



# INJURY ANNUAL REPORT

October 2014

## Injuries in Tennessee, 2012

Injury is a major public health problem across the U.S. and in Tennessee. It is the leading cause of death among children and young adults (Table 1), and leads to an overwhelming 90 thousand years of potential life lost (YPLL)<sup>1</sup> in the state of Tennessee from one year alone. While fatal injuries are tragic, they represent a small portion of the actual burden they have in our population. Thousands of Tennesseans face disability and chronic pain for the rest of their lives, and these injuries are often predictable and preventable.

In 2012, a total of 5,105 fatal injuries occurred in Tennessee. For every death, there were seven hospitalizations and 146 emergency department (ED) visits due to an injury. They include both unintentional and those caused by acts of violence; however, the great majority of these injuries are unintentional, which includes motor vehicle accidents, fire accidents, falls and drowning.

**Table 1.** Leading Causes of Death for Tennessee Residents by Age Groups, 2012

Rank	<1yr	1-4yr	5-14yr	15-24yr	25-34yr	35-44yr	45-54yr	55-64yr	65+	All ages
1	Congenital anomalies	Unintentional Injuries	Unintentional Injuries	Unintentional Injuries	Unintentional Injuries	Unintentional Injuries	Malignant neoplasms	Malignant neoplasms	Heart Disease	Heart Disease
2	Unintentional Injuries	Homicide	Malignant neoplasms	Homicide	Suicide	Heart Disease	Heart Disease	Heart Disease	Malignant neoplasms	Malignant neoplasms
3	Heart Disease	Congenital anomalies	Congenital anomalies	Suicide	Homicide	Malignant neoplasms	Unintentional Injuries	Chronic lower respiratory diseases	Chronic lower respiratory diseases	Chronic lower respiratory diseases
4	Homicide	Malignant neoplasms	Homicide	Malignant neoplasms	Heart Disease	Suicide	Suicide	Unintentional Injuries	Cerebrovascular diseases	Unintentional Injuries
5	Nephritis, nephrotic syndrome and nephrosis	Influenza and pneumonia	Heart Disease	Heart Disease	Malignant neoplasms	Homicide	Chronic liver disease and cirrhosis	Diabetes Mellitus	Alzheimer's disease	Cerebrovascular diseases

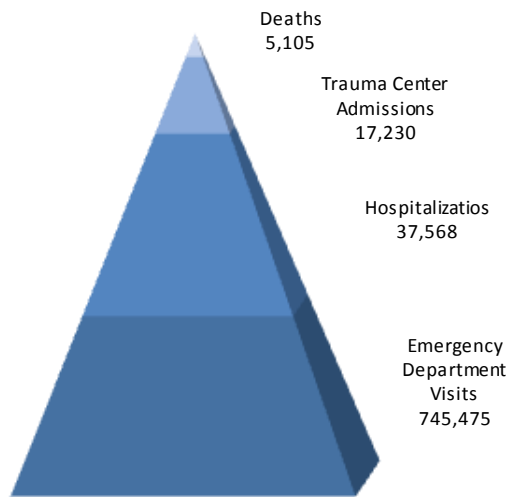
Source: Tennessee Department of Health, Death Statistical System

### Fatal and Non-Fatal Injuries

Injury has a significantly broader and more profound impact in our society than its mortality rate, and this is illustrated in Figure 1. In 2012, there were 5,105 deaths, 17,230 trauma center admissions, 37,568 hospitalizations and 745,475 ED visits in Tennessee due to an injury.

<sup>1</sup> Years of Potential Life Lost (YPLL) is an estimate of premature mortality that has been defined as the number of years of life lost among persons who die before the age of 75, the average life expectancy in Tennessee.

**Figure 1. Injury Pyramid, 2012**



Source: Tennessee Department of Health, Death Statistical System, Hospital Discharge Data System; Trauma Registrar.

The leading causes of injury vary by outcome. Table 2 outlines the leading causes for injury deaths, hospitalizations, and ED visits for Tennessee residents in 2006-2012. As shown in the chart, motor vehicle accidents are the leading cause of injury deaths for age groups 1-24 years. For age groups 25-64, the leading cause is poisoning, inclusive of both unintentional and intentional acts. Finally, among individuals 65 years old or older, unintentional falls are the leading cause of death. It is interesting to note that the leading cause of ED visits for an injury across all ages is due to a fall, followed by motor vehicle accidents and poisoning. The causes of hospitalizations varied across age groups.

**Table 2. Leading Causes of Injury Deaths, Hospitalizations and ED Visits by Age Group, 2006-2012**

CAUSE	DEATH	HOSPITALIZATION	EMERGENCY ROOM VISITS
<b>Age-group 1-14yr</b>			
#1	Motor Vehicle	Fall	Fall
#2	Drowning	Motor Vehicle	Motor Vehicle
#3	Fire	Poisoning	Poisoning
<b>Age-group 15-24yr</b>			
#1	Motor Vehicle	Motor Vehicle	Fall
#2	Firearms	Poisoning	Motor Vehicle
#3	Suicides	Suicides	Poisoning
<b>Age-group 25-34yr</b>			
#1	Poisoning	Poisoning	Fall
#2	Motor Vehicle	Motor Vehicle	Motor Vehicle
#3	Firearms	Suicides	Poisoning
<b>Age-group 35-44yr</b>			
#1	Poisoning	Poisoning	Fall
#2	Suicides	Motor Vehicle	Motor Vehicle
#3	Firearms	Suicides	Poisoning
<b>Age-group 45-64yr</b>			
#1	Poisoning	Fall	Fall
#2	Suicides	Poisoning	Motor Vehicle
#3	Motor Vehicle	Motor Vehicle	Poisoning
<b>Age-group 65+yr</b>			
#1	Fall	Fall	Fall
#2	Motor Vehicle	Motor Vehicle	Motor Vehicle
#3	Suicides	Poisoning	Poisoning

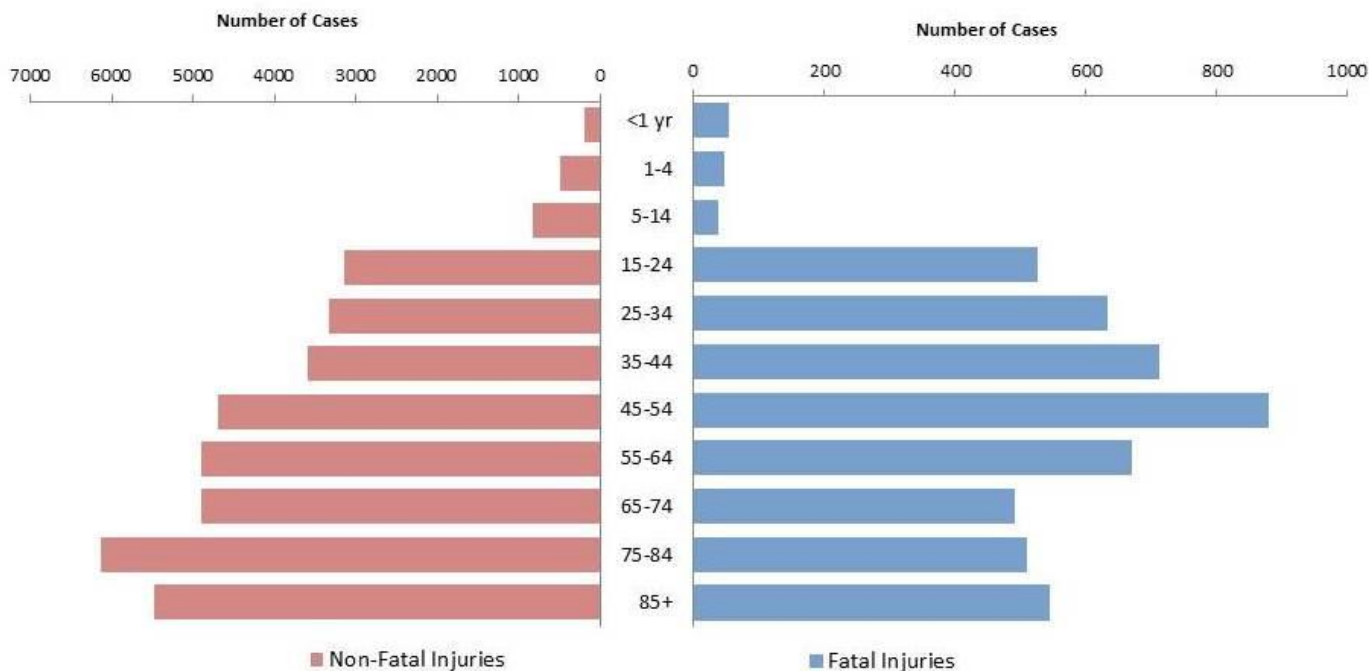
Source: Tennessee Department of Health, Death Statistical System, Hospital Discharge Data System.

For many years, the leading cause of injury deaths among the residents of Tennessee was motor vehicle accidents. Efforts from the injury prevention community within the past decade have led to a steady decrease of these crashes in the state. In 2009, motor vehicle accidents became the second cause of all injury deaths, and poisoning became the first, of which 90 percent were due to drug overdose.

### Injury Demographic

Most of the fatal injuries occur among older teenagers and adults, while most of the non-fatal injuries are composed of a much younger population, as seen in Figure 2. The majority of the deaths (65 percent) are also among males. Males are at a higher risk of dying and being hospitalized from an injury, even though females account for most of the hospitalizations (54 percent). The gender distribution for injury ED visits is similar for both genders. Additionally, the great majority of fatal (85 percent) and non-fatal injuries (85 percent for hospitalizations and 75 percent for ED visits) are suffered by whites in Tennessee; however, the racial risk of mortality and hospitalization varies by the type of injury.

**Figure 2.** Age Distribution for Fatal and Non-Fatal Injuries, 2012



Source: Tennessee Department of Health, Death Statistical System, Hospital Discharge Data System.

Table 3 and Table 4 contain the numbers of injury deaths and hospitalizations, respectively, for each demographic by injury type. While whites are at highest risk of dying from a motor vehicle accident, a drug overdose or a suicide, blacks are at a higher risk of mortality from a homicide or an injury that involves a firearm. Residents of other race<sup>2</sup> have the lowest risk of suffering a fatal injury.

<sup>2</sup> Other race includes all other non-white or non-black races.

For non-fatal injury hospitalizations, the racial disparities are similar to fatal injuries; however, the gender disparity is different. Although males are at a higher risk of any injury mortality, females are at a higher risk of being hospitalized for fall related accidents, poisoning and suicide attempts.

A geographical distribution of these cases is also provided in Appendix A. The numbers of fatal and non-fatal injuries for each county in the state are listed in Table 1, and maps are provided in Figures 1 and 2 of the Appendix.

**Table 3.** Demographic Disparity of Injury Fatalities<sup>†</sup> and Age-Adjusted Rates\*\* per 100,000 Populations by Injury Type, 2012

Fatal Injury Type	Gender				Race					
	Male		Female		White		Black		Other <sup>2</sup>	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Total Injury fatalities <sup>†</sup>	3,309	107.1*	1,796	49.6*	4,318	79.5*	693	65.2*	94	45.9*
Unintentional drowning	55	1.8*	24	0.8*	63	1.3	12	1.1	4	1.4
Unintentional fall-related	295	10.7	295	7.0	549	9.1*	32	3.9*	9	5.7
Unintentional fire-related	37	1.1	19	0.5	47	0.8	9	1.1	-	0.0
Firearm-related	829	26.0*	152	4.5*	713	13.0*	252	21.9*	16	7.9
Homicides	358	11.4*	98	3.1*	194	3.8*	251	21.6*	11	4.4
Motor vehicle traffic	655	20.7*	234	7.0*	758	14.5*	107	9.8*	24	11.1
Poisoning	679	21.8*	537	16.1*	1,096	21.4*	108	9.9*	12	5.7
Drug poisoning	591	19.0*	503	15.2*	990	19.4*	93	8.5*	11	5.2
Suicides	753	23.6*	203	5.8*	872	16.0*	62	5.8*	22	11.6*

Source: Tennessee Department of Health, Death Statistical System; U.S. Census Bureau.

**Table 4.** Demographic Disparity of Non-Fatal Injuries<sup>†</sup> and Age-Adjusted Rates\*\* per 100,000 Populations by Injury Type, 2012

Non-Fatal Injury Type	Gender				Race					
	Male		Female		White		Black		Other <sup>2</sup>	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Total Injury Hospitalizations <sup>†</sup>	17,200	558.6*	20,365	536.1*	32,206	571.9*	4,203	412.1*	701	391.9*
Unintentional drowning	24	0.8	18	0.6	27	0.6	9	0.8	4	1.2
Unintentional fall-related	5,876	199.1*	11,752	287.9*	16,039	267.1*	1,181	136.3*	257	185.8*
Unintentional fire-related	170	5.4*	58	1.6*	184	3.5*	24	2.5*	6	3.7
Firearm-related	675	21.8*	87	2.7*	289	5.7*	429	35.9*	28	11.6*
Homicides	1,144	36.8*	203	6.4*	634	12.7*	649	56.9*	43	18.6*
Motor vehicle traffic	3,113	97.7*	1,862	55.1*	4,059	77.6*	697	62.1*	137	63.0
Poisoning	2,773	87.8*	3,814	112.4*	5,764	109.9*	653	60.6*	100	43.7*
Suicide attempt	1,316	42.4*	1,803	56.1*	2,730	54.6*	293	26.3*	55	24.4

Source: Tennessee Department of Health, Death Statistical System; U.S. Census Bureau.

<sup>2</sup> Other race includes all other non-white or non-black races.

<sup>†</sup> Sum of cases may not equal total due to missing gender and race; not all injuries are classified or listed and some may overlap.

\* Difference between population rates is considered statistically significant at the .05 level.

\*\* Rates for less than 20 cases are unstable and must be used with caution.

## Economic Impact of Non-Fatal Injuries

Non-fatal injuries include trauma care, hospitalizations and ED visits. The number of trauma cases represents over 40 percent of the hospitalizations. The majority of those who survive experience long-term disabilities and chronic pain, both of which contribute to the increase in health care costs. In Tennessee, the average length of stay (LOS) for a non-fatal injury hospitalization in 2012 was 5 days and the average admission charge was approximately \$49,000 per admission. That same year, the total non-fatal injury related charges exceeded \$3.4 billion: \$1.6 billion from ED visits and \$1.8 billion from hospitalizations (which do not include rehabilitation or physician costs).

Table 5 and Table 6 show hospital charges in dollars stratified by injury types. Injuries related to fire and firearms had the highest average hospital admission charge; however the injuries with the highest total charges were falls and motor vehicle accidents, mainly due to the higher volume. Table 6 shows that the latter is also true for injury ED visits.

**Table 5.** Number, LOS and Charges for Non-Fatal Injuries Hospitalized by Cause, 2012

Cause of Injury	Number of hospitalizations	Average hospital length of stay (in days)	Total charges	Average charge per hospitalization
Unintentional fall-related	17,629	5	\$ 751,288,433	\$ 42,617
Motor vehicle traffic	4,975	7	\$ 458,528,788	\$ 92,167
Poisoning	6,588	3	\$ 146,623,572	\$ 22,256
Homicide	1,347	6	\$ 93,930,912	\$ 69,733
Suicide attempt	3,120	3	\$ 80,606,783	\$ 25,836
Firearm-related	762	8	\$ 78,209,215	\$ 102,637
Unintentional fire-related	228	12	\$ 35,825,291	\$ 157,128
Unintentional drowning	42	4	\$ 2,102,285	\$ 50,054
All <sup>†</sup>	37,568	5	\$ 1,845,933,699	\$ 49,136

<sup>†</sup> Sum of cases may not equal total; not all injuries are classified or listed and some may overlap.

Source: Tennessee Department of Health, Hospital Discharge Data System.

**Table 6.** Number and Charges for Non-Fatal Injuries Treated and Released by Cause, 2012

Cause of Injury	Number of ED Visits	Total charges	Average charge per ED visit
Unintentional fall-related	212,254	\$ 531,674,313	\$ 2,505
Motor vehicle traffic	76,293	\$ 305,410,629	\$ 4,003
Homicide	27,108	\$ 101,410,487	\$ 3,741
Poisoning	18,983	\$ 59,182,318	\$ 3,117
Suicide attempt	8,203	\$ 32,952,916	\$ 4,017
Firearm-related	1,802	\$ 12,635,416	\$ 7,012
Unintentional fire-related	2,276	\$ 4,158,817	\$ 1,827
Unintentional drowning	189	\$ 476,141	\$ 2,519
All <sup>†</sup>	745,475	\$ 1,639,204,080	\$ 2,199

<sup>†</sup> Sum of cases may not equal total; not all injuries are classified or listed and some may overlap.

Source: Tennessee Department of Health, Hospital Discharge Data System.

## Appendix A

**Table 1. Tennessee Fatal and Non-Fatal Injury Numbers and Age-Adjusted Rates\*\* by County, 2012**

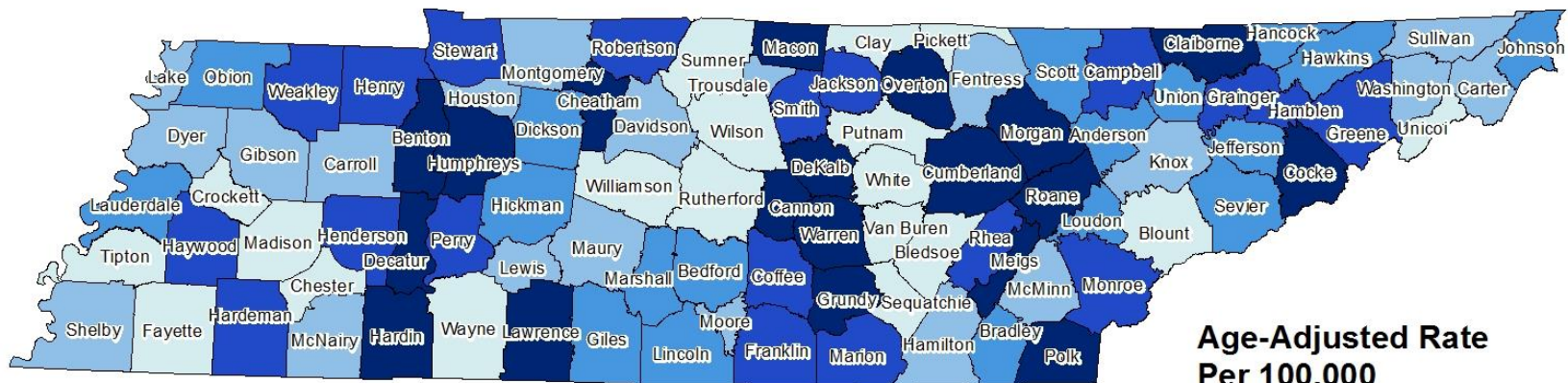
Tennessee Injury Data: State and County											
Injury Deaths, Age Adjusted Rate /100,000 Population						Non-fatal Injury Hospitalizations, Age Adjusted Rate /100,000 Population					
Tennessee Residents, 2012						Tennessee Residents, 2012					
County	Number	Rate	County	Number	Rate	County	Number	Rate	County	Number	Rate
ANDERSON	68	80.5	LAUDERDALE	24	86.4	ANDERSON	517	576.7	LAUDERDALE	152	544.8
BEDFORD	37	83.0	LAWRENCE	50	121.9	BEDFORD	299	653.2	LAWRENCE	274	592.9
BENTON	25	148.9	LEWIS	8	67.8	BENTON	161	854.7	LEWIS	84	613.6
BLEDSON	5	38.9	LINCOLN	31	93.1	BLEDSON	84	624.4	LINCOLN	141	369.1
BLOUNT	85	64.0	LOUDON	46	80.5	BLOUNT	764	538.3	LOUDON	301	498.0
BRADLEY	92	89.6	MACON	27	110.6	BRADLEY	680	638.3	MACON	175	741.8
CAMPBELL	42	94.8	MADISON	59	57.6	CAMPBELL	294	693.4	MADISON	588	573.9
CANNON	24	168.7	MARION	29	106.5	CANNON	106	670.7	MARION	205	682.5
CARROLL	24	76.2	MARSHALL	30	90.5	CARROLL	208	629.9	MARSHALL	158	486.1
CARTER	41	68.3	MAURY	61	72.6	CARTER	494	766.7	MAURY	410	479.3
CHEATHAM	49	127.6	MCMINN	36	69.0	CHEATHAM	257	702.1	MCMINN	342	583.9
CHESTER	7	42.7	MCNAIRY	22	79.0	CHESTER	127	669.5	MCNAIRY	157	523.1
CLAIBORNE	43	128.4	MEIGS	15	136.4	CLAIBORNE	257	741.4	MEIGS	90	746.0
CLAY	5	58.0	MONROE	46	95.1	CLAY	55	597.0	MONROE	279	548.4
COCKE	40	113.8	MONTGOMERY	114	70.4	COCKE	266	669.6	MONTGOMERY	702	473.5
COFFEE	58	108.2	MOORE	5	76.0	COFFEE	407	707.4	MOORE	35	451.8
CROCKETT	9	58.7	MORGAN	24	111.6	CROCKETT	93	531.2	MORGAN	143	604.1
CUMBERLAND	65	110.7	OBION	31	93.5	CUMBERLAND	411	581.3	OBION	151	416.5
DAVIDSON	469	73.6	OVERTON	24	114.2	DAVIDSON	3,349	541.1	OVERTON	176	699.9
DECATUR	20	154.5	PERRY	9	99.9	DECATUR	85	601.5	PERRY	59	673.1
DEKALB	23	116.6	PICKETT	3	59.9	DEKALB	152	731.0	PICKETT	38	533.3
DICKSON	44	84.8	POLK	18	112.6	DICKSON	308	584.7	POLK	141	803.7
DYER	28	70.2	PUTNAM	46	61.3	DYER	262	656.9	PUTNAM	419	535.5
FAYETTE	20	53.8	RHEA	31	95.1	FAYETTE	203	506.4	RHEA	187	540.8
FENTRESS	15	75.4	ROANE	64	111.7	FENTRESS	164	792.5	ROANE	438	688.2
FRANKLIN	42	98.0	ROBERTSON	66	98.6	FRANKLIN	286	605.1	ROBERTSON	349	532.3
GIBSON	39	73.8	RUTHERFORD	138	55.3	GIBSON	304	519.9	RUTHERFORD	1,071	470.0
GILES	30	93.0	SCOTT	19	86.6	GILES	190	578.1	SCOTT	133	597.2
GRAINGER	24	103.0	SEQUATCHIE	8	56.8	GRAINGER	172	723.7	SEQUATCHIE	96	600.5
GREENE	82	110.5	SEVIER	76	79.2	GREENE	519	677.5	SEVIER	502	517.9
GRUNDY	21	157.0	SHELBY	665	71.6	GRUNDY	169	1092.8	SHELBY	4,439	491.9
HAMBLIN	60	94.3	SMITH	20	106.3	HAMBLIN	420	596.8	SMITH	130	651.0
HAMILTON	251	68.5	STEWART	14	104.5	HAMILTON	2,071	547.2	STEWART	94	631.7
HANCOCK	6	82.3	SULLIVAN	129	75.8	HANCOCK	74	1024.6	SULLIVAN	1,194	659.6
HARDEMAN	27	95.7	SUMNER	112	66.4	HARDEMAN	174	621.8	SUMNER	964	576.3
HARDIN	35	115.5	TIPTON	39	66.9	HARDIN	175	602.7	TIPTON	286	474.8
HAWKINS	54	94.0	TROUSDALE	5	69.1	HAWKINS	428	701.1	TROUSDALE	52	665.7
HAYWOOD	18	95.9	UNICOI	10	47.2	HAYWOOD	86	438.5	UNICOI	182	822.0
HENDERSON	26	100.9	UNION	17	85.2	HENDERSON	178	591.3	UNION	125	640.0
HENRY	33	96.3	VAN BUREN	3	34.2	HENRY	232	609.3	VAN BUREN	32	505.5
HICKMAN	20	82.2	WARREN	47	111.7	HICKMAN	180	697.7	WARREN	302	704.5
HOUSTON	8	79.0	WASHINGTON	96	70.1	HOUSTON	82	881.8	WASHINGTON	939	682.9
HUMPHREYS	22	129.6	WAYNE	13	67.6	HUMPHREYS	138	691.0	WAYNE	100	516.2
JACKSON	14	110.1	WEAKLEY	34	97.0	JACKSON	110	917.3	WEAKLEY	216	550.6
JEFFERSON	47	88.6	WHITE	19	65.7	JEFFERSON	330	573.4	WHITE	174	577.0
JOHNSON	15	81.9	WILLIAMSON	94	55.9	JOHNSON	116	595.6	WILLIAMSON	704	410.3
KNOX	336	73.6	WILSON	75	65.5	KNOX	2,479	534.0	WILSON	675	575.8
LAKE	5	70.2	<b>TENNESSEE</b>	<b>5,105</b>	<b>77.0</b>	LAKE	48	610.8	<b>TENNESSEE</b>	<b>37,568</b>	<b>558.2</b>

\*\* Rates for less than 20 cases are unstable and must be used with caution.

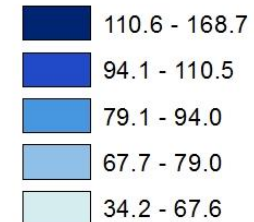
Source: Tennessee Department of Health, Death Statistical System, Hospital Discharge Data System; U.S. Census Bureau.

**Figure 1. Tennessee Fatal Injury Rates by County, 2012**

## Injury Deaths Tennessee, 2012



**Age-Adjusted Rate  
Per 100,000**



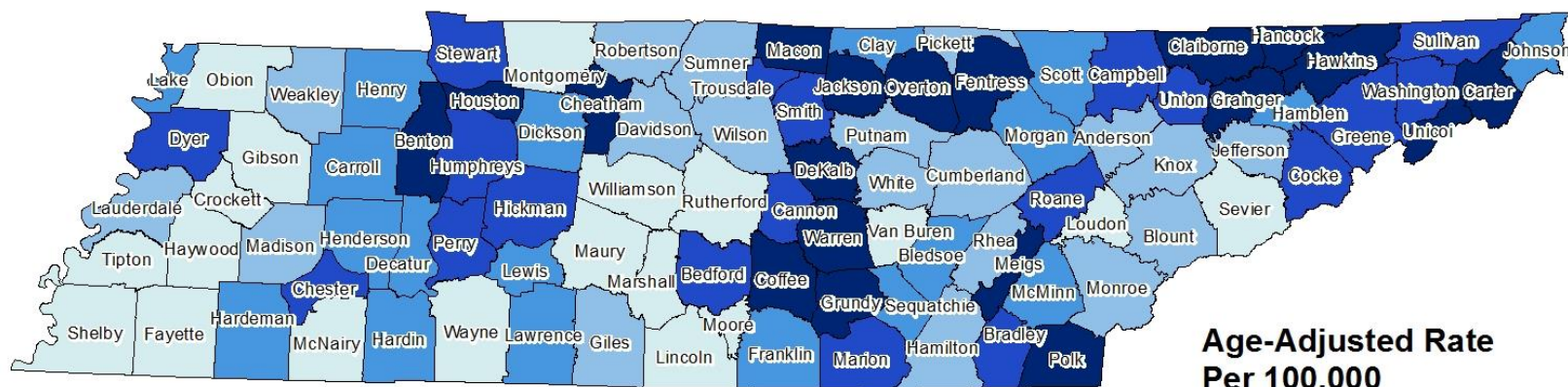
State Rate: 77.0 / 100,000

Data sources: 1) Tennessee Department of Health; Division of Policy, Planning and Assessment; Death Statistical System;  
2) U.S. Census Bureau

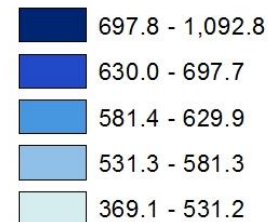
Map produced by Tennessee Department of Health; Division of Policy, Planning and Assessment; Surveillance, Epidemiology and Evaluation

**Figure 2. Tennessee Non-Fatal Injury Rates by County, 2012**

## Non-Fatal Injury Hospitalizations Tennessee, 2012



**Age-Adjusted Rate  
Per 100,000**



State Rate: 558.2 / 100,000

Data sources: 1) Tennessee Department of Health; Division of Policy, Planning and Assessment; Hospital Discharge Data System;  
2) U.S. Census Bureau

Map produced by Tennessee Department of Health; Division of Policy, Planning and Assessment; Surveillance, Epidemiology and Evaluation