

Trauma02

Trauma-related hospitalizations
 ICD9-CM Codes 800-959.9 excluding 905-909,910-924,930-939
 2002 hospital discharge data.

County / State	Frequency	Cumulative
		Frequency
ALAMANCE	751	751
ALEXANDER	211	962
ALLEGHANY	104	1066
ANSON	164	1230
ASHE	168	1398
AVERY	128	1526
BEAUFORT	260	1786
BERTIE	147	1933
BLADEN	188	2121
BRUNSWICK	507	2628
BUNCOMBE	1730	4358
BURKE	543	4901
CABARRUS	790	5691
CALDWELL	535	6226
CAMDEN	15	6241
CARTERET	310	6551
CASWELL	55	6606
CATAWBA	761	7367
CHATHAM	232	7599
CHEROKEE	154	7753
CHOWAN	104	7857
CLAY	55	7912
CLEVELAND	726	8638
COLUMBUS	322	8960
CRAVEN	580	9540
CUMBERLAND	984	10524
CURRITUCK	42	10566
DARE	78	10644
DAVIDSON	745	11389
DAVIE	209	11598
DUPLIN	311	11909
DURHAM	1050	12959
EDGECOMBE	343	13302
FORSYTH	1843	15145
FRANKLIN	261	15406
GASTON	1099	16505
GATES	34	16539
GRAHAM	45	16584
GRANVILLE	233	16817
GREENE	104	16921
GUILFORD	2767	19688
HALIFAX	399	20087
HARNETT	507	20594

Trauma02

HAYWOOD	451	21045
HENDERSON	823	21868
HERTFORD	142	22010
HOKE	99	22109
HYDE	25	22134
IREDELL	841	22975
JACKSON	155	23130
JOHNSTON	664	23794
JONES	68	23862
LEE	388	24250
LENOIR	440	24690
LINCOLN	350	25040
MCDOWELL	284	25324
MACON	177	25501
MADISON	176	25677
MARTIN	204	25881
MECKLENBURG	3005	28886
MITCHELL	126	29012
MONTGOMERY	172	29184
MOORE	561	29745
NASH	509	30254
NEW HANOVER	848	31102
NORTHAMPTON	143	31245
ONSLow	561	31806
ORANGE	441	32247
PAMLICO	84	32331
PASQUOTANK	172	32503
PENDER	218	32721
PERQUIMANS	62	32783
PERSON	191	32974
PITT	794	33768
POLK	131	33899
RANDOLPH	743	34642
RICHMOND	419	35061
ROBESON	850	35911
ROCKINGHAM	622	36533
ROWAN	753	37286
RUTHERFORD	414	37700
SAMPSON	349	38049
SCOTLAND	175	38224
STANLY	367	38591
STOKES	261	38852
SURRY	520	39372
SWAIN	116	39488
TRANSYLVANIA	223	39711
TYRRELL	24	39735
UNION	632	40367
VANCE	264	40631
WAKE	2465	43096

Trauma02

WARREN	79	43175
WASHINGTON	73	43248
WATAUGA	250	43498
WAYNE	691	44189
WILKES	502	44691
WILSON	395	45086
YADKIN	255	45341
YANCEY	150	45491
NORTH CAROLINA	45491	

Trauma03

Trauma-related hospitalizations
 ICD9-CM Codes 800-959.9 excluding 905-909,910-924,930-939
 2003 hospital discharge data

County/State	Frequency	Cumulative
		Frequency
ALAMANCE	789	789
ALEXANDER	220	1009
ALLEGHANY	112	1121
ANSON	155	1276
ASHE	199	1475
AVERY	131	1606
BEAUFORT	298	1904
BERTIE	131	2035
BLADEN	184	2219
BRUNSWICK	544	2763
BUNCOMBE	1832	4595
BURKE	593	5188
CABARRUS	835	6023
CALDWELL	499	6522
CAMDEN	30	6552
CARTERET	422	6974
CASWELL	44	7018
CATAWBA	766	7784
CHATHAM	240	8024
CHEROKEE	150	8174
CHOWAN	105	8279
CLAY	55	8334
CLEVELAND	730	9064
COLUMBUS	416	9480
CRAVEN	660	10140
CUMBERLAND	1150	11290
CURRITUCK	50	11340
DARE	123	11463
DAVIDSON	715	12178
DAVIE	219	12397
DUPLIN	318	12715
DURHAM	1094	13809
EDGECOMBE	348	14157
FORSYTH	2052	16209
FRANKLIN	302	16511
GASTON	1130	17641
GATES	52	17693
GRAHAM	30	17723
GRANVILLE	216	17939
GREENE	120	18059
GUILFORD	2740	20799
HALIFAX	387	21186
HARNETT	537	21723

Trauma03

HAYWOOD	503	22226
HENDERSON	861	23087
HERTFORD	163	23250
HOKE	125	23375
HYDE	23	23398
IREDELL	941	24339
JACKSON	166	24505
JOHNSTON	713	25218
JONES	80	25298
LEE	368	25666
LENOIR	518	26184
LINCOLN	384	26568
MCDOWELL	360	26928
MACON	206	27134
MADISON	174	27308
MARTIN	211	27519
MECKLENBURG	2974	30493
MITCHELL	156	30649
MONTGOMERY	182	30831
MOORE	591	31422
NASH	513	31935
NEW HANOVER	904	32839
NORTHAMPTON	166	33005
ONSLow	539	33544
ORANGE	527	34071
PAMLICO	85	34156
PASQUOTANK	189	34345
PENDER	230	34575
PERQUIMANS	70	34645
PERSON	185	34830
PITT	905	35735
POLK	183	35918
RANDOLPH	775	36693
RICHMOND	419	37112
ROBESON	840	37952
ROCKINGHAM	701	38653
ROWAN	767	39420
RUTHERFORD	414	39834
SAMPSON	387	40221
SCOTLAND	234	40455
STANLY	398	40853
STOKES	289	41142
SURRY	591	41733
SWAIN	114	41847
TRANSYLVANIA	232	42079
TYRRELL	31	42110
UNION	688	42798
VANCE	288	43086
WAKE	2734	45820

Trauma03

WARREN	72	45892
WASHINGTON	84	45976
WATAUGA	219	46195
WAYNE	828	47023
WILKES	552	47575
WILSON	432	48007
YADKIN	297	48304
YANCEY	151	48455
NORTH CAROLINA	48455	

Note. These results come from provisional hospital discharge data, thus, they might be subject to change as the final hospital discharge data file is received.

**Spinal cord injury-related hospitalizations
ICD9-CM Codes 806-806.9, 2002 Hospital discharge data**

County / State	Frequency	Cumulative
		Frequency
ALAMANCE	5	5
ALEXANDER	2	7
ALLEGHANY	3	10
ANSON	1	11
ASHE	5	16
BEAUFORT	3	19
BERTIE	2	21
BLADEN	6	27
BRUNSWICK	1	28
BUNCOMBE	13	41
BURKE	5	46
CABARRUS	1	47
CALDWELL	7	54
CARTERET	1	55
CASWELL	4	59
CATAWBA	9	68
CHATHAM	1	69
CHOWAN	2	71
CLEVELAND	6	77
CRAVEN	2	79
CUMBERLAND	5	84
DAVIDSON	2	86
DAVIE	2	88
DUPLIN	3	91
DURHAM	11	102
EDGECOMBE	3	105
FORSYTH	18	123
FRANKLIN	1	124
GASTON	6	130
GRANVILLE	2	132
GREENE	2	134
GUILFORD	19	153
HALIFAX	2	155
HARNETT	1	156
HAYWOOD	3	159
HENDERSON	2	161
HERTFORD	2	163
IREDELL	2	165
JOHNSTON	4	169
JONES	1	170
LEE	5	175
LENOIR	3	178
LINCOLN	4	182
MCDOWELL	5	187
MACON	1	188
MARTIN	3	191
MECKLENBURG	21	212

**Spinal cord injury-related hospitalizations
ICD9-CM Codes 806-806.9, 2002 Hospital discharge data**

County / State	Frequency	Cumulative
		Frequency
MONTGOMERY	1	213
NASH	7	220
NEW HANOVER	4	224
NORTHAMPTON	2	226
ONslow	2	228
ORANGE	2	230
PENDER	2	232
PERSON	1	233
RANDOLPH	2	235
RICHMOND	2	237
ROBESON	13	250
ROCKINGHAM	6	256
ROWAN	7	263
RUTHERFORD	7	270
SCOTLAND	1	271
STANLY	2	273
STOKES	3	276
SURRY	5	281
TRANSYLVANIA	1	282
UNION	6	288
VANCE	4	292
WAKE	15	307
WATAUGA	1	308
WAYNE	2	310
WILKES	2	312
WILSON	2	314
YADKIN	2	316
YANCEY	2	318
NORTH CAROLINA	318	

**Spinal cord injury-related hospitalizations
ICD9-CM Codes 806-806.9, 2003 Hospital discharge data**

County / State	Frequency	Cumulative
		Frequency
ALAMANCE	9	9
ALLEGHANY	1	10
ANSON	1	11
BEAUFORT	1	12
BLADEN	1	13
BRUNSWICK	5	18
BUNCOMBE	5	23
BURKE	3	26
CABARRUS	5	31
CALDWELL	3	34
CARTERET	2	36
CATAWBA	4	40
CHATHAM	4	44
CHOWAN	1	45
CLEVELAND	6	51
COLUMBUS	7	58
CRAVEN	5	63
CUMBERLAND	10	73
DARE	1	74
DAVIDSON	10	84
DAVIE	1	85
DUPLIN	5	90
DURHAM	10	100
EDGECOMBE	1	101
FORSYTH	24	125
FRANKLIN	3	128
GASTON	11	139
GRANVILLE	2	141
GREENE	1	142
GUILFORD	22	164
HALIFAX	2	166
HARNETT	2	168
HENDERSON	4	172
HOKE	1	173
HYDE	3	176
IREDELL	7	183
JOHNSTON	7	190
JONES	2	192
LEE	3	195
LENOIR	3	198
LINCOLN	3	201
MCDOWELL	2	203
MACON	3	206
MADISON	2	208
MARTIN	1	209
MECKLENBURG	22	231
MOORE	1	232

**Spinal cord injury-related hospitalizations
ICD9-CM Codes 806-806.9, 2003 Hospital discharge data**

County / State	Frequency	Cumulative
		Frequency
NASH	3	235
NEW HANOVER	7	242
NORTHAMPTON	1	243
ONSLow	8	251
ORANGE	6	257
PAMLICO	1	258
PENDER	3	261
PERSON	3	264
PITT	6	270
POLK	1	271
RANDOLPH	6	277
RICHMOND	2	279
ROBESON	5	284
ROCKINGHAM	9	293
ROWAN	1	294
RUTHERFORD	1	295
SAMPSON	7	302
SCOTLAND	2	304
SURRY	9	313
SWAIN	1	314
TRANSYLVANIA	2	316
UNION	1	317
VANCE	2	319
WAKE	21	340
WARREN	1	341
WASHINGTON	2	343
WATAUGA	2	345
WAYNE	7	352
WILKES	7	359
WILSON	3	362
YADKIN	2	364
NORTH CAROLINA	364	

Note. These results come from provisional hospital discharge data, thus, they might be subject to change as the final hospital discharge data file is received.

TRAUMATIC BRAIN INJURY STATISTICS IN NORTH CAROLINA , 1999 AND 2001
Prepared by Injury and Violence Prevention Unit, March 13, 2003

Table 1. Deaths¹ and Hospitalizations² from Traumatic Brain Injuries of North Carolina Residents by Sex, 1999 and 2001

	1999				2001			
	Deaths No.	Rate ³	Hospitalizations No.	Rate	Deaths No.	Rate	Hospitalizations No.	Rate
Females	474	11.7	1,663	41.0	463	11.1	1,587	38.0
Males	1,255	32.3	2,816	72.5	1,345	33.5	3,034	75.5
Total	1,729	21.8	4,479 ⁴	56.4	1,808	22.1	4,621 ⁵	56.4

¹ Based on ICD-10 external cause of injury codes for TBI included in the 1999 CDC-Injury Indicator Report (S01.0-S01.9,S02.0,S02.3,S02.7-S02.9,S06.0-S06.9,S07.0,S07.1,S07.8,S07.9,S09.7-S09.0.T01.0,T02.9,T04.0,T06.0,T90.1,T90.2,T90.4,T90.5,T90.8,T90.0), that were selected from the multiple cause of death fields on death certificates for NC residents.

² Based on ICD-9-CM nature of injury codes for TBI included in the 1999 CDC-Injury Indicator Report (800.0-801.9; 803.0-804.9; 850.0-854.1; 959.01), that were selected from all diagnosis fields among hospitalizations with an injury-related diagnosis (800.0-909.2; 909.4; 909.9-994.9; 995.5-995.59; 995.80-995.85) in the principal diagnosis field. It is important to note that these data represent the number of discharges, and NOT the number of people with TBI.

³ Crude rates per 100,000 persons. Populations for 1999: female = 4,053,124; male = 3,884,938; total = 7,938,062. Populations for 2001: female = 4,171,829; male = 4,016,179; total = 8,188,008.

⁴ 8 records in hospital discharge database were missing gender status thus reducing the total count of hospitalizations for 1999 (4,487) by 8 discharges. The effect on the rate was negligible.

⁵ 4 records in hospital discharge database were missing gender status thus reducing the total count of hospitalizations for 1999 (4,625) by 4 discharges. The effect on the rate was negligible.

Table 2. North Carolina Resident Deaths with any mention of Traumatic Brain Injury¹ by age, 1999 and 2001

	<0 No. Rate ²	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Total
1999	14 12.9	21 5.0	46 4.2	334 30.1	268 22.0	272 21.5	197 18.7	135 19.1	187 35.4	154 47.7	101 97.8	1,729 21.8
2001	9 7.9	24 5.4	51 4.5	322 28.0	244 20.2	239 18.5	241 21.4	153 20.4	190 35.5	194 58.0	131 116.1	1,808 22.1

¹ Based on ICD-10 external cause of injury codes for TBI included in the 1999 CDC-Injury Indicator Report (S01.0-S01.9,S02.0,S02.3,S02.7-S02.9,S06.0-S06.9,S07.0,S07.1,S07.8,S07.9,S09.7-S09.0.T01.0,T02.9,T04.0,T06.0,T90.1,T90.2,T90.4,T90.5,T90.8,T90.0), that were selected from the multiple cause of death fields on death certificates for NC residents.

² Crude rates per 100,000 persons. Populations for 1999: female = 4,053,124; male = 3,884,938; total = 7,938,062. Populations for 2001: female = 4,171,829; male = 4,016,179; total = 8,188,008.

TRAUMATIC BRAIN INJURY STATISTICS IN NORTH CAROLINA , 1999 AND 2001
Prepared by Injury and Violence Prevention Unit, March 13, 2003

Table 3. North Carolina Resident [Injury-Related Hospitalizations](#) with any mention of Traumatic Brain Injury¹ by age, 1999 and 2001

	<0 No./ Rate ²	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Total
1999	119 /109.7	137/ 32.4	355/ 32.3	880/ 79.3	623/ 51.2	563/ 44.4	347/ 32.9	278/ 39.3	358/ 67.8	496/ 153.8	331/ 320.5	4,487/ 56.5
2001	112/ 98.6	145/ 32.7	350/ 31.1	841/ 73.2	570/ 47.2	586/ 45.3	480/ 42.6	333/ 44.4	386/ 72.2	497/ 148.5	325/ 288.1	4,625/ 56.5

- 1 Based on ICD-9-CM nature of injury codes for TBI included in the 1999 CDC-Injury Indicator Report (800.0-801.9; 803.0-804.9; 850.0-854.1; 959.01), that were selected from all diagnosis fields among hospitalizations with an injury-related diagnosis (800.0-909.2; 909.4; 909.9-994.9; 995.5-995.59; 995.80-995.85) in the principal diagnosis field. It is important to note that these data represent the number of discharges, and NOT the number of people with TBI.
- 2 Crude rates per 100,000 persons. Populations for 1999: female = 4,053,124; male = 3,884,938; total = 7,938,062. Populations for 2001: female = 4,171,829; male = 4,016,179; total = 8,188,008.

Table 4. North Carolina Resident Deaths with any mention of Traumatic Brain Injury¹ by Race/Ethnicity², 1999 and 2001

	White	Other	Hispanic	Non-Hispanic (NH)	Not Classifiable/unknown	American Indian/Alaskan Native, NH*	Asian Pacific Islander, NH	Black/African American, NH	White, NH	Hispanic	Other, NH
1999	1,321	408									
2001	1,434	374	95	1,712	1	45	6	321	1,340	95	1

* NH is Non-Hispanic

Based on ICD-10 external cause of injury codes for TBI included in the 1999 CDC-Injury Indicator Report (S01.0-S01.9,S02.0,S02.3,S02.7-S02.9,S06.0-S06.9,S07.0,S07.1,S07.8,S07.9,S09.7-S09.0.T01.0,T02.9,T04.0,T06.0,T90.1,T90.2,T90.4,T90.5,T90.8,T90.0), that were selected from the multiple cause of death fields on death certificates for NC residents. Deaths by race in 1999 were only reported as "white" or "other".

The Case for A Trauma System

The Incidence and Prevalence of Trauma in North Carolina

For 1999 - 2002, the total number of deaths due to all injuries excluding adverse effects, poisonings, drownings and suffocations totaled 15,998. The top five leading causes of injury-related deaths for 1999 - 2002 were as follows: (1) motor vehicle crashes, (2) firearms, (3) falls, (4) unspecified, and (5) fire/flames. Table 1 contains the distribution of cause and intent of injury for these patients* Over 74,440 people were hospitalized at the 11 North Carolina trauma centers with an injury during the four-year period from 1999 - 2002.

Table 1:
Cause and Intent of Injury for Patients Who Died of Injuries in North Carolina - 1999-2002

Cause of injury/ Intent	Uninten- tional	Suicide	Homicide	Undeter- mined	Legal/War	Total
Cut/ Pierce	18	39	274	0	0	331
Fall	1704	24	2	3	0	1733
Fire/ Flame	524	18	13	1	0	556
Hot object/ Scald	21	0	0	0	0	21
Firearm	105	2428	1775	18	18	4344
Machin- ery	75	0	0	0	0	75
MV Traffic	6256	0	0	0	0	6256
Other pedal cycle	13	0	0	0	0	13
Other pedes-trian	126	0	0	0	0	126
Other land transport	178	15	5	1	0	199
Other transport	119	0	0	0	0	119
Natural/ Environme ntal	201	0	0	0	0	201
Struck by or against	135	0	19	0	0	154

Other specified mech-anism	142	20	33	7	13	215
Unknown	1280	48	293	29	5	1655
Total	10897	2592	2414	59	36	15998

* Data provided from the North Carolina State Center for Health Statistics, North Carolina Vital Statistics database. This table does not include data on poisonings, drownings, suffocations, and adverse effects, which account for 4552 deaths.

The Percent of Rural Population and Trauma Care Issues Specific to Rural Areas

Though North Carolina, with 8 million citizens, is roughly 50% rural in terms of population distribution, large rural areas interspersed with infrequent urban centers characterize the state. The 2000 US Census identified 60.2% as urban population and 39.8% rural. Trauma care issues specific to rural areas include differences in morbidity and mortality. Survival from rural trauma is dependent on several factors, including EMS response times, time for transfer to a hospital, time to transfer to a trauma center, and training of the rural hospital staff in how to deal with trauma. The mechanisms of injury also may be different for the rural versus urban setting, with a higher rate of farm and machinery-related injuries in the rural areas.