

ITSMR Research Note

KEY FINDINGS

In 2018:

- 272 pedestrians were killed in motor vehicle crashes, compared to 268 in 2014.
- Pedestrian fatalities accounted for 29% of all traffic fatalities, up from 26% in 2014.
- Alcohol involvement was a factor for 26% of the pedestrians killed in traffic crashes, up from 22% in 2014.
- 15,767 pedestrians were injured in crashes, compared to 14,906 in 2014.
- Top 3 contributing factors in fatal and personal injury pedestrian crashes were Failure to Yield Right-of-Way (33%), Driver Inattention/Distracted (32%) and Pedestrian/Bicyclist Error/Confusion (23%).

From 2014 to 2018:

- 43% of the pedestrian fatalities occurred in New York City, 33% occurred Upstate and 24% occurred on Long Island
- 40% of all fatal pedestrian crashes occurred from 6pm to midnight, while 42% of all personal injury crashes occurred from 3pm to 9pm.
- Half of the pedestrians killed were ages 55 and older, while 49% of the pedestrians injured were ages 15-44.
- 64% of the pedestrians killed were male.

Conclusions:

- Pedestrian safety continues to be a serious concern, with pedestrians accounting for nearly 3 out of 10 fatalities on New York roadways.
- Not surprisingly, New York City remains the area of greatest concern, accounting for more than 4 out of 10 pedestrian fatalities and approximately 7 out of 10 pedestrians injured.

Crashes Involving Pedestrians on New York Roadways: 2014-2018

INTRODUCTION

New York State Vehicle and Traffic Law defines a pedestrian as any person afoot or in a wheelchair (§ 130). This includes people on personal conveyances such as roller skates, skateboards and scooters. Recognizing that pedestrian safety continues to be a serious concern in New York State, the Governor's Traffic Safety Committee (GTSC) provided funding to the Institute for Traffic Safety Management and Research (ITSMR) to analyze the data collected on motor vehicle crashes involving pedestrians. This research note presents information about pedestrian crashes, fatalities and injuries as follows:

- Overview
- Environmental Characteristics
- Time of Day and Day of Week
- Age and Gender
- Alcohol Involvement
- Crash Contributing Factors and Pedestrian Actions
- Manner of Collision and Vehicle Type
- Fatalities and Injuries by Region
- Fatalities and Injuries by County

All crash data were obtained from the NYS Department of Motor Vehicles' Accident Information System (AIS). Much of the data can be viewed through New York's Traffic Safety Statistical Repository (TSSR) at www.itsmr.org/tssr. Population data were obtained from the U.S. Census Bureau. Unless otherwise noted, unknown values were removed before calculating percentages.

OVERVIEW

Although year-to-year fluctuations in the number of pedestrians killed or injured occurred between 2014 and 2018, the number of pedestrians killed or injured in motor vehicle crashes in 2018 was nearly the same as the number killed or injured in 2014. Table 1 shows that 272 pedestrians were killed in 2018, compared to 268 in 2014. Despite this similarity, there is a marked difference with regard to the proportion of total motor vehicle fatalities that were pedestrians. As shown in Table 1, pedestrians accounted for 29% of the motor vehicle fatalities in 2018, up from 26% in 2014 and 25% in 2017. To put these percentages

for New York in perspective, on a national level pedestrians accounted for 16% of all motor vehicle fatalities in 2017, the most recent year for which national data are available.¹

Table 1 Total and Pedestrians Killed/Injured in Traffic Crashes

	2014	2015	2016	2017	2018
Total Killed	1,026	1,116	1,029	1,000	936
Pedestrians Killed	268	321	320	252	272
% of Total Killed	26.1%	28.8%	31.1%	25.2%	29.1%
Total Injured	160,497	159,025	169,884	169,752	168,304
Pedestrians Injured	14,906	13,413	15,346	15,581	15,767
% of Total Injured	9.3%	8.4%	9.0%	9.2%	9.4%

The numbers of pedestrians injured increased from 14,906 in 2014 to 15,767 in 2018, accounting for 9% of all persons injured in 2018. Again, to put this percentage in perspective, in 2017, 9% of the people injured in motor vehicle crashes in New York were pedestrians, compared to an estimated national average of 3% during the same year.¹

ENVIRONMENTAL CHARACTERISTICS

Figures 1-3 provide information on several environmental characteristics – month of the year, light condition and weather – for motor vehicle crashes in which pedestrians were killed or injured during the five-year period 2014-2018. Because the data showed little variation from year to year, the data for these five years were aggregated for analysis purposes.

In the five-year period 2014-2018, 33% of the fatal pedestrian crashes and 31% of the personal injury pedestrian crashes occurred October to December (Figure 1).

Figure 1 Fatal and Personal Injury Pedestrian Crashes by Month, 2014-2018

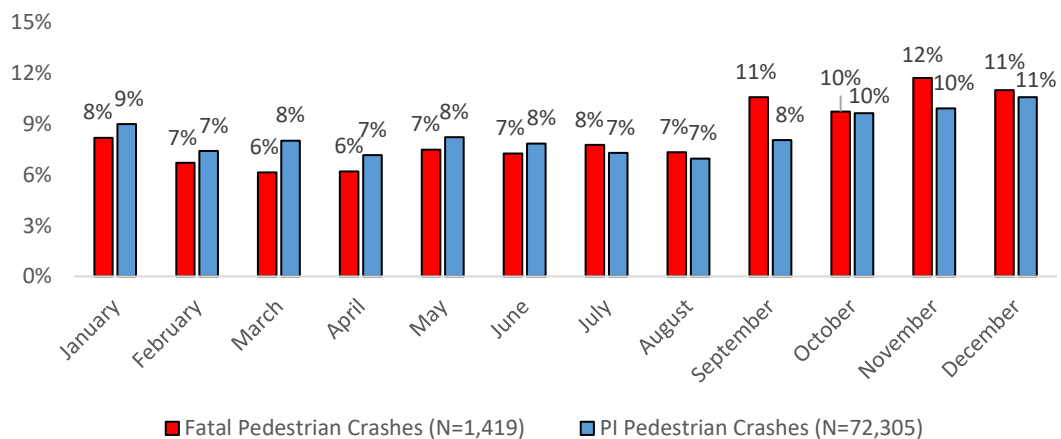


Figure 2 shows that from 2014 to 2018, 62% of the fatal pedestrian crashes occurred in the dark and 34% occurred during daylight.

In contrast, 60% of the personal injury pedestrian crashes occurred in daylight and 34% occurred in the dark.

70% of the fatal and personal injury pedestrian motor vehicle crashes from 2014 to 2018 occurred during clear weather (Figure 3).

Figure 2 Fatal and Personal Injury Pedestrian Crashes by Light Condition, 2014-2018

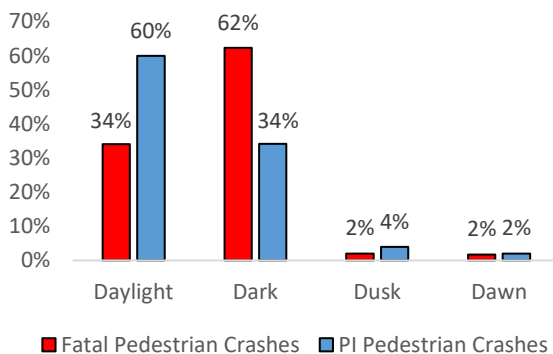
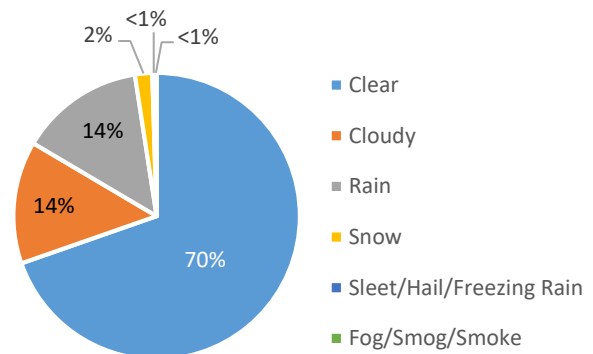


Figure 3 Fatal and Personal Injury Pedestrian Crashes by Weather, 2014-2018



TIME OF DAY AND DAY OF WEEK

Similar to the data on environmental characteristics, since the data on time of day and day of week showed little variation from year to year, the data for these five years were aggregated for analysis purposes. Figure 4 shows that the greatest percentages of fatal pedestrian crashes from 2014 to 2018 occurred during the 3-hour time periods 6 to 9pm and 9pm to midnight (both 20%). The greatest percentages of personal injury pedestrian crashes during the same years occurred from 3 to 6pm and from 6 to 9pm (both 21%).

Figure 4 Fatal Pedestrian Crashes by Time of Day, 2014-2018

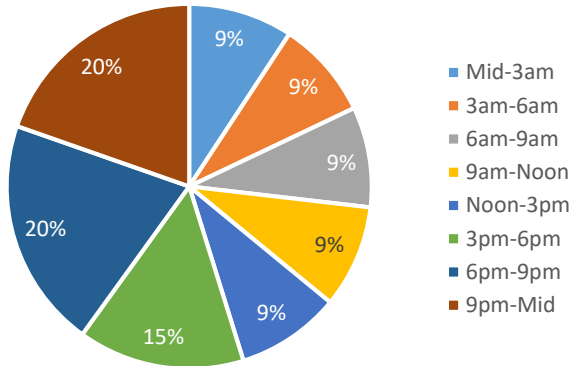


Figure 5 Personal Injury Pedestrian Crashes by Time of Day, 2014-2018

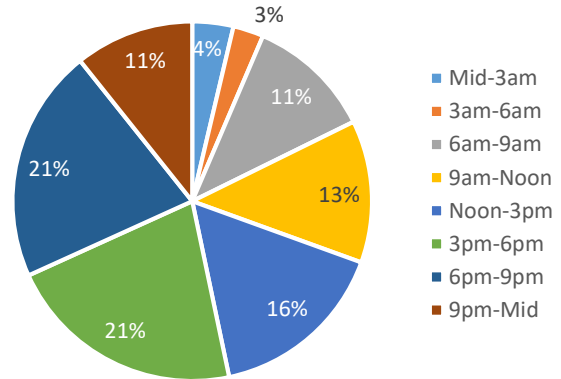
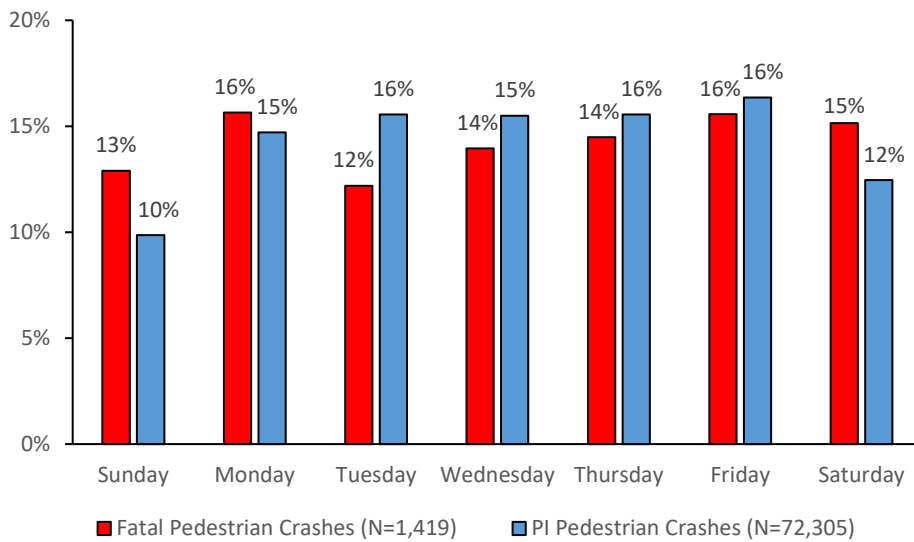


Figure 6 Fatal and Personal Injury Pedestrian Crashes by Day of Week, 2014-2018



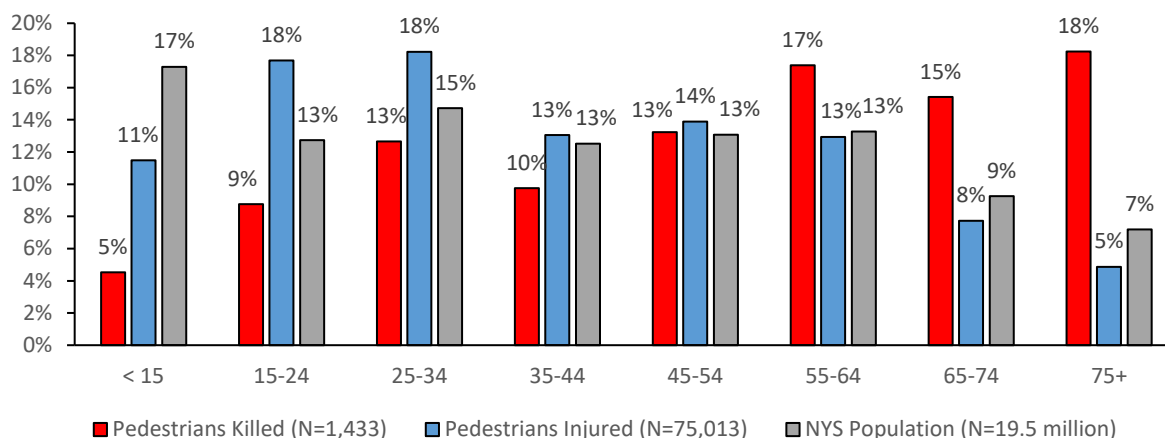
From 2014 to 2018, 28% of fatal pedestrian crashes occurred on the weekends (Saturday or Sunday), and 22% of personal injury pedestrian crashes happened on weekends (Figure 6).

AGE AND GENDER

The data on age and gender were also aggregated for the five years, 2014-2018, due to little variation in the data from year to year. As shown in Figure 7, pedestrians ages 55 and older were overrepresented with respect to fatalities in motor vehicle crashes, with half the pedestrians killed being ages 55 and older, compared to 29% of the population.

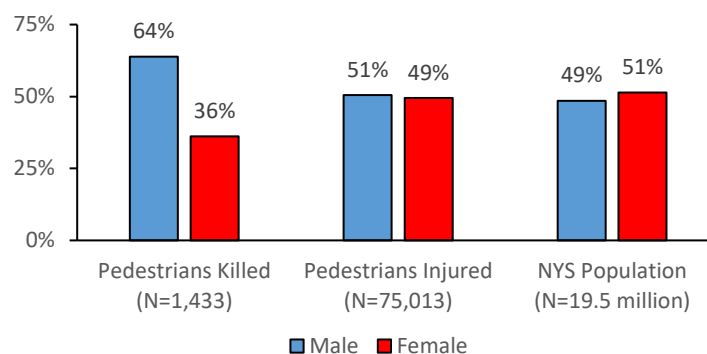
During the same years, pedestrians ages 15-34 were overrepresented with respect to persons injured in motor vehicle crashes. Figure 7 shows that 36% of the pedestrians injured were in this age group, compared to 28% of the population.

Figure 7 Pedestrians Killed and Injured by Age, 2014-2018



As indicated in Figure 8, 64% of the pedestrians killed and 51% of those injured in motor vehicle crashes from 2014 to 2018 were male, compared to 49% of males in the population of New York State during the same years.

Figure 8 Pedestrians Killed and Injured by Gender, 2014-2018



ALCOHOL INVOLVEMENT

The analyses conducted with regard to alcohol involvement focused on 1) the number of fatal and personal injury pedestrian crashes that involved alcohol and 2) the extent to which alcohol involvement was reported for the pedestrian. New York State defines an alcohol-related motor vehicle crash as one in which at least one of the following three factors is present: 1) "alcohol involvement" was noted as a contributing factor on the police crash report form, 2) a ticket for impaired driving was issued to one or more drivers involved in the crash, or 3) a BAC was reported for the impaired driver, pedestrian or bicyclist involved.

Table 2 presents the number of alcohol-related fatal and personal injury pedestrian crashes as a percentage of all fatal and personal injury pedestrian crashes from 2014 to 2018. This proportion increased slightly over the five-year period, from 3.0% in 2014 to 3.6% in 2018.

Table 2 Total Fatal and Personal Injury Pedestrian Crashes; Alcohol-Related Pedestrian Crashes

	2014	2015	2016	2017	2018
Fatal and Personal Injury Pedestrian Crashes	14,919	13,189	15,039	15,161	15,416
Alcohol-Related F & PI Pedestrian Crashes	445	398	495	534	555
% of F & PI Pedestrian Crashes	3.0%	3.0%	3.3%	3.5%	3.6%

Table 3 shows the extent to which alcohol involvement was reported for pedestrians. The data presented may underrepresent the full extent of pedestrian alcohol involvement because there is no requirement that pedestrians killed or injured in a motor vehicle crash be tested for the presence of alcohol. As indicated in Table 3, alcohol involvement was

reported for 26% of the pedestrians killed in 2018, up from 22% in 2014. The proportion of pedestrians injured for whom alcohol involvement was reported remained fairly constant at 1%-2% in each of the five years.

Table 3 Pedestrians Killed and Injured in MV Crashes; Alcohol Involvement Reported for Pedestrians Killed and Injured

	2014	2015	2016	2017	2018
Pedestrians Killed	268	321	320	252	272
Alcohol Involvement Reported	58	76	67	60	71
<i>% of Pedestrians Killed</i>	<i>21.6%</i>	<i>23.7%</i>	<i>20.9%</i>	<i>23.8%</i>	<i>26.1%</i>
Pedestrians Injured	14,906	13,413	15,346	15,581	15,767
Alcohol Involvement Reported	204	205	284	344	339
<i>% of Pedestrians Injured</i>	<i>1.4%</i>	<i>1.5%</i>	<i>1.9%</i>	<i>2.2%</i>	<i>2.2%</i>

CRASH CONTRIBUTING FACTORS AND PEDESTRIAN ACTIONS

Because data on contributing factors and pedestrian actions in crashes are only captured on the police accident report form, the analyses conducted on contributing factors and pedestrian actions focused on police-reported crashes.

- Failure to Yield Right-of-Way, Driver Inattention/Distraction and Pedestrian/Bicyclist Error/Confusion were the top three contributing factors reported in pedestrian fatal and personal injury crashes each year. As shown in Table 4, in 2018, 33% of the crashes had Failure to Yield Right-of-Way reported as a contributing factor, 32% had Driver Inattention/Distraction reported and 23% had Pedestrian/Bicyclist Error/Confusion reported.

Table 4: Select Contributing Factors in Police-Reported Fatal and Personal Injury Pedestrian Crashes

	2014 N=14,383	2015 N=12,679	2016 N=14,576	2017 N=14,792	2018 N=14,952
F & PI Pedestrian Crashes					
Contributing Factors					
Failure to Yield Right-of-Way	24.5%	26.2%	24.3%	31.0%	33.1%
Driver Inattention/Distraction	25.0%	26.6%	25.5%	29.4%	31.6%
Pedestrian/Bicyclist Error/Confusion	22.9%	22.8%	23.4%	25.6%	23.0%
Backing Unsafely	6.1%	5.6%	5.5%	5.9%	5.7%
Traffic Control Device Disregarded	3.4%	3.5%	3.4%	4.6%	4.7%
Alcohol Involvement	2.7%	2.6%	3.0%	3.2%	3.4%
Unsafe Speed	2.9%	3.4%	2.5%	2.7%	2.4%

- In each year, the most frequent police-reported pedestrian action for pedestrians killed or injured in crashes was crossing with a traffic signal (28%-33%) (Table 5). The second most frequently reported pedestrian action was crossing at a place where there was no traffic signal or crosswalk (21%-22%).

Table 5 Select Actions for Pedestrians Killed or Injured in Police-Reported MV Crashes

	2014 N=14,614	2015 N=13,219	2016 N=15,191	2017 N=15,460	2018 N=15,572
Pedestrians Killed or Injured					
Pedestrian Actions					
Crossing, With Signal	31.4%	30.4%	28.2%	31.0%	32.5%
Crossing, No Signal or Crosswalk	21.1%	21.1%	21.7%	20.9%	21.5%
Crossing, No Signal, Marked Crosswalk	8.3%	8.7%	8.8%	8.6%	9.1%
Crossing, Against Signal	9.3%	8.8%	7.8%	7.9%	7.4%

MANNER OF COLLISION AND VEHICLE TYPE

Table 6 Total and Single-Vehicle Fatal and Personal Injury Pedestrian Crashes

	2014	2015	2016	2017	2018
Total F & PI Pedestrian Crashes	14,919	13,189	15,039	15,161	15,416
Fatal Pedestrian Crashes	269	316	316	249	269
% Involving Single Vehicle	88.1%	89.9%	87.0%	91.2%	87.4%
Personal Injury Pedestrian Crashes	14,650	12,873	14,723	14,912	15,147
% Involving Single Vehicle	96.0%	96.3%	96.2%	96.3%	96.5%

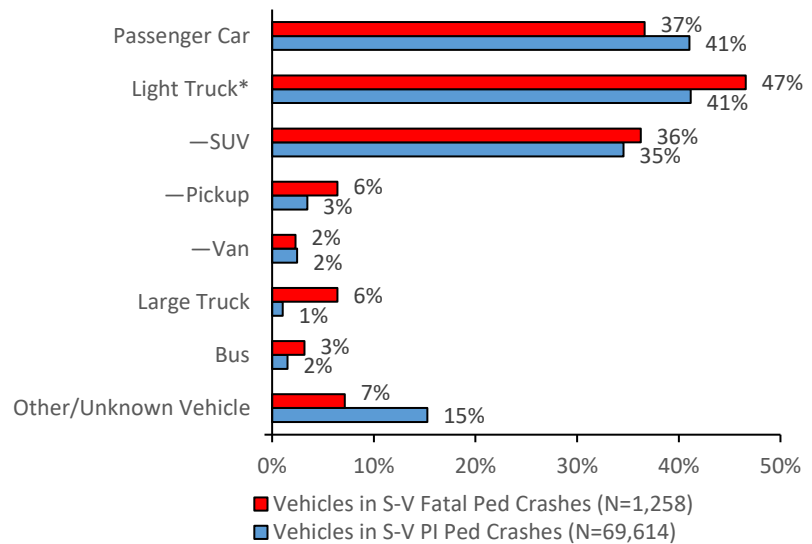
The proportion of fatal pedestrian crashes involving a single vehicle fluctuated between 2014 and 2018, ultimately declining to 87% in 2018 (Table 6). In each of the

five years, about 96% of all personal injury pedestrian crashes involved a single vehicle.

Figure 9 illustrates the proportions of the types of vehicles involved in single-vehicle fatal and personal injury pedestrian crashes during the five-year period 2014-2018.

- 47% of the vehicles involved in single-vehicle fatal pedestrian crashes from 2014 to 2018 were light trucks, including SUVs, pickups and vans. Another 37% were passenger cars.
- 41% of the vehicles involved in single-vehicle personal injury pedestrian crashes were passenger cars, and 41% were light trucks.

Figure 9 Type of Vehicle Involved in Single-Vehicle Fatal and Personal Injury Pedestrian Crashes, 2014-2018



*Light truck totals include other/unknown light trucks.

Table 7 shows a slight decrease in the proportions of passenger cars involved in single-vehicle fatal and personal injury pedestrian crashes over the five-year period, from 41% in 2014 to 40% in 2018. At the same time, the proportions of SUVs involved in these crashes increased by 6 percentage points, from 32% in 2014 to 38% in 2018.

Table 7 Vehicles Involved in Single-Vehicle Fatal and Personal Injury Pedestrian Crashes by Vehicle Type

Vehicles Involved in Single-Vehicle F & PI Pedestrian Crashes	2014 N=14,301	2015 N=12,686	2016 N=14,432	2017 N=14,594	2018 N=14,859
Vehicle Type					
Passenger Car	40.8%	40.3%	43.0%	41.2%	39.5%
Light Truck*	39.5%	40.2%	38.7%	42.9%	44.8%
—SUV	32.4%	33.0%	32.5%	36.5%	38.3%
—Pickup	3.2%	3.4%	3.4%	3.7%	3.8%
—Van	2.9%	2.9%	2.3%	2.2%	2.1%
Large Truck	1.2%	1.2%	1.1%	1.2%	1.1%
Bus	1.7%	1.7%	1.4%	1.3%	1.3%
Other/Unknown Vehicle	16.9%	16.6%	15.7%	13.4%	13.3%

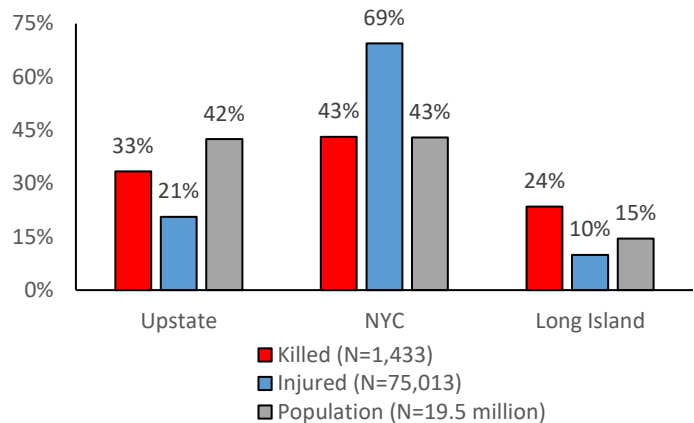
*Light truck totals include other/unknown light trucks.

FATALITIES AND INJURIES BY REGION

For purposes of analyzing crash data, New York State is typically divided into three regions: Upstate, Long Island and New York City. The Upstate region consists of the 55 counties north of New York City, the Long Island region includes the two counties of Nassau and Suffolk, and the New York City region is comprised of five counties (Bronx, Kings, New York, Queens and Richmond).

Over the five-year period 2014-2018, New York City accounted for 43% of the state's pedestrian fatalities and 69% of the pedestrians injured in motor vehicle crashes, but 43% of the state's population (Figure 10). In comparison, 33% of the pedestrians were killed and 21% were injured in the Upstate region, where another 42% of the state's population lived. The remaining 24% of the pedestrians were killed and 10% were injured on Long Island, which had 15% of the population. New York City, therefore, was overrepresented with respect to pedestrians injured, and Long Island with respect to fatalities.

Figure 10 Pedestrians Killed and Injured Compared to Population by Region, 2014-2018



FATALITIES AND INJURIES BY COUNTY

The six counties shown in Figure 11 have consistently had the greatest numbers of pedestrians killed or injured in crashes in the state. Together they accounted for 55% of New York's population but 66% of the pedestrians killed and 78% of those injured in 2018. Queens County was overrepresented in terms of pedestrian fatalities and injuries. Kings, New York and the Bronx were overrepresented in terms of pedestrians injured. Nassau and Suffolk were overrepresented with respect to pedestrian fatalities.

Figure 11 Pedestrians Killed and Injured Compared to Population by County, Top 6 Counties, 2018

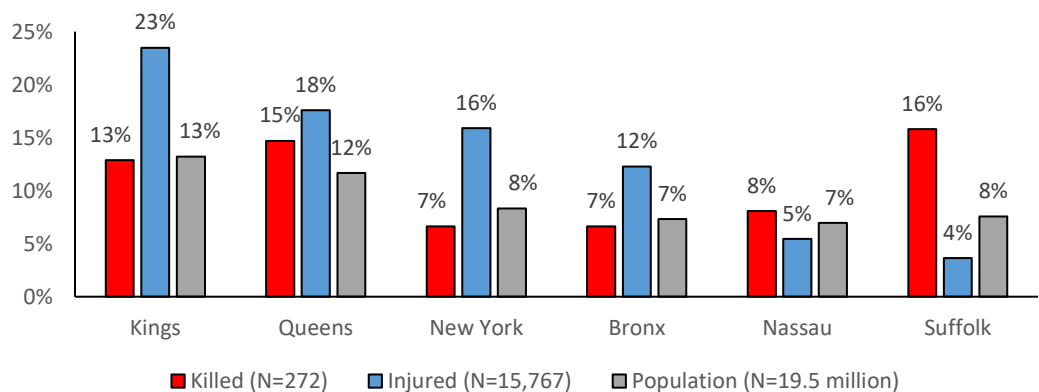
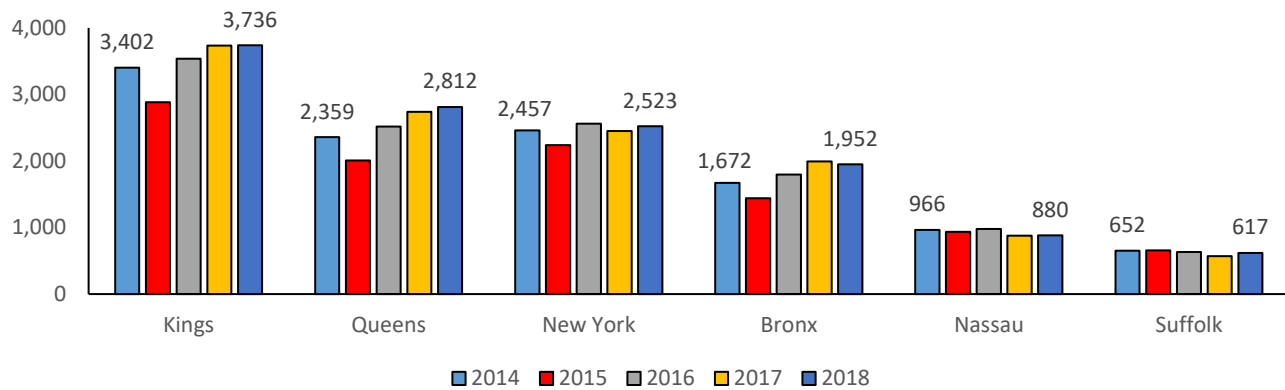


Figure 12 illustrates the up and down pattern in the numbers of pedestrians killed or injured in each of these top six counties over the five-year period 2014-2018. Compared to 2014, Nassau County experienced the greatest decrease in the number of pedestrians killed or injured in 2018 (966 vs. 880, or 9%), while Queens experienced the greatest increase (2,359 vs. 2,812, or 19%).

Figure 12 Pedestrians Killed or Injured by County, Top 6 Counties, 2014-2018



For New York State and for each of the 20 counties with the highest numbers of pedestrians killed or injured in motor vehicle crashes in 2018, Table 8 presents the total population, number of persons killed or injured, number of pedestrians killed or injured, percentage of pedestrians killed or injured of persons killed or injured, and the rates of persons killed or injured and pedestrians killed or injured per 10,000 population. In 2018:

- As shown in Figure 12 and Table 8, pedestrian fatalities and injuries were highest in Kings County (3,736), followed by Queens (2,812), New York (2,523) and Bronx (1,952).
- Statewide, 9.5% of the persons killed or injured in traffic crashes were pedestrians. The county proportions were highest in the five boroughs of New York City: New York (24.9%), Kings (16.6%), Bronx (14.4%), Queens (12.6%) and Richmond (10.8%).
- In New York State, 8.21 pedestrians were killed or injured per 10,000 population. New York County had the highest county rate (15.49), followed by Kings (14.46), Bronx (13.63), and Queens (12.34).

Table 8 Persons Killed or Injured in Motor Vehicle Crashes, Pedestrians Killed or Injured, NYS and Top 20 Counties, 2018

	Population	Persons Killed or Injured in MV Crashes	Pedestrians Killed or Injured	% of Persons Killed or Injured	Persons Killed or Injured per 10,000 Population	
					Total	Pedestrians
NEW YORK STATE	19,542,209	169,240	16,039	9.5%	86.60	8.21
COUNTY						
Kings	2,582,830	22,517	3,736	16.6%	87.18	14.46
Queens	2,278,906	22,349	2,812	12.6%	98.07	12.34
New York	1,628,701	10,145	2,523	24.9%	62.29	15.49
Bronx	1,432,132	13,525	1,952	14.4%	94.44	13.63
Nassau	1,358,343	15,978	880	5.5%	117.63	6.48
Suffolk	1,481,093	16,365	617	3.8%	110.49	4.17
Westchester	967,612	7,732	550	7.1%	79.91	5.68
Erie	919,719	9,725	460	4.7%	105.74	5.00
Richmond	476,179	3,601	390	10.8%	75.62	8.19
Monroe	742,474	5,776	300	5.2%	77.79	4.04
Onondaga	461,809	3,638	217	6.0%	78.78	4.70
Albany	307,117	2,940	191	6.5%	95.73	6.22
Rockland	325,695	2,901	154	5.3%	89.07	4.73
Orange	381,951	3,616	104	2.9%	94.67	2.72
Dutchess	293,718	2,601	99	3.8%	88.55	3.37
Schenectady	155,350	1,142	84	7.4%	73.51	5.41
Broome	191,659	1,257	73	5.8%	65.59	3.81
Oneida	229,577	1,507	73	4.8%	65.64	3.18
Rensselaer	159,442	1,031	72	7.0%	64.66	4.52
Ulster	178,599	1,678	64	3.8%	93.95	3.58

CONCLUSION

This Research Note contains information about motor vehicle crashes, fatalities and injuries involving pedestrians on New York roadways. Compared to 2014, the numbers of pedestrians killed on New York roadways in 2018 remained essentially unchanged. In 2018, 272 pedestrians were killed, compared to 268 in 2014. The numbers of pedestrians injured increased by about 6%, from 14,906 in 2014 to 15,767 in 2018. In 2018, pedestrian fatalities accounted for 29% of total fatalities, up from 26% in 2014. The analyses also indicate that New York City remains the area of greatest concern, accounting for 43% of the pedestrian fatalities and 69% of the pedestrians injured during the five-year period 2014-2018. These findings show that much work remains to reduce crashes involving pedestrians throughout the state. Results presented here should be useful to the GTSC and New York's pedestrian safety community, in developing countermeasures that address problems related to pedestrian safety.

¹National Center for Statistics and Analysis (2019, July). *Quick Facts 2017*. (Traffic Safety Facts. Report No. DOT HS 812 747). Washington, DC: National Highway Traffic Safety Administration.

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