



Ulster County Road Safety Plan

Data Analysis Update

May 14th, 2020

Key Takeaways

- » Serious Injuries and Fatalities both declined between 2010 and 2016, but the highest number of fatalities occurred in 2017, while serious injuries increased by 25% between 2017 and 2018
- » Even when normalized for VMT or population, a disproportionate number of fatalities have occurred in Lloyd. Denning also has a notably high serious injury rate
- » Roadway Departure emerges as a key emphasis area in Ulster County, accounting for almost 40% of fatalities and serious injuries where a crash type could be identified
- » The county's arterial roads have the highest rates of fatalities and serious injuries

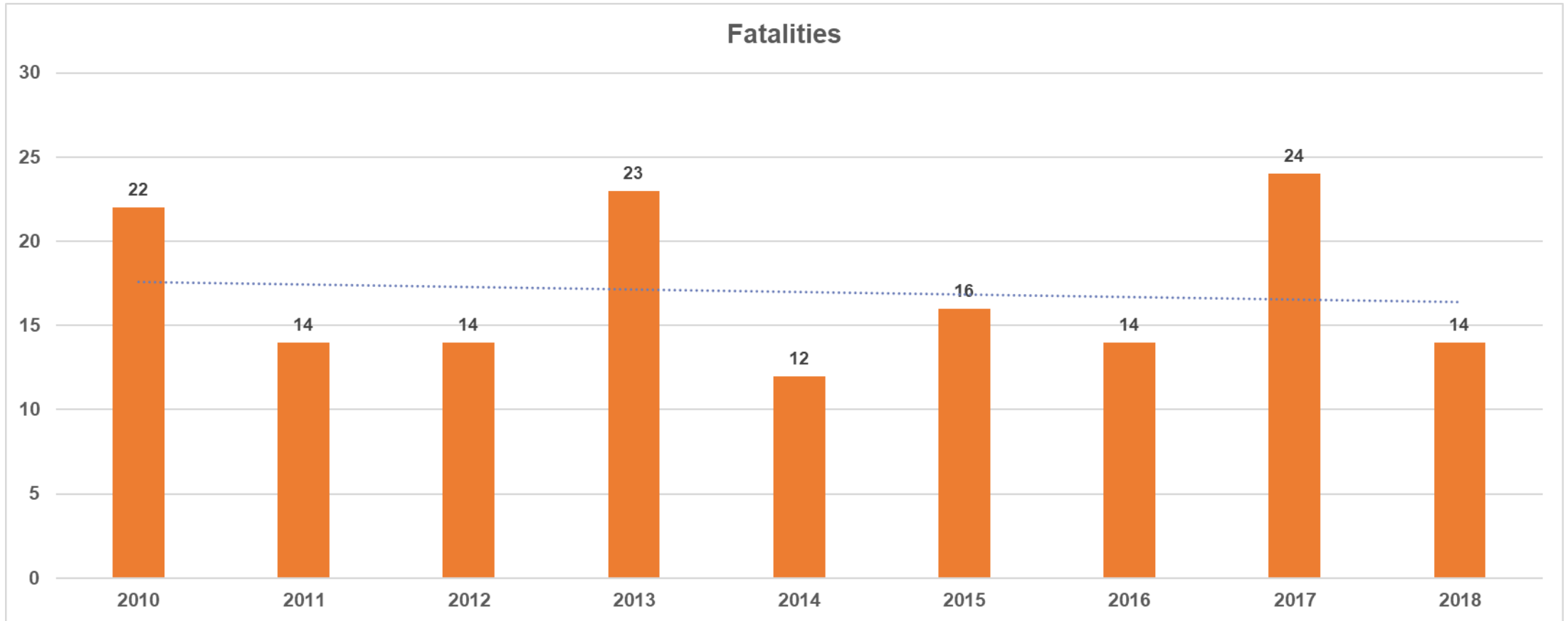


Ulster County Fatality and Serious Injury Trends

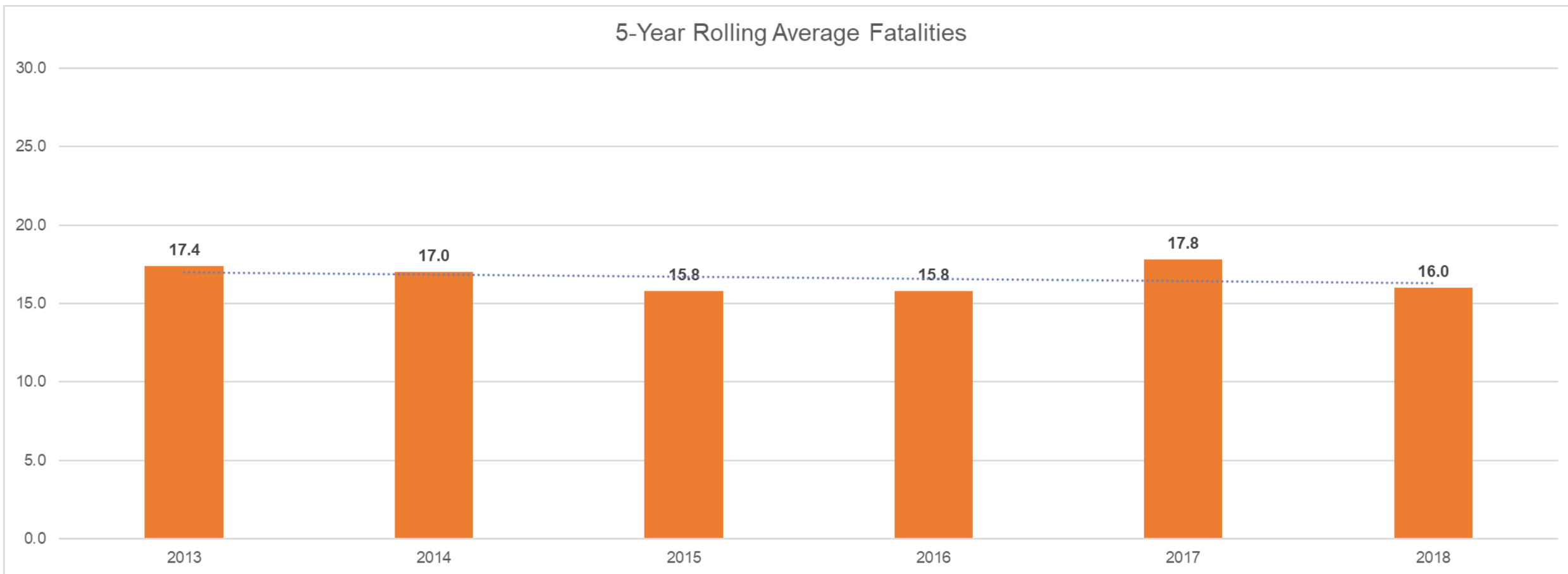
Crash Severity by Year

Year	Fatalities	Serious Injuries	Total Crashes
2010	22	241	6027
2011	14	199	6140
2012	14	201	6118
2013	23	201	6364
2014	12	156	6373
2015	16	178	6240
2016	14	143	6066
2017	24	171	5917
2018	14	216	6370
Total	153	1706	55615
Average	17	190	6179

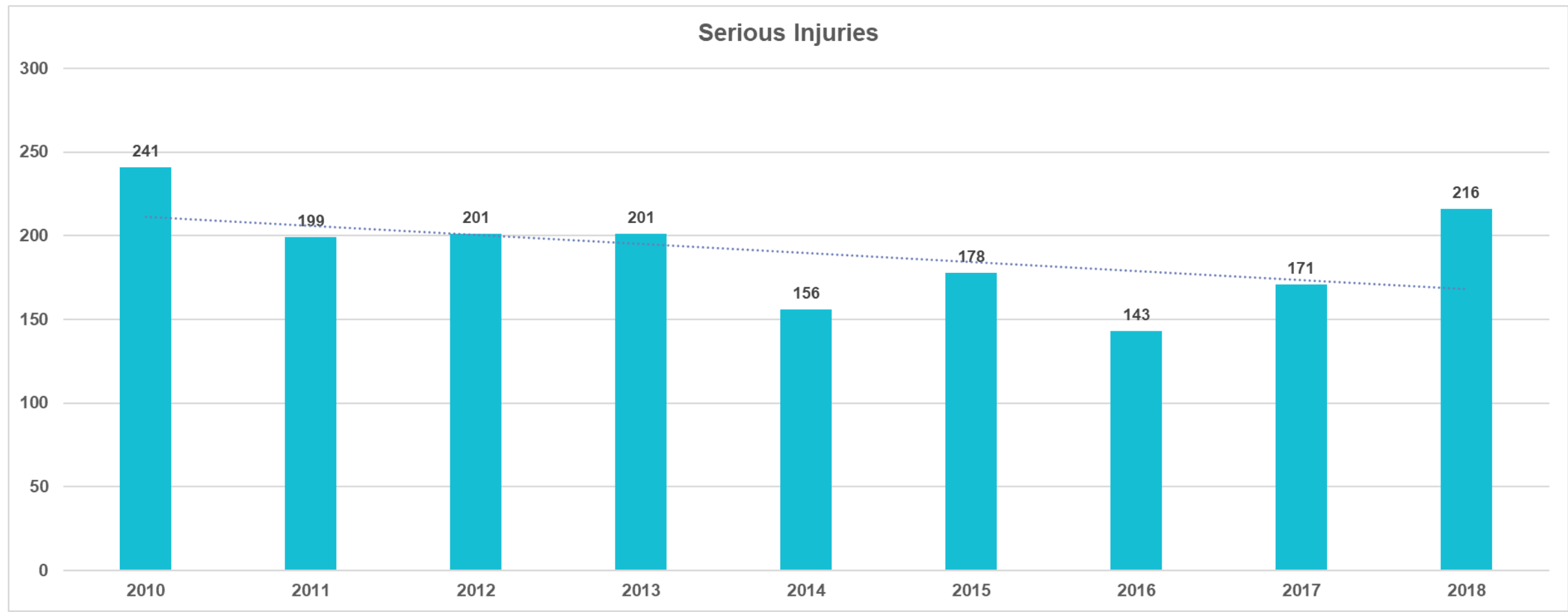
Fatalities by Year (2010 – 2018)



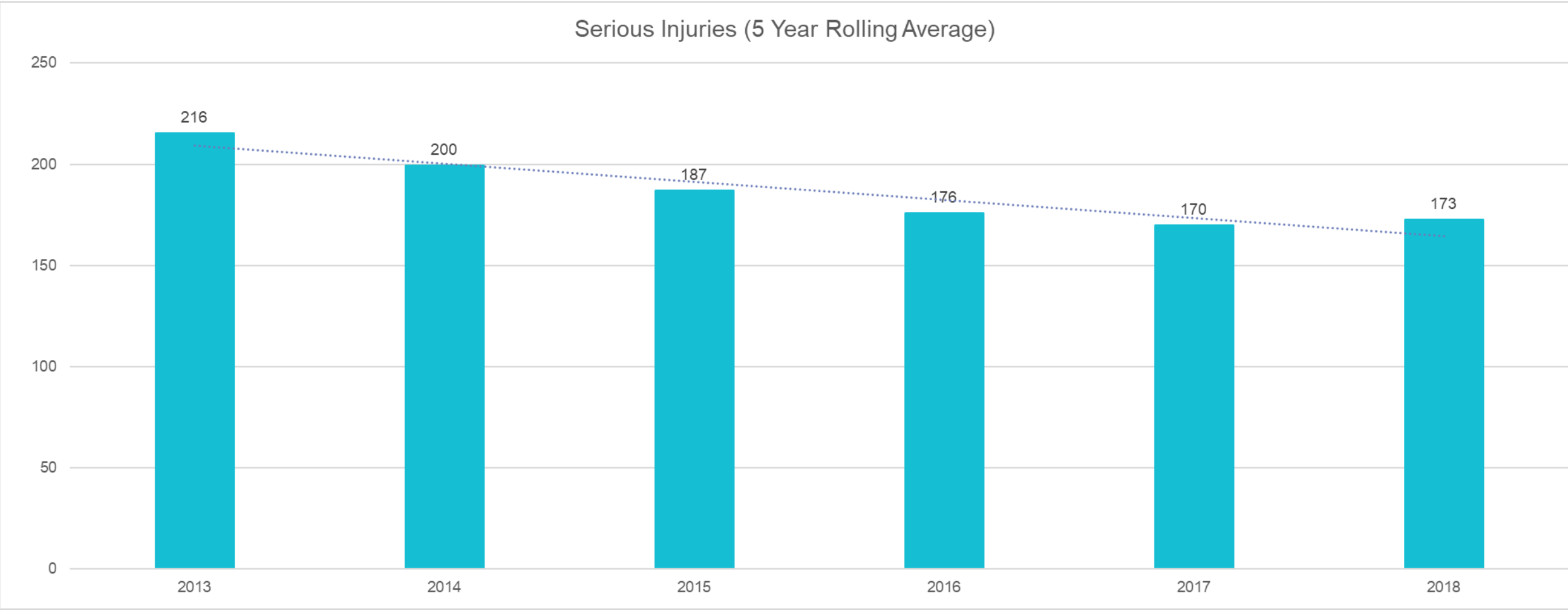
Fatalities (5 Year Rolling Average)



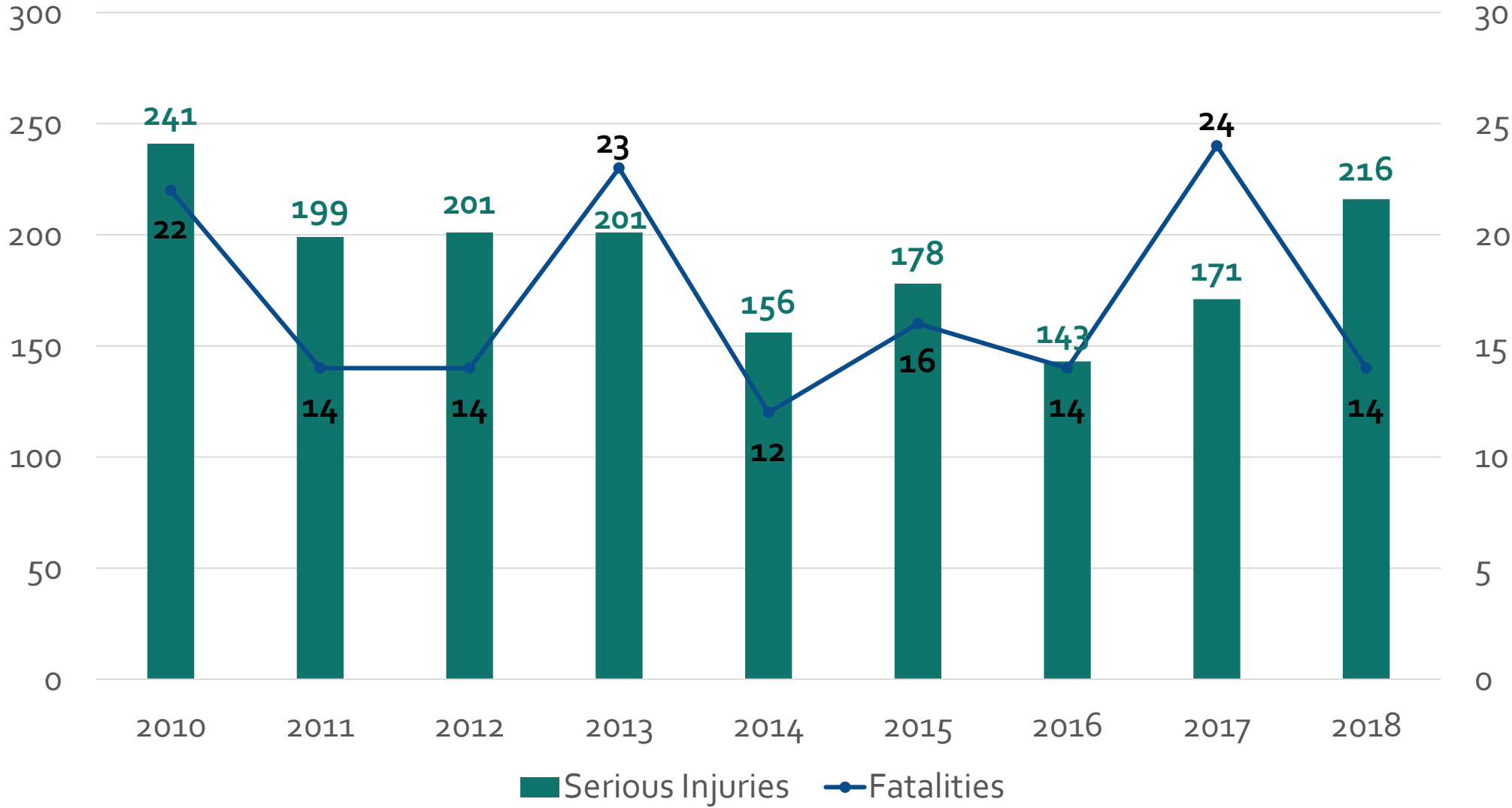
Serious Injuries (2010-2018)



Serious Injuries (5 Year Rolling Average)

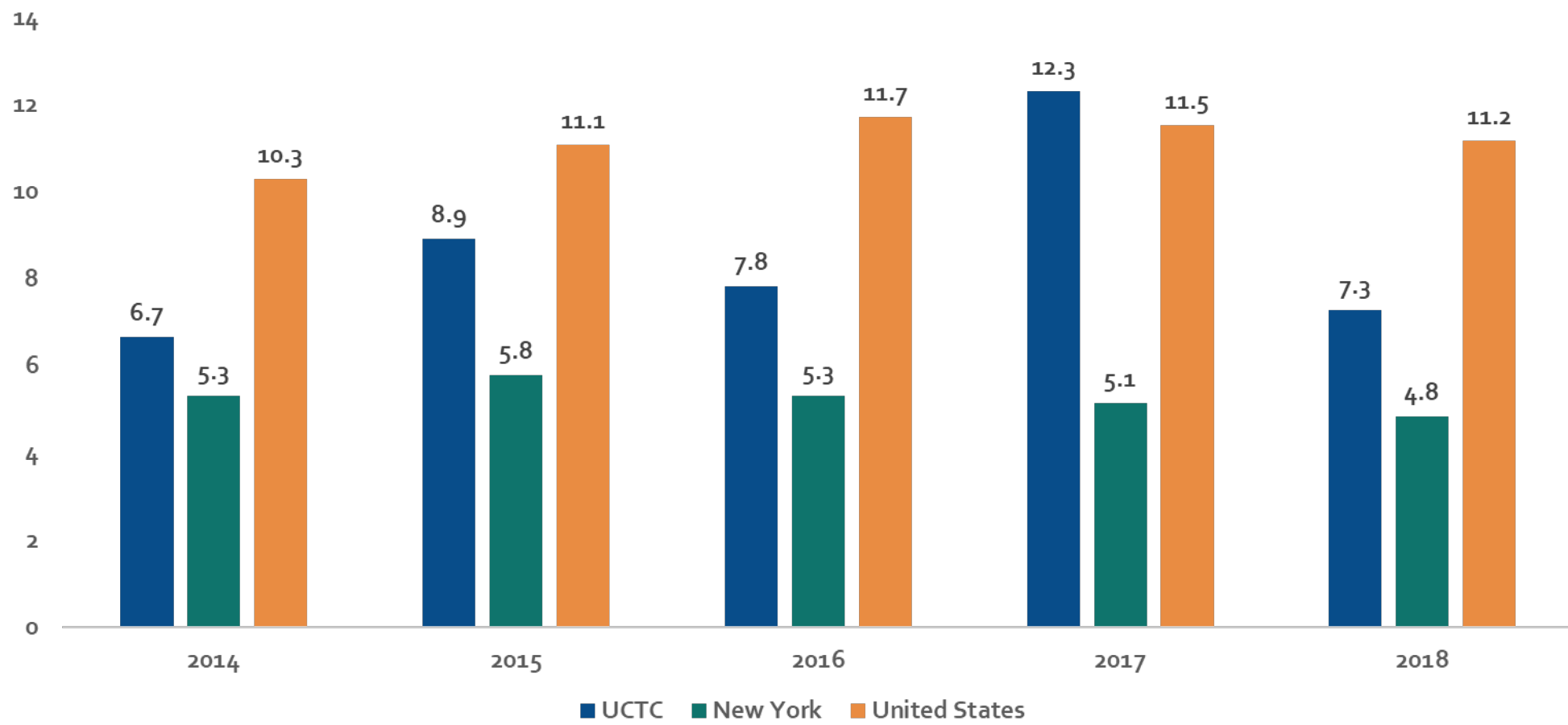


Injury Severity by Year



Fatalities Per 100,000 People (2013-2017)

Fatalities Per 100,000 Population



Population – By Jurisdiction

Population							
Jurisdiction	2013	2014	2015	2016	2017	Average	Percent Change (2013-17)
Denning	666	712	611	588	535	622	-20%
Esopus	9,019	8,984	8,957	8,907	8,886	8,951	-1%
Gardiner	5,702	5,703	5,708	5,686	5,671	5,694	-1%
Hardenburgh	165	175	221	190	233	197	41%
Hurley	6,284	6,256	6,225	6,194	6,168	6,225	-2%
Kingston	24,824	24,689	24,554	24,446	24,474	24,597	-1%
Lloyd	10,810	10,742	10,681	10,623	10,571	10,685	-2%
Marbletown	5,605	5,581	5,585	5,561	5,543	5,575	-1%
Marlborough	8,807	8,788	8,773	8,723	8,727	8,764	-1%
New Paltz	14,059	14,092	14,193	14,123	14,124	14,118	0%
Olive	4,406	4,389	4,376	4,352	4,333	4,371	-2%
Plattekill	10,412	10,390	10,388	10,333	10,323	10,369	-1%
Rochester	7,278	7,275	7,261	7,250	7,254	7,264	0%
Rosendale	6,061	6,043	6,017	5,971	5,952	6,009	-2%
Saugerties	19,419	19,362	19,319	19,229	19,192	19,304	-1%
Shandaken	2,914	2,866	2,953	2,964	2,847	2,909	-2%
Shawangunk	14,248	14,224	14,190	14,159	14,095	14,183	-1%
Ulster	12,268	12,245	12,251	12,275	12,335	12,275	1%
Wawarsing	13,235	13,189	13,147	13,045	13,004	13,124	-2%
Woodstock	5,904	5,893	5,890	5,886	5,862	5,887	-1%
Total	182,086	181,598	181,300	180,505	180,129	181,124	-1%

Crash Severity by Jurisdiction (Totals, 2010-2018)



Crash Severity by Jurisdiction				
Jurisdiction	Fatalities	Serious Injuries	All Injuries	Total Crashes
Catskill	0	1	2	16
Denning	0	10	27	65
Ellenville	0	28	237	809
Esopus	7	88	675	2,309
Gardiner	5	61	365	1,569
Hardenburgh	0	2	11	28
Hurley	7	46	365	1,282
Kingston	8	228	2,125	9,027
Lloyd	18	133	1,273	4,165
Marbletown	4	85	512	2,020
Marlborough	6	86	619	1,862
New Paltz	5	93	1,283	5,301
Olive	10	42	238	854
Plattekill	13	86	747	2,443
Rochester	13	80	470	1,808
Rosendale	5	53	451	1,775
Saugerties	19	169	1,348	4,679
Shandaken	2	27	245	825
Shawangunk	5	68	673	2,036
Ulster	14	165	2,310	8,737
Wawarsing	11	117	769	2,696
Woodstock	1	38	324	1,292
Total	153	1,706	15,069	55,598

Crash Severity by Jurisdiction (Percentage, 2010-2018)

Crash Severity by Jurisdiction				
Jurisdiction	Fatalities	Serious Injuries	All Injuries	Total Crashes
Catskill	0%	0%	0%	0%
Denning	0%	1%	0%	0%
Ellenville	0%	2%	2%	1%
Esopus	5%	5%	4%	4%
Gardiner	3%	4%	2%	3%
Hardenburgh	0%	0%	0%	0%
Hurley	5%	3%	2%	2%
Kingston	5%	13%	14%	16%
Lloyd	12%	8%	8%	7%
Marbletown	3%	5%	3%	4%
Marlborough	4%	5%	4%	3%
New Paltz	3%	5%	9%	10%
Olive	7%	2%	2%	2%
Plattekill	8%	5%	5%	4%
Rochester	8%	5%	3%	3%
Rosendale	3%	3%	3%	3%
Saugerties	12%	10%	9%	8%
Shandaken	1%	2%	2%	1%
Shawangunk	3%	4%	4%	4%
Ulster	9%	10%	15%	16%
Wawarsing	7%	7%	5%	5%
Woodstock	1%	2%	2%	2%

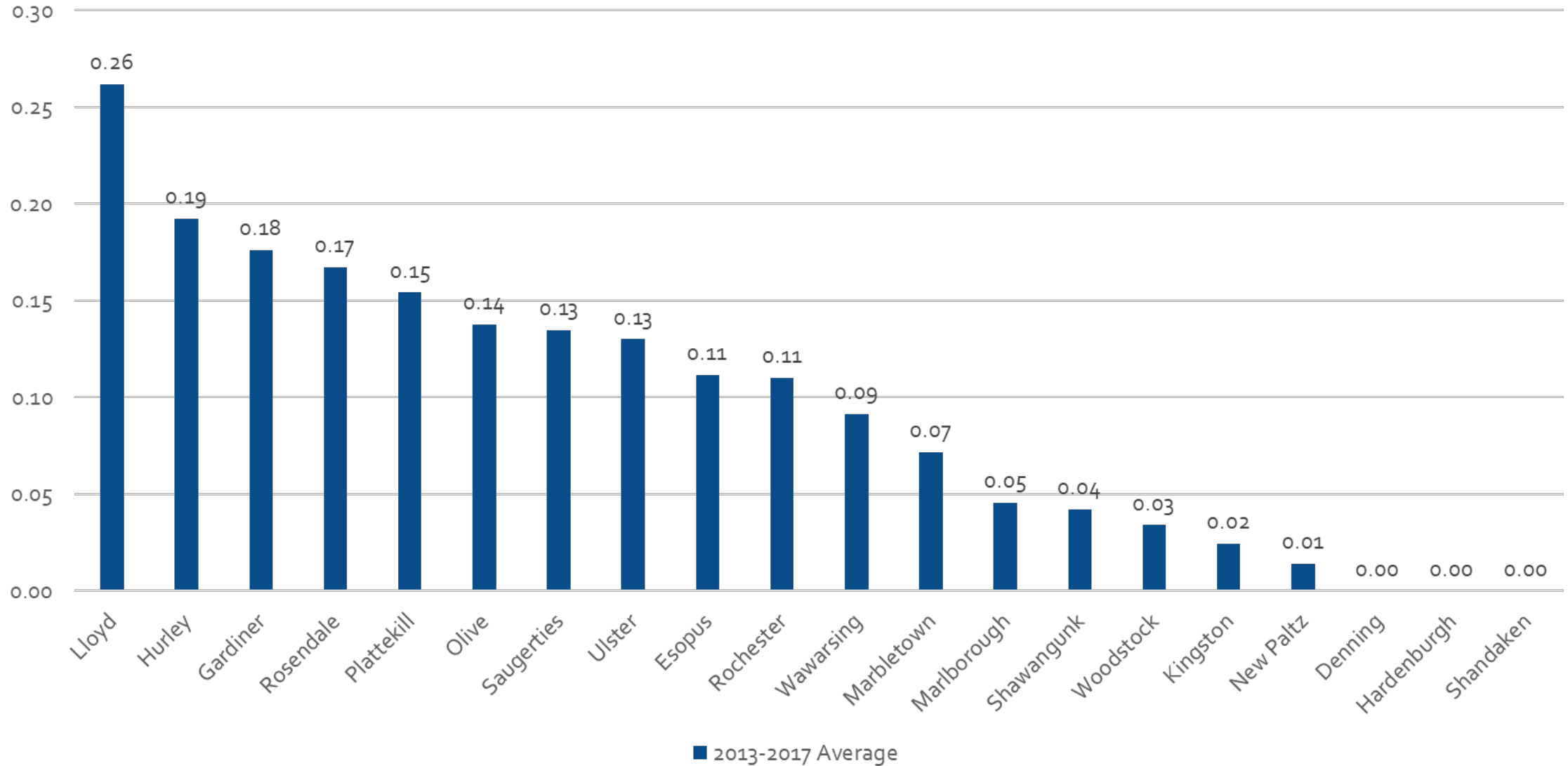
Fatalities and Serious Injuries Per 1,000 Crashes (2010-2018)

Crash Severity by Jurisdiction		
Jurisdiction	Fatalities	Serious Injuries
Catskill	0.0	62.5
Denning	0.0	153.8
Ellenville	0.0	34.6
Esopus	3.0	38.1
Gardiner	3.2	38.9
Hardenburgh	0.0	71.4
Hurley	5.5	35.9
Kingston	0.9	25.3
Lloyd	4.3	31.9
Marbletown	2.0	42.1
Marlborough	3.2	46.2
New Paltz	0.9	17.5
Olive	11.7	49.2
Plattekill	5.3	35.2
Rochester	7.2	44.2
Rosendale	2.8	29.9
Saugerties	4.1	36.1
Shandaken	2.4	32.7
Shawangunk	2.5	33.4
Ulster	1.6	18.9
Wawarsing	4.1	43.4
Woodstock	0.8	29.4
Total	2.8	30.7

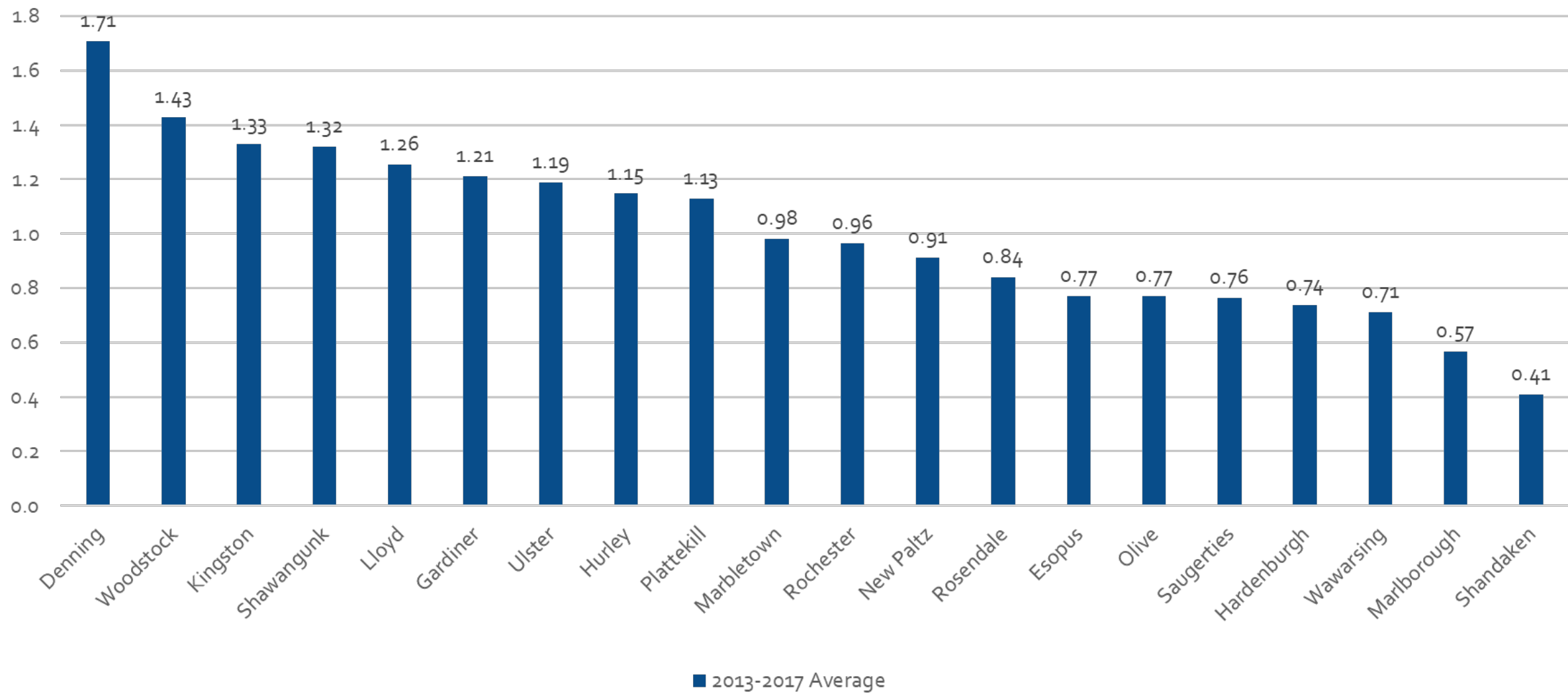
Fatalities and Serious Injuries Per 1,000 People (2013-2017)

Crash Severity by Jurisdiction		
Jurisdiction	Fatalities	Serious Injuries
Denning	0.00	1.71
Esopus	0.11	0.77
Gardiner	0.18	1.21
Hardenburgh	0.00	0.74
Hurley	0.19	1.15
Kingston	0.02	1.33
Lloyd	0.26	1.26
Marbletown	0.07	0.98
Marlborough	0.05	0.57
New Paltz	0.01	0.91
Olive	0.14	0.77
Plattekill	0.15	1.13
Rochester	0.11	0.96
Rosendale	0.17	0.84
Saugerties	0.13	0.76
Shandaken	0.00	0.41
Shawangunk	0.04	1.32
Ulster	0.13	1.19
Wawarsing	0.09	0.71
Woodstock	0.03	1.43

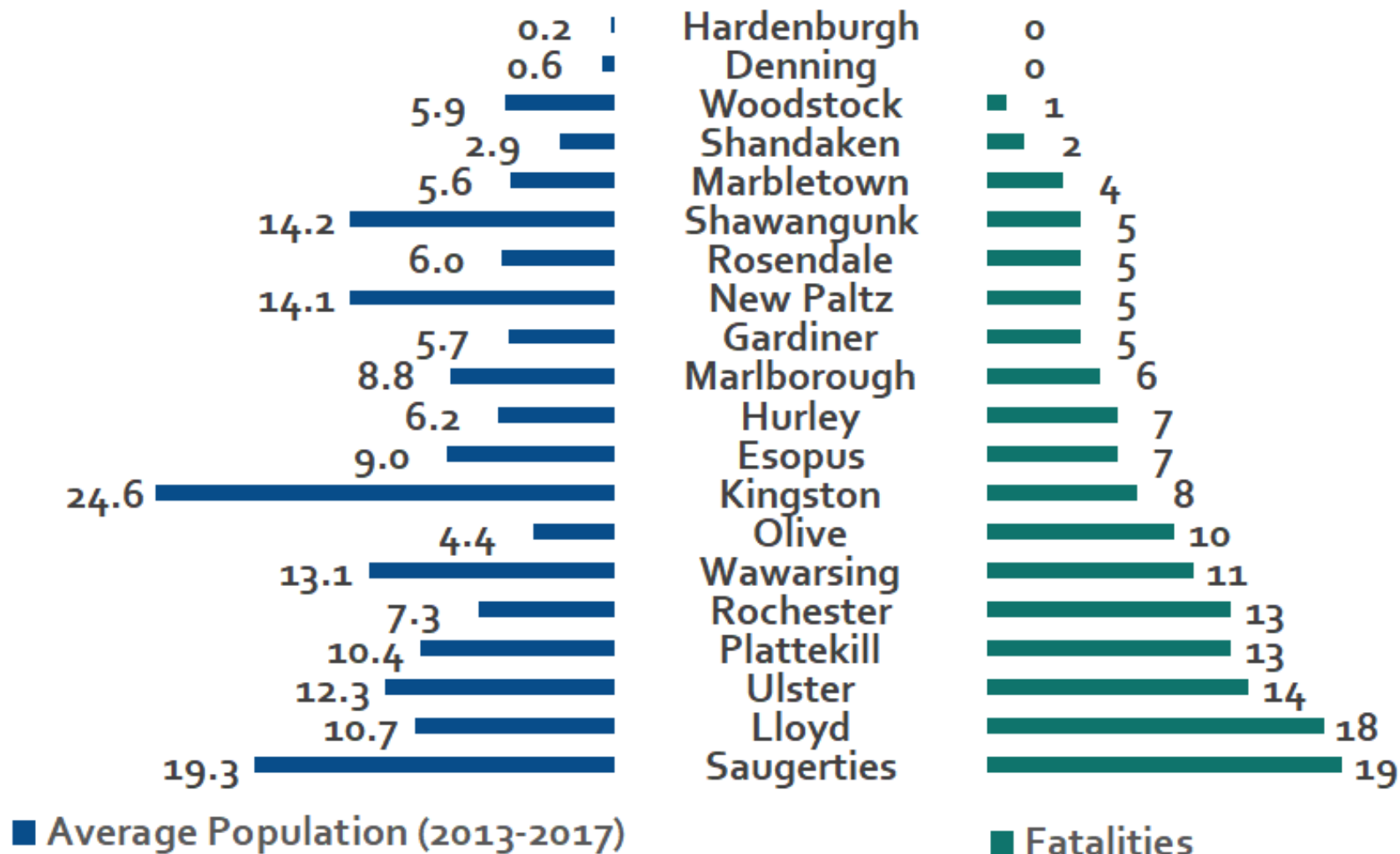
Fatalities per 1,000 people (2013-2017)



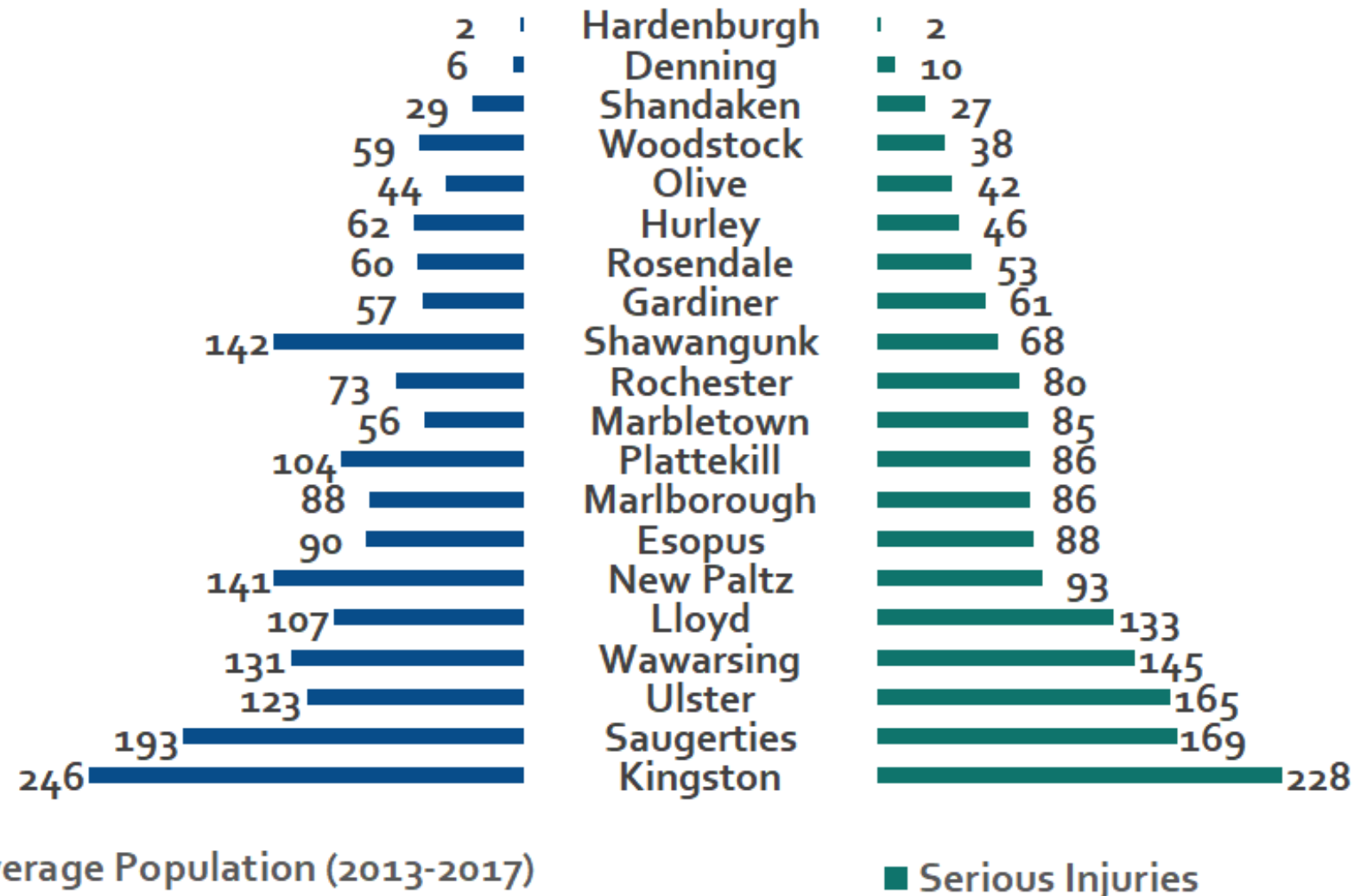
Serious Injuries per 1,000 people (2013-2017)



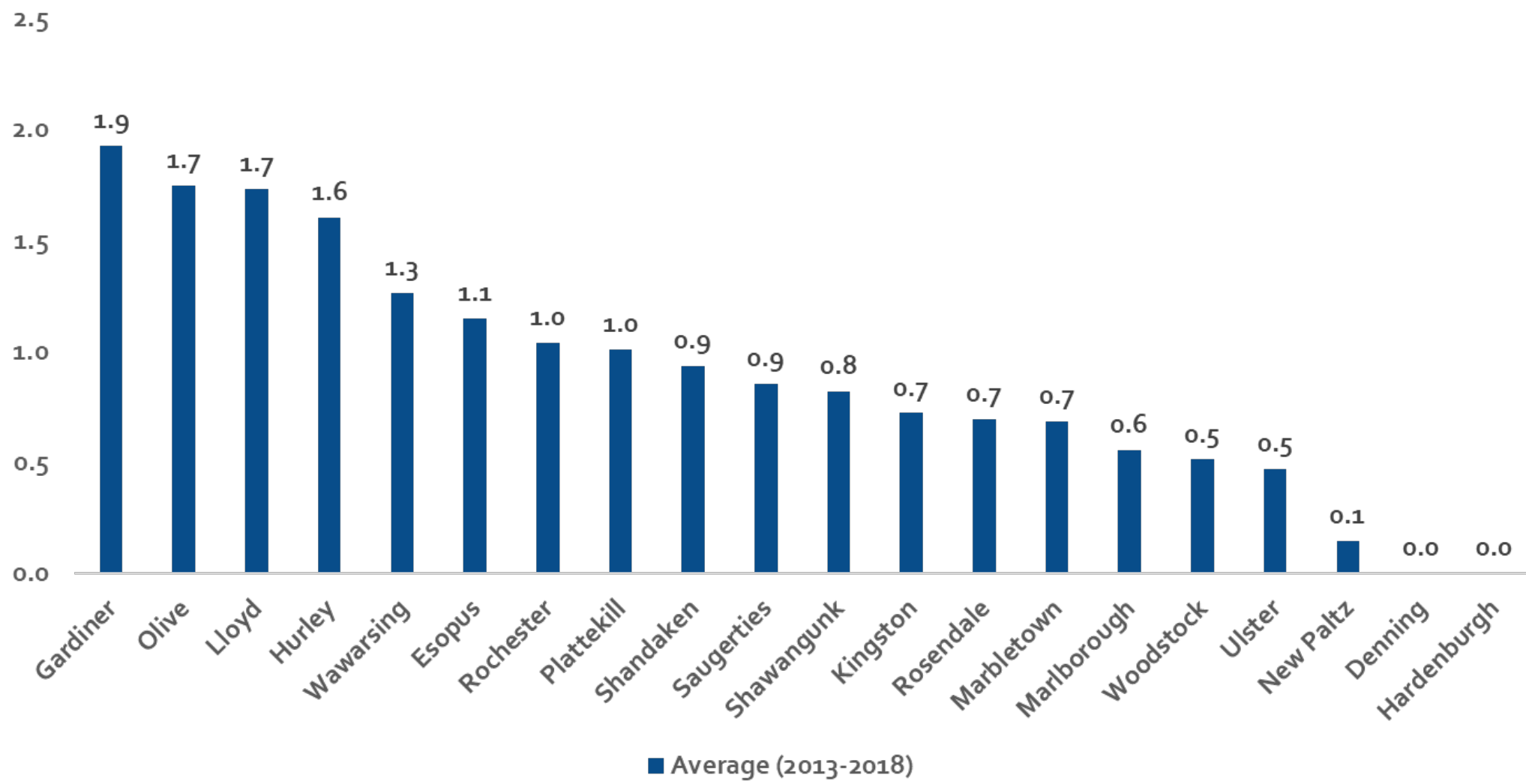
Fatalities (2010-2018) and Jurisdiction Population (1,000 People)



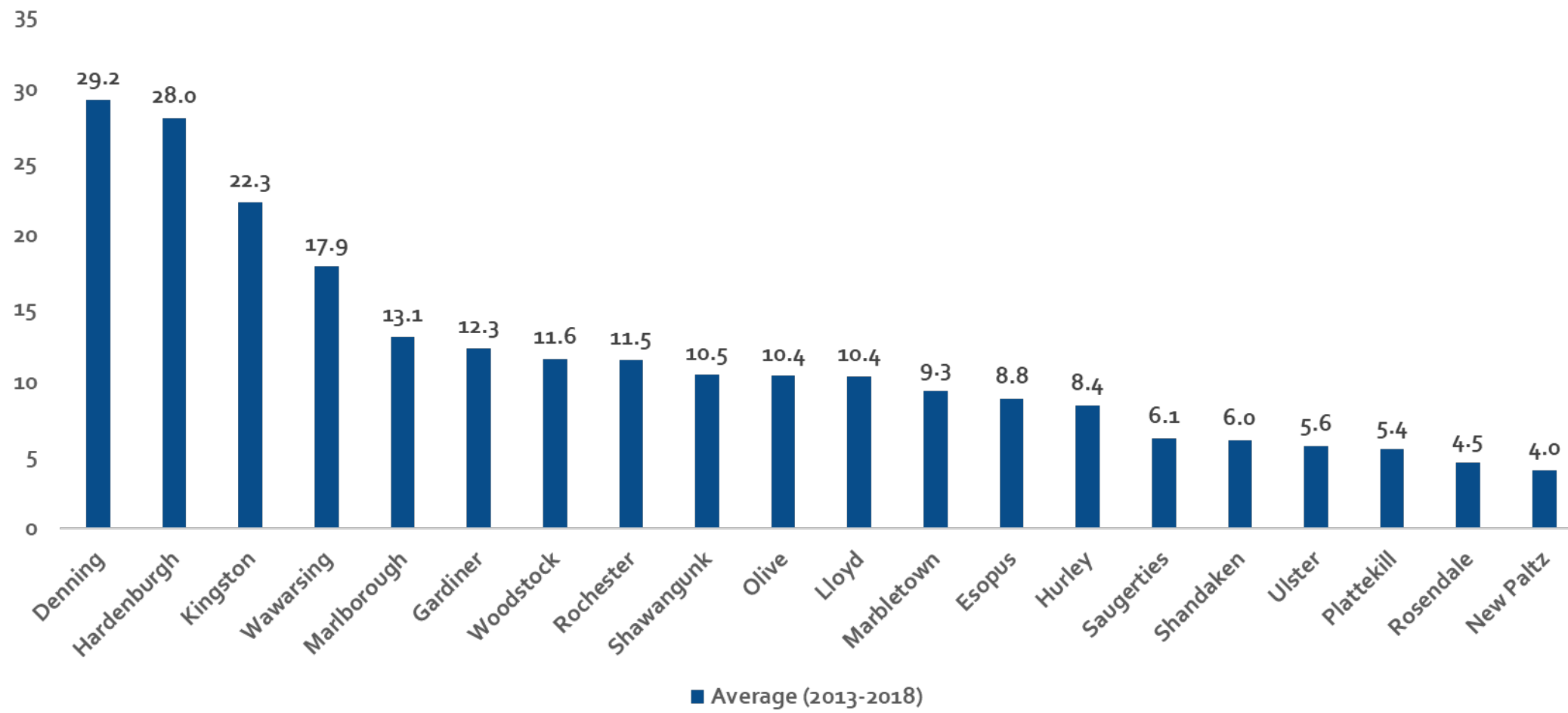
Serious Injuries (2010-2018) and Jurisdiction Population (100 People)



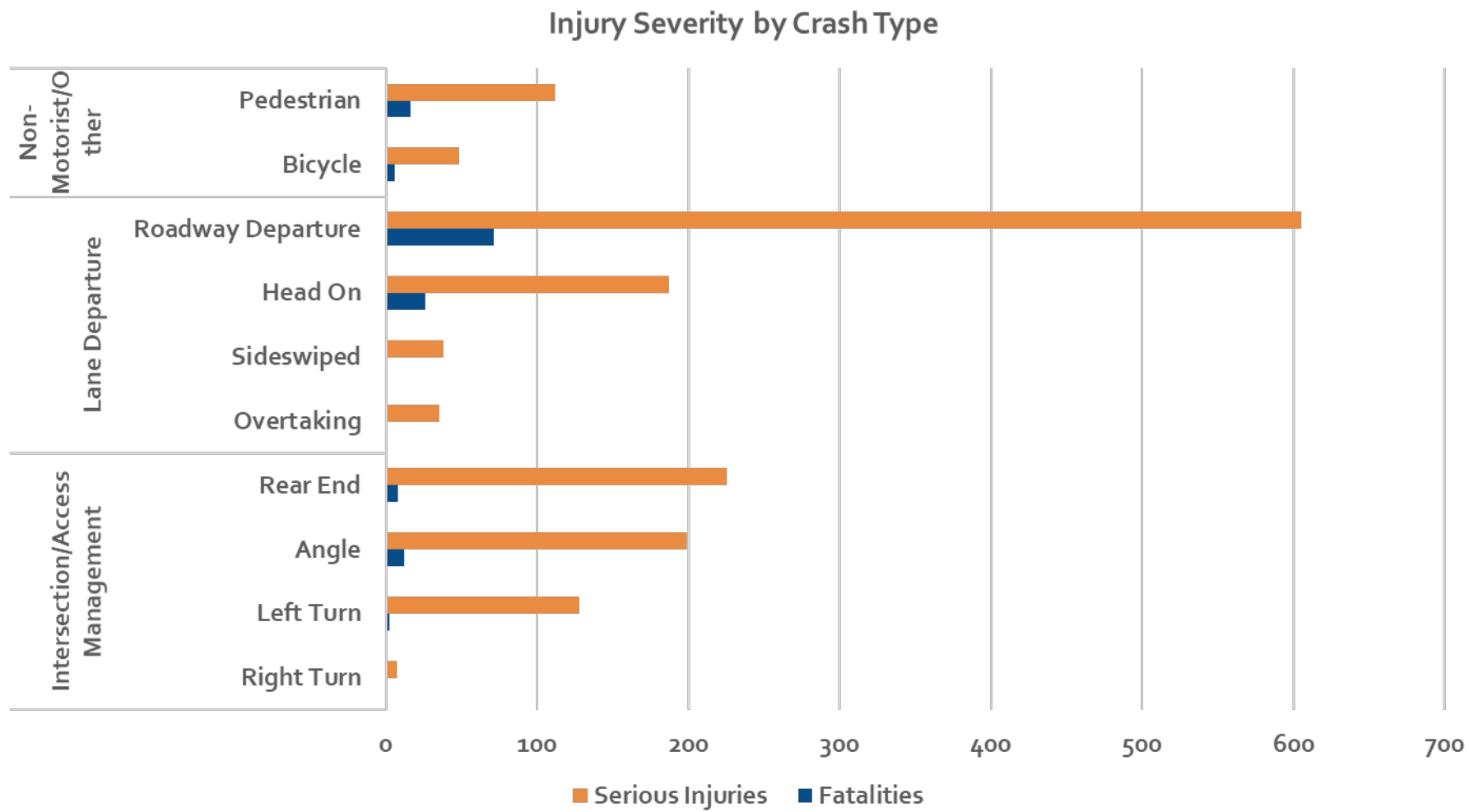
Fatalities per 100 Million VMT



Serious Injuries Per 100 Million VMT



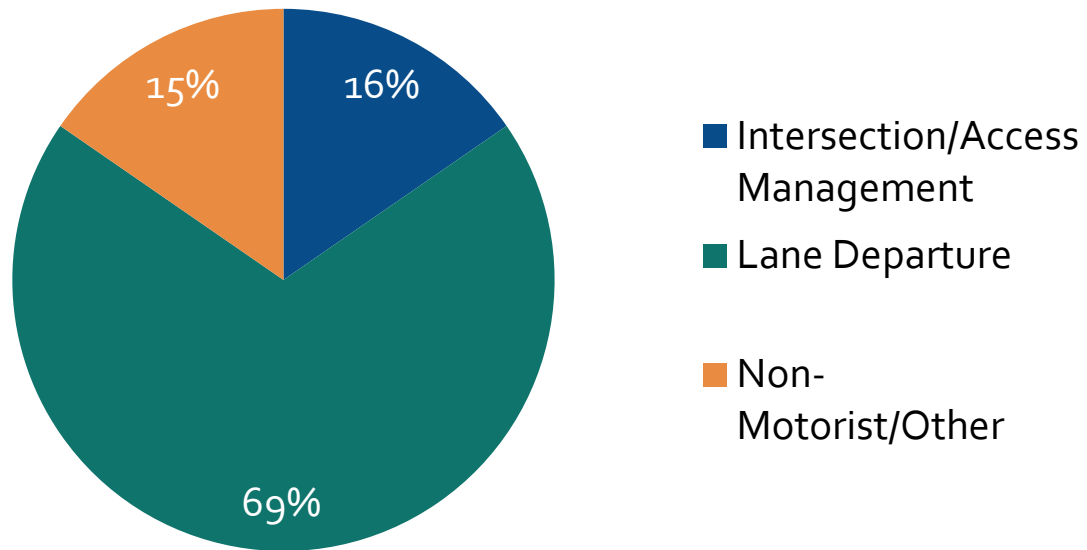
Fatalities and Serious Injuries by Crash Type, 2010-2018



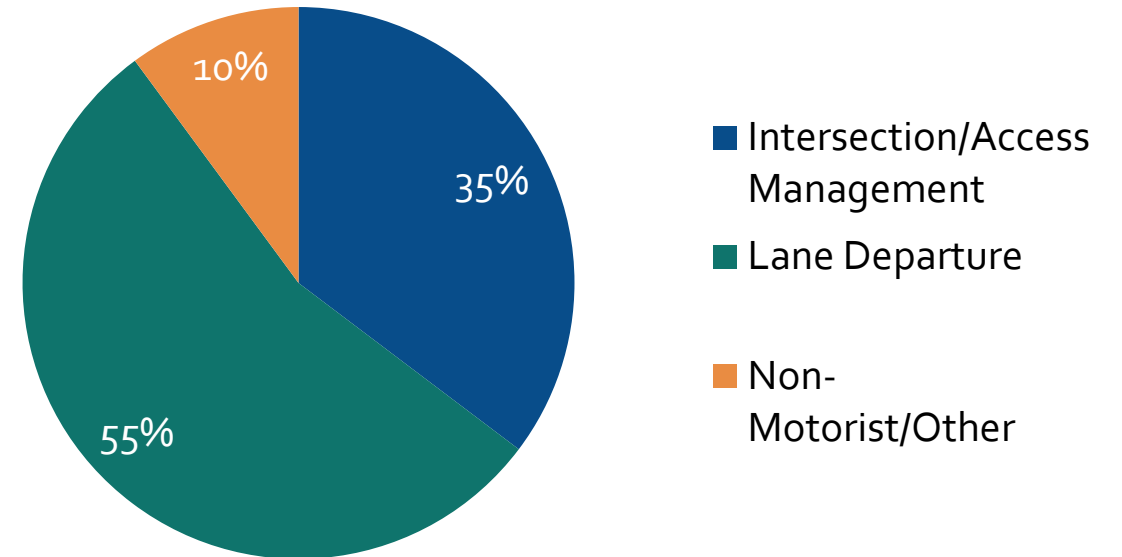
Fatalities and Serious Injuries by Crash Type, 2010-2018



Fatalities by Crash Type

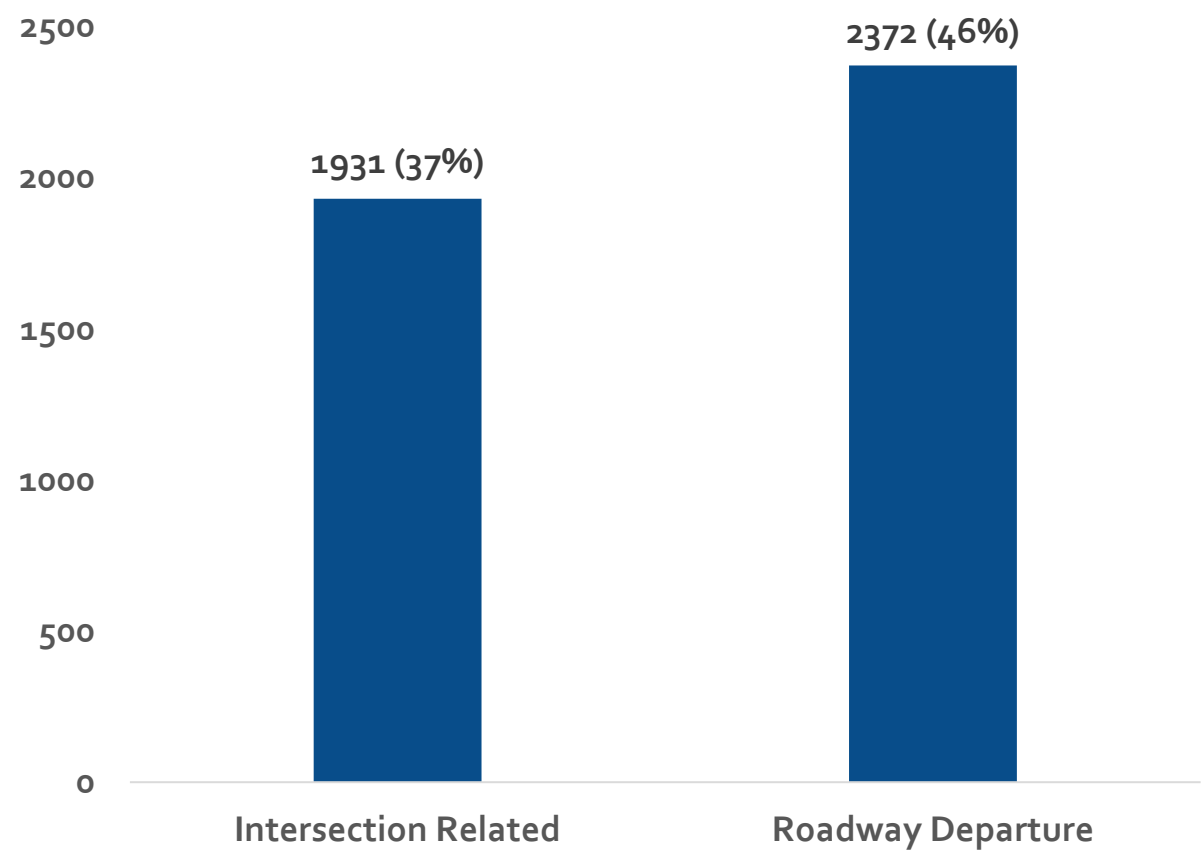


Serious Injuries by Crash Type

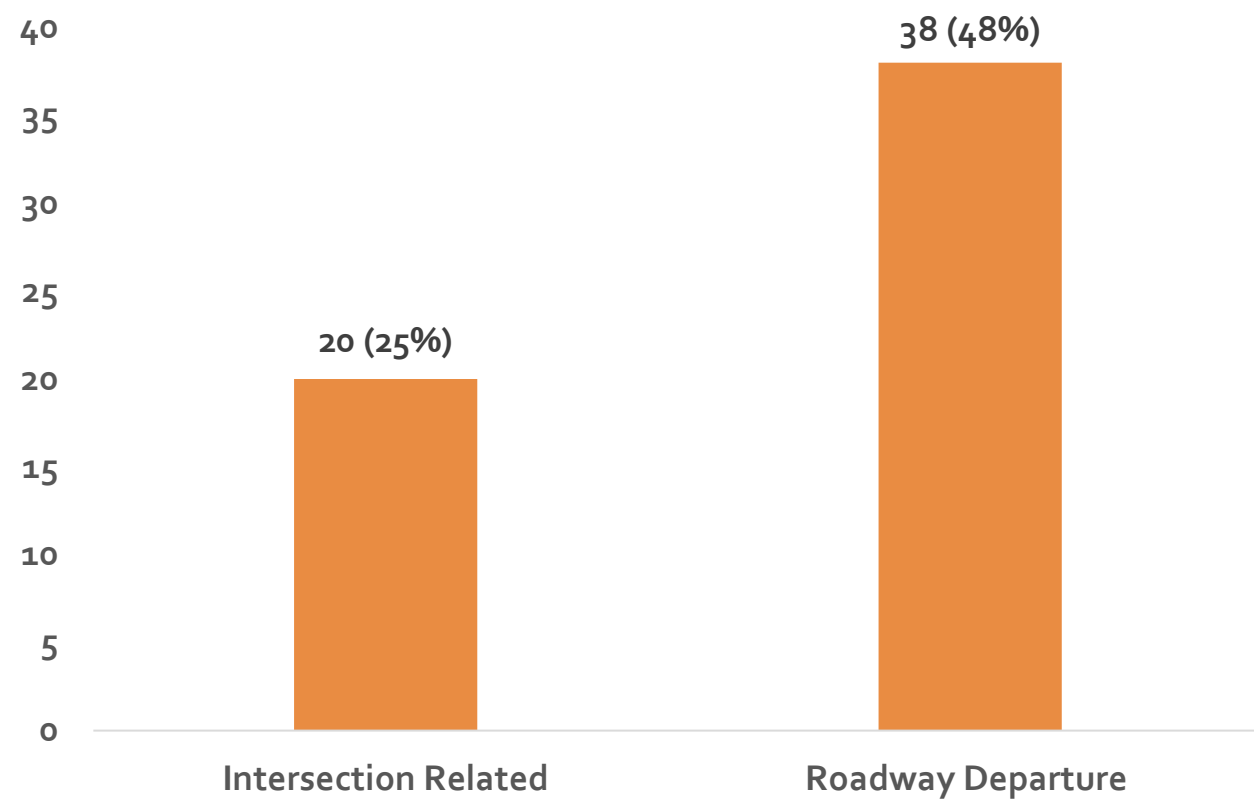


Fatalities by Crash Type in New York and Ulster County, 2014-2018

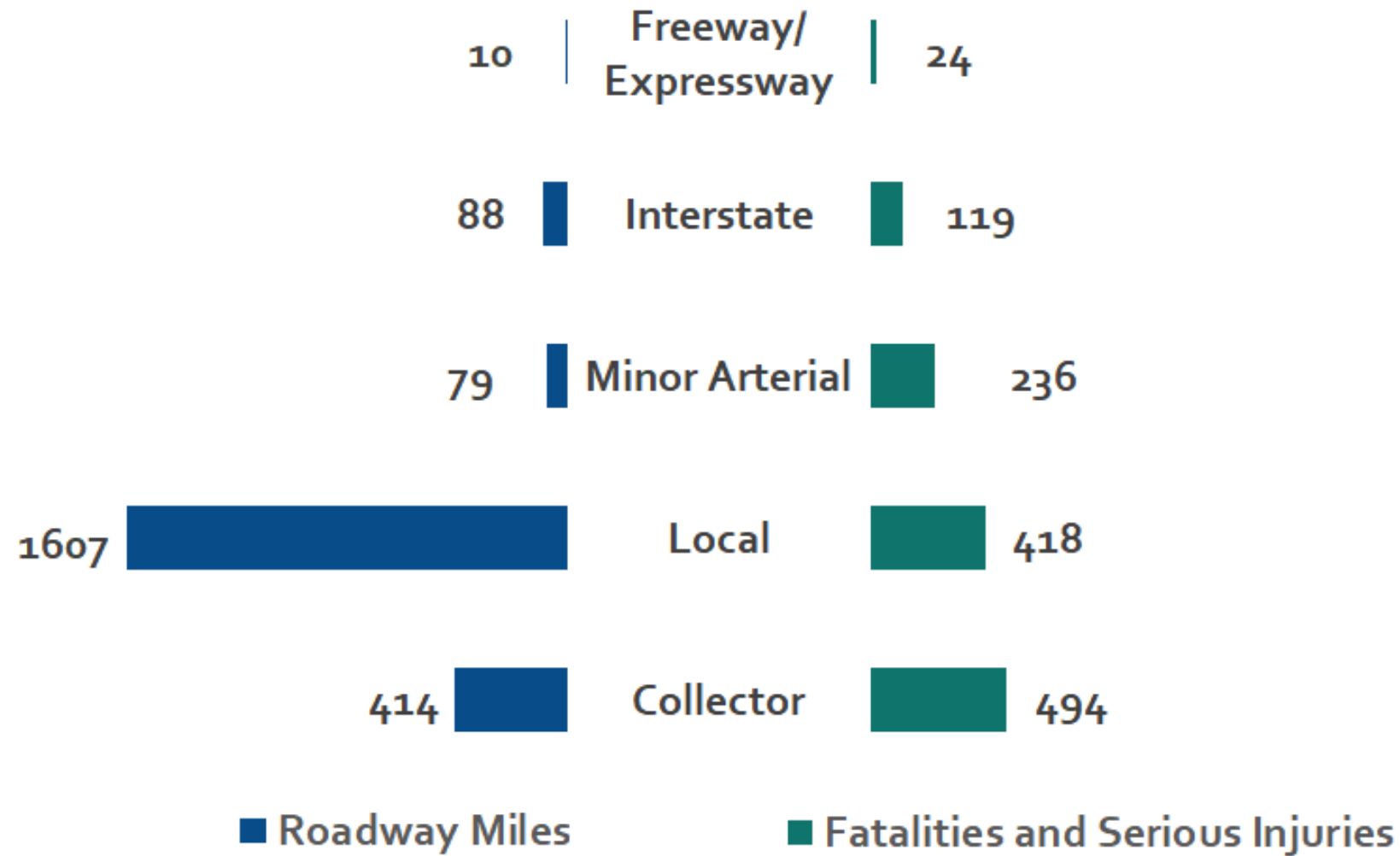
New York State Traffic Fatalities



Ulster County Traffic Fatalities



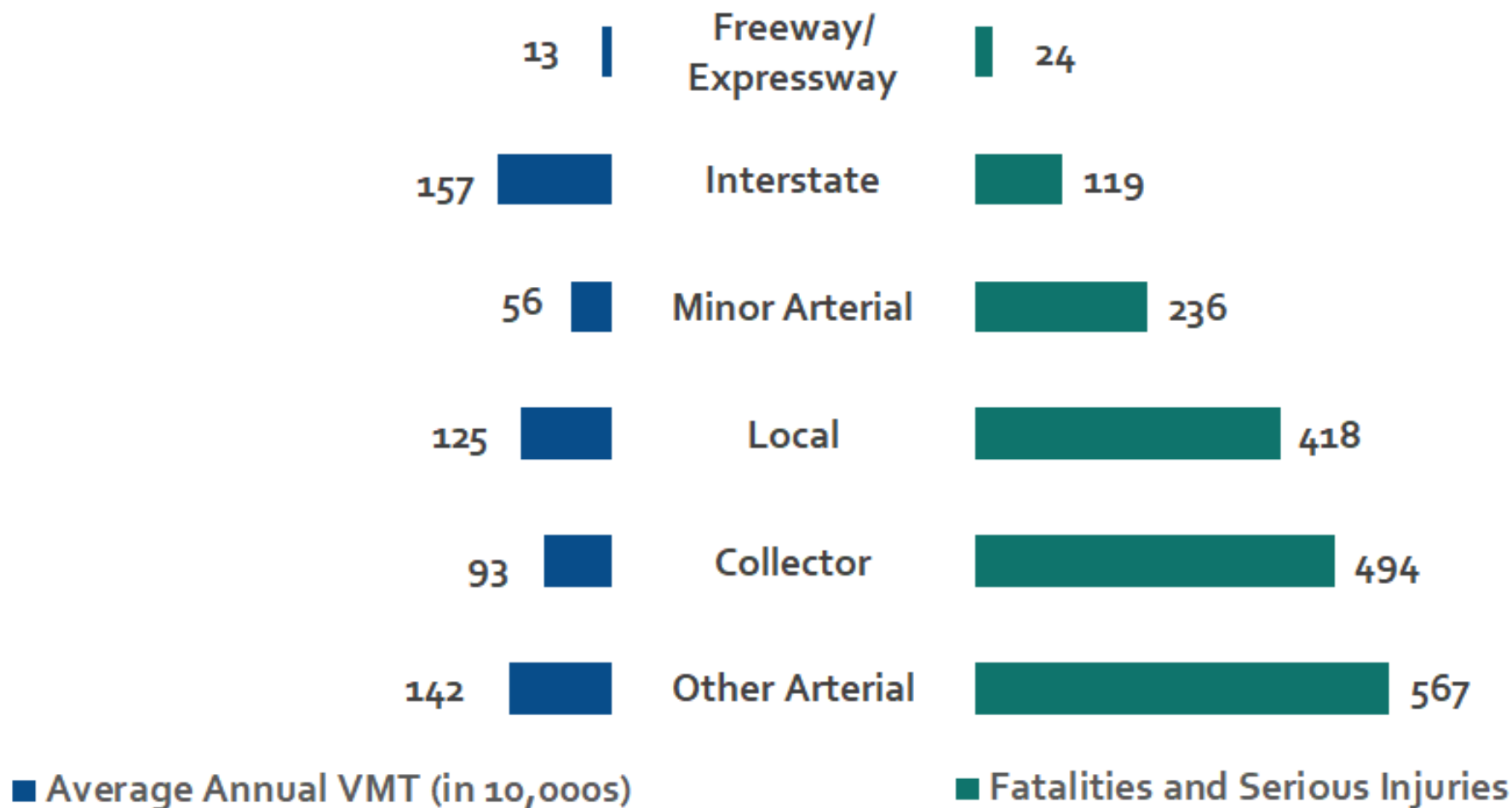
Fatalities and Serious Injuries by Functional Class Roadway Mileage, 2010-2018



Fatalities and Serious Injuries per 100 miles by Functional Class (2010-2018)

Rural	0.52
Collector	0.97
Interstate	1.95
Local	0.20
Minor Arterial	2.11
Other Arterial	3.16
Urban	1.54
Collector	2.04
Freeway/Expressway	2.93
Interstate	1.52
Local	0.48
Minor Arterial	3.82
Other Arterial	71.64
All Roads	0.92

Fatalities and Serious Injuries by Functional Class and Average Annual VMT, 2010-2018

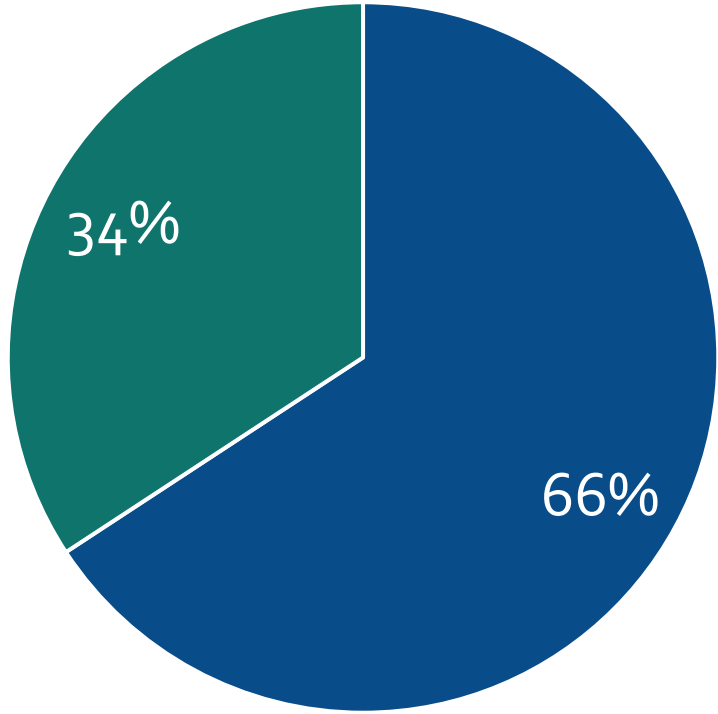


Fatalities and Serious Injuries by Road Context, Rate Per 100,000 VMT (2010-2018)

Rural	45.54
Collector	64.64
Interstate	14.30
Local	36.82
Minor Arterial	40.94
Other Arterial	47.03
Urban	32.54
Collector	59.44
Freeway/Expressway	21.70
Interstate	8.41
Local	38.89
Minor Arterial	49.71
Other Arterial	43.32
All Roads	36.09

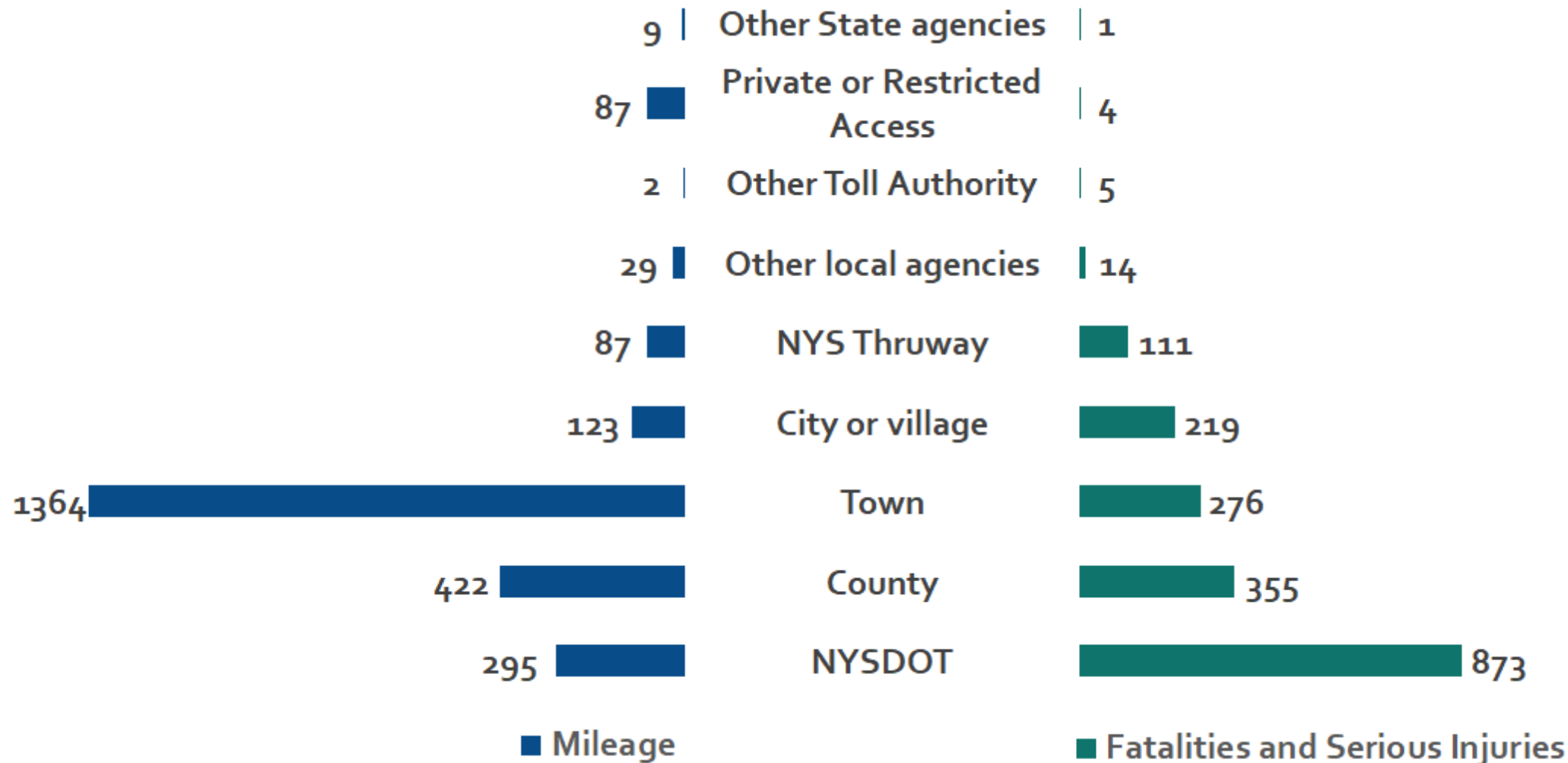
Fatalities and Serious Injuries by Road Context, 2010-2018

Number of Fatalities and Serious Injuries

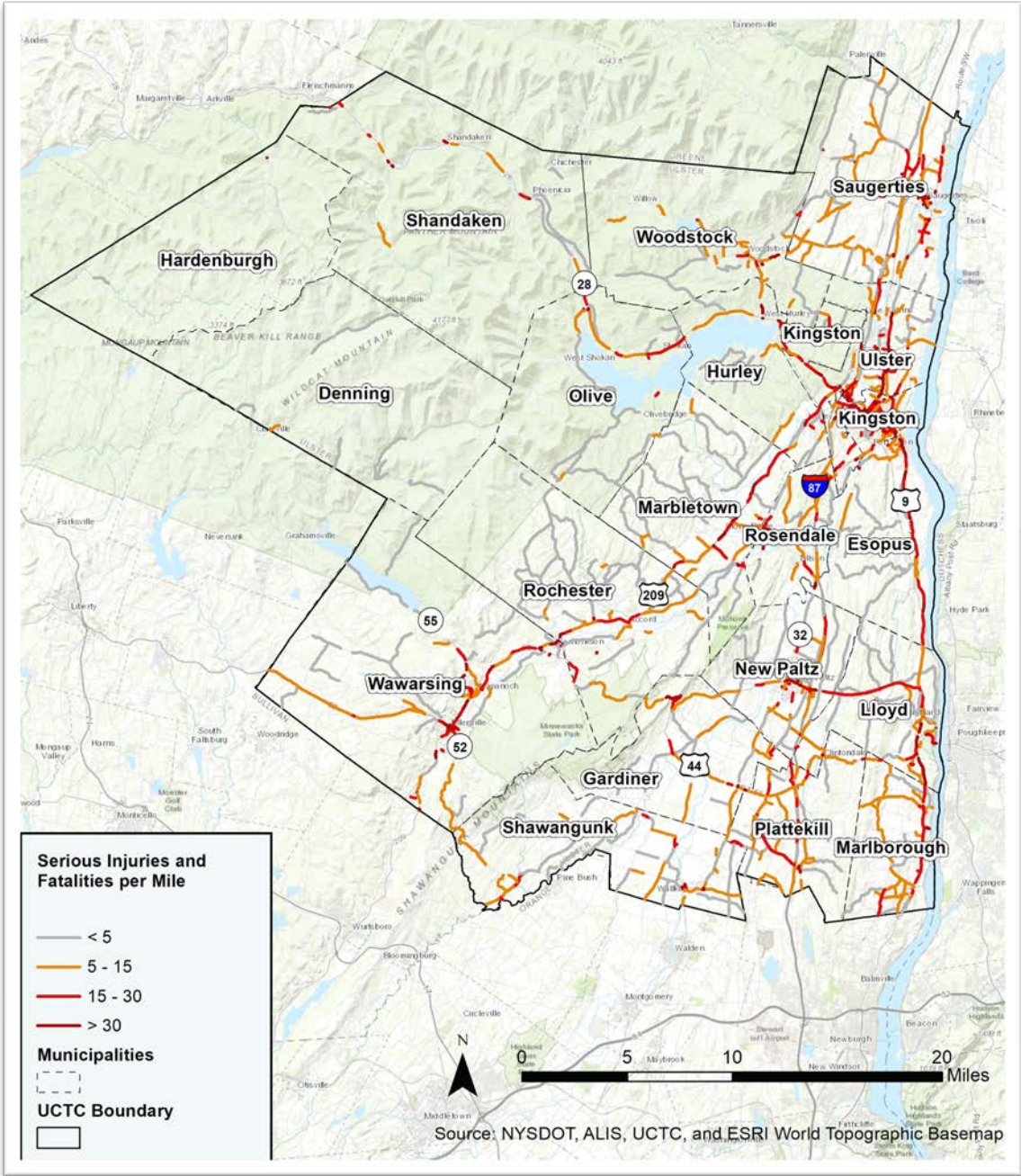


■ Urban ■ Rural

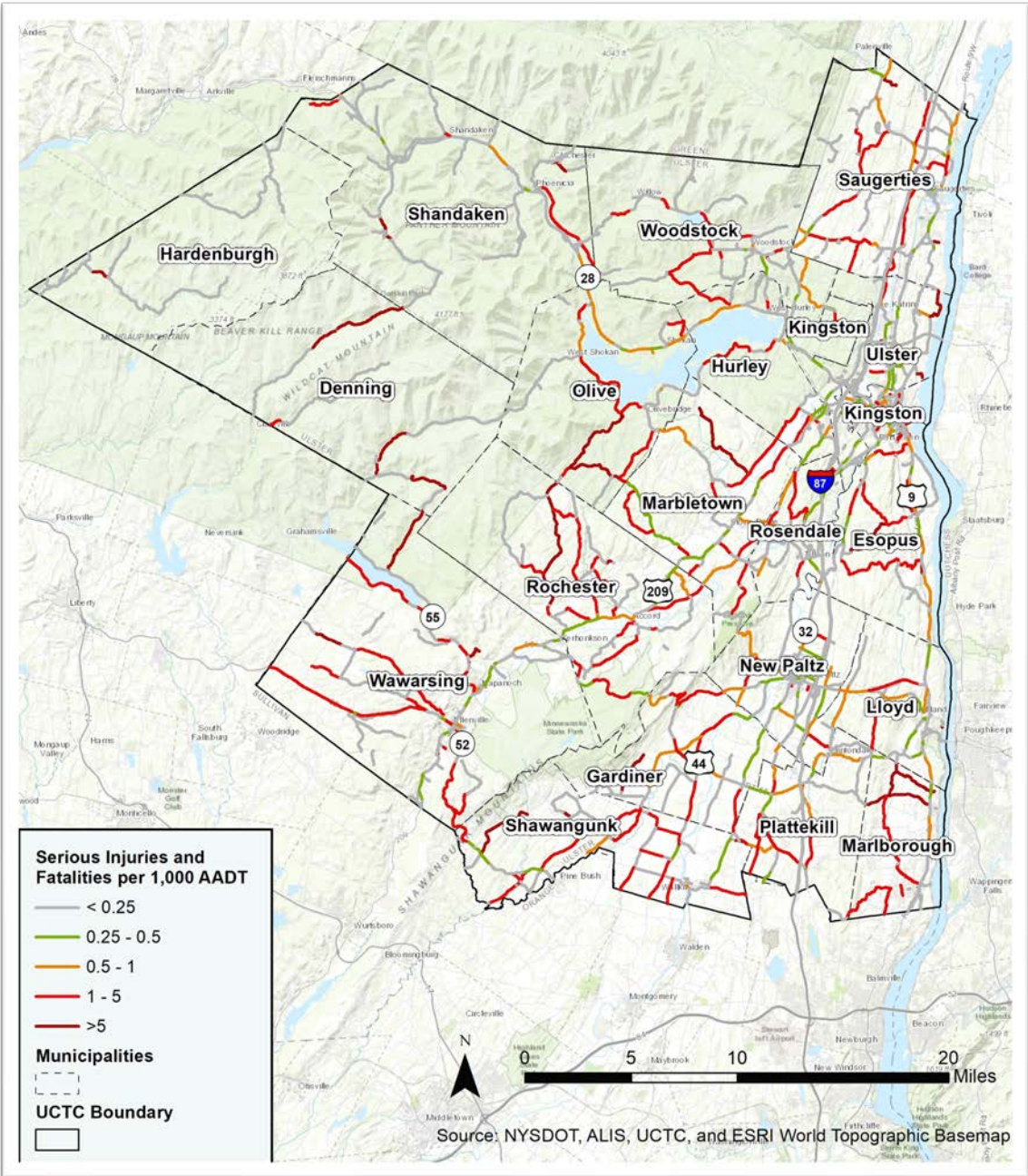
Fatalities and Serious Injuries by Roadway Ownership, 2010-2018



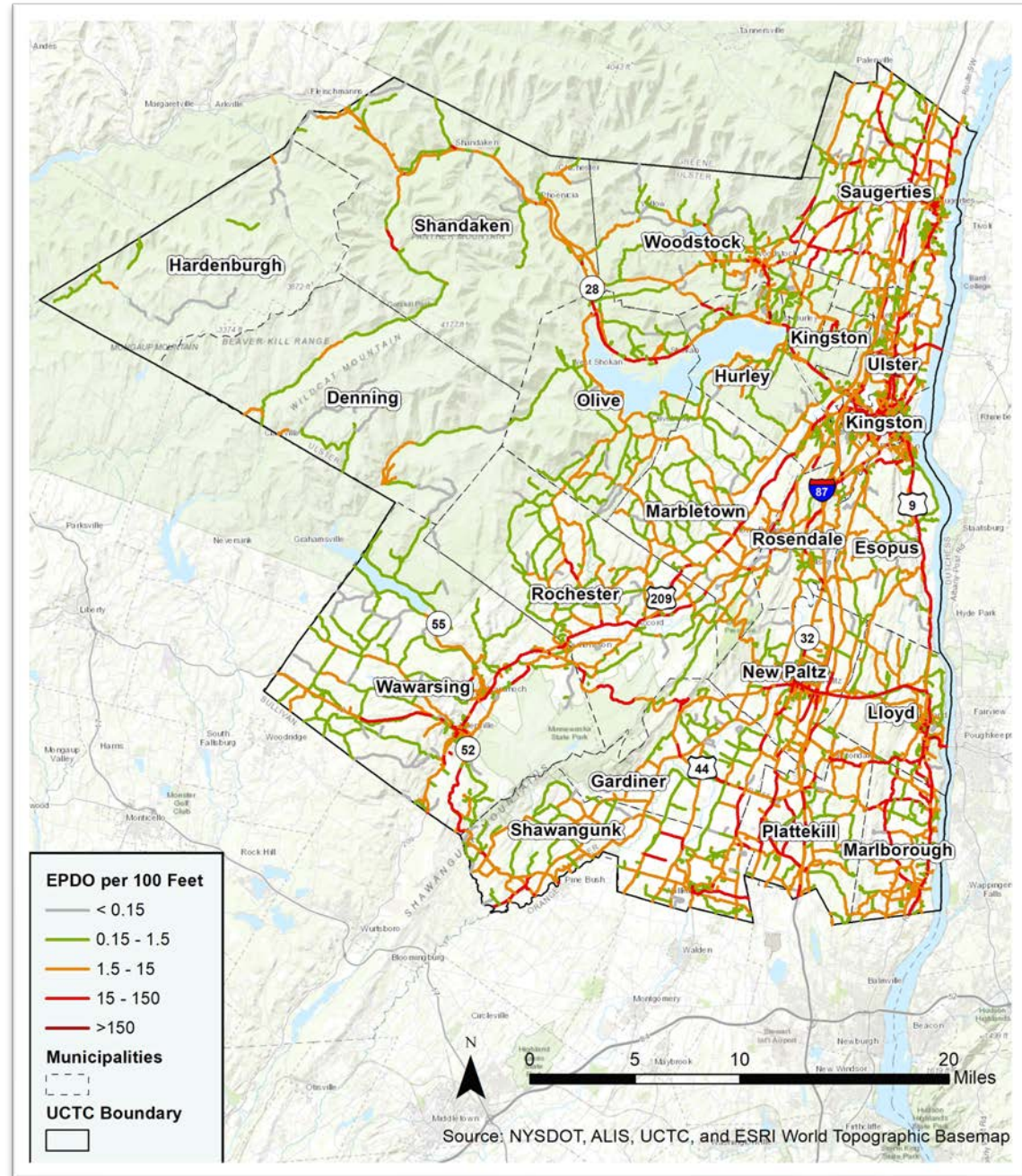
Serious Injuries and Fatalities Per Mile (2010-2018)



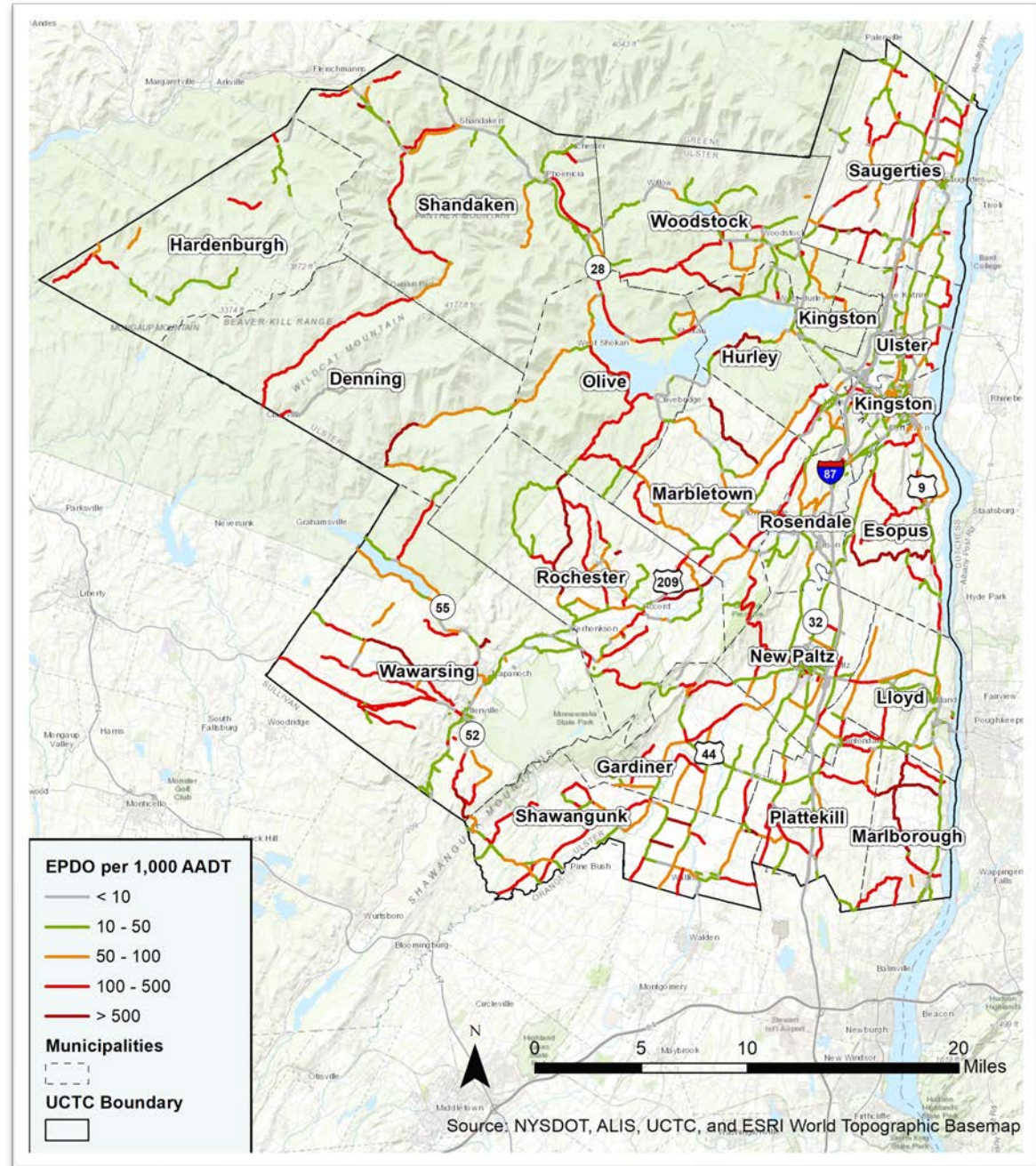
Serious Injuries and Fatalities Normalized by AADT (2010-2018)



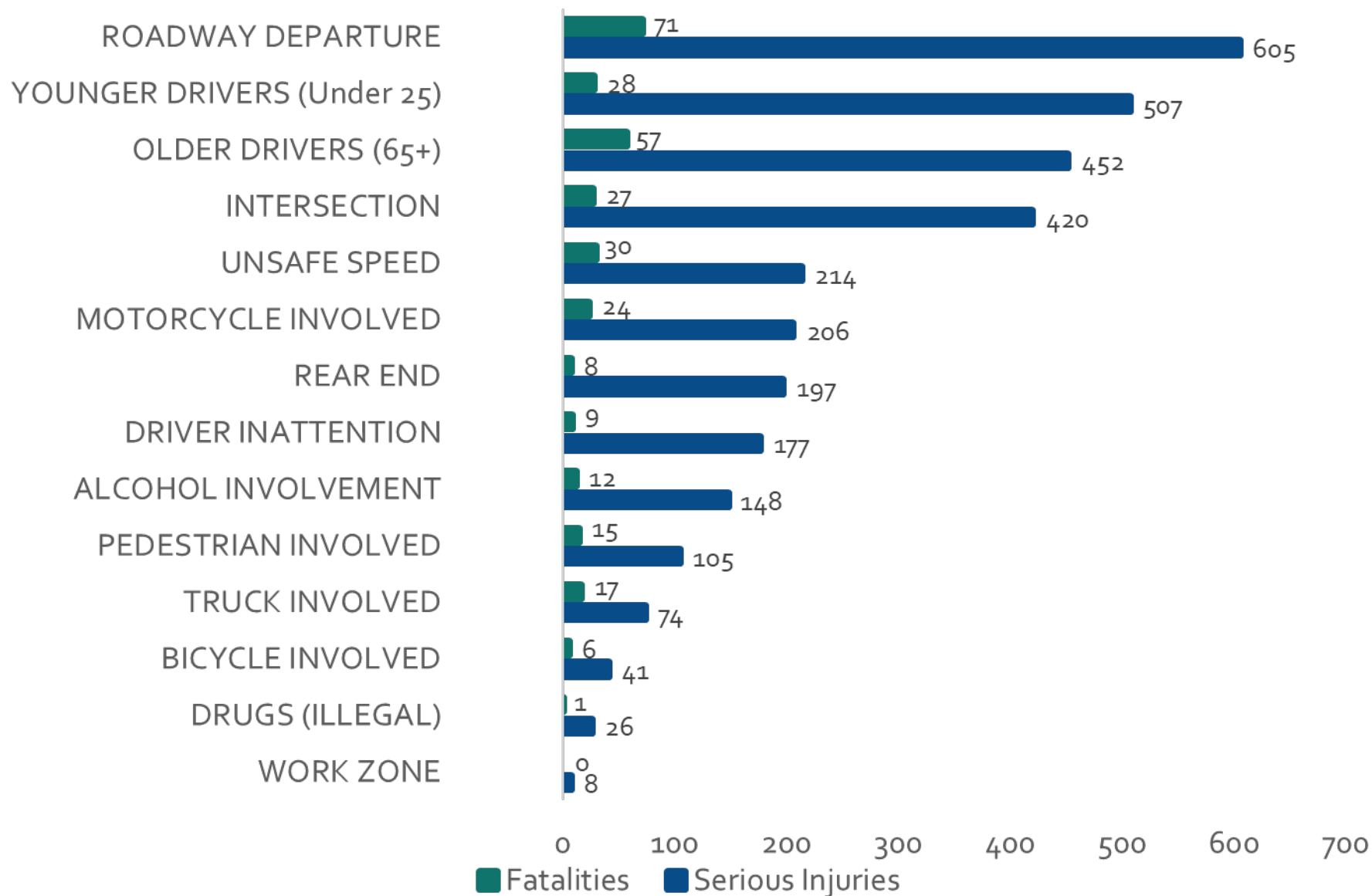
EPDO Per 100 Feet (2010-2018)



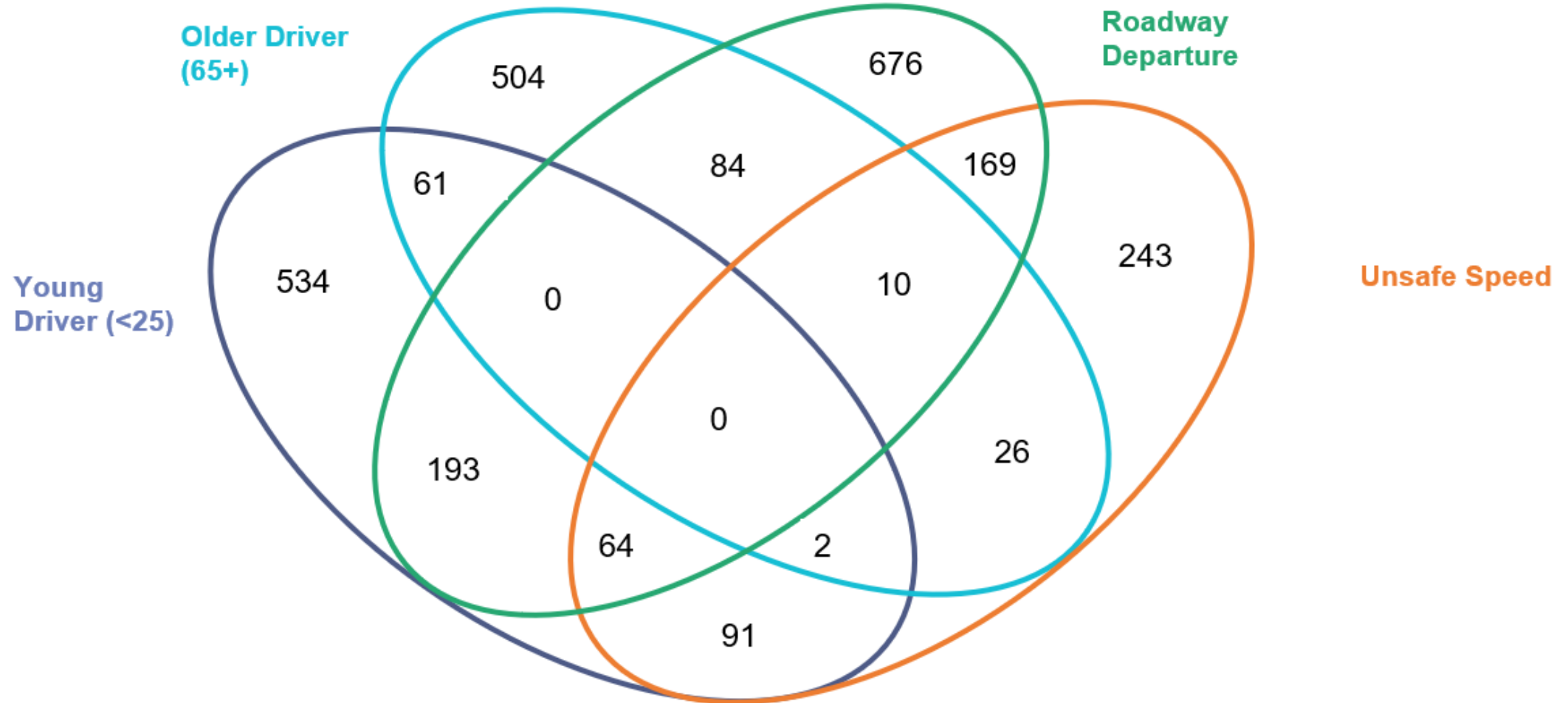
EPDO Per 1,000 AADT (2010-2018)



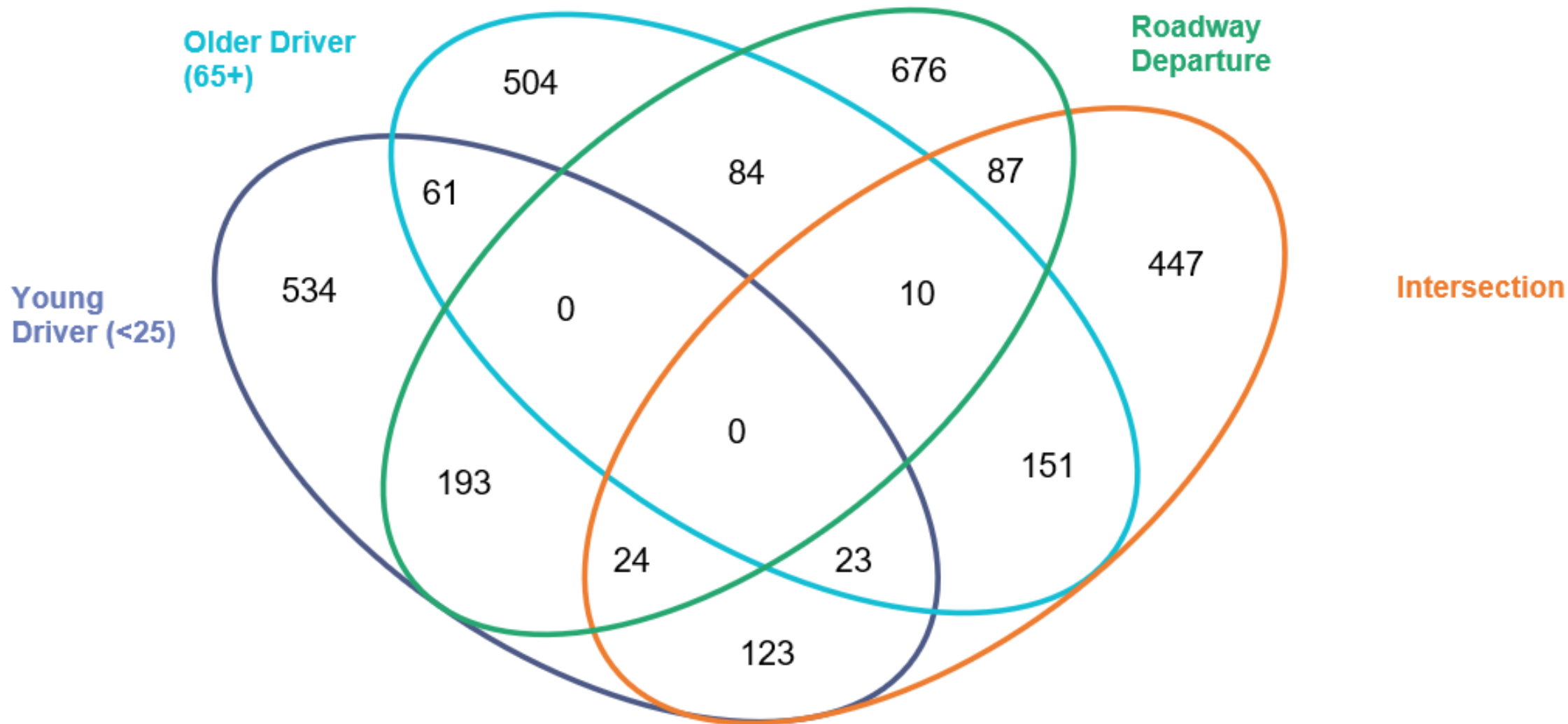
Roadway Crash Emphasis Areas, 2010-2018



Emphasis Area Overlap (2010-2018)



Emphasis Area Overlap (2010-2018)

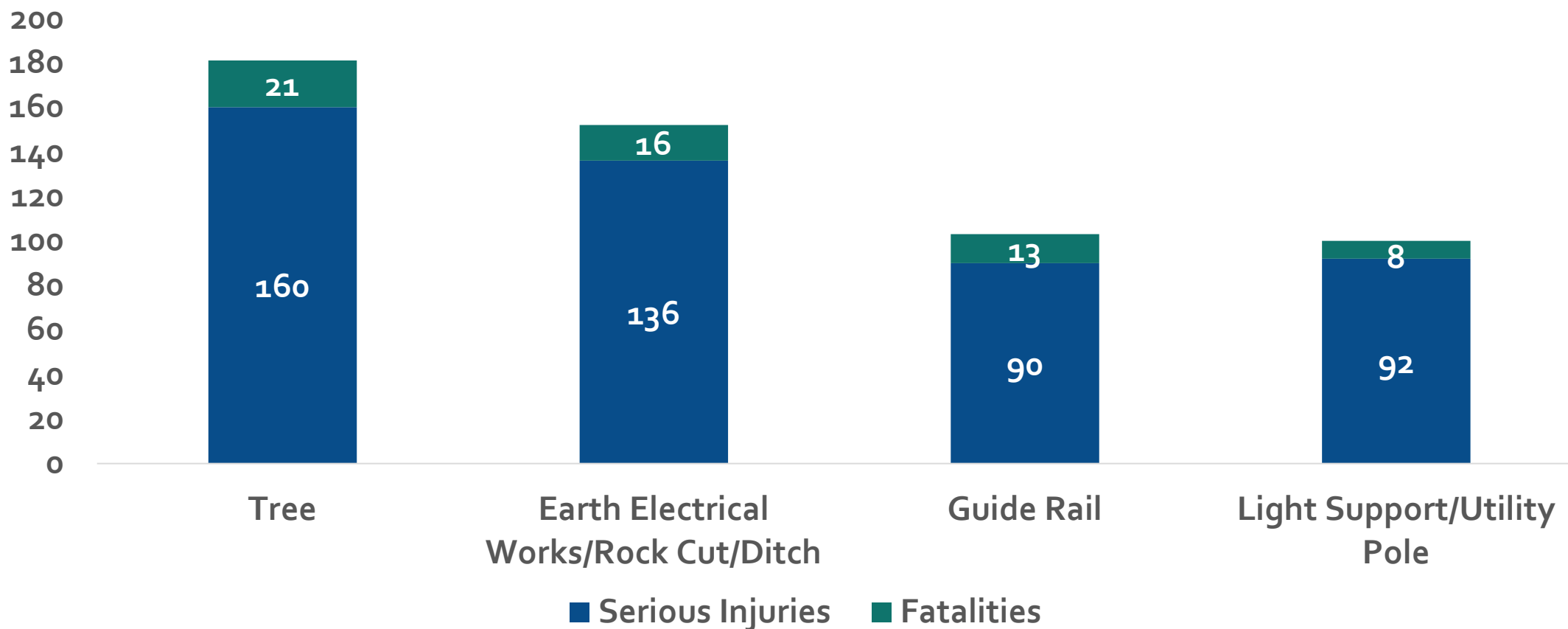


Roadway Departure Crash Severity by Year (2010-2018)

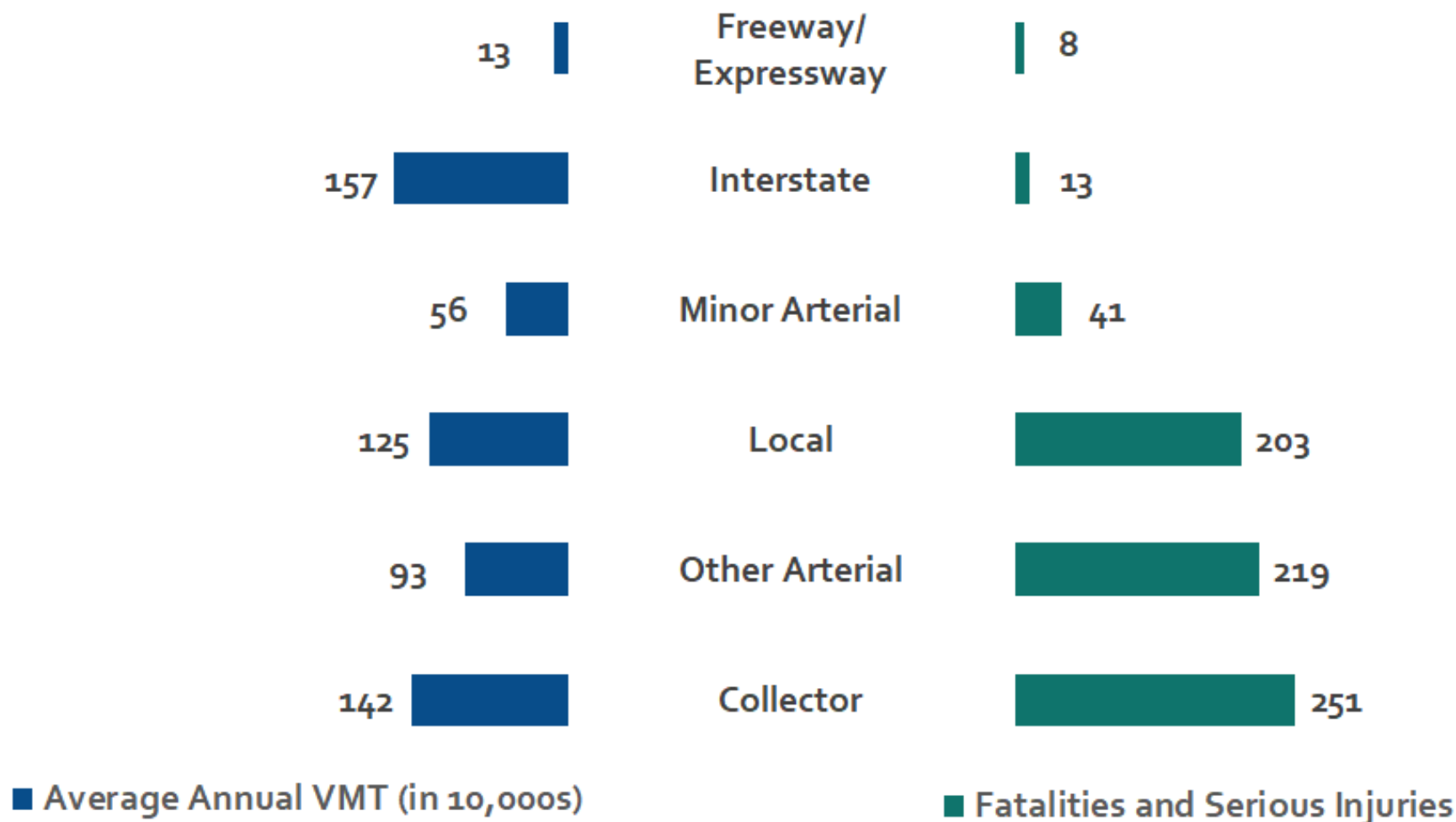
Roadway Departure Crash Severity by Year			
Year	Fatalities	Serious Injuries	Total Crashes
2010	11	95	1486
2011	9	79	1375
2012	5	76	1304
2013	8	77	1429
2014	5	58	1365
2015	8	46	1342
2016	7	51	1189
2017	11	60	1189
2018	7	63	1292
Total	71	605	11971
Average	8	67	1330

Most Common Roadway Departure Crashes (2010-2018)

Top Roadway Departure Objects



Fatalities and Serious Injuries by Functional Class— Roadway Departure Crashes Only, 2010-2018



Roadway Departure Severity by Jurisdiction

Jurisdiction	Fatalities	Serious Injuries	All Injuries	Total Crashes
Catskill	0%	0%	0%	0%
Denning	0%	1%	1%	0%
Ellenville	0%	0%	0%	1%
Esopus	6%	5%	6%	5%
Gardiner	4%	5%	4%	4%
Hardenburgh	0%	0%	0%	0%
Hurley	4%	4%	3%	3%
Kingston	6%	4%	5%	7%
Lloyd	8%	7%	6%	7%
Marbletown	3%	6%	5%	5%
Marlborough	1%	2%	4%	4%
New Paltz	1%	5%	7%	8%
Olive	6%	4%	3%	3%
Plattekill	13%	7%	8%	7%
Rochester	10%	7%	5%	5%
Rosendale	3%	5%	4%	4%
Saugerties	15%	12%	10%	10%
Shandaken	3%	1%	3%	2%
Shawangunk	1%	6%	6%	5%
Ulster	8%	6%	9%	10%
Wawarsing	7%	9%	7%	6%
Woodstock	0%	2%	3%	3%

Roadway Departure Takeaways

- » Roadway Departure emerges as a key emphasis area in Ulster County, accounting for almost 50% of fatalities where a crash type could be identified
- » Roadway Departure crashes resulting in fatalities or serious injuries are most common on local and collector roadways
- » Trees, utilities, and guide rails are the most frequent objects collided with
- » Weather and roadway condition seem to play only a minor role in roadway departure crashes—58% of RWD crashes took place during clear weather conditions vs. 66% for other crash types
- » 73% of RWD crashes took place on dry roadways compared to 82% of all other crashes

Bike/Ped Crash Severity (2010-2018)

Crash Severity by Year			
Year	Fatalities	Serious Injuries	Total Crashes
2010	1	14	88
2011	0	9	107
2012	3	18	122
2013	3	18	113
2014	2	15	107
2015	0	12	88
2016	3	17	92
2017	5	22	103
2018	4	21	97
Total	21	146	917
Average	2	16	102

Bike/Ped Crash Severity (2010-2018)

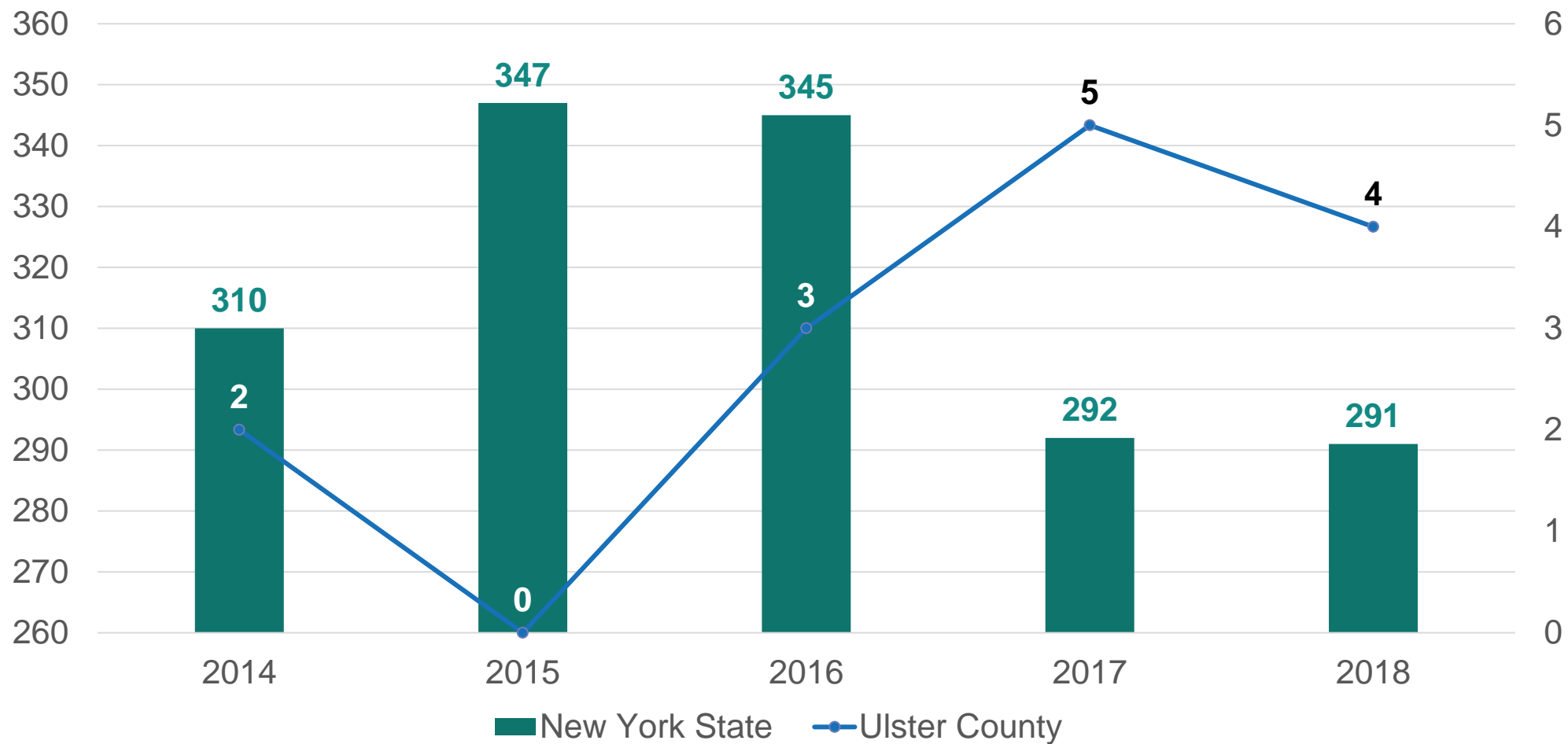
Bicyclist Crash Severity by Year

Year	Fatalities	Serious Injuries	Total Crashes
2010	0	3	31
2011	0	2	38
2012	1	8	56
2013	1	5	53
2014	1	4	51
2015	0	4	31
2016	0	3	32
2017	2	7	39
2018	1	5	33
Total	6	41	364
Average	1	5	40

Pedestrian Crash Severity by Year

Year	Fatalities	Serious Injuries	Total Crashes
2010	1	11	57
2011	0	7	69
2012	2	10	66
2013	2	13	60
2014	1	11	56
2015	0	8	57
2016	3	14	60
2017	3	15	64
2018	3	16	64
Total	15	105	553
Average	2	12	61

Pedestrian and Bicyclist Fatalities (2010-2018)



Bike/Ped Crash Severity by Jurisdiction (2010-2018)



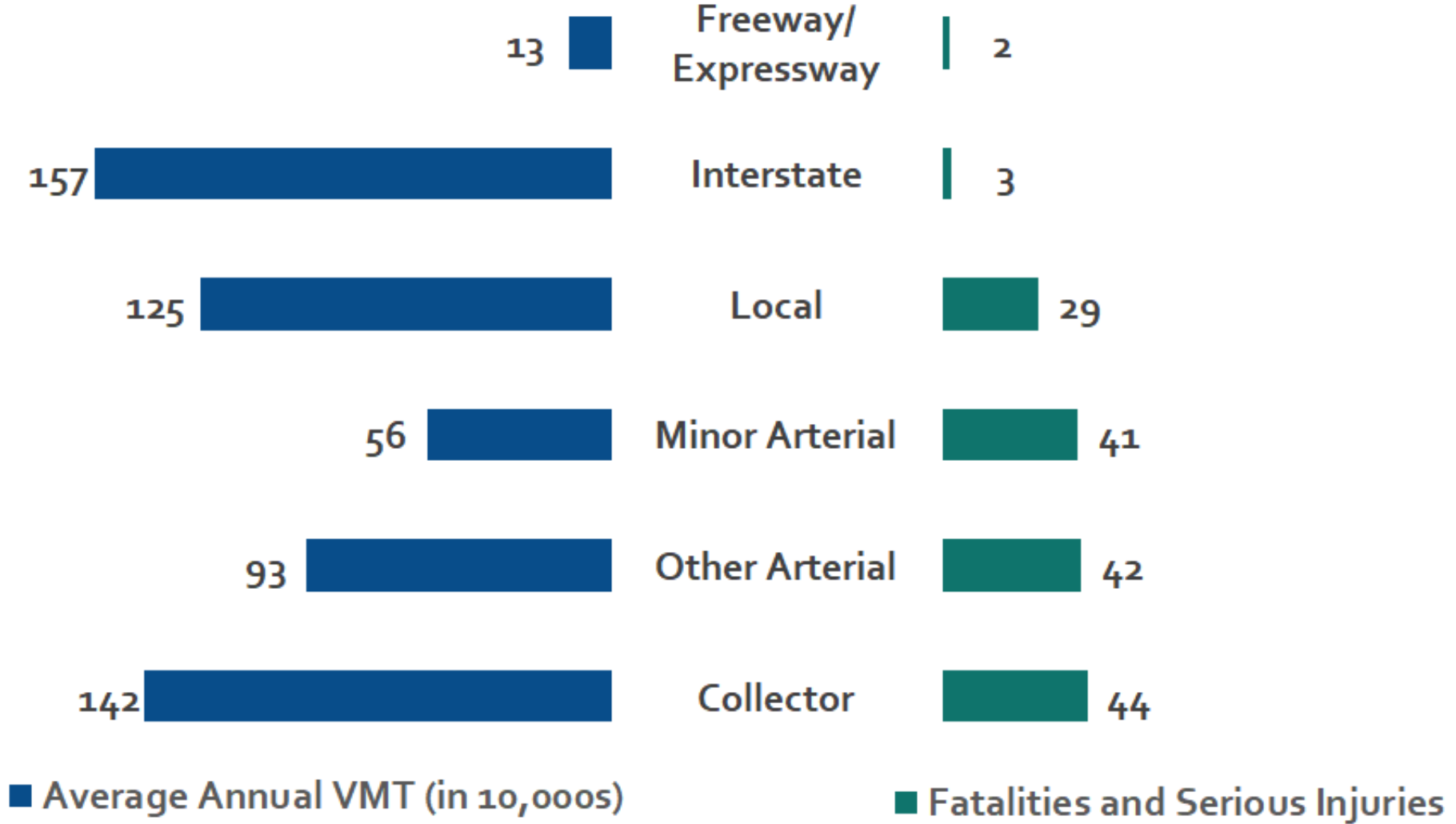
Jurisdiction	Fatalities	Serious Injuries	All Injuries	Total Crashes
Denning	0	0	0	0
Ellenville	0	9	39	42
Esopus	3	6	28	32
Gardiner	0	3	15	15
Hardenburgh	0	0	1	1
Hurley	1	1	8	9
Kingston	3	37	297	344
Lloyd	1	8	47	50
Marbletown	0	2	14	16
Marlborough	0	7	20	17
New Paltz	1	17	103	117
Olive	1	1	6	6
Plattekill	1	6	11	17
Rochester	1	5	13	15
Rosendale	2	1	7	9
Saugerties	3	15	62	64
Shandaken	0	1	2	2
Shawangunk	1	3	9	11
Ulster	3	16	79	104
Wawarsing	0	4	24	25
Woodstock	0	4	16	19
Total	21	146	801	915

Bike/Ped Crash Severity by Time of Day (2010-2018)

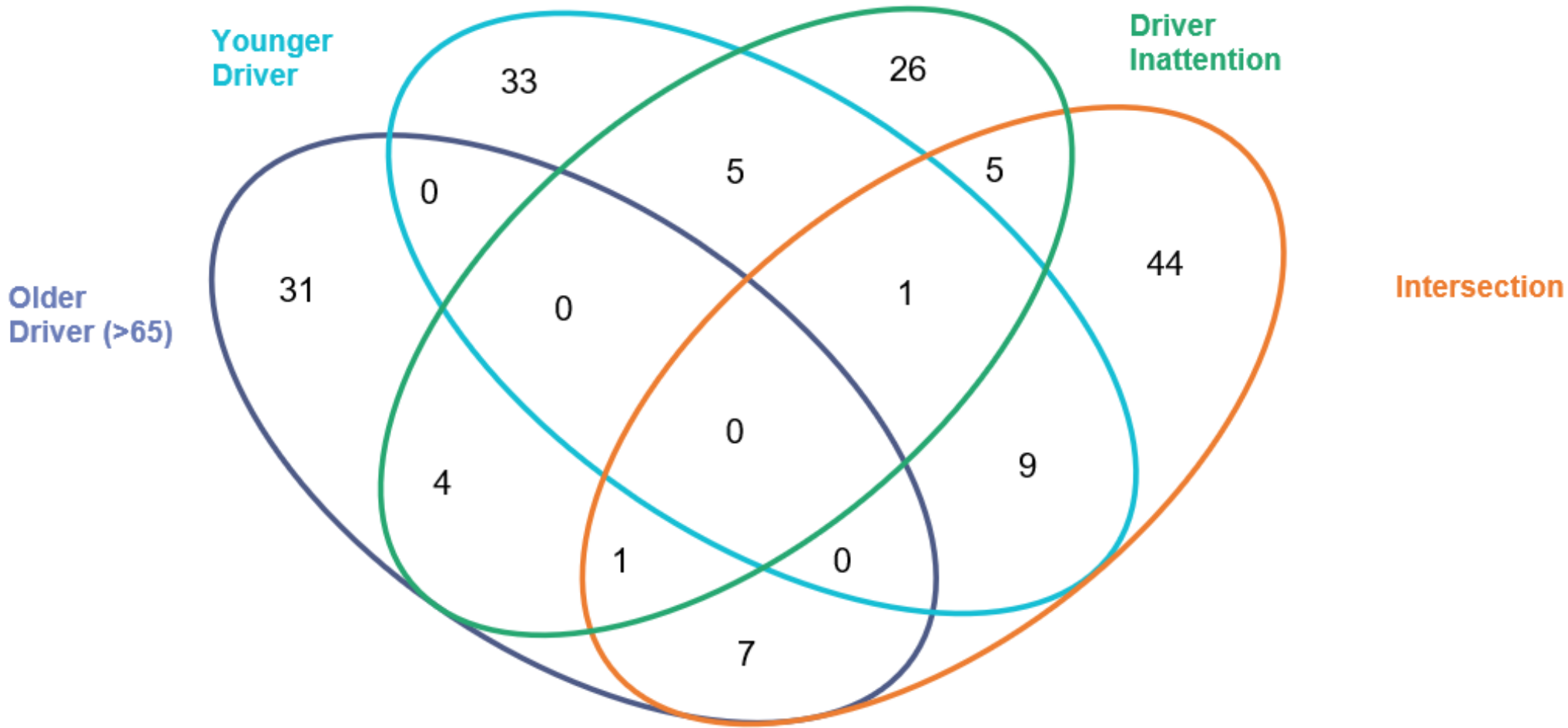


	Bicycle and Pedestrian Fatalities and Serious Injuries	All Other Fatalities and Serious Injuries
Night (8 PM - 5 AM)	14.4%	17.8%
AM Peak (5 AM - 10 AM)	15.0%	17.7%
Midday (10 AM - 3 PM)	35.0%	29.2%
PM Peak (3 PM - 8 PM)	35.0%	35.1%

Bike/Ped Crash Severity by Functional Class (2010-2018)



Emphasis Area Overlap for Bike/Ped Only (2010-2018)



Bike/Ped Takeaways

- » Fatalities and serious injuries among people walking and biking are heavily concentrated in the county's most populated jurisdictions
- » While overall numbers of fatalities and serious injuries to people walking and biking remain low, the last two years of available data show an increase
- » Collectors and Arterials are the predominant functional classes for pedestrian and bicyclist fatalities and serious injuries
- » Only 2 pedestrian serious injuries and 1 fatality overlapped with roadway departure crashes between 2010 and 2018 (collisions with guide rail and utility pole), and no roadway departure crashes involved bicyclists
- » Bike/ped serious injuries and fatalities are more likely to occur during clear conditions (69% of crashes) than vehicle occupant injuries or fatalities (63%), which is likely due to increased bike/ped volumes in clear conditions