

8. Safety & Security

Introduction

The Fixing America's Surface Transportation (FAST) Act, which was signed into law in 2015, expanded the safety and security provisions contained in both SAFETEA-LU and MAP-21. MAP-21 included six major safety-related goals:

- Strengthen America’s highway & public transportation systems
- Establish a performance-based Federal program
- Create jobs & support economic growth
- Support the Department’s aggressive safety agenda
- Simplify and focus the Federal program
- Accelerate project delivery & promote innovation

The FAST Act also continued the Highway Safety Improvement Program (HSIP) as a key federal-aid program. HSIP’s main goals are to reduce fatalities and serious injuries on public roads. This cascades down to a local level - a significant amount of the work that is conducted by the MPO is focused on achieving these goals throughout the region. Table (8-1) details transportation related fatalities in the region from 2005 to 2015. The MPO heavily weighs safety and crash data (where applicable) in prioritizing projects. A comprehensive profile of crash data for each county is found at the end of this chapter.

Table 8-1: Fatalities by County: 10 Year Trend

County	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	10 Year Average
Alexander	12	7	6	4	9	6	6	7	8	7	5	7
Burke	13	18	22	18	14	10	13	7	8	15	9	14
Caldwell	14	14	13	8	17	17	18	7	8	10	12	13
Catawba	23	22	25	26	30	33	17	19	19	24	26	24
Regional	62	61	66	56	70	66	54	40	43	56	52	60

Source: NCDOT.

Both FHWA and NCDOT have developed a variety of resources to help the MPO develop, implement, evaluate, and promote transportation safety in the Western Piedmont region. In addition, the MPO recently adopted the region’s first Congestion Mitigation Process (CMP) – a federally required systematic approach to managing new and existing transportation systems. The CMP is designed to relieve congestion and maximize the safety and mobility of people and goods. The ultimate goal of the CMP is to safely achieve the most efficient and effective use of existing and future transportation systems.

Federal and State Strategic Highway Safety Plans

The Highway Safety Improvement Program (HSIP) is a core Federal-aid program that focuses on reducing traffic fatalities and serious injuries on all public roads, including non-State-owned roads

and roads on tribal land. The HSIP requires a data-driven, performance-based approach to highway safety improvement.

In support of the National Highway Safety Improvement Program, The North Carolina Executive Committee first developed North Carolina's Strategic Highway Safety Plan (SHSP) in 2004. The Plan's 2014 update expanded the number of "emphasis areas" to 14:

- Lane Departure
- Ensuring Drivers Are Fully Licensed
- Curbing Aggressive Driving
- Increasing Safety Belt Usage
- Keeping Drivers Alert
- Speed
- Intersection Safety
- Older Drivers
- Motorcycles
- Commercial Motor Vehicles
- Public Information
- Bicycle and Pedestrian Safety
- Incident Management
- Driver Education

The update also discussed 9 areas of emphasis that offered the greatest opportunity for safety stakeholders to achieve the Plan's safety improvement goals. Safety stakeholders selected these emphasis areas cooperatively using a data-driven approach, noting that many individual crashes can be attributed to more than one emphasis area. For example, a crash may involve speeding, intersection safety, and occupant protection. Therefore, these emphasis areas provide an opportunity to address crashes from multiple perspectives. These nine emphasis areas are:

- Demographic Considerations
- Driving While Impaired
- Emerging Issues and Data
- Intersection Safety
- Keeping Drivers Alert
- Lane Departure
- Occupant Protection/Motorcycles
- Pedestrians and Bicyclists
- Speed

All of the information derived from these emphasis areas (in addition to other local, state and federal data) provides the MPO with the necessary resources to prioritize projects in a manner that aligns with the state's comprehensive goal of achieving zero annual transportation-related deaths. Through the MPO's local prioritization methodology, every potential project – regardless of mode – is evaluated using safety data in some manner, thereby resulting in the reduction of accident-prone locations in the planning area.

Transit System

The Western Piedmont Regional Transit Authority's (WPRTA) mission is to develop and maintain an effective, efficient, and safe system of public transportation services within Alexander, Burke, Caldwell, and Catawba Counties.

The WPRTA offers interactive training programs to educate its employees. Each employee must follow the "Western Piedmont Regional Transit Authority: Operators Handbook." The handbook describes how personnel should perform during the course of their normal duties and during

emergencies—such as crashes. WPRTA employees are also provided with informational guides and booklets published by the Federal Transit Authority regarding workplace violence, transit system security, and the recognition of and proper reaction to terrorist activity.

Incidents and accidents are reported to Transit Board of Directors on a monthly basis, and to the Transportation Advisory Board on quarterly basis. MPO staff are actively involved on both boards, providing information and staying up to date on all matters.

Bike and Pedestrian Network

The National Highway Traffic Safety Administration has determined that pedestrian crashes are more likely to occur during peak travel periods in the morning and afternoon. Most crashes involving pedestrians will occur in urban areas where pedestrian and vehicular traffic volumes are high; however, rural areas can also be dangerous for pedestrians due to the lack of sidewalks, paths, wide shoulders, and crosswalks. Driver behavior is also a factor; speed and alcohol involvement have an impact on many crashes with pedestrians. (An extensive analysis of bicycle and pedestrian related accidents can be found in the county profiles section at the end of this chapter).

American roadways, which were primarily designed to serve only automobile traffic, create dangerous conditions for bicyclists. Slight increases in automobile speeds can severely affect the likelihood of a cyclist's ability to walk away from an accident unscathed. Wayfaring and awareness signage, and pavement markings such as sharrows, are examples of relatively low cost solutions that can be used to improve bicycle and pedestrian safety. Local public education sessions focused on safe bicycling practices (for children and adults) should be combined with increased enforcement activities. Other NCDOT safety programs, including "Safe Routes to School," "Complete Streets," "Watch for Me," and "Share the Road" can also be integrated into local education efforts to help maximize bicycle and pedestrian network safety.

Security and Emergency Management

The National Guard maintains a database of state and local emergency responders called the Regional and State Online Resource for Emergency Management. The Regional and State Online Resource for Emergency Management consists of a searchable database and mapping system that includes the locations of every fire station, police station, hospital, and EMS provider across the country. There are five (5) Army National Guard bases in the region, located in Morganton, Lenoir, Taylorsville, Hickory, and Newton. These bases provide supplementary forces for the regular armed forces and participate in other community assistance operations during national emergencies and declared states of emergency.

Alexander, Burke, Caldwell, and Catawba Counties have each adopted Hazard Mitigation Plans. These, in conjunction with locally adopted ordinances, provide guidelines for evacuations, containment, and first responder actions. The plans are developed in coordination with transportation, law enforcement, planning, and other operational agencies.

All four counties in the region operate emergency 9-1-1 communications systems. These systems provide citizens with the ability to report emergencies, and enable local governments to dispatch first responders. It is critical for counties and municipalities to communicate with one another in

order to prevent the occurrence of street naming and addressing conflicts. Such conflicts can severely impact emergency response times.

511 Information Line

Motorists traveling in North Carolina can call 511 from any telephone for the latest road conditions and other important information, including:

- Traffic incidents, road closures and construction on interstates, U.S. and state routes
- Amber Alerts and Silver Alerts
- Transfers to neighboring states' 511 systems

Winter Weather Protocol

NCDOT maintains the second largest road network in the country. It is responsible for interstates, state and U.S. routes as well as secondary roads not maintained by area municipalities.

When clearing roadways impacted by winter weather, NCDOT's first priority is interstates and four-lane divided primary routes (N.C. and U.S. routes) that are essential to the movement of intrastate and regional traffic. After these roads are cleared, their priority moves to clearing lower-volume primary roads, high-volume secondary roads, lower-volume secondary roads and then subdivision streets.

Priority is based on the following criteria:

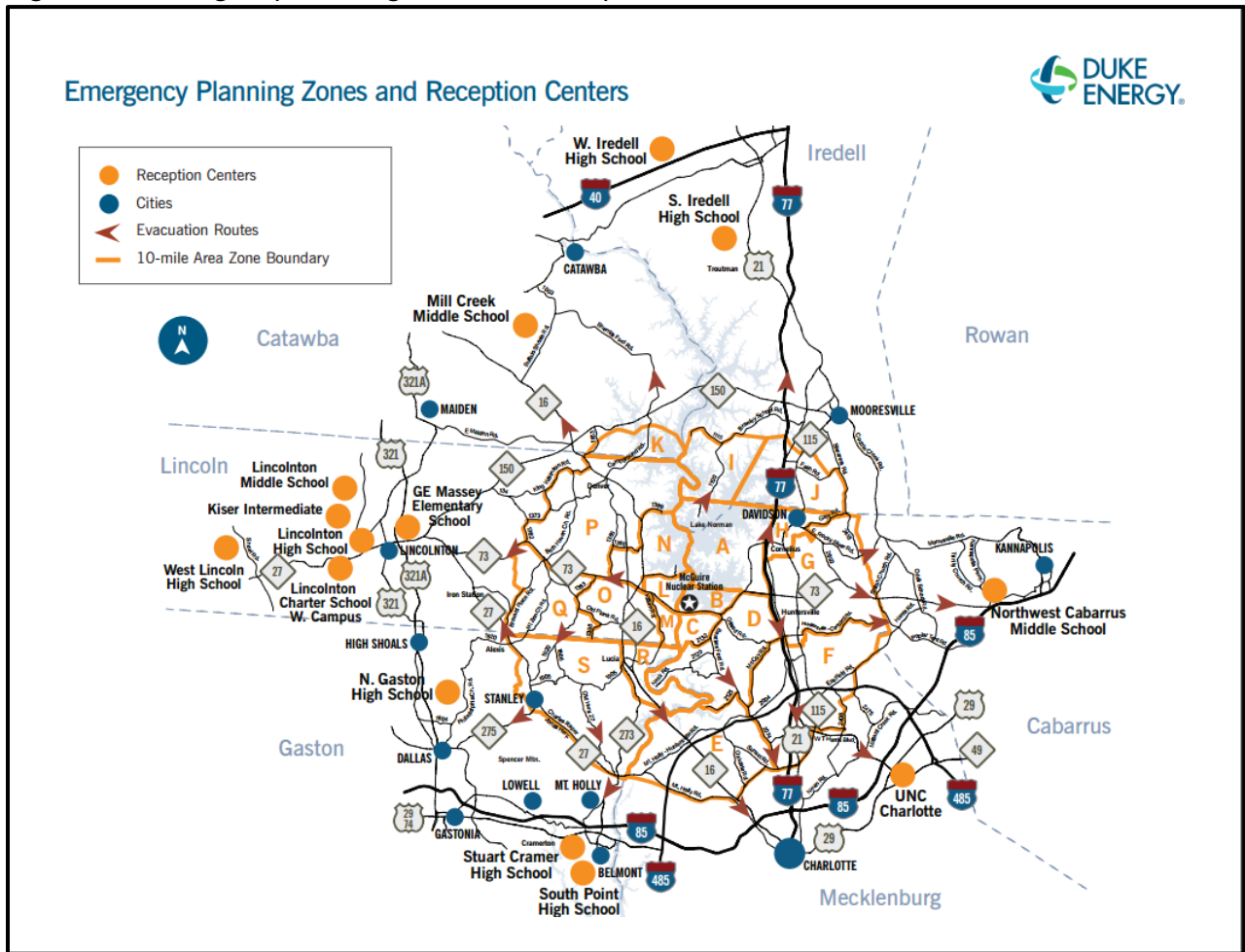
- Connectivity
- Traffic volume
- Trucking routes and major business avenues
- Importance to hospitals and emergency routes

NCDOT crews have designated snow and ice removal routes that they must follow. During inclement weather, trucks that are driving on roadways (but not treating them) are likely traveling to their designated snow and ice removal route. NCDOT does not remove snow and ice from sidewalks, nor does it clear driveways.

Nuclear Power Plant Evacuations

The southern portion of the planning area is approximately 35 miles north/northwest of the McGuire Nuclear Station. Evacuation routes have been designated for use in the event of an emergency at the plant. As shown in Figure 8-1, evacuation routes and one reception center are located in the southern section of the GHMPO area.

Figure 8-1: Emergency Planning Zones and Reception Centers



Source: Duke Energy.

County Profile: Alexander County

Alexander County



Reportable	2012		2013		2014		2015		2016		5 Year Avg.	
	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries
Fatal	6	7	8	8	6	7	5	5	4	4	6	6
Non Fatal Injury	186	248	145	204	134	193	183	245	153	207	156	219
PDO	272		302		292		372		361		320	
Total	444	255	455	212	432	200	560	250	518	211	482	226
<u>Alcohol Related Crashes</u>												
Fatal	0	0	0	0	0	0	1	1	0	0	0	0
Non Fatal Injury	20	34	18	30	9	12	11	17	18	20	15	23
PDO	21		9		10		7		10		11	
Total	41	34	27	30	19	12	19	18	28	20	27	23
<u>Percent Alcohol Related</u>												
Fatal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	20.0%	0.0%	0.0%	3.4%	3.2%
Non Fatal Injury	12.0%	13.7%	12.4%	14.7%	6.7%	6.2%	6.0%	6.9%	11.8%	9.7%	9.7%	10.3%
Total	9.2%	13.3%	5.9%	14.2%	4.4%	6.0%	3.4%	7.2%	5.4%	9.5%	5.6%	10.1%
<u>Pedestrian Crashes</u>												
Fatal	0	0	0	0	0	0	1	1	0	0	0	0
Non Fatal Injury	3	3	1	2	2	2	3	3	2	2	2	2
PDO	0		0		0		0		0		0	
Total	3	3	1	2	2	2	4	4	2	2	2	3
<u>Bicycle Crashes</u>												
Fatal	0	0	0	0	0	0	0	0	0	0	0	0
Non Fatal Injury	0	0	0	0	0	0	0	0	1	1	0	0
PDO	0		0		0		0		0		0	
Total	0	0	0	0	0	0	0	0	1	1	0	0
<u>Motorcycle Crashes</u>												
Fatal	3	3	1	1	0	0	1	1	1	1	1	1
Non Fatal Injury	16	20	8	9	4	4	11	13	12	15	10	12
PDO	0		1		3		5		2		2	
Total	19	23	10	10	7	4	17	14	15	16	14	13

County Ranking 71 58 62 76 86

General Information

		Ranking	
		2015	2016
Population (2015)	37,952	65	64
Registered Vehicles (2015)	43,960	60	60
Estimated Avg. Annual Miles Traveled (100 MVMT) (2015)	2.86	76	77

\$\$ Comprehensive Crash Cost \$\$

(Based on a 3 Year Average of All Reported Crashes in 2015 Dollars)

		Ranking	
		2015	2016
Average Annual Cost	\$80,525,133	68	70
Average Cost Per Crash	\$140,451	4	10
Average Cost Per Person	\$2,122	63	85
Average Cost Per Vehicle	\$1,832	83	92
Average Cost / 100 Miles Traveled	\$28.18	15	30

Crash Rates

(Based on a 3 Year Average of All Reported Crashes)

Total Crash Rate (/100 MVMT)	200.63	80	77
Fatal Crash Rate (/100 MVMT)	1.87	7	22
Non Fatal Injury Crash Rate (/100 MVMT)	55.76	64	68
Crash Injuries Per 1000 People	5.88	97	98
Fatal Crash Injuries Per 1000 People	0.15	37	64
Crashes Per 1000 Reg. Veh.	13.04	100	100
Fatal Crashes Per 1000 Reg. Veh.	0.12	49	75
Percent Alcohol Related Crashes	4.2%	65	64
Severity Index	4.40	8	26

Time To Next...

Crash	15.3	Hours
Fatal Injury	1,545.9	Hours
Injury	39.2	Hours
Crash Cost Per Hour	\$9,192	

County Profile: Burke County

Burke County



<u>Reportable</u>	2012		2013		2014		2015		2016		5 Year Avg.	
	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries
Fatal	7	7	8	8	14	15	9	9	16	17	11	11
Non Fatal Injury	615	928	622	944	564	878	670	990	613	918	617	932
PDO	1,031		1,122		1,176		1,245		1,289		1,173	
Total	1,653	935	1,752	952	1,754	893	1,924	999	1,918	935	1,800	943
<u>Alcohol Related Crashes</u>												
Fatal	2	2	1	1	1	1	1	1	2	2	1	1
Non Fatal Injury	62	79	53	64	36	53	49	69	40	57	48	64
PDO	44		36		37		53		50		44	
Total	108	81	90	65	74	54	103	70	92	59	93	66
<u>Percent Alcohol Related</u>												
Fatal	28.6%	28.6%	12.5%	12.5%	7.1%	6.7%	11.1%	11.1%	12.5%	11.8%	13.0%	12.5%
Non Fatal Injury	10.1%	8.5%	8.5%	6.8%	6.4%	6.0%	7.3%	7.0%	6.5%	6.2%	7.8%	6.9%
Total	6.5%	8.7%	5.1%	6.8%	4.2%	6.0%	5.4%	7.0%	4.8%	6.3%	5.2%	7.0%
<u>Pedestrian Crashes</u>												
Fatal	1	1	0	0	3	3	2	2	5	5	2	2
Non Fatal Injury	10	17	12	14	11	15	9	9	12	12	11	13
PDO	0		1		0		0		0		0	
Total	11	18	13	14	14	18	11	11	17	17	13	16
<u>Bicycle Crashes</u>												
Fatal	0	0	0	0	0	0	1	1	0	0	0	0
Non Fatal Injury	1	1	1	1	2	2	0	0	3	3	1	1
PDO	0		1		0		0		0		0	
Total	1	1	2	1	2	2	1	1	3	3	2	2
<u>Motorcycle Crashes</u>												
Fatal	2	2	1	1	2	2	2	2	0	0	1	1
Non Fatal Injury	51	56	44	50	37	44	39	43	42	52	43	49
PDO	0		3		6		6		4		4	
Total	53	58	48	51	45	46	47	45	46	52	48	50

County Ranking 86 80 71 73 58

General Information

		<u>Ranking</u>	
		2015	2016
Population (2015)	89,114	32	32
Registered Vehicles (2015)	88,832	33	33
Estimated Avg. Annual Miles Traveled (100 MVMT) (2015)	9.96	30	32

\$\$ Comprehensive Crash Cost \$\$

		<u>Ranking</u>	
		2015	2016
<i>(Based on a 3 Year Average of All Reported Crashes in 2015 Dollars)</i>			
Average Annual Cost	\$230,808,033	37	34
Average Cost Per Crash	\$99,045	65	55
Average Cost Per Person	\$2,590	70	57
Average Cost Per Vehicle	\$2,598	67	55
Average Cost / 100 Miles Traveled	\$23.17	73	59

Crash Rates

(Based on a 3 Year Average of All Reported Crashes)

Total Crash Rate (/100 MVMT)	233.98	66	60
Fatal Crash Rate (/100 MVMT)	1.31	76	60
Non Fatal Injury Crash Rate (/100 MVMT)	64.36	51	51
Crash Injuries Per 1000 People	10.92	40	47
Fatal Crash Injuries Per 1000 People	0.15	78	62
Crashes Per 1000 Reg. Veh.	26.23	55	57
Fatal Crashes Per 1000 Reg. Veh.	0.15	75	57
Percent Alcohol Related Crashes	4.3%	66	59
Severity Index	4.01	40	44

Time To Next....

Crash	3.8 Hours
Fatal Injury	641.0 Hours
Injury	9.0 Hours
Crash Cost Per Hour	\$26,348

County Profile: Caldwell County

Caldwell County



Reportable	2012		2013		2014		2015		2016		5 Year Avg.	
	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries
Fatal	5	7	8	8	8	10	12	12	9	10	8	9
Non Fatal Injury	524	779	528	835	533	847	584	925	591	860	552	849
PDO	994		999		1,097		1,140		1,159		1,078	
Total	1,523	786	1,535	843	1,638	857	1,736	937	1,759	870	1,638	859
Alcohol Related Crashes												
Fatal	2	3	3	3	4	6	5	5	3	3	3	4
Non Fatal Injury	41	60	43	70	45	65	30	44	35	41	39	56
PDO	35		33		39		44		31		36	
Total	78	63	79	73	88	71	79	49	69	44	79	60
Percent Alcohol Related												
Fatal	40.0%	42.9%	37.5%	37.5%	50.0%	60.0%	41.7%	41.7%	33.3%	30.0%	40.5%	42.6%
Non Fatal Injury	7.8%	7.7%	8.1%	8.4%	8.4%	7.7%	5.1%	4.8%	5.9%	4.8%	7.0%	6.6%
Total	5.1%	8.0%	5.1%	8.7%	5.4%	8.3%	4.6%	5.2%	3.9%	5.1%	4.8%	7.0%
Pedestrian Crashes												
Fatal	0	0	1	1	2	2	0	0	1	1	1	1
Non Fatal Injury	10	10	6	8	9	10	12	12	6	6	9	9
PDO	1		0		0		0		0		0	
Total	11	10	7	9	11	12	12	12	7	7	10	10
Bicycle Crashes												
Fatal	0	0	0	0	0	0	0	0	0	0	0	0
Non Fatal Injury	6	6	1	1	1	1	2	2	3	3	3	3
PDO	0		0		0		0		0		0	
Total	6	6	1	1	1	1	2	2	3	3	3	3
Motorcycle Crashes												
Fatal	1	2	1	1	1	1	3	3	1	1	1	2
Non Fatal Injury	37	43	30	33	25	30	28	31	30	32	30	34
PDO	9		8		3		3		6		6	
Total	47	45	39	34	29	31	34	34	37	33	37	35

County Ranking	35	55	74	59	63
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General Information

		Ranking	2015	2016
Population (2015)	82,577	33	33	
Registered Vehicles (2015)	87,270	34	34	
Estimated Avg. Annual Miles Traveled (100 MVMT) (2015)	7.68	41	39	

Comprehensive Crash Cost

	Ranking	2015	2016
Average Annual Cost	40	41	
Average Cost Per Crash	81	77	
Average Cost Per Person	69	70	
Average Cost Per Vehicle	76	76	
Average Cost / 100 Miles Traveled	42	46	

Crash Rates

		Ranking	2015	2016
Total Crash Rate (/100 MVMT)	327.41	11	13	
Fatal Crash Rate (/100 MVMT)	1.35	55	57	
Non Fatal Injury Crash Rate (/100 MVMT)	77.41	20	21	
Crash Injuries Per 1000 People	11.19	38	40	
Fatal Crash Injuries Per 1000 People	0.14	74	70	
Crashes Per 1000 Reg. Veh.	28.82	42	44	
Fatal Crashes Per 1000 Reg. Veh.	0.12	77	78	
Percent Alcohol Related Crashes	3.8%	76	83	
Severity Index	3.48	84	80	

Time To Next...

Crash	3.5 Hours
Fatal Injury	772.9 Hours
Injury	9.5 Hours
Crash Cost Per Hour	\$22,648

Source: NCDOT Crash Facts & Reporting

County Profile: Catawba County

Catawba County



<u>Reportable</u>	2012		2013		2014		2015		2016		5 Year Avg.	
	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries	Crashes	Injuries
Fatal	17	19	17	19	22	24	24	26	18	18	20	21
Non Fatal Injury	1,356	2,066	1,241	1,850	1,230	1,869	1,313	1,993	1,356	1,979	1,299	1,951
PDO	2,503		2,988		3,068		3,211		3,581		3,070	
Total	3,876	2,085	4,246	1,869	4,320	1,893	4,548	2,019	4,955	1,997	4,389	1,973
<u>Alcohol Related Crashes</u>												
Fatal	8	9	4	4	12	13	6	6	4	4	7	7
Non Fatal Injury	108	153	84	122	93	134	76	105	101	154	92	134
PDO	91		108		81		102		100		96	
Total	207	162	196	126	186	147	184	111	205	158	196	141
<u>Percent Alcohol Related</u>												
Fatal	47.1%	47.4%	23.5%	21.1%	54.5%	54.2%	25.0%	23.1%	22.2%	22.2%	34.7%	34.0%
Non Fatal Injury	8.0%	7.4%	6.8%	6.6%	7.6%	7.2%	5.8%	5.3%	7.4%	7.8%	7.1%	6.8%
Total	5.3%	7.8%	4.6%	6.7%	4.3%	7.8%	4.0%	5.5%	4.1%	7.9%	4.5%	7.1%
<u>Pedestrian Crashes</u>												
Fatal	1	1	2	3	5	5	1	1	3	3	2	3
Non Fatal Injury	32	35	27	30	36	39	30	33	15	15	28	30
PDO	0		2		2		0		2		1	
Total	33	36	31	33	43	44	31	34	20	18	32	33
<u>Bicycle Crashes</u>												
Fatal	0	0	0	0	0	0	1	1	0	0	0	0
Non Fatal Injury	5	5	9	9	4	4	8	10	8	8	7	7
PDO	0		0		0		0		0		0	
Total	5	5	9	9	4	4	9	11	8	8	7	7
<u>Motorcycle Crashes</u>												
Fatal	6	6	1	1	5	5	7	7	4	4	5	5
Non Fatal Injury	68	77	57	66	60	74	41	52	74	92	60	72
PDO	5		8		6		17		13		10	
Total	79	83	66	67	71	79	65	59	91	96	74	77

County Ranking 31 45 50 39 44

General Information

		<u>Ranking</u>	
		2015	2016
Population (2015)	155,828	17	18
Registered Vehicles (2015)	167,150	15	15
Estimated Avg. Annual Miles Traveled (100 MVMT) (2015)	19.54	12	11

\$\$ Comprehensive Crash Cost \$\$

(Based on a 3 Year Average of All Reported Crashes in 2015 Dollars)

		<u>Ranking</u>	
		2015	2016
Average Annual Cost	\$450,001,933	14	15
Average Cost Per Crash	\$69,302	88	86
Average Cost Per Person	\$2,888	35	34
Average Cost Per Vehicle	\$2,692	47	47
Average Cost / 100 Miles Traveled	\$23.03	61	61

Crash Rates

(Based on a 3 Year Average of All Reported Crashes)

Total Crash Rate (/100 MVMT)	332.29	10	11
Fatal Crash Rate (/100 MVMT)	1.19	66	70
Non Fatal Injury Crash Rate (/100 MVMT)	68.37	34	39
Crash Injuries Per 1000 People	12.93	20	24
Fatal Crash Injuries Per 1000 People	0.16	55	57
Crashes Per 1000 Reg. Veh.	38.85	15	16
Fatal Crashes Per 1000 Reg. Veh.	0.14	62	65
Percent Alcohol Related Crashes	3.3%	93	94
Severity Index	3.12	94	96

Time To Next...

Crash	1.3 Hours
Fatal Injury	355.1 Hours
Injury	4.3 Hours
Crash Cost Per Hour	\$51,370