

# **CENTRAL NERVOUS SYSTEM INJURY IN KENTUCKY**

Emergency Department Visits and Hospitalizations, 2023

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

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## FOR MORE INFORMATION

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## Abbreviations

- TBI – Traumatic brain injury
- NTBI – Non-traumatic brain injury
- SCI – Spinal cord injury
- CNSI – Central nervous system injury
- LOS – Length of stay
- MVTC – Motor vehicle traffic crash
- ETS – Exposure to toxic substances
- KIPRC – Kentucky Injury Prevention and Research Center

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This report presents basic data about emergency department (ED) visits, hospitalizations, and hospital deaths for the calendar year 2023 for central nervous system injuries (CNSIs) that include traumatic brain injuries (TBIs), non-traumatic brain injuries (NTBIs), spinal cord injuries (SCIs) 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 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 a minor TBI may have serious, long-term consequences.

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

Major sections of this report include:

- Nonfatal TBI, non-traumatic brain injury (NTBI), spinal cord injury (SCI) and stroke case demographics, causes and outcomes,
- TBI, NTBI, and stroke case frequencies and rates at the county level, and
- SCI demographics, causes, and outcomes.

Later reports will include trends.

This report does not include data on TBIs from federal, military, or Veterans' Administration hospitals. Data regarding deaths due to TBI, NTBI, SCI, and stroke include only deaths treated or seen in an emergency department (ED) or admitted as an inpatient to an acute care hospital. Deaths that occur due to TBI, 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 central nervous system injuries (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**

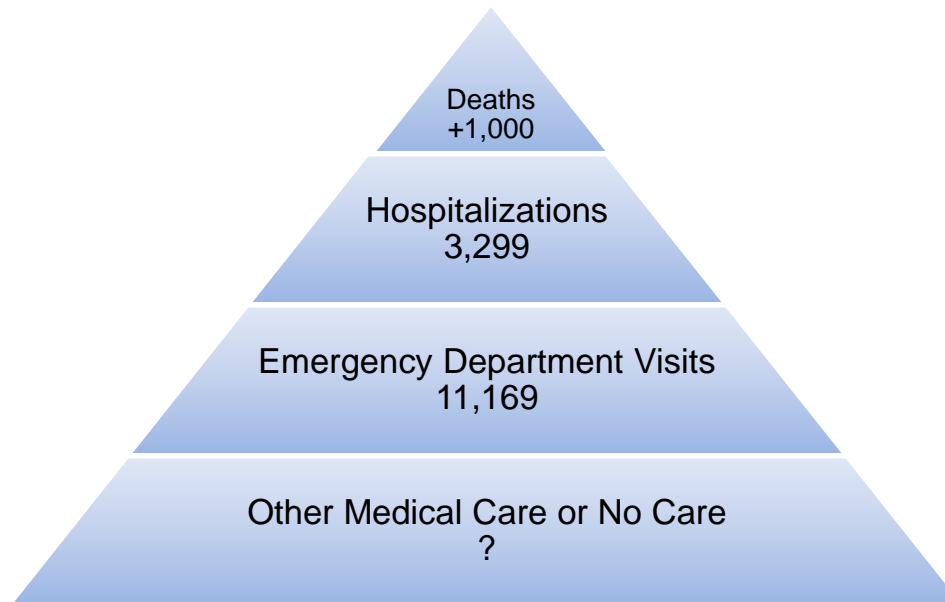
This report describes CNSI-related ED visits and hospitalizations in Kentucky for the calendar year 2023. The numbers show the magnitude of the problem, but the rates are also important. Rates show how a certain group is affected by CNSI by relating the number of CNSIs to the size of the population. For example, a relatively small number of TBIs occurring in a small population (e.g., persons aged 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 aged 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 Traumatic Brain Injury in Kentucky

In Kentucky, it is estimated that more than 14,000 traumatic brain injuries and deaths occur each year. In 2023, 11,169 (77.2%) ED discharges and 3,299 (22.8%) hospitalization discharges (nonfatal) were recorded in Kentucky hospitals. In addition to these nonfatal incidents, there were over 1,000 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 deaths in Kentucky for 2023. 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, 2023**



### **TBI in Kentucky, 2023:**

- More than 14,000 people visited Kentucky hospitals with a TBI-related injury. Of those, 11,169 were treated and released from an ED and 3,299 were hospitalized.
- 2,339 TBIs occurred among children aged 0 to 14 years; ED visits accounted for more than 92% of the TBIs in this age group.
- Falls were the leading cause of TBI for both ED visits as well as hospitalizations. Fall rates were highest for adults 65 years or older in both ED visits as well as hospitalizations.
- Falls resulted in the greatest number of TBI-related hospitalizations, with a rate 2.5 times that of motor vehicle traffic crashes.
- Adults aged 65 years or older had the highest rate of TBI-related hospitalization, with a rate higher than 3x that of all other ages combined.
- Falls accounted for more than twice as many TBI injuries as did motor vehicle traffic crashes.
- Data indicate that TBIs led to over 42 state residents per day being treated in Kentucky hospitals (ED and hospitalization).

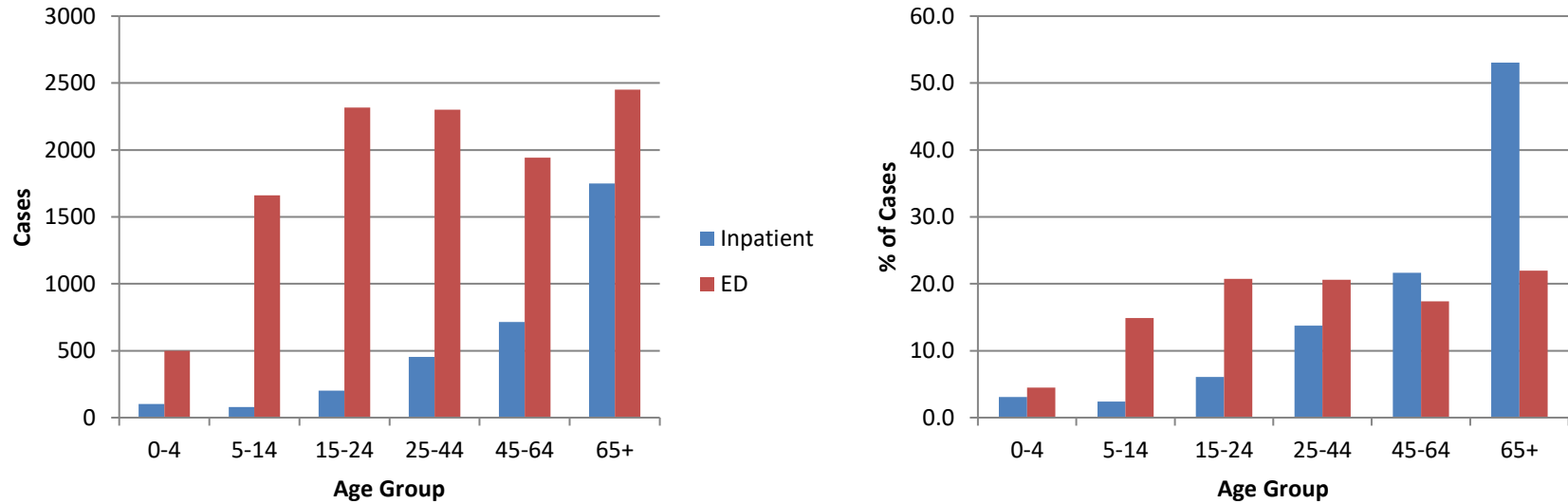
Our results indicate a need to focus prevention efforts on the following causes and target populations:

- 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, and
- Exposure to toxic substances (NTBI), especially among ages 45 and older.

## TBI by Age: Comparing the Numbers

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

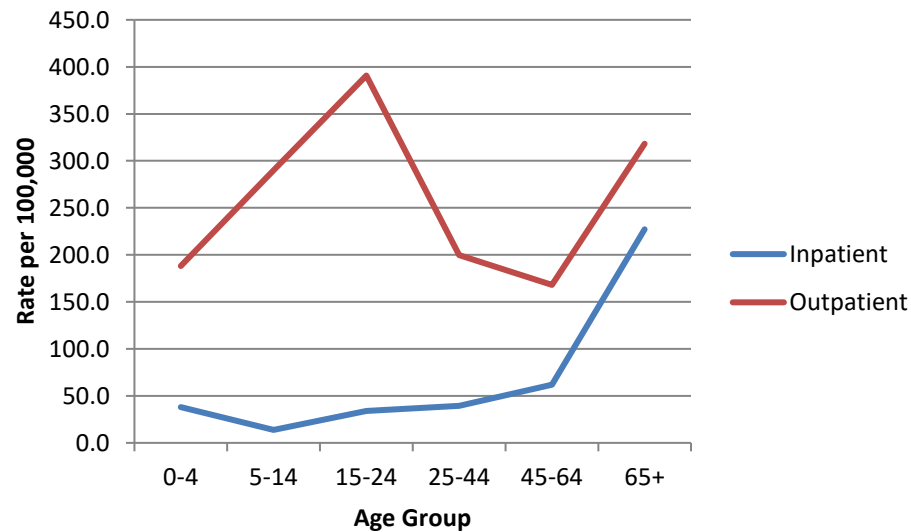
**Figure 2: Numbers of Nonfatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2023**



## TBI by Age: Comparing the Rates

The following figure depicts the annual rate of TBI-related ED visits and hospitalizations by age group in Kentucky for 2023. The y axis represents the rate per 100,000 population. During 2023, young adults aged 15–24 years had the highest rate of nonfatal TBI-related ED visits, 391 per 100,000 population. From age 25 to age 64, the rates for ED visits decline then begin to rise again for those aged 65 and over. The highest rates of nonfatal TBI-related hospitalization occurred among adults aged 65 years or older (227 per 100,000).

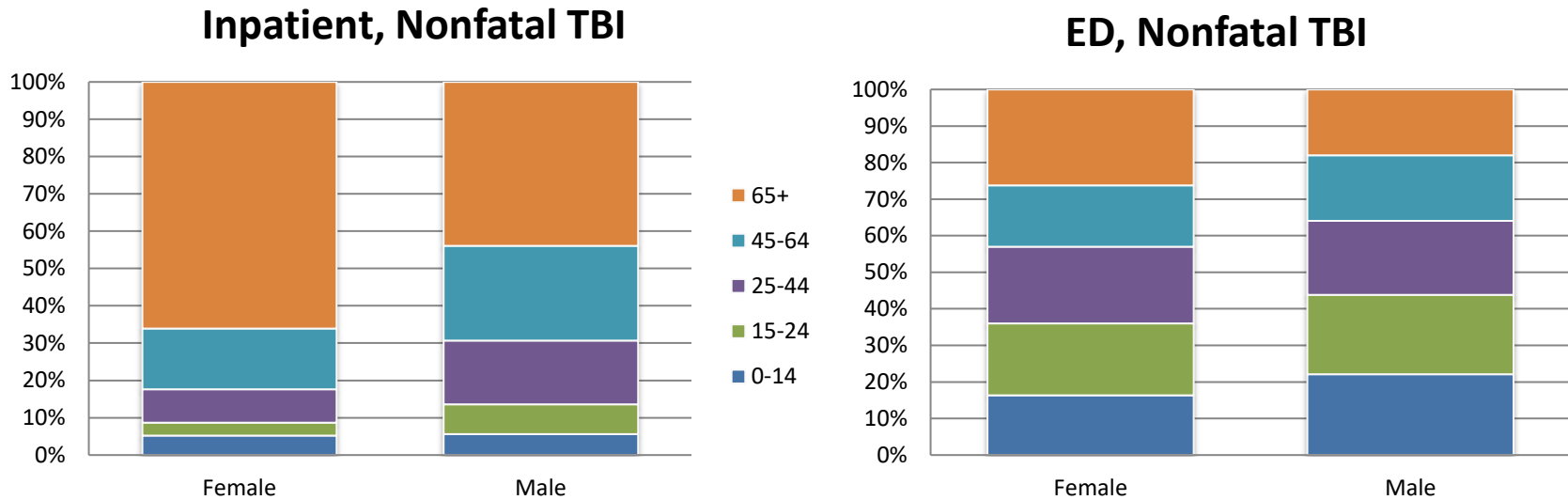
**Figure 3: Rates of Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations by Age Group, Kentucky, 2023**



## 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 2023. Overall, 7,769 nonfatal TBIs occurred among males, compared with 6,696 among females.

**Figure 4: Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations by Age Group and Gender, Kentucky, 2023**

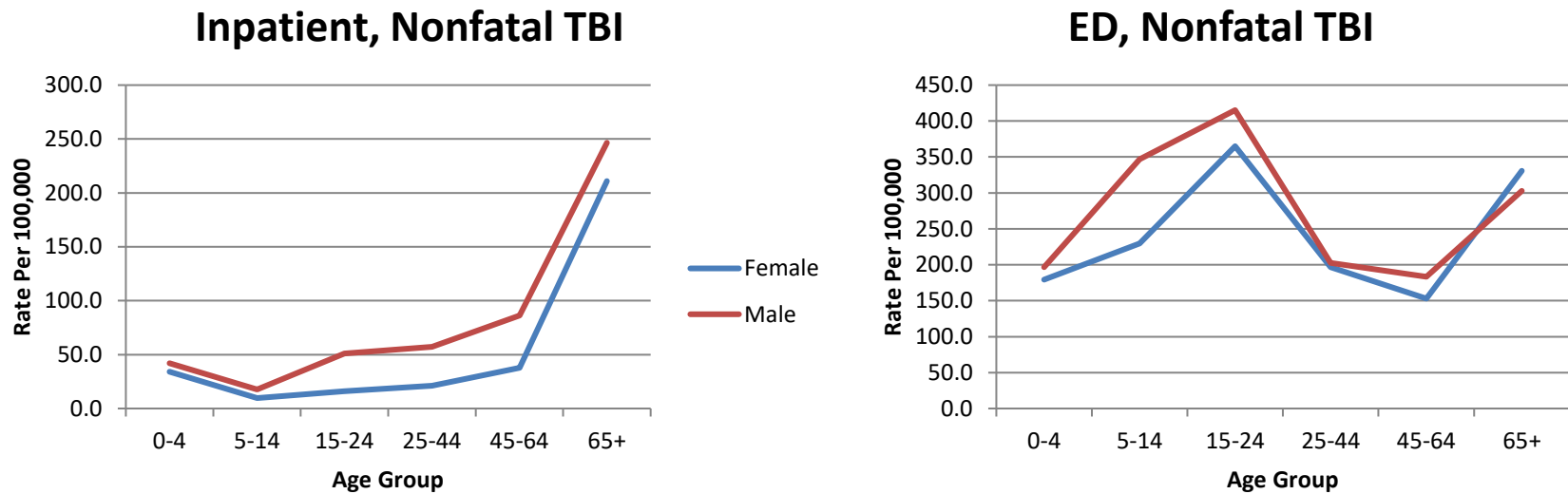


Over two-thirds of female nonfatal TBI-related inpatient admissions were over the age of 64, while almost 4 out of 10 men admitted for nonfatal hospitalization for TBI were over the age of 64.

## TBI by Gender: Comparing the Rates

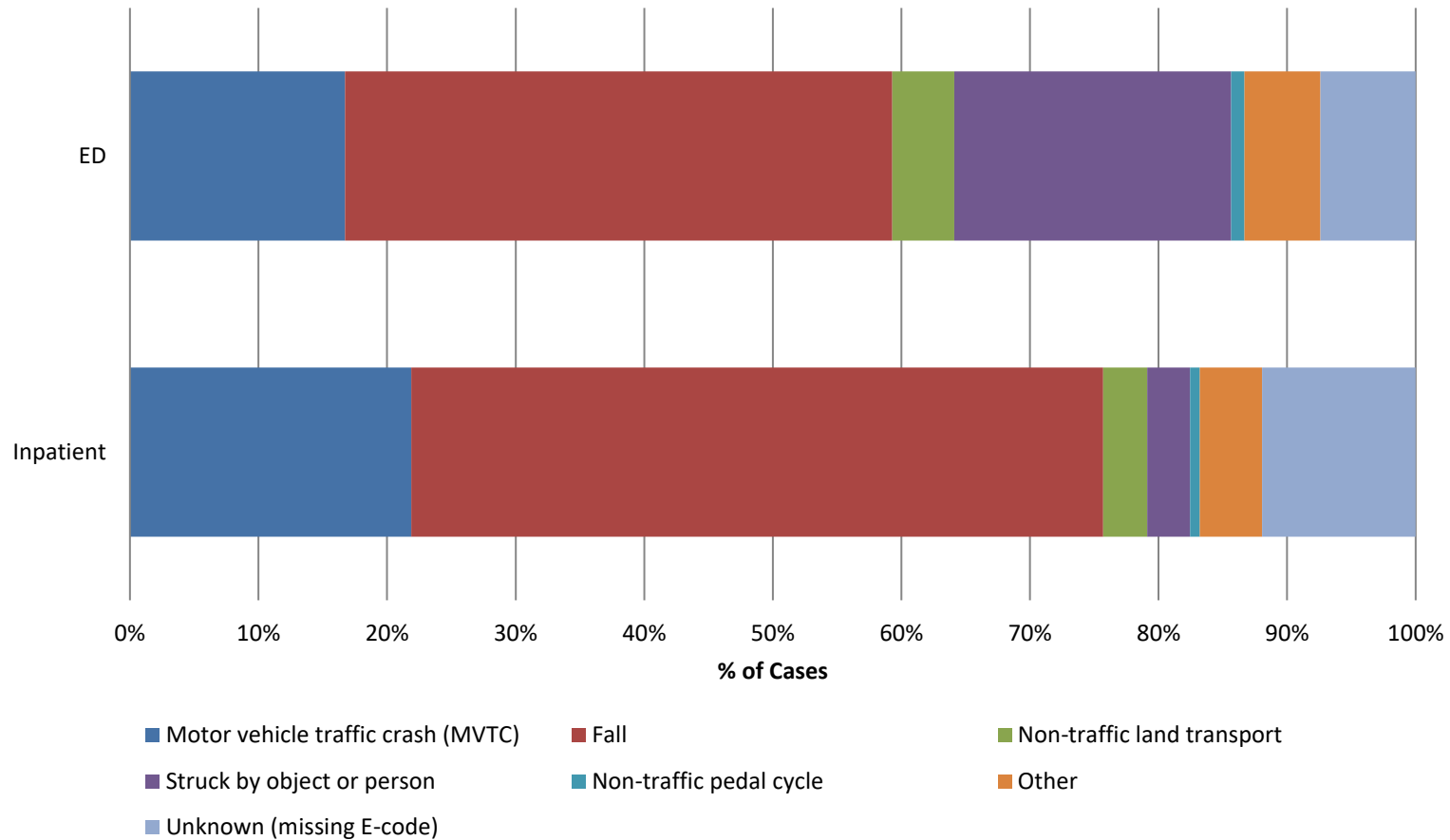
The following figure depicts the rates of TBI-related ED visits and hospitalizations by gender. The y axis represents the rate per 100,000 population. Males from 15 to 24 years of age had the highest rates for TBI-related ED visits, 415 per 100,000. Rates were also high for female ED visits from 15 to 24 years of age, 365 per 100,000. Both males and females had high rates for age 65 and older inpatient visits, 247 per 100,000 for males and 211 per 100,000 for females.

**Figure 5: Rates of Nonfatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations by Gender, Kentucky, 2023**



**Figure 6: External Cause of Nonfatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, Kentucky, 2023**

**Mechanism of Injury, Nonfatal TBI**



## TBI by External Cause: Comparing the Percentages

The following pie chart depicts the percentage of TBI-related ED visits and hospitalizations, combined, by external cause of injury. Falls were the leading known cause of TBI, covering 45% of all nonfatal TBIs in Kentucky in 2023. The second-leading known cause was motor vehicle traffic crashes, which contributed 18% of all nonfatal TBIs.

**Figure 7: Percentage of Traumatic Brain Injury Combined Emergency Department Visits and Hospitalizations, by External Cause, Kentucky, 2023**

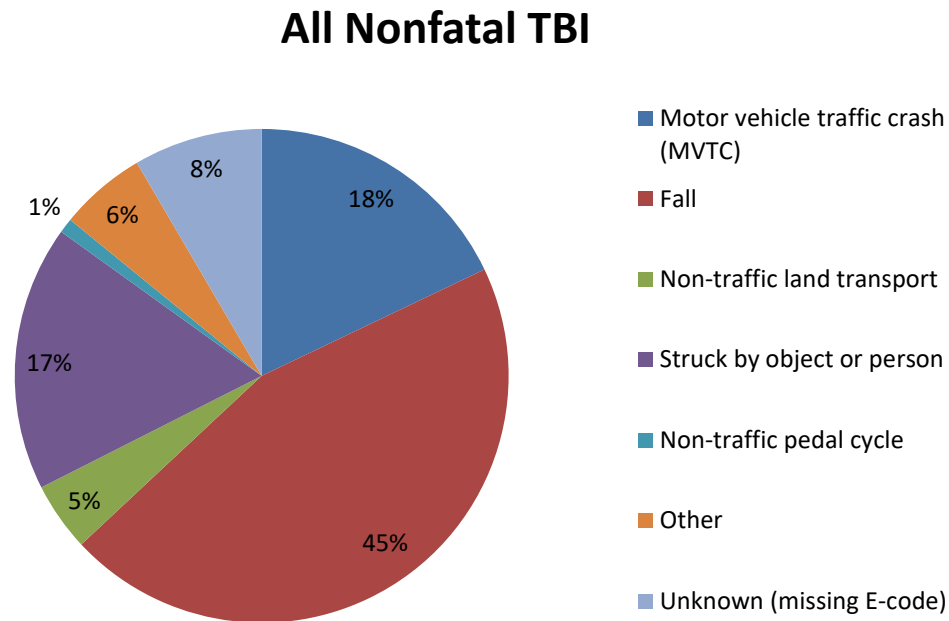
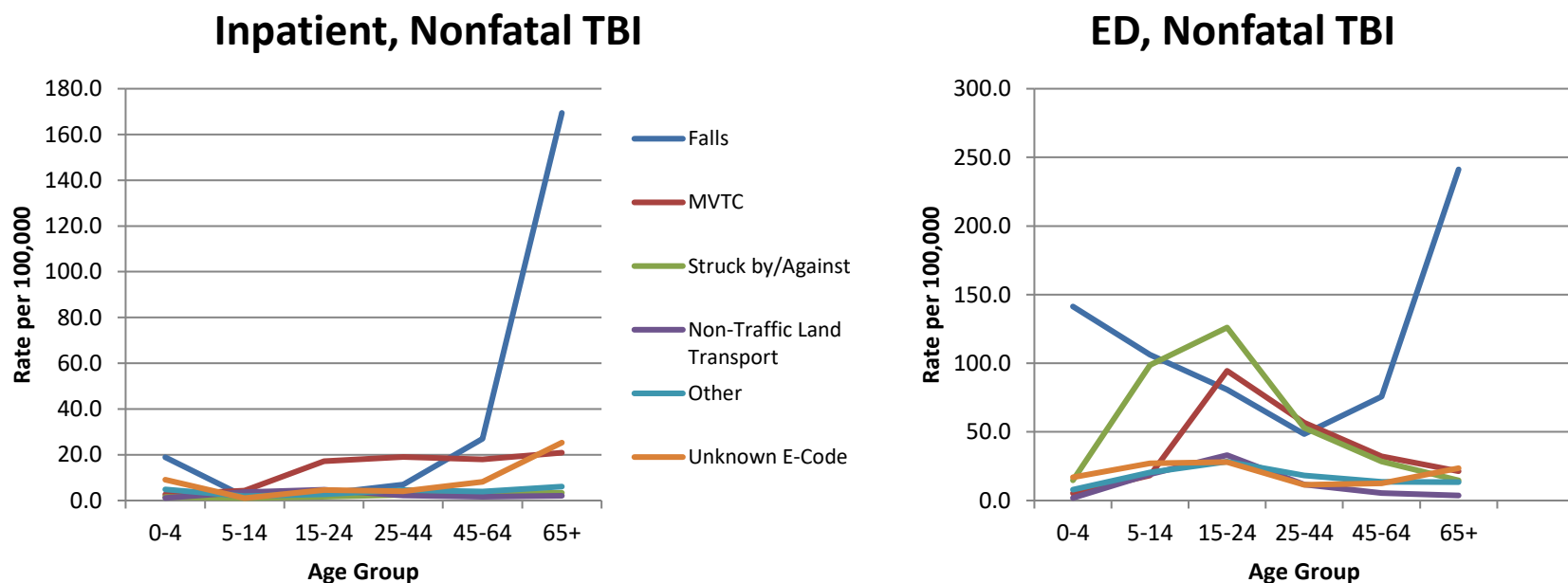




Figure 8 depicts the rates of TBI-related ED visits and hospitalizations by external cause. The y axis represents the rate per 100,000 population.

The data indicate that falls were the leading cause of TBI in Kentucky. Rates were highest among those aged 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 aged 15–24 years.

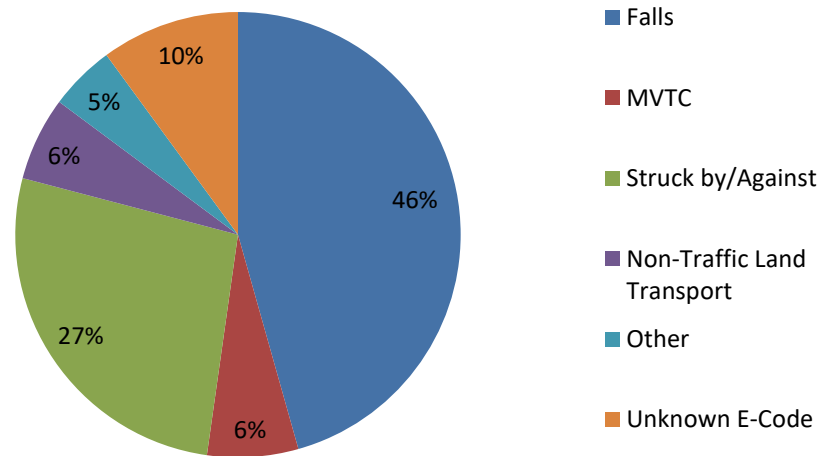
**Figure 8: Rates of Nonfatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations by External Cause, Kentucky, 2023**



## TBI by External Cause: Comparing the Percentages by Age Groups

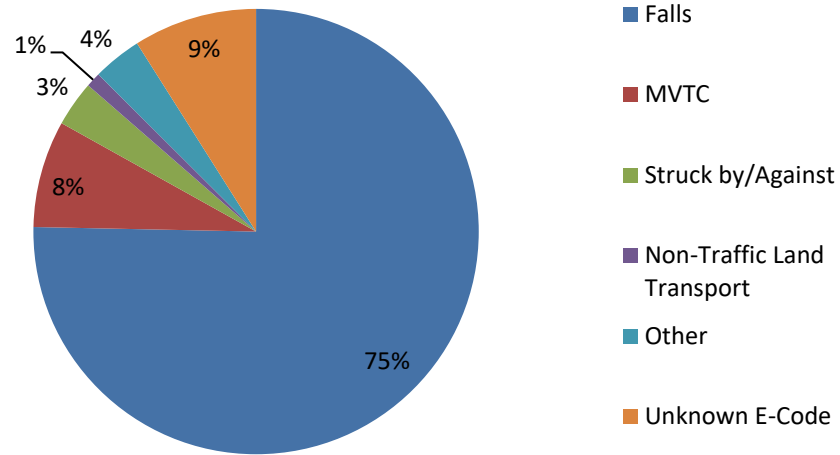
The following two figures depict the percentage of nonfatal TBI-related ED visits and hospitalizations by external cause for specific age groups. Figure 9 presents data for children aged 0–14 years. Figure 10 presents data for adults aged 65 and older.

**Figure 9: Percentage of Traumatic Brain Injury Combined Emergency Department Visits and Hospitalizations Among Children Aged 0–14 Years, by External Cause, Kentucky, 2023**



For children aged 0–14 years, falls were the leading known external cause of nonfatal 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 27% of injuries.

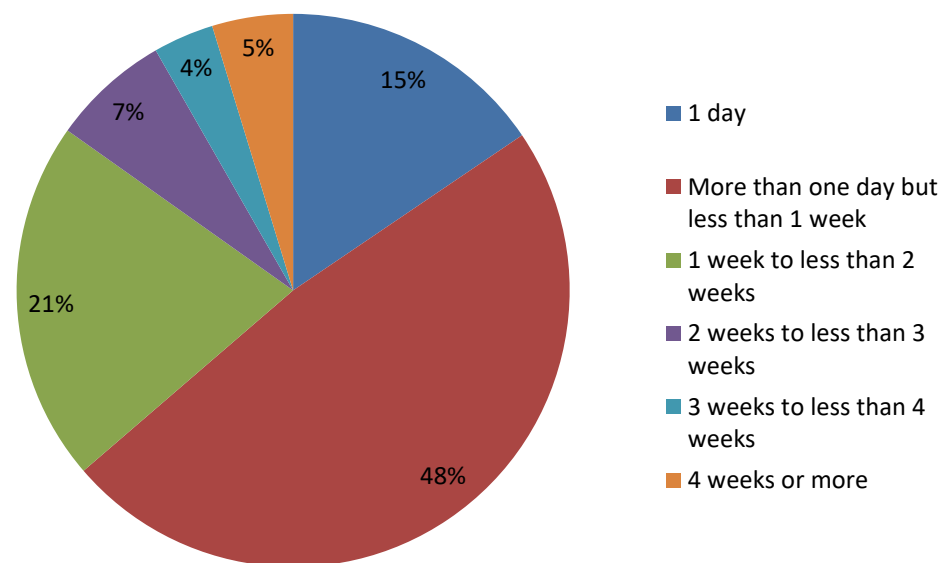
**Figure 10: Percentage of Nonfatal Traumatic Brain Injury Combined Emergency Department Visits and Hospitalizations Among Older Adults 65 Years or Older, by External Cause, Kentucky, 2023**



Falls were also the leading cause of nonfatal TBI for adults aged 65 years or older and contributed to three-quarters of nonfatal TBI injuries.

The length of stay (LOS) for hospitalized nonfatal TBI (n=3,299) ranged from 1 day to 500 days. The mean LOS was 8.3 days, with a median LOS of 4.0 days. Figure 11 shows the distribution of stays for those hospitalized with a TBI. Just under two-thirds of admitted TBI injuries stayed for less than one week.

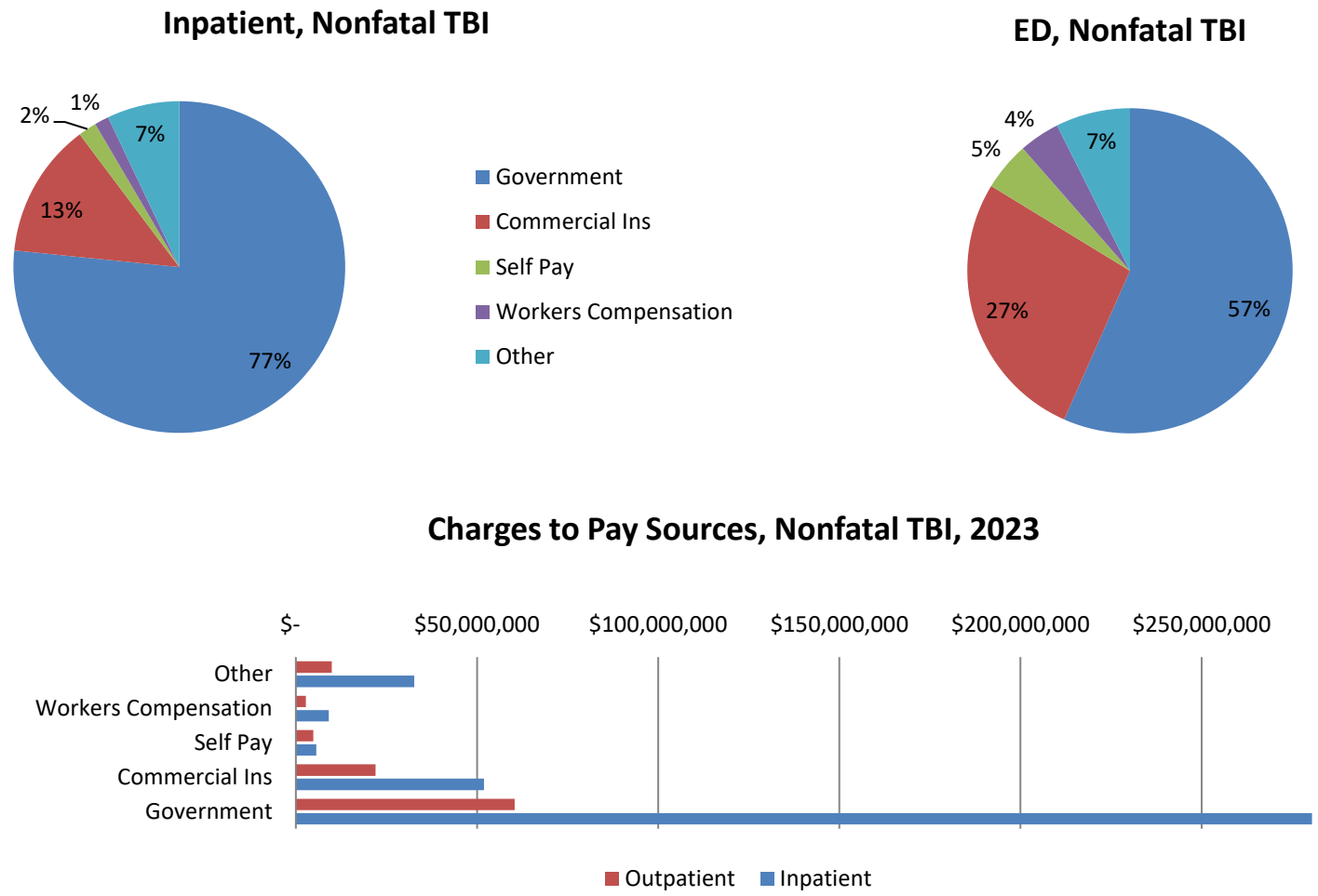
**Figure 11: Nonfatal Traumatic Brain Injury Hospitalization Length of Stay, Kentucky, 2023**



For nonfatal inpatient TBIs, 1,685 (51.1%) had a disposition other than “routine”. The three most frequent non-routine discharges were “skilled nursing facility”, “home health”, and “rehabilitation”. A total of 1,285 inpatient discharges had one of these three dispositions. ED discharges were nearly always (82.5%) 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 three-quarters (76.4%) of nonfatal TBIs, as well as more than half of ED care charges (56.8%). 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: Nonfatal Traumatic Brain Injury Emergency Department Visit and Hospitalization Payer Source and Charges, Kentucky, 2023**



As one would expect, the incidence of TBI was highest in the larger counties. The top three in overall (inpatient and ED combined) TBI incidence (Jefferson, Fayette, and Hardin) are among the most populous counties in Kentucky. Both Pulaski and Franklin counties make the top 10 in incidence while being only 14<sup>th</sup> and 19<sup>th</sup>, respectively, in population rank in the state. Johnson, Ohio, Harrison, and Bell also stood out by being the counties with the top 4 age-adjusted rates while ranking 51<sup>st</sup>, 49<sup>th</sup>, 63<sup>rd</sup>, and 44<sup>th</sup>, respectively, in population size. Clay County, which has consistently been one of the highest-rated counties in Kentucky for TBI since 2001, is in the top 10 again this year. In the past when data were 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.



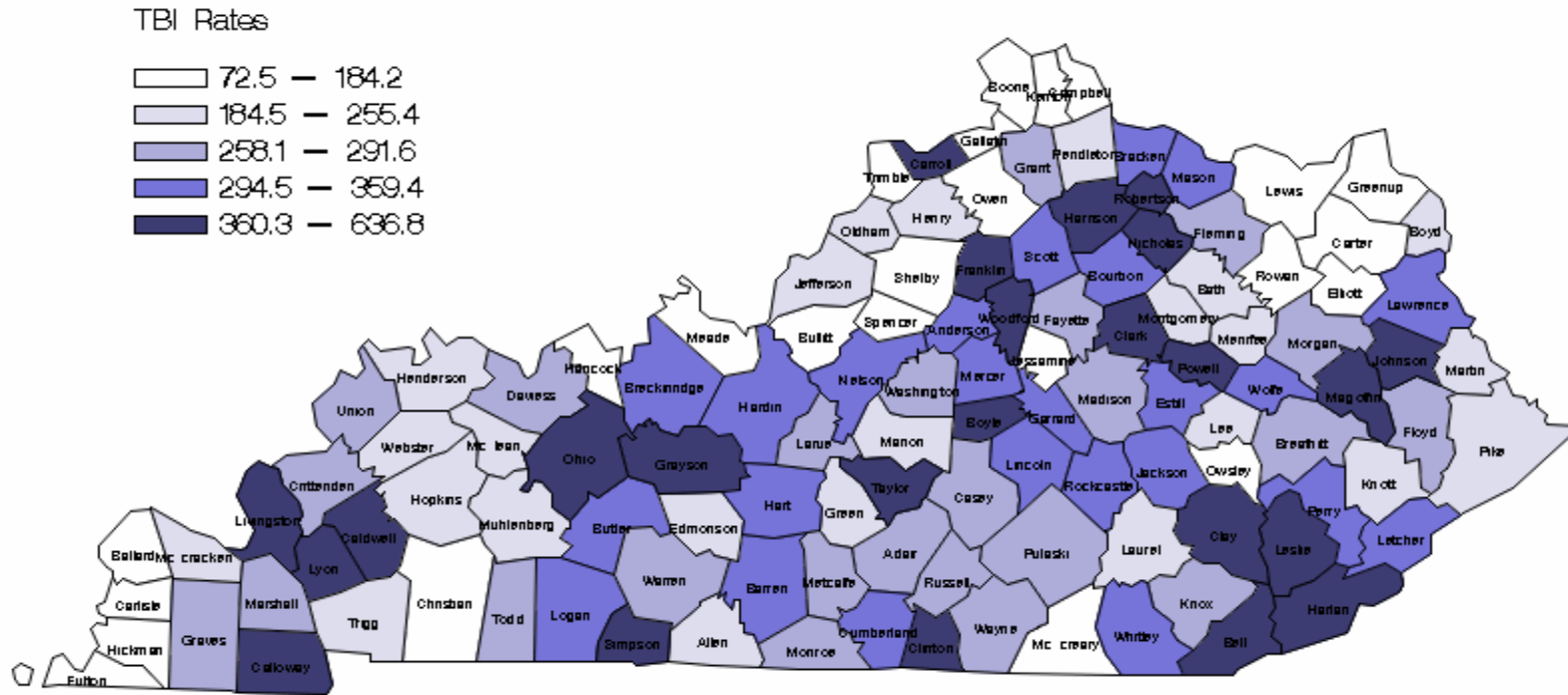






Figure 16:

### Age-Adjusted TBI ED Rates by County, Kentucky 2023



Source: Kentucky TBI Surveillance Project 2023.

## Non-Traumatic Brain Injury in Kentucky

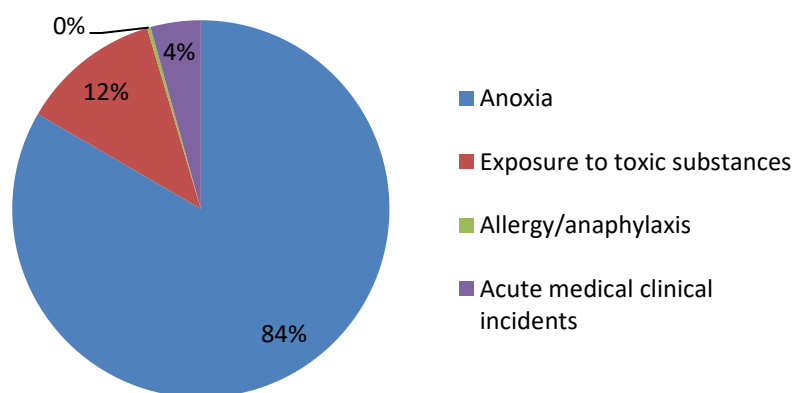
In addition to TBI as defined by the Centers for Disease Control and Prevention (CDC), there are many brain injuries that have non-traumatic etiologies. These we have classified as NTBI (non-traumatic brain injuries). (See Appendix for diagnosis codes.) Because these diagnoses are not included in the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

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

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

This represents a significant widening of our definition from previous years (previously labeled acquired brain injury or ABI). In 2023, there were 126,444 Kentucky residents identified in Kentucky hospitals with nonfatal, non-traumatic incidences of brain injury. This includes both inpatient (96,045) and ED (30,399) cases. The crude incidence rate for 2023 was 2,804 per 100,000 population.

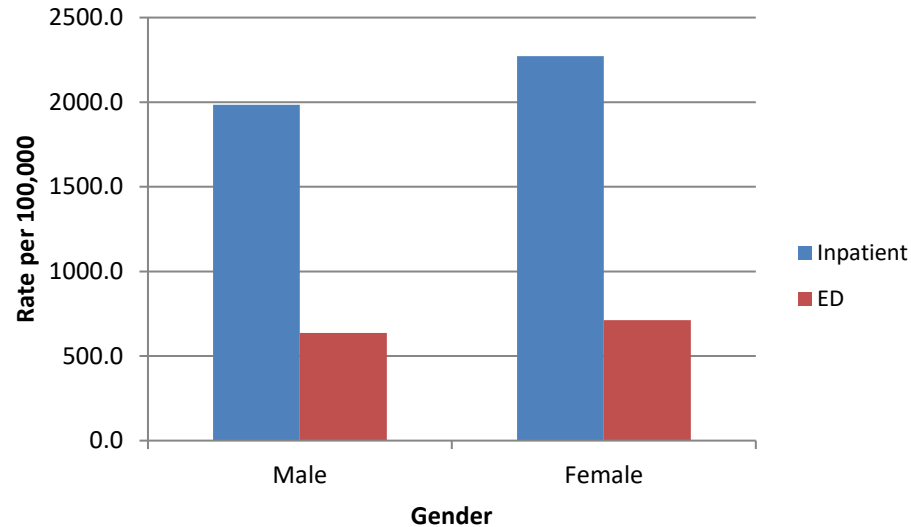
**Figure 17: Nonfatal, Non-Traumatic Brain Injury (NTBI) by Type, Kentucky, 2023**



## NTBI by Gender: Comparing the Rates

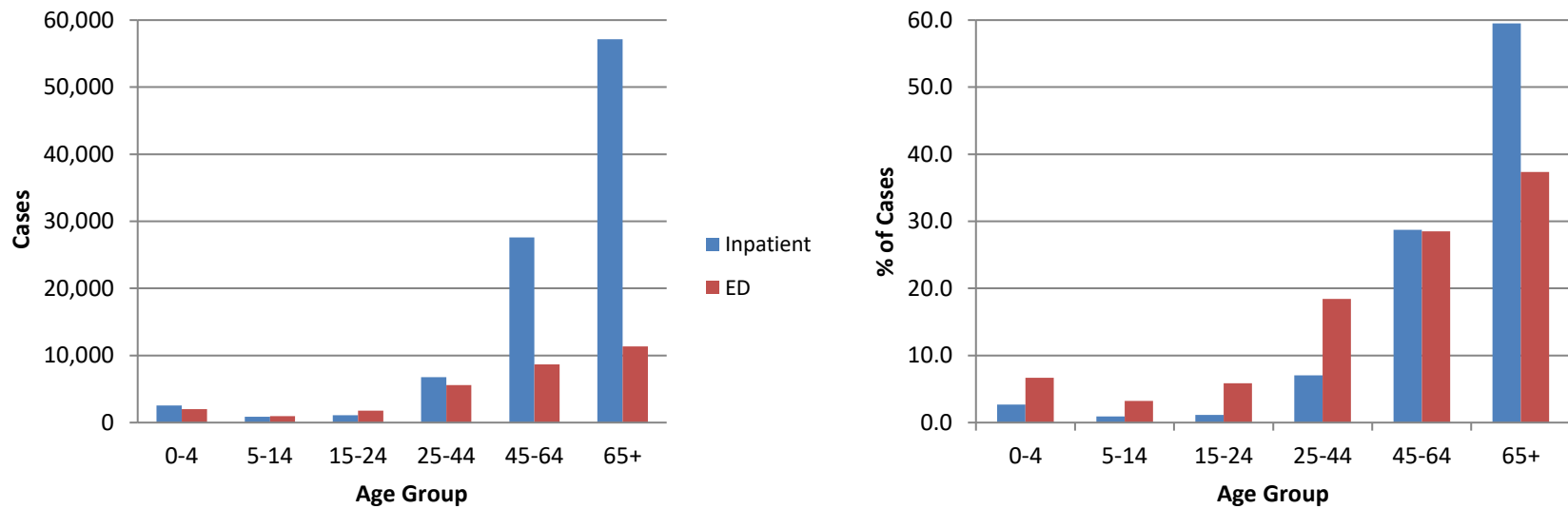
The following figure depicts the rates of nonfatal NTBI-related ED visits and hospitalizations by gender. The y axis represents the rate per 100,000 population. Rates were slightly higher for males in ED NTBI cases, with females having the higher overall rate between inpatient and ED.

**Figure 18: Rates of Nonfatal Non-Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations by Gender, Kentucky, 2023**



## NTBI by Age: Comparing the Numbers

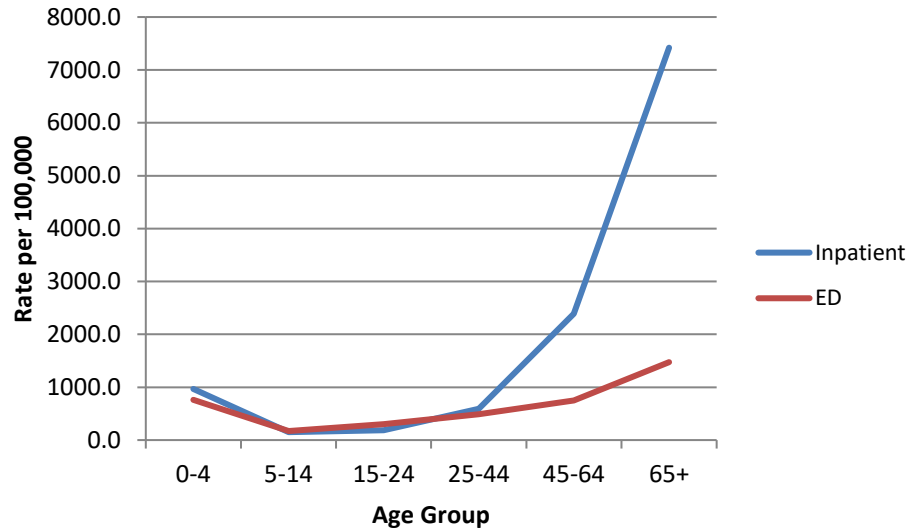
**Figure 19: Numbers of Nonfatal Non-Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations by Age Group, Kentucky, 2023**



## NTBI by Age: Comparing the Rates

The following figure depicts the annual rate of NTBI-related ED visits and hospitalizations by age group in Kentucky for 2023. The y axis represents the rate per 100,000 population. During 2023, the highest rate of nonfatal NTBI-related ED visits, at 1,474 per 100,000 population, were those in the 65+ age group. The highest rates of nonfatal NTBI-related hospitalization also occurred among adults aged 65 years or older (7,420 per 100,000).

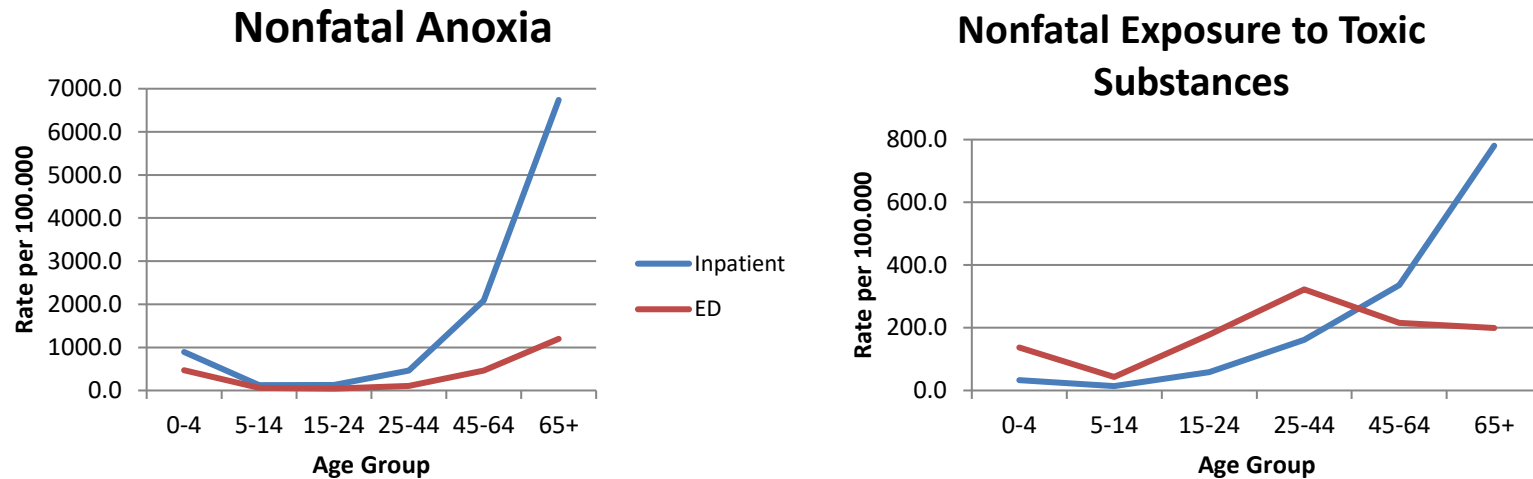
**Figure 20: Rates of Nonfatal Non-Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations by Age Group, Kentucky, 2023**



## NTBI by Age and Type: Comparing the Rates

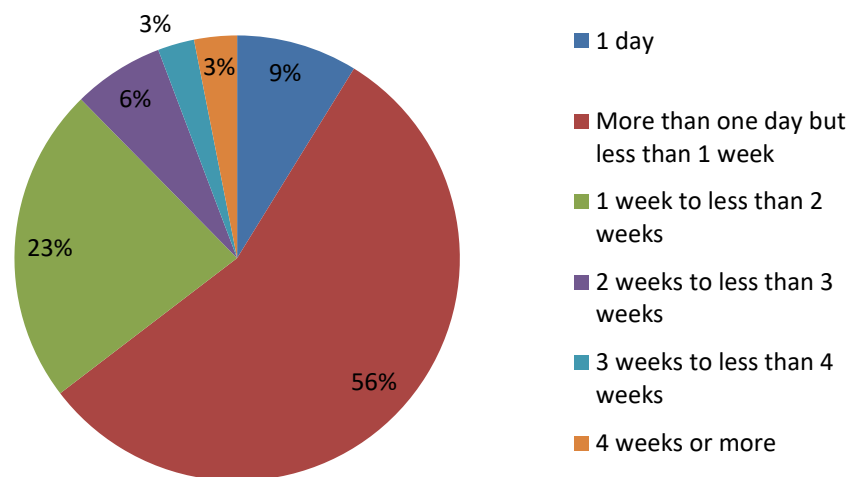
Nearly all inpatient NTBI (83.4%) were a result of anoxia/hypoxia. Anoxia/hypoxia was also the leading cause of NTBI in ED visits (57.1%), with exposure to toxic substances (ETS) following (30.4%). Almost half of all ETS cases included poisoning by narcotics, hallucinogens, sedatives, hypnotics, central nervous system depressants/anesthetics, and toxic effects of alcohol. Over 87% of all anoxia cases were due to respiratory failure with hypoxia or hypercapnia. In nonfatal NTBI inpatient visits, anoxia tends to affect older people (aged 45 and over) considerably more often than younger people, whereas ETS also affects a significant number of persons 25 and older.

**Figure 21: Rates of Nonfatal Non-Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations by Age Group and Type, Kentucky, 2023**



The LOS for hospitalized, nonfatal NTBI (n=96,045) ranged from 1 day to 731 days. The mean LOS was 7.5 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: Nonfatal Non-Traumatic Brain Injury Hospitalization Length of Stay, Kentucky, 2023**

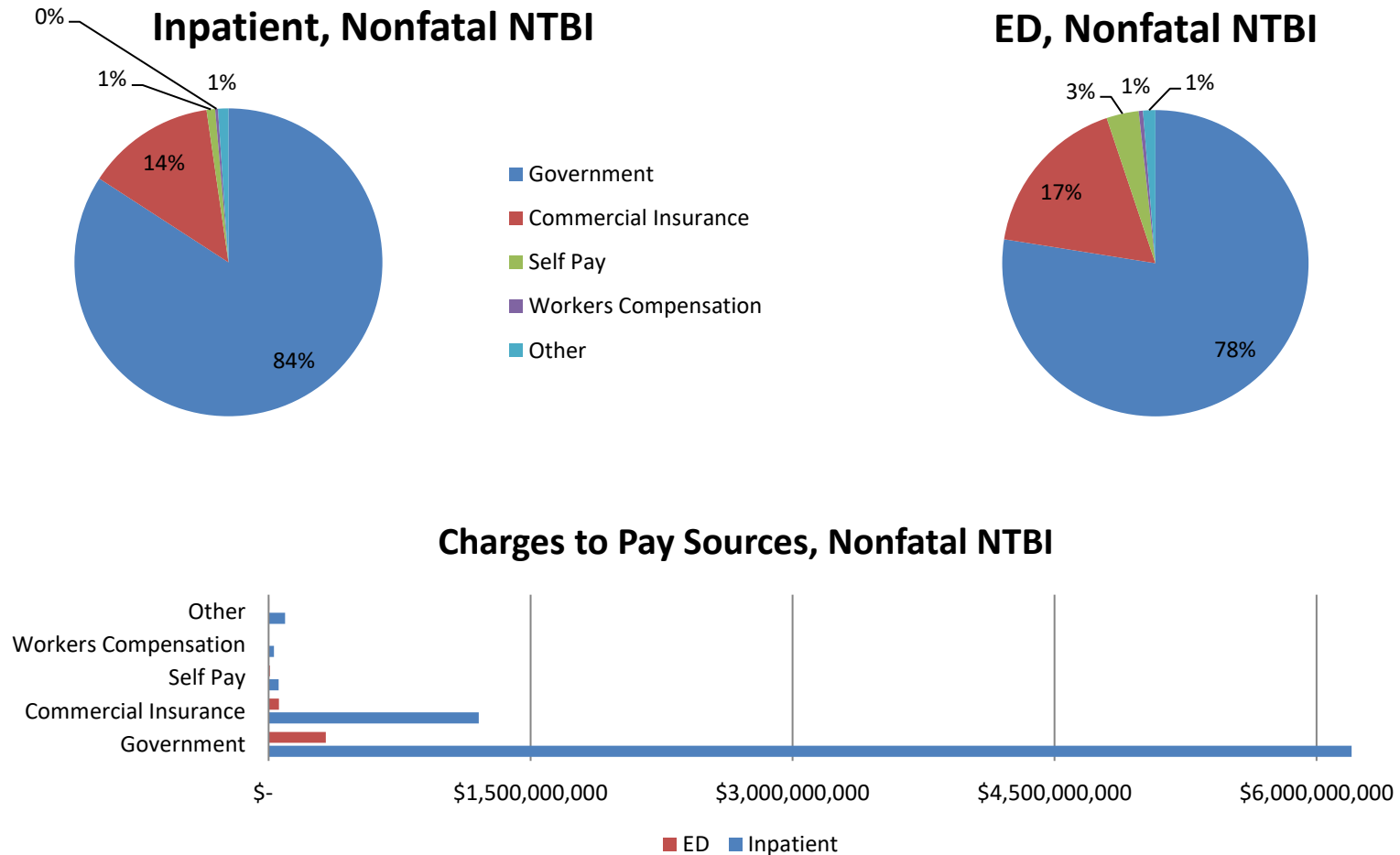


For nonfatal inpatient NTBIs, 47,556 (49.5%) had a disposition other than “routine”. The three most frequent non-routine discharges were “skilled nursing facility”, “home health”, and “rehabilitation”. A total of 33,579 inpatient discharges had one of these three dispositions. ED discharges were most likely (70.4%) 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 (84.2%) and ED (77.5%) cases for nonfatal 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: Nonfatal Non-Traumatic Brain Injury Emergency Department and Hospitalization Payer Source and Charges, Kentucky, 2023**



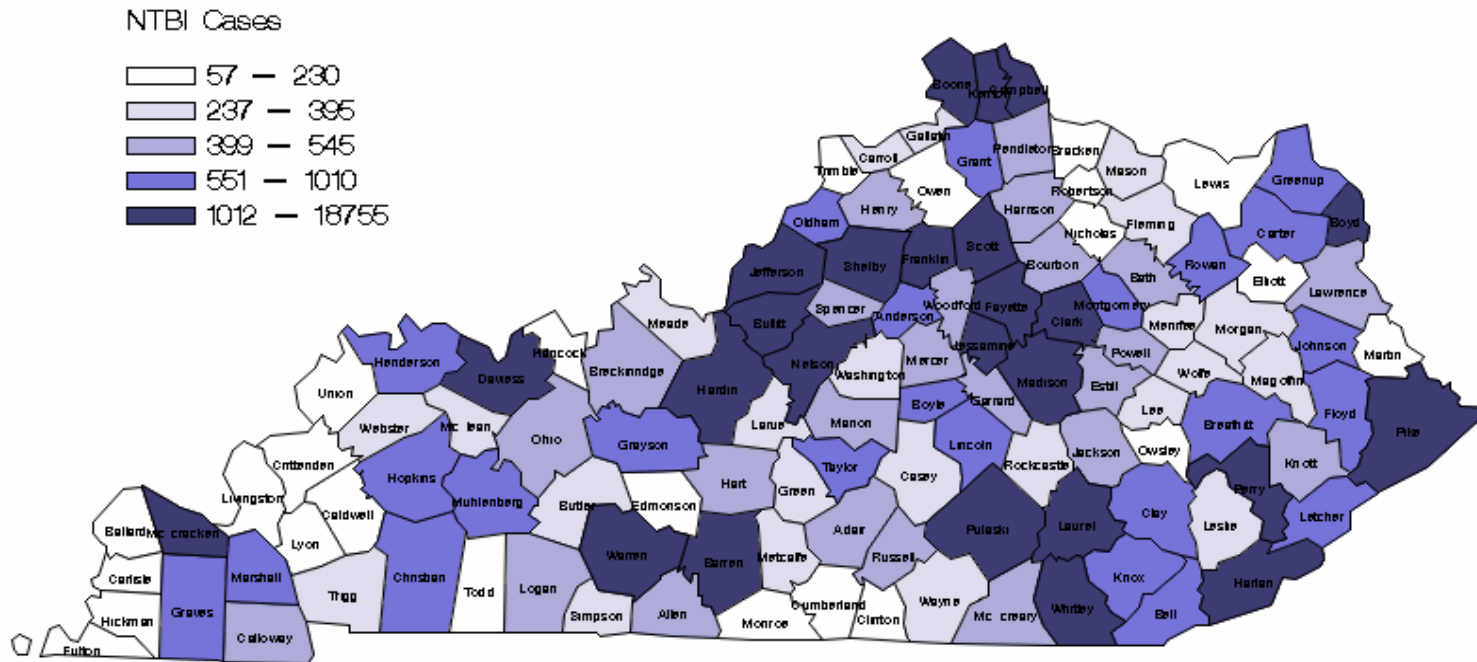
In general, as with TBI, the more populous counties had high numbers of NTBI. However, only one of the 25 most populous counties appeared in the top 25 counties when ranked by age-adjusted rate for hospitalized cases. Perry, which ranks 45<sup>th</sup> with respect to county population, had the highest age-adjusted rate of inpatient NTBI in the state. Leading the state for age-adjusted rate for ED cases was Harlan County, the 48<sup>th</sup> most populated county when ranked by population size, followed by Carroll, Powell and Grayson counties, which are ranked 96<sup>th</sup>, 90<sup>th</sup>, and 41<sup>st</sup> in population, respectively. 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 Hospitalization Cases by County, Kentucky 2023



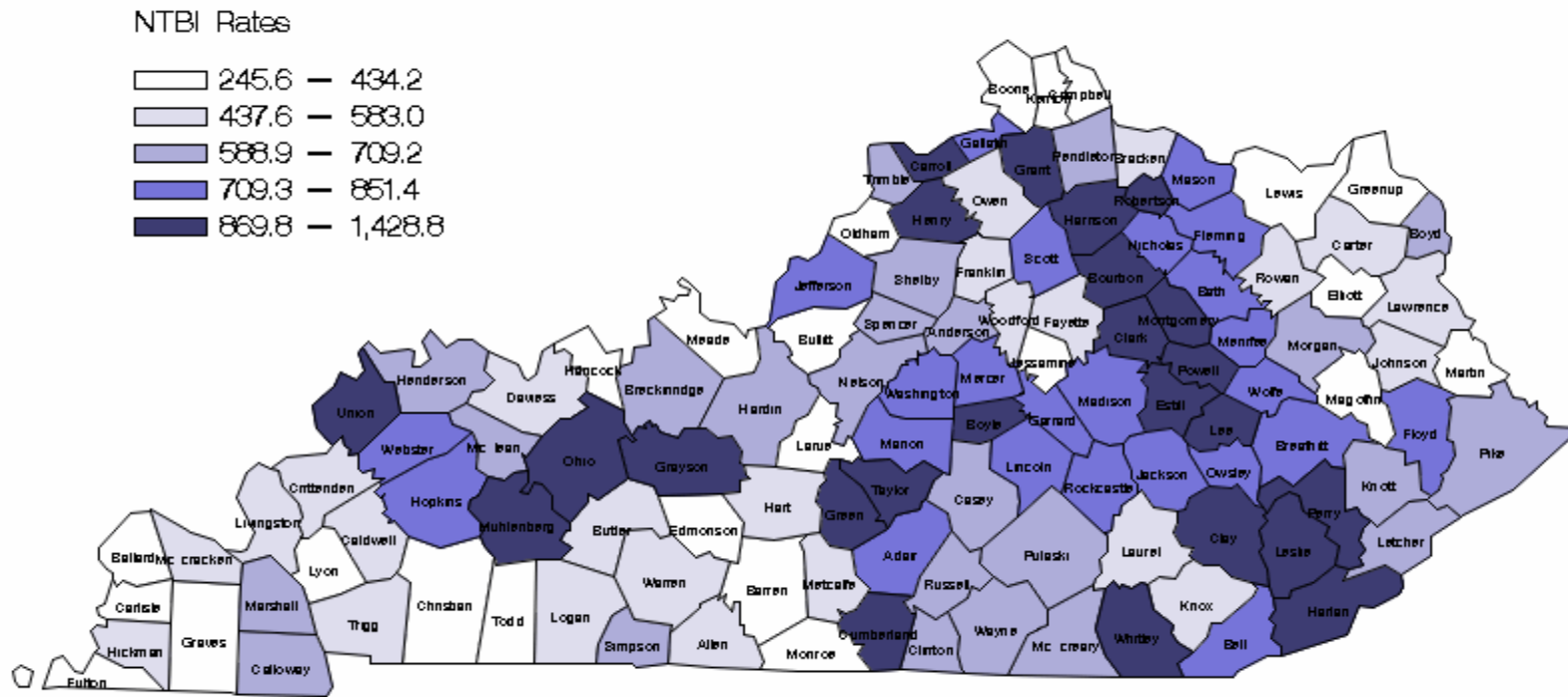
Source: Kentucky TBI Surveillance Project 2023.





Figure 27.

### Age-Adjusted NTBI ED Rates by County, Kentucky 2023



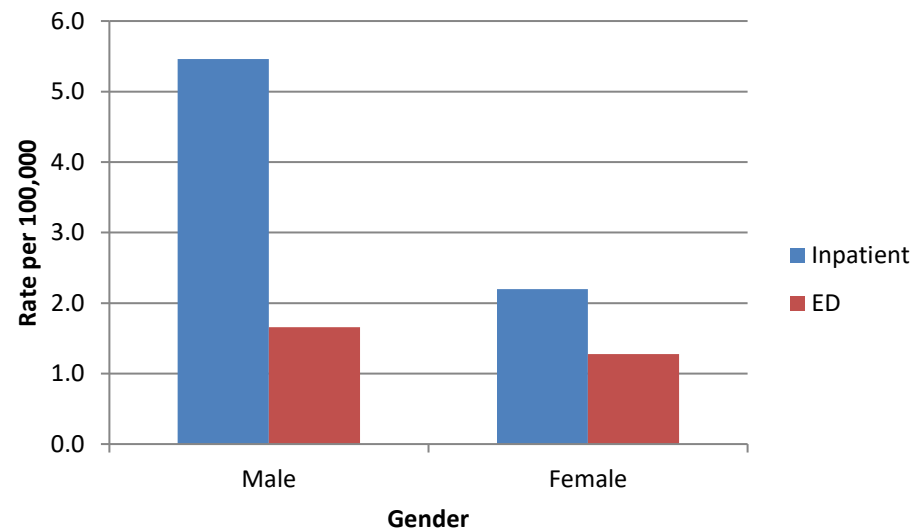
Source: Kentucky TBI Surveillance Project 2023.

## Spinal Cord Injury in Kentucky

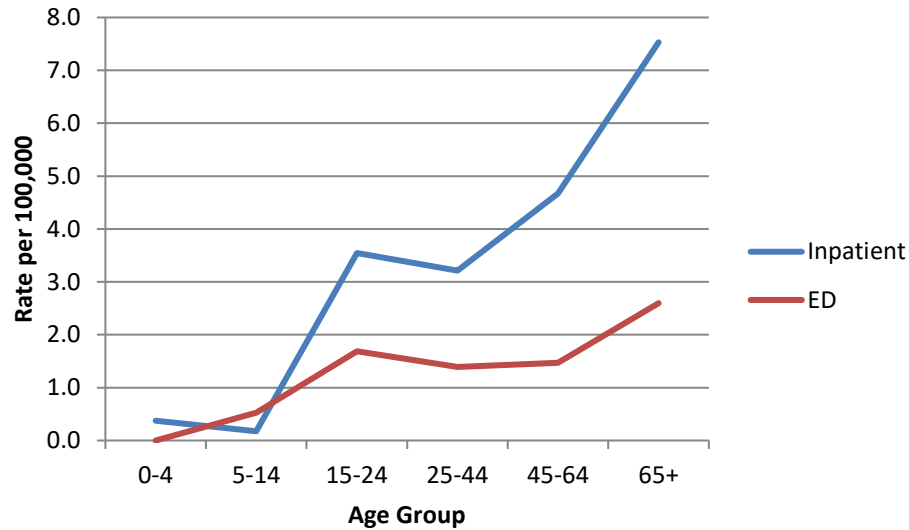
Spinal cord injury (SCI) patients often are readmitted for problems stemming from the original injury. To avoid double counting in such cases, for SCI we looked only at the first three listed diagnosis codes. There were 172 nonfatal inpatient SCI cases among Kentucky residents identified in 2023 as well as 66 nonfatal ED cases. The crude incidence rate of any nonfatal SCI was 5.3 per 100,000 population.

### SCI by Gender: Comparing the Rates

**Figure 28: Rates of Nonfatal Spinal Cord Injury-Related Emergency Department Visits and Hospitalizations by Gender, Kentucky, 2023**



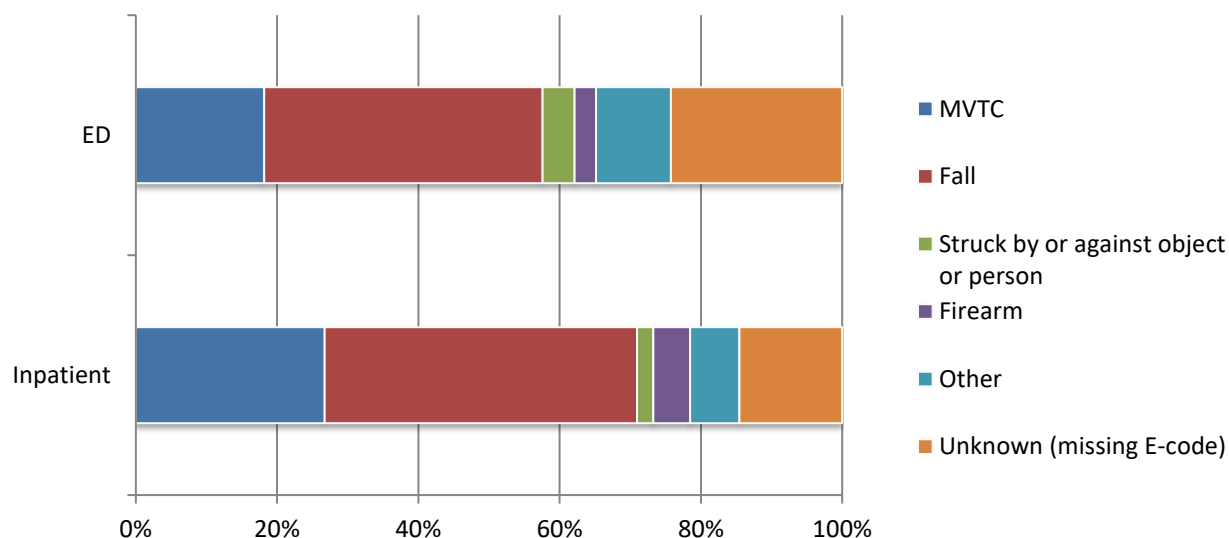
**Figure 29: Rates of Spinal Cord Injury-Related Emergency Department Visits and Hospitalizations by Age Group, Kentucky, 2023**



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



**Figure 30: Nonfatal Spinal Cord Injury-Related Emergency Department Visits and Hospitalizations by External Cause, Kentucky, 2023**

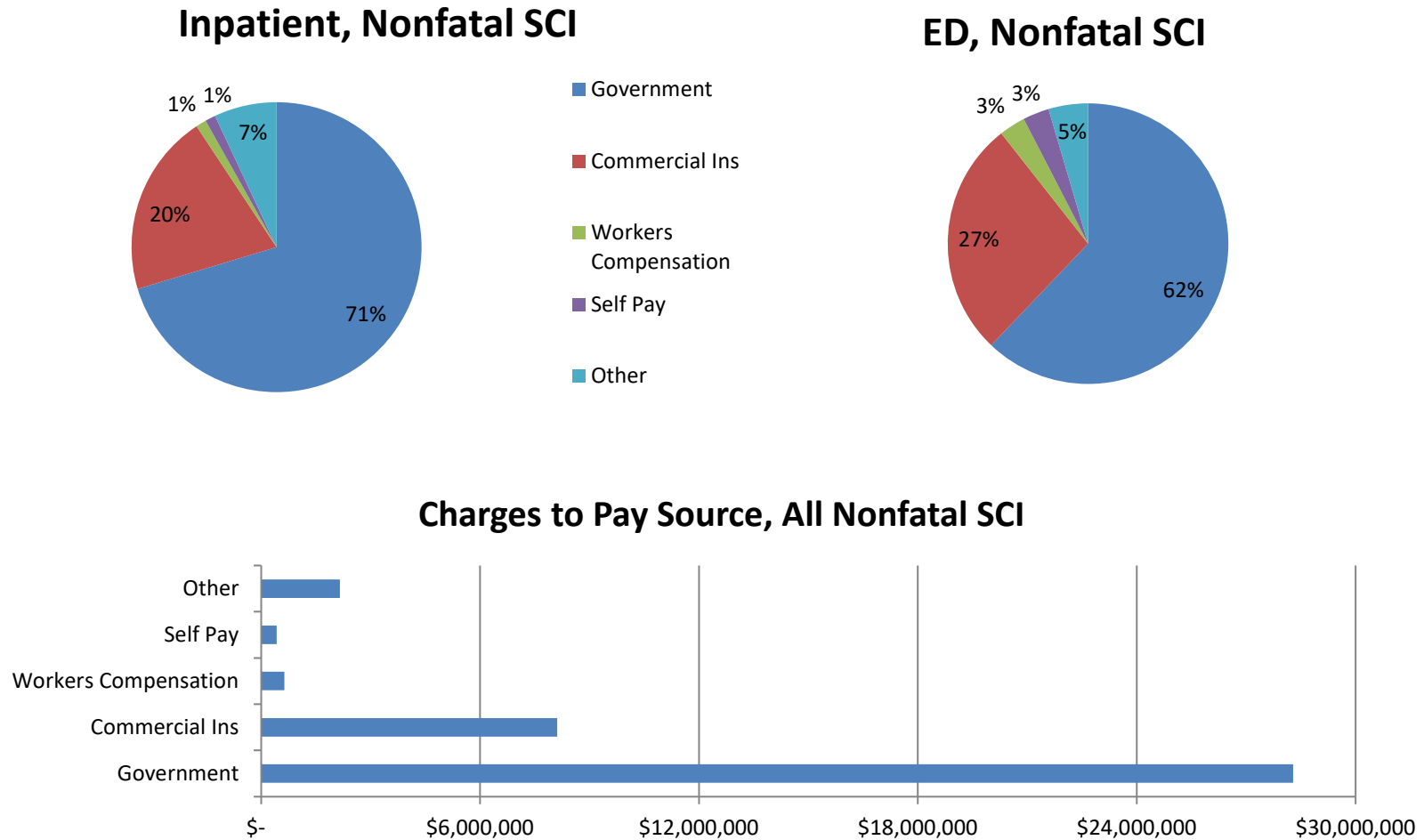


Among nonfatal SCIs for which an E-code was reported, falls were the leading mechanisms of injury for both inpatient and ED SCI visits. Motor vehicle crashes were the second leading cause of SCI in both hospitalizations and ED visits.

Hospitalized SCI patients had a length of stay varying from 1 day to 78 days. The mean LOS was 12.2 days, with a median of 9 days. Almost three-quarters (73.8%) of the nonfatal inpatient SCI discharges had dispositions other than “routine”, while 34.8% of ED discharges were non-routine. In total, more than 6 out of 10 of all SCI nonfatal discharges went on to receive further care. In comparison, nonfatal TBI inpatient visits were routinely discharged 48.9% of the time and TBI visits to the ED were routinely discharged about 82.5% of the time. Overall, 3 out of 4 nonfatal TBI discharges were discharged to home or self-care (routine).

Government sources were the primary payer billed for acute care charges in over two-thirds of all nonfatal SCI. Government payers were billed over \$28 million in 2023 and commercial payers over \$8.1 million.

**Figure 31: Nonfatal Spinal Cord Injury Emergency Department Visit and Hospitalization Payer Source and Charges, Kentucky, 2023**

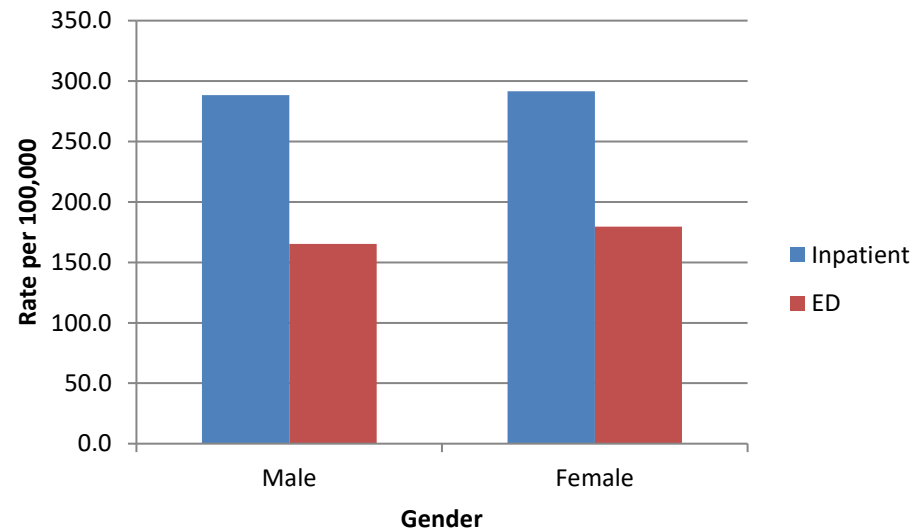


## Cerebrovascular Disease in Kentucky

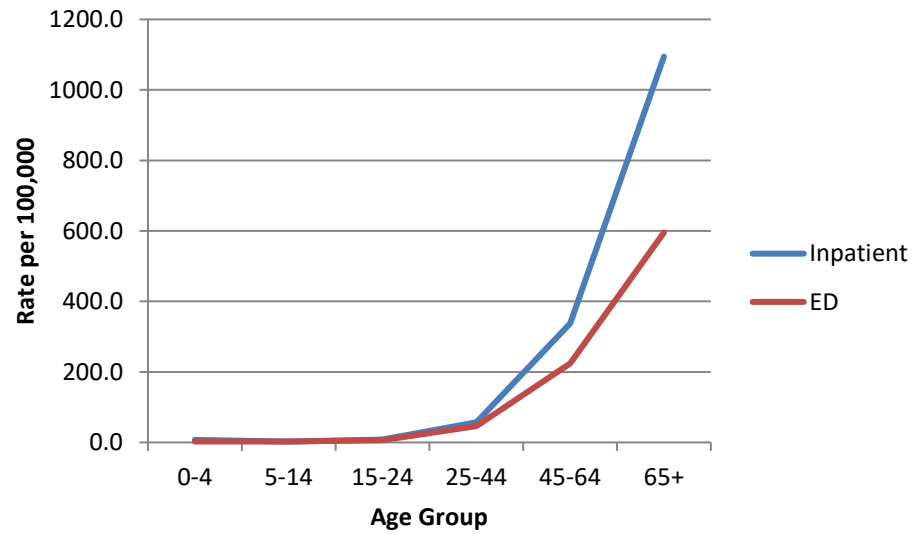
The highest death rates for cerebrovascular disease (stroke) occur in the southeastern U.S., which has been dubbed the “stroke belt”. This region consists of a group of 11 southeastern states that have an age-adjusted stroke mortality rate more than 10% above the national average. Kentucky is included in this region. In 2023, more than 20,000 nonfatal hospital visits by Kentucky residents were coded with stroke-related ICD-10-CM codes in one or more diagnosis fields. 71.5% of inpatient admissions coded for stroke listed stroke as the principal diagnosis. There were 13,076 nonfatal inpatient stroke cases for Kentucky residents identified in 2023 as well as 7,773 nonfatal ED cases. The crude incidence rate was 462 per 100,000 population.

### Stroke by Gender: Comparing the Rates

**Figure 32: Rates of Nonfatal Stroke-Related Emergency Department Visits and Hospitalizations by Gender, Kentucky, 2023**



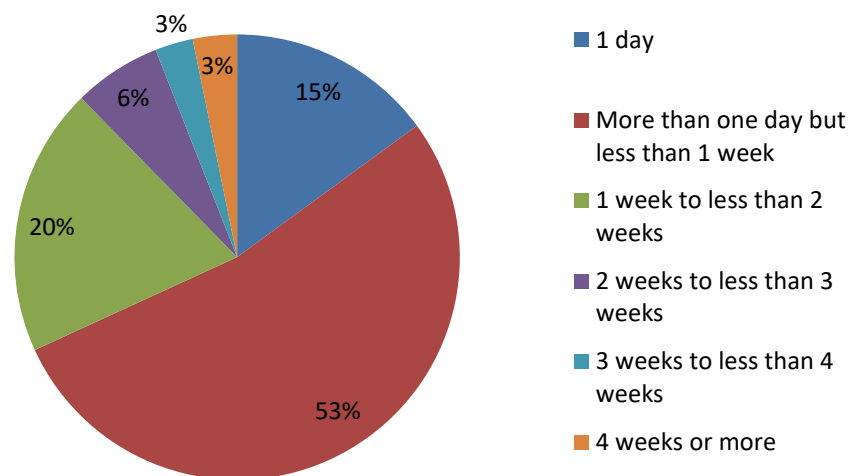
**Figure 33: Rates of Stroke-Related Emergency Department Visits and Hospitalizations by Age Group, Kentucky, 2023**



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

The length of stay for nonfatal stroke-related hospitalizations (n=13,077) ranged from 1 day to 336 days. The mean LOS was 7 days, with a median LOS of 4 days. Figure 34 shows the distribution of stays for those hospitalized with a stroke diagnosis. Almost one out of three admitted (inpatient) stroke-related hospitalizations stayed for 1 week or longer.

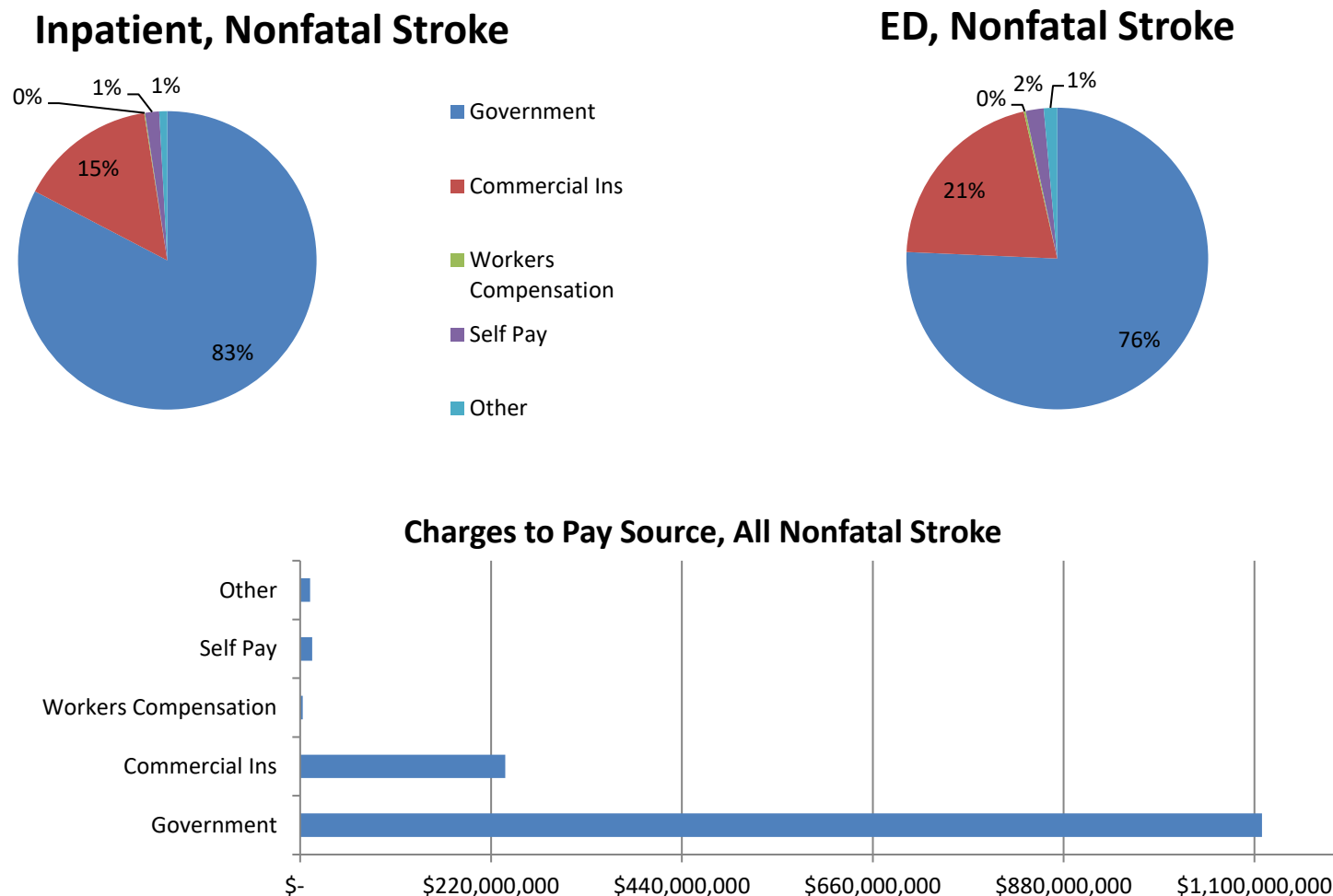
**Figure 34: Nonfatal Stroke-Related Hospitalization Length of Stay, Kentucky, 2023**



For nonfatal stroke-related hospitalizations, 7,605 (58.2%) had a disposition other than “routine”. The three most frequent non-routine discharges were “skilled nursing facility”, “home health”, and “rehabilitation”. A total of 5,734 inpatient discharges had one of these three dispositions. ED discharges were routinely discharged to home or self-care (routine) just over half the time (59.3%), with “inpatient – other” being the most frequent non-routine discharge (27.3%).

Government sources were the primary payer billed for acute care charges in almost 8 out of 10 of nonfatal stroke-related hospital visits. Government payers were billed more than \$1.1 billion in 2023 and commercial payers over \$236 million.

**Figure 35: Nonfatal Stroke-Related Emergency Department Visit and Hospitalization Payer Source and Charges, Kentucky, 2023**



As one would expect, the incidence of stroke was highest in the larger counties. The top four counties in overall (inpatient and ED combined) stroke incidence (Jefferson, Fayette, Warren, and Hardin) are four of the six most populous counties in Kentucky. Notable exceptions include Wolfe and Owsley counties, which were ranked 1<sup>st</sup> and 7<sup>th</sup> in age-adjusted rate for stroke but were 113<sup>th</sup> and 119<sup>th</sup> in population, respectively. Russell (65<sup>th</sup>) and Monroe (97<sup>th</sup>) were also in the top 10 counties with highest age-adjusted rates despite their smaller populations. Several southern border counties may have significant numbers of residents treated in Tennessee hospitals. Prominent examples include Christian, Whitley, Warren, Bell, Harlan, Graves, Logan, and McCracken. This illustrates an important point: *if this report shows a county to have a high rate of stroke, we can be confident that this is a county in need. Conversely, however, if a county is shown to have a low rate we cannot conclude that there is not a significant problem in that county, particularly if it is located on or near the state border.*

The following illustrations map both the frequency of stroke hospital visits in Kentucky counties (Figures 36 and 37) as well as the age-adjusted rate of stroke in each county (Figures 38 and 39) for inpatient and outpatient stroke records. It should be noted that these mappings include ALL inpatient stroke cases (Figures 36 and 38) as well as ALL ED stroke cases (Figures 37 and 39)—including those that died at the hospital. Fatalities are not included in other analysis in this report unless noted but are included here to capture a visual representation of the magnitude of the problem of stroke in each county. These numbers DO NOT include those that died before admission to an acute care hospital.

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.

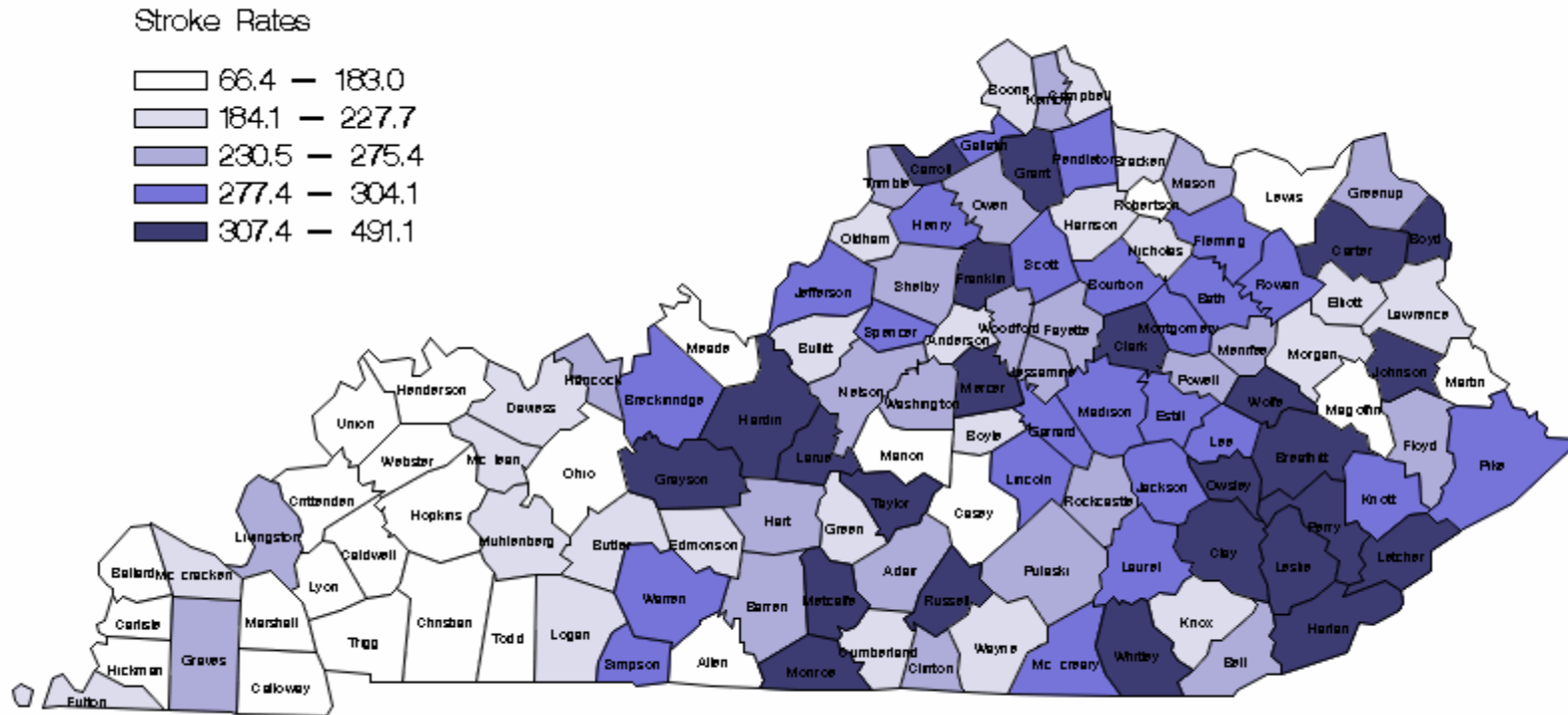






Figure 38.

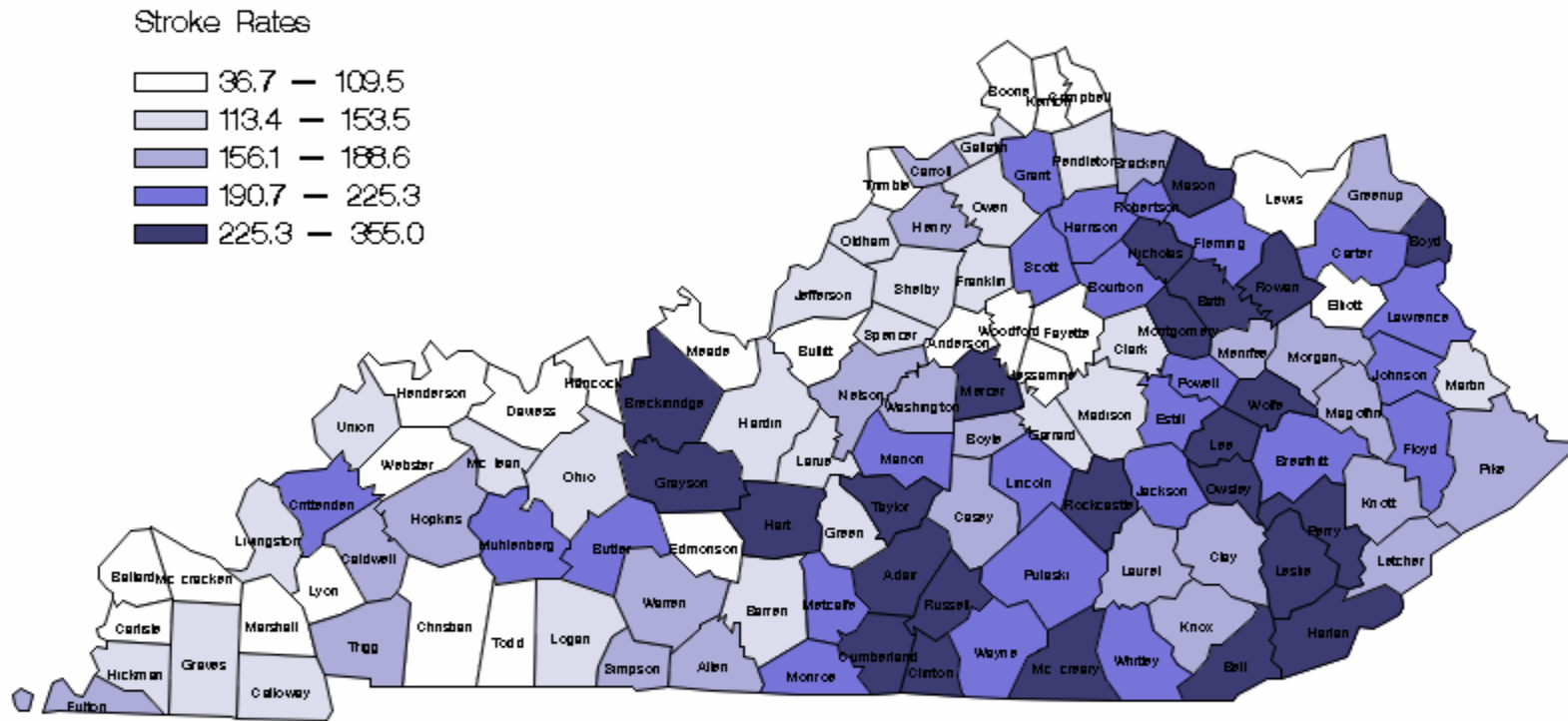
Age-Adjusted Stroke Hospitalization Rates by County, Kentucky 2023



Source: Kentucky TBI Surveillance Project 2023.

Figure 39.

### Age-Adjusted Stroke ED Rates by County, Kentucky 2023



Source: Kentucky TBI Surveillance Project 2023.

## Conclusion

More than 162,000 nonfatal central nervous system injury-related ED visits and hospitalizations occurred in Kentucky in 2023. 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 who 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 2023 data are not recommended for use in comparisons with pre-2016 reports due to coding changes made in the third quarter of 2015, the data are still important when discussing the larger issue of brain injury in Kentucky. Many people recover from their injuries, but in 2023 alone almost 444 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 were calculated using the most recent available Kentucky population estimates (2021) and are per 100,000.

**Table 1: Nonfatal TBI ED Visits and Hospitalizations by Age Group, Kentucky, 2023**

Age	Inpatient			Outpatient			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	101	16.8	38.1	499	83.2	188.2	600	100.0	226.3
5-14	79	4.5	13.8	1660	95.5	289.8	1,739	100.0	303.6
15-24	201	8.0	33.9	2316	92.0	390.7	2,517	100.0	424.7
25-44	454	16.5	39.4	2300	83.5	199.6	2,754	100.0	239.0
45-64	714	26.9	61.8	1943	73.1	168.0	2,657	100.0	229.8
65+	1,750	41.7	227.2	2451	58.3	318.2	4,201	100.0	545.4
Total	3,299	22.8	73.2	11,169	77.2	247.7	14,468	100.0	320.8

**Table 2: Nonfatal TBI ED Visits and Hospitalizations by Gender, Kentucky, 2023**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	1,944	25.0	87.0	5,825	75.0	260.8	7,769	100.0	347.8
Female	1,353	20.2	59.5	5,343	79.8	234.8	6,696	100.0	294.3
Total	3,297	22.8	73.1	11,168	77.2	247.7	14,465	100.0	320.8

**Table 3: Nonfatal TBI ED Visits and Hospitalizations by External Cause of Injury, Kentucky, 2023**

Mechanism of Injury	Inpatient			ED			Total		
	Number	Pct.	Rate	Number	Pct.	Rate	Number	Pct.	Rate
Motor vehicle traffic crash	722	27.9	16.0	1,869	72.1	41.4	2,591	100.0	57.5
Fall	1,775	27.2	39.4	4,754	72.8	105.4	6,529	100.0	144.8
Firearm	36	73.5	0.8	13	26.5	0.3	49	100.0	1.1
Non-traffic land transport	113	17.3	2.5	539	82.7	12.0	652	100.0	14.5
Struck by object or person	110	4.4	2.4	2,404	95.6	53.3	2,514	100.0	55.8
Non-traffic pedal cycle	25	17.9	0.6	115	82.1	2.6	140	100.0	3.1
Machinery	1	7.1	0.0	13	92.9	0.3	14	100.0	0.3
Other	123	16.2	2.7	636	83.8	14.1	759	100.0	16.8
Unknown (missing E-code)	394	32.3	8.7	826	67.7	18.3	1,220	100.0	27.1
<b>Total</b>	<b>3,299</b>	<b>22.8</b>	<b>73.2</b>	<b>11,169</b>	<b>77.2</b>	<b>247.7</b>	<b>14,468</b>	<b>100.0</b>	<b>320.8</b>

**Table 4: Leading Causes of Nonfatal TBI ED Visits and Hospitalizations for Ages 0–4, Kentucky, 2023**

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Fall	50	49.5	375	75.2	425	70.8
Motor vehicle traffic crash	7	6.9	14	2.8	21	3.5
Struck by or against object or person	4	4.0	39	7.8	43	7.2
Non-traffic land transportation	3	3.0	5	1.0	8	1.3
Other (including non-specific codes)	13	12.9	21	4.2	34	5.7
Unknown (missing E-code)	24	23.8	45	9.0	69	11.5
<b>Total</b>	<b>101</b>	<b>100.0</b>	<b>499</b>	<b>100.0</b>	<b>600</b>	<b>100.0</b>

**Table 5: Leading Causes of Nonfatal TBI ED Visits and Hospitalizations for Ages 5–14, Kentucky, 2023**

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Motor vehicle traffic crash	25	31.6	105	6.3	130	7.5
Fall	10	12.7	608	36.6	618	35.5
Non-traffic land transportation	21	26.6	110	6.6	131	7.5
Other pedal cycle	5	6.3	48	2.9	53	3.0
Struck by or against object or person	6	7.6	565	34.0	571	32.8
Other (including non-specific codes)	6	7.6	69	4.2	75	4.3
Unknown (missing E-code)	6	7.6	155	9.3	161	9.3
Total	79	100.0	1,660	100.0	1,739	100.0

**Table 6: Leading Causes of Nonfatal TBI ED Visits and Hospitalizations for Ages 15–24, Kentucky, 2023**

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Motor vehicle traffic crash	102	50.7	560	24.2	662	26.3
Firearm	11	5.5	3	0.1	14	0.6
Non-traffic land transportation	28	13.9	196	8.5	224	8.9
Fall	18	9.0	479	20.7	497	19.7
Struck by or against object or person	10	5.0	747	32.3	757	30.1
Other (including non-specific codes)	5	2.5	165	7.1	170	6.8
Unknown (missing E-code)	27	13.4	166	7.2	193	7.7
Total	201	100.0	2,316	100.0	2,517	100.0

**Table 7: Leading Causes of Nonfatal TBI ED Visits and Hospitalizations for Ages 25–44, Kentucky, 2023**

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Motor vehicle traffic crash	219	48.2	654	28.4	873	31.7
Firearm	19	4.2	7	0.3	26	0.9
Fall	80	17.6	558	24.3	638	23.2
Struck by or against object or person	29	6.4	611	26.6	640	23.2
Non-traffic land transportation	26	5.7	135	5.9	161	5.8
Machinery	0	0.0	3	0.1	3	0.1
Other (including non-specific codes)	34	7.5	200	8.7	234	8.5
Unknown (missing E-code)	47	10.4	132	5.7	179	6.5
<b>Total</b>	<b>454</b>	<b>100.0</b>	<b>2,300</b>	<b>100.0</b>	<b>2,754</b>	<b>100.0</b>

**Table 8: Leading Causes of Nonfatal TBI ED Visits and Hospitalizations for Ages 45–64, Kentucky, 2023**

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Fall	312	43.7	876	45.1	1,188	44.7
Motor vehicle traffic crash	208	29.1	371	19.1	579	21.8
Firearm	5	0.7	2	0.1	7	0.3
Struck by or against object or person	35	4.9	329	16.9	364	13.7
Non-traffic land transportation	19	2.7	64	3.3	83	3.1
Other (including non-specific codes)	40	5.6	155	8.0	195	7.3
Unknown (missing E-code)	95	13.3	146	7.5	241	9.1
<b>Total</b>	<b>714</b>	<b>100.0</b>	<b>1,943</b>	<b>100.0</b>	<b>2,657</b>	<b>100.0</b>



**Table 9: Leading Causes of Nonfatal TBI ED Visits and Hospitalizations for Ages 65 and Over, Kentucky, 2023**

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Fall	1,305	74.6	1,858	75.8	3,163	75.3
Motor vehicle traffic crash	161	9.2	165	6.7	326	7.8
Firearm	1	0.1	1	0.0	2	0.0
Struck by or against object or person	26	1.5	113	4.6	139	3.3
Non-traffic land transportation	16	0.9	29	1.2	45	1.1
Other (including non-specific codes)	46	2.6	103	4.2	149	3.5
Unknown (missing E-code)	195	11.1	182	7.4	377	9.0
<b>Total</b>	<b>1,750</b>	<b>100.0</b>	<b>2,451</b>	<b>100.0</b>	<b>4,201</b>	<b>100.0</b>

**Table 10: Hospital Discharges by Disposition for Nonfatal TBI ED Visits and Hospitalizations, Kentucky, 2023**

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	1,614	48.9	9,212	82.5
Skilled nursing facility (SNF)	405	12.3	133	1.2
Home health	262	7.9	51	0.5
Inpatient-other short-term hospital	52	1.6	1,329	11.9
Intermediate care facility (ICF)	14	0.4	13	0.1
Rehab	618	18.7	26	0.2
Other	334	10.1	405	3.6
<b>Total</b>	<b>3,299</b>	<b>100.0</b>	<b>11,169</b>	<b>100.0</b>

**Table 11: Incidence of All Inpatient TBI\* by County, Sorted by County, Kentucky, 2023**

\*Includes inpatient deaths as well as nonfatal 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	12	0.3	66.1	61.4	Grant	20	0.5	84.6	78.8	McLean	15	0.4	121.7	165.3
Allen	*	-	-	-	Graves	22	0.6	43.5	59.8	Meade	27	0.7	85.6	94.4
Anderson	17	0.5	56.8	74.5	Grayson	22	0.6	65.0	83.1	Menifee	8	0.2	100.5	123.0
Ballard	*	-	-	-	Green	10	0.3	82.0	91.0	Mercer	35	1.0	141.6	159.9
Barren	25	0.7	44.1	56.4	Greenup	10	0.3	19.6	28.7	Metcalfe	7	0.2	58.7	69.6
Bath	17	0.5	134.2	136.2	Hancock	11	0.3	107.2	125.8	Monroe	6	0.2	41.3	56.9
Bell	8	0.2	22.2	31.4	Hardin	100	2.7	83.5	89.8	Montgomery	32	0.9	110.6	113.5
Boone	79	2.2	57.9	58.3	Harlan	19	0.5	61.1	74.3	Morgan	13	0.4	93.7	98.9
Bourbon	18	0.5	78.1	90.4	Harrison	20	0.5	86.6	105.7	Muhlenberg	19	0.5	50.7	62.4
Boyd	15	0.4	23.6	32.2	Hart	14	0.4	67.4	73.6	Nelson	47	1.3	95.2	101.2
Boyle	28	0.8	77.0	92.2	Henderson	7	0.2	14.1	15.6	Nicholas	7	0.2	114.7	96.8
Bracken	*	-	-	-	Henry	15	0.4	92.5	93.4	Ohio	23	0.6	80.3	96.2
Breathitt	18	0.5	144.9	143.4	Hickman	*	-	-	-	Oldham	52	1.4	82.3	77.6
Breckinridge	19	0.5	62.6	92.5	Hopkins	12	0.3	24.1	26.9	Owen	7	0.2	50.2	63.5
Bullitt	68	1.9	74.1	82.7	Jackson	12	0.3	81.1	90.0	Owsley	*	-	-	-
Butler	7	0.2	49.0	55.1	Jefferson	857	23.4	98.5	111.7	Pendleton	10	0.3	64.8	68.6
Caldwell	*	-	-	-	Jessamine	52	1.4	82.9	96.2	Perry	43	1.2	157.0	168.9
Calloway	17	0.5	35.0	43.3	Johnson	17	0.5	65.4	77.3	Pike	59	1.6	93.9	103.4
Campbell	61	1.7	53.6	64.9	Kenton	95	2.6	51.8	56.6	Powell	15	0.4	118.0	122.8
Carlisle	5	0.1	74.8	106.6	Knott	11	0.3	49.5	75.8	Pulaski	77	2.1	109.0	117.5
Carroll	13	0.4	115.7	121.2	Knox	11	0.3	36.4	35.5	Robertson	*	-	-	-
Carter	7	0.2	17.0	26.4	Larue	15	0.4	80.3	103.9	Rockcastle	22	0.6	107.8	131.3
Casey	17	0.5	98.9	105.8	Laurel	61	1.7	89.6	99.6	Rowan	9	0.2	39.9	36.5
Christian	*	-	-	-	Lawrence	5	0.1	25.4	32.4	Russell	19	0.5	88.0	105.6
Clark	31	0.8	88.4	85.0	Lee	11	0.3	137.8	151.3	Scott	40	1.1	75.0	68.4
Clay	27	0.7	134.1	137.5	Leslie	6	0.2	68.2	62.3	Shelby	41	1.1	73.6	82.6
Clinton	7	0.2	48.3	69.2	Letcher	40	1.1	178.8	188.6	Simpson	*	-	-	-
Crittenden	*	-	-	-	Lewis	*	-	-	-	Spencer	13	0.4	65.1	66.4
Cumberland	10	0.3	105.2	153.3	Lincoln	22	0.6	82.0	89.9	Taylor	27	0.7	90.0	105.0
Daviess	107	2.9	93.1	104.9	Livingston	*	-	-	-	Todd	*	-	-	-
Edmonson	*	-	-	-	Logan	6	0.2	19.1	21.9	Trigg	*	-	-	-
Elliott	*	-	-	-	Lyon	*	-	-	-	Trimble	8	0.2	75.2	94.3
Estill	21	0.6	131.4	148.8	Madison	87	2.4	89.5	92.3	Union	0	0.0	0.0	0.0
Fayette	258	7.0	76.4	79.4	Magoffin	6	0.2	52.3	49.9	Warren	42	1.1	32.7	31.2
Fleming	14	0.4	87.2	95.9	Marion	24	0.7	111.2	124.3	Washington	8	0.2	63.0	65.9
Floyd	20	0.5	49.1	57.2	Marshall	17	0.5	36.4	54.6	Wayne	24	0.7	97.1	118.8
Franklin	46	1.3	77.0	90.0	Martin	10	0.3	88.7	90.7	Webster	*	-	-	-
Fulton	*	-	-	-	Mason	12	0.3	72.2	70.4	Whitley	53	1.4	140.6	145.4
Gallatin	0	0.0	0.0	0.0	McCracken	73	2.0	80.9	111.2	Wolfe	12	0.3	146.6	168.9
Garrard	19	0.5	93.8	107.2	McCreary	15	0.4	86.3	87.9	Woodford	38	1.0	124.6	142.0

\* 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, 2023**

\*Includes ED deaths as well as nonfatal ED 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	57	0.5	285.9	291.5	Grant	66	0.6	276.5	260.0	McLean	20	0.2	226.3	220.4
Allen	42	0.4	196.3	197.2	Graves	98	0.9	268.9	266.2	Meade	43	0.4	152.5	150.3
Anderson	77	0.7	352.8	337.2	Grayson	135	1.2	530.3	509.8	Menifee	15	0.1	254.6	230.7
Ballard	9	0.1	137.6	115.8	Green	28	0.2	253.0	254.7	Mercer	71	0.6	336.5	324.4
Barren	140	1.2	303.0	316.0	Greenup	48	0.4	134.9	137.7	Metcalfe	29	0.3	278.7	288.3
Bath	29	0.3	242.0	232.4	Hancock	15	0.1	172.6	171.6	Monroe	30	0.3	281.1	284.4
Bell	141	1.3	580.4	553.3	Hardin	328	2.9	295.4	294.7	Montgomery	71	0.6	252.0	251.9
Boone	163	1.5	123.9	120.4	Harlan	99	0.9	394.9	387.2	Morgan	37	0.3	285.4	281.5
Bourbon	69	0.6	356.9	346.7	Harrison	113	1.0	593.3	597.3	Muhlenberg	80	0.7	255.4	262.7
Boyd	104	0.9	221.2	223.6	Hart	61	0.5	324.7	320.8	Nelson	146	1.3	312.3	314.3
Boyle	140	1.2	435.8	461.0	Henderson	110	1.0	252.5	245.9	Nicholas	26	0.2	383.2	359.4
Bracken	27	0.2	311.9	325.9	Henry	36	0.3	234.6	224.1	Ohio	143	1.3	615.9	598.4
Breathitt	32	0.3	265.0	255.0	Hickman	5	0.0	125.3	114.6	Oldham	122	1.1	188.7	182.1
Breckinridge	58	0.5	306.7	282.4	Hopkins	113	1.0	243.0	253.0	Owen	17	0.2	165.6	154.3
Bullitt	112	1.0	144.5	136.3	Jackson	35	0.3	294.5	262.4	Owsley	7	0.1	147.4	161.6
Butler	35	0.3	298.5	275.5	Jefferson	1515	13.5	201.2	197.4	Pendleton	26	0.2	197.5	178.3
Caldwell	47	0.4	363.7	370.5	Jessamine	81	0.7	145.9	149.8	Perry	82	0.7	325.2	322.1
Calloway	181	1.6	448.1	460.6	Johnson	143	1.3	636.8	649.9	Pike	109	1.0	193.7	191.0
Campbell	129	1.2	138.0	137.2	Kenton	155	1.4	92.5	92.3	Powell	53	0.5	473.5	433.8
Carlisle	8	0.1	163.1	170.5	Knott	32	0.3	220.1	220.5	Pulaski	162	1.4	268.5	247.2
Carroll	41	0.4	404.4	382.1	Knox	90	0.8	291.6	290.1	Robertson	12	0.1	535.0	561.8
Carter	46	0.4	164.2	173.3	Larue	44	0.4	278.7	304.9	Rockcastle	56	0.5	359.4	334.3
Casey	39	0.3	274.8	242.7	Laurel	144	1.3	241.4	235.1	Rowan	23	0.2	89.4	93.2
Christian	112	1.0	163.5	156.7	Lawrence	49	0.4	342.7	317.4	Russell	47	0.4	283.2	261.1
Clark	136	1.2	381.3	373.0	Lee	17	0.2	222.4	233.9	Scott	190	1.7	341.3	325.0
Clay	82	0.7	447.1	417.7	Leslie	33	0.3	361.2	342.4	Shelby	81	0.7	162.4	163.3
Clinton	41	0.4	427.3	405.5	Letcher	61	0.5	307.2	287.6	Simpson	85	0.8	470.1	456.1
Crittenden	23	0.2	279.6	260.0	Lewis	14	0.1	116.7	105.6	Spencer	32	0.3	157.8	163.4
Cumberland	24	0.2	349.1	367.9	Lincoln	79	0.7	335.4	322.9	Taylor	103	0.9	400.4	400.7
Daviess	278	2.5	286.1	272.6	Livingston	30	0.3	360.3	331.8	Todd	31	0.3	258.1	249.0
Edmonson	23	0.2	200.3	188.0	Logan	84	0.7	297.4	306.4	Trigg	30	0.3	204.9	203.0
Elliott	12	0.1	173.9	162.8	Lyon	32	0.3	402.1	393.5	Trimble	15	0.1	172.2	176.9
Estill	46	0.4	344.9	326.0	Madison	252	2.2	264.7	267.3	Union	41	0.4	260.2	283.9
Fayette	950	8.5	290.3	292.5	Magoffin	53	0.5	458.8	441.0	Warren	356	3.2	262.2	264.7
Fleming	41	0.4	278.4	280.8	Marion	50	0.4	254.7	258.9	Washington	32	0.3	283.2	263.4
Floyd	93	0.8	270.9	265.9	Marshall	83	0.7	279.6	266.3	Wayne	55	0.5	284.7	272.2
Franklin	191	1.7	384.5	373.6	Martin	22	0.2	184.5	199.4	Webster	24	0.2	188.0	185.7
Fulton	6	0.1	72.5	100.8	Mason	55	0.5	311.0	322.9	Whitley	132	1.2	358.2	362.1
Gallatin	16	0.1	184.2	182.3	McCracken	156	1.4	243.1	237.6	Wolfe	20	0.2	305.1	281.5
Garrard	55	0.5	305.7	310.4	McCreary	27	0.2	161.1	158.2	Woodford	114	1.0	438.9	425.9

**Table 13: Incidence of All Inpatient TBI\* by County, Sorted by Frequency, Kentucky, 2023**

\*Includes inpatient deaths as well as nonfatal inpatient cases

County	Age-Adjusted Crude				County	Age-Adjusted Crude				County	Age-Adjusted Crude			
	Freq	Percent	Rate	Rate		Freq	Percent	Rate	Rate		Freq	Percent	Rate	Rate
Jefferson	857	23.4	98.5	111.7	Floyd	20	0.5	49.1	57.2	Pendleton	10	0.3	64.8	68.6
Fayette	258	7.0	76.4	79.4	Grant	20	0.5	84.6	78.8	Rowan	9	0.2	39.9	36.5
Daviess	107	2.9	93.1	104.9	Harrison	20	0.5	86.6	105.7	Bell	8	0.2	22.2	31.4
Hardin	100	2.7	83.5	89.8	Breckinridge	19	0.5	62.6	92.5	Menifee	8	0.2	100.5	123.0
Kenton	95	2.6	51.8	56.6	Garrard	19	0.5	93.8	107.2	Trimble	8	0.2	75.2	94.3
Madison	87	2.4	89.5	92.3	Harlan	19	0.5	61.1	74.3	Washington	8	0.2	63.0	65.9
Boone	79	2.2	57.9	58.3	Muhlenberg	19	0.5	50.7	62.4	Butler	7	0.2	49.0	55.1
Pulaski	77	2.1	109.0	117.5	Russell	19	0.5	88.0	105.6	Carter	7	0.2	17.0	26.4
McCracken	73	2.0	80.9	111.2	Bourbon	18	0.5	78.1	90.4	Clinton	7	0.2	48.3	69.2
Bullitt	68	1.9	74.1	82.7	Breathitt	18	0.5	144.9	143.4	Henderson	7	0.2	14.1	15.6
Campbell	61	1.7	53.6	64.9	Anderson	17	0.5	56.8	74.5	Metcalfe	7	0.2	58.7	69.6
Laurel	61	1.7	89.6	99.6	Bath	17	0.5	134.2	136.2	Nicholas	7	0.2	114.7	96.8
Pike	59	1.6	93.9	103.4	Calloway	17	0.5	35.0	43.3	Owen	7	0.2	50.2	63.5
Whitley	53	1.4	140.6	145.4	Casey	17	0.5	98.9	105.8	Leslie	6	0.2	68.2	62.3
Jessamine	52	1.4	82.9	96.2	Johnson	17	0.5	65.4	77.3	Logan	6	0.2	19.1	21.9
Oldham	52	1.4	82.3	77.6	Marshall	17	0.5	36.4	54.6	Magoffin	6	0.2	52.3	49.9
Nelson	47	1.3	95.2	101.2	Boyd	15	0.4	23.6	32.2	Monroe	6	0.2	41.3	56.9
Franklin	46	1.3	77.0	90.0	Henry	15	0.4	92.5	93.4	Carlisle	5	0.1	74.8	106.6
Perry	43	1.2	157.0	168.9	Larue	15	0.4	80.3	103.9	Lawrence	5	0.1	25.4	32.4
Warren	42	1.1	32.7	31.2	McCreary	15	0.4	86.3	87.9	Fulton	*	-	-	-
Shelby	41	1.1	73.6	82.6	McLean	15	0.4	121.7	165.3	Lewis	*	-	-	-
Letcher	40	1.1	178.8	188.6	Powell	15	0.4	118.0	122.8	Livingston	*	-	-	-
Scott	40	1.1	75.0	68.4	Fleming	14	0.4	87.2	95.9	Simpson	*	-	-	-
Woodford	38	1.0	124.6	142.0	Hart	14	0.4	67.4	73.6	Allen	*	-	-	-
Mercer	35	1.0	141.6	159.9	Carroll	13	0.4	115.7	121.2	Ballard	*	-	-	-
Montgomery	32	0.9	110.6	113.5	Morgan	13	0.4	93.7	98.9	Bracken	*	-	-	-
Clark	31	0.8	88.4	85.0	Spencer	13	0.4	65.1	66.4	Elliott	*	-	-	-
Boyle	28	0.8	77.0	92.2	Adair	12	0.3	66.1	61.4	Hickman	*	-	-	-
Clay	27	0.7	134.1	137.5	Hopkins	12	0.3	24.1	26.9	Lyon	*	-	-	-
Meade	27	0.7	85.6	94.4	Jackson	12	0.3	81.1	90.0	Christian	*	-	-	-
Taylor	27	0.7	90.0	105.0	Mason	12	0.3	72.2	70.4	Crittenden	*	-	-	-
Barren	25	0.7	44.1	56.4	Wolfe	12	0.3	146.6	168.9	Edmonson	*	-	-	-
Marion	24	0.7	111.2	124.3	Hancock	11	0.3	107.2	125.8	Owsley	*	-	-	-
Wayne	24	0.7	97.1	118.8	Knott	11	0.3	49.5	75.8	Robertson	*	-	-	-
Ohio	23	0.6	80.3	96.2	Knox	11	0.3	36.4	35.5	Caldwell	*	-	-	-
Graves	22	0.6	43.5	59.8	Lee	11	0.3	137.8	151.3	Todd	*	-	-	-
Grayson	22	0.6	65.0	83.1	Cumberland	10	0.3	105.2	153.3	Trigg	*	-	-	-
Lincoln	22	0.6	82.0	89.9	Green	10	0.3	82.0	91.0	Webster	*	-	-	-
Rockcastle	22	0.6	107.8	131.3	Greenup	10	0.3	19.6	28.7	Gallatin	0	0.0	0.0	0.0
Estill	21	0.6	131.4	148.8	Martin	10	0.3	88.7	90.7	Union	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, 2023**

\*Includes ED deaths as well as nonfatal ED cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Jefferson	1515	13.5	201.2	197.4	Marshall	83	0.7	279.6	266.3	Jackson	35	0.3	294.5	262.4
Fayette	950	8.5	290.3	292.5	Clay	82	0.7	447.1	417.7	Leslie	33	0.3	361.2	342.4
Warren	356	3.2	262.2	264.7	Perry	82	0.7	325.2	322.1	Lyon	32	0.3	402.1	393.5
Hardin	328	2.9	295.4	294.7	Shelby	81	0.7	162.4	163.3	Washington	32	0.3	283.2	263.4
Daviess	278	2.5	286.1	272.6	Jessamine	81	0.7	145.9	149.8	Breathitt	32	0.3	265.0	255.0
Madison	252	2.2	264.7	267.3	Muhlenberg	80	0.7	255.4	262.7	Knott	32	0.3	220.1	220.5
Franklin	191	1.7	384.5	373.6	Lincoln	79	0.7	335.4	322.9	Spencer	32	0.3	157.8	163.4
Scott	190	1.7	341.3	325.0	Anderson	77	0.7	352.8	337.2	Todd	31	0.3	258.1	249.0
Calloway	181	1.6	448.1	460.6	Mercer	71	0.6	336.5	324.4	Livingston	30	0.3	360.3	331.8
Boone	163	1.5	123.9	120.4	Montgomery	71	0.6	252.0	251.9	Monroe	30	0.3	281.1	284.4
Pulaski	162	1.4	268.5	247.2	Bourbon	69	0.6	356.9	346.7	Trigg	30	0.3	204.9	203.0
McCracken	156	1.4	243.1	237.6	Grant	66	0.6	276.5	260.0	Metcalf	29	0.3	278.7	288.3
Kenton	155	1.4	92.5	92.3	Hart	61	0.5	324.7	320.8	Bath	29	0.3	242.0	232.4
Nelson	146	1.3	312.3	314.3	Letcher	61	0.5	307.2	287.6	Green	28	0.2	253.0	254.7
Laurel	144	1.3	241.4	235.1	Breckinridge	58	0.5	306.7	282.4	Bracken	27	0.2	311.9	325.9
Johnson	143	1.3	636.8	649.9	Adair	57	0.5	285.9	291.5	McCreary	27	0.2	161.1	158.2
Ohio	143	1.3	615.9	598.4	Rockcastle	56	0.5	359.4	334.3	Nicholas	26	0.2	383.2	359.4
Bell	141	1.3	580.4	553.3	Mason	55	0.5	311.0	322.9	Pendleton	26	0.2	197.5	178.3
Boyle	140	1.2	435.8	461.0	Garrard	55	0.5	305.7	310.4	Cumberland	24	0.2	349.1	367.9
Barren	140	1.2	303.0	316.0	Wayne	55	0.5	284.7	272.2	Webster	24	0.2	188.0	185.7
Clark	136	1.2	381.3	373.0	Powell	53	0.5	473.5	433.8	Crittenden	23	0.2	279.6	260.0
Grayson	135	1.2	530.3	509.8	Magoffin	53	0.5	458.8	441.0	Edmonson	23	0.2	200.3	188.0
Whitley	132	1.2	358.2	362.1	Marion	50	0.4	254.7	258.9	Rowan	23	0.2	89.4	93.2
Campbell	129	1.2	138.0	137.2	Lawrence	49	0.4	342.7	317.4	Martin	22	0.2	184.5	199.4
Oldham	122	1.1	188.7	182.1	Greenup	48	0.4	134.9	137.7	Wolfe	20	0.2	305.1	281.5
Woodford	114	1.0	438.9	425.9	Caldwell	47	0.4	363.7	370.5	McLean	20	0.2	226.3	220.4
Harrison	113	1.0	593.3	597.3	Russell	47	0.4	283.2	261.1	Lee	17	0.2	222.4	233.9
Hopkins	113	1.0	243.0	253.0	Estill	46	0.4	344.9	326.0	Owen	17	0.2	165.6	154.3
Christian	112	1.0	163.5	156.7	Carter	46	0.4	164.2	173.3	Gallatin	16	0.1	184.2	182.3
Bullitt	112	1.0	144.5	136.3	Larue	44	0.4	278.7	304.9	Menifee	15	0.1	254.6	230.7
Henderson	110	1.0	252.5	245.9	Meade	43	0.4	152.5	150.3	Hancock	15	0.1	172.6	171.6
Pike	109	1.0	193.7	191.0	Allen	42	0.4	196.3	197.2	Trimble	15	0.1	172.2	176.9
Boyd	104	0.9	221.2	223.6	Clinton	41	0.4	427.3	405.5	Lewis	14	0.1	116.7	105.6
Taylor	103	0.9	400.4	400.7	Carroll	41	0.4	404.4	382.1	Robertson	12	0.1	535.0	561.8
Harlan	99	0.9	394.9	387.2	Fleming	41	0.4	278.4	280.8	Elliott	12	0.1	173.9	162.8
Graves	98	0.9	268.9	266.2	Union	41	0.4	260.2	283.9	Ballard	9	0.1	137.6	115.8
Floyd	93	0.8	270.9	265.9	Casey	39	0.3	274.8	242.7	Carlisle	8	0.1	163.1	170.5
Knox	90	0.8	291.6	290.1	Morgan	37	0.3	285.4	281.5	Owsley	7	0.1	147.4	161.6
Simpson	85	0.8	470.1	456.1	Henry	36	0.3	234.6	224.1	Fulton	6	0.1	72.5	100.8
Logan	84	0.7	297.4	306.4	Butler	35	0.3	298.5	275.5	Hickman	5	0.0	125.3	114.6

\* 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, 2023**

\*Includes inpatient deaths as well as nonfatal 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
Letcher	40	1.1	178.8	188.6	Meade	27	0.7	85.6	94.4	Knott	11	0.3	49.5	75.8
Perry	43	1.2	157.0	168.9	Grant	20	0.5	84.6	78.8	Floyd	20	0.5459	49.1	57.2
Wolfe	12	0.3	146.6	168.9	Hardin	100	2.7	83.5	89.8	Butler	7	0.2	49.0	55.1
Breathitt	18	0.5	144.9	143.4	Jessamine	52	1.4	82.9	96.2	Ciinton	7	0.2	48.3	69.2
Mercer	35	1.0	141.6	159.9	Oldham	52	1.4	82.3	77.6	Barren	25	0.7	44.1	56.4
Whitley	53	1.4	140.6	145.4	Green	10	0.3	82.0	91.0	Graves	22	0.6	43.5	59.8
Lee	11	0.3	137.8	151.3	Lincoln	22	0.6	82.0	89.9	Fulton	*	-	-	-
Bath	17	0.5	134.2	136.2	Jackson	12	0.3	81.1	90.0	Monroe	6	0.2	41.3	56.9
Clay	27	0.7	134.1	137.5	McCracken	73	2.0	80.9	111.2	Row an	9	0.2	39.9	36.5
Estill	21	0.6	131.4	148.8	Ohio	23	0.6	80.3	96.2	Ow sley	*	-	-	-
Woodford	38	1.0	124.6	142.0	Larue	15	0.4	80.3	103.9	Bracken	*	-	-	-
McLean	15	0.4	121.7	165.3	Bourbon	18	0.5	78.1	90.4	Marshall	17	0.5	36.4	54.6
Pow ell	15	0.4	118.0	122.8	Boyle	28	0.8	77.0	92.2	Knox	11	0.3	36.4	35.5
Carroll	13	0.4	115.7	121.2	Franklin	46	1.3	77.0	90.0	Callow ay	17	0.5	35.0	43.3
Nicholas	7	0.2	114.7	96.8	Fayette	258	7.0	76.4	79.4	Warren	42	1.1	32.7	31.2
Marion	24	0.7	111.2	124.3	Trimble	8	0.2	75.2	94.3	Lew is	*	-	-	-
Montgomery	32	0.9	110.6	113.5	Scott	40	1.1	75.0	68.4	Elliott	*	-	-	-
Pulaski	77	2.1	109.0	117.5	Carlisle	5	0.1	74.8	106.6	Hickman	*	-	-	-
Rockcastle	22	0.6	107.8	131.3	Bullitt	68	1.9	74.1	82.7	Livingston	*	-	-	-
Hancock	11	0.3	107.2	125.8	Shelby	41	1.1	73.6	82.6	Lyon	*	-	-	-
Cumberland	10	0.3	105.2	153.3	Mason	12	0.3	72.2	70.4	Law rence	5	0.1	25.4	32.4
Menifee	8	0.2	100.5	123.0	Leslie	6	0.2	68.2	62.3	Hopkins	12	0.3	24.1	26.9
Casey	17	0.5	98.9	105.8	Hart	14	0.4	67.4	73.6	Ballard	3	0.1	23.9	38.6
Jefferson	857	23.4	98.5	111.7	Adair	12	0.3	66.1	61.4	Boyd	15	0.4	23.6	32.2
Wayne	24	0.7	97.1	118.8	Johnson	17	0.5	65.4	77.3	Bell	8	0.2	22.2	31.4
Nelson	47	1.3	95.2	101.2	Spencer	13	0.4	65.1	66.4	Simpson	*	-	-	-
Pike	59	1.6	93.9	103.4	Grayson	22	0.6	65.0	83.1	Greenup	10	0.3	19.6	28.7
Garrard	19	0.5	93.8	107.2	Pendleton	10	0.3	64.8	68.6	Logan	6	0.2	19.1	21.9
Morgan	13	0.4	93.7	98.9	Washington	8	0.2	63.0	65.9	Carter	7	0.2	17.0	26.4
Daviess	107	2.9	93.1	104.9	Breckinridge	19	0.5	62.6	92.5	Crittenden	*	-	-	-
Henry	15	0.4	92.5	93.4	Harlan	19	0.5	61.1	74.3	Henderson	7	0.2	14.1	15.6
Taylor	27	0.7	90.0	105.0	Metcalf	7	0.2	58.7	69.6	Allen	*	-	-	-
Laurel	61	1.7	89.6	99.6	Boone	79	2.2	57.9	58.3	Edmonson	*	-	-	-
Madison	87	2.4	89.5	92.3	Anderson	17	0.5	56.8	74.5	Webster	*	-	-	-
Martin	10	0.3	88.7	90.7	Campbell	61	1.7	53.6	64.9	Todd	*	-	-	-
Clark	31	0.8	88.4	85.0	Magoffin	6	0.2	52.3	49.9	Trigg	*	-	-	-
Russell	19	0.5	88.0	105.6	Robertson	2	0.1	52.1	93.6	Caldw ell	*	-	-	-
Fleming	14	0.4	87.2	95.9	Kenton	95	2.6	51.8	56.6	Christian	*	-	-	-
Harrison	20	0.5	86.6	105.7	Muhlenberg	19	0.5	50.7	62.4	Gallatin	0	0.0	0.0	0.0
McCreary	15	0.4	86.3	87.9	Ow en	7	0.2	50.2	63.5	Union	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 w hich it w as based

**Table 16: Incidence of All ED TBI\* by County, Sorted by Age-Adjusted Rate, Kentucky, 2023**

\*Includes ED deaths as well as nonfatal ED cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Johnson	143	1.3	636.8	649.9	Breckinridge	58	0.5	306.7	282.4	Bath	29	0.3	242.0	232.4
Ohio	143	1.3	615.9	598.4	Garrard	55	0.5	305.7	310.4	Laurel	144	1.3	241.4	235.1
Harrison	113	1.0	593.3	597.3	Wolfe	20	0.2	305.1	281.5	Henry	36	0.3	234.6	224.1
Bell	141	1.3	580.4	553.3	Barren	140	1.2	303.0	316.0	McLean	20	0.2	226.3	220.4
Robertson	12	0.1	535.0	561.8	Butler	35	0.3	298.5	275.5	Lee	17	0.2	222.4	233.9
Grayson	135	1.2	530.3	509.8	Logan	84	0.7	297.4	306.4	Boyd	104	0.9	221.2	223.6
Powell	53	0.5	473.5	433.8	Hardin	328	2.9	295.4	294.7	Knott	32	0.3	220.1	220.5
Simpson	85	0.8	470.1	456.1	Jackson	35	0.3	294.5	262.4	Trigg	30	0.3	204.9	203.0
Magoffin	53	0.5	458.8	441.0	Knox	90	0.8	291.6	290.1	Jefferson	1515	13.5	201.2	197.4
Calloway	181	1.6	448.1	460.6	Fayette	950	8.5	290.3	292.5	Edmonson	23	0.2	200.3	188.0
Clay	82	0.7	447.1	417.7	Daviess	278	2.5	286.1	272.6	Pendleton	26	0.2	197.5	178.3
Woodford	114	1.0	438.9	425.9	Adair	57	0.5	285.9	291.5	Allen	42	0.4	196.3	197.2
Boyle	140	1.2	435.8	461.0	Morgan	37	0.3	285.4	281.5	Pike	109	1.0	193.7	191.0
Clinton	41	0.4	427.3	405.5	Wayne	55	0.5	284.7	272.2	Oldham	122	1.1	188.7	182.1
Carroll	41	0.4	404.4	382.1	Russell	47	0.4	283.2	261.1	Webster	24	0.2	188.0	185.7
Lyon	32	0.3	402.1	393.5	Washington	32	0.3	283.2	263.4	Martin	22	0.2	184.5	199.4
Taylor	103	0.9	400.4	400.7	Monroe	30	0.3	281.1	284.4	Gallatin	16	0.1	184.2	182.3
Harlan	99	0.9	394.9	387.2	Crittenden	23	0.2	279.6	260.0	Elliott	12	0.1	173.9	162.8
Franklin	191	1.7	384.5	373.6	Marshall	83	0.7	279.6	266.3	Hancock	15	0.1	172.6	171.6
Nicholas	26	0.2	383.2	359.4	Larue	44	0.4	278.7	304.9	Trimble	15	0.1	172.2	176.9
Clark	136	1.2	381.3	373.0	Metcalfe	29	0.3	278.7	288.3	Owen	17	0.2	165.6	154.3
Caldwell	47	0.4	363.7	370.5	Fleming	41	0.4	278.4	280.8	Carter	46	0.4	164.2	173.3
Leslie	33	0.3	361.2	342.4	Grant	66	0.6	276.5	260.0	Christian	112	1.0	163.5	156.7
Livingston	30	0.3	360.3	331.8	Casey	39	0.3	274.8	242.7	Carlisle	8	0.1	163.1	170.5
Rockcastle	56	0.5	359.4	334.3	Floyd	93	0.8	270.9	265.9	Shelby	81	0.7	162.4	163.3
Whitley	132	1.2	358.2	362.1	Graves	98	0.9	268.9	266.2	McCreary	27	0.2	161.1	158.2
Bourbon	69	0.6	356.9	346.7	Pulaski	162	1.4	268.5	247.2	Spencer	32	0.3	157.8	163.4
Anderson	77	0.7	352.8	337.2	Breathitt	32	0.3	265.0	255.0	Meade	43	0.4	152.5	150.3
Cumberland	24	0.2	349.1	367.9	Madison	252	2.2	264.7	267.3	Owsley	7	0.1	147.4	161.6
Estill	46	0.4	344.9	326.0	Warren	356	3.2	262.2	264.7	Jessamine	81	0.7	145.9	149.8
Lawrence	49	0.4	342.7	317.4	Union	41	0.4	260.2	283.9	Bullitt	112	1.0	144.5	136.3
Scott	190	1.7	341.3	325.0	Todd	31	0.3	258.1	249.0	Campbell	129	1.2	138.0	137.2
Mercer	71	0.6	336.5	324.4	Muhlenberg	80	0.7	255.4	262.7	Ballard	9	0.1	137.6	115.8
Lincoln	79	0.7	335.4	322.9	Marion	50	0.4	254.7	258.9	Greenup	48	0.4	134.9	137.7
Perry	82	0.7	325.2	322.1	Menifee	15	0.1	254.6	230.7	Hickman	5	0.0	125.3	114.6
Hart	61	0.5	324.7	320.8	Green	28	0.2	253.0	254.7	Boone	163	1.5	123.9	120.4
Nelson	146	1.3	312.3	314.3	Henderson	110	1.0	252.5	245.9	Lewis	14	0.1	116.7	105.6
Bracken	27	0.2	311.9	325.9	Montgomery	71	0.6	252.0	251.9	Kenton	155	1.4	92.5	92.3
Mason	55	0.5	311.0	322.9	McCracken	156	1.4	243.1	237.6	Rowan	23	0.2	89.4	93.2
Letcher	61	0.5	307.2	287.6	Hopkins	113	1.0	243.0	253.0	Fulton	6	0.1	72.5	100.8

**Table 17: Length of Stay for Nonfatal Inpatient TBI, Kentucky, 2023**

Length of Stay	Number	Percent*
1 day	512	15.5
More than one day but less than 1 week	1589	48.2
1 week to less than 2 weeks	697	21.1
2 weeks to less than 3 weeks	228	6.9
3 weeks to less than 4 weeks	117	3.5
4 weeks or more	156	4.7
<b>Total</b>	<b>3299</b>	<b>100.0</b>

\*Percent of hospitalized TBI

**Table 18: Work-Related Nonfatal TBI, Kentucky 2023**

<b>Inpatient Work TBI (n=45)</b>	LOS Days	Cost
Mean	11.2	\$197,949
Median	8	\$92,003
Min, Max	1-43	\$273,\$841535
Sum of Charges		\$9,105,660

<b>ED Work TBI (n=439)</b>	Cost
Mean	\$6,128
Median	\$4,553
Min, Max	\$4,\$53642
Sum of Charges	\$2,763,801

**Table 19: Primary Payer and Charges for Nonfatal Inpatient TBI, Kentucky, 2023**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	2,527	76.6	\$ 280,431,649
Commercial Ins	434	13.2	\$ 51,943,284
Self Pay	59	1.8	\$ 5,620,695
Workers Compensation	46	1.4	\$ 9,105,660
Other	233	7.1	\$ 32,696,123
<b>Total</b>	<b>3,299</b>	<b>100.0</b>	<b>\$ 379,797,411</b>



**Table 20: Primary Payer and Charges for Nonfatal ED TBI, Kentucky, 2023**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	6,325	56.6	\$ 60,382,806
Commercial Ins	3,027	27.1	\$ 22,005,258
Self Pay	539	4.8	\$ 4,847,180
Workers Compensation	451	4.0	\$ 2,763,801
Other	827	7.4	\$ 9,877,526
Total	11,169	100.0	\$ 99,876,571

**Table 21: Nonfatal NTBI by Age Group, Kentucky, 2023**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	2,562	55.9	966.4	2,025	44.1	763.8	4,587	100.0	1730.2
5-14	858	46.7	149.8	980	53.3	171.1	1,838	100.0	320.9
15-24	1,089	38.0	183.7	1,778	62.0	300.0	2,867	100.0	483.7
25-44	6,784	54.8	588.7	5,598	45.2	485.8	12,382	100.0	1074.5
45-64	27,596	76.1	2386.7	8,666	23.9	749.5	36,262	100.0	3136.2
65+	57,156	83.4	7420.4	11,352	16.6	1473.8	68,508	100.0	8894.1
Total	96,045	76.0	2129.9	30,399	24.0	674.1	126,444	100.0	2804.0

**Table 22: Nonfatal NTBI by Gender, Kentucky, 2023**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	44,329	75.7	1984.4	14,210	24.3	636.1	58,539	100.0	2620.5
Female	51,694	76.2	2271.8	16,185	23.8	711.3	67,879	100.0	2983.0
Total	96,023	76.0	2129.4	30,395	24.0	674.0	126,418	100.0	2803.4

**Table 23: Incidence of All Inpatient NTBI\* by County, Sorted by County, Kentucky, 2023**

\*Includes inpatient deaths as well as nonfatal inpatient cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Adair	446	0.4	1710.4	2280.8	Grant	674	0.6	2422.5	2654.9	McLean	265	0.3	2063.0	2920.1
Allen	410	0.4	1429.8	1924.6	Graves	842	0.8	1698.7	2286.9	Meade	360	0.3	1096.9	1258.0
Anderson	631	0.6	2286.3	2763.5	Grayson	891	0.8	2580.2	3364.8	Menifee	250	0.2	2677.2	3845.0
Ballard	158	0.1	1401.4	2033.7	Green	237	0.2	1536.2	2155.5	Mercer	504	0.5	1734.2	2302.5
Barren	1012	1.0	1728.9	2284.4	Greenup	884	0.8	1758.2	2535.5	Metcalfe	333	0.3	2351.6	3310.8
Bath	534	0.5	3458.7	4278.5	Hancock	186	0.2	1650.3	2127.7	Monroe	208	0.2	1459.8	1971.8
Bell	615	0.6	1796.7	2413.5	Hardin	2409	2.3	1934.0	2164.3	Montgomery	998	0.9	2869.3	3540.8
Boone	2418	2.3	1654.3	1785.9	Harlan	1076	1.0	3139.5	4208.7	Morgan	346	0.3	2170.9	2632.8
Bourbon	485	0.5	1815.4	2437.1	Harrison	419	0.4	1700.7	2214.6	Muhlenberg	728	0.7	1745.1	2390.3
Boyd	1565	1.5	2377.9	3364.4	Hart	401	0.4	1674.9	2109.1	Nelson	1234	1.2	2250.3	2656.6
Boyle	781	0.7	1954.3	2571.9	Henderson	809	0.8	1371.0	1808.2	Nicholas	178	0.2	1999.1	2460.6
Bracken	214	0.2	1986.2	2582.7	Henry	469	0.4	2308.2	2919.0	Ohio	477	0.5	1522.4	1995.9
Breathitt	551	0.5	3368.1	4390.4	Hickman	102	0.1	1383.1	2337.3	Oldham	908	0.9	1332.2	1355.2
Breckinridge	399	0.4	1394.0	1942.8	Hopkins	998	0.9	1672.4	2234.6	Owen	227	0.2	1595.8	2060.5
Bullitt	1740	1.6	1751.6	2117.3	Jackson	522	0.5	3034.1	3913.0	Owsley	214	0.2	3537.9	4941.1
Butler	261	0.2	1528.9	2054.6	Jefferson	18755	17.8	2050.2	2443.8	Pendleton	399	0.4	2113.6	2735.5
Caldwell	188	0.2	1021.3	1481.8	Jessamine	1423	1.3	2229.8	2632.4	Perry	1441	1.4	4453.5	5660.8
Calloway	525	0.5	1118.6	1335.9	Johnson	568	0.5	1957.9	2581.6	Pike	1717	1.6	2257.9	3009.3
Campbell	1688	1.6	1455.8	1795.4	Kenton	3148	3.0	1657.5	1874.4	Powell	540	0.5	3750.1	4419.7
Carlisle	89	0.1	1376.9	1896.9	Knott	493	0.5	2521.2	3397.2	Pulaski	1801	1.7	2091.4	2748.4
Carroll	268	0.3	2062.8	2497.7	Knox	695	0.7	1825.6	2240.4	Robertson	57	0.1	1719.1	2668.5
Carter	863	0.8	2415.5	3251.5	Larue	325	0.3	1762.4	2252.1	Rockcastle	374	0.4	1726.8	2232.8
Casey	311	0.3	1433.6	1935.8	Laurel	1683	1.6	2273.8	2748.3	Rowan	756	0.7	2897.8	3063.0
Christian	883	0.8	1322.7	1235.4	Lawrence	431	0.4	2114.7	2792.2	Russell	400	0.4	1654.4	2222.5
Clark	1223	1.2	2687.3	3354.1	Lee	298	0.3	3134.0	4100.2	Scott	1213	1.1	2155.2	2074.6
Clay	853	0.8	3620.5	4345.2	Leslie	394	0.4	3052.0	4088.4	Shelby	1012	1.0	1747.0	2039.9
Clinton	230	0.2	1616.3	2275.0	Letcher	1010	1.0	3394.4	4761.2	Simpson	328	0.3	1422.1	1760.1
Crittenden	118	0.1	873.7	1333.8	Lewis	153	0.1	871.5	1153.7	Spencer	431	0.4	1978.7	2200.7
Cumberland	161	0.2	1596.5	2468.2	Lincoln	581	0.6	1784.5	2374.7	Taylor	704	0.7	2204.0	2738.6
Daviess	2134	2.0	1718.5	2092.6	Livingston	172	0.2	1273.3	1902.4	Todd	163	0.2	1065.9	1309.5
Edmonson	183	0.2	997.7	1495.7	Logan	537	0.5	1436.2	1958.7	Trigg	245	0.2	1020.7	1658.1
Elliott	187	0.2	1882.3	2536.6	Lyon	144	0.1	1060.1	1770.6	Trimble	150	0.1	1375.6	1768.7
Estill	545	0.5	2854.1	3862.8	Madison	2169	2.1	2175.1	2301.0	Union	158	0.1	889.7	1094.0
Fayette	6708	6.4	1962.5	2065.7	Magoffin	311	0.3	2004.0	2588.0	Warren	2220	2.1	1616.1	1650.4
Fleming	387	0.4	2111.1	2650.1	Marion	453	0.4	1879.3	2345.5	Washington	287	0.3	1831.8	2362.7
Floyd	824	0.8	1815.0	2356.0	Marshall	646	0.6	1396.3	2073.0	Wayne	395	0.4	1437.8	1954.6
Franklin	1552	1.5	2336.4	3036.1	Martin	215	0.2	1530.2	1949.1	Webster	249	0.2	1475.0	1926.8
Fulton	141	0.1	1650.7	2369.0	Mason	358	0.3	1590.9	2101.6	Whitley	1653	1.6	3892.8	4534.9
Gallatin	246	0.2	2594.9	2802.1	McCracken	1374	1.3	1496.3	2093.1	Wolfe	384	0.4	4254.5	5403.9
Garrard	490	0.5	2168.7	2765.4	McCreary	447	0.4	2159.7	2618.5	Woodford	539	0.5	1564.1	2013.8

**Table 24: Incidence of All ED NTBI\* by County, Sorted by County, Kentucky, 2023**

\*Includes ED deaths as well as nonfatal ED cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Adair	167	0.5	728.3	854.0	Grant	267	0.9	982.7	1051.7	McLean	75	0.2	668.4	826.5
Allen	125	0.4	494.8	586.8	Graves	175	0.6	397.8	475.3	Meade	83	0.3	266.6	290.1
Anderson	151	0.5	623.9	661.3	Grayson	402	1.3	1280.6	1518.1	Menifee	60	0.2	761.7	922.8
Ballard	34	0.1	341.0	437.6	Green	141	0.5	1022.3	1282.4	Mercer	213	0.7	846.0	973.1
Barren	221	0.7	428.0	498.9	Greenup	167	0.5	402.0	479.0	Metcalfe	64	0.2	501.8	636.3
Bath	114	0.4	807.8	913.4	Hancock	45	0.1	434.3	514.8	Monroe	41	0.1	313.2	388.7
Bell	246	0.8	825.8	965.4	Hardin	677	2.2	598.2	608.2	Montgomery	293	0.9	938.9	1039.5
Boone	577	1.9	415.4	426.2	Harlan	462	1.5	1428.8	1807.1	Morgan	87	0.3	589.4	662.0
Bourbon	194	0.6	889.3	974.8	Harrison	208	0.7	979.6	1099.4	Muhlenberg	353	1.1	946.0	1159.0
Boyd	331	1.1	614.0	711.6	Hart	94	0.3	437.6	494.4	Nelson	352	1.1	709.2	757.8
Boyle	296	1.0	875.8	974.7	Henderson	304	1.0	595.2	679.5	Nicholas	64	0.2	766.2	884.7
Bracken	56	0.2	571.3	675.8	Henry	169	0.5	926.1	1051.9	Ohio	270	0.9	919.5	1129.8
Breathitt	102	0.3	712.5	812.8	Hickman	24	0.1	456.4	550.0	Oldham	265	0.9	407.8	395.5
Breckinridge	159	0.5	659.6	774.2	Hopkins	407	1.3	794.2	911.3	Owen	66	0.2	526.5	599.1
Bullitt	367	1.2	411.9	446.6	Jackson	121	0.4	814.0	907.1	Owsley	40	0.1	749.9	923.6
Butler	74	0.2	490.7	582.5	Jefferson	5743	18.6	709.3	748.3	Pendleton	115	0.4	663.6	788.4
Caldwell	87	0.3	546.9	685.7	Jessamine	248	0.8	431.8	458.8	Perry	309	1.0	1070.7	1213.9
Calloway	282	0.9	649.2	717.6	Johnson	114	0.4	457.0	518.1	Pike	452	1.5	684.9	792.2
Campbell	414	1.3	401.7	440.3	Kenton	734	2.4	408.5	437.0	Powell	177	0.6	1343.6	1448.7
Carlisle	19	0.1	383.1	404.9	Knott	102	0.3	591.5	702.9	Pulaski	448	1.4	608.9	683.7
Carroll	166	0.5	1357.4	1547.1	Knox	207	0.7	580.7	667.3	Robertson	33	0.1	980.7	1544.9
Carter	134	0.4	461.4	504.9	Larue	62	0.2	385.8	429.6	Rockcastle	141	0.5	772.8	841.8
Casey	120	0.4	631.9	746.9	Laurel	382	1.2	583.0	623.8	Rowan	106	0.3	461.0	429.5
Christian	235	0.8	336.7	328.8	Lawrence	79	0.3	441.8	511.8	Russell	124	0.4	590.8	689.0
Clark	358	1.2	869.8	981.8	Lee	76	0.2	892.2	1045.7	Scott	454	1.5	796.7	776.5
Clay	217	0.7	1005.0	1105.4	Leslie	121	0.4	1049.4	1255.6	Shelby	330	1.1	603.5	665.2
Clinton	82	0.3	643.7	811.1	Letcher	155	0.5	589.4	730.7	Simpson	146	0.5	690.1	783.5
Crittenden	49	0.2	481.0	553.9	Lewis	54	0.2	348.4	407.2	Spencer	148	0.5	674.8	755.7
Cumberland	102	0.3	1070.2	1563.7	Lincoln	244	0.8	851.4	997.3	Taylor	267	0.9	940.5	1038.6
Daviess	625	2.0	548.7	612.9	Livingston	50	0.2	483.6	553.0	Todd	54	0.2	384.4	433.8
Edmonson	44	0.1	333.9	359.6	Logan	172	0.6	551.2	627.4	Trigg	106	0.3	549.7	717.4
Elliott	29	0.1	374.5	393.4	Lyon	41	0.1	389.1	504.1	Trimble	57	0.2	588.9	672.1
Estill	176	0.6	1124.8	1247.4	Madison	771	2.5	817.9	817.9	Union	148	0.5	901.4	1024.7
Fayette	1777	5.7	540.6	547.2	Magoffin	62	0.2	416.9	515.9	Warren	639	2.1	481.8	475.1
Fleming	139	0.4	799.0	951.9	Marion	183	0.6	804.6	947.5	Washington	106	0.3	803.5	872.6
Floyd	295	1.0	715.6	843.5	Marshall	273	0.9	667.6	876.0	Wayne	152	0.5	623.9	752.1
Franklin	307	1.0	561.4	600.6	Martin	41	0.1	310.1	371.7	Webster	116	0.4	765.3	897.6
Fulton	19	0.1	245.6	319.2	Mason	150	0.5	768.8	880.5	Whitley	417	1.3	1084.0	1144.0
Gallatin	73	0.2	750.8	831.5	McCracken	397	1.3	559.9	604.8	Wolfe	74	0.2	823.9	1041.4
Garrard	150	0.5	718.6	846.6	McCreary	128	0.4	638.6	749.8	Woodford	130	0.4	455.0	485.7

**Table 25: Incidence of All Inpatient NTBI\* by County, Sorted by Frequency, Kentucky, 2023**

\*Includes inpatient deaths as well as nonfatal 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	18755	17.8	2050.2	2443.8	Taylor	704	0.7	2204.0	2738.6	Morgan	346	0.3	2170.9	2632.8
Fayette	6708	6.4	1962.5	2065.7	Knox	695	0.7	1825.6	2240.4	Metcalfe	333	0.3	2351.6	3310.8
Kenton	3148	3.0	1657.5	1874.4	Grant	674	0.6	2422.5	2654.9	Simpson	328	0.3	1422.1	1760.1
Boone	2418	2.3	1654.3	1785.9	Marshall	646	0.6	1396.3	2073.0	Larue	325	0.3	1762.4	2252.1
Hardin	2409	2.3	1934.0	2164.3	Anderson	631	0.6	2286.3	2763.5	Casey	311	0.3	1433.6	1935.8
Warren	2220	2.1	1616.1	1650.4	Bell	615	0.6	1796.7	2413.5	Magoffin	311	0.3	2004.0	2588.0
Madison	2169	2.1	2175.1	2301.0	Lincoln	581	0.6	1784.5	2374.7	Lee	298	0.3	3134.0	4100.2
Daviess	2134	2.0	1718.5	2092.6	Johnson	568	0.5	1957.9	2581.6	Washington	287	0.3	1831.8	2362.7
Pulaski	1801	1.7	2091.4	2748.4	Breathitt	551	0.5	3368.1	4390.4	Carroll	268	0.3	2062.8	2497.7
Bullitt	1740	1.6	1751.6	2117.3	Estill	545	0.5	2854.1	3862.8	McLean	265	0.3	2063.0	2920.1
Pike	1717	1.6	2257.9	3009.3	Powell	540	0.5	3750.1	4419.7	Butler	261	0.2	1528.9	2054.6
Campbell	1688	1.6	1455.8	1795.4	Woodford	539	0.5	1564.1	2013.8	Menifee	250	0.2	2677.2	3845.0
Laurel	1683	1.6	2273.8	2748.3	Logan	537	0.5	1436.2	1958.7	Webster	249	0.2	1475.0	1926.8
Whitley	1653	1.6	3892.8	4534.9	Bath	534	0.5	3458.7	4278.5	Gallatin	246	0.2	2594.9	2802.1
Boyd	1565	1.5	2377.9	3364.4	Calloway	525	0.5	1118.6	1335.9	Trigg	245	0.2	1020.7	1658.1
Franklin	1552	1.5	2336.4	3036.1	Jackson	522	0.5	3034.1	3913.0	Green	237	0.2	1536.2	2155.5
Perry	1441	1.4	4453.5	5660.8	Mercer	504	0.5	1734.2	2302.5	Clinton	230	0.2	1616.3	2275.0
Jessamine	1423	1.3	2229.8	2632.4	Knott	493	0.5	2521.2	3397.2	Owen	227	0.2	1595.8	2060.5
McCracken	1374	1.3	1496.3	2093.1	Garrard	490	0.5	2168.7	2765.4	Martin	215	0.2	1530.2	1949.1
Nelson	1234	1.2	2250.3	2656.6	Bourbon	485	0.5	1815.4	2437.1	Bracken	214	0.2	1986.2	2582.7
Clark	1223	1.2	2687.3	3354.1	Ohio	477	0.5	1522.4	1995.9	Owsley	214	0.2	3537.9	4941.1
Scott	1213	1.1	2155.2	2074.6	Henry	469	0.4	2308.2	2919.0	Monroe	208	0.2	1459.8	1971.8
Harlan	1076	1.0	3139.5	4208.7	Marion	453	0.4	1879.3	2345.5	Caldwell	188	0.2	1021.3	1481.8
Barren	1012	1.0	1728.9	2284.4	McCreary	447	0.4	2159.7	2618.5	Elliott	187	0.2	1882.3	2536.6
Shelby	1012	1.0	1747.0	2039.9	Adair	446	0.4	1710.4	2280.8	Hancock	186	0.2	1650.3	2127.7
Letcher	1010	1.0	3394.4	4761.2	Lawrence	431	0.4	2114.7	2792.2	Edmonson	183	0.2	997.7	1495.7
Hopkins	998	0.9	1672.4	2234.6	Spencer	431	0.4	1978.7	2200.7	Nicholas	178	0.2	1999.1	2460.6
Montgomery	998	0.9	2869.3	3540.8	Harrison	419	0.4	1700.7	2214.6	Livingston	172	0.2	1273.3	1902.4
Oldham	908	0.9	1332.2	1355.2	Allen	410	0.4	1429.8	1924.6	Todd	163	0.2	1065.9	1309.5
Grayson	891	0.8	2580.2	3364.8	Hart	401	0.4	1674.9	2109.1	Cumberland	161	0.2	1596.5	2468.2
Greenup	884	0.8	1758.2	2535.5	Russell	400	0.4	1654.4	2222.5	Ballard	158	0.1	1401.4	2033.7
Christian	883	0.8	1322.7	1235.4	Breckinridge	399	0.4	1394.0	1942.8	Union	158	0.1	889.7	1094.0
Carter	863	0.8	2415.5	3251.5	Pendleton	399	0.4	2113.6	2735.5	Lewis	153	0.1	871.5	1153.7
Clay	853	0.8	3620.5	4345.2	Wayne	395	0.4	1437.8	1954.6	Trimble	150	0.1	1375.6	1768.7
Graves	842	0.8	1698.7	2286.9	Leslie	394	0.4	3052.0	4088.4	Lyon	144	0.1	1060.1	1770.6
Floyd	824	0.8	1815.0	2356.0	Fleming	387	0.4	2111.1	2650.1	Fulton	141	0.1	1650.7	2369.0
Henderson	809	0.8	1371.0	1808.2	Wolfe	384	0.4	4254.5	5403.9	Crittenden	118	0.1	873.7	1333.8
Boyle	781	0.7	1954.3	2571.9	Rockcastle	374	0.4	1726.8	2232.8	Hickman	102	0.1	1383.1	2337.3
Rowan	756	0.7	2897.8	3063.0	Meade	360	0.3	1096.9	1258.0	Carlisle	89	0.1	1376.9	1896.9
Muhlenberg	728	0.7	1745.1	2390.3	Mason	358	0.3	1590.9	2101.6	Robertson	57	0.1	1719.1	2668.5

**Table 26: Incidence of All ED NTBI\* by County, Sorted by Frequency, Kentucky, 2023**

\*Includes ED deaths as well as nonfatal ED cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Jefferson	5743	18.6	709.3	748.3	Barren	221	0.7	428.0	498.9	Trigg	106	0.3	549.7	717.4
Fayette	1777	5.7	540.6	547.2	Clay	217	0.7	1005.0	1105.4	Washington	106	0.3	803.5	872.6
Madison	771	2.5	817.9	817.9	Mercer	213	0.7	846.0	973.1	Breathitt	102	0.3	712.5	812.8
Kenton	734	2.4	408.5	437.0	Harrison	208	0.7	979.6	1099.4	Cumberland	102	0.3	1070.2	1563.7
Hardin	677	2.2	598.2	608.2	Knox	207	0.7	580.7	667.3	Knott	102	0.3	591.5	702.9
Warren	639	2.1	481.8	475.1	Bourbon	194	0.6	889.3	974.8	Hart	94	0.3	437.6	494.4
Daviess	625	2.0	548.7	612.9	Marion	183	0.6	804.6	947.5	Caldwell	87	0.3	546.9	685.7
Boone	577	1.9	415.4	426.2	Powell	177	0.6	1343.6	1448.7	Morgan	87	0.3	589.4	662.0
Harlan	462	1.5	1428.8	1807.1	Estill	176	0.6	1124.8	1247.4	Meade	83	0.3	266.6	290.1
Scott	454	1.5	796.7	776.5	Graves	175	0.6	397.8	475.3	Clinton	82	0.3	643.7	811.1
Pike	452	1.5	684.9	792.2	Logan	172	0.6	551.2	627.4	Larrence	79	0.3	441.8	511.8
Pulaski	448	1.4	608.9	683.7	Henry	169	0.5	926.1	1051.9	Lee	76	0.2	892.2	1045.7
Whitley	417	1.3	1084.0	1144.0	Adair	167	0.5	728.3	854.0	McLean	75	0.2	668.4	826.5
Campbell	414	1.3	401.7	440.3	Greenup	167	0.5	402.0	479.0	Butler	74	0.2	490.7	582.5
Hopkins	407	1.3	794.2	911.3	Carroll	166	0.5	1357.4	1547.1	Wolfe	74	0.2	823.9	1041.4
Grayson	402	1.3	1280.6	1518.1	Breckinridge	159	0.5	659.6	774.2	Gallatin	73	0.2	750.8	831.5
McCracken	397	1.3	559.9	604.8	Letcher	155	0.5	589.4	730.7	Owen	66	0.2	526.5	599.1
Laurel	382	1.2	583.0	623.8	Wayne	152	0.5	623.9	752.1	Metcalfe	64	0.2	501.8	636.3
Bullitt	367	1.2	411.9	446.6	Anderson	151	0.5	623.9	661.3	Nicholas	64	0.2	766.2	884.7
Clark	358	1.2	869.8	981.8	Garrard	150	0.5	718.6	846.6	Larue	62	0.2	385.8	429.6
Muhlenberg	353	1.1	946.0	1159.0	Mason	150	0.5	768.8	880.5	Magoffin	62	0.2	416.9	515.9
Nelson	352	1.1	709.2	757.8	Spencer	148	0.5	674.8	755.7	Menifee	60	0.2	761.7	922.8
Boyd	331	1.1	614.0	711.6	Union	148	0.5	901.4	1024.7	Trimble	57	0.2	588.9	672.1
Shelby	330	1.1	603.5	665.2	Simpson	146	0.5	690.1	783.5	Bracken	56	0.2	571.3	675.8
Perry	309	1.0	1070.7	1213.9	Green	141	0.5	1022.3	1282.4	Lewis	54	0.2	348.4	407.2
Franklin	307	1.0	561.4	600.6	Rockcastle	141	0.5	772.8	841.8	Todd	54	0.2	384.4	433.8
Henderson	304	1.0	595.2	679.5	Fleming	139	0.4	799.0	951.9	Livingston	50	0.2	483.6	553.0
Boyle	296	1.0	875.8	974.7	Carter	134	0.4	461.4	504.9	Crittenden	49	0.2	481.0	553.9
Floyd	295	1.0	715.6	843.5	Woodford	130	0.4	455.0	485.7	Hancock	45	0.1	434.3	514.8
Montgomery	293	0.9	938.9	1039.5	McCreary	128	0.4	638.6	749.8	Edmonson	44	0.1	333.9	359.6
Calloway	282	0.9	649.2	717.6	Allen	125	0.4	494.8	586.8	Lyon	41	0.1	389.1	504.1
Marshall	273	0.9	667.6	876.0	Russell	124	0.4	590.8	689.0	Martin	41	0.1	310.1	371.7
Ohio	270	0.9	919.5	1129.8	Jackson	121	0.4	814.0	907.1	Monroe	41	0.1	313.2	388.7
Grant	267	0.9	982.7	1051.7	Leslie	121	0.4	1049.4	1255.6	Owsley	40	0.1	749.9	923.6
Taylor	267	0.9	940.5	1038.6	Casey	120	0.4	631.9	746.9	Ballard	34	0.1	341.0	437.6
Oldham	265	0.9	407.8	395.5	Webster	116	0.4	765.3	897.6	Robertson	33	0.1	980.7	1544.9
Jessamine	248	0.8	431.8	458.8	Pendleton	115	0.4	663.6	788.4	Elliott	29	0.1	374.5	393.4
Bell	246	0.8	825.8	965.4	Bath	114	0.4	807.8	913.4	Hickman	24	0.1	456.4	550.0
Lincoln	244	0.8	851.4	997.3	Johnson	114	0.4	457.0	518.1	Carlisle	19	0.1	383.1	404.9
Christian	235	0.8	336.7	328.8	Rowan	106	0.3	461.0	429.5	Fulton	19	0.1	245.6	319.2

**Table 27: Incidence of All Inpatient NTBI\* by County, Sorted by Age-Adjusted Rate, Kentucky, 2023**

\*Includes inpatient deaths as well as nonfatal inpatient cases

County	Age-Adjusted Crude				County	Age-Adjusted Crude				County	Age-Adjusted Crude			
	Freq	Percent	Rate	Rate		Freq	Percent	Rate	Rate		Freq	Percent	Rate	Rate
Perry	1441	1.4	4453.5	5660.8	Fleming	387	0.4	2111.1	2650.1	Hancock	186	0.2	1650.3	2127.7
Wolfe	384	0.4	4254.5	5403.9	Pulaski	1801	1.7	2091.4	2748.4	Clinton	230	0.2	1616.3	2275.0
Whitley	1653	1.6	3892.8	4534.9	McLean	265	0.3	2063.0	2920.1	Warren	2220	2.1	1616.1	1650.4
Powell	540	0.5	3750.1	4419.7	Carroll	268	0.3	2062.8	2497.7	Cumberland	161	0.2	1596.5	2468.2
Clay	853	0.8	3620.5	4345.2	Jefferson	18755	17.8	2050.2	2443.8	Owen	227	0.2	1595.8	2060.5
Owsley	214	0.2	3537.9	4941.1	Magoffin	311	0.3	2004.0	2588.0	Mason	358	0.3	1590.9	2101.6
Bath	534	0.5	3458.7	4278.5	Nicholas	178	0.2	1999.1	2460.6	Woodford	539	0.5	1564.1	2013.8
Letcher	1010	1.0	3394.4	4761.2	Bracken	214	0.2	1986.2	2582.7	Green	237	0.2	1536.2	2155.5
Breathitt	551	0.5	3368.1	4390.4	Spencer	431	0.4	1978.7	2200.7	Martin	215	0.2	1530.2	1949.1
Harlan	1076	1.0	3139.5	4208.7	Fayette	6708	6.4	1962.5	2065.7	Butler	261	0.2	1528.9	2054.6
Lee	298	0.3	3134.0	4100.2	Johnson	568	0.5	1957.9	2581.6	Ohio	477	0.5	1522.4	1995.9
Leslie	394	0.4	3052.0	4088.4	Boyle	781	0.7	1954.3	2571.9	McCracken	1374	1.3	1496.3	2093.1
Jackson	522	0.5	3034.1	3913.0	Hardin	2409	2.3	1934.0	2164.3	Webster	249	0.2	1475.0	1926.8
Rowan	756	0.7	2897.8	3063.0	Elliott	187	0.2	1882.3	2536.6	Monroe	208	0.2	1459.8	1971.8
Montgomery	998	0.9	2869.3	3540.8	Marion	453	0.4	1879.3	2345.5	Campbell	1688	1.6	1455.8	1795.4
Estill	545	0.5	2854.1	3862.8	Washington	287	0.3	1831.8	2362.7	Wayne	395	0.4	1437.8	1954.6
Clark	1223	1.2	2687.3	3354.1	Knox	695	0.7	1825.6	2240.4	Logan	537	0.5	1436.2	1958.7
Menifee	250	0.2	2677.2	3845.0	Bourbon	485	0.5	1815.4	2437.1	Casey	311	0.3	1433.6	1935.8
Gallatin	246	0.2	2594.9	2802.1	Floyd	824	0.8	1815.0	2356.0	Allen	410	0.4	1429.8	1924.6
Grayson	891	0.8	2580.2	3364.8	Bell	615	0.6	1796.7	2413.5	Simpson	328	0.3	1422.1	1760.1
Knott	493	0.5	2521.2	3397.2	Lincoln	581	0.6	1784.5	2374.7	Ballard	158	0.1	1401.4	2033.7
Grant	674	0.6	2422.5	2654.9	Larue	325	0.3	1762.4	2252.1	Marshall	646	0.6	1396.3	2073.0
Carter	863	0.8	2415.5	3251.5	Greenup	884	0.8	1758.2	2535.5	Breckinridge	399	0.4	1394.0	1942.8
Boyd	1565	1.5	2377.9	3364.4	Bullitt	1740	1.6	1751.6	2117.3	Hickman	102	0.1	1383.1	2337.3
Metcalfe	333	0.3	2351.6	3310.8	Shelby	1012	1.0	1747.0	2039.9	Carlisle	89	0.1	1376.9	1896.9
Franklin	1552	1.5	2336.4	3036.1	Muhlenberg	728	0.7	1745.1	2390.3	Trimble	150	0.1	1375.6	1768.7
Henry	469	0.4	2308.2	2919.0	Mercer	504	0.5	1734.2	2302.5	Henderson	809	0.8	1371.0	1808.2
Anderson	631	0.6	2286.3	2763.5	Barren	1012	1.0	1728.9	2284.4	Oldham	908	0.9	1332.2	1355.2
Laurel	1683	1.6	2273.8	2748.3	Rockcastle	374	0.4	1726.8	2232.8	Christian	883	0.8	1322.7	1235.4
Pike	1717	1.6	2257.9	3009.3	Robertson	57	0.1	1719.1	2668.5	Livingston	172	0.2	1273.3	1902.4
Nelson	1234	1.2	2250.3	2656.6	Daviess	2134	2.0	1718.5	2092.6	Calloway	525	0.5	1118.6	1335.9
Jessamine	1423	1.3	2229.8	2632.4	Adair	446	0.4	1710.4	2280.8	Meade	360	0.3	1096.9	1258.0
Taylor	704	0.7	2204.0	2738.6	Harrison	419	0.4	1700.7	2214.6	Todd	163	0.2	1065.9	1309.5
Madison	2169	2.1	2175.1	2301.0	Graves	842	0.8	1698.7	2286.9	Lyon	144	0.1	1060.1	1770.6
Morgan	346	0.3	2170.9	2632.8	Hart	401	0.4	1674.9	2109.1	Caldwell	188	0.2	1021.3	1481.8
Garrard	490	0.5	2168.7	2765.4	Hopkins	998	0.9	1672.4	2234.6	Trigg	245	0.2	1020.7	1658.1
McCreary	447	0.4	2159.7	2618.5	Kenton	3148	3.0	1657.5	1874.4	Edmonson	183	0.2	997.7	1495.7
Scott	1213	1.1	2155.2	2074.6	Russell	400	0.4	1654.4	2222.5	Union	158	0.1	889.7	1094.0
Lawrence	431	0.4	2114.7	2792.2	Boone	2418	2.3	1654.3	1785.9	Crittenden	118	0.1	873.7	1333.8
Pendleton	399	0.4	2113.6	2735.5	Fulton	141	0.1	1650.7	2369.0	Lewis	153	0.1	871.5	1153.7

**Table 28: Incidence of All ED NTBI\* by County, Sorted by Age-Adjusted Rate, Kentucky, 2023**

\*Includes inpatient deaths as well as nonfatal inpatient cases

County	Age-Adjusted Crude				County	Age-Adjusted Crude				County	Age-Adjusted Crude			
	Freq	Percent	Rate	Rate		Freq	Percent	Rate	Rate		Freq	Percent	Rate	Rate
Harlan	462	1.5	1428.8	1807.1	Menifee	60	0.2	761.7	922.8	Caldwell	87	0.3	546.9	685.7
Carroll	166	0.5	1357.4	1547.1	Gallatin	73	0.2	750.8	831.5	Fayette	1777	5.7	540.6	547.2
Powell	177	0.6	1343.6	1448.7	Owsley	40	0.1	749.9	923.6	Owen	66	0.2	526.5	599.1
Grayson	402	1.3	1280.6	1518.1	Adair	167	0.5	728.3	854.0	Metcalfe	64	0.2	501.8	636.3
Estill	176	0.6	1124.8	1247.4	Garrard	150	0.5	718.6	846.6	Allen	125	0.4	494.8	586.8
Whitley	417	1.3	1084.0	1144.0	Floyd	295	1.0	715.6	843.5	Butler	74	0.2	490.7	582.5
Perry	309	1.0	1070.7	1213.9	Breathitt	102	0.3	712.5	812.8	Livingston	50	0.2	483.6	553.0
Cumberland	102	0.3	1070.2	1563.7	Jefferson	5743	18.6	709.3	748.3	Warren	639	2.1	481.8	475.1
Leslie	121	0.4	1049.4	1255.6	Nelson	352	1.1	709.2	757.8	Crittenden	49	0.2	481.0	553.9
Green	141	0.5	1022.3	1282.4	Simpson	146	0.5	690.1	783.5	Carter	134	0.4	461.4	504.9
Clay	217	0.7	1005.0	1105.4	Pike	452	1.5	684.9	792.2	Rowan	106	0.3	461.0	429.5
Grant	267	0.9	982.7	1051.7	Spencer	148	0.5	674.8	755.7	Johnson	114	0.4	457.0	518.1
Robertson	33	0.1	980.7	1544.9	McLean	75	0.2	668.4	826.5	Hickman	24	0.1	456.4	550.0
Harrison	208	0.7	979.6	1099.4	Marshall	273	0.9	667.6	876.0	Woodford	130	0.4	455.0	485.7
Muhlenberg	353	1.1	946.0	1159.0	Pendleton	115	0.4	663.6	788.4	Lawrence	79	0.3	441.8	511.8
Taylor	267	0.9	940.5	1038.6	Breckinridge	159	0.5	659.6	774.2	Hart	94	0.3	437.6	494.4
Montgomery	293	0.9	938.9	1039.5	Calloway	282	0.9	649.2	717.6	Hancock	45	0.1	434.3	514.8
Henry	169	0.5	926.1	1051.9	Clinton	82	0.3	643.7	811.1	Jessamine	248	0.8	431.8	458.8
Ohio	270	0.9	919.5	1129.8	McCreary	128	0.4	638.6	749.8	Barren	221	0.7	428.0	498.9
Union	148	0.5	901.4	1024.7	Casey	120	0.4	631.9	746.9	Magoffin	62	0.2	416.9	515.9
Lee	76	0.2	892.2	1045.7	Wayne	152	0.5	623.9	752.1	Boone	577	1.9	415.4	426.2
Bourbon	194	0.6	889.3	974.8	Anderson	151	0.5	623.9	661.3	Bullitt	367	1.2	411.9	446.6
Boyle	296	1.0	875.8	974.7	Boyd	331	1.1	614.0	711.6	Kenton	734	2.4	408.5	437.0
Clark	358	1.2	869.8	981.8	Pulaski	448	1.4	608.9	683.7	Oldham	265	0.9	407.8	395.5
Lincoln	244	0.8	851.4	997.3	Shelby	330	1.1	603.5	665.2	Greenup	167	0.5	402.0	479.0
Mercer	213	0.7	846.0	973.1	Hardin	677	2.2	598.2	608.2	Campbell	414	1.3	401.7	440.3
Bell	246	0.8	825.8	965.4	Henderson	304	1.0	595.2	679.5	Graves	175	0.6	397.8	475.3
Wolfe	74	0.2	823.9	1041.4	Knott	102	0.3	591.5	702.9	Lyon	41	0.1	389.1	504.1
Madison	771	2.5	817.9	817.9	Russell	124	0.4	590.8	689.0	Larue	62	0.2	385.8	429.6
Jackson	121	0.4	814.0	907.1	Morgan	87	0.3	589.4	662.0	Todd	54	0.2	384.4	433.8
Bath	114	0.4	807.8	913.4	Letcher	155	0.5	589.4	730.7	Carlisle	19	0.1	383.1	404.9
Marion	183	0.6	804.6	947.5	Trimble	57	0.2	588.9	672.1	Elliott	29	0.1	374.5	393.4
Washington	106	0.3	803.5	872.6	Laurel	382	1.2	583.0	623.8	Lewis	54	0.2	348.4	407.2
Fleming	139	0.4	799.0	951.9	Knox	207	0.7	580.7	667.3	Ballard	34	0.1	341.0	437.6
Scott	454	1.5	796.7	776.5	Bracken	56	0.2	571.3	675.8	Christian	235	0.8	336.7	328.8
Hopkins	407	1.3	794.2	911.3	Franklin	307	1.0	561.4	600.6	Edmonson	44	0.1	333.9	359.6
Rockcastle	141	0.5	772.8	841.8	McCracken	397	1.3	559.9	604.8	Monroe	41	0.1	313.2	388.7
Mason	150	0.5	768.8	880.5	Logan	172	0.6	551.2	627.4	Martin	41	0.1	310.1	371.7
Nicholas	64	0.2	766.2	884.7	Trigg	106	0.3	549.7	717.4	Meade	83	0.3	266.6	290.1
Webster	116	0.4	765.3	897.6	Daviess	625	2.0	548.7	612.9	Fulton	19	0.1	245.6	319.2

**Table 29: Causes of Nonfatal NTBI, Kentucky, 2023**

ABI Category	Inpatient		ED	
	Number	Percent	Number	Percent
Anoxia	85,128	83.4	17,642	57.1
Exposure to toxic substances	12,271	12.0	9,406	30.4
Allergy/anaphylaxis	307	0.3	2,399	7.8
Acute medical clinical incidents	4,392	4.3	1,451	4.7

\* 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: Nonfatal Anoxia by Age Group, Kentucky, 2023**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	2,359	65.4	889.8	1,248	34.6	470.7	3,607	100.0	1360.5
5-14	709	66.6	123.8	355	33.4	62.0	1,064	100.0	185.8
15-24	760	74.7	128.2	257	25.3	43.4	1,017	100.0	171.6
25-44	5,292	81.3	459.2	1,214	18.7	105.4	6,506	100.0	564.6
45-64	24,097	81.9	2084.1	5,343	18.1	462.1	29,440	100.0	2546.2
65+	51,911	84.9	6739.4	9,225	15.1	1197.6	61,136	100.0	7937.1
Total	85,128	82.8	1887.8	17,642	17.2	391.2	102,770	100.0	2279.0



**Table 31: Diagnosis Distribution for Nonfatal Anoxia, Kentucky, 2023**

Diagnosis	Description	Inpatient		ED	
		Number	Percent	Number	Percent
G91(.0-.2)	Communicating hydrocephalus	665	0.78	183	1.04
G931	Anoxic brain damage, NEC	175	0.21	98	0.56
J96	Respiratory failure, NEC w/hypoxia or hypercapnia	77,027	90.48	12,674	71.84
R090	Asphyxia and hypoxemia	7,208	8.47	4,362	24.73
T71	Asphyxiation	50	0.06	259	1.47
T751	Unspec effects of drowning and non-fatal submersion	3	0.00	66	0.37
Total		85,128	100.00	17,642	100.00

**Table 32: Nonfatal Exposure to Toxic Substances by Age Group, Kentucky, 2023**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	88	19.5	33.2	364	80.5	137.3	452	100.0	170.5
5-14	80	24.5	14.0	247	75.5	43.1	327	100.0	57.1
15-24	348	24.8	58.7	1,054	75.2	177.8	1,402	100.0	236.5
25-44	1,861	33.4	161.5	3,714	66.6	322.3	5,575	100.0	483.8
45-64	3,882	60.9	335.7	2,492	39.1	215.5	6,374	100.0	551.3
65+	6,012	79.7	780.5	1,535	20.3	199.3	7,547	100.0	979.8
Total	12,271	56.6	272.1	9,406	43.4	208.6	21,677	100.0	480.7

**Table 33: Diagnosis Distribution for Nonfatal Exposure to Toxic Substances, Kentucky, 2023**

Diagnosis	Description	Inpatient		ED	
		Number	Percent	Number	Percent
G92	Toxic encephalopathy	6625	54.0	663	7.0
T40	Poisoning by narcotics and hallucinogens	2589	21.1	5040	53.6
T41	Poisoning by anesthetics and therapeutic gases	145	1.2	103	1.1
T42(.3-.7)	Poisoning by antiepileptic and sedative hypnotic drugs	931	7.6	1448	15.4
T45.5	Poisoning by anticoagulants and antithrombotic drugs	1285	10.5	607	6.5
T51	Toxic effect of alcohol	120	1.0	169	1.8
T56	Toxic effect of metals	28	0.2	86	0.9
T57	Toxic effect of other inorganic substances	2	0.0	3	0.0
T58	Toxic effect of carbon monoxide	39	0.3	151	1.6
T60	Toxic effect of pesticides	9	0.1	58	0.6
T61	Toxic effect of noxious substances eaten as seafood	1	0.0	16	0.2
T62	Toxic effect of other noxious substances eaten as food	4	0.0	69	0.7
T65	Toxic effect of other unspecified substances	94	0.8	947	10.1
T81.1	Postprocedural shock	354	2.9	9	0.1
T88.2	Shock due to anesthesia	11	0.1	1	0.0
T88.5	Other complications of anesthesia	34	0.3	36	0.4
Total		12271	100.0	9406	100.0

**Table 34: Length of Stay for Nonfatal Inpatient NTBI, Kentucky, 2023**

Length of Stay	Number	Percent*
1 day	8448	8.8
More than one day but less than 1 week	53612	55.8
1 week to less than 2 weeks	22107	23.0
2 weeks to less than 3 weeks	6342	6.6
3 weeks to less than 4 weeks	2551	2.7
4 weeks or more	2985	3.1
Total	96045	100.0

\*Percent of hospitalized NTBI

**Table 35: Discharge Disposition for Nonfatal NTBI, Kentucky, 2023**

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	47,556	49.5	21,392	70.4
Skilled nursing facility (SNF)	13,857	14.4	1,086	3.6
Home health	14,552	15.2	965	3.2
Inpatient-other type facility	92	0.1	306	1.0
Inpatient-other short-term hospital	3,101	3.2	3,611	11.9
Intermediate care facility (ICF)	1,040	1.1	117	0.4
Rehab	5,170	5.4	186	0.6
Other	10,677	11.1	2,736	9.0
<b>Total</b>	<b>96,045</b>	<b>100.0</b>	<b>30,399</b>	<b>100.0</b>

**Table 36: Primary Payer and Charges for Nonfatal Inpatient NTBI, Kentucky, 2023**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	80,830	84.2	\$ 6,201,550,738
Commercial Insurance	13,025	13.6	\$ 1,203,348,398
Self Pay	865	0.9	\$ 57,112,222
Workers Compensation	279	0.3	\$ 31,438,610
Other	1046	1.1	\$ 94,383,042
<b>Total</b>	<b>96,045</b>	<b>100.0</b>	<b>\$ 7,587,833,010</b>

**Table 37: Primary Payer and Charges for Nonfatal ED NTBI, Kentucky, 2023**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	23,561	77.5	\$ 327,722,788
Commercial Insurance	5,272	17.3	\$ 58,684,209
Self Pay	1,036	3.4	\$ 6,635,086
Workers Compensation	136	0.4	\$ 871,175
Other	394	1.3	\$ 4,458,280
<b>Total</b>	<b>30,399</b>	<b>100.0</b>	<b>\$ 398,371,538</b>

**Table 38: Nonfatal SCI by Age Group, Kentucky, 2023**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	1	0.0	0.4	0	0.0	0.0	1	100.0	0.4
5-14	1	33.3	0.2	3	75.0	0.5	4	100.0	0.7
15-24	21	67.7	3.5	10	32.3	1.7	31	100.0	5.2
25-44	37	69.8	3.2	16	30.2	1.4	53	100.0	4.6
45-64	54	76.1	4.7	17	23.9	1.5	71	100.0	6.1
65+	58	74.4	7.5	20	25.6	2.6	78	100.0	10.1
<b>Total</b>	<b>172</b>	<b>72.3</b>	<b>3.8</b>	<b>66</b>	<b>27.7</b>	<b>1.5</b>	<b>238</b>	<b>100.0</b>	<b>5.3</b>

**Table 39: Nonfatal SCI by Gender, Kentucky, 2023**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	122	76.7	5.5	37	23.3	1.7	159	100.0	7.1
Female	50	63.3	2.2	29	36.7	1.3	79	100.0	3.5
<b>Total</b>	<b>172</b>	<b>72.3</b>	<b>3.8</b>	<b>66</b>	<b>27.7</b>	<b>1.5</b>	<b>238</b>	<b>100.0</b>	<b>5.3</b>

**Table 40: Leading Causes of Nonfatal SCI, Kentucky, 2023**

Mechanism of Injury	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Motor vehicle traffic crash	46	79.3	1.0	12	20.7	0.3	58	100.0	1.3
Fall	76	74.5	1.7	26	25.5	0.6	102	100.0	2.3
Non-traffic land transportation	8	80.0	0.2	2	20.0	0.0	10	100.0	0.2
Struck by or against object or person	4	57.1	0.1	3	42.9	0.1	7	100.0	0.2
Firearm	9	81.8	0.2	2	18.2	0.0	11	100.0	0.2
Other	4	44.4	0.1	5	55.6	0.1	9	100.0	0.2
Unknown (missing E-code)	25	61.0	0.6	16	39.0	0.4	41	100.0	0.9
Total	172	72.3	3.8	66	27.7	1.5	238	100.0	5.3

**Table 41: Length of Stay for Nonfatal Inpatient SCI, Kentucky, 2023**

Length of Stay	Number	Percent*
1 day	8	4.7
More than one day but less than 1 week	54	31.4
1 week to less than 2 weeks	62	36.0
2 weeks to less than 3 weeks	27	15.7
3 weeks to less than 4 weeks	8	4.7
4 weeks or more	13	7.6
Total	172	100.0

\*Percent of hospitalized SCI

Mean 12.2  
 Median 9  
 Min, Max 1-78

**Table 42: Discharge Disposition for Nonfatal SCI, Kentucky, 2023**

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	45	26.2	43	65.2
Home health	9	5.2	0	0.0
Skilled nursing facility (SNF)	7	4.1	1	1.5
Inpatient-other	3	1.7	14	21.2
Rehab	92	53.5	2	3.0
Other	16	9.3	6	9.1
<b>Total</b>	<b>172</b>	<b>100.0</b>	<b>66</b>	<b>100.0</b>

**Table 43: Primary Payer and Charges for Nonfatal Inpatient SCI, Kentucky, 2023**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	121	70.3	\$ 27,664,994
Commercial Ins	35	20.3	\$ 7,895,642
Workers Compensation	2	1.2	\$ 593,149
Self Pay	2	1.2	\$ 405,488
Other	12	7.0	\$ 2,128,144
<b>Total</b>	<b>172</b>	<b>100.0</b>	<b>\$38,687,417</b>

**Table 44: Primary Payer and Charges for Nonfatal ED SCI, Kentucky, 2023**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	41	62.1	\$ 622,903
Commercial Ins	18	27.3	\$ 220,320
Workers Compensation	2	3.0	\$ 44,077
Self Pay	2	3.0	\$ 21,311
Other	3	4.5	\$ 26,273
<b>Total</b>	<b>66</b>	<b>100.0</b>	<b>\$934,884</b>

**Table 45: Nonfatal Stroke by Age Group, Kentucky, 2023**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	19	0.0	7.2	8	0.0	3.0	27	100.0	10.2
5-14	14	93.3	2.4	15	51.7	2.6	29	100.0	5.1
15-24	50	56.8	8.4	38	43.2	6.4	88	100.0	14.8
25-44	658	55.2	57.1	535	44.8	46.4	1,193	100.0	103.5
45-64	3,906	60.1	337.8	2,592	39.9	224.2	6,498	100.0	562.0
65+	8,430	64.8	1094.4	4,587	35.2	595.5	13,017	100.0	1689.9
Total	13,077	62.7	290.0	7,775	37.3	172.4	20,852	100.0	462.4

**Table 46: Nonfatal Stroke by Gender, Kentucky, 2023**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	6,443	63.6	288.4	3,690	36.4	165.2	10,133	100.0	453.6
Female	6,633	61.9	291.5	4,083	38.1	179.4	10,716	100.0	470.9
Total	13,076	62.7	290.0	7,773	37.3	172.4	20,849	100.0	462.3

**Table 47: Length of Stay for Nonfatal Inpatient Stroke, Kentucky, 2023**

Length of Stay	Number	Percent*
1 day	1,956	15.0
More than one day but less than 1 week	6,956	53.2
1 week to less than 2 weeks	2,551	19.5
2 weeks to less than 3 weeks	834	6.4
3 weeks to less than 4 weeks	361	2.8
4 weeks or more	419	3.2
Total	13,077	100.0

\*Percent of hospitalized Stroke

**Table 48: Discharge Disposition for Nonfatal Stroke, Kentucky, 2023**

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	5,472	41.8	4,614	59.3
Home health	1,408	10.8	225	2.9
Skilled nursing facility (SNF)	1,825	14.0	181	2.3
Inpatient-other	363	2.8	2,125	27.3
Intermediate Care Facility	92	0.7	27	0.3
Rehab	2,501	19.1	59	0.8
Other	1,416	10.8	544	7.0
<b>Total</b>	<b>13,077</b>	<b>100.0</b>	<b>7,775</b>	<b>100.0</b>

**Table 49: Primary Payer and Charges for Nonfatal Inpatient Stroke, Kentucky, 2023**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	10,809	82.7	989,958,228
Commercial Ins	1,944	14.9	202,184,000
Workers Compensation	12	0.1	2,881,277
Self Pay	199	1.5	10,601,064
Other	113	0.9	9,359,412
<b>Total</b>	<b>13,077</b>	<b>100.0</b>	<b>\$1,214,983,981</b>

**Table 50: Primary Payer and Charges for Nonfatal ED Stroke, Kentucky, 2023**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	5,885	75.7	\$ 118,586,174
Commercial Ins	1,612	20.7	\$ 34,240,422
Workers Compensation	16	0.2	\$ 261,746
Self Pay	150	1.9	\$ 3,308,987
Other	112	1.4	\$ 2,202,359
<b>Total</b>	<b>7,775</b>	<b>100.0</b>	<b>\$158,599,688</b>



**Table 51: Incidence of All Inpatient Stroke\* by County, Sorted by County, Kentucky, 2023**

\*Includes inpatient deaths as well as nonfatal inpatient cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude				Rate	Crude				Rate	Crude
Adair	72	0.5	269.1	368.2	Grant	111	0.8	417.2	437.2	McLean	29	0.2	215.3	319.6
Allen	50	0.3	179.3	234.7	Graves	117	0.8	230.5	317.8	Meade	54	0.4	156.6	188.7
Anderson	54	0.4	194.6	236.5	Grayson	113	0.8	321.2	426.7	Menifee	24	0.2	235.3	369.1
Ballard	19	0.1	169.0	244.6	Green	35	0.2	199.9	318.3	Mercer	100	0.7	344.0	456.9
Barren	141	1.0	236.9	318.3	Greenup	132	0.9	270.3	378.6	Metcalfe	39	0.3	310.9	387.8
Bath	46	0.3	288.8	368.6	Hancock	30	0.2	247.2	343.2	Monroe	59	0.4	395.0	559.3
Bell	82	0.6	237.8	321.8	Hardin	414	2.9	328.9	371.9	Montgomery	108	0.8	302.9	383.2
Boone	322	2.2	219.3	237.8	Harlan	118	0.8	339.2	461.6	Morgan	32	0.2	184.1	243.5
Bourbon	74	0.5	288.2	371.8	Harrison	50	0.3	203.7	264.3	Muhlenberg	88	0.6	195.9	288.9
Boyd	235	1.6	350.1	505.2	Hart	61	0.4	257.1	320.8	Nelson	151	1.1	273.5	325.1
Boyle	84	0.6	197.1	276.6	Henderson	79	0.5	127.0	176.6	Nicholas	20	0.1	218.4	276.5
Bracken	22	0.2	189.3	265.5	Henry	64	0.4	284.9	398.3	Ohio	58	0.4	172.7	242.7
Breathitt	54	0.4	328.3	430.3	Hickman	6	0.0	69.0	137.5	Oldham	142	1.0	195.8	211.9
Breckinridge	84	0.6	284.2	409.0	Hopkins	98	0.7	159.5	219.4	Owen	34	0.2	251.0	308.6
Bullitt	205	1.4	201.7	249.4	Jackson	52	0.4	300.1	389.8	Owsley	20	0.1	307.4	461.8
Butler	34	0.2	206.1	267.7	Jefferson	2769	19.3	292.9	360.8	Pendleton	53	0.4	285.4	363.4
Caldwell	29	0.2	148.7	228.6	Jessamine	176	1.2	270.8	325.6	Perry	132	0.9	403.8	518.5
Calloway	64	0.4	131.0	162.9	Johnson	88	0.6	320.2	400.0	Pike	235	1.6	301.8	411.9
Campbell	246	1.7	212.3	261.6	Kenton	454	3.2	236.7	270.3	Powell	42	0.3	272.3	343.8
Carlisle	9	0.1	115.8	191.8	Knott	65	0.5	291.7	447.9	Pulaski	245	1.7	269.2	373.9
Carroll	46	0.3	356.9	428.7	Knox	86	0.6	212.4	277.2	Robertson	7	0.0	174.0	327.7
Carter	113	0.8	327.7	425.7	Larue	69	0.5	377.6	478.1	Rockcastle	60	0.4	275.4	358.2
Casey	36	0.3	158.4	224.1	Laurel	209	1.5	280.6	341.3	Rowan	74	0.5	288.8	299.8
Christian	90	0.6	130.8	125.9	Lawrence	38	0.3	196.1	246.2	Russell	84	0.6	360.6	466.7
Clark	160	1.1	343.0	438.8	Lee	27	0.2	277.4	371.5	Scott	161	1.1	286.3	275.4
Clay	90	0.6	367.9	458.5	Leslie	42	0.3	313.2	435.8	Shelby	142	1.0	242.3	286.2
Clinton	34	0.2	237.9	336.3	Letcher	127	0.9	425.8	598.7	Simpson	65	0.5	277.8	348.8
Crittenden	11	0.1	80.8	124.3	Lewis	24	0.2	126.1	181.0	Spencer	63	0.4	277.8	321.7
Cumberland	19	0.1	194.7	291.3	Lincoln	94	0.7	293.0	384.2	Taylor	109	0.8	319.2	424.0
Daviess	274	1.9	220.8	268.7	Livingston	35	0.2	234.3	387.1	Todd	20	0.1	135.6	160.7
Edmonson	31	0.2	187.6	253.4	Logan	72	0.5	189.8	262.6	Trigg	31	0.2	136.6	209.8
Elliott	20	0.1	194.2	271.3	Lyon	23	0.2	160.9	282.8	Trimble	31	0.2	256.9	365.5
Estill	60	0.4	297.1	425.3	Madison	277	1.9	278.3	293.9	Union	13	0.1	66.4	90.0
Fayette	890	6.2	256.9	274.1	Magoffin	18	0.1	123.8	149.8	Warren	410	2.9	304.1	304.8
Fleming	55	0.4	303.1	376.6	Marion	40	0.3	170.0	207.1	Washington	40	0.3	241.8	329.3
Floyd	124	0.9	260.2	354.5	Marshall	88	0.6	183.0	282.4	Wayne	61	0.4	217.0	301.8
Franklin	227	1.6	348.0	444.1	Martin	24	0.2	158.0	217.6	Webster	19	0.1	108.0	147.0
Fulton	17	0.1	195.3	285.6	Mason	56	0.4	253.7	328.7	Whitley	210	1.5	491.1	576.1
Gallatin	26	0.2	284.0	296.2	McCracken	221	1.5	227.7	336.7	Wolfe	38	0.3	440.9	534.8
Garrard	69	0.5	281.5	389.4	McCreary	58	0.4	280.5	339.8	Woodford	97	0.7	265.3	362.4

**Table 52: Incidence of All ED Stroke\* by County, Sorted by County, Kentucky, 2023**

\*Includes ED deaths as well as nonfatal ED 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	61	0.8	229.8	311.9	Grant	59	0.8	219.1	232.4	McLean	15	0.2	133.7	165.3
Allen	51	0.7	169.2	239.4	Graves	71	0.9	142.8	192.8	Meade	24	0.3	68.3	83.9
Anderson	28	0.4	97.2	122.6	Grayson	99	1.3	305.6	373.9	Menifee	19	0.2	174.2	292.2
Ballard	6	0.1	62.8	77.2	Green	28	0.4	150.8	254.7	Mercer	71	0.9	255.8	324.4
Barren	87	1.1	142.6	196.4	Greenup	82	1.0	168.1	235.2	Metcalfe	28	0.4	199.3	278.4
Bath	45	0.6	288.1	360.5	Hancock	6	0.1	59.6	68.6	Monroe	29	0.4	205.2	274.9
Bell	82	1.0	253.9	321.8	Hardin	179	2.3	147.3	160.8	Montgomery	88	1.1	252.1	312.2
Boone	120	1.5	81.8	88.6	Harlan	115	1.5	355.0	449.8	Morgan	33	0.4	188.6	251.1
Bourbon	50	0.6	201.6	251.2	Harrison	52	0.7	211.5	274.8	Muhlenberg	101	1.3	225.3	331.6
Boyd	145	1.9	227.3	311.7	Hart	55	0.7	233.4	289.3	Nelson	90	1.2	163.6	193.8
Boyle	76	1.0	178.8	250.3	Henderson	66	0.8	109.5	147.5	Nicholas	24	0.3	283.2	331.8
Bracken	17	0.2	165.0	205.2	Henry	36	0.5	174.8	224.1	Ohio	48	0.6	140.0	200.8
Breathitt	37	0.5	223.9	294.8	Hickman	5	0.1	120.3	114.6	Oldham	81	1.0	113.4	120.9
Breckinridge	64	0.8	226.9	311.6	Hopkins	96	1.2	156.9	214.9	Owen	18	0.2	138.9	163.4
Bullitt	61	0.8	60.0	74.2	Jackson	36	0.5	208.2	269.9	Owsley	18	0.2	318.1	415.6
Butler	31	0.4	215.1	244.0	Jefferson	1051	13.4	114.4	136.9	Pendleton	21	0.3	115.4	144.0
Caldwell	32	0.4	158.5	252.2	Jessamine	54	0.7	79.5	99.9	Perry	96	1.2	304.0	377.1
Calloway	58	0.7	114.0	147.6	Johnson	53	0.7	190.8	240.9	Pike	130	1.7	171.6	227.8
Campbell	93	1.2	81.2	98.9	Kenton	112	1.4	59.6	66.7	Powell	30	0.4	211.0	245.5
Carlisle	8	0.1	97.9	170.5	Knott	38	0.5	184.6	261.9	Pulaski	187	2.4	213.4	285.4
Carroll	21	0.3	170.5	195.7	Knox	72	0.9	188.6	232.1	Robertson	7	0.1	224.0	327.7
Carter	74	0.9	220.7	278.8	Larue	30	0.4	153.5	207.9	Rockcastle	67	0.9	289.2	400.0
Casey	38	0.5	171.5	236.5	Laurel	118	1.5	158.7	192.7	Rowan	57	0.7	228.7	230.9
Christian	57	0.7	87.6	79.7	Lawrence	36	0.5	203.6	233.2	Russell	57	0.7	253.9	316.7
Clark	71	0.9	149.4	194.7	Lee	24	0.3	251.1	330.2	Scott	116	1.5	203.6	198.4
Clay	40	0.5	174.2	203.8	Leslie	31	0.4	241.1	321.7	Shelby	71	0.9	118.4	143.1
Clinton	30	0.4	225.3	296.7	Letcher	60	0.8	184.4	282.8	Simpson	42	0.5	180.2	225.4
Crittenden	22	0.3	190.7	248.7	Lewis	21	0.3	102.3	158.3	Spencer	32	0.4	140.0	163.4
Cumberland	30	0.4	298.1	459.9	Lincoln	70	0.9	215.6	286.1	Taylor	84	1.1	255.6	326.8
Daviess	115	1.5	87.0	112.8	Livingston	19	0.2	123.4	210.2	Todd	6	0.1	36.7	48.2
Edmonson	12	0.2	67.9	98.1	Logan	42	0.5	116.7	153.2	Trigg	41	0.5	184.3	277.5
Elliott	8	0.1	88.8	108.5	Lyon	14	0.2	86.7	172.1	Trimble	10	0.1	88.1	117.9
Estill	46	0.6	223.6	326.0	Madison	144	1.8	145.8	152.8	Union	21	0.3	114.5	145.4
Fayette	305	3.9	88.0	93.9	Magoffin	29	0.4	187.7	241.3	Warren	211	2.7	156.1	156.9
Fleming	40	0.5	223.4	273.9	Marion	48	0.6	198.1	248.5	Washington	29	0.4	165.6	238.7
Floyd	93	1.2	204.5	265.9	Marshall	42	0.5	94.8	134.8	Wayne	55	0.7	202.2	272.2
Franklin	85	1.1	125.7	166.3	Martin	21	0.3	147.6	190.4	Webster	18	0.2	107.4	139.3
Fulton	11	0.1	157.5	184.8	Mason	49	0.6	240.6	287.6	Whitley	84	1.1	197.6	230.4
Gallatin	14	0.2	133.9	159.5	McCracken	88	1.1	100.1	134.1	Wolfe	27	0.3	296.1	380.0
Garrard	32	0.4	130.9	180.6	McCreary	48	0.6	242.8	281.2	Woodford	37	0.5	103.9	138.2

**Table 53: Incidence of All Inpatient Stroke\* by County, Sorted by Frequency, Kentucky, 2023**

\*Includes inpatient deaths as well as nonfatal inpatient cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude				Rate	Crude				Rate	Crude
Jefferson	2769	19.3	292.9	360.8	Clay	90	0.6	367.9	458.5	Powell	42	0.3	272.3	343.8
Fayette	890	6.2	256.9	274.1	Johnson	88	0.6	320.2	400.0	Marion	40	0.3	170.0	207.1
Kenton	454	3.2	236.7	270.3	Marshall	88	0.6	183.0	282.4	Washington	40	0.3	241.8	329.3
Hardin	414	2.9	328.9	371.9	Muhlenberg	88	0.6	195.9	288.9	Metcalfe	39	0.3	310.9	387.8
Warren	410	2.9	304.1	304.8	Knox	86	0.6	212.4	277.2	Lawrence	38	0.3	196.1	246.2
Boone	322	2.2	219.3	237.8	Boyle	84	0.6	197.1	276.6	Wolfe	38	0.3	440.9	534.8
Madison	277	1.9	278.3	293.9	Breckinridge	84	0.6	284.2	409.0	Casey	36	0.3	158.4	224.1
Daviess	274	1.9	220.8	268.7	Russell	84	0.6	360.6	466.7	Green	35	0.2	199.9	318.3
Campbell	246	1.7	212.3	261.6	Bell	82	0.6	237.8	321.8	Livingston	35	0.2	234.3	387.1
Pulaski	245	1.7	269.2	373.9	Henderson	79	0.5	127.0	176.6	Butler	34	0.2	206.1	267.7
Boyd	235	1.6	350.1	505.2	Bourbon	74	0.5	288.2	371.8	Clinton	34	0.2	237.9	336.3
Pike	235	1.6	301.8	411.9	Rowan	74	0.5	288.8	299.8	Owen	34	0.2	251.0	308.6
Franklin	227	1.6	348.0	444.1	Adair	72	0.5	269.1	368.2	Morgan	32	0.2	184.1	243.5
McCracken	221	1.5	227.7	336.7	Logan	72	0.5	189.8	262.6	Edmonson	31	0.2	187.6	253.4
Whitley	210	1.5	491.1	576.1	Garrard	69	0.5	281.5	389.4	Trigg	31	0.2	136.6	209.8
Laurel	209	1.5	280.6	341.3	Larue	69	0.5	377.6	478.1	Trimble	31	0.2	256.9	365.5
Bullitt	205	1.4	201.7	249.4	Knott	65	0.5	291.7	447.9	Hancock	30	0.2	247.2	343.2
Jessamine	176	1.2	270.8	325.6	Simpson	65	0.5	277.8	348.8	Caldwell	29	0.2	148.7	228.6
Scott	161	1.1	286.3	275.4	Calloway	64	0.4	131.0	162.9	McLean	29	0.2	215.3	319.6
Clark	160	1.1	343.0	438.8	Henry	64	0.4	284.9	398.3	Lee	27	0.2	277.4	371.5
Nelson	151	1.1	273.5	325.1	Spencer	63	0.4	277.8	321.7	Gallatin	26	0.2	284.0	296.2
Oldham	142	1.0	195.8	211.9	Hart	61	0.4	257.1	320.8	Lewis	24	0.2	126.1	181.0
Shelby	142	1.0	242.3	286.2	Wayne	61	0.4	217.0	301.8	Martin	24	0.2	158.0	217.6
Barren	141	1.0	236.9	318.3	Estill	60	0.4	297.1	425.3	Menifee	24	0.2	235.3	369.1
Greenup	132	0.9	270.3	378.6	Rockcastle	60	0.4	275.4	358.2	Lyon	23	0.2	160.9	282.8
Perry	132	0.9	403.8	518.5	Monroe	59	0.4	395.0	559.3	Bracken	22	0.2	189.3	265.5
Letcher	127	0.9	425.8	598.7	McCreary	58	0.4	280.5	339.8	Elliott	20	0.1	194.2	271.3
Floyd	124	0.9	260.2	354.5	Ohio	58	0.4	172.7	242.7	Nicholas	20	0.1	218.4	276.5
Harlan	118	0.8	339.2	461.6	Mason	56	0.4	253.7	328.7	Owsley	20	0.1	307.4	461.8
Graves	117	0.8	230.5	317.8	Fleming	55	0.4	303.1	376.6	Todd	20	0.1	135.6	160.7
Carter	113	0.8	327.7	425.7	Anderson	54	0.4	194.6	236.5	Ballard	19	0.1	169.0	244.6
Grayson	113	0.8	321.2	426.7	Breathitt	54	0.4	328.3	430.3	Cumberland	19	0.1	194.7	291.3
Grant	111	0.8	417.2	437.2	Meade	54	0.4	156.6	188.7	Webster	19	0.1	108.0	147.0
Taylor	109	0.8	319.2	424.0	Pendleton	53	0.4	285.4	363.4	Magoffin	18	0.1	123.8	149.8
Montgomery	108	0.8	302.9	383.2	Jackson	52	0.4	300.1	389.8	Fulton	17	0.1	195.3	285.6
Mercer	100	0.7	344.0	456.9	Allen	50	0.3	179.3	234.7	Union	13	0.1	66.4	90.0
Hopkins	98	0.7	159.5	219.4	Harrison	50	0.3	203.7	264.3	Crittenden	11	0.1	80.8	124.3
Woodford	97	0.7	265.3	362.4	Bath	46	0.3	288.8	368.6	Carlisle	9	0.1	115.8	191.8
Lincoln	94	0.7	293.0	384.2	Carroll	46	0.3	356.9	428.7	Robertson	7	0.0	174.0	327.7
Christian	90	0.6	130.8	125.9	Leslie	42	0.3	313.2	435.8	Hickman	6	0.0	69.0	137.5

**Table 54: Incidence of All ED Stroke\* by County, Sorted by Frequency, Kentucky, 2023**

\*Includes ED deaths as well as nonfatal ED cases

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Jefferson	1051	13.4	114.4	136.9	Breckinridge	64	0.8	226.9	311.6	Leslie	31	0.4	241.1	321.7
Fayette	305	3.9	88.0	93.9	Adair	61	0.8	229.8	311.9	Clinton	30	0.4	225.3	296.7
Warren	211	2.7	156.1	156.9	Bullitt	61	0.8	60.0	74.2	Cumberland	30	0.4	298.1	459.9
Pulaski	187	2.4	213.4	285.4	Letcher	60	0.8	184.4	282.8	Larue	30	0.4	153.5	207.9
Hardin	179	2.3	147.3	160.8	Grant	59	0.8	219.1	232.4	Powell	30	0.4	211.0	245.5
Boyd	145	1.9	227.3	311.7	Calloway	58	0.7	114.0	147.6	Magoffin	29	0.4	187.7	241.3
Madison	144	1.8	145.8	152.8	Christian	57	0.7	87.6	79.7	Monroe	29	0.4	205.2	274.9
Pike	130	1.7	171.6	227.8	Rowan	57	0.7	228.7	230.9	Washington	29	0.4	165.6	238.7
Boone	120	1.5	81.8	88.6	Russell	57	0.7	253.9	316.7	Anderson	28	0.4	97.2	122.6
Laurel	118	1.5	158.7	192.7	Hart	55	0.7	233.4	289.3	Green	28	0.4	150.8	254.7
Scott	116	1.5	203.6	198.4	Wayne	55	0.7	202.2	272.2	Metcalfe	28	0.4	199.3	278.4
Daviess	115	1.5	87.0	112.8	Jessamine	54	0.7	79.5	99.9	Wolfe	27	0.3	296.1	380.0
Harlan	115	1.5	355.0	449.8	Johnson	53	0.7	190.8	240.9	Lee	24	0.3	251.1	330.2
Kenton	112	1.4	59.6	66.7	Harrison	52	0.7	211.5	274.8	Meade	24	0.3	68.3	83.9
Muhlenberg	101	1.3	225.3	331.6	Allen	51	0.7	169.2	239.4	Nicholas	24	0.3	283.2	331.8
Grayson	99	1.3	305.6	373.9	Bourbon	50	0.6	201.6	251.2	Crittenden	22	0.3	190.7	248.7
Hopkins	96	1.2	156.9	214.9	Mason	49	0.6	240.6	287.6	Carroll	21	0.3	170.5	195.7
Perry	96	1.2	304.0	377.1	Marion	48	0.6	198.1	248.5	Lewis	21	0.3	102.3	158.3
Campbell	93	1.2	81.2	98.9	McCreary	48	0.6	242.8	281.2	Martin	21	0.3	147.6	190.4
Floyd	93	1.2	204.5	265.9	Ohio	48	0.6	140.0	200.8	Pendleton	21	0.3	115.4	144.0
Nelson	90	1.2	163.6	193.8	Estill	46	0.6	223.6	326.0	Union	21	0.3	114.5	145.4
McCracken	88	1.1	100.1	134.1	Bath	45	0.6	288.1	360.5	Livingston	19	0.2	123.4	210.2
Montgomery	88	1.1	252.1	312.2	Logan	42	0.5	116.7	153.2	Menifee	19	0.2	174.2	292.2
Barren	87	1.1	142.6	196.4	Marshall	42	0.5	94.8	134.8	Owen	18	0.2	138.9	163.4
Franklin	85	1.1	125.7	166.3	Simpson	42	0.5	180.2	225.4	Owsley	18	0.2	318.1	415.6
Taylor	84	1.1	255.6	326.8	Trigg	41	0.5	184.3	277.5	Webster	18	0.2	107.4	139.3
Whitley	84	1.1	197.6	230.4	Clay	40	0.5	174.2	203.8	Bracken	17	0.2	165.0	205.2
Bell	82	1.0	253.9	321.8	Fleming	40	0.5	223.4	273.9	McLean	15	0.2	133.7	165.3
Greenup	82	1.0	168.1	235.2	Casey	38	0.5	171.5	236.5	Gallatin	14	0.2	133.9	159.5
Oldham	81	1.0	113.4	120.9	Knott	38	0.5	184.6	261.9	Lyon	14	0.2	86.7	172.1
Boyle	76	1.0	178.8	250.3	Breathitt	37	0.5	223.9	294.8	Edmonson	12	0.2	67.9	98.1
Carter	74	0.9	220.7	278.8	Woodford	37	0.5	103.9	138.2	Fulton	11	0.1	157.5	184.8
Knox	72	0.9	188.6	232.1	Henry	36	0.5	174.8	224.1	Trimble	10	0.1	88.1	117.9
Clark	71	0.9	149.4	194.7	Jackson	36	0.5	208.2	269.9	Carlisle	8	0.1	97.9	170.5
Graves	71	0.9	142.8	192.8	Lawrence	36	0.5	203.6	233.2	Elliott	8	0.1	88.8	108.5
Mercer	71	0.9	255.8	324.4	Morgan	33	0.4	188.6	251.1	Robertson	7	0.1	224.0	327.7
Shelby	71	0.9	118.4	143.1	Caldwell	32	0.4	158.5	252.2	Ballard	6	0.1	62.8	77.2
Lincoln	70	0.9	215.6	286.1	Garrard	32	0.4	130.9	180.6	Hancock	6	0.1	59.6	68.6
Rockcastle	67	0.9	289.2	400.0	Spencer	32	0.4	140.0	163.4	Todd	6	0.1	36.7	48.2
Henderson	66	0.8	109.5	147.5	Butler	31	0.4	215.1	244.0	Hickman	5	0.1	120.3	114.6

## **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 in November 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 4,509,394, 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 TBIs, NTBIs, SCIs, or strokes 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 9.4.

### **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
- Fracture 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 hospital discharge data, 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.