

# **CENTRAL NERVOUS SYSTEM INJURY IN KENTUCKY**

Emergency Department Visits and Hospitalizations 2020

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

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## **FOR MORE INFORMATION**

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## Table of Contents

Introduction	7
Overview of TBI in Kentucky	9
Number of Traumatic Brain Injury-related ED Visits, Hospitalizations, and Estimated Deaths	9
<b>TBI in Kentucky</b>	10
<b>TBI</b>	
--by Age Groups	11-12
--by Gender	13-14
--by External Cause	15-17
--by External Cause, Children and Seniors	18-19
--by Length of Stay	20
--by Pay Source and Charges	21
--by County	22-26
<b>NTBI</b>	
--by Type	27
--by Gender	28
--by Age Groups	29-31
--by Length of Stay	32
--by Pay Source and Charges	33
--by County	34-38
<b>SCI</b>	
--by Gender	39
--by Age Group	40
--by External Cause	41
--by Pay Source and Charges	42
Stroke	
--by Gender	43
--by Age Group	44
--by Length of Stay	45
--by Pay Source and Charges	46
--by County	47-51
Conclusion	52

## Table of Contents

### Appendix A: Tables

1. Non-fatal TBI by age group	53
2. Non-fatal TBI by gender	53
3. Leading external causes of non-fatal TBI, all ages	54
4. Leading external causes of non-fatal TBI for ages 0-4	54
5. Leading external causes of non-fatal TBI for ages 5-14	55
6. Leading external causes of non-fatal TBI for ages 15-24	55
7. Leading external causes of non-fatal TBI for ages 25-44	56
8. Leading external causes of non-fatal TBI for ages 45-64	56
9. Leading external causes of non-fatal TBI for ages 65+	57
10. Non-fatal discharges by disposition	57
11. Incidence of all inpatient TBI by county, sorted by county name	58
12. Incidence of all ED TBI by county, sorted by county name	59
13. Incidence of all inpatient TBI by county, sorted by frequency	60
14. Incidence of all ED TBI by county, sorted by frequency	61
15. Incidence of all inpatient TBI by county, sorted by age-adjusted rate	62
16. Incidence of all ED TBI by county, sorted by age-adjusted rate	63
17. Length of stay for non-fatal inpatient TBI	64
18. Work related non-fatal TBI	64
19. Primary payer and charges for non-fatal inpatient TBI	64
20. Primary payer and charges for non-fatal ED TBI	65
21. Non-fatal NTBI by age group	65
22. Non-fatal NTBI by gender	65
23. Incidence of all inpatient NTBI by county, sorted by county name	66
24. Incidence of all ED NTBI by county, sorted by county name	67
25. Incidence of all inpatient NTBI by county, sorted by frequency	68
26. Incidence of all ED NTBI by county, sorted by frequency	69

## Table of Contents

### Appendix A: Tables (continued)

27. Incidence of all inpatient NTBI by county, sorted by age-adjusted rate	70
28. Incidence of all ED NTBI by county, sorted by age-adjusted rate	71
29. Causes of non-fatal NTBI	72
30. Anoxia by age group for non-fatal NTBI	72
31. Diagnosis for anoxic non-fatal NTBI	73
32. Exposure to toxic substances by age group for non-fatal NTBI	73
33. Diagnosis for ETS for non-fatal NTBI	74
34. Length of stay for non-fatal inpatient NTBI	74
35. Hospital discharge disposition for non-fatal NTBI	75
36. Primary payer and charges for non-fatal inpatient NTBI	75
37. Primary payer and charges for non-fatal ED NTBI	76
38. Non-fatal SCI by age group	76
39. Non-fatal SCI by gender	76
40. Leading causes of non-fatal SCI, all ages	77
41. Length of stay for non-fatal inpatient SCI	77
42. Discharge disposition for non-fatal SCI	78
43. Primary payer and charges for non-fatal inpatient SCI	78
44. Primary payer and charges for non-fatal ED SCI	78
45. Non-fatal Stroke by age group	79
46. Non-fatal Stroke by gender	79
47. Length of stay for non-fatal inpatient stroke	79
48. Discharge disposition for non-fatal stroke	80
49. Primary payer and charges for non-fatal inpatient stroke	80
50. Primary payer and charges for non-fatal ED stroke	80
51. Incidence of all inpatient stroke by county, sorted by county name	81
52. Incidence of all ED stroke by county, sorted by county name	82
53. Incidence of all inpatient stroke by county, sorted by frequency	83
54. Incidence of all ED stroke by county, sorted by frequency	84
<b>Appendix B: Methods, Abbreviations, Definitions and Data</b>	<b>85-87</b>

This report presents basic data about emergency department (ED) visits, hospitalizations, and hospital deaths for the calendar year 2018 for central nervous system injuries (CNSI) that include traumatic brain injuries (TBI), non-traumatic brain injuries (NTBI), spinal cord injuries (SCI) and cerebrovascular disease (stroke). **The numbers found in this report should only be used in comparison with reports after 2015 due to the transition from the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) to the most recent Tenth Revision (ICD-10-CM).** ED visits represent approximately three out of four of all TBIs. This report will illustrate the leading causes of central nervous system injuries in Kentucky, what age groups are affected, and who pays for care received. The report is intended as a reference for policy makers, service providers, educators, researchers, advocates, and others interested in knowing more about the impact of central nervous system injuries with a focus on TBI.

## Introduction

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

### **Mild TBI**

Fatigue  
Headaches  
Seizures  
Emotional disturbances  
Balance issues  
Memory loss  
Impulsive Behavior

### **Severe TBI**

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

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

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

Major sections of this report include:

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

Later reports will include trends.

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

## **Purpose of the Report**

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

## **Contents and Organization**

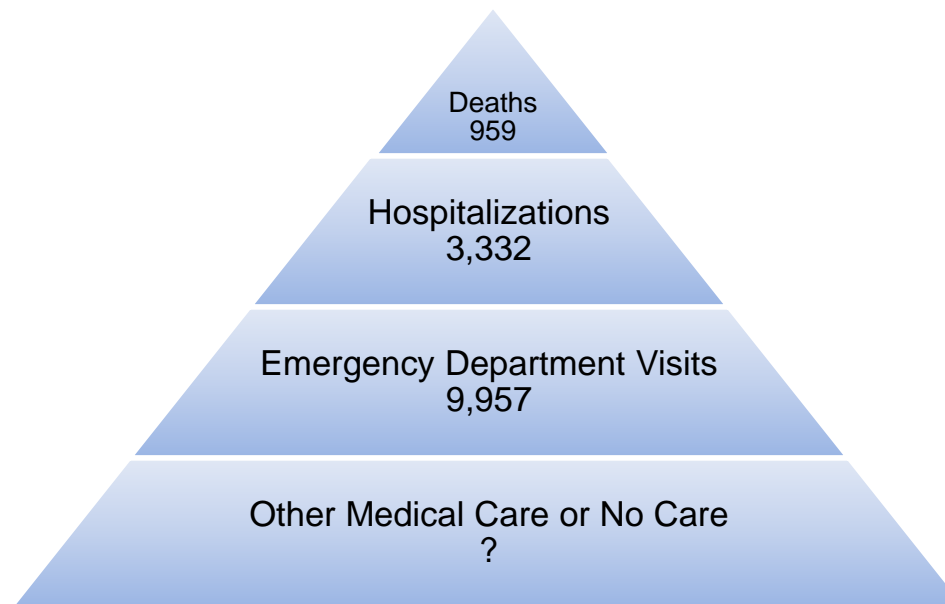
This report describes CNSI-related ED visits and hospitalizations in Kentucky for the calendar year 2020. The numbers show the magnitude of the problem, but the rates are also important. Rates show how a certain group is affected by CNSI by relating the number of CNSIs to the size of the population. For example, a relatively small number of TBIs occurring in a small population (e.g., persons ages 65 years or older) would result in a higher TBI rate than if the same number of TBIs occurred in a larger population (e.g., persons ages 25 to 44 years). The report findings are organized into two main sections. The Overview summarizes and interprets some key findings. The Appendices present more detailed data tables, along with a description of the methods and limitations.



## Overview of TBI in Kentucky

In Kentucky, it is estimated that over 12,000 traumatic brain injuries and deaths occur each year. In 2020, 9,957 (74.9%) ED discharges and 3,332 (25.1%) hospitalization discharges (non-fatal) were recorded in Kentucky hospitals. In addition to these non-fatal incidents, there were 959 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 2020. 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, 2020**



### **TBI in Kentucky, 2020:**

- Over 13,000 people visited Kentucky hospitals with a TBI related injury. Of those, 9,957 were treated and released from an ED and 3,332 were hospitalized.
- 1,610 TBIs occurred among children ages 0 to 14 years; ED visits accounted for almost 90% of the TBIs in this age group.
- Falls were the leading cause of TBI for both ED visits as well as hospitalizations. Rates were highest for children ages 0 to 4 years (ED visits) and for adults 65 years or older.
- Falls resulted in the greatest number of TBI-related hospitalizations with a rate 2.7 times motor vehicle traffic crashes.
- Adults ages 65 years or older had the highest rates of TBI-related hospitalization with a rate higher than all other ages combined.
- Falls accounted for over twice as many TBI injuries as motor vehicle traffic crashes (MVTC).
- Data indicates that TBIs led to over 36 state residents per day being treated in Kentucky hospitals (ED and hospitalization).

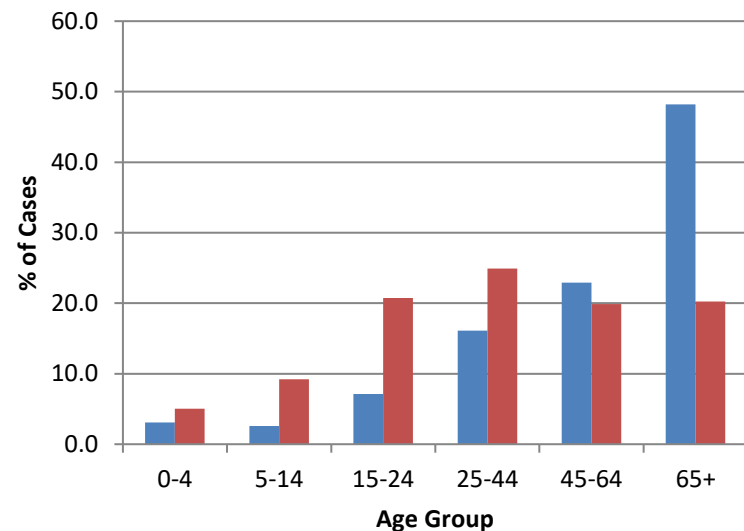
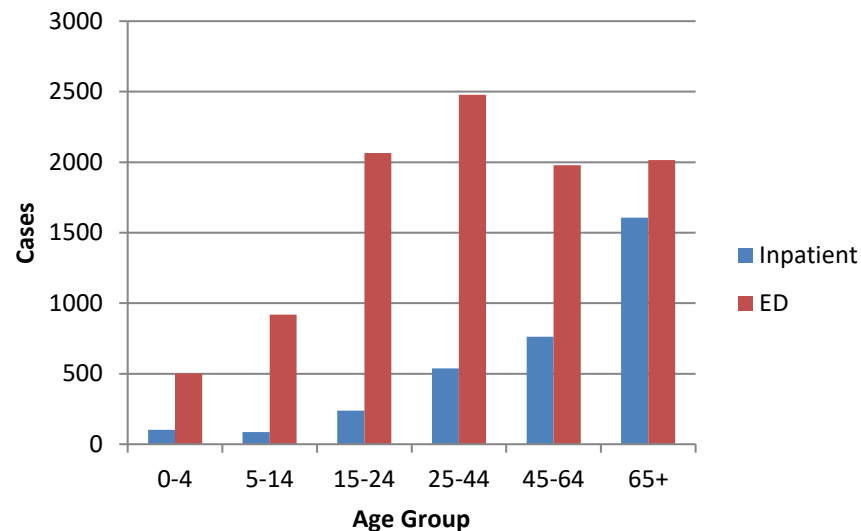
Our results indicate a need to focus prevention efforts on the following causes and target populations:

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

## TBI by Age: Comparing the Numbers

**Figure 2: Numbers of Non-Fatal Traumatic Brain Injury-Related Emergency Department Visits, and Hospitalizations, by Age Group, Kentucky, 2020**

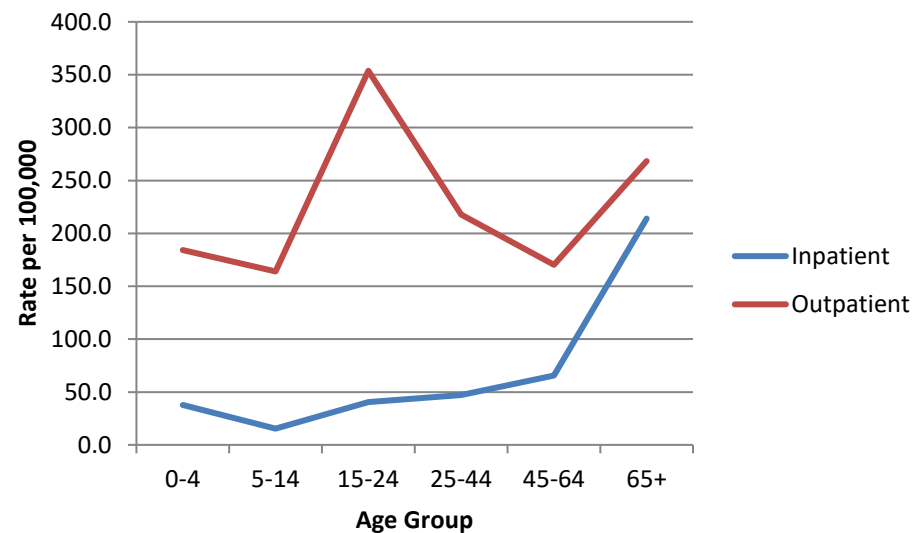
A non-fatal TBI related injury treated at a Kentucky hospital results in an *inpatient* admission for almost half of older adults (65 and older) TBI related injuries while almost 9 out of 10 TBI related injuries in children (under the age of 15) are treated and released in the ED.



## TBI by Age: Comparing the Rates

The following figure, **Figure 3**, is a graph depicting the annual rate of TBI-related ED visits and hospitalizations by age groups in Kentucky for 2020. The y axis represents the rate per 100,000 population. During 2020, young adults, ages 15 to 24 years had the highest rate of non-fatal TBI-related ED visits, 354 per 100,000 population. From age 25 to age 64 the rates for ED visits decline, then begin to rise again for those ages 65 and over. The highest rates of non-fatal TBI-related hospitalization occurred among adults age 65 years or older (214 per 100,000).

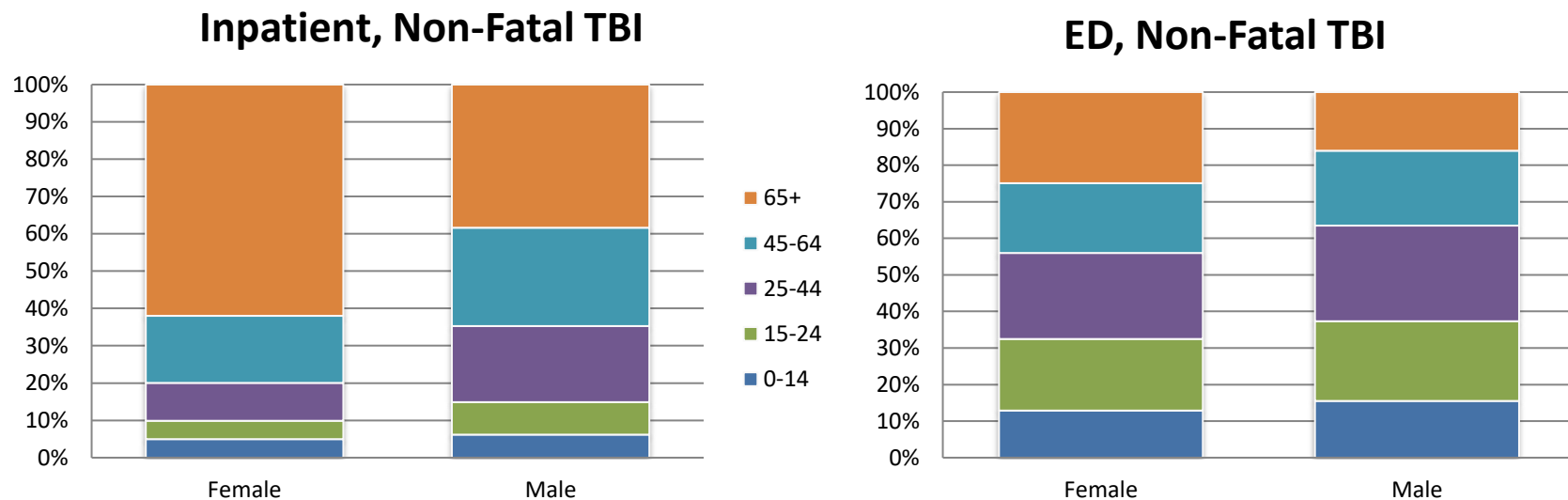
**Figure 3: Rates of Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2020**



## 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 2020. Overall 7,165 non-fatal TBIs occurred among males compared with 6,123 among females.

**Figure 4: Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by Age Group and Gender, Kentucky, 2020**

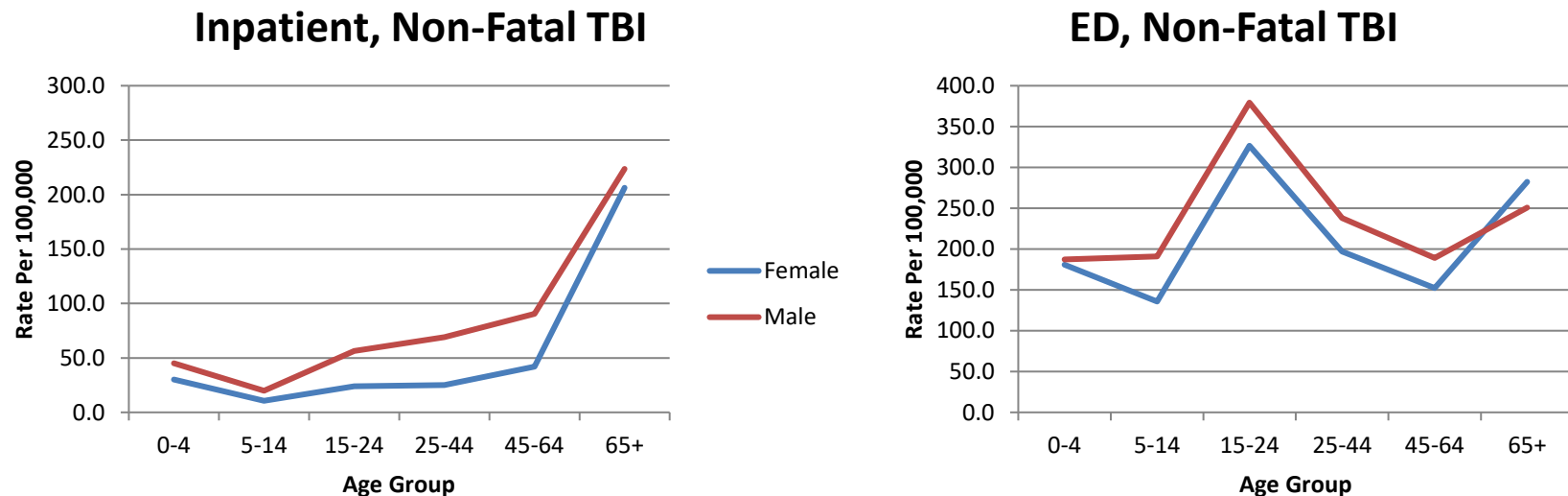


Over half of female, non-fatal TBI related inpatient admissions were over the age of 64 while almost 4 out of 10 men admitted for non-fatal hospitalization for TBI were over the age of 64.

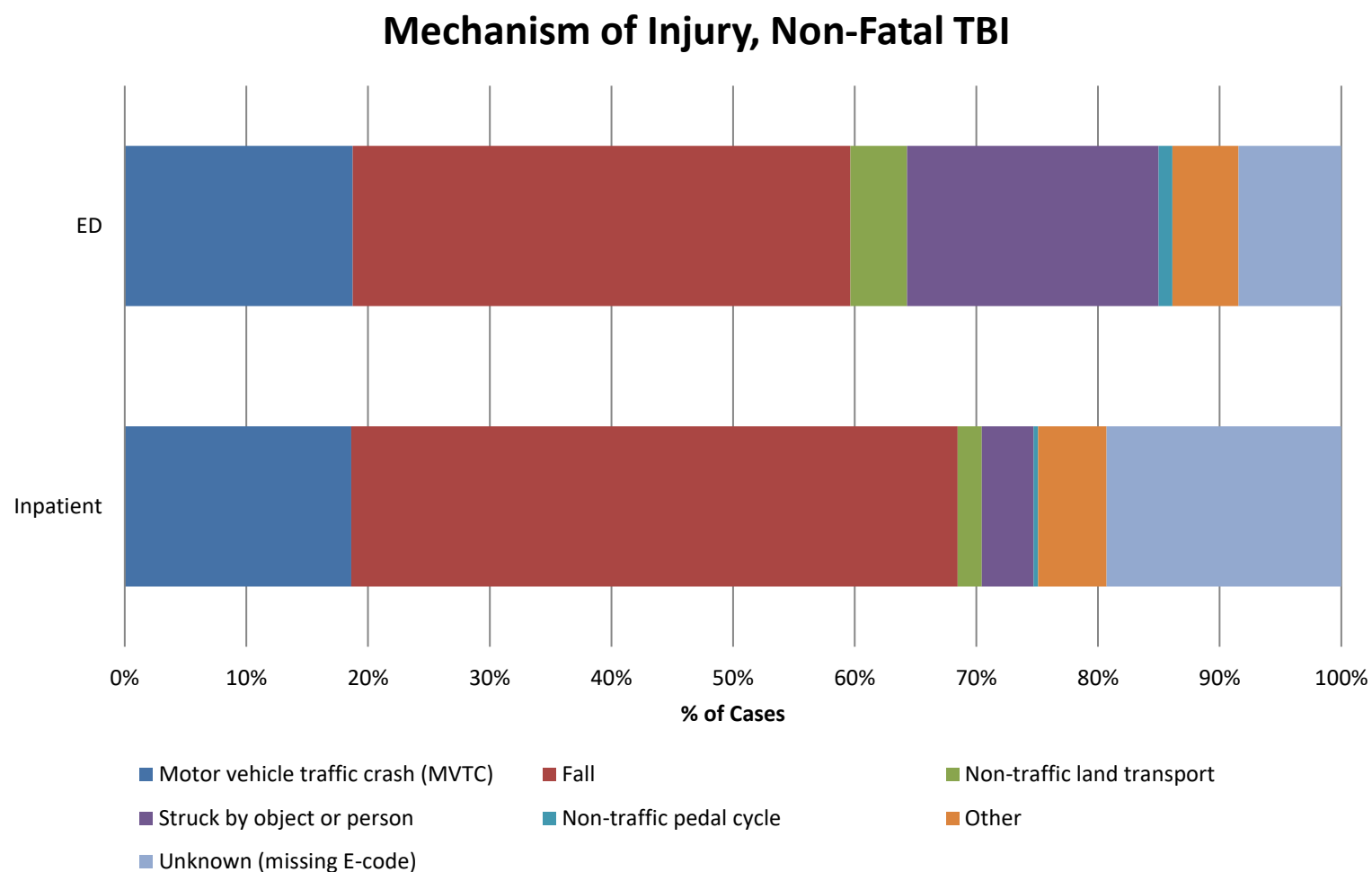
## TBI by Gender: Comparing the Rates

The following figure, **Figure 5**, is a graph depicting the rates of TBI-related ED visits and hospitalizations by gender. The y axis represents the rate per 100,000 population. Males from 15 to 24 years of age had the highest rates for TBI-related ED visits, 379 per 100,000. Rates were also high for females from 15 to 24 years of age, 326 per 100,000. Both males and females had high rates for ages 65 and older inpatient visits, 224 per 100,000 for males and 206 per 100,000 for females.

**Figure 5: Rates of Non-Fatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by Gender, Kentucky, 2020**



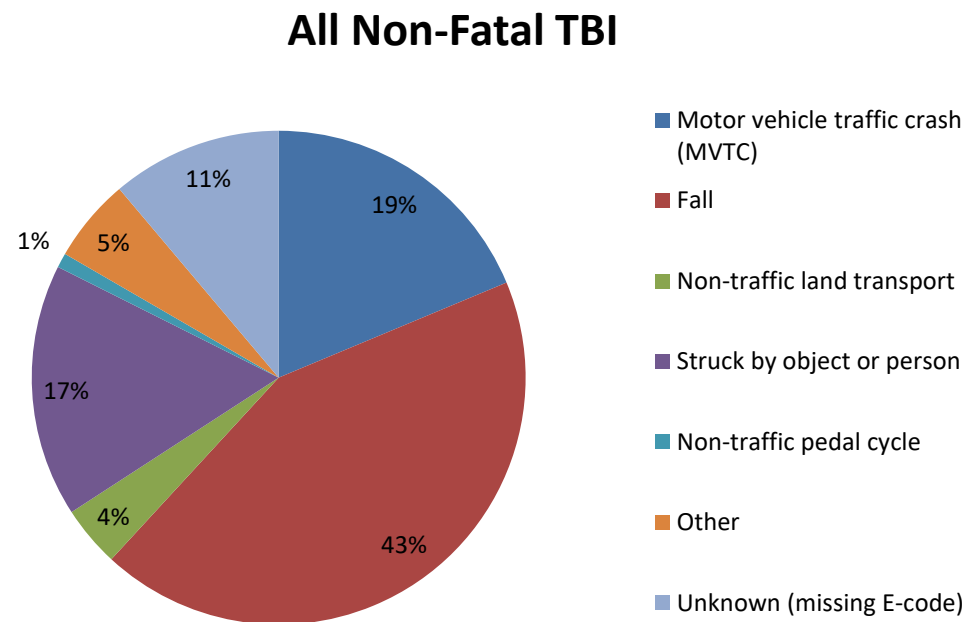
**Figure 6: Non-Fatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, Kentucky, 2020**



### TBI by External Cause: Comparing the Percentages

Following is a pie chart depicting the percentage of TBI-related ED visits and hospitalizations, combined, by external cause of injury. Falls were the leading known cause of TBI covering 43% of all non-fatal TBI in Kentucky in 2020. The second leading known cause was motor vehicle traffic crashes (MVTC) which contributed 19% of all non-fatal TBI. With the change in coding still being translated on the surveillance side, there are a larger number of unknown codes for this year. This number is expected to be reduced and confidence in coding increase as consistent coding crosswalks are generated.

**Figure 7: Percentage of Traumatic Brain Injury-Combined Emergency Department Visits and Hospitalizations, by External Cause, Kentucky, 2020**

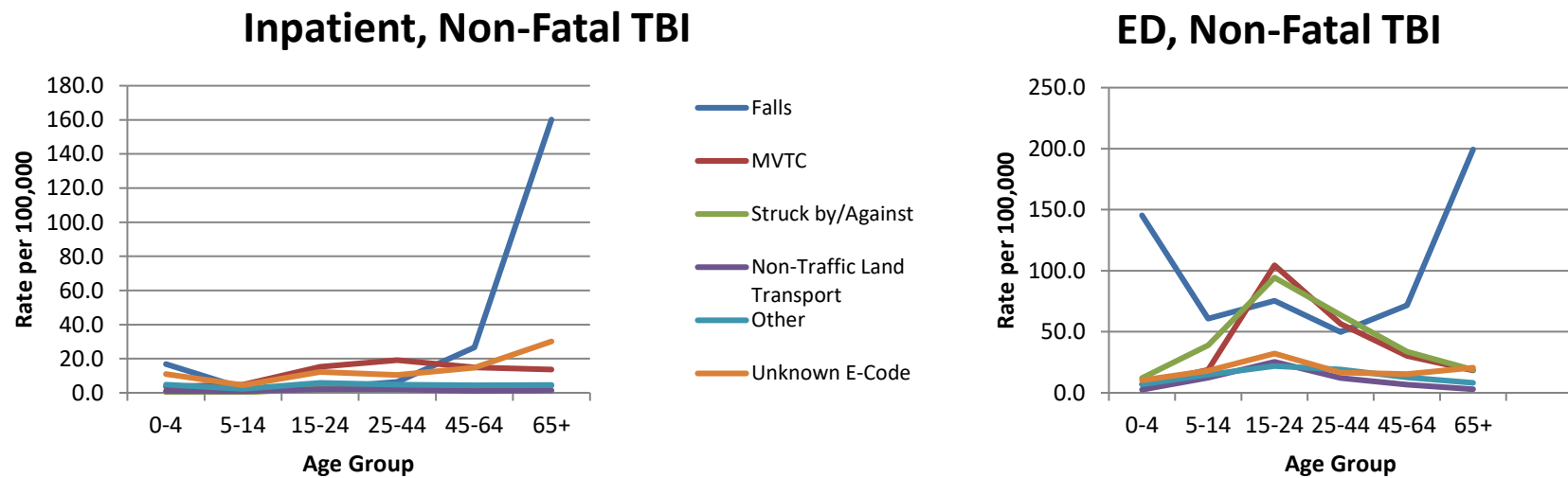




The following figure, **Figure 8**, is a graph depicting the rates of TBI-related ED visits and hospitalizations by external cause. The y axis represents the rate per 100,000 population.

The data indicate that Falls were the leading cause of TBI in Kentucky. Rates were highest among ages 0-4 years (ED) and 65 years and older (both, hospitalizations and ED). The rates for motor vehicle crash related TBI were highest among young adults ages 15 to 24 years.

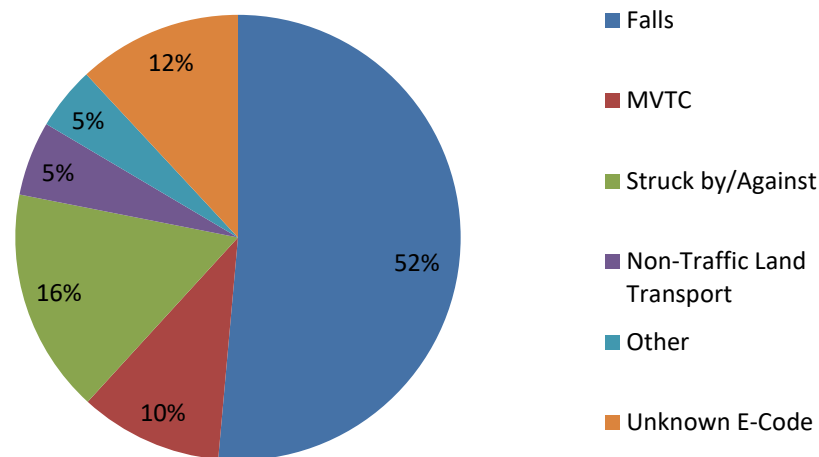
**Figure 8: Rates of Non-Fatal Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by External Cause, Kentucky, 2020**



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

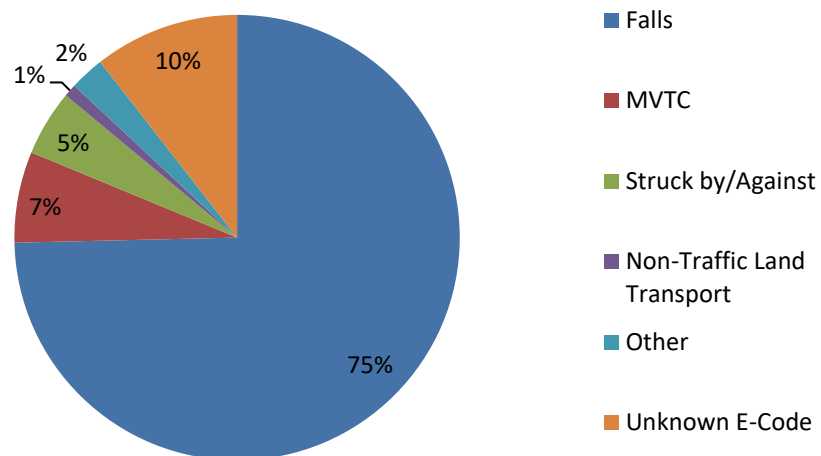
The following two figures depict the percentage of non-fatal TBI-related ED visits and hospitalizations by external cause for specific age groups. Figure 9 presents data for children ages 0 to 14 years. Figure 10 presents data for adults age 65 or older.

**Figure 9: Percentage of Traumatic Brain Injury-Combined Emergency Department Visits and Hospitalizations Among Children 0 to 14 Years, by External Cause, Kentucky, 2020**



For children ages 0 to 14 years, falls were the leading known external cause of non-fatal TBI, contributing to over half of all TBIs in this age group. The second leading known external cause was struck by or against events which accounted for 16% of injuries.

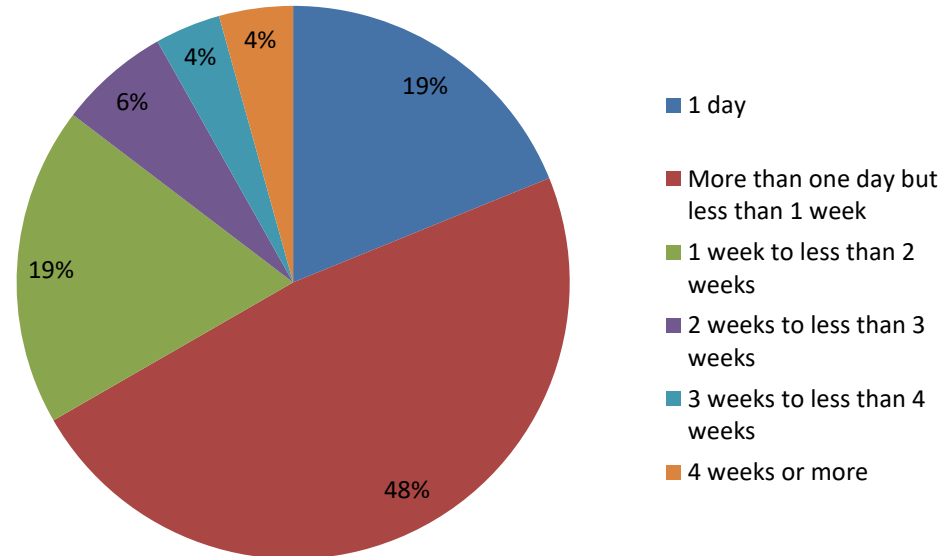
**Figure 10: Percentage of Non-Fatal Traumatic Brain Injury-Combined Emergency Department Visits and Hospitalizations Among Older Adults 65 Years or Older, by External Cause, Kentucky, 2020**



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

The length of stay (LOS) for hospitalized, non-fatal TBI (n=3,332) ranged from 1 day to 258 days. The mean LOS was 7.5 days with a median LOS of 4 days. Figure 11 shows the distribution of stays for those hospitalized with a TBI. Just over two thirds of admitted TBI injuries stayed for less than 1 week.

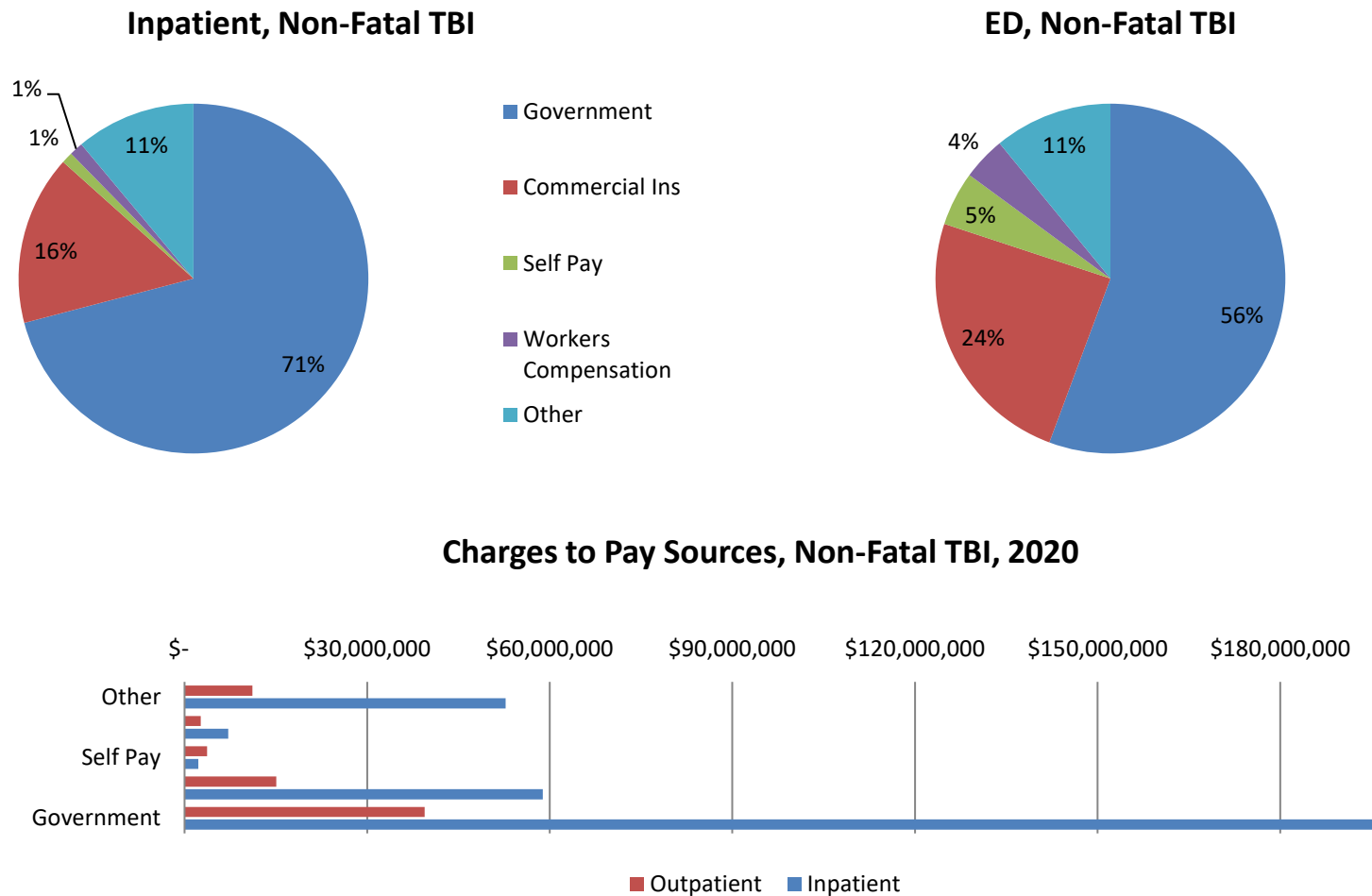
**Figure 11: Non-Fatal Traumatic Brain Injury-Hospitalization Length of Stay, Kentucky, 2020**



For non-fatal inpatient TBIs, 1,725 (51.8%) had a disposition other than “routine”. The three most frequent non-routine discharges were “skilled nursing facility”, “home health”, and “rehabilitation”. A total of 1,316 inpatient discharges had one of these three dispositions. ED discharges were nearly always (81.0%) 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 over 7 out of 10 (70.9%) of non-fatal TBI as well as over half ED care charges (55.7%). Please note that the amount billed by the hospital will generally be larger than the amount actually paid after adjudication of the claim.

**Figure 12: Non-Fatal Traumatic Brain Injury-Emergency Department and Hospitalizations, Payer Source and Charges, Kentucky, 2020**

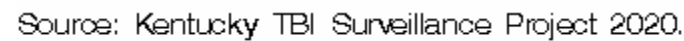


As one would expect, the incidence of TBI was highest in the larger counties. The top three in overall (inpatient and ED combined) TBI incidence (Jefferson, Fayette, and Hardin) are among the top most populous counties in Kentucky. Both Pike and Scott County makes the top 10 in incidence while only being 16<sup>th</sup> and 17<sup>th</sup> (respectively) in population rank in the state. Another notable exception was Clark County, which was 12<sup>th</sup> in TBI incidence but 28<sup>th</sup> in population. Letcher, Owsley, Powell, and Harlan also stood out by being the top 4 age-adjusted rate while ranking 52<sup>nd</sup>, 118<sup>th</sup>, 87<sup>th</sup>, and 42<sup>nd</sup> in population size. Clay County, which has consistently been one of the highest rated counties in Kentucky since 2001, remains in the top 15 again this year. In the past when data was available, it was noted that several southern border counties have significant numbers of residents treated in Tennessee hospitals. Prominent examples include Christian, Whitley, Warren, Bell, Harlan, Graves, Logan, and McCracken. This illustrates an important point: *if this report shows a county to have a high rate of TBI, we can be confident that this is a county in need. Conversely, however, if a county is shown to have a low rate we cannot conclude that there is not a significant problem in that county, particularly if it is located on or near the state border.*

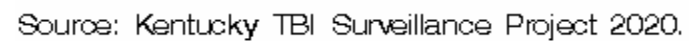
The following illustrations map both the frequency of TBI in Kentucky counties (Figures 13 and 14) as well as the age adjusted rate of TBI in each county (Figures 15 and 16) for inpatient and outpatient TBIs. It should be noted that these mappings include ALL inpatient TBI cases (Figures 13 and 15) as well as ALL ED TBI cases (Figures 14 and 16) – including those that died at the hospital. Fatalities are not included in other analysis in this report unless noted but are included here to capture a visual representation of the magnitude of the problem of TBI in each county. These numbers DO NOT include those that died before admission to an acute care hospital.

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

## TBI Hospitalization Cases by County, Kentucky 2020



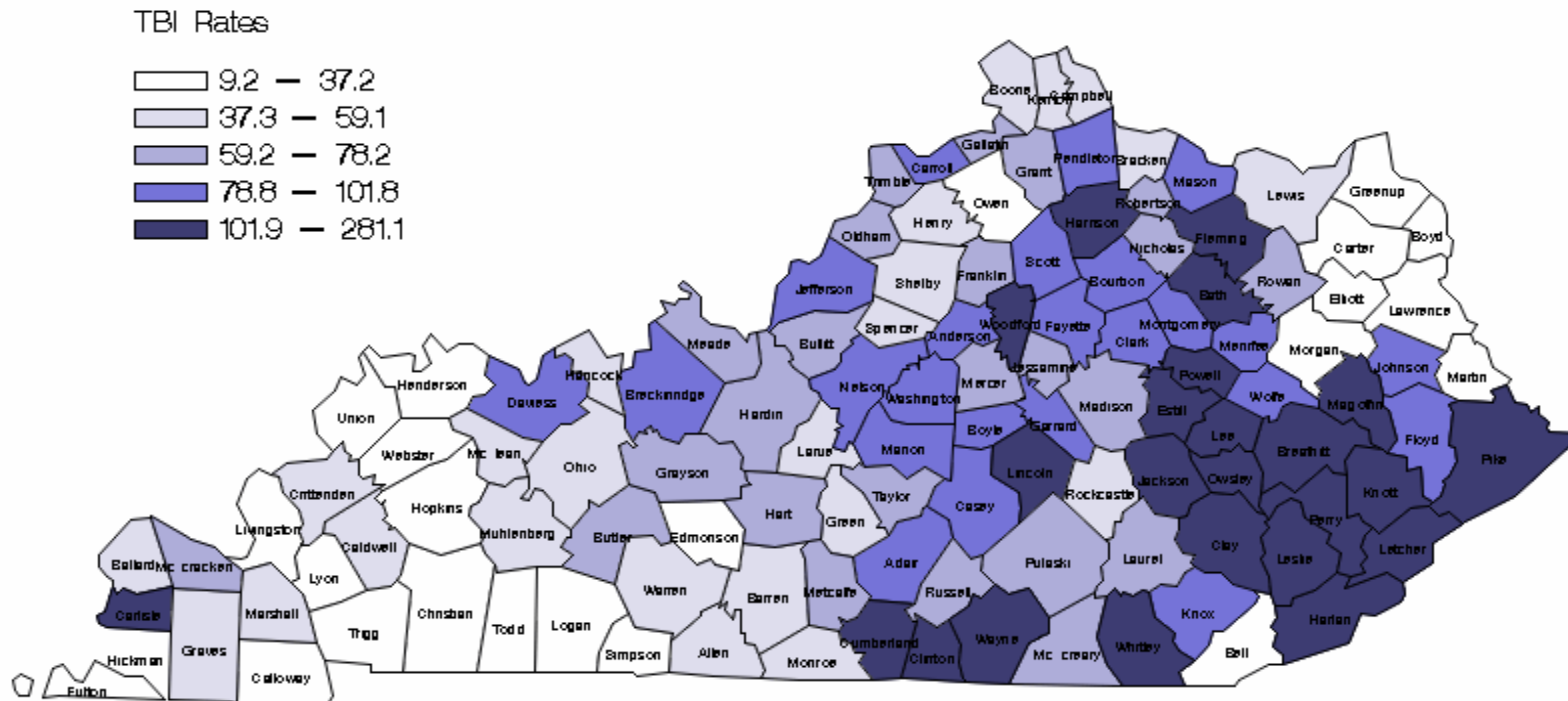
## TBI ED Cases by County, Kentucky 2020





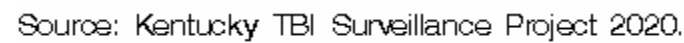
**Figure 15:**

## Age—Adjusted TBI Hospitalization Rates by County, Kentucky 2020



Source: Kentucky TBI Surveillance Project 2020.

Age-Adjusted TBI ED Rates by County, Kentucky 2020



## Non-Traumatic Brain Injury in Kentucky

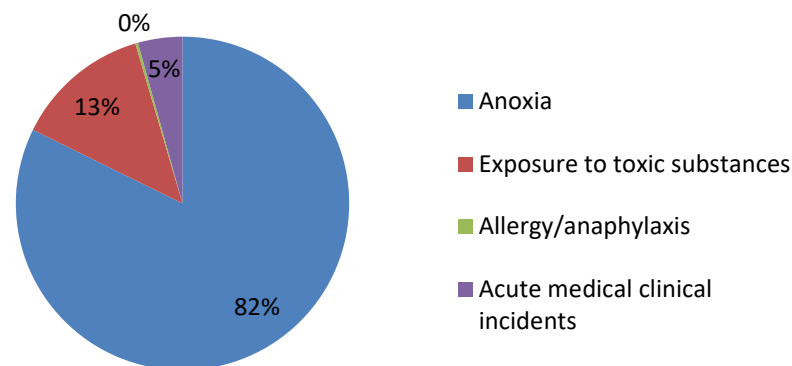
In addition to CDC-defined TBI, there are many brain injuries that have non-traumatic etiologies. These we have classified as NTBI (Non-Traumatic Brain Injuries). (See Appendix for diagnosis codes.) Because these diagnoses are not included in the CDC definition of TBI, they have been analyzed separately.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

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

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

This represents a significant widening of our definition from previous years (previously labeled Acquired Brain Injury or ABI). In 2020, there were 112,024 Kentucky residents identified in Kentucky hospitals with non-fatal, non-traumatic incidences of brain injury. This includes both inpatient (88,904) and ED (23,120) cases. The crude incidence rate for 2020 was 2,507 per 100,000 population.

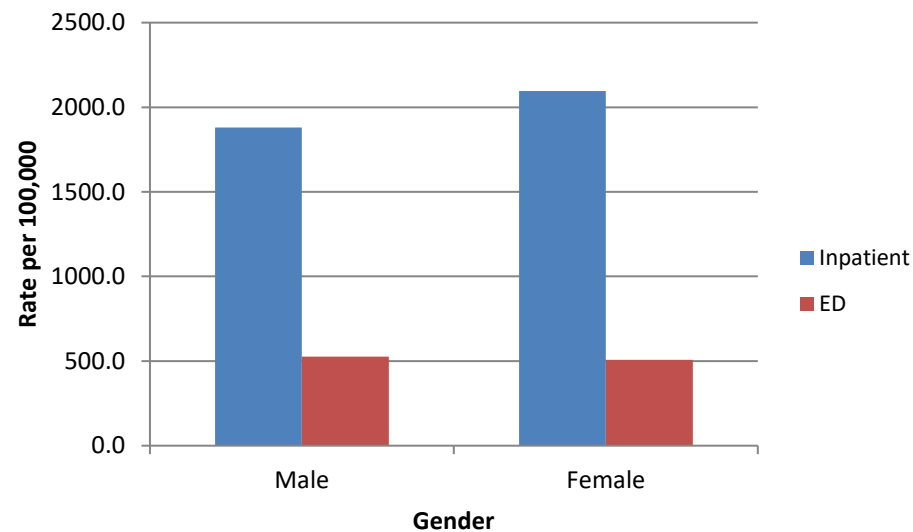
**Figure 17: Non-Fatal, Non-Traumatic Brain Injury (NTBI) by Type, Kentucky, 2020**



## NTBI by Gender: Comparing the Rates

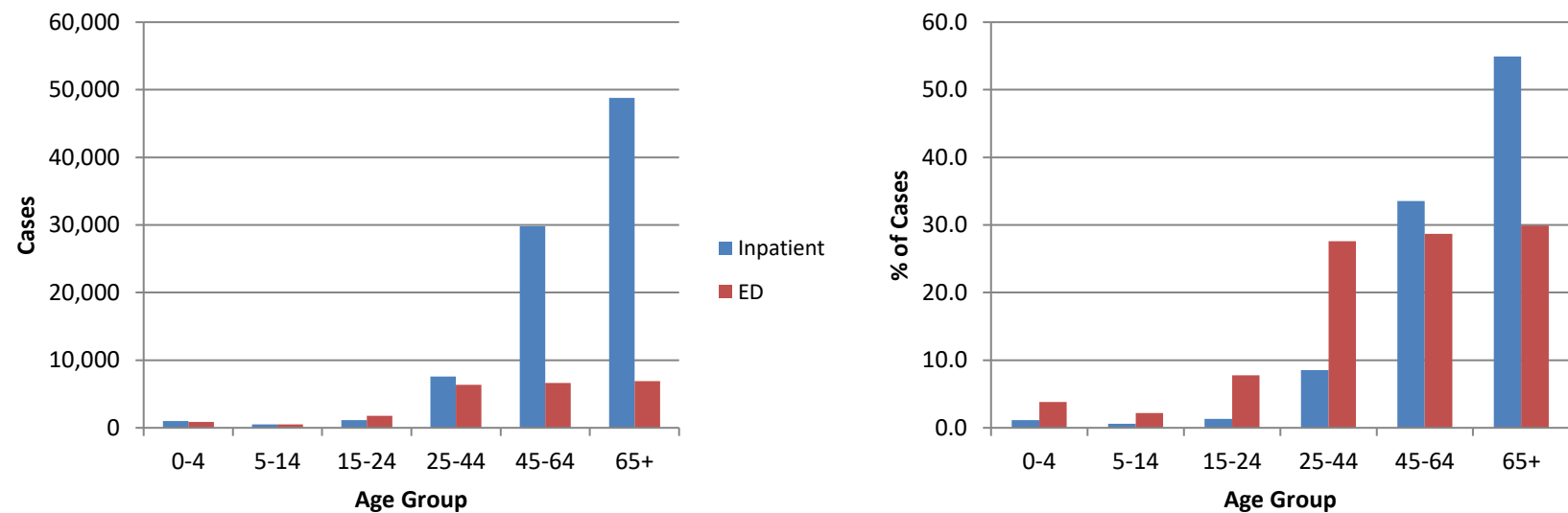
The following figure, **Figure 18**, is a graph depicting the rates of non-fatal NTBI-related ED visits and hospitalizations by gender. The y axis represents the rate per 100,000 population. Rates were slightly higher for males in ED NTBI cases with females having the higher overall rate between inpatient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

**Figure 18: Rates of Non-Fatal Acquired Brain Injury-Related Emergency Department Visits and Hospitalizations, by Gender, Kentucky, 2020**



## NTBI by Age: Comparing the Numbers

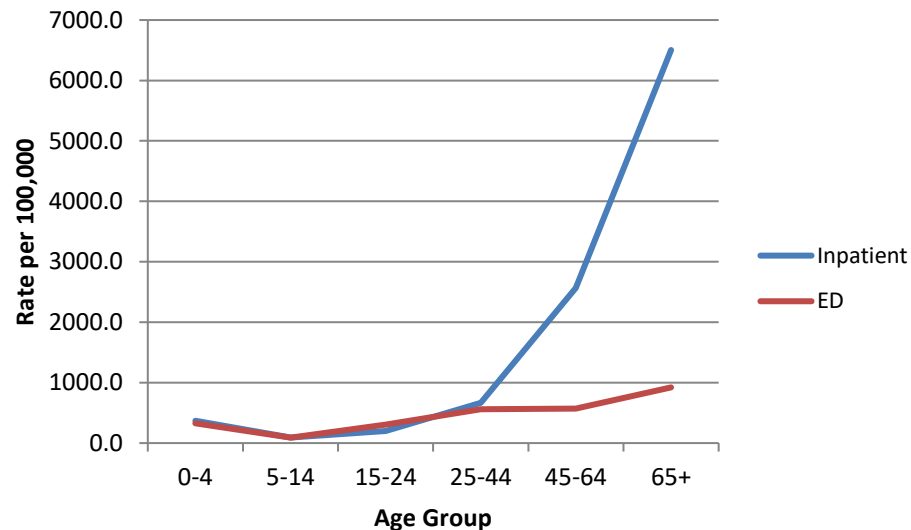
**Figure 19: Numbers of Non-Fatal Acquired Brain Injury-Related Emergency Department Visits, and Hospitalizations, by Age Group, Kentucky, 2020**



## NTBI by Age: Comparing the Rates

The following figure, **Figure 20**, is a graph depicting the annual rate of NTBI-related ED visits and hospitalizations by age groups in Kentucky for 2020. The y axis represents the rate per 100,000 population. During 2020, the highest rate of non-fatal NTBI-related ED visits at 922 per 100,000 population were those in the 65+ age group. The highest rates of non-fatal NTBI-related hospitalization also occurred among adults age 65 years or older (6,504 per 100,000).

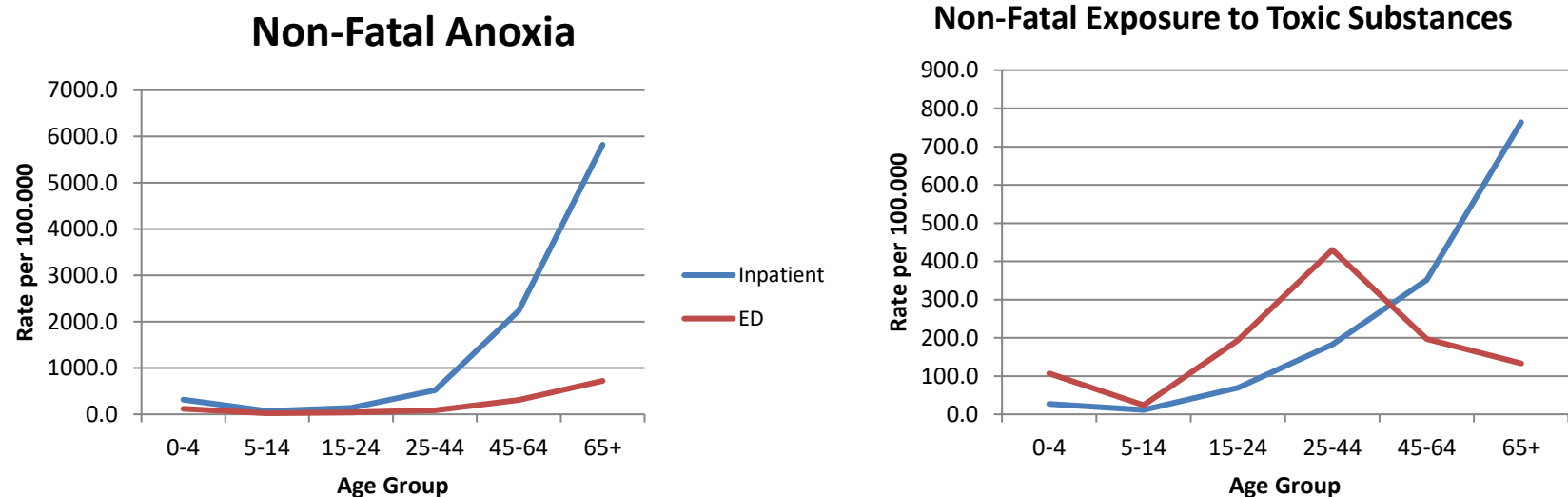
**Figure 20: Rates of Non-Traumatic Brain Injury-Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2020**



## NTBI by Age and Type: Comparing the Rates

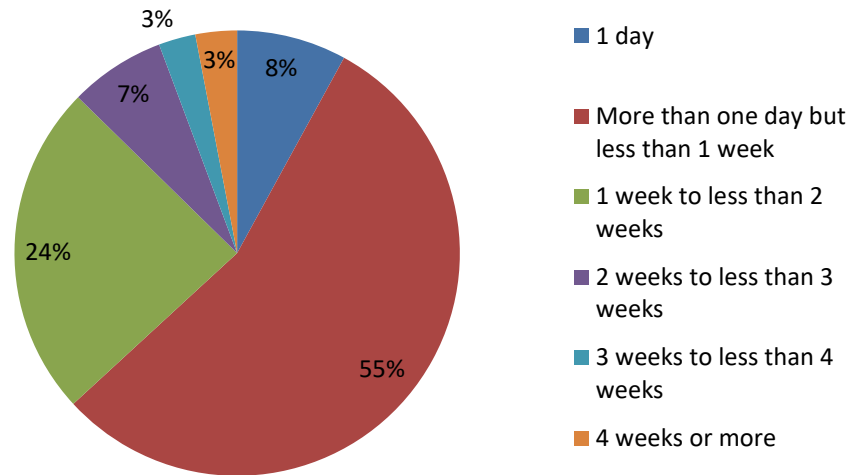
Nearly all inpatient NTBI (82%) were a result of anoxia/hypoxia. Anoxia/hypoxia was also the leading cause of NTBI in ED (45.8%) with exposure to toxic substances (ETS) following (41.6%). Over 6 out of 10 ETS cases included poisoning by narcotics, hallucinogens, sedatives, hypnotics, central nervous system depressants/anesthetics and toxic effects of alcohol. Over 86% of all anoxia cases were due to respiratory failure with hypoxia or hypercapnia. In non-fatal NTBI inpatient visits, anoxia tends to affect older people (ages 45 and over) considerably more often than younger people, whereas ETS also affects persons 25 and older.

**Figure 21: Rates of Non-Fatal Non-Traumatic Brain Injury-Related Emergency Department Visits, and Hospitalizations, by Age Group and Type, Kentucky, 2020**



The length of stay (LOS) for hospitalized, non-fatal NTBI (n=88,904) ranged from 1 day to 637 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: Non-Fatal Non-Traumatic Brain Injury-Hospitalization Length of Stay, Kentucky, 2020**

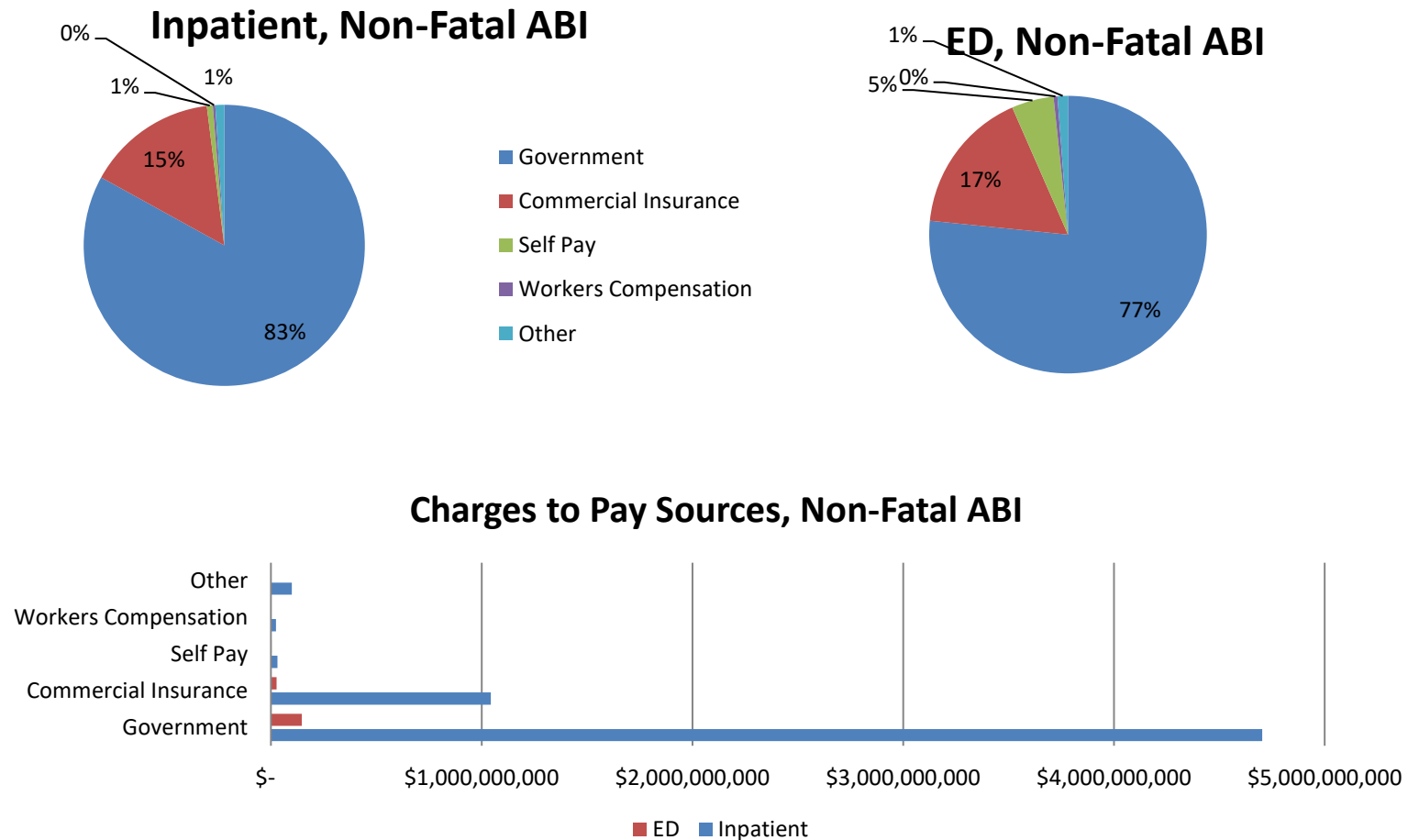


For non-fatal inpatient NTBIs, 46,410 (52.2%) had a disposition other than “routine”. The three most frequent non-routine discharges were “skilled nursing facility”, “home health”, and “rehabilitation”. A total of 31,951 inpatient discharges had one of these three dispositions. ED discharges were most likely (68.1%) routinely discharged to home or self care (routine) with “inpatient – other short term hospital” being the most frequent non-routine discharge.



Government sources were the most often primary payers billed for both inpatient (83.0%) and ED (76.6%) cases for non-fatal NTBI. Please note that the amount billed by the hospital will generally be larger than the amount actually paid after adjudication of the claim.

**Figure 23: Non-Fatal Non-Traumatic Brain Injury-Emergency Department and Hospitalizations, Payer Source and Charges, Kentucky, 2020**



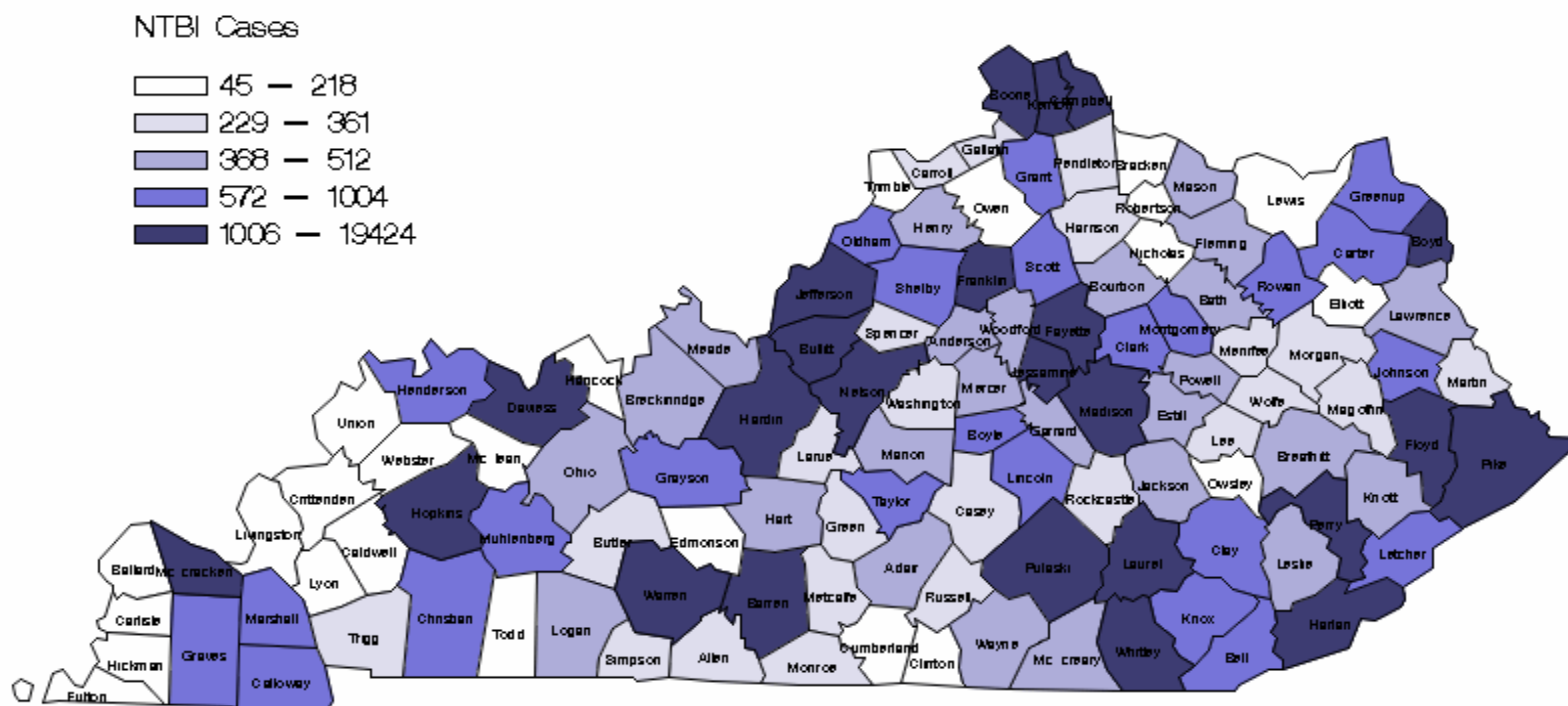
In general, as with TBI, the more populous counties had high numbers of NTBI. However, only two of the 25 most populous counties appeared in the top 25 counties when ranked by age-adjusted rate for hospitalized cases. Whitley, which ranks 29<sup>th</sup> with respect to county population, had the highest age adjusted rate of inpatient NTBI in the state. Leading the state for age adjusted rate for ED cases was Carroll County, the 96<sup>th</sup> (most populated) county when ranked by population size, followed by Estill, Leslie and Grant counties, which are ranked 79<sup>th</sup>, 99<sup>th</sup>, and 46<sup>th</sup> in population. The counties with the highest inpatient rates were concentrated in eastern Kentucky (Figure 26).

The following figures map both the frequency of NTBI in Kentucky counties (Figures 24 and 25) as well as the age adjusted rate of NTBI in each county (Figures 26 and 27) for inpatient and outpatient NTBIs. It should be noted that these mappings include ALL inpatient NTBI cases (Figures 24 and 26) as well as ALL ED NTBI cases (Figures 25 and 27) – including those that died at the hospital. Fatalities are not included in other analysis in this report unless noted but are included here to capture a visual representation of the magnitude of the problem of NTBI in each county. These numbers DO NOT include those that died before admission to an acute care hospital.

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

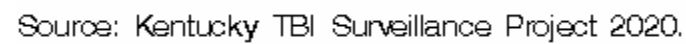
Figure 24.

## NTBI Hospitalization Cases by County, Kentucky 2020



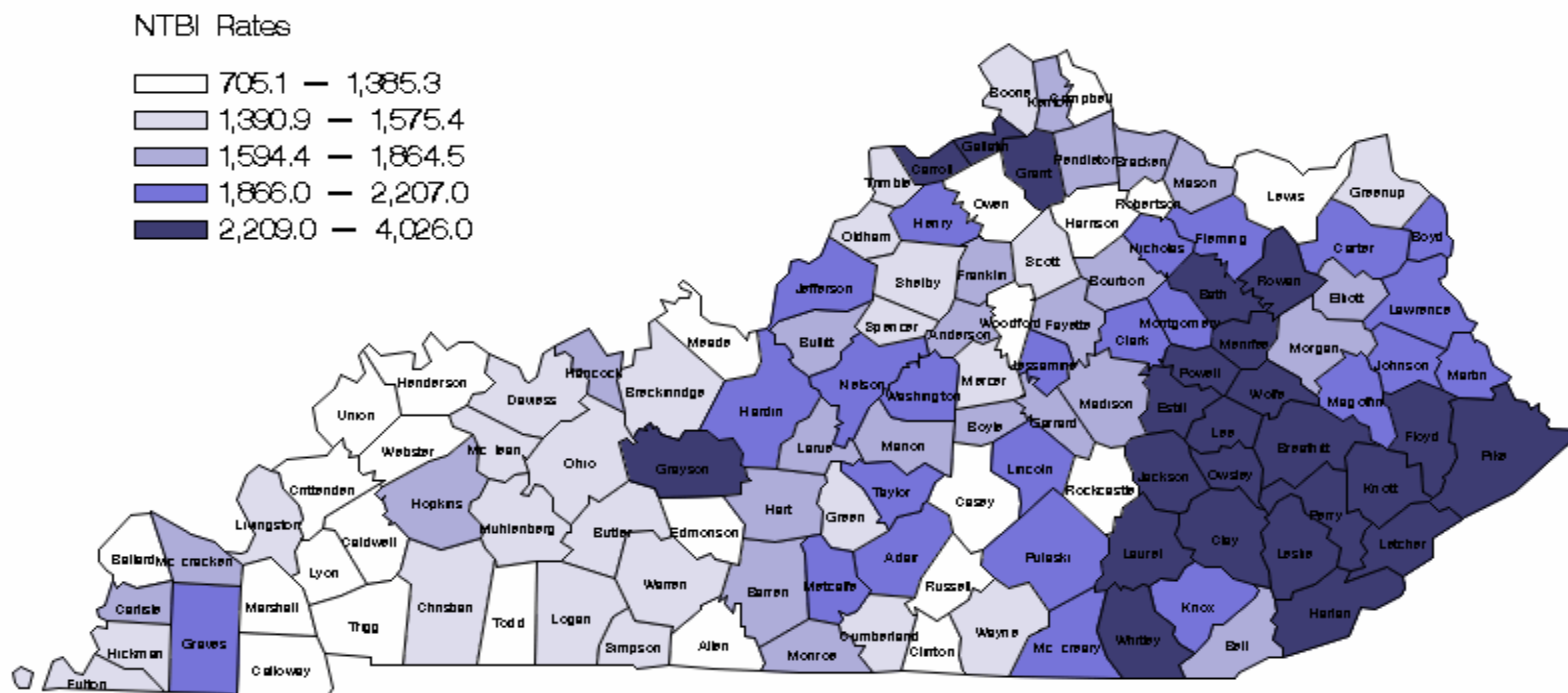
Source: Kentucky TBI Surveillance Project 2020.

## NTBI ED Cases by County, Kentucky 2020



**Figure 26.**

## Age—Adjusted NTBI Hospitalization Rates by County, Kentucky 2020



Source: Kentucky TBI Surveillance Project 2020.

Age-Adjusted NTBI ED Rates by County, Kentucky 2020

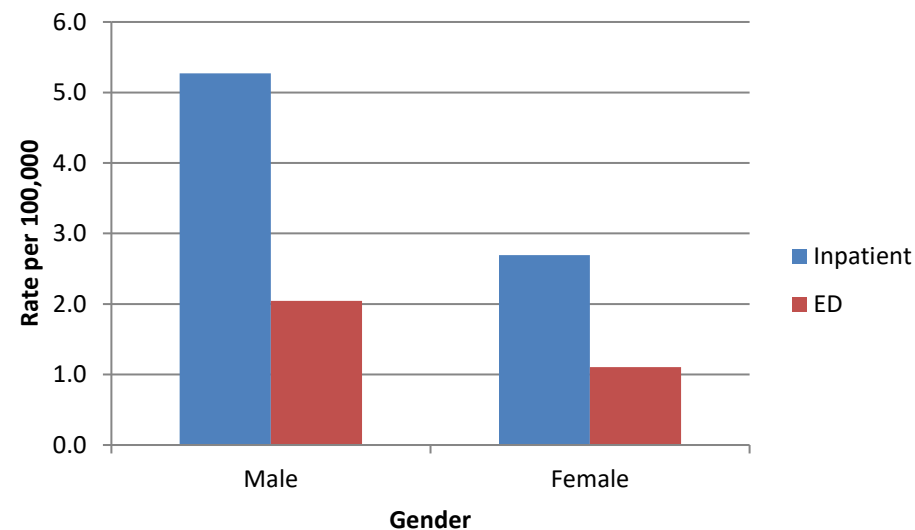


## Spinal Cord Injury in Kentucky

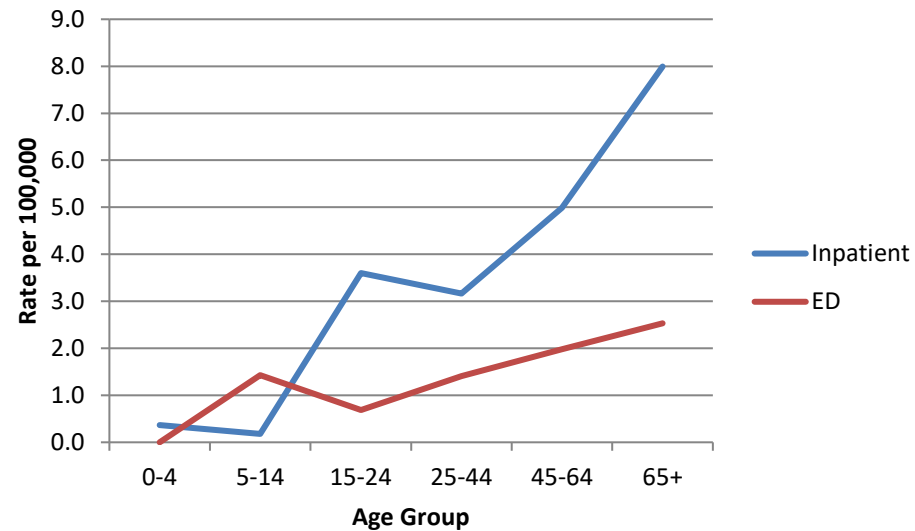
Spinal cord injury (SCI) patients often are readmitted for problems stemming from the original injury. In an effort to avoid double counting in such cases, for SCI we looked only at the first three listed diagnosis codes. There were 177 non-fatal inpatient SCI cases for Kentucky residents identified in 2020 as well as 70 non-fatal ED cases. The crude incidence rate of any non-fatal SCI was 5.5 per 100,000 population.

### SCI by Gender: Comparing the Rates

**Figure 28: Rates of Non-Fatal Spinal Cord Injury-Related Emergency Department Visits and Hospitalizations, by Gender, Kentucky, 2020**



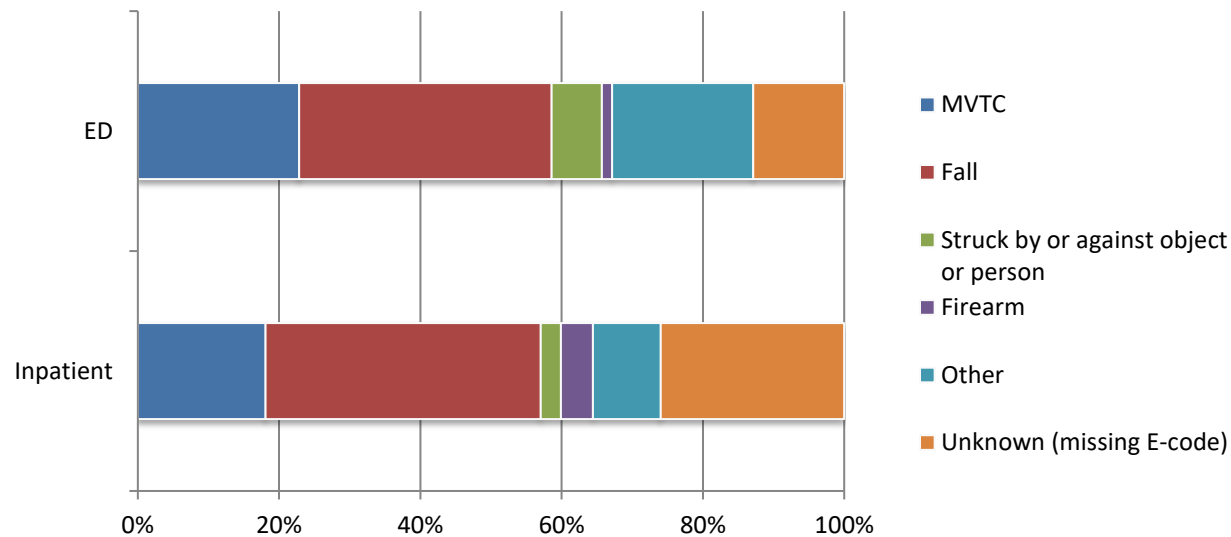
**Figure 29: Rates of Spinal Cord Injury-Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2020**



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



**Figure 30: Non-Fatal Spinal Cord Injury-Related Emergency Department Visits and Hospitalizations by External Cause, Kentucky, 2020**

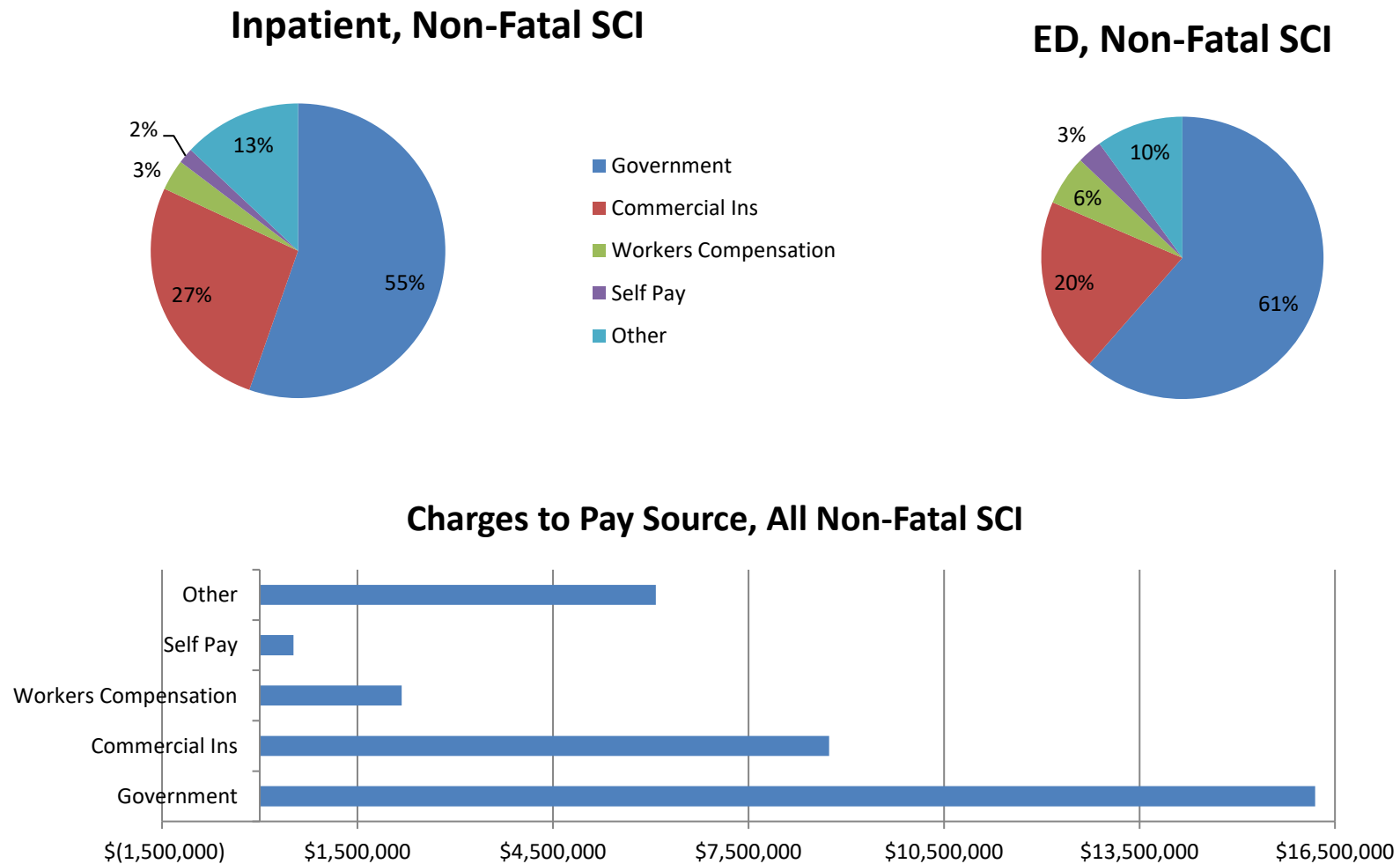


Among non-fatal SCI's for which an E-code was reported, falls were the leading mechanisms of injury for both inpatient and ED SCI visits. Unfortunately, over one out of four of the inpatient SCI discharges had no E-code reported.

Hospitalized SCI patients had a length of stay (LOS) varying from 1 day to 91 days. The mean LOS was 11.1 days with a median of 8 days. Almost 3 out of 4 (70.1%) of the non-fatal inpatient SCI discharges had dispositions other than "routine", while 40.0% of ED discharges were non-routine. In total, over 6 out of 10 of all SCI non-fatal discharges went on to receive further care. In comparison, non-fatal TBI inpatient visits were routinely discharged 48.2% of the time and TBI visits to the ED were routinely discharged about 81.0% of the time. Overall, almost 3 out of 4 non-fatal TBI discharges were discharged to home or self care (routine).

Government sources were the primary payer billed for acute care charges in two thirds of all non-fatal SCI. Government payers were billed over \$21.2 million in 2020, and commercial payers over \$4.8 million.

**Figure 31: Non-Fatal Spinal Cord Injury-Emergency Department and Hospitalizations, Payer Source and Charges, Kentucky, 2020**

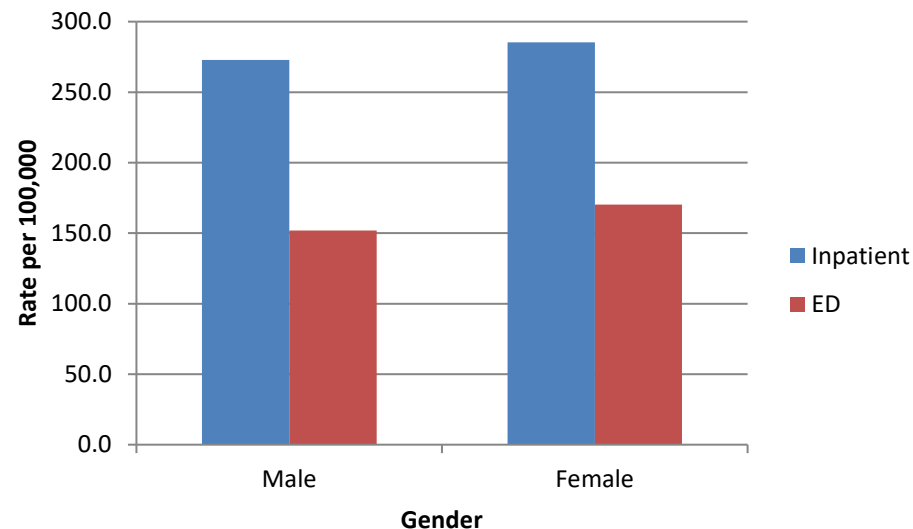


## Cerebrovascular Disease in Kentucky

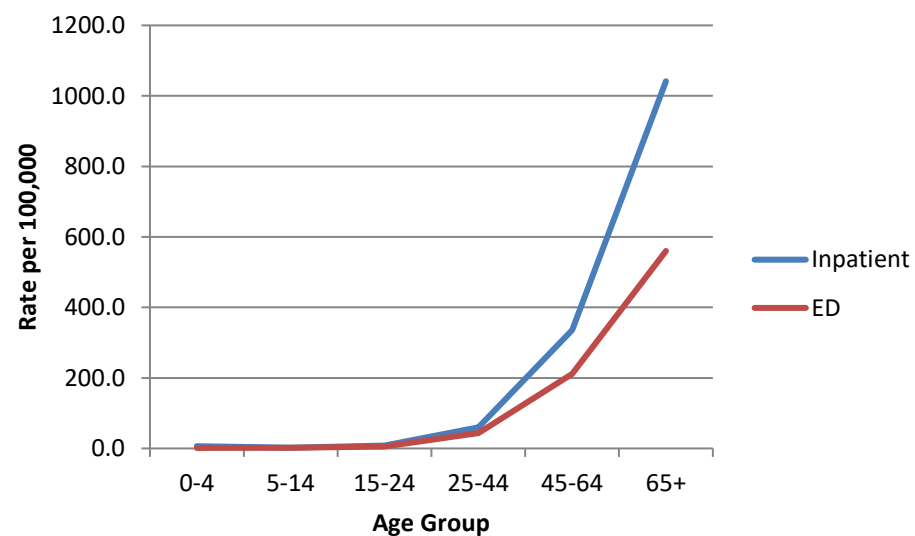
The highest death rates for cerebrovascular disease (stroke) occur in the southeastern US which has been dubbed the “stroke belt”. This region consists of a group of 11 southeastern states that have an age-adjusted stroke mortality rate more than 10% above the national average. Kentucky is included in this region. In 2020, almost 2,000 non-fatal hospital visits by Kentucky residents were coded with stroke related ICD-10-CM codes in one or more diagnosis fields. 75.9% inpatient admissions coded for stroke listed stroke as the principal diagnosis. There were 12,475 non-fatal inpatient stroke cases for Kentucky residents identified in 2020 as well as 7,204 non-fatal ED cases. The crude incidence rate was 441 per 100,000 population.

### Stroke by Gender: Comparing the Rates

**Figure 32: Rates of Non-Fatal Stroke Related Emergency Department Visits and Hospitalizations, by Gender, Kentucky, 2020**



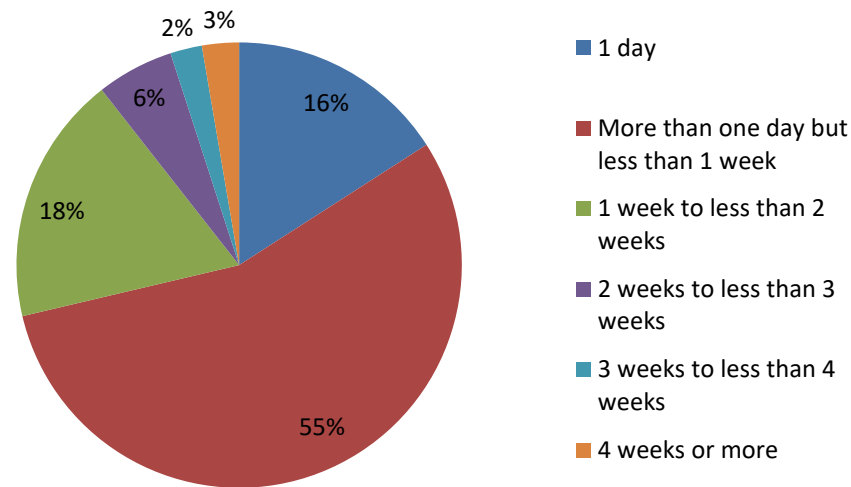
**Figure 33: Rates of Stroke Related Emergency Department Visits and Hospitalizations, by Age Group, Kentucky, 2020**



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

The length of stay (LOS) for non-fatal stroke related hospitalizations (n=12,475) ranged from 1 day to 173 days. The mean LOS was 6.3 days with a median LOS of 4 days. Figure 34 shows the distribution of stays for those hospitalized with a stroke diagnosis. Over one in four admitted (inpatient) stroke related hospitalizations stayed for 1 week or longer.

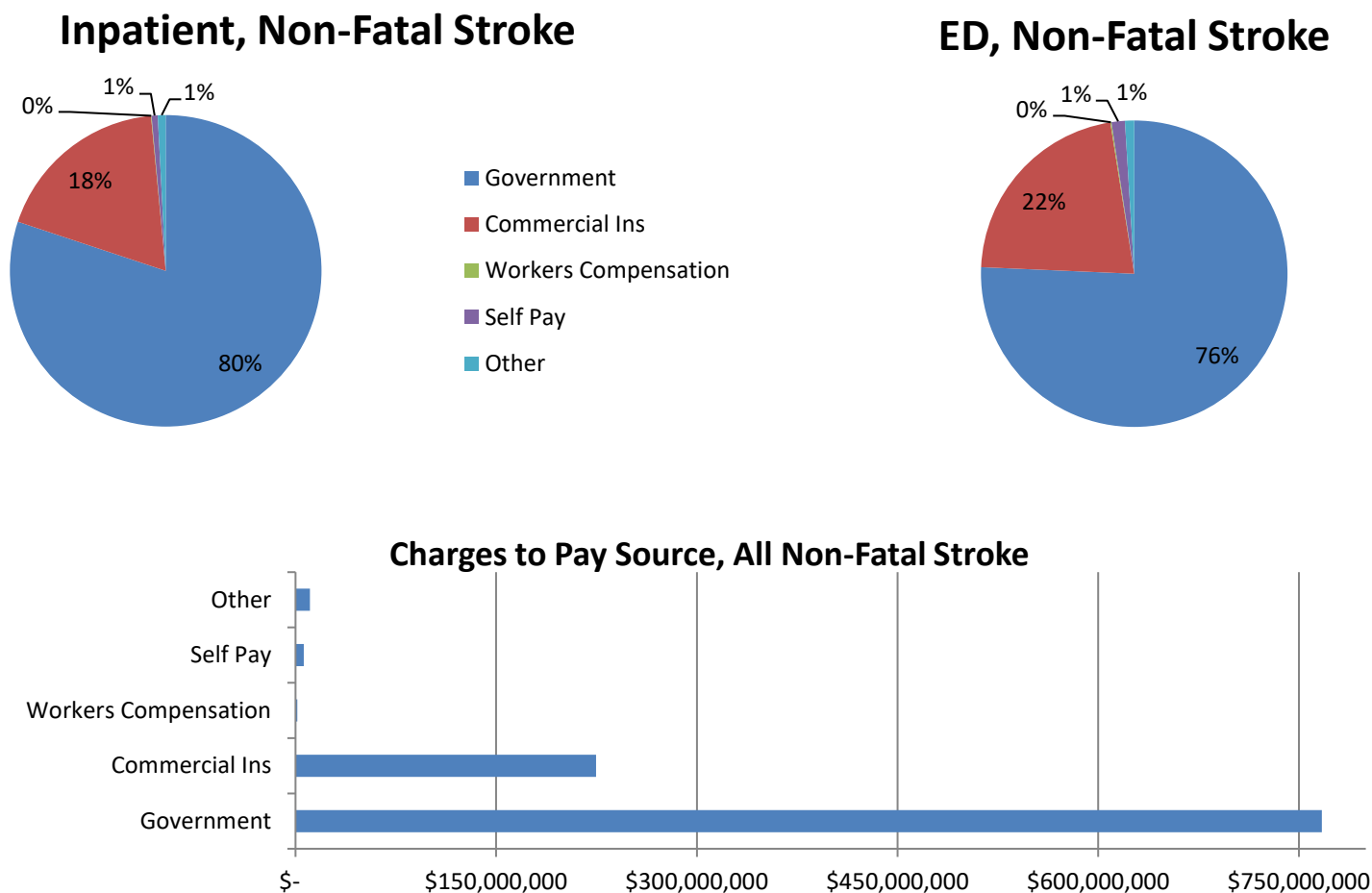
**Figure 34: Non-Fatal Stroke Related Hospitalization Length of Stay, Kentucky, 2020**



For non-fatal stroke related hospitalizations, 7,523 (60.3%) had a disposition other than “routine”. The three most frequent non-routine discharges were “skilled nursing facility”, “home health”, and “rehabilitation”. A total of 5,739 inpatient discharges had one of these three dispositions. ED discharges were routinely discharged to home or self care (routine) just over half the time (55.6%) with “inpatient – other” being the most frequent non-routine discharge (38.3%).

Government sources were the primary payer billed for acute care charges in almost 8 out of 10 of all non-fatal stroke related hospital visits. Government payers were billed over \$767 million in 2020, and commercial payers almost \$225 million.

**Figure 35: Non-Fatal Stroke Related Emergency Department Visits and Hospitalizations, Payer Source and Charges, Kentucky, 2020**

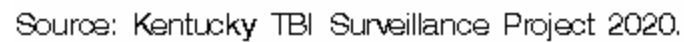


As one would expect, the incidence of stroke was highest in the larger counties. The top four in overall (inpatient and ED combined) stroke incidence (Jefferson, Fayette, Hardin and Warren) are the four of the six most populous counties in Kentucky. Notable exceptions include Leslie, Perry, and Letcher Counties, which were ranked 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> in age adjusted rate for stroke but were 99<sup>th</sup>, 44<sup>th</sup>, and 52<sup>nd</sup> in population (respectively). Wolfe (111<sup>th</sup>) was also in the top ten counties with highest age adjusted rates despite it's smaller population. Several southern border counties may have significant numbers of residents treated in Tennessee hospitals. Prominent examples include Christian, Whitley, Warren, Bell, Harlan, Graves, Logan, and McCracken. This illustrates an important point: *if this report shows a county to have a high rate of stroke, we can be confident that this is a county in need. Conversely, however, if a county is shown to have a low rate we cannot conclude that there is not a significant problem in that county, particularly if it is located on or near the state border.*

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

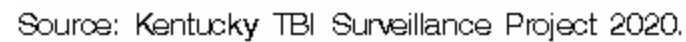
Multiple tables can be found in the Appendix detailing specific rates and frequencies by county, frequency, and age adjusted rates for both inpatient and ED stroke records

## Stroke Hospitalization Cases by County, Kentucky 2020



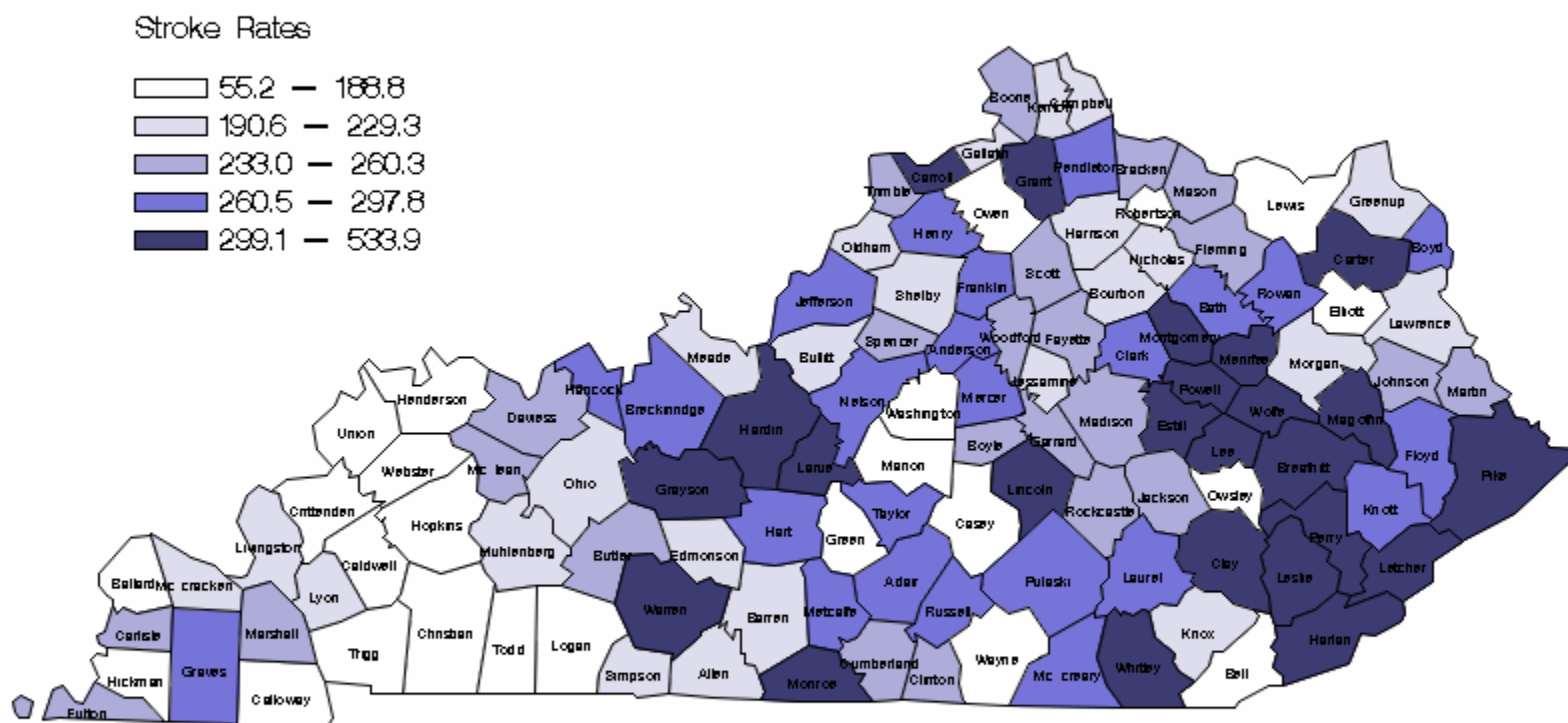


## Stroke ED Cases by County, Kentucky 2020



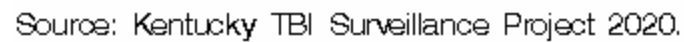
**Figure 38.**

# Age—Adjusted Stroke Hospitalization Rates by County, Kentucky 2020



Source: Kentucky TBI Surveillance Project 2020.

### Age-Adjusted Stroke ED Rates by County, Kentucky 2020



## Conclusion

Over 145k non-fatal central nervous system injury-related ED visits and hospitalizations occurred in Kentucky in 2020. The findings show the importance of including ED visits because of the large number of TBIs seen only in that setting, especially among children. Although this report provides data on a wide range of CNSI occurring in Kentucky, it still does not capture all of them. It does not include those treated by emergency medical services that refused transport to a hospital, or those hospitalized outside of Kentucky nor does it include those seen by non-hospital medical services or who sought no care at all. While the 2020 data is not recommended for use in comparisons with pre-2016 reports due to coding changes made in the third quarter of 2015, the data is still important when discussing the larger issue of brain injury in Kentucky. Many people recover from their injuries, but in 2020 alone, over 397 Kentuckians per day received either inpatient or ED care for a CNSI, many of which will result in some long term disability. Thus, brain and spinal cord injury prevention, improved acute care and rehabilitation to reduce the likelihood of injury-related disability, and also increased access to services for those who do not fully recover are critical to improving quality of life of persons following a CNSI.

## Appendix A: Tables and Figures

For the following tables: Unless otherwise noted, persons who were hospitalized or died were excluded from the data for ED Visits. For Hospitalizations, in-hospital deaths were excluded. The average annual rate is per 100,000 population. Rates calculated using the most recent available Kentucky population estimates (2019) and are per 100,000.

**Table 1: Non-Fatal TBI ED Visits and Hospitalizations by Age Group, Kentucky, 2020**

Age	Inpatient			Outpatient			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	103	17.0	37.8	502	83.0	184.1	605	100.0	221.9
5-14	86	8.6	15.3	919	91.4	164.0	1,005	100.0	179.3
15-24	237	10.3	40.6	2065	89.7	353.7	2,302	100.0	394.3
25-44	537	17.8	47.2	2479	82.2	217.8	3,016	100.0	264.9
45-64	763	27.8	65.7	1978	72.2	170.2	2,741	100.0	235.9
65+	1,606	44.4	214.0	2014	55.6	268.3	3,620	100.0	482.3
Total	3,332	25.1	74.6	9,957	74.9	222.9	13,289	100.0	297.4

**Table 2: Non-Fatal TBI ED Visits and Hospitalizations by Gender, Kentucky, 2020**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	1,943	27.1	88.3	5,222	72.9	237.3	7,165	100.0	325.5
Female	1,389	22.7	61.3	4,734	77.3	208.9	6,123	100.0	270.1
Total	3,332	25.1	74.6	9,956	74.9	222.8	13,288	100.0	297.4

**Table 3: Non-Fatal TBI ED Visits and Hospitalizations by External Cause of Injury, Kentucky, 2020**

Mechanism of Injury	Inpatient			ED			Total		
	Number	Pct.	Rate	Number	Pct.	Rate	Number	Pct.	Rate
Motor vehicle traffic crash	620	24.9	13.9	1,866	75.1	41.8	2,486	100.0	55.6
Fall	1,661	29.0	37.2	4,072	71.0	91.1	5,733	100.0	128.3
Firearm	59	71.1	1.3	24	28.9	0.5	83	100.0	1.9
Non-traffic land transport	66	12.5	1.5	464	87.5	10.4	530	100.0	11.9
Struck by object or person	142	6.5	3.2	2,059	93.5	46.1	2,201	100.0	49.3
Non-traffic pedal cycle	13	10.2	0.3	114	89.8	2.6	127	100.0	2.8
Machinery	1	5.6	0.0	17	94.4	0.4	18	100.0	0.4
Other	127	20.2	2.8	501	79.8	11.2	628	100.0	14.1
Unknown (missing E-code)	643	43.4	14.4	840	56.6	18.8	1,483	100.0	33.2
Total	3,332	25.1	74.6	9,957	74.9	222.9	13,289	100.0	297.4

**Table 4: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 00-04, Kentucky, 2020**

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Fall	46	44.7	396	78.9	442	73.1
Motor vehicle traffic crash	10	9.7	19	3.8	29	4.8
Struck by or against object or person	1	1.0	33	6.6	34	5.6
Non-traffic land transportation	3	2.9	7	1.4	10	1.7
Other (including non-specific codes)	13	12.6	19	3.8	32	5.3
Unknown (missing E-code)	30	29.1	28	5.6	58	9.6
Total	103	100.0	502	100.0	605	100.0

**Table 5: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 05-14, Kentucky, 2020**

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Motor vehicle traffic crash	27	31.4	105	11.4	132	13.1
Fall	15	17.4	341	37.1	356	35.4
Non-traffic land transportation	5	5.8	69	7.5	74	7.4
Other pedal cycle	4	4.7	54	5.9	58	5.8
Struck by or against object or person	1	1.2	218	23.7	219	21.8
Other (including non-specific codes)	9	10.5	30	3.3	39	3.9
Unknown (missing E-code)	25	29.1	102	11.1	127	12.6
Total	86	100.0	919	100.0	1,005	100.0

**Table 6: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 15-24, Kentucky, 2020**

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Motor vehicle traffic crash	89	37.6	610	29.5	699	30.4
Firearm	16	6.8	9	0.4	25	1.1
Non-traffic land transportation	12	5.1	148	7.2	160	7.0
Fall	16	6.8	440	21.3	456	19.8
Struck by or against object or person	15	6.3	551	26.7	566	24.6
Other (including non-specific codes)	18	7.6	119	5.8	137	6.0
Unknown (missing E-code)	71	30.0	188	9.1	259	11.3
Total	237	100.0	2,065	100.0	2,302	100.0

**Table 7: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 25-44, Kentucky, 2020**

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Motor vehicle traffic crash	218	40.6	643	25.9	861	28.5
Firearm	22	4.1	10	0.4	32	1.1
Fall	73	13.6	567	22.9	640	21.2
Struck by or against object or person	48	8.9	725	29.2	773	25.6
Non-traffic land transportation	24	4.5	139	5.6	163	5.4
Machinery	0	0.0	2	0.1	2	0.1
Other (including non-specific codes)	32	6.0	204	8.2	236	7.8
Unknown (missing E-code)	120	22.3	189	7.6	309	10.2
Total	537	100.0	2,479	100.0	3,016	100.0

**Table 8: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 45-64, Kentucky, 2020**

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Fall	309	40.5	832	42.1	1,141	41.6
Motor vehicle traffic crash	174	22.8	352	17.8	526	19.2
Firearm	12	1.6	4	0.2	16	0.6
Struck by or against object or person	45	5.9	391	19.8	436	15.9
Non-traffic land transportation	12	1.6	78	3.9	90	3.3
Other (including non-specific codes)	40	5.2	143	7.2	183	6.7
Unknown (missing E-code)	171	22.4	178	9.0	349	12.7
Total	763	100.0	1,978	100.0	2,741	100.0



**Table 9: Leading Causes of Non-Fatal TBI ED Visits and Hospitalizations for Ages 65 or Over, Kentucky, 2020**

Mechanism of Injury	Inpatient		ED		Total	
	Number	Percent	Number	Percent	Number	Percent
Fall	1,202	74.8	1,496	74.3	2,698	74.5
Motor vehicle traffic crash	102	6.4	137	6.8	239	6.6
Firearm	4	0.2	1	0.0	5	0.1
Struck by or against object or person	32	2.0	141	7.0	173	4.8
Non-traffic land transportation	10	0.6	23	1.1	33	0.9
Other (including non-specific codes)	30	1.9	61	3.0	91	2.5
Unknown (missing E-code)	226	14.1	155	7.7	381	10.5
Total	1,606	100.0	2,014	100.0	3,620	100.0

**Table 10: Hospital Discharges by Disposition for Non-Fatal TBI ED Visits and Hospitalizations, Kentucky, 2020**

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	1,607	48.2	8,068	81.0
Skilled nursing facility (SNF)	473	14.2	80	0.8
Home health	281	8.4	31	0.3
Inpatient-other short-term hospital	73	2.2	1,358	13.6
Intermediate care facility (ICF)	23	0.7	10	0.1
Rehab	562	16.9	12	0.1
Other	313	9.4	398	4.0
Total	3,332	100.0	9,957	100.0

**Table 11: Incidence of All Inpatient TBI\* by County, Sorted by County, Kentucky, 2020**

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

County			Age-Adjusted		County			Age-Adjusted		County			Age-Adjusted	
	Freq	Percent	Rate	Crude Rate		Freq	Percent	Rate	Crude Rate		Freq	Percent	Rate	Crude Rate
Adair	18	0.5	80.4	93.7	Grant	16	0.4	66.3	63.8	McLean	6	0.2	52.4	65.2
Allen	11	0.3	43.7	51.6	Graves	21	0.6	46.5	56.4	Meade	17	0.5	59.2	59.5
Anderson	19	0.5	82.2	83.5	Grayson	20	0.5	63.2	75.7	Menifee	6	0.2	82.9	92.5
Ballard	5	0.1	45.7	63.4	Green	7	0.2	52.6	64.0	Mercer	19	0.5	78.2	86.6
Barren	27	0.7	52.7	61.0	Greenup	13	0.4	28.1	37.0	Metcalfe	7	0.2	59.7	69.5
Bath	17	0.5	122.2	136.0	Hancock	5	0.1	59.1	57.3	Monroe	7	0.2	58.2	65.7
Bell	9	0.2	28.6	34.6	Hardin	87	2.4	73.7	78.4	Montgomery	24	0.7	81.7	85.2
Boone	76	2.1	57.6	56.9	Harlan	43	1.2	145.1	165.3	Morgan	5	0.1	37.1	37.6
Bourbon	18	0.5	81.5	91.0	Harrison	21	0.6	103.4	111.2	Muhlenberg	21	0.6	54.8	68.6
Boyd	17	0.5	31.9	36.4	Hart	14	0.4	68.5	73.5	Nelson	38	1.0	81.9	82.2
Boyle	33	0.9	89.4	109.8	Henderson	5	0.1	12.2	11.1	Nicholas	5	0.1	68.1	68.8
Bracken	6	0.2	59.1	72.3	Henry	10	0.3	52.7	62.0	Ohio	18	0.5	58.5	75.0
Breathitt	22	0.6	177.4	174.2	Hickman	0	0.0	0.0	0.0	Oldham	50	1.4	71.7	74.9
Breckinridge	22	0.6	94.0	107.4	Hopkins	11	0.3	21.8	24.6	Owen	*	-	-	-
Bullitt	66	1.8	75.1	80.8	Jackson	16	0.4	114.3	120.0	Owsley	14	0.4	281.1	317.1
Butler	10	0.3	60.6	77.6	Jefferson	844	23.0	98.7	110.1	Pendleton	12	0.3	78.8	82.2
Caldwell	5	0.1	37.3	39.2	Jessamine	40	1.1	68.1	73.9	Perry	41	1.1	159.0	159.2
Calloway	14	0.4	30.4	35.9	Johnson	25	0.7	83.9	112.7	Pike	82	2.2	122.1	141.7
Campbell	48	1.3	42.9	51.3	Kenton	105	2.9	58.9	62.9	Powell	25	0.7	207.9	202.3
Carlisle	8	0.2	117.9	168.1	Knott	21	0.6	138.2	141.8	Pulaski	59	1.6	78.0	90.8
Carroll	11	0.3	95.8	103.5	Knox	27	0.7	85.3	86.7	Robertson	*	-	-	-
Carter	10	0.3	31.2	37.3	Larue	9	0.2	54.6	62.5	Rockcastle	11	0.3	55.4	65.9
Casey	15	0.4	84.8	92.8	Laurel	44	1.2	70.5	72.4	Rowan	16	0.4	60.1	65.4
Christian	6	0.2	9.2	8.5	Lawrence	*	-	-	-	Russell	17	0.5	74.1	94.9
Clark	39	1.1	98.6	107.5	Lee	11	0.3	143.8	148.6	Scott	49	1.3	94.8	86.0
Clay	37	1.0	186.3	185.9	Leslie	15	0.4	126.7	151.9	Shelby	25	0.7	50.2	51.0
Clinton	13	0.4	110.9	127.2	Letcher	32	0.9	130.9	148.5	Simpson	6	0.2	26.7	32.3
Crittenden	*	-	-	-	Lewis	6	0.2	48.7	45.2	Spencer	12	0.3	58.3	62.0
Cumberland	14	0.4	137.7	211.7	Lincoln	30	0.8	107.9	122.2	Taylor	19	0.5	64.5	73.7
Daviess	102	2.8	85.1	100.5	Livingston	*	-	-	-	Todd	*	-	-	-
Edmonson	*	-	-	-	Logan	11	0.3	36.7	40.6	Trigg	*	-	-	-
Elliott	*	-	-	-	Lyon	*	-	-	-	Trimble	7	0.2	77.2	82.6
Estill	15	0.4	114.7	106.3	Madison	61	1.7	67.8	65.6	Union	*	-	-	-
Fayette	290	7.9	89.0	89.7	Magoffin	17	0.5	148.0	139.8	Warren	58	1.6	46.0	43.6
Fleming	17	0.5	101.9	116.6	Marion	20	0.5	101.8	103.8	Washington	14	0.4	98.4	115.8
Floyd	31	0.8	81.0	87.1	Marshall	25	0.7	50.7	80.4	Wayne	28	0.8	128.2	137.7
Franklin	43	1.2	75.9	84.3	Martin	*	-	-	-	Webster	*	-	-	-
Fulton	*	-	-	-	Mason	16	0.4	93.2	93.7	Whitley	44	1.2	111.4	121.3
Gallatin	5	0.1	65.8	56.4	McCracken	53	1.4	64.7	81.0	Wolfe	6	0.2	89.3	83.8
Garrard	15	0.4	86.2	84.9	McCreary	14	0.4	78.2	81.2	Woodford	29	0.8	113.5	108.5

\* 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, 2020**

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Adair	54	0.5	287.4	281.2	Grant	42	0.4	183.0	167.5	McLean	32	0.3	393.1	347.6
Allen	50	0.5	227.1	234.6	Graves	82	0.8	219.9	220.0	Meade	38	0.4	137.0	133.0
Anderson	56	0.6	265.1	246.2	Grayson	79	0.8	301.9	298.9	Menifee	8	0.1	123.4	123.3
Ballard	9	0.1	117.0	114.1	Green	35	0.3	341.9	319.9	Mercer	40	0.4	182.2	182.4
Barren	137	1.4	300.3	309.6	Greenup	45	0.4	126.5	128.2	Metcalfe	33	0.3	346.3	327.7
Bath	29	0.3	240.7	232.0	Hancock	11	0.1	138.9	126.1	Monroe	29	0.3	288.8	272.3
Bell	86	0.9	332.8	330.4	Hardin	360	3.6	329.8	324.4	Montgomery	78	0.8	291.0	277.0
Boone	131	1.3	101.8	98.1	Harlan	113	1.1	494.6	434.4	Morgan	38	0.4	313.3	285.5
Bourbon	43	0.4	232.7	217.3	Harrison	98	1.0	517.6	518.9	Muhlenberg	96	1.0	313.1	313.5
Boyd	103	1.0	225.7	220.5	Hart	59	0.6	301.2	310.0	Nelson	130	1.3	293.5	281.2
Boyle	97	1.0	309.0	322.7	Henderson	97	1.0	224.8	214.6	Nicholas	22	0.2	308.4	302.7
Bracken	22	0.2	271.3	265.0	Henry	45	0.4	301.0	279.1	Ohio	111	1.1	486.1	462.6
Breathitt	28	0.3	220.1	221.7	Hickman	5	0.1	89.2	114.2	Oldham	104	1.0	162.1	155.7
Breckinridge	51	0.5	233.4	249.1	Hopkins	86	0.9	190.7	192.5	Owen	8	0.1	69.2	73.4
Bullitt	63	0.6	77.9	77.1	Jackson	40	0.4	328.0	300.1	Owsley	19	0.2	405.0	430.4
Butler	32	0.3	266.9	248.5	Jefferson	1461	14.6	190.5	190.5	Pendleton	17	0.2	134.5	116.5
Caldwell	22	0.2	162.6	172.6	Jessamine	90	0.9	166.0	166.3	Perry	103	1.0	420.0	399.9
Calloway	76	0.8	190.4	194.9	Johnson	72	0.7	323.7	324.5	Pike	152	1.5	266.8	262.6
Campbell	66	0.7	70.9	70.5	Kenton	133	1.3	80.4	79.6	Powell	52	0.5	439.9	420.7
Carlisle	7	0.1	166.3	147.1	Knott	44	0.4	309.8	297.2	Pulaski	121	1.2	196.3	186.2
Carroll	29	0.3	285.4	272.8	Knox	108	1.1	351.4	346.8	Robertson	9	0.1	292.0	426.9
Carter	38	0.4	136.2	141.8	Larue	53	0.5	368.8	368.1	Rockcastle	74	0.7	419.4	443.2
Casey	29	0.3	170.3	179.5	Laurel	159	1.6	269.0	261.5	Rowan	30	0.3	127.9	122.6
Christian	148	1.5	212.4	210.0	Lawrence	34	0.3	230.2	222.0	Russell	45	0.4	263.2	251.1
Clark	157	1.6	452.0	432.9	Lee	12	0.1	168.3	162.1	Scott	161	1.6	291.2	282.4
Clay	80	0.8	417.6	402.0	Leslie	32	0.3	330.1	324.0	Shelby	72	0.7	145.7	146.9
Clinton	34	0.3	325.4	332.7	Letcher	154	1.5	745.3	714.5	Simpson	57	0.6	307.5	306.9
Crittenden	25	0.2	303.4	283.9	Lewis	21	0.2	154.0	158.2	Spencer	32	0.3	165.6	165.4
Cumberland	19	0.2	251.5	287.3	Lincoln	98	1.0	394.3	399.2	Taylor	91	0.9	333.1	353.1
Daviess	272	2.7	279.3	268.0	Livingston	23	0.2	281.2	250.2	Todd	22	0.2	170.3	178.9
Edmonson	17	0.2	138.2	139.9	Logan	65	0.6	241.6	239.8	Trigg	28	0.3	177.1	191.1
Elliott	14	0.1	190.2	186.2	Lyon	7	0.1	89.0	85.3	Trimble	17	0.2	217.6	200.7
Estill	42	0.4	305.9	297.7	Madison	195	1.9	214.5	209.7	Union	41	0.4	302.8	285.1
Fayette	778	7.8	238.1	240.8	Magoffin	37	0.4	331.9	304.3	Warren	240	2.4	181.8	180.6
Fleming	32	0.3	213.9	219.5	Marion	65	0.6	342.1	337.3	Washington	37	0.4	320.3	305.9
Floyd	91	0.9	265.2	255.7	Marshall	66	0.7	224.4	212.2	Wayne	53	0.5	264.8	260.7
Franklin	144	1.4	282.8	282.4	Martin	20	0.2	173.5	178.7	Webster	29	0.3	225.2	224.1
Fulton	*	-	-	-	Mason	38	0.4	225.8	222.6	Whitley	142	1.4	393.6	391.6
Gallatin	11	0.1	131.6	124.0	McCracken	123	1.2	196.6	188.0	Wolfe	31	0.3	394.0	433.1
Garrard	44	0.4	270.3	249.1	McCreary	22	0.2	134.2	127.7	Woodford	67	0.7	261.7	250.6

\* At least one but fewer than five

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

**Table 13: Incidence of All Inpatient TBI\* by County, Sorted by Frequency, Kentucky, 2020**

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

Age-Adjusted Crude					Age-Adjusted Crude					Age-Adjusted Crude				
County	Freq	Percent	Rate	Rate	County	Freq	Percent	Rate	Rate	County	Freq	Percent	Rate	Rate
Jefferson	844	23.0	98.7	110.1	Harrison	21	0.6	103.4	111.2	Rockcastle	11	0.3	55.4	65.9
Fayette	290	7.9	89.0	89.7	Knott	21	0.6	138.2	141.8	Butler	10	0.3	60.6	77.6
Kenton	105	2.9	58.9	62.9	Muhlenberg	21	0.6	54.8	68.6	Carter	10	0.3	31.2	37.3
Daviess	102	2.8	85.1	100.5	Grayson	20	0.5	63.2	75.7	Henry	10	0.3	52.7	62.0
Hardin	87	2.4	73.7	78.4	Marion	20	0.5	101.8	103.8	Bell	9	0.2	28.6	34.6
Pike	82	2.2	122.1	141.7	Anderson	19	0.5	82.2	83.5	Larue	9	0.2	54.6	62.5
Boone	76	2.1	57.6	56.9	Mercer	19	0.5	78.2	86.6	Carlisle	8	0.2	117.9	168.1
Bullitt	66	1.8	75.1	80.8	Taylor	19	0.5	64.5	73.7	Green	7	0.2	52.6	64.0
Madison	61	1.7	67.8	65.6	Adair	18	0.5	80.4	93.7	Metcalf	7	0.2	59.7	69.5
Pulaski	59	1.6	78.0	90.8	Bourbon	18	0.5	81.5	91.0	Monroe	7	0.2	58.2	65.7
Warren	58	1.6	46.0	43.6	Ohio	18	0.5	58.5	75.0	Trimble	7	0.2	77.2	82.6
McCracken	53	1.4	64.7	81.0	Bath	17	0.5	122.2	136.0	Bracken	6	0.2	59.1	72.3
Oldham	50	1.4	71.7	74.9	Boyd	17	0.5	31.9	36.4	Christian	6	0.2	9.2	8.5
Scott	49	1.3	94.8	86.0	Fleming	17	0.5	101.9	116.6	Lewis	6	0.2	48.7	45.2
Campbell	48	1.3	42.9	51.3	Magoffin	17	0.5	148.0	139.8	McLean	6	0.2	52.4	65.2
Laurel	44	1.2	70.5	72.4	Meade	17	0.5	59.2	59.5	Menifee	6	0.2	82.9	92.5
Whitley	44	1.2	111.4	121.3	Russell	17	0.5	74.1	94.9	Simpson	6	0.2	26.7	32.3
Franklin	43	1.2	75.9	84.3	Grant	16	0.4	66.3	63.8	Wolfe	6	0.2	89.3	83.8
Harlan	43	1.2	145.1	165.3	Jackson	16	0.4	114.3	120.0	Ballard	5	0.1	45.7	63.4
Perry	41	1.1	159.0	159.2	Mason	16	0.4	93.2	93.7	Caldwell	5	0.1	37.3	39.2
Jessamine	40	1.1	68.1	73.9	Rowan	16	0.4	60.1	65.4	Gallatin	5	0.1	65.8	56.4
Clark	39	1.1	98.6	107.5	Casey	15	0.4	84.8	92.8	Hancock	5	0.1	59.1	57.3
Nelson	38	1.0	81.9	82.2	Estill	15	0.4	114.7	106.3	Henderson	5	0.1	12.2	11.1
Clay	37	1.0	186.3	185.9	Garrard	15	0.4	86.2	84.9	Morgan	5	0.1	37.1	37.6
Boyle	33	0.9	89.4	109.8	Leslie	15	0.4	126.7	151.9	Nicholas	5	0.1	68.1	68.8
Letcher	32	0.9	130.9	148.5	Calloway	14	0.4	30.4	35.9	Lawrence	*	-	-	-
Floyd	31	0.8	81.0	87.1	Cumberland	14	0.4	137.7	211.7	Livingston	*	-	-	-
Lincoln	30	0.8	107.9	122.2	Hart	14	0.4	68.5	73.5	Lyon	*	-	-	-
Woodford	29	0.8	113.5	108.5	McCreary	14	0.4	78.2	81.2	Martin	*	-	-	-
Wayne	28	0.8	128.2	137.7	Owsley	14	0.4	281.1	317.1	Owen	*	-	-	-
Barren	27	0.7	52.7	61.0	Washington	14	0.4	98.4	115.8	Trigg	*	-	-	-
Knox	27	0.7	85.3	86.7	Clinton	13	0.4	110.9	127.2	Crittenden	*	-	-	-
Johnson	25	0.7	83.9	112.7	Greenup	13	0.4	28.1	37.0	Edmonson	*	-	-	-
Marshall	25	0.7	50.7	80.4	Pendleton	12	0.3	78.8	82.2	Robertson	*	-	-	-
Powell	25	0.7	207.9	202.3	Spencer	12	0.3	58.3	62.0	Todd	*	-	-	-
Shelby	25	0.7	50.2	51.0	Allen	11	0.3	43.7	51.6	Webster	*	-	-	-
Montgomery	24	0.7	81.7	85.2	Carroll	11	0.3	95.8	103.5	Elliott	*	-	-	-
Breathitt	22	0.6	177.4	174.2	Hopkins	11	0.3	21.8	24.6	Fulton	*	-	-	-
Breckinridge	22	0.6	94.0	107.4	Lee	11	0.3	143.8	148.6	Union	*	-	-	-
Graves	21	0.6	46.5	56.4	Logan	11	0.3	36.7	40.6	Hickman	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, 2020**

\*Includes ED deaths as well as non-fatal 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
Jefferson	1461	14.6	190.5	190.5	Calloway	76	0.8	190.4	194.9	Butler	32	0.3	266.9	248.5
Fayette	778	7.8	238.1	240.8	Rockcastle	74	0.7	419.4	443.2	Fleming	32	0.3	213.9	219.5
Hardin	360	3.6	329.8	324.4	Johnson	72	0.7	323.7	324.5	Leslie	32	0.3	330.1	324.0
Daviess	272	2.7	279.3	268.0	Shelby	72	0.7	145.7	146.9	McLean	32	0.3	393.1	347.6
Warren	240	2.4	181.8	180.6	Woodford	67	0.7	261.7	250.6	Spencer	32	0.3	165.6	165.4
Madison	195	1.9	214.5	209.7	Campbell	66	0.7	70.9	70.5	Wolfe	31	0.3	394.0	433.1
Scott	161	1.6	291.2	282.4	Marshall	66	0.7	224.4	212.2	Rowan	30	0.3	127.9	122.6
Laurel	159	1.6	269.0	261.5	Logan	65	0.6	241.6	239.8	Bath	29	0.3	240.7	232.0
Clark	157	1.6	452.0	432.9	Marion	65	0.6	342.1	337.3	Carroll	29	0.3	285.4	272.8
Letcher	154	1.5	745.3	714.5	Bullitt	63	0.6	77.9	77.1	Casey	29	0.3	170.3	179.5
Pike	152	1.5	266.8	262.6	Hart	59	0.6	301.2	310.0	Monroe	29	0.3	288.8	272.3
Christian	148	1.5	212.4	210.0	Simpson	57	0.6	307.5	306.9	Webster	29	0.3	225.2	224.1
Franklin	144	1.4	282.8	282.4	Anderson	56	0.6	265.1	246.2	Breathitt	28	0.3	220.1	221.7
Whitley	142	1.4	393.6	391.6	Adair	54	0.5	287.4	281.2	Trigg	28	0.3	177.1	191.1
Barren	137	1.4	300.3	309.6	Larue	53	0.5	368.8	368.1	Crittenden	25	0.2	303.4	283.9
Kenton	133	1.3	80.4	79.6	Wayne	53	0.5	264.8	260.7	Livingston	23	0.2	281.2	250.2
Boone	131	1.3	101.8	98.1	Powell	52	0.5	439.9	420.7	Bracken	22	0.2	271.3	265.0
Nelson	130	1.3	293.5	281.2	Breckinridge	51	0.5	233.4	249.1	Caldwell	22	0.2	162.6	172.6
McCracken	123	1.2	196.6	188.0	Allen	50	0.5	227.1	234.6	McCreary	22	0.2	134.2	127.7
Pulaski	121	1.2	196.3	186.2	Greenup	45	0.4	126.5	128.2	Nicholas	22	0.2	308.4	302.7
Harlan	113	1.1	494.6	434.4	Henry	45	0.4	301.0	279.1	Todd	22	0.2	170.3	178.9
Ohio	111	1.1	486.1	462.6	Russell	45	0.4	263.2	251.1	Lewis	21	0.2	154.0	158.2
Knox	108	1.1	351.4	346.8	Garrard	44	0.4	270.3	249.1	Martin	20	0.2	173.5	178.7
Oldham	104	1.0	162.1	155.7	Knott	44	0.4	309.8	297.2	Cumberland	19	0.2	251.5	287.3
Boyd	103	1.0	225.7	220.5	Bourbon	43	0.4	232.7	217.3	Owsley	19	0.2	405.0	430.4
Perry	103	1.0	420.0	399.9	Estill	42	0.4	305.9	297.7	Edmonson	17	0.2	138.2	139.9
Harrison	98	1.0	517.6	518.9	Grant	42	0.4	183.0	167.5	Pendleton	17	0.2	134.5	116.5
Lincoln	98	1.0	394.3	399.2	Union	41	0.4	302.8	285.1	Trimble	17	0.2	217.6	200.7
Boyle	97	1.0	309.0	322.7	Jackson	40	0.4	328.0	300.1	Elliott	14	0.1	190.2	186.2
Henderson	97	1.0	224.8	214.6	Mercer	40	0.4	182.2	182.4	Lee	12	0.1	168.3	162.1
Muhlenberg	96	1.0	313.1	313.5	Carter	38	0.4	136.2	141.8	Gallatin	11	0.1	131.6	124.0
Floyd	91	0.9	265.2	255.7	Mason	38	0.4	225.8	222.6	Hancock	11	0.1	138.9	126.1
Taylor	91	0.9	333.1	353.1	Meade	38	0.4	137.0	133.0	Ballard	9	0.1	117.0	114.1
Jessamine	90	0.9	166.0	166.3	Morgan	38	0.4	313.3	285.5	Robertson	9	0.1	292.0	426.9
Bell	86	0.9	332.8	330.4	Magoffin	37	0.4	331.9	304.3	Menifee	8	0.1	123.4	123.3
Hopkins	86	0.9	190.7	192.5	Washington	37	0.4	320.3	305.9	Owen	8	0.1	69.2	73.4
Graves	82	0.8	219.9	220.0	Green	35	0.3	341.9	319.9	Carlisle	7	0.1	166.3	147.1
Clay	80	0.8	417.6	402.0	Clinton	34	0.3	325.4	332.7	Lyon	7	0.1	89.0	85.3
Grayson	79	0.8	301.9	298.9	Lawrence	34	0.3	230.2	222.0	Hickman	5	0.1	89.2	114.2
Montgomery	78	0.8	291.0	277.0	Metcalf	33	0.3	346.3	327.7	Fulton	*	-	-	-

\* At least one but fewer than five

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

**Table 15: Incidence of All Inpatient TBI\* by County, Sorted by Age Adjusted Rate, Kentucky, 2020**

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

Age-Adjusted Crude					Age-Adjusted Crude					Age-Adjusted Crude				
County	Freq	Percent	Rate	Rate	County	Freq	Percent	Rate	Rate	County	Freq	Percent	Rate	Rate
Owsley	14	0.4	281.1	317.1	Menifee	6	0.2	82.9	92.5	Muhlenberg	21	0.6	54.8	68.6
Powell	25	0.7	207.9	202.3	Anderson	19	0.5	82.2	83.5	Larue	9	0.2454	54.6	62.5
Clay	37	1.0	186.3	185.9	Nelson	38	1.0	81.9	82.2	Barren	27	0.7	52.7	61.0
Breathitt	22	0.6	177.4	174.2	Montgomery	24	0.7	81.7	85.2	Henry	10	0.3	52.7	62.0
Perry	41	1.1	159.0	159.2	Bourbon	18	0.5	81.5	91.0	Green	7	0.2	52.6	64.0
Magoffin	17	0.5	148.0	139.8	Floyd	31	0.8	81.0	87.1	McLean	6	0.2	52.4	65.2
Harlan	43	1.2	145.1	165.3	Adair	18	0.5	80.4	93.7	Marshall	25	0.7	50.7	80.4
Lee	11	0.3	143.8	148.6	Pendleton	12	0.3	78.8	82.2	Shelby	25	0.7	50.2	51.0
Knott	21	0.6	138.2	141.8	McCreary	14	0.4	78.2	81.2	Lewis	6	0.2	48.7	45.2
Cumberland	14	0.4	137.7	211.7	Mercer	19	0.5	78.2	86.6	Graves	21	0.6	46.5	56.4
Letcher	32	0.9	130.9	148.5	Pulaski	59	1.6	78.0	90.8	Warren	58	1.6	46.0	43.6
Wayne	28	0.8	128.2	137.7	Trimble	7	0.2	77.2	82.6	Ballard	5	0.1	45.7	63.4
Leslie	15	0.4	126.7	151.9	Franklin	43	1.2	75.9	84.3	Allen	11	0.3	43.7	51.6
Bath	17	0.5	122.2	136.0	Bullitt	66	1.8	75.1	80.8	Campbell	48	1.3	42.9	51.3
Pike	82	2.2	122.1	141.7	Russell	17	0.5	74.1	94.9	Crittenden	*	-	-	-
Carlisle	8	0.2	117.9	168.1	Hardin	87	2.4	73.7	78.4	Caldwell	5	0.1	37.3	39.2
Estill	15	0.4	114.7	106.3	Oldham	50	1.4	71.7	74.9	Lyon	*	-	-	-
Jackson	16	0.4	114.3	120.0	Laurel	44	1.2	70.5	72.4	Morgan	5	0.1	37.1	37.6
Woodford	29	0.8	113.5	108.5	Robertson	*	-	-	-	Logan	11	0.3	36.7	40.6
Whitley	44	1.2	111.4	121.3	Hart	14	0.4	68.5	73.5	Owen	*	-	-	-
Clinton	13	0.4	110.9	127.2	Jessamine	40	1.1	68.1	73.9	Martin	*	-	-	-
Lincoln	30	0.8	107.9	122.2	Nicholas	5	0.1	68.1	68.8	Boyd	17	0.5	31.9	36.4
Harrison	21	0.6	103.4	111.2	Madison	61	1.7	67.8	65.6	Carter	10	0.3	31.2	37.3
Fleming	17	0.5	101.9	116.6	Grant	16	0.4	66.3	63.8	Calloway	14	0.4	30.4	35.9
Marion	20	0.5	101.8	103.8	Gallatin	5	0.1	65.8	56.4	Bell	9	0.2	28.6	34.6
Jefferson	844	23.0	98.7	110.1	McCracken	53	1.4	64.7	81.0	Greenup	13	0.4	28.1	37.0
Clark	39	1.1	98.6	107.5	Taylor	19	0.5	64.5	73.7	Webster	*	-	-	-
Washington	14	0.4	98.4	115.8	Grayson	20	0.5	63.2	75.7	Livingston	*	-	-	-
Carroll	11	0.3	95.8	103.5	Butler	10	0.3	60.6	77.6	Simpson	6	0.2	26.7	32.3
Scott	49	1.3	94.8	86.0	Rowan	16	0.4	60.1	65.4	Todd	*	-	-	-
Breckinridge	22	0.6	94.0	107.4	Metcalf	7	0.2	59.7	69.5	Hopkins	11	0.3	21.8	24.6
Mason	16	0.4	93.2	93.7	Meade	17	0.5	59.2	59.5	Lawrence	*	-	-	-
Boyle	33	0.9	89.4	109.8	Bracken	6	0.2	59.1	72.3	Edmonson	*	-	-	-
Wolfe	6	0.2	89.3	83.8	Hancock	5	0.1	59.1	57.3	Trigg	*	-	-	-
Fayette	290	7.9	89.0	89.7	Kenton	105	2.9	58.9	62.9	Fulton	*	-	-	-
Garrard	15	0.4	86.2	84.9	Ohio	18	0.5	58.5	75.0	Elliott	*	-	-	-
Knox	27	0.7	85.3	86.7	Spencer	12	0.3	58.3	62.0	Henderson	5	0.1	12.2	11.1
Daviess	102	2.8	85.1	100.5	Monroe	7	0.2	58.2	65.7	Union	*	-	-	-
Casey	15	0.4	84.8	92.8	Boone	76	2.1	57.6	56.9	Christian	6	0.2	9.2	8.5
Johnson	25	0.7	83.9	112.7	Rockcastle	11	0.3	55.4	65.9	Hickman	0	0.0	0.0	0.0

\* At least one but fewer than five

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

**Table 16: Incidence of All ED TBI\* by County, Sorted by Age Adjusted Rate, Kentucky, 2020**

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

County			Age-Adjusted		County			Age-Adjusted		County			Age-Adjusted	
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Letcher	154	1.5	745.3	714.5	Barren	137	1.4	300.3	309.6	McCracken	123	1.2	196.6	188.0
Harrison	98	1.0	517.6	518.9	Nelson	130	1.3	293.5	281.2	Pulaski	121	1.2	196.3	186.2
Harlan	113	1.1	494.6	434.4	Robertson	9	0.1	292.0	426.9	Hopkins	86	0.9	190.7	192.5
Ohio	111	1.1	486.1	462.6	Scott	161	1.6	291.2	282.4	Jefferson	1461	14.6	190.5	190.5
Clark	157	1.6	452.0	432.9	Montgomery	78	0.8	291.0	277.0	Calloway	76	0.8	190.4	194.9
Powell	52	0.5	439.9	420.7	Monroe	29	0.3	288.8	272.3	Elliott	14	0.1	190.2	186.2
Perry	103	1.0	420.0	399.9	Adair	54	0.5	287.4	281.2	Grant	42	0.4	183.0	167.5
Rockcastle	74	0.7	419.4	443.2	Carroll	29	0.3	285.4	272.8	Mercer	40	0.4	182.2	182.4
Clay	80	0.8	417.6	402.0	Franklin	144	1.4	282.8	282.4	Warren	240	2.4	181.8	180.6
Owsley	19	0.2	405.0	430.4	Livingston	23	0.2	281.2	250.2	Trigg	28	0.3	177.1	191.1
Lincoln	98	1.0	394.3	399.2	Daviess	272	2.7	279.3	268.0	Martin	20	0.2	173.5	178.7
Wolfe	31	0.3	394.0	433.1	Bracken	22	0.2	271.3	265.0	Casey	29	0.3	170.3	179.5
Whitley	142	1.4	393.6	391.6	Garrard	44	0.4	270.3	249.1	Todd	22	0.2	170.3	178.9
McLean	32	0.3	393.1	347.6	Laurel	159	1.6	269.0	261.5	Lee	12	0.1	168.3	162.1
Larue	53	0.5	368.8	368.1	Butler	32	0.3	266.9	248.5	Carlisle	7	0.1	166.3	147.1
Knox	108	1.1	351.4	346.8	Pike	152	1.5	266.8	262.6	Jessamine	90	0.9	166.0	166.3
Metcalfe	33	0.3	346.3	327.7	Floyd	91	0.9	265.2	255.7	Spencer	32	0.3	165.6	165.4
Marion	65	0.6	342.1	337.3	Anderson	56	0.6	265.1	246.2	Caldwell	22	0.2	162.6	172.6
Green	35	0.3	341.9	319.9	Wayne	53	0.5	264.8	260.7	Oldham	104	1.0	162.1	155.7
Taylor	91	0.9	333.1	353.1	Russell	45	0.4	263.2	251.1	Lewis	21	0.2	154.0	158.2
Bell	86	0.9	332.8	330.4	Woodford	67	0.7	261.7	250.6	Shelby	72	0.7	145.7	146.9
Magoffin	37	0.4	331.9	304.3	Cumberland	19	0.2	251.5	287.3	Hancock	11	0.1	138.9	126.1
Leslie	32	0.3	330.1	324.0	Logan	65	0.6	241.6	239.8	Edmonson	17	0.2	138.2	139.9
Hardin	360	3.6	329.8	324.4	Bath	29	0.3	240.7	232.0	Meade	38	0.4	137.0	133.0
Jackson	40	0.4	328.0	300.1	Fayette	778	7.8	238.1	240.8	Carter	38	0.4	136.2	141.8
Clinton	34	0.3	325.4	332.7	Breckinridge	51	0.5	233.4	249.1	Pendleton	17	0.2	134.5	116.5
Johnson	72	0.7	323.7	324.5	Bourbon	43	0.4	232.7	217.3	McCreary	22	0.2	134.2	127.7
Washington	37	0.4	320.3	305.9	Larrence	34	0.3	230.2	222.0	Gallatin	11	0.1	131.6	124.0
Morgan	38	0.4	313.3	285.5	Allen	50	0.5	227.1	234.6	Rowan	30	0.3	127.9	122.6
Muhlenberg	96	1.0	313.1	313.5	Mason	38	0.4	225.8	222.6	Greenup	45	0.4	126.5	128.2
Knott	44	0.4	309.8	297.2	Boyd	103	1.0	225.7	220.5	Menifee	8	0.1	123.4	123.3
Boyle	97	1.0	309.0	322.7	Webster	29	0.3	225.2	224.1	Ballard	9	0.1	117.0	114.1
Nicholas	22	0.2	308.4	302.7	Henderson	97	1.0	224.8	214.6	Boone	131	1.3	101.8	98.1
Simpson	57	0.6	307.5	306.9	Marshall	66	0.7	224.4	212.2	Hickman	5	0.1	89.2	114.2
Estill	42	0.4	305.9	297.7	Breathitt	28	0.3	220.1	221.7	Lyon	7	0.1	89.0	85.3
Crittenden	25	0.2	303.4	283.9	Graves	82	0.8	219.9	220.0	Kenton	133	1.3	80.4	79.6
Union	41	0.4	302.8	285.1	Trimble	17	0.2	217.6	200.7	Bullitt	63	0.6	77.9	77.1
Grayson	79	0.8	301.9	298.9	Madison	195	1.9	214.5	209.7	Campbell	66	0.7	70.9	70.5
Hart	59	0.6	301.2	310.0	Fleming	32	0.3	213.9	219.5	Owen	8	0.1	69.2	73.4
Henry	45	0.4	301.0	279.1	Christian	148	1.5	212.4	210.0	Fulton	*	-	-	-

\* At least one but fewer than five

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

**Table 17: Length of Stay for Non-Fatal Inpatient TBI, Kentucky, 2020**

Length of Stay	Number	Percent*
1 day	628	18.8
More than one day but less than 1 week	1594	47.8
1 week to less than 2 weeks	622	18.7
2 weeks to less than 3 weeks	216	6.5
3 weeks to less than 4 weeks	128	3.8
4 weeks or more	144	4.3
Total	3332	100.0

\*Percent of hospitalized TBI

**Table 18: Work Related Non-Fatal TBI, Kentucky 2020**

Inpatient Work TBI (n=42)	LOS Days	Cost
Mean	9.5	\$171,370
Median	4	\$59,563
Min, Max	1-53	\$37,\$1,038,072
Sum of Charges		\$7,197,514

ED Work TBI (n=398)	Cost
Mean	\$6,638
Median	\$4,183
Min, Max	\$2,\$106,298
Sum of Charges	\$2,642,035

**Table 19: Primary Payer and Charges for Non-Fatal Inpatient TBI, Kentucky, 2020**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	2,363	70.9	\$ 197,405,762
Commercial Ins	523	15.7	\$ 58,861,476
Self Pay	35	1.1	\$ 2,249,004
Workers Compensation	42	1.3	\$ 7,197,514
Other	369	11.1	\$ 52,751,858
Total	3,332	100.0	\$ 318,465,614



**Table 20: Primary Payer and Charges for Non-Fatal ED TBI, Kentucky, 2020**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	5,544	55.7	\$ 39,450,351
Commercial Ins	2,428	24.4	\$ 15,072,892
Self Pay	499	5.0	\$ 3,707,812
Workers Compensation	398	4.0	\$ 2,642,035
Other	1,088	10.9	\$ 11,141,691
Total	9,957	100.0	\$ 72,014,782

**Table 21: Non-Fatal NTBI by Age Group, Kentucky, 2020**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	1,005	53.1	368.7	888	46.9	325.7	1,893	100.0	694.4
5-14	514	50.4	91.7	505	49.6	90.1	1,019	100.0	181.8
15-24	1,162	39.3	199.0	1,793	60.7	307.1	2,955	100.0	506.2
25-44	7,578	54.3	665.7	6,379	45.7	560.4	13,957	100.0	1226.1
45-64	29,828	81.8	2567.1	6,638	18.2	571.3	36,466	100.0	3138.3
65+	48,817	87.6	6504.0	6,917	12.4	921.6	55,734	100.0	7425.6
Total	88,904	79.4	1989.9	23,120	20.6	517.5	112,024	100.0	2507.4

**Table 22: Non-Fatal NTBI by Gender, Kentucky, 2020**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	41,377	78.1	1879.9	11,601	21.9	527.1	52,978	100.0	2407.0
Female	47,525	80.5	2096.7	11,518	19.5	508.2	59,043	100.0	2604.9
Total	88,902	79.4	1989.9	23,119	20.6	517.5	112,021	100.0	2507.4

**Table 23: Incidence of All Inpatient NTBI\* by County, Sorted by County, Kentucky, 2020**

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Adair	492	0.5	1935.8	2562.2	Grant	632	0.6	2245.4	2521.0	McLean	196	0.2	1544.4	2128.8
Allen	361	0.4	1286.8	1693.6	Graves	929	0.9	1923.8	2492.9	Meade	429	0.4	1312.8	1501.5
Anderson	479	0.5	1728.9	2105.8	Grayson	847	0.9	2557.3	3205.1	Menifee	230	0.2	2583.7	3544.5
Ballard	121	0.1	989.6	1534.0	Green	238	0.2	1404.7	2175.3	Mercer	443	0.4	1541.7	2019.8
Barren	1040	1.0	1788.4	2350.3	Greenup	758	0.8	1486.6	2159.7	Metcalfe	295	0.3	2099.3	2929.2
Bath	410	0.4	2559.6	3280.0	Hancock	169	0.2	1602.9	1937.6	Monroe	267	0.3	1851.8	2507.0
Bell	572	0.6	1639.8	2197.3	Hardin	2376	2.4	1926.8	2141.4	Montgomery	703	0.7	2095.6	2496.7
Boone	2231	2.2	1547.8	1670.2	Harlan	1214	1.2	3485.4	4667.4	Morgan	316	0.3	1790.2	2374.3
Bourbon	462	0.5	1771.4	2334.8	Harrison	323	0.3	1348.9	1710.3	Muhlenberg	625	0.6	1514.0	2041.0
Boyd	1354	1.4	2102.4	2898.2	Hart	390	0.4	1619.4	2048.9	Nelson	1071	1.1	1957.0	2316.5
Boyle	681	0.7	1749.4	2265.5	Henderson	664	0.7	1114.4	1468.7	Nicholas	166	0.2	1878.2	2283.7
Bracken	183	0.2	1725.3	2204.0	Henry	398	0.4	1971.0	2468.1	Ohio	443	0.4	1459.6	1846.3
Breathitt	475	0.5	2965.0	3760.9	Hickman	104	0.1	1545.6	2374.4	Oldham	1004	1.0	1451.5	1503.0
Breckinridge	383	0.4	1496.7	1870.4	Hopkins	1006	1.0	1709.2	2251.3	Owen	185	0.2	1247.5	1697.1
Bullitt	1575	1.6	1594.4	1928.4	Jackson	494	0.5	2888.8	3706.2	Owsley	201	0.2	3317.4	4552.7
Butler	260	0.3	1545.9	2018.8	Jefferson	19424	19.5	2125.8	2533.3	Pendleton	345	0.3	1864.5	2364.6
Caldwell	218	0.2	1197.2	1710.2	Jessamine	1191	1.2	1913.7	2200.9	Perry	1215	1.2	3803.3	4717.0
Calloway	606	0.6	1302.0	1553.8	Johnson	602	0.6	2080.5	2713.2	Pike	1942	2.0	2511.8	3355.5
Campbell	1575	1.6	1385.3	1683.0	Kenton	3062	3.1	1627.1	1833.6	Powell	396	0.4	2760.2	3204.1
Carlisle	126	0.1	1781.7	2647.1	Knott	424	0.4	2209.0	2863.7	Pulaski	1679	1.7	1950.4	2583.9
Carroll	281	0.3	2245.2	2643.2	Knox	713	0.7	1903.0	2289.3	Robertson	45	0.0	1291.9	2134.7
Carter	728	0.7	2055.9	2716.7	Larue	353	0.4	1855.8	2451.7	Rockcastle	270	0.3	1317.8	1617.3
Casey	308	0.3	1370.7	1906.1	Laurel	1646	1.7	2235.9	2706.7	Rowan	623	0.6	2421.1	2547.0
Christian	986	1.0	1486.0	1399.4	Lawrence	368	0.4	1866.0	2402.6	Russell	327	0.3	1345.8	1824.5
Clark	924	0.9	2040.8	2548.1	Lee	251	0.3	2676.9	3390.5	Scott	836	0.8	1481.0	1466.6
Clay	742	0.7	3074.6	3728.5	Leslie	397	0.4	3147.3	4019.4	Shelby	849	0.9	1479.4	1731.8
Clinton	184	0.2	1363.7	1800.7	Letcher	719	0.7	2480.2	3336.0	Simpson	344	0.3	1466.0	1852.3
Crittenden	116	0.1	942.8	1317.3	Lewis	166	0.2	929.5	1250.5	Spencer	328	0.3	1442.9	1695.0
Cumberland	152	0.2	1483.4	2298.2	Lincoln	627	0.6	1930.3	2554.1	Taylor	641	0.6	2060.8	2487.5
Daviess	1729	1.7	1402.0	1703.3	Livingston	198	0.2	1496.7	2153.6	Todd	121	0.1	825.5	984.2
Edmonson	203	0.2	1159.3	1670.8	Logan	512	0.5	1390.9	1889.2	Trigg	237	0.2	1064.7	1617.6
Elliott	184	0.2	1773.5	2447.8	Lyon	174	0.2	1313.6	2119.4	Trimble	172	0.2	1531.6	2030.5
Estill	408	0.4	2293.0	2892.4	Madison	1803	1.8	1849.7	1939.0	Union	120	0.1	705.1	834.4
Fayette	6045	6.1	1786.1	1870.6	Magoffin	322	0.3	2128.4	2647.8	Warren	2060	2.1	1538.6	1550.1
Fleming	370	0.4	1996.3	2537.6	Marion	417	0.4	1784.9	2163.7	Washington	296	0.3	1880.7	2447.3
Floyd	1077	1.1	2330.8	3026.2	Marshall	607	0.6	1335.6	1951.8	Wayne	408	0.4	1407.1	2006.6
Franklin	1186	1.2	1841.6	2325.9	Martin	274	0.3	2009.0	2447.5	Webster	211	0.2	1278.8	1630.4
Fulton	130	0.1	1575.5	2177.9	Mason	368	0.4	1642.5	2155.8	Whitley	1708	1.7	4026.0	4709.9
Gallatin	229	0.2	2433.0	2582.0	McCracken	1457	1.5	1653.0	2227.2	Wolfe	258	0.3	2830.1	3604.9
Garrard	423	0.4	1850.7	2394.4	McCreary	441	0.4	2207.0	2559.3	Woodford	463	0.5	1344.3	1731.9

**Table 24: Incidence of All ED NTBI\* by County, Sorted by County, Kentucky, 2020**

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Adair	192	0.8	831.2	999.9	Grant	247	1.0	959.3	985.3	McLean	41	0.2	395.6	445.3
Allen	119	0.5	494.6	558.3	Graves	183	0.8	444.2	491.1	Meade	44	0.2	151.6	154.0
Anderson	84	0.4	360.8	369.3	Grayson	166	0.7	595.0	628.2	Menifee	41	0.2	547.3	631.8
Ballard	20	0.1	242.3	253.6	Green	112	0.5	771.7	1023.7	Mercer	129	0.5	547.8	588.2
Barren	165	0.7	338.9	372.9	Greenup	128	0.5	343.1	364.7	Metcalfe	49	0.2	448.6	486.6
Bath	79	0.3	595.5	632.0	Hancock	31	0.1	322.4	355.4	Monroe	71	0.3	573.9	666.7
Bell	207	0.9	685.4	795.2	Hardin	422	1.8	372.4	380.3	Montgomery	211	0.9	701.6	749.4
Boone	419	1.8	317.2	313.7	Harlan	201	0.9	639.2	772.8	Morgan	70	0.3	467.9	526.0
Bourbon	134	0.6	675.7	677.2	Harrison	119	0.5	582.2	630.1	Muhlenberg	266	1.1	741.9	868.7
Boyd	276	1.2	558.3	590.8	Hart	93	0.4	414.4	488.6	Nelson	302	1.3	606.1	653.2
Boyle	175	0.7	533.4	582.2	Henderson	222	0.9	417.1	491.0	Nicholas	45	0.2	568.0	619.1
Bracken	52	0.2	591.5	626.3	Henry	98	0.4	599.6	607.7	Ohio	195	0.8	688.2	812.7
Breathitt	81	0.3	552.5	641.3	Hickman	13	0.1	272.0	296.8	Oldham	185	0.8	289.6	277.0
Breckinridge	112	0.5	502.0	547.0	Hopkins	275	1.2	535.6	615.4	Owen	45	0.2	386.5	412.8
Bullitt	222	0.9	259.6	271.8	Jackson	136	0.6	842.8	1020.3	Owsley	26	0.1	490.6	588.9
Butler	46	0.2	298.1	357.2	Jefferson	4587	19.4	584.8	598.2	Pendleton	66	0.3	428.3	452.4
Caldwell	84	0.4	540.3	659.0	Jessamine	149	0.6	272.9	275.3	Perry	241	1.0	874.9	935.6
Calloway	121	0.5	300.5	310.3	Johnson	100	0.4	403.8	450.7	Pike	444	1.9	663.1	767.2
Campbell	389	1.6	404.2	415.7	Kenton	631	2.7	373.0	377.9	Powell	107	0.5	798.9	865.8
Carlisle	18	0.1	309.4	378.2	Knott	76	0.3	451.5	513.3	Pulaski	328	1.4	455.7	504.8
Carroll	126	0.5	1109.1	1185.2	Knox	199	0.8	552.4	639.0	Robertson	12	0.1	588.5	569.3
Carter	113	0.5	408.8	421.7	Larue	43	0.2	301.6	298.7	Rockcastle	96	0.4	556.7	575.0
Casey	111	0.5	539.6	686.9	Laurel	365	1.5	547.6	600.2	Rowan	65	0.3	288.0	265.7
Christian	346	1.5	520.9	491.1	Lawrence	67	0.3	402.2	437.4	Russell	85	0.4	422.5	474.3
Clark	272	1.2	697.3	750.1	Lee	77	0.3	939.3	1040.1	Scott	342	1.4	602.5	600.0
Clay	156	0.7	702.3	783.9	Leslie	121	0.5	1004.7	1225.1	Shelby	252	1.1	475.9	514.0
Clinton	76	0.3	575.0	743.8	Letcher	125	0.5	498.1	580.0	Simpson	134	0.6	641.5	721.5
Crittenden	51	0.2	546.0	579.2	Lewis	31	0.1	192.6	233.5	Spencer	56	0.2	289.2	289.4
Cumberland	48	0.2	490.1	725.7	Lincoln	203	0.9	770.3	826.9	Taylor	261	1.1	955.5	1012.8
Daviess	340	1.4	313.2	334.9	Livingston	60	0.3	538.6	652.6	Todd	33	0.1	250.1	268.4
Edmonson	41	0.2	289.7	337.5	Logan	102	0.4	320.3	376.4	Trigg	106	0.4	560.1	723.5
Elliott	27	0.1	367.9	359.2	Lyon	40	0.2	331.0	487.2	Trimble	32	0.1	339.9	377.8
Estill	163	0.7	1024.5	1155.5	Madison	593	2.5	642.7	637.7	Union	84	0.4	551.6	584.1
Fayette	1411	6.0	435.7	436.6	Magoffin	66	0.3	473.7	542.7	Warren	428	1.8	325.1	322.1
Fleming	109	0.5	653.1	747.6	Marion	117	0.5	563.4	607.1	Washington	55	0.2	430.8	454.7
Floyd	338	1.4	813.0	949.7	Marshall	181	0.8	438.8	582.0	Wayne	164	0.7	640.2	806.6
Franklin	191	0.8	367.6	374.6	Martin	55	0.2	435.8	491.3	Webster	65	0.3	428.4	502.2
Fulton	14	0.1	190.4	234.6	Mason	131	0.6	678.4	767.4	Whitley	306	1.3	783.4	843.8
Gallatin	58	0.2	664.6	654.0	McCracken	230	1.0	311.7	351.6	Wolfe	68	0.3	911.0	950.1
Garrard	123	0.5	650.3	696.3	McCreary	88	0.4	463.7	510.7	Woodford	97	0.4	361.8	362.8

**Table 25: Incidence of All Inpatient NTBI\* by County, Sorted by Frequency, Kentucky, 2020**

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

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude				Rate	Crude				Rate	Crude
Jefferson	19424	19.5	2125.8	2533.3	Grant	632	0.6	2245.4	2521.0	Magoffin	322	0.3	2128.4	2647.8
Fayette	6045	6.1	1786.1	1870.6	Lincoln	627	0.6	1930.3	2554.1	Morgan	316	0.3	1790.2	2374.3
Kenton	3062	3.1	1627.1	1833.6	Muhlenberg	625	0.6	1514.0	2041.0	Casey	308	0.3	1370.7	1906.1
Hardin	2376	2.4	1926.8	2141.4	Rowan	623	0.6	2421.1	2547.0	Washington	296	0.3	1880.7	2447.3
Boone	2231	2.2	1547.8	1670.2	Marshall	607	0.6	1335.6	1951.8	Metcalfe	295	0.3	2099.3	2929.2
Warren	2060	2.1	1538.6	1550.1	Calloway	606	0.6	1302.0	1553.8	Carroll	281	0.3	2245.2	2643.2
Pike	1942	2.0	2511.8	3355.5	Johnson	602	0.6	2080.5	2713.2	Martin	274	0.3	2009.0	2447.5
Madison	1803	1.8	1849.7	1939.0	Bell	572	0.6	1639.8	2197.3	Rockcastle	270	0.3	1317.8	1617.3
Daviess	1729	1.7	1402.0	1703.3	Logan	512	0.5	1390.9	1889.2	Monroe	267	0.3	1851.8	2507.0
Whitley	1708	1.7	4026.0	4709.9	Jackson	494	0.5	2888.8	3706.2	Butler	260	0.3	1545.9	2018.8
Pulaski	1679	1.7	1950.4	2583.9	Adair	492	0.5	1935.8	2562.2	Wolfe	258	0.3	2830.1	3604.9
Laurel	1646	1.7	2235.9	2706.7	Anderson	479	0.5	1728.9	2105.8	Lee	251	0.3	2676.9	3390.5
Bullitt	1575	1.6	1594.4	1928.4	Breathitt	475	0.5	2965.0	3760.9	Green	238	0.2	1404.7	2175.3
Campbell	1575	1.6	1385.3	1683.0	Woodford	463	0.5	1344.3	1731.9	Trigg	237	0.2	1064.7	1617.6
McCracken	1457	1.5	1653.0	2227.2	Bourbon	462	0.5	1771.4	2334.8	Menifee	230	0.2	2583.7	3544.5
Boyd	1354	1.4	2102.4	2898.2	Mercer	443	0.4	1541.7	2019.8	Gallatin	229	0.2	2433.0	2582.0
Perry	1215	1.2	3803.3	4717.0	Ohio	443	0.4	1459.6	1846.3	Caldwell	218	0.2	1197.2	1710.2
Harlan	1214	1.2	3485.4	4667.4	McCreary	441	0.4	2207.0	2559.3	Webster	211	0.2	1278.8	1630.4
Jessamine	1191	1.2	1913.7	2200.9	Meade	429	0.4	1312.8	1501.5	Edmonson	203	0.2	1159.3	1670.8
Franklin	1186	1.2	1841.6	2325.9	Knott	424	0.4	2209.0	2863.7	Owsley	201	0.2	3317.4	4552.7
Floyd	1077	1.1	2330.8	3026.2	Garrard	423	0.4	1850.7	2394.4	Livingston	198	0.2	1496.7	2153.6
Nelson	1071	1.1	1957.0	2316.5	Marion	417	0.4	1784.9	2163.7	McLean	196	0.2	1544.4	2128.8
Barren	1040	1.0	1788.4	2350.3	Bath	410	0.4	2559.6	3280.0	Owen	185	0.2	1247.5	1697.1
Hopkins	1006	1.0	1709.2	2251.3	Estill	408	0.4	2293.0	2892.4	Clinton	184	0.2	1363.7	1800.7
Oldham	1004	1.0	1451.5	1503.0	Wayne	408	0.4	1407.1	2006.6	Elliott	184	0.2	1773.5	2447.8
Christian	986	1.0	1486.0	1399.4	Henry	398	0.4	1971.0	2468.1	Bracken	183	0.2	1725.3	2204.0
Graves	929	0.9	1923.8	2492.9	Leslie	397	0.4	3147.3	4019.4	Lyon	174	0.2	1313.6	2119.4
Clark	924	0.9	2040.8	2548.1	Powell	396	0.4	2760.2	3204.1	Trimble	172	0.2	1531.6	2030.5
Shelby	849	0.9	1479.4	1731.8	Hart	390	0.4	1619.4	2048.9	Hancock	169	0.2	1602.9	1937.6
Grayson	847	0.9	2557.3	3205.1	Breckinridge	383	0.4	1496.7	1870.4	Lewis	166	0.2	929.5	1250.5
Scott	836	0.8	1481.0	1466.6	Fleming	370	0.4	1996.3	2537.6	Nicholas	166	0.2	1878.2	2283.7
Greenup	758	0.8	1486.6	2159.7	Lawrence	368	0.4	1866.0	2402.6	Cumberland	152	0.2	1483.4	2298.2
Clay	742	0.7	3074.6	3728.5	Mason	368	0.4	1642.5	2155.8	Fulton	130	0.1	1575.5	2177.9
Carter	728	0.7	2055.9	2716.7	Allen	361	0.4	1286.8	1693.6	Carlisle	126	0.1	1781.7	2647.1
Letcher	719	0.7	2480.2	3336.0	Larue	353	0.4	1855.8	2451.7	Ballard	121	0.1	989.6	1534.0
Knox	713	0.7	1903.0	2289.3	Pendleton	345	0.3	1864.5	2364.6	Todd	121	0.1	825.5	984.2
Montgomery	703	0.7	2095.6	2496.7	Simpson	344	0.3	1466.0	1852.3	Union	120	0.1	705.1	834.4
Boyle	681	0.7	1749.4	2265.5	Spencer	328	0.3	1442.9	1695.0	Crittenden	116	0.1	942.8	1317.3
Henderson	664	0.7	1114.4	1468.7	Russell	327	0.3	1345.8	1824.5	Hickman	104	0.1	1545.6	2374.4
Taylor	641	0.6	2060.8	2487.5	Harrison	323	0.3	1348.9	1710.3	Robertson	45	0.0	1291.9	2134.7

**Table 26: Incidence of All ED NTBI\* by County, Sorted by Frequency, Kentucky, 2020**

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Jefferson	4587	19.4	584.8	598.2	Grayson	166	0.7	595.0	628.2	Lee	77	0.3	939.3	1040.1
Fayette	1411	6.0	435.7	436.6	Barren	165	0.7	338.9	372.9	Clinton	76	0.3	575.0	743.8
Kenton	631	2.7	373.0	377.9	Wayne	164	0.7	640.2	806.6	Knott	76	0.3	451.5	513.3
Madison	593	2.5	642.7	637.7	Estill	163	0.7	1024.5	1155.5	Monroe	71	0.3	573.9	666.7
Pike	444	1.9	663.1	767.2	Clay	156	0.7	702.3	783.9	Morgan	70	0.3	467.9	526.0
Warren	428	1.8	325.1	322.1	Jessamine	149	0.6	272.9	275.3	Wolfe	68	0.3	911.0	950.1
Hardin	422	1.8	372.4	380.3	Jackson	136	0.6	842.8	1020.3	Lawrence	67	0.3	402.2	437.4
Boone	419	1.8	317.2	313.7	Bourbon	134	0.6	675.7	677.2	Magoffin	66	0.3	473.7	542.7
Campbell	389	1.6	404.2	415.7	Simpson	134	0.6	641.5	721.5	Pendleton	66	0.3	428.3	452.4
Laurel	365	1.5	547.6	600.2	Mason	131	0.6	678.4	767.4	Rowan	65	0.3	288.0	265.7
Christian	346	1.5	520.9	491.1	Mercer	129	0.5	547.8	588.2	Webster	65	0.3	428.4	502.2
Scott	342	1.4	602.5	600.0	Greenup	128	0.5	343.1	364.7	Livingston	60	0.3	538.6	652.6
Daviess	340	1.4	313.2	334.9	Carroll	126	0.5	1109.1	1185.2	Gallatin	58	0.2	664.6	654.0
Floyd	338	1.4	813.0	949.7	Letcher	125	0.5	498.1	580.0	Spencer	56	0.2	289.2	289.4
Pulaski	328	1.4	455.7	504.8	Garrard	123	0.5	650.3	696.3	Martin	55	0.2	435.8	491.3
Whitley	306	1.3	783.4	843.8	Calloway	121	0.5	300.5	310.3	Washington	55	0.2	430.8	454.7
Nelson	302	1.3	606.1	653.2	Leslie	121	0.5	1004.7	1225.1	Bracken	52	0.2	591.5	626.3
Boyd	276	1.2	558.3	590.8	Allen	119	0.5	494.6	558.3	Crittenden	51	0.2	546.0	579.2
Hopkins	275	1.2	535.6	615.4	Harrison	119	0.5	582.2	630.1	Metcalf	49	0.2	448.6	486.6
Clark	272	1.2	697.3	750.1	Marion	117	0.5	563.4	607.1	Cumberland	48	0.2	490.1	725.7
Muhlenberg	266	1.1	741.9	868.7	Carter	113	0.5	408.8	421.7	Butler	46	0.2	298.1	357.2
Taylor	261	1.1	955.5	1012.8	Breckinridge	112	0.5	502.0	547.0	Nicholas	45	0.2	568.0	619.1
Shelby	252	1.1	475.9	514.0	Green	112	0.5	771.7	1023.7	Owen	45	0.2	386.5	412.8
Grant	247	1.0	959.3	985.3	Casey	111	0.5	539.6	686.9	Meade	44	0.2	151.6	154.0
Perry	241	1.0	874.9	935.6	Fleming	109	0.5	653.1	747.6	Larue	43	0.2	301.6	298.7
McCracken	230	1.0	311.7	351.6	Powell	107	0.5	798.9	865.8	Edmonson	41	0.2	289.7	337.5
Bullitt	222	0.9	259.6	271.8	Trigg	106	0.4	560.1	723.5	McLean	41	0.2	395.6	445.3
Henderson	222	0.9	417.1	491.0	Logan	102	0.4	320.3	376.4	Menifee	41	0.2	547.3	631.8
Montgomery	211	0.9	701.6	749.4	Johnson	100	0.4	403.8	450.7	Lyon	40	0.2	331.0	487.2
Bell	207	0.9	685.4	795.2	Henry	98	0.4	599.6	607.7	Todd	33	0.1	250.1	268.4
Lincoln	203	0.9	770.3	826.9	Woodford	97	0.4	361.8	362.8	Trimble	32	0.1	339.9	377.8
Harlan	201	0.9	639.2	772.8	Rockcastle	96	0.4	556.7	575.0	Hancock	31	0.1	322.4	355.4
Knox	199	0.8	552.4	639.0	Hart	93	0.4	414.4	488.6	Lewis	31	0.1	192.6	233.5
Ohio	195	0.8	688.2	812.7	McCreary	88	0.4	463.7	510.7	Elliott	27	0.1	367.9	359.2
Adair	192	0.8	831.2	999.9	Russell	85	0.4	422.5	474.3	Owsley	26	0.1	490.6	588.9
Franklin	191	0.8	367.6	374.6	Anderson	84	0.4	360.8	369.3	Ballard	20	0.1	242.3	253.6
Oldham	185	0.8	289.6	277.0	Caldwell	84	0.4	540.3	659.0	Carlisle	18	0.1	309.4	378.2
Graves	183	0.8	444.2	491.1	Union	84	0.4	551.6	584.1	Fulton	14	0.1	190.4	234.6
Marshall	181	0.8	438.8	582.0	Breathitt	81	0.3	552.5	641.3	Hickman	13	0.1	272.0	296.8
Boyle	175	0.7	533.4	582.2	Bath	79	0.3	595.5	632.0	Robertson	12	0.1	588.5	569.3

**Table 27: Incidence of All Inpatient NTBI\* by County, Sorted by Age Adjusted Rate, Kentucky, 2020**

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

Age-Adjusted Crude					Age-Adjusted Crude					Age-Adjusted Crude				
County	Freq	Percent	Rate	Rate	County	Freq	Percent	Rate	Rate	County	Freq	Percent	Rate	Rate
Whitley	1708	1.7	4026.0	4709.9	Lincoln	627	0.6	1930.3	2554.1	Muhlenberg	625	0.6	1514.0	2041.0
Perry	1215	1.2	3803.3	4717.0	Hardin	2376	2.4	1926.8	2141.4	Livingston	198	0.2	1496.7	2153.6
Harlan	1214	1.2	3485.4	4667.4	Graves	929	0.9	1923.8	2492.9	Breckinridge	383	0.4	1496.7	1870.4
Ow sley	201	0.2	3317.4	4552.7	Jessamine	1191	1.2	1913.7	2200.9	Greenup	758	0.8	1486.6	2159.7
Leslie	397	0.4	3147.3	4019.4	Knox	713	0.7	1903.0	2289.3	Christian	986	1.0	1486.0	1399.4
Clay	742	0.7	3074.6	3728.5	Washington	296	0.3	1880.7	2447.3	Cumberland	152	0.2	1483.4	2298.2
Breathitt	475	0.5	2965.0	3760.9	Nicholas	166	0.2	1878.2	2283.7	Scott	836	0.8	1481.0	1466.6
Jackson	494	0.5	2888.8	3706.2	Law rence	368	0.4	1866.0	2402.6	Shelby	849	0.9	1479.4	1731.8
Wolfe	258	0.3	2830.1	3604.9	Pendleton	345	0.3	1864.5	2364.6	Simpson	344	0.3	1466.0	1852.3
Pow ell	396	0.4	2760.2	3204.1	Larue	353	0.4	1855.8	2451.7	Ohio	443	0.4	1459.6	1846.3
Lee	251	0.3	2676.9	3390.5	Monroe	267	0.3	1851.8	2507.0	Oldham	1004	1.0	1451.5	1503.0
Menifee	230	0.2	2583.7	3544.5	Garrard	423	0.4	1850.7	2394.4	Spencer	328	0.3	1442.9	1695.0
Bath	410	0.4	2559.6	3280.0	Madison	1803	1.8	1849.7	1939.0	Wayne	408	0.4	1407.1	2006.6
Grayson	847	0.9	2557.3	3205.1	Franklin	1186	1.2	1841.6	2325.9	Green	238	0.2	1404.7	2175.3
Pike	1942	2.0	2511.8	3355.5	Morgan	316	0.3	1790.2	2374.3	Daviess	1729	1.7	1402.0	1703.3
Letcher	719	0.7	2480.2	3336.0	Barren	1040	1.0	1788.4	2350.3	Logan	512	0.5	1390.9	1889.2
Gallatin	229	0.2	2433.0	2582.0	Fayette	6045	6.1	1786.1	1870.6	Campbell	1575	1.6	1385.3	1683.0
Row an	623	0.6	2421.1	2547.0	Marion	417	0.4	1784.9	2163.7	Casey	308	0.3	1370.7	1906.1
Floyd	1077	1.1	2330.8	3026.2	Carlisle	126	0.1	1781.7	2647.1	Clinton	184	0.2	1363.7	1800.7
Estill	408	0.4	2293.0	2892.4	Elliott	184	0.2	1773.5	2447.8	Harrison	323	0.3	1348.9	1710.3
Grant	632	0.6	2245.4	2521.0	Bourbon	462	0.5	1771.4	2334.8	Russell	327	0.3	1345.8	1824.5
Carroll	281	0.3	2245.2	2643.2	Boyle	681	0.7	1749.4	2265.5	Woodford	463	0.5	1344.3	1731.9
Laurel	1646	1.7	2235.9	2706.7	Anderson	479	0.5	1728.9	2105.8	Marshall	607	0.6	1335.6	1951.8
Knott	424	0.4	2209.0	2863.7	Bracken	183	0.2	1725.3	2204.0	Rockcastle	270	0.3	1317.8	1617.3
McCreary	441	0.4	2207.0	2559.3	Hopkins	1006	1.0	1709.2	2251.3	Lyon	174	0.2	1313.6	2119.4
Magoffin	322	0.3	2128.4	2647.8	McCracken	1457	1.5	1653.0	2227.2	Meade	429	0.4	1312.8	1501.5
Jefferson	####	19.5	2125.8	2533.3	Mason	368	0.4	1642.5	2155.8	Callow ay	606	0.6	1302.0	1553.8
Boyd	1354	1.4	2102.4	2898.2	Bell	572	0.6	1639.8	2197.3	Robertson	45	0.0	1291.9	2134.7
Metcalfe	295	0.3	2099.3	2929.2	Kenton	3062	3.1	1627.1	1833.6	Allen	361	0.4	1286.8	1693.6
Montgomery	703	0.7	2095.6	2496.7	Hart	390	0.4	1619.4	2048.9	Webster	211	0.2	1278.8	1630.4
Johnson	602	0.6	2080.5	2713.2	Hancock	169	0.2	1602.9	1937.6	Ow en	185	0.2	1247.5	1697.1
Taylor	641	0.6	2060.8	2487.5	Bullitt	1575	1.6	1594.4	1928.4	Caldw ell	218	0.2	1197.2	1710.2
Carter	728	0.7	2055.9	2716.7	Fulton	130	0.1	1575.5	2177.9	Edmonson	203	0.2	1159.3	1670.8
Clark	924	0.9	2040.8	2548.1	Boone	2231	2.2	1547.8	1670.2	Henderson	664	0.7	1114.4	1468.7
Martin	274	0.3	2009.0	2447.5	Butler	260	0.3	1545.9	2018.8	Trigg	237	0.2	1064.7	1617.6
Fleming	370	0.4	1996.3	2537.6	Hickman	104	0.1	1545.6	2374.4	Ballard	121	0.1	989.6	1534.0
Henry	398	0.4	1971.0	2468.1	McLean	196	0.2	1544.4	2128.8	Crittenden	116	0.1	942.8	1317.3
Nelson	1071	1.1	1957.0	2316.5	Mercer	443	0.4	1541.7	2019.8	Lew is	166	0.2	929.5	1250.5
Pulaski	1679	1.7	1950.4	2583.9	Warren	2060	2.1	1538.6	1550.1	Todd	121	0.1	825.5	984.2
Adair	492	0.5	1935.8	2562.2	Trimble	172	0.2	1531.6	2030.5	Union	120	0.1	705.1	834.4

**Table 28: Incidence of All ED NTBI\* by County, Sorted by Age Adjusted Rate, Kentucky, 2020**

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

Age-Adjusted Crude					Age-Adjusted Crude					Age-Adjusted Crude				
County	Freq	Percent	Rate	Rate	County	Freq	Percent	Rate	Rate	County	Freq	Percent	Rate	Rate
Carroll	126	0.5	1109.1	1185.2	Clinton	76	0.3	575.0	743.8	Henderson	222	0.9	417.1	491.0
Estill	163	0.7	1024.5	1155.5	Monroe	71	0.3	573.9	666.7	Hart	93	0.4	414.4	488.6
Leslie	121	0.5	1004.7	1225.1	Nicholas	45	0.2	568.0	619.1	Carter	113	0.5	408.8	421.7
Grant	247	1.0	959.3	985.3	Marion	117	0.5	563.4	607.1	Campbell	389	1.6	404.2	415.7
Taylor	261	1.1	955.5	1012.8	Trigg	106	0.4	560.1	723.5	Johnson	100	0.4	403.8	450.7
Lee	77	0.3	939.3	1040.1	Boyd	276	1.2	558.3	590.8	Lawrence	67	0.3	402.2	437.4
Wolfe	68	0.3	911.0	950.1	Rockcastle	96	0.4	556.7	575.0	McLean	41	0.2	395.6	445.3
Perry	241	1.0	874.9	935.6	Breathitt	81	0.3	552.5	641.3	Owen	45	0.2	386.5	412.8
Jackson	136	0.6	842.8	1020.3	Knox	199	0.8	552.4	639.0	Kenton	631	2.7	373.0	377.9
Adair	192	0.8	831.2	999.9	Union	84	0.4	551.6	584.1	Hardin	422	1.8	372.4	380.3
Floyd	338	1.4	813.0	949.7	Mercer	129	0.5	547.8	588.2	Elliott	27	0.1	367.9	359.2
Powell	107	0.5	798.9	865.8	Laurel	365	1.5	547.6	600.2	Franklin	191	0.8	367.6	374.6
Whitley	306	1.3	783.4	843.8	Menifee	41	0.2	547.3	631.8	Woodford	97	0.4	361.8	362.8
Green	112	0.5	771.7	1023.7	Crittenden	51	0.2	546.0	579.2	Anderson	84	0.4	360.8	369.3
Lincoln	203	0.9	770.3	826.9	Caldwell	84	0.4	540.3	659.0	Greenup	128	0.5	343.1	364.7
Muhlenberg	266	1.1	741.9	868.7	Casey	111	0.5	539.6	686.9	Trimble	32	0.1	339.9	377.8
Clay	156	0.7	702.3	783.9	Livingston	60	0.3	538.6	652.6	Barren	165	0.7	338.9	372.9
Montgomery	211	0.9	701.6	749.4	Hopkins	275	1.2	535.6	615.4	Lyon	40	0.2	331.0	487.2
Clark	272	1.2	697.3	750.1	Boyle	175	0.7	533.4	582.2	Warren	428	1.8	325.1	322.1
Ohio	195	0.8	688.2	812.7	Christian	346	1.5	520.9	491.1	Hancock	31	0.1	322.4	355.4
Bell	207	0.9	685.4	795.2	Breckinridge	112	0.5	502.0	547.0	Logan	102	0.4	320.3	376.4
Mason	131	0.6	678.4	767.4	Letcher	125	0.5	498.1	580.0	Boone	419	1.8	317.2	313.7
Bourbon	134	0.6	675.7	677.2	Allen	119	0.5	494.6	558.3	Daviess	340	1.4	313.2	334.9
Gallatin	58	0.2	664.6	654.0	Owsley	26	0.1	490.6	588.9	McCracken	230	1.0	311.7	351.6
Pike	444	1.9	663.1	767.2	Cumberland	48	0.2	490.1	725.7	Carlisle	18	0.1	309.4	378.2
Fleming	109	0.5	653.1	747.6	Shelby	252	1.1	475.9	514.0	Larue	43	0.2	301.6	298.7
Garrard	123	0.5	650.3	696.3	Magoffin	66	0.3	473.7	542.7	Calloway	121	0.5	300.5	310.3
Madison	593	2.5	642.7	637.7	Morgan	70	0.3	467.9	526.0	Butler	46	0.2	298.1	357.2
Simpson	134	0.6	641.5	721.5	McCreary	88	0.4	463.7	510.7	Edmonson	41	0.2	289.7	337.5
Wayne	164	0.7	640.2	806.6	Pulaski	328	1.4	455.7	504.8	Oldham	185	0.8	289.6	277.0
Harlan	201	0.9	639.2	772.8	Knott	76	0.3	451.5	513.3	Spencer	56	0.2	289.2	289.4
Nelson	302	1.3	606.1	653.2	Metcalfe	49	0.2	448.6	486.6	Rowan	65	0.3	288.0	265.7
Scott	342	1.4	602.5	600.0	Graves	183	0.8	444.2	491.1	Jessamine	149	0.6	272.9	275.3
Henry	98	0.4	599.6	607.7	Marshall	181	0.8	438.8	582.0	Hickman	13	0.1	272.0	296.8
Bath	79	0.3	595.5	632.0	Martin	55	0.2	435.8	491.3	Bullitt	222	0.9	259.6	271.8
Grayson	166	0.7	595.0	628.2	Fayette	1411	6.0	435.7	436.6	Todd	33	0.1	250.1	268.4
Bracken	52	0.2	591.5	626.3	Washington	55	0.2	430.8	454.7	Ballard	20	0.1	242.3	253.6
Robertson	12	0.1	588.5	569.3	Webster	65	0.3	428.4	502.2	Lewis	31	0.1	192.6	233.5
Jefferson	4587	19.4	584.8	598.2	Pendleton	66	0.3	428.3	452.4	Fulton	14	0.1	190.4	234.6
Harrison	119	0.5	582.2	630.1	Russell	85	0.4	422.5	474.3	Meade	44	0.2	151.6	154.0

**Table 29: Causes of Non-Fatal NTBI, Kentucky, 2020**

ABI Category	Inpatient		ED	
	Number	Percent	Number	Percent
Anoxia	77,745	82.3	10,715	45.8
Exposure to toxic substances	12,433	13.2	9,745	41.6
Allergy/anaphylaxis	249	0.3	1,846	7.9
Acute medical clinical incidents	4,069	4.3	1,109	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: Non-Fatal Anoxia by Age Group, Kentucky, 2020**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	865	73.1	317.3	318	26.9	116.7	1,183	100.0	434.0
5-14	396	76.0	70.7	125	24.0	22.3	521	100.0	93.0
15-24	799	76.8	136.9	242	23.2	41.5	1,041	100.0	178.3
25-44	5,955	86.0	523.1	972	14.0	85.4	6,927	100.0	608.5
45-64	26,031	87.7	2240.3	3,635	12.3	312.8	29,666	100.0	2553.1
65+	43,699	89.0	5822.2	5,423	11.0	722.5	49,122	100.0	6544.7
Total	77,745	87.9	1740.2	10,715	12.1	239.8	88,460	100.0	1980.0



**Table 31: Diagnosis Distribution for Non-Fatal Anoxia, Kentucky, 2020**

Diagnosis	Description	Inpatient		ED	
		Number	Percent	Number	Percent
G91(.0-.2)	Communicating hydrocephalus	595	0.77	108	1.01
G931	Anoxic brain damage, NEC	228	0.29	52	0.49
J96	Respiratory failure, NEC w/hypoxia or hypercapnia	69428	89.30	6783	63.30
R090	Asphyxia and hypoxemia	7448	9.58	3467	32.36
T71	Asphyxiation	38	0.05	236	2.20
T751	Unspec effects of drowning and non-fatal submersion	8	0.01	69	0.64
Total		77,745	100.00	10,715	100.00

**Table 32: Non-Fatal Exposure to Toxic Substances by Age Group, Kentucky, 2020**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	75	20.5	27.5	291	79.5	106.7	366	100.0	134.3
5-14	64	32.3	11.4	134	67.7	23.9	198	100.0	35.3
15-24	403	26.2	69.0	1,133	73.8	194.1	1,536	100.0	263.1
25-44	2,076	29.8	182.4	4,895	70.2	430.0	6,971	100.0	612.4
45-64	4,082	64.1	351.3	2,291	35.9	197.2	6,373	100.0	548.5
65+	5,733	85.1	763.8	1,001	14.9	133.4	6,734	100.0	897.2
Total	12,433	56.1	278.3	9,745	43.9	218.1	22,178	100.0	496.4

**Table 33: Diagnosis Distribution for Non-Fatal Exposure to Toxic Substances, Kentucky, 2020**

Diagnosis	Description	Inpatient		ED	
		Number	Percent	Number	Percent
G92	Toxic encephalopathy	5917	47.6	365	3.7
T40	Poisoning by narcotics and hallucinogens	2984	24.0	6246	64.1
T41	Poisoning by anesthetics and therapeutic gases	163	1.3	70	0.7
T42(.3-.7)	Poisoning by antiepileptic and sedative hypnotic drugs	1175	9.5	1276	13.1
T45.5	Poisoning by anticoagulants and antithrombotic drugs	1620	13.0	401	4.1
T51	Toxic effect of alcohol	150	1.2	175	1.8
T56	Toxic effect of metals	26	0.2	27	0.3
T57	Toxic effect of other inorganic substances	1	0.0	2	0.0
T58	Toxic effect of carbon monoxide	41	0.3	150	1.5
T60	Toxic effect of pesticides	10	0.1	60	0.6
T61	Toxic effect of noxious substances eaten as seafood	0	0.0	9	0.1
T62	Toxic effect of other noxious substances eaten as food	5	0.0	43	0.4
T65	Toxic effect of other unspecified substances	107	0.9	879	9.0
T81.1	Postprocedural shock	179	1.4	4	0.0
T88.2	Shock due to anesthesia	10	0.1	2	0.0
T88.5	Other complications of anesthesia	45	0.4	36	0.4
Total		12433	100.0	9745	100.0

**Table 34: Length of Stay for Non-Fatal Inpatient NTBI, Kentucky, 2020**

Length of Stay	Number	Percent*
1 day	7089	8.0
More than one day but less than 1 week	49063	55.2
1 week to less than 2 weeks	21492	24.2
2 weeks to less than 3 weeks	6192	7.0
3 weeks to less than 4 weeks	2387	2.7
4 weeks or more	2681	3.0
Total	88904	100.0

\*Percent of hospitalized NTBI

**Table 35: Discharge Disposition for Non-Fatal NTBI, Kentucky, 2020**

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	42,494	47.8	15,746	68.1
Skilled nursing facility (SNF)	12,375	13.9	601	2.6
Home health	14,870	16.7	468	2.0
Inpatient-other type facility	59	0.1	141	0.6
Inpatient-other short-term hospital	3,261	3.7	3,410	14.7
Intermediate care facility (ICF)	788	0.9	43	0.2
Rehab	4,706	5.3	97	0.4
Other	10,351	11.6	2,614	11.3
Total	88,904	100.0	23,120	100.0

**Table 36: Primary Payer and Charges for Non-Fatal Inpatient NTBI, Kentucky, 2020**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	73,813	83.0	\$ 4,703,590,491
Commercial Insurance	13,323	15.0	\$ 1,043,562,323
Self Pay	612	0.7	\$ 30,330,930
Workers Compensation	250	0.3	\$ 24,189,637
Other	906	1.0	\$ 98,996,069
Total	88,904	100.0	\$ 5,900,669,450

**Table 37: Primary Payer and Charges for Non-Fatal ED NTBI, Kentucky, 2020**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Charges
Government	17,709	76.6	\$ 146,521,715
Commercial Insurance	3,890	16.8	\$ 26,994,075
Self Pay	1,135	4.9	\$ 3,524,699
Workers Compensation	105	0.5	\$ 390,991
Other	281	1.2	\$ 1,969,911
Total	23,120	100.0	\$ 179,401,392

**Table 38: Non-Fatal SCI by Age Group, Kentucky, 2020**

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	12.5	0.2	8	88.9	1.4	9	100.0	1.6
15-24	21	84.0	3.6	4	16.0	0.7	25	100.0	4.3
25-44	36	69.2	3.2	16	30.8	1.4	52	100.0	4.6
45-64	58	71.6	5.0	23	28.4	2.0	81	100.0	7.0
65+	60	75.9	8.0	19	24.1	2.5	79	100.0	10.5
Total	177	71.7	4.0	70	28.3	1.6	247	100.0	5.5

**Table 39: Non-Fatal SCI by Gender, Kentucky, 2020**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	116	72.0	5.3	45	28.0	2.0	161	100.0	7.3
Female	61	70.9	2.7	25	29.1	1.1	86	100.0	3.8
Total	177	71.7	4.0	70	28.3	1.6	247	100.0	5.5

**Table 40: Leading Causes of Non-Fatal SCI, Kentucky, 2020**

Mechanism of Injury	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Motor vehicle traffic crash	32	66.7	0.7	16	33.3	0.4	48	100.0	1.1
Fall	69	73.4	1.5	25	26.6	0.6	94	100.0	2.1
Non-traffic land transportation	4	80.0	0.1	1	20.0	0.0	5	100.0	0.1
Struck by or against object or person	5	50.0	0.1	5	50.0	0.1	10	100.0	0.2
Firearm	8	88.9	0.2	1	11.1	0.0	9	100.0	0.2
Other	13	50.0	0.3	13	50.0	0.3	26	100.0	0.6
Unknown (missing E-code)	46	83.6	1.0	9	16.4	0.2	55	100.0	1.2
Total	177	71.7	4.0	70	28.3	1.6	247	100.0	5.5

**Table 41: Length of Stay for Non-Fatal Inpatient SCI, Kentucky, 2020**

Length of Stay	Number	Percent*
1 day	12	6.8
More than one day but less than 1 week	63	35.6
1 week to less than 2 weeks	57	32.2
2 weeks to less than 3 weeks	23	13.0
3 weeks to less than 4 weeks	7	4.0
4 weeks or more	15	8.5
Total	177	100.0

\*Percent of hospitalized SCI

Mean 11.1  
Median 8  
Min, Max 1-91

**Table 42: Discharge Disposition for Non-Fatal SCI, Kentucky, 2020**

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	53	29.9	42	60.0
Home health	10	5.6	1	1.4
Skilled nursing facility (SNF)	17	9.6	1	1.4
Inpatient-other	2	1.1	20	28.6
Rehab	84	47.5	0	0.0
Other	11	6.2	6	8.6
Total	177	100.0	70	100.0

**Table 43: Primary Payer and Charges for Non-Fatal Inpatient SCI, Kentucky, 2020**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	98	55.4	\$ 15,795,126
Commercial Ins	47	26.6	\$ 8,607,397
Workers Compensation	6	3.4	\$ 2,157,987
Self Pay	3	1.7	\$ 493,428
Other	23	13.0	\$ 5,984,314
Total	177	100.0	\$33,038,252

**Table 44: Primary Payer and Charges for Non-Fatal ED SCI, Kentucky, 2020**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	43	61.4	\$ 400,101
Commercial Ins	14	20.0	\$ 129,399
Workers Compensation	4	5.7	\$ 18,093
Self Pay	2	2.9	\$ 22,034
Other	7	10.0	\$ 95,634
Total	70	100.0	\$665,261

**Table 45: Non-Fatal Stroke by Age Group, Kentucky, 2020**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
0-4	18	0.0	6.6	4	0.0	1.5	22	100.0	8.1
5-14	12	120.0	2.1	10	45.5	1.8	22	100.0	3.9
15-24	47	59.5	8.1	32	40.5	5.5	79	100.0	13.5
25-44	679	57.8	59.6	496	42.2	43.6	1,175	100.0	103.2
45-64	3,901	61.3	335.7	2,458	38.7	211.5	6,359	100.0	547.3
65+	7,818	65.0	1041.6	4,204	35.0	560.1	12,022	100.0	1601.7
Total	12,475	63.4	279.2	7,204	36.6	161.2	19,679	100.0	440.5

**Table 46: Non-Fatal Stroke by Gender, Kentucky, 2020**

Age	Inpatient			ED			Total		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
Male	6,006	64.2	272.9	3,345	35.8	152.0	9,351	100.0	424.8
Female	6,468	62.6	285.4	3,859	37.4	170.3	10,327	100.0	455.6
Total	12,474	63.4	279.2	7,204	36.6	161.2	19,678	100.0	440.5

**Table 47: Length of Stay for Non-Fatal Inpatient Stroke, Kentucky, 2020**

Length of Stay	Number	Percent*
1 day	1,985	15.9
More than one day but less than 1 week	6,912	55.4
1 week to less than 2 weeks	2,258	18.1
2 weeks to less than 3 weeks	698	5.6
3 weeks to less than 4 weeks	287	2.3
4 weeks or more	335	2.7
Total	12,475	100.0

\*Percent of hospitalized Stroke

**Table 48: Discharge Disposition for Non-Fatal Stroke, Kentucky, 2020**

Discharge Disposition	Inpatient		ED	
	Number	Percent	Number	Percent
Routine discharge (home/self care)	4,952	39.7	3,698	55.6
Home health	1,699	13.6	163	0.0
Skilled nursing facility (SNF)	1,758	14.1	134	0.0
Inpatient-other	411	3.3	2,611	38.3
Intermediate Care Facility	62	0.5	22	2.5
Rehab	2,282	18.3	26	0.4
Other	1,311	10.5	550	3.7
Total	12,475	100.0	7204	100.0

**Table 49: Primary Payer and Charges for Non-Fatal Inpatient Stroke, Kentucky, 2020**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	9,993	80.1	691,229,993
Commercial Ins	2,294	18.4	199,682,877
Workers Compensation	7	0.1	1,329,366
Self Pay	79	0.6	5,127,315
Other	102	0.8	9,985,375
Total	12,475	100.0	\$907,354,927

**Table 50: Primary Payer and Charges for Non-Fatal ED Stroke, Kentucky, 2020**

Payer	Number of Discharges	Percent of Discharges	Total Hospital Discharges
Government	5,452	75.7	\$ 75,830,587
Commercial Ins	1,572	21.8	\$ 24,977,460
Workers Compensation	9	0.1	\$ 116,382
Self Pay	101	1.4	\$ 1,034,603
Other	70	1.0	\$ 864,773
Total	7,204	100.0	\$102,823,806



**Table 51: Incidence of All Inpatient Stroke\* by County, Sorted by County, Kentucky, 2020**

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Adair	68	0.5	271.6	354.1	Grant	100	0.7	366.8	398.9	McLean	32	0.2	240.6	347.6
Allen	61	0.4	210.0	286.2	Graves	135	1.0	269.6	362.3	Meade	71	0.5	215.3	248.5
Anderson	79	0.6	284.8	347.3	Grayson	114	0.8	333.1	431.4	Menifee	29	0.2	299.1	446.9
Ballard	23	0.2	173.2	291.6	Green	27	0.2	158.6	246.8	Mercer	80	0.6	269.2	364.7
Barren	108	0.8	190.7	244.1	Greenup	110	0.8	221.7	313.4	Metcalfe	38	0.3	275.8	377.3
Bath	45	0.3	280.2	360.0	Hancock	31	0.2	270.8	355.4	Monroe	48	0.3	328.9	450.7
Bell	58	0.4	163.1	222.8	Hardin	418	3.0	333.5	376.7	Montgomery	114	0.8	332.1	404.9
Boone	337	2.4	235.4	252.3	Harlan	132	1.0	375.7	507.5	Morgan	37	0.3	226.8	278.0
Bourbon	61	0.4	229.3	308.3	Harrison	57	0.4	225.7	301.8	Muhlenberg	82	0.6	202.8	267.8
Boyd	188	1.4	288.1	402.4	Hart	63	0.5	260.5	331.0	Nelson	148	1.1	275.9	320.1
Boyle	103	0.7	251.5	342.6	Henderson	50	0.4	80.7	110.6	Nicholas	21	0.2	227.7	288.9
Bracken	29	0.2	259.2	349.3	Henry	58	0.4	281.8	359.7	Ohio	61	0.4	197.0	254.2
Breathitt	55	0.4	324.3	435.5	Hickman	10	0.1	152.5	228.3	Oldham	133	1.0	193.2	199.1
Breckinridge	78	0.6	287.4	380.9	Hopkins	100	0.7	175.3	223.8	Owen	29	0.2	184.9	266.0
Bullitt	205	1.5	201.3	251.0	Jackson	45	0.3	249.9	337.6	Owsley	13	0.1	185.7	294.5
Butler	43	0.3	237.9	333.9	Jefferson	2634	19.1	283.2	343.5	Pendleton	51	0.4	277.5	349.6
Caldwell	32	0.2	166.8	251.0	Jessamine	144	1.0	226.8	266.1	Perry	166	1.2	514.2	644.5
Calloway	64	0.5	131.9	164.1	Johnson	71	0.5	250.8	320.0	Pike	252	1.8	329.2	435.4
Campbell	221	1.6	195.4	236.2	Kenton	378	2.7	201.5	226.4	Powell	60	0.4	443.3	485.5
Carlisle	20	0.1	260.3	420.2	Knott	55	0.4	264.3	371.5	Pulaski	236	1.7	272.4	363.2
Carroll	39	0.3	318.2	366.9	Knox	76	0.6	190.6	244.0	Robertson	5	0.0	183.9	237.2
Carter	105	0.8	301.0	391.8	Larue	59	0.4	316.7	409.8	Rockcastle	57	0.4	259.4	341.4
Casey	43	0.3	176.6	266.1	Laurel	206	1.5	288.7	338.7	Rowan	74	0.5	284.8	302.5
Christian	100	0.7	150.8	141.9	Lawrence	39	0.3	206.0	254.6	Russell	68	0.5	280.7	379.4
Clark	139	1.0	285.1	383.3	Lee	33	0.2	334.6	445.8	Scott	130	0.9	238.1	228.1
Clay	82	0.6	333.2	412.0	Leslie	74	0.5	533.9	749.2	Shelby	121	0.9	204.1	246.8
Clinton	34	0.2	239.4	332.7	Letcher	110	0.8	402.2	510.4	Simpson	52	0.4	228.1	280.0
Crittenden	17	0.1	130.0	193.1	Lewis	33	0.2	185.6	248.6	Spencer	54	0.4	234.2	279.1
Cumberland	26	0.2	255.1	393.1	Lincoln	104	0.8	329.9	423.6	Taylor	101	0.7	297.8	391.9
Daviess	296	2.2	236.2	291.6	Livingston	34	0.2	218.2	369.8	Todd	19	0.1	128.4	154.5
Edmonson	40	0.3	205.6	329.2	Logan	60	0.4	159.1	221.4	Trigg	21	0.2	97.7	143.3
Elliott	17	0.1	148.4	226.2	Lyon	32	0.2	213.8	389.8	Trimble	28	0.2	253.6	330.5
Estill	64	0.5	358.7	453.7	Madison	234	1.7	239.5	251.6	Union	10	0.1	55.2	69.5
Fayette	844	6.1	249.8	261.2	Magoffin	44	0.3	300.3	361.8	Warren	399	2.9	301.4	300.2
Fleming	50	0.4	259.5	342.9	Marion	40	0.3	159.4	207.5	Washington	23	0.2	150.8	190.2
Floyd	124	0.9	265.8	348.4	Marshall	115	0.8	233.0	369.8	Wayne	62	0.5	188.8	304.9
Franklin	181	1.3	278.0	355.0	Martin	33	0.2	257.2	294.8	Webster	20	0.1	119.2	154.5
Fulton	22	0.2	256.4	368.6	Mason	54	0.4	239.5	316.3	Whitley	138	1.0	329.3	380.5
Gallatin	19	0.1	211.7	214.2	McCracken	219	1.6	226.3	334.8	Wolfe	31	0.2	341.2	433.1
Garrard	57	0.4	241.1	322.7	McCreary	57	0.4	277.2	330.8	Woodford	87	0.6	244.2	325.4

**Table 52: Incidence of All ED Stroke\* by County, Sorted by County, Kentucky, 2020**

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude		Freq	Percent	Rate	Crude
Adair	97	1.3	381.2	505.2	Grant	64	0.9	249.6	255.3	McLean	13	0.2	91.0	141.2
Allen	39	0.5	144.3	183.0	Graves	64	0.9	129.6	171.7	Meade	22	0.3	67.6	77.0
Anderson	22	0.3	74.1	96.7	Grayson	47	0.6	144.2	177.8	Menifee	20	0.3	196.9	308.2
Ballard	9	0.1	66.0	114.1	Green	36	0.5	209.0	329.0	Mercer	57	0.8	200.3	259.9
Barren	110	1.5	199.3	248.6	Greenup	52	0.7	111.3	148.2	Metcalfe	32	0.4	251.0	317.7
Bath	41	0.6	275.3	328.0	Hancock	8	0.1	71.5	91.7	Monroe	31	0.4	200.5	291.1
Bell	65	0.9	187.2	249.7	Hardin	141	1.9	111.6	127.1	Montgomery	86	1.2	240.6	305.4
Boone	79	1.1	53.9	59.1	Harlan	102	1.4	311.6	392.2	Morgan	29	0.4	168.8	217.9
Bourbon	38	0.5	155.2	192.0	Harrison	63	0.9	255.7	333.6	Muhlenberg	78	1.1	195.7	254.7
Boyd	97	1.3	148.0	207.6	Hart	55	0.8	245.6	288.9	Nelson	112	1.5	206.9	242.3
Boyle	102	1.4	255.9	339.3	Henderson	59	0.8	105.4	130.5	Nicholas	26	0.4	284.2	357.7
Breckenridge	17	0.2	148.3	204.7	Henry	28	0.4	136.0	173.6	Ohio	45	0.6	145.5	187.5
Breathitt	27	0.4	154.6	213.8	Hickman	6	0.1	83.9	137.0	Oldham	61	0.8	82.7	91.3
Breckinridge	56	0.8	195.0	273.5	Hopkins	94	1.3	156.1	210.4	Owen	15	0.2	110.4	137.6
Bullitt	47	0.6	49.7	57.5	Jackson	35	0.5	215.1	262.6	Owsley	9	0.1	136.6	203.9
Butler	17	0.2	99.3	132.0	Jefferson	666	9.2	72.8	86.9	Pendleton	18	0.2	103.1	123.4
Caldwell	18	0.2	85.2	141.2	Jessamine	40	0.6	67.3	73.9	Perry	128	1.8	392.9	496.9
Calloway	70	1.0	154.2	179.5	Johnson	60	0.8	206.5	270.4	Pike	136	1.9	177.0	235.0
Campbell	49	0.7	47.4	52.4	Kenton	105	1.5	55.2	62.9	Powell	21	0.3	144.5	169.9
Carlisle	17	0.2	211.4	357.1	Knott	47	0.6	264.0	317.4	Pulaski	166	2.3	196.7	255.5
Carroll	16	0.2	136.4	150.5	Knox	85	1.2	217.4	272.9	Robertson	9	0.1	247.5	426.9
Carter	48	0.7	146.6	179.1	Larue	24	0.3	122.8	166.7	Rockcastle	70	1.0	311.5	419.3
Casey	37	0.5	156.4	229.0	Laurel	146	2.0	206.0	240.1	Rowan	58	0.8	233.2	237.1
Christian	113	1.6	176.0	160.4	Lawrence	36	0.5	197.4	235.0	Russell	42	0.6	179.3	234.3
Clark	72	1.0	160.0	198.5	Lee	14	0.2	145.9	189.1	Scott	81	1.1	142.0	142.1
Clay	74	1.0	294.7	371.8	Leslie	47	0.6	375.1	475.9	Shelby	69	1.0	120.2	140.7
Clinton	39	0.5	269.5	381.7	Letcher	77	1.1	298.6	357.3	Simpson	39	0.5	172.0	210.0
Crittenden	16	0.2	132.1	181.7	Lewis	26	0.4	144.5	195.9	Spencer	11	0.2	47.0	56.8
Cumberland	18	0.2	155.8	272.2	Lincoln	102	1.4	311.8	415.5	Taylor	82	1.1	258.0	318.2
Daviess	108	1.5	87.2	106.4	Livingston	27	0.4	185.6	293.7	Todd	17	0.2	109.2	138.3
Edmonson	7	0.1	33.9	57.6	Logan	55	0.8	154.5	202.9	Trigg	32	0.4	141.1	218.4
Elliott	6	0.1	60.1	79.8	Lyon	18	0.2	129.4	219.2	Trimble	10	0.1	91.4	118.1
Estill	41	0.6	232.1	290.7	Madison	129	1.8	132.6	138.7	Union	30	0.4	170.0	208.6
Fayette	241	3.3	71.5	74.6	Magoffin	34	0.5	218.6	279.6	Warren	160	2.2	120.9	120.4
Fleming	54	0.7	321.5	370.3	Marion	61	0.8	262.1	316.5	Washington	31	0.4	195.9	256.3
Floyd	135	1.9	295.9	379.3	Marshall	67	0.9	143.2	215.4	Wayne	58	0.8	196.5	285.3
Franklin	66	0.9	103.2	129.4	Martin	37	0.5	288.1	330.5	Webster	19	0.3	129.1	146.8
Fulton	*	-	-	-	Mason	53	0.7	233.2	310.5	Whitley	115	1.6	271.8	317.1
Gallatin	10	0.1	111.5	112.8	McCracken	114	1.6	124.5	174.3	Wolfe	26	0.4	277.2	363.3
Garrard	37	0.5	166.2	209.4	McCreary	60	0.8	285.2	348.2	Woodford	24	0.3	66.8	89.8

\* At least one but fewer than five

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

**Table 53: Incidence of All Inpatient Stroke\* by County, Sorted by Frequency, Kentucky, 2020**

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

County	Age-Adjusted				County	Age-Adjusted				County	Age-Adjusted			
	Freq	Percent	Rate	Crude Rate		Freq	Percent	Rate	Crude Rate		Freq	Percent	Rate	Crude Rate
Jefferson	2634	19.1	283.2	343.5	Woodford	87	0.6	244.2	325.4	Magoffin	44	0.3	300.3	361.8
Fayette	844	6.1	249.8	261.2	Clay	82	0.6	333.2	412.0	Butler	43	0.3	237.9	333.9
Hardin	418	3.0	333.5	376.7	Muhlenberg	82	0.6	202.8	267.8	Casey	43	0.3	176.6	266.1
Warren	399	2.9	301.4	300.2	Mercer	80	0.6	269.2	364.7	Edmonson	40	0.3	205.6	329.2
Kenton	378	2.7	201.5	226.4	Anderson	79	0.6	284.8	347.3	Marion	40	0.3	159.4	207.5
Boone	337	2.4	235.4	252.3	Breckinridge	78	0.6	287.4	380.9	Carroll	39	0.3	318.2	366.9
Daviess	296	2.2	236.2	291.6	Knox	76	0.6	190.6	244.0	Lawrence	39	0.3	206.0	254.6
Pike	252	1.8	329.2	435.4	Leslie	74	0.5	533.9	749.2	Metcalfe	38	0.3	275.8	377.3
Pulaski	236	1.7	272.4	363.2	Rowan	74	0.5	284.8	302.5	Morgan	37	0.3	226.8	278.0
Madison	234	1.7	239.5	251.6	Johnson	71	0.5	250.8	320.0	Clinton	34	0.2	239.4	332.7
Campbell	221	1.6	195.4	236.2	Meade	71	0.5	215.3	248.5	Livingston	34	0.2	218.2	369.8
McCracken	219	1.6	226.3	334.8	Adair	68	0.5	271.6	354.1	Lee	33	0.2	334.6	445.8
Laurel	206	1.5	288.7	338.7	Russell	68	0.5	280.7	379.4	Lewis	33	0.2	185.6	248.6
Bullitt	205	1.5	201.3	251.0	Calloway	64	0.5	131.9	164.1	Martin	33	0.2	257.2	294.8
Boyd	188	1.4	288.1	402.4	Estill	64	0.5	358.7	453.7	Caldwell	32	0.2	166.8	251.0
Franklin	181	1.3	278.0	355.0	Hart	63	0.5	260.5	331.0	Lyon	32	0.2	213.8	389.8
Perry	166	1.2	514.2	644.5	Wayne	62	0.5	188.8	304.9	McLean	32	0.2	240.6	347.6
Nelson	148	1.1	275.9	320.1	Allen	61	0.4	210.0	286.2	Hancock	31	0.2	270.8	355.4
Jessamine	144	1.0	226.8	266.1	Bourbon	61	0.4	229.3	308.3	Wolfe	31	0.2	341.2	433.1
Clark	139	1.0	285.1	383.3	Ohio	61	0.4	197.0	254.2	Bracken	29	0.2	259.2	349.3
Whitley	138	1.0	329.3	380.5	Logan	60	0.4	159.1	221.4	Menifee	29	0.2	299.1	446.9
Graves	135	1.0	269.6	362.3	Powell	60	0.4	443.3	485.5	Owen	29	0.2	184.9	266.0
Oldham	133	1.0	193.2	199.1	Larue	59	0.4	316.7	409.8	Trimble	28	0.2	253.6	330.5
Harlan	132	1.0	375.7	507.5	Bell	58	0.4	163.1	222.8	Green	27	0.2	158.6	246.8
Scott	130	0.9	238.1	228.1	Henry	58	0.4	281.8	359.7	Cumberland	26	0.2	255.1	393.1
Floyd	124	0.9	265.8	348.4	Garrard	57	0.4	241.1	322.7	Ballard	23	0.2	173.2	291.6
Shelby	121	0.9	204.1	246.8	Harrison	57	0.4	225.7	301.8	Washington	23	0.2	150.8	190.2
Marshall	115	0.8	233.0	369.8	McCreary	57	0.4	277.2	330.8	Fulton	22	0.2	256.4	368.6
Grayson	114	0.8	333.1	431.4	Rockcastle	57	0.4	259.4	341.4	Nicholas	21	0.2	227.7	288.9
Montgomery	114	0.8	332.1	404.9	Breathitt	55	0.4	324.3	435.5	Trigg	21	0.2	97.7	143.3
Greenup	110	0.8	221.7	313.4	Knott	55	0.4	264.3	371.5	Carlisle	20	0.1	260.3	420.2
Letcher	110	0.8	402.2	510.4	Mason	54	0.4	239.5	316.3	Webster	20	0.1	119.2	154.5
Barren	108	0.8	190.7	244.1	Spencer	54	0.4	234.2	279.1	Gallatin	19	0.1	211.7	214.2
Carter	105	0.8	301.0	391.8	Simpson	52	0.4	228.1	280.0	Todd	19	0.1	128.4	154.5
Lincoln	104	0.8	329.9	423.6	Pendleton	51	0.4	277.5	349.6	Crittenden	17	0.1	130.0	193.1
Boyle	103	0.7	251.5	342.6	Fleming	50	0.4	259.5	342.9	Elliott	17	0.1	148.4	226.2
Taylor	101	0.7	297.8	391.9	Henderson	50	0.4	80.7	110.6	Owsley	13	0.1	185.7	294.5
Christian	100	0.7	150.8	141.9	Monroe	48	0.3	328.9	450.7	Hickman	10	0.1	152.5	228.3
Grant	100	0.7	366.8	398.9	Bath	45	0.3	280.2	360.0	Union	10	0.1	55.2	69.5
Hopkins	100	0.7	175.3	223.8	Jackson	45	0.3	249.9	337.6	Robertson	5	0.0	183.9	237.2

**Table 54: Incidence of All ED Stroke\* by County, Sorted by Frequency, Kentucky, 2020**

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

County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted		County	Freq	Percent	Age-Adjusted	
			Rate	Crude Rate				Rate	Crude Rate				Rate	Crude Rate
Jefferson	666	9.2	72.8	86.9	Harrison	63	0.9	255.7	333.6	Washington	31	0.4	195.9	256.3
Fayette	241	3.3	71.5	74.6	Marion	61	0.8	262.1	316.5	Union	30	0.4	170.0	208.6
Pulaski	166	2.3	196.7	255.5	Oldham	61	0.8	82.7	91.3	Morgan	29	0.4	168.8	217.9
Warren	160	2.2	120.9	120.4	Johnson	60	0.8	206.5	270.4	Henry	28	0.4	136.0	173.6
Laurel	146	2.0	206.0	240.1	McCreary	60	0.8	285.2	348.2	Breathitt	27	0.4	154.6	213.8
Hardin	141	1.9	111.6	127.1	Henderson	59	0.8	105.4	130.5	Livingston	27	0.4	185.6	293.7
Pike	136	1.9	177.0	235.0	Rowan	58	0.8	233.2	237.1	Lewis	26	0.4	144.5	195.9
Floyd	135	1.9	295.9	379.3	Wayne	58	0.8	196.5	285.3	Nicholas	26	0.4	284.2	357.7
Madison	129	1.8	132.6	138.7	Mercer	57	0.8	200.3	259.9	Wolfe	26	0.4	277.2	363.3
Perry	128	1.8	392.9	496.9	Breckinridge	56	0.8	195.0	273.5	Larue	24	0.3	122.8	166.7
Whitley	115	1.6	271.8	317.1	Hart	55	0.8	245.6	288.9	Woodford	24	0.3	66.8	89.8
McCracken	114	1.6	124.5	174.3	Logan	55	0.8	154.5	202.9	Anderson	22	0.3	74.1	96.7
Christian	113	1.6	176.0	160.4	Fleming	54	0.7	321.5	370.3	Meade	22	0.3	67.6	77.0
Nelson	112	1.5	206.9	242.3	Mason	53	0.7	233.2	310.5	Powell	21	0.3	144.5	169.9
Barren	110	1.5	199.3	248.6	Greenup	52	0.7	111.3	148.2	Menifee	20	0.3	196.9	308.2
Daviess	108	1.5	87.2	106.4	Campbell	49	0.7	47.4	52.4	Webster	19	0.3	129.1	146.8
Kenton	105	1.5	55.2	62.9	Carter	48	0.7	146.6	179.1	Caldwell	18	0.2	85.2	141.2
Boyle	102	1.4	255.9	339.3	Bullitt	47	0.6	49.7	57.5	Cumberland	18	0.2	155.8	272.2
Harlan	102	1.4	311.6	392.2	Grayson	47	0.6	144.2	177.8	Lyon	18	0.2	129.4	219.2
Lincoln	102	1.4	311.8	415.5	Knott	47	0.6	264.0	317.4	Pendleton	18	0.2	103.1	123.4
Adair	97	1.3	381.2	505.2	Leslie	47	0.6	375.1	475.9	Bracken	17	0.2	148.3	204.7
Boyd	97	1.3	148.0	207.6	Ohio	45	0.6	145.5	187.5	Butler	17	0.2	99.3	132.0
Hopkins	94	1.3	156.1	210.4	Russell	42	0.6	179.3	234.3	Carlisle	17	0.2	211.4	357.1
Montgomery	86	1.2	240.6	305.4	Bath	41	0.6	275.3	328.0	Todd	17	0.2	109.2	138.3
Knox	85	1.2	217.4	272.9	Estill	41	0.6	232.1	290.7	Carroll	16	0.2	136.4	150.5
Taylor	82	1.1	258.0	318.2	Jessamine	40	0.6	67.3	73.9	Crittenden	16	0.2	132.1	181.7
Scott	81	1.1	142.0	142.1	Allen	39	0.5	144.3	183.0	Owen	15	0.2	110.4	137.6
Boone	79	1.1	53.9	59.1	Clinton	39	0.5	269.5	381.7	Lee	14	0.2	145.9	189.1
Muhlenberg	78	1.1	195.7	254.7	Simpson	39	0.5	172.0	210.0	McLean	13	0.2	91.0	141.2
Letcher	77	1.1	298.6	357.3	Bourbon	38	0.5	155.2	192.0	Spencer	11	0.2	47.0	56.8
Clay	74	1.0	294.7	371.8	Casey	37	0.5	156.4	229.0	Gallatin	10	0.1	111.5	112.8
Clark	72	1.0	160.0	198.5	Garrard	37	0.5	166.2	209.4	Trimble	10	0.1	91.4	118.1
Calloway	70	1.0	154.2	179.5	Martin	37	0.5	288.1	330.5	Ballard	9	0.1	66.0	114.1
Rockcastle	70	1.0	311.5	419.3	Green	36	0.5	209.0	329.0	Owsley	9	0.1	136.6	203.9
Shelby	69	1.0	120.2	140.7	Lawrence	36	0.5	197.4	235.0	Robertson	9	0.1	247.5	426.9
Marshall	67	0.9	143.2	215.4	Jackson	35	0.5	215.1	262.6	Hancock	8	0.1	71.5	91.7
Franklin	66	0.9	103.2	129.4	Magoffin	34	0.5	218.6	279.6	Edmonson	7	0.1	33.9	57.6
Bell	65	0.9	187.2	249.7	Metcalf	32	0.4	251.0	317.7	Elliott	6	0.1	60.1	79.8
Grant	64	0.9	249.6	255.3	Trigg	32	0.4	141.1	218.4	Hickman	6	0.1	83.9	137.0
Graves	64	0.9	129.6	171.7	Monroe	31	0.4	200.5	291.1	Fulton	*	-	-	-

\* At least one but fewer than five

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

## **Appendix B: Methods, Abbreviations, Definitions and Data**

### **Methods**

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

Crude incidence rates were calculated for each injury type by dividing the number of injuries by 4,467,673, the most recent estimated population of Kentucky according to the Kentucky State Data Center, and then multiplying by 100,000. This figure represents the number of TBI, NTBI, SCI or stroke that occurred per 100,000 residents of Kentucky. Age-adjusted rates were calculated using the Year 2000 Standard Population. Data analysis, including mapping, was performed using SAS Version 9.2.

### **Abbreviations**

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

## Identification of Cases

### ***Traumatic brain injury case definition***

The Centers for Disease Control and Prevention (CDC) have established standards for TBI case identification (CDC, 1995). Hospitals are currently using ICD-10 codes for injury coding. Definitions are being developed using the new ICD-10 coding. The following ICD-10 codes were used to identify TBI records:

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

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

### ***Non-traumatic brain injury case definition***

In addition to CDC-defined TBI, there are many brain injuries that have non-traumatic etiologies. These we have classified as NTBI. Because these diagnoses are not included in the CDC definition of TBI, they have been linked and analyzed separately. These conditions were also identified by ICD-10 diagnosis codes, as follows:

- Anoxia: G91(.0-.2), G93.1, J96, R09.0, T71, T751
- Allergy/Anaphylaxis: T78.0, T78.2, T80.5, T80.6, T88.1, T88.6
- Acute Medical Clinical Incidents: G00, G01, G02, G03, G04(.0,2,3,8,9), G05, G06.0, G07, A39.0, A39.81, A85, A86, A87, A88.8, A89, C70.0, C71, C79.3, D32.0, D33(.0-.2), D42.0, D43(.0-.2), D49.6, G37.4, A83, B00.4, B01(.0,1), B02(.0,1), B37.5
- Toxic Substances: G92, T40, T41, T42(.3-.7), T45.5, T51, T56, T57, T58, T60, T61, T62, T64, T65, T81.1, T88.2, T88.5

Anoxia includes but is not limited to:

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

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

### ***Spinal cord injury case definition***

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

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

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

### ***Stroke case definition***

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

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

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