

Maryland Statewide FFY2024 Problem Identification

Overall

In 2021, 563 people were killed—a 1.7 percent decrease from 2020—in 108,656 police-reported traffic crashes in Maryland, while 40,788 people were injured, and 80,048 crashes involved no apparent injury. In total, 343 drivers (269 vehicle drivers and 74 motorcycle operators), 137 non-motorists, and 83 passengers were killed on Maryland roads. The fatality rate for Maryland increased from 0.86 in 2018 to 0.89 in 2019 and 1.13 in 2020, before falling to 0.99 in 2021; however, the overall fatality rate has consistently been lower than the national fatality rates every year since 1992.

On average in 2021, one person was killed every 15 hours, 111 people were injured each day (4 injured every hour), and 297 police-reported traffic crashes occurred every day.

On average, crashes in the Baltimore and Washington metropolitan regions accounted for 90 percent of the state's annual crashes.¹ Approximately 20,000 crashes occurred in both Baltimore and Prince George's Counties in 2021, accounting for over 37 percent of all crashes reported statewide. Prince George's County was also the site of the greatest number of fatal crashes in Maryland in 2021.

Crashes occurred consistently through the year on Maryland's roadways, spread relatively evenly through the calendar year. On average, however, slightly fewer crashes occurred in January, February, March, and April. Crashes tended to increase significantly in May but occurred most frequently in October, November, and December. Regardless of the month, more crashes occurred on Fridays and during afternoon or early evening hours in Maryland. Approximately 10 percent of daily crashes occurred from midnight to 5 am.

Young adult drivers, ages 21 to 29, represented approximately one in every five drivers (19 percent) involved in Maryland crashes. These young adults also comprised a large share of injuries (23 percent) and deaths (22 percent) resulting from crashes on Maryland roadways.

Females accounted for one-third (32 percent) of drivers involved in crashes yet accounted for nearly half (48 percent) of the drivers injured. Males accounted for 48 percent of drivers involved in crashes yet accounted for over three-quarters (78 percent) of fatally injured drivers.

¹Baltimore Metropolitan Region: Anne Arundel, Baltimore, Carroll, Harford, Howard, Queen Anne's, Baltimore City
Washington Metropolitan Region: Calvert, Charles, Frederick, Montgomery, Prince George's, St. Mary's

General Crash Factors (2017-2021 Averages)		
Factor	Variable	Percentage
Age (drivers)	21–34	29% of involved; 34% of injured; 33% of killed
Sex (drivers)	Male	48% of involved; 50% of injured; 78% of killed
Month	October–December (total crashes); May–July (injury crashes); August–October (fatal crashes)	Oct.–Dec., total crashes – 27% May–July, injury crashes – 26% Aug. –Oct., fatal crashes – 30%
Day of Week	Friday (total and injury crashes); Saturday (fatal crashes)	Fri. total crashes – 16% Fri. injury crashes – 16% Sat. fatal crashes – 17%
Time of Day	2p.m.–7 p.m. (total/injury crashes) 9 p.m.–4 a.m. (fatal crashes)	Total crashes – 34% Injury crashes – 36% Fatal crashes – 35%
Road Type	State Roads (IS, US, MD)	Total crashes – 47% Injury crashes – 53% Fatal crashes – 71%
Jurisdiction	Baltimore City; Baltimore, Montgomery, and Prince George’s Counties (total, injury, and fatal crashes)	Total crashes – 64% Injury crashes – 62% Fatal crashes – 49%

Impaired Driving

The number of impaired driving crashes in 2021 increased by approximately 5 percent since 2020, though the 2021 total was still 5 percent below the number of impaired crashes that occurred in 2019. Despite the increase in total crashes, fatal crashes involving alcohol and/or drugs decreased by 11 percent since 2020, resulting in a 7 percent decrease in the number of fatalities.

While one in 42 crashes involving driver impairment resulted in a fatality in 2021, 29 percent of all fatal crashes in the State involved alcohol and/or drugs. Although every impaired driving crash does not result in a fatality, impairment is often a factor when a fatality does occur. This relatively high rate of occurrence and correlation between impaired driving and fatal crashes

and fatalities on Maryland roadways has made impaired driving a crucial focus point for traffic safety and law enforcement professionals throughout the state.

In 2021, Maryland law enforcement officers issued 38,535 citations for impaired driving (total of all citations issued, not total persons cited; in a single stop, an impaired driver may be cited for two or three violations), which translated to a total of 14,855 arrested drivers. This compared to 14,017 arrests in 2020 and 19,022 in 2019. Comparably, the MHSO and its SHSP EAT partners are interested in curbing drugged driving in Maryland. In 2021, there were 6,647 citations issued to drivers for operating a vehicle while impaired by drugs or controlled dangerous substances (CDS), compared to 6,629 written in 2020 and 7,683 written in 2019.

Frequency of Impaired Crashes

For 2017 through 2021, impaired driving crashes (both total and injury) occurred consistently throughout the year, with a slight decrease from January through April. A higher percentage of fatal crashes involving impairment occurred in July and August. But, for the full seven-month period from April through October, incorporating the typical warm-weather driving months, more than half of all impaired driving crashes (59 percent), and about two in every three impaired fatal crashes (66 percent) occurred.

Approximately 8 percent of yearly impaired driving crashes occurred each month. Fifty-seven percent of all impaired crashes occurred on a Friday, Saturday, or Sunday, while crashes resulting in death or injury were highest on Saturdays and Sundays. Crashes began to increase from the late afternoon through the early morning hours and saw a dramatic fall after 3 a.m. Approximately 32 percent of fatal crashes occurred between midnight and 4 a.m. In addition, 57 percent of impaired crashes occurred from Friday through early Sunday morning. More than two in three (68 percent) of all impaired crashes occurred from Thursday through Sunday.

Typical Profile of Impaired Driver/High-Risk Crash Locations

Fifty-seven percent of impaired drivers were 20–39 years old. In addition, impaired drivers in their twenties and thirties comprised 58 percent of injured and 56 percent of fatal impaired drivers.

Forty-two percent of impaired drivers and 41 percent of passengers killed in impaired crashes were not wearing a seat belt. In comparison, in all crashes across the State, 31 percent of drivers killed (and 39 percent of passengers) were not wearing their seat belts, indicating that impaired drivers are less inclined to buckle up. This combination of impaired driving and reduced usage of seat belts, particularly during late-night hours, indicates an opportunity for effective crossover or combined outreach efforts by the State, utilizing impaired and occupant protection messages. Additionally, use of this data set provides law enforcement the opportunity to combat impaired driving by implementing nighttime seat belt enforcement strategies.

More than three in every four crashes involving impaired drivers (79 percent) occurred in nine Maryland counties plus the city of Baltimore, including Anne Arundel, Baltimore, Charles, Frederick, Harford, Howard, Montgomery, Prince George's, and Washington Counties. These counties also represented the top counties in Maryland for percentage of total crashes involving unrestrained occupants.

These profiles together help define the most effective target focus of statewide education and media campaigns and enhanced enforcement efforts for both impaired driving and non-use of seat belts.

The most frequently noted driver demographic information and locations were male drivers, ages 20–39, driving between 8 p.m. and 4 a.m. in the jurisdictions of the nine counties above, plus Baltimore City, mainly on State and county roadways.

Occupant Protection

In Maryland during 2021, over 2,150 unbelted occupants of passenger vehicles or light trucks were injured or killed in crashes. Despite increases in observed belt use rates in Maryland and across the nation, 25 percent of all Marylanders killed in motor vehicle crashes were not wearing seat belts. Research has shown that seat belts, when used properly, reduce the risk of fatal injury to front-seat passengers by 45 percent and reduce the risk of moderate to critical injury by 50 percent.

In 2021, Maryland law enforcement agencies issued a total of 14,994 citations for seat belt use violations (which includes 1,938 child safety seat violations), reflecting decreases of 11 percent and 3 percent, respectively, since 2020. There were 16,833 belt use citations issued in 2020 (1,991 of which were for child safety seat violations) and 29,653 issued in 2019 (3,786 for child safety seat violations). The increase in the fine had been cited as a possible cause for fewer citations being written in previous years, or the issuance of a warning in lieu of a moving violation. Also cited had been the "Ferguson effect" where the tense climate of public interactions with, and increased scrutiny of, law enforcement may be affecting the number of vehicle stops. The MHSO will continue to analyze these data trends and work with its law enforcement partners to understand the changes seen in law enforcement interventions for traffic violations.

Frequency of Unrestrained Occupant Crashes

In 2021, there were 139 unrestrained occupants killed in crashes, and 384 unrestrained seriously injured occupants. These unbelted motor vehicle occupants represented 41 percent of all vehicle occupants fatally injured in crashes statewide and 25 percent of all statewide traffic fatalities. The seriously injured unbelted motor vehicle occupants represented 19 percent of all vehicle occupants seriously injured in crashes statewide and 13 percent of all seriously injured in the State in a traffic-related crash.

Maryland crashes involving unrestrained occupants have occurred rather consistently on average throughout the year. Over 55 percent of all crashes involving unrestrained occupants occurred in the six-month period from April through September, corresponding to typically warm weather driving periods.

Crashes with unrestrained occupants occurred consistently throughout the week but were more frequent on Friday and Saturday (one out of three). Thirty-nine percent of all fatal crashes with at least one unrestrained occupant occurred on Saturday or Sunday. Two-thirds of all unrestrained injury crashes happened between noon and midnight. Although 34 percent of all crashes with unrestrained occupants occurred between 7 p.m. and 6 a.m., 54 percent of all fatal crashes involving unrestrained occupants occurred during that time, which indicates that serious crashes involving unrestrained occupants are more likely to occur at nighttime.

More than 80 percent of all crashes involving unrestrained occupants occurred in nine jurisdictions – Anne Arundel, Baltimore, Cecil, Charles, Harford, Howard, Montgomery, Prince George’s counties, and Baltimore City. These same locations accounted for 79 percent of all injury crashes involving unrestrained occupants, and 78 percent of fatal crashes involving unrestrained occupants.

Typical Profile of Unrestrained Occupants

Between 2017-2021, more than one half of all unrestrained occupants were male (58 percent), including those injured (56 percent), seriously injured (65 percent) and those who were killed (74 percent). The mean age for injured occupants was 27 and was 39 for fatally injured occupants. Among all unrestrained drivers, 67 percent were male and the mean age was 37. Among all unrestrained passengers, 51 percent were male and the mean age was 14.

Child Passenger Safety Results

Analysis of child passenger safety results for motor vehicle occupants under age eight indicated that, in 2021 in Maryland, 8213 children were involved in crashes, with 81.5 percent of those riding in the back seat and 45 percent were documented by law enforcement as either not using a child passenger safety seat (32%) or unknown if child passenger safety seat was used (13%). If children are reported as using any restraint other than an appropriate child safety seat, they are considered improperly restrained or unrestrained. Of the unrestrained and unknown if restrained, 83 percent were uninjured, and 17 percent were injured, with one child fatality of age seven or younger. Similarly, 83 percent of restrained children were uninjured, 17 percent were injured, and four were killed.

By age, restraint use was more common among younger children of child seat age (at least 67 percent up to age 4, and 46 percent at age five), while restraint use dropped among booster seat age children (33 percent at age six, and 24 percent at age seven).

Safety initiatives that have been effective in the past for other age groups, including education/awareness/training and enforcement efforts, are necessary for child passengers and should be considered for enhancement.

Observational Occupant Protection Survey Results

The 2022 front seat belt observational survey in Maryland was conducted following a revised sampling of the State roadways, resulting in 14 jurisdictions that will follow the NHTSA data collection protocol between 2022 and 2026. Based on data sampled in these jurisdictions, the overall observed seat belt usage rate for drivers and right front seat passengers in the State of Maryland in 2022, after weighting by probability of roadway selection and jurisdictional roadway specific vehicle miles traveled (VMT), was 92.7%. The 2022 usage rate represented a 1.3 percentage point increase over the previous year. The Statewide standard error of 0.6% was well below the NHTSA threshold of 2.5%, yielding a 95% confidence interval of 91.5% to 93.9% for the combined usage rate. These rates were based on observation of 33,674 vehicles and 42,203 occupants, representing decreases of 15.5% and 14.7% in the number of vehicles and occupants observed, respectively, in the 2021 survey.

Belt use was highest among passenger cars and SUVs relative to pick-up trucks (93.4% vs. 88.0%, respectively). Seat belt usage was also highest among all front seat occupants traveling on Primary roads relative to Secondary and Local roads (95.2% vs. 91.8% and 85.2%). Since 2021, the rates represented increases across the board for passenger cars/SUVs, pick-up trucks, and all three types of roadways.

Prince George's County (98.1%) had the highest usage rate among Maryland's 14 NHTSA jurisdictions, followed by Montgomery (96.3%), and Carroll (94.8%) counties. There were nine jurisdictions with rates of at least 90%; Baltimore City (85.3%), Washington County (84.6%) and Charles County (80.6%) experienced the lowest rates. Overall, five of the 14 jurisdictions experienced an increase in combined usage rates over the past year. The large decrease in rates over the past year for Baltimore City may be partially due to the 2022 random sample of roadways. For occupants of passenger cars or SUVs, 10 jurisdictions had usage rates of at least 90%. Among occupants of pick-up trucks, three jurisdictions had a usage rate above 90% (Prince George's, Montgomery, and Carroll Counties), and two jurisdictions (Washington and Charles Counties) experienced rates below 80%. Unweighted analysis indicated that drivers had a slightly lower Statewide usage rate (92.8%) than front seat passengers (93.7%).

Seat belt usage could not be ascertained for 3.7% of all drivers and passengers. Unknown belt use was more prevalent in pick-up trucks (6.4%) than in passenger cars (3.2%), higher for drivers (4.6%) than for passengers (0.3%), and slightly higher on Local roads (5.5%) compared to Primary roads (3.0%) and Secondary roads (4.3%).

Approximately 93.4% of all drivers and right front-seat passengers traveling in the 10 non-NHTSA jurisdictions were belted, representing a 3.2 percentage point increase over the past year (unweighted analysis). A slightly lower proportion of drivers (93.0%) than passengers (96.3%) were observed to be belted. In addition, higher usage rates were found in passenger cars or SUVs (94.8%) than in pick-up trucks (89.5%), and on Primary as opposed to Secondary or Local roadways. Eight of the non-NHTSA jurisdictions had a usage rate above 90%. For passenger cars or SUVs, usage rates were also at least 90% in eight jurisdictions, while usage

rates among occupants of trucks were above 90% in six non-NHTSA jurisdictions. Kent County experienced the lowest rate among all vehicles. Seat belt usage could not be ascertained for 3.0% of all front-seat occupants.

Examination of individual record-level data, for the instance in which both a driver and passenger were observed in the front seat, indicated that 95.5% of passengers were belted when the driver was belted. However, if the driver was unbelted, only 41.5% of passengers were observed to wear their belt. This large difference in passenger belt use occurred in cars and SUVs (95.8% for belted drivers vs. 43.2% for unbelted drivers) as well as in trucks (93.0% for belted drivers vs. 34.0% for unbelted drivers). There was also an association with roadway classification, with the Secondary or Local roadways corresponding to a larger difference in passenger belt use between belted and unbelted drivers than the discrepancy seen on Primary roads. Data on cell phone usage by drivers were not presented, as only 169 drivers (0.5%) were observed using a hand-held cell phone.

An additional analysis was carried out to compare rural vs. urban jurisdictions and roadways among the 14 NHTSA jurisdictions. In 2022, the unweighted percent seat belt usage was higher in rural compared to urban jurisdictions for all vehicle types, whereas the 2021 rates were higher in the urban jurisdictions. When comparing the 2022 restraint use findings on roadways classified as being either rural or urban, rates in cars remained slightly higher on rural roads while rates in trucks were slightly higher on urban roads.

While Maryland has not conducted a rear seat evaluation in a few years, based on the most recent observation as well as statewide and national surveys, rear seat passengers are at high risk and are not buckling up at the same rate as front seat occupants. Unbelted backseat occupants had a 3.4 times greater risk of sustaining a severe or fatal injury than those reported to be belted. 41% of backseat fatalities with known belt use were unbelted.

The last year a rear seat observation was conducted (2019), among all vehicles with a single back seat occupant, analysis of known belt use indicated that 78.3% were belted, with a best-case scenario of only 79.5% (i.e., if all unknowns represented belted occupants). When two individuals were seated in the rear, however, seat belt usage was found to be somewhat lower. Analysis of known cases demonstrated that both rear occupants were belted only 70.9% of the time, increasing to 72.3% in the best possible case. Therefore, further analysis was conducted to determine if there was a disproportion in rates according to passenger type (i.e., adult or child) and driver belt use.

The majority (93.5%) of drivers was belted, so ample sample sizes were available in this group to determine differences in belt use rates of adult and child back seat passengers. Among occupants with known belt use, 78.9% were belted, which differed for adults (58.5%) versus children (92.5%). Among vehicles with a single back seat occupant, analysis of known belt use indicated the adult passenger was much less likely to be belted than the child passenger (56.4% adult vs. 92.9% child), with the best possible scenario increasing rates to 60.5% for the adult and 93.1% for the child. Thus, despite the use of a seat belt by the driver, adult occupants of

the back seat were far less likely to wear their seat belt. Children, however, experienced a higher usage rate.

Analysis of vehicles with an unbelted driver revealed similar differences in rates between adults and children. In addition, it was apparent that, although sample sizes were small, occupants were much less likely to wear their seat belts if the driver was not belted. Analysis of occupants with known belt use indicated that only 56.6% were belted, with a large difference in belt usage found for adults (20.0%) when compared with children (80.9%). For single occupants, usage rates dipped to 18.2% for the adult vs. 86.4% for the child and fell even further for double occupancy (0% for both adults and 54.5% for both children).

Distracted Driving

Though the number of distracted driving crashes in 2021 increased by 12 percent from the previous year, the number of fatal crashes involving distracted driving remained the same (n=205). An average of more than 53,000 distracted driving crashes occurred on Maryland roads each year between 2017 and 2021. For this latest five-year period, distracted driving was a factor in an annual average of approximately one-half of all traffic crashes (48 percent), more than half of all injury crashes (53 percent), and well over one third of all fatal crashes (38 percent). Distracted driving was a factor in 54 percent of injuries and 38 percent of fatalities. Thus, distracted driving is significantly over-represented in all crashes, and even more so in injury crashes. However, the difficulty in accurately capturing distracted driving as a cause on crash reports would indicate that distracted driving is, potentially, still under-reported. Research has also shown that investigating officers tend to conclude that drivers not paying attention is common and frequent, and the use of the codes related to these behaviors may be over-reported. Combined with the significant contribution of identified crashes, distracted driving is a significant problem but a complex one to understand when evaluating crash reports. Nevertheless, distracted driving is a major focus for traffic safety professionals in Maryland and across the nation.

In 2021, Maryland law enforcement officers issued 16,449 citations for handheld cell phone use and 797 citations for texting while driving. These numbers represent decreases of 10 percent and 15 percent, respectively, from those of the previous year. In 2020, there were 18,257 handheld cell phone citations issued along with 941 texting citations. In 2019, there were 31,034 handheld cell phone citations and 2,367 texting citations.

Frequency of Distracted Driving Crashes

Due to the large proportion of all crashes identified as distracted related, distracted driving crashes occurred consistently throughout the year and every day of the week. A slight increase occurred on Fridays before decreasing on Saturdays and Sundays. From day to day, the afternoon rush hour (3 to 6:59 p.m.; 29 percent) accounted for a significant proportion of distracted crashes, including injury crashes (30 percent).

Typical Profile of Distracted Driver

Crash data revealed the typical profile of a distracted Maryland driver involved in a crash as male, ages 21 to 34 (34 percent). Eighty percent of distracted drivers killed were male, and 35 percent of distracted drivers who died were unrestrained.

Typical Distracted Driving Crash Locations

Most distracted driver-involved crashes occurred in Prince George's and Baltimore Counties, both urban areas. This may be an expected profile and one that makes sense as a focus of statewide education, media, and enforcement campaigns.

Aggressive Driving

In 2021, the number of fatal crashes involving aggressive driving decreased by 42 percent, resulting in 28 fewer fatalities than in 2020. The significant one-year decrease in fatalities and fatal crashes occurred even though the number of aggressive driving related crashes in 2021 increased by 300, or by 10 percent. During the latest five-year period, 2017 through 2021, aggressive drivers have been involved in an average of 3,840 crashes on Maryland roads each year. For the same five-year period, aggressive driving accounted for an annual average of 4 percent of all traffic crashes, 4 percent of all injury crashes, and 8 percent of all fatal crashes in Maryland. Aggressive driving was a factor in 5 percent of injuries and 8 percent of fatalities during the five-year period, and 4 percent of injuries and 6 percent of fatalities in 2021.

In 2021, Maryland law enforcement officers issued 601 citations statewide for aggressive driver violations, compared to 791 in 2020 and 822 in 2019. Difficulties exist in obtaining convictions for violating the aggressive driving statute because of the requirement that officers observe three separate driving violations to issue an aggressive driving citation. This requirement almost certainly contributes to the low number of citations written each year for aggressive driving in Maryland, since law enforcement officers are typically trained to take immediate action upon seeing a violation. Waiting to observe two or more additional offenses before taking enforcement action is counter-intuitive to officers. It is suspected that many of the aggressive driving citations are directly related to police pursuits.

Frequency of Aggressive Driving Crashes

Aggressive driving crashes overall were most common between the months of October and December (27 percent). Injury crashes involving aggressive driving typically increased during May through July, with another increase in October. Maryland averaged 40 fatal aggressive driving crashes per year during the latest five-year period (2017-2021), with more fatal crashes tending to occur in May, August, and September. Over one-third of fatal crashes (35 percent) occurred during weekends (Saturday and Sunday). The afternoon rush hour time (2 to 6:59 p.m.) accounted for about 40 percent of aggressive driving crashes and injury crashes, with fatal crashes increasing into the late evening hours.

Typical Profile of Aggressive Drivers

Data revealed the common profile of an aggressive Maryland driver involved in a crash as male, ages 21 to 34 (36 percent), and generally using a seat belt restraint, except in fatal crashes where the aggressive driver killed was unrestrained in 33 percent of fatal crashes. Most of these drivers were involved in crashes in Anne Arundel, Baltimore, Howard, Montgomery, and Prince George's Counties, and Baltimore City; 75 percent of all aggressive driving crashes occurred in these six jurisdictions. This high-risk driver will be a major focus of statewide education and media campaigns, as well as increased enforcement efforts.

Among the 12 individual acts that comprise aggressive driving outlined in Maryland law, enforcement officers in 2021 cited 4,012 drivers for failing to yield, 25,307 for failing to obey traffic control devices (such as stopping for red lights and stop signs), and 9,607 drivers for lane violations. By comparison, in 2020 officers wrote 3,860 citations for failing to yield, 24,380 for failing to obey traffic control devices, and 9,153 drivers for lane violations.

Speeding

The number of fatal crashes involving speed decreased by 14 percent in 2021, resulting in 14 fewer fatalities than in 2020. The significant decrease in fatalities and fatal crashes occurred even though the number of speed-related crashes in the State in 2020 increased by 5 percent, from 7,568 to 7,947. Still, between 2017 and 2021, an average of 9,059 speed-related crashes occurred on Maryland roadways each year. For the same five-year period, speeding was involved in an annual average of 8 percent of all traffic crashes, 9 percent of all injury crashes, and 17 percent of all fatal crashes in Maryland. In addition, driver speed was a factor in 9 percent of injured persons and 17 percent of fatalities for the five-year period, and 8 percent of injuries and 17 percent of fatalities in 2021.

Frequency of Speed-Involved Crashes

Speed-involved crashes were most common during the months of December and January. Increases in injury crashes tended to occur from October through January. Excessive speed caused an average of 85 fatal crashes annually from 2017 through 2021, with 55 percent occurring from May through October. Speed-involved crashes, including injury crashes, occurred most likely on Thursdays and Fridays, and fatal crashes were most common from Saturday to Monday. The afternoon rush hour period from 2 to 6:59 p.m. accounted for a large proportion (33 percent) of speed-involved crashes than any other part of the day. Fatal crashes were more likely to occur during the late-night hours of 9 p.m. to 3 a.m. (37 percent) than during any other 6-hour period of the day.

Typical Profile of Speeding Driver

Crash data showed the profile of the typical speeding Maryland driver involved in a crash as male, ages 21 to 34 (42 percent), and using a seat belt restraint, except in fatal crashes where 39 percent of speeding drivers killed were not restrained. Most of these drivers were involved in crashes in Baltimore, Prince George's, Montgomery, and Anne Arundel Counties, mainly

urban areas. This high-risk driver, like all aggressive drivers, should be a major focus of statewide education and media campaigns, as well as increased enforcement efforts.

In 2021, Maryland law enforcement officers issued 139,797 citations to drivers for speeding violations, compared to 151,093 in 2020 and 182,169 in 2019. The number of speed-related citations issued in 2021 represent an 8 percent decrease from the previous year and a 23 percent decrease since 2019. (These figures do not include automated enforcement issuances.)

Motorcycle-Involved

Compared to the previous year, motorcycle-involved crashes in 2021 increased by 4 percent, though there were four fewer fatal crashes and three fewer fatalities during the same period. Between 2017 and 2021, an average of 1,322 motorcycle-involved crashes occurred on Maryland roads each year.

From 2017 through 2021 in Maryland, motorcycle-involved crashes accounted for 2 percent of injuries and 14 percent of fatalities. Thus, motorcycles are significantly over-represented in fatal crashes.

While a relatively low 6 percent of motorcycle crashes result in a fatality, the fact that 14 percent of all statewide fatalities involve a motorcycle is cause for concern among traffic safety experts. This significant involvement of motorcycles in fatal crashes and their effects on overall traffic fatalities in Maryland indicate the need for greater motorcycle safety efforts such as awareness, education, training, and enforcement.

Frequency of Motorcycle Crashes

Warmer weather is conducive to motorcycle riding, so it is not surprising that higher proportions of motorcycle-involved crashes occurred during the warm-weather months of May through September. Crashes were significantly more common during the weekend days, with more than half (55 percent) occurring Friday through Sunday. Motorcycle-involved crashes were most common between 2 and 8: 59 p.m. (55 percent).

Crash data in recent years have shown that more than 1 in 3 of fatal motorcycle crashes involved only the motorcycle. Inattention and speed are frequent causal factors in motorcycle crashes, with alcohol impairment a higher occurrence in fatal motorcycle crashes.

Typical Profile of Motorcycle Operators in Crashes

Crash data suggested the typical profile of Maryland motorcycle operators involved in a crash as male, ages 21 to 39 (44 percent), with more than two in every three wearing a safety helmet (71 percent). Most motorcycle crashes occurred in Baltimore and Prince George's Counties, mainly urban areas.

Helmet-Law Violations in Maryland

Maryland has had a comprehensive mandatory helmet law for decades, but the accurate capturing of helmet use on the crash report may be in question. Crash data for 2021 indicated that 12 percent of injured motorcycle operators in a crash were known to not be wearing a helmet and 9 percent of operator fatalities were unhelmeted.

Pedestrian-Involved

The incidence of pedestrian on foot-involved² crashes in Maryland in 2021 increased by 9 percent since 2020, but fatalities decreased by 3 percent (from 131 to 127 deaths) over the same period. Approximately 2,548 pedestrian-involved crashes occurred on Maryland roads in 2021, and an average of 2,962 such crashes occurred per year between 2017 and 2021.

For the same five-year period, pedestrians were involved in an annual average of 3 percent of all traffic crashes, 8 percent of injury crashes, and almost one-quarter (24 percent) of fatal crashes. Pedestrians involved in crashes accounted for 7 percent of injuries and 23 percent of all fatalities, although only 4 percent of pedestrian-involved crashes resulted in a fatality. These facts alone show cause for concern among safety professionals, as pedestrians are significantly over-represented in fatal crashes. The apparent risk to pedestrians involved in Maryland crashes calls for improved pedestrian safety as a major focus for traffic safety professionals across the State.

Frequency of Pedestrian-Involved Crashes

Pedestrian-involved crashes tended to occur consistently through the first eight months of the year, but more than one-third of pedestrian-involved crashes (38 percent) occurred in the fall and early winter months, September through December, corresponding to the time of year when 41 percent of fatal pedestrian crashes occurred. October and November accounted for 20 percent of total pedestrian crashes, including 22 percent of fatal crashes.

Three in every four pedestrian-involved crashes (76 percent) occurred on a weekday, Monday through Friday. Forty-one percent of all pedestrian-involved crashes occurred Friday through Sunday, and nearly half of all fatal crashes (45 percent) took place from Friday through Sunday. Over half (54 percent) of pedestrian-involved crashes occurred between the hours of 2 and 9:59 p.m. Over half of all fatal crashes involving pedestrians took place later in the evening, from 5 p.m. to 12:59 a.m. (60 percent).

Typical Profile of Pedestrians Involved in Crashes

The profile of Maryland pedestrians involved in overall crashes included ages 20–39, male, and being struck on the road but not in a crosswalk (30 percent), compared to fatal crashes where 54 percent of pedestrians were on the road and not in a crosswalk. Traditional school aged children (ages 5-19) were involved in 18 percent of pedestrian crashes and 6 percent of fatal crashes. By contrast, older age groups tended to be involved in more serious pedestrian crashes, often later at night. The age range of 40 to 59-year-olds accounted for over one in four

² ACRS Non-Motorist Type: Pedestrian (01)

(27 percent) of all pedestrians involved in crashes, but more than one in three (36 percent) of all pedestrian fatalities. Pedestrians of age 60 or older accounted for 17 percent of all pedestrians involved in crashes, but 25 percent of all pedestrian fatalities.

Twenty-seven percent of pedestrian crashes occurred on state-maintained roads, compared to 34 percent on county roads, and 14 percent in parking lots. In contrast, 73 percent of fatal crashes occurred on state-maintained roads (higher speeds), whereas 19 percent of pedestrian fatal crashes occurred on county roads (and less than 1 percent in parking lots).

Typical Locations of Pedestrian-Involved Crashes

Almost one-third of pedestrian crashes (31 percent) took place in Baltimore City, but these crashes accounted for only 14 percent of fatal crashes.

Fifty-six percent of all pedestrian-involved crashes occurred in six Maryland counties: Anne Arundel, Baltimore, Harford, Howard, Montgomery, and Prince George's. These same six counties accounted for two in every three fatal crashes involving pedestrians (66 percent). Four other counties exhibited disproportionate results in comparing total crashes with fatal crashes. The counties of Cecil, Charles, St. Mary's, and Worcester together accounted for nearly 5 percent of all pedestrian-involved crashes, but 8 percent of all fatal crashes involving pedestrians, an indicator of more serious crash situations occurring in these jurisdictions.

In 2021, 182 pedestrians were cited in Maryland for violating traffic laws, in comparison to 235 pedestrians cited in 2020, and 359 cited in 2019. Also, in 2021, 648 drivers were cited for violating pedestrian traffic laws, compared with 927 drivers cited in 2020, and 993 cited in 2019.

Bicycle-Involved

The 2021 incidence of bicycle-involved crashes in Maryland increased by 2 percent when compared to 2020. However, bicycle-involved fatalities decreased from 16 in 2020 to 6 in 2021. From 2017-2021, an average of approximately 782 bicycle-involved crashes occurred on Maryland roadways each year. During the same period, bicycles were involved in an annual average of fewer than one in 100 (0.7 percent) of all statewide traffic crashes, 2 percent of statewide injury crashes, and 1.9 percent of statewide fatal crashes. Bicycle-involved crashes accounted for 1.5 percent of statewide injuries and 1.8 percent of statewide fatalities during the same period.

Bicycle crashes are more likely to involve younger than older riders. Approximately one-quarter (27 percent) of crashes in 2021 involved children of age 17 or under. By contrast, bicycle riders aged 20 to 29 accounted for 20 percent of all crashes and riders aged 50 to 64 accounted for 18 percent of all crashes.

Bicycle riders, like pedestrians, do not have the structural protection afforded by vehicles, are not as visible as other vehicles, and are not motorized (generally, though there are more

electric bicycles on the road now, but they are still as vulnerable). These factors together put bicycles at a great disadvantage on roadways, especially where motorized vehicles are traveling at much higher rates of speed. From 2017-2021, more than half of all bicycle-involved crashes (58 percent) occurred on state, county, and federal roadways, but 86 percent of all fatal crashes involving bicycles occurred on the same roadways.

Frequency of Bicycle-Involved Crashes

Bicycle crashes were more common from May through October, when 70 percent of all such crashes occurred, most likely due to warmer/drier weather encouraging greater use of bicycles for travel or commuting, as well as increased recreational riding.

Most fatal bicycle crashes (78 percent) occurred from May through November. Close to half (45 percent) of fatal bicycle-involved crashes occurred Friday through Sunday, although those same three days accounted for 40 percent of total crashes.

Approximately three in four bicycle-involved crashes (71 percent) and nearly half of fatal crashes (49 percent) occurred between noon and 9:59 p.m.

Typical Profile of Crash-Involved Bicycle Rider

Maryland crash data indicated a typical profile for a bicyclist involved in a crash as male between ages 10 and 29, with 42 percent of all bicyclists struck while riding in the roadway (25 percent with traffic and 9 percent against traffic). Riders of ages 10 to 29 accounted for 46 percent of all riders involved and injured in crashes and 25 percent of fatalities. Riders between ages 50 and 64 accounted for 18 percent of all riders involved in crashes and 19 percent of those who were injured, but 46 percent of bicycle fatalities.

Almost one-fourth (24 percent) of bicycle crashes occurred in Baltimore City, where 10 percent of fatal crashes occurred. Fifty-six percent of total bicycle crashes occurred in five counties: Anne Arundel, Baltimore, Montgomery, Prince George's, and Worcester Counties, and these same five counties accounted for 55 percent of fatal crashes.

Young-Driver Involved

Young drivers (ages 16-20) are at greater risk on roadways often simply due to a lack of experience behind the wheel. The unique challenges many of these drivers face must be considered in all planning and education efforts. Young drivers' relative inexperience may indicate less anticipation, slower reaction times, poor judgment, or risky behavior as compared to drivers 21 and older, and all these issues must factor into awareness, education, and enforcement efforts.

For the five-year period from 2017 through 2021, the incidence of young-driver involved crashes increased by 9 percent in Maryland compared to 2012 to 2016, with 13,490 young-driver involved crashes having occurred on Maryland roads on average between 2017-2021 (compared to 12,402 in the previous five years).

From 2017 through 2021, young drivers were involved in an average of one in eight (12 percent) of all traffic crashes, 14 percent of injury crashes, and 10 percent of fatal crashes. Young driver-involved crashes accounted for 14 percent of injuries and 10 percent of fatalities.

Frequency of Young-Driver Involved Crashes

Higher proportions of young driver involved crashes occurred during summer and fall months (May through October) when 54 percent of all such crashes and 59 percent of fatal crashes took place, perhaps reflecting greater exposure on roadways during summer breaks from high school and college.

Crashes involving young drivers were most common during weekdays, but Friday through Sunday accounted for 43 percent of all young driver involved crashes and 44 percent of fatal crashes. More than three in four (77 percent) of young drivers involved in crashes were of ages 18–20, and 80 percent of the fatally injured drivers were of age 18-20, reflecting the greater exposure of young drivers, particularly after Graduated Driver Licensing (GDL) restrictions are no longer applicable. Young drivers are inexperienced drivers, and inexperienced drivers are at greater risk.

Crashes involving young drivers were most common from 12 p.m. to 8:59 p.m., when 59 percent and 61 percent of total and injury crashes occurred, respectively, and when 41 percent of all fatal crashes occurred involving the age group. The fact that drivers ages 16 and 17 accounted for 23 percent of the crash-involved drivers in the age group would indicate the relative effectiveness of night-time driving restrictions imposed during the GDL process in Maryland, prohibiting young drivers from driving after midnight, when 21 percent of fatal young-driver involved crashes occurred (midnight to 5:59 a.m.).

Research indicates the importance of studying driving habits and patterns of young drivers to determine if these crash patterns of behavior and outcomes may be related.

Typical Profile of Crash-Involved Young Drivers

Crash data revealed the most typical profile of a young driver involved in a crash was male of ages 18 to 20 (28 percent were age 20) and using a seat belt restraint, except in fatal crashes where more than 1 in 3 young drivers killed were unrestrained (35 percent). Eighty-two percent of all driver fatalities in the 16-20-year age group were male drivers.

Most crashes involving young Maryland drivers (69 percent) occurred in Anne Arundel, Baltimore, Carroll, Frederick, Harford, Howard, Montgomery, and Prince George's Counties. Fifty-eight percent of fatal crashes in the age group occurred in these eight counties. Baltimore City accounted for 10 percent of overall crashes involving young drivers, and 8 percent of all fatal crashes in the age group.

Older-Driver Involved

As the statewide and national population ages, older drivers (ages 65–110) will become more prevalent on roadways and can present unique challenges that must be considered in safety planning and education. Older drivers may have slower reaction times and shorter sight distances, which factor into awareness, education, and enforcement efforts.

For the five-year period from 2017 through 2021, the incidence of older driver involved crashes increased by 17 percent compared to 2012 to 2016. There were 14,242 crashes involving older drivers on Maryland roads each year on average between 2017 and 2021.

From 2017 through 2021, older drivers were involved in an average of more than one in eight (13 percent) of all traffic crashes, 17 percent of injury crashes, and 16 percent of fatal crashes annually. Older drivers were involved in crashes that accounted for one in six injuries (17 percent) and 16 percent of fatalities.

Frequency of Crashes Involving Older Drivers

Older driver involved crashes occurred consistently throughout the first half of the year, with slightly higher proportions during late fall and early winter (28 percent, October through December), possibly due to inclement weather and earlier onset of darkness. More than half of all fatal crashes in this age group (54 percent) occurred between July and December. About one-third of all crashes (33 percent) and 31 percent of fatal crashes involving older drivers occurred on Thursday and Friday. Crashes involving older drivers were most common from 11 a.m. to 6:59 p.m., when 64 percent of all crashes and 57 percent of fatal crashes took place.

Typical Profile of Crash-Involved Older Drivers

Crash data outlined the typical profile of an older Maryland driver involved in a crash as male, between ages 65 to 79 (16 percent were 80 or older, in older driver-involved-only crashes) and using a seat belt restraint (86 percent, overall crashes; 87 percent injury crashes). Notably, in fatal crashes, the older drivers who were killed were unrestrained 24 percent of the time. Most crashes (69 percent) involving older drivers occurred in the same eight counties outlined for young driver-involved crashes, including 62 percent of fatal crashes. Eleven percent of older driver involved crashes and 6 percent of fatal crashes occurred in Baltimore City.

Note: Citation frequencies and percentages reported here may be underestimates of actual issued citations due to an ongoing system conversion.