



# **SUPPORTING DATA ANALYSIS FOR THE VISION ZERO 2030 ACTION PLAN**

**JULY 2021**

## ABOUT THIS DOCUMENT

This report is an addendum to Montgomery County’s Vision Zero 2030 Action Plan. It provides additional context to the data presented in the plan and other trends shaping traffic safety in the County. This version replaces the draft report released in April 2021 to include the high injury network map and additional crash data by roadway attributes.

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## 2015-2019 Collision Trends

In developing the 2030 Action Plan, collision data provided by the Montgomery County Police Department (MCPD) covering 2015 to 2019 were analyzed. There were 1,419 collisions that resulted in 1,461 serious injuries and 163 fatalities to drivers, passengers, pedestrians, and bicyclists.

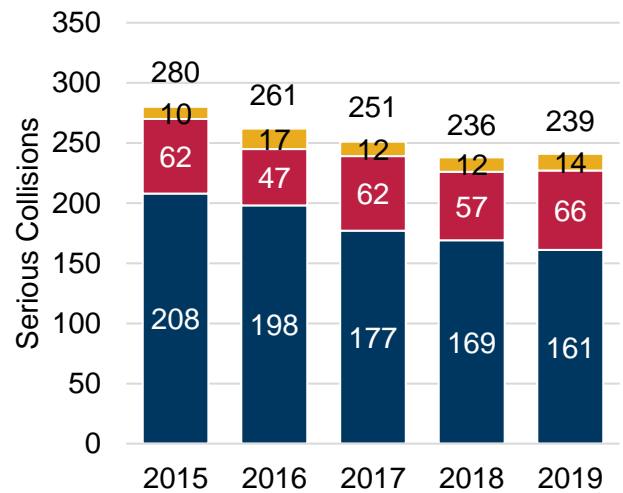
From 2015 to 2019, the number of serious collisions declined 15%, but from 2018 to 2019 were largely unchanged at 236 and 239, respectively.<sup>i</sup> The declines were largely due to declining serious and fatal crashes for motor vehicle occupants. The number of serious injury crashes for people biking and walking increased from 72 in 2015 to 80 in 2019.

The County averaged 30 fatal collisions a year from 2015 to 2019. Fatal collisions declined from 2015 to 2017, but increased after 2017. People biking and walking represented 45% of fatal collisions, which was significantly higher than the 14% of total injury collisions recorded during the five years.

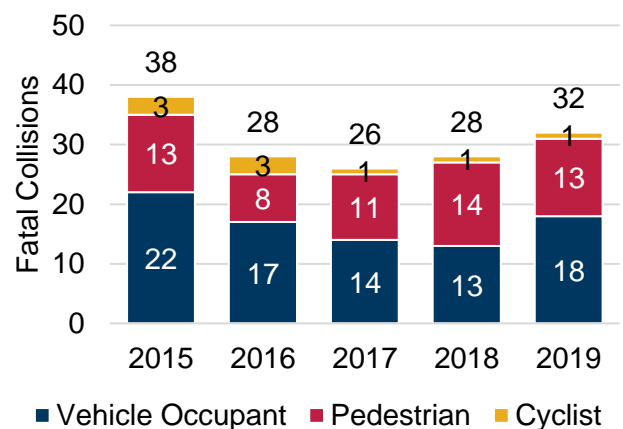
Note that the crash data presented do not include every collision that occurred in the county during the analysis period. The main areas excluded are the interstates (I-495 and I-270), the Intercounty Connector (MD-200), and roads maintained by the Federal Government (Clara Barton Parkway). These areas were omitted for two reasons. First, MCPD's records did not include reports from all police departments operating within Montgomery County. Second, the action plan was designed to focus on areas where the County Government has some control over the roadway for design or enforcement.

Reports Included	Reports Not Included
Montgomery County PD	MD State Police
Rockville PD	MD Transit Authority
Gaithersburg PD	Chevy Chase Police
M-NCPPC Park Police	Federal Agencies
Takoma Park	

**Serious Collisions, 2015-2019<sup>ii</sup>**



**Fatal Collisions, 2015-2019**



<sup>i</sup> See the full definition of a serious/serious injury in the [appendix](#).

<sup>ii</sup> Collisions with both fatal and serious injuries are shown in the fatal collisions chart to avoid double counting

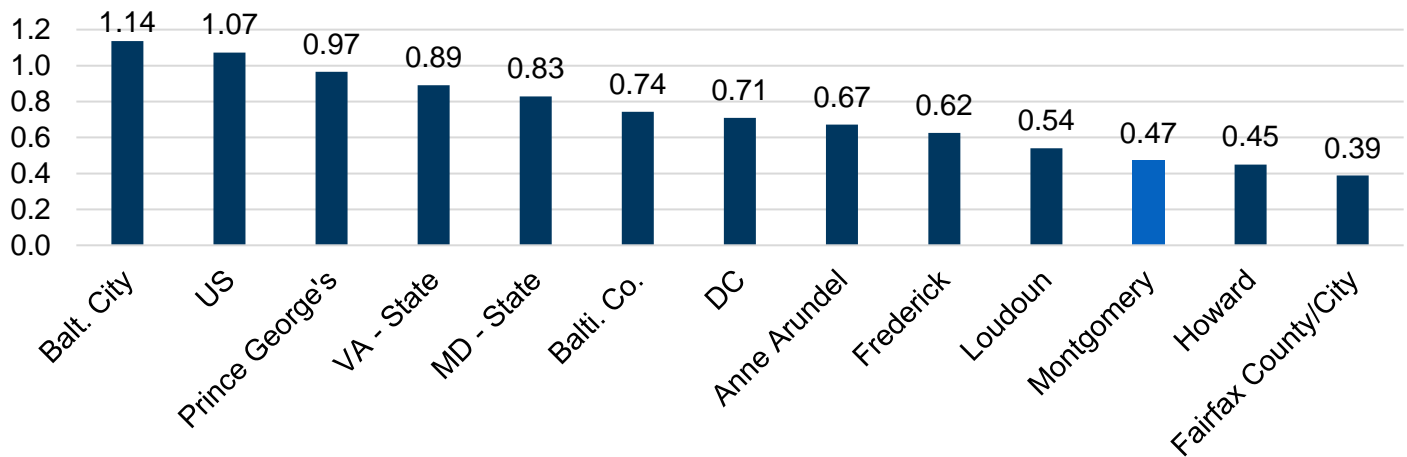
crashes. There were 1,267 serious crashes, but due to five crashes having more than one type of roadway user seriously injured, the total if adding up all road users was 1,272 serious crashes.

## Benchmarking Montgomery County's Fatal Crash Rate

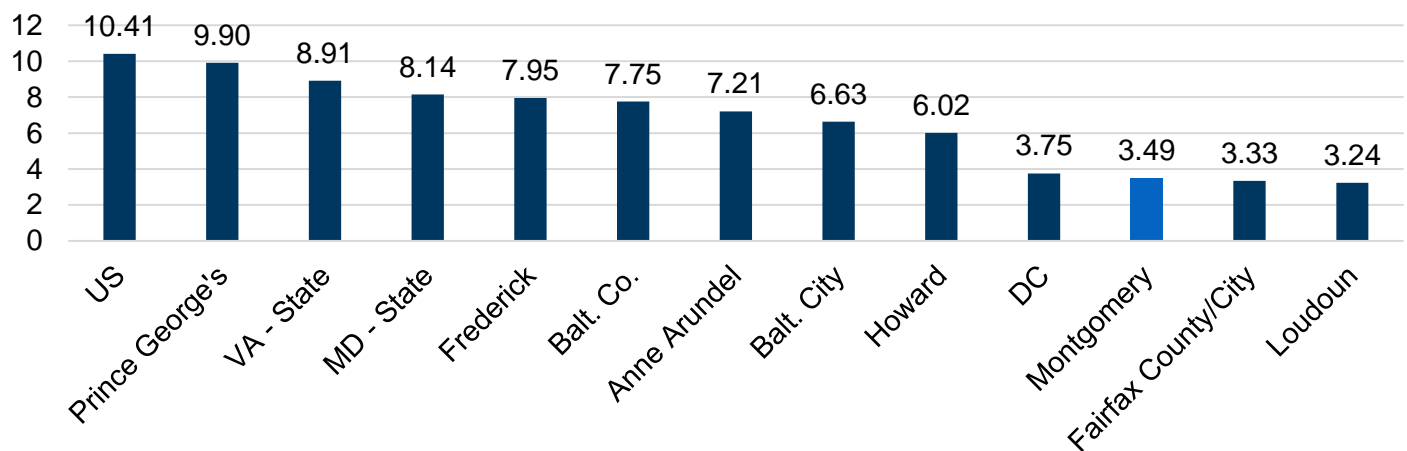
The National Highway Traffic Safety Administration (NHTSA) maintains a census of all motor vehicle crashes with a fatal injury in the United States. Using NHTSA data combined with data on population from the US Census Bureau and state motor vehicle traffic volume allowed for comparing fatality rates across jurisdictions. The two charts below compare Montgomery County's 2015 to 2019 fatal crashes per 100 million vehicle miles traveled (VMT) and per 100 thousand population to other cities and counties in the Greater Washington and Baltimore Metropolitan Areas.<sup>iii</sup>

Montgomery County's fatal crash rate was well below national and state averages for 2015 to 2019. The County's fatal crash rate per 100 million VMT was 78% below the national and 55% below the state average. Compared to 9 peer cities and counties, Montgomery County had the third lowest fatal crash rate.

### 2015-2019 Fatal Crash Rate per 100 Million Vehicle Miles Traveled (VMT)



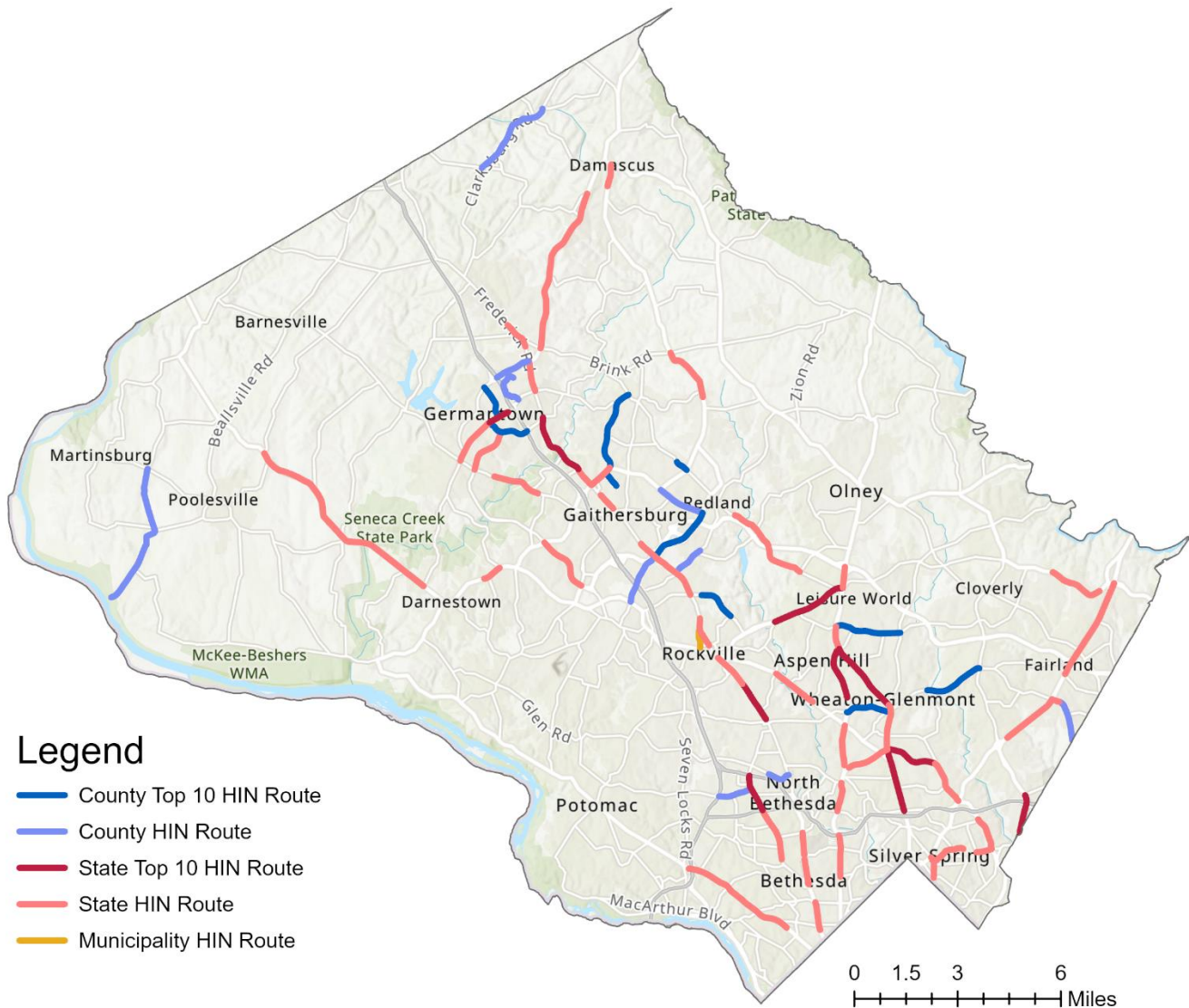
### 2015-2019 Fatal Crash Rate per 100 Thousand Population



<sup>iii</sup> To allow for comparisons across jurisdictions, the Montgomery County statistics above include all roads in the county (local roads and highways, interstates, and federal roads).




## High Injury Network

The high injury network (HIN) highlights roadway corridors with the highest concentration of serious and fatal crashes. The corridors shown on the map below represented 3% of the non-interstate roadway network and 41% of serious and fatal crashes.<sup>iv</sup> The following pages provide detailed crash and roadway characteristic data for the top ten priority routes for the State and County Governments. High injury network roadways were concentrated in Mid-County (Wheaton, Glenmont, Aspen Hill) and UpCounty (Germantown and Gaithersburg) regions. Prioritizing safety projects at these high crash locations is crucial to achieve interim crash reduction targets and the ultimate Vision Zero goal.






<sup>iv</sup> As with the first Vision Zero Action Plan, the 2030 Action Plan does not include freeways (I-495, I-270, I-370, and MD 200) and federally maintained roads such as Clara Barton Parkway as part of the HIN. The County Government partners with the State Government for safety issues on these routes.

## Top 10 Priority Corridors for State-Maintained Roadways

Roadway	Total Serious and Fatal Crashes	 Seriously Injured or Killed	 Seriously Injured or Killed	 Seriously Injured or Killed	Serious and Fatal Crashes per Mile per Year	Serious and Fatal Crashes per 100M VMT*	Number of Travel Lanes	Speed Limit in 2019
<b>Georgia Ave</b> from University Blvd W to Forest Glen Rd	28	15	13	0	3.0	14.9	6	35 MPH
<b>Georgia Ave</b> from Connecticut Ave to Layhill Rd	22	14	7	1	2.0	17.5	6	45 MPH
<b>University Blvd W</b> from Georgia Ave to Arcola Ave	17	10	7	0	2.2	21.1	6	40 MPH
<b>Norbeck Rd</b> from Baltimore Rd to Georgia Ave	17	16	1	0	1.5	9.0	4	45 MPH
<b>New Hampshire Ave</b> from Powder Mill Rd to County Line	16	9	6	1	2.9	12.8	6	40 MPH
<b>Frederick Rd</b> from Middlebrook Rd to Watkins Mill Rd	15	7	7	1	1.5	11.5	6	40 MPH
<b>Connecticut Ave</b> from Georgia Ave to Weller Rd	12	11	1	0	1.5	11.5	6	45 MPH
<b>Rockville Pike</b> from Woodmont CC Entrance to Towne Rd	11	8	2	1	1.8	10.2	6	40 MPH
<b>Old Georgetown Rd</b> from I-270 spur to I-495	10	7	2	1	1.8	10.8	6	40 MPH
<b>Germantown Rd</b> from Middlebrook Rd to I-270	8	7	1	0	2.6	16.2	6	40 to 45 MPH

\*\*100M VMT = 100,000,000 Vehicle Miles of Travel

## Top 10 Priority Corridors for County-Maintained Roadways

Roadway	Total Serious and Fatal Crashes	 Seriously Injured or Killed	 Seriously Injured or Killed	 Seriously Injured or Killed	Serious and Fatal Crashes per Mile per Year	Serious and Fatal Crashes per 100M VMT*	Number of Travel Lanes	Speed Limit in 2019
<b>Shady Grove Rd</b> from Frederick Rd to Midcounty Hwy	14	12	2	0	1.4	9.8	6	40 to 45 MPH
<b>E Gude Dr</b> from Crabbs Branch Way to Southlawn Ln	11	6	3	2	2.5	16.1	4 to 6	40 MPH
<b>Randolph Rd</b> from Connecticut Ave to Georgia Ave	9	6	2	1	1.3	13.4	6	35 MPH
<b>Middlebrook Rd</b> from Germantown Rd to I-270	8	5	3	0	1.3	14.7	6	40 MPH
<b>Randolph Rd</b> from Kemp Mill Rd to New Hampshire Ave	7	6	1	0	0.8	5.5	6	40 MPH
<b>Bel Pre Rd</b> from Georgia Ave to Layhill Rd	6	3	3	0	0.6	7.2	4	35 MPH
<b>Montgomery Village Ave</b> from Wightman Rd to Midcounty Hwy	5	3	2	0	0.4	3.3	4	35 MPH
<b>Crystal Rock Dr</b> from Father Hurley Blvd to Germantown Rd	4	3	1	0	0.8	3.0	4	40 MPH
<b>Lost Knife Rd</b> from Montgomery Village Ave to Odendhal Ave	4	0	4	0	1.6	2.6	4	30 MPH
<b>Snuffer School Rd</b> from Mooney Dr to Woodfield Rd	4	2	2	0	2.1	26.0	4	40 MPH

\*\*100M VMT = 100,000,000 Vehicle Miles of Travel

## Serious and Fatal Collisions by Roadway Characteristics

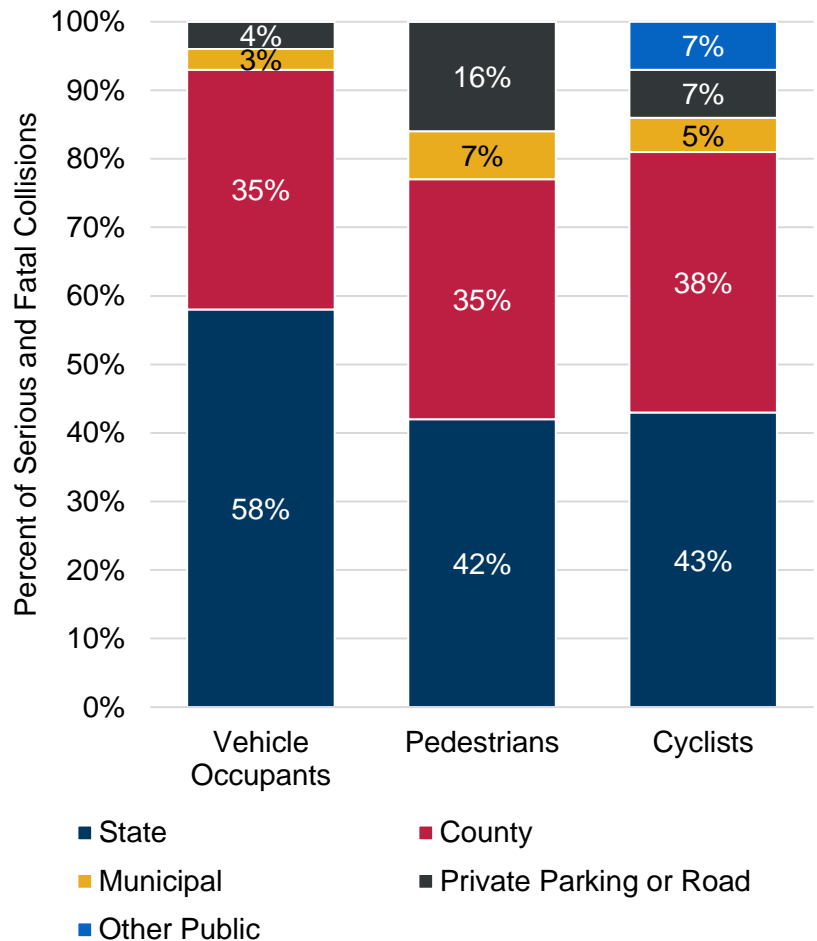
Fifty-two percent of serious and fatal crashes were on roadways with four or more travel lanes and a posted speed limit of 35MPH or higher. The majority of these roadways are designed and controlled by State Highway Administration, making their partnership key in reaching Vision Zero.

## Serious and Fatal Collisions by Roadway Owner

Roadways in Montgomery County fall under five main categories: state, county, municipal, other public (Maryland Parks), and private. The State of Maryland had primary jurisdiction over 17% of non-interstate lane miles in the county and 56% of all non-interstate vehicle miles traveled, which accounted for 53% of the County's serious and fatal collisions.

The County Government maintained the vast majority (72%) of roadway lane miles. The County maintained a wide variety of roadway types from highways like Shady Grove and Randolph Roads to residential cul-de-sacs. Overall, 35% of serious and fatal collisions occurred on County maintained roads.

Municipal-maintained roads accounted for 4% of serious and fatal crashes. Within that 4%, 53% were on Rockville roads, 33% on Gaithersburg roads, and 5% Takoma Park.



## 2019 Non-Interstate Lane Miles and Vehicle Miles Traveled by Roadway Owner

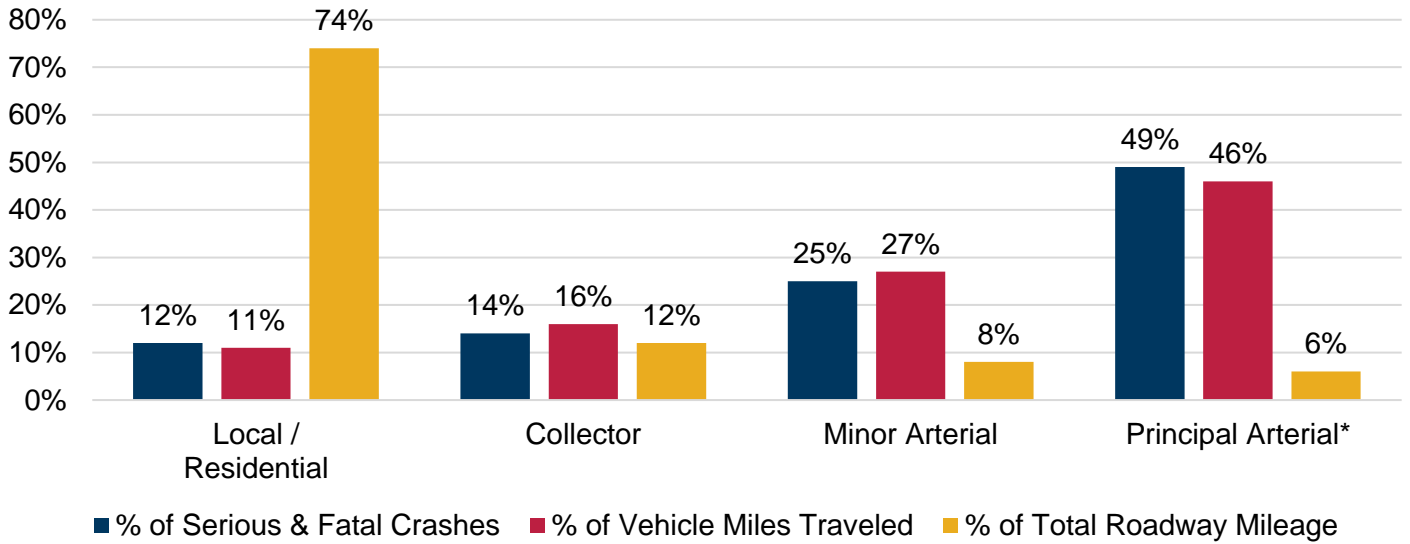
	State	County	Municipal	Total
<b>Lane Miles</b>	1,171 (17%)	4,931 (72%)	775 (11%)	6,877 (100%)
<b>Millions of Vehicle Miles Traveled</b>	2,926 (56%)	Local - 2,287 (44%) <sup>v</sup>		5,214 (100%)

<sup>v</sup> Annual vehicle miles traveled reports do not split out county and municipal roads.



### Serious And Fatal Collisions by Roadway Functional Class

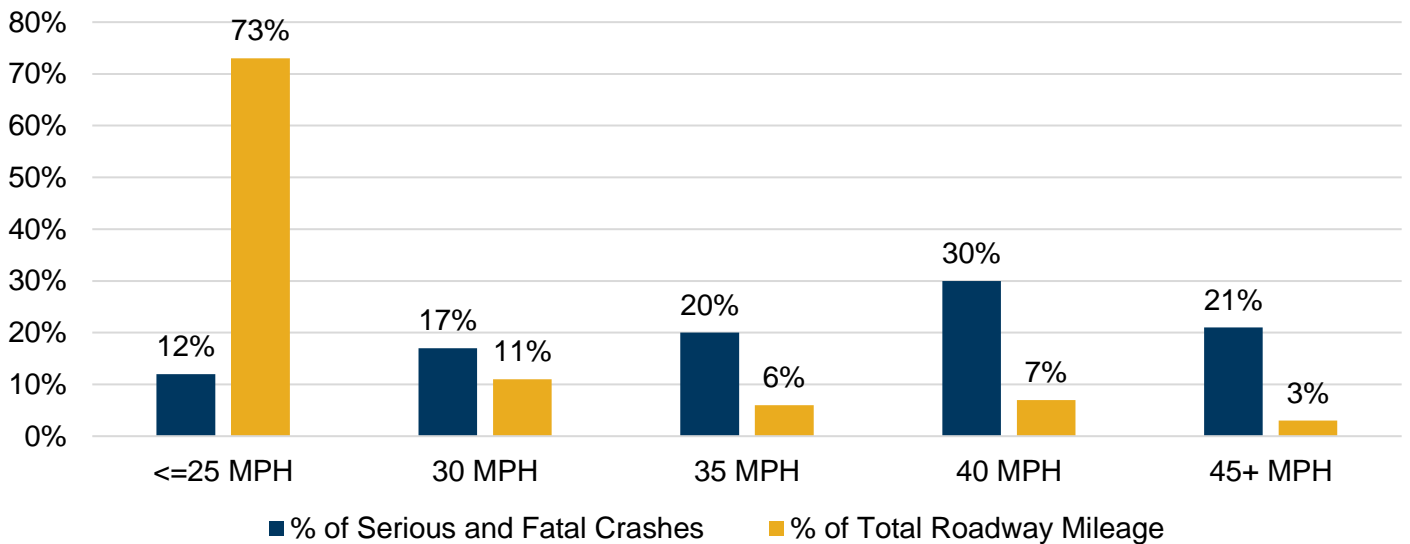
The distribution of serious and fatal crashes across the system closely matches how much people travel on the roads. For each type of road, ranging from low-volume neighborhood streets to major highways such as Rockville Pike, Georgia Ave, and Connecticut Ave, the percentage of serious and fatal crashes was within 3 percentage points of the overall amount of traffic for that type of road.



\*Excludes interstates and the Intercountry Connector (MD 200).

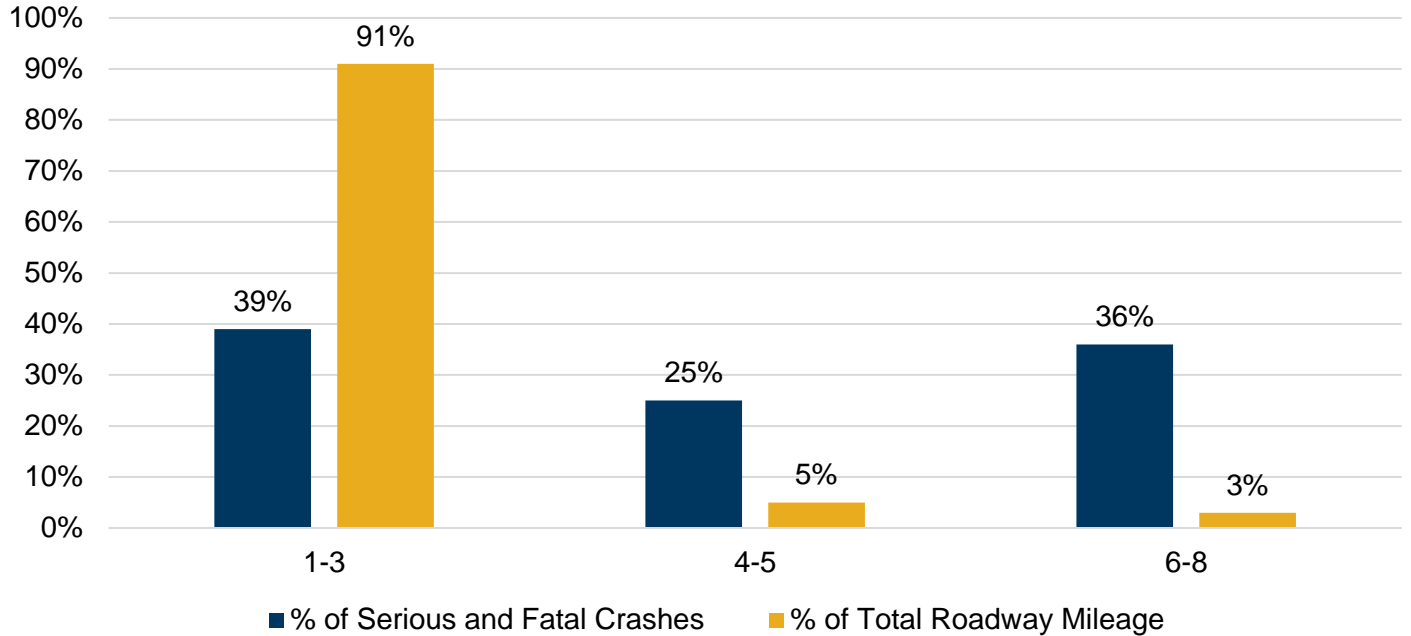
### Serious and Fatal Collisions by Posted Speed Limit

Seventy-three percent of all non-interstate roadways in the county were posted at 25 MPH or less and accounted for a small 12% of serious and fatal crashes. The majority, 51%, of serious and fatal crashes were on roadways posted at or above 40 miles per hour.



### Serious and Fatal Collisions by Number of Travel Lanes

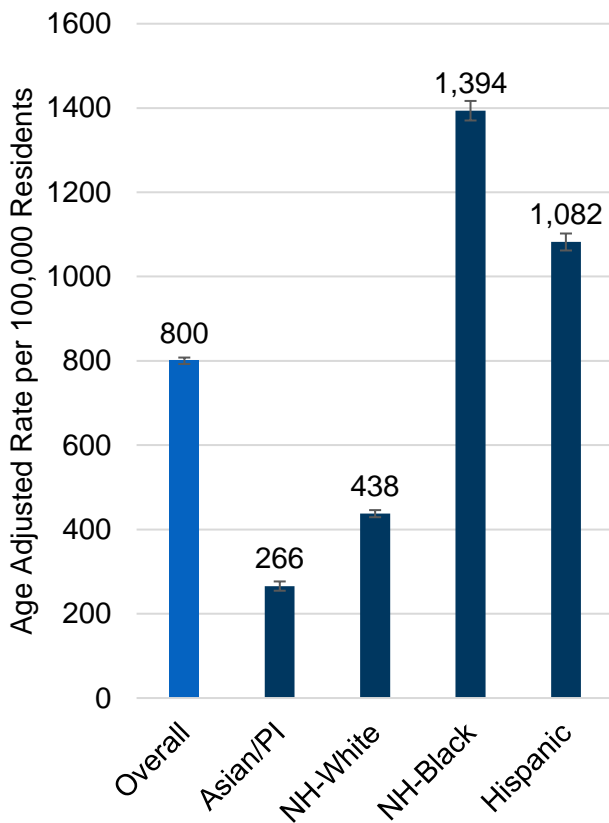
61% of serious and fatal crashes occurred with more than one travel lane in each direction. For pedestrians seriously injured or killed, 43% of those crashes occurred on 6 to 8 lane roads. For cyclists, 51% of serious and fatal crashes occurred on one to three lane roadways.



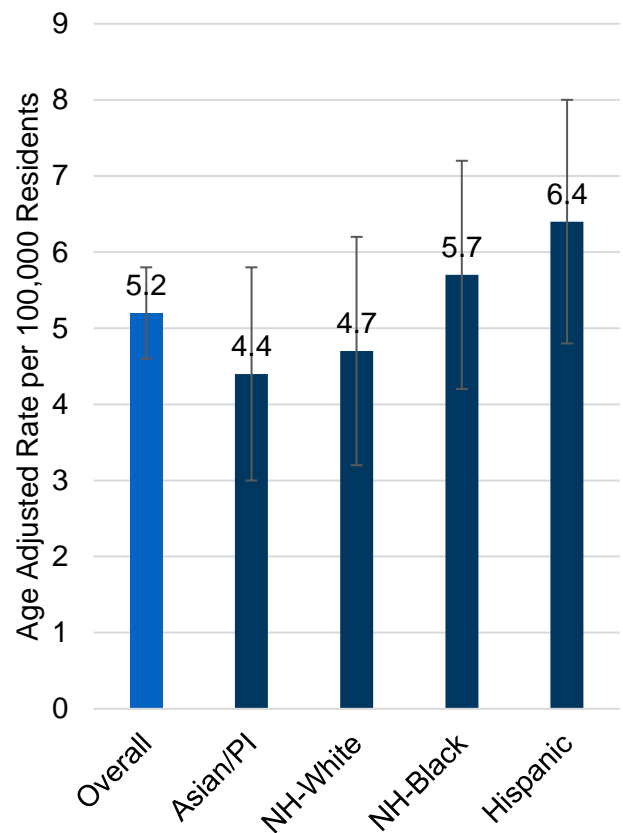
## Ethnicity and Race of Person Killed or Injured

Based on hospital and medical examiner records, there were clear disparities between ethnic and racial groups in Montgomery County. <sup>vi</sup> Black and African American Montgomery County residents had an emergency room admission rate for motor vehicle crashes 136% higher than Asian/Pacific Islander residents and 104% higher than White, Non-Hispanic residents. For fatality rates, the disparity trend was similar, but the age adjusted estimates for all ethnic and racial groups fell within the margin of error. It was not possible to break out the emergency room visit and fatality rates by roadway user as there were too many cases where the cause of death or injury was listed as “unspecified motor-vehicle accident, traffic” to have confidence in the roadway user counts.

**Emergency Room Visits for Motor Vehicle Crashes by Ethnicity/Race 2015-2019**



**Mortality Rate for Motor Vehicle Crashes by Ethnicity/Race 2015-2019**



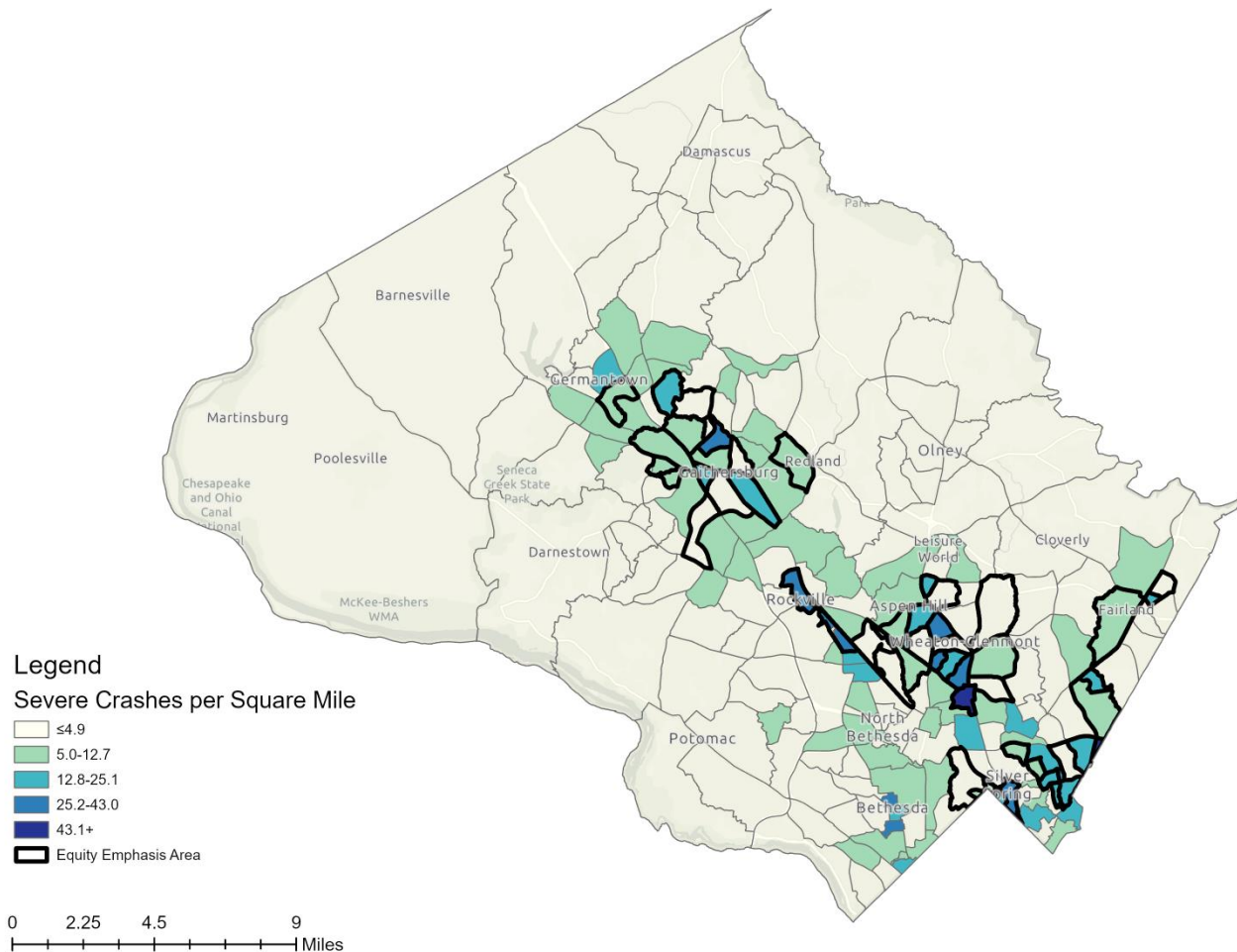
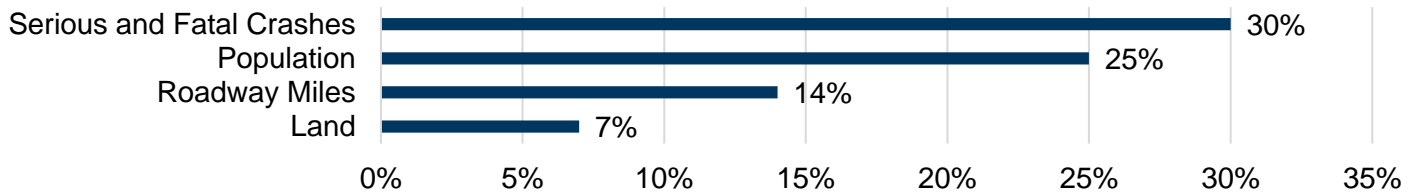
**Sources:** Vital Statistics Administration, Maryland Department of Health; Maryland Health Services Cost Review Commission; US Census, American Community Survey population estimates.

<sup>vi</sup> Currently Maryland crash reports do not include a crash participant’s ethnicity and race, but hospital and medical examiner records provide a proxy. Data include Montgomery County residents and includes residents that were injured or killed outside of Montgomery County.

## Collisions and Equity Emphasis Areas

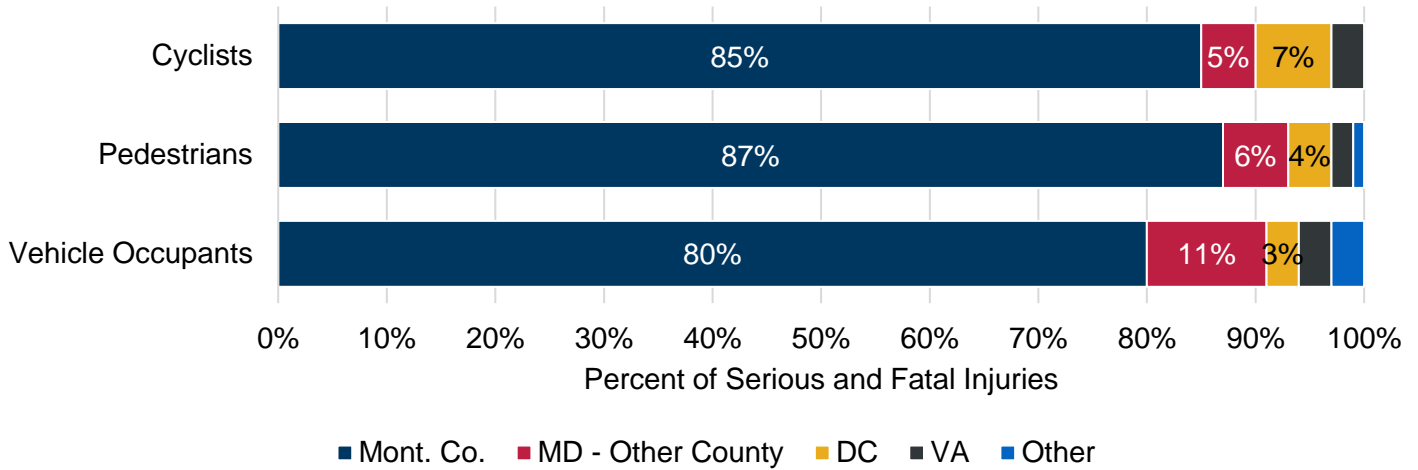
The Metropolitan Washington Council of Governments (MWCOC) identified 364 of the region's more than 1,300 census tracts, neighborhoods of roughly equal populations, with high concentrations of low-income individuals and/or traditionally disadvantaged racial and ethnic population groups.<sup>1</sup> These 364 tracts were categorized as equity emphasis areas. In Montgomery County, MWCOC identified 49 census tracts that met the threshold to be included as an equity emphasis area and highlighted in black in the map below. These neighborhoods were 7% of the land and 14% of roadway miles in the county, but contained 30% of serious and fatal roadway crashes. This disproportionate concentration of serious and fatal crashes in equity emphasis areas was not unique to Montgomery County as a MWCOC analysis found similar concentrations for fatalities in equity emphasis areas across the Washington Region.<sup>2</sup>

Equity Emphasis Areas Contain



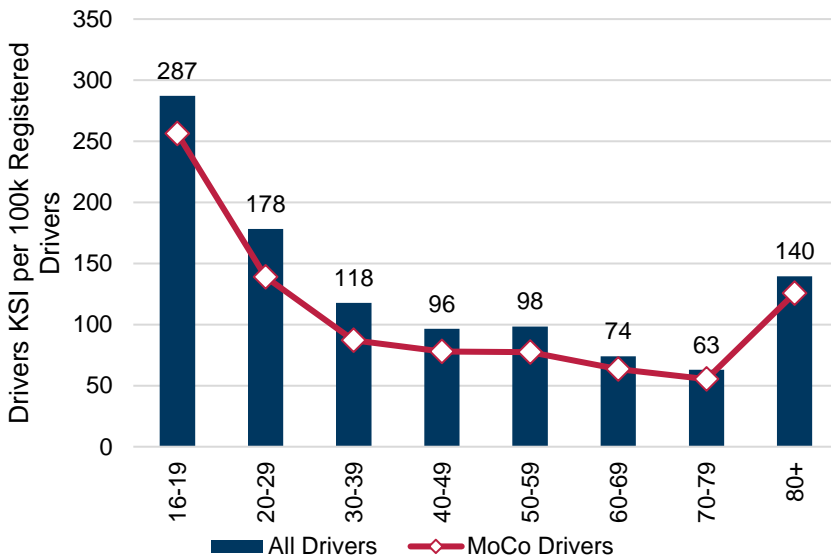
## Residency of Person Seriously Injured or Killed

Based on the person's reported home zip code, 82% of those seriously injured or killed lived in Montgomery County. For motor vehicle occupants, pedestrians, and cyclists, the residency rates were 80%, 87%, and 85% respectively. These rates were nearly equal to minor injury rates of 81%, 86%, and 90%.



## Age of Person Seriously Injured or Killed

Data for the age of persons with serious or fatal injuries were baselined against the county's overall population for pedestrians and cyclists and against registered drivers for driver injuries. Because the crash data include non-county residents, the charts below show rates for all people in the blue bars and for validated county residents in the pink line to account for the different populations. The overall trend by age was the same with or without the inclusion of non-county residents.



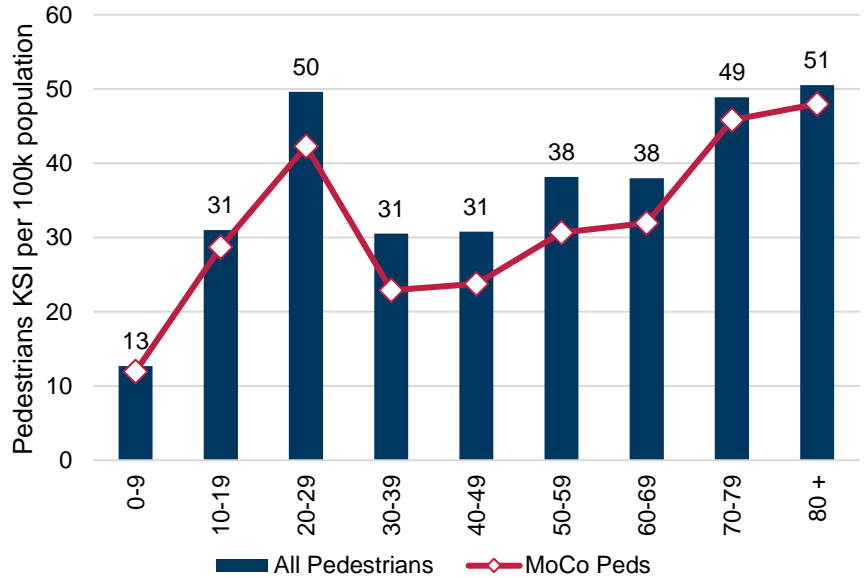
### Drivers

For drivers who were killed or seriously injured (KSI), the highest rates were among the youngest and oldest drivers. The KSI rate dropped with age, until the 80+ group. 29% of the 16-19 age were speeding, the highest for any age group. Younger drivers had higher rates of driving under the influence with 15% impaired in the 20-29 age group and 0% above the age of 70.

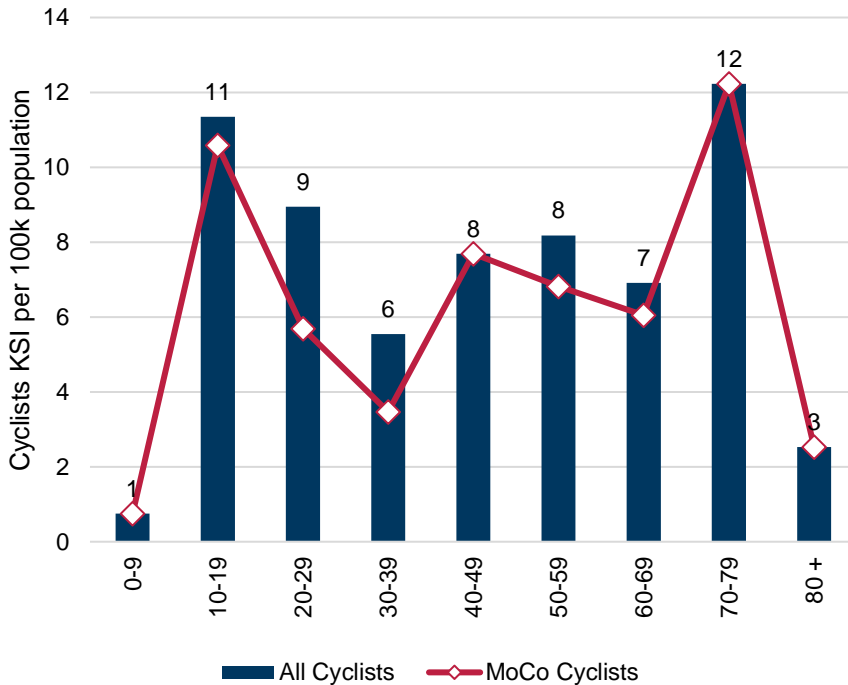
## Pedestrians

The median age for a pedestrian having serious or fatal injuries was 43, four years higher than the overall County population. The age groups with the highest rates were 80+ and ages 20 to 29.

When examining fatal pedestrian collisions, the opposite was true: the highest fatality rates were among the 60+ age group and the lowest per capita rate was among those under 30.

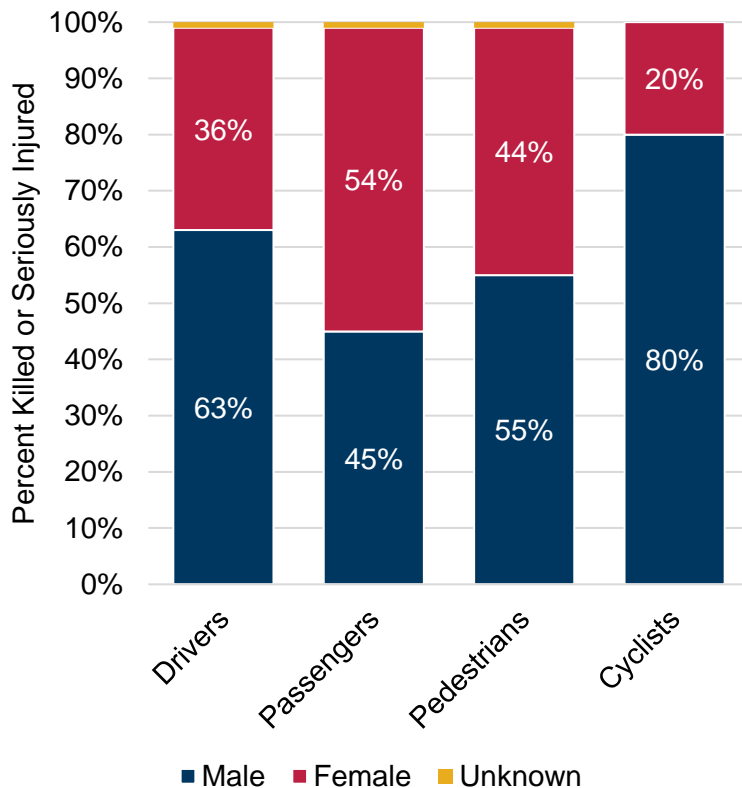


## Cyclists



The killed or seriously injured (KSI) rates for cyclists were highest among school-aged children aged 10 to 19 and older adults 70 to 79. However, the differences in injury rates from ages 10 to 79 were relatively minor with the biggest difference being six KSI collisions per 100,000 residents for these groups. Within the 10 to 19 age group, 67% were high-school aged (15–18 years old) and there were 3 fatalities, the most of any age group.

## Sex of Person Seriously Injured or Killed



The County's overall population was 52% female and 48% male. However, males were the majority (62%) of those seriously injured or killed. The largest imbalance was amongst cyclists with 80% being male. The large disparity for cyclists can be attributed to the gender imbalance between men and women cycling in mixed traffic.<sup>3</sup> For the imbalance in driver injuries, research by the International Institute for Highway Safety found, "men typically drive more miles than women and more likely to engage in risky driving practices, including not using safety belts, driving while impaired by alcohol, and speeding."<sup>4</sup>

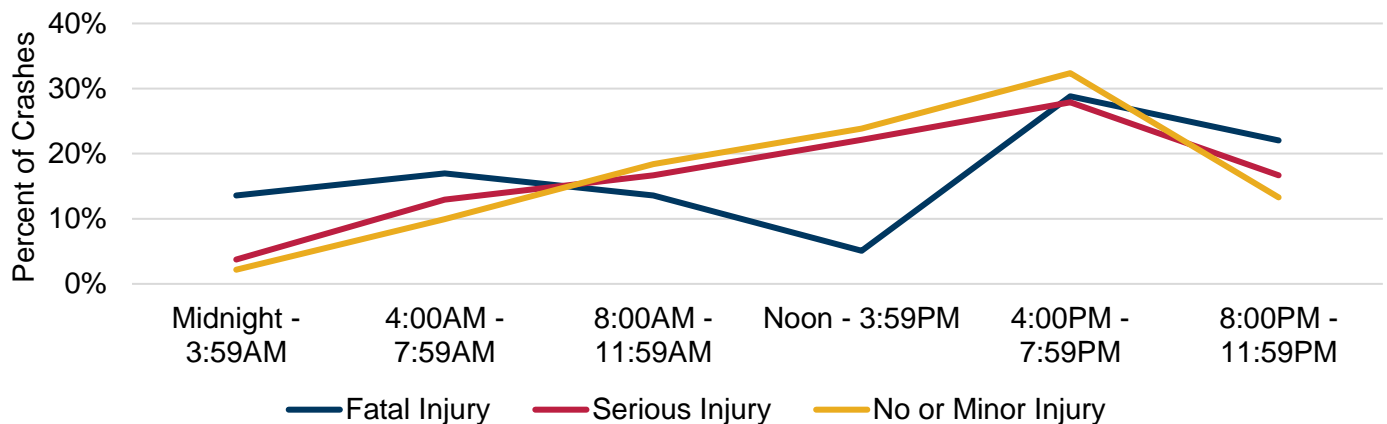
For vehicle passengers seriously injured or killed, the trend mirrored the County demographics with 54% female, 45% male, and 1% unknown.

## Temporal Analysis of Serious and Fatal Collisions

### Collisions by Time of Day

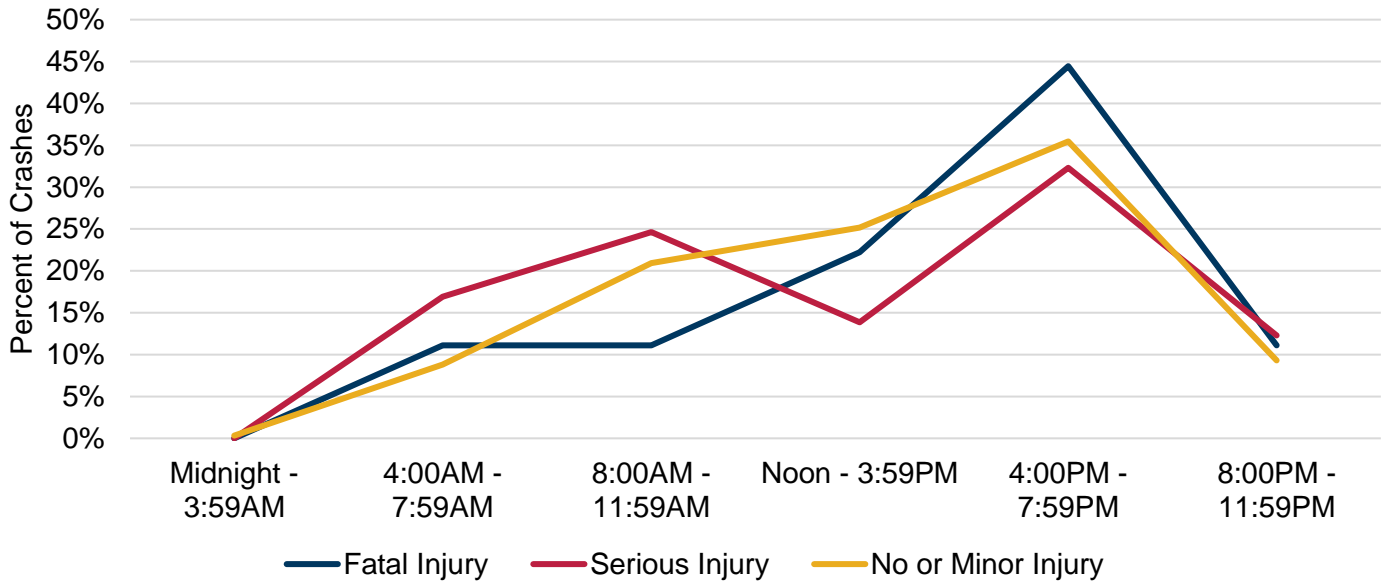
#### *Pedestrian Involved Crashes*

For all crashes where a pedestrian was struck, morning rush hour had fewer crashes than evening rush hour. By injury severity, more serious crashes occurred overnight. 36% of fatal crashes were between 8PM and 3:59AM compared to 20% of serious and 15% of no or minor injury crashes.



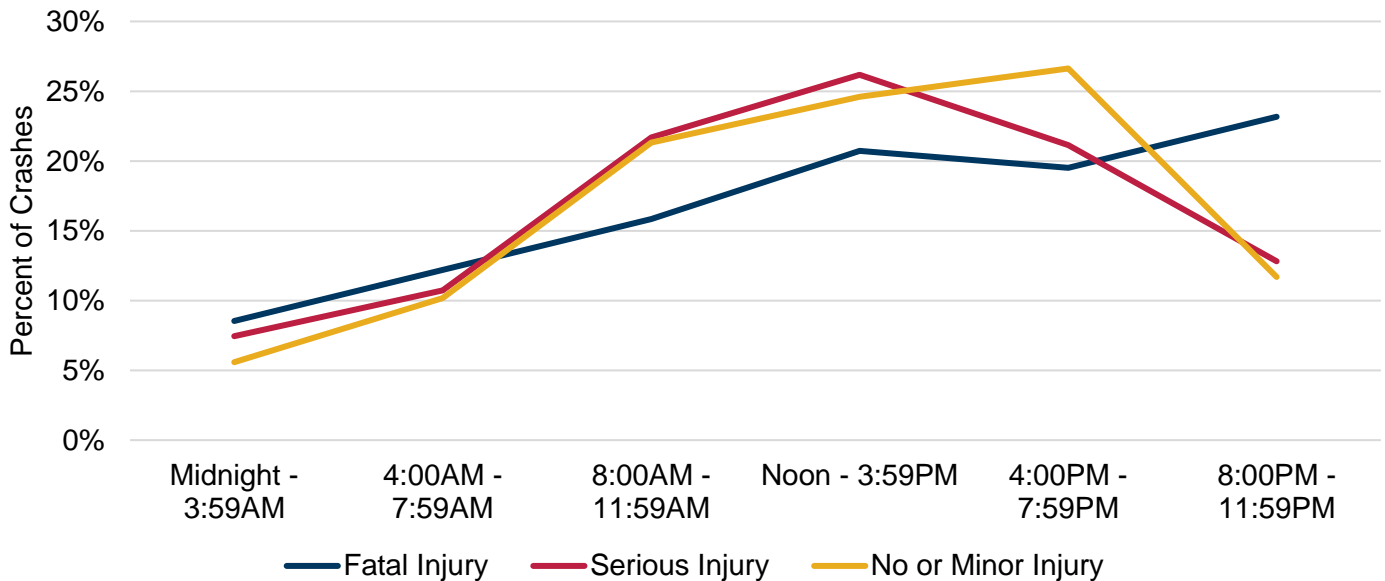
### ***Bicyclist Involved Crashes***

The trends by time of day and injury severity for a bicyclist struck by a driver were similar with peaks during the afternoon commute of 4PM to 7:59PM. The rate of crashes between 8PM and 3:59AM were 11% for fatal crashes, 12% for serious, and 10% for no or minor injury.



### ***Motor Vehicle Occupant Crashes***

Fatal crashes for people in motor vehicles peaked during the 8PM to 11:59PM timeframe at 23% of all fatal crashes. The second most common time period for a fatal crash was noon to 3:59PM with 21% of fatal crashes.

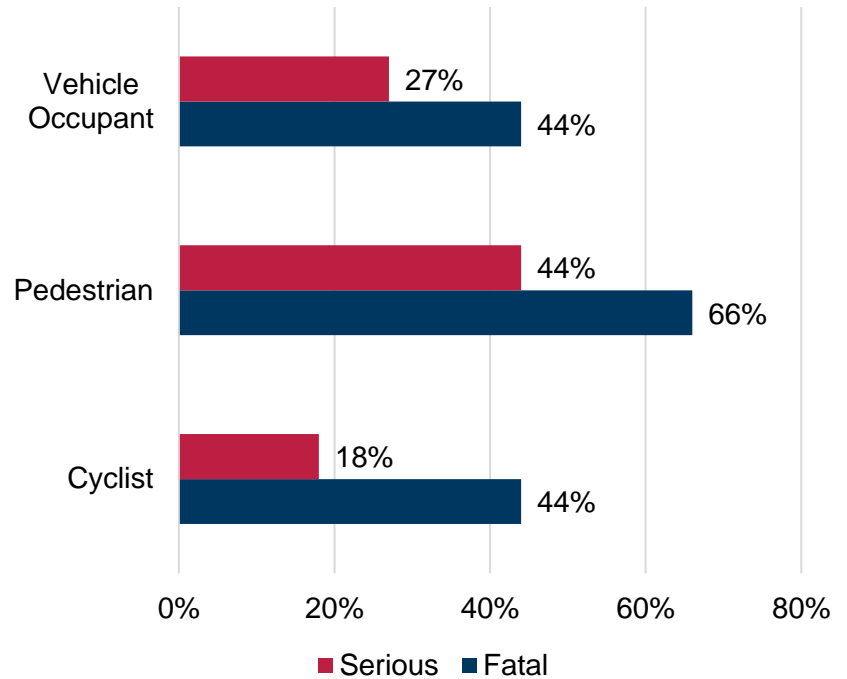




## Collisions Occurring Between Dusk and Dawn

Nighttime collisions were more common in fatal crashes compared to crashes with serious injuries for all roadway users. For pedestrians, 66% of fatal crashes occurred at night. Previous analyses conducted as part of the Pedestrian Safety Initiative found a negative correlation between the number of hours of daylight in a month and all of pedestrian collisions.<sup>5</sup>

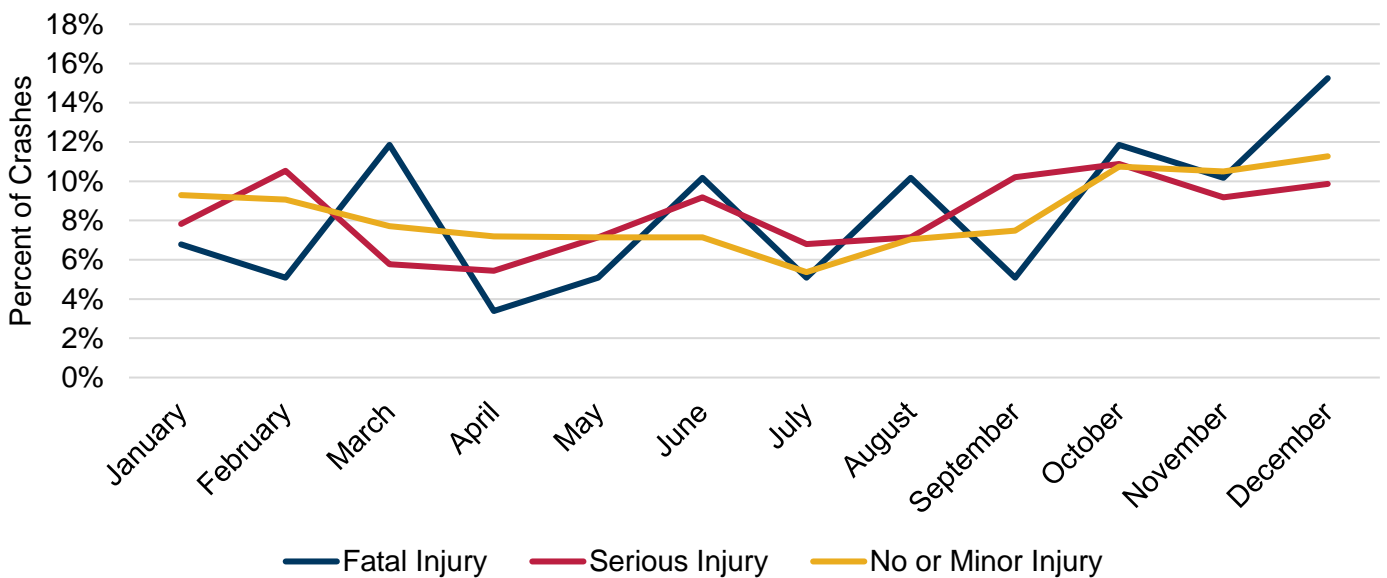
Lighting conditions were not the only factor in the nighttime collisions. The majority of collisions where the officer detected alcohol occurred at night.



## Collisions by Month of Year

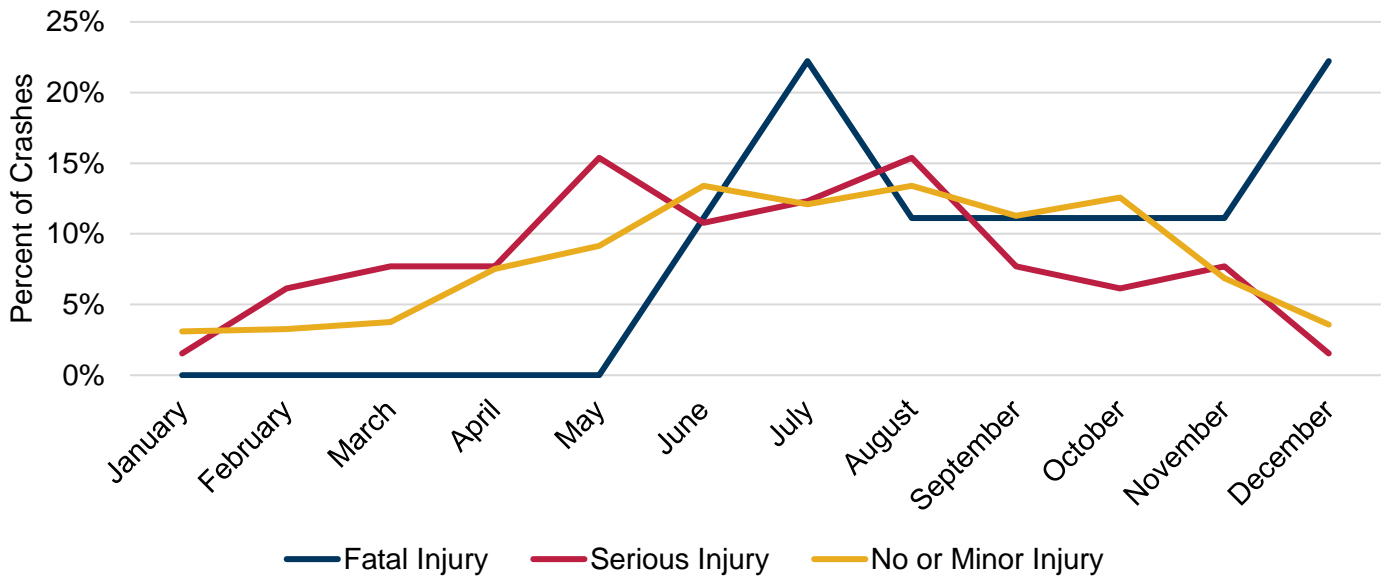
### *Pedestrian Involved Crashes*

The end of the year from October through December had the highest number of pedestrian involved collisions across all injury severities. These three months contained 37% of fatal, 30% of serious, and 33% of no or minor injury crashes.



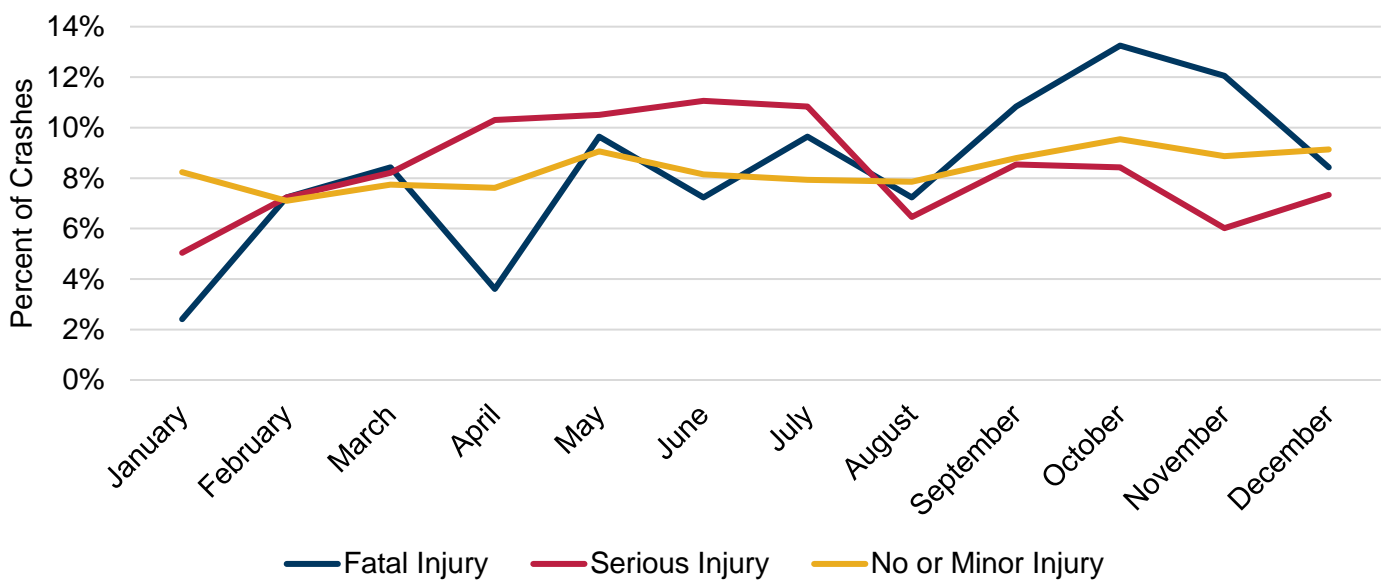
### ***Bicyclist Involved Crashes***

For 2015 to 2019, there were not cyclist fatalities during the months of January through May. Overall, crashes followed seasonal warmer temperatures with increases in the spring and dropping down after October.



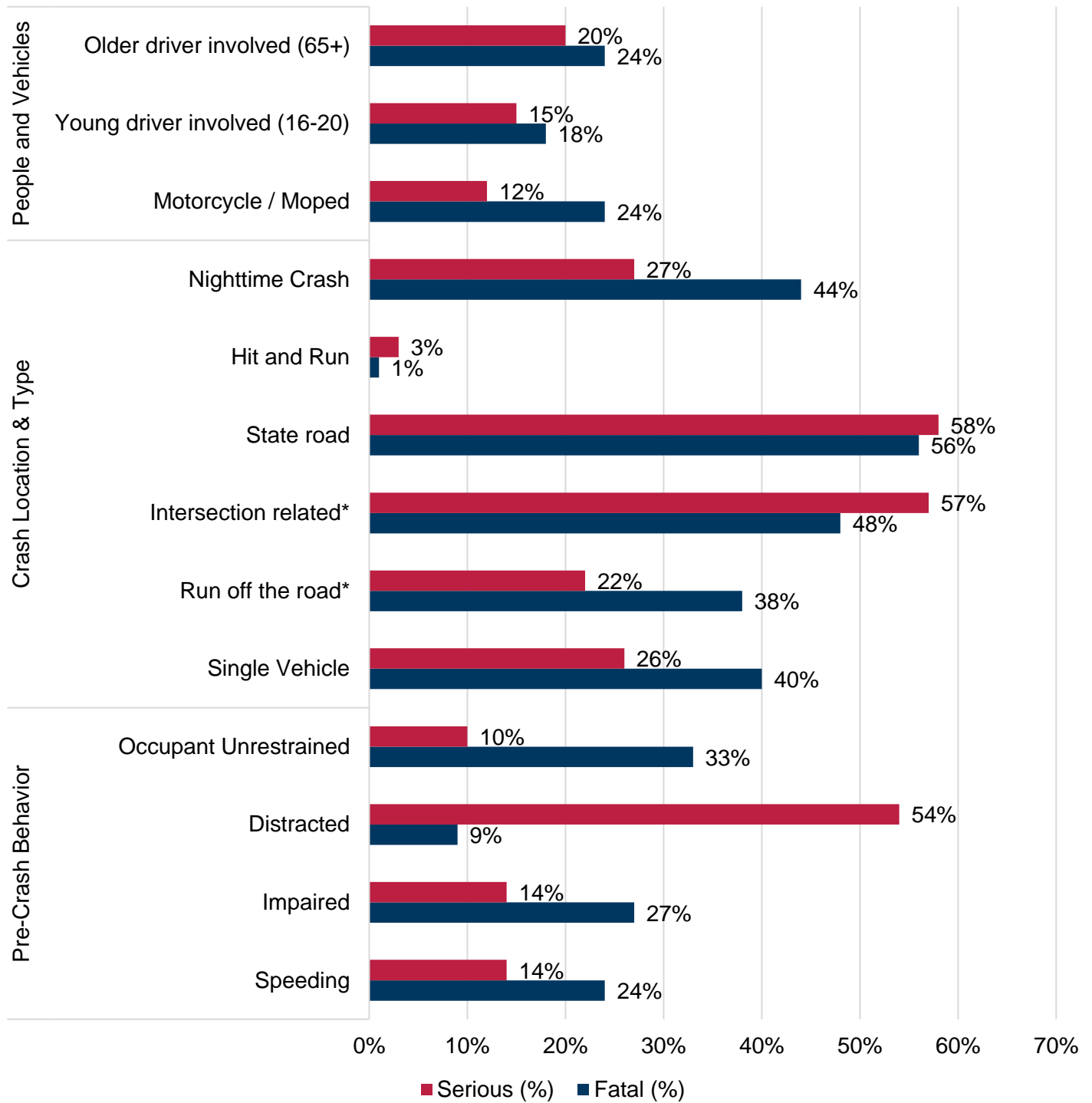
### ***Motor Vehicle Occupant Crashes***

The month with the most fatal crashes for motor vehicle occupants was October at 13% followed closely by November at 12%. Serious crashes peaked in the summer months while crashes with no or minor injuries had no seasonal trend.










## Motor Vehicle Occupant Collisions

### Crash Factors Summary for Motor Vehicle Occupant Collisions



\*Data shown exclude crashes that did not begin on a roadway (i.e., parking lot or private property crashes).

## Collision Type

Collision Type	% of Single or Vehicle-to-Vehicle Collisions	
	Serious	Fatal
 Single Vehicle	26%	40%
 Straight Movement Angle	21%	18%
 Left Turn	18%	17%
 Same Direction Rear End	18%	7%
 Head On	7%	14%
Other	5%	4%
 Sideswipe	3%	0%
 Right Turn	1%	0%
Unknown N/A	<1%	0%

Forty percent of vehicle occupant fatalities involved only one vehicle where the vehicle struck a fixed object. The object struck in 36% of the fatal collisions was a tree and 36% hit a pole. These collisions were much more likely to occur late at night and early morning: 55% of fatal single vehicle collisions occurred in the dark compared to 37% for other collision types. The proportion of fatal crashes being single vehicle was much higher than the 26% for serious crashes and 16% for no and minor injury crashes.

The second most common collision type for serious and fatal motor vehicle occupant crashes was straight movement angle, commonly known as a T-bone collision, where one vehicle collides its front end with the side of another vehicle. This crash type can be particularly dangerous for people inside motor vehicles as there is less space between the occupants compared to a head on or rear end collision.

Matching national trends,<sup>6</sup> left turns were responsible for 18% of serious and fatal collisions while right turns accounted for only 1%. In 58% of left turn collisions, the driver at fault failed to yield the right of way, 25% failed to give full time and attention, and 13% failed to obey the traffic control device or officer. New York City's analysis noted that left turns were more dangerous than right turns because left turns can be taken at a wider turn radius which leads to higher turn speeds, visibility is slightly obscured by parked cars and the vehicle's A-pillar, and left turns are more complicated to navigate compared to right turns.<sup>7</sup>

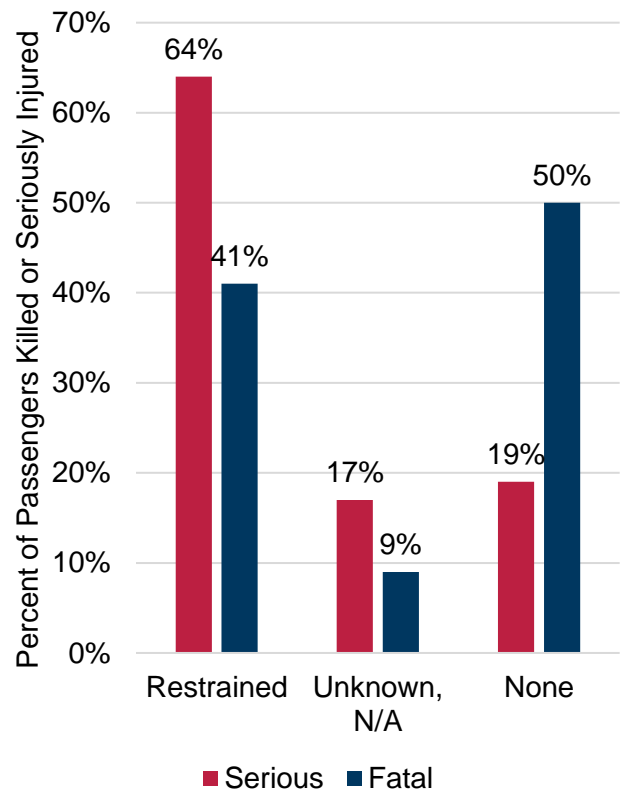
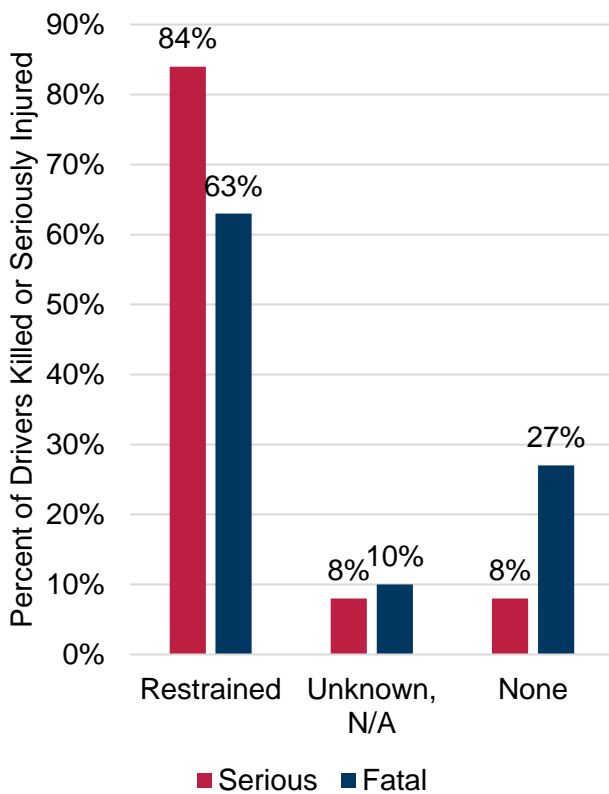
## Driver and Passenger Safety Equipment Used

### Driver Safety Equipment Use

Seatbelts are life savers. Drivers in Montgomery County killed in roadway collisions had significantly lower seatbelt utilization rates compared to those seriously injured in crashes and the general driving population. Confirmed lack of safety restraints for drivers at 8% and 27% for serious and fatal injuries was higher than the observed seatbelt rate of nearly 90% in Maryland<sup>8</sup>. Of concern, the State of Maryland's seatbelt utilization rate in 2019 was slightly below the national average at 90.3% compared to 90.7% nationwide. Maryland's rate has dropped from a high of 92.9% in 2015 to 90.3% in 2019.<sup>9</sup>

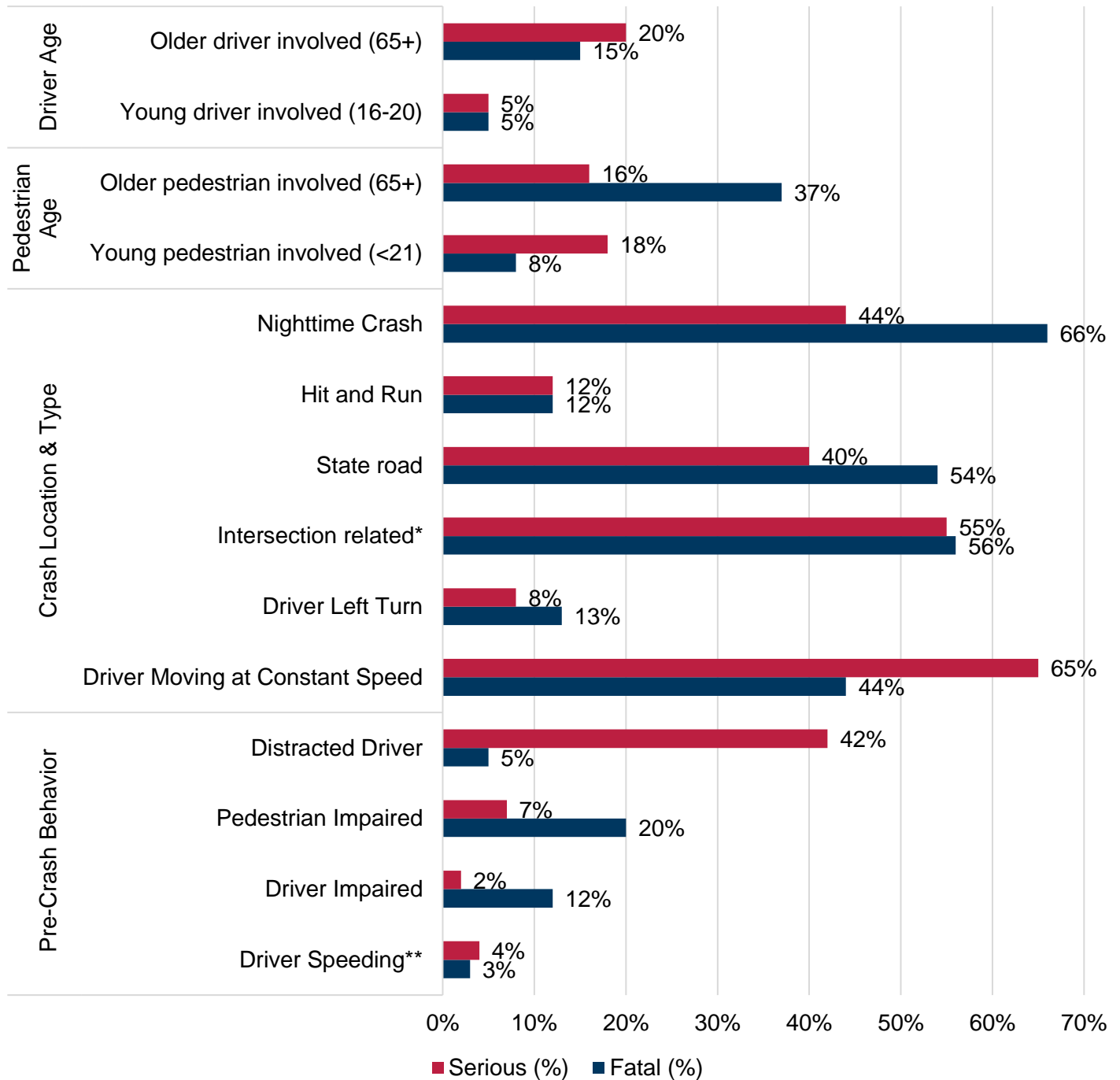
### Passenger Safety Equipment Use

For passengers seriously injured or killed in crashes, the disparities between injury types were larger than for drivers. Fifty percent of motor vehicle passengers killed were not wearing a seatbelt or other restraint. Half of the passengers not using a safety restraint and killed were fully ejected from the vehicle.



## Pedestrians and Cyclists

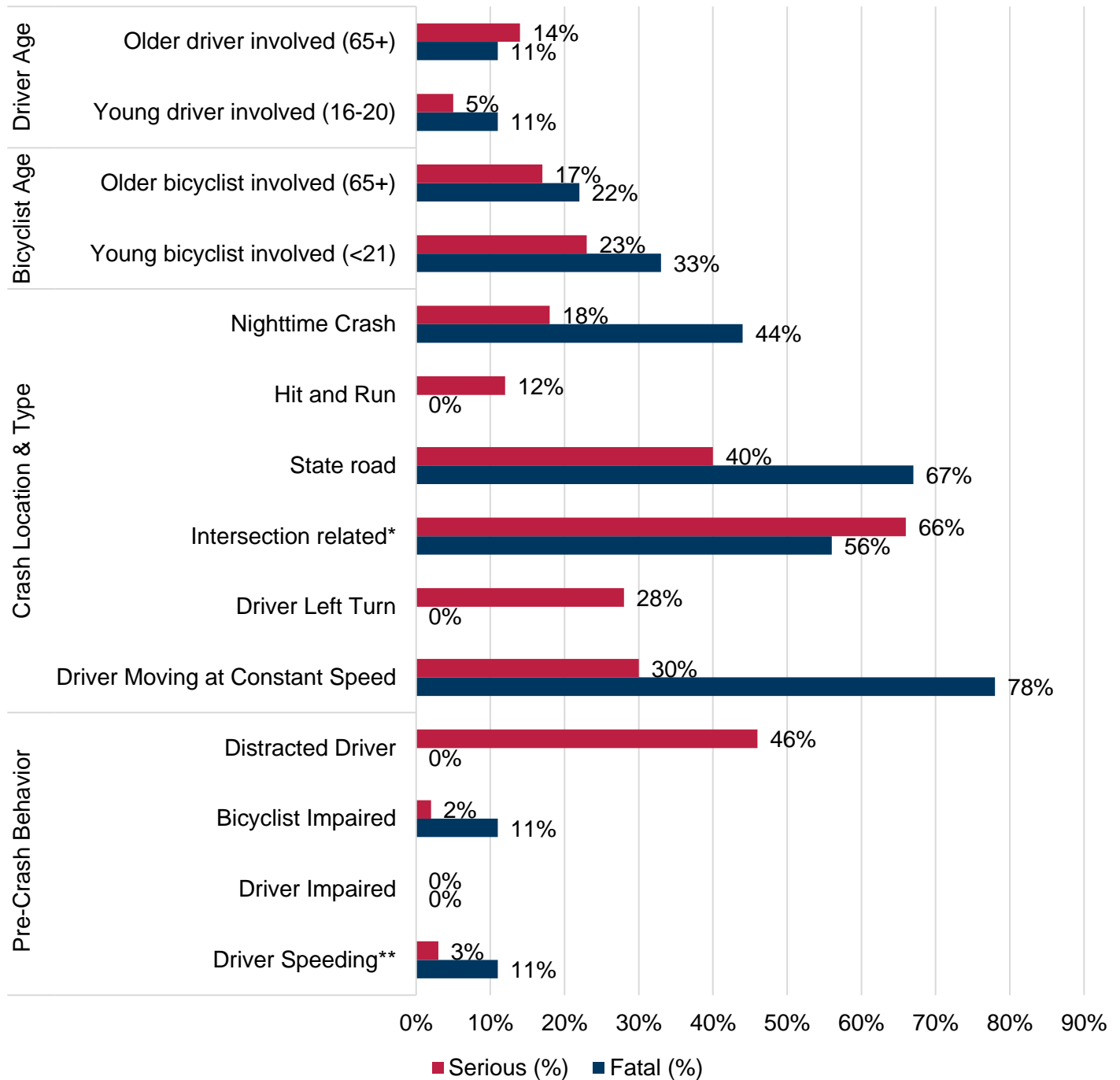
### Crash Factors Summary for Serious and Fatal Pedestrian Collisions



\*Data shown exclude crashes that did not begin on a roadway (i.e., parking lot or private property crashes).

\*\*Though a small percentage of drivers were reported exceeding the speed limit or driving too fast for conditions, a driver operating at the speed limit of 35MPH or more can still seriously injure a pedestrian.

## Crash Factors Summary for Serious and Fatal Bicycle Collisions



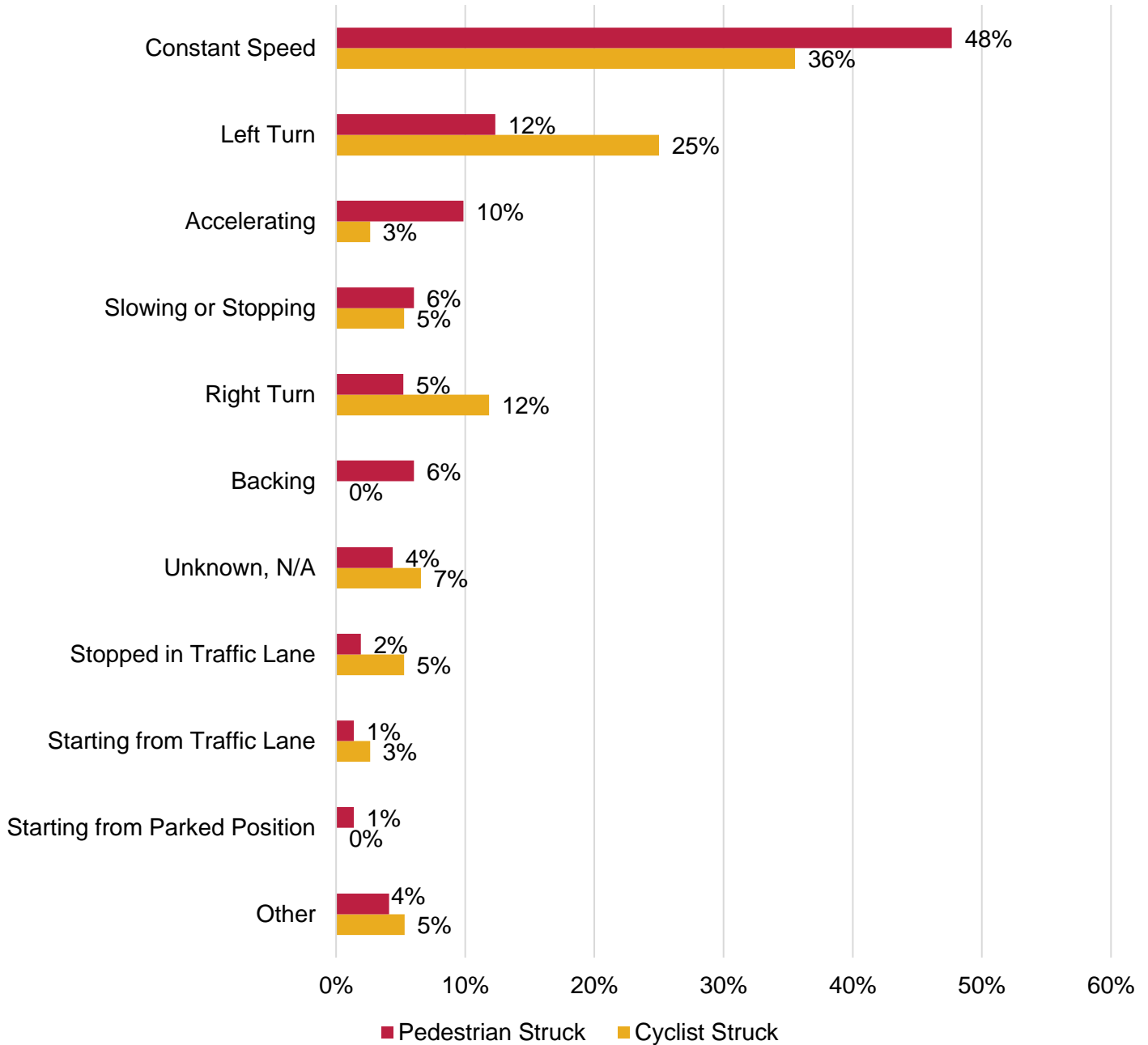
\*Data shown exclude crashes that did not begin on a roadway (i.e., parking lot or private property crashes).

\*\*Though a small percentage of drivers were reported exceeding the speed limit or driving too fast for conditions, a driver operating at the speed limit of 35MPH or more can still seriously injure a cyclist.

## Movement of Drivers Involved

In serious and fatal pedestrian and cyclist crashes, the top driver movements were moving at a constant speed, followed by left turns. Serious and fatal collisions involving drivers turning right were more common for cyclists than pedestrians at 12% and 5%, respectively. For bicycle involved collisions with no or minor injuries, right turning drivers made up a higher percentage of drivers striking bicyclists at 25%. Left turns can lead to more serious injuries than right turns as left turns occur at higher speeds than right turns.

### Driver Movement at Time of Collision

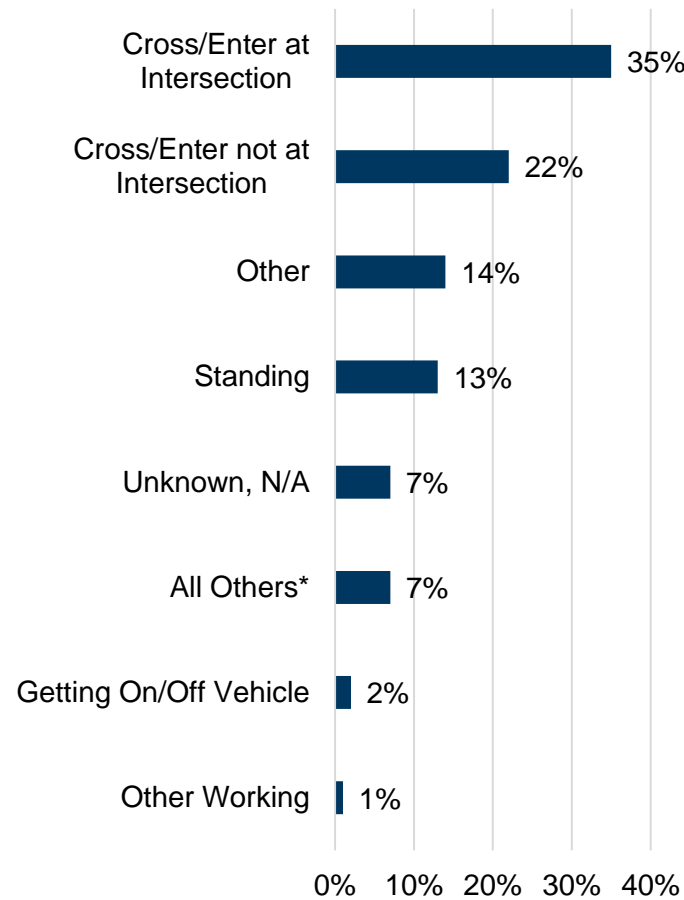




## Movement of Pedestrians and Cyclists Involved

The danger for pedestrians and cyclists came from crossing or entering at an intersection; the most common area for conflicts between motor vehicles and pedestrians and cyclists to occur. This movement was linked to 35% and 41% of the serious and fatal collisions for pedestrians and cyclists, respectively.

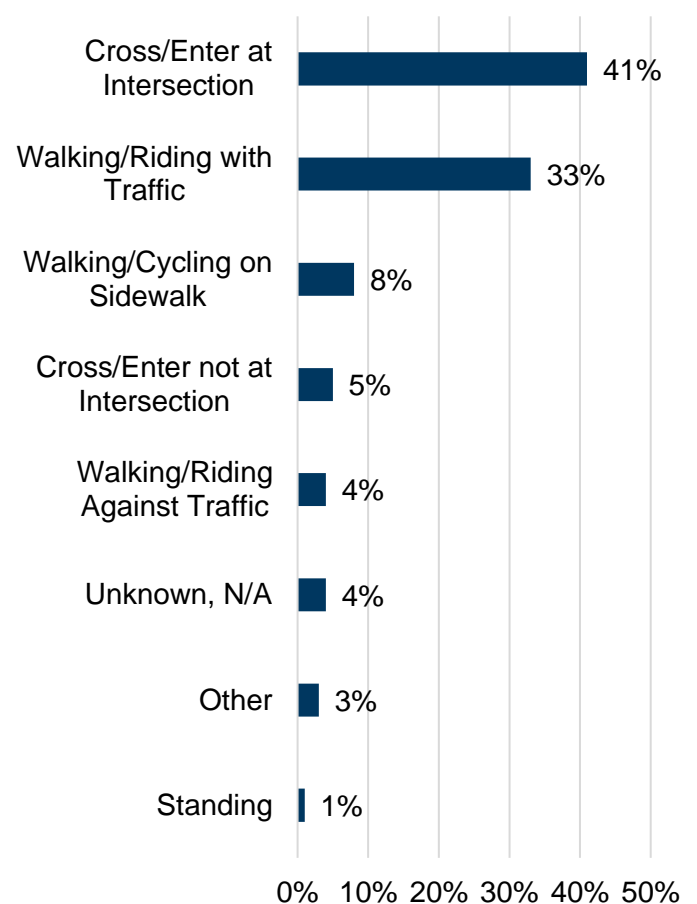
### ***Pedestrians***



*Numbers may not add to 100% due to rounding.*

\*Includes Approach/Leaving School Bus, Playing, Push/Work on Vehicle, Walking to/from School, Walking/Cycling on Sidewalk, Walking/Riding against Traffic, and Walking/Riding with Traffic

### ***Cyclists***

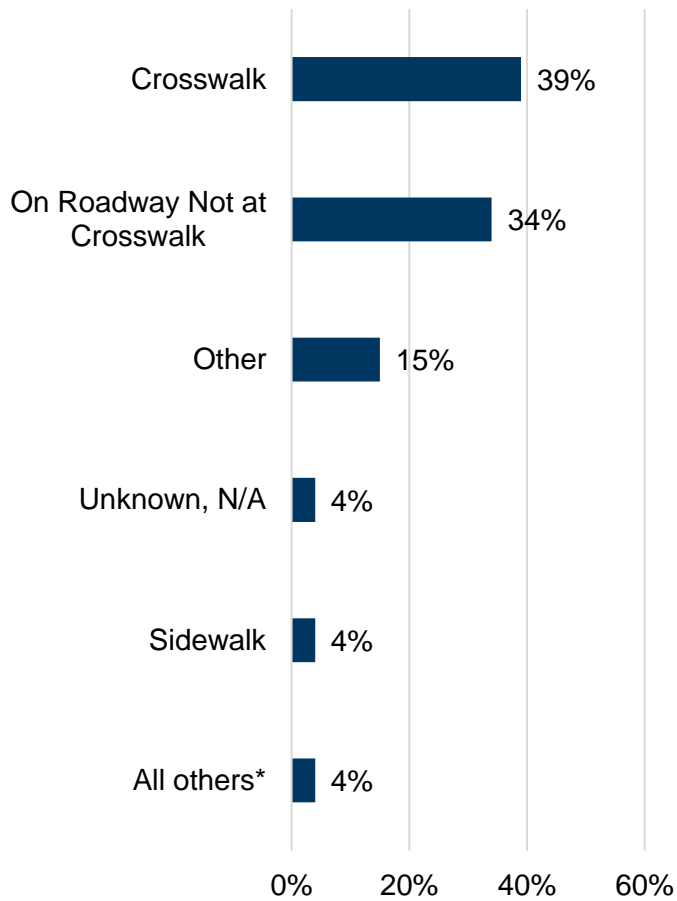


*Numbers may not add to 100% due to rounding.*

## Location of Pedestrians and Cyclists Involved

For pedestrians and cyclists seriously injured or killed, the plurality were in the crosswalk when struck. For pedestrians and cyclists fatally struck, 40% and 33% were on the roadway not at a crosswalk, respectively.

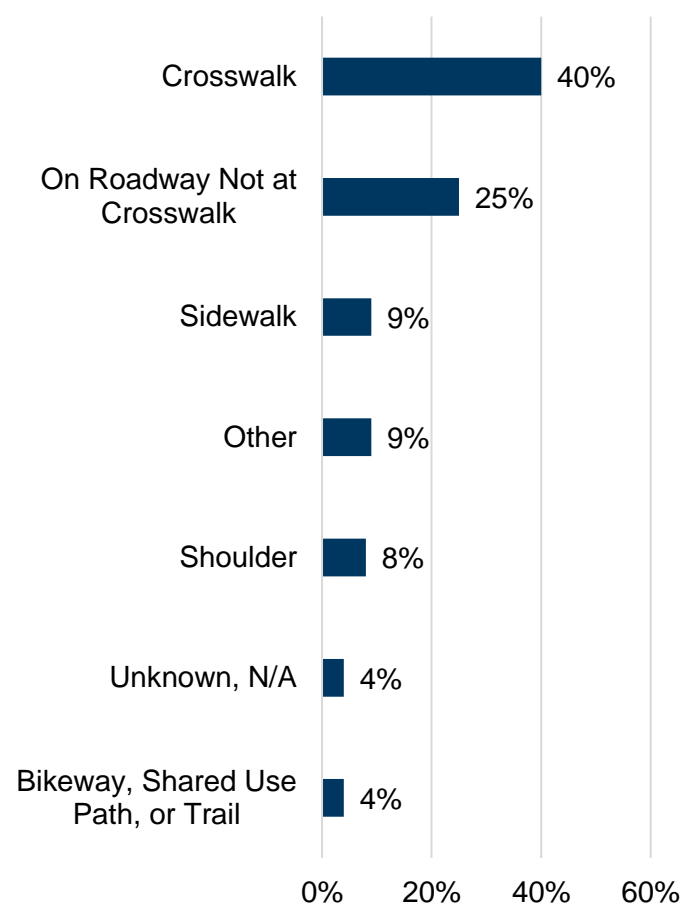
### Pedestrians



Numbers may not add to 100% due to rounding.

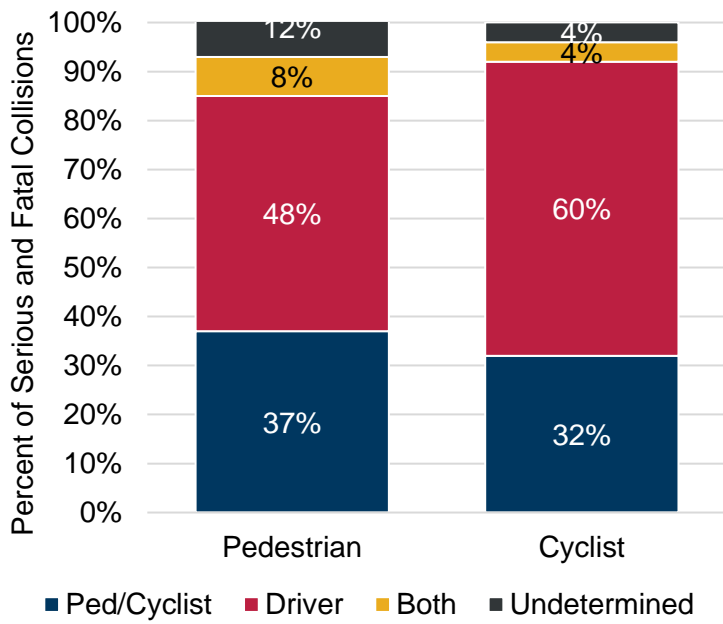
\*Includes Shoulder, Outside Right of Way, Curb, Median, Island, Inside Building, and Driveway Access Marked Crosswalk.

### Cyclists



Numbers may not add to 100% due to rounding.

## Party At Fault



Drivers were found at fault when striking a pedestrian or cyclist and causing serious or fatal injuries 48% and 60%, respectively. Drivers failed to give full time and attention and failed to yield right of way in these crashes.

## Other Trends Shaping the Montgomery County Context

The collision data tell only part of the story concerning roadway safety in Montgomery County. The County must utilize demographic data to tailor its outreach efforts for the diverse population and unique conditions that exist throughout the County. In executing the 2030 Action Plan, project and campaign implementers will utilize demographic data to develop unique profiles for each area.

### Demographics

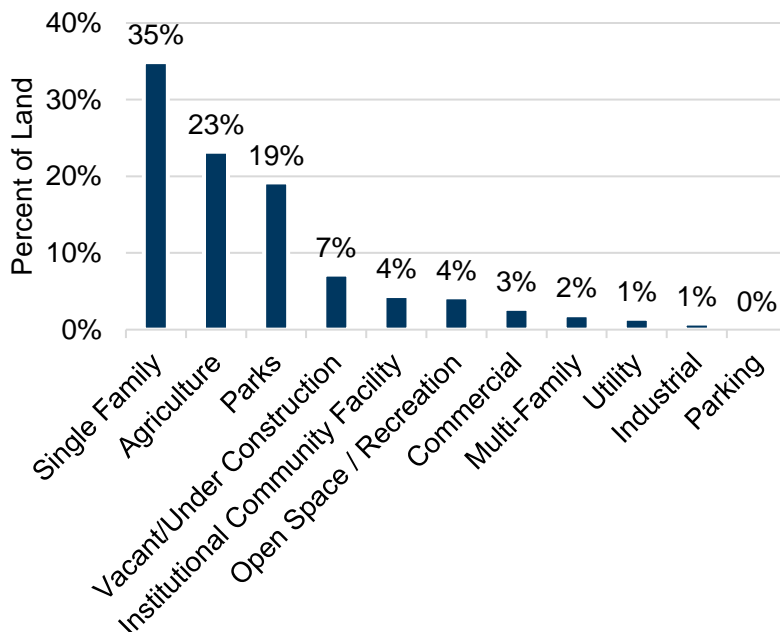
The County’s 2019 population of 1,050,688 residents has increased 8.2% since 2010 and projected to increase to 1,197,148 by 2040.<sup>10,11</sup> In 2010, the County became a majority minority jurisdiction and was home to four of the top ten most diverse cities in America.<sup>12</sup> Despite being one of the wealthiest counties in the US, over 75,000 Montgomery County residents live below the poverty line.

### Select Characteristics for Montgomery County Compared to US

Characteristic	Montgomery County	United States
Median Household Income	\$108,820	\$62,843
Persons 65 Years and over	16.1%	16.5%
Language other the English spoken at home	41.2%	21.6%
Residents in Poverty	7.3%	10.5%
Foreign Born Residents	32.3%	13.6%
Population 25 Years and Older with Bachelor’s degree or higher	58.9%	32.1%

Source: “Table S0501 – Selected Characteristics of the Native and Foreign-Born Populations: 2015–2019 American Community Survey 5-Year Estimates” US Census Bureau, 2019.

### Land Use



Montgomery County’s 504 square miles cover a wide spectrum of different land uses. The pastoral 145 square mile Agricultural Reserve spans much of the northern tier of the county whereas communities inside the beltway like Bethesda and Silver Spring have neighborhoods of up to 31,073 persons per square mile. Agriculture, parks, and open space make up nearly half (47%) of land use in the county followed by residential areas.

Source: “Thrive 2050”, Montgomery County Planning, 2021, <https://montgomeryplanning.org/wp-content/uploads/2021/04/Thrive-Planning-Board-Draft-web.pdf>.

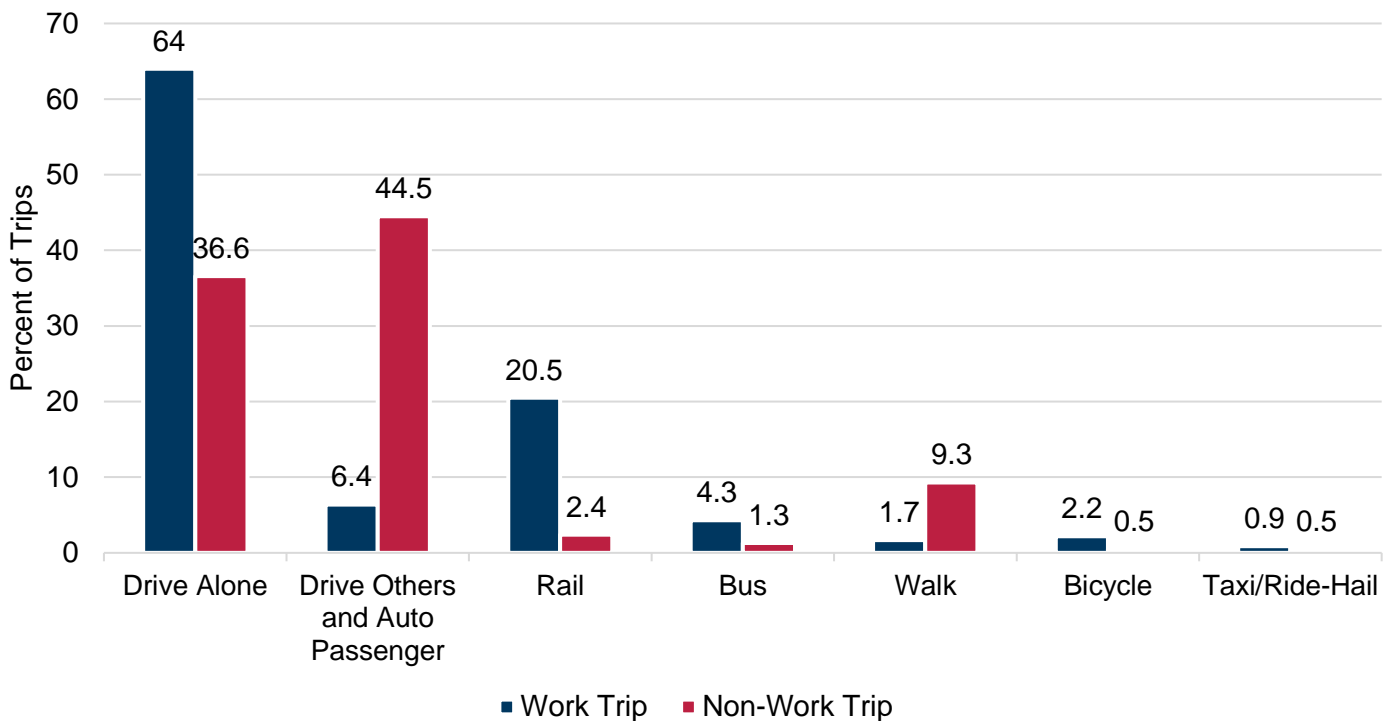
## Mobility

The most recent county-wide resident survey in 2019 showed traffic congestion as one of the three most important issues the County should address.<sup>13</sup> Ridership was down for mass transit in the County, with Metrorail weekday entries at Montgomery County stations down 12% and Ride On trips down 7% between 2010 and 2019. The effects of the COVID-19 pandemic on the mix of travel modes are unknown, but transit ridership may stay lower than pre-pandemic levels due to the continuation of telework while walking and biking may increase.<sup>14</sup>

### Travel Mode Share for Montgomery County Residents

The Transportation Planning Board sponsors the Regional Travel Survey once a decade to get a detailed view of the daily travel patterns in the Metropolitan Washington area. The survey collects demographic and travel information for a randomly selected representative sample of households in the region and adjacent areas. Data for the 2017-2018 survey were released in 2020. For Montgomery County, 64% of work trips involved driving alone and 81% of non-work trips involved driving or being a passenger in an automobile. Rail use was 8.5 times higher for the percentage of work trips compared to non-work trips. Ten percent of non-work trips were done by walking or biking.<sup>15</sup>

#### Weekday Work and Non-work Trips by Travel Mode

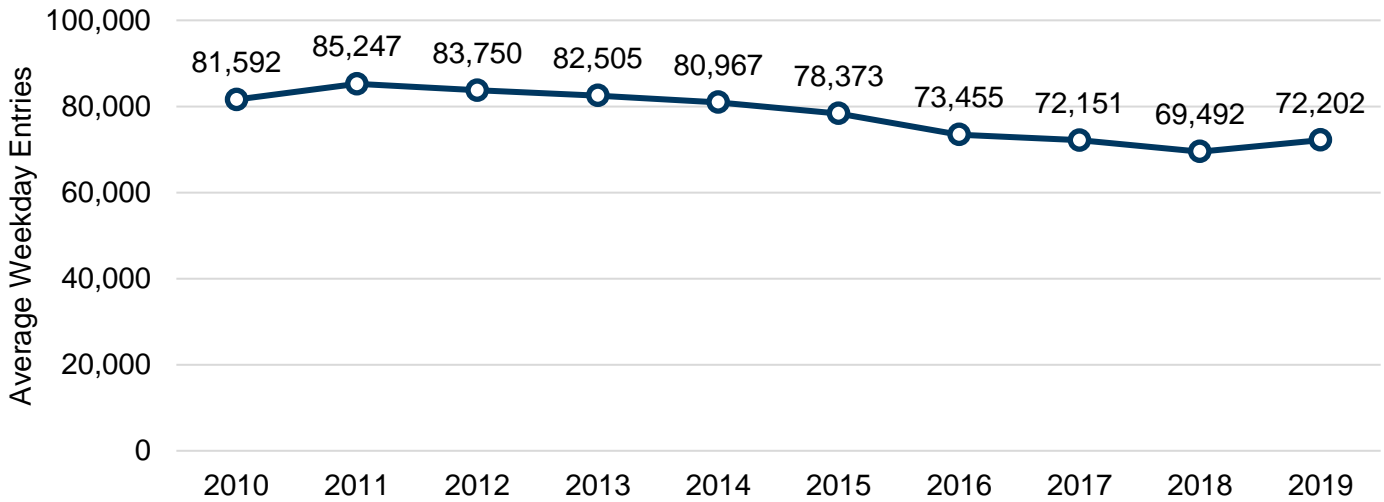


**Source:** Kenneth Joh, "2017-2018 Regional Travel Survey Briefing, Initial Findings of Observed Daily Trips," Regional Travel Survey Presentations, Metropolitan Washington Council of Governments, October 2020, <https://www.mwcoq.org/documents/2020/01/21/regional-travel-survey-presentations-regional-travel-survey-tpb-travel-surveys/>.

## Rail and Bus Ridership Changes from 2010 to 2019

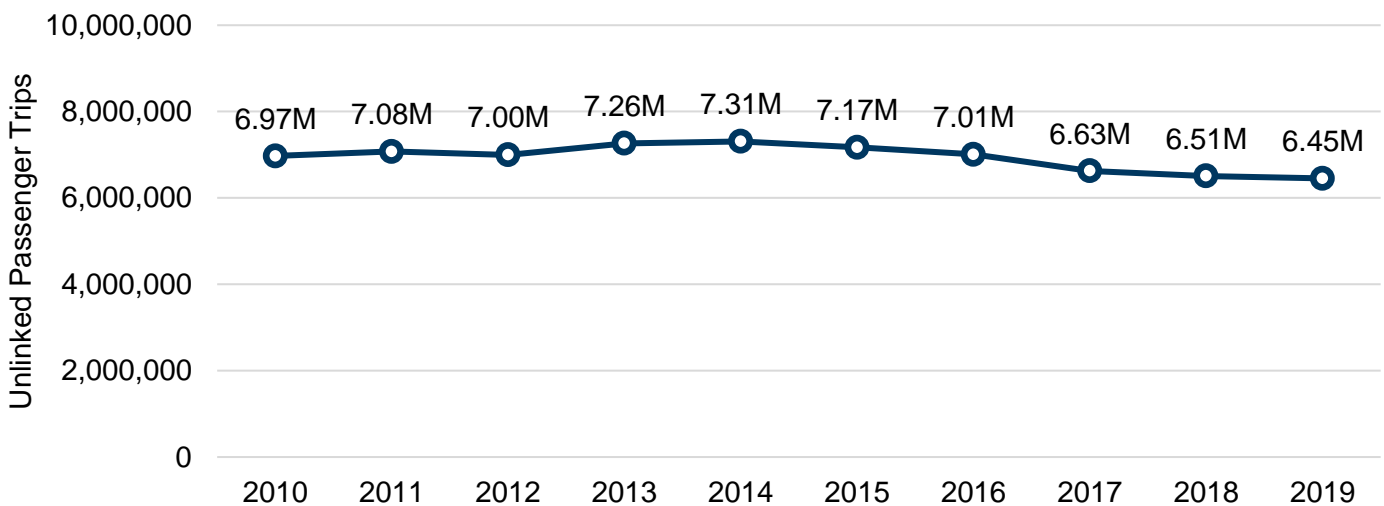
Despite an increasing population, the ridership for Metrorail and Ride On have declined. Metrorail ridership, measured as the number of passengers entering the system at a Montgomery County based station, peaked in 2011 and declined each year through 2018. The decline was consistent across the entire rail system. Ride On ridership, measured through unlinked passenger trips, peaked in 2014 and has declined each year after.

### Average Weekday Metrorail Entries at Montgomery County Stations



**Source:** "Rail Ridership Data Viewer", Metropolitan Washington Area Transit Authority, Accessed March 2021, <https://www.wmata.com/initiatives/ridership-portal/Rail-Data-Portal.cfm>.

### Ride On Ridership by Calendar Year



**Source:** "Monthly Module Raw Data Release", Federal Transit Administration, Accessed March 2021, <https://www.transit.dot.gov/ntd/data-product/monthly-module-raw-data-release>.

# Appendix

## Serious and Fatal Collision Definitions

The State of Maryland’s Automated Crash Reporting System (ACRS), used by all Maryland law enforcement to report traffic collisions, aligns its definition of injury severity with the National Highway Traffic Safety Administration’s Model Minimum Uniform Crash Criteria. For a serious injury, or suspected serious injury as it is listed in ACRS, the person involved has one or more of the following injury criteria apply:

- Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Crush injuries
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
- Significant burns (second and third degree burns over 10% or more of the body)
- Unconsciousness when taken from the crash scene
- Paralysis

A fatal injury is any injury that results in death within 30 days after the motor vehicle crash in which the injury occurred. In practice, however, Montgomery County Police will update records from a suspected serious injury to fatal within one year of the crash to support possible charges in court. Cases where the person was determined to have perished that were not related to the crash, such as a medical emergency, are excluded.

## Adjustments to Crash Data

The following section details the adjustments made to the crash data posted on the County’s data platform dataMontgomery.

### Excluding Interstate and MD 200 (ICC) Crash Records

The vast majority of crash records for interstates and the Maryland Intercounty Connector (MD-200) were written by Maryland State Police and Maryland Transit Authority Police, respectively. However, 1,065 crashes on the interstates and MD-200 were written by local police and included in the County Government’s crash database. Because the County’s records do not include state police agencies, the County’s data on the interstates and MD-200 were incomplete. Therefore, all crashes occurring on these roads were excluded.

Crash Type	Total Crashes
<b>All crashes in Montgomery County Police’s crash database from 2015 to 2019</b>	59,200
<b>(-) Interstate crash reports</b>	1,031
<b>(-) MD-200 crashes</b>	34
<b>Total crashes included</b>	58,135

## Adjustments to Injury Severity

There were seven adjustments to the injury severity category to account for fatal crashes. Adjustments were made to account for fatal injuries that were not updated to fatal in ACRS and to subtract injuries listed as fatal but later cleared as deaths not related to the crash. All the adjustments up from serious to fatal were from 2015, the first full year of the new crash reporting system.

<b>Fatal Injuries</b>	<b>Crashes</b>	<b>People</b>
<b>Fatal crashes in Montgomery County Police's crash database</b>	151	162
<b>(+) Crashes listed as serious injury, but confirmed fatal injury by Collision Reconstruction Unit</b>	4	4
<b>(-) Crashes listed as fatal injury, but confirmed death unrelated to traffic crash by Collision Reconstruction Unit</b>	3	3
<b>Total crashes included</b>	152	163

## **Adjustments to Non-Motorist Type**

To clean and roll-up the non-motorist types to pedestrians and bicyclists, the following changes were made from the investigating officer's initial non-motorist type entered. Adjustments to the non-motorist type in ACRS were based on review of the crash report and in consultation with MCPD Traffic Division. All data shown below exclude crashes along interstates, the Intercounty Connector, and federal land.

<b>Bicyclist Adjustments</b>	<b>Crashes</b>	<b>People</b>
<b>Bicycle crashes in Montgomery County Police's crash database</b>	679	686
<b>(+) Other Pedalcyclist, Other Conveyance, Pedestrians that were bicyclists</b>	7	7
<b>Adjusted Bicycle Count</b>	686	693

<b>Pedestrian Adjustments</b>	<b>Crashes</b>	<b>People</b>
<b>Pedestrian crashes in Montgomery County Police's crash database</b>	2,329	2,460
<b>(-) Pedestrians that were bicyclists</b>	3	3
<b>(+) Machine operator/rider, Other, Other Conveyance</b>	95	107
<b>Adjusted Pedestrian Count</b>	2,421	2,564

There were 85 non-motorists across 77 crash reports that were deemed not to be a non-motorist after review. Those crashes have been categorized as motor-vehicle crashes. A commonly cleared non-motorist was one listed as "other" and determined to be the owner of the property damaged in the crash.

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"Transport," Transport from SHAREICON, Licensed under Flaticon Basic License, <https://www.shareicon.net/reach-collision-cars-transport-accident-crash-693941>.



## Endnotes

- <sup>1</sup> “Equity Emphasis Areas for TPB’s Enhanced Environmental Justice Analysis,” *Metropolitan Washington Council of Governments*, 2017, <https://www.mwcog.org/transportation/planning-areas/fairness-and-accessibility/environmental-justice/equity-emphasis-areas/>.
- <sup>2</sup> Hopwood, Corey, “Regional Safety Study: Equity Emphasis Area Analysis,” Metropolitan Washington Council of Governments, May 2021, <https://www.mwcog.org/documents/2020/07/22/tpb-safety-study-resources--safety-policy-federal-performance-measures-highways--roads-traffic-safety/>.
- <sup>3</sup> Greg Lindsey, “Bicycles, Gender, and Risk: Driver Behaviors When Passing Cyclists,” *The Gender Policy Report*, University of Minnesota, July 2019, <https://genderpolicyreport.umn.edu/bicycles-gender-and-risk/>.
- <sup>4</sup> <https://www.ihs.org/topics/fatality-statistics/detail/males-and-females>
- <sup>5</sup> “2014 Pedestrian Safety Initiative,” Montgomery County CountyStat, 2017, <https://stat.montgomerycountymd.gov/en/dataset/Ped-Safety-Web-Version/fmkw-w6ux>.
- <sup>6</sup> “Crash Factors in Intersection-Related Crashes: An On-Scene Perspective,” *NHTSA National Center for Statistics and Analysis* (Washington, DC: U.S. Department of Transportation, 2010), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/811366>.
- <sup>7</sup> “Don’t Cut Corners: Left Turn Pedestrian & Bicyclist Crash Study,” *New York City Department of Transportation*, Aug 2016, <http://www.nyc.gov/html/dot/downloads/pdf/left-turn-pedestrian-and-bicycle-crash-study.pdf>.
- <sup>8</sup> “2018 Maryland Occupant Protection Program Area Brief,” Maryland Department of Transportation Motor Vehicle Administration, Highway Safety Office, 2019, [https://mva.maryland.gov/Documents/FY19\\_OP\\_ProgramAreaBriefFINAL.pdf](https://mva.maryland.gov/Documents/FY19_OP_ProgramAreaBriefFINAL.pdf).
- <sup>9</sup> “Seat Belt Use in 2019 – Use Rate in the States and Territories,” *NHTSA National Center for Statistics and Analysis* (Washington, DC: U.S. Department of Transportation, April 2020), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812947>.
- <sup>10</sup> “Quickfacts,” US Census Bureau, 2020, <https://www.census.gov/quickfacts/fact/table/montgomerycountymaryland,US/PST045219>.
- <sup>11</sup> “Projections to 2045,” Maryland State Data Center, Department of Planning, December 2020, [https://mdp.state.md.us/MSDC/pages/s3\\_projection.aspx](https://mdp.state.md.us/MSDC/pages/s3_projection.aspx).
- <sup>12</sup> “Most and Least Ethnically Diverse Cities in the US,” WalletHub, February 2021, <https://wallethub.com/edu/cities-with-the-most-and-least-ethno-racial-and-linguistic-diversity/10264>.
- <sup>13</sup> “Montgomery County, MD Community Livability Report 2019,” National Research Center, 2019, <https://www.montgomerycountymd.gov/OPI/survey2019.html>.
- <sup>14</sup> Karen Armendariz, “What did the Voices of the Region survey tell us about travel during COVID-19 and beyond?” TPB News, Metropolitan Washington Council of Governments, March 2021, <https://www.mwcog.org/newsroom/2021/03/09/what-did-the-voices-of-the-region-survey-tell-us-about-travel-during-covid-19-and-beyond-tpb-visualize-2045/>.
- <sup>15</sup> Kenneth Joh, “2017-2018 Regional Travel Survey Briefing, Initial Findings of Observed Daily Trips,” Regional Travel Survey Presentations, Metropolitan Washington Council of Governments, October 2020, <https://www.mwcog.org/documents/2020/01/21/regional-travel-survey-presentations-regional-travel-survey-tpb-travel-surveys/>.



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