

2010-2019 MOTOR VEHICLE INJURY BRIEF

County of San Diego, Health and Human Services Agency,
Public Health Services, Community Health Statistics Unit

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INTRODUCTION

WHAT ARE MOTOR VEHICLE INJURIES?



Motor vehicle or road-traffic injuries, are fatal or non-fatal injuries that occur when at least one vehicle in motion is involved in a collision on a public or private road.¹ Motor vehicle injuries are often a result of collisions involving cars, buses, motorcycles, bicycles, trucks, or pedestrians.² Injuries sustained in motor vehicle collisions vary in severity (e.g., fractures, organ damage) depending on the impact of the crash and can affect different bodily regions (e.g., head, neck, chest, abdomen, spine).³

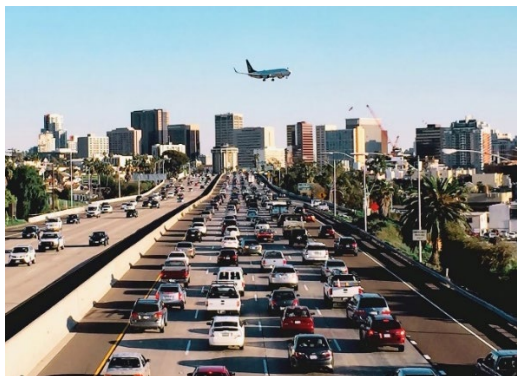
Anyone who uses the road and is involved in a collision, such as drivers, passengers, pedestrians, or cyclists, can sustain fatal or non-fatal injuries.⁴ Nationally among road users, motorcyclists, bicyclists, and pedestrians are the most vulnerable, constituting more than half of the deaths in motor vehicle collisions.²

Globally, nearly 1.3 million people die in motor vehicle collisions each year.⁵ In the United States, motor vehicle injury was the third leading cause of death due to unintentional injuries in 2019.⁶ Among workers, motor vehicle collisions were the leading cause of unintentional injury death among work-related collisions in the United States.⁷ Also, in 2019, motor vehicle collisions were the leading cause of death among unintentional injuries in children and young adults between 5-24 years of age in the United States and California.⁶ In California, among unintentional injuries, motor vehicle traffic injury was the second leading cause of death in 2019.⁶

In 2019, the combined medical costs of non-fatal hospitalizations and non-fatal emergency department discharges due to motor vehicle injuries in the United States were over \$119 billion and \$219 billion, respectively.⁶ During the same year, the combined medical costs of fatal motor vehicle injuries in the United States were over \$389 billion.⁶

MOTOR VEHICLE INJURIES IN SAN DIEGO COUNTY

In San Diego County, accident/unintentional injury was the fifth leading cause of death in 2019.⁸ In the same year, San Diego County had the second highest total number of motor vehicle injuries and the fourth highest total number of motor vehicle fatalities compared to all other counties in California.⁶



This brief further presents key findings about motor vehicle injuries in San Diego County, the six Health and Human Services Agency (HHSA) regions, and the 41 subregional areas (SRAs), from 2010 to 2019. Key findings are presented by type of motor vehicle injury and collision. Motor vehicle injury collisions reported in this brief refer to collisions that occurred on any public road in San Diego County, at the point of collision and not

the victims' place of residence. Indicators in this brief represent victims of total motor vehicle injuries, pedestrian injuries, pedalcycle/bicycle injuries, injuries from alcohol-involved collisions, as well as drinking drivers involved in motor vehicle injury collisions. When available, rates are provided by age group, sex, and year.

DATA GUIDE

DATA SOURCE

The motor vehicle collision and injury data reported in this brief come from the Transportation Injury Mapping System (TIMS), Safe Transportation Research and Education Center, University of California, Berkeley (<https://tims.berkeley.edu/>). Data on injury collisions and victims are compiled annually by TIMS from the California Statewide Integrated Traffic Records System (SWITRS) maintained by the California Highway Patrol (<https://iswitrs.chp.ca.gov/Reports/jsp/index.jsp>).

METHODS

The data reported are for injury collisions occurring on public roads in San Diego County. Rates include anyone traveling on San Diego County roads. Rates are not calculated for fewer than 5 events. The location of collisions is based on reports filed by law enforcement report and may not contain specific geographic coordinates. Locational data may be different when data are finalized by TIMS. All rates are calculated per 100,000 resident population. Age-adjusted rates are calculated per 100,000 2000 US standard population.

KEY DEFINITIONS

Injury Collision: Any motor vehicle collision where an injury or death has occurred. Property damage only collisions are not included in these data.

Total Injuries: Rates of all victims killed or injured in motor vehicle collisions in San Diego County.

Pedestrian Injuries: Rates of victims killed or injured in a motor vehicle collision, who were not in or upon a vehicle, bicycle, or animal. Includes a person in or operating a pedestrian conveyance, such as a baby carriage, coaster wagon, skateboard, roller skates, skis, sled, non-motorized or motorized wheelchair.

Pedalcycle Injuries: Rates of victims killed or injured in a motor vehicle collision who were riding a bicycle or other cycle propelled by operating the pedals as opposed to a motorcycle.

Alcohol-Involved Injuries: Rates of victims killed or injured resulting from a motor vehicle traffic collision where a driver, pedestrian, or bicyclist had been drinking.

Drinking Drivers: Rate of drivers involved in injury collisions, where the driver had been drinking (HBD) and was under the influence; HBD, not under influence; or HBD, with level of impairment unknown.

HOW TO INTERPRET RATES:

A rate is the number of cases divided by the population, usually multiplied by a constant (100,000 in the example). For example, 987 cases, divided by population of 654,321, would be a rate of 150.8 per 100,000 population. This means for every 100,000 people; 150-151 cases would be expected.

MOTOR VEHICLE INJURY DASHBOARD

Data for this brief can also be viewed on the Motor Vehicle Injury Indicators in San Diego County, 2010-2019 Dashboard. This dashboard is an interactive tool that helps visualize motor vehicle injury indicator rates across years (annual trend), rates by age and sex, and rates by SRA and year (map). To access the Motor Vehicle Injury Indicators in San Diego County, 2010-2019 Dashboard, please click [here](#).

KEY FINDINGS

AGE

Motor vehicle injuries in San Diego County impact people of all ages. Although any age can be affected, certain age groups had higher rates of a specific motor vehicle collision injury from 2010-2019.

Total Injuries

The following section describes the rates of total victims injured due to motor vehicle collisions by age in San Diego County from 2010-2019 (Figure 1) and in 2019 (Figure 2). Total injuries include all victims who were killed or injured in a motor vehicle collision and should not be interpreted as those who caused a motor vehicle collision.

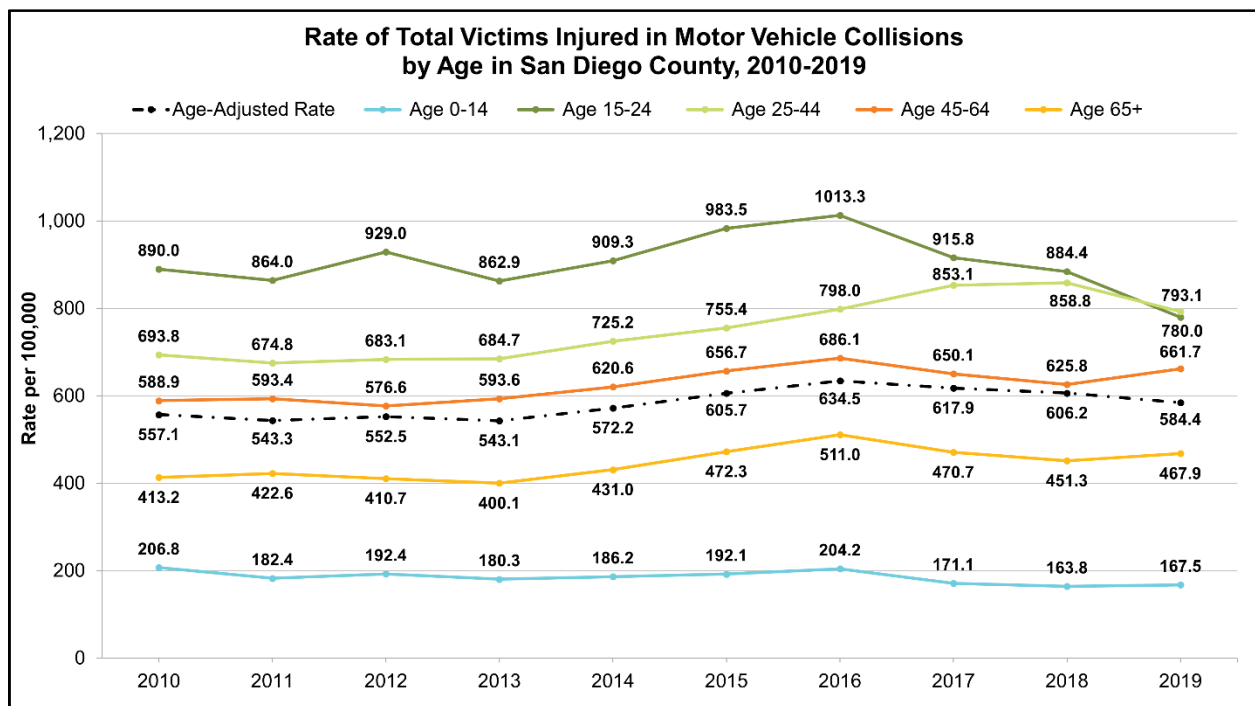


Figure 1. Rates of Total Injuries by Age, 2010-2019.

From 2010-2019, the rate of total victims injured in motor vehicle collisions in San Diego County remained stable for all age groups, except for victims aged 15-24 years old.

Among age groups, the rates of total injuries due to motor vehicle collisions among victims ages 15-24 years, 25-44 years, and 45-64 years were higher compared to the age-adjusted rate in San Diego County overall from 2010-2019.

The greatest increase in the rate of total victims injured in motor vehicle collisions, from 2010-2019, were among victims 25-44 years old (14.3%), followed by victims 65 years and older (13.2%), and victims 45-64 years old (12.4%). The rate of total victims 0-14 years old and 15-24 years old who were injured in motor vehicle collisions decreased by 19.0% and 12.4%, respectively, from 2010-2019.

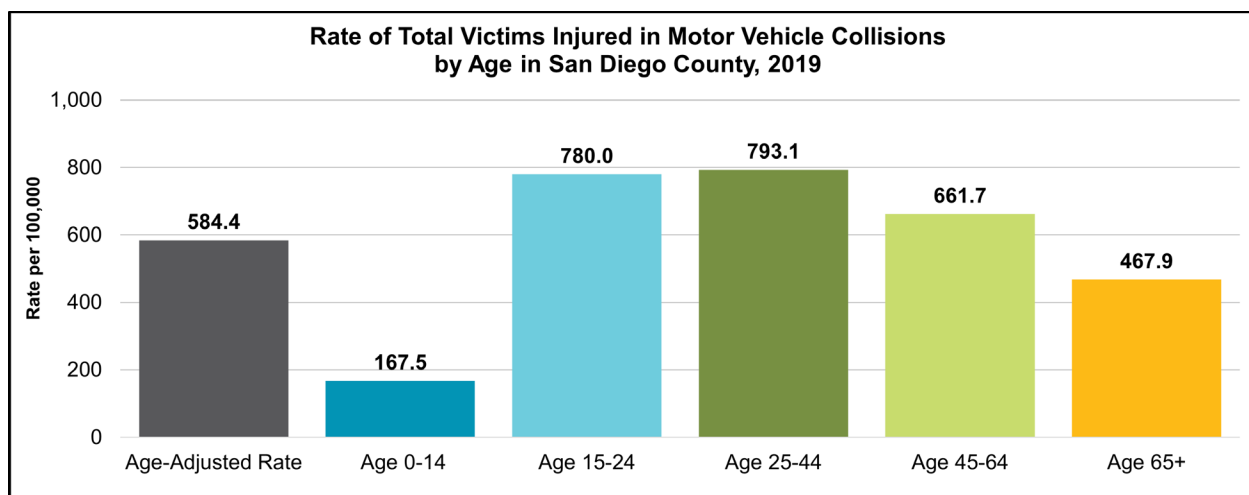


Figure 2. Rate of Total Injuries by Age, 2019.

From 2010-2018, the highest rates of total victims injured in motor vehicle collisions were among victims 15-24 years old, compared to all other age groups (Figure 1). **However, in 2019, the highest rate of total victims injured in motor vehicle collisions were among victims between 25-44 years old, followed by victims 15-24 years old and victims 45-64 years old (Figure 2).**

Pedestrian Injuries

The following section describes the rates of pedestrian injuries due to motor vehicle collisions by age in San Diego County from 2010-2019 (data not shown) and in 2019 (Figure 3). Pedestrian injuries include victims who were killed or injured in motor vehicle collisions involving anyone who was in or operating a pedestrian conveyance, such as a baby carriage, coaster wagon, skateboard, roller skates, skis, sled, non-motorized or motorized wheelchair.

In San Diego County, the rate of pedestrian injuries due to motor vehicle collisions have been higher among victims 15-24 years old nearly every year from 2010-2019. **However, the greatest increase in the rates of pedestrian injuries have been among victims 65 years and older with an increase of nearly 40.0% from 2010-2019.** The rate of pedestrian injuries due to motor vehicle collisions also increased among victims aged 45-64 years old (32.0%) and 25-44 years old (31.3%) from 2010-2019. Meanwhile, the pedestrian injury rates among victims 0-14 years old had the greatest decrease (31.1%), followed by victims aged 15-24 years old (11.9%).

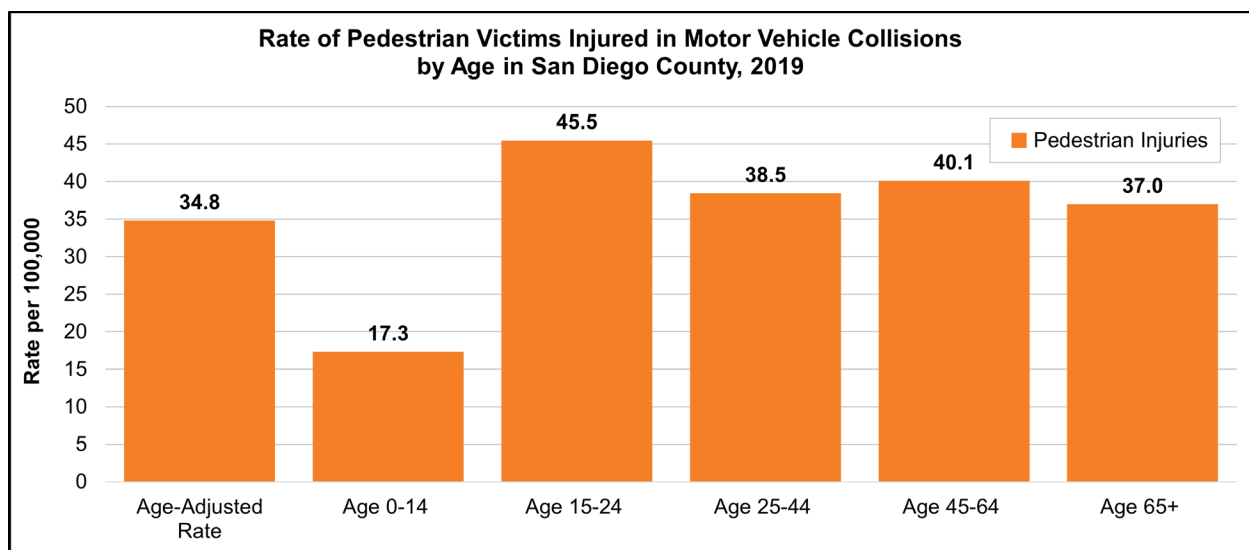


Figure 3. Rate of Pedestrian Injuries by Age, 2019.

In 2019, the rate of pedestrian injuries due to motor vehicle collisions among victims aged 15-24 years old (45.5 per 100,000) was higher than all other age groups and the age-adjusted rate in San Diego County overall (34.8 per 100,000). **In 2019, the rate of pedestrian injuries due to motor vehicle collisions among victims 15-24 years old was 2.6 times higher than the rate among victims 0-14 years old.** In 2019, victims 0-14 years old had the lowest rate of pedestrian injuries due to motor vehicle collisions in San Diego County. Among victims 0-14 years old and victims 65 years and older, the rates of pedestrian injuries were higher compared to the rates of all other injury types from a motor vehicle collision in 2019.

Pedalcycle Injuries

The following section describes the rates of pedalcycle injuries due to motor vehicle collisions by age in San Diego County from 2010-2019 (data not shown) and in 2019 (Figure 4). Pedalcycle injuries include victims who were killed or injured from a motor vehicle collision while riding or operating a pedal propelled cycle, such as a bicycle.

In San Diego County, the age-adjusted rate of pedalcycle injuries has decreased by 27.2% from 2010 (27.9 per 100,000) to 2019 (20.3 per 100,000). **The rate of pedalcycle injuries due to motor vehicle collisions among victims aged 15-24 years, 25-44 years, and 45-64 years have generally been higher than the age-adjusted rate in San Diego County overall from 2010-2019.** All age groups had a decrease in the rate of pedalcycle injuries due to motor vehicle collisions from 2010-2019, except victims aged 65 years and older. Among the age groups, pedalcycle injury victims 15-24 years old had the greatest decrease (58.9%), followed by victims 0-14 years old (55.7%) and victims 25-44 years old (20.5%).

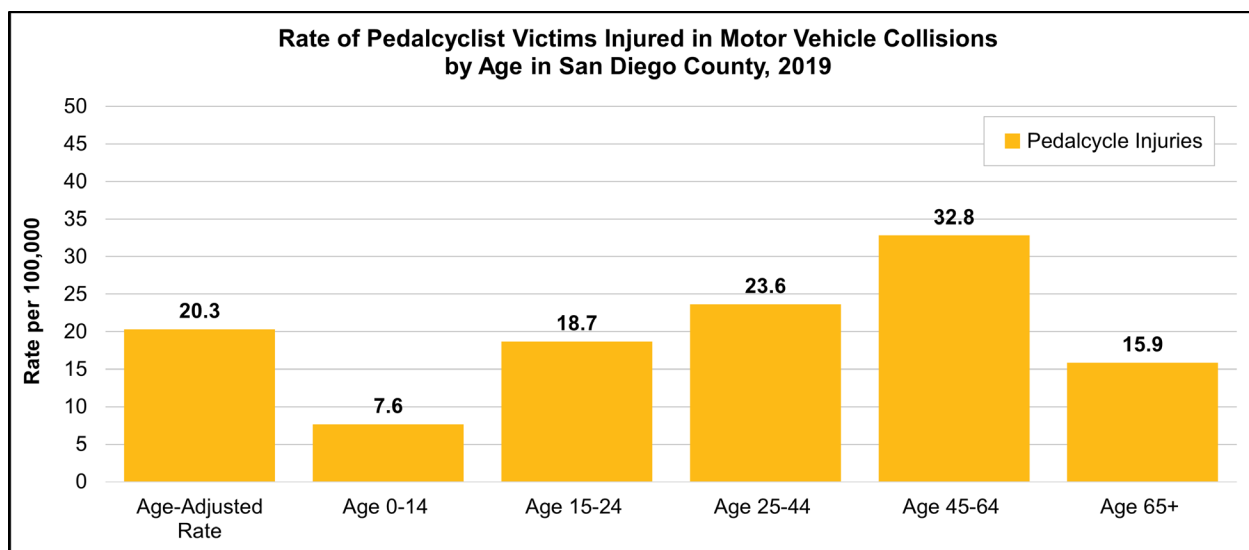


Figure 4. Rate of Pedalcycle Injuries by Age, 2019.

Among all age groups, pedalcycle injuries had the lowest rates of victims injured compared to all other injury types from motor vehicle collisions. In 2019, the highest rate of pedalcycle injuries due to motor vehicle collisions was among victims 45-64 years old (32.8 per 100,000), while the lowest rate was among victims 0-14 years old (7.6 per 100,000). **In 2019, the rate of pedalcycle injuries due to motor vehicle collisions among victims 45-64 years old was 4.3 times higher than the rate among victims 0-14 years old.**

Drinking Drivers

The following section describes the rates of drinking drivers involved in motor vehicle injury collisions by age in San Diego County from 2010-2019 (data not shown) and in 2019 (Figure 5). Drinking drivers include anyone who had been drinking (HBD) and was under the influence, HBD but not under the influence of alcohol, or HBD with an unknown level of impairment, and were involved in a motor vehicle collision.

Overall, the age-adjusted rate of drinking drivers in San Diego County increased by 17.1% from 2010 (43.5 per 100,000) to 2019 (50.9 per 100,000). The rate of drinking drivers increased from 2010-2019 among all age groups, except among drinking drivers 15-24 years old where the rate decreased nearly 17.0%. From 2010-2019, drinking drivers 25-44 years old had the greatest increase (35.2%) in the rate of drinking drivers involved in motor vehicle injury collisions, followed by drinking drivers 45-64 years old (23.8%) and 65 years and older (23.0%).

The highest rates of drinking drivers involved in motor vehicle injury collisions were among drinking drivers 15-24 years old, followed by drinking drivers 25-44

years old from 2010-2019. The rates of drinking drivers involved in motor vehicle injury collisions for both of these age groups were higher compared to all other age groups and the age-adjusted rate in San Diego County overall. The lowest rates of drinking drivers involved in motor vehicle injury collisions were among drinking drivers 65 years and older, followed by drinking drivers 45-64 years old.

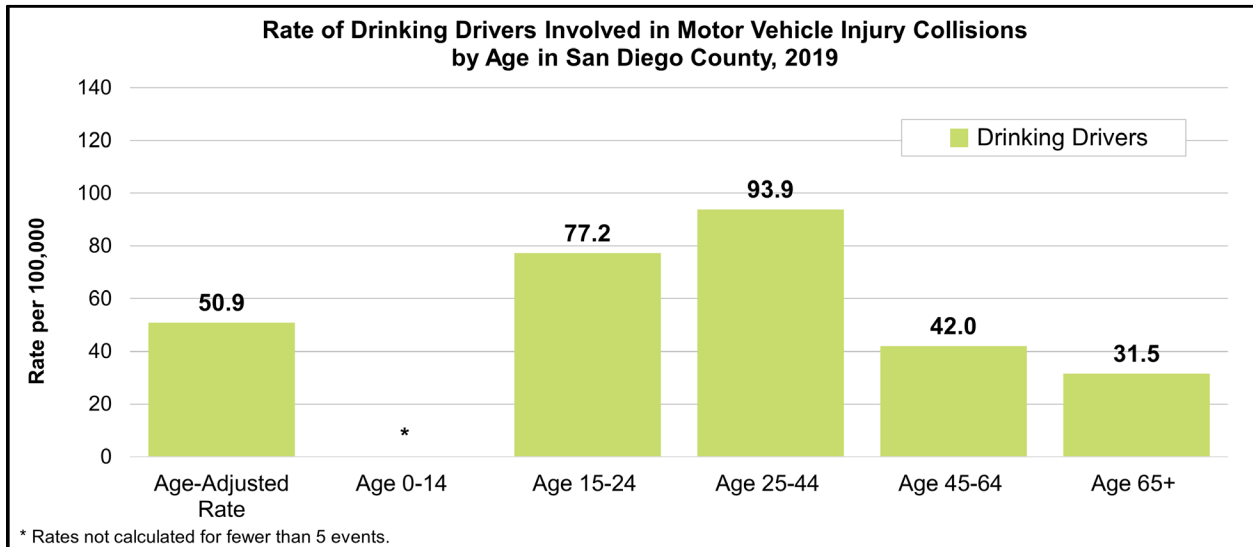


Figure 5. Rate of Drinking Drivers by Age, 2019.

Among motor vehicle injury collisions in 2019, the rates of drinking drivers aged 15-24 years old (77.2 per 100,000) and 25-44 years old (93.9 per 100,000) were higher compared to the age-adjusted rate in San Diego County overall (50.9 per 100,000). **In San Diego County, the rate of drinking drivers involved in motor vehicle injury collisions aged 25-44 years old was 2.2 times higher than the rate among drinking drivers aged 45-64 years old in 2019.** Moreover, the rate of drinking drivers involved in motor vehicle injury collisions aged 25-44 years old was nearly three times higher than the rate among drinking drivers 65 years and older.

Alcohol-Involved Injuries

The following section describes the rates of alcohol-involved injuries due to motor vehicle collisions by age in San Diego County from 2010-2019 (data not shown) and in 2019 (Figure 6). Rates of alcohol-involved injuries include victims who were killed or injured because of a motor vehicle collision where a driver, pedestrian, or bicyclist was drinking.

From 2010-2019, the rates of victims injured in alcohol-involved motor vehicle collisions remained relatively stable among each age group, except among victims 15-24 years

old. Rates among victims 15-24 years old who were injured in alcohol-involved motor vehicle collisions varied throughout the years from 2010-2019.

The age-adjusted rate of victims injured in alcohol-involved motor vehicle collisions in San Diego County increased by 10.4% from 2010 (67.1 per 100,000) to 2019 (74.0 per 100,000). **Among all age groups, the rate of victims injured from alcohol-involved motor vehicle collisions increased from 2010-2019, except for victims 15-24 years old where the rate decreased nearly 25.0%.** Despite having the second lowest rates, victims 65 years and older had the greatest increase in the rate of alcohol-involved injuries (48.6%), followed by victims 25-44 years old (30.3%), from 2010-2019.

Among the age groups, the rates of injuries due to alcohol-involved motor vehicle collisions among victims 15-24 years old and 25-44 years old was higher compared to the age-adjusted rate in San Diego County overall. Between 2010-2019, the lowest rates of victims injured in alcohol-involved motor vehicle collisions were among victims 0-14 years old, followed by victims 65 years and older.

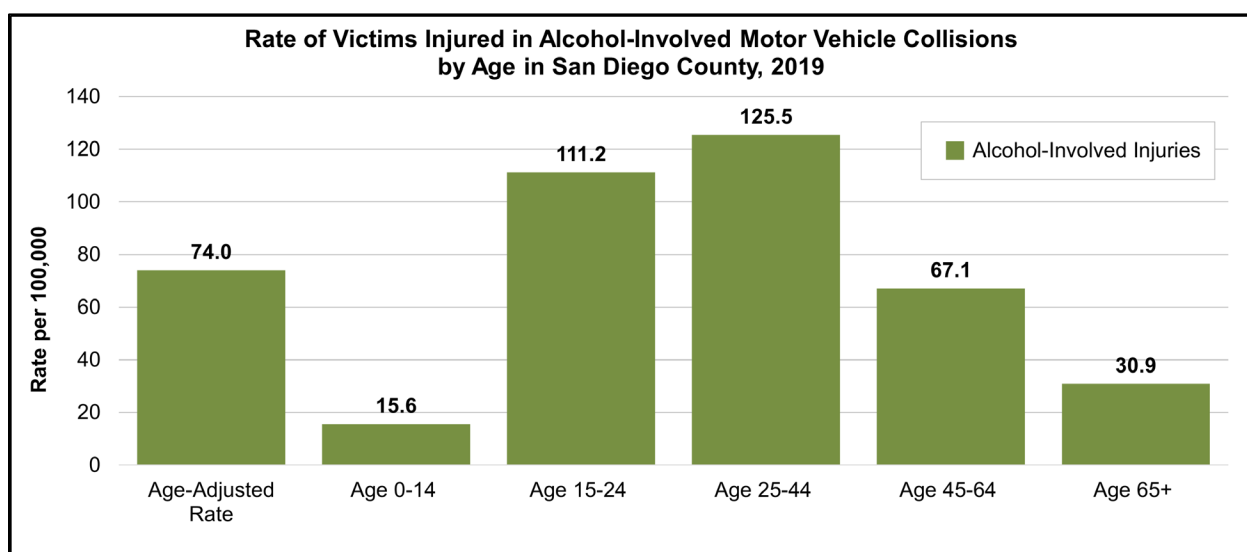


Figure 6. Rate of Alcohol-Involved Injuries by Age, 2019.

In 2019, the rate of victims injured in alcohol-involved motor vehicle collisions aged 25-44 years old was nearly two times higher and over four times higher than the rate among victims 45-64 years and victims 65 years and older, respectively. In 2019, the rate of alcohol-involved injuries in victims 25-44 years old was eight times higher than that of victims 0-14 years old.

SEX

Motor vehicle injury rates by sex reflect a victim's sex and should therefore, not be interpreted as collisions caused by that sex.

Total Injuries

The following section describes the rates of total victims injured due to motor vehicle collisions by sex in San Diego County from 2010-2019 (Figure 7) and in 2019 (Figure 8). The rates of total victims injured in motor vehicle collisions in San Diego County have increased from 2010-2019.

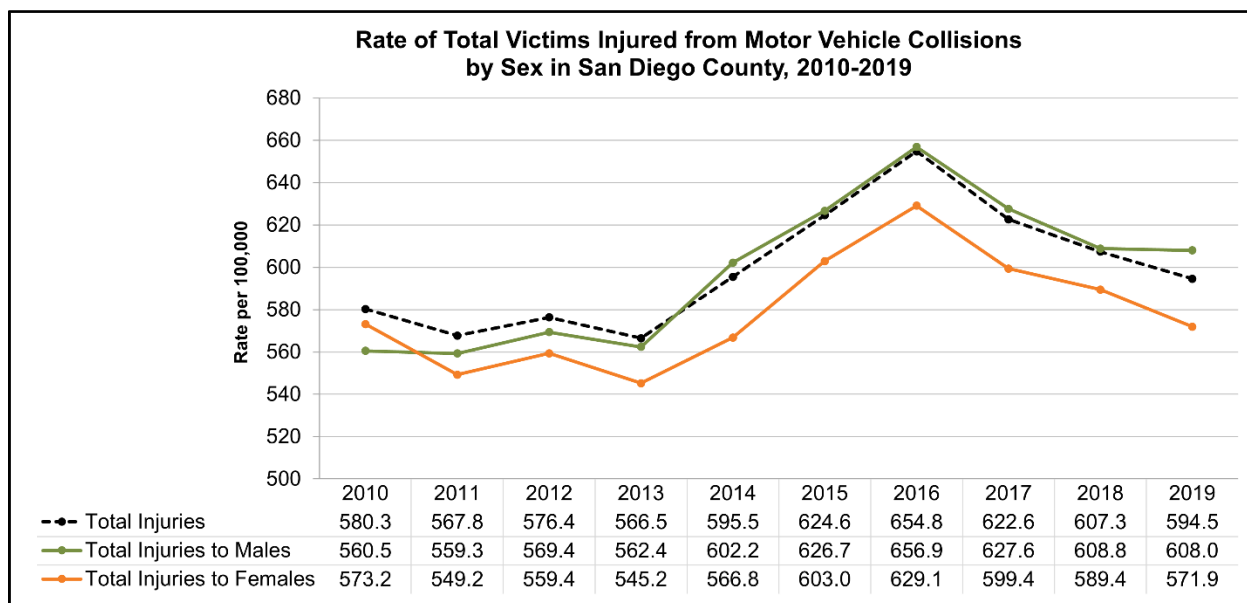


Figure 7. Rates of Total Injuries by Sex, 2010-2019.

The rate of total victims injured in motor vehicle collisions among male victims increased by 8.5% from 2010-2019, while the rate among females decreased by 0.2% from 2010-2019.

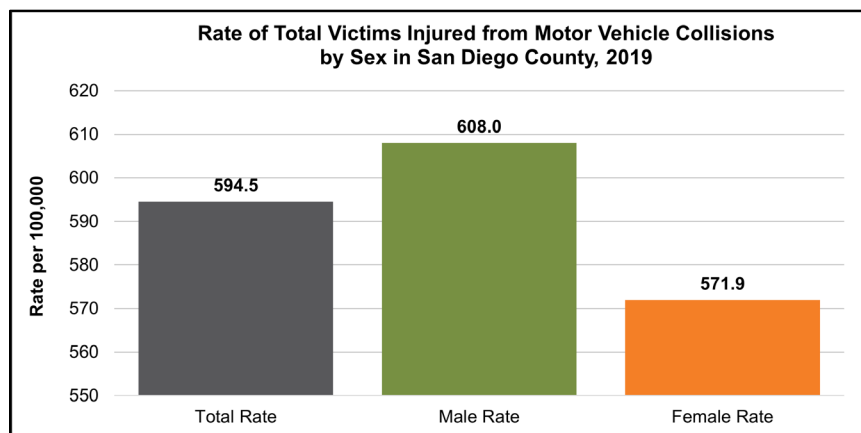


Figure 8. Rate of Total Injuries by Sex, 2019.

In 2019, the rate of total victims injured in motor vehicle collisions among male victims (608.0 per 100,000) was higher than the rate among female victims (571.9 per 100,000) and the rate in San Diego County overall (594.5 per 100,000).

Pedestrian Injuries

The following section describes the rates of pedestrian injuries due to motor vehicle collisions by sex in San Diego County from 2010-2019 (data not shown) and in 2019 (Figure 9). From 2010-2019, the rate of pedestrian injuries by sex have remained relatively stable throughout the years. From 2010-2019, the rate among male victims increased by 20.4%, while the rate of female victims increased by 3.4%.

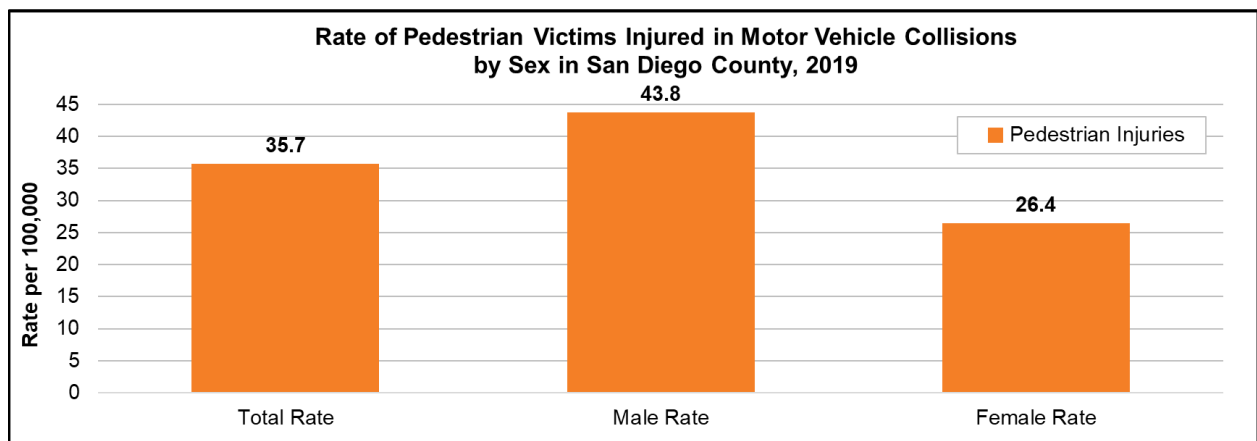


Figure 9. Rate of Pedestrian Injuries by Sex, 2019.

In 2019, the rate of pedestrian injuries due to motor vehicle collisions among male victims was nearly two times higher than the rate among female victims in San Diego County. In 2019, the rate of pedestrian injuries due to motor vehicle collisions among male victims was higher than the total rate of pedestrian injuries in San Diego County overall.

Pedalcycle Injuries

The following section describes the rates of pedalcycle injuries due to motor vehicle collisions by sex in San Diego County from 2010-2019 (data not shown) and in 2019 (Figure 10). In San Diego County, the rates of pedalcycle injuries due to motor vehicle collisions among male victims were higher compared to the rates among female victims. This trend has been relatively stable from 2010-2019 (data are not shown). The rates of pedalcycle injuries among male victims have been higher than the rates among female victims and San Diego County overall every year from 2010-2019. From 2010-2019, the rate of pedalcycle injuries due to motor vehicle collisions decreased among female victims (31.3%), which was greater compared to the decrease among male victims (26.2%) and the total rate of pedalcycle injuries in San Diego County overall (27.4%).

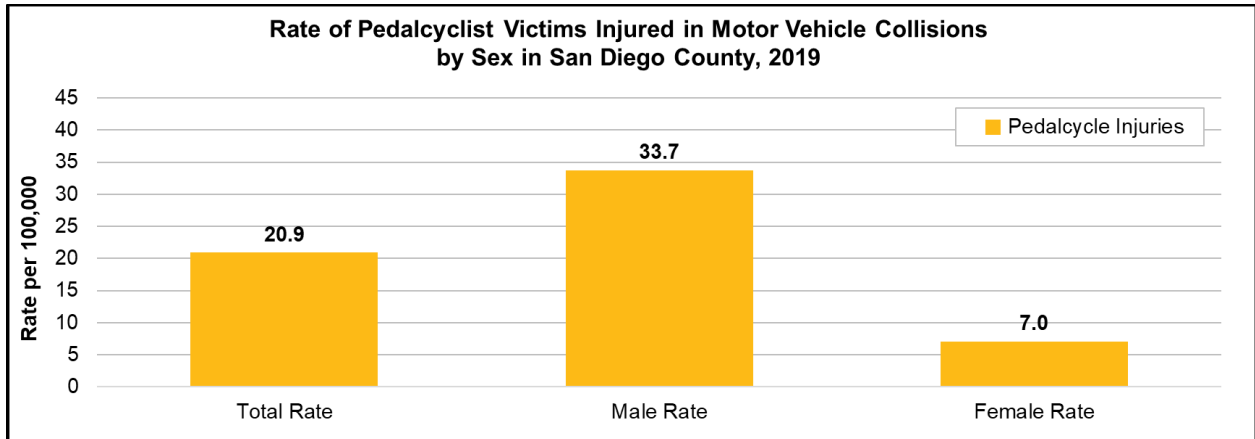


Figure 10. Rate of Pedalcycle Injuries by Sex, 2019.

In 2019, the rate of pedalcycle injuries due to motor vehicle collisions among male victims was nearly five times higher than the rate among female victims. In 2019, the rate of pedalcycle injuries due to motor vehicle collisions among male victims was also higher than the total rate in San Diego County overall.

Drinking Drivers

The following section describes the rates of drinking drivers involved in motor vehicle injury collisions by sex in San Diego County from 2010-2019 (data not shown) and in 2019 (Figure 11). **From 2010-2019, female drinking drivers had the greatest increase in the rate of drinking drivers involved in motor vehicle injury collisions (18.9%).** This increase was also higher than the increase in the rate of male drinking drivers involved in motor vehicle injury collisions (11.7%) and San Diego County overall (13.6%) from 2010-2019. However, despite this increase, the rate of male drinking drivers involved in motor vehicle injury collisions remained over twice as high as the rate of female drinking drivers involved in motor vehicle injury collisions in 2019.

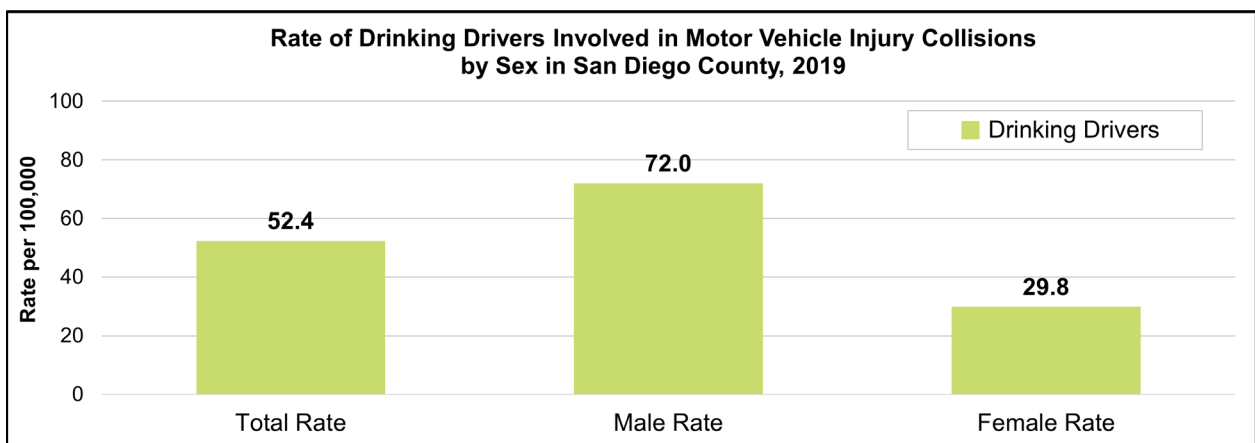


Figure 11. Rate of Drinking Drivers by Sex, 2019.

In 2019, the rate of male drinking drivers involved in motor vehicle injury collisions was 2.4 times higher compared to the rate of female drinking drivers involved in motor vehicle injury collisions in San Diego County.

Alcohol-Involved Injuries

The following section describes the rates of victims injured in alcohol-involved motor vehicle collisions by sex in San Diego County from 2010-2019 (data not shown) and in 2019 (Figure 12). From 2010-2019, the rates of victims injured in alcohol-involved motor vehicle collisions were higher among male victims compared to female victims.

However, the rate of victims injured from alcohol-involved motor vehicle collisions among female victims (9.7%) has had the greatest increase compared to the rate among male victims (4.2%) from 2010-2019.

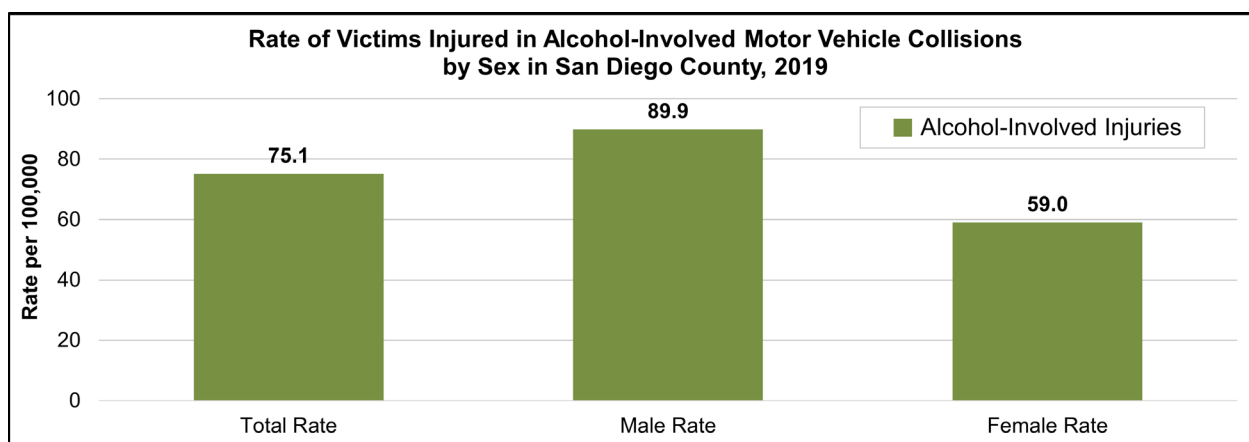


Figure 12. Rate of Alcohol-Involved Injuries by Sex, 2019.

Despite the increase among female victims, the rate of male victims injured in alcohol-involved motor vehicle collisions was higher compared to San Diego County overall in 2019.

GEOGRAPHY

Rates of motor vehicle injuries in San Diego County's Regional and Subregional Areas (SRAs) have varied over the years from 2010-2019. Victims who were injured from alcohol-involved motor vehicle collisions have had the highest motor vehicle injury rates from 2010-2019 in San Diego County and all Health and Human Services Agency (HHSA) regions. Among the HHSA regions, in 2019, East Region had the highest rate of victims injured in alcohol-involved motor vehicle collisions (86.8 per 100,000), followed by North Coastal Region (82.6 per 100,000). In 2019, Central Region had the highest rates of pedestrian injuries and pedalcycle injuries due to motor vehicle

collisions. Compared to San Diego County and all other HHSA regions, East Region had the highest rates of total victims injured in motor vehicle collisions, victims injured from alcohol-involved motor vehicle collisions, and drinking drivers involved in motor vehicle injury collisions in 2019.

Total Injuries

The following section describes the rates of total victims injured due to motor vehicle collisions by HHSA Regions and SRAs in San Diego County from 2010-2019 (Figures 13-14) and in 2019 (Figure 15).

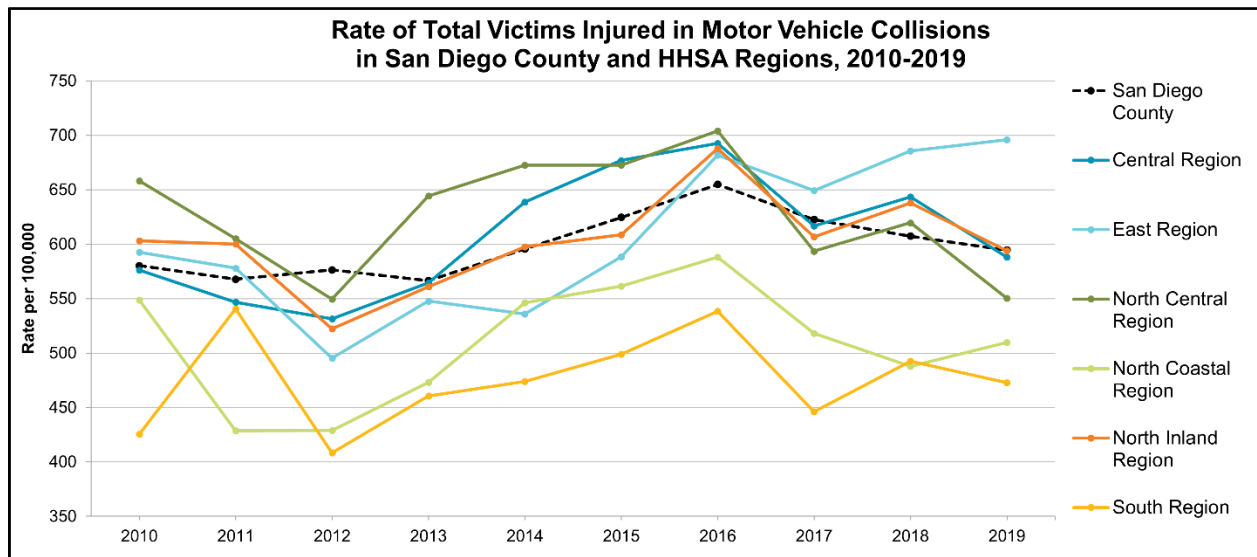


Figure 13. Rate of Total Injuries by HHSA Region, 2010-2019.

From 2017-2019, East Region had the highest rates of total victims injured due to motor vehicle injuries compared to all other HHSA regions and San Diego County overall. The rates of total victims injured in motor vehicle collisions were the lowest in South Region every year compared to all other HHSA regions despite an increase of over 11.0% from 2010-2019.

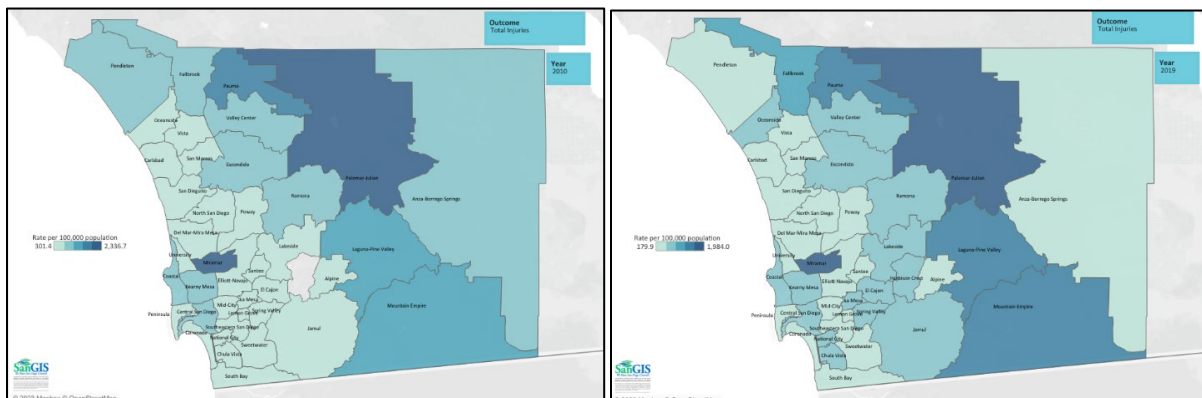


Figure 14. Trends in Motor Vehicle Injury Indicators in San Diego County: Rate of Total Injuries by SRA, 2010 and 2019.

At the subregional level, Palomar-Julian SRA and Miramar SRA had the highest rates of total victims injured in motor vehicle collisions every year from 2010-2019. From 2010-2019, the highest rates of total victims injured in motor vehicle collisions were in North Inland SRAs Fallbrook, Palomar-Julian, and Pauma, and East Region SRAs Laguna-Pine Valley and Mountain Empire. In South Region, from 2010-2019, National City SRA generally had the highest rates of total victims injured in motor vehicle collisions.

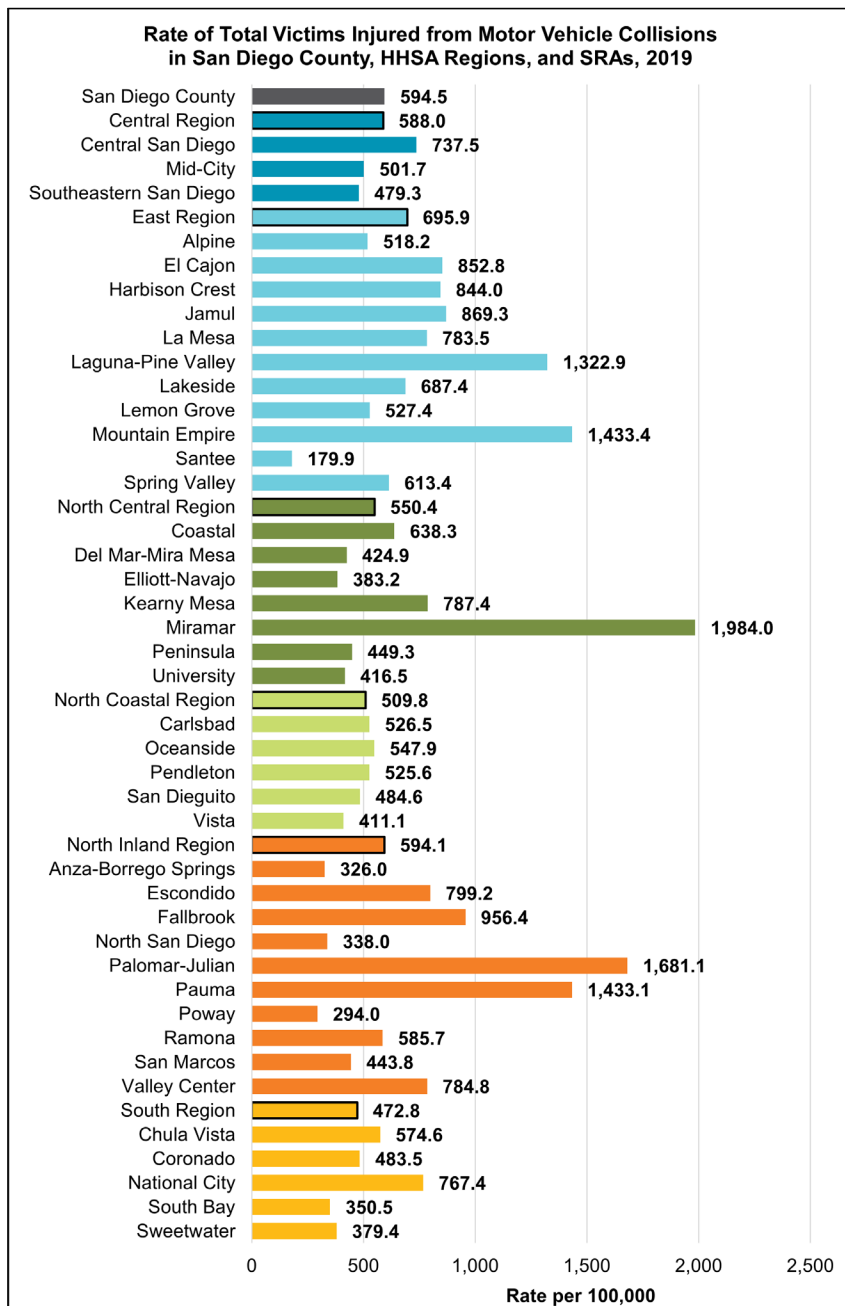


Figure 15. Rate of Total Injuries by SRA, 2019.

In 2019, East Region had the highest rate of total victims injured in motor vehicle collisions (695.5 per 100,000), followed by North Inland Region (594.1 per 100,000). However, among San Diego County's SRAs in 2019, Miramar had the highest rate of total victims injured in motor vehicle collisions (1,984.0 per 100,000), followed by Palomar-Julian SRA (1,681.1 per 100,000). These rates were also higher than the rate of total victims injured in San Diego County overall (594.5 per 100,000) in 2019.

In 2019, the rate of total victims injured in motor vehicle collisions in Miramar SRA was over 3.5 times higher than the rate of total victims injured in North Central Region.

Pedestrian Injuries

The following section describes the rates of pedestrian injuries due to motor vehicle collisions by HHSR Regions and SRAs in San Diego County from 2010-2019 (Figures 16-17) and in 2019 (Figure 18).

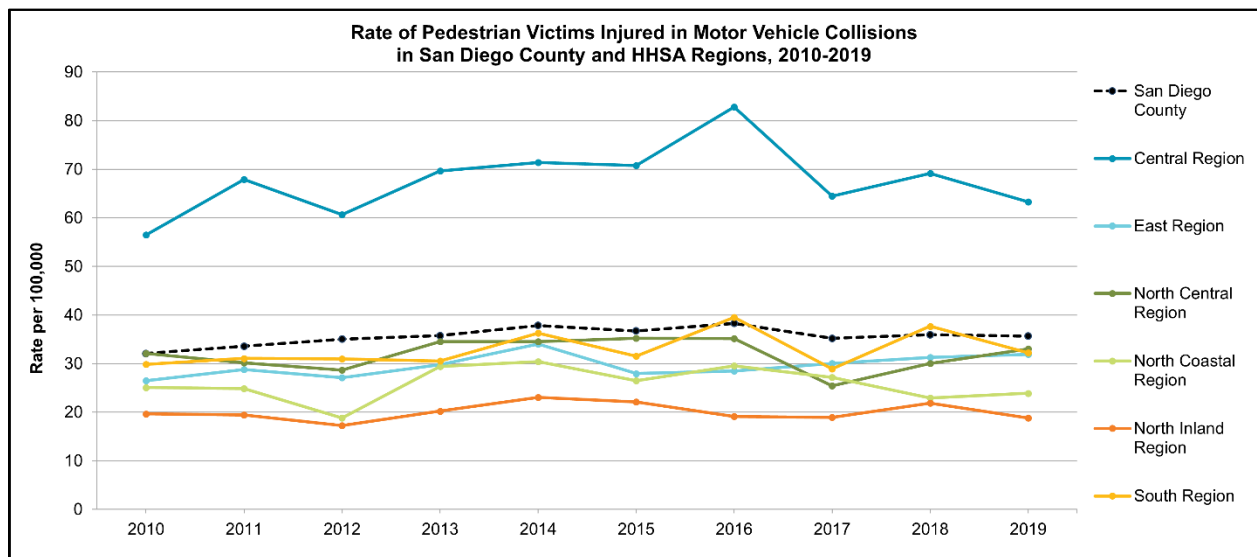


Figure 16. Rate of Pedestrian Injuries by HHSR Region, 2010-2019.

In San Diego County, the rate of pedestrian injuries due to motor vehicle collisions remained stable for all HHSR regions, except Central Region, from 2010-2019. **Every year between 2010-2019, the highest rates of pedestrian injuries due to motor vehicle collisions were in Central Region, while the lowest rates were in North Inland Region.** However, from 2010-2019, East Region had the greatest increase in the rates of pedestrian injuries due to motor vehicle collisions (20.6%).

Among the HHSR regions, the highest rates of pedestrian injuries among male and female victims were in Central Region from 2010-2019. North Inland Region had the greatest increase (28.1%), but the lowest rates of pedestrian injuries among male and female victims from 2010-2019. Overall, rates of pedestrian injuries among male victims increased in all HHSR regions, except North Coastal Region where the rate decreased nearly 6.0%. Among female victims, the greatest increase in the rate of pedestrian injuries was in East Region (23.0%), while the greatest decrease was in North Inland Region (45.5%) from 2010-2019.

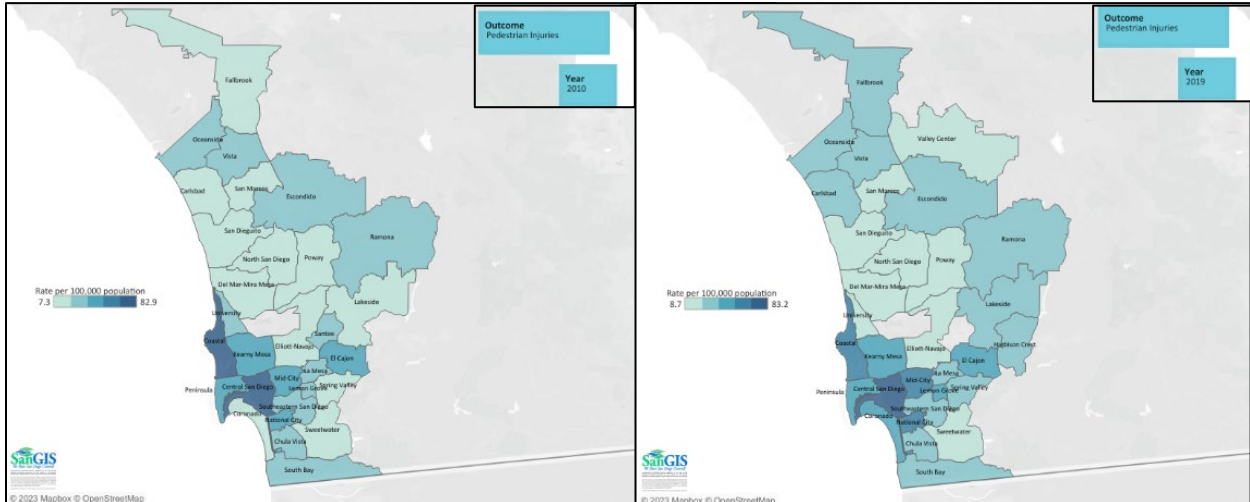


Figure 17. Trends in Motor Vehicle Injury Indicators in San Diego County: Rate of Pedestrian Injuries by SRA, 2010 and 2019.

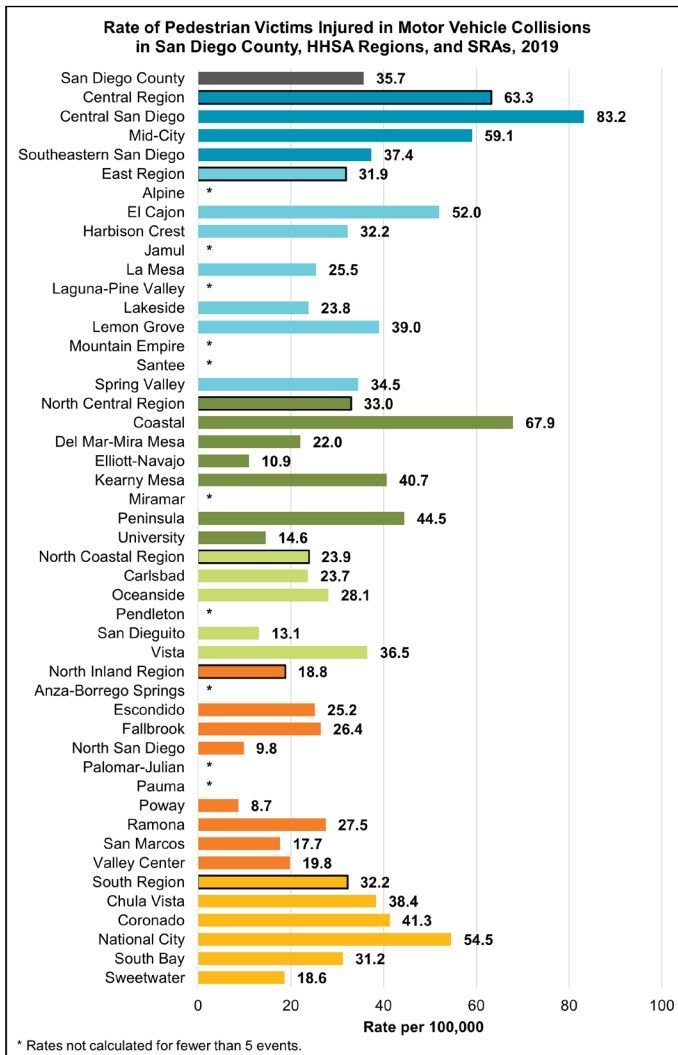


Figure 18. Rate of Pedestrian Injuries by SRA, 2019.

At the subregional level, Central San Diego SRA and Coastal SRA have had the highest rates of pedestrian injuries due to motor vehicle collisions every year from 2010-2019.

All the HHSA regions, except Central Region, had lower rates of pedestrian injuries due to motor vehicle collisions compared to San Diego County overall in 2019. Among the HHSA regions, North Inland Region had the lowest rate of pedestrian injuries due to motor vehicle collisions (18.8 per 100,000) in 2019.

In 2019, Central Region had the highest rate of pedestrian injuries due to motor vehicle collisions (63.3 per 100,000), which was nearly twice as high compared to the rate in San Diego County overall (35.7 per 100,000).

Pedalcycle Injuries

The following section describes the rates of pedalcycle injuries due to motor vehicle collisions by HHS Regions and SRAs in San Diego County from 2010-2019 (Figures 19-20) and in 2019 (Figure 21).

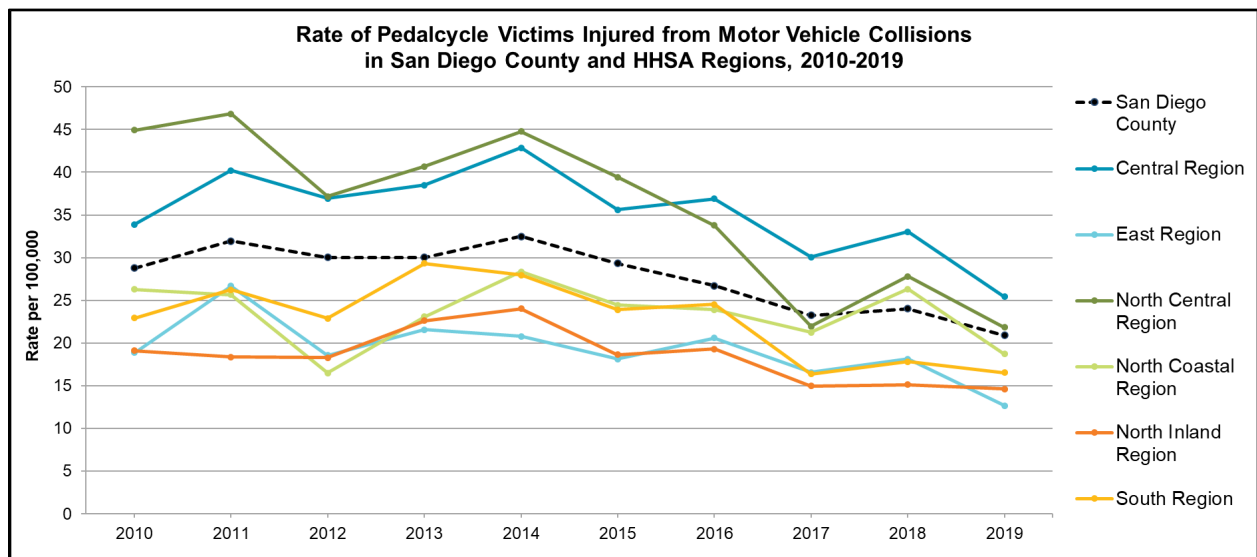


Figure 19. Rate of Pedalcycle Injuries by HHS Region, 2010-2019.

In San Diego County and all the HHS regions, the rates of pedalcycle injuries due to motor vehicle collisions decreased from 2010-2019. Between 2010-2019, generally Central Region and North Central Region have had higher rates of pedalcycle injuries due to motor vehicle collisions compared to San Diego County overall. **However, from 2010-2019, North Central Region had the greatest decrease in the rate of pedalcycle injuries due to motor vehicle collisions (51.4%) despite having generally higher rates of pedalcycle injuries due to motor vehicle collisions compared to San Diego County.**

Among the HHS regions, the greatest decrease in the rate of pedalcycle injuries due to motor vehicle collisions among male victims was in North Central Region (48.7%), followed by East Region (35.6%). Among female victims, the greatest decrease in the rate of pedalcycle injuries due to motor vehicle collisions was also in North Central Region (60.4%), followed by North Inland Region (50.9%).

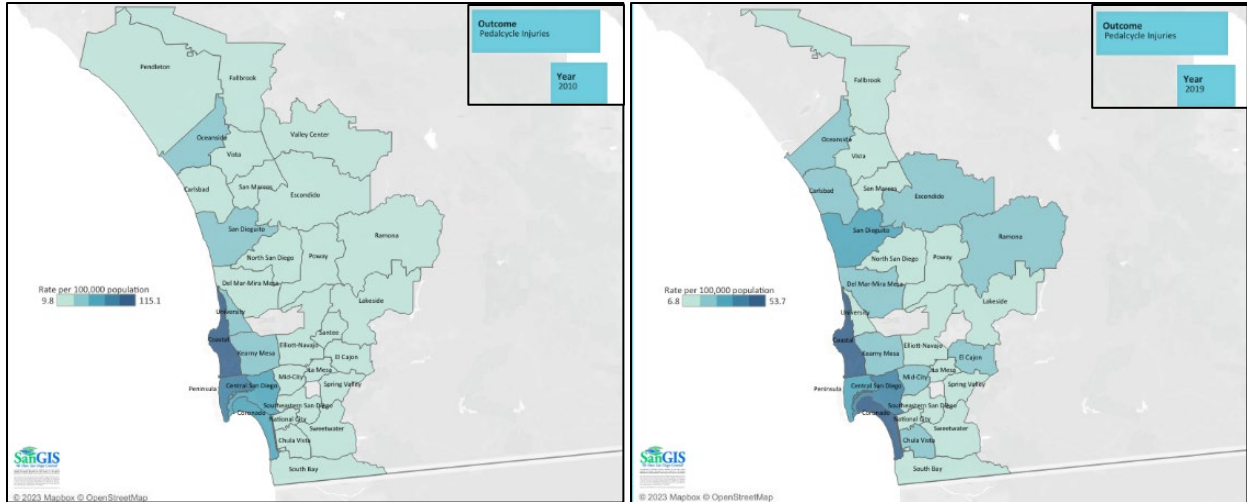


Figure 20. Trends in Motor Vehicle Injury Indicators in San Diego County: Rate of Pedalcycle Injuries by SRA, 2010 and 2019

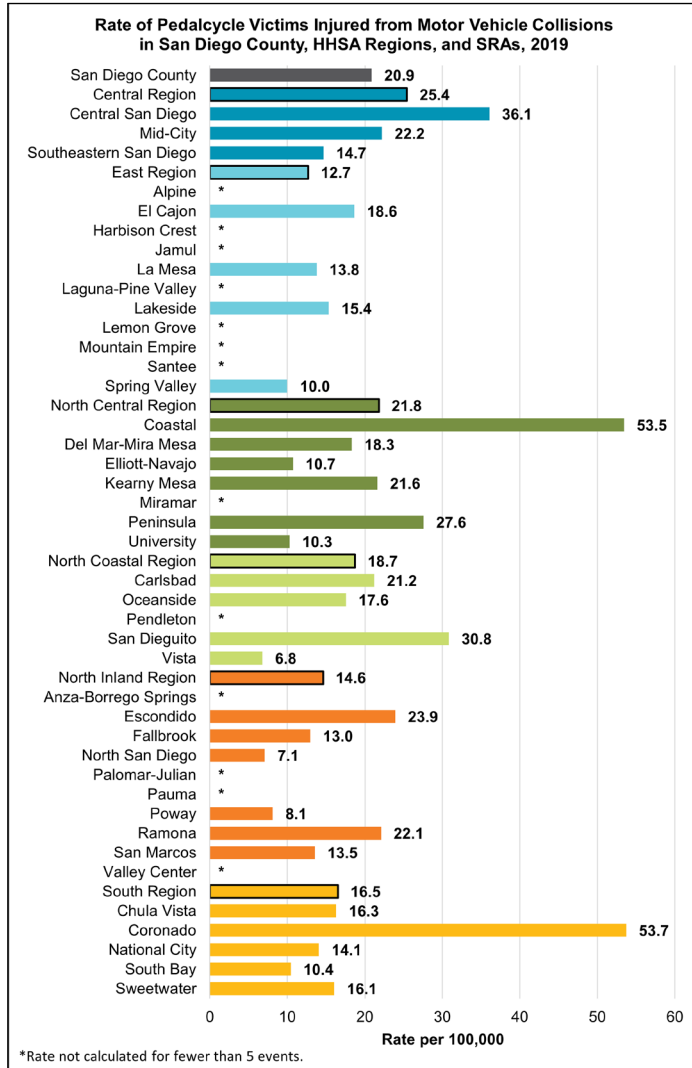


Figure 21. Rate of Pedalcycle Injuries by SRA, 2019.

East Region and North Inland Region generally had the lowest rates of pedalcycle injuries due to motor vehicle collisions between 2010-2019. **At the subregional level, Coronado SRA and Coastal SRA had the highest rates of pedalcycle injuries due to motor vehicle collisions in 2019.**

In 2019, the rate of pedalcycle injuries in Coronado SRA was over three times higher than the rate in South Region, while the rate of pedalcycle injuries in Coastal SRA was nearly two and a half times higher than the rate in North Central Region.

Drinking Drivers

The following section describes the rates of drinking drivers involved in motor vehicle injury collisions by HHSA Regions and SRAs in San Diego County from 2010-2019 (Figures 22-23) and in 2019 (Figure 24).

In San Diego County, the rate of drinking drivers involved in motor vehicle injury collisions has varied in all HHSA regions from 2010-2019. Among the HHSA regions, North Inland Region generally had the highest rates of drinking drivers involved in motor vehicle injury collisions from 2010-2019. In South Region, the rates of drinking drivers involved in motor vehicle injury collisions were the lowest every year compared to all other HHSA regions despite an increase in rates by 11.5% from 2010-2019.

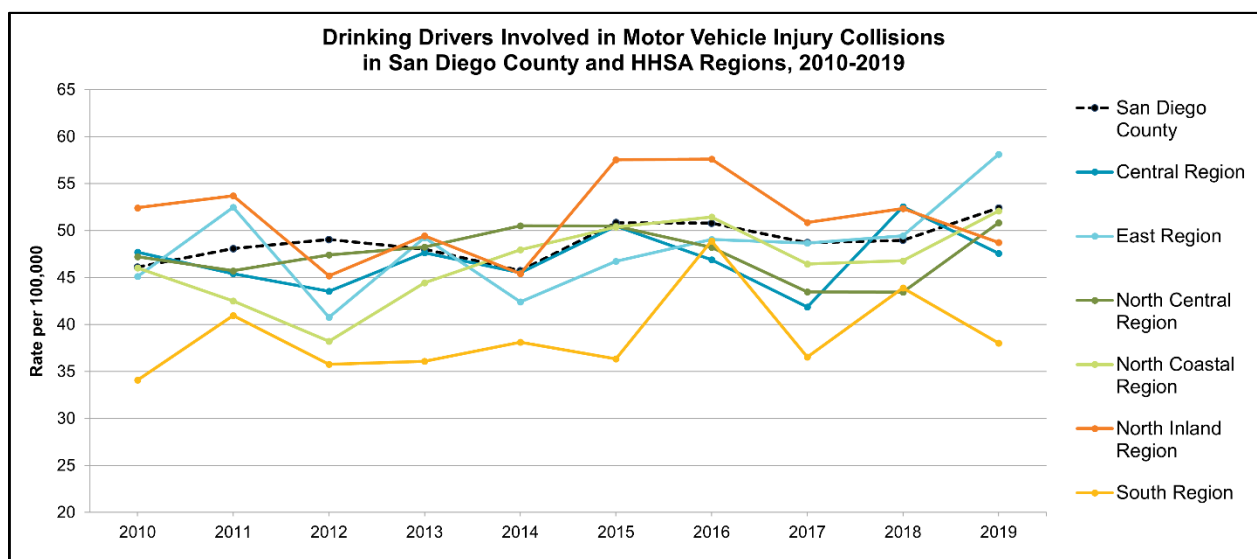


Figure 22. Rate of Drinking Drivers by HHSA Region, 2010-2019.

From 2010-2019, East Region had the greatest increase (28.8%) in the rate of drinking drivers involved in motor vehicle injury collisions compared to all other HHSA regions and San Diego County overall. Among the HHSA regions, nearly all regions had an increase in the rate of male drinking drivers involved in motor vehicle injury collisions, while nearly all regions had a decrease in the rate of female drinking drivers involved in motor vehicle injury collisions. From 2010-2019, the greatest increase in the rate of male drinking drivers involved in motor vehicle injury collisions was in South Region (17.6%). The greatest increase in the rate of female drinking drivers involved in motor vehicle injury collisions from 2010-2019 was in East Region (21.9%).

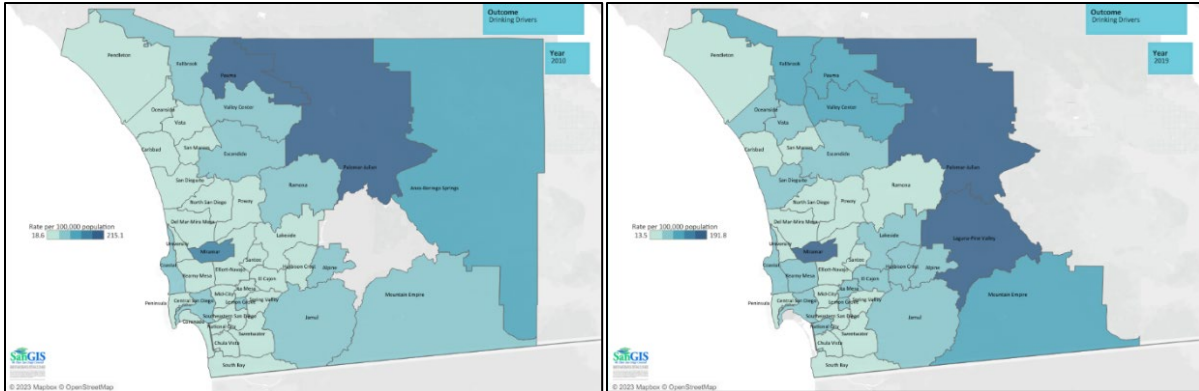


Figure 23. Trends in Motor Vehicle Injury Indicators in San Diego County: Rate of Drinking Drivers by SRA, 2010 and 2019

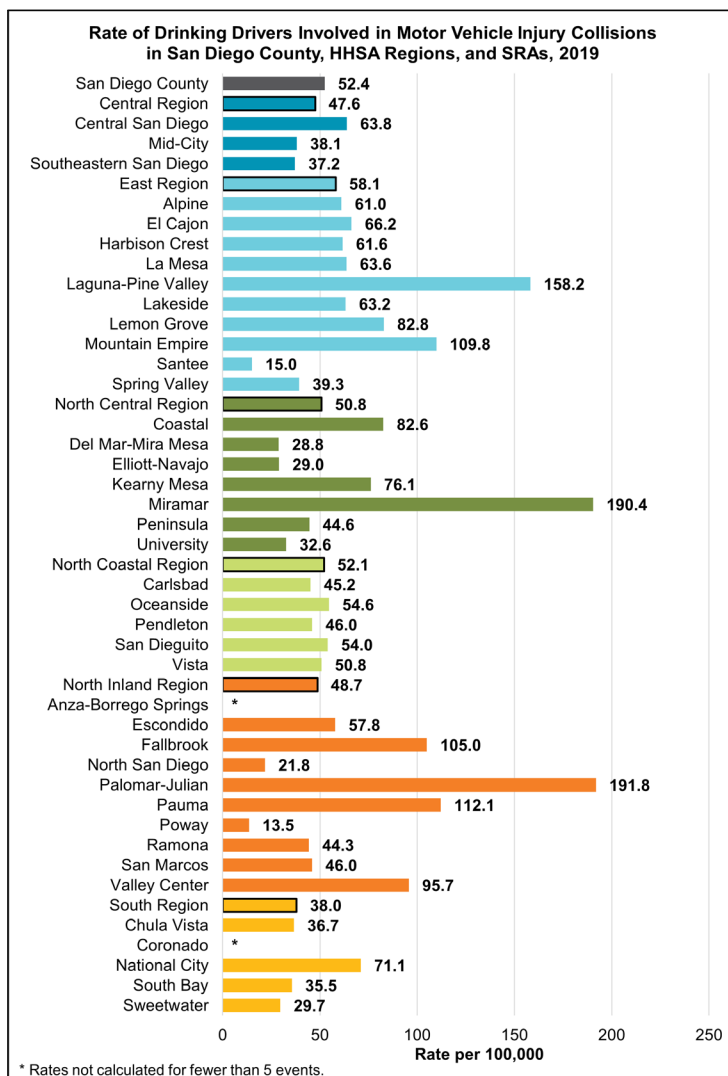


Figure 24. Rate of Drinking Drivers by SRA, 2019.

Among the 41 SRAs in San Diego County, Palomar-Julian, Pauma, and Miramar generally had the highest rates of drinking drivers involved in motor vehicle injury collisions every year from 2010-2019.

In 2019, the rate of drinking drivers involved in motor vehicle injury collisions in Palomar-Julian SRA was nearly four times higher than the rate in North Inland Region.

Similarly, in 2019, the rate of drinking drivers involved in motor vehicle injury collisions in Miramar SRA was nearly four times higher than the rate in North Coastal Region. In 2019, Laguna-Pine Valley SRA had a rate of drinking drivers involved in motor vehicle injury collisions nearly three times higher than the rate in East Region.

In 2019, Poway SRA had lowest rate of drinking drivers involved in

motor vehicle injury collisions (13.5 per 100,000), followed by Santee SRA (15.0 per 100,000) and North San Diego SRA (21.8 per 100,000).

Alcohol-Involved Injuries

The following section describes the rates of victims injured in alcohol-involved motor vehicle collisions by HHS Regions and SRAs in San Diego County from 2010-2019 (Figures 25-26) and in 2019 (Figure 27).

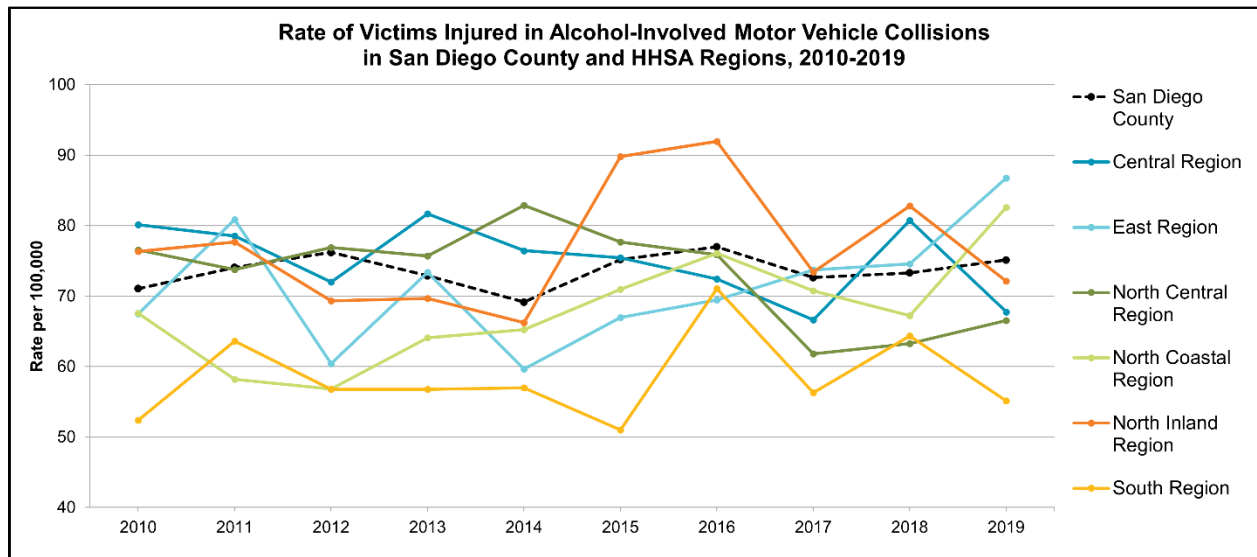


Figure 25. Rate of Alcohol-Involved Injuries by HHS Region, 2010-2019.

In San Diego County, the rate of victims injured from alcohol-involved motor vehicle collisions increased nearly 6.0% from 2010 (71.0 per 100,000) to 2019 (75.1 per 100,000). **From 2010-2019, East Region had the greatest increase in the rate of victims injured from alcohol-involved motor vehicle collisions (28.6%), followed by North Coastal Region (22.3%).**

Between 2010-2019, Central Region, East Region, North Central Region, and North Inland Region generally had higher rates of victims injured from alcohol-involved motor vehicle collisions compared to San Diego County overall. **Among HHS regions, East Region had higher rates of victims injured from alcohol-involved motor vehicle collisions, while North Coastal Region and South Region had lower rates, compared to San Diego County overall from 2010-2019.**

Among the HHS regions, East Region had the greatest increase in the rate of victims injured in alcohol-involved motor vehicle collisions (51.5%) among female victims and in North Coastal Region (32.5%) among male victims from 2010-2019. Central Region had the greatest decrease in the rate of victims injured in alcohol-involved motor vehicle collisions among male victims (14.2%) and female victims (18.8%) from 2010-2019.

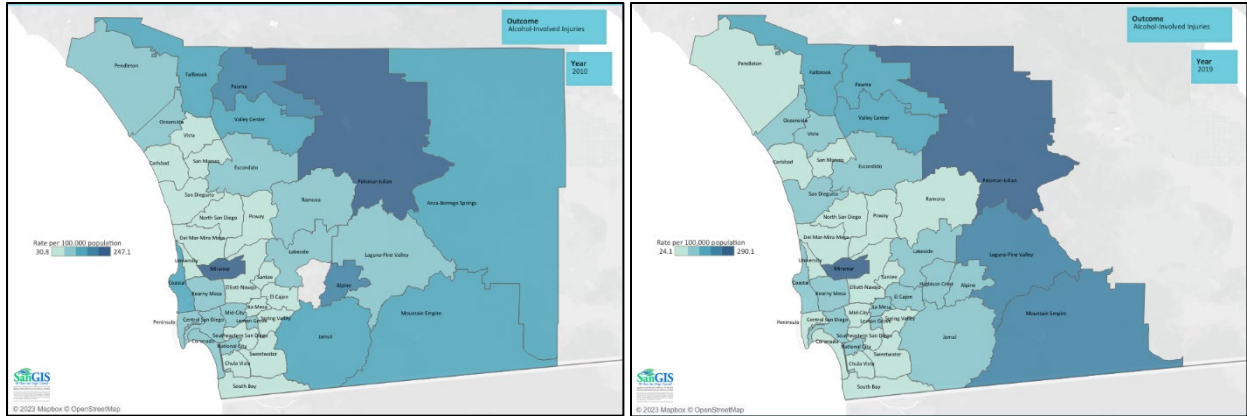


Figure 26. Trends in Motor Vehicle Injury Indicators in San Diego County: Rate of Alcohol-Involved Injuries by SRA, 2010 and 2019

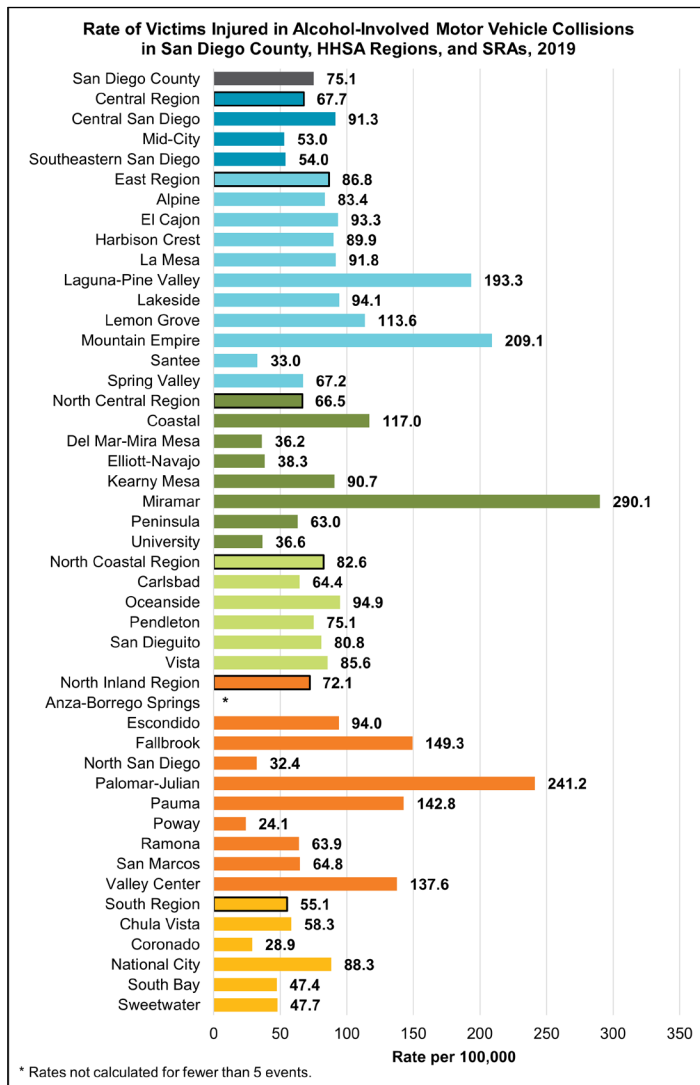


Figure 27. Rate of Alcohol-Involved Injuries by SRA, 2019.

In 2019, the highest rate of victims injured in alcohol-involved motor vehicle collisions was in East Region (86.8 per 100,000), followed by North Coastal Region (82.6 per 100,000). At the subregional level, Miramar SRA (290.1 per 100,000) and Palomar-Julian SRA (241.2 per 100,000) had the highest rates of victims injured in alcohol-involved motor vehicle collisions in 2019.

The rate of victims injured in alcohol-involved motor vehicle collisions in Miramar SRA was over four times higher than the rate in the North Central Region in 2019. In 2019, the rate in Palomar-Julian SRA was over three times higher than the rate in the North Inland Region. Additionally, the rates of victims injured in alcohol-involved motor vehicle collisions in East Region and all its SRAs, except Santee SRA and Spring Valley SRA, were higher than the rate in San Diego County overall.

CONCLUSION

In San Diego County and all its geographic areas, the rates of motor vehicle injuries due to motor vehicle collisions varied by age, sex, and geography from 2010-2019. Rates of victims and drinking drivers involved in motor vehicle injury collisions were higher among age groups 15-24 years and 25-44 years. In San Diego County, the rates of victims and drinking drivers involved in motor vehicle injury collisions were higher among males compared to females. Among motor vehicle collisions in HHS regions, East Region had the highest rates of total injuries and alcohol-involved injuries, while Central Region had the highest rates of pedestrian injuries and pedalcycle injuries from 2010-2019. North Inland Region had the highest rates of drinking drivers involved in motor vehicle injury collisions from 2010-2019. Among SRAs in San Diego County, Miramar and Palomar-Julian had the highest rates of total injuries, alcohol-involved injuries and drinking drivers involved in motor vehicle injury collisions from 2010-2019. Moreover, among SRAs in San Diego County, the highest rates of pedestrian injuries were in Central San Diego and Coastal, while the highest rates of pedalcycle injuries were in Coastal and Coronado from 2010-2019. Further research is needed to understand why injury rates due to motor vehicle collisions vary by age, sex, and geography. However, there are steps that can be taken to prevent motor vehicle injuries.

PREVENTION

Roads throughout San Diego County are shared by cars/trucks, buses, motorcycles, bicyclists, pedestrians, and other travelers for transportation. Motor vehicle collisions can occur at any moment, and the injuries from these accidents can affect all people involved. Prevention strategies can help reduce the number or severity of motor vehicle injuries. The prevention methods presented below offer general transportation safety strategies and strategies for motor vehicle users at higher risk of motor vehicle injuries.

Transportation Safety

Wear seat belts and restraints

- In the event of a collision, wearing a seat belt reduces the risk of serious crash-related injuries and death by about half.¹⁰
- In 2018, over half of the teens (13-19 years) and adults (20-44 years) who died from a collision were not wearing a seat belt at the time of the crash.¹¹
- Buckle children into age- and size- appropriate seating:
 - Compared to seat belt use alone, car seats reduce the risk of motor vehicle injury among children by 71.0%-82.0%.^{12,13}
 - Compared to seat belt use alone, booster seats reduce the risk of motor vehicle injury among children 4-8 years old by 45%.¹⁴

- Among children 7-8 years old, booster seats can help prevent moderate and serious crash injuries.¹⁵

Refrain from driving while impaired

- Impaired driving refers to the use of a motor vehicle by someone who is under the influence of alcohol, marijuana and other illicit drugs, or prescription and over-the-counter medications.^{16,17}
- Alcohol-impaired driving is measured as having a Blood Alcohol Concentration (BAC) at or above 0.08%.¹⁷ Although a BAC below 0.08% is not illegal, alcohol-impairment can begin before the legal limit.
 - At a BAC of 0.02%, drivers can experience some loss of judgment and overall relaxation which can result in a decline in visual functions (e.g., rapid tracking of moving targets) and ability to perform two tasks at the same time.¹⁸
 - At a BAC of 0.05%, drivers can experience impaired judgment, loss of small-muscle movements (e.g., focusing eyes), release of inhibition, and lowered alertness which can result in difficulty steering and reduced coordination, ability to track moving objects, and response to emergency situations.¹⁸
- Every year, over 10,000 people in the United States die during a crash involving an alcohol-impaired driver.¹⁹
- In 2019, 28.0% of all deaths in motor vehicle crashes were due to alcohol-impaired driving.²⁰
- Among deaths from alcohol-impaired driving, 63.0% of drivers were alcohol-impaired.²⁰

Avoid distracted driving

- Distracted driving includes anything that takes the attention away from driving such as sending a text, talking on the phone, using a navigation system, or eating. In the United States, distracted driving results in over 3,000 deaths every year.²¹
- In 2019, about 1 in 5 deaths from crashes involving distracted drivers were walking or riding their bikes.²¹

Motor Vehicle Users at Risk

Teenage Drivers

- In the United States, motor vehicle crashes are the leading cause of death among teens.²²

- Several factors place teens at risk of motor vehicle crashes such as inexperience, nighttime and weekend driving, lack of seat belt use, distracted driving, speeding, and drug/substance use (e.g., alcohol, illicit drugs, medications).²²
- Teen drivers between 16-19 years old have the highest risk of motor vehicle crashes and a fatal crash rate nearly three times higher than drivers 20 years and older per mile driven.²²
- Parents are key in helping teens become safe drivers by monitoring and supervising their teens' driving habits and behaviors.²²

Older Adult Drivers

- The risk of injury or death from a motor vehicle crash increases with age due to changes in vision, physical functioning, cognition (e.g., reasoning, memory), and physical health (e.g., disease, medication).²³
- Compared to middle-aged drivers (35-54 years), adults 70 years and older have higher crash death rates per 1,000 crashes.²³
- Deaths due to crashes are higher among older adults due to their increased vulnerability to injury in the event of a motor vehicle crash.²³

Vulnerable Users (Pedestrians, Bicyclists, Motorcyclists)

- Urban areas, nighttime, and locations where roadways are away from intersections are settings where most pedestrian deaths occur.²⁴
- Pedestrians can take the following actions to increase their safety:²⁴
 - Make sure to walk across designated crosswalks or intersection.
 - Wear reflective clothing or carry a flashlight when walking at night.
 - Walk on sidewalks and path instead of the road.
 - Avoid walking while distracted (e.g., wearing earbuds) or under the influence of alcohol or drugs as these may impair judgment and coordination.
- In the United States, over 130,000 bicyclists are injured and nearly 1,000 die every year from crashes, with most having occurred in urban areas and roadway locations away from intersection or from an alcohol-involved crash.²⁵
- About one-third of bicyclist deaths occurred from an alcohol-involved crash.²⁵
- Bicyclists can take the following actions to increase their safety:²⁵
 - Always wear a bike helmet.
 - Wear fluorescent or retro-reflective clothing for better visibility at night.
 - Equip bicycles with retro-reflective material and active lighting.
- In the event of a motor vehicle crash, wearing a helmet reduces the risk of head injury among motorcyclists by 69.0%.²⁶

- In addition to wearing a helmet, motorcyclists can take the following actions to increase their safety or reduce the severity of injuries from a motor vehicle crash.²⁷
 - Wear protective gear that completely covers arms and legs, ideally from a thick material such as leather or heavy denim.
 - Wear gloves and ankle-high boots or shoes to protect hands and feet.
 - Wear items with reflective material to increase visibility to other motor vehicle drivers.

RESOURCES

<p>Additional Information</p>	<p>Centers for Disease Control and Prevention (CDC) Transportation Safety</p> <ul style="list-style-type: none"> • Parents Are the Key to Safe Teen Drivers helps parents guide their teens to become safe drivers. • MyMobility Plan helps older adult drivers assess their mobility. <p>California Highway Patrol (CHP)</p> <ul style="list-style-type: none"> • Programs and Services
<p>Data Sources</p>	<p>Transportation Injury Mapping System (TIMS), Statewide Integrated Traffic Records System (SWITRS)</p> <p>California Department of Public Health (CDPH) EpiCenter: California Injury Data Online</p>

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