



South Carolina

STATUS

OF INJURY

DATA REPORT

2010

Data Sources:

- Death data: Office of Public Health Statistics and Information System (PHISIS) of South Carolina Department of Health and Environmental Control (DHEC).
- Non-Fatal Traumatic Brain Injury Data: Include Hospital Discharges (HD) and Emergency Department (ED) visits provided by Office of Research and Statistics (ORS) of SC Budget and Control Board.
 - Analysis done by the DHEC Division of Injury and Violence Prevention.
- Non-Fatal All Injury Data: Includes Injury HD and ED visits provided by ORS of SC Budget and Control Board. It is aggregate data on a website specifically used for the DHEC Division of Injury & Violence Prevention.
 - Report Prepared by the DHEC Division of Injury and Violence Prevention.

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Disclaimer:

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Definitions of Causes of Injury

There are two dimensions of the external causes of injury: intent (manner) and the mechanism (cause) by which the injury occurred. Injuries are grouped according to the intent which in turn divided into groups by causes.

I. Unintentional injuries:

1. **Cut/Pierce:** injuries caused by, or falls on, cutting and piercing instruments or objects (powered or non powered hand tools and household appliances). This includes also injury by nails, needles, broken glasses, splinters, and tin can lids.
2. **Drowning/near drowning** in watercraft accidents, while swimming or just wading in water. It also includes drowning/submersion in bathtubs. DEATH DATA DOESN'T INCLUDE WATERCRAFT ACCIDENTS (IN ORDER TO COMPARE WITH NATIONAL DEATH DATA)
3. **Falls:** include falls on same level (slipping, tripping), falls on different levels (stairs, bed, ladder).
4. **Fire/flame:** include burning by fire; asphyxia or poisoning due to fire; secondary fires due to explosion; fall or jump from burning structure.
5. **Firearms:** use of handguns, automatic weapons, hunting rifles, military firearms, and air guns.
6. **Foreign body:** foreign body accidentally entering eye & adnexa, or entering other orifice.
7. **Hot/object or substance:** the injury is caused by hot liquids and vapor (including steam); hot appliances or objects; caustic/corrosive material.
8. **Machinery:** include agricultural, mining, lifting, metalworking, woodworking, and earth moving machines.
9. **Motor vehicle crashes (MVC):** include all motor vehicles, except motorcycles, which are involved in traffic crashes.
 - The injured person in this group is an occupant of a motor vehicle (driver or passenger), or an unspecified individual who is involved in traffic MVC.
10. **Motorcyclists:** motorcycle involved in traffic or non-traffic crashes.

The injured person is a driver or passenger of a motorcycle.
11. **Pedal cyclists:** pedal cycle involved in traffic or non-traffic motor vehicle crashes, struck by (train, other bicycle, other road vehicle, or animal drawn vehicle). This also involves falling from or turnover of the pedal cycle, or hitting a fixed or moveable object. The injured person is any person riding on a pedal cycle or in a sidecar attached to such a vehicle.
12. **Pedestrians:** the person injured in this group is a pedestrian who is struck by a motor vehicle in traffic or non traffic crashes, or is struck by other road vehicles or trains.
13. **Other Transport:**
 - In Death data:** include train railway accidents, non-traffic MVC (*is any motor vehicle accident occurring entirely in any place other than a public highway*), other road vehicle crashes, (3 wheeled vehicles, ATV, steer cars, animal drawn vehicles). It also involves water, air and space transport crashes.
 - In Non-Fatal data:** include train railway accidents, non-traffic MVC (*is any motor vehicle accident occurring entirely in any place other than a public highway*), Animal-

drawn vehicle accident, Water transport accidents not including those used in the course of recreational activities.

14. **Natural and environmental factors:** excessive heat or cold, change in air pressure, hunger, thirst, neglect, lightning, floods, tornados, and storms. It is due also to animal bites, poisoning and toxic reactions from venomous animals and plants.
15. **Overexertion:** include overexertion resulting from lifting, pulling, or pushing. It also includes excessive physical exercises, and strenuous movements in recreational and other activities.
16. **Poisoning** by drugs (painkillers, tranquilizer, antibiotics, antipyretics, antirheumatics), alcohols, food, cleansing agents, agriculture's chemicals, corrosives, and gases.
17. **Struck By/Against Person or Object or Caught In between Object** or crushed by a crowd.
18. **Sports & Recreation (only in non-fatal data)** includes: **falls in sports; Struck by or against in sports** (Kicked or stepped on during game, Knocked down during boxing, hit by a ball or hockey stick or puck); **Pedal cycle in sports** (Motor vehicle traffic collision involving a pedal cyclist); **water skiing; Drowning in sports** (Accident to watercraft causing submersion not including water skiers); **Diving** (diving or jumping into water, striking bottom, wall or board of pool, effect of air pressure from diving); **Animal riding; Off-road vehicle** (non-traffic accident involving motor-driven snow vehicle or other off-road vehicle); **Other water-related sports** (Swimmer struck by or crushed between watercraft); **Unpowered aircraft** (Any accident with balloon, glider, hang glider, kite carrying a person); **Other vehicles** (non-motor, non-road vehicle Not otherwise specified).
19. **Suffocation:** include inhalation and ingestion of food or object, which cause the obstruction of the respiratory tract or suffocation. This group also includes accidental mechanical suffocation (e.g. by plastic bag, closed up in air tight place, accidental hanging).
20. **Other unintentional causes:** include pressurized & explosive materials, electrical current, effects of radiation, and late effects.

II. Intentional injuries:

1. **Suicide or attempted suicide** is self-inflicted injuries, which leads to death or harm, by any means.
2. **Assaults** are injuries inflicted by another person with intent to injure or kill (homicide), by any means.
3. **Legal intervention.**
4. **Operations of war.**

III. Undetermined Intention. These injuries cannot be determined whether they are unintentional or intentional.

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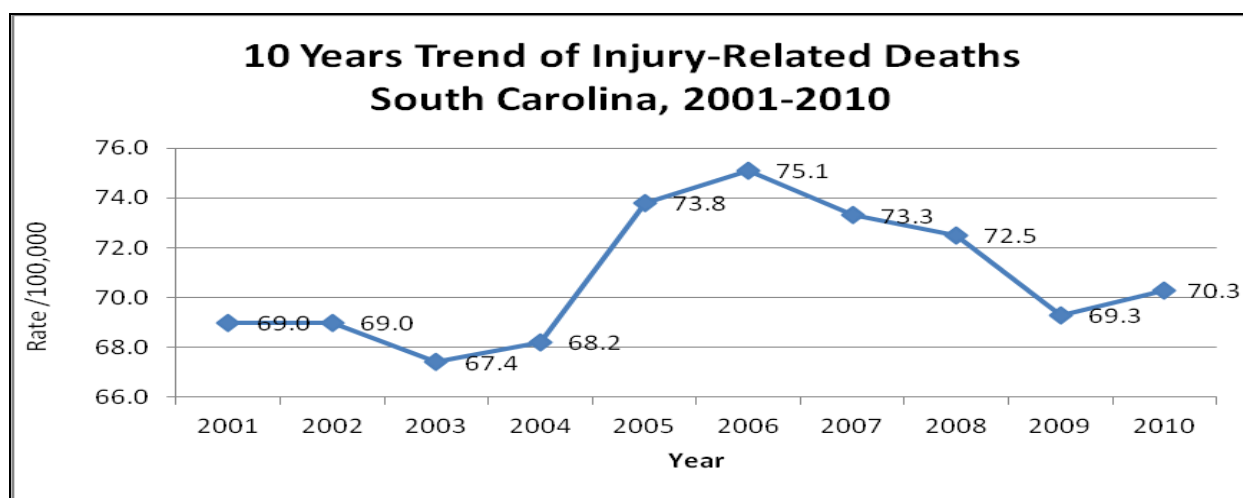
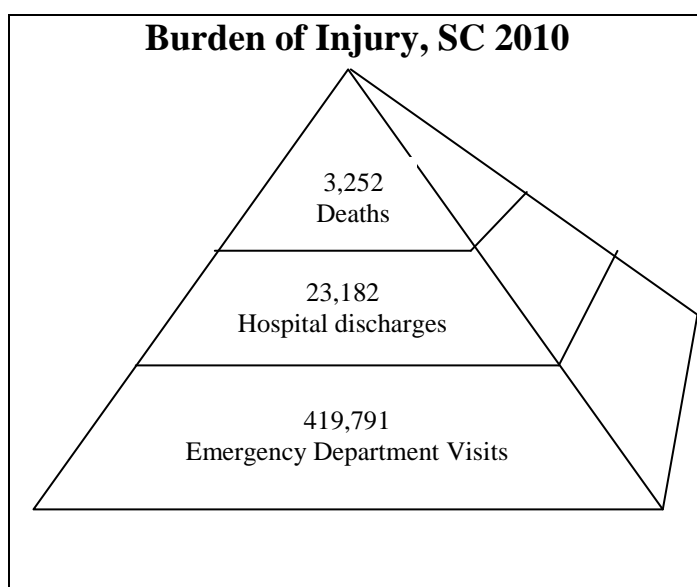
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Introduction

In The United states, unintentional injury is the fifth cause of all deaths and it is the leading cause of deaths for people 1-44 years old¹ which includes the most productive period in people's lives. In the United States in 2009 there were: 177,154 persons died from injury (rate 57.7/100,000), and 27,862,231 people were treated in the Emergency Department (ED) (rate 908.2/10,000)². This doesn't take in account the cases which have been seen in doctors' offices. Injuries cost more than \$406 billion annually in medical care and lost productivity¹

In 2010 due to injury in South Carolina there were: 3,252 deaths (rate 70.3/100,000), 23,182 HD (rate 50.1/10,000), and 419,791 ED visits (rate 907.6/10,000). The cost of acute medical care for HD and ED in that year was \$2,070,934,595.



Numbers	2,804	2,833	2,795	2,861	3,140	3,238	3,230	3,250	3,161	3,250
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1 Source: Office of Statistics & Programming, National Center for Injury Prevention & Control, <http://www.cdc.gov/injury/overview/data.html>
 2 Source: CDC - National Center for Injury Prevention and Control using WISQARS.

2010 Injury Deaths

(All rates in Section I of this report are based on 100,000 population)

- In 2010, there were 3,252 deaths in South Carolina due to injury. The crude death rate was 70.3 per 100,000 population.
- Suicide was the leading cause of injury deaths (19.3 %) followed by unintentional poisoning and motor vehicle crashes (MVC) (18.7% & 18.4% respectively) **Table 1.1**. Unintentional injuries accounted for 69.2% of all causes of injury deaths.
- People 65 years and older had the highest injury death rate followed by age group 35-49 (117.4 & 87.3/100,000 respectively) **Figure 1.1**. Table 1.2 shows that MVC are the primary cause of injury death for young people in age of 15 to 24 and it is one of the top 3 causes among the other age groups. Unintentional poisoning was the leading cause of injury death for adults 25-49 years old and the second cause for people aged 50-64 years. Suicide was one of the top 3 causes of injury deaths for people 15 years and older and it was the leading cause for age group 50-64. Homicides were the second cause among children 0-14 years and the third cause for young people aged 15-24 years.
- Injury death occurred more among men (white and black/other) **Figure 1.2**. White males die almost twice as much as white females; black /other males died almost three and half times as much as black/other females. Suicide is the top cause of death among white males while homicide is the top one for black/other males. Unintentional poisoning is one of the top 5 causes for all race-sex groups and it was the leading cause for white female (**Table 1.3**).
- The highest MVC-related deaths among whites (males & females) were in age group 15-24 while that for black/other (males & females) was in age group 25-34 (**Figure 1.3**). Among white males the death rate decreased steadily after the age of 24 then increased again at the age of 65+. Among black/other males, the death rate decreased steadily after the age of 34.
- More than 75% of intentional injury related deaths among black/other (males and females) were due to homicide while among whites (males and females) around 80% of these causes were due to suicide (**Figure 1.4**). Firearms were used in 74.8% of homicide cases as the weapon of assault, and were used in 61.6% in the suicide cases (**Table 1.4**).

Table 1.1: Causes of Injury Deaths, SC 2010
2009 National rates for several causes

Cause of Injury	Number	Percent	Rate	National Rate*
I. Unintentional	2,249	69.2	48.6	38.4
Poisoning	608	18.7	13.1	10.3
MVC (Traffic)	597	18.4	12.9*	8.3**
Fall	286	8.8	6.2	8.1
Unspecified Causes	143	4.4	3.1	
Suffocation	142	4.4	3.1	1.9
Pedestrians	101	3.1	2.2	1.7
Motor Cyclists	85	2.6	1.8	1.4
Drowning	72	2.2	1.6	1.2
Fire/Flame	60	1.9	1.3	0.9
Other transport	48	1.5	1.0	
Natural/Environmental	24	0.7	0.5	
Other Causes	24	0.7	0.5	
Firearm	22	0.7	0.5	
Pedal Cyclists	16	0.5	0.3	
Struck by/caught in	15	0.5	0.3	
Machinery	3	0.1	-----	
Burn hot Object	2	0.1	-----	
Cut/Pierce	1	0.0	-----	
II. All Intentional	958	29.5	20.7	
Suicide	628	19.3	13.6	12.0
Homicide	325	10.0	7.0	5.5
Legal Intervention	5	0.15	0.1	
III. Undetermined Intent	45	1.4	1.0	
Total	3,252	100.0	70.3	57.7

Percent of the total injury Deaths
Rate per 100,000 population

Both SC & National Rates are crude rates.

* Source: CDC - National Center for Injury Prevention and Control using WISQARS.

**National's MVC group includes industrial, constructional, and agricultural vehicles. The state's MVC group does not include these vehicles; they are included in other transport group.

Figure 1.1: Injury Deaths by Age Groups, SC 2010

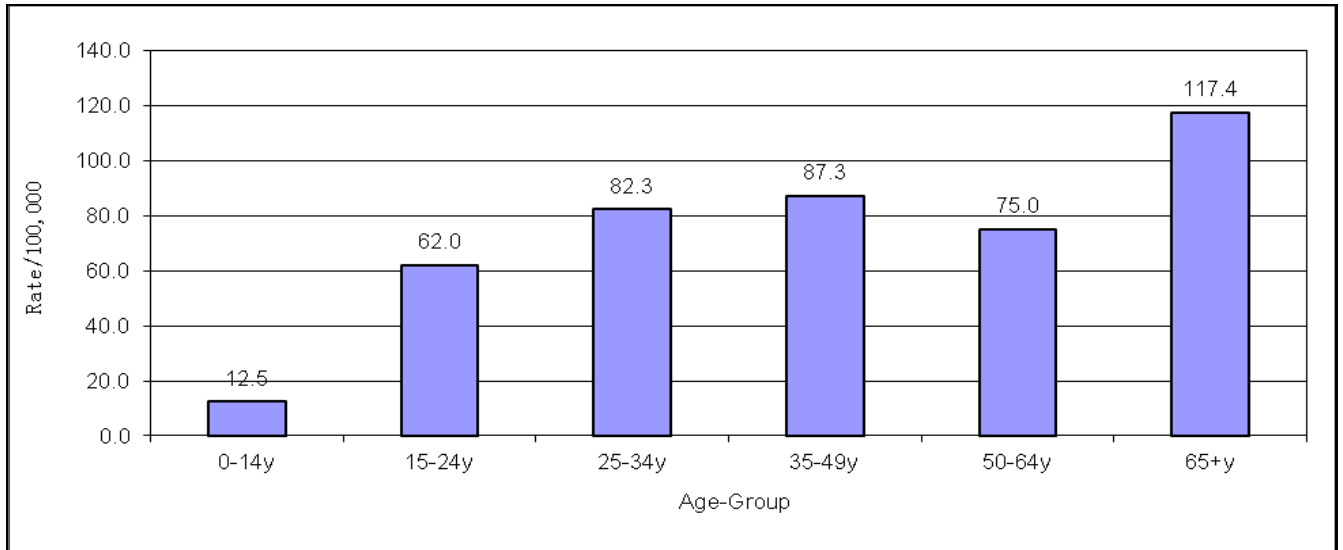


Table 1.2: Top 3 Causes of Injury Deaths by Age Groups, SC 2010

Age Group	Cause of Injury	No.	Rate	Age Group	Cause of Injury	No.	Rate
0-14	Suffocation	28	3.1	35-49	Poisoning	250	26.8
	Homicide	19	2.1		Suicide	181	19.4
	MVC (Traffic)	17	1.9		MVC (Traffic)	136	14.6
15-24	MVC (Traffic)	144	21.8	50-64	Suicide	182	20.0
	Suicide	75	11.3		Poisoning	165	18.1
	Homicide	74	11.2		MVC (Traffic)	108	11.9
24-34	Poisoning	118	19.9	65+	Fall	225	35.6
	MVC (Traffic)	104	17.6		Suicide	89	14.1
	Suicide	96	16.2		MVC (Traffic)	88	13.9

Age specific rate per 100,000 population
 All Causes are Unintentional except (suicide, homicide)

Figure 1.2: Injury Deaths by Race & Sex, SC 2010

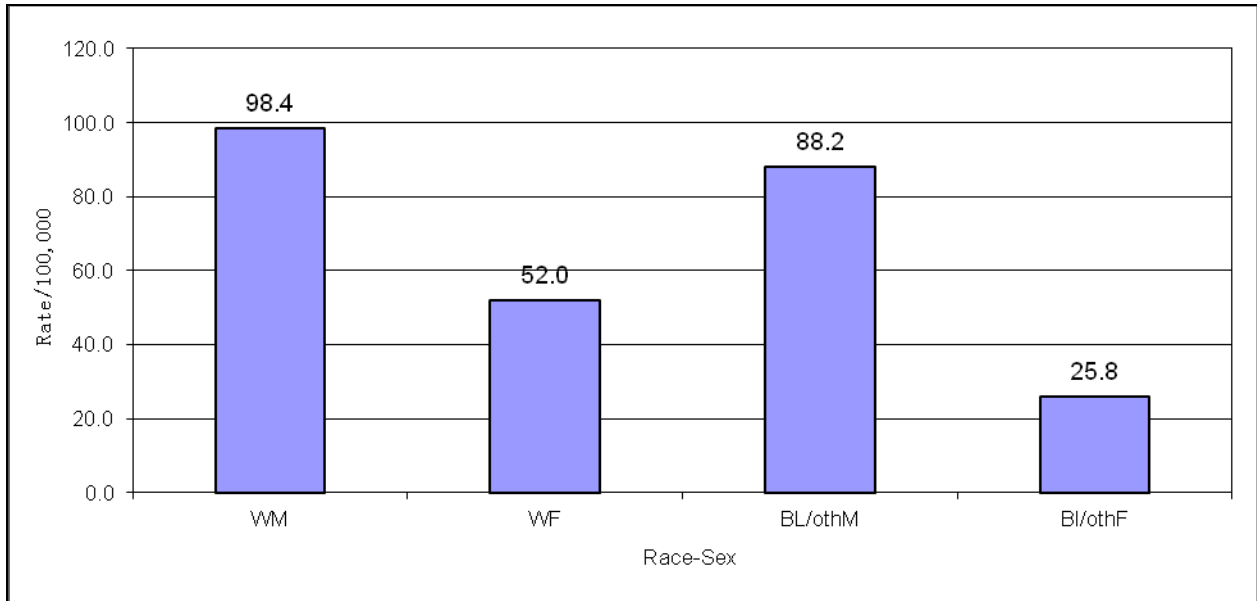


Table 1.3: Top 5 Causes of Injury Deaths by Race & Sex, SC 2010

Race & Sex	Cause of Injury	No.	Rate	Race & Sex	Cause of Injury	No.	Rate
White Males	Suicide	412	26.1	Black/ other Males	Homicide	169	25.1
	Poisoning	292	18.5		MVC (Traffic)	125	18.6
	MVC (Traffic)	269	17.0		Suicide	56	8.3
	Fall	130	8.2		Poisoning	54	8.0
	Homicide	81	5.1		Drowning	31	4.6
White Females	Poisoning	225	13.9	Black/ other Females	MVC (Traffic)	53	7.0
	Suicide	139	8.6		Poisoning	28	3.7
	MVC (Traffic)	133	8.2		Homicide	28	3.7
	Fall	121	7.5		Suffocation	19	2.5
	Suffocation	44	2.7		Fall	16	2.1

Race-sex specific rate per 100,000 population
 All Causes are Unintentional except (suicide, homicide)

Figure 1.3: Deaths Due to MVC by Race, Sex and Age Group, SC 2010

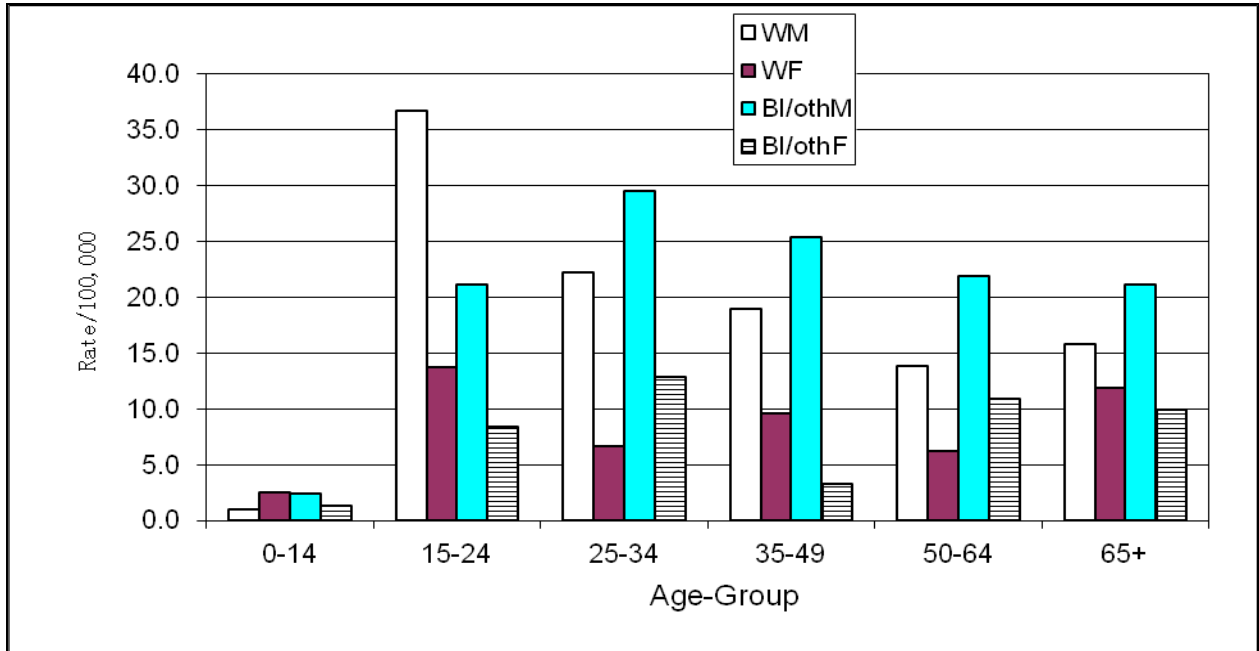


Figure 1.4: Deaths due to Intentional Injuries by Race and Sex, SC 2010

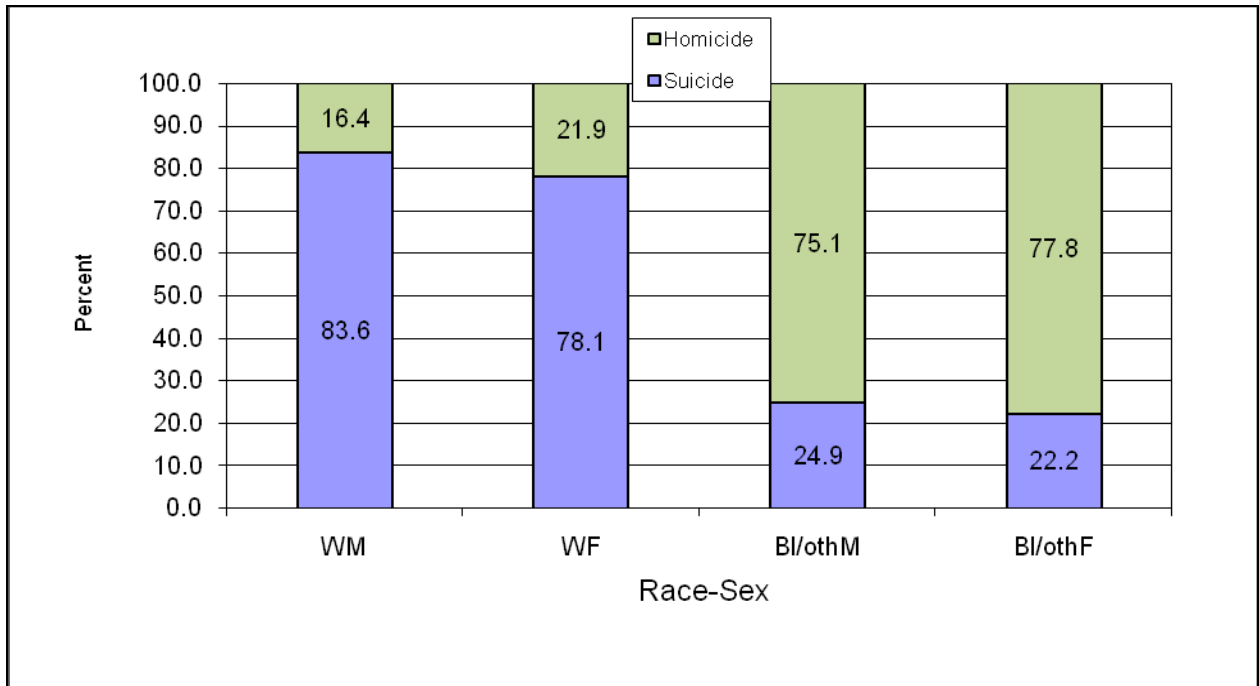


Table 1.4: Top Causes of Deaths due to Intentional Injuries, SC 2010

Suicide	No.	%	Homicide	No.	%
Firearm	387	61.6	Firearm	232	74.8
Suffocation	109	17.4	Cut/Pierce	30	9.7
Poisoning	104	16.6	Unspecified causes	25	8.1
Cut/Pierce	10	1.6	Struck by	7	2.3
Drowning	6	1.0	Suffocation	7	2.3
Fire	4	0.6	Fire	5	1.6
Other Causes	4	0.6	Drowning	2	0.7
Unspecified causes	3	0.5	Poisoning	2	0.7
Falls	1	0.2			
Total	628	100.0	Total	310	100.0

%= Percent of all causes of suicide

%= Percent of all causes of homicide

2010 Injury Hospital Discharges (HD)

(All rates in Section II of this report are based on 10,000 population)

- In 2010, there were 23,182 Injury Hospital Discharges (HD) due to injury in SC, resulting in a crude rate of 50.1/10,000 population.
- Falls were the leading cause of injury HD (44.1%) followed by MVC (10.8%) **Table 2.1**. Intentional injuries accounted for 12.6% of causes of injury. Sports and recreation contributed 3.1% to injury-related hospitalizations.
- People 65 years and older had highest injury HD rate and it is triple the next highest rate of age group 50-64 (148.4 & 49.2/10,000 respectively) **Figure 2.1**. Falls, were the leading cause of injury for children 0-14 and people 35 years and older, while MVC were the primary cause of hospitalizations for young people 15-24 years old (**Table 2.2**) . Attempted suicide was the leading cause of injury among young adults 25-34 years old.
- White females had the most injury-related HD followed by black/other males (rates 60.2 & 51.8/10,000 respectively) **Figure 2.2**. Falls were the leading cause of injury among all race-sex groups, and it was most frequent among white females (rate 36.2/10,000) Table 2.3.
- MVC-related injury were the highest among young people 15-24 years old for all race-sex groups except black/other males where the peak of their MVC injuries were in the age group 25-34 (rate 13.0/10,000) **Figure 2.3**.
- The injury HD rate due to falls was the highest among white females (36.2/10,000), which was almost 3 times as that among black/other females and double the rate among white males (**Table 2.4**). Eighty one percent of the falls resulted in fractures, 7.8% had intracranial injury without skull fracture, and 1.6% had contusions with intact skin (**Table 2.5**).

Table 2.1: Causes of Injury Hospital Discharges, SC 2010

Cause of Injury	Number	Percent	Rate
I. Unintentional	19,469	84.0	42.1
Falls	10,212	44.1	22.1
MVC (Traffic)	2,508	10.8	5.4
Poisoning	1,536	6.6	3.3
Natural, Environmental Factors	1,058	4.6	2.3
Adverse effects of therapeutic drugs	848	3.7	1.8
Sports and Recreation	725	3.1	1.6
Motorcyclist	625	2.7	1.4
Struck By/ Caught In	351	1.5	0.8
Unknown cause	287	1.2	0.6
Overexertion and Strenuous Activity	278	1.2	0.6
Other transport	270	1.2	0.6
Pedestrian	230	1.0	0.5
Foreign Body	164	0.7	0.4
Piercing or Cutting Object	159	0.7	0.3
Machinery	135	0.6	0.3
Firearm	133	0.6	0.3
Hot Substance/Objects	73	0.3	0.2
Fire and Flame	63	0.3	0.1
Suffocation/Near Suffocation	57	0.2	0.1
Pedal Cyclist	21	0.1	0.0
Other Unintentional Injury	21	0.1	0.0
Drowning/Near Drowning	8	0.0	0.0
II. All Intentional	2,911	12.6	6.3
Attempted Suicide	1,882	8.1	4.1
Assault	1,022	4.4	2.2
Legal Intervention/operation of war	7	0.0	0.0
III. All Undetermined Intention	509	2.2	1.1
Total	23,182	100.0	50.1

Percent of the total Injury Hospital Discharges
Rate per 10,000 population

Figure 2.1: Injury Hospital Discharge Rates by Age Group, SC 2010

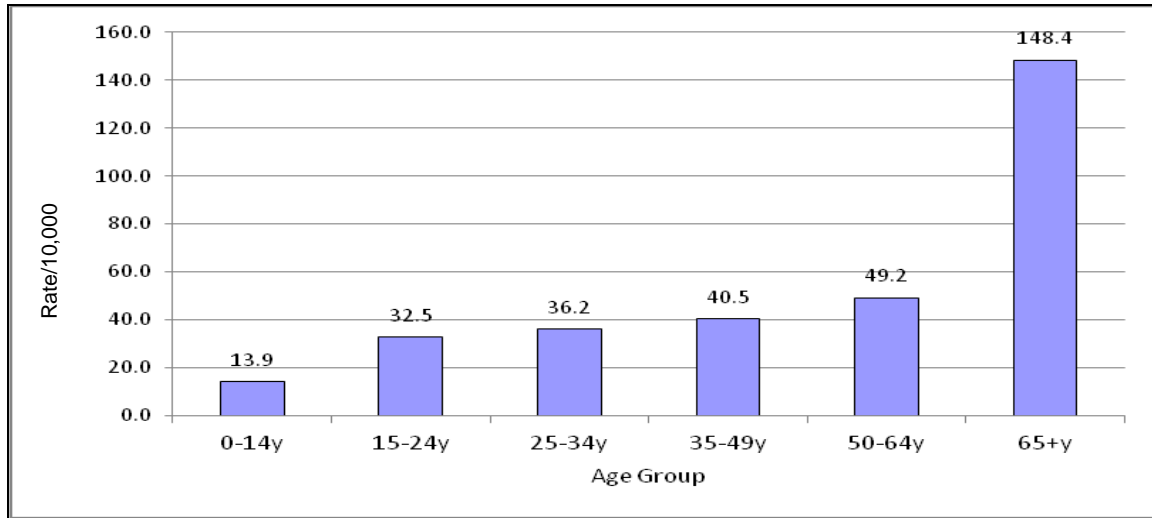


Table 2.2: Top 5 Causes of Injury Hospital Discharge by Age Group, SC 2010

Age Group	Cause of Injury	No.	Rate	Age Group	Cause of Injury	No.	Rate
0-14	Falls	312	3.5	35-49	Falls	695	7.4
	Sports & Recreation	228	2.5		Attempted Suicide	660	7.1
	MVC	142	1.6		MVC	536	5.7
	Poisoning	92	1.0		Poisoning	338	3.6
	Natural, Environmental	89	1.0		Assault	275	2.9
15-24	MVC	593	9.0	50-64	Falls	1,705	18.7
	Attempted Suicide	335	5.1		Poisoning	470	5.2
	Assault	296	4.5		MVC	447	4.9
	Falls	139	2.1		Attempted Suicide	368	4.0
	Sports & Recreation	135	2.0		Adverse effects of therapeutic drugs	272	3.0
25-34	Attempted Suicide	408	6.9	65+	Falls	7,093	112.3
	MVC	400	6.8		MVC	390	6.2
	Falls	268	4.5		Adverse effects of therapeutic drugs	372	5.9
	Assault	240	4.1		Poisoning	368	5.8
	Poisoning	150	2.5		Natural, Environmental	352	5.6

Age specific rate per 10,000 population

All Causes are Unintentional except (assault, attempted suicide)

Figure 2.2: Injury Hospital Discharge Rates by Race Sex, SC 2010

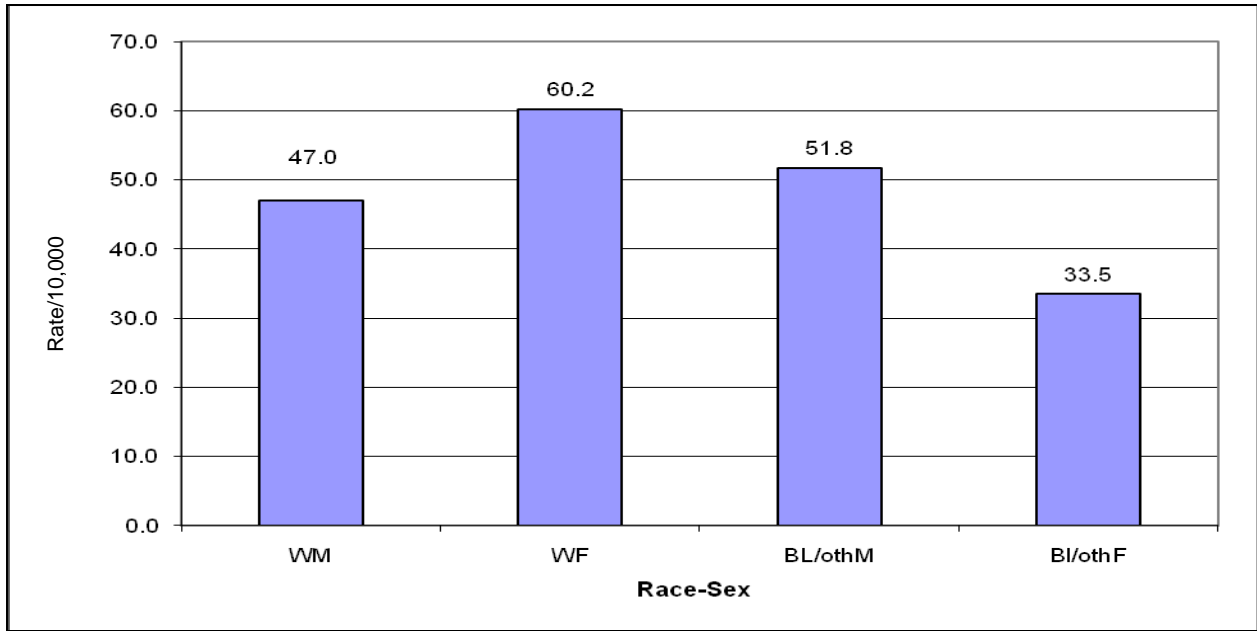


Table 2.3: Top 5 Causes of Injury Hospital Discharges by Race & Sex, SC 2010

Race & Sex	Cause of Injury	No.	Rate	Race & Sex	Cause of Injury	No.	Rate
White Males	Falls	2,619	16.6	Black/ other Males	Falls	746	11.1
	MVC	873	5.5		Assault	580	8.6
	Attempted Suicide	621	3.9		MVC	563	8.4
	Poisoning	514	3.3		Natural, Environmental	201	3.0
	Motorcyclist	419	2.7		Poisoning	187	2.8
White Females	Falls	5,866	36.2	Black/ other Females	Falls	981	13.0
	Attempted Suicide	875	5.4		MVC	339	4.5
	MVC	732	4.5		Attempted Suicide	231	3.1
	Poisoning	642	4.0		Adverse effects of therapeutic drugs	220	2.9
	Natural, Environmental	323	2.0		Poisoning	193	2.6

Race-sex specific rate per 10,000 population
 All Causes are Unintentional except (assault, attempted suicide)

Figure 2.3: MVC-Related Injury Hospital Discharges by Race, Sex & Age Group, SC 2010

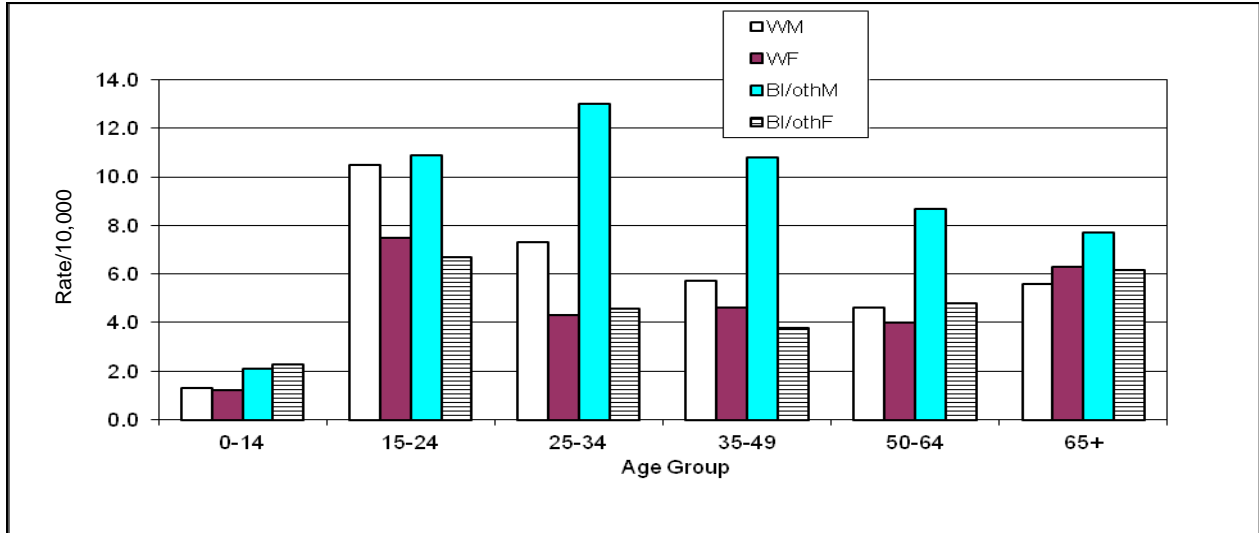


Table 2.4: Falls-Related Injury Hospital Discharges by Race-Sex, SC 2010

Sex-Race	Number	Rate
White M	2,619	16.6
White F	5,866	36.2
Black/other M	746	11.1
Black/other F	981	13.0

Race-sex specific rate per 10,000 population

Table 2.5: Nature of Injuries Due to Falls, SC 2010

Nature of Injuries Resulted from Falls	Percent
Fractures	83.1
Intracranial injury without skull fracture	7.8
Other injuries	5.5
Contusions with intact skin surfaces	1.6
Open wounds	1.0
Sprains & Strains	0.9
Superficial injury	0.1

Percent of all falls

Table 2.6: Source of Payments & Charges, Injury Hospital Discharges, SC 2010

Paying Source	Percent
Medicare	40.1
Insurance	31.0
Self Pay	19.2
Medicaid	9.6
Total Charges to all payers: \$1,064,132,096	

Charges are the amount billed to paying sources and not the amount collected

2010 Injury Emergency Department (ED) Visits

(All rates in Section III of this report are based on 10,000 population)

- In 2010, there were 419,791 Emergency Department (ED) visits due to injury in SC, resulting in a crude rate of 907.6/10,000 population.
- Falls were the leading cause of ED visits (24.9%) followed by Natural, Environmental Factors (17.9%), and MVC (13.6%) **Table 3.1**. Intentional injuries accounted for 5.3% of the injuries where assault was the major cause; 4.1% of all injuries were due to sports and recreation.
- Young adults 25-34 years old had the most injury-related ED visits followed by age group 15-24 (rates 1,177.5 & 1,172.6/10,000 respectively) **Figure 3.1**. Falls were the leading cause of injury for all age groups except people 15-34 years old where MVC was the leading cause of injury (**Table 3.2**).
- Black/other males had the highest ED visits rate followed by black/other females (1,293.1 and 1,105.9/10,000 respectively) **Figure 3.2**. The leading causes of injury were: falls among whites (males & females), natural/environmental factors among black/other males, and MVC for black/other females (**Table 3.3**).
- The highest MVC-related ED visits were among black/other (males & females) in the age of 25-34 years followed by age group 15-24 (**Figure 3.3**). For whites (males & females), the highest occurrence of MVC was in age group 15-24. ED visits for MVC injuries decreased with advance in age after 34 years.
- ED visits rate due to falls was the highest among females (white and black/other) (265.8 & 234.4/10,000 respectively) **Table 3.4**. Twenty seven percent of the falls resulted in contusions with intact skin surfaces, 23.2% had fractures, 20.5% had sprains and strains, and 14.0% had open wounds (**Table 3.5**).

Table 3.1: Causes of Injury ED Visits, SC 2010

Cause of Injury	Number	Percent	Rate
I. Unintentional	392,519	93.5	848.6
Falls	10,4535	24.9	226.0
Natural, Environmental Factors	74,978	17.9	162.1
MVC (Traffic)	57,011	13.6	123.3
Struck By/ Caught In	42,833	10.2	92.6
Overexertion and Strenuous Activity	35,900	8.6	77.6
Piercing or Cutting Object	25,956	6.2	56.1
Sports & Recreation	17267	4.1	37.3
Foreign Body	7,929	1.9	17.1
Adverse effects of therapeutic drugs	6,266	1.5	13.5
Hot Substance/Objects	5,187	1.2	11.2
Poisoning	3,871	0.9	8.4
Unknown causes	3,441	0.8	7.4
Motorcyclist	2,422	0.6	5.2
Other transport	1,967	0.5	4.3
Fire and Flame	1,833	0.4	4.0
Pedestrian	1,514	0.4	3.3
Machinery	1,267	0.3	2.7
Firearm	802	0.2	1.7
Other Unintentional Injury	657	0.2	1.4
Suffocation/Near Suffocation	255	0.1	0.6
Pedal Cyclist	135	0.0	0.3
Drowning/Near Drowning	57	0.0	0.1
II. All Intentional	22,046	5.3	47.7
Assault	18,274	4.4	39.5
Attempted Suicide	3,289	0.8	7.1
Legal Intervention, operation of war	487	0.1	1.0
III. All Undetermined Intention	1,658	0.4	3.6
Total	419,791	100.0	907.6

Percent of the total Injury ED visits
Rate per 10,000 population

Figure 3.1: Injury ED visits Rates by Age Group, SC 2010

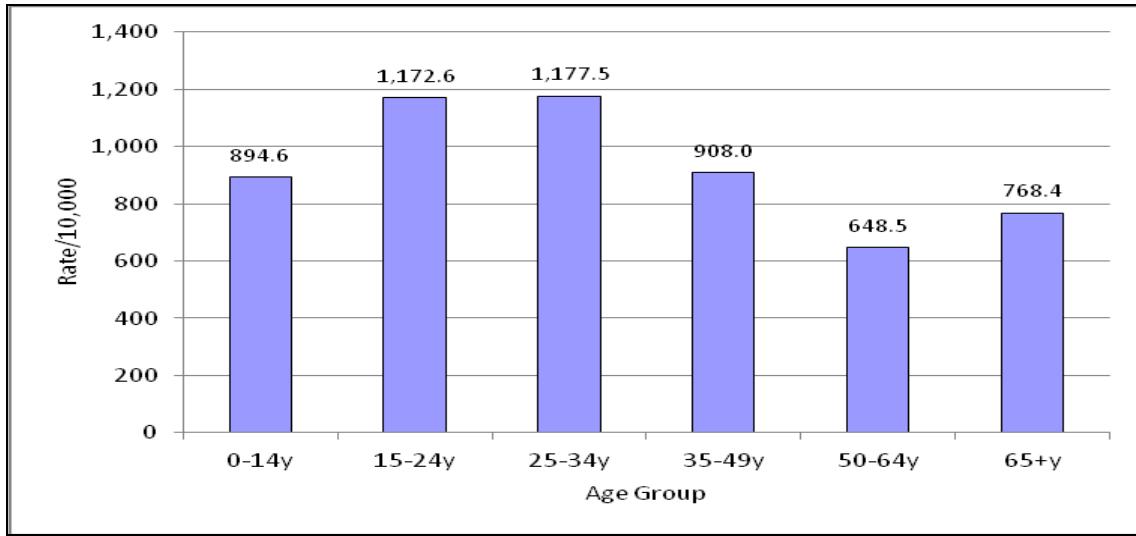


Table 3.2: Top 5 Causes of Injury ED Visits by Age Group, SC 2010

Age Group	Cause of Injury	No.	Rate	Age Group	Cause of Injury	No.	Rate
0-14	Falls	22,255	248.5	35-49	Falls	17,272	184.9
	Struck By/ Caught In	13,066	145.9		Natural, Environmental	17,018	182.2
	Natural, Environmental	12,040	134.5		MVC (Traffic)	13,210	141.4
	Sports & Recreation	8,298	92.7		Overexertion	9,482	101.5
	Piercing/Cutting	4,945	55.2		Struck By/ Caught In	7,565	81.0
15-24	MVC (Traffic)	15,919	240.7	50-64	Falls	17,398	191.1
	Natural, Environmental	11,645	176.0		Natural, Environmental	13,162	144.6
	Falls	10,034	151.7		MVC (Traffic)	7,757	85.2
	Struck By/ Caught In	8,241	124.6		Overexertion	4,914	54.0
	Overexertion	7,425	112.2		Struck By/ Caught In	4,316	47.4
24-34	MVC (Traffic)	12,687	214.3	65+	Falls	26,284	416.0
	Natural, Environmental	11,987	202.5		Natural, Environmental	9,126	144.4
	Falls	11,292	190.7		MVC (Traffic)	2,954	46.7
	Overexertion	7,918	133.7		Struck By/ Caught In	2,639	41.8
	Struck By/ Caught In	7,006	118.3		Overexertion	2,002	31.7

Age-specific rate per 10,000 population All Causes are Unintentional except (assault, attempted suicide)

Figure 3.2: Injury ED Visits by Race and Sex, SC 2010

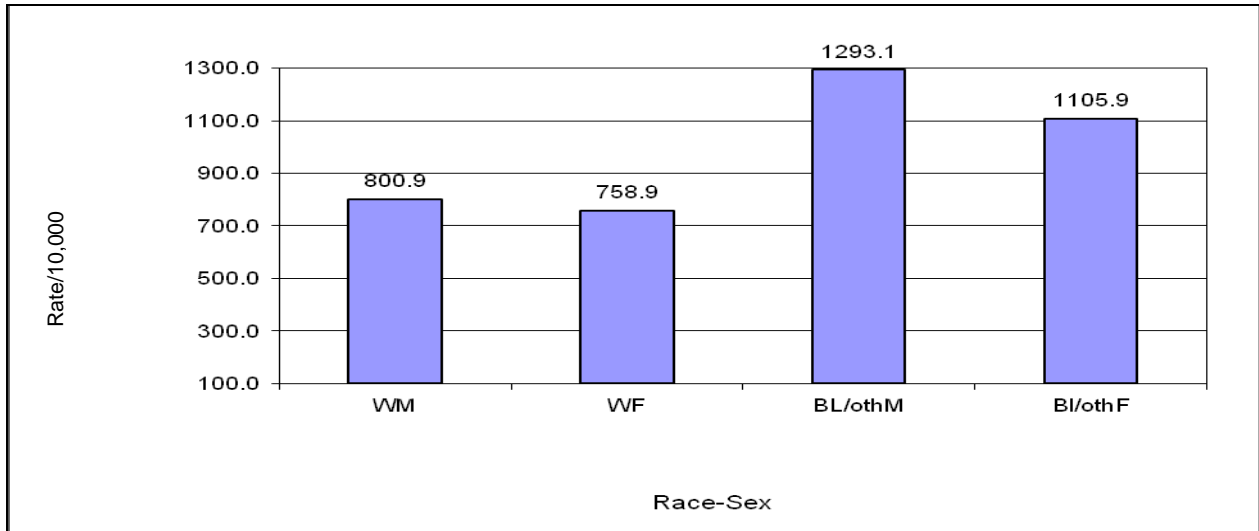


Table 3.3: Top 5 Causes of Injury ED Visits by Race & Sex, SC 2010

Race & Sex	Cause of Injury	No.	Rate	Race & Sex	Cause of Injury	No.	Rate
White Males	Falls	29,314	185.8	Black/ other Males	Natural, Environmental	14,977	222.8
	Natural, Environmental	22,066	139.8		MVC (Traffic)	14,689	218.5
	Struck By/ Caught In	15,365	97.4		Falls	14,439	214.8
	Piercing/Cutting	11,027	69.9		Struck By/ Caught In	9,562	142.3
	Overexertion	10,992	69.7		Overexertion	7,075	105.3
White Females	Falls	43,077	265.8	Black/ other Females	MVC (Traffic)	18,663	247.3
	Natural, Environmental	21,635	133.5		Falls	17,688	234.4
	MVC (Traffic)	12,945	79.9		Natural, Environmental	16,292	215.9
	Struck By/ Caught In	10,985	67.8		Struck By/ Caught In	6,915	91.6
	Overexertion	10,933	67.5		Overexertion	6,897	91.4

Race-sex specific rate per 10,000 population
 All Causes are Unintentional except (assault, attempted suicide)

Figure 3.3: MVC-Related ED Visits by Race, Sex & Age Group, SC 2010

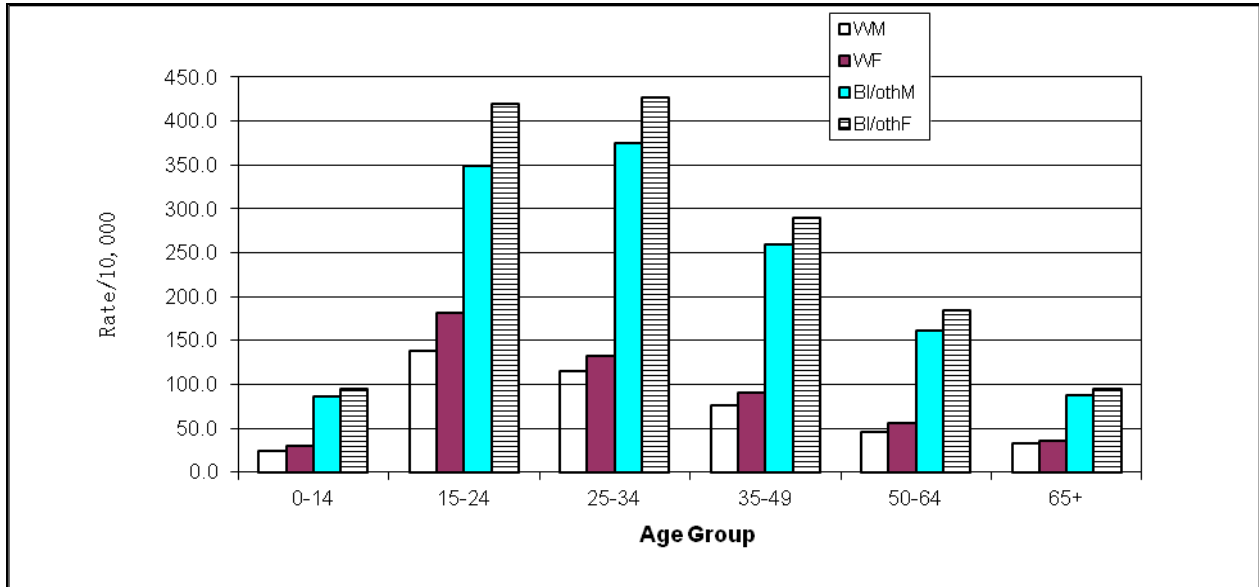


Table 3.4: Falls-Related ED Visits by Race-Sex, SC 2010

Sex-Race	Number	Rate
White M	29,314	185.8
White F	43,077	265.8
Black/other M	14,439	214.8
Black/other F	17,688	234.4

Rate per 10,000 population

Table 3.5: Nature of Injuries Due to Falls, SC 2010

Nature of Injuries Resulted from Falls	Percent
Contusions with intact skin surfaces	27.3
Fractures	23.2
Sprains & Strains	20.5
Open wounds	14.0
Other injuries	10.1
Superficial injuries	2.8
Intracranial injury, exclude those with skull fracture	2.1

Percent of all falls

Table 3.6: Source of Payments & Charges, ED Visits, SC 2010

Paying Source	Percent
Insurance	45.3
Self Pay	24.8
Medicare	17.4
Medicaid	12.6
Total Charges to all payers: \$ 1,006,802,499	

Charges are the amount billed to paying sources and not the amount collected

2010 Traumatic Brain Injury Deaths

(All rates in Section IV of this report are based on 100,000 population)

- In 2010, there were 1,068 deaths in South Carolina due to Traumatic Brain Injury (TBI). The crude death rate was 23.1 per 100,000 population.
- Motor vehicle crashes (MVC) were the leading cause of TBI deaths (27.6%) followed by suicide and falls (28.7 & 13.4% respectively) **Table 4.1**.
- Thirty-eight percent of TBI were intra-cranial (IC) injuries, 3.0% were skull/facial bone fractures, 24.1% were open wound of head, and 34.8% were unspecified head injury (**Figure 4.1**).
- People 65 years and older had the highest TBI death rate followed by age group 25-34 (39.0 & 30.7/100,000 respectively) **Figure 4.2**. **Table 4.2** shows that the primary cause of TBI death was: homicide among children 0-14 years old, suicide for people 35-64 years old, and falls for people 65 years and older.
- Black/other males had the highest TBI death rate followed by white males (36.1 & 34.7/100,000 respectively) **Figure 4.3**. TBI deaths among white males are nearly doubled that of white females, and black/other males die from TBI 4 times as much as black/other females. MVC were the primary cause of death for all race-sex groups except white males, where suicide was the leading cause (**Table 4.3**).
- **Figure 4.4** shows that deaths from MVC were the highest among black/other males 25-34 years old followed by white males in the age group 15-24 (rates 24.4 & 20.8/100,000 respectively). For females (white & black/other) the highest rate of MVC-related TBI deaths was in age group 15-24.
- Homicide among black/other was more than whites and it was the reverse for suicide (**Figure 4.5**). Firearms were used in 67.1% of homicide-related TBI deaths as the weapon of assault, and firearms were used in 96.1% of the suicide cases.

Table 4.1: Causes of TBI Deaths, SC 2010

Cause of Injury	Number	Percent	Rate
I. Unintentional	621	58.1	13.4
MVC (Traffic)	268	25.1	5.8
Fall	165	15.5	3.6
Pedestrians	49	4.6	1.1
Motor Cyclists	48	4.5	1.0
Unspecified Causes	34	3.2	0.7
Other Transport	20	1.9	0.4
Firearm	12	1.1	0.3
Other Causes	10	0.9	0.2
Pedal Cyclists	6	0.6	0.1
Struck by/caught in	5	0.5	0.1
Suffocation	2	0.2	0.0
Machinery	1	0.1	0.0
Poisoning	1	0.1	0.0
II. All Intentional	434	40.6	9.4
Suicide	308	28.8	6.7
Homicide	125	11.7	2.7
Legal Intervention	1	0.1	0.0
III. Undetermined Intent	13	1.2	0.3
Total	1,068	100.0	23.1

Percent of the total TBI Deaths
Rate per 100,000 population

Figure 4.1: Types of TBI Deaths, SC 2010

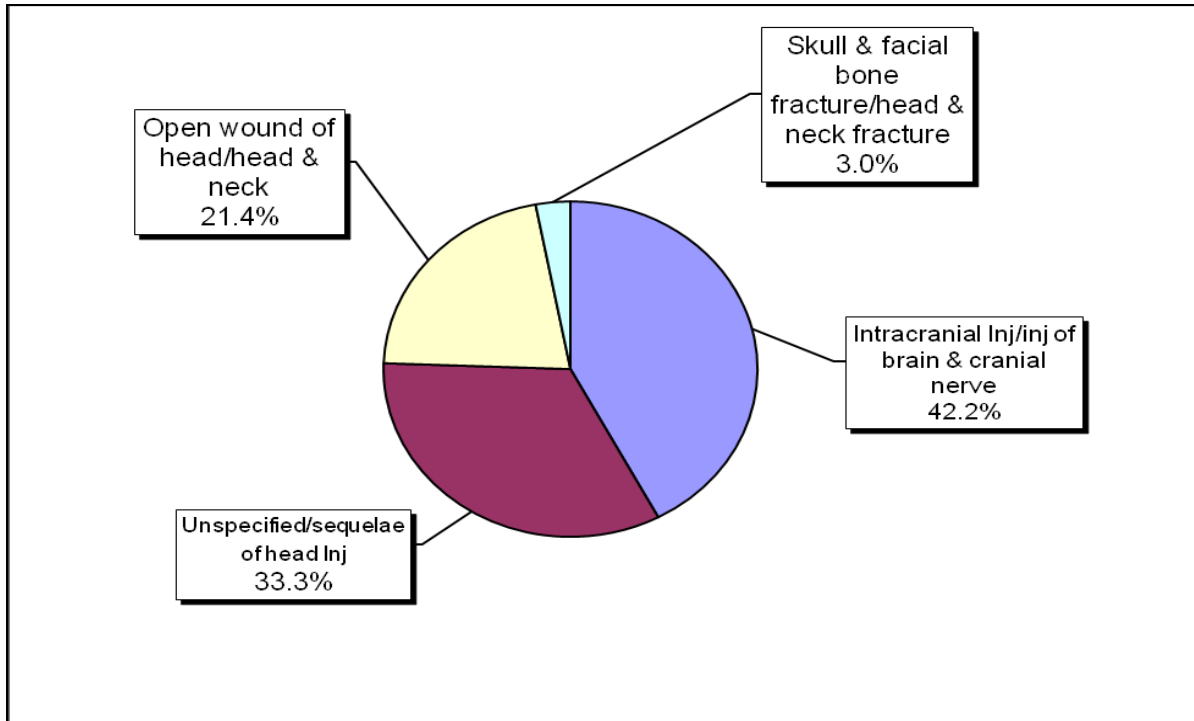


Figure 4.2: TBI Death Rates by Age Groups, SC 2010

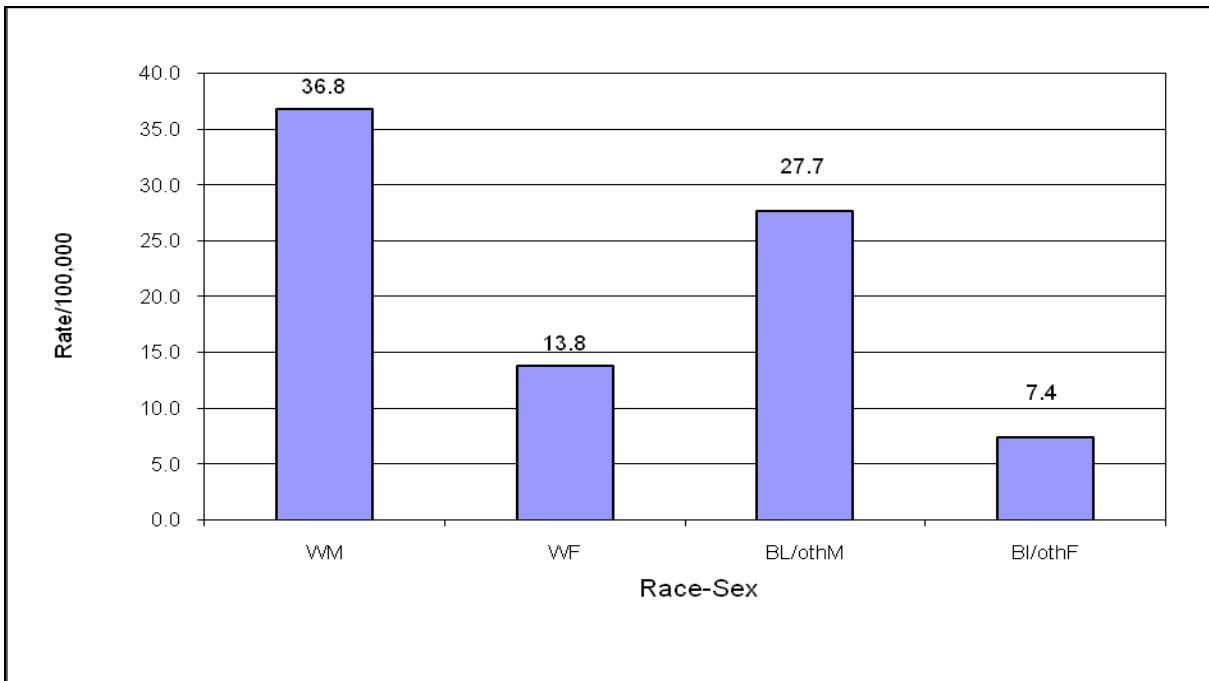


Table 4.2: Top 3 Causes of TBI Deaths by Age Group, SC 2010

Age Group	Cause of Injury	No.	Rate	Age Group	Cause of Injury	No.	Rate
0-14	Homicide	11	1.2	35-49	Suicide	77	8.2
	MVC (Traffic)	9	1.0		MVC (Traffic)	68	7.3
	Pedestrians	8	0.9		Homicide	31	3.3
15-24	MVC (Traffic)	78	11.8	50-64	Suicide	87	9.6
	Suicide	44	6.7		MVC (Traffic)	34	3.7
	Homicide	23	3.5		Fall	20	2.2
24-34	MVC (Traffic)	49	8.3	65+	Fall	125	19.8
	Suicide	47	7.9		Suicide	53	8.4
	Homicide	30	5.1		MVC (Traffic)	30	4.7

Age specific rate per 100,000 population
 All Causes are Unintentional except (suicide, homicide)

Figure 4.3: TBI Death by Race and Sex, SC 2010

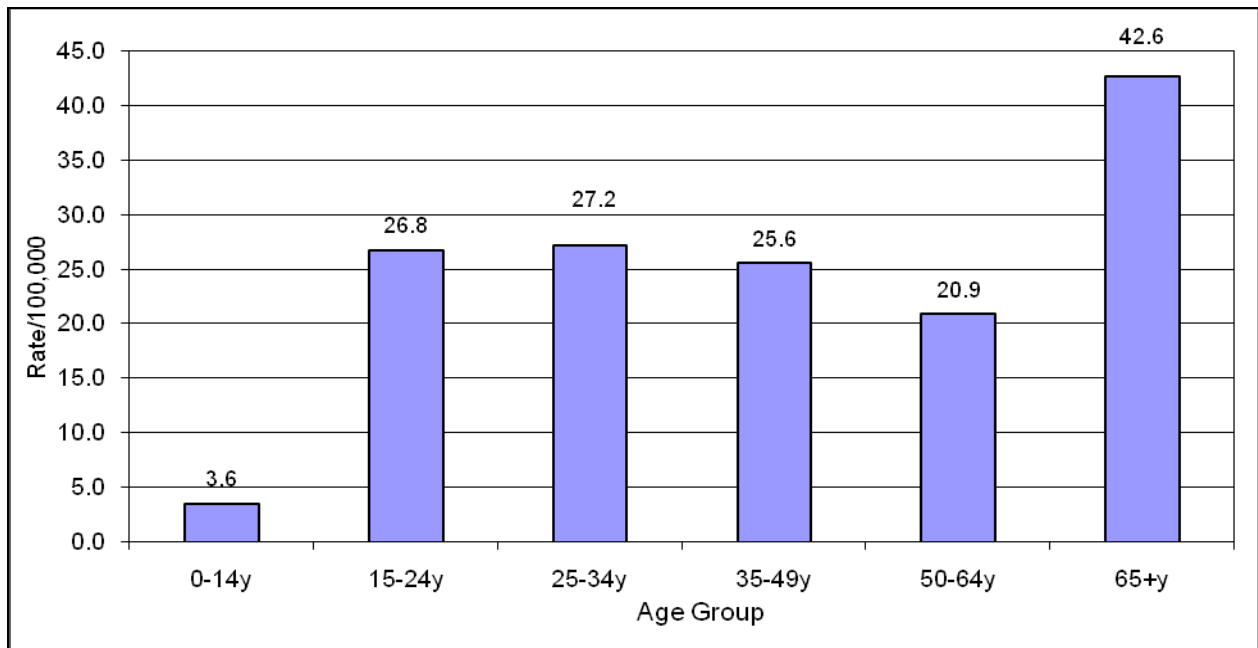


Table 4.3: Top 5 Causes of TBI Deaths by Race & Sex, SC 2010

Race & Sex	Cause of Injury	No.	Rate	Race & Sex	Cause of Injury	No.	Rate
White Males	Suicide	236	15.0	Black/ other Males	MVC (Traffic)	57	8.5
	MVC (Traffic)	126	8.0		Homicide	55	8.2
	Fall	75	4.8		Suicide	26	3.9
	Motor Cyclists	33	2.1		Pedestrians	15	2.2
	Homicide	32	2.0		Motor Cyclists	10	1.5
White Females	Fall	70	4.3	Black/ other Females	MVC (Traffic)	21	2.8
	MVC (Traffic)	58	3.6		Homicide	14	1.9
	Suicide	43	2.7		Fall	7	0.9
	Homicide	21	1.3		Pedestrians	6	0.8
	Pedestrians	6	0.4		Motor Cyclists	2	0.3

Race-sex specific rate per 100,000
 All Causes are Unintentional except (suicide, homicide)

Figure 4.4: TBI Deaths Due to MVC by Race, Sex & Age Group, SC 2010

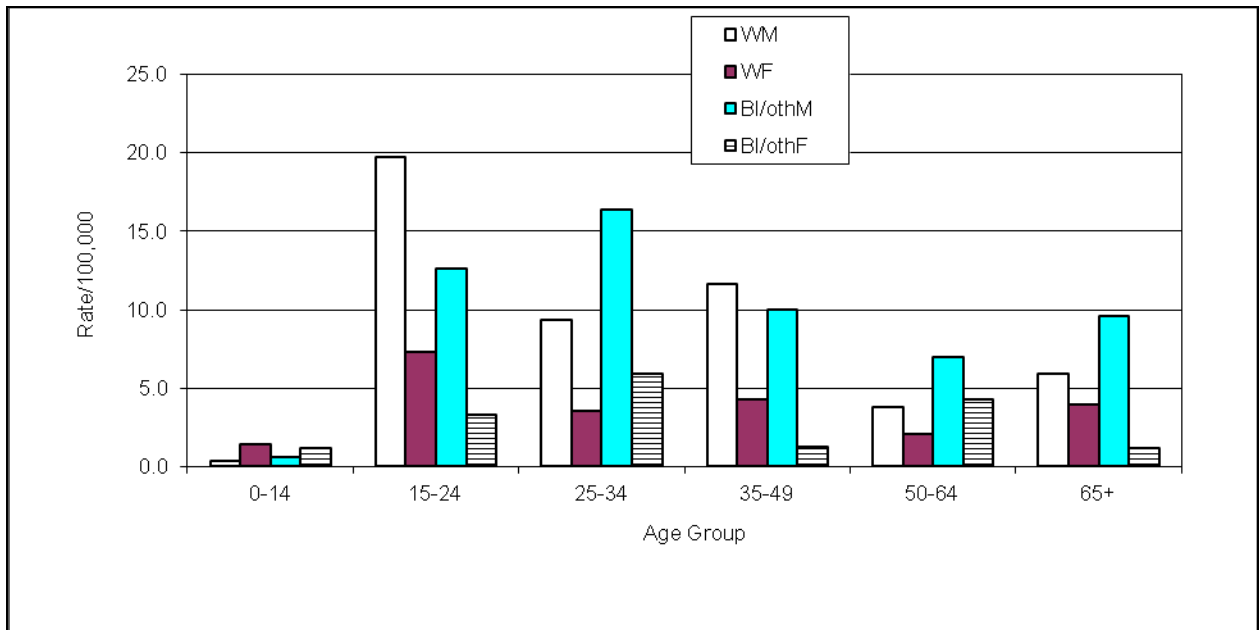
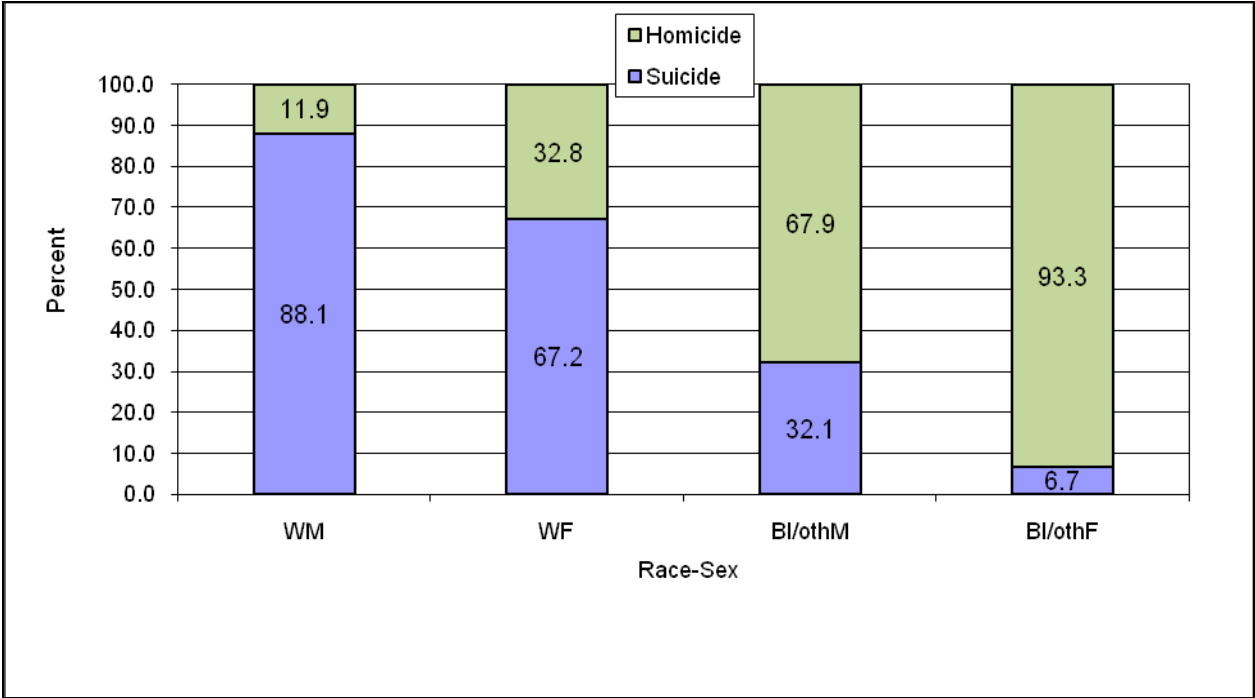


Figure 4.5: TBI Deaths due to Intentional Injuries by Race and Sex, SC 2010



2010 Traumatic Brain Injury Hospital Discharges (HD)

(All rates in Section V of this report are based on 100,000 population)

- In 2010, there were 3,696 TBI hospital discharges (HD) in SC resulting in a crude rate of 79.9 discharges /100,000 population.
- Falls were the leading cause of TBI/HD (40.5%) followed by MVC (26.2%) **Table 5.1**. Intentional injuries accounted for 8.0% of the causes of injury and mainly it was assault-related.
- Forty two percent of the TBI discharges were diagnosed as intracranial (IC) injury, 23.5% were concussions, 20.7% were skull fracture with or without IC injury, and 13.8% were unspecified head injuries (**Figure 5.1**).
- Almost 74% of the cases were classified as moderate and severe injuries, and 26% were mild (**Figure 5.2**). Among people 50 and older 77% of the TBI were moderate and severe (**Figure 5.3**). The highest percentage of mild TBI was among children 0-14 years old.
- People 65 and older had the most TBI discharges which is twice the next highest rate among age group 15-24 (rate 189.8 & 79.2/100,000 respectively) **Figure 5.4**. Falls were the leading cause of TBI-related injury for children 0-14 and people 50 years and older (**Table 4.4**); MVC were the leading cause of injury from age 15 to 49 years old.
- TBI/HD was the highest among black/other males followed by white males (rates 115.0 & 97.6/100,000 respectively) **Figure 5.5**. White females were admitted to the hospital almost twice as much as black/other females. **Table 5.5** shows that MVC were the leading cause of injury among black/other males , while falls were the leading cause for all other race-sex groups.
- MVC-related TBI /HD were the highest among people in the age group 15-24 for all race-sex except black/other males where the peak of MVC among them was in the age range of 25-34 (**Figure 5.6**).
- **Figure 5.7** shows that fall occurred mostly among people 65 and older and by far it was the highest among white females. Falls on the same level occurred in 18.7% of the cases (**Figure 5.8**), 15.2% were falls from one level to another, 7.6% from stairs or steps and 51.3% were unspecified falls.

Table 5.1: Causes of TBI/HD, SC 2010

Cause of Injury	Number	Percent	Rate
I. Unintentional	3,389	91.7	73.3
Fall	1,496	40.5	32.3
MVC (Traffic)	969	26.2	20.9
Motor Cyclists	269	7.3	5.8
Unspecified Causes	155	4.2	3.4
Sports/Recreation	141	3.8	3.0
Pedestrians	90	2.4	1.9
Struck by/caught in	87	2.4	1.9
Other Transport	84	2.3	1.8
Unknown Causes	55	1.5	1.2
Pedal cyclists	10	0.3	0.2
Other Causes	8	0.2	0.2
Machinery	7	0.2	0.2
Natural/environmental	7	0.2	0.2
Firearm	6	0.2	0.1
Suffocation	5	0.1	0.1
II. All Intentional	296	8.0	6.4
Assault	272	7.4	5.9
Attempted Suicide	24	0.7	0.5
III. Undetermined Intent	11	0.3	0.2
Total	3,696	100.0	79.9

Percent of the total HD
Rate per 100,000 population

Figure 5.1: Types of TBI/HD, SC 2010

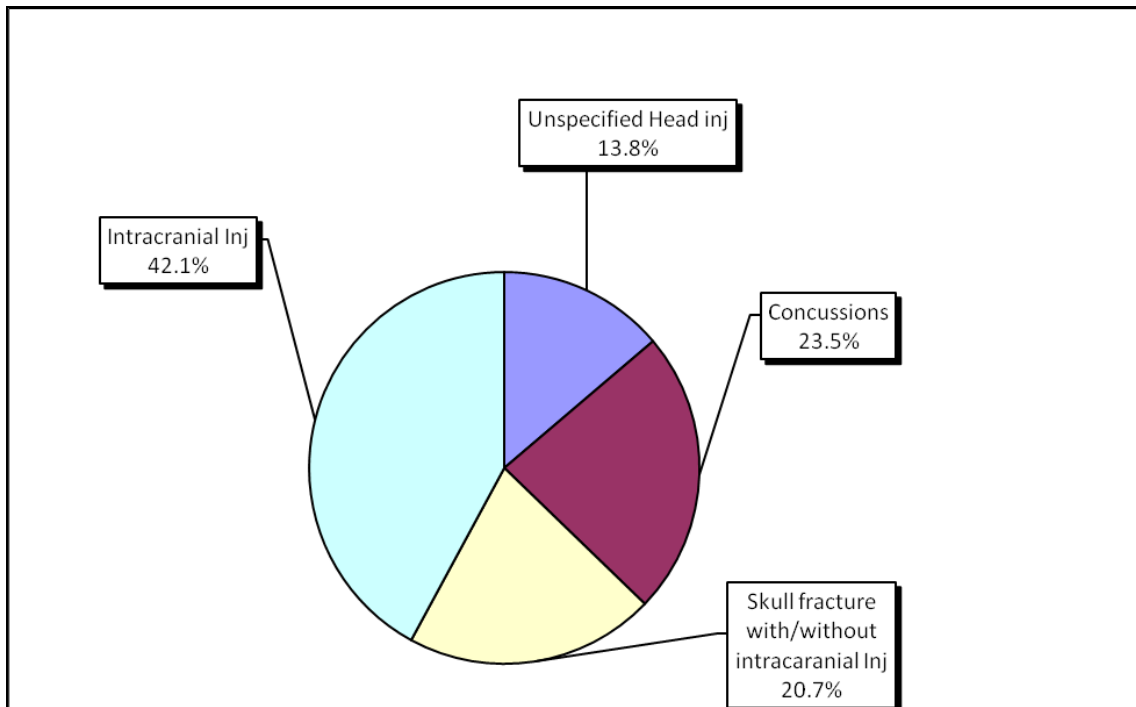


Figure 5.2: TBI/HD Severity, SC 2010

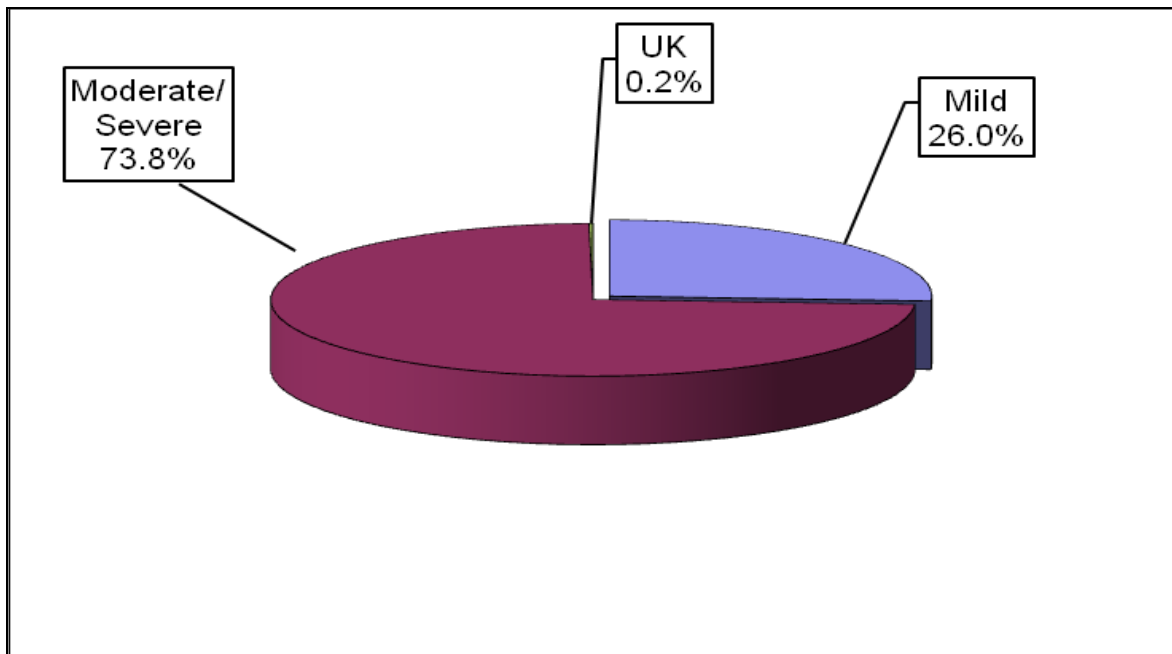


Figure 5.3: TBI/HD Severity by Age Group, SC 2010

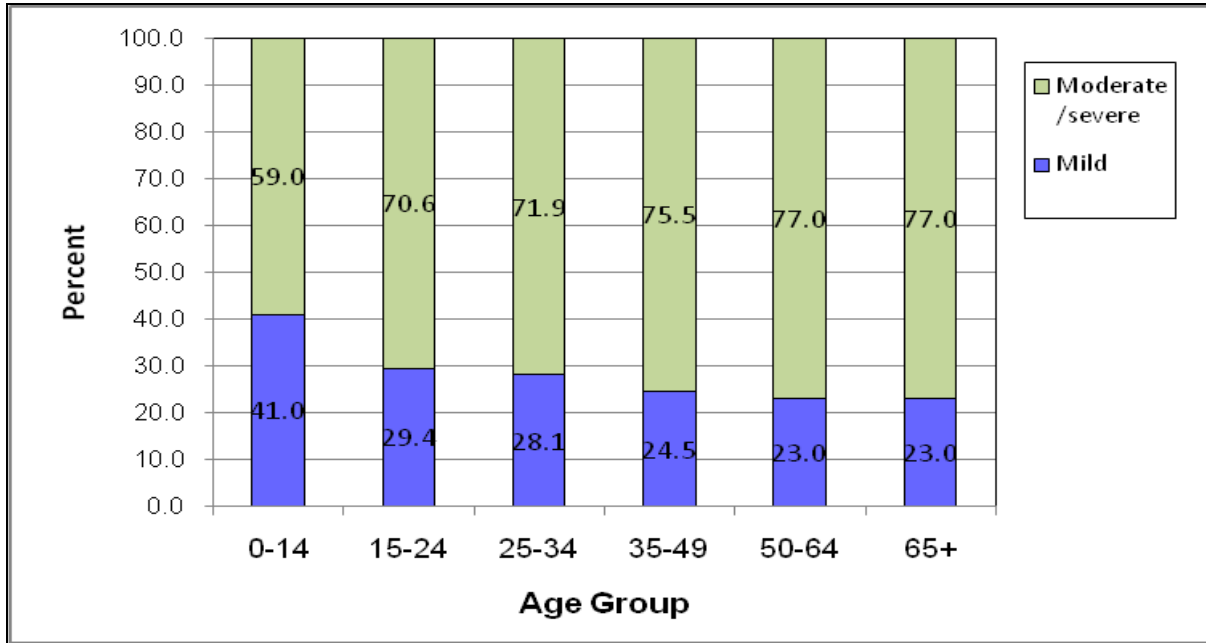


Figure 5.4: TBI/HD Rates by Age Group, SC 2010

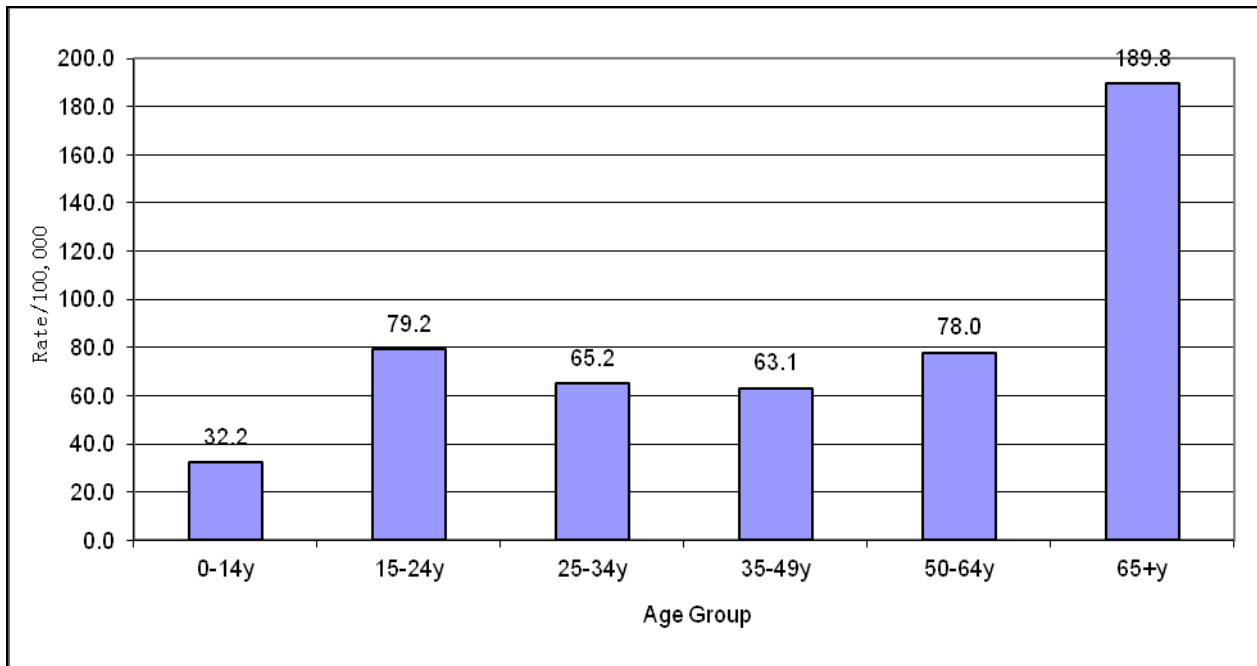


Table 5.4: Top 5 Causes of TBI/HD by Age Group, SC 2010

Age Group	Cause of Injury	No.	Rate	Age Group	Cause of Injury	No.	Rate
0-14	Fall	114	12.7	35-49	MVC (Traffic)	192	20.6
	MVC (Traffic)	59	6.6		Fall	110	11.8
	Sports/Recreation	35	3.9		Motor Cyclists	89	9.5
	Assault	18	2.0		Assault	82	8.8
	Pedestrians	14	1.6		Sports/Recreation	31	3.3
15-24	MVC (Traffic)	271	41.0	50-64	Fall	282	31.0
	Assault	62	9.4		MVC (Traffic)	160	17.6
	Fall	36	5.4		Motor Cyclists	76	8.3
	Motor Cyclists	33	5.0		Assault	43	4.7
	Other Transport	29	4.4		Sports/Recreation	22	2.4
24-34	MVC (Traffic)	148	25.0	65+	Fall	893	141.3
	Fall	61	10.3		MVC (Traffic)	139	22.0
	Motor Cyclists	57	9.6		Assault	21	3.3
	Assault	46	7.8		Struck by/caught in	21	3.3
	Pedestrians	18	3.0		Motor Cyclists	12	1.9

Age-specific rate per 100,000 All Causes are Unintentional except (assault, attempted suicide)

Figure 5.5: TBI/HD by Race and Sex, SC 2010

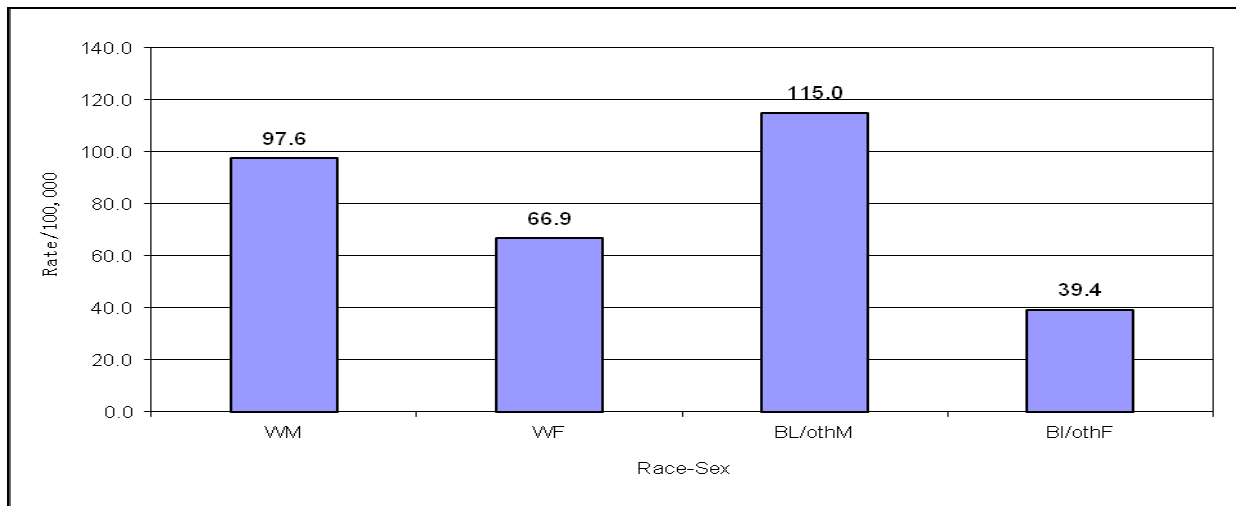


Table 5.5: Top 5 Causes of TBI/HD by Race & Sex, SC 2010

Race & Sex	Cause of Injury	No.	Rate	Race & Sex	Cause of Injury	No.	Rate
White Males	Fall	566	35.9	Black/ other Males	MVC (Traffic)	235	35.0
	MVC (Traffic)	378	24.0		Fall	187	27.8
	Motor Cyclists	193	12.2		Assault	145	21.6
	Assault	87	5.5		Motor Cyclists	46	6.8
	Sports/Recreation	76	4.8		Pedestrians	35	5.2
White Females	Fall	621	38.3	Black/ other Females	Fall	122	16.2
	MVC (Traffic)	256	15.8		MVC (Traffic)	99	13.1
	Sports/Recreation	31	1.9		Assault	22	2.9
	Motor Cyclists	26	1.6		Pedestrians	12	1.6
	Struck by/caught in	24	1.5		Sports/Recreation	9	1.2

Race-sex specific rate per 100,000
 All Causes are Unintentional except (assault, attempted suicide)

Figure 5.6: TBI/HD Due to MVC by Race, Sex and Age Group, SC 2010

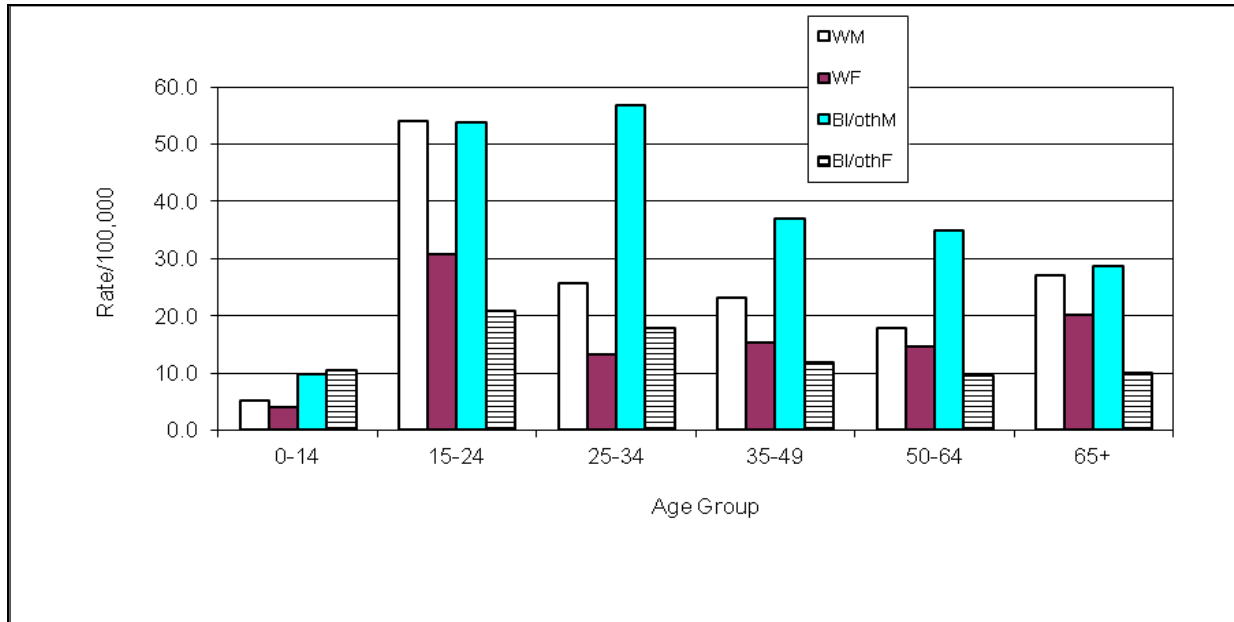


Figure 5.7: TBI/HD Due to Falls by Race, Sex & Age Group, SC 2010

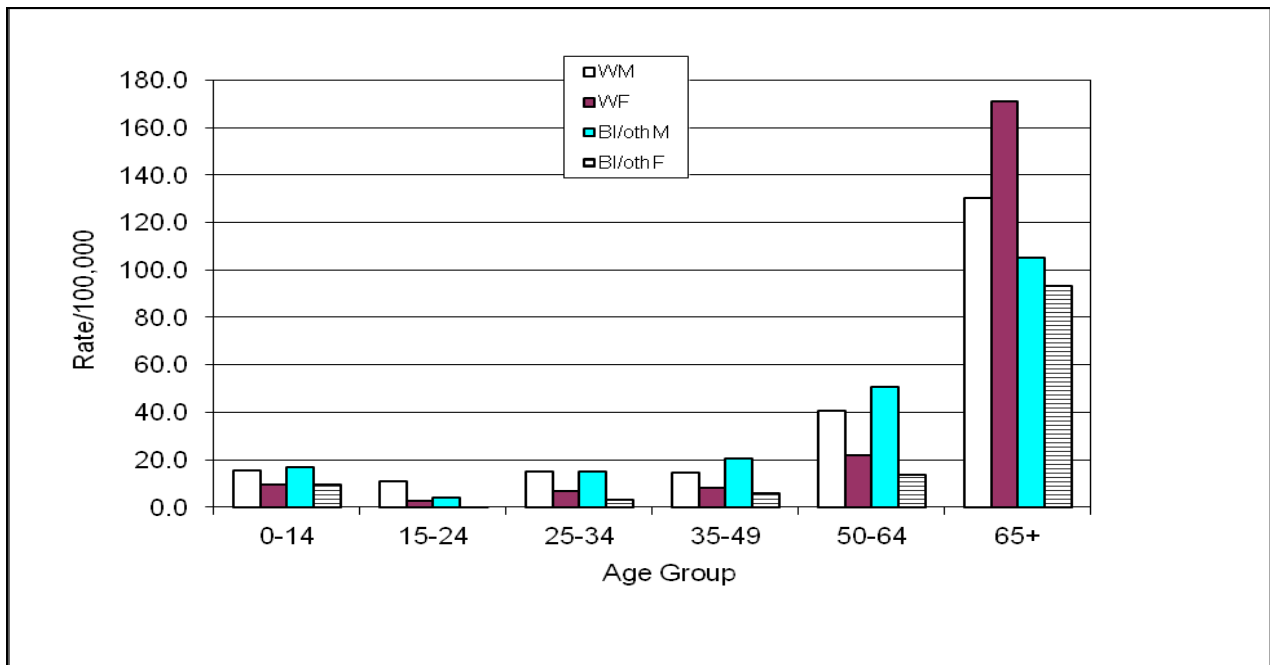
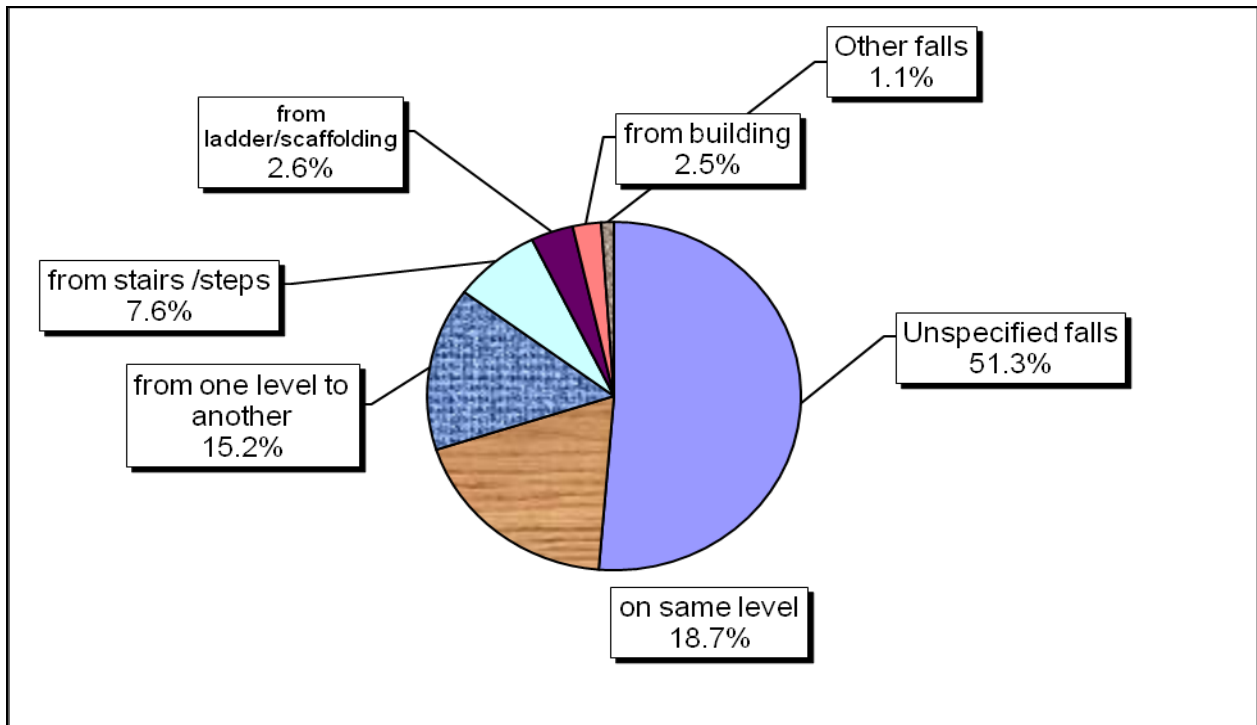


Figure 5.8: Types of Falls, TBI/HD, SC 2010



2010 Traumatic Brain Injury Emergency Department (ED) Visits

(All rates in Section V of this report are based on 100,000 population)

- There were 23,037 TBI emergency department (ED) visits in SC in year 2010, resulting in a crude rate of 498.1 visits /100,000 population.
- Falls were the leading cause of TBI ED visits (41.9%) followed by MVC (18.9%) **Table 6.1**. Intentional injuries accounted for 11.7% of the causes of injury and mainly it was assault-related.
- Almost 65% of the TBI-related ED visits were diagnosed as unspecified head injuries, 30.1% were concussions, 2.1% were intracranial (IC) injury, and 2.5% were skull fracture with or without Intra-cranial (IC) injury (**Figure 6.1**).
- The majority of the TBI were classified as mild injuries (95.3%), while 4.2% of the visits were moderate and severe (**Figure 6.2**). People 65 years and older had the highest percentage of moderate and severe TBI (7.0%), followed by people 35-64 years old (**Figure 6.3**).
- Young people 15-24 years old had the most visits to the ED due to TBI followed people 65 & older (rates 662.8 & 639.4/100,000 consecutively) **Figure 6.4**. ED visits declined after age of 24 and it increased again for people 65 years and older. Falls were the leading cause of TBI-related injury for children 0-14 years and people 35 years and older (**Table 6.2**) and MVC were the leading cause of injury from age 15 to age 34 years.
- TBI ED visits among black/other males were 1.3 times that among white males (**Figure 6.5**), and black/other females had injuries 1.5 as that among white females. **Table 6.3** shows that the top 5 causes of TBI injury were the same among all race-sex groups, with falls being the leading cause, and occurred more frequent among white females than any other group.
- MVC-related TBI/ED visits were the highest among people in the age range of 15-24 years (**Figure 6.6**), and in that age group the highest rate was among black/other males (278.6/100,000). After age 24, TBI /ED visits for MVC decreased with increase in age.
- **Figure 6.7** shows a U shaped like graph, which indicates that falls occurred the most in the early years of life (0-14 years) and among people 65 years and older. In age group 0-14, males (white & black/other) had more falls-related TBI than females (white & black/other). By far white females 65 and older had the highest number of falls (rate 696.0/100,000). Forty percent of the falls resulting in TBI were unspecified in nature (**Figure 6.8**), 29.6% were falls on the same level, 21.7% were from one level to another, and 5.7% were falls from stairs or steps.

Table 6.1: Causes of TBI ED Visits, SC 2010

Cause of Injury	Number	Percent	Rate
I. Unintentional	20,336	88.3	439.7
Fall	9,926	43.1	214.6
MVC (Traffic)	4,286	18.6	92.7
Struck by/caught in	2,898	12.6	62.7
Sports/Recreation	1,387	6.0	30.0
Unspecified Causes	781	3.4	16.9
Motor Cyclists	321	1.4	6.9
Other Transport	247	1.1	5.3
Pedestrians	150	0.7	3.2
Unknown Causes	119	0.5	2.6
Drowning/Submersion	58	0.3	1.3
Cut/Pierce	56	0.2	1.2
Natural/environmental	39	0.2	0.8
Pedal cyclists	37	0.2	0.8
Machinery	12	0.1	0.3
Poisoning	7	0.0	0.2
Fire/Flame	6	0.0	0.1
Firearm	6	0.0	0.1
II. All Intentional	2,657	11.5	57.4
Assault	2,646	11.4	57.2
Attempted Suicide	11	0.1	0.2
III. Undetermined Intent	44	0.2	1.0
Total	23,037	100.0	498.1

Percent of the total ED visits
Rate per 100,000 population

Figure 6.1: Types of TBI in ED Visits, SC 2010

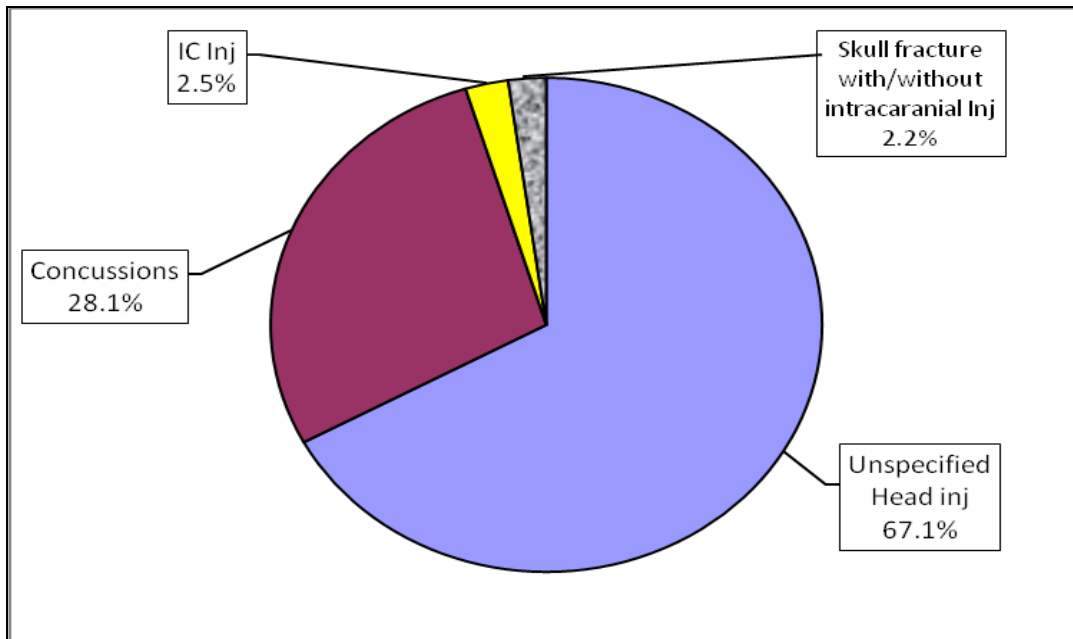


Figure 6.2: TBI ED Visits by Severity, SC 2010

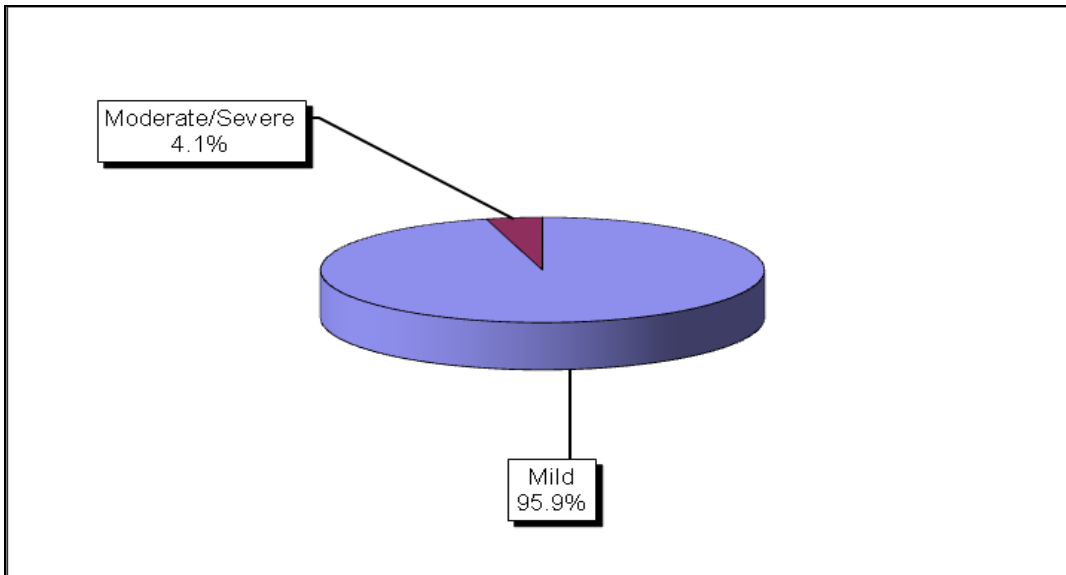


Figure 6.3: TBI/ED Severity by Age Group, SC 2010

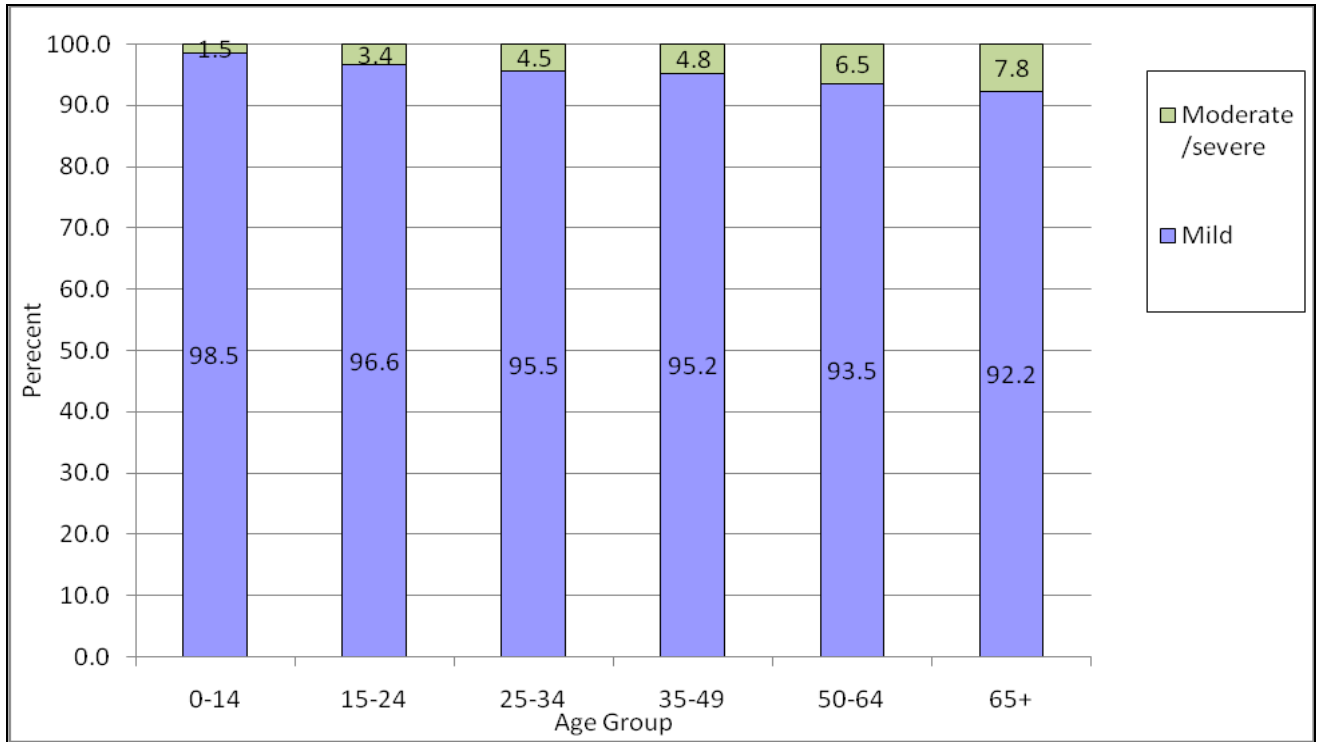


Figure 6.4: TBI ED Visits Rates by Age Group, SC 2010

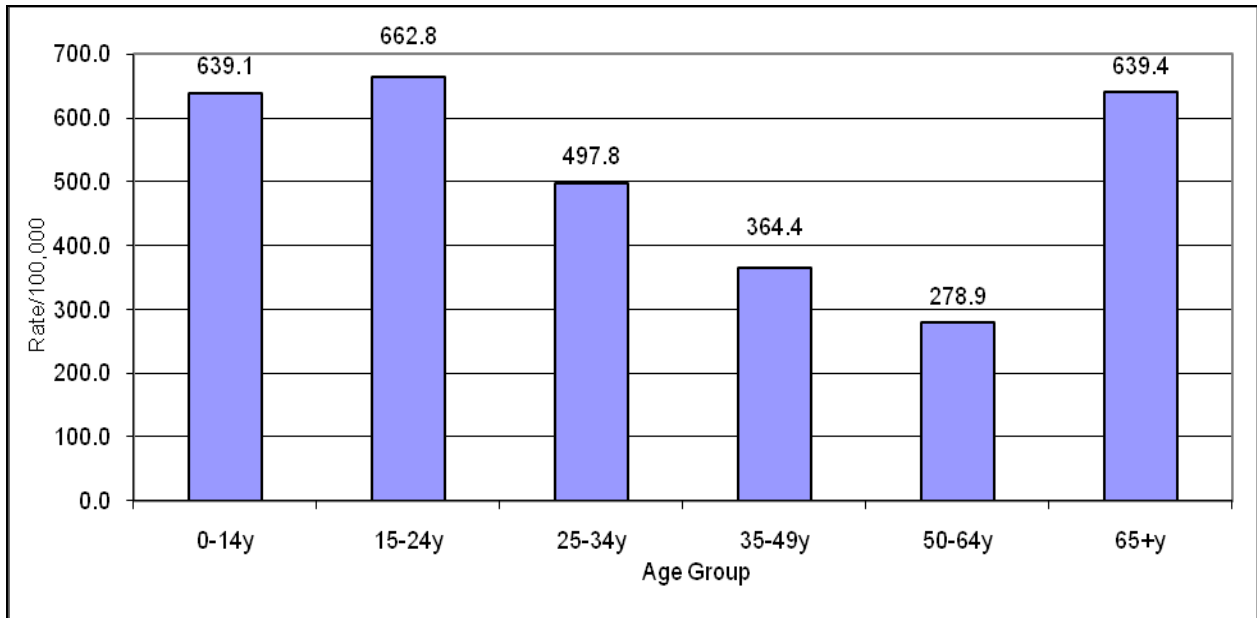


Table 6.2: Top 5 Causes of TBI ED Visits by Age Group, SC 2010

Age Group	Cause of Injury	No.	Rate	Age Group	Cause of Injury	No.	Rate
0-14	Fall	3,115	347.9	35-49	Fall	953	102.0
	Struck by/caught in	1,168	130.4		MVC (Traffic)	825	88.3
	Sports/Recreation	601	67.1		Assault	726	77.7
	MVC (Traffic)	390	43.6		Struck by/caught in	396	42.4
	Assault	97	10.8		Sports/Recreation	119	12.7
15-24	MVC (Traffic)	1,410	213.2	50-64	Fall	1,232	135.3
	Assault	807	122.0		MVC (Traffic)	491	53.9
	Fall	730	110.4		Assault	271	29.8
	Struck by/caught in	568	85.9		Struck by/caught in	244	26.8
	Sports/Recreation	455	68.8		Sports/Recreation	74	8.1
24-34	MVC (Traffic)	926	156.4	65+	Fall	3,333	527.5
	Assault	690	116.5		MVC (Traffic)	244	38.6
	Fall	563	95.1		Struck by/caught in	182	28.8
	Struck by/caught in	340	57.4		Assault	55	8.7
	Sports/Recreation	109	18.4		Sports/Recreation	29	4.6

Age-specific rate per 100,000

All Causes are Unintentional except (assault, attempted suicide)

Figure 6.5: TBI ED Visits by Race and Sex, SC 2010

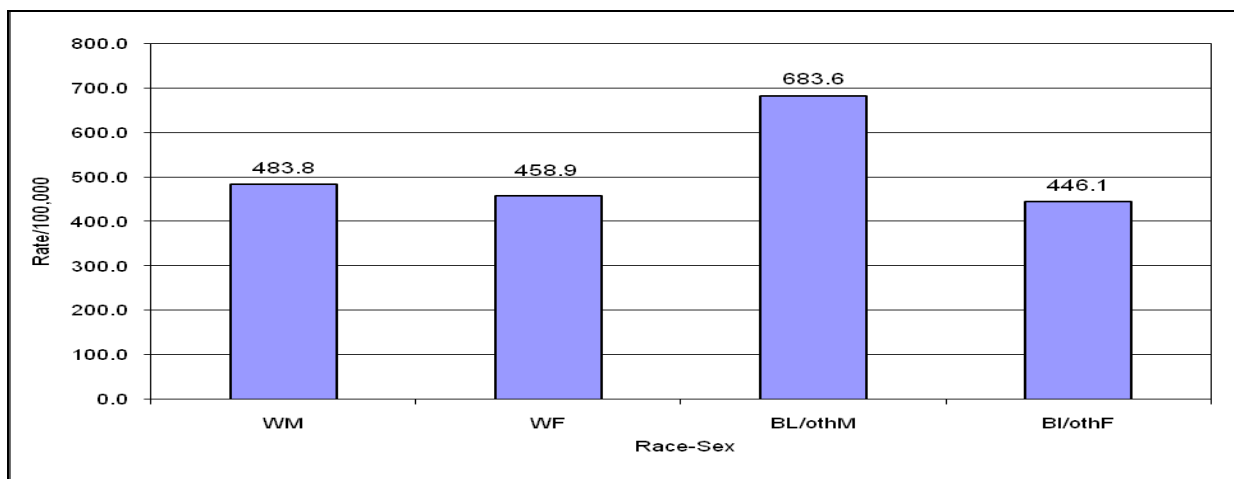


Table 6.3: Top 5 Causes of TBI ED Visits by Race & Sex, SC 2010

Race & Sex	Cause of Injury	No.	Rate	Race & Sex	Cause of Injury	No.	Rate
White Males	Fall	3,118	197.6	Black/ other Males	Fall	1,361	202.5
	MVC (Traffic)	1,157	73.3		MVC (Traffic)	1,023	152.2
	Struck by/caught in	1,040	65.9		Assault	776	115.4
	Assault	896	56.8		Struck by/caught in	667	99.2
	Sports/Recreation	626	39.7		Sports/Recreation	351	52.2
White Females	Fall	4,117	254.0	Black/ other Females	Fall	1,330	176.2
	MVC (Traffic)	1,137	70.2		MVC (Traffic)	965	127.9
	Struck by/caught in	804	49.6		Assault	414	54.9
	Assault	560	34.6		Struck by/caught in	386	51.2
	Sports/Recreation	334	20.6		Sports/Recreation	76	10.1

Race-sex specific rate per 100,000
 All Causes are Unintentional except (assault, attempted suicide)

Figure 6.6: TBI ED Visits Due to MVC by Race, Sex and Age Group, SC 2010

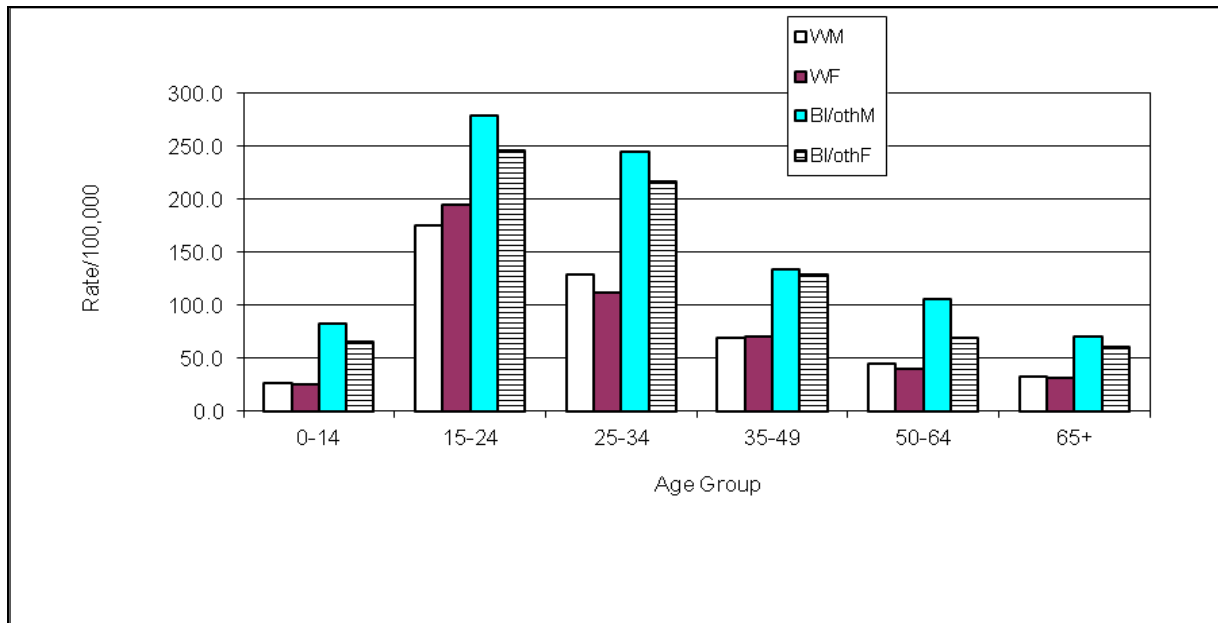


Figure 6.7: TBI ED Visits Due to Falls by Race, Sex & Age Group, SC 2010

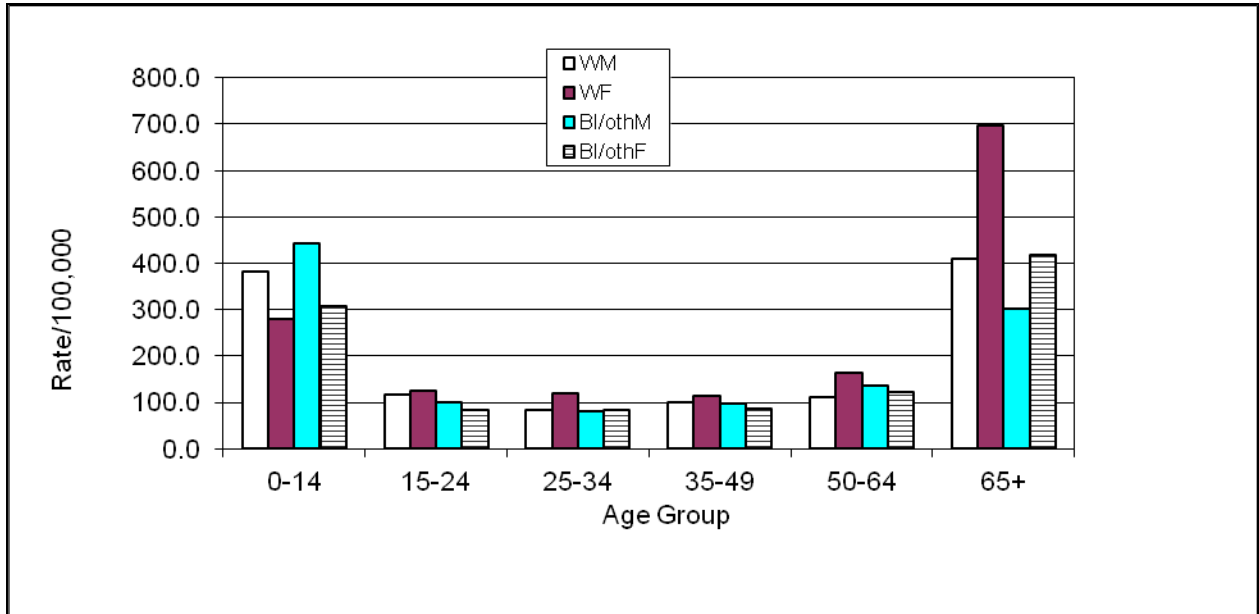
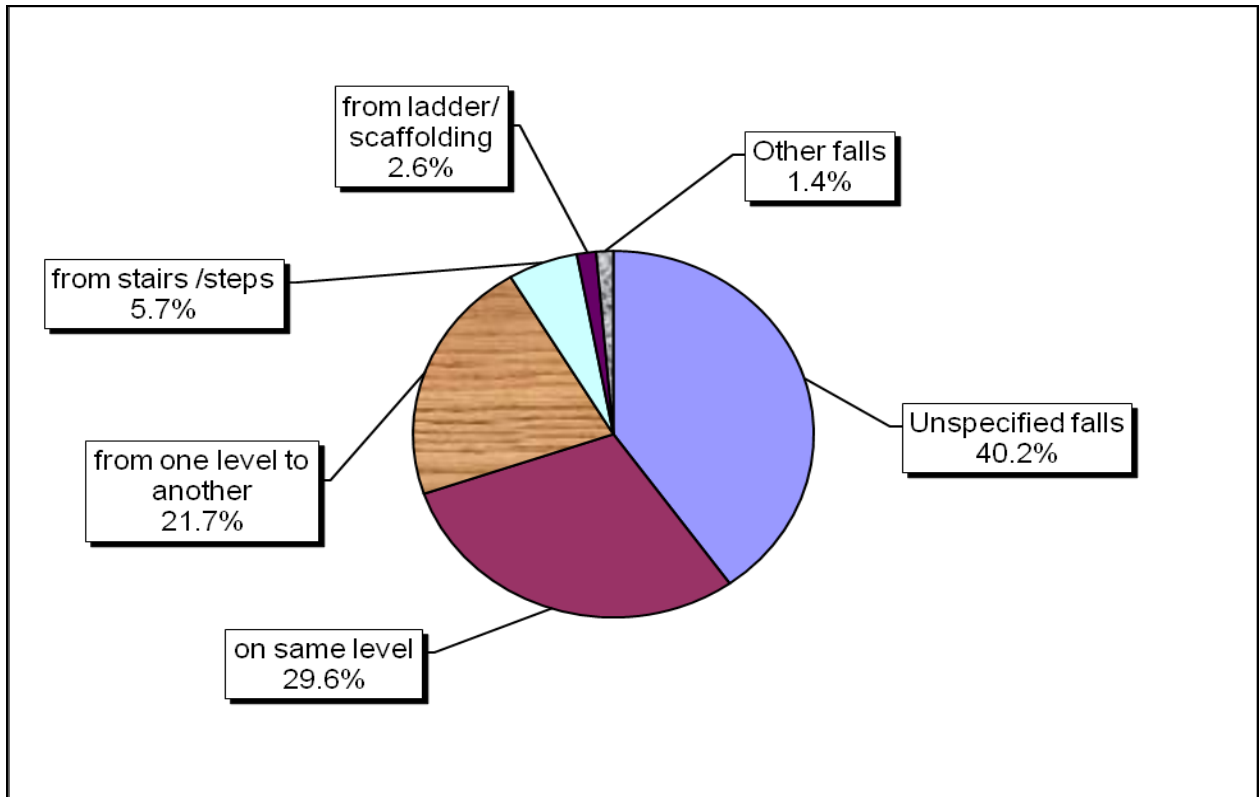


Figure 6.8: Types of Falls, TBI ED Visits, SC 2010





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