139.9	147.9	Boyle	30	0.8	79.4	99.7	Pendleton	10	0.3	56.3	68.8
Leslie	14	0.4	138.0	138.0	Johnson	22	0.6	79.4	98.3	Campbell	55	1.5	53.9	59.0
Whitley	52	1.5	132.7	143.5	Ohio	20	0.6	78.8	83.0	Graves	26	0.7	53.7	69.7
Livingston	13	0.4	130.6	140.7	Laurel	51	1.4	78.1	84.1	Owen	7	0.2	51.6	64.3
Larue	18	0.5	124.2	125.8	Oldham	47	1.3	77.3	70.7	Trimble	*	-	-	-
Pike	80	2.2	122.7	137.0	Fleming	13	0.4	76.9	90.1	Lee	*	-	-	-
Clinton	14	0.4	121.8	137.2	Clark	35	1.0	76.9	96.6	Mason	8	0.2	47.7	46.6
Breathitt	16	0.4	121.5	125.7	Marshall	29	0.8	75.2	93.0	Bracken	*	-	-	-
McLean	11	0.3	118.0	118.9	Lincoln	20	0.6	74.6	81.2	Magoffin	7	0.2	46.1	56.6
Henry	20	0.6	116.0	124.2	Nelson	34	1.0	73.6	74.2	Barren	21	0.6	44.3	47.5
Clay	25	0.7	115.9	124.3	Butler	11	0.3	73.4	86.1	Spencer	8	0.2	43.2	42.6
Perry	31	0.9	115.5	118.8	Monroe	10	0.3	73.0	93.3	Caldwell	8	0.2	43.1	62.9
Pulaski	82	2.3	113.5	126.9	Hickman	*	-	-	-	Carter	15	0.4	42.0	55.5
Mercer	26	0.7	113.1	119.4	Anderson	18	0.5	72.4	79.4	Bell	12	0.3	40.9	45.2
Montgomery	32	0.9	108.5	113.5	Hart	14	0.4	71.8	74.1	Washington	5	0.1	39.8	41.4
Harrison	22	0.6	103.4	117.2	McCracken	62	1.7	71.6	94.9	Ballard	*	-	-	-
Daviess	117	3.3	102.4	115.7	Bourbon	17	0.5	70.9	84.2	Simpson	7	0.2	35.3	37.8
Taylor	29	0.8	101.8	113.5	Madison	63	1.8	70.6	68.2	Boyd	20	0.6	33.4	42.3
Powell	13	0.4	99.6	104.5	Hancock	6	0.2	69.9	68.5	Warren	34	1.0	26.6	25.9
Russell	20	0.6	97.7	112.2	Allen	17	0.5	69.4	80.5	Carlisle	*	-	-	-
Lyon	9	0.3	96.9	112.4	Gallatin	7	0.2	69.2	79.3	Garrard	5	0.1	24.0	28.5
Martin	10	0.3	94.3	88.3	Elliott	6	0.2	68.8	79.9	Edmonson	*	-	-	-
Meade	26	0.7	93.8	90.5	Morgan	11	0.3	68.8	82.4	Hopkins	9	0.3	21.5	20.0
Carroll	10	0.3	92.5	93.1	Hardin	80	2.2	68.8	72.5	Lewis	*	-	-	-
Floyd	38	1.1	91.7	106.0	Calloway	32	0.9	68.1	81.8	Webster	*	-	-	-
Grayson	25	0.7	91.2	95.0	Shelby	33	0.9	67.0	68.0	Todd	*	-	-	-
Nicholas	7	0.2	91.0	97.7	Jessamine	39	1.1	66.6	72.3	Trigg	*	-	-	-
Jefferson	779	21.9	90.4	101.1	Metcalf	9	0.3	66.0	89.7	Crittenden	*	-	-	-
Casey	16	0.4	87.2	100.7	Woodford	18	0.5	65.9	67.8	Logan	5	0.1	13.5	18.5
Bath	11	0.3	86.4	88.8	Harlan	21	0.6	65.7	79.5	Union	*	-	-	-
Breckinridge	19	0.5	84.0	93.2	Boone	82	2.3	64.6	62.3	Fulton	*	-	-	-
Jackson	10	0.3	83.8	74.4	Kenton	115	3.2	64.0	69.3	Henderson	*	-	-	-
Adair	18	0.5	83.7	93.7	Rowan	13	0.4	62.8	52.9	Lawrence	*	-	-	-
McCreary	14	0.4	83.3	80.4	Grant	15	0.4	61.9	59.7	Christian	*	-	-	-
Franklin	46	1.3	80.9	90.5	Green	7	0.2	60.5	63.4	Greenup	*	-	-	-
Fayette	264	7.4	80.7	81.5	Bullitt	53	1.5	59.1	65.4	Robertson	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, 2019

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

Age-Adjusted Crude					Age-Adjusted Crude					Age-Adjusted Crude				
County	Freq	Percent	Rate	Rate	County	Freq	Percent	Rate	Rate	County	Freq	Percent	Rate	Rate
Harrison	119	1.0	640.4	633.7	Daviess	327	2.8	336.0	323.4	Elliott	18	0.2	238.1	239.7
Perry	150	1.3	629.2	574.9	Johnson	75	0.6	335.1	335.0	Logan	63	0.5	235.7	233.4
Wolfe	42	0.4	598.6	585.2	Russell	58	0.5	331.8	325.5	Pulaski	141	1.2	235.3	218.2
Metcalfe	60	0.5	577.1	598.2	Powell	38	0.3	326.9	305.4	Christian	162	1.4	234.1	226.0
Rockcastle	87	0.7	543.2	519.4	Montgomery	90	0.8	319.8	319.1	Jefferson	1761	15.0	232.1	228.5
Letcher	109	0.9	538.1	497.7	Mercer	65	0.6	317.6	298.5	Shelby	109	0.9	231.4	224.7
Henry	79	0.7	525.2	490.5	Butler	38	0.3	313.9	297.5	Henderson	100	0.9	230.9	219.3
Ohio	120	1.0	512.9	498.2	Mason	56	0.5	313.6	326.5	Breathitt	28	0.2	228.5	220.0
Adair	96	0.8	503.0	499.6	Nelson	137	1.2	311.3	298.8	Grant	55	0.5	227.2	218.9
Morgan	64	0.5	503.0	479.6	Muhlenberg	92	0.8	311.1	299.0	Warren	300	2.6	226.9	228.5
Whitley	184	1.6	500.9	507.7	Carlisle	16	0.1	306.7	335.4	Graves	81	0.7	222.0	217.1
Robertson	10	0.1	484.8	468.4	Cumberland	20	0.2	304.8	300.3	Spencer	40	0.3	219.6	212.8
Taylor	130	1.1	478.8	508.8	Knox	94	0.8	303.9	300.3	Edmonson	25	0.2	219.1	203.7
Clay	90	0.8	466.1	447.7	Allen	61	0.5	302.9	288.8	Hancock	18	0.2	217.8	205.5
Nicholas	36	0.3	461.9	502.4	Laurel	178	1.5	300.9	293.4	Oldham	135	1.2	208.0	203.1
Larue	62	0.5	455.0	433.4	Casey	48	0.4	300.6	302.1	Trigg	30	0.3	205.7	204.9
Livingston	40	0.3	443.2	432.8	Garrard	49	0.4	297.5	279.0	Lawrence	32	0.3	205.6	205.5
Floyd	151	1.3	429.5	421.3	Rowan	73	0.6	296.1	297.0	Lee	14	0.1	204.8	199.1
Hardin	446	3.8	410.1	404.1	Estill	38	0.3	294.2	267.6	Washington	24	0.2	202.5	198.6
Clark	144	1.2	402.4	397.3	Bourbon	58	0.5	294.1	287.4	Marshall	64	0.5	202.2	205.2
Barren	173	1.5	401.3	391.6	Webster	38	0.3	294.0	289.8	Jessamine	106	0.9	194.0	196.6
Grayson	101	0.9	393.3	383.7	Owsley	12	0.1	293.0	268.3	Lewis	23	0.2	192.6	173.5
Wayne	78	0.7	389.2	381.1	Bracken	24	0.2	288.6	291.3	Owen	20	0.2	191.9	183.8
Menifee	21	0.2	386.1	325.5	Trimble	22	0.2	288.1	258.4	McCreary	32	0.3	188.4	183.8
Lincoln	91	0.8	373.8	369.3	Hopkins	122	1.0	287.5	270.7	McCracken	116	1.0	186.7	177.5
Simpson	70	0.6	373.8	377.8	Anderson	61	0.5	281.9	269.2	Caldwell	23	0.2	184.4	180.9
Leslie	36	0.3	373.3	354.9	Harlan	71	0.6	280.5	268.8	Todd	21	0.2	172.2	170.6
Jackson	46	0.4	372.2	342.2	Clinton	28	0.2	277.4	274.3	Pendleton	22	0.2	164.8	151.4
Hart	68	0.6	370.8	359.7	Fleming	38	0.3	276.8	263.3	Gallatin	13	0.1	156.6	147.2
Bell	93	0.8	357.8	350.0	Franklin	134	1.1	269.5	263.7	Carter	41	0.3	153.7	151.8
Carroll	37	0.3	355.7	344.6	Monroe	29	0.2	268.1	270.6	Hickman	7	0.1	138.5	158.3
Knott	50	0.4	355.1	330.6	McLean	23	0.2	267.3	248.6	Lyon	9	0.1	138.0	112.4
Woodford	89	0.8	352.9	335.4	Martin	28	0.2	267.2	247.3	Bullitt	111	0.9	136.7	136.9
Bath	43	0.4	351.5	347.3	Fayette	870	7.4	265.7	268.7	Boone	168	1.4	130.9	127.7
Green	39	0.3	348.8	353.0	Calloway	101	0.9	265.5	258.1	Greenup	47	0.4	130.5	133.3
Crittenden	30	0.3	345.2	336.5	Pike	144	1.2	261.0	246.6	Campbell	118	1.0	130.3	126.7
Boyle	109	0.9	344.5	362.1	Marion	48	0.4	257.9	247.4	Meade	34	0.3	129.5	118.4
Union	49	0.4	344.0	337.8	Scott	142	1.2	257.5	253.4	Kenton	177	1.5	108.7	106.6
Magoffin	38	0.3	338.7	307.4	Madison	222	1.9	241.8	240.3	Ballard	6	0.1	88.9	75.2
Breckinridge	65	0.6	337.2	318.8	Boyd	113	1.0	238.2	239.2	Fulton	*	-	-	-

* At least one but fewer than five

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

Table 17: Length of Stay for Non-Fatal Inpatient TBI, Kentucky, 2019

Length of Stay	Number	Percent*
1 day	606	18.6
More than one day but less than 1 week	1639	50.4
1 week to less than 2 weeks	656	20.2
2 weeks to less than 3 weeks	184	5.7
3 weeks to less than 4 weeks	80	2.5
4 weeks or more	87	2.7
Total	3252	100.0

*Percent of hospitalized TBI

Table 18: Work Related Non-Fatal TBI, Kentucky 2019

Inpatient Work TBI (n=61)	LOS Days	Cost
Mean	6.4	\$91,453
Median	3	\$43,904
Min, Max	1,40	\$183,\$605,800
Sum of Charges		\$5,578,613

ED Work TBI (n=447)	Cost
Mean	\$5,771
Median	\$4,052
Min, Max	\$2,\$37,787
Sum of Charges	\$2,579,597

Table 19: Primary Payer and Charges for Non-Fatal Inpatient TBI, Kentucky, 2019

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	2,255	69.4	\$ 154,383,054
Commercial Ins	492	15.1	\$ 40,578,923
Self Pay	60	1.8	\$ 4,327,064
Workers Compensation	61	1.9	\$ 5,578,613
Other	382	11.8	\$ 48,393,078
Total	3,250	100.0	\$ 253,260,733

Table 20: Primary Payer and Charges for Non-Fatal ED TBI, Kentucky, 2019

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	6,136	52.6	\$ 38,576,518
Commercial Ins	3,045	26.1	\$ 16,757,773
Self Pay	702	6.0	\$ 374,856
Workers Compensation	447	3.8	\$ 40,900
Other	1,336	11.5	\$ 13,135,718
Total	11,666	100.0	\$ 68,885,765

Table 21: Non-Fatal NTBI by Age Group, Kentucky, 2019

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	1,998	59.3	732.9	1,370	40.7	502.5	3,368	100.0	1235.5
5-14	713	48.3	127.2	764	51.7	136.3	1,477	100.0	263.6
15-24	1,142	39.4	195.6	1,755	60.6	300.6	2,897	100.0	496.2
25-44	6,825	54.1	599.6	5,799	45.9	509.4	12,624	100.0	1109.0
45-64	29,564	81.4	2544.3	6,745	18.6	580.5	36,309	100.0	3124.8
65+	50,815	87.5	6770.2	7,232	12.5	963.5	58,047	100.0	7733.8
Total	91,057	79.4	2038.1	23,665	20.6	529.7	114,722	100.0	2567.8

Table 22: Non-Fatal NTBI by Gender, Kentucky, 2019

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	41,061	78.5	1865.5	11,274	21.5	512.2	52,335	100.0	2377.8
Female	49,993	80.1	2205.6	12,390	19.9	546.6	62,383	100.0	2752.2
Total	91,054	79.4	2038.1	23,664	20.6	529.7	114,718	100.0	2567.7

Table 23: Incidence of All Inpatient NTBI* by County, Sorted by County, Kentucky, 2019

*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	445	0.4	1816.9	2315.9	Grant	588	0.6	2181.7	2340.7	McLean	202	0.2	1656.9	2183.3
Allen	415	0.4	1562.6	1964.8	Graves	999	1.0	2047.1	2677.1	Meade	493	0.5	1535.9	1716.9
Anderson	467	0.5	1742.6	2060.6	Grayson	910	0.9	2752.4	3457.3	Menifee	254	0.3	2629.2	3937.4
Ballard	155	0.2	1322.9	1942.6	Green	239	0.2	1494.6	2163.1	Mercer	532	0.5	1843.1	2443.3
Barren	1101	1.1	1912.3	2492.3	Greenup	752	0.8	1504.6	2132.2	Metcalfe	309	0.3	2308.8	3080.8
Bath	417	0.4	2700.3	3367.5	Hancock	162	0.2	1515.5	1849.7	Monroe	257	0.3	1786.8	2397.8
Bell	584	0.6	1667.4	2198.1	Hardin	2465	2.5	2064.2	2233.7	Montgomery	715	0.7	2153.1	2535.2
Boone	1984	2.0	1429.7	1508.4	Harlan	1032	1.0	2902.8	3907.8	Morgan	381	0.4	2306.2	2855.0
Bourbon	492	0.5	1872.6	2437.6	Harrison	313	0.3	1283.4	1666.8	Muhlenberg	629	0.6	1543.5	2043.9
Boyd	1412	1.4	2198.7	2989.0	Hart	359	0.4	1545.1	1898.9	Nelson	1201	1.2	2269.4	2619.4
Boyle	734	0.7	1845.1	2438.5	Henderson	617	0.6	1056.4	1353.3	Nicholas	163	0.2	1873.6	2274.6
Bracken	207	0.2	2008.2	2512.4	Henry	440	0.4	2160.2	2731.9	Ohio	443	0.4	1458.1	1839.2
Breathitt	446	0.4	2781.9	3504.6	Hickman	100	0.1	1394.1	2261.9	Oldham	931	0.9	1375.6	1400.6
Breckinridge	430	0.4	1637.9	2109.1	Hopkins	988	1.0	1660.4	2192.2	Owen	196	0.2	1404.5	1801.5
Bullitt	1642	1.6	1733.1	2025.4	Jackson	475	0.5	2819.5	3533.7	Owsley	180	0.2	2926.5	4025.0
Butler	259	0.3	1526.2	2027.9	Jefferson	18860	18.9	2079.2	2447.7	Pendleton	356	0.4	1997.3	2450.3
Caldwell	211	0.2	1190.8	1659.5	Jessamine	1192	1.2	1949.5	2210.7	Perry	1294	1.3	3984.9	4959.4
Calloway	600	0.6	1315.1	1533.2	Johnson	648	0.6	2182.0	2894.7	Pike	1728	1.7	2252.6	2958.8
Campbell	1536	1.5	1375.3	1648.9	Kenton	2818	2.8	1509.3	1697.1	Powell	436	0.4	2932.8	3504.3
Carlisle	144	0.1	2227.3	3018.2	Knott	376	0.4	1992.4	2485.8	Pulaski	1663	1.7	2000.8	2573.4
Carroll	340	0.3	2738.2	3166.6	Knox	727	0.7	1902.3	2322.4	Robertson	41	0.0	1350.5	1920.4
Carter	646	0.6	1842.0	2392.2	Larue	376	0.4	2076.8	2628.1	Rockcastle	260	0.3	1225.6	1552.2
Casey	343	0.3	1655.4	2158.9	Laurel	1637	1.6	2274.0	2698.3	Rowan	669	0.7	2662.1	2721.4
Christian	978	1.0	1481.5	1364.6	Lawrence	386	0.4	1962.6	2479.0	Russell	347	0.3	1421.9	1947.1
Clark	934	0.9	2049.3	2576.6	Lee	252	0.3	2798.1	3583.1	Scott	849	0.9	1566.5	1515.2
Clay	809	0.8	3416.8	4023.9	Leslie	490	0.5	3694.6	4830.9	Shelby	758	0.8	1347.8	1562.3
Clinton	180	0.2	1331.6	1763.7	Letcher	759	0.8	2502.0	3465.9	Simpson	333	0.3	1461.9	1797.2
Crittenden	117	0.1	904.8	1312.4	Lewis	184	0.2	996.9	1388.0	Spencer	386	0.4	1931.6	2053.9
Cumberland	151	0.2	1520.5	2267.6	Lincoln	699	0.7	2195.1	2836.4	Taylor	619	0.6	1996.4	2422.8
Daviess	1869	1.9	1502.3	1848.6	Livingston	204	0.2	1544.6	2207.3	Todd	140	0.1	924.3	1137.2
Edmonson	171	0.2	981.6	1393.2	Logan	578	0.6	1620.6	2141.6	Trigg	226	0.2	1017.1	1543.4
Elliott	212	0.2	2044.3	2823.7	Lyon	175	0.2	1372.9	2185.0	Trimble	179	0.2	1696.5	2102.2
Estill	433	0.4	2376.9	3049.7	Madison	1981	2.0	2084.2	2144.7	Union	104	0.1	565.0	717.0
Fayette	5590	5.6	1676.9	1726.5	Magoffin	403	0.4	2600.0	3260.0	Warren	2020	2.0	1523.1	1538.9
Fleming	341	0.3	1811.4	2362.8	Marion	342	0.3	1454.4	1762.5	Washington	294	0.3	1823.0	2433.0
Floyd	1095	1.1	2412.9	3054.8	Marshall	687	0.7	1536.6	2202.6	Wayne	417	0.4	1494.9	2037.3
Franklin	1454	1.5	2272.1	2861.4	Martin	275	0.3	1955.2	2428.7	Webster	208	0.2	1314.1	1586.5
Fulton	150	0.2	1777.7	2451.0	Mason	395	0.4	1749.2	2303.2	Whitley	1703	1.7	4070.8	4699.0
Gallatin	223	0.2	2179.2	2524.9	McCracken	1584	1.6	1788.1	2424.0	Wolfe	268	0.3	2876.8	3734.2
Garrard	421	0.4	1864.5	2397.5	McCreary	498	0.5	2420.2	2860.8	Woodford	445	0.4	1346.8	1677.2

Table 24: Incidence of All ED NTBI* by County, Sorted by County, Kentucky, 2019

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Adair	166	0.7	692.5	863.9	Grant	254	1.1	1038.7	1011.1	McLean	39	0.2	368.9	421.5
Allen	141	0.6	567.4	667.6	Graves	239	1.0	595.8	640.5	Meade	66	0.3	216.1	229.9
Anderson	91	0.4	386.8	401.5	Grayson	200	0.8	671.7	759.9	Menifee	40	0.2	560.5	620.1
Ballard	25	0.1	283.7	313.3	Green	141	0.6	1032.8	1276.1	Mercer	117	0.5	512.3	537.3
Barren	165	0.7	340.2	373.5	Greenup	143	0.6	363.8	405.5	Metcalf	46	0.2	428.8	458.6
Bath	67	0.3	516.8	541.1	Hancock	32	0.1	327.1	365.4	Monroe	68	0.3	560.2	634.5
Bell	214	0.9	699.3	805.5	Hardin	480	2.0	423.0	435.0	Montgomery	240	1.0	783.0	851.0
Boone	452	1.9	343.9	343.6	Harlan	197	0.8	624.8	746.0	Morgan	82	0.3	546.0	614.5
Bourbon	135	0.6	611.9	668.9	Harrison	125	0.5	596.3	665.7	Muhlenberg	189	0.8	535.2	614.2
Boyd	280	1.2	553.4	592.7	Hart	82	0.3	407.0	433.7	Nelson	294	1.2	607.9	641.2
Boyle	169	0.7	536.8	561.5	Henderson	225	0.9	419.8	493.5	Nicholas	38	0.2	469.5	530.3
Bracken	53	0.2	560.9	643.3	Henry	135	0.6	778.8	838.2	Ohio	177	0.7	644.9	734.8
Breathitt	77	0.3	555.0	605.1	Hickman	19	0.1	275.1	429.8	Oldham	214	0.9	332.0	322.0
Breckinridge	104	0.4	456.2	510.1	Hopkins	293	1.2	570.5	650.1	Owen	50	0.2	465.6	459.6
Bullitt	219	0.9	257.7	270.1	Jackson	140	0.6	884.2	1041.5	Owsley	49	0.2	909.9	1095.7
Butler	41	0.2	281.3	321.0	Jefferson	4368	18.2	552.8	566.9	Pendleton	99	0.4	689.6	681.4
Caldwell	111	0.5	765.5	873.0	Jessamine	182	0.8	329.0	337.5	Perry	190	0.8	669.6	728.2
Calloway	171	0.7	401.8	437.0	Johnson	122	0.5	499.3	545.0	Pike	365	1.5	524.5	625.0
Campbell	413	1.7	441.8	443.4	Kenton	613	2.5	365.6	369.2	Powell	118	0.5	905.7	948.4
Carlisle	14	0.1	228.9	293.4	Knott	60	0.2	378.2	396.7	Pulaski	346	1.4	484.1	535.4
Carroll	120	0.5	1008.3	1117.6	Knox	174	0.7	500.9	555.8	Robertson	16	0.1	678.7	749.4
Carter	103	0.4	358.7	381.4	Larue	59	0.2	403.3	412.4	Rockcastle	103	0.4	552.6	614.9
Casey	137	0.6	704.9	862.3	Laurel	299	1.2	451.2	492.8	Rowan	75	0.3	319.4	305.1
Christian	345	1.4	516.3	481.4	Lawrence	87	0.4	512.1	558.7	Russell	74	0.3	329.6	415.2
Clark	304	1.3	768.3	838.6	Lee	74	0.3	925.8	1052.2	Scott	355	1.5	629.9	633.6
Clay	187	0.8	823.5	930.1	Leslie	119	0.5	911.6	1173.2	Shelby	263	1.1	512.3	542.1
Clinton	92	0.4	743.5	901.4	Letcher	137	0.6	573.2	625.6	Simpson	135	0.6	653.1	728.6
Crittenden	51	0.2	462.3	572.1	Lewis	37	0.2	227.1	279.1	Spencer	79	0.3	439.8	420.4
Cumberland	67	0.3	789.1	1006.2	Lincoln	176	0.7	618.6	714.2	Taylor	289	1.2	1033.4	1131.2
Daviess	336	1.4	319.2	332.3	Livingston	51	0.2	495.9	551.8	Todd	43	0.2	349.6	349.3
Edmonson	32	0.1	248.1	260.7	Logan	123	0.5	419.3	455.7	Trigg	92	0.4	531.9	628.3
Elliott	24	0.1	273.0	319.7	Lyon	54	0.2	450.7	674.2	Trimble	35	0.1	373.1	411.0
Estill	172	0.7	1129.9	1211.4	Madison	593	2.5	647.7	642.0	Union	58	0.2	334.2	399.9
Fayette	1359	5.7	418.3	419.7	Magoffin	65	0.3	472.6	525.8	Warren	479	2.0	376.0	364.9
Fleming	93	0.4	566.4	644.4	Marion	106	0.4	500.3	546.3	Washington	75	0.3	580.2	620.7
Floyd	342	1.4	829.9	954.1	Marshall	194	0.8	478.5	622.0	Wayne	160	0.7	655.5	781.7
Franklin	253	1.1	506.2	497.9	Martin	69	0.3	552.4	609.4	Webster	72	0.3	502.6	549.2
Fulton	18	0.1	270.6	294.1	Mason	113	0.5	555.1	658.9	Whitley	316	1.3	785.1	871.9
Gallatin	56	0.2	616.2	634.1	McCracken	289	1.2	393.2	442.3	Wolfe	81	0.3	937.6	1128.6
Garrard	101	0.4	512.5	575.2	McCreary	106	0.4	539.4	608.9	Woodford	143	0.6	524.9	539.0

Table 25: Incidence of All Inpatient NTBI* by County, Sorted by Frequency, Kentucky, 2019

*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
Jefferson	18860	18.9	2079.2	2447.7	Johnson	648	0.6	2182.0	2894.7	Fleming	341	0.3	1811.4	2362.8
Fayette	5590	5.6	1676.9	1726.5	Carter	646	0.6	1842.0	2392.2	Carroll	340	0.3	2738.2	3166.6
Kenton	2818	2.8	1509.3	1697.1	Muhlenberg	629	0.6	1543.5	2043.9	Simpson	333	0.3	1461.9	1797.2
Wardin	2465	2.5	2064.2	2233.7	Taylor	619	0.6	1996.4	2422.8	Harrison	313	0.3	1283.4	1666.8
Warren	2020	2.0	1523.1	1538.9	Henderson	617	0.6	1056.4	1353.3	Metcalfe	309	0.3	2308.8	3080.8
Boone	1984	2.0	1429.7	1508.4	Calloway	600	0.6	1315.1	1533.2	Washington	294	0.3	1823.0	2433.0
Madison	1981	2.0	2084.2	2144.7	Grant	588	0.6	2181.7	2340.7	Martin	275	0.3	1955.2	2428.7
Daviess	1869	1.9	1502.3	1848.6	Bell	584	0.6	1667.4	2198.1	Wolfe	268	0.3	2876.8	3734.2
Pike	1728	1.7	2252.6	2958.8	Logan	578	0.6	1620.6	2141.6	Rockcastle	260	0.3	1225.6	1552.2
Whitley	1703	1.7	4070.8	4699.0	Mercer	532	0.5	1843.1	2443.3	Butler	259	0.3	1526.2	2027.9
Pulaski	1663	1.7	2000.8	2573.4	McCreary	498	0.5	2420.2	2860.8	Monroe	257	0.3	1786.8	2397.8
Bullitt	1642	1.6	1733.1	2025.4	Meade	493	0.5	1535.9	1716.9	Menifee	254	0.3	2629.2	3937.4
Laurel	1637	1.6	2274.0	2698.3	Bourbon	492	0.5	1872.6	2437.6	Lee	252	0.3	2798.1	3583.1
McCracken	1584	1.6	1788.1	2424.0	Leslie	490	0.5	3694.6	4830.9	Green	239	0.2	1494.6	2163.1
Campbell	1536	1.5	1375.3	1648.9	Jackson	475	0.5	2819.5	3533.7	Trigg	226	0.2	1017.1	1543.4
Franklin	1454	1.5	2272.1	2861.4	Anderson	467	0.5	1742.6	2060.6	Gallatin	223	0.2	2179.2	2524.9
Boyd	1412	1.4	2198.7	2989.0	Breathitt	446	0.4	2781.9	3504.6	Elliott	212	0.2	2044.3	2823.7
Perry	1294	1.3	3984.9	4959.4	Adair	445	0.4	1816.9	2315.9	Caldwell	211	0.2	1190.8	1659.5
Nelson	1201	1.2	2269.4	2619.4	Woodford	445	0.4	1346.8	1677.2	Webster	208	0.2	1314.1	1586.5
Jessamine	1192	1.2	1949.5	2210.7	Ohio	443	0.4	1458.1	1839.2	Bracken	207	0.2	2008.2	2512.4
Barren	1101	1.1	1912.3	2492.3	Henry	440	0.4	2160.2	2731.9	Livingston	204	0.2	1544.6	2207.3
Floyd	1095	1.1	2412.9	3054.8	Powell	436	0.4	2932.8	3504.3	McLean	202	0.2	1656.9	2183.3
Harlan	1032	1.0	2902.8	3907.8	Estill	433	0.4	2376.9	3049.7	Owen	196	0.2	1404.5	1801.5
Graves	999	1.0	2047.1	2677.1	Breckinridge	430	0.4	1637.9	2109.1	Lewis	184	0.2	996.9	1388.0
Hopkins	988	1.0	1660.4	2192.2	Garrard	421	0.4	1864.5	2397.5	Clinton	180	0.2	1331.6	1763.7
Christian	978	1.0	1481.5	1364.6	Bath	417	0.4	2700.3	3367.5	Owsley	180	0.2	2926.5	4025.0
Clark	934	0.9	2049.3	2576.6	Wayne	417	0.4	1494.9	2037.3	Trimble	179	0.2	1696.5	2102.2
Oldham	931	0.9	1375.6	1400.6	Allen	415	0.4	1562.6	1964.8	Lyon	175	0.2	1372.9	2185.0
Grayson	910	0.9	2752.4	3457.3	Magoffin	403	0.4	2600.0	3260.0	Edmonson	171	0.2	981.6	1393.2
Scott	849	0.9	1566.5	1515.2	Mason	395	0.4	1749.2	2303.2	Nicholas	163	0.2	1873.6	2274.6
Clay	809	0.8	3416.8	4023.9	Lawrence	386	0.4	1962.6	2479.0	Hancock	162	0.2	1515.5	1849.7
Letcher	759	0.8	2502.0	3465.9	Spencer	386	0.4	1931.6	2053.9	Ballard	155	0.2	1322.9	1942.6
Shelby	758	0.8	1347.8	1562.3	Morgan	381	0.4	2306.2	2855.0	Cumberland	151	0.2	1520.5	2267.6
Greenup	752	0.8	1504.6	2132.2	Knott	376	0.4	1992.4	2485.8	Fulton	150	0.2	1777.7	2451.0
Boyle	734	0.7	1845.1	2438.5	Larue	376	0.4	2076.8	2628.1	Carlisle	144	0.1	2227.3	3018.2
Knox	727	0.7	1902.3	2322.4	Hart	359	0.4	1545.1	1898.9	Todd	140	0.1	924.3	1137.2
Montgomery	715	0.7	2153.1	2535.2	Pendleton	356	0.4	1997.3	2450.3	Crittenden	117	0.1	904.8	1312.4
Lincoln	699	0.7	2195.1	2836.4	Russell	347	0.3	1421.9	1947.1	Union	104	0.1	565.0	717.0
Marshall	687	0.7	1536.6	2202.6	Casey	343	0.3	1655.4	2158.9	Hickman	100	0.1	1394.1	2261.9

Table 26: Incidence of All ED NTBI* by County, Sorted by Frequency, Kentucky, 2019

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Jefferson	4368	18.2	552.8	566.9	Knox	174	0.7	500.9	555.8	Wolfe	81	0.3	937.6	1128.6
Fayette	1359	5.7	418.3	419.7	Estill	172	0.7	1129.9	1211.4	Spencer	79	0.3	439.8	420.4
Kenton	613	2.5	365.6	369.2	Calloway	171	0.7	401.8	437.0	Breathitt	77	0.3	555.0	605.1
Madison	593	2.5	647.7	642.0	Boyle	169	0.7	536.8	561.5	Rowan	75	0.3	319.4	305.1
Hardin	480	2.0	423.0	435.0	Adair	166	0.7	692.5	863.9	Washington	75	0.3	580.2	620.7
Warren	479	2.0	376.0	364.9	Barren	165	0.7	340.2	373.5	Lee	74	0.3	925.8	1052.2
Boone	452	1.9	343.9	343.6	Wayne	160	0.7	655.5	781.7	Russell	74	0.3	329.6	415.2
Campbell	413	1.7	441.8	443.4	Greenup	143	0.6	363.8	405.5	Webster	72	0.3	502.6	549.2
Pike	365	1.5	524.5	625.0	Woodford	143	0.6	524.9	539.0	Martin	69	0.3	552.4	609.4
Scott	355	1.5	629.9	633.6	Allen	141	0.6	567.4	667.6	Monroe	68	0.3	560.2	634.5
Pulaski	346	1.4	484.1	535.4	Green	141	0.6	1032.8	1276.1	Bath	67	0.3	516.8	541.1
Christian	345	1.4	516.3	481.4	Jackson	140	0.6	884.2	1041.5	Cumberland	67	0.3	789.1	1006.2
Floyd	342	1.4	829.9	954.1	Casey	137	0.6	704.9	862.3	Meade	66	0.3	216.1	229.9
Daviess	336	1.4	319.2	332.3	Letcher	137	0.6	573.2	625.6	Magoffin	65	0.3	472.6	525.8
Whitley	316	1.3	785.1	871.9	Bourbon	135	0.6	611.9	668.9	Knott	60	0.2	378.2	396.7
Clark	304	1.3	768.3	838.6	Henry	135	0.6	778.8	838.2	Larue	59	0.2	403.3	412.4
Laurel	299	1.2	451.2	492.8	Simpson	135	0.6	653.1	728.6	Union	58	0.2	334.2	399.9
Nelson	294	1.2	607.9	641.2	Harrison	125	0.5	596.3	665.7	Gallatin	56	0.2	616.2	634.1
Hopkins	293	1.2	570.5	650.1	Logan	123	0.5	419.3	455.7	Lyon	54	0.2	450.7	674.2
McCracken	289	1.2	393.2	442.3	Johnson	122	0.5	499.3	545.0	Bracken	53	0.2	560.9	643.3
Taylor	289	1.2	1033.4	1131.2	Carroll	120	0.5	1008.3	1117.6	Crittenden	51	0.2	462.3	572.1
Boyd	280	1.2	553.4	592.7	Leslie	119	0.5	911.6	1173.2	Livingston	51	0.2	495.9	551.8
Shelby	263	1.1	512.3	542.1	Powell	118	0.5	905.7	948.4	Owen	50	0.2	465.6	459.6
Grant	254	1.1	1038.7	1011.1	Mercer	117	0.5	512.3	537.3	Owsley	49	0.2	909.9	1095.7
Franklin	253	1.1	506.2	497.9	Mason	113	0.5	555.1	658.9	Metcalf	46	0.2	428.8	458.6
Montgomery	240	1.0	783.0	851.0	Caldwell	111	0.5	765.5	873.0	Todd	43	0.2	349.6	349.3
Graves	239	1.0	595.8	640.5	Marion	106	0.4	500.3	546.3	Butler	41	0.2	281.3	321.0
Henderson	225	0.9	419.8	493.5	McCreary	106	0.4	539.4	608.9	Menifee	40	0.2	560.5	620.1
Bullitt	219	0.9	257.7	270.1	Breckinridge	104	0.4	456.2	510.1	McLean	39	0.2	368.9	421.5
Bell	214	0.9	699.3	805.5	Carter	103	0.4	358.7	381.4	Nicholas	38	0.2	469.5	530.3
Oldham	214	0.9	332.0	322.0	Rockcastle	103	0.4	552.6	614.9	Lewis	37	0.2	227.1	279.1
Grayson	200	0.8	671.7	759.9	Garrard	101	0.4	512.5	575.2	Trimble	35	0.1	373.1	411.0
Harlan	197	0.8	624.8	746.0	Pendleton	99	0.4	689.6	681.4	Edmonson	32	0.1	248.1	260.7
Marshall	194	0.8	478.5	622.0	Fleming	93	0.4	566.4	644.4	Hancock	32	0.1	327.1	365.4
Perry	190	0.8	669.6	728.2	Clinton	92	0.4	743.5	901.4	Ballard	25	0.1	283.7	313.3
Muhlenberg	189	0.8	535.2	614.2	Trigg	92	0.4	531.9	628.3	Elliott	24	0.1	273.0	319.7
Clay	187	0.8	823.5	930.1	Anderson	91	0.4	386.8	401.5	Hickman	19	0.1	275.1	429.8
Jessamine	182	0.8	329.0	337.5	Lawrence	87	0.4	512.1	558.7	Fulton	18	0.1	270.6	294.1
Ohio	177	0.7	644.9	734.8	Hart	82	0.3	407.0	433.7	Robertson	16	0.1	678.7	749.4
Lincoln	176	0.7	618.6	714.2	Morgan	82	0.3	546.0	614.5	Carlisle	14	0.1	228.9	293.4

Table 27: Incidence of All Inpatient NTBI* by County, Sorted by Age Adjusted Rate, Kentucky, 2019***Includes inpatient deaths as well as non-fatal inpatient cases**

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Whitley	1703	1.7	4070.8	4699.0	Graves	999	1.0	2047.1	2677.1	Muhlenberg	629	0.6	1543.5	2043.9
Perry	1294	1.3	3984.9	4959.4	Elliott	212	0.2	2044.3	2823.7	Marshall	687	0.7	1536.6	2202.6
Leslie	490	0.5	3694.6	4830.9	Bracken	207	0.2	2008.2	2512.4	Meade	493	0.5	1535.9	1716.9
Clay	809	0.8	3416.8	4023.9	Pulaski	1663	1.7	2000.8	2573.4	Butler	259	0.3	1526.2	2027.9
Powell	436	0.4	2932.8	3504.3	Pendleton	356	0.4	1997.3	2450.3	Warren	2020	2.0	1523.1	1538.9
Owsley	180	0.2	2926.5	4025.0	Taylor	619	0.6	1996.4	2422.8	Cumberland	151	0.2	1520.5	2267.6
Harlan	1032	1.0	2902.8	3907.8	Knott	376	0.4	1992.4	2485.8	Hancock	162	0.2	1515.5	1849.7
Wolfe	268	0.3	2876.8	3734.2	Lawrence	386	0.4	1962.6	2479.0	Kenton	2818	2.8	1509.3	1697.1
Jackson	475	0.5	2819.5	3533.7	Martin	275	0.3	1955.2	2428.7	Greenup	752	0.8	1504.6	2132.2
Lee	252	0.3	2798.1	3583.1	Jessamine	1192	1.2	1949.5	2210.7	Daviess	1869	1.9	1502.3	1848.6
Breathitt	446	0.4	2781.9	3504.6	Spencer	386	0.4	1931.6	2053.9	Wayne	417	0.4	1494.9	2037.3
Grayson	910	0.9	2752.4	3457.3	Barren	1101	1.1	1912.3	2492.3	Green	239	0.2	1494.6	2163.1
Carroll	340	0.3	2738.2	3166.6	Knox	727	0.7	1902.3	2322.4	Christian	978	1.0	1481.5	1364.6
Bath	417	0.4	2700.3	3367.5	Nicholas	163	0.2	1873.6	2274.6	Simpson	333	0.3	1461.9	1797.2
Rowan	669	0.7	2662.1	2721.4	Bourbon	492	0.5	1872.6	2437.6	Ohio	443	0.4	1458.1	1839.2
Menifee	254	0.3	2629.2	3937.4	Garrard	421	0.4	1864.5	2397.5	Marion	342	0.3	1454.4	1762.5
Magoffin	403	0.4	2600.0	3260.0	Boyle	734	0.7	1845.1	2438.5	Boone	1984	2.0	1429.7	1508.4
Letcher	759	0.8	2502.0	3465.9	Mercer	532	0.5	1843.1	2443.3	Russell	347	0.3	1421.9	1947.1
McCreary	498	0.5	2420.2	2860.8	Carter	646	0.6	1842.0	2392.2	Owen	196	0.2	1404.5	1801.5
Floyd	1095	1.1	2412.9	3054.8	Washington	294	0.3	1823.0	2433.0	Hickman	100	0.1	1394.1	2261.9
Estill	433	0.4	2376.9	3049.7	Adair	445	0.4	1816.9	2315.9	Oldham	931	0.9	1375.6	1400.6
Metcalfe	309	0.3	2308.8	3080.8	Fleming	341	0.3	1811.4	2362.8	Campbell	1536	1.5	1375.3	1648.9
Morgan	381	0.4	2306.2	2855.0	McCracken	1584	1.6	1788.1	2424.0	Lyon	175	0.2	1372.9	2185.0
Laurel	1637	1.6	2274.0	2698.3	Monroe	257	0.3	1786.8	2397.8	Robertson	41	0.0	1350.5	1920.4
Franklin	1454	1.5	2272.1	2861.4	Fulton	150	0.2	1777.7	2451.0	Shelby	758	0.8	1347.8	1562.3
Nelson	1201	1.2	2269.4	2619.4	Mason	395	0.4	1749.2	2303.2	Woodford	445	0.4	1346.8	1677.2
Pike	1728	1.7	2252.6	2958.8	Anderson	467	0.5	1742.6	2060.6	Clinton	180	0.2	1331.6	1763.7
Carlisle	144	0.1	2227.3	3018.2	Bullitt	1642	1.6	1733.1	2025.4	Ballard	155	0.2	1322.9	1942.6
Boyd	1412	1.4	2198.7	2989.0	Trimble	179	0.2	1696.5	2102.2	Calloway	600	0.6	1315.1	1533.2
Lincoln	699	0.7	2195.1	2836.4	Fayette	5590	5.6	1676.9	1726.5	Webster	208	0.2	1314.1	1586.5
Johnson	648	0.6	2182.0	2894.7	Bell	584	0.6	1667.4	2198.1	Harrison	313	0.3	1283.4	1666.8
Grant	588	0.6	2181.7	2340.7	Hopkins	988	1.0	1660.4	2192.2	Rockcastle	260	0.3	1225.6	1552.2
Gallatin	223	0.2	2179.2	2524.9	McLean	202	0.2	1656.9	2183.3	Caldwell	211	0.2	1190.8	1659.5
Henry	440	0.4	2160.2	2731.9	Casey	343	0.3	1655.4	2158.9	Henderson	617	0.6	1056.4	1353.3
Montgomery	715	0.7	2153.1	2535.2	Breckinridge	430	0.4	1637.9	2109.1	Trigg	226	0.2	1017.1	1543.4
Madison	1981	2.0	2084.2	2144.7	Logan	578	0.6	1620.6	2141.6	Lewis	184	0.2	996.9	1388.0
Jefferson	####	18.9	2079.2	2447.7	Scott	849	0.9	1566.5	1515.2	Edmonson	171	0.2	981.6	1393.2
Larue	376	0.4	2076.8	2628.1	Allen	415	0.4	1562.6	1964.8	Todd	140	0.1	924.3	1137.2
Hardin	2465	2.5	2064.2	2233.7	Hart	359	0.4	1545.1	1898.9	Crittenden	117	0.1	904.8	1312.4
Clark	934	0.9	2049.3	2576.6	Livingston	204	0.2	1544.6	2207.3	Union	104	0.1	565.0	717.0

Table 28: Incidence of All ED NTBI* by County, Sorted by Age Adjusted Rate, Kentucky, 2019***Includes inpatient deaths as well as non-fatal inpatient cases**

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Estill	172	0.7	1129.9	1211.4	Letcher	137	0.6	573.2	625.6	Lyon	54	0.2	450.7	674.2
Grant	254	1.1	1038.7	1011.1	Hopkins	293	1.2	570.5	650.1	Campbell	413	1.7	441.8	443.4
Taylor	289	1.2	1033.4	1131.2	Allen	141	0.6	567.4	667.6	Spencer	79	0.3	439.8	420.4
Green	141	0.6	1032.8	1276.1	Fleming	93	0.4	566.4	644.4	Metcalfe	46	0.2	428.8	458.6
Carroll	120	0.5	1008.3	1117.6	Bracken	53	0.2	560.9	643.3	Hardin	480	2.0	423.0	435.0
Wolfe	81	0.3	937.6	1128.6	Menifee	40	0.2	560.5	620.1	Henderson	225	0.9	419.8	493.5
Lee	74	0.3	925.8	1052.2	Monroe	68	0.3	560.2	634.5	Logan	123	0.5	419.3	455.7
Leslie	119	0.5	911.6	1173.2	Mason	113	0.5	555.1	658.9	Fayette	1359	5.7	418.3	419.7
Owsley	49	0.2	909.9	1095.7	Breathitt	77	0.3	555.0	605.1	Hart	82	0.3	407.0	433.7
Powell	118	0.5	905.7	948.4	Boyd	280	1.2	553.4	592.7	Larue	59	0.2	403.3	412.4
Jackson	140	0.6	884.2	1041.5	Jefferson	4368	18.2	552.8	566.9	Calloway	171	0.7	401.8	437.0
Floyd	342	1.4	829.9	954.1	Rockcastle	103	0.4	552.6	614.9	McCracken	289	1.2	393.2	442.3
Clay	187	0.8	823.5	930.1	Martin	69	0.3	552.4	609.4	Anderson	91	0.4	386.8	401.5
Cumberland	67	0.3	789.1	1006.2	Morgan	82	0.3	546.0	614.5	Knott	60	0.2	378.2	396.7
Whitley	316	1.3	785.1	871.9	McCreary	106	0.4	539.4	608.9	Warren	479	2.0	376.0	364.9
Montgomery	240	1.0	783.0	851.0	Boyle	169	0.7	536.8	561.5	Trimble	35	0.1	373.1	411.0
Henry	135	0.6	778.8	838.2	Muhlenberg	189	0.8	535.2	614.2	McLean	39	0.2	368.9	421.5
Clark	304	1.3	768.3	838.6	Trigg	92	0.4	531.9	628.3	Kenton	613	2.5	365.6	369.2
Caldwell	111	0.5	765.5	873.0	Woodford	143	0.6	524.9	539.0	Greenup	143	0.6	363.8	405.5
Clinton	92	0.4	743.5	901.4	Pike	365	1.5	524.5	625.0	Carter	103	0.4	358.7	381.4
Casey	137	0.6	704.9	862.3	Bath	67	0.3	516.8	541.1	Todd	43	0.2	349.6	349.3
Bell	214	0.9	699.3	805.5	Christian	345	1.4	516.3	481.4	Boone	452	1.9	343.9	343.6
Adair	166	0.7	692.5	863.9	Garrard	101	0.4	512.5	575.2	Barren	165	0.7	340.2	373.5
Pendleton	99	0.4	689.6	681.4	Shelby	263	1.1	512.3	542.1	Union	58	0.2	334.2	399.9
Robertson	16	0.1	678.7	749.4	Mercer	117	0.5	512.3	537.3	Oldham	214	0.9	332.0	322.0
Grayson	200	0.8	671.7	759.9	Lawrence	87	0.4	512.1	558.7	Russell	74	0.3	329.6	415.2
Perry	190	0.8	669.6	728.2	Franklin	253	1.1	506.2	497.9	Jessamine	182	0.8	329.0	337.5
Wayne	160	0.7	655.5	781.7	Webster	72	0.3	502.6	549.2	Hancock	32	0.1	327.1	365.4
Simpson	135	0.6	653.1	728.6	Knox	174	0.7	500.9	555.8	Rowan	75	0.3	319.4	305.1
Madison	593	2.5	647.7	642.0	Marion	106	0.4	500.3	546.3	Daviess	336	1.4	319.2	332.3
Ohio	177	0.7	644.9	734.8	Johnson	122	0.5	499.3	545.0	Ballard	25	0.1	283.7	313.3
Scott	355	1.5	629.9	633.6	Livingston	51	0.2	495.9	551.8	Butler	41	0.2	281.3	321.0
Harlan	197	0.8	624.8	746.0	Pulaski	346	1.4	484.1	535.4	Hickman	19	0.1	275.1	429.8
Lincoln	176	0.7	618.6	714.2	Marshall	194	0.8	478.5	622.0	Elliott	24	0.1	273.0	319.7
Gallatin	56	0.2	616.2	634.1	Magoffin	65	0.3	472.6	525.8	Fulton	18	0.1	270.6	294.1
Bourbon	135	0.6	611.9	668.9	Nicholas	38	0.2	469.5	530.3	Bullitt	219	0.9	257.7	270.1
Nelson	294	1.2	607.9	641.2	Owen	50	0.2	465.6	459.6	Edmonson	32	0.1	248.1	260.7
Harrison	125	0.5	596.3	665.7	Crittenden	51	0.2	462.3	572.1	Carlisle	14	0.1	228.9	293.4
Graves	239	1.0	595.8	640.5	Breckinridge	104	0.4	456.2	510.1	Lewis	37	0.2	227.1	279.1
Washington	75	0.3	580.2	620.7	Laurel	299	1.2	451.2	492.8	Meade	66	0.3	216.1	229.9

Table 29: Causes of Non-Fatal NTBI, Kentucky, 2019

ABI Category	Inpatient		ED	
	Number	Percent	Number	Percent
Anoxia	79,131	82.0	11,157	46.7
Exposure to toxic substances	12,719	13.2	9,075	37.9
Allergy/anaphylaxis	309	0.3	2,326	9.7
Acute medical clinical incidents	4,341	4.5	1,358	5.7

* 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 30: Non-Fatal Anoxia by Age Group, Kentucky, 2019

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	1,781	73.2	653.3	652	26.8	239.2	2,433	100.0	892.5
5-14	578	73.9	103.1	204	26.1	36.4	782	100.0	139.5
15-24	770	81.1	131.9	180	18.9	30.8	950	100.0	162.7
25-44	5,041	85.0	442.8	891	15.0	78.3	5,932	100.0	521.1
45-64	25,551	87.4	2199.0	3,687	12.6	317.3	29,238	100.0	2516.3
65+	45,410	89.1	6050.1	5,543	10.9	738.5	50,953	100.0	6788.6
Total	79,131	87.6	1771.2	11,157	12.4	249.7	90,288	100.0	2020.9

Table 31: Diagnosis Distribution for Non-Fatal Anoxia, Kentucky, 2019

Diagnosis	Description	Inpatient		ED	
		Number	Percent	Number	Percent
G91(.0-.2)	Communicating hydrocephalus	662	0.84	143	1.28
G931	Anoxic brain damage, NEC	233	0.29	67	0.60
J96	Respiratory failure, NEC w/hypoxia or hypercapnia	70096	88.58	6924	62.06
R090	Asphyxia and hypoxemia	8090	10.22	3737	33.49
T71	Asphyxiation	41	0.05	199	1.78
T751	Unspec effects of drowning and non-fatal submersion	9	0.01	87	0.78
Total		79,131	100.00	11,157	100.00

Table 32: Non-Fatal Exposure to Toxic Substances by Age Group, Kentucky, 2019

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	65	17.5	23.8	306	82.5	112.2	371	100.0	136.1
5-14	73	30.2	13.0	169	69.8	30.2	242	100.0	43.2
15-24	401	27.3	68.7	1,067	72.7	182.8	1,468	100.0	251.5
25-44	1,993	32.1	175.1	4,209	67.9	369.8	6,202	100.0	544.8
45-64	4,207	66.1	362.1	2,153	33.9	185.3	6,360	100.0	547.4
65+	5,980	83.6	796.7	1,171	16.4	156.0	7,151	100.0	952.8
Total	12,719	58.4	284.7	9,075	41.6	203.1	21,794	100.0	487.8

Table 33: Diagnosis Distribution for Non-Fatal Exposure to Toxic Substances, Kentucky, 2019

Diagnosis	Description	Inpatient		ED	
		Number	Percent	Number	Percent
G92	Toxic encephalopathy	5564	43.7	397	4.4
T40	Poisoning by narcotics and hallucinogens	3140	24.7	5020	55.3
T41	Poisoning by anesthetics and therapeutic gases	149	1.2	70	0.8
T42(.3-.7)	Poisoning by antiepileptic and sedative hypnotic drugs	1395	11.0	1308	14.4
T45.5	Poisoning by anticoagulants and antithrombotic drugs	1803	14.2	509	5.6
T51	Toxic effect of alcohol	175	1.4	202	2.2
T56	Toxic effect of metals	40	0.3	35	0.4
T57	Toxic effect of other inorganic substances	1	0.0	1	0.0
T58	Toxic effect of carbon monoxide	48	0.4	211	2.3
T60	Toxic effect of pesticides	15	0.1	82	0.9
T61	Toxic effect of noxious substances eaten as seafood	1	0.0	14	0.2
T62	Toxic effect of other noxious substances eaten as food	24	0.2	217	2.4
T65	Toxic effect of other unspecified substances	93	0.7	954	10.5
T81.1	Postprocedural shock	177	1.4	6	0.1
T88.2	Shock due to anesthesia	4	0.0	0	0.0
T88.5	Other complications of anesthesia	90	0.7	49	0.5
Total		12719	100.0	9075	100.0

Table 34: Length of Stay for Non-Fatal Inpatient NTBI, Kentucky, 2019

Length of Stay	Number	Percent*
1 day	7203	7.9
More than one day but less than 1 week	52536	57.7
1 week to less than 2 weeks	21216	23.3
2 weeks to less than 3 weeks	5665	6.2
3 weeks to less than 4 weeks	2153	2.4
4 weeks or more	2284	2.5
Total	91057	100.0

*Percent of hospitalized ABI

Table 35: Discharge Disposition for Non-Fatal NTBI, Kentucky, 2019

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	43,737	48.0	16,523	69.8
Skilled nursing facility (SNF)	14,820	16.3	545	2.3
Home health	14,197	15.6	508	2.1
Inpatient-other type facility	92	0.1	257	1.1
Inpatient-other short-term hospital	2,968	3.3	3,218	13.6
Intermediate care facility (ICF)	818	0.9	50	0.2
Rehab	4,586	5.0	86	0.4
Other	9,839	10.8	2,478	10.5
Total	91,057	100.0	23,665	100.0

Table 36: Primary Payer and Charges for Non-Fatal Inpatient NTBI, Kentucky, 2019

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	77,520	85.1	\$ 4,491,940,833
Commercial Insurance	11,403	12.5	\$ 847,830,133
Self Pay	951	1.0	\$ 51,857,860
Workers Compensation	220	0.2	\$ 26,910,802
Other	963	1.1	\$ 90,829,758
Total	91,057	100.0	\$ 5,509,369,387

Table 37: Primary Payer and Charges for Non-Fatal ED NTBI, Kentucky, 2019

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	17,915	75.7	\$ 143,267,788
Commercial Insurance	3,961	16.7	\$ 25,345,693
Self Pay	1,301	5.5	\$ 4,458,378
Workers Compensation	140	0.6	\$ 492,217
Other	348	1.5	\$ 2,958,645
Total	23,665	100.0	\$ 176,522,721

Table 38: Non-Fatal SCI by Age Group, Kentucky, 2019

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	2	0.0	0.7	0	0.0	0.0	2	100.0	0.7
5-14	1	50.0	0.2	2	66.7	0.4	3	100.0	0.5
15-24	14	63.6	2.4	8	36.4	1.4	22	100.0	3.8
25-44	39	68.4	3.4	18	31.6	1.6	57	100.0	5.0
45-64	63	65.6	5.4	33	34.4	2.8	96	100.0	8.3
65+	57	61.3	7.6	36	38.7	4.8	93	100.0	12.4
Total	176	64.5	3.9	97	35.5	2.2	273	100.0	6.1

Table 39: Non-Fatal SCI by Gender, Kentucky, 2019

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	119	71.7	5.4	47	28.3	2.1	166	100.0	7.5
Female	57	53.3	2.5	50	46.7	2.2	107	100.0	4.7
Total	176	64.5	3.9	97	35.5	2.2	273	100.0	6.1

Table 40: Leading Causes of Non-Fatal SCI, Kentucky, 2019

Mechanism of Injury	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Motor vehicle traffic crash	28	63.6	0.6	16	36.4	0.4	44	100.0	1.0
Fall	68	58.6	1.5	48	41.4	1.1	116	100.0	2.6
Non-traffic land transportation	4	36.4	0.1	7	63.6	0.2	11	100.0	0.2
Struck by or against object or person	6	54.5	0.1	5	45.5	0.1	11	100.0	0.2
Firearm	10	100.0	0.2	0	0.0	0.0	10	100.0	0.2
Other	12	63.2	0.3	7	36.8	0.2	19	100.0	0.4
Unknown (missing E-code)	48	77.4	1.1	14	22.6	0.3	62	100.0	1.4
Total	176	64.5	3.9	97	35.5	2.2	273	100.0	6.1

Table 41: Length of Stay for Non-Fatal Inpatient SCI, Kentucky, 2019

Length of Stay	Number	Percent*
1 day	17	9.7
More than one day but less than 1 week	52	29.5
1 week to less than 2 weeks	60	34.1
2 weeks to less than 3 weeks	28	15.9
3 weeks to less than 4 weeks	10	5.7
4 weeks or more	9	5.1
Total	176	100.0

*Percent of hospitalized SCI

Mean 10.55
Median 8
Min, Max 1-58

Table 42: Discharge Disposition for Non-Fatal SCI, Kentucky, 2019

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	52	29.5	62	63.9
Home health	5	2.8	0	0.0
Skilled nursing facility (SNF)	22	12.5	2	2.1
Inpatient-other	4	2.3	30	30.9
Rehab	85	48.3	0	0.0
Other	8	4.5	3	3.1
Total	176	100.0	97	100.0

Table 43: Primary Payer and Charges for Non-Fatal Inpatient SCI, Kentucky, 2019

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	112	63.6	\$ 20,492,093
Commercial Ins	31	17.6	\$ 4,778,131
Workers Compensation	4	2.3	\$ 961,803
Self Pay	5	2.8	\$ 252,560
Other	24	13.6	\$ 3,724,237
Total	176	100.0	\$30,208,825

Table 44: Primary Payer and Charges for Non-Fatal ED SCI, Kentucky, 2019

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	70	72.2	\$ 719,516
Commercial Ins	11	11.3	\$ 70,545
Workers Compensation	2	2.1	\$ 47,558
Self Pay	3	3.1	\$ 19,172
Other	11	11.3	\$ 177,586
Total	97	100.0	\$1,034,377

Table 45: Non-Fatal Stroke by Age Group, Kentucky, 2019

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	23	0.0	8.4	4	0.0	1.5	27	100.0	9.9
5-14	14	280.0	2.5	5	26.3	0.9	19	100.0	3.4
15-24	44	50.6	7.5	43	49.4	7.4	87	100.0	14.9
25-44	683	57.8	60.0	498	42.2	43.7	1,181	100.0	103.7
45-64	4,008	60.0	344.9	2,676	40.0	230.3	6,684	100.0	575.2
65+	8,424	64.6	1122.4	4,624	35.4	616.1	13,048	100.0	1738.4
Total	13,196	62.7	295.4	7,850	37.3	175.7	21,046	100.0	471.1

Table 46: Non-Fatal Stroke by Gender, Kentucky, 2019

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	6,405	63.6	291.0	3,658	36.4	166.2	10,063	100.0	457.2
Female	6,789	61.8	299.5	4,191	38.2	184.9	10,980	100.0	484.4
Total	13,194	62.7	295.3	7,849	37.3	175.7	21,043	100.0	471.0

Table 47: Length of Stay for Non-Fatal Inpatient Stroke, Kentucky, 2019

Length of Stay	Number	Percent*
1 day	2,109	16.0
More than one day but less than 1 week	7,472	56.6
1 week to less than 2 weeks	2,355	17.8
2 weeks to less than 3 weeks	718	5.4
3 weeks to less than 4 weeks	250	1.9
4 weeks or more	292	2.2
Total	13,196	100.0

*Percent of hospitalized Stroke

Table 48: Discharge Disposition for Non-Fatal Stroke, Kentucky, 2019

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	5,303	40.2	3,829	55.6
Home health	1,479	11.2	151	0.0
Skilled nursing facility (SNF)	2,147	16.3	176	0.0
Inpatient-other	427	3.2	3,099	38.3
Intermediate Care Facility	64	0.5	14	2.5
Rehab	2,433	18.4	29	0.4
Other	1,343	10.2	552	3.7
Total	13,196	100.0	7850	100.0

Table 49: Primary Payer and Charges for Non-Fatal Inpatient Stroke, Kentucky, 2019

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	10,551	80.0	\$ 669,445,470
Commercial Ins	2,312	17.5	\$ 188,118,713
Workers Compensation	8	0.1	\$ 972,507
Self Pay	196	1.5	\$ 13,691,585
Other	129	1.0	\$ 10,031,345
Total	13,196	100.0	\$882,259,620

Table 50: Primary Payer and Charges for Non-Fatal ED Stroke, Kentucky, 2019

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	6,156	78.4	\$ 81,464,644
Commercial Ins	1,424	18.1	\$ 21,880,818
Workers Compensation	9	0.1	\$ 165,810
Self Pay	163	2.1	\$ 2,314,325
Other	98	1.2	\$ 1,253,938
Total	7,850	100.0	\$107,079,535

Table 51: Incidence of All Inpatient Stroke* by County, Sorted by County, Kentucky, 2019

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Adair	72	0.5	273.6	374.7	Grant	98	0.7	384.8	390.1	McLean	45	0.3	385.7	486.4
Allen	83	0.6	310.8	393.0	Graves	125	0.9	250.0	335.0	Meade	67	0.5	211.8	233.3
Anderson	73	0.5	271.1	322.1	Grayson	117	0.8	343.9	444.5	Menifee	24	0.2	272.3	372.0
Ballard	20	0.1	166.3	250.7	Green	29	0.2	194.1	262.5	Mercer	81	0.6	274.8	372.0
Barren	128	0.9	222.1	289.8	Greenup	102	0.7	212.5	289.2	Metcalf	41	0.3	301.1	408.8
Bath	64	0.4	418.9	516.8	Hancock	30	0.2	276.0	342.5	Monroe	63	0.4	450.9	587.8
Bell	63	0.4	175.0	237.1	Hardin	511	3.6	430.6	463.0	Montgomery	116	0.8	335.1	411.3
Boone	271	1.9	201.4	206.0	Harlan	114	0.8	326.2	431.7	Morgan	35	0.2	204.1	262.3
Bourbon	82	0.6	298.1	406.3	Harrison	61	0.4	253.6	324.8	Muhlenberg	84	0.6	212.3	273.0
Boyd	205	1.4	301.9	434.0	Hart	68	0.5	295.9	359.7	Nelson	125	0.9	236.9	272.6
Boyle	87	0.6	207.8	289.0	Henderson	49	0.3	81.4	107.5	Nicholas	29	0.2	294.2	404.7
Bracken	33	0.2	308.1	400.5	Henry	56	0.4	282.5	347.7	Ohio	70	0.5	225.6	290.6
Breathitt	39	0.3	232.2	306.5	Hickman	11	0.1	162.8	248.8	Oldham	162	1.1	238.0	243.7
Breckinridge	74	0.5	263.7	363.0	Hopkins	72	0.5	119.5	159.8	Owen	35	0.2	268.7	321.7
Bullitt	207	1.4	225.2	255.3	Jackson	55	0.4	328.0	409.2	Owsley	18	0.1	313.0	402.5
Butler	57	0.4	321.6	446.3	Jefferson	2832	19.8	303.6	367.5	Pendleton	52	0.4	282.4	357.9
Caldwell	29	0.2	148.1	228.1	Jessamine	139	1.0	227.0	257.8	Perry	161	1.1	490.2	617.0
Calloway	72	0.5	146.5	184.0	Johnson	89	0.6	308.2	397.6	Pike	244	1.7	307.4	417.8
Campbell	240	1.7	214.2	257.6	Kenton	394	2.8	217.9	237.3	Powell	58	0.4	395.0	466.2
Carlisle	26	0.2	378.5	545.0	Knott	52	0.4	277.2	343.8	Pulaski	258	1.8	298.4	399.2
Carroll	38	0.3	306.1	353.9	Knox	86	0.6	216.2	274.7	Robertson	7	0.0	201.2	327.9
Carter	101	0.7	307.5	374.0	Larue	64	0.4	345.3	447.3	Rockcastle	47	0.3	228.7	280.6
Casey	44	0.3	200.4	276.9	Laurel	187	1.3	259.9	308.2	Rowan	74	0.5	273.6	301.0
Christian	106	0.7	165.6	147.9	Lawrence	40	0.3	214.5	256.9	Russell	63	0.4	246.4	353.5
Clark	136	0.9	308.8	375.2	Lee	27	0.2	296.4	383.9	Scott	133	0.9	265.7	237.4
Clay	99	0.7	425.8	492.4	Leslie	75	0.5	547.0	739.4	Shelby	109	0.8	202.0	224.7
Clinton	46	0.3	313.3	450.7	Letcher	127	0.9	440.6	579.9	Simpson	70	0.5	305.0	377.8
Crittenden	24	0.2	179.9	269.2	Lewis	32	0.2	188.9	241.4	Spencer	37	0.3	174.2	196.9
Cumberland	34	0.2	313.7	510.6	Lincoln	110	0.8	320.5	446.4	Taylor	99	0.7	308.4	387.5
Daviess	276	1.9	216.7	273.0	Livingston	40	0.3	286.9	432.8	Todd	16	0.1	101.7	130.0
Edmonson	31	0.2	166.5	252.6	Logan	65	0.5	171.5	240.8	Trigg	18	0.1	73.8	122.9
Elliott	24	0.2	229.6	319.7	Lyon	34	0.2	251.6	424.5	Trimble	22	0.2	193.1	258.4
Estill	48	0.3	270.0	338.1	Madison	218	1.5	227.9	236.0	Union	18	0.1	102.2	124.1
Fayette	792	5.5	238.2	244.6	Magoffin	46	0.3	303.6	372.1	Warren	430	3.0	327.5	327.6
Fleming	46	0.3	255.6	318.7	Marion	75	0.5	319.9	386.5	Washington	45	0.3	275.1	372.4
Floyd	169	1.2	372.6	471.5	Marshall	102	0.7	206.7	327.0	Wayne	76	0.5	267.1	371.3
Franklin	222	1.5	344.2	436.9	Martin	36	0.3	253.9	317.9	Webster	13	0.1	77.6	99.2
Fulton	16	0.1	166.9	261.4	Mason	51	0.4	234.9	297.4	Whitley	168	1.2	397.0	463.6
Gallatin	28	0.2	251.3	317.0	McCracken	272	1.9	294.6	416.2	Wolfe	32	0.2	307.0	445.9
Garrard	60	0.4	269.3	341.7	McCreary	50	0.3	233.4	287.2	Woodford	73	0.5	203.8	275.1

Table 52: Incidence of All ED Stroke* by County, Sorted by County, Kentucky, 2019

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Adair	70	0.9	271.7	364.3	Grant	45	0.6	175.2	179.1	McLean	19	0.2	144.8	205.4
Allen	56	0.7	216.0	265.1	Graves	69	0.9	141.3	184.9	Meade	11	0.1	31.1	38.3
Anderson	24	0.3	83.1	105.9	Grayson	67	0.8	201.1	254.6	Menifee	20	0.3	220.2	310.0
Ballard	12	0.2	105.6	150.4	Green	45	0.6	306.5	407.3	Mercer	64	0.8	220.3	293.9
Barren	118	1.5	202.6	267.1	Greenup	81	1.0	161.4	229.7	Metcalf	26	0.3	177.8	259.2
Bath	47	0.6	309.1	379.6	Hancock	15	0.2	128.3	171.3	Monroe	43	0.5	309.7	401.2
Bell	91	1.2	263.3	342.5	Hardin	181	2.3	149.9	164.0	Montgomery	88	1.1	257.3	312.0
Boone	84	1.1	61.0	63.9	Harlan	106	1.3	322.2	401.4	Morgan	31	0.4	167.6	232.3
Bourbon	52	0.7	197.1	257.6	Harrison	95	1.2	394.6	505.9	Muhlenberg	50	0.6	125.1	162.5
Boyd	116	1.5	182.8	245.6	Hart	36	0.5	146.0	190.4	Nelson	90	1.1	166.9	196.3
Boyle	70	0.9	176.2	232.6	Henderson	79	1.0	133.6	173.3	Nicholas	24	0.3	261.1	334.9
Bracken	14	0.2	153.7	169.9	Henry	30	0.4	145.9	186.3	Ohio	54	0.7	175.9	224.2
Breathitt	37	0.5	222.7	290.7	Hickman	5	0.1	69.4	113.1	Oldham	50	0.6	72.7	75.2
Breckinridge	53	0.7	199.4	260.0	Hopkins	162	2.1	284.3	359.5	Owen	15	0.2	108.1	137.9
Bullitt	61	0.8	66.1	75.2	Jackson	36	0.5	219.6	267.8	Owsley	15	0.2	268.7	335.4
Butler	24	0.3	148.6	187.9	Jefferson	685	8.7	74.2	88.9	Pendleton	15	0.2	92.7	103.2
Caldwell	36	0.5	193.4	283.1	Jessamine	34	0.4	56.3	63.1	Perry	143	1.8	444.1	548.1
Calloway	100	1.3	207.8	255.5	Johnson	69	0.9	248.2	308.2	Pike	135	1.7	177.0	231.2
Campbell	72	0.9	65.5	77.3	Kenton	94	1.2	51.6	56.6	Powell	43	0.5	311.1	345.6
Carlisle	8	0.1	100.3	167.7	Knott	43	0.5	218.3	284.3	Pulaski	185	2.3	221.7	286.3
Carroll	17	0.2	135.0	158.3	Knox	99	1.3	255.6	316.3	Robertson	10	0.1	304.7	468.4
Carter	70	0.9	211.9	259.2	Larue	23	0.3	115.0	160.8	Rockcastle	63	0.8	280.9	376.1
Casey	46	0.6	226.1	289.5	Laurel	164	2.1	219.1	270.3	Rowan	59	0.7	227.7	240.0
Christian	148	1.9	228.3	206.5	Lawrence	59	0.7	315.3	378.9	Russell	47	0.6	190.2	263.7
Clark	76	1.0	171.7	209.7	Lee	24	0.3	240.1	341.2	Scott	96	1.2	174.9	171.3
Clay	72	0.9	296.4	358.1	Leslie	57	0.7	423.2	562.0	Shelby	64	0.8	115.5	131.9
Clinton	47	0.6	346.5	460.5	Letcher	76	1.0	276.1	347.0	Simpson	54	0.7	261.0	291.4
Crittenden	22	0.3	173.2	246.8	Lewis	31	0.4	174.9	233.8	Spencer	11	0.1	52.2	58.5
Cumberland	29	0.4	268.5	435.5	Lincoln	92	1.2	288.3	373.3	Taylor	93	1.2	296.3	364.0
Daviess	105	1.3	81.7	103.9	Livingston	22	0.3	162.9	238.0	Todd	18	0.2	128.5	146.2
Edmonson	13	0.2	76.1	105.9	Logan	44	0.6	127.2	163.0	Trigg	38	0.5	180.1	259.5
Elliott	11	0.1	121.6	146.5	Lyon	15	0.2	107.8	187.3	Trimble	11	0.1	109.2	129.2
Estill	47	0.6	251.3	331.0	Madison	133	1.7	137.3	144.0	Union	42	0.5	238.0	289.6
Fayette	264	3.3	79.0	81.5	Magoffin	36	0.5	240.7	291.2	Warren	169	2.1	129.7	128.7
Fleming	43	0.5	231.8	297.9	Marion	63	0.8	263.8	324.7	Washington	35	0.4	215.2	289.6
Floyd	134	1.7	285.1	373.8	Marshall	59	0.7	123.6	189.2	Wayne	63	0.8	228.8	307.8
Franklin	76	1.0	120.9	149.6	Martin	50	0.6	369.8	441.6	Webster	30	0.4	174.7	228.8
Fulton	6	0.1	78.1	98.0	Mason	50	0.6	239.2	291.5	Whitley	159	2.0	392.0	438.7
Gallatin	8	0.1	67.1	90.6	McCracken	100	1.3	112.8	153.0	Wolfe	33	0.4	344.2	459.8
Garrard	36	0.5	159.3	205.0	McCreary	54	0.7	271.1	310.2	Woodford	27	0.3	70.4	101.8

Table 53: Incidence of All Inpatient Stroke* by County, Sorted by Frequency, Kentucky, 2019

*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
Jefferson	2832	19.8	303.6	367.5	Boyle	87	0.6	207.8	289.0	Fleming	46	0.3	255.6	318.7
Fayette	792	5.5	238.2	244.6	Knox	86	0.6	216.2	274.7	Magoffin	46	0.3	303.6	372.1
Hardin	511	3.6	430.6	463.0	Muhlenberg	84	0.6	212.3	273.0	McLean	45	0.3	385.7	486.4
Warren	430	3.0	327.5	327.6	Allen	83	0.6	310.8	393.0	Washington	45	0.3	275.1	372.4
Kenton	394	2.8	217.9	237.3	Bourbon	82	0.6	298.1	406.3	Casey	44	0.3	200.4	276.9
Daviess	276	1.9	216.7	273.0	Mercer	81	0.6	274.8	372.0	Metcalfe	41	0.3	301.1	408.8
McCracken	272	1.9	294.6	416.2	Wayne	76	0.5	267.1	371.3	Lawrence	40	0.3	214.5	256.9
Boone	271	1.9	201.4	206.0	Leslie	75	0.5	547.0	739.4	Livingston	40	0.3	286.9	432.8
Pulaski	258	1.8	298.4	399.2	Marion	75	0.5	319.9	386.5	Breathitt	39	0.3	232.2	306.5
Pike	244	1.7	307.4	417.8	Breckinridge	74	0.5	263.7	363.0	Carroll	38	0.3	306.1	353.9
Campbell	240	1.7	214.2	257.6	Rowan	74	0.5	273.6	301.0	Spencer	37	0.3	174.2	196.9
Franklin	222	1.5	344.2	436.9	Anderson	73	0.5	271.1	322.1	Martin	36	0.3	253.9	317.9
Madison	218	1.5	227.9	236.0	Woodford	73	0.5	203.8	275.1	Morgan	35	0.2	204.1	262.3
Bullitt	207	1.4	225.2	255.3	Adair	72	0.5	273.6	374.7	Owen	35	0.2	268.7	321.7
Boyd	205	1.4	301.9	434.0	Calloway	72	0.5	146.5	184.0	Cumberland	34	0.2	313.7	510.6
Laurel	187	1.3	259.9	308.2	Hopkins	72	0.5	119.5	159.8	Lyon	34	0.2	251.6	424.5
Floyd	169	1.2	372.6	471.5	Ohio	70	0.5	225.6	290.6	Bracken	33	0.2	308.1	400.5
Whitley	168	1.2	397.0	463.6	Simpson	70	0.5	305.0	377.8	Lewis	32	0.2	188.9	241.4
Oldham	162	1.1	238.0	243.7	Hart	68	0.5	295.9	359.7	Wolfe	32	0.2	307.0	445.9
Perry	161	1.1	490.2	617.0	Meade	67	0.5	211.8	233.3	Edmonson	31	0.2	166.5	252.6
Jessamine	139	1.0	227.0	257.8	Logan	65	0.5	171.5	240.8	Hancock	30	0.2	276.0	342.5
Clark	136	0.9	308.8	375.2	Bath	64	0.4	418.9	516.8	Caldwell	29	0.2	148.1	228.1
Scott	133	0.9	265.7	237.4	Larue	64	0.4	345.3	447.3	Green	29	0.2	194.1	262.5
Barren	128	0.9	222.1	289.8	Bell	63	0.4	175.0	237.1	Nicholas	29	0.2	294.2	404.7
Letcher	127	0.9	440.6	579.9	Monroe	63	0.4	450.9	587.8	Gallatin	28	0.2	251.3	317.0
Graves	125	0.9	250.0	335.0	Russell	63	0.4	246.4	353.5	Lee	27	0.2	296.4	383.9
Nelson	125	0.9	236.9	272.6	Harrison	61	0.4	253.6	324.8	Carlisle	26	0.2	378.5	545.0
Grayson	117	0.8	343.9	444.5	Garrard	60	0.4	269.3	341.7	Crittenden	24	0.2	179.9	269.2
Montgomery	116	0.8	335.1	411.3	Powell	58	0.4	395.0	466.2	Elliott	24	0.2	229.6	319.7
Harlan	114	0.8	326.2	431.7	Butler	57	0.4	321.6	446.3	Menifee	24	0.2	272.3	372.0
Lincoln	110	0.8	320.5	446.4	Henry	56	0.4	282.5	347.7	Trimble	22	0.2	193.1	258.4
Shelby	109	0.8	202.0	224.7	Jackson	55	0.4	328.0	409.2	Ballard	20	0.1	166.3	250.7
Christian	106	0.7	165.6	147.9	Knott	52	0.4	277.2	343.8	Owsley	18	0.1	313.0	402.5
Greenup	102	0.7	212.5	289.2	Pendleton	52	0.4	282.4	357.9	Trigg	18	0.1	73.8	122.9
Marshall	102	0.7	206.7	327.0	Mason	51	0.4	234.9	297.4	Union	18	0.1	102.2	124.1
Carter	101	0.7	307.5	374.0	McCreary	50	0.3	233.4	287.2	Fulton	16	0.1	166.9	261.4
Clay	99	0.7	425.8	492.4	Henderson	49	0.3	81.4	107.5	Todd	16	0.1	101.7	130.0
Taylor	99	0.7	308.4	387.5	Estill	48	0.3	270.0	338.1	Webster	13	0.1	77.6	99.2
Grant	98	0.7	384.8	390.1	Rockcastle	47	0.3	228.7	280.6	Hickman	11	0.1	162.8	248.8
Johnson	89	0.6	308.2	397.6	Clinton	46	0.3	313.3	450.7	Robertson	7	0.0	201.2	327.9

Table 54: Incidence of All ED Stroke* by County, Sorted by Frequency, Kentucky, 2019

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Jefferson	685	8.7	74.2	88.9	Johnson	69	0.9	248.2	308.2	Jackson	36	0.5	219.6	267.8
Fayette	264	3.3	79.0	81.5	Grayson	67	0.8	201.1	254.6	Magoffin	36	0.5	240.7	291.2
Pulaski	185	2.3	221.7	286.3	Mercer	64	0.8	220.3	293.9	Washington	35	0.4	215.2	289.6
Hardin	181	2.3	149.9	164.0	Shelby	64	0.8	115.5	131.9	Jessamine	34	0.4	56.3	63.1
Warren	169	2.1	129.7	128.7	Marion	63	0.8	263.8	324.7	Wolfe	33	0.4	344.2	459.8
Laurel	164	2.1	219.1	270.3	Rockcastle	63	0.8	280.9	376.1	Lewis	31	0.4	174.9	233.8
Hopkins	162	2.1	284.3	359.5	Wayne	63	0.8	228.8	307.8	Morgan	31	0.4	167.6	232.3
Whitley	159	2.0	392.0	438.7	Bullitt	61	0.8	66.1	75.2	Henry	30	0.4	145.9	186.3
Christian	148	1.9	228.3	206.5	Lawrence	59	0.7	315.3	378.9	Webster	30	0.4	174.7	228.8
Perry	143	1.8	444.1	548.1	Marshall	59	0.7	123.6	189.2	Cumberland	29	0.4	268.5	435.5
Pike	135	1.7	177.0	231.2	Rowan	59	0.7	227.7	240.0	Woodford	27	0.3	70.4	101.8
Floyd	134	1.7	285.1	373.8	Leslie	57	0.7	423.2	562.0	Metcalfe	26	0.3	177.8	259.2
Madison	133	1.7	137.3	144.0	Allen	56	0.7	216.0	265.1	Anderson	24	0.3	83.1	105.9
Barren	118	1.5	202.6	267.1	McCreary	54	0.7	271.1	310.2	Butler	24	0.3	148.6	187.9
Boyd	116	1.5	182.8	245.6	Ohio	54	0.7	175.9	224.2	Lee	24	0.3	240.1	341.2
Harlan	106	1.3	322.2	401.4	Simpson	54	0.7	261.0	291.4	Nicholas	24	0.3	261.1	334.9
Daviess	105	1.3	81.7	103.9	Breckinridge	53	0.7	199.4	260.0	Larue	23	0.3	115.0	160.8
Calloway	100	1.3	207.8	255.5	Bourbon	52	0.7	197.1	257.6	Crittenden	22	0.3	173.2	246.8
McCracken	100	1.3	112.8	153.0	Martin	50	0.6	369.8	441.6	Livingston	22	0.3	162.9	238.0
Knox	99	1.3	255.6	316.3	Mason	50	0.6	239.2	291.5	Menifee	20	0.3	220.2	310.0
Scott	96	1.2	174.9	171.3	Muhlenberg	50	0.6	125.1	162.5	McLean	19	0.2	144.8	205.4
Harrison	95	1.2	394.6	505.9	Oldham	50	0.6	72.7	75.2	Todd	18	0.2	128.5	146.2
Kenton	94	1.2	51.6	56.6	Bath	47	0.6	309.1	379.6	Carroll	17	0.2	135.0	158.3
Taylor	93	1.2	296.3	364.0	Clinton	47	0.6	346.5	460.5	Hancock	15	0.2	128.3	171.3
Lincoln	92	1.2	288.3	373.3	Estill	47	0.6	251.3	331.0	Lyon	15	0.2	107.8	187.3
Bell	91	1.2	263.3	342.5	Russell	47	0.6	190.2	263.7	Owen	15	0.2	108.1	137.9
Nelson	90	1.1	166.9	196.3	Casey	46	0.6	226.1	289.5	Owsley	15	0.2	268.7	335.4
Montgomery	88	1.1	257.3	312.0	Grant	45	0.6	175.2	179.1	Pendleton	15	0.2	92.7	103.2
Boone	84	1.1	61.0	63.9	Green	45	0.6	306.5	407.3	Bracken	14	0.2	153.7	169.9
Greenup	81	1.0	161.4	229.7	Logan	44	0.6	127.2	163.0	Edmonson	13	0.2	76.1	105.9
Henderson	79	1.0	133.6	173.3	Fleming	43	0.5	231.8	297.9	Ballard	12	0.2	105.6	150.4
Clark	76	1.0	171.7	209.7	Knott	43	0.5	218.3	284.3	Elliott	11	0.1	121.6	146.5
Franklin	76	1.0	120.9	149.6	Monroe	43	0.5	309.7	401.2	Meade	11	0.1	31.1	38.3
Letcher	76	1.0	276.1	347.0	Powell	43	0.5	311.1	345.6	Spencer	11	0.1	52.2	58.5
Campbell	72	0.9	65.5	77.3	Union	42	0.5	238.0	289.6	Trimble	11	0.1	109.2	129.2
Clay	72	0.9	296.4	358.1	Trigg	38	0.5	180.1	259.5	Robertson	10	0.1	304.7	468.4
Adair	70	0.9	271.7	364.3	Breathitt	37	0.5	222.7	290.7	Carlisle	8	0.1	100.3	167.7
Boyle	70	0.9	176.2	232.6	Caldwell	36	0.5	193.4	283.1	Gallatin	8	0.1	67.1	90.6
Carter	70	0.9	211.9	259.2	Garrard	36	0.5	159.3	205.0	Fulton	6	0.1	78.1	98.0
Graves	69	0.9	141.3	184.9	Hart	36	0.5	146.0	190.4	Hickman	5	0.1	69.4	113.1

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 4,467,673, 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, NTBI, 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
- NTBI – Non-traumatic 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 are currently using ICD-10 codes for injury coding. Definitions are being developed using the new ICD-10 coding. The following ICD-10 codes were used to identify TBI records:

- 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.

Non-traumatic 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 NTBI. 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-10 diagnosis codes, as follows:

- Anoxia: G91(.0-.2), G93.1, J96, R09.0, T71, T751
- Allergy/Anaphylaxis: T78.0, T78.2, T80.5, T80.6, T88.1, T88.6
- Acute Medical Clinical Incidents: G00, G01, G02, G03, G04(.0,2,3,8,9), G05, G06.0, G07, A39.0, A39.81, A85, A86, A87, A88.8, A89, C70.0, C71, C79.3, D32.0, D33(.0-.2), D42.0, D43(.0-.2), D49.6, G37.4, A83, B00.4, B01(.0,1), B02(.0,1), B37.5
- Toxic Substances: G92, T40, T41, T42(.3-.7), T45.5, T51, T56, T57, T58, T60, T61, T62, T64, T65, 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 NTBI.

Spinal cord injury case definition

SCI was defined by the following ICD-10 diagnosis codes:

- 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-10 diagnosis codes (n-codes) were used for identifying stroke cases in HDD:

- 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.