Epi Data Brief

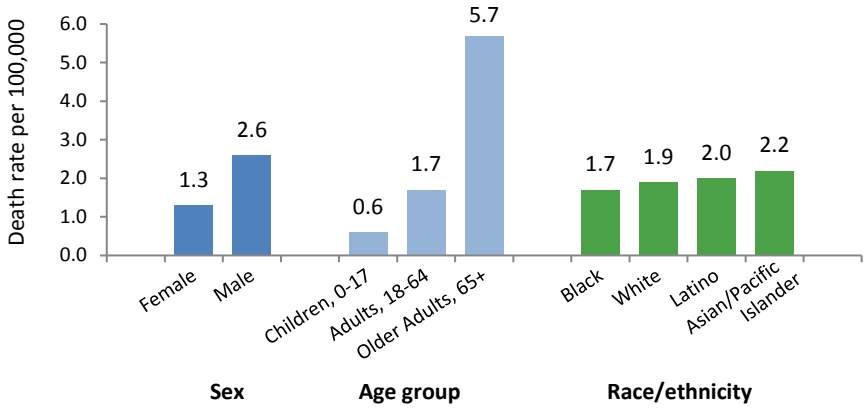
New York City Department of Health and Mental Hygiene March 2017, No. 86

Pedestrian Fatalities in New York City

Preventing traffic-related injuries and deaths is the goal of New York City's (NYC) Vision Zero initiative. Between 2012 and 2014, there were 497 pedestrian fatalities, accounting for more than half of the total 889 traffic-related fatalities in NYC.

Pedestrian fatalities varied by sex and age

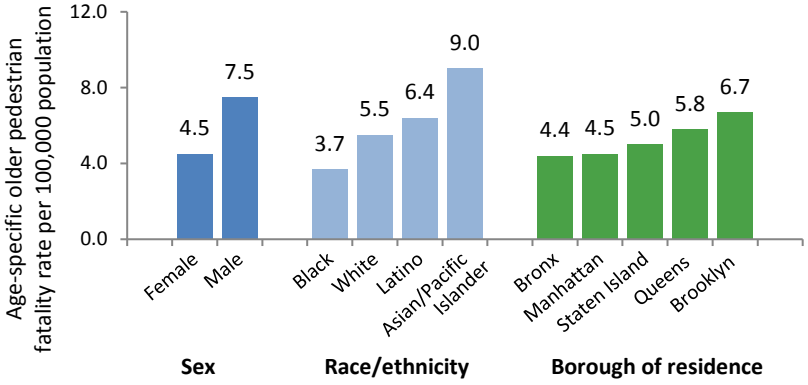
New York City pedestrian fatalities by sex, race/ethnicity and age groups, 2012–2014



White, Black, and Asian/Pacific Islander races exclude Latino ethnicity.
Latino includes Hispanic or Latino of any race.
Source: NYC DOHMH Bureau of Vital Statistics, 2012–2014

- The pedestrian fatality rate among males was twice the rate among females (2.6 vs. 1.3 per 100,000 population).
- Older adults (aged 65 years and older) had the highest pedestrian fatality rate (5.7 per 100,000 population) compared with children aged 0 to 17 years (0.6 per 100,000 population) and adults aged 18 to 64 years (1.7 per 100,000 population).
  - Older adults represented 37% of all pedestrian fatalities, but only 13% of NYC's total population.
  - Among older adults, the fatality rate was higher among males than among females (7.5 vs. 4.5 per 100,000 population).
  - Asian or Pacific Islander older adults had the highest fatality rate among all race and ethnicity groups (9.0 per 100,000 population).
  - By borough, the fatality rate was highest among older adults living Brooklyn (6.7 per 100,000 population).

New York City older adult (65 years and older) pedestrian fatalities by demographic characteristics, 2012–2014



White, Black, and Asian/Pacific Islander races exclude Latino ethnicity.
Latino includes Hispanic or Latino of any race.
Source: NYC DOHMH Bureau of Vital Statistics, 2012–2014

Definitions:

Pedestrian fatalities are defined as anyone on foot, walking, running or jogging killed from injuries sustained from a crash with a motor vehicle, motorcycle, or bicycle. For all pedestrian fatalities, both crash and death occurred in NYC.

Types of roads are defined by NYC Department of City Planning. **Highways** are considered roads with on-and-off ramps, higher speed limits and are limited to motor vehicle traffic. **Arterial roads** are typically wide streets with traffic signals that carry high volumes of traffic. **Local roads** are roads that typically have the lowest speeds.

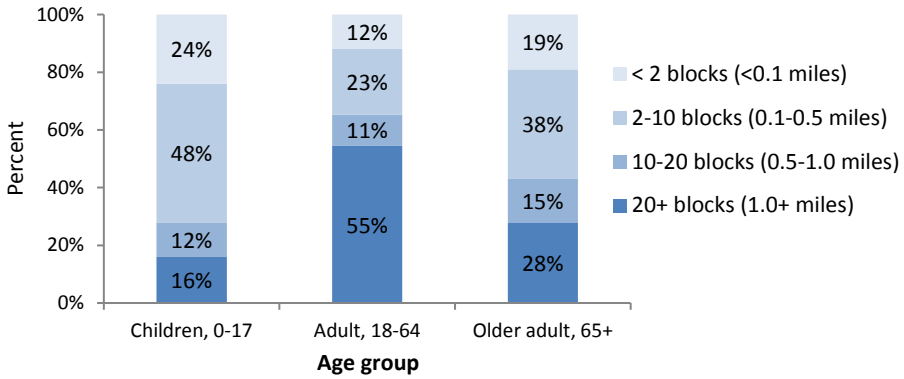
Alcohol use described in this report represents alcohol use for the pedestrian decedent involved in a crash, based on review of medical examiner reports.

Race/ethnicity: White, Black, and Asian/Pacific Islander race categories exclude Latino ethnicity. Latino includes Hispanic or Latino of any race.

Children and older adult pedestrians were struck close to home

- More than half (57%) of older adult pedestrian fatalities and nearly three-quarters (72%) of child pedestrian fatalities died from a crash that occurred within 10 blocks of home compared with 35% among adults aged 18 to 64 years.
- Among fatal pedestrian crashes, 58% occurred on an arterial road.

Distance[1] between home and crash among pedestrian fatalities by age group, New York City, 2012–2014



1. Distance between home and crash was unable to be determined for 101 pedestrian fatalities.

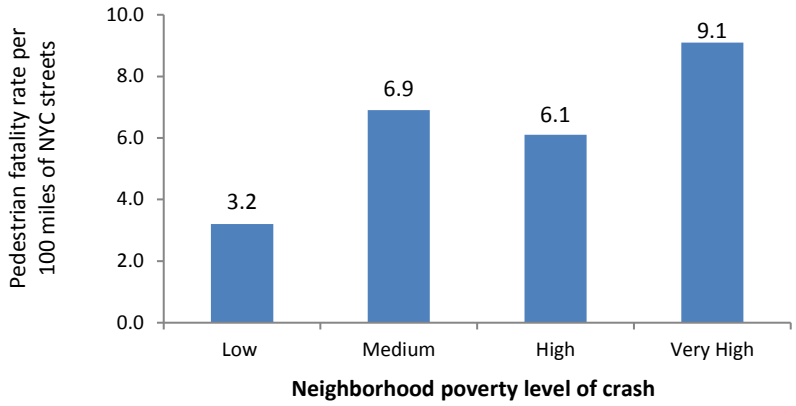
Sources: NYC Office of Chief Medical Examiner 2012–2014 and NYC DOHMH Bureau of Vital Statistics, 2012–2014

Drivers who fatally struck a pedestrian differed by age, sex and type of vehicle

- Among the 492 pedestrians fatally struck by a motor vehicle:
  - Driver sex was known for 75% of pedestrian fatalities. Among these, 83% were struck by a male driver.
  - Driver age was known for 72% of pedestrian fatalities. Among these, nearly one-third (30%) were struck by a driver aged 18 to 34 years.
  - Type of vehicle was known for 77% of pedestrian fatalities. Among these, more than three-quarters (78%) were struck and killed by cars, 12% by trucks (excluding pick-up trucks), and 9% by buses.
- Pedestrians killed in collisions with a bicycle were rare, accounting for 1% of pedestrian fatalities.

Very high poverty neighborhoods had pedestrian fatality rates three times as high as low poverty neighborhoods

Pedestrian fatality rate by poverty level of neighborhood where crash occurred,[1] 2012–2014



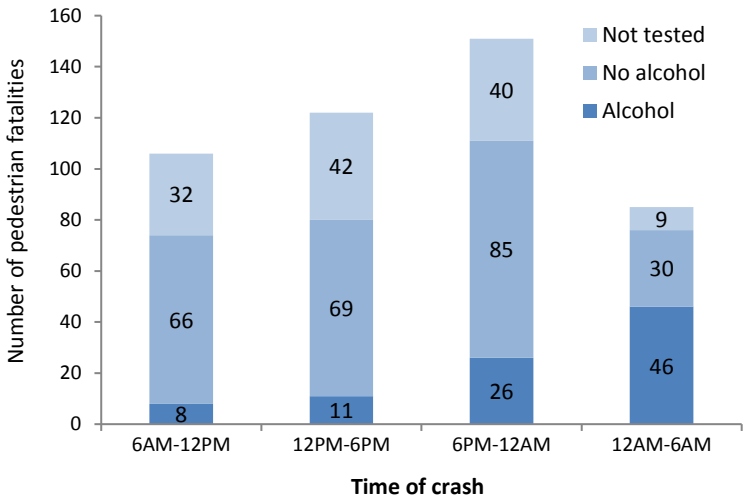
1. Neighborhood poverty is based on as the proportion of residents in the crash ZIP Code with incomes below 100% of the Federal Poverty Level (FPL), per American Community Survey (2010-2014), in four categories: Low (<10% FPL), Medium (10% to <20% FPL), High (20% to <30% FPL), and Very High Poverty (≥30% FPL).

Sources: NYC DOHMH Bureau of Vital Statistics, 2012–2014 and NYC Department of Transportation, 2012–2014

- For every 100 miles of roadway, there were nine pedestrian fatalities in very high poverty neighborhoods compared with three in low poverty neighborhoods.

Alcohol use among pedestrian fatalities varied by time of day

Pedestrian fatalities and alcohol use, by time of crash,[1] New York City, 2012–2014



1. Time of crash was unknown for 33 decedents.

Sources: NYC Office of Chief Medical Examiner 2012–2014 and NYC DOHMH Bureau of Vital Statistics, 2012–2014

- Alcohol use may impair judgment and reduce reaction times for all road users.
  - Among 497 pedestrian fatalities, 72% were tested for alcohol use. Among these, 28% had evidence of alcohol use.
  - Pedestrians who had evidence of alcohol use were more likely to be involved in a crash during the late night/early morning hours (midnight to 6 AM) than those who had no evidence of alcohol use (46% vs. 11%).
  - Pedestrians who had evidence of alcohol use were more likely than those who did not to be struck more than 20 blocks (one mile) from home (58% vs. 38%).

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Acknowledgements: Melanie Firestone, Anna Caffarelli, Liang-yu Chen, Khristina Ipapo, Seth Hostetter, Jennifer M. Norton

Data Sources:

Bureau of Vital Statistics (BVS), 2012–2014: The NYC Health Department's BVS maintains administrative data on all deaths in NYC and injury death information was obtained from death certificates. The following International Classification of Diseases (ICD)-10 codes were used to classify transportation deaths: V01-V99. The National Center for Health Statistics Injury Matrices was used to provide a framework to organize injury codes into meaningful groupings to facilitate national and international comparisons. The NYC Police Department (NYPD), the NYC Department of Transportation (DOT), and the NYC Health Department all monitor traffic-related fatalities. Each monitoring system is based on different definitions and counts presented in this report will differ from NYPD and DOT. For more information on how these counts differ, please refer to page 99 of the Summary of Vital Statistics, Technical Notes.

NYC Office of Chief Medical Examiner (OCME) File Review, 2012–2014: Pedestrian fatalities were determined through manual review of medical examiner files. These counts included pedestrian traffic-related deaths involving a crash with motor vehicle or a bicycle. These fatality records were reviewed for additional crash circumstances and toxicology information on the victim.

NYC Department of Transportation (DOT) Fatality Database, 2012–2014: The NYC DOT Fatality Database compiles information on traffic-related fatalities from police reports (MV 104-AN) and additional DOT crash analysis.

Intercensal Estimates, 2000–2014: NYC Health Department population estimates, modified from US Census Bureau intercensal population estimates 2000–2014, updated October 2015. Rates are age-adjusted to the US 2000 standard population, except those for specific age groups.

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Epi Data Tables

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Data Tables

Data Sources

Bureau of Vital Statistics (BVS), 2012-2014: The NYC Health Department's BVS maintains administrative data on all deaths in NYC and injury death information was obtained from death certificates. The following International Classification of Diseases (ICD)-10 codes were used to classify pedestrian deaths V01-V04 (.1,.9), V09.2. These counts included pedestrian traffic-related deaths involving a crash with motor vehicle or a bicycle. The National Center for Health Statistics Injury Matrices was used to provide a framework to organize injury codes inot meaningful groupings to facilitate national and international comparisons. More information can be found at: http://www.cdc.gov/nchs/injury/injury_matrices.htm

NYC Office of Chief Medical Examiner (OCME) File Review, 2012-2014: Traffic fatality records were reviewed for further information on crash role and toxicology information on the victim for 2012-2014.

NYC Department of Transportation (DOT) Fatality Database, 2012-2014: The NYC DOT Fatality Database compiles information on traffic-related fatalities from police reports (MV 104-AN) and additional DOT crash analysis.

Intercensal Estimates, 2000-2014: NYC Health Department population estimates, modified from US Census Bureau intercensal population estimates 2000-2014, updated October 2015. Rates are age-adjusted to the US 2000 standard population, except those for specific age groups.

Table 1. Pedestrian fatalites by age, sex, race/ethnicity, borough of residence, and neighborhood poverty of residence, New York City, 2012-2014

Source: Office of Chief Medical Examiner and NYC DOHMH Bureau of Vital Statistics

	Child (aged 0-17)[1]			Adult (aged 18-64)[1]			Older adult (aged 65+)[1]			Total[1]		
Demographic factor	**N**	**%**	**Rate**	**N**	**%**	**Rate**	**N**	**%**	**Rate**	**N**	**%**	**Rate**
Sex												
Male	20	63%	0.7	188	67%	2.3	97	53%	7.5	306	62%	2.6
Female	12	38%	0.5	92	33%	1.1	87	47%	4.5	191	38%	1.3
Race/ethnicity[2]												
White	8*	25%	0.6	90	33%	1.6	79	44%	5.5	178	37%	1.9
Black	8*	25%	0.6	66	24%	1.8	26	14%	3.7	100	21%	1.7
Latino	10*	31%	0.5	81	30%	1.7	43	24%	6.4	134	28%	2.0
Asian	6*	19%	0.9	35	13%	1.4	33	18%	9.0	74	15%	2.2
Borough of Residence[3]												
Bronx	7*	24%	0.6	40	17%	1.5	21	12%	4.4	68	15%	1.6
Brooklyn	11*	38%	0.6	75	31%	1.5	62	35%	6.7	148	33%	1.9
Manhattan	4*	14%	0.6	38	16%	1.1	31	17%	4.5	73	16%	1.4
Queens	6*	21%	0.4	72	30%	1.6	54	30%	5.8	132	29%	1.8
Staten Island	1*	3%	0.3	15	6%	1.7	10*	6%	5.0	26	6%	1.7
Neighborhood Poverty[4] (Residence)												
Low	3*	10%	0.4	22	9%	0.8	27	15%	3.8	52	12%	1.0
Medium	10*	34%	0.6	97	41%	1.6	74	42%	6.1	181	41%	1.9
High	8*	28%	0.6	62	26%	1.5	42	24%	5.4	112	25%	1.7
Very High	8*	28%	0.5	53	23%	1.5	35	20%	6.7	96	22%	1.9
Total[5]	32	6%	0.6	280	56%	1.7	184	37%	5.7	497	100%	1.9

[1]Figures represent three year (2012-2014) total fatalities that occurred in NYC, percentages are column percentages, and rates are age-adjusted to the US standard population per 100,000. Age was unknown for one decedent.

[2]Race/ethnicity or unknown was not noted for 11 decedents. White, Black, and Asian are self-reported race categories that exclude Latino ethnicity. Latino includes Hispanic or Latino of any race.

[3]Only includes decedents who lived in New York City; 49 decedents lived outside of New York City or no resident zip code was noted.

[4]Neighborhood poverty is based on the resident's ZIP Code and is defined as proportion of residents in a ZIP Code with incomes below 100% of the Federal Poverty Level (FPL), per American Community Survey (2010-2014), in four categories: Low (<10% FPL), Medium (10% to <20% FPL), High (20% to <30% FPL), and Very High Poverty (≥30% FPL); 49 decedents lived outside of New York City decedents or no resident zip code was noted and 6 decedents did not have a NYC resident zip code noted to determine neighborhood poverty.

[5]Figures represent three year (2012-2014) totals, percentages are row percentages, and rates are age-adjusted to the US standard population per 100,000.

*Estimates should be interpreted with caution due to small cell size counts.

Table 2. Alcohol status of pedestrian fatalities by age, sex, race/ethnicity, borough of residence, and neighborhood poverty of residence, New York City, 2012-2014

Source: NYC Office of Chief Medical Examiner

	Positive Alcohol		Negative Alcohol		Not Tested[1]		Total	
Demographic factor	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Age[2]								
Child (aged 0-17)	1	1%	24	9%	7	5%	32	6%
Adult (aged 18-64)	91	93%	136	52%	53	39%	280	56%
Older adult (aged 65+)	6	6%	101	39%	77	56%	184	37%
Sex								
Male	81	82%	143	55%	82	60%	306	62%
Female	18	18%	118	45%	55	40%	191	38%
Race/ethnicity[3]								
White	22	23%	84	33%	72	54%	178	37%
Black	28	29%	51	20%	21	16%	100	21%
Latino	42	43%	73	29%	19	14%	134	28%
Asian	5	5%	47	18%	22	16%	74	15%
Borough of Residence[4]								
Brooklyn	29	35%	70	29%	49	39%	148	33%
Bronx	15	18%	39	16%	14	11%	68	15%
Manhattan	16	20%	38	16%	19	15%	73	16%
Queens	20	24%	79	33%	33	26%	132	29%
Staten Island	2	2%	12	5%	12	9%	26	6%
Neighborhood Poverty[5](Residence)								
Low	3	4%	28	12%	21	17%	52	12%
Medium	34	44%	100	42%	47	37%	181	41%
High	23	30%	49	21%	40	31%	112	25%
Very High	17	22%	60	25%	19	15%	96	22%
Total	99	20%	261	53%	137	28%	497	100%

[1]Decedents were not tested for alcohol because of family objection to autopsy.

[2]Age was unknown for one decedent.

[3]Race/ethnicity or unknown was not noted for 11 decedents. White, Black, and Asian are self-reported race categories that exclude Latino ethnicity. Latino includes Hispanic or Latino of any race.

[4]Only includes decedents who lived in New York City; 50 decedents lived outside of New York City or no resident zip code was noted.

[5]Neighborhood poverty is based on crash ZIP Code and is defined as proportion of residents in a ZIP Code with incomes below 100% of the Federal Poverty Level (FPL), per American Community Survey (2010-2014), in four categories: Low (<10% FPL), Medium (10% to <20% FPL), High (20% to <30% FPL), and Very High Poverty (≥30% FPL); 49 decedents lived outside of New York City decedents or no resident zip code was noted and 6 decedents did not have a NYC resident zip code noted to determine neighborhood poverty.

Table 3. Pedestrian fatalities by crash circumstances (pedestrian action, location, time of day, and road type) and alcohol status, New York City, 2012-2014

Source: NYC Office of Chief Medical Examiner

	Positive Alcohol		Negative Alcohol		Not tested for Alcohol[1]		Total	
Crash circumstance	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**
Pedestrian action								
Irregular crossing action[2]	63	64%	127	49%	46	34%	236	47%
Crossing with the light	9	9%	58	22%	28	20%	95	19%
On sidewalk or median	4	4%	15	6%	9	7%	28	6%
Unknown[3]	23	23%	61	23%	54	39%	138	28%
Distance[4] from crash location to home								
Blocks[5] (Miles)								
< 2 blocks (<0.1)	9	9%	34	13%	17	12%	60	15%
2-10 blocks (0.1-0.5)	15	15%	74	28%	32	23%	121	31%
10-20 blocks (0.5-1.0)	9	9%	26	10%	14	10%	49	12%
20+ blocks (1.0+)	45	45%	81	31%	40	29%	166	42%
Unknown	21	21%	46	18%	34	25%	101	26%
Time of Day								
Morning (6:00am-12:00pm)	8	8%	66	25%	32	23%	106	21%
Midday (12:00pm-6:00pm)	11	11%	69	26%	42	31%	122	25%
Afternoon/Evening (6:00pm-12:00am)	26	26%	85	33%	40	29%	151	30%
Night/Early Morning (12:00am-6:00am)	46	46%	30	11%	9	7%	85	17%
Unknown	8	8%	11	4%	14	10%	33	7%
Road Type								
Local	13	13%	65	25%	39	28%	117	24%
Arterial	66	67%	154	59%	67	49%	287	58%
Highway	14	14%	13	5%	1	1%	28	6%
Unknown	6	6%	29	11%	30	22%	65	13%
Total	99	20%	261	53%	137	28%	497	100%

[1]Decedents were not tested for alcohol because of family objection to autopsy.

[2]Irregular crossing action includes crossing against the light at a midblock, crossing against the light at an intersection, crossing on a highway, or crossing in the street not at an intersection.

[3]Not noted or unknown crossing action, not noted or unknown if crossing at a signalized intersection or midblock.

[4]Distance from crash location to home was calculated using ArcGIS v10.2.1 street network analysis: Streets_LION_DCP_2012; distance from home to crash was unavailable for 100 pedestrians, age was unknown for one decedent.

[5]City blocks calculated as 1 mile = 20 city blocks.

Table 4. Pedestrian fatalities by crash circumstances (location, time of day, and road type) and age, New York City, 2012-2014

Source: NYC Office of Chief Medical Examiner

	Child (aged 0-17)		Adult (aged 18-64)		Older Adult (aged 65+)		Total	
Crash circumstance	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**
Distance[1] from crash location to home								
Blocks[2] (Miles)								
< 2 blocks (<0.1)	6	24%	25	12%	29	19%	60	15%
2-10 blocks (0.1-0.5)	12	48%	50	23%	59	38%	121	31%
10-20 blocks (0.5-1.0)	3	12%	23	11%	23	15%	49	12%
20+ blocks (1.0+)	4	16%	118	55%	44	28%	166	42%
Time of Day								
Morning (6:00am-12:00pm)	7	22%	45	16%	54	29%	106	21%
Midday (12:00pm-6:00pm)	12	38%	52	19%	58	32%	122	25%
Afternoon/Evening (6:00pm-12:00am)	11	34%	89	32%	50	27%	151	30%
Night/Early Morning (12:00am-6:00am)	1	3%	77	28%	7	4%	85	17%
Unknown	1	3%	17	6%	15	8%	33	7%
Road Type								
Local	9	28%	56	20%	51	28%	117	24%
Arterial	18	56%	164	59%	105	57%	287	58%
Highway	0	0%	26	9%	2	1%	28	6%
Unknown	5	16%	34	12%	26	14%	65	13%
Total	32	6%	280	56%	184	37%	497	100%

[1]Distance from crash location to home was calculated using ArcGIS v10.2.1 street network analysis: Streets_LION_DCP_2012; distance from home to crash was unavailable for 100

[2]City blocks calculated as 1 mile = 20 city blocks.

Table 5. Pedestrian fatalities by age and vehicle struck by, New York City, 2012-2014

Source: NYC Department of Transportation Fatality Database and NYC Office of Chief Medical Examiner

	Child (aged 0-17)		Adult (aged 18-64)		Older Adult (aged 65+)		Total[1]	
	N	%	N	%	N	%	N	%
Type of motor vehicle (N=492)								
SUV/Jeep/Van/Pick-up	14	44%	77	28%	63	34%	154	31%
Car (other than SUV/Jeep/Van/Pick-up)	6	19%	88	31%	44	24%	138	28%
Truck	4	13%	24	9%	15	8%	44	9%
Bus	0	0%	22	8%	12	7%	34	7%
Motorcycle	0	0%	3	1%	3	2%	6	1%
Other	1	3%	2	1%	0	0%	3	1%
Unspecified	7	22%	61	22%	45	24%	113	23%
Type of non-motor vehicle (N=5)								
Bicycle	0	0%	3	1%	2	1%	5	1%
Total	32	7%	280	61%	184	40%	497	100%

[1]Age was unknown for one decedent.

Table 6. Pedestrian fatalities rates by neighborhood poverty of crash, New York City, 2012-2014

Source: NYC Office of Chief Medical Examiner

	Total		
Neighborhood poverty group[1]	**N**	**%**	**Fatality rate per 100 miles of street network**
Low	74	15%	3.2
Medium	207	43%	6.9
High	100	21%	6.1
Very high	103	21%	9.1
Total	484	100%	6.0

[1]Neighborhood poverty is defined as a proportion of residents in a crash ZIP Code with incomes below 100% of the Federal Poverty Level (FPL), per American Community Survey (2010-2014), in four categories: Low (<10% FPL), Medium (10% to <20% FPL), High (20% to <30% FPL), and Very High Poverty (≥30% FPL). 13 decedents did not have a valid ZIP Code to determine neighborhood poverty of crash.