

Existing Conditions Memorandum for Mat-Su Borough Comprehensive Safety Action Plan

PREPARED BY MICHAEL BAKER INTERNATIONAL FOR MATANUSKA-SUSITNA BOROUGH



November 26, 2024

- Introduction..... 4
- Safe System Approach 5
- Crash Data Summary and Key Trends 6
 - Overview* 6
 - Key takeaways from 2018-2022 crash trends 6
 - Data clarification and potential data gaps 10
 - Big Picture Trends* 11
 - Five-Year Trend 11
 - Driver Age 12
 - Contributing Action at Time of Crash 13
 - Trends by Mode* 13
 - Motor Vehicle Trends 14
 - Motorcycle Trends 15
 - Bicycle Trends 17
 - Pedestrian Trends 19
 - Environmental Trends (lighting, surface condition, adverse weather)* 23
- Equity Analysis..... 25
 - Defining Equity in Transportation*..... 25
 - Vulnerable Populations within the Expanded Core Area* 25
 - Transportation insecurity*..... 27
 - Social vulnerability indicators within the Expanded Core Area* 28
 - High Injury Area Equity Analysis* 30
 - Transportation Disparities*..... 31
 - Transportation Barriers That Exist Within Vulnerable Populations* 32
 - Regional Transportation Indicators Within the Expanded Core Area* 33
 - Equitable Distribution of Safety Investments* 34
 - Recommendations* 34
- Peer City Review..... 35
 - Comparison Community Backgrounds* 35
 - Total crashes 35
 - Fatal and Serious Injury Crashes 37
 - Fatal Crashes 38
 - Exposure to Crash Risk..... 39
- Plan, Policy, and Program Reviews..... 40
 - Plan Reviews* 40
 - Key Findings..... 41
 - Policy and Program Reviews* 44
 - Programs and Policy Review Related to Safety 44
 - Program Review 45
 - Safety Strategies and Programs in Other Communities 47

Public and Stakeholder Input	54
<i>Introduction and Purpose</i>	54
<i>Engagement Tactics</i>	54
The Project Website.....	55
The Stakeholder/Outreach List	55
Safety Action Plan Team	55
Pop-up Events	56
Mat-Su Borough Committee Meeting Presentations	56
Social Media and News Publications.....	56
Email Notifications	57
Safety Survey	57
Appendices	69
<i>Appendix A: Summary Data and Sources for Peer City Comparison</i>	71
Table A-1. Peer City Comparisons	71
Table A-2. Peer City Summary Data	72
<i>Appendix B: MSB CSAP Plans Review</i>	75

List of Figures

Figure 1. Map of the Mat-Su Borough Expanded Core Area	4
Figure 2. Safe System Approach diagram courtesy of USDOT	5
Figure 3. Comparison of traditional versus Safe System Approach	6
Figure 4. Percent of crashes by roadway functional class	7
Figure 5. Heat map with point map inset showing concentration of all crashes in the Mat-Su Expanded Core Area.....	8
Figure 6. Map showing concentration of serious crashes in Mat-Su Expanded Core Area	9
Figure 7. Human circumstances breakdown for all crashes, showing extent of missing or incomplete information for this data field	10
Figure 8. Total crashes by year and growth trend	11
Figure 9. Serious crashes by year and growth trend	11
Figure 10. Number of crashes by age	12
Figure 11. Number of serious crashes by age.....	12
Figure 12. Contributing unit action at time of serious crash	13
Figure 13. Serious crashes by mode	13
Figure 14. Serious motor vehicle crashes by driver gender.....	14
Figure 15. Serious motorcycle crash first harmful event.....	15
Figure 16. Serious motorcycle crashes by driver gender	15
Figure 17. Locations of motorcycle crashes in the Mat-Su Expanded Core Area	16
Figure 18. Severity of bicycle crashes.....	17
Figure 19. Contributing unit action in all bicycle crashes	17
Figure 20. Lighting conditions for all bicycle crashes.....	17
Figure 21. Location of bicycle crashes in the Mat-Su Expanded Core Area	18
Figure 22. Severity of pedestrian crashes.....	19
Figure 23. Lighting conditions for all pedestrian crashes	19
Figure 24. Most contributing unit's action in pedestrian crashes.....	19
Figure 25. Location of pedestrian crashes in the in the Mat-Su Expanded Core Area.....	21
Figure 26. Crashes by month.....	23

Figure 27. Road conditions at the time of all crashes..... 24

Figure 28. Road conditions at the time of serious crashes..... 24

Figure 29. Lighting conditions at time of crash..... 24

Figure 30. Climate and Economic Justice Screening Tool analysis for Expanded Core Area..... 26

Figure 31. USDOT ETC analysis for the Expanded Core Area..... 27

Figure 32. USDOT ETC analysis of social vulnerability in the Expanded Core Area..... 29

Figure 33. Mat-Su Expanded Core Area Crashes 2018-2022 (Fatalities and Serious Injuries)..... 30

Figure 34. Mat-Su Expanded Core Area Crashes 2018-2022 (Fatalities and Serious Injuries in Disadvantaged Areas)..... 31

Figure 35. Transportation Poverty Diagram 32

Figure 36. Total annual crashes by comparison community 36

Figure 37. Fatal and serious crashes by comparison community 37

Figure 38. Serious crashes per capita and VMT by comparison community 38

Figure 39. Annual fatal crashes by comparison community..... 38

Figure 40. Fatal crashes per capita and VMT by comparison community 39

Figure 41. Safety Survey Results – Age of respondents..... 58

Figure 42. Safety Survey Results – Ethnicity of respondents..... 59

Figure 43. Safety Survey Results – Gender Identity of respondents..... 59

Figure 44. Safety Survey Results – Location of respondents 60

Figure 45. Safety Survey Results – Relationship to Transportation Safety 60

Figure 46. Safety Survey Results – Work Travel Mode Choice 61

Figure 47. Safety Survey Results – Non-Work Travel Mode Choice..... 61

Figure 48. Safety Survey Results – Perceived Safety Walking, Biking, and Taking Transit 62

Figure 49. Safety Survey Results – Choosing to Walk..... 63

Figure 50. Safety Survey Results – Choosing to Bike 64

Figure 51. Safety Survey Results – Prioritizing Safety..... 65

Figure 52. Safety Survey Results – Challenges to Safety..... 66

Figure 53. Safety Survey Results – Investing in Safety..... 67

Figure 54. Safety Survey Results – Areas of Concern..... 68

Introduction

In 2023, the Matanuska-Susitna (Mat-Su) Borough applied for and was awarded a U.S. Department of Transportation - Safe Streets for All grant to develop a Comprehensive Safety Action Plan (CSAP) for the Mat-Su Borough's Expanded Core Area. The CSAP will be a strategic roadmap to help the Mat-Su Borough move towards a safer transportation network to significantly reduce serious injuries and fatalities on the roadway. To begin this planning effort, a comprehensive analysis of existing conditions was undertaken to provide a solid foundation on which to build the Mat-Su Borough's CSAP. The map below shows the study area analyzed in the Existing Conditions Memorandum.

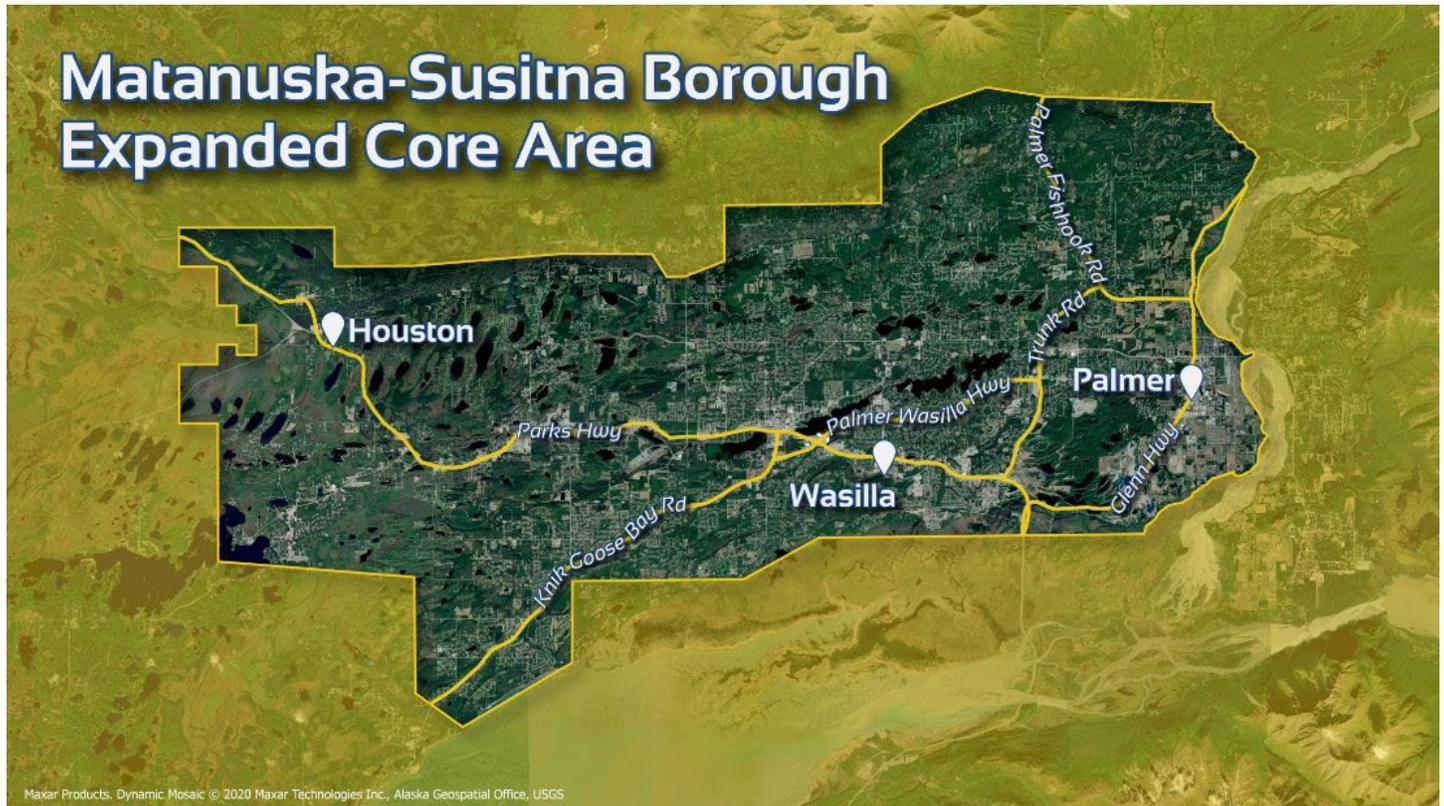


Figure 1. Map of the Mat-Su Borough Expanded Core Area

The existing conditions analysis includes an overview of the Safe Systems Approach; a crash data summary and key trends analysis; a comprehensive equity analysis outlining disadvantaged populations that exist within the study area; a peer city review; a review of existing Mat-Su Borough transportation safety-related plans, policies, and programs; and a comprehensive review of the methods used to gather input from stakeholders and the public on current safety conditions within the Mat-Su Borough Expanded Core Area.

Safe System Approach

The development of the Mat-Su Borough Comprehensive Safety Action Plan (CSAP) will follow the Safe System Approach (SSA), a national roadway safety strategy developed by the U.S. Department of Transportation (USDOT). Every year, an average of 43 Mat-Su Borough residents are seriously injured or killed on the transportation network in the Expanded Core Area. The ripple effects of these serious crashes go far beyond the lives of the people involved. They reverberate through families, friends, neighborhoods, and the whole community. The SSA recognizes that crashes are preventable. By making changes to key elements of the transportation system, we can anticipate human mistakes and create layers of protection within the network that reduce fatalities and serious injuries.

In the United States, the number of serious injuries and fatalities on the transportation network is on the rise. This represents a public health concern that merits a focused, comprehensive solution. In 2024, the National Highway Traffic Safety Administration estimated that 8,650 people died in traffic crashes nationally in the first three months of the year alone. Within the Mat-Su Borough Expanded Core Area, more than 10,000 roadway crashes occurred between 2013-2022. These included 99 fatal crashes, 345 serious injury crashes, and 69 crashes involving bicycles and pedestrians, 93% of which resulted in injury or death.

The SSA was developed as part of the Vision Zero initiative, which states that no person should be killed or seriously injured on the road system, and that even one death is unacceptable. This approach is founded on five core elements and six core principles that work together to form a safe system that protects all road users.

The following principles of the SSA work together to create safer people, safer vehicles, safer speeds, safer roads, and engage in post-crash care.

1. Death and serious injuries on the transportation network are unacceptable.
2. Humans make mistakes, and a safe system protects them better when they do.
3. Humans are vulnerable to the forces of a crash.
4. Responsibility to improve safety within the transportation network is shared between road users and transportation practitioners.
5. To be effective, safety must be proactive and systematic.
6. Redundancy within the system is crucial to success.

This approach shifts the focus towards both human mistakes and human vulnerability to design a system with protections in place that help mitigate crash severity and occurrence.



Figure 2. Safe System Approach diagram courtesy of USDOT

TRADITIONAL APPROACH vs. SAFE SYSTEM APPROACH

Prevent all crashes	→	Prevent deaths and serious injuries
Control road user speeds	→	Design for lower speeds
Change road user behavior	→	Design for human mistakes
Individual user responsibility	→	Shared responsibility (road users and practitioners)
React to crashes	→	Be proactive in identifying and mitigating risks

Figure 3. Comparison of traditional versus Safe System Approach

The six core SSA principles listed above guide the development of all Mat-Su Borough CSAP components, including the comprehensive crash data analysis, robust public outreach, focus on equity and vulnerable populations within the Mat-Su Borough Expanded Core Area, recommended project selection and prioritization, and suggested countermeasures and tools to help mitigate and prevent crashes.

Crash Data Summary and Key Trends

Overview

Below is a summary of crash data within the Mat-Su Borough's Expanded Core Area boundary from 2018-2022. Michael Baker International, on behalf of the borough, obtained and analyzed data from an Alaska Department of Transportation and Public Facilities (DOT&PF) database that comprises reports submitted by local law enforcement agencies and self-reporting through the Alaska Division of Motor Vehicles.

Key takeaways from 2018-2022 crash trends

Most crashes are concentrated in Wasilla.

- Crashes are most concentrated around the W Parks Highway, S Knik-Goose Bay Road, E Bogard Road, N. Crusey Street, N. Lucille Street, and E. Palmer-Wasilla Highway (see Figure 5).
- Fatal and serious injury crashes (referred to in this document as “serious crashes”) follow this trend, with the highest concentrations around the Parks Highway and E. Palmer-Wasilla Highway (see Figure 6).

Most crashes occur on high-speed, high-volume roads.

- More crashes are occurring on interstates compared to other road classifications, which is a direct correlation to speed and volume.
- However, **more crashes occurred on major and minor arterials** combined than on interstates (see Figure 4). This same pattern is present with serious crashes.

Drugs and alcohol are the top contributing factors to serious crashes.

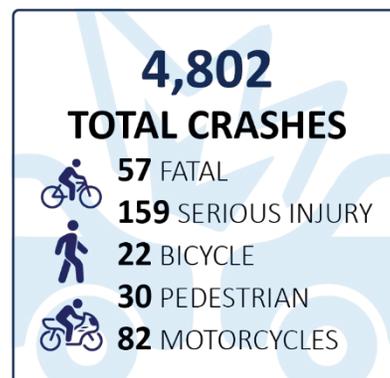
- Drugs or alcohol were involved in **24% of serious crashes**.

Most serious crashes happen at intersections.

- 75% of all crashes and 66% of serious crashes are **intersection related**.

There are more crashes during winter, but fewer serious crashes.

- 71% of crashes occur in the **winter months** (October-March), but only 46% of serious crashes occur during winter.



Most crashes involved two or more vehicles.

- The most common first harmful event was a crash with another vehicle (79%) and the second most common was hitting a live animal (6.5%).
- Hitting another vehicle was also the most common event for serious crashes (65%) and the second most common was vehicle rollover (6%).

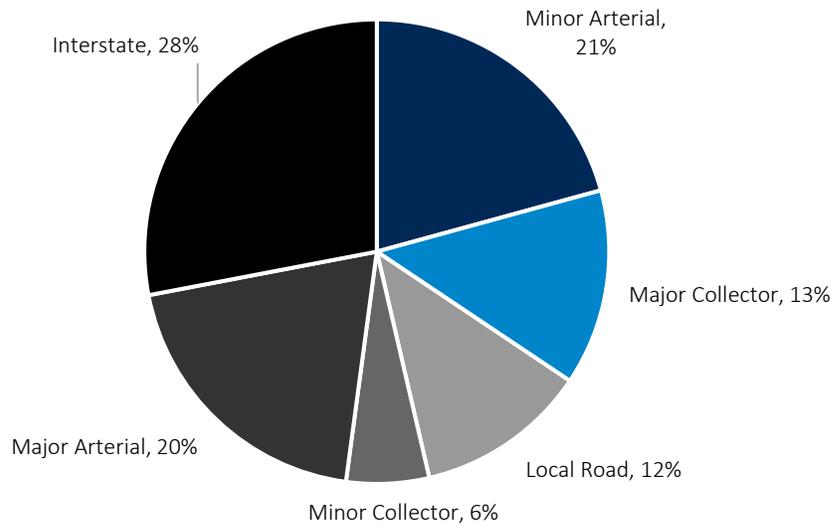


Figure 4. Percent of crashes by roadway functional class

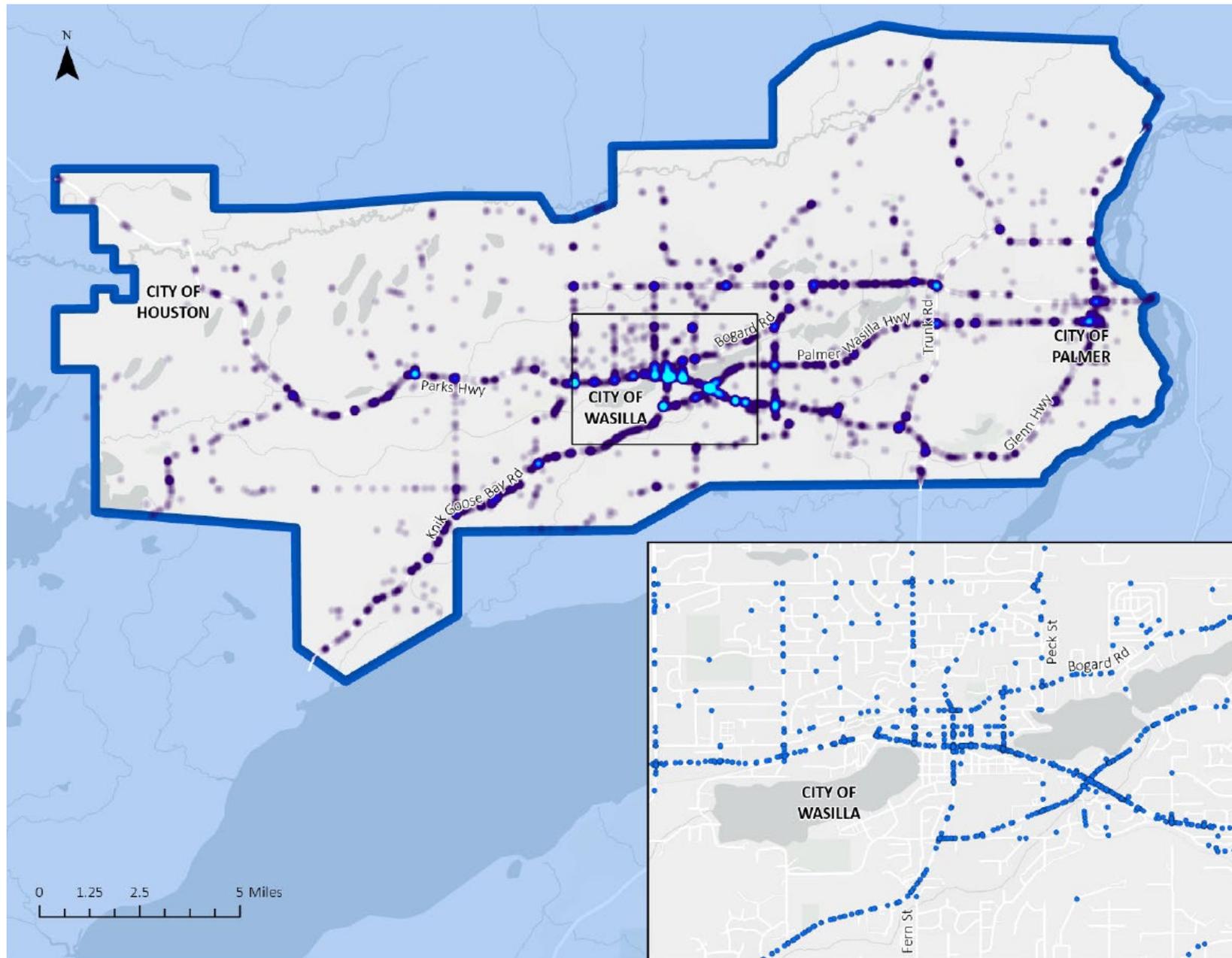


Figure 5. Heat map with point map inset showing concentration of all crashes in the Mat-Su Expanded Core Area

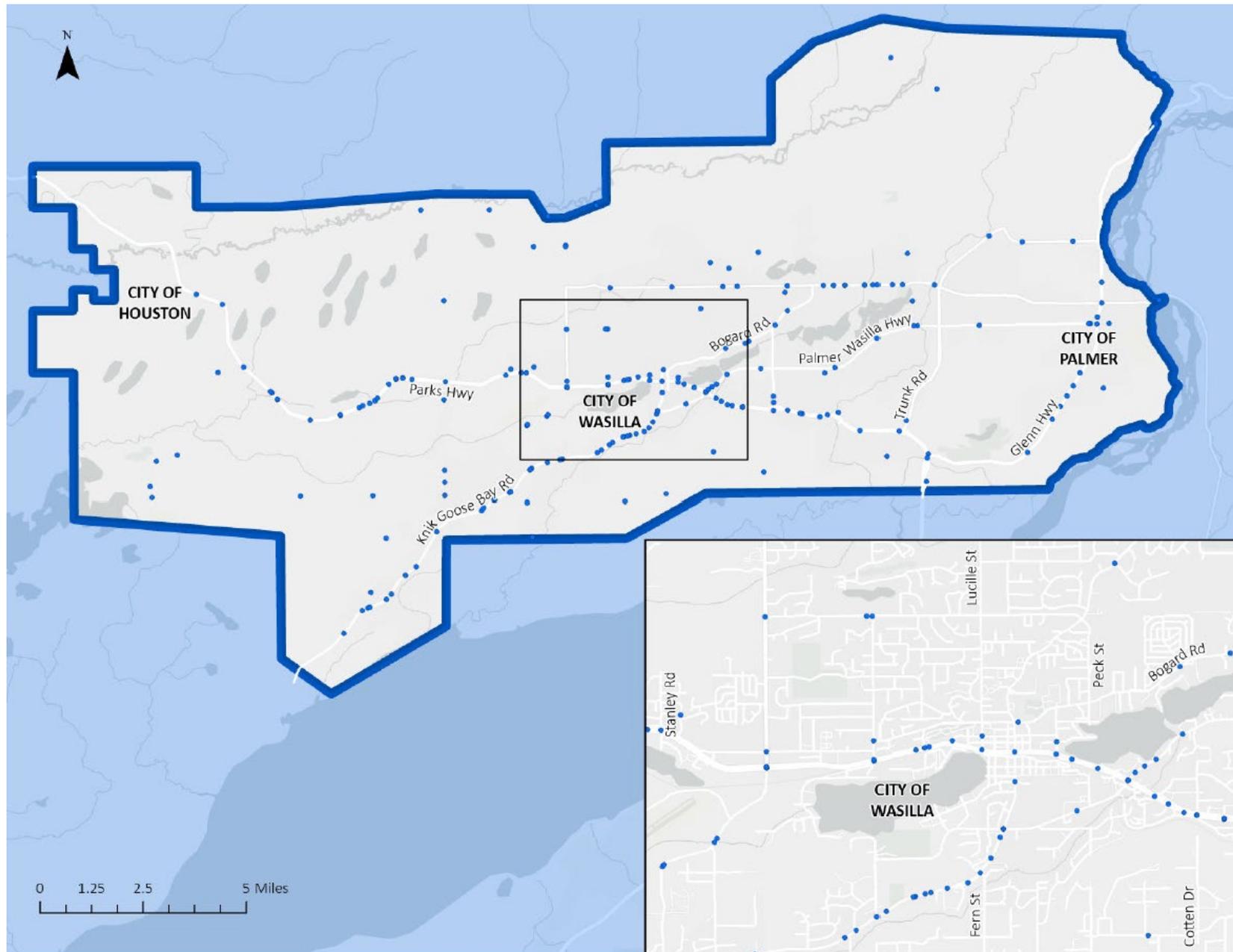


Figure 6. Map showing concentration of serious crashes in Mat-Su Expanded Core Area

Data clarification and potential data gaps

Fatal and serious injury crash definitions

This report discusses and analyzes fatal crashes and serious injury crashes by event. This means that each crash event that includes the death or serious injury of one or more individuals is counted as one serious crash. The total number of fatalities and serious injuries may be more than the number of fatal and serious injury crashes.

Alaska defines a fatal crash as one where death results within 30 days from the injuries received in the traffic crash. Serious injuries are defined as “severe lacerations [with] significant loss of blood; Broken or distorted extremity (arm or leg); Crush injuries; Suspected skull, chest or abdominal injury other than bruises or minor lacerations; Significant burns (second and third degree burns over 10% or more of the body); Unconsciousness when taken from the crash scene; or Paralysis.”¹ Most serious injury crashes will have an ambulance response and/or require hospitalization.

Data collection

There are many opportunities for varied and sometimes contradictory responses in crash data report fields. One notable example relates to the use of seatbelts. One field asks if there was “driver restraint misuse” and another field asks if a “driver restraint system [was] used.” It is unclear whether “misuse” includes not using a restraint system. Multiple reports indicated no misuse and no use of a restraint system. Duplicative and ambiguous fields like these increase the likelihood of the fields not being completed as intended, which makes accurate data analysis more challenging.

The extent of “null” (not completed), “unknown,” and vague options that do not provide valuable insight on crash reports reveal missed opportunities for understanding the factors involved in crashes.

Figure 7 is a chart that exemplifies this with the

“human circumstance” breakdown of all crashes. Nearly 50% of the data from these fields yield no meaningful information with fields showing as “null,” “unknown,” or “no contributing action/circumstance” or “other contributing action/circumstance.” This data field is useful and includes choices such as: driver inattention, following too closely, or ran red light or stop sign. Reducing the extent of choices in this field may increase quality of response in crash reports.

Self-reporting

Forty-three percent of crash reports were completed using Form 12209, which is submitted by individuals (not law enforcement officers). Seventy-three percent of those reported no injuries. None of these reports indicated misuse of seatbelts, or speed or alcohol as factors in the crash. While better than no data at all, driver self-reports are less likely to capture all data fields as accurately as when completed by a third-party law enforcement officer, adding further subjectivity to data fields. All fatal crashes and all but five reports indicating serious injuries were completed by law enforcement officers using Form 12200.

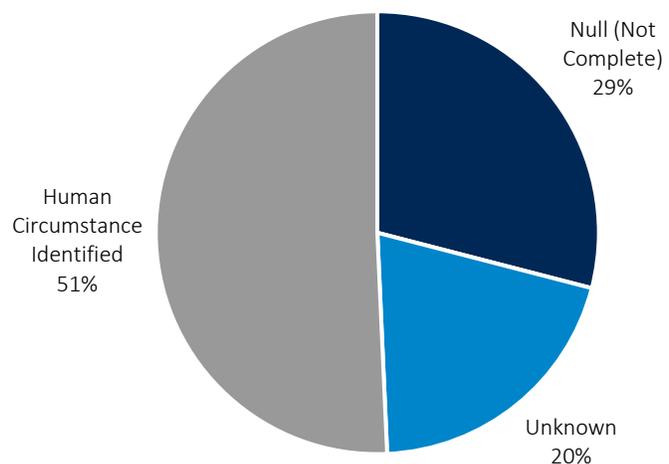


Figure 7. Human circumstances breakdown for all crashes, showing extent of missing or incomplete information for this data field

¹ <https://highways.dot.gov/media/20141>

Big Picture Trends

Five-Year Trend

Since 2018, the total number of crashes is trending upward (Figure 8) even when including a decline in 2020, which is likely due to the COVID pandemic when fewer drivers were on the road. Serious crashes are on a flatter but upward trend (Figure 9).

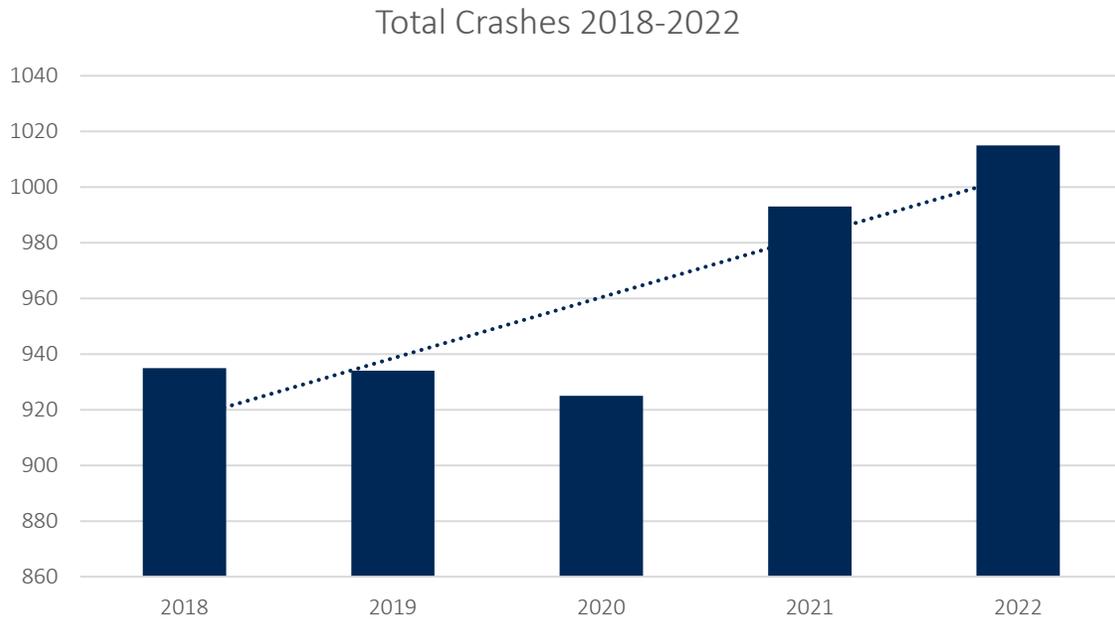


Figure 8. Total crashes by year and growth trend

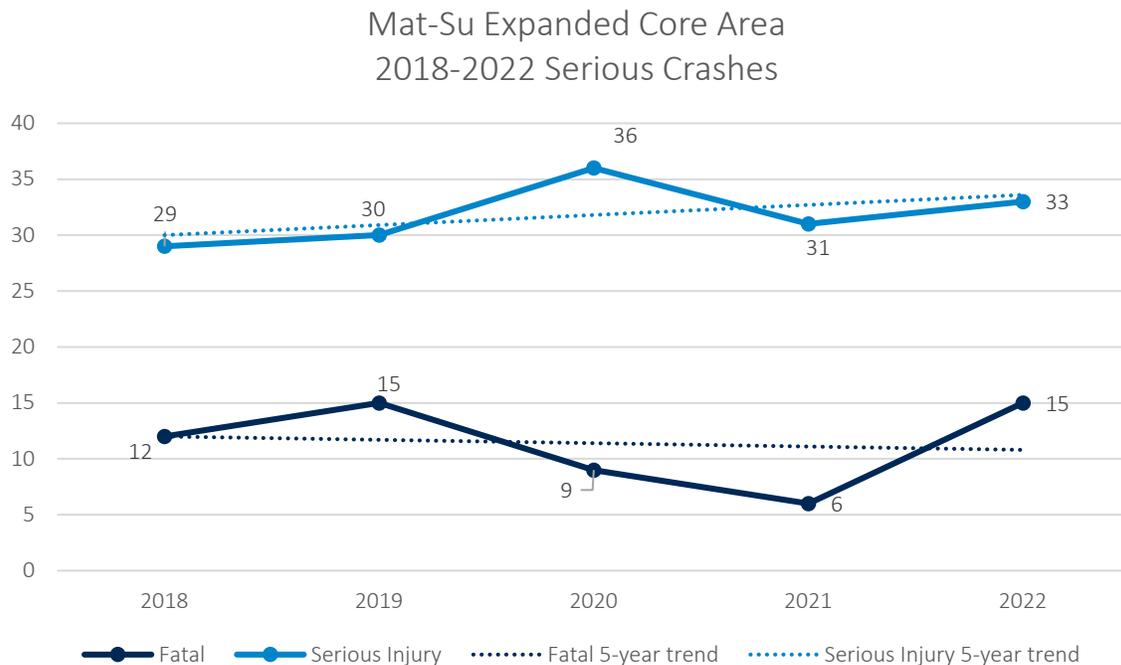


Figure 9. Serious crashes by year and growth trend

Driver Age

Drivers aged 25-34 were involved in 17% of all crashes and 22% of serious crashes. Drivers aged 18 experienced the highest extent of crashes for any single age, but drivers aged 25 experienced the most serious crashes for any age (Figure 10 and Figure 11). Total crashes and serious crashes generally declined for drivers after age 65.

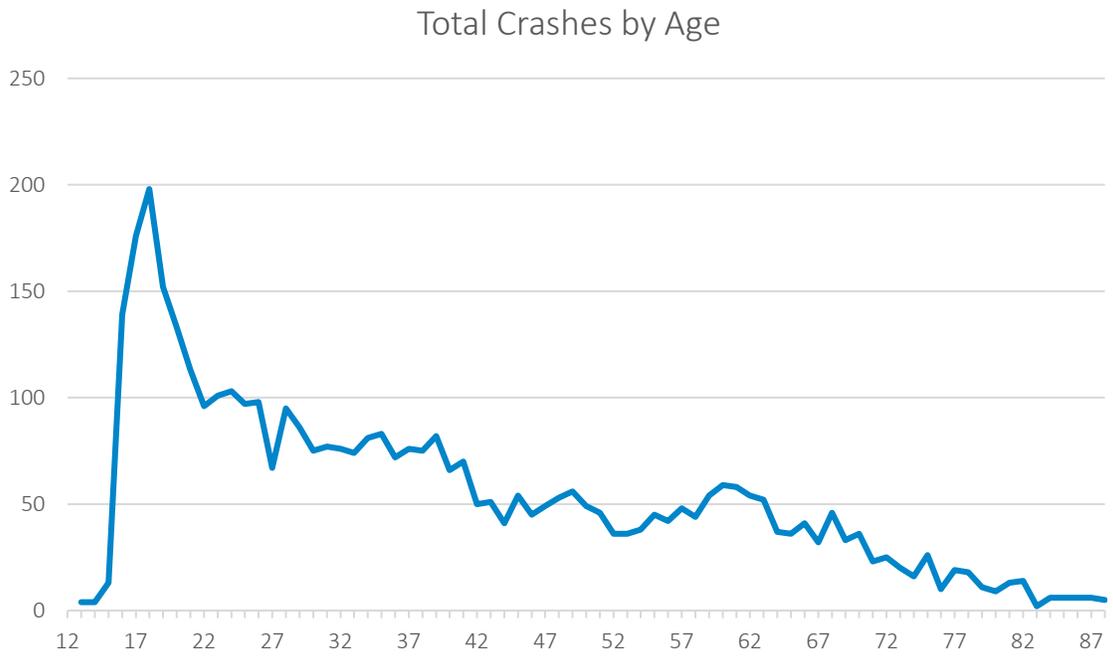


Figure 10. Number of crashes by age

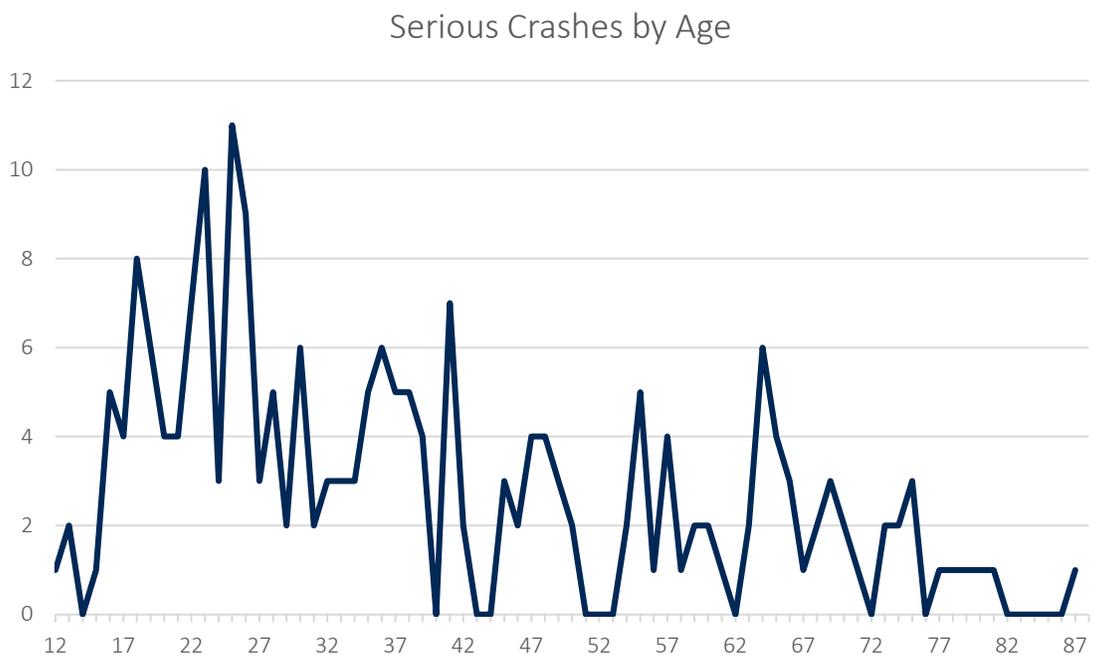


Figure 11. Number of serious crashes by age

Contributing Action at Time of Crash

A contributing unit in a crash report is the entity that was the main contributor to the crash, i.e., the person at fault. Figure 12 shows the most common actions of the contributing unit at the time of a serious crash. Going straight, which may indicate speed as a contributing factor to the crash, and turning left are the primary actions involved in serious crashes.

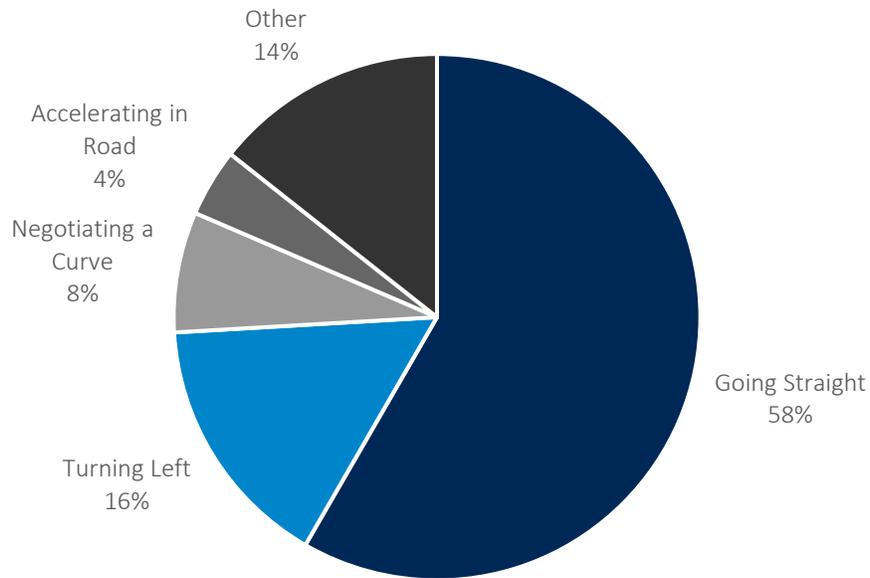


Figure 12. Contributing unit action at time of serious crash

Trends by Mode

Most crashes (97.2%) were motor vehicle crashes, with nearly 2% motorcycles and the remainder involving bicycles and pedestrians (1% combined). For serious crashes, motorcycles make up a larger proportion by mode at 15% (Figure 13).

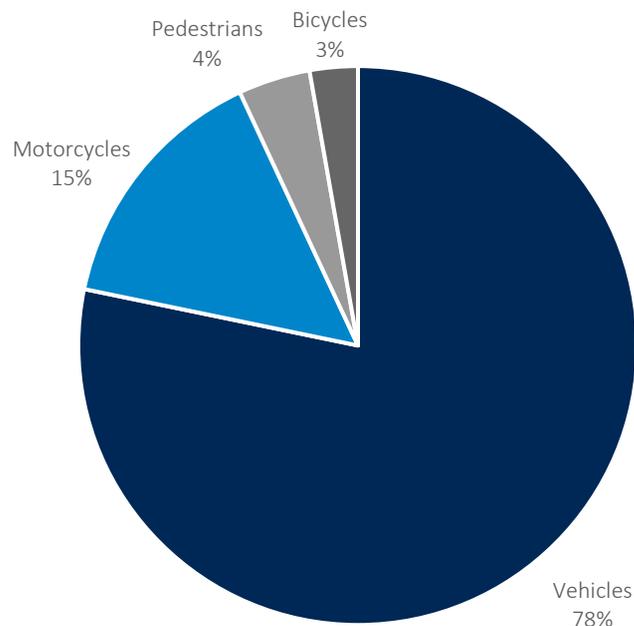


Figure 13. Serious crashes by mode

Motor Vehicle Trends

There were 4,668 motor vehicle crashes from 2018-2022, of which 169 (or 3.6%) were serious crashes. Alcohol was a factor in 17.8% of serious crashes. Males accounted for 59% of drivers in serious crashes while females accounted for 39%² (Figure 14).

PRIMARY MOTOR VEHICLE TRENDS

4,668 total crashes

43 FATAL

124 SERIOUS INJURY

Top serious crash types:

- Single vehicle run off the road
- Head-on
- Rear-end
- Left turn (angle)

Top serious crash human circumstances:

- Run off the road
- Failure to yield
- Failed to keep in lane
- Ran stop sign / red light
- Inattentive, careless, erratic, negligent

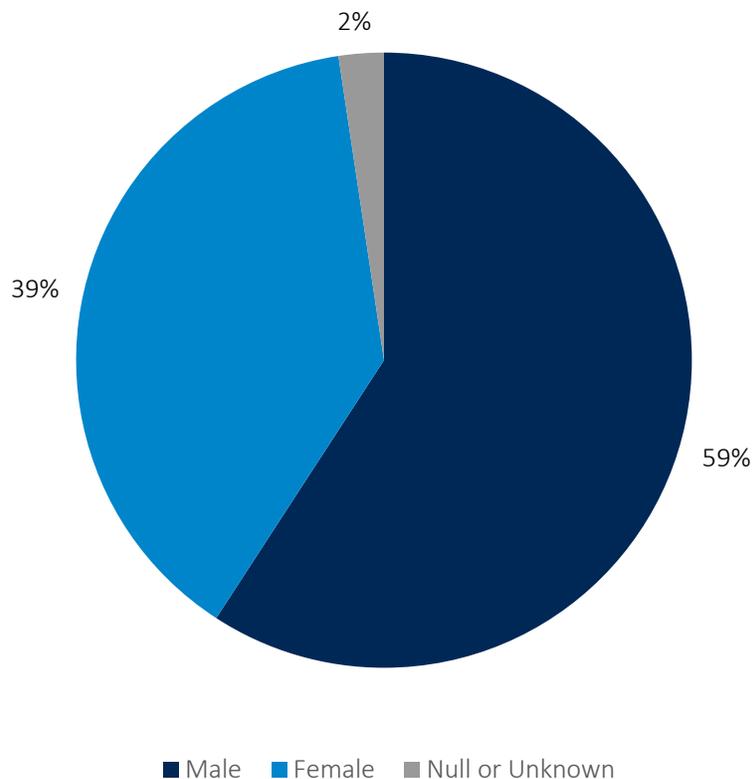


Figure 14. Serious motor vehicle crashes by driver gender

² From driver's license data or as identified on an individual crash report. The Alaska Division of Motor Vehicles recognizes only male and female for gender (sex) in driver licensing.

Motorcycle Trends

There were 82 motorcycle crashes from 2018-2022, and 32 (or 39%) were serious crashes. Alcohol was a factor in 12% of all motorcycle crashes and 12% of all serious motorcycle crashes. The first harmful event in 75% of serious crashes was hitting a motor vehicle. Males were involved in more motorcycle crashes (72%) than females (25%). In all but one of the serious motorcycle crashes, the driver wore no helmet, it was not a USDOT-approved helmet, or it was unknown whether they wore a helmet. No helmet worn was cited in three of the six (50%) fatal motorcycle crashes, and one other fatal crash cited a non-USDOT-approved helmet was worn by the driver. Figure 17 shows the location of motorcycle crashes in the Expanded Core Area.

PRIMARY MOTORCYCLE TRENDS

82 total crashes

6 FATAL

26 SERIOUS INJURY

Top serious crash types:

- Angle
- Front to rear

Top serious crash human circumstances:

- Failure to yield
- Inattentive, careless, erratic, negligent

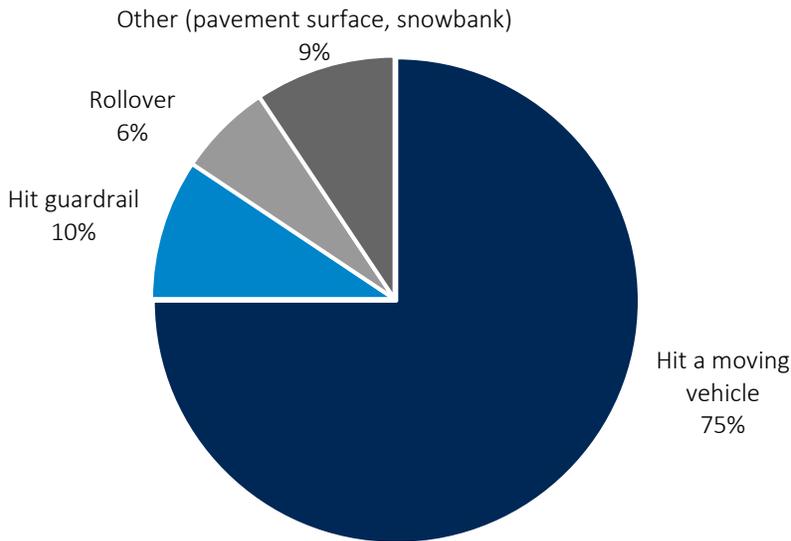


Figure 15. Serious motorcycle crash first harmful event

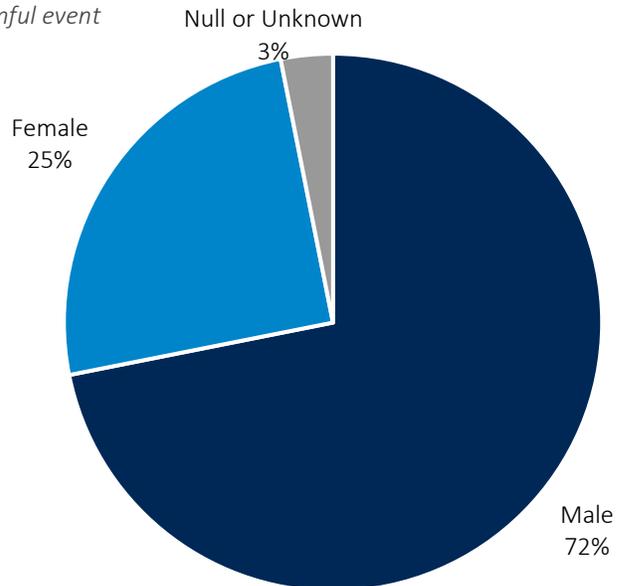


Figure 16. Serious motorcycle crashes by driver gender

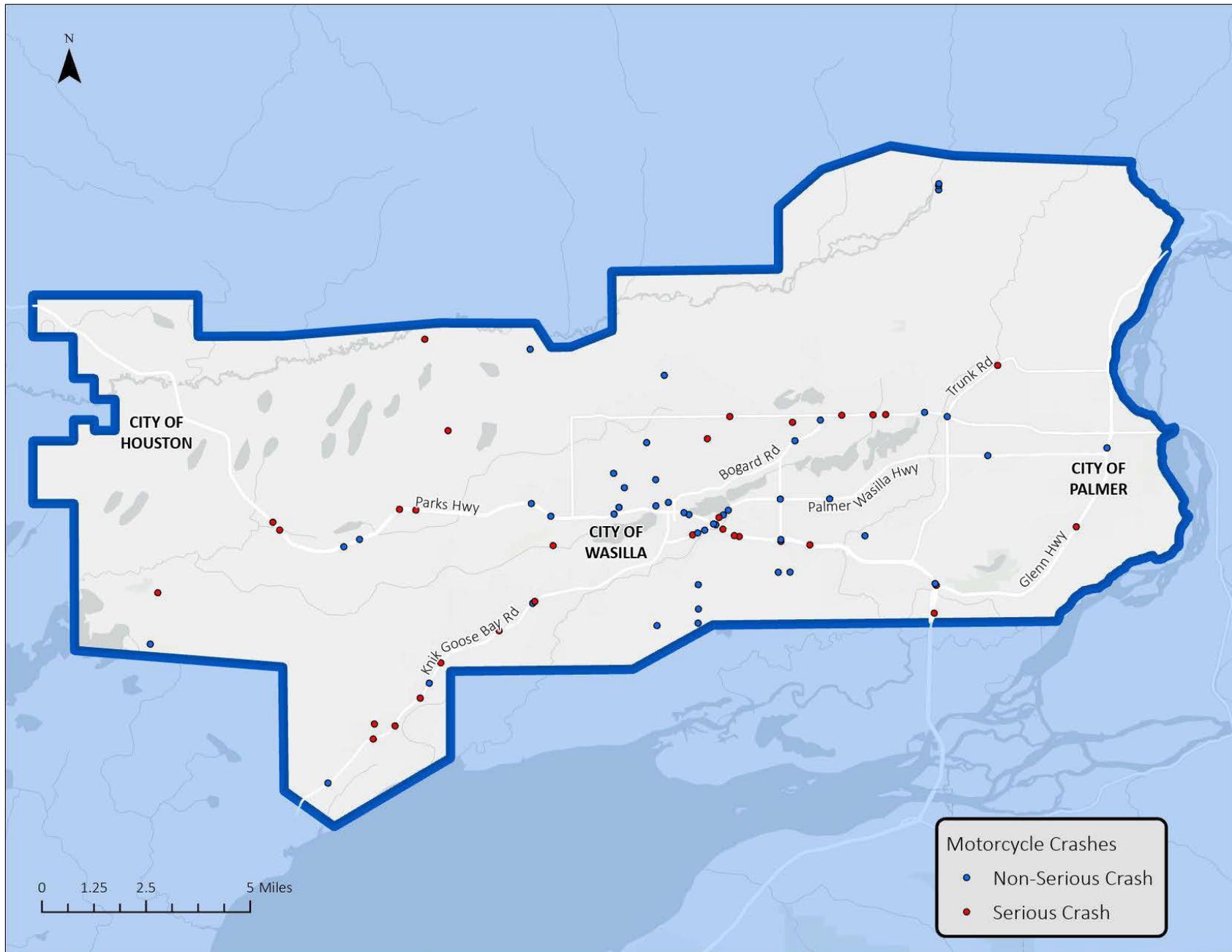


Figure 17. Locations of motorcycle crashes in the Mat-Su Expanded Core Area

Bicycle Trends

There were 22 bicycle crashes from 2018-2022, with six (27%) serious crashes—one fatality and five serious injuries. All but three bicycle crashes resulted in some form of injury (see Figure 18). Figure 21 shows that the location of bicycle crashes is predominantly intersections for both all crashes (82%) and for serious crashes (83%.)

Figure 19 shows the most common action of the contributing unit at the time of the crash, and Figure 20 shows the lighting conditions at the time of the crash.

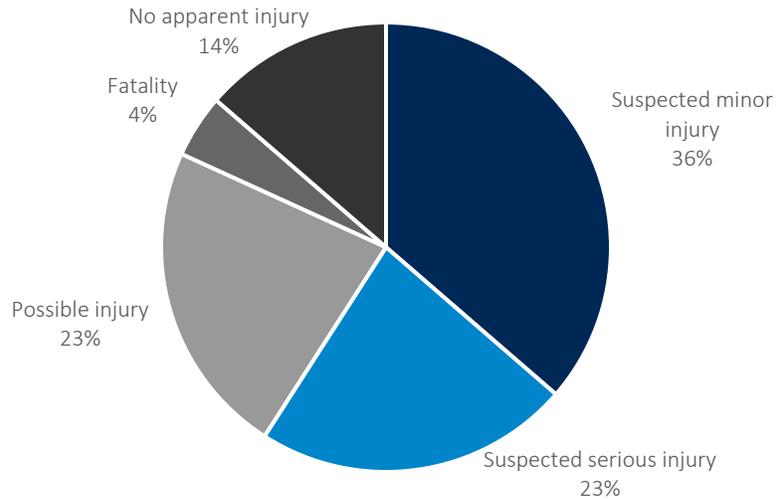


Figure 18. Severity of bicycle crashes

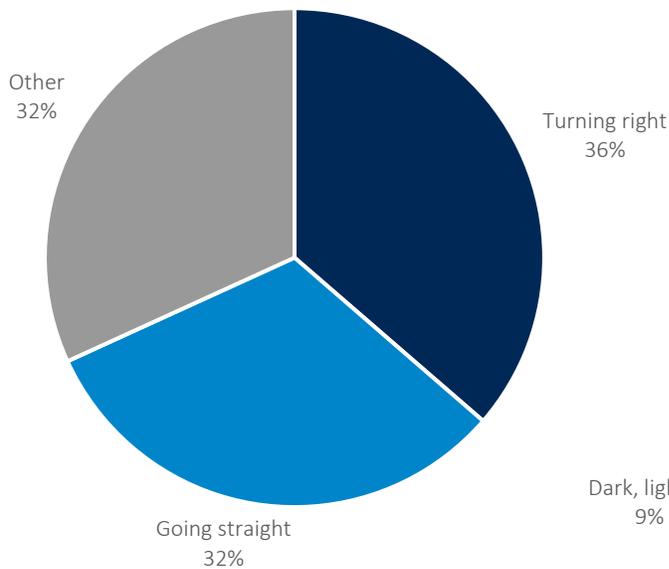


Figure 19. Contributing unit action in all bicycle crashes

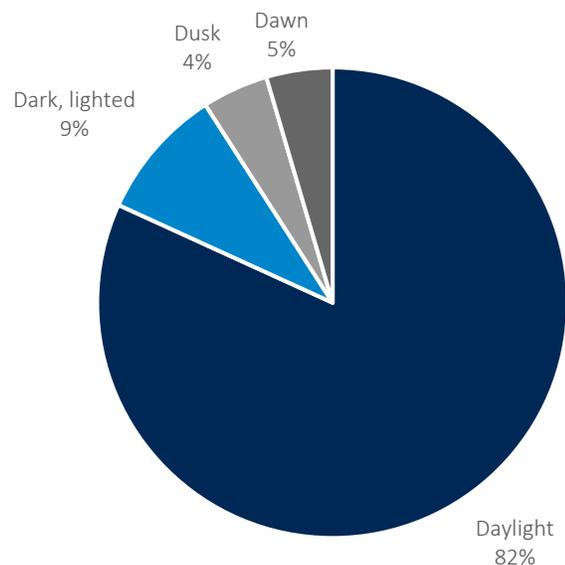


Figure 20. Lighting conditions for all bicycle crashes

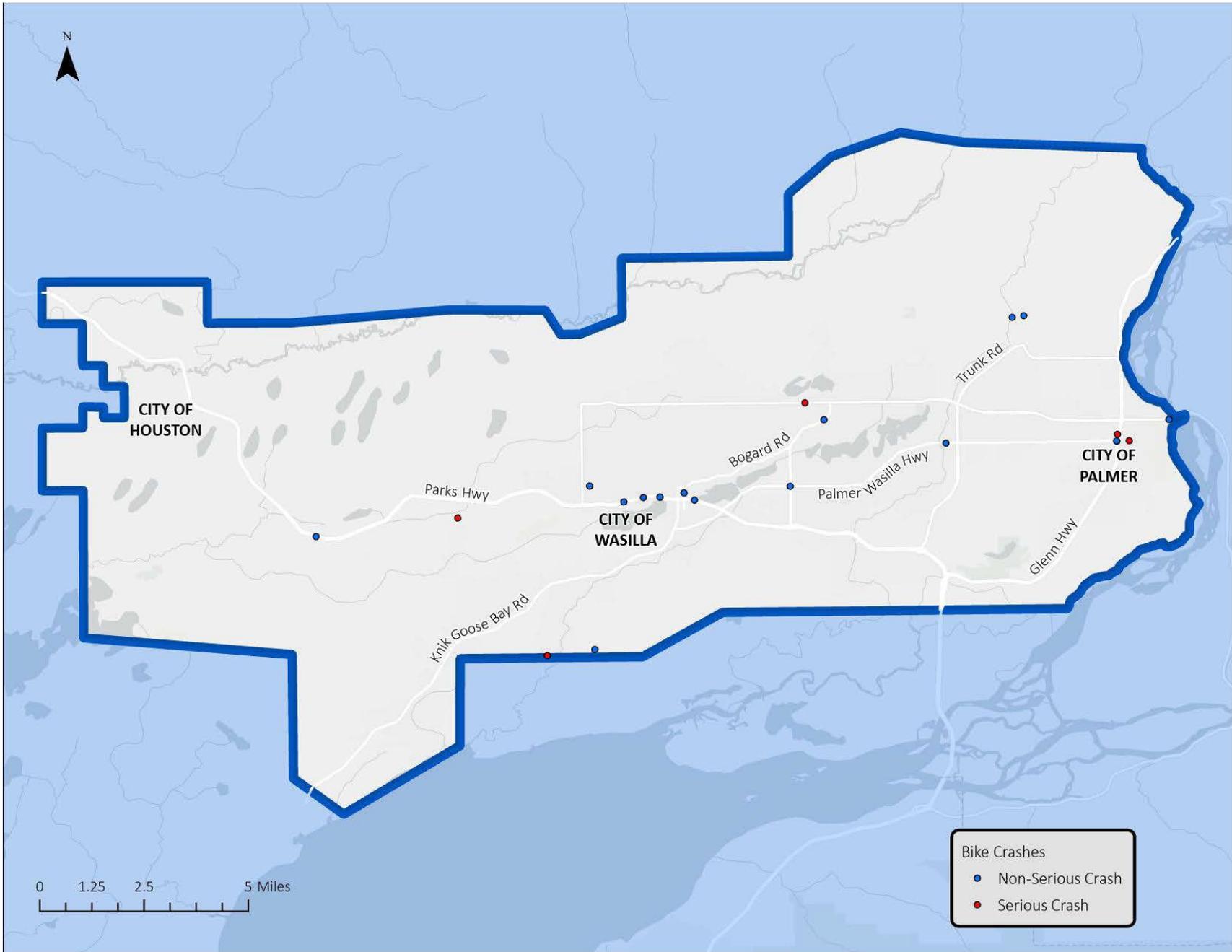


Figure 21. Location of bicycle crashes in the Mat-Su Expanded Core Area

Pedestrian Trends

There were 30 crashes involving pedestrians from 2018-2022, with 9 of those (30%) being serious crashes—5 fatalities, and 4 serious injuries. All but three pedestrian crashes resulted in some form of injury (see Figure 22). Figure 23 shows lighting conditions for pedestrian crashes, which are mostly occurring in dark conditions. Figure 24 shows contributing actions at the time of a pedestrian crash. Figure 25 shows the location of pedestrian crashes is predominantly at intersections for both all crashes (70%) and serious crashes (20%).

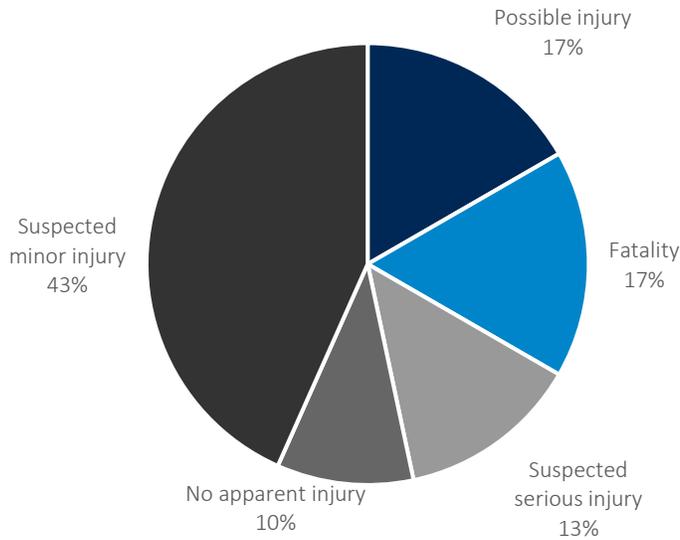


Figure 22. Severity of pedestrian crashes

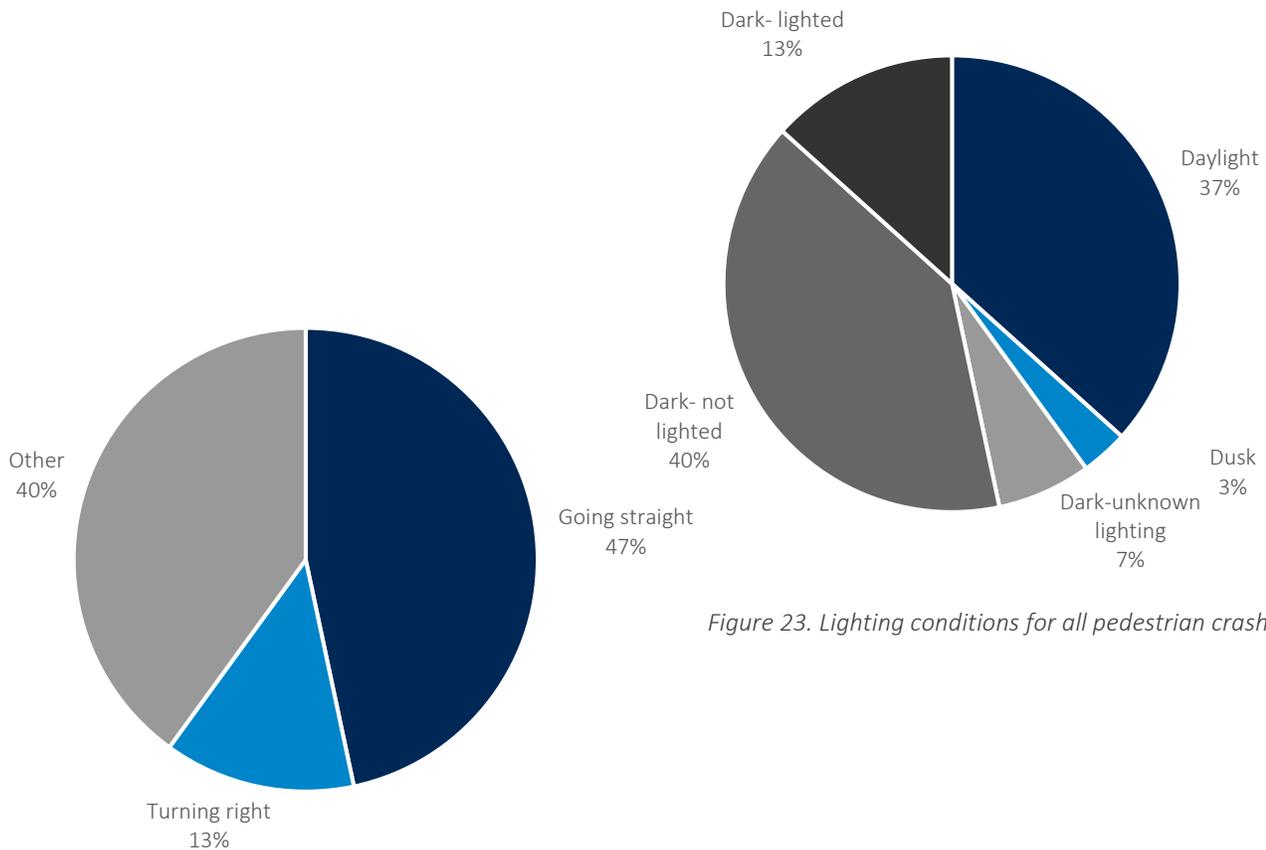


Figure 23. Lighting conditions for all pedestrian crashes

Figure 24. Most contributing unit's action in pedestrian crashes

This page intentionally left blank.

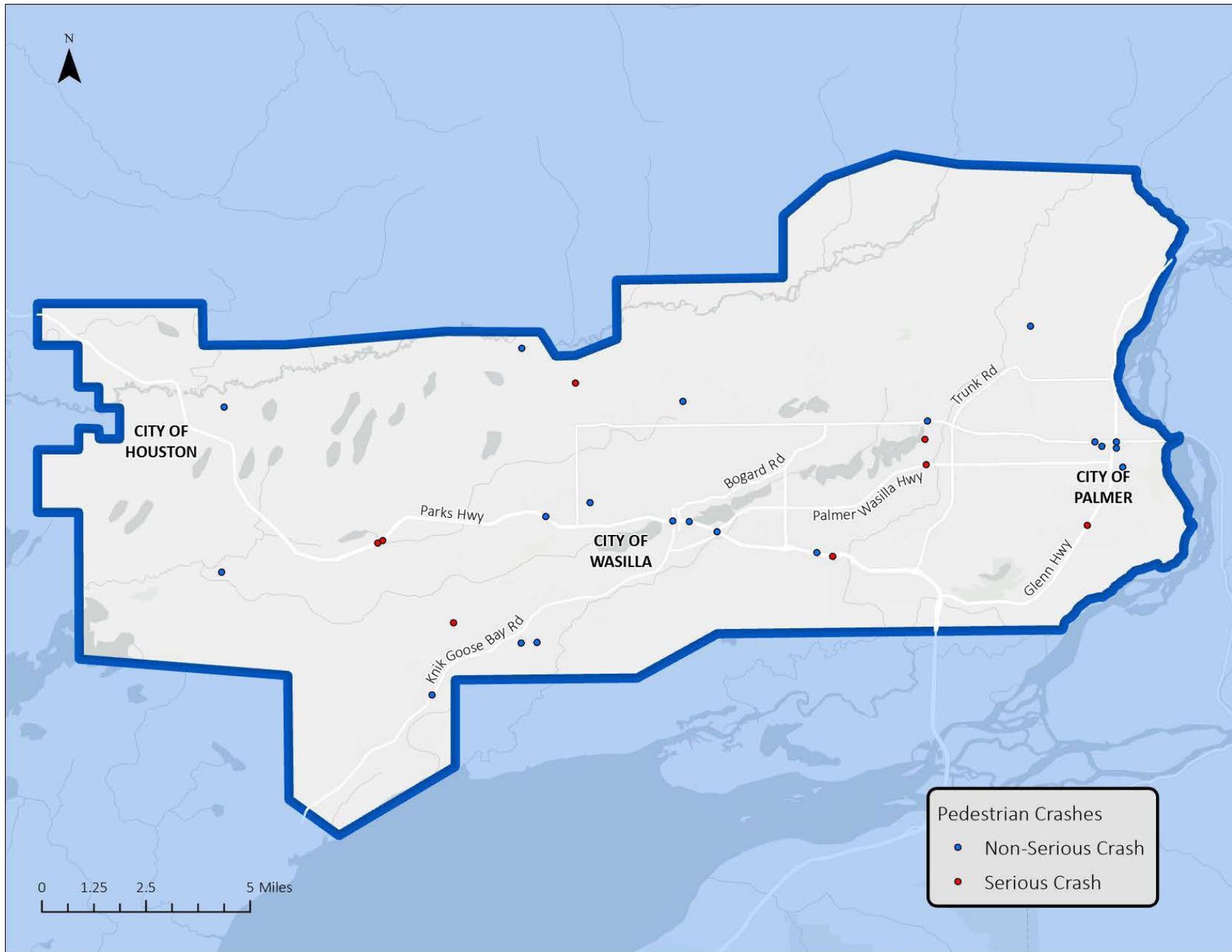


Figure 25. Location of pedestrian crashes in the in the Mat-Su Expanded Core Area

This page intentionally left blank.

Environmental Trends (lighting, surface condition, adverse weather)

Most crash types occurred in the winter months, with 75% occurring from October through March. However, only 46% of serious crashes occurred during this same timeframe, with the highest months for serious crashes occurring in September and July (12% and 10% of all serious crashes, respectively). Figure 26 shows the distribution of crash severity by month from 2018-2022.

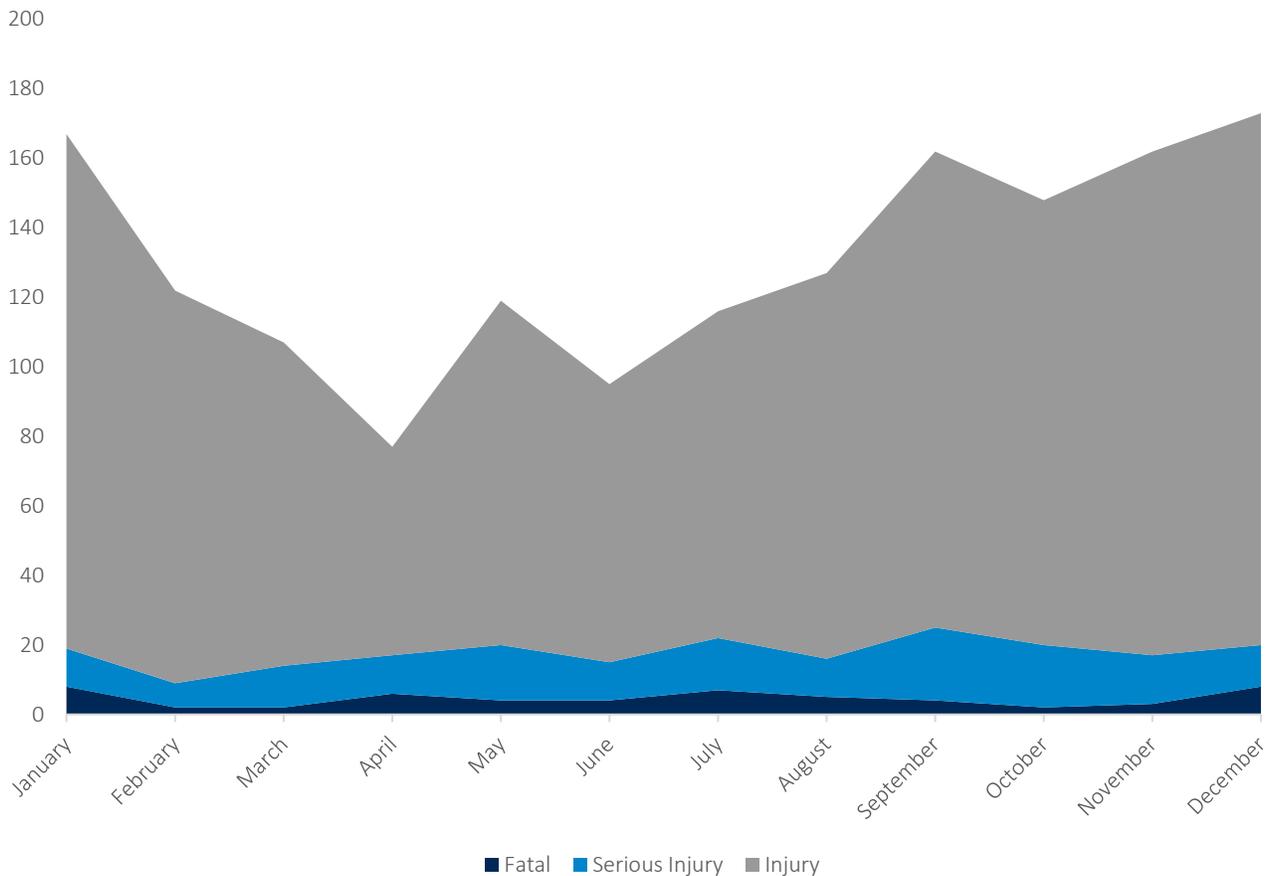


Figure 26. Crashes by month

While more total crashes are occurring in the winter months, dark and winter road conditions do not appear to be the predominant contributing factors for all crashes. Figure 27 indicates nearly half of all crashes occur during dry conditions, Figure 29 conditions (64%) and daylight (62%), correlating to the highest crash months of September and July.

This data suggest both darkness and inclement weather conditions are not a major contributing factor to crashes. In particular, most serious crashes are happening in dry road conditions. The environmental conditions trend for serious crashes may indicate aggressive or overconfident driving, and that drivers may be more conservative or cautious in less favorable conditions. As noted in modal trends, bicycle crashes occur more commonly during daylight hours (82% of all crashes), but most pedestrian crashes (63%) do not occur during daylight hours. Twenty-one percent of all serious crashes occur in dark and unlighted conditions, compared to 13% of all crashes occurring in those conditions, suggesting a lack of roadway lighting could be a factor in serious crashes.

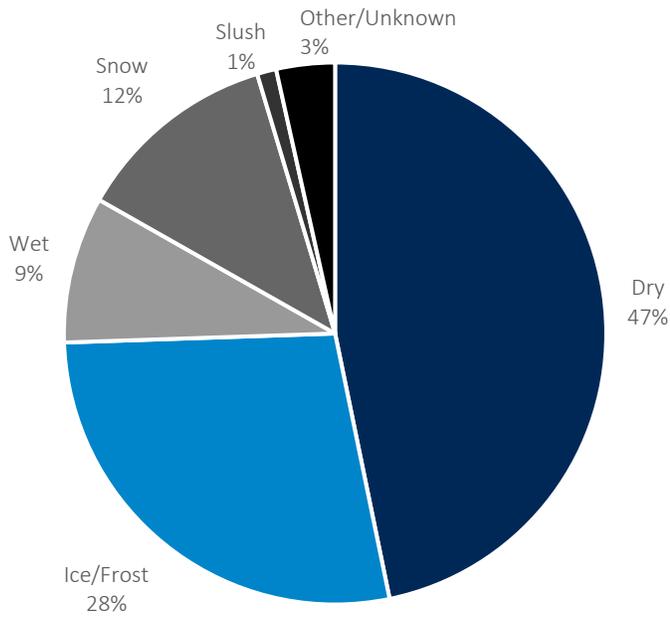


Figure 28. Road conditions at the time of all crashes

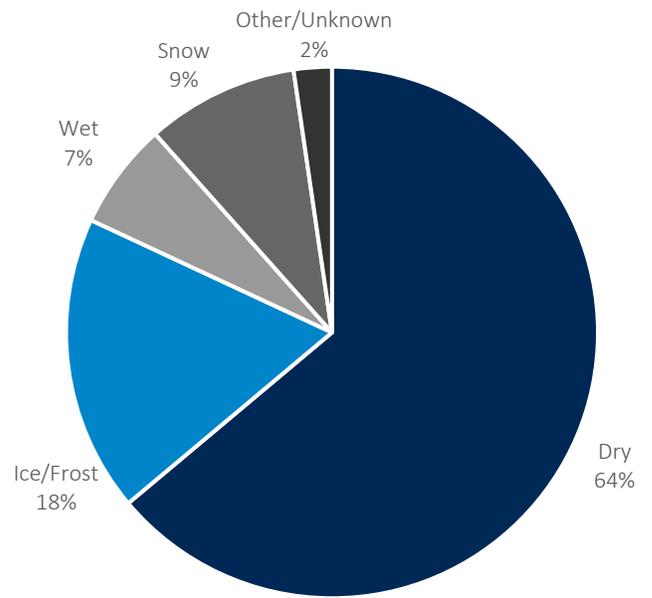


Figure 27. Road conditions at the time of serious crashes

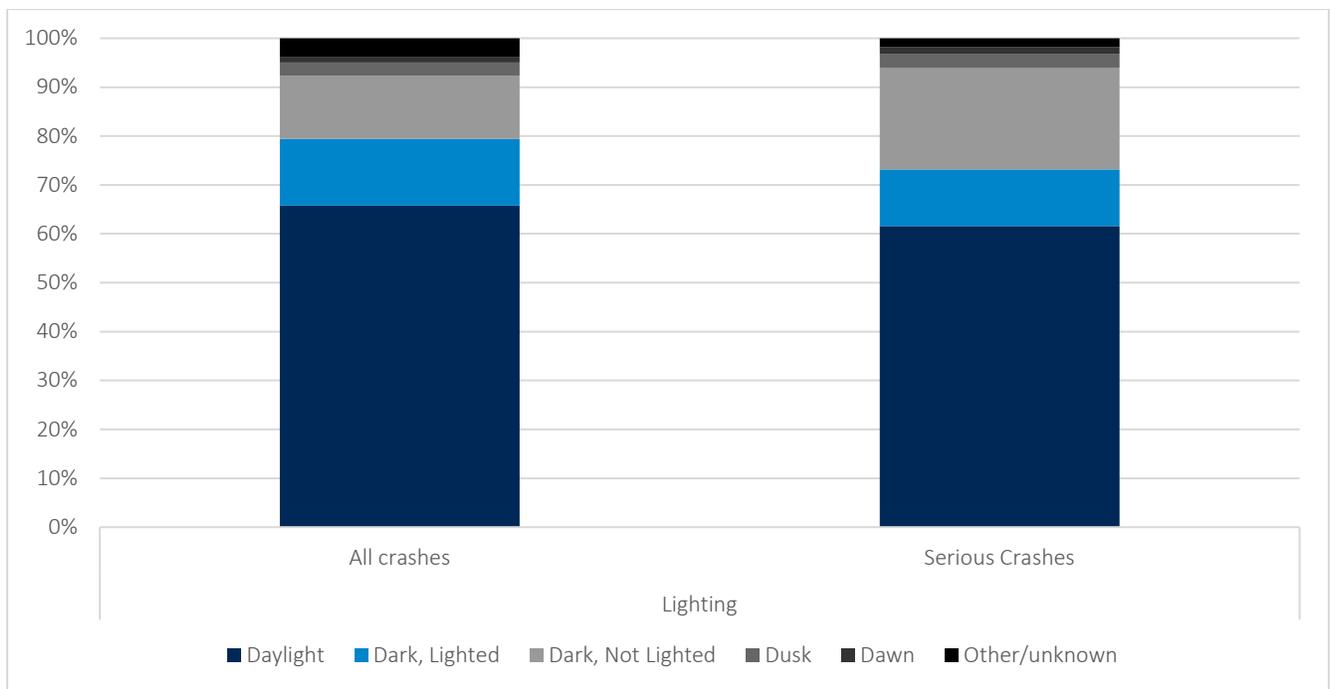


Figure 29. Lighting conditions at time of crash

Equity Analysis

Defining Equity in Transportation

An equitable transportation system strives to support all users by providing transportation options that are affordable and reliable and that meet the needs of the communities they serve. [Executive Order 13985 Advancing Racial Equity and Support for Underserved Communities](#)³ (2021) defines equity as “the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality.”

Building an equitable transportation system means taking extra care to consider and plan for the unique challenges that disadvantaged communities face regarding mobility and connectivity needs. Engaging with disadvantaged populations early and often during the transportation planning process can help a community respond to these needs and adjust to ensure an equitable transportation network is achieved. During the planning process and particularly regarding public involvement and outreach, it is the responsibility of transportation planning agencies to ensure that the entire community is included, regardless of race, nationality, income, age, sex, or disability.

Vulnerable Populations within the Expanded Core Area

As part of the Mat-Su Borough CSAP process, we performed a comprehensive equity analysis to identify disadvantaged populations within the Mat-Su Borough Expanded Core Area. These populations have disproportionately higher risks navigating the transportation network. The results of this analysis show a correlation between demographics and safety risk, and they provide an equity-specific lens that can be used to help prioritize and recommend projects for implementation in the final Mat-Su Borough CSAP. To complete this analysis, we used three separate methods for determining disadvantaged populations in the Mat-Su Borough Expanded Core Area. The first method features results using the Council on Environmental Quality’s Climate and Economic Justice Screening Tool. This tool utilized census tract boundaries from 2010 and includes the following eight categories to assess climate and economic justice burden:

- **Climate Change** – loss of agriculture, buildings, and population because of climate change, flood risk, and wildfire risk
- **Energy** – high energy costs
- **Health** – asthma, diabetes, heart disease, low life expectancy
- **Housing** – historic underinvestment, high housing costs, lack of green space, lack of indoor plumbing, presence of lead paint
- **Legacy pollution** – presence of abandoned mining land or former defense sites, proximity to hazardous waste facilities, proximity to superfund sites, proximity to risk management plan facilities
- **Transportation** – exposure to diesel particulate matter, transportation barriers, traffic proximity and volume
- **Water and wastewater** – presence of underground storage tanks and releases of wastewater discharge
- **Workforce development** – linguistic isolation, low median income, poverty, unemployment

Purple shading in the map below shows areas with a high number of indicators signifying the presence of climate and economic justice burdens. These areas specific to the Mat-Su Borough Expanded Core Area indicate low-income populations, higher than average (above the 90th percentile) energy costs, lack of indoor plumbing, higher than average (above the 90th percentile) relative cost and time spent on transportation, and high (above 90th percentile) numbers of unemployment.

³ <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/>

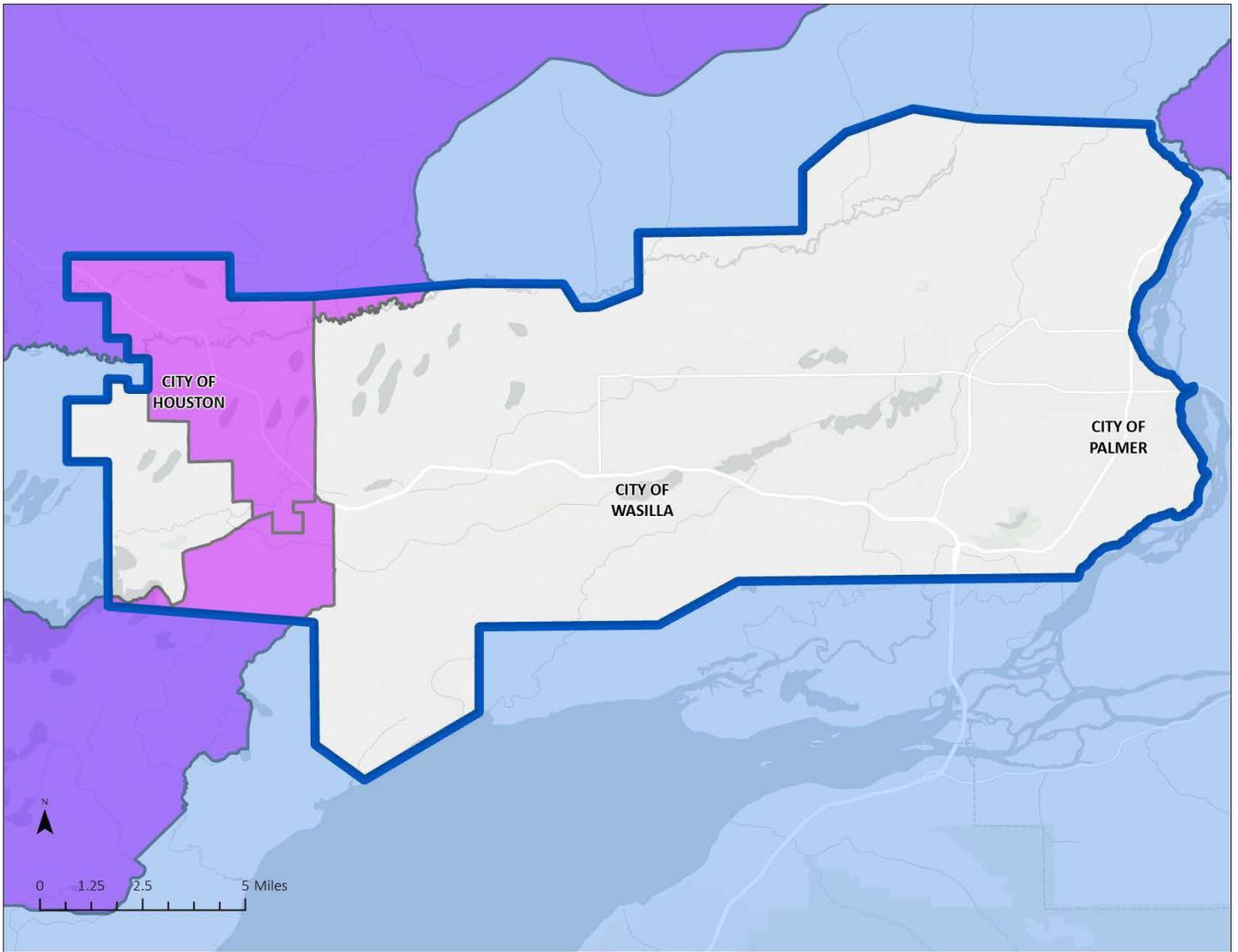


Figure 30. Climate and Economic Justice Screening Tool analysis for Expanded Core Area

The second equity analysis tool we used was the USDOT Equitable Transportation Community (ETC) Explorer. This interactive web application serves to complement the Climate and Economic Justice Screening Tool by focusing on transportation-related disadvantages. The ETC Explorer analyzes five components to look at the overall burden experienced by a community due to underinvestment in transportation. They include:

- Transportation insecurity
- Climate and disaster risk burden
- Environmental burden
- Health vulnerability
- Social vulnerability

Using this tool, we assessed that nearly the entire Mat-Su Borough Expanded Core Area experiences transportation disadvantages and transportation insecurity. Transportation insecurity is a core component indicating transportation disadvantage in a community. It occurs when a significant number of people in a community are unable to experience regular, reliable, and safe mobility to meet their daily needs. Transportation insecurity is also a substantial factor in persistent poverty.

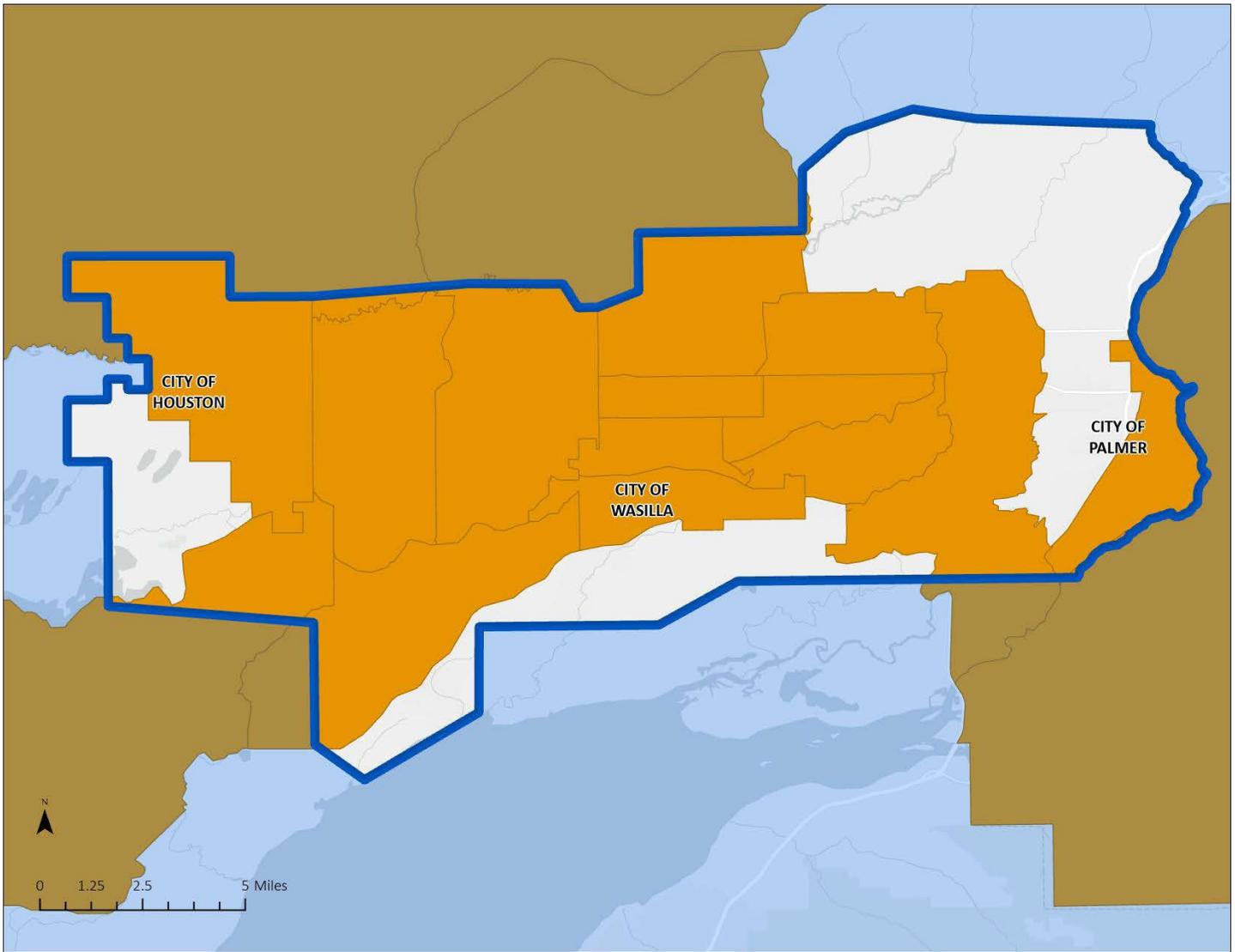


Figure 31. USDOT ETC analysis for the Expanded Core Area

On deeper analysis, the orange areas in the above map were found to have high scores in three components of the ETC Explorer Tool. These included transportation insecurity, health vulnerability, and social vulnerability.

Transportation insecurity

Transportation insecurity occurs when people are unable to meet their daily needs regularly, reliably, and safely due to the following three prevalent factors.

- **Transportation access** – Includes long wait times and difficulty traveling by car, walking, biking, or taking transit. Long commute times and limited access to a vehicle are barriers to employment and resources.
- **Transportation cost burden** – Households that spend a greater than average percentage of their income on transportation, which can include transit costs, vehicle maintenance and insurance costs, gasoline, and fuel. Overspending on transportation costs can make people more vulnerable to losing housing, not being able to afford hospital and medical care, and not being able to afford healthy food options, which can lead to chronic illness and obesity.
- **Transportation safety** – This factor indicates higher than average scores for the number of motor vehicle fatalities per capita.

Social Vulnerability

Social vulnerability measures lack of employment, level of education, level of poverty, percentage of home ownership, access to online resources, housing cost burden, age, English proficiency, and disability status.

Health Vulnerability

The health vulnerability category assesses the rates of disease that can be attributed to air, noise, and water pollution; limited mobility conditions due to lack of safe walking facilities; dependence on a vehicle; and long commute times. This category looks at the prevalence of asthma, cancer, high blood pressure, diabetes, and poor mental health in a community.

Finally, a third equity analysis of the Mat-Su Borough Expanded Core Area focused on the social vulnerability category of the ETC Explorer to assess the highest disadvantaged areas. This analysis is explained in the next section, Social Vulnerability Indicators within the Expanded Core Area.

Social vulnerability indicators within the Expanded Core Area

For this equity analysis, we used socioeconomic status and household characteristics to assess social vulnerability.

Indicators for socioeconomic status include:

- Percent of population with income below 200% of poverty level
- Percent of people age 25+ with less than a high school diploma
- Percent of people age 16+ who are unemployed
- Percent of total housing units that are renter-occupied
- Percent of houses that spend 30% or more of their income on housing with less than \$75k income
- Percent of population uninsured
- Percent of households with no internet subscription
- Gini index (degree of inequality in the distribution of income/wealth)

Indicators for household characteristics include:

- Percent of population 65 years or older
- Percent of population 17 years or younger
- Percent of population with a disability
- Percent of population (age 5+) with limited English proficiency
- Percent of total housing units that are mobile homes

Four census tracts within the Mat-Su Borough Expanded Core Area had high percentages of the above indicators for social vulnerability. They include Houston, Big Lake, North Wasilla, and South Wasilla.

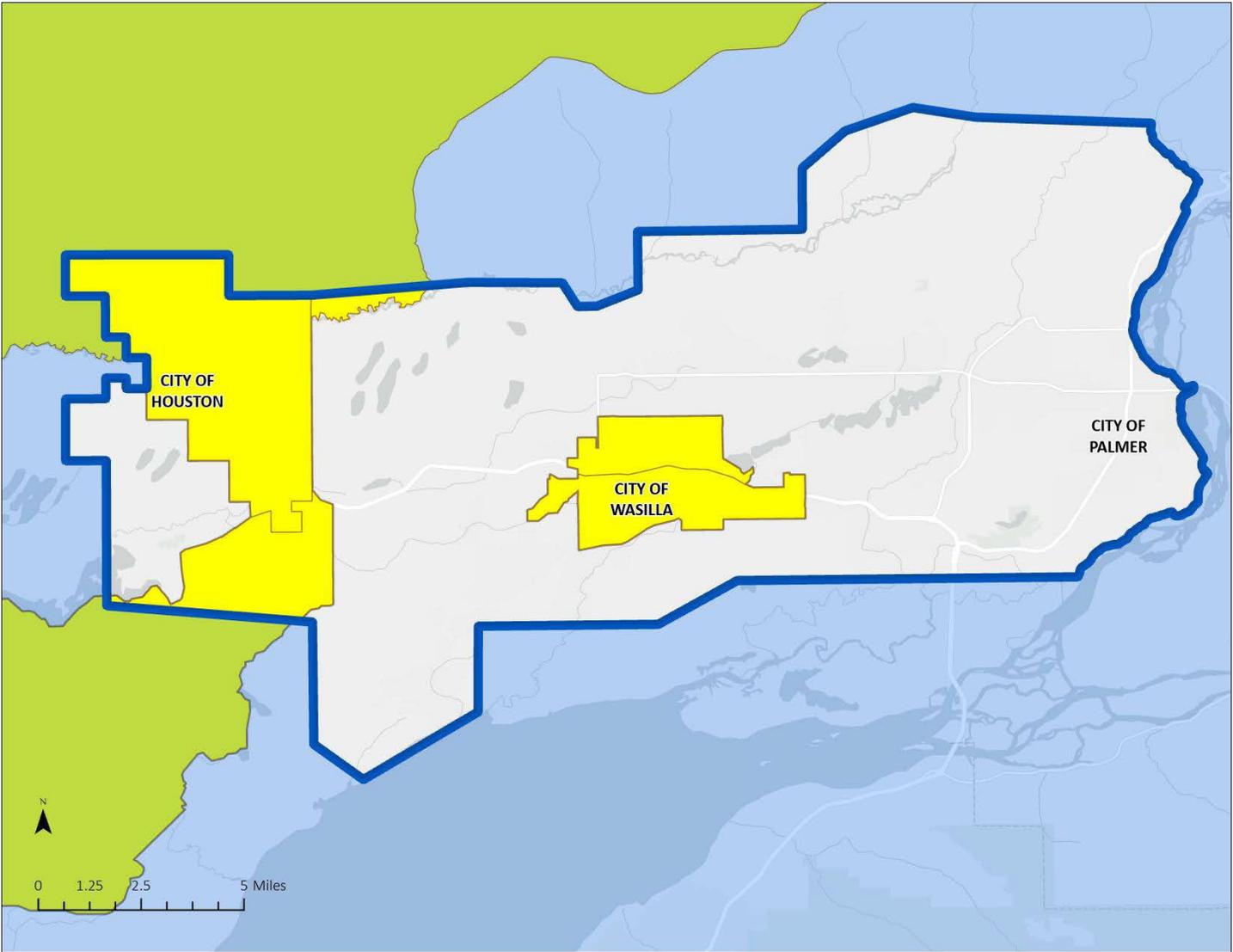


Figure 32. USDOT ETC analysis of social vulnerability in the Expanded Core Area

High Injury Area Equity Analysis

The Mat-Su Borough Expanded Core Area experienced 4,802 crashes between 2018-2022. Of those crashes, 57 resulted in a fatality and 159 resulted in a serious injury. Figure 33 depicts the crash locations for fatal and serious injury crashes.

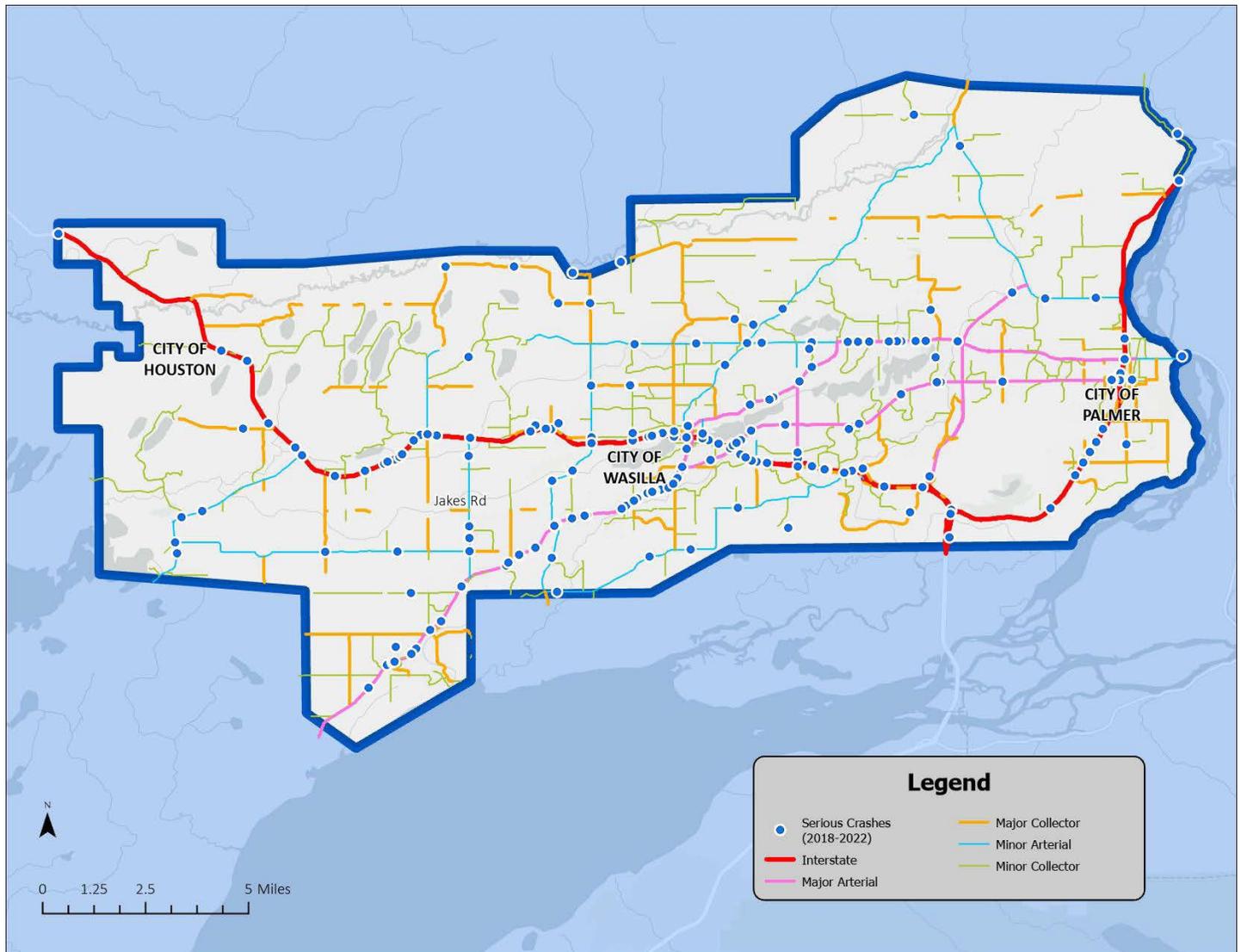


Figure 33. Mat-Su Expanded Core Area Crashes 2018-2022 (Fatalities and Serious Injuries)

Looking at these crashes through an equity lens developed using only the social vulnerability indicators analysis, it was determined that 2,050 (42% of all crashes) occurred in the areas determined to have high disadvantaged populations. Of those crashes, 11 resulted in a fatality and 59 resulted in a serious injury. Furthermore, 32% of all serious injury and fatality crashes occurred in areas with greater disadvantaged populations. Both total crashes and serious crashes are overrepresented in these areas, as the disadvantaged population boundaries comprise less than 18% of the Mat-Su Expanded Core Area boundary.

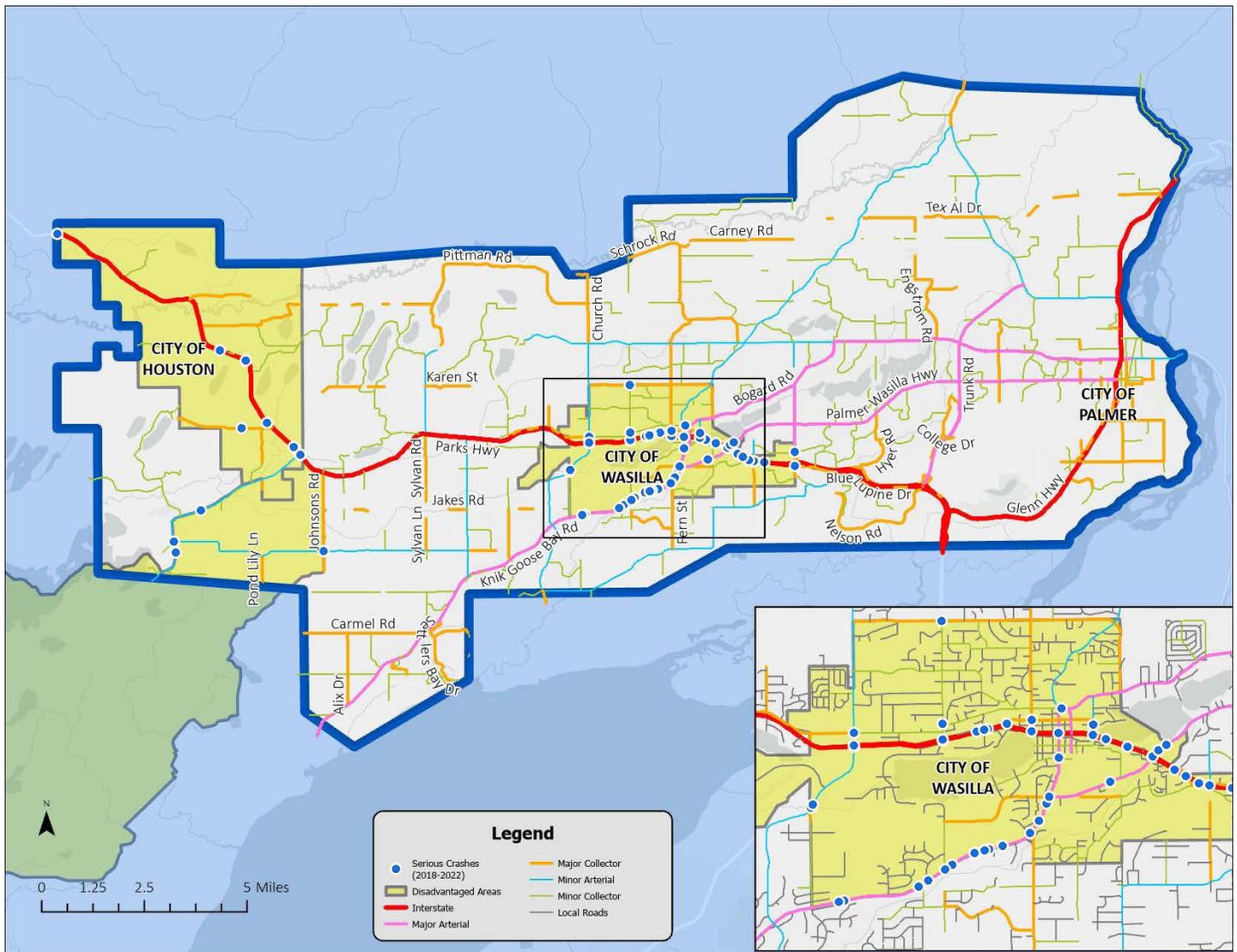


Figure 34. Mat-Su Expanded Core Area Crashes 2018-2022 (Fatalities and Serious Injuries in Disadvantaged Areas)

Figure 34 illustrates where fatal and serious injury crashes occurred in disadvantaged population areas. By focusing on the expanding quality mobility options and focusing on road safety issues in these areas, the Mat-Su Borough can have a profound effect on improving transportation safety for socially vulnerable populations.

Transportation Disparities

The Mat-Su Borough CSAP emphasizes minimizing safety risks within the transportation network. However, other factors can lead to transportation inequality within disadvantaged populations. These factors can have a substantial impact on a community member’s health, ability to work, and ability to meet their day-to-day needs such as access to groceries and consumer goods. They include elevated safety risks for people who depend on transit facilities and have limited access to transportation options and desired destinations, such as places of work, healthcare, education, and social networks. When disadvantaged populations are also subject to these transportation disparities, it creates a state of transportation poverty, which can severely limit a population’s resources for meeting mobility needs. It can also lead to social isolation and a reduced quality of life.

Figure 35 outlines the transportation disparities that exist within the study area based on the two social vulnerability categories used in the third equity analysis—socioeconomic status and household characteristics. They include access to transportation options and desired destinations, quality of transportation, safety risks, and health risks.

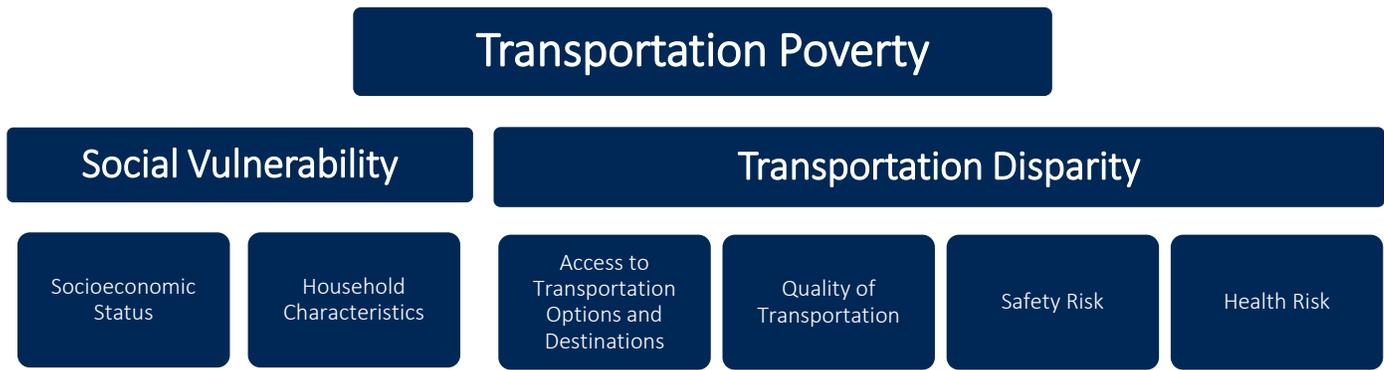


Figure 35. Transportation Poverty Diagram

The recognition of transportation disparities is growing in the United States and building momentum towards creating meaningful solutions. To avoid perpetuating disparities within the transportation network, it is important to recognize emerging needs within the Mat-Su Borough Expanded Core and plan to address them in future transportation improvements. Some examples of emerging needs for this area include:

- Older Mat-Su Borough residents need safe and convenient multi-modal options so they can choose to age in place.
- Common impacts of climate change, including severe storms, higher than average winds, and heavy snowfall can disproportionately affect disadvantaged populations, limiting their ability to access basic services. Providing convenient transportation options lowers the reliance on single vehicle ownership and provides alternatives in the event of a severe climate event.
- Changes in travel patterns due to part-time work and telework abilities can result in lower peak-hour congestion and more dispersed trips throughout the day. Encouraging a shift toward shared mobility options and roadway optimization will help the community envision a proactive plan for growing Mat-Su populations.

Transportation Barriers That Exist Within Vulnerable Populations

Transportation barriers are caused by a lack of adequate transportation or access to transportation to the extent that it interferes with an individual’s ability to meet their daily needs and be a functioning member of society. For the Mat-Su Borough Expanded Core Area we identified the following barriers through the CSAP Equity Analysis:

- High cost of transportation (higher than 90th percentile nationally)
- Lack of transit facilities/routes
- Long commute times to employment and resources
- Limited access to a vehicle
- Vehicle maintenance/insurance/fuel costs (higher than 90th percentile nationally)
- Lack of safety on roadway (Mat-Su Borough has a higher-than-average rate of motor vehicle fatalities per capita than other areas nationally)
- Lack of safe walking and biking facilities
- Lack of adequate all-season maintenance to keep pathways clear
- Low income to transportation needs cost ratio
- Limited access to transportation options and destinations

By addressing these barriers through future investments in the Mat-Su Borough Expanded Core Area transportation network, transportation disparities can be diminished to create greater equity, a safer and more convenient transportation system, and a safer community.

Regional Transportation Indicators Within the Expanded Core Area

To help mitigate transportation barriers that exist in the Mat-Su Borough Expanded Core Area, it is important that the Borough proactively work to address each barrier and measure the effectiveness of mitigation over time to indicate progress. To help that process be effective, indicators that measure progress in decreasing these barriers over time need to be developed. For each barrier identified in the equity analysis, one or multiple regional transportation indicators are suggested in the table below. The corresponding performance measures shown will help to track progress on mitigating transportation barriers and potential inequities that exist within the Mat-Su Borough Expanded Core Area.

Transportation Barrier	Regional Transportation Indicator	Performance Measure (within Mat-Su Borough Expanded Core Area)
High cost of transportation	Affordability Accessibility	<ul style="list-style-type: none"> Transportation cost analysis performed with each new census update
Lack of transit facilities/routes	Accessibility Connectivity Effectiveness Mobility Health	<ul style="list-style-type: none"> Number of transit operators that serve disadvantaged populations Number of commuter/demand service providers, such as Valley Transit, serving disadvantaged populations Number of transit routes serving disadvantaged populations Number of bus stops in disadvantaged areas Number of bus stop shelters within disadvantaged areas
Long commute times to employment and resources	Accessibility Effectiveness Health	<ul style="list-style-type: none"> Average distance from disadvantaged households to employment centers Average distance from disadvantaged households to resources (grocery stores, schools, parks, urban centers)
Limited access to a vehicle	Accessibility Affordability Mobility	<ul style="list-style-type: none"> Access to a vehicle analysis performed with each new census update
Vehicle maintenance/insurance/fuel costs	Affordability Accessibility	<ul style="list-style-type: none"> Transportation cost analysis performed with each new census update
Lack of safety on roadways	Safety Effectiveness Health	<ul style="list-style-type: none"> Yearly update on number of fatal and serious injury crashes within disadvantaged areas 3-year (repeating) survey to assess level of comfort and feelings of safety on the transportation network
Lack of safe walking and biking facilities	Accessibility Affordability Connectivity Effectiveness Mobility Health Safety	<ul style="list-style-type: none"> Number of added sidewalks within disadvantaged areas Number of added multi-use pathways within disadvantaged areas Number of protected bicycle facilities added within disadvantaged areas Number of gaps in the non-motorized transportation network overall
Lack of adequate all-season maintenance	Accessibility Effectiveness Mobility Connectivity Health Safety	<ul style="list-style-type: none"> Number of maintenance vehicles servicing the Mat-Su Borough Expanded Core Area Average yearly funding for maintenance in the Mat-Su Borough Expanded Core Area Number of maintenance staff servicing the Mat-Su Borough Expanded Core Area Average time (in hours) to clear walking and bicycling facilities in disadvantaged areas of snow and debris

Transportation Barrier	Regional Transportation Indicator	Performance Measure (within Mat-Su Borough Expanded Core Area)
Low income to transportation needs cost ratio	Affordability Accessibility	<ul style="list-style-type: none"> Percentage of population using transit facilities or other alternative transportation in disadvantaged areas
Limited access to transportation options and destinations	Accessibility Mobility Connectivity Effectiveness Mobility Health Safety	<ul style="list-style-type: none"> Number of transit routes serving disadvantaged areas Average distance from households to urban centers in disadvantaged areas Average distance from households to walking and bicycling routes in disadvantaged areas Average distance from households to transit stops in disadvantaged areas

Equitable Distribution of Safety Investments

This equity analysis is a core component of the Mat-Su Borough CSAP and will serve to influence decisions about future safety investments within the Mat-Su Borough Expanded Core Area. The disproportionate safety risk identified within disadvantaged populations in the study area means that any safety improvements made in these areas, including new infrastructure, policies, programs, enforcement, and education, will help to advance equity. This equity analysis can also be used in future planning efforts such as assisting with determining selection criteria for the local area Metropolitan Planning Organization’s (MVP) Transportation Improvement Program. This analysis helps determine where future investments will make the most headway in decreasing severe injuries and fatalities. It will also help make the most of limited transportation improvement funding.

Recommendations

To ensure that the Mat-Su Borough Expanded Core Area makes the most of limited resources in advancing transportation equity, it is important to respond to the transportation disparities and barriers that have been identified in the Mat-Su Borough CSAP. Infrastructure and services that support safe, multi-modal transportation should be advanced throughout the Expanded Core Area, but also specifically targeted towards the areas of Houston, Big Lake, North Wasilla, and South Wasilla. Investments in infrastructure and services could include:

- Expanding local transit operators
- Expanding commuter/service providers like Valley Transit
- Building transit facilities such as bus stops, bus shelters, transit corridors, and park and ride lots
- Investing in protected walking and biking facilities such as sidewalks and separated pathways
- Funding adequate all-season maintenance of existing multi-modal transportation facilities
- Including funding for all-season maintenance in planned transportation infrastructure (new facilities)
- Installing roadway and pedestrian-scale lighting in urban areas
- Retrofitting existing transportation facilities to ensure compliance with the Americans with Disabilities Act (ADA)
- Ensuring that new or planned transportation facilities are ADA compliant
- Encouraging the development of transit supportive corridors that incentivize compact, mixed-use development along commercial nodes and urban centers, affordable housing, and easy access to walking and bicycling facilities
- Closing gaps within the existing transportation networks with new planned infrastructure
- Connecting the on-street transportation network to existing pathways and trails
- Expanding the Safe Routes to School Program to include specific project investment recommendations for school zone improvements

The above recommendations are specific to equity within the Mat-Su Borough CSAP. The implementation chapter in the final plan will include additional safety recommendations inclusive to all areas within the Mat-Su Borough Expanded Core Area.

Peer City Review

To better understand how the Mat-Su Borough Expanded Core Area's roadway crashes compared to similarly sized winter communities, we evaluated crash and population data for several other communities. Where possible, the Mat-Su Borough Expanded Core Area was also compared to statewide data.

To account for the variability in roadway network length in relation to traffic volumes, comparing on a vehicle miles traveled (VMT) basis rather than population alone helps portray a more accurate picture of crash trends from one community to another. VMTs are calculated by the total length of road in a segment or network multiplied by the average annual daily traffic of each route or segment, times 365 days per year.

VMTs are published at the state level as required by the Federal Highway Administration (FHWA), but not necessarily at the local level. VMT data were not available for all communities. Similarly, publicly available crash data varies at the municipal level, so the leading factor of crashes for peer cities was not analyzed. A summary of data by community is in Appendix A: Summary Data and Sources for Peer City Comparison. Notes about the data sources and their limitations are also provided.

Comparison Community Backgrounds

Communities selected for comparison were chosen from the Midwest or Western states with winter climates. Fairbanks North Star Borough and Kenai Peninsula Borough were also selected as more closely relatable communities on the statewide level. Western states typically have underdeveloped and growing transportation networks like the Mat-Su Borough Expanded Core Area. Fargo, North Dakota (considered Midwestern) has a comparable climate to the Mat-Su Borough. Appendix A contains more background on the comparison communities and how they correspond to the Mat-Su Expanded Core Area.

Total crashes

The Mat-Su Borough Expanded Core Area is in the low end of total crashes for comparison communities for both population and VMTs (where data were available). This is not surprising given the Mat-Su Borough Expanded Core Area is on the low end of VMTs for all comparison communities. However, Cass County, North Dakota has far greater VMTs (likely given the presence of I-29 and I-94) and notably had lower crashes per VMT.

Total Annual Crashes (Five Year Average) Per Capita and Per 100M VMTs

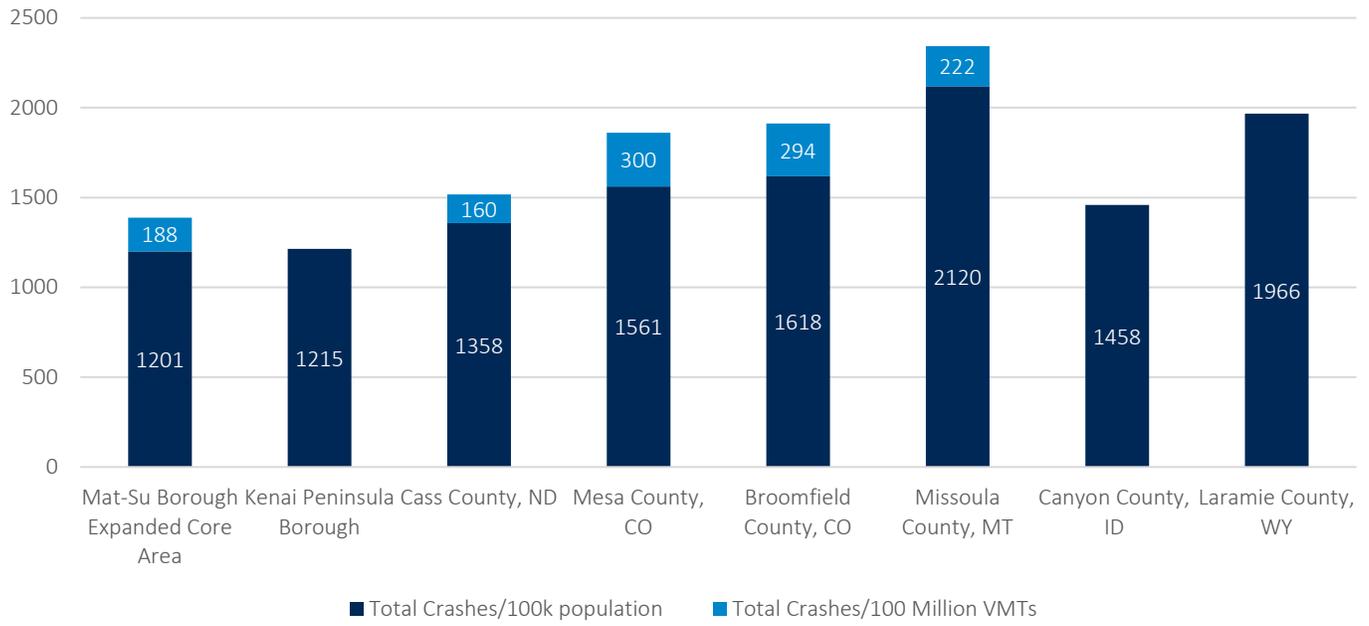


Figure 36. Total annual crashes by comparison community

Fatal and Serious Injury Crashes

The composite of fatal and serious injury crashes is a better indicator of serious crash trends as evaluating fatal crashes on their own may show high variability over a given period. The Mat-Su Borough Expanded Core Area averaged 43.2 fatal and serious injury crashes from 2018-2022, comprising 10.5% of the state's total. This was mostly comparable to Laramie County, Wyoming, and Kenai Peninsula Borough, but was substantially less than Canyon County, Idaho. By VMT, the Mat-Su Borough Expanded Core Area was slightly above the state rates of fatal and serious injury crashes, but well below comparison communities in total serious crashes.

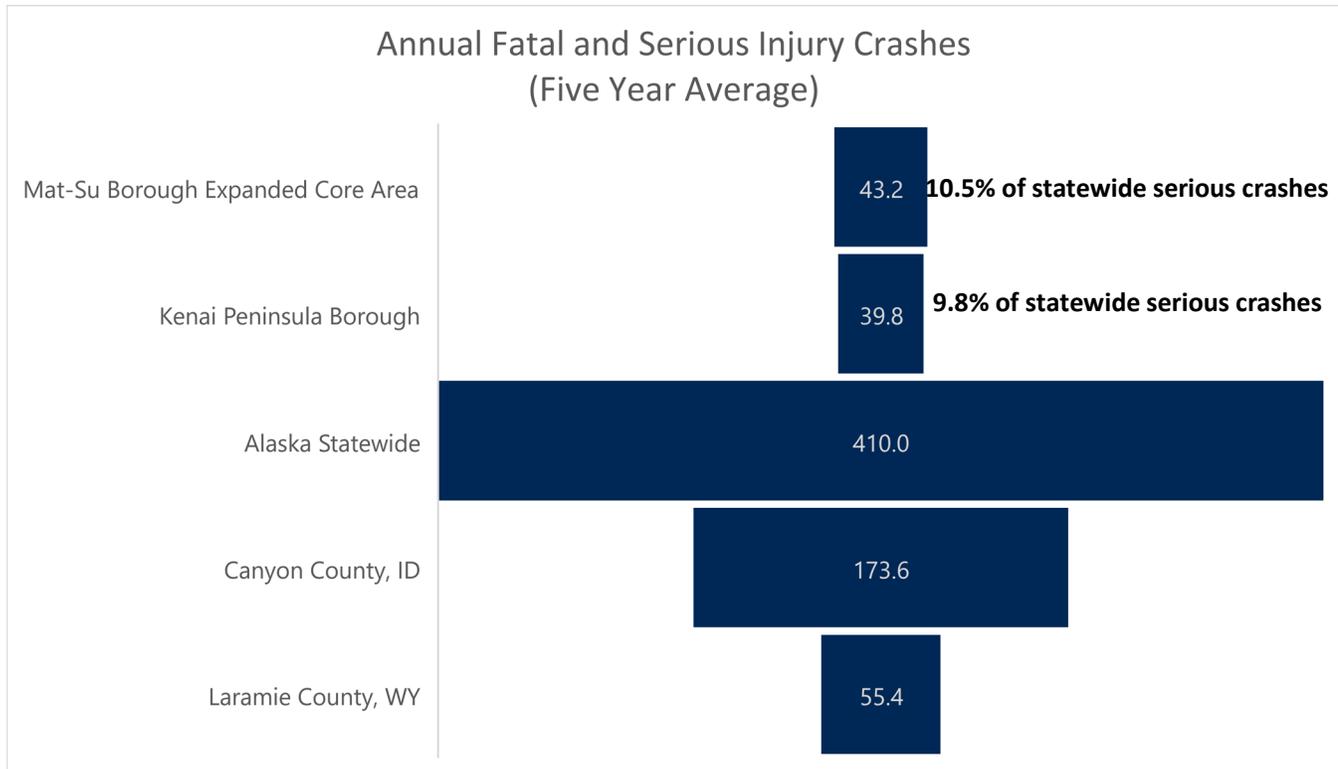


Figure 37. Fatal and serious crashes by comparison community

Fatal and Serious Injury Crashes (Five Year Average) Per Capita and per 100M VMT

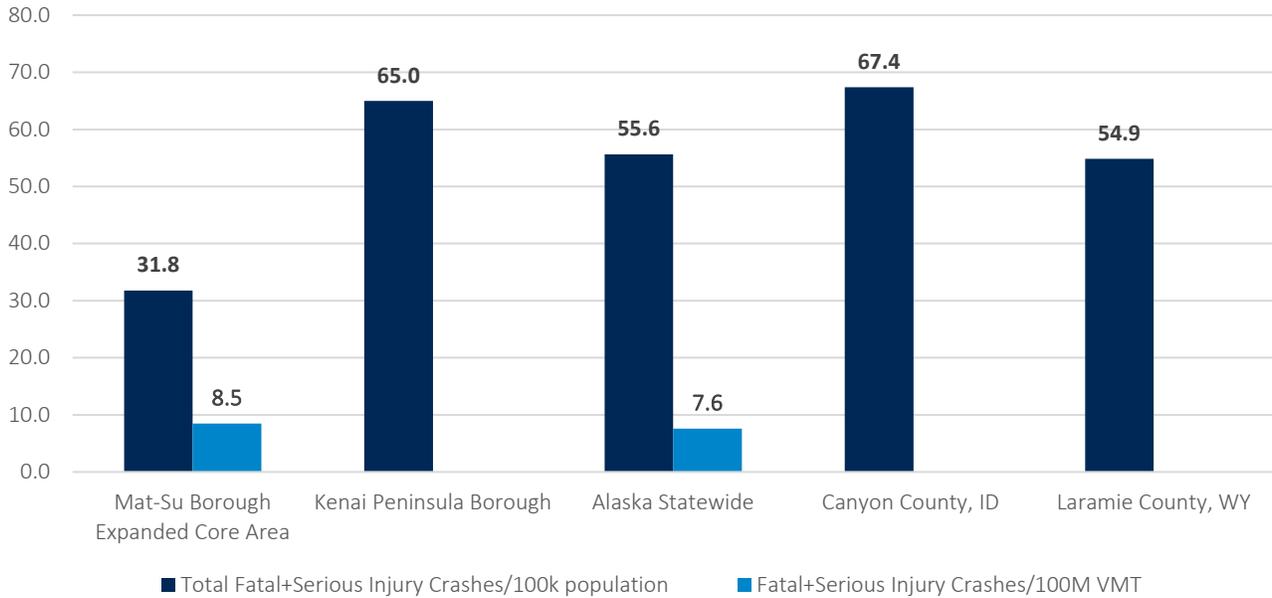


Figure 38. Serious crashes per capita and VMT by comparison community

Fatal Crashes

Peer cities were compared for fatalities for further context, particularly since fatal crash data are more widely available for states and municipalities. The Mat-Su Borough Expanded Core Area led all communities in fatal crashes per capita by a small margin. The Expanded Core Area led by a large magnitude per VMT, however, with only Mesa County on a comparable but slightly lower crash rate per VMT.

Annual Fatal Crashes (2018-2022 Average)

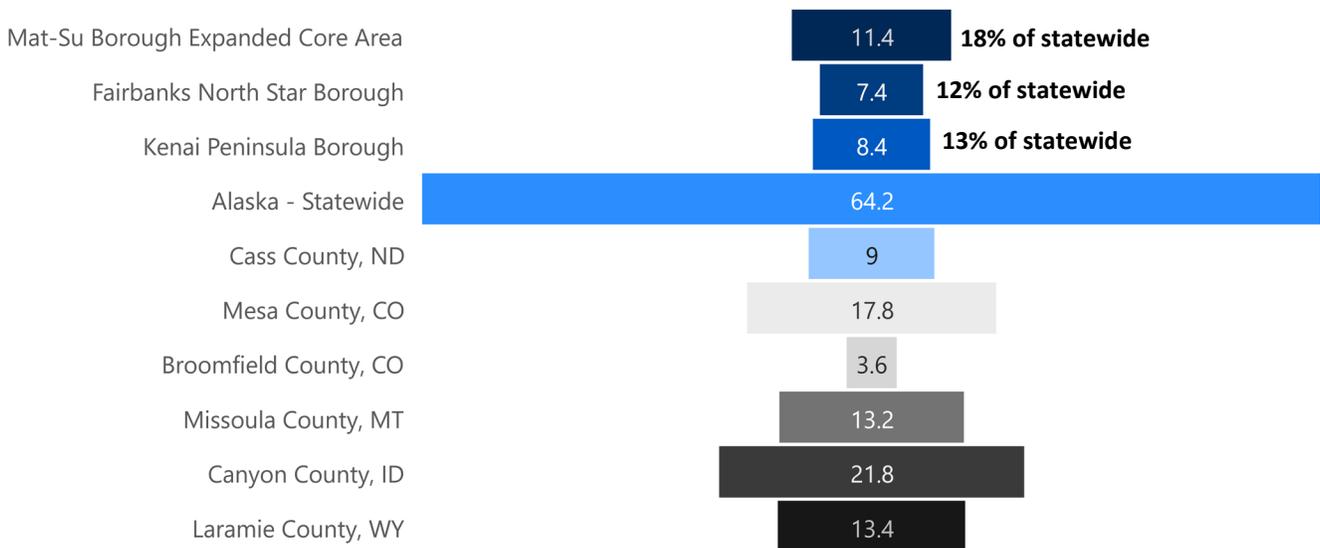


Figure 39. Annual fatal crashes by comparison community

Fatal Crashes (2018-2022 Average) Per Capita and Per 100M VMTs

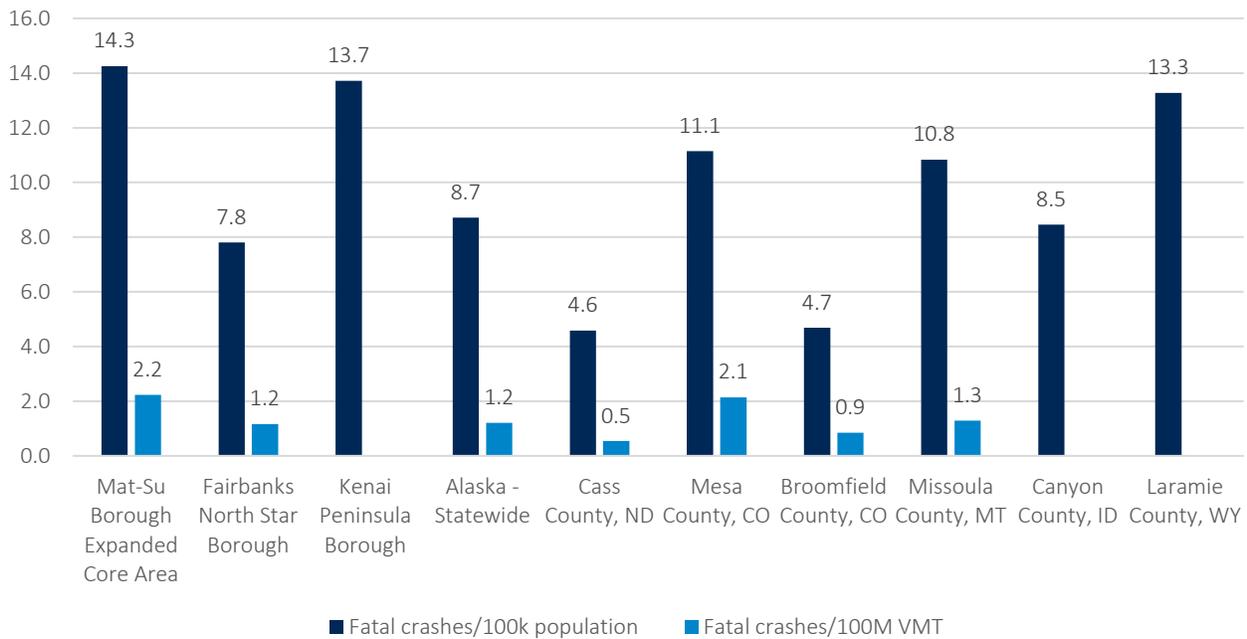


Figure 40. Fatal crashes per capita and VMT by comparison community

Exposure to Crash Risk

Alaska DOT&PF's defined program methodology for evaluating exposure type in its Highway Safety Improvement Program is simply traffic volume or average annual daily traffic (AADT). VMT can also be a measure of risk exposure for a given route or a network. Other exposure metrics can include population, number of registered vehicles, and number of licensed drivers. Population data for the Mat-Su Borough Expanded Core Area is described in Table A-2, Appendix A. As of 2023, the Mat-Su Borough has 80,330 registered motor vehicles, or 12% of the state's total.⁴ Vehicle registration data for the smaller Mat-Su Expanded Core Area is unknown, and the Alaska Division of Motor Vehicles does not publish licensed drivers by municipal area.

For motor vehicle traffic, the highest volume⁵ route segments in the Mat-Su Borough Expanded Core Area as of 2022 are:

- Parks Highway near Palmer-Wasilla Highway (36,500 AADT)
- Knik-Goose Bay Road near Parks Highway (15,200 AADT)
- Glenn Highway near Bogard Road (14,600 AADT)
- Palmer-Wasilla Highway near Trunk Road (14,000 AADT)

Total crashes in the heat map shown in Figure 5 correlate to higher concentrations of crashes in these route segments.

For bicycles and pedestrians, FHWA defines exposure to roadway features criteria as follows:⁶

- **Urban roadways** have a higher concentration of non-motorized users and, accordingly, a higher proportion of non-motorized crashes occur on these routes
- **Divided roadways** are demonstrated to be safer for non-motorized users compared to undivided roadways
- **Work zone crashes** disproportionately affect non-motorized users

⁴ Alaska Division of Motor Vehicles: https://dmv.alaska.gov/media/rs3owmw/2023_registeredvehiclesbyboundaryreport.pdf

⁵ Alaska DOT&PF: <https://alaskatrafficdata.drakewell.com/publicmultinodemap.asp>

⁶ <https://highways.dot.gov/safety/pedestrian-bicyclist/safety-tools/synthesis-methods-estimating-pedestrian-and-bicyclist-8>

- **Higher posted speed** increases the probability of a non-motorized user fatality
- **Lack of roadway lighting** increases the likelihood of a non-motorized fatality
- **Sidewalks, bike lanes, road shoulders, and on-street parking** are all shown to improve safety for bicycles and pedestrians, while the **presence of bus stops** appears to increase pedestrian crash frequency
- **Multilane** roadways are more likely to see a higher incidence of non-motorized crashes
- **Signalized intersections** generally present less risk to non-motorized users compared to unsignalized intersections
- **Marked crosswalks** present mixed data for prevalence of pedestrian fatalities, with volume and the presence of other traffic control devices greatly affecting pedestrian fatalities

For the relatively low number of bicycle crashes in the Mat-Su Borough Expanded Core Area, they appear most prevalent on exposure features along undivided segments of the Parks Highway (an interstate with higher posted speed) and urban arterials (higher posted speed). The relatively low number of pedestrian crashes appear intersection-related with a slightly higher prevalence at unsignalized intersections.

Plan, Policy, and Program Reviews

Plan Reviews

To ensure the Mat-Su Borough CSAP builds upon past transportation safety planning efforts, we studied existing plans to analyze relevant goals, strategies, policies, and recommended projects from those efforts. Wherever possible, these planning initiatives will be carried forward and aligned with Mat-Su Borough CSAP goals, policies, strategies, and recommended projects. Consolidating these transportation safety planning elements into one document will also help facilitate CSAP implementation after it is adopted.

Summaries of our reviews of the following plans are in Appendix B: MSB CSAP Plans Review. For each plan, we performed an analysis of the overarching plan goal; transportation safety-related goals; key safety-related policies, programs, and projects; and applicability to the Mat-Su Borough CSAP.

Plan Title	Plan Owner	Year
Mat-Su Borough Comprehensive Plan Update	Mat-Su Borough	in process
Alaska DOT&PF Statewide Transportation Improvement Program	DOT&PF	2024
Alaska Strategic Highway Safety Plan	DOT&PF	2024
Bogard-Seldon Corridor Access Management Plan (Draft)	Mat-Su Borough	2024
Alaska Vulnerable Road User Assessment	DOT&PF	2023
Mat-Su Borough Bicycle & Pedestrian Plan	Mat-Su Borough	2023
Mat-Su Borough Coordinated Human Services Transportation Plan Update	Mat-Su Borough	2023
Mat-Su Valley Planning (MVP) MPO Boundary Development Document & Interactive Map	Mat-Su Borough	2023
Mat-Su Borough Official Streets & Highways Plan	Mat-Su Borough	2022
Mat-Su Borough Transportation Infrastructure Program	Mat-Su Borough	2021,2023 & 2024
City of Houston Comprehensive Plan	City of Houston	2017
Mat-Su Borough Highway Safety Improvement Program Handbook	Mat-Su Borough	2017
Mat-Su Borough Long Range Transportation Plan	Mat-Su Borough	2017
Mat-Su Borough MPO Self-Assessment	Mat-Su Borough	2016
City of Wasilla Comprehensive Plan	City of Wasilla	2011
Mat-Su Borough Core Area Comprehensive Plan	Mat-Su Borough	2007
City of Palmer Comprehensive Plan	City of Palmer	2006
Mat-Su Borough Comprehensive Plan	Mat-Su Borough	2005

Key Findings

Transportation related safety goals

A common theme among these plans are the goals of improving road safety and aligning with long-range strategies to improve transportation efficiency, promote healthy communities, and foster vibrant economies. Common transportation safety-related goals include:

- Reduce and mitigate crashes
- Reduce congestion
- Promote efficient movement of people, goods, and services throughout the borough
- Protect and foster the health, safety, and welfare of the Mat-Su Borough community
- Improve pedestrian and vehicle connections adjacent to the Glenn Highway
- Identify and prioritize trail improvements and future trail corridors
- Expand safe, accessible, and affordable transit facilities
- Provide safe street networks that enhance the quality of life for residents
- Grow sidewalk networks and improve maintenance of sidewalks
- Improve connectivity
- Prioritize projects that will strengthen the transportation network and improve safety
- Identify funding opportunities to implement plan recommendations

Transportation safety-related recommendations

Many of the plans reviewed included recommendations that serve to strengthen and complete the existing transportation network, supporting safe multi-modal movement throughout the Mat-Su Borough. Many plans also stress the importance of integrating street and trail connectivity, developing pedestrian and bicycle linkages between schools, public facilities, neighborhoods, parks and open spaces, and population centers, where feasible. Potential countermeasures from these plans that could apply to the Mat-Su Borough CSAP include:

- Access management, intersection, and driveway consolidation
- ATV Policy adoption to designate facilities for this use type
- Incorporation of flat-bottomed gravel ditches, stabilized shoulders, and trail/road intersections into new road construction
- Installing more pedestrian crossing infrastructure
- Separating vulnerable road users from motor vehicle traffic
- Installation of signage and wayfinding on trails and within population centers
- Pavement of local roads to decrease dust/visibility/asthma issues
- Expanding transit service with a focus on senior centers and vulnerable populations
- Enhance ADA accessibility on walkways
- Implement better lighting on trails, pathways, and in town centers
- Update multi-modal design standards
- Update the Subdivision Construction Manual to include bicycle and pedestrian safety and connectivity

Project Recommendations

Project recommendations included in previous planning efforts may be good candidates for Safe Streets for All (SS4A) projects after countermeasures have been identified. In the case of the Statewide Transportation Improvement Program, if funding is secured, those projects would likely be screened out of SS4A consideration. Below are the recommended projects included in each plan.

Alaska DOT&PF Statewide Transportation Improvement Program (latest approved) and Highway Safety Improvement Program (Note: some of these have started or recently completed construction, and as such are not good candidates for SS4A but are included to show recent transportation improvements and investment.)

- Bogard Road N. Earl to N. Engstrom
- Bogard Road Safety and Capacity Improvements
- Fairview Loop Road Rehabilitation and Pathway
- Hermon Road Extension (Parks to Palmer-Wasilla)
- Hemmer Road Upgrade and Extension
- Palmer-Fishhook Separated Pathway (Trunk to Edgerton-Parks)
- Parks Highway MP 52-57 Reconstruction (Big Lake to Houston)
- Glenn Highway: Parks Highway to South Inner Springer Loop (Cienna Ave.)
- Glenn Highway Arctic Avenue to Palmer-Fishhook Road Safety and Capacity Improvements
- Seldon Road Extension Phase II: Windy Bottom/Beverly Lakes Road – Pittman
- Seldon Road Reconstruction: Wasilla-Fishhook to Lucille Street
- Knik-Goose Bay Road Reconstruction
- Wasilla to Fishhook Main Street Reconstruction
- Big Lake Road Rehabilitation
- Trunk (Nelson) Road Rehabilitation
- Inner and Outer Springer Loop Separated Pathway
- (HSIP) Bogard Road at Engstrom/Green Forest Drive Intersection Improvements
- (HSIP) Vine Road at Hollywood Road Intersection Improvements
- (HSIP) Church Road and Spruce Ave Intersection Flashing Beacon
- (HSIP) Wasilla-Fishhook Road and Spruce Ave./Peck St. Roundabout
- (HSIP) Palmer-Fishhook Road and Trunk Road Roundabout
- (HSIP) Pittman Road Shoulder Widening and Slope Flattening
- (HSIP) Bogard Road: Greyling Street to Grumman Circle Safety Improvements
- (HSIP) Bogard Road: Trunk Road to Engstrom Safety Improvements

Alaska Vulnerable Road User Assessment

- Bogard/Arctic Avenue from Anna St. to Gulkana St.
- East Palmer-Wasilla from Felton St. to Valley Way
- East Palmer-Wasilla and Glenn Hwy.
- West Bogard and Glenn Hwy.
- East Parks and Palmer-Wasilla Hwy.

City of Houston Comprehensive Plan

- Parks Highway bypass
- Four-Lane Upgrade from Big Lake to Houston
- Access consolidation W. Larae Road/Airola
- Access consolidation Corn St.
- Access consolidation N. Dana Ct. to Railroad Undercrossing
- More pedestrian crossings (general)
- Secondary road link to Beaver Lake area
- Access to middle and high schools from Delroy Road
- Alternate access to Cheri Lake
- Bridge connecting Armstrong Road to Prater Lake area

- Pathway along Hawk Lane (between middle and high schools)
- Connect Hawk Lane pathway to Big Beaver Lake
- Pathway along Kenlar Road

City of Palmer Comprehensive Plan

- Glenn Highway Bypass
- Bogard Road Extension
- Downtown – East West Connection
- Felton Extension
- Pave all roads within community (general)
- Connect north and south Gulkana St.

City of Wasilla Comprehensive Plan

- Expand Parks Highway through Downtown Wasilla
- Mack Dr. with Clapp Road extension
- New intersection at Fairview Road
- Conceptual Transportation Site Master Plan

Mat-Su Borough Long Range Transportation Plan

- Access Development Plans for all major collectors and arterial roadways
- Highway Safety Corridor designation for between Palmer and Wasilla
- Glenn Hwy. Erosion Protection
- Parks Highway/Talkeetna Spur Ped Improvements
- Palmer Wasilla Highway widen to three lanes
- Bridge replacement Montana Creek and Sheep Creek
- Nelson Road extension to Fairview Loop Road
- Engstrom Road Congestion Relief
- Engstrom Rd North extension to Tex Al
- Tex Al Road Upgrade and Extension
- Glenn/Parks Interchange Hospital Access Improvements
- Ongoing AKDOT&PF Asset Management and Safety Improvement Program
- Seldon Road - Beverly Lake Road to Pittman Road
- Jensen Road Extension to Soapstone Road
- Museum Drive Extension west to Vine Road
- Katherine Drive Connection to Trunk Road
- Vine Road Improvements - Hollywood Blvd. to Parks Hwy.
- Wolverine Road from Wolverine Creek Canyon to approximately Mile 10 (where maintenance ends)

Mat-Su Borough Transportation Infrastructure Program (21, 23, 24)

- Lucille Street Rehabilitation
- Cheri Lake Drive/Karen Avenue/King Arthur Drive
- Fern Street Reconstruction
- Palmer-Fishhook Separated Pathway
- Inner-Outer Springer Loop Pathway (see STIP)
- MSB School District Pedestrian Projects (Safe Routes to Schools)
- School Site Traffic and Safety Improvements: Shaw Elementary School
- School Site Traffic and Safety Improvements: Finger Lake Elementary School

- School Site Traffic and Safety Improvements: Pioneer Peak Elementary School
- King Arthur Drive Reconstruction
- Johnsons Road Upgrade
- Edgerton Parks Rd - Mtn Trails Drive Upgrade & Pathway
- MSB School District Shaw Elementary Access Improvements
- 49th State Street Pathway
- Smith Road Extension Upgrade and Pathway
- Green Forest Drive Upgrade
- Engstrom North Extension to Tex-Al

Policy and Program Reviews

Programs and Policy Review Related to Safety

Until Vision Zero is achieved, all communities can do more to improve safety. However, Mat-Su Borough has done or is already doing things that support Vision Zero objectives. This section describes areas of success and other areas with opportunities for improvement.

Code Review

We did not conduct a comprehensive review of Mat-Su Borough code, as this effort is presently underway as part of the borough's Sub-Area Solutions Studies. However, we performed a cursory review to identify issues directly related to safety. Below is a summary of recommendations based on this review:

Chapter 11 (Roads, Streets, Sidewalks and Trails)

- 11.020.040 Driveway Applications
 - (A)(4) triggers a turn lane warrant analysis when 50 or more vehicles are anticipated in the peak hour. Consider not constraining turn lane warrants to only high-volume driveways. AASHTO's GB7 (see [Policy Section](#)) identifies left turn lane warrants starting as low as five turning vehicles in the peak hour. Consideration should be given for other contextual factors to require a turn lane analysis such as AADT, roadway functional classification, crash history, or other roadways key for development as identified in the Official Highways and Streets Plan.
 - For both (A)(4) and (A)(5), consider requiring, as a factor in triggering a warrant or traffic impact analysis, a 15- or 20-year growth projection and/or the growth factor for anticipated trips as the basis or source of projected growth for a given roadway to ensure consideration is given to future anticipated traffic growth and not just the year of development.
- 11.020.070 High Volume Driveway Standards
 - Consider adopting the latest version of AASHTO for left turn lane warrants in part B. The cited standard is from 1967 and considerable research has been conducted since then (see the [Corridor Access Management section](#)).
 - Consider a review of requirements or creating custom requirements for right turn lane warrants. See the [Increase minimum thresholds for right or left turn lanes for developers and roadway designers](#) section for examples of practices in other communities. While the turning traffic volume warrants will always be higher for right turn lanes than for left turn lanes, other mitigations for right turning traffic such as 10:1 approach tapers can be considered.
- 11.020.080 Traffic Impact Analysis
 - (A)(3) Consider removing reference to the date or version of the Transportation Research Board's *Highway Capacity Manual* and requiring the most current version be used instead. Using the most current version of a cited manual ensures the latest research and best practices are applied and does not require the borough to update code every time a new manual is released. This practice is consistent with

Mat-Su Borough Code 11.020.040(A)(2)(h)(ii), which requires use of the most current version of the Institute of Traffic Engineers *Trip Generation Manual*. This practice is also used in the Mat-Su Borough 2022 Subdivision Construction Manual where AASHTO manuals are cited.

2022 Subdivision Construction Manual

- Table A-1 Design Criteria: consider making design speed equal to posted speed to promote operating speeds at the target speed.
- Section C-B.02: consider less than 12-foot lane widths where context-appropriate for arterials and collectors to help reduce driver speed, and potentially provide wider shoulders or space for non-motorized users.
- General: consider warranting requirements for separated bicycle or pedestrian facilities.

Mat-Su Borough is preparing a draft design criteria manual. The considerations above should also be given in this criteria manual, with particular focus on selecting a design speed. Designing to a speed higher than the intended posted and operational speed may promote driving above the intended speed and is not consistent with the practice of designing roadways to be self-enforcing. See the [Review/implement speed management policies for setting speed limits](#) section on speed management policies and DOT&PF's shift to designing self-enforcing roadways.

Program Review

Designating and Decommissioning Safety Corridors

The Parks Highway between Wasilla and Houston was the second of four Safety Corridors designated in Alaska in 2007. It was the first to be decommissioned in 2022 once the four-lane divided highway, with segments of separated multi-use path, was completed. **This corridor saw a 55% [reduction in fatal crashes](#)⁷ between 2009 and 2022.**

[Knik-Goose Bay Road](#)⁸ was designated as a Safety Corridor in 2009, with work currently underway (beginning in 2022) that should allow for removal of this designation once it becomes a divided highway with a separated multi-use path. Crash data reinforce the reason Knik-Goose Bay Road was designated as a safety corridor, as shown in the heat map in Figure 5.

Designating these high crash corridors as Safety Corridors incorporates the tenets of the SSA by adding an enforcement focus (more serious penalties for speeding infractions) and a call to action to allocate funding for construction of needed changes to these roadways.

Roundabout Construction

Since 2010, eight single-lane or multi-lane roundabouts have been constructed in the Mat-Su Borough Expanded Core Area, with at least six more planned. Roundabouts are an [FHWA Proven Safety Countermeasure](#)⁹ that can reduce fatal and serious injury crashes by 81%. They are continuing to grow in number across Alaska and show the same effectiveness within the state as in national studies.

This safety track record is why Alaska DOT&PF has a ["Roundabouts First"](#)¹⁰ policy, requiring engineers to consider whether a roundabout is appropriate before considering other intersection solutions. Engineers are also required to document when traffic signals are selected over a single-lane roundabout.

Roundabouts are effective because they reduce the number of potential conflicts, reducing the likelihood of a crash. They also substantially reduce speeds, which reduces the severity of crashes when they do occur. Before and after crash data and benefit costs of Mat-Su area single-lane roundabouts were not analyzed, but conclusions from 2018-2022 data are provided below.

⁷https://dot.alaska.gov/stwdplng/hwysafety/assets/pdf/2022_Safety_Corridors_Audit.pdf

⁸https://dot.alaska.gov/stwdplng/hwysafety/safety_corridors.shtml#:~:text=Currently%20the%20Seward%20%28May%202006%29%2C%20the%20Parks%20%28October,are%20the%20four%20designated%20Safety%20Corridors%20in%20Alaska

⁹<https://highways.dot.gov/safety/proven-safety-countermeasures/roundabouts>

¹⁰<https://dot.alaska.gov/stwddes/dcstraffic/roundabouts.shtml>

Each location had consistent trends: no serious injury, and no bicycle, pedestrian, or motorcycle crashes. Each location demonstrates that while crashes may occur, they are not serious, indicating that single-lane roundabouts are an effective intersection treatment on collector and arterial roads in the Mat-Su Borough Expanded Core Area.

- **Lucille St. and Seldon Road Roundabout** was developed under Mat-Su Borough’s Highway Safety Improvement Program (HSIP) and constructed in 2014. There were 23 crashes at this intersection from 2018-2022, most of which were angle crashes. Where driver circumstances were reported, they were listed as failure to yield.
- **Trunk Road and Parks Highway South Ramp Roundabout** was constructed in 2016. There were 14 crashes at this intersection from 2018-2022. Where driver circumstances were reported, they were listed as failure to yield.
- **Big Lake Road and Northshore Drive Roundabout** was constructed in 2016. There were two crashes at this intersection from 2018-2022. One was an angle crash, and the other was a crash with a sign.

Transportation Capital Investments

Through DOT&PF and locally funded projects, it is estimated the Mat-Su Borough Expanded Core Area has recently constructed or is planning to construct over \$600M in transportation projects that will significantly contribute to safety and operations in the region.¹¹ Some of the larger dollar investments contributing to that total include:

- Glenn Hwy.: Parks Hwy. to S. Inner Springer Loop Phase II
- Knik-Goose Bay Road Reconstruction
- Wasilla to Fishhook Main St. Rehabilitation
- Seward-Meridian Road, Phase II: Palmer-Wasilla Hwy. to Seldon Road
- Parks Hwy. MP 52-57 Reconstruction (Big Lake to Houston)
- Glenn Hwy.: Arctic Avenue to Palmer-Fishhook
- Fairview Loop Rehabilitation and Pathway
- Glenn Hwy. Parks to Old Glenn
- Bogard Road Safety and Capacity Improvements (Trunk Road to Grumman Circle)

The Mat-Su Borough has its own Transportation Improvement Program (TIP) and has successfully secured voter-approved bond projects for local needs. For some projects, the borough has used local funds as match to DOT&PF’s Community Transportation Program to further leverage available funding sources and increase the likelihood of grant awards. Mat-Su Borough TIP projects include addressing multi-modal needs such as a pathway on the Inner-Outer Springer Loop. The projects also address safety needs in and around schools with pathway improvements (E. Nelson Road near Machetanz Elementary) and school site safety improvements (Finger Lake and Shaw Elementary Schools). The TIP also appropriately addresses asset management through drainage improvements (Jolly Creek) and pavement preservation (Earl Drive, Eek St. Pavement Rehabilitation).

The region also benefits from city-sponsored projects from the cities of Houston, Palmer, and Wasilla and will soon have a local TIP dedicated to funding for the recently formed Metropolitan Planning Organization, MVP for Transportation.

Highway Safety Improvement Program

Roads within the Mat-Su Borough are eligible for project nomination and funding under DOT&PF’s HSIP, regardless of the road’s ownership. This funding program within the Statewide Transportation Improvement Program (STIP) is focused on reducing fatal and serious crashes through systemic or spot safety improvements. The program requires eligible projects to have crash data demonstrating a safety cost-benefit through established countermeasures.

Recently, a \$20M two-way left-turn lane was constructed on Palmer-Wasilla Highway under HSIP. This program is also funding three roundabouts under development at Hollywood and Vine, Palmer-Fishhook and Trunk Road, and Wasilla-Fishhook at Spruce and Peck.

Some project activities are not eligible under HSIP, and its cost-benefit requirements generally eliminate the eligibility of higher-dollar improvements such as grade-separated interchanges. HSIP projects must present an engineering solution to

¹¹ Review of DOT&PF 2024-2027 STIP Amendment #1, DOT&PF’s 2024-2027 HSIP Funding Plan, Mat-Su Borough TIP-21, 23, and 24 as well as DOT&PF open construction phases for projects in the Mat-Su Borough Expanded Core area as of August 2024. DOT&PF projects include total project development cost.

a demonstrated problem, which makes other factors such as public input and equity less likely to influence its nominations. However, federal rulemaking is underway to incorporate [equity considerations](#)¹² into the program.

The *Mat-Su Borough HSIP Handbook*, last updated in 2017, is modeled after DOT&PF's handbook of the same name. The handbook was developed to augment DOT&PF's HSIP by prioritizing safety projects, maintaining local control, and allowing more flexibility on the data-driven approach. (Prior to 2021, DOT&PF often had a lag of up to four years with producing crash data, making data flexibility useful.)

The *Mat-Su Borough HSIP Handbook* has project screening criteria similar to DOT&PF's program and it was used successfully in 2014 to construct the roundabout at Seldon Road and Lucille Street. The manual has not been updated in recent years due to lack of resources, and no dedicated capital funding program exists for safety projects.

While Mat-Su Borough's investment in transportation improvements is commendable, dedicating a portion of the capital funding program to safety, especially as population growth and development occurs, would be beneficial. Such a program could be designed to focus on recommendations and tools from the CSAP. It could include projects identified during the plan's data evaluation, as well as future evaluations of the publicly available and updated crash data presented through the crash dashboard developed under this plan.

Data

The Mat-Su Borough has extensive data that are collected and organized into a GIS data system. This practice is valuable as it can inform elected bodies of specific needs and trends. In addition to collecting asset management needs, the Mat-Su Borough collects data on public requests for speed calming. These data can be used as part of a speed management policy that considers public input and common themes. They can also be used to help support local requests for increased enforcement presence, particularly outside of the city boundaries of Houston, Palmer, and Wasilla.

Safety Strategies and Programs in Other Communities

SSA is an emerging concept for the Nation and for communities, and many are embracing the Vision Zero goal through public commitments and the SS4A program. The next section describes some safety strategies being planned or used in other communities, and some that are already being implemented in Alaska.

Education

► *Collaborate with DOT&PF and the Metropolitan Planning Organization to implement Vision Zero campaigns and maintain a regional Vision Zero webpage*

These campaigns focus on behaviors of concern such as distracted driving, driving under the influence, all modes sharing the road, and unsafe behavior from younger drivers. This collaborative effort requires a coordinator or champion to be effective.

Benefit: Promotes a culture of traffic safety among a community's leaders and decision makers. A website can provide resources for safety emphasis areas and supports the shared responsibility aspect of the SSA.

Communities: [Boulder, Colorado](#)¹³, [Denver Metro Council of Governments](#),¹⁴ [Ada County, Idaho](#)¹⁵

► *Combine countermeasure deployment with promotional activities*

Generate announcements such as press releases, conduct media interviews, organize ribbon cuttings, and install promotional signs at project sites.

¹² <https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-02/HSIP%20NPRM%20Briefing%202-27-24.pdf>

¹³ <https://bouldercolorado.gov/media/11606/download?inline> hereafter hyperlinked as Boulder, Colorado

¹⁴ <https://drcog.org/transportation-planning/planning-future/safety/regional-vision-zero> hereafter hyperlinked as Denver Metro Council of Governments

¹⁵ <https://www.achdidaho.org/community-resources/education/let-s-get-there-safely> hereafter hyperlinked as Ada County, Idaho

Benefit: Publicizes community safety efforts and provides an opportunity to educate the public on the rationale and benefits. May improve morale for transportation staff working on these initiatives.

Communities: [Boulder, Colorado](#)

Enforcement

► *Active monitoring for red light-running*

Deploy cameras at traffic signals to assist law enforcement officials through automated enforcement.

Benefit: Drivers who are not compliant at traffic signals present a risk of severe angle crashes. Increased compliance can result in a corresponding reduction in crash severity, potentially [reducing fatal crashes](#)¹⁶ at signalized intersections by 21%. The USDOT has published operational guidelines for [camera deployment](#).¹⁷

Communities: [Boulder, Colorado](#)

► *Explore a change in state law to reduce legal blood alcohol content (BAC) for impaired driving*

Reduce the impaired driving threshold from a BAC of 0.08 to 0.05.

Benefit: Recognizing these crashes are 100% preventable, this threshold reduction reinforces the cultural stigma of having even one drink and then driving. Utah saw a [20% reduction](#)¹⁸ in its fatal crash rate (per 100M VMT) from 2016 to 2019 (law passed in 2017, took effect 2019). This practice is supported by the National Transportation Safety Board, whose 2023 paper cites research indicating the law had no apparent impact on alcohol sales, consumption, or tourist revenue—only driver choices. While Mat-Su Borough does not have the authority to change state law, its community leaders could advocate for the change to legislators.

Communities: State of Utah

► *Facilitate training sessions for law enforcement agencies on crash reporting and traffic safety*

Benefit: Particularly in areas with multiple law enforcement jurisdictions, training provides support on addressing key crash profiles and behaviors (to get ahead of the crash data reporting lag). Promotes consistency in generating comprehensive crash reports for improved data quality.

Communities: [Denver Metro Council of Governments](#)

Infrastructure

► *Enhanced delineation for horizontal curves*

Improve conspicuity of horizontal curves and enhance advanced warning to prevent run-off-the-road crashes on high-speed roadways. Includes installing delineators, chevron signs, larger fluorescent and/or retroreflective sign panels, dynamic curve warning signs including speed radar feedback signs, and in-lane curve warning through pavement markings.

Benefit: These are low-cost improvements for areas with a high incidence of run-off-the-road crashes and/or curves. As an example, oversized chevron signs can [reduce fatal and injury crashes](#)¹⁹ by 15%.

¹⁶ <https://www.iihs.org/news/detail/turning-off-red-light-cameras-costs-lives-new-research-shows>

¹⁷ https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/red_light_camera_systems_operational_guidelines.pdf

¹⁸ <https://www.nts.gov/Advocacy/safety-topics/Documents/Point-05%20SafetyBriefingFacts%20March2023.pdf>

¹⁹ <https://highways.dot.gov/safety/proven-safety-countermeasures/enhanced-delineation-horizontal-curves>

Communities: This is an FHWA Proven Safety Countermeasure applied nationwide and in Alaska. For example, these were installed across the state on rural roadways including the Richardson, Steese, and Alaska Highways, where as much as a 20:1 benefit-cost ratio was realized.²⁰

► *Roadside design improvements at curves*

Provide additional clear zone through slope flattening and/or shoulder widening on roads near horizontal curves to provide a more traversable or recoverable area for vehicles that leave the roadway.

Benefit: Providing a clear zone of 30 feet from 16.7 feet has been shown to [reduce all crashes](#)²¹ by up to 44%.

Communities: This is an FHWA Proven Safety Countermeasure applied nationwide. This is a customary design practice for roadway rehabilitation and reconstruction projects (including Mat-Su area projects) but it can be applied as a spot improvement if crash history suggests curves are contributing to run-off-the-road crashes.

► *Wider edge lines*

Stripe 6-inch roadway fog lines instead of the standard 4-inch fog line to emphasize the roadway edge.

Benefit: This FHWA Proven Safety Countermeasure has shown to [reduce non-fatal and injury related crashes](#)²² (not intersection related) on two-lane rural roadways by 37%, and has a 25:1 benefit-cost ratio for fatal and serious injury crashes on two-lane rural roadways. Roadway restriping can be a low-cost improvement.

Communities: FHWA's research cites application in Missouri and Idaho.

► *Road diets*

Convert four-lane roadways to three-lane, or three-lane roadways to two-lane depending on context and capacity. Utilize the space previously used by vehicles for bicycle and pedestrian accommodations. Some roads constructed decades ago may no longer need all the vehicular lanes considering shifts in transportation modes and build-outs of other road networks.

Benefit: This FHWA Proven Safety Countermeasure has shown to [reduce total crashes](#)²³ between 19 and 47%. Depending on the facility, it can be implemented at relatively low cost through roadway restriping and can also add new facilities without introducing the need for new right-of-way.

Communities: [Walla Walla, Washington](#),²⁴ [Minneapolis, Minnesota](#),²⁵ and nationwide

► *Flashing yellow arrows at signalized intersections*

Advises drivers to use caution on a permissive left turn, as opposed to the traditional "yield on green ball" signal, which is not always intuitive because green indicates "go."

Benefit: Flashing yellow arrows are shown to [reduce total crashes](#),²⁶ especially angle crashes for the permissive left turn at a traffic signal. Protected left turn phases (solid green arrow) remain safer but can reduce efficiency of intersection operations.

²⁰ <https://aws.state.ak.us/OnlinePublicNotices/Notices/Attachment.aspx?id=142395> for 13NR04 Richardson Highway MP 291- 295 Enhanced Curve Delineation

²¹ <https://highways.dot.gov/safety/proven-safety-countermeasures/roadside-design-improvements-curves>

²² <https://highways.dot.gov/safety/proven-safety-countermeasures/wider-edge-lines>

²³ <https://highways.dot.gov/safety/proven-safety-countermeasures/road-diets-roadway-reconfiguration>

²⁴ <https://www.wallawallawa.gov/home/showpublisheddocument/9438/638424659891470000> hereafter hyperlinked as Walla Walla, Washington

²⁵ <https://lms.minneapolismn.gov/Download/RCAV2/31027/18-Vision-Zero-Action-Plan-2023-2025.pdf> hereafter hyperlinked as Minneapolis, Minnesota

²⁶ <https://highways.dot.gov/sites/fhwa.dot.gov/files/FHWA-HRT-19-035.pdf>

Communities: Nationwide including [Alaska](#)²⁷ and Mat-Su Borough (not fully deployed at all signals)

► *Leading pedestrian interval at intersections*

A leading pedestrian interval gives pedestrians the opportunity to enter the crosswalk at an intersection 3 to 7 seconds before vehicles are given a green indication, improving their visibility in the crosswalk before turning vehicles approach the crosswalk.

Benefit: This FHWA Proven Safety Countermeasure can potentially [reduce pedestrian-vehicle crashes](#)²⁸ by up to 13% at intersections and is very low cost to implement if only signal timing changes are required.

Communities: [Walla Walla, Washington](#), [Boulder, Colorado](#)

► *Retroreflective signal backplates*

Promotes traffic signal visibility, conspicuity, and orientation for both older and color vision deficient drivers.

Benefit: Can provide a 15% [reduction in total intersection crashes](#)²⁹. These backplates can be implemented in conjunction with other signal modernization projects, such as flashing yellow arrow implementation. This has been done in Fairbanks and is planned in Anchorage.

Communities: Alaska, [Walla Walla, Washington](#), and [Minneapolis, Minnesota](#)

Crosswalk visibility enhancements

These enhancements include ladder-style crosswalks, enhanced signs and markings, and improved lighting at crosswalks. These treatments should focus on uncontrolled intersections and mid-block crossings at areas that connect key pedestrian generators.

Benefit: This proven safety countermeasure can [reduce pedestrian crashes](#)³⁰ by up to 40%.

Communities: Nationwide, [Walla Walla, Washington](#).

Dedicated right- and left-turn lanes at intersections

Auxiliary lanes, or turn lanes, separate stopped or turning traffic from through-traffic movements at the approaches to intersections.

Benefit: Right-turn lanes can reduce [total crashes](#)³¹ at an intersection by 14-26%, while left-turn lanes can provide a 28 to 48% reduction. This FHWA Proven Safety Countermeasure can be considered preemptively or in response to intersection crash patterns. Discussion about design guideline policy decisions is provided in the [Reduce minimum thresholds for right or left turn lanes for developers and roadway designers](#) section.

Communities: Nationwide, including Alaska and Mat-Su Borough.

Dedicated bicycle lanes

These facilities make space for bicyclists and alert motorists to anticipate the presence of bicycles adjacent to the travel lane. Implementing can be low cost depending on the existing road width. Protected bike lanes add a further element of bicycle lane visibility and improve comfort and safety for cyclists.

Benefit: Adding bicycle lanes [can reduce total crashes](#)³² up to 30% on urban two-lane collectors and local roads.

²⁷ <https://dot.alaska.gov/stwddes/dcstraffic/fya/index.shtml>

²⁸ <https://highways.dot.gov/safety/proven-safety-countermeasures/leading-pedestrian-interval>

²⁹ <https://highways.dot.gov/safety/proven-safety-countermeasures/backplates-retroreflective-borders>

³⁰ <https://highways.dot.gov/safety/proven-safety-countermeasures/crosswalk-visibility-enhancements>

³¹ <https://highways.dot.gov/safety/proven-safety-countermeasures/dedicated-left-and-right-turn-lanes-intersections>

³² <https://highways.dot.gov/safety/proven-safety-countermeasures/bicycle-lanes>

Communities: [Walla Walla, Washington](#), [Boulder, Colorado](#), and [Minneapolis, Minnesota](#).

Implement rectangular rapid flashing beacons

Enhances awareness of pedestrian crossings at uncontrolled marked crosswalks by providing pedestrian activated (as needed) beacons.

Benefit: This FHWA Proven Safety Countermeasure is particularly effective at multilane crossings with speed limits less than 40 mph. It can improve motorist yield compliance by 98% and [reduce pedestrian crashes](#)³³ up to 47%.

Communities: Anchorage and Fairbanks, [Alaska](#), [Boulder, Colorado](#), and [Minneapolis, Minnesota](#).

Roundabouts

See [Roundabout Construction section](#) about roundabout benefits and specific data in the Mat-Su Borough.

Policy

Establish a regional Vision Zero working group

This group consists of borough/county, MPO, and city representatives who meet regularly to discuss local roadway safety issues.

Benefit: The Safety Action Plan stakeholder team (Vision Zero Working Group) continues to meet after the plan to evaluate local safety issues, opportunities, and to maintain accountability to the regional Safety Plan.

Communities: [Denver Regional Council of Governments](#).

Corridor access management

Plan access management for a given corridor with various tactics for eventual infrastructure projects combined with a development management policy such as:

- Reducing or consolidating access points (driveways)
- Manage spacing of future driveways to limit density and reduce conflicts
- Implement raised medians to reduce left turning and cross-traffic conflicts
- Implement roundabouts and/or restricted crossing U-turns and median U-turns that reduce left-turn conflicts
- Provide auxiliary turn lanes with adequate deceleration and storage
- Develop frontage or backage off-arterial roads (one way or two way) that are lower speed and keep local traffic off the main higher speed artery

Benefit: Reducing the density of driveways on urban arterials can [reduce fatal and serious injury crashes](#)³⁴ by 25 to 31%. Access management has [proven to provide benefits to businesses](#) across the United State, with most businesses reporting the same or increased sales and the same or increased property values.

Communities: Nationwide, including Mat-Su Borough (Parks Highway Wasilla to Big Lake, Knik-Goose Bay Road).

Review/implement speed management policies for setting speed limits

Safe speeds are a core tenet of SSA because human error compounded with speed can result in serious crashes. [Speed management policies](#)³⁵ are one way of managing the energy (and resulting severity) of a crash and are an FHWA [Proven Safety Countermeasure](#).³⁶ Where allowed by state law, local jurisdictions are designating reduced speed zones beyond the statutory maximum speed limits when regulatory limits do not fit a road or traffic conditions.³⁷ Many states and communities, including Alaska DOT&PF, are departing from the traditional practice of setting speed limits based on 85th percentile speed. Alaska DOT&PF's emerging speed management policy will focus on [self-enforcing roadways](#)³⁸ to give drivers more indicators than a speed limit sign to advise them to drive a target speed more appropriate for the local

³³ <https://highways.dot.gov/safety/proven-safety-countermeasures/rectangular-rapid-flashing-beacons-rrfb>

³⁴ <https://highways.dot.gov/safety/proven-safety-countermeasures/corridor-access-management>

³⁵ https://highways.dot.gov/sites/fhwa.dot.gov/files/Safe_System_Approach_for_Speed_Management.pdf

³⁶ <https://highways.dot.gov/safety/proven-safety-countermeasures/appropriate-speed-limits-all-road-users>

³⁷ This is allowed by state law in Alaska. See Alaska Administrative Code [13 AAC 275](#) and [13 AAC 280](#)

³⁸ https://www.fhwa.dot.gov/publications/research/safety/17098/17098.pdf?_gl=1*_o3i07d*_ga*MTAxNDg2NDg3Ni4xNzIzNTA2ODM5*_ga_VW1SFWJKBB*MTcyMzUwNjgzOC4xLjEuMTcyMzUwOTcyMy4wLjAuMA

context.³⁹ This is in line with NCRHP Report 966: *Posted Speed Limit Setting Procedure Tool*, which departs from the 85th percentile speed with more focus on roadway context and use.

Benefit: The city of Seattle saw a 26% [reduction in traffic fatalities](#) after implementation of city-wide speed management strategies. Another study found that on rural roads, setting a speed limit to 5 mph below the 85th percentile improved compliance with speed limits and may result in [fewer serious and overall crashes](#).⁴⁰

Communities: [Walla Walla, Washington](#), [Minneapolis, Minnesota](#), [Austin, Texas](#),⁴¹ and [Boulder, Colorado](#).

Additional resources: The FHWA provides technical assistance to local governments trying to set [safe, reasonable, and consistent speed limits](#)⁴² through an engineering evaluation, resources for [traffic calming](#)⁴³, and a template for state and local jurisdictions for development of [speed management action plans](#).⁴⁴

Work with member governments to help update street design guidelines, standards, and municipal codes to support Complete Streets policies and Safe System principles

Supports design consistency within a region and focuses on design parameters that align with Safe System principles.

Benefit: Can complement a Complete Streets Policy and/or Toolkit to assist planners and engineers with addressing safety-related aspects of street design, incorporating Vision Zero principles, applying countermeasures, and including further guidance for creating design components that create safe speeds.

Communities: [Denver Regional Council of Governments](#).

Implement a submittal checklist for developers and/or roadway design project reviews prior to project approval

Benefit: A checklist for designers and reviewers of plans strengthens local staff's knowledge of design code and standards, sets expectations for required elements, and provides additional quality review. For developers, a checklist sets expectations for submittals and can help streamline reviews or delays associated with incomplete submittals. The exercise of creating a checklist can also assist municipal staff in identifying gaps in municipal code or design standards or areas needing improvement. It can be completed in conjunction with design manual updates.

Communities: [Ada County, Idaho](#)⁴⁵ (developer checklist example).

Establish roadway design standards that cite the most recent version of manuals (e.g., AASHTO, MUTCD, Highway Capacity Manual) in municipal code as applicable

Memorializing a version of manuals in code or other dated reference documents requires regular review of code for any desired updates. Code changes generally require elected body approval.

Benefit: Adopting in code the most recent design manuals from established credible design sources incorporates the most recent research and trends without requiring frequent code review and updates. In turn, designers and developers apply the most modern design criteria.

Communities: [Canyon County, Idaho](#)⁴⁶

Reduce minimum thresholds for right or left turn lanes for developers and roadway designers

This section describes policy around the design policy decisions to construct new turn lanes. Benefits of this FHWA Proven Safety Countermeasure are described earlier in the [Program Review](#) section.

³⁹ DOT&PF update to Alaska House Transportation Committee, July 11, 2024

⁴⁰ <https://highways.dot.gov/safety/proven-safety-countermeasures/appropriate-speed-limits-all-road-users>

⁴¹ <https://www.austintexas.gov/department/speed-management>

⁴² <https://highways.dot.gov/safety/speed-management/uslimits2>

⁴³ <https://highways.dot.gov/safety/speed-management/traffic-calming-eprimer>

⁴⁴ https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/fhwa_speedmanagementpackage_final.pdf

⁴⁵ <https://www.achdidaho.org/home/showpublisheddocument/166/638239823692100000>

⁴⁶ https://www.nampahighway1.com/forms/2022_ACCHD_Manual.pdf

Warrants for turn lanes vary by community. Early research by M.D. Harmelink dating back to 1967 is the [origin](#)⁴⁷ of many adopted turn lane design guidance policies nationwide. Installing turn lanes, especially left turn lanes, adds cost and can add right-of-way considerations due to the extent of pavement widening and modification to incorporate appropriate tapers and storage. As such, agencies often rely on warrants to validate design decisions and/or to set consistent expectations for developers. Modern research and guidance incorporate context-sensitive design principles for the basis of exceeding design minimums for roadway design professionals and/or developer proposed driveways. Nothing precludes designers from adding a turn lane when one does not meet design warrants, but they should have good (and documented) reasons for straying from established standards. Requiring an unwarranted turn lane of a developer is likely to be heavily resisted and politically elevated due to a perceived arbitrary requirement adding to development costs.

Traditional turn lane guidance leans toward warranting conditions for turn lanes in areas of high through traffic and turning volumes and on higher speed roadways. High traffic volumes are generally not realized in many Alaskan communities except on major arterials, and while turning volumes can be limited depending on the development, they can still present a safety or operational issue. These higher thresholds can limit opportunities to construct turn lanes at the opportune time, which is particularly true for private developments where there is generally only one opportunity to require roadway improvements constructed at their cost (as a condition of granting access.)

Benefit: Adopting new standards based on [more recent research](#)⁴⁸ allows roadway designers more flexibility and comfort in making decisions to incorporate auxiliary lanes as a safety and operational enhancement to arterial roads (generally associated with more traffic volumes) and turning movements (generally associated with collector roads.) Adopting these approaches into local code (with some further analysis and clarifying directives to make it less subjective for developers to ascertain warrants) could result in more developer-funded auxiliary lanes associated with development. It could also give planners and designers working on borough roads stronger tools for design decision making for incorporating auxiliary lanes in road rehabilitation or reconstruction projects.

Considerations:

Left turn lane warrants: AASHTO's *Policy for Geometric Designs of Highways and Streets*, 2018 (GB7) emphasizes the importance of roadway context in its view that "warrants for the use of auxiliary lanes cannot be stated definitively."⁴⁹ The GB7 takes a generally conservative approach and ranges for establishing when left turn lanes may be warranted for urban and when rural arterials may be warranted. This information is presented in an easy-to-follow table (not complex charts with multiple variables). One key distinction in GB7 from traditional Harmelink charts is that warrants are not dependent on roadway speed, which allows speed to be part of a contextual decision but not a key design criterion. However, GB7 suggests decisions are "after cost benefit evaluation" which ultimately leaves the discretion to the designer and their available project budget.

Using GB7 (or the most modern version) standards for left turn lane warrants is a credible basis for establishing left turn lanes. Local policy must be developed to isolate the appropriate ranges. For example, GB7 suggests an urban arterial at a three-leg intersection and at least 450 vehicles in the peak hour on the major route could warrant a left turn lane with as few as five turning vehicles in any peak hour. However, it goes as high as 50 or more in the peak hour if the through volume is 100 vehicles in the peak hour.⁵⁰ Thresholds are considerably lower for rural areas, which is suggestive of a higher likelihood of a following driver being surprised by a turning vehicle in these areas.

Right turn lane warrants have a higher threshold because unlike a left turn, right turners do not have to yield to opposing traffic, which requires a potential stop condition. Alaska DOT&PF uses criteria⁵¹ that do not trigger full right turn lane widths until 40 turns an hour, and the threshold goes up to 100 an hour as through volumes decrease. There are some

⁴⁷ <https://onlinepubs.trb.org/Onlinepubs/hrr/1967/211/211-001.pdf>

⁴⁸ <https://nap.nationalacademies.org/catalog/22608/left-turn-accommodations-at-unsignalized-intersections>

⁴⁹ AASHTO's *A Policy on Geometric Design of Highways and Streets*, 2018, Section 9.7.1

⁵⁰ AASHTO's *A Policy on Geometric Design of Highways and Streets*, 2018, Tables 9-24 and 9-26

⁵¹ *NCHRP Report 279*, Figure 4-23, 1985, referenced by the Alaska Highway Preconstruction Manual for right turn lanes

variations of these requirements, but the threshold does not change substantially.⁵² Arizona DOT has high thresholds for right turn lanes but presents data in a more concise [tabular form](#)⁵³.

Other contextual considerations for right turn lanes should consider total roadway width and shoulder width since shoulders provide some margin of error for slowing vehicles to pull over. Driveway standards can also adopt 10:1 pavement tapers⁵⁴ transitioning from driveways on higher speed roads to provide limited deceleration space.

Any new policy should include context guidance to be incorporated into decisions for either right or left turn lanes as is used by Alaska DOT&PF.⁵⁵ Policy should also consider surrounding driveways in proximity to the intersection (which may introduce confusion about what the turn lane is accessing) and consider any impacts the added road width may have on bicycles and pedestrian ability to cross at the intersection. Another option is to select classes of roads, or key roads in an area for which a development will automatically trigger a traffic impact analysis, regardless of the development's trip generation. For example, the city of Marysville, Ohio's access management policy is that any proposed development along an arterial will generally require a traffic impact study to demonstrate the need for the access on the arterial and consideration given to future volume and operations.⁵⁶

Consideration should also be given to whether a growth factor should be applied to through volumes or turning traffic. Design projects traditionally target a design year AADT that accounts for projected growth, but developers tend to report maximum peak hour anticipated based on guidelines for trip generation, which may increase once constructed. In a fast-growing community, discretion is needed for when to expect a development may attract more traffic in the foreseeable design year (generally accepted to be 20 years) to apply a realistic growth projection so that the local agency's capital resources are not overly burdened by the actions of a developer. Any policy could ultimately delegate decision making to a designated borough official, regardless of whether the proposal is part of roadway reconstruction or a developer's actions.

Public and Stakeholder Input

Introduction and Purpose

Safety on the roadway is affected by many variables, and there can be several factors associated with any crash. To ensure that the Mat-Su Borough CSAP Existing Conditions Analysis accounts for the wide array of different variables present in the Mat-Su Borough Expanded Core Area, a robust public engagement process was initiated to gain valuable information from a multidisciplinary group of stakeholders, transportation agency professionals, and the public.

Engagement Tactics

Several engagement tactics were deployed to ensure robust public participation for the Existing Conditions Analysis. The following activities were through September 2024. The final CSAP will address engagement tactics through completion of the plan.

This comprehensive engagement strategy included:

- Development of the project website, branding, and logo
- Development of the stakeholder/outreach list
- A meeting with the Safety Action Plan Team (SAPT) to introduce the project and gain valuable insights on safety issues and areas of concern.

⁵²Missouri DOT: https://epg.modot.org/index.php/940.9_Auxiliary_Acceleration_and_Turning_Lanes#940.9.7_Right_Turn_Lanes

⁵³<https://azdot.gov/sites/default/files/2019/05/tgp0245-2019-01.pdf>

⁵⁴Alaska Highway Preconstruction Manual, 1190.5.4

⁵⁵https://dot.alaska.gov/nreg/precon/Design_Directives/ See 19-02, Turn Lanes for examples of roadway context considerations

⁵⁶<https://marysvilleohio.org/DocumentCenter/View/489/2023-Access-Management-Guidelines?bidId=>

- Three pop-up events to provide Mat-Su Borough CSAP information and a platform to identify safety concerns voiced by the public.
- Five Mat-Su Borough agency meeting presentations.
- Social media and news publications.
- Email notifications to a broad stakeholder list.
- A safety survey which had a total of 913 responders and identified over 1,000 locations of concern in and around the Mat-Su Borough Expanded Core Area.

The Project Website

Our team developed a project website using Esri Experience Builder in the first phase of plan development. This website included general information about the plan, the SS4A, SSA, the project timeline and calendar of events, and contact information. To help facilitate engagement in the plan process, the website included a page to notify the public on upcoming public workshops and pop-up events. It also provided an opportunity to sign up for email updates on future planning milestones. Finally, the website includes a documents page where the public can view milestone deliverables including a video recording of Public Workshop #1, the Expanded Core Area Map, an informational recording on the SS4A program, and feedback gathered during Public Workshop #1.

The Stakeholder/Outreach List

Our team developed a robust stakeholder/outreach list which was used to notify the public about the project, upcoming participation events, and the project timeline. Stakeholders included key representatives from the following groups:

- Local Mat-Su Borough Advocacy Groups
- Disability Services
- Family Services
- Recreation
- Senior Services
- Mat-Su Borough Government
- Housing
- Employment Services
- Youth Services
- Tribal Governments
- Health Care
- Business
- Emergency Services
- Education
- Transit

Safety Action Plan Team

To comply with SS4A guidelines for developing CSAPs, we initiated development of an advisory committee to oversee key milestones during the planning process. The SAPT will provide valuable local insights into transportation safety in the study area. It is made up of key transportation and safety representatives from the following agencies:

- Mat-Su Borough Public Works*
- Mat-Su Borough Planning*
- Mat-Su Borough Emergency Services*
- Mat-Su Borough School District*
- MVP*
- DOT&PF*

- Alaska State Troopers*
- City of Palmer
- City of Wasilla
- City of Houston
- Valley Mountain Bikers & Hikers
- Coalition of Mat-Su Senior Centers
- Boys and Girls Club of Mat-Su
- Alaska Trucking Association
- Knik Tribal Council
- Native Village of Chickaloon
- Valley Transit

*Participated in SAPT meetings to date

This group helped to identify specific transportation safety concerns within the Mat-Su Borough Expanded Core and will provide oversight and direction on potential safety solutions, project recommendations, and implementation actions in the final plan.

Pop-up Events

Pop-up events are an effective way to meet the community where they are and provide an opportunity for education and engagement during the plan process. Our team facilitated three pop-up events that collected valuable information from the public including specific safety concern locations and comments on existing and planned facilities. Our team also provided project information flyers, fact sheets, paper copies of the safety survey, and promotional project giveaways (reflective dog bandanas, reflective arm bands, blinking lights, and project stickers). We engaged with the community at three separate in-person events on the following dates:

- August 9, 2024 – Friday Fling in Palmer
- August 17, 2024 – Houston Founders Day
- August 21, 2024 – Wasilla Farmer’s Market

Mat-Su Borough Committee Meeting Presentations

To help facilitate public awareness of the Mat-Su Borough CSAP, promote the safety survey, and ensure a smooth plan adoption process, our team met with key Mat-Su Borough committees to provide an overview of the Mat-Su Borough CSAP and gather comments from transportation and safety professionals, policy makers, and the public. These included:

- Mat-Su Borough Transportation Advisory Board
- Local Road Service Area Advisory Board
- Mat-Su Borough Planning Commission
- MVP Technical Committee
- MVP Policy Board

Social Media and News Publications

Utilizing social media to promote plan awareness and gather feedback at key milestones of the plan process is a powerful tool and can help ensure broad public participation. Our team created a Facebook post and a promotional reel to help publicize the safety survey. The post and reel guided people to the project website where they could learn more about the plan, view the latest plan documents, learn how to get involved in the process, and contact the project team. The Facebook post was promoted through paid advertising by the Mat-Su Borough’s Facebook page. The reel was shared 36 times and watched 15,000 times. In addition, the Facebook post and reel were shared with the following Facebook groups:

- Friends Who Like Saving Life Thru Driver's Safety Class
- Saving Life Thru Driver's Safety Class
- Willow Area Community Organization
- KGB community, traffic & crime updates - Wasilla, Alaska
- Alaska DOT&PF
- Glenn Highway Construction and General Traffic Report
- Mat-Su Valley Traffic, Road, and Weather Conditions Discussion
- Palmer Alaska Buzz
- Palmer Alaska News
- Mat-Su Borough EMS
- Wasilla Police Department
- Mat-Su Valley News
- City of Houston, Alaska (didn't share the reel but did share the info about the survey)

Email Notifications

The stakeholder/outreach list was utilized to reach a broad cross section of the Mat-Su Borough Expanded Core Area through email correspondence at key milestones during development of the existing conditions analysis. These included:

- Project Initiation – an email notification to launch the project website and educate stakeholders and the public about the purpose of the plan, the SS4A program, and upcoming public participation opportunities.
- Virtual Public Workshop #1 – an email to invite the public to attend the workshop and provide workshop details such as purpose, outcomes, and schedule. This email also promoted and encouraged participation in the safety survey.
- A reminder email to take the safety survey before it closed on September 13, 2024.

Safety Survey

Safety Survey Results

Purpose

We conducted a comprehensive safety survey to gain valuable insight from the public on their perceptions of transportation safety within the Mat-Su Borough Expanded Core Area. The survey included a wide array of questions to understand where the community's biggest opportunities and challenges for transportation safety exist, as well as to identify specific barriers to walking and bicycling. The information from this survey will be used to prioritize broad community safety needs, prioritize safety recommendations, and assess core areas for future investment in the Mat-Su Borough Expanded Core Area.

Methods

The safety survey was launched on June 26, 2024, and open through September 13, 2024. During that time, it was available on the project website. Physical (hard copy) surveys were distributed in Houston, Wasilla, and Palmer at the following locations:

- Houston City Hall
- Wasilla Museum and Visitor Center
- Wasilla Public Library
- Palmer Public Library
- Palmer Museum and Visitor Center

Physical surveys were collected, and their data were entered into the Esri Experience Builder project database. Access to the online survey was provided at the following:

- Virtual Public Workshop #1
- On the project website

- Through a mass email to the project’s stakeholder outreach database
- Via paper flyers distributed at public pop-up events
- Via social media outlets including Facebook and Instagram
- At presentations to five local Mat-Su Borough Agencies including the Planning Commission, Local Road Service Area Advisory Board, Transportation Advisory Board, MVP Technical Committee, and MVP Policy Board.

Online Survey

The online survey was developed using Esri Experience Builder and a link was hosted on the project website. Survey responders took the survey via participant self-selection after gaining access to the link through one of the many outreach methods. Any person who was uncomfortable taking the survey online was encouraged (through specific direction on the project website) to call the Michael Baker International project manager to take the survey over the phone.

Paper Survey

Thirty paper surveys were collected at the above-listed locations. Additionally, one paper survey was mailed to the Mat-Su Borough project manager. All data from the paper surveys were manually entered into the Esri Experience Builder project site.

Survey Content

The survey included a total of 16 multiple choice, ranking, and open-ended questions encompassing the following topics:

- Demographics of survey responder (age, ethnicity, place of residence, and gender identity)
- Relationship to the Mat-Su Borough CSAP
- Typical mode of transportation for work and non-work travel
- Perception of safety in place of residence
- Factors affecting the likelihood of walking and biking in place of residence
- Factors encouraging the prioritization of safety
- Challenges to transportation safety
- Priorities for investing in transportation safety
- One open ended question providing the opportunity to share a transportation safety concern
- Online surveys included a map where respondents could drop a pin to identify areas of specific concern

Results

Response rate

The survey garnered a total of 927 complete responses within the Mat-Su Borough area.

Demographics

Age

The largest age group represented in the survey was 36-45 years of age (24%) followed closely by those 46-55 years of age (23%). The next largest groups were 56-65 years of age and 66-75 years of age, representing 18% and 15% of all responders, respectively. People over 75 made up 3% of responders and people 18-25 years of age made up 2% of all responders. There was only one person under 18 who took the survey.

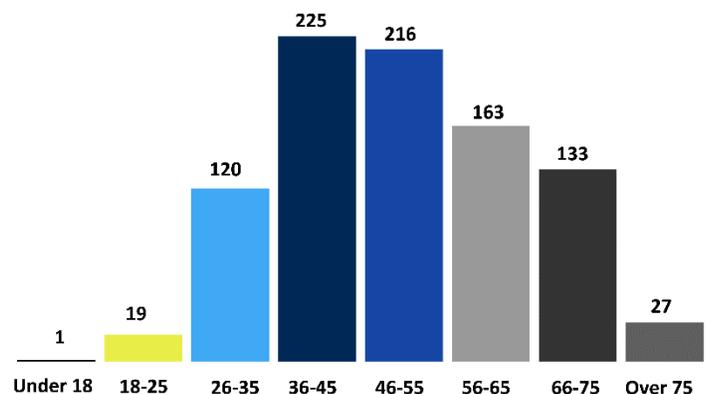


Figure 41. Safety Survey Results – Age of respondents

Ethnicity/Race

Most of the survey respondents identified as white (74%). The next largest identified ethnicity was American Indian or Alaska Native at 4%, while 1% identified as Asian, 1% identified as Black or African American, 1.5% identified as Hispanic or Latino, and 0.25% identified as Native Hawaiian or Other Pacific Islander. Of all survey responders, 2.5% identified as Other and 18% preferred not to answer this question.

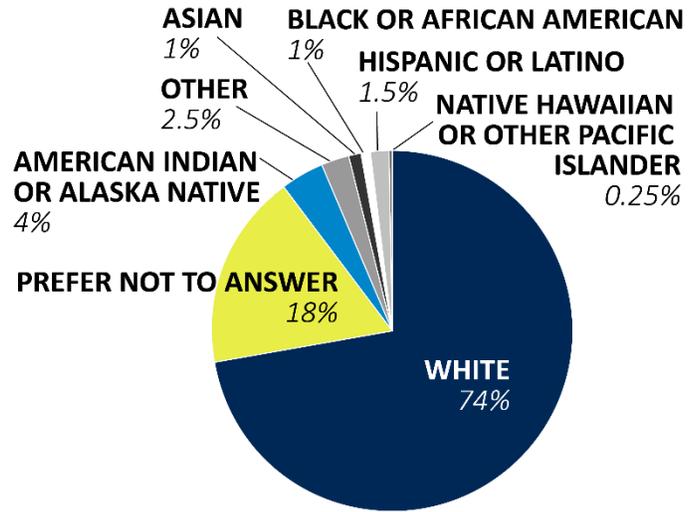


Figure 42. Safety Survey Results – Ethnicity of respondents

Gender Identity

Most survey respondents identified as female (55%) and 30% identified as male, 0.5% identified as non-binary/non-conforming, 11% preferred not to answer, and 0.1% identified as other.

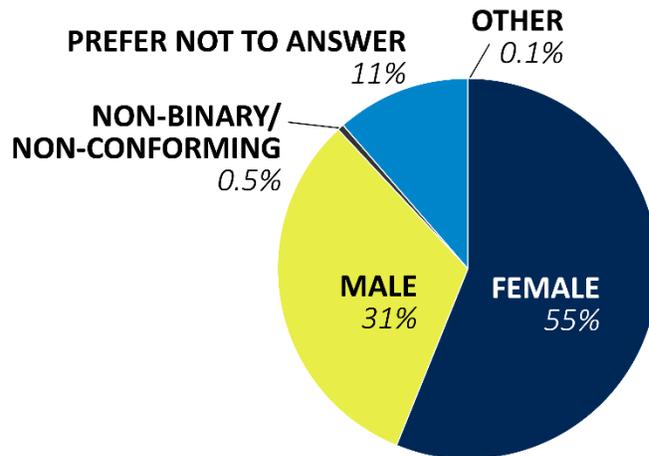


Figure 43. Safety Survey Results – Gender Identity of respondents

Where in the MSB Do You Live?

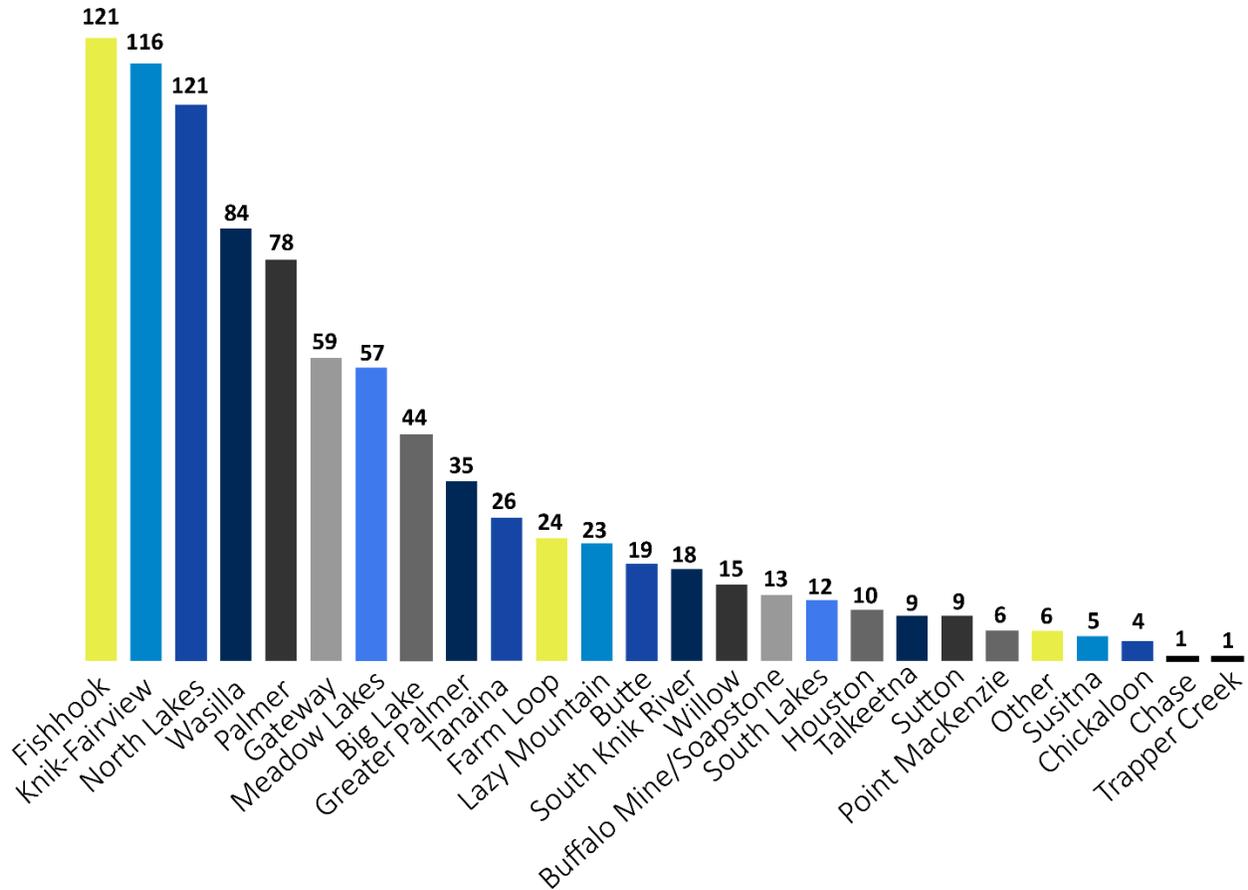


Figure 44. Safety Survey Results – Location of respondents

Regarding where people who took the survey lived, there was good representation across all communities within the Mat-Su Borough Expanded Core Area as well as some from areas outside the study boundary. Most survey responses came from residents of the Fishhook, Knik-Fairview, North Lakes, Wasilla, Palmer, Gateway, and Meadow Lakes communities.

Relationship to Transportation Safety

The overwhelming majority of survey respondents were interested residents at 92%. Safety Professionals made up 4%, while Transportation Professionals made up 3% of respondents. Interested visitors and Interested Non-resident workers each made up 0.5% of respondents.

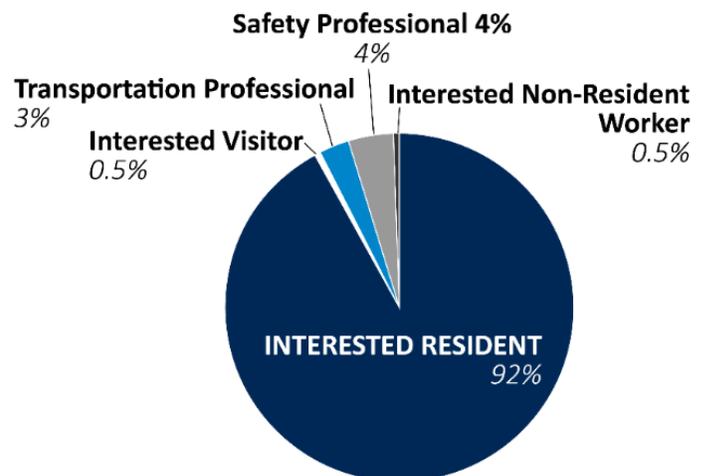


Figure 45. Safety Survey Results – Relationship to Transportation Safety

Modes of Transportation

Workplace Travel

Looking at mode choice in the Mat-Su Borough transportation network, 91% of survey respondents indicated that they use a vehicle or motorcycle for transport to and from their workplace. Of those surveyed, 3.5% chose bicycling as their primary means of commuting to work, 1% walked, 1% rode an ATV, 0.1% use public transportation, and 0.1% indicated needing an assisted mobility device. 4% chose other.

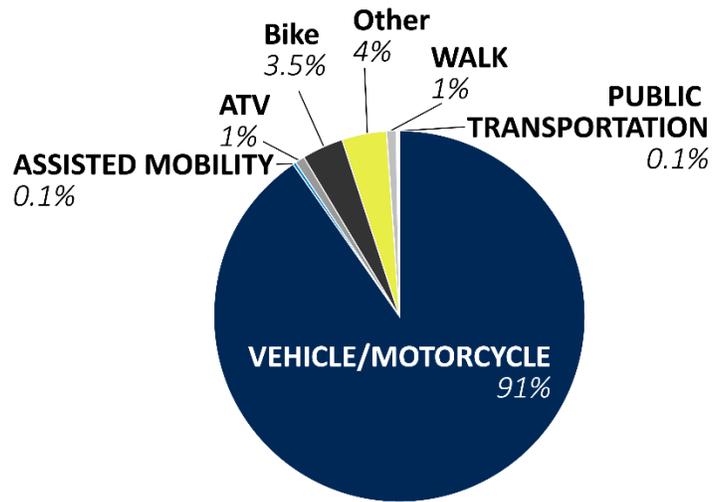


Figure 46. Safety Survey Results – Work Travel Mode Choice

Non-work Travel

For non-work travel, the survey results showed more diversity in mode choice. While 83% of respondents still chose vehicle/motorcycle as their primary mode of choice, 8% indicated bicycling as their primary choice, 4% indicated walking, 3% rode an ATV, and 0.1% used public transit. 1% indicated they used another option for transport.

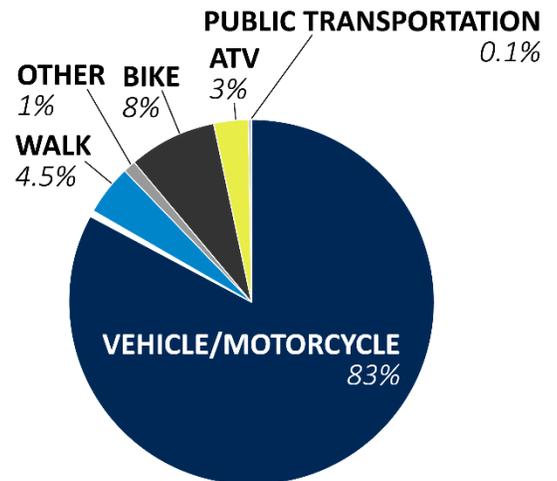


Figure 47. Safety Survey Results – Non-Work Travel Mode Choice

Perceptions to Transportation Safety and Proximity to Transit

A major element of the SS4A program is assessing the perception of safety in and around the transportation network. This is intended to help identify areas of improvement that will encourage greater use of the system and provide more options when it comes to mode choice. The survey asked respondents to share their perception of safety while walking and biking to gauge the ease of access to transit facilities.

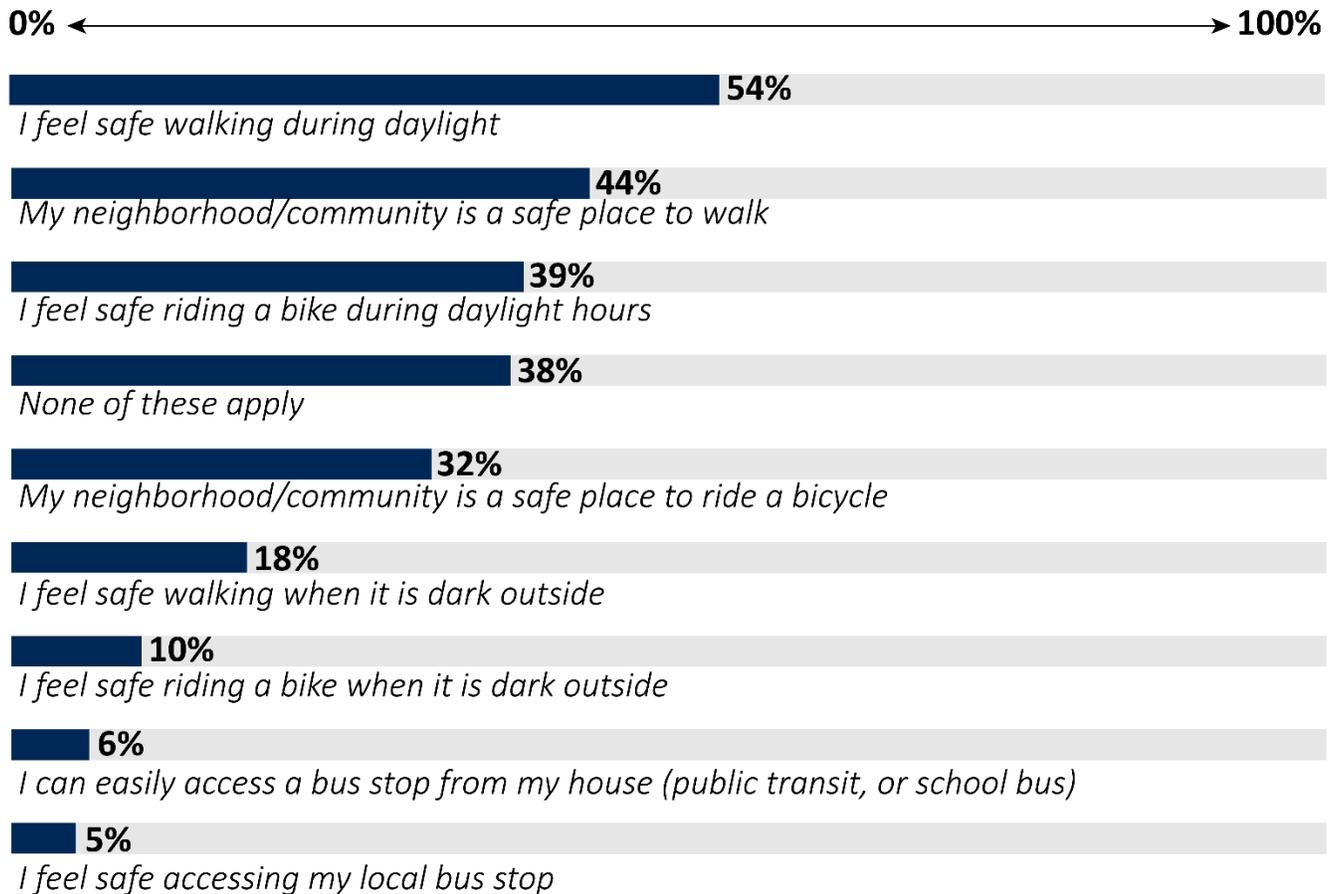


Figure 48. Safety Survey Results – Perceived Safety Walking, Biking, and Taking Transit

Only 54% of survey respondents felt safe walking in their communities during the daytime, and that decreased to 18% when it was dark outside. Similarly, 39% felt safe riding a bicycle during daylight hours, while just 10% felt safe riding a bicycle after nightfall. Only 6% of all respondents felt they had easy access to a bus stop or school bus from their place of residence and even less (5%) felt that it was safe to access their local bus stop.

Choosing to Walk

Identifying barriers to transportation is a key step leading to solutions that promote greater choices for mobility in a community. The survey asked respondents to indicate what improvements or changes might be made to the transportation network that would make them feel more comfortable walking. They were asked to rank the following choices on a scale of 1 to 5, with 1 being not likely at all and 5 indicating extremely likely to encourage them to walk.

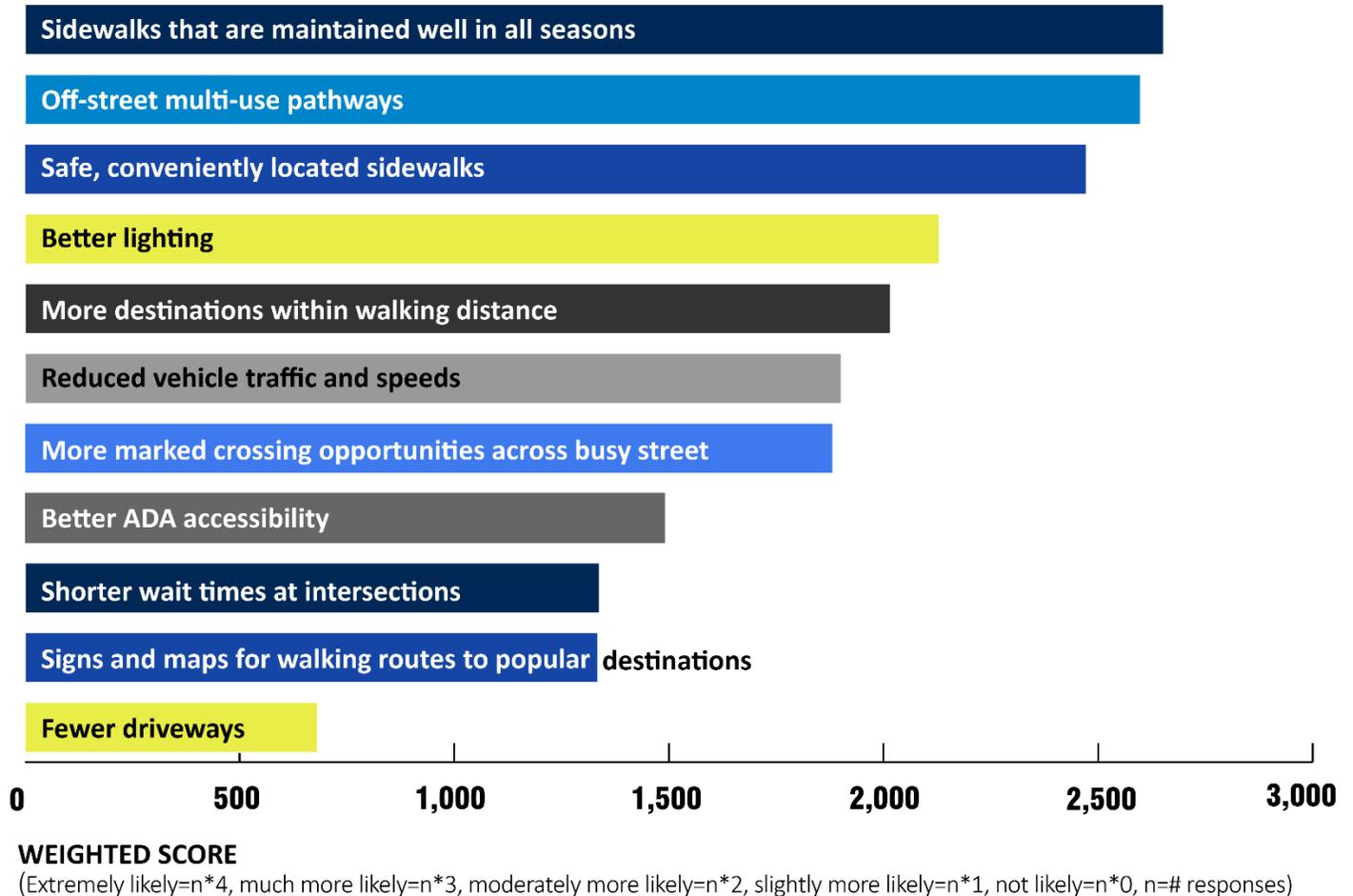


Figure 49. Safety Survey Results – Choosing to Walk

Sidewalks that are well-maintained in all seasons, off-street multi-use pathways, and safe, conveniently located sidewalks were the top three categories that would encourage residents to walk more. Better lighting, destinations within walking distance, reduced vehicle traffic and speeds, and more marked crossing opportunities were the next three highest scoring categories. Better ADA accessibility, shorter wait times at intersections, and signs and maps leading to popular destinations were next. Fewer driveways was the lowest indicator of a change that would increase walking in the Mat-Su Borough Expanded Core area.

Identifying these barriers (potential changes that would increase the likelihood of walking) is a tool that can be used to prioritize future improvements to the transportation network and help allocate valuable transportation safety funds with limited resources.

Choosing to Bike

A similar question was asked about biking within the Mat-Su Borough Expanded Core area.

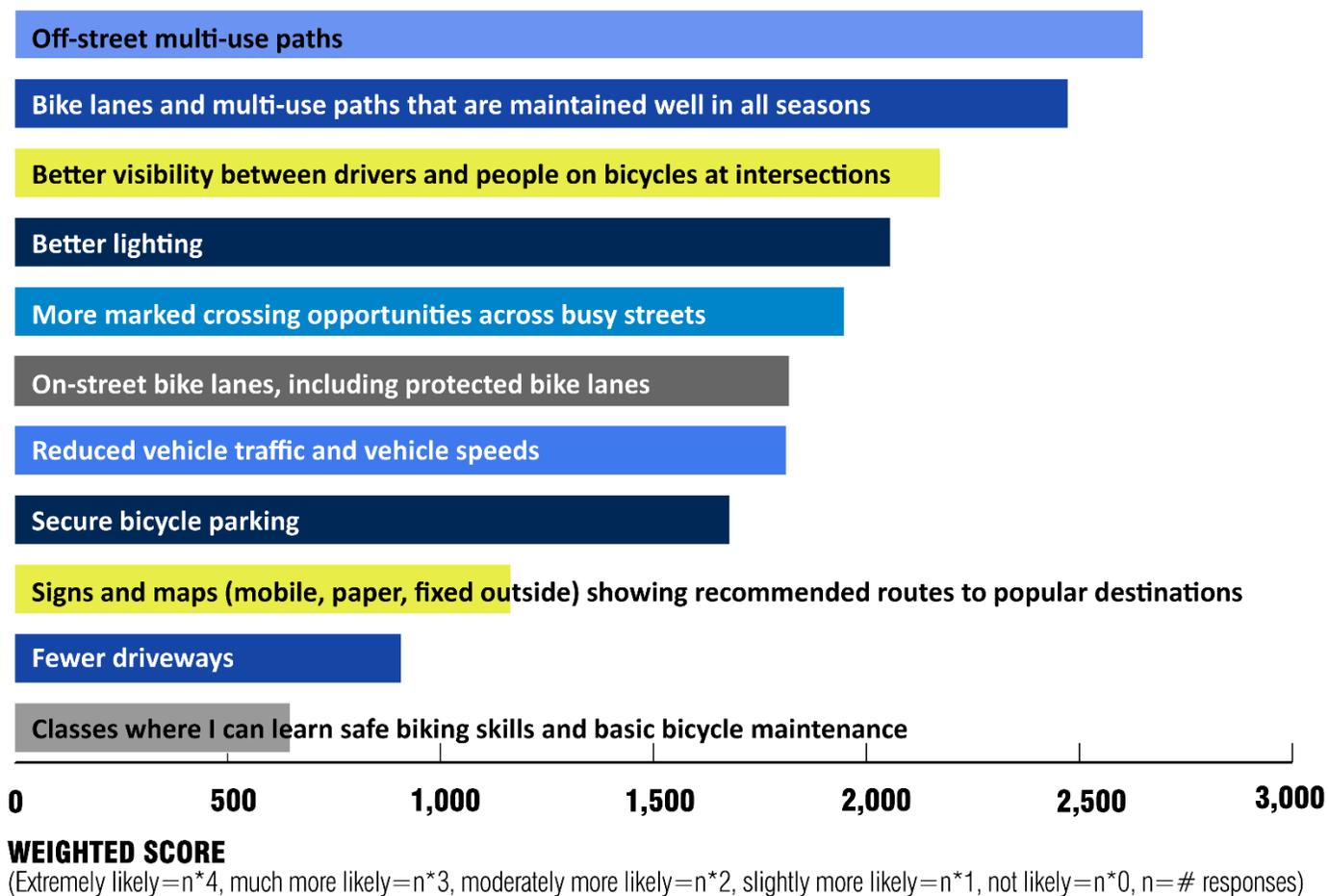


Figure 50. Safety Survey Results – Choosing to Bike

In terms of changes that would encourage people to bike more, the presence of off-street, multi-use paths and well-maintained bike lanes and multi-use paths scored the highest. The next four highest scoring categories included better lighting, more marked crossing opportunities across busy streets, on-street bike lanes including protected bike lanes, and reduced vehicle traffic and vehicle speeds. Secure bicycle parking, signs and maps leading to popular destinations, and fewer driveways were the next three highest scoring categories. Classes teaching safe biking skills and basic bicycle maintenance was the lowest scoring category to have an influence on whether more people choose bicycling.

Encouraging People to Prioritize Safety

To help prioritize improvements that will most help to prioritize safety in the transportation system, survey respondents were asked to assess a variety of actions to determine what actions might have the most impact. The respondents were asked to select all choices that they thought would help to prioritize safety.

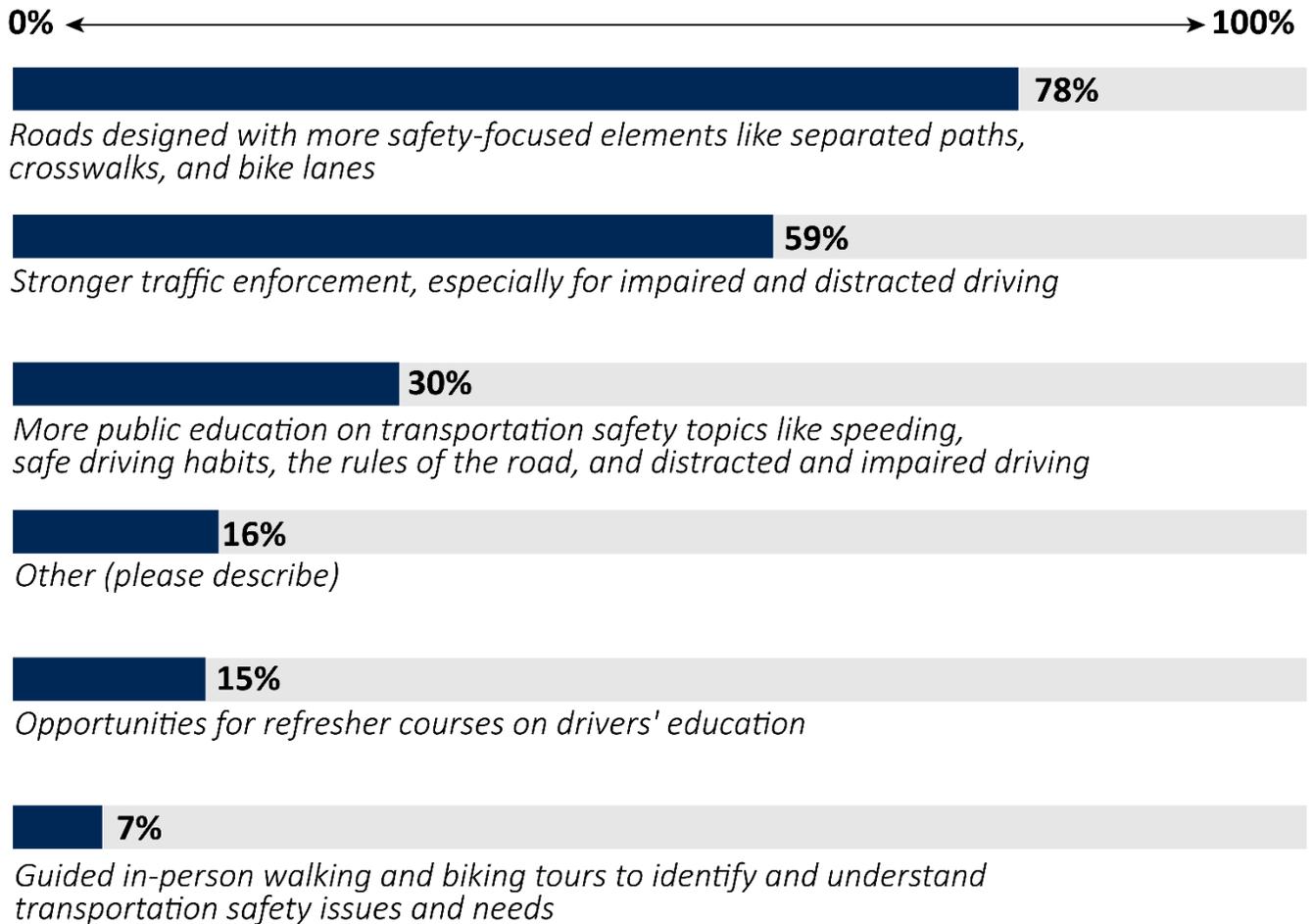


Figure 51. Safety Survey Results – Prioritizing Safety

Overwhelmingly, 78% of respondents chose road design with more safety-focused elements such as separated paths, crosswalks, and bike lanes as the most important action that would help to prioritize safety within the Mat-Su Borough Expanded Core Area. The next highest scoring action (59%) was stronger traffic enforcement, especially for impaired and distracted driving. More public education on transportation safety topics like speeding, safe driving habits, the rules of the road, and distracted and impaired driving came in third, scoring 30%. Fifteen percent of respondents thought that refresher courses on drivers' education would be beneficial and 7% thought that guided, in-person walking and biking tours to identify and understand transportation safety issues and needs would help to prioritize safety in the Mat-Su Borough Expanded Core Area.

The Biggest Challenges to Related to Transportation Safety

In addition to identifying transportation barriers, identifying perceived challenges to improving safety in the transportation network can help to prioritize where resources should be spent to overcome these challenges.

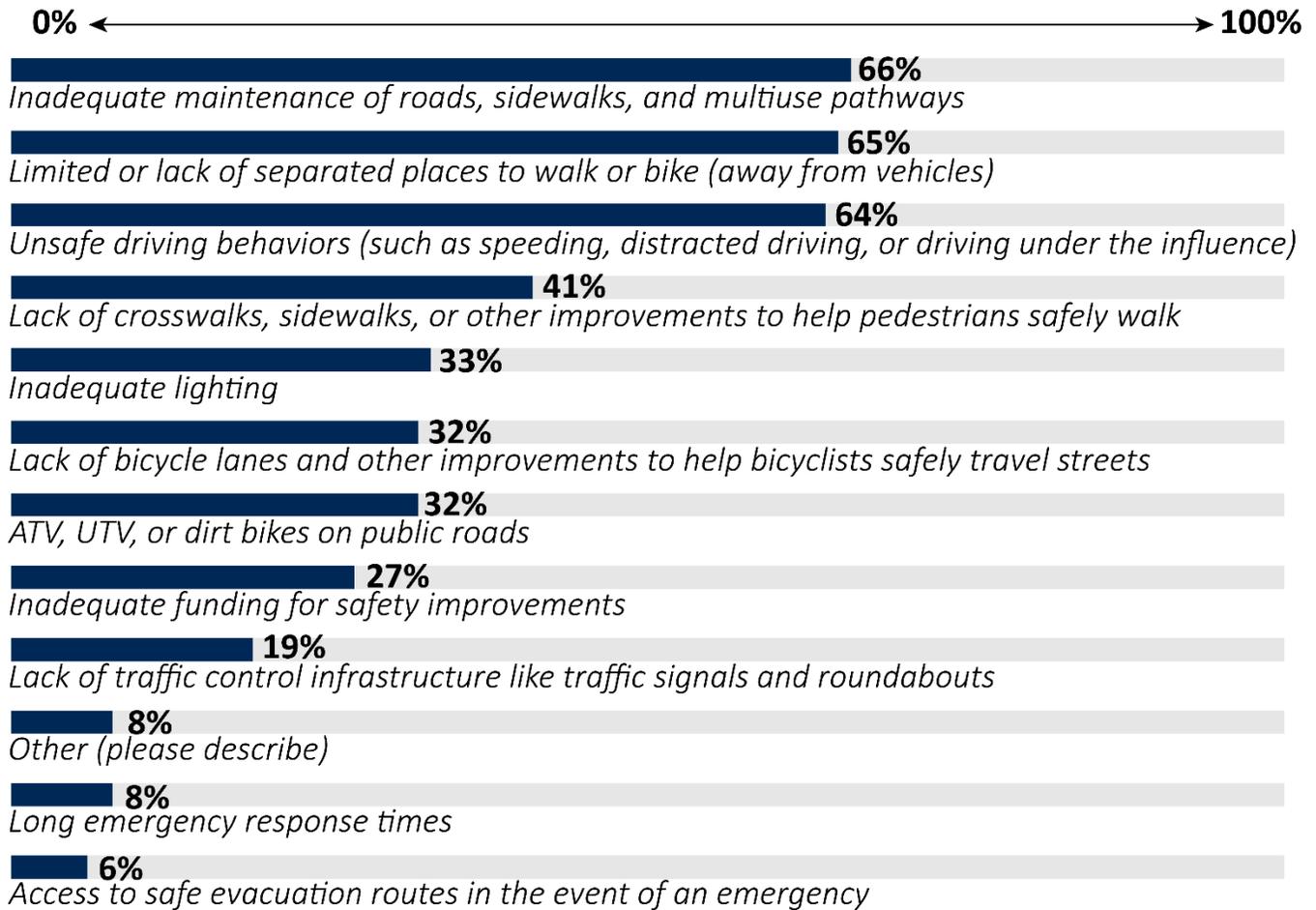


Figure 52. Safety Survey Results – Challenges to Safety

The top three scoring categories for this question included inadequate maintenance of roads, sidewalks, and multiuse pathways (66%); a lack of separated places to walk and bike (away from vehicles) (65%); and unsafe driving behaviors (such as speeding, distracted driving, or driving under the influence) (64%). The next four similarly scored categories included lack of crosswalks, sidewalks, other improvements to help pedestrians safely walk (41%); inadequate lighting (33%); lack of bicycle lanes and other improvements to help bicyclists safety travel the streets (32%); and ATV, UTV, or dirt bikes on public roads (32%). Inadequate funding for safety improvements scored 27%, while lack of traffic control infrastructure like traffic signals and roundabouts scored 19%. Finally, long emergency response times scored 8%, while access to safe evacuation routes scored 6%.

Investments in Transportation Safety

Survey respondents were asked to indicate which of the following investments would have the most impact on improving safety within the Mat-Su Borough Expanded Core Area. They were asked to select their top 5 priorities.

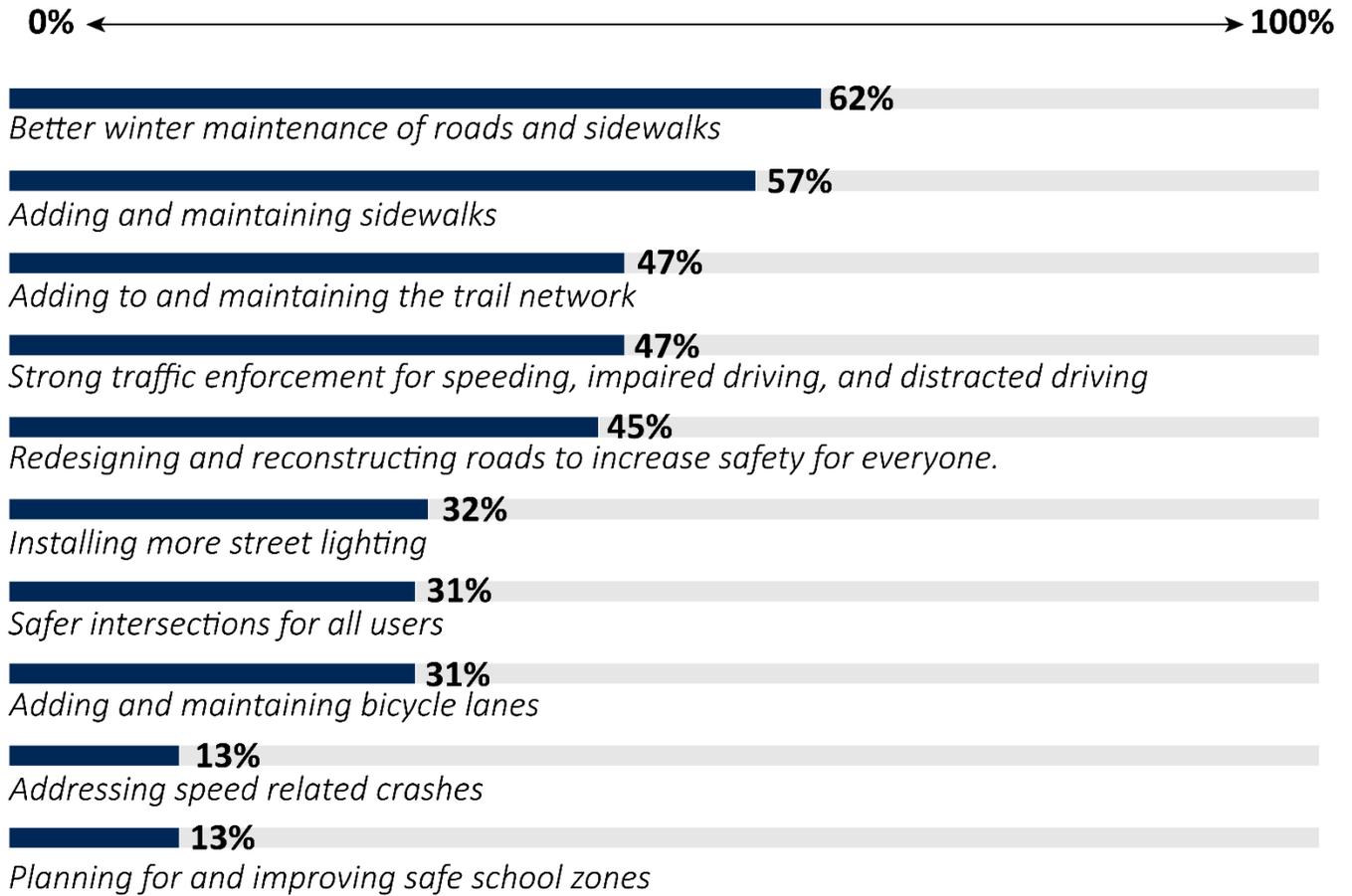


Figure 53. Safety Survey Results – Investing in Safety

This page intentionally left blank.

Appendix A: Summary Data and Sources for Peer City Comparison

Table A-1. Peer City Comparisons

Community	General Information	Similarities to Mat-Su Expanded Core Area
Fairbanks North Star Borough	<ul style="list-style-type: none"> • Third most⁵⁷ populated area of Alaska (followed by Anchorage and Mat-Su) and two military bases • Includes City of Fairbanks, North Pole, and University of Alaska Fairbanks • Junction of two interstates, Richardson Highway and Parks Highway 	<ul style="list-style-type: none"> • Generally similar climate • Comparable population and demographics¹ and mix of urban/rural roadways • Similar spread of borough government, city government and unincorporated city boundary between • Similar demographics¹ and VMTs
Kenai Peninsula Borough	<ul style="list-style-type: none"> • Fourth most¹ populated area of Alaska • Heavy traffic for summer tourist destinations • Reliant on main interstate access: Seward and Sterling Highways and connecting roadways 	<ul style="list-style-type: none"> • Generally similar climate • Comparable population and demographics¹ and mix of urban/rural roadways • Similar spread of borough government, city government and unincorporated city boundary between • Similar demographics¹
Cass County, North Dakota	<ul style="list-style-type: none"> • County seat is Fargo, ND, the state's most populated city • Metropolitan Planning Area joined with Moorhead, MN (Fargo-Moorhead Metropolitan Council of Governments) 	<ul style="list-style-type: none"> • Similar climate particularly for wind and winter conditions • Comparable population • Similar demographics¹ • Presence of agriculture and mix of rural/urban roadways • Has experienced rapid population growth since 2010 similar to Mat-Su Borough⁵⁸ • Has interstate highway presence (I-29 and I-94)
Mesa County, Colorado	<ul style="list-style-type: none"> • Encompasses Grand Junction (most populated city in county) • Not considered in Front Range mountainous area of Colorado, or part of Denver metropolitan area 	<ul style="list-style-type: none"> • Winter climate • Comparable population • Similar demographics¹ and mix of urban/rural roadways • Has interstate highway presence (I-70) • Active trails network and outdoor community • Actively working on an SS4A Comprehensive Safety Action Plan
Broomfield County, Colorado	Consolidated city and county in north central Colorado	<ul style="list-style-type: none"> • Winter climate • Very comparable population and demographics¹, though population more dense • Similar VMTs • Has interstate highway presence (I-25) • Active trails network and parks/recreational community • Rapid population growth similar to Mat-Su Borough²
Missoula County, Montana	<ul style="list-style-type: none"> • Western county in Montana, Missoula is county seat and largest city in county • College town, home of University of Montana 	<ul style="list-style-type: none"> • Winter climate • Includes many unincorporated communities • Has interstate highway presence (I-90) and mix of urban/rural roadways • Comparable population and demographics¹
Canyon County, Idaho	<ul style="list-style-type: none"> • County of "bedroom" communities in western Idaho encompassing Nampa, Caldwell and Middleton, part of Boise (Ada County) metro area 	<ul style="list-style-type: none"> • Winter climate • Has interstate highway presence (I-84) • Comparable population density, demographics demographics¹ as well as mix of urban/rural roadways • Rapid population growth similar to Mat-Su Borough²
Laramie County, Wyoming	Southeastern county in Wyoming, home of Cheyenne, the state capital	<ul style="list-style-type: none"> • Winter climate • Has interstate presence (I-25 and I-80) • Railroad history/in vicinity (Union Pacific) • Comparable population • Similar demographics¹ and mix of urban/rural roadways

⁵⁷ Alaska Department of Labor & Workforce Development <https://live.laborstats.alaska.gov/pop/estimates/pub/chap2.pdf>

⁵⁸ US Census Data <https://www.census.gov/quickfacts/>

Table A-2. Peer City Summary Data

	VMT (hundred million)	Length of Road (mi)	Latest population est. ²	Land area (Sq Mi) ²	Population Density (person/Sq Mi)	Fatal crashes 2018-2022 (5 yr avg) ¹	Fatal crashes/100M VMT	Fatal crashes/100k population	Serious Injury Crashes ¹⁶ (5 yr average)	Killed + Serious Injury (KSI) Crashes	KSI Crashes/100k population	KSI Crashes/100M VMT	Total Crashes (5 yr avg)	Crashes/100M VMT	Crashes/100k population
Mat-Su Borough Expanded Core Area	5.1 ³	1,184 ¹⁰	81,000	253	320	11.4	2.2	14.1	31.8 ¹⁴	43.2	53.3	8.5	960 ¹⁴	188.3	1185.7
Fairbanks North Star Borough	6.4 ⁴	1,909 ¹⁰	94,840	7,335	13	7.4	1.2	7.8							
Kenai Peninsula Borough	0.10 ⁵	1,994 ¹⁰	61,223	16,017	4	8.4		13.7	31.4 ¹⁴	39.8	65.0		744 ¹⁴		1215.2
Alaska - Statewide	54 ⁶	17,681 ¹	736,812 ²	571,022	1	64.2	1.2	8.7	335 ¹⁵	410.0 ¹⁵	55.6	7.6			
Cass County, ND	16.7 ⁷		196,362	1,765	111	9	0.5	4.6	Not available by county				2666 ¹⁸	159.6	1357.7
Mesa County, CO	8.30 ⁸	266 ¹²	159,681	3,328	48	17.8	2.1	11.1	CO does not track severity				2492.2 ¹⁸	300.1	1560.7
Broomfield County, CO	4.23 ⁸	28 ¹²	76,860	33	2,329	3.6	0.9	4.7	CO does not track severity				1243.4 ¹⁸	293.8	1617.7
Missoula County, MT	11.63 ⁹	2,275 ¹³	121,849	2,593	47	13.2	1.3	10.8	MT does not track severity				2583 ¹⁸	222.1	2120.2
Canyon County, ID			257,674	587	439	21.8		8.5	151.6	173.6	67.4		3757 ¹⁸		1458.0
Laramie County, WY			100,984	2,686	38	13.4		13.3	42	55.4	54.9		1986 ¹⁸		1966.5

Data Source Reference Information:

1. Fatality and Injury Reporting System Tool, National Highway Transportation System Administration, 2018-2022 five-year average, with exception of Mat-Su Borough Expanded Core Area. This is a custom boundary and fatalities were pulled from local law enforcement reports within this boundary, 2018-2022 five-year average.
2. **Communities:** US Census Data population data estimates as of 2023, land area as of 2020. Mat-Su Expanded Core Area population data is not available as this was a boundary determined for purposes of the SS4A grant. MSB Expanded Core area is a custom boundary and estimated from census tracts most closely matching it from the US DOT Equitable Transportation Community Explorer Tool, which sources from US Census. **Alaska statewide population data** from Alaska Dept. of Labor & Workforce Development, estimate as of 2023. Alaska land area from US Census data.
3. Vehicle Miles Traveled (VMT) estimate as of 2022. This was calculated from the length of roadway within the MSB Expanded Core Area (source: MSB GIS data) multiplied by the AADT of routes, where available, times 365. Not all routes in this area had volume data but the most recent year of data available was used. AADT data sourced from DOT&PF and MSB. Low volume roads often do not have AADT data, but accordingly make less of an impact on VMT calculations. This estimate is believed to be reasonably accurate for comparison purposes. **Note:** VMT data is difficult to obtain at a county/city level and generally reported at statewide level. Some states report VMT like Colorado and Montana report by county. Alaska does not report VMT by municipality.
4. Vehicle Miles Traveled estimate as of 2022. This was calculated similar to MSB Expanded Core Area above using DOT&PF AADT data. This estimate is believed to be reasonably accurate for comparison purposes.
5. Vehicle Miles Traveled estimate as of 2022, calculated similar to MSB and FSNB. However, substantial AADT information is missing for more than two thirds of the routes in the KPB, and the VMT, while believed to be substantially lower than MSB and FSNB, is not believed to be actually this low. Crashes per VMT were not carried through in calculations due to this uncertainty.
6. Estimation from 2016-2020 annual VMTs presented in *Alaska Strategic Highway Safety Plan*, updated March 2024.
7. 2022 VMT, North Dakota DOT
8. 2023 VMT, Colorado DOT
9. 2023 VMT, Montana DOT
10. Calculation from GIS data sourced from respective Boroughs. For communities without road length data shown, complete length of network data was not located. Most municipal entities only report roads under their ownership which is not representative of the total length of roads in a network.
11. 2020 estimate, *Alaska Strategic Highway Safety Plan*, updated March 2024.
12. Colorado DOT
13. Montana DOT

14. 2018-2022 crash data from local law enforcement reports. Serious injury crashes shown as annual estimate averaged over five-year period.
15. Rolling average 2016-2020, *Alaska Strategic Highway Safety Plan*, updated March 2024.
16. Where not reported, serious injury crash data is not tracked specifically in these localities at the municipal level (Cass County) or is not tracked by severity (Montana and Colorado). Montana DOT reported this data is not public on advice of counsel and referred us to FIRST/NHTSA for fatality only data. Fairbanks North Star Borough data for 2018-2022 was available but not used for this metric as a known deficiency in data reporting uploads from Fairbanks Police Department since 2018. Total crashes and serious injury crashes would be underrepresented based on available data at this time.
17. Respective state DOT, 2018-2022 annual estimate averaged over this five-year period. Exception: Laramie County data is from 2019-2023 from WYDOT.

This page intentionally left blank.

Appendix B: MSB CSAP Plans Review

This page intentionally left blank.

MSB CSAP Plans Review						
Plan Title	Plan Ownership	Year Completed	Overarching Goal of Plan	Transportation Safety Related Goals	Key safety related policies/programs/projects	Potential applicability to MSB CSAP
Alaska Vulnerable Road User Assessment	DOT&PF	2023	A program of strategies that uses data and local stakeholders to address safety for vulnerable road users (VRUs). VRUs are generally anyone mobile on a roadway outside of a motor vehicle (pedestrians, bicyclists, wheelchair users, skaters/rollers, children playing, and workers in construction zones.	Identify VRU high risk areas and develops 14 strategies to reduce VRU crash risk.	Identifies high risk corridors and intersections statewide.	Identifies the following MSB Expanded Core Area Corridors for VRUs which may be good candidate SS4A projects once countermeasures identified: *Bogard/Arctic Avenue from Anna Street to Gulkana Street *East Palmer-Wasilla from Felton St to Valley Way. Similarly identifies high risk intersections: *East Palmer-Wasilla and Glenn Highway *West Bogard & Glenn Hwy *East Parks & Palmer-Wasilla Highway . Several strategies are useful and applicable for consideration as CSAP recommended implementation or supplemental planning projects, including deploying FHWA Proven Safety Countermeasures in underserved communities, conducting VRU Safety Audits, installing more pedestrian crossing infrastructure, and separating VRUs from motor vehicle traffic.
Alaska Strategic Highway Safety Plan	DOT&PF	2024	Provides a coordinated framework to unify safety stakeholders in reducing fatalities and serious injuries on public roads statewide.	Incorporates Safe System principles to establish performance goals for reducing fatal and serious injury crashes Toward Zero Deaths, with a commitment to monitor and report on goals over time.	*Key reporting measures include: number of fatalities, rate of fatalities, number of serious injuries, rate of serious injuries, and number of non-motorized fatalities and serious injuries (vulnerable road users.) Emphasis areas include: Pedestrians and Bicyclists; Young Drivers and Older Drivers; Motorcycles, All-Purpose Vehicles and Snowmachines; Dangerous Driving; Roadways; Speed Management; Vehicle Safety; and Emergency Response.	The plan provides a wealth of statewide data, trends and emphasis areas related to transportation safety. The framework for actions, responsible agency, performance measures and timeframes for each emphasis area is also an excellent model for CSAP recommendations.
Mat-Su Borough Highway Safety Improvement Program Handbook	MSB	2017	Reduce the number of crashes on borough roads, reduce injuries and save lives.	Reduce the number of crashes on borough roads, reduce injuries and save lives. Takes Alaska DOT&PF's HSIP program one step further in considering public input or addressing high-risk potential crash locations.	Policy focuses on a benefit cost model for countermeasures that reduce crashes (and associated crash costs to society.) However, no dedicated funding exists for the program, and project screening has not happened on a recent or regular basis due to lack of staff resources. Some elements of the HSIP screening process may apply to CSAP implementation projects, however, SS4A has other considerations, including equity. In addition, since 2017 DOT&PF's HSIP program has been modified to evaluate intersections by spots and does not use crash rates.	No program of projects exists currently. However, a plan recommendation could be to bring focus back to this program, and associated funding/resources.
Mat-Su Borough Core Area Comprehensive Plan	MSB	2007	The purpose of the plan is to set out goals and policies to guide the development in the Core Area that will enhance the quality of life and the public health, safety, and welfare.	Implement MSB LRTP goals for transportation	Strategies that serve the transportation safety goal are: Improve Transportation Safety Education; Continue the Safe Routes to School Program; Continue Support of Highway Safety Improvement Program; Develop and Implement Access Development Plans for all Major Collectors and Arterial Roadways within the MSB.	Work with AKDOT&PF, Cities of Palmer & Wasilla to pursue funding for a Traffic Safety Signal Management Program. Palmer Wasilla Highway Action Plan. Subdivision Construction Manual Update. Develop Active Transportation Work Plan. Continue Coordination with MSB School District Regarding Safe Routes to School (SRTS). Proactively Support Active Transportation Provisions with Highway Facility Improvements.

MSB CSAP Plans Review						
Plan Title	Plan Ownership	Year Completed	Overarching Goal of Plan	Transportation Safety Related Goals	Key safety related policies/programs/projects	Potential applicability to MSB CSAP
Mat-Su Borough Comprehensive Plan	MSB	2005	Enhance quality of life, improve public health, safety, and welfare. Address borough-wide growth and provide general goals and policy recommendations for future development. The plan addresses these elements: Land use Transportation Public facilities Planning methods Community quality Parks and open space Economy Hazards Implementation	Develop an integrated surface transportation network that facilitates the efficient movement of people, goods, and services throughout the Borough and region. Protect and enhance the public safety, health, and welfare of Borough residents. Enhance the transportation infrastructure to reduce travel times and improve transport efficiencies and safety.	Locate new economic nodes at or near major arterial intersections instead of allowing linear commercial growth along such arterials. Develop an integrated highway and arterial surface transport system. Allow local communities, through local community based plans, to refine and tailor transportation system needs and alternatives for their particular community needs that are consistent with the borough's long range transportation plan and Borough-wide Comprehensive Plan. Develop an effective multi-modal transportation plan that provides recommendations for all modes of transportation including surface, air, waterborne, rail, public transit and trails, pipeline, electrical, and communications. Provide and encourage street and trail connectivity at a regional and local level. Require new developments to integrate street and trail connectivity as a component of their proposal. Develop pedestrian and bicycle linkages between schools, public facilities, neighborhoods, parks and open spaces and population centers where feasible.	Develop pedestrian and bike linkages
City of Houston Comprehensive Plan	City of Houston	2017	The purpose of the plan is to reflect the community's vision for future growth and development changes., to provide direction for development, and validate the community's core values. These include accommodating orderly growth, addressing the need for enhance education, health, and governmental services, promoting local employment and economic opportunity; and maintaining a high quality semi-rural residential environment.	<ul style="list-style-type: none"> • Increase safety, accessibility, and mobility through much of the city with improvements benefiting all users, including pedestrians, bicyclists, and other non-motorized users, while maintaining community character. • Provide a transportation system that enhances the local economy and quality of life: Minimize neighborhood through-traffic movements; promote positive and attractive design of transportation facilities; develop a multi-modal transportation network; encourage the paving of roads and the increased use of dust control materials. • Develop an integrated roadway network that facilitates the efficient movement of people and goods: Minimizing the number of access points on collector and arterial roads to maximize safety and road capacity; provide a multi-modal transportation system that is safe, effective and meets the needs of all residents; 	<p>Parks Highway:</p> <ul style="list-style-type: none"> •Parks Hwy bypass (grade separated interchange between mile 56 and mile 60) - this project will provide opportunities for a cohesive town center around community assets (Little Susitna River and existing businesses) and help facilitate efficient and safe freight movement. •Upgrade to a 4-lane divided highway between Big Lake Road and the northern boundary of Houston. A divided highway will reduce conflicts between slower moving trucks and faster moving cars and has the potential to greatly reduce severe crashes, such as head-on collisions. • Access Management: limiting the number of intersections with the Parks Hwy and using frontage roads in the existing commercial zone near Armstrong Road. Access points identified for consolidating/rerouting include 1. W Larae Rd/Airolo (align intersections) Dr 2. Corn St (close hwy access and route to Hawk Ln or Delroy Rd) 3. Debra Jean Ln (close hwy access and route to Hawk Ln or Delroy Rd) 4. N Dana Ct to Railroad undercrossing (close hwy and provide frontage roads connecting to repurposed Parks Hwy after bypass construction) • Pedestrian crossings - safer crossings could be encouraged through construction and proper maintenance of surrounding trail networks, directing pedestrians to reduced speed areas of the Parks Hwy or future signalized access points. <p>Local Road Network: Improve neighborhood connectivity</p>	<ul style="list-style-type: none"> •Signage and wayfinding directing visitors to town center businesses •On/off ramps at existing Parks Highway at either end of bypass • Streetside or other public parking venues in the town center • Access management through intersection and driveway consolidation • Safer pedestrian crossings connecting to trail the trail network and future signalized access points • Preservation of existing formal pathways • ATV Policy adoption to designate facilities for this use type, incorporation of flat bottomed gravel ditches, stabilized shoulders, and trail/road intersections into new road construction.

MSB CSAP Plans Review						
Plan Title	Plan Ownership	Year Completed	Overarching Goal of Plan	Transportation Safety Related Goals	Key safety related policies/programs/projects	Potential applicability to MSB CSAP
				provide for the travel needs of mobility limited residents (young, old, low income, disabled); support continued operation and expansion of local public transportation. • City of Houston's 1999 adopted plan stressed need for emergency access routes and combination fire breaks. Proposed emergency access routes include a connection between Millers Reach Road and the Beaver Lake area and connecting roads north of the Little Susitna River from Armstrong Road to Edgerton Parks Road.	<ul style="list-style-type: none"> • West of Park Highway: secondary road link to the Beaver Lake area; access around the south side of Morvo Lake; and access to the Middle and High Schools from Delroy Road. • East of Parks Highway: Alternate Cheri Lake access; access to the east of Cheri Lake; completion of a loop around Prator Lake; and a new bridge over the Little Susitna River to connect Armstrong Road to the Prator Lake area. Non-motorized Users: <ul style="list-style-type: none"> • Preserve existing formal pathways and add additional pathways along Hawk Lane (btwn Park hwy and Middle/High Schools); Extend Hawk Lane pathway from school campus to Big Beaver Lake and connect with the Big Lake community trail system. • Construct a formal pathway along Kenlar Road connecting the Hawk Lane pathway with the existing pathway adjacent to Big Lake Road. • Construct formal pathway along King Arthur Drive with connection to the existing pathway along the Parks Hwy. • Construct missing links to provide continuous pathways on both sides along the entire Parks Hwy. • construct formal pathway along the Little Susitna River in vicinity of proposed Town Center • Include adjacent pathways wherever feasible in all new construction and upgrade projects for interstate, arterial and collector roads. Off-Road Vehicles: ATVs and snow machines are allowed on City streets and ROW, however these can cause conflicts including invading private property, rutting, and safety concerns at intersections and	
					<ul style="list-style-type: none"> • Adopt a policy to incorporate off-road vehicle facilities including stabilized shoulders, flat-bottom gravel surfaced ditches, and trail/road intersection considerations when constructing new roadways. • provide designated ATV trails between major ATV destinations, such as frequently visited lakes. Public Transportation: Existing bus service only extends into Houston's southern boundary. <ul style="list-style-type: none"> • expand bus service to other parts of Houston • Senior Center on Hawk Lane is a potential candidate for bus service • Create a formal, city owned Park-and-Ride lot for people who want to use the bus or carpool to commute to Wasilla or Anchorage • support development of Anchorage to MSB commute rail. 	

MSB CSAP Plans Review						
Plan Title	Plan Ownership	Year Completed	Overarching Goal of Plan	Transportation Safety Related Goals	Key safety related policies/programs/projects	Potential applicability to MSB CSAP
City of Palmer Comprehensive Plan	City of Palmer	2006	To provide a method to analyze past development, current issues and community views, and use this information to establish policies guiding future development. Key components of this plan include a broad, long term vision for Palmer's future; policies to guide land use, growth, and development; priorities to improve community facilities and services; and policies to promote economic development, retain community character and protect the natural environment.	<p><u>GOAL 1:</u> Shape the character and use of the Glenn Highway. • Provide efficient, safe access to Palmer while serving the needs of through traffic. • Maintain the Glenn Highway corridor as an attractive community entry. • Improve pedestrian and vehicular links between east and west sides of the Glenn Highway. • Control access to commercial development along the Glenn Highway. <u>GOAL 2:</u> Improve the Palmer road system to meet anticipated growth. • Identify and prioritize specific roads for improvement. • Identify collector-level streets that are or will be needed to serve future development and traffic. • Identify future road corridors for acquisition of right-of-way <u>GOAL 3:</u> Maintain and improve community sidewalks and trails. • Make it easier to move around town without a car. • Identify and prioritize trails for improvement and future trail corridors for improvement</p> <p><u>GOAL 4:</u> Support expansion and improvement of regional transit service. • Continue to provide and improve transportation services for disabled individuals. • Improve the "MASCOT" transportation service by establishing smaller node routes that are interconnected to reduce overall travel time.</p>	<p>• Glenn Highway Bypass/Hemmer Road Extension • Proposed Road Improvements include Glenn Hwy (the Glenn Highway should be designated as a four-lane, limited-access, "boulevard-style" arterial with a generous planted median) Bogard Road Extension (Bogard Road is a key Core Area arterial that helps carry east-west traffic that uses the Palmer-Wasilla Highway.) Downtown – East West Connection (Another important road project is to develop a new, improved east-west connection across the railroad in downtown. The most promising route is to connect existing street segments of Dogwood Street to create an urban street running east of Denali Street, across the Alaska Railroad right-of-way.) Felton Extension (The Felton extension would connect Evergreen (Palmer-Wasilla Highway) with W. Arctic Avenue, and be connected to the planned extension of Dogwood. This improvement will create an important, more direct north-south link, reducing travel times and congestion on the Glenn Highway.) • Other Road Connections/Road Projects (Pave all roads within the community with the highest priorities should be streets with the greatest use, particularly in the downtown commercial and mixed use area. Collector streets are needed on an approximate one to one half mile grid consider requiring subdividers to consider the relationship of their developments to adjacent subdivisions.</p> <p>Additional minor road connections needed include connecting the north and south sections of Gulkana Street coincident with the development of adjacent property. Connect subdivisions to existing trails within the community • Implement Proposed Trail Improvements and Proposed Sidewalk Improvements (see map (Figure 3) of proposed trail and sidewalk connections) • Rehabilitate Sidewalks and Improve Sidewalk Maintenance • Expand upon Mat-Su Community Transit (MASCOT) • Increase funding for transit service for The Palmer Senior Citizens Center • Pursue the creation of bus and rail commuter service between the Valley and Anchorage.</p>	<p>• Implement identified road projects that will help alleviate congestion • Pave local roads to decrease dust/visibility/asthma issues • require developers to connect subdivision roads to walking and biking trails • implement identified trail and sidewalk missing links, needed improvements • rehabilitate sidewalks and improve sidewalk maintenance • expand transit service with a focus on service to senior centers and vulnerable populations</p>
City of Wasilla Comprehensive Plan	City of Wasilla	2011	The Plan is intended to guide the decision-making of the City's elected officials, commissions, and staff regarding future development and community quality of life. It provides a road map for action, with findings and goals that address important community elements.	<p>1) Provide for streets and highways that promote mobility, connectivity and access for both present and future users. 2) Provide a streets and highway network that supports economic development and growth. 3) Support the City as a transportation hub that provides connecting highways, railroad, and expanded air service. 4) Provide a neighborhood street network that enhances the residents' quality of life. 5) Maintain and improve City sidewalks and non-motorized pathways to increase walkability.</p>	<p>• Develop strategies and partnerships to successfully fund regionally important road projects (e.g., STIP identified priority projects) • Update and maintain the City's Streets and Highways Plan. • Set aside funds annually to maintain and improve the existing City roads. • Seek alternatives to expanding and widening the Parks Highway through Downtown to alleviate current and future traffic. • Identify network options and negotiate right-of-way acquisition needed to speed up work on anticipated critical project linkages. • Work toward completing the region's perimeter roads that allow residents north and south of the City to avoid major road networks and remove unnecessary traffic from congested areas. • Minimize driveways and visual clutter within sight distance of intersections. • Work with ARRC to develop and maintain appropriate at-grade railroad crossings and to make improvements that address traffic flow impacts related to the railroad. • Identify ways to improve safety at high accident intersections. • Seek ways to reduce pedestrian and vehicle conflicts and make pedestrian crossings safer. • Require new commercial developments to provide connectivity with adjoining commercial uses.</p>	<p>• strengthen relationship with AKDOT to help plan and fund road improvements • develop perimeter roads that allow city residents to avoid major road networks and decrease congestion • improve pedestrian crossings • require commercial developers to provide access to adjoining commercial uses • develop transportation master plan • develop conceptual city site master plan which includes an element of buffering between non-compatible uses • implement safe routes to school program to identify routes and plan for safety improvements • develop and implement signage and wayfinding that is accessible for multi-modal travel • create and implement a maintenance plan for walkways • encourage sidewalk accessibility and connection to transit stops • enhance ADA accessibility on walkways • implement better lighting on walkways</p>

MSB CSAP Plans Review						
Plan Title	Plan Ownership	Year Completed	Overarching Goal of Plan	Transportation Safety Related Goals	Key safety related policies/programs/projects	Potential applicability to MSB CSAP
					<ul style="list-style-type: none"> • Ensure future street connectivity for new subdivisions during plat reviews by recommending connections between subdivisions and appropriate roadway alignments. • Consider a Mack Drive with Clapp Road extension, with a major intersection that re-orient and links in Fairview Road for maximum safety and connectivity. • Develop a conceptual site master plan for the transportation node and surrounding lands, which considers compatibility, connectivity, and buffering between non-compatible uses. 	
					<ul style="list-style-type: none"> • Support the public and private sector in establishing viable alternatives to single-occupancy vehicle trips, particularly for commuters. • Where through-traffic problems occur consider traffic calming measures or shifting road use and circulation patterns to address the issue. • Encourage neighborhoods to develop plans and identify neighborhood-specific transportation improvement priorities. • Work with existing schools to identify major pedestrian/bike access routes, and undertake safety and circulation improvements. Use the "Safe Routes to School" program as a potential resource and source of funding. • Require new commercial developments to provide basic pedestrian access to adjacent commercial uses. • Develop signage and safety solutions for road crossings and sidewalks that attract multiple types of users (pedestrians, handicapped persons, bicycles, and ATV's). • Create and implement a maintenance plan for walkways that allows them to be used year-round. • Encourage sidewalk connections to public transit stops. • Create design standards for new sidewalks that require the developer to provide connectivity between uses that are pedestrian friendly. • Ensure that sufficient area for pathways is set aside for future pathways at time of development. • Enhance ADA accessibility on walkways. • Encourage use of low-impact lighting. 	
Mat-Su Borough Long Range Transportation Plan	MSB	2017	The stated purpose of the plan is to identify and communicate the MSB's highest transportation priorities. The Plan establishes goals for the MSB transportation system, recommends strategies for all modes of travel, including personal automobiles, bus/transit, bicycles, pedestrians, freight, rail, marine, and aviation. It provides a range of improvements that address mobility, safety, and accessibility needs, and establishes a prioritized, fiscally constrained list of roadway improvements as well as a short term implementation strategy.	Goal 5: Make Transportation Safer; Goal 1: Improve Transportation & Land Use Connection; Goal 3: Improve Connectivity;	Goal 1 strategy: Explore Remote Land Use Access and Infrastructure Issues -noting lack of infrastructure impacts user safety. Goal 3 strategy: Establish Non-Motorized Design Requirements on All Major Collector Roads and Above. Increases access to transit and improves pedestrian safety. Goal 5 strategies: Improve Transportation Safety Education. Continue Safe Routes to School Program. Continue support of Highway Safety Improvement Program. Develop and Implement Access Development Plans for All Major Collectors and Arterial Roadways within the MSB. Knik Goosebak between Parks Hwy and Pt MacKenzie Rd and the Parks Hwy between Wasilla and Big Lake are designated as Highway Safety Corridors. Palmer Wasilla Hwy between Palmer and Wasilla is being considered for Highway Safety Corridor designation. Glenn Hwy Erosion Protection MP 64/64; Parks Hwy/Talkeetna Spur Ped improvements; Palmer Wasilla Hwy widen to 3 lanes; AKDOT&PF MSB Intersection Improvement Program; Parks Hwy. Bridge Replacement Montana Creek and Sheep Creek; Nelson Rd extension to Fairview Loop Rd; Engstrom Road Congestion Relief; Engstrom Rd North extension to Tex Al; Tex Al Rd Upgrade and Extension; Glenn/Parks Interchange Hospital Access Improvements; Ongoing AKDOT&PF Asset Management and Safety Improvement Program; Seldon Rd - Beverly Lake Rd to Pittman Rd; Jensen Rd Extension to Soapstone Rd; Museum Drive Extension west to Vine Rd.	Access management, pedestrian improvements, design standards.

MSB CSAP Plans Review						
Plan Title	Plan Ownership	Year Completed	Overarching Goal of Plan	Transportation Safety Related Goals	Key safety related policies/programs/projects	Potential applicability to MSB CSAP
					Katerine Drive Connection to Trunk Rd; Vine Rd Improvements - Hollywood Blvd to Parks Hwy; Wolverine Rd from Wolverine Creek Canyon to approx. Mile 10 (where maintenance ends)	
Mat-Su Borough MPO Self-Assessment	MSB	2016	To help identify the context in which an MPO would operate, the requirements of an MPO if one is established, the financial ramifications on existing staff and project resources, and the pros/cons of having an MPO.	The document is not a plan and does not contain goals, as such. The document explains the MPO structure/organization and compares that with MSB transportation planning and services. The document includes a peer MPO evaluation and more in-depth information about the FMATS (now FAST Planning) and AMATS. The document also includes a "give/gain" grid to help evaluate partnership roles/responsibilities, their contributions and benefits gained from participating in the MPO. The document also assesses the RTPO (Regional Transportation Planning Organization) vs the MPO and determines having both would be duplicative.	The document does not identify specific projects, but explains and evaluates the MPO structure and how it may work for the MSB. The MPO would be required to prepare and maintain a Metropolitan Transportation Plan (MTP) with performance measures and targets. One of the many stated purposes to the MTP is to increase the safety of the transportation system for motorized and non-motorized users.	The document does not include specific projects/locations or countermeasures.
Mat-Su Borough Official Streets & Highways Plan	MSB	2022	To be a planning tool to help decision makers reserve future road corridors and identify possible road network improvements so that when the need arises, reasonable options are still available. The stated goals of the plan are: Link planning to engineering; Provide a plan for development of an appropriate road network; Guide future land use; Preserve safe & efficient travel; Promote economic development; Produce lower cost projects; Extend project design lives; Improve quality of life.	Road network access & connectivity; Protect options for projects beyond 2035; Implements the Long Range Transportation Plan; Not fiscally constrained; Defines functional classes & patterns network design with planning level road alignments; Designs secondary road system network needed to support arterial level Long Range Transportation Plan solutions. Expected Design Features per Functional Class identify design speed, road surface, access, intersection treatments, median treatments, shoulder treatments, pedestrian treatments, and other expectations such as transit stops, mail box pull outs, etc.	Develop policy stating that OS&HP routes and recommendations be incorporated into all aspects of planning, design, project development, and construction within the MSB; Revise the SCM to better align with the OS&HP and FHWA AADT thresholds; Adopt ROW standards for each functional classification for use in plat reviews, setback requirements, and road network development; Draft or revise MSB code to require all streets to conform to the OS&HP; Require Developers to identify the intended use of the property to better plan for trip generation; Require developments to document how traffic will impact the surrounding road network; Require developments with impacts that result in a change of functional class to the immediately adjacent road network as outlined in the OS&HP, change of intersection location, and/or change in OS&HP present a plan for bringing impacted road to the applicable functional classification; Develop policy and plans for access management ; Develop a timeline or triggers for implementing zoning and/or adopting road power; Develop and adopt a Design Criteria Manual which includes standard criteria for the design and construction of each functional class of roads in the OS&HP; Survey existing road designs and compare them to standards of the DCM; Determine locations where road upgrades are needed to conform to standards; Prioritize projects to upgrade existing roads to meet the OS&HP recommendations; Conduct corridor management studies.	Specific projects are not recommended. Many of the recommended policies and standards employ applicable countermeasures, such as controlled intersections, access control management, and pedestrian facilities. Development of a Design Criteria Manual is likely to be a related plan recommendation in the CSAP in implementing Complete Streets principles or employing Proven Safety Countermeasures.
					Prioritize projects to upgrade existing roads to meet the OS&HP recommendations; Conduct corridor management studies.	

MSB CSAP Plans Review						
Plan Title	Plan Ownership	Year Completed	Overarching Goal of Plan	Transportation Safety Related Goals	Key safety related policies/programs/projects	Potential applicability to MSB CSAP
Mat-Su Borough Bicycle and Pedestrian Plan	MSB	2023	Vision: The Matanuska-Susitna Borough envisions equitable access to a safe bike and pedestrian transportation network where residents and visitors of all ages and abilities enjoy an improved quality of life through healthier, better-connected communities.	Plan Goals: • Inventory and document the bike and pedestrian network to identify gaps and deficiencies. • Review MSB Code, the MSB Subdivision Construction Manual, and MSB Policy to identify potential changes that will help implement the plan's recommendations. • Create a prioritized list of projects to start building out the bike and pedestrian network. • Educate the public on the vision and goals for the BPP. •Solicit public input on the BPP's gap analysis and other findings. • Identify funding mechanisms to help implement the BPP's recommendations.	Recommended policies: Implement facility design standards • Implement a Complete Streets Policy • Implement a snow-clearing policy • Implement a general Maintenance Policy • Revise MSB Code to include pedestrian infrastructure when subdivisions are created • Implement a Vision Zero program • Include bicycle and pedestrian plans in the TIP. Recommended Infrastructure: Implement SRTS Walk zone inventory for MSB • Separated path along Glenn Hwy (Fish Lake to Chickaloon Branch Rd and Palmer Fishhook Rd and Jonesville Road) •Separated path along Maud Road (Old Glenn to end of paved portion of Maud Rd)... see all projects (pgs. 39-47) • Recommended Programs: Convene nonmotorized task force • Conduct annual bicycle/pedestrian counts at key MSB locations • Conduct LOS assessment for bicyclists and pedestrians. • Publish a bicycle and pedestrian map • Conduct ADA assessment in core areas. • Conduct a user conflict study • Develop a wayfinding plan • Conduct a greenbelt pathway reconnaissance and feasibility study. • Develop an interpretive bicycle and pedestrian path to connect historic transportation routes. Include interpretive and wayfinding signage.	Update multi-modal design standards • Complete Streets Policy • All season maintenance policy • Policy to include pedestrian infrastructure in new subdivision developments • Implement separated pathways along key safety corridors • Develop bicycle map • Install wayfinding signage • Crosswalks • Enhanced pedestrian street amenities
Mat-Su Borough Comprehensive Plan Update (in process)	MSB		Help elected officials and borough staff make policy decisions that protect private investments, bolster economic development, and support high-quality public services.	Planning staff are working to develop solutions for connections between platting and classifying roads.	This plan is still in development, but during public outreach, the borough asked about the favorability of the Parks Highway Alternative Corridor (Wasilla Bypass). 79% of respondents were either in favor or neutral to this project.	This plan is still in development, but stakeholders suggested more lighting, crosswalks, and safer routes to school. Some other ideas in the forces and trends report: Updating the Subdivision Construction Manual to include bicycle and pedestrian safety and connectivity.
Mat-Su Borough Coordinated Human Services Transportation Plan Update	MSB	2023	Improve transportation options and access to services for the following target populations: Older adults (65+) Youth (ages 10 to 17) Indigenous people Veterans Individuals with disabilities Individuals living in poverty Individuals with limited English proficiency Households with no vehicles Unhoused people. Aid in the allocation of future funding for transit projects for these populations Identify and prioritize strategies for future implementation in the Borough	Design safe, accessible, and affordable services for borough residents.	Upgrade facilities at bus stops and transfer stations. Further identify public transportation infrastructure needs in the borough.	Lighting
Mat-Su Valley Planning (MVP) MPO Boundary Development Document & Interactive Map	MSB		This document presents a methodology to form the Mat-Su MPO Metropolitan Planning Area (MPA) boundary to be submitted to the Governor for designation as a MPO.	The document is not a plan and does not contain goals, as such.	The document does not identify specific projects. Nor does it include recommended policies, program or projects. It evaluates areas of potential growth and recommends a boundary for the MPA.	

MSB CSAP Plans Review						
Plan Title	Plan Ownership	Year Completed	Overarching Goal of Plan	Transportation Safety Related Goals	Key safety related policies/programs/projects	Potential applicability to MSB CSAP
Mat-Su Borough Transportation Infrastructure Program	MSB	2021 & 2023	A funding plan that focuses on implementing projects identified other plans including the Long Range Transportation Plan, Official Highways and Streets Plan, and Safe Routes to School.	Program of projects that address traffic congestion, connectivity improvements, pedestrian and vehicle safety improvements, and provide more transportation choices for residents. The Borough recognizes the importance of TIP investment due to the fast growing nature of the community.	Example TIP 23 projects include *Inner-Outer Springer Loop Pathway *School Site Traffic and Safety Improvements: Pioneer Peak Elementary *Hemmer Road Extension South. Constructed TIP 21 projects include Nelson Road Pathway, Trunk Road Connector (Katherine Drive) including a separated pathway, and Lucille Street (Seldon to Schrok).	Planned capital projects should be screened out during safety analysis to optimize available funding for SS4A grant opportunities. However, TIP projects that are still in the development phase may qualify for SS4A grant funding, which may free up TIP funding for other project needs in the Borough.
Alaska DOT&PF Statewide Transportation Improvement Program and Draft Amendment #1	DOT&PF	2024	Demonstrates DOT&PF's four year transportation investment plan statewide that is fiscally constrained. Adopts MPO TIPs by reference, except not MVP at this time since they do not yet have a TIP.	Highway, non-motorized and transit investment in planning, design and construction phases across a variety of funding categories and route classifications. The STIP includes an allocation of Highway Safety Improvement Program funding of over \$62M in FFY24.	Example projects include: *Bogard Road N. Earl to N. Engstrom*Bogard Road Safety & Capacity Improvements *Fairview Loop Road Rehabilitation and Pathway *Hermon Road Extension (Parks to Palmer-Wasilla) *Hemmer Road Upgrade & Extension *Palmer-Fishhook Separated Pathway (Trunk to Edgerton-Parks) *Parks Highway Big Lake to Houston *Seldon Road Wasilla-Fishhook to Lucille St *Knik-Goose Bay Road Reconstruction	Planned capital projects should be screened out during safety analysis to optimize available funding for SS4A grant opportunities.