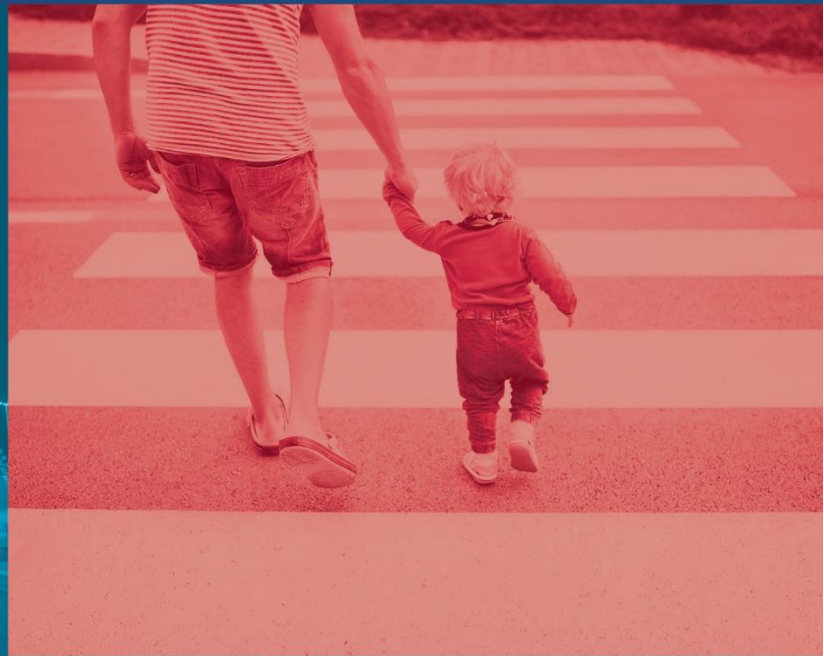
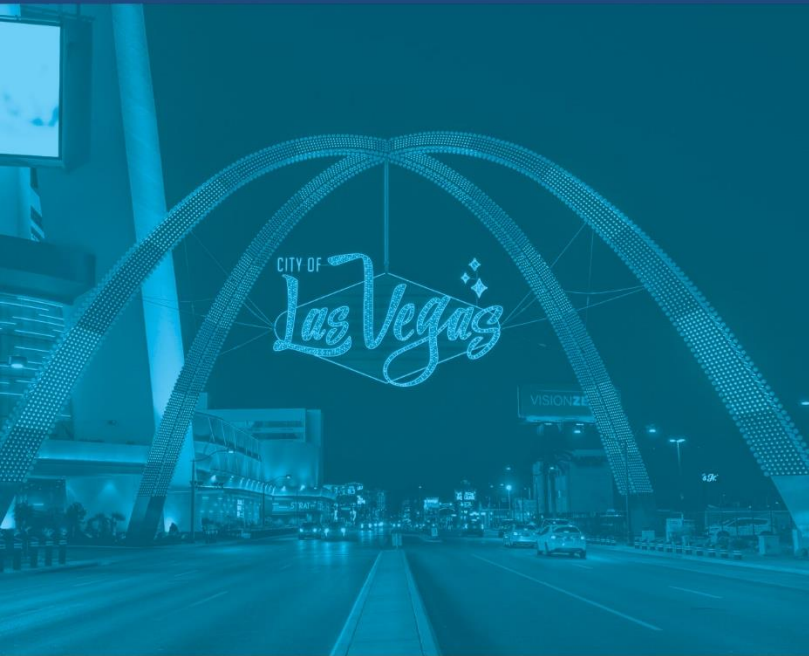




VISION**ZERO**

ACTION PLAN

August 2022





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1	Introduction to Vision Zero
2	Why Las Vegas Needs Vision Zero
4	Engagement and Collaboration
8	Data-Driven Decision-Making
10	Strategies and Action Items
24	Early Implementation
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APPENDICES

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D-1	Appendix D: CICMP Crash Data



LETTER FROM THE CITY MANAGER

I am proud to be the City Manager of Las Vegas!

As the City Manager, it is my priority to ensure the safety of the public. Unfortunately, traffic fatalities and serious injuries are a near weekly occurrence within our city limits. I recognize that even one death on Las Vegas streets is one too many, and Las Vegas residents deserve the safest streets on which to walk, bicycle, access transit, operate mobility devices, and/or drive. It is of urgent importance that we make our streets safe for everyone, regardless of where they go or how they get there. Safety needs to be one of our highest priorities! In other words, it is time for **Vision Zero**.

Traffic-related fatalities and serious injuries are preventable. We need to continue building safer streets that will protect our most vulnerable users, who are disproportionately being affected by speeding, impaired, and distracted drivers. Improved roadway designs and regulations will continue to be implemented throughout Las Vegas to make our roads safer.

We will save lives through:

- ▶ Better collaboration and communication
- ▶ Quality street designs
- ▶ Safe speeds
- ▶ Culture of safety
- ▶ Enhanced data collection
- ▶ New policies and standards

To this point, I am committing to the City of Las Vegas *Vision Zero Action Plan*, which is developing strategies to eliminate all traffic fatalities and serious injuries by the year 2050. The *Vision Zero Action Plan* is a collaborative effort combining the City of Las Vegas, elected officials, safety stakeholders, and public outreach to create safe, healthy, and equitable mobility for all.

Peer cities across the United States have paved the way with their own respective Vision Zero Action Plans and have successfully reduced traffic fatalities and serious injuries. It is now time for Las Vegas to act and commit to eliminating all fatal and serious injury crashes from our daily lives.

In conclusion, we cannot achieve the goal of Vision Zero without the help of all Las Vegas residents. I encourage you to commit to Vision Zero and help make our wonderful city a safe haven for all residents and tourists utilizing our transportation network.

Sincerely,

Jorge Cervantes, P.E., PTOE
City Manager

Introduction to Vision Zero



According to the Vision Zero Network:

Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all. First implemented in Sweden in the 1990s, Vision Zero has proved successful across Europe – and now it's gaining momentum in major American cities.

For far too long, the United States has considered traffic fatalities and serious injuries to be a normal part of everyday life. This laissez-faire attitude needs to change, which is why the Vision Zero (plan definitions provided in **Appendix A**) approach is a fundamental shift in how we address roadway safety.

Vision Zero recognizes that drivers make mistakes, however we can design and operate our transportation system to prevent driver errors from resulting in fatalities and serious injuries. The traditional safety approach is reactive, puts the responsibility squarely on the driver, and has an overall goal of preventing all types of crashes. Whereas, Vision Zero is proactive, acknowledges the imperfect human element, has an overall goal to prevent fatal and serious injury crashes, and focuses on the Federal Highway Administration's (FHWA) Safe System Approach. According to the FHWA:

Applying the Safe System Approach involves anticipating human mistakes by designing and managing road infrastructure to keep the risk of mistake low; and when a mistake leads to a crash, the impact on the human body doesn't result in a fatality or serious injury. Road design and management should encourage safe speeds and manipulate appropriate crash angles to reduce injury severity.

TRADITIONAL APPROACH

Traffic deaths are **INEVITABLE**
PERFECT human behavior
 Prevent **COLLISIONS**
INDIVIDUAL responsibility
 Saving Lives is **EXPENSIVE**

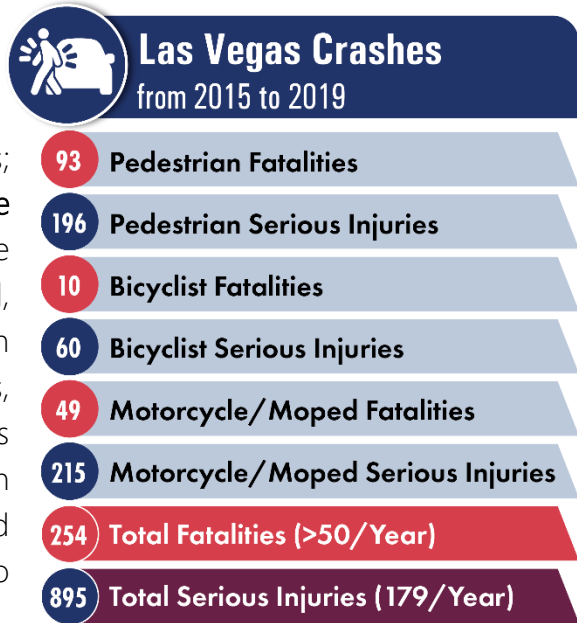
VS

VISIONZERO

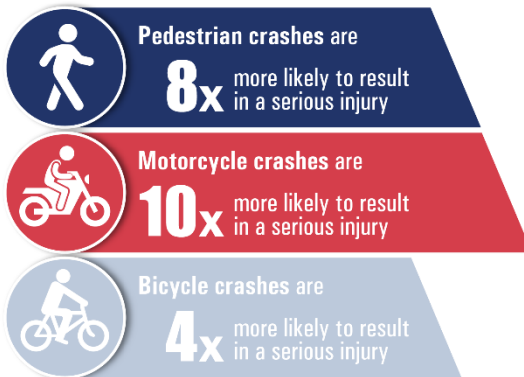
Traffic deaths are **PREVENTABLE**
 Integrate **HUMAN FAILING** in approach
 Prevent **FATAL AND SEVERE CRASHES**
SYSTEMS approach
 Saving Lives is **NOT EXPENSIVE**

Why Las Vegas Needs Vision Zero

Las Vegas has seen a steady rise of crashes due to a combination of distracted driving, high speeds, impairment, roadway/intersection design, and failure to obey traffic control devices; resulting in an average of **one fatality and three and a half serious injuries each week!** A few of the troubling Las Vegas statistics are illustrated, including a fatality and serious injury crash breakdown, vehicle crashes with vulnerable users, and risky behaviors. These escalating statistics have prompted the City of Las Vegas to focus on achieving a safer transportation system and formally initiate a Vision Zero campaign to eliminate all fatalities and serious injuries.

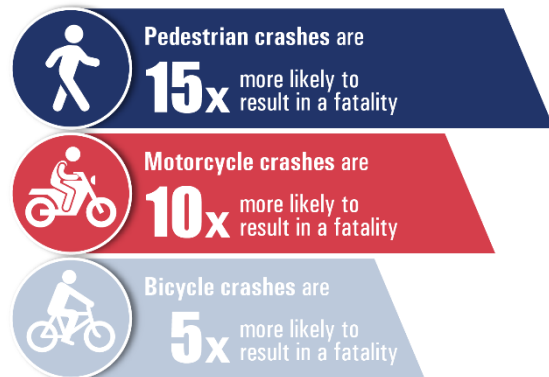


In Las Vegas, when compared to vehicular crashes...



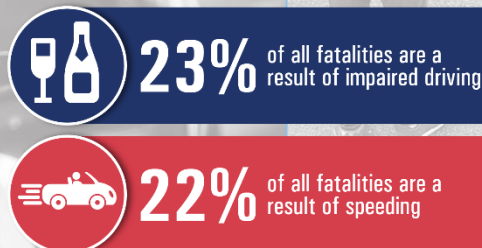
Source: NDOT Crash Data (Years 2015 - 2019)

In Las Vegas, when compared to vehicular crashes...



Source: NDOT Crash Data (Years 2015 - 2019)

Las Vegas Risky Behaviors

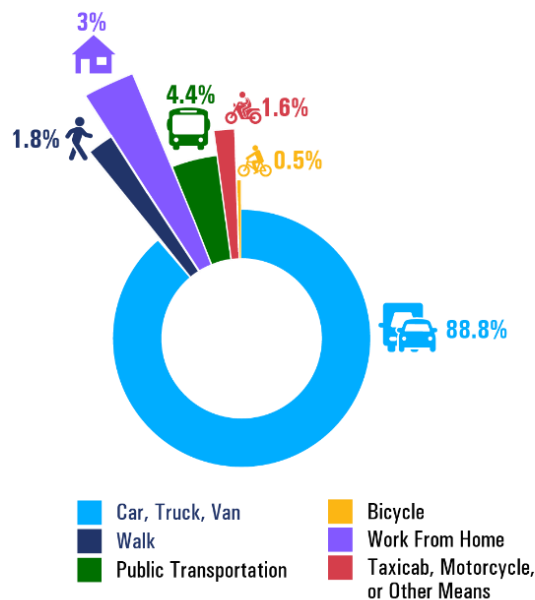


Source: NDOT Crash Data (Years 2015 - 2019)

Why Las Vegas Needs Vision Zero

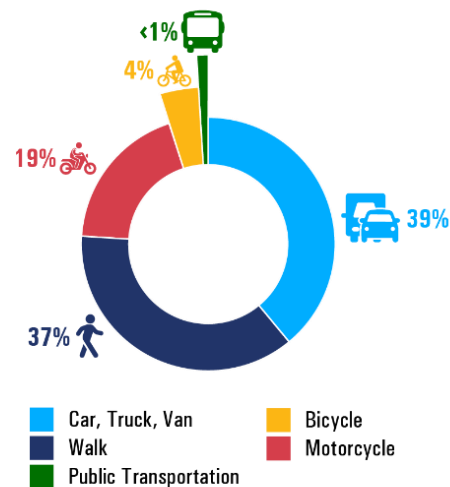
In addition, Las Vegas has a unique set of “one-of-a-kind” circumstances that are shaping the *Vision Zero Action Plan*, including:

- Over 40-Million people visit Las Vegas annually, nearly half of which arrive driving a vehicle. This results in a constant presence of drivers who are unfamiliar with the transportation network, which in turn, substantially increases the opportunity for errors and crashes.
- The Las Vegas economy is built mainly on the tourism industry, therefore our transportation system needs to accommodate both visitors and resort workforce. Having a prevalence of impaired visitors, in addition to accommodating commuters for three industry work shifts on top of regular rush hours, is a particular challenge.
- Over 90% of commuters drive to work and a little over 4% use transit, which increases the opportunity for crashes to occur.



Las Vegas Transportation Modes

Source: City of Las Vegas Mobility Master Plan, 2016



Las Vegas Traffic Fatalities

Source: NDOT Crash Data (Years 2015 - 2019)

This City of Las Vegas *Vision Zero Action Plan* contains specific strategies to eliminate all traffic fatalities and serious injuries by the year 2050. In addition, this document details our extensive engagement and collaboration effort, how data-driven decision-making is critical to success of the program, as well as positive results from an early implementation of Vision Zero principles.

Through the implementation of the *Vision Zero Action Plan*, the City of Las Vegas will continue to contribute efforts to reducing fatalities and serious injuries on roadways to zero for all modes of transportation.

Engagement and Collaboration

Vision Zero Technical Advisory Committee

Vision Zero is a multidisciplinary approach, where a mix of diverse stakeholders collaborate to address the complexity of fatal and serious injury crashes. In turn, the City of Las Vegas Vision Zero Technical Advisory Committee (TAC) combines City of Las Vegas staff, elected officials, safety stakeholders, and the public to create safe, healthy, and equitable mobility for all.

The Vision Zero TAC for the City of Las Vegas *Vision Zero Action Plan* includes:

- City of Las Vegas
 - Mayor's Office
 - City Council Ward Offices
 - City Manager's Office
 - Department of Public Works – Transportation Engineering Division
 - Department of Community Development
 - Department of Neighborhood Services
 - Department of Economic and Urban Development
 - Department of Public Safety
 - Office of Communications
 - City Attorney's Office
 - Las Vegas Fire and Rescue
- Wood Rodgers
- Nevada Department of Transportation (NDOT)
- Clark County Office of Traffic Safety
- City of Henderson (CoH)
- City of North Las Vegas (CNLV)
- Regional Transportation Commission of Southern Nevada (RTCSNV)
- Regional Transportation Commission Washoe County (RTC-Washoe)
- Clark County Safe Routes to School (SRTS)
- Clark County School District Police Department
- Las Vegas Metropolitan Police Department (LVMPD)
- University of Nevada Las Vegas (UNLV)
- Nevada Bicycle and Pedestrian Advisory Board
- Southern Nevada Health District (SNHD)
- Southern Nevada Bicycle Coalition
- Southern Nevada Pedestrian Task Force
- Taxi and Transportation Network Companies (TNC) – Uber
- Motional

The Vision Zero TAC met multiple times over the course of one year to help develop the City of Las Vegas *Vision Zero Action Plan*. The meeting dates and topics included:

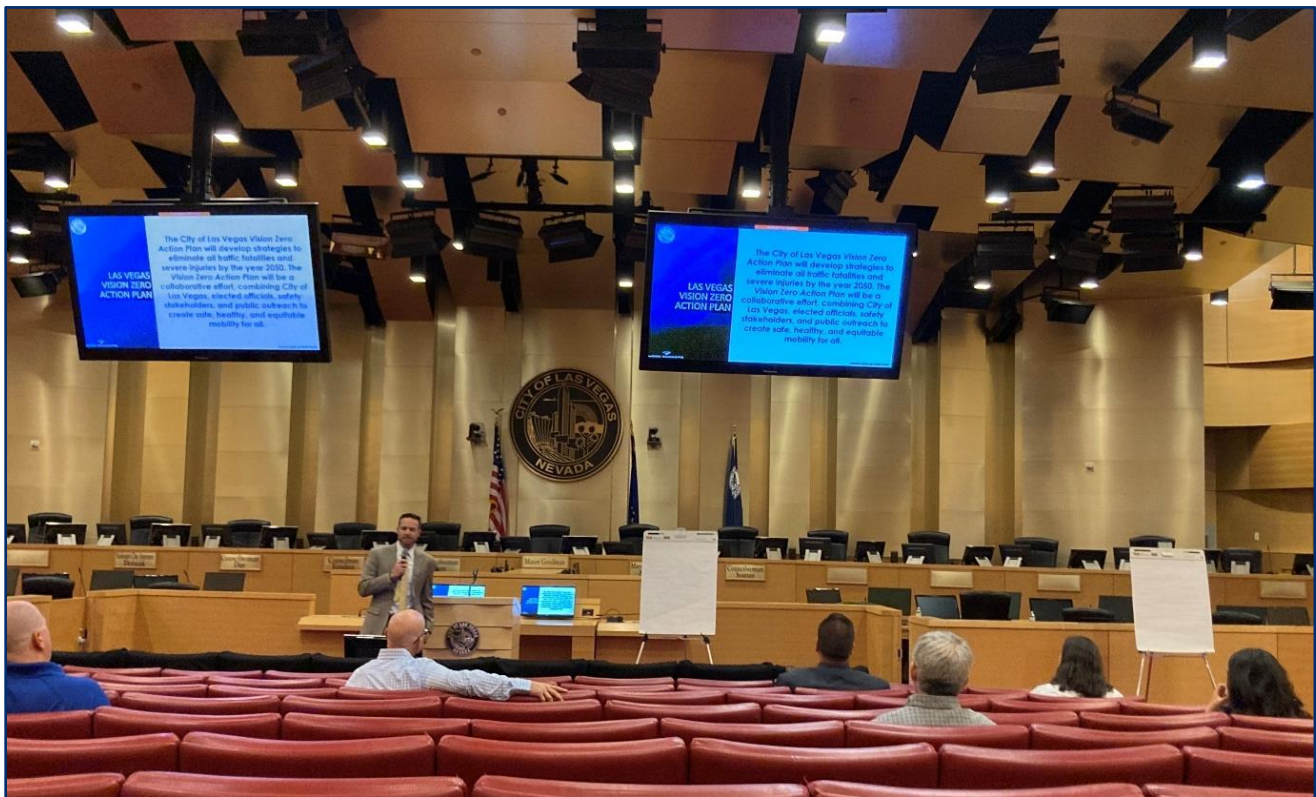
- *TAC Meeting #1 – October 25, 2021*
 - Informational meeting to give a debrief on Vision Zero and why Las Vegas needs Vision Zero.
- *TAC Meeting #2 – November 16, 2021*
 - The TAC developed a vision statement, a mission statement, and initial goals. Through multiple breakout sessions, the TAC discussed safety concerns by looking at them with a Safe System Approach for all road users through an evaluation of current policies, local standards, and the need for improvement. The development of these components was determined to be more closely evaluated through collaborative efforts within the Action Plan to ensure long lasting changes to safety within Southern Nevada.



Engagement and Collaboration

- *TAC Meeting #3 – January 18, 2022*
 - The TAC discussed their safety areas of concern and learned about the City’s crash statistics and Vision Zero’s data-driven process. During breakout sessions, the TAC discussed at length the factors and contributing factors for crashes, as well as the need for accurate reporting needs. They detected locations with the highest serious injury and fatal crashes within City limits to determine if areas of concern identified aligned with crash data. Then, the TAC prioritized corridors and locations identified, and discussed utilizing crash data to prioritize safety improvements by location for use within the Action Plan based on the number and severity of crashes.
- *TAC Meeting #4 – March 22, 2022*
 - The TAC was educated about crash costs and what the City has been doing to help reduce crashes using proven countermeasures, as well as helped develop action item benchmarks and implementation for use within the Action Plan. They were also informed about the development of the High Injury Network (HIN) and Communities of Concern (CoC) map, which further advanced and prioritized corridors and locations for projects based on safety and equitable needs for improvement across all City Wards that were to be included within the Action Plan.

The Vision Zero TAC will continue to meet throughout the implementation of this *Vision Zero Action Plan*, as well as into the future as revisions to the *Vision Zero Action Plan* are developed with the goal of reducing fatal and serious injury crashes to zero.



Engagement and Collaboration

The City of Las Vegas developed this *Vision Zero Action Plan* with the help of the Vision Zero TAC, where the TAC collaboratively developed the vision statement, mission statement, and initial strategies. These statements and strategies will help guide the City of Las Vegas toward the goal of zero fatal and serious injury crashes within City limits.



Vision Statement

Eliminate all transportation fatalities and serious injuries in the City of Las Vegas by 2050.



Mission Statement

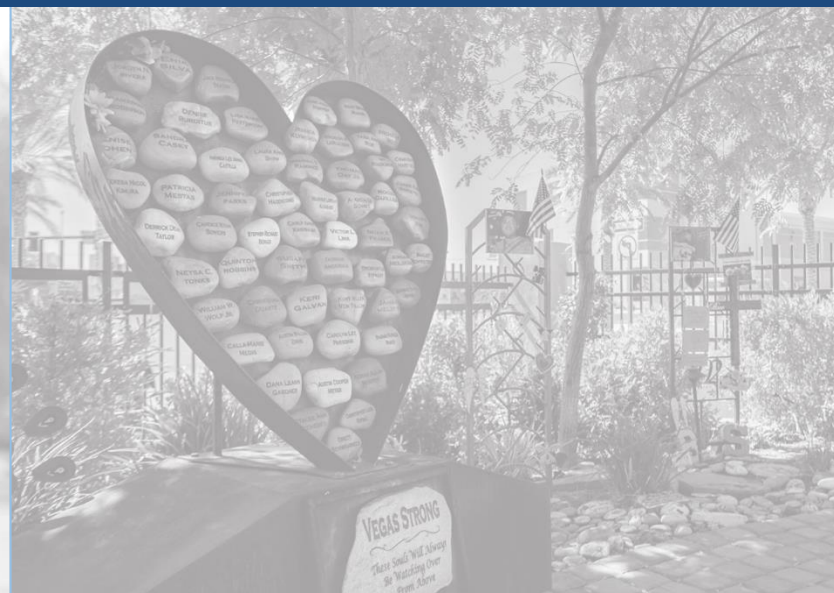
Engage everyone to create safe, healthy, and equitable mobility for all.



Strategies

The following five strategies were established, which shaped the development of the Vision Zero Action Items:

- #1 – Reform the City's Approach to Transportation Safety
- #2 – Create Safe Streets for All
- #3 – Implement Safe Speeds
- #4 – Promote a Culture of Safety
- #5 – Enhance Communication, Transparency, and Accountability



Engagement and Collaboration

Virtual Public Meeting and Survey

In addition to the Vision Zero TAC, the public was incorporated into the development of the *Vision Zero Action Plan* through a virtual public meeting and survey, which were open from August 4, 2022, through August 18, 2022. The virtual public meeting included a video explaining the *Vision Zero Action Plan* process, and the public survey allowed participants to provide input on improving transportation safety and included an interactive map to provide feedback on locations of concern with respect to traffic safety.

The public survey had a total of 283 responses, where participants ranked the following as their highest priority safety improvement strategies:

- 90% express a need to reduce impaired driving (22% high priority, 68% essential)
- 85% are concerned with red light and stop sign running (21% high priority, 64% essential)
- 82% want to see a reduction in distracted driving (26% high priority, 56% essential)
- 77% would like to see increased visibility at intersections (34% high priority, 43% essential)
- 76% are in favor of increased enforcement (23% high priority, 53% essential)

Additional public survey results are located in **Appendix B**.



||| Data-Driven Decision-Making

Utilizing data-driven decision-making is critical to the success of a Vision Zero program. Therefore, in order to determine the best locations to implement safety countermeasures, a High Injury Network (HIN) was developed to identify roadways with the most traffic-related fatalities and serious injuries. The HIN indicates where fatalities and serious injuries are most concentrated, not whether the roadway is dangerous. It aids in prioritizing where safety improvements will have the biggest impact. Additionally, the HIN helps in understanding patterns of fatalities and serious injuries, which informs more sustainable and effective engineering measures to ultimately save lives.

*The City of Las Vegas High Injury Network indicates that **77%** of Las Vegas' serious injury and fatal traffic crashes occur on just **11%** of the streets.*

In addition to the HIN, Communities of Concern (CoC) were identified to incorporate equity into the data driven analysis. CoC identify locations where a high concentration of vulnerable residents live and commute to work. The City of Las Vegas utilized the RTCSNV Access 2050 Regional Transportation Plan (RTP) for equity as it identifies vulnerable resident locations as areas with a high concentration of low-income, people with disabilities, senior, limited English proficiency, and minority neighborhoods who rely more heavily on bicycling, walking, and/or transit as their primary forms of transportation. Similar to the FHWA Transportation Disadvantaged Census Tracts, the RTCSNV utilized census information to help locate CoC, as described in **Appendix C**.

When integrating the HIN and CoC, it reveals that disadvantaged communities are impacted by higher rates of crashes, fatalities, and serious injuries.

RTC's defined Equity population groups



Low Income

Less than \$12,060 per 1 person/household



People with Disabilities

Individuals with one or more of the following: hearing difficulty, vision difficulty, cognitive difficulty, ambulatory difficulty, self-care difficulty, and independent living difficulty.



Seniors

65 years of age or older



Limited English Proficiency

Speaks English "less than very well"



Minority

Non-white

Source: RTC Access 2050 – Appendix K: Environmental Justice Analysis

*The City of Las Vegas Communities of Concern are located along **33%** of City streets, however **58%** of the High Injury Network is located within the Communities of Concern.*

The HIN and CoC help identify safety concerns by looking at the fatal and serious injury crash locations, their contributing factors, crash types, road users, historical trends, and equity. In turn, the Vision Zero HIN and CoC will help guide the City's investments in infrastructure and programs and ensure that Vision Zero projects support those most in need. A map illustrating both the HIN and CoC is shown on the following page, and a detailed breakdown of the HIN and CoC can be found in **Appendix C**.



VISIONZERO

Version 1

City of Las Vegas High Injury Network

The Vision Zero High Injury Network (HIN) guides the city's investments in infrastructure and programs, and ensures that Vision Zero projects support those most in need.

77%

of Las Vegas' severe and fatal traffic injuries occur on just

11%

of our streets.

33%

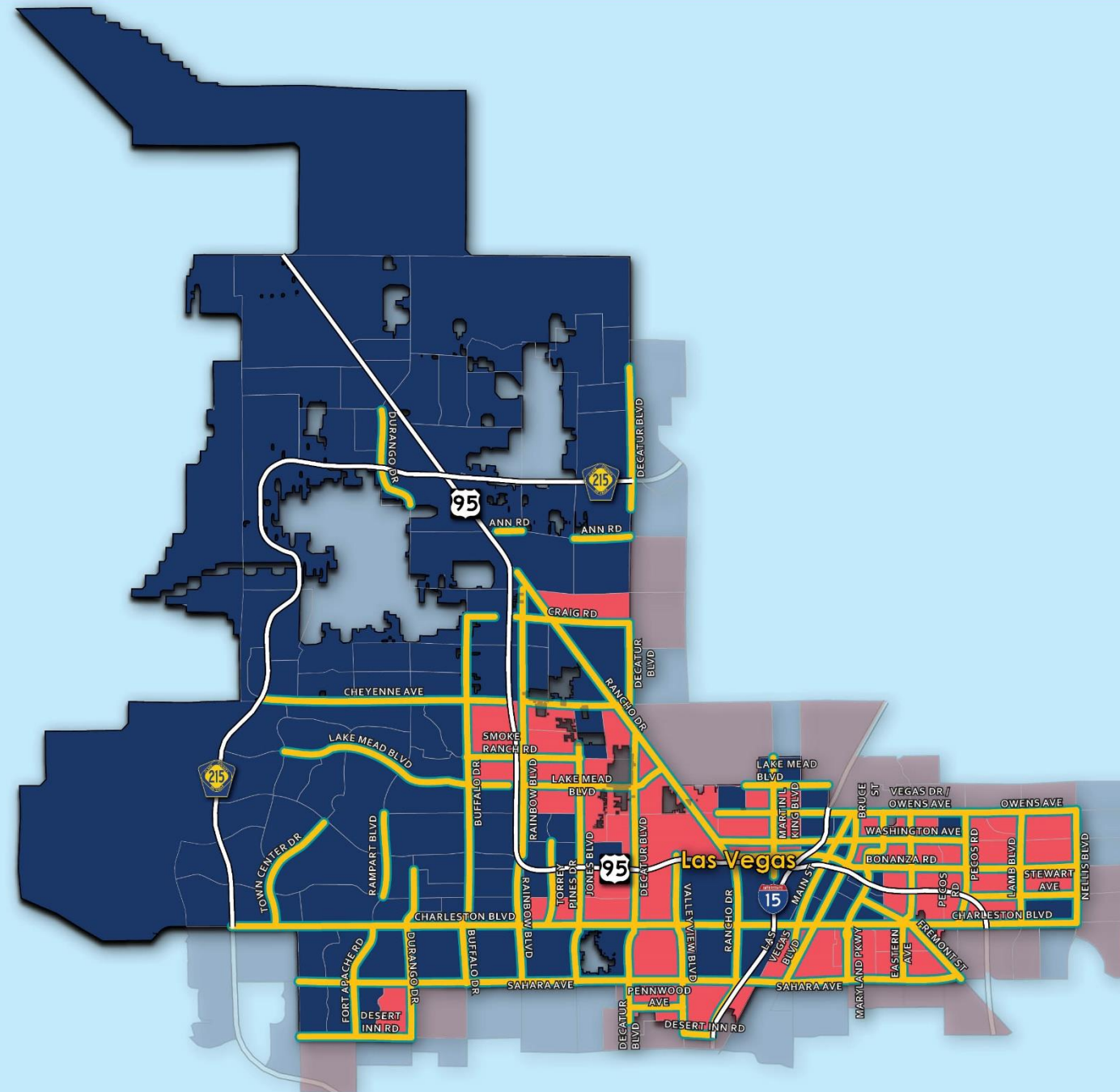
of city streets are in Communities of Concern, and

58%

of the High Injury Network is in those same communities.

- High Injury Network
- The RTC of Southern Nevada Equity Focus Areas / Communities of Concern (CoC)

The CoC represents areas that have a higher identified need and typically represent low-income, minority neighborhoods who rely more heavily on bicycling, walking, or transit as their primary form of transportation



The following pages detail each strategy, including actions, timeframes, lead agency, and supporting agencies.

CITY OF LAS VEGAS VISION ZERO STRATEGIES

1

Reform the City's Approach to Transportation Safety

2

Create Safe Streets for All

3

Implement Safe Speeds

4

Promote a Culture of Safety

5

Enhance Communication, Transparency, & Accountability









1

Reform the City's Approach to Transportation Safety

City of Las Vegas Vision Zero Action Plan – August 2022

Strategies and Action Items

Action	Timeframe	Lead	Support
 1.1 Establish the City of Las Vegas (CLV) Vision Zero program.			
1.1.1 Make CLV a model Vision Zero adopter, including operational/organizational changes and training.	Ongoing	Vision Zero (VZ) Task Force*	-
1.1.2 Create a Vision Zero Task Force and assign action item champions.	Complete Year 1	VZ Task Force	-
1.1.3 Convene regular meetings of the Technical Advisory Committee (TAC) to discuss current safety topics and opportunities for improvement.	Ongoing (4 meetings/year)	VZ Task Force	VZ TAC
1.1.4 Produce a comprehensive biannual report that documents the implementation status of the <i>Vision Zero Action Plan</i> , including case studies and lessons learned.	Ongoing (every 2 years)	VZ Task Force	VZ TAC
 1.2 Establish a permanent funding source for the Vision Zero program.			
1.2.1 Develop a plan to establish a permanent, dedicated funding source for Vision Zero implementation and coordination.	Complete Year 2	CLV	-
1.2.2 Apply for federal grants, regional funds, and local funds for programmatic planning and infrastructure to implement the Vision Zero Program.	Ongoing	CLV	-
1.2.3 Collaborate with the Regional Transportation Commission (RTC) to determine inclusion of Vision Zero action items in the RTC's Regional Transportation Plan/Transportation Improvement Program (RTP/TIP).	Ongoing	VZ Task Force	RTC
 1.3 Update City and regional infrastructure processes and guidelines to facilitate designs centered around transportation safety.			
1.3.1 Evaluate local roadway design standards to ensure consistency with Vision Zero goals and Safe System approach. Include at least one additional Safe System element at each standard plans update.	Ongoing	VZ Task Force	RTC, VZ TAC
1.3.2 Establish CLV Vision Zero internal processes to ensure that a Safe System approach is evaluated and implemented for all transportation projects.	Ongoing	CLV	-
1.3.3 Finalize the CLV Neighborhood Traffic Management Program (NTMP) guidelines and hold trainings to educate staff.	Complete Year 1	CLV	-
1.3.4 Establish multi-discipline response team for crashes involving fatal and serious injuries – responsible for holistic analysis of contributing factors and recommendation of potential countermeasures through Safe System analysis.	Complete Year 2	CLV	-
 1.4 Implement policy changes to enhance transportation safety.			
1.4.1 Support legislative efforts related to advancing Vision Zero principles.	Ongoing	VZ Task Force	Nevada Advisory Committee on Traffic Safety (NVACTS), City Attorney's Office (CAO)

*VZ Task Force consists of members of the City of Las Vegas Department of Public Works Transportation Engineering Division




2


Create Safe Streets For All

City of Las Vegas Vision Zero Action Plan – August 2022

Strategies and Action Items


Action	Timeframe	Lead	Support
 2.1 Implement safety treatments along the High Injury Network (HIN), within the Communities of Concern (CoC), and citywide using the Safe System approach, Federal Highway Administration (FHWA) Proven Safety Countermeasures, and Complete Streets principles.			
2.1.1 Perform Road Safety Audits (RSAs) utilizing the ArcGIS template developed by Vision Zero. Develop a process that can be replicated for all City corridors.	Ongoing	VZ Task Force	-
2.1.2 Reduce crashes through low-cost engineering solutions, enforcement, and education efforts.	Ongoing	CLV, VZ Task Force	-
2.1.3 Plan and develop long-term multimodal improvements on targeted corridors, transforming City streets through major projects designed to ensure safe travel for all.	1 every 3 Years	CLV	-
2.1.4 Plan/fund/construct improvements strategically and equitably from CLV's Intersection Improvement Master List.	Yearly	CLV, VZ Task Force	-
2.1.4.1 Safety improvement project at Sahara Avenue and Valley View Boulevard (Wards 1 and 3)	Complete Year 4	CLV	-
2.1.4.2 Safety improvement project at Sahara Avenue and Ft Apache Road (Ward 2)	Complete Year 4	CLV	-
2.1.4.3 Safety improvement project at Lake Mead Boulevard and Greenspring Street (Wards 2 and 4)	Complete Year 4	CLV	-
2.1.4.4 Safety improvement project at Peak Drive and Rainbow Boulevard (Wards 1 and 5)	Complete Year 6	CLV	-
2.1.4.5 Safety improvement project at Deer Springs Way and Jones Boulevard (Ward 6)	Complete Year 6	CLV	-
2.1.5 Enhance streetlighting to improve visibility along corridors and at intersections.	Ongoing	CLV	-
2.1.5.1 Streetlight upgrades on Decatur from Pennwood Avenue to Washington Avenue (Ward 1)	Complete Year 4	CLV	-
2.1.5.2 Streetlight upgrades on Lake Mead Boulevard from Anasazi Drive to US-95 (Ward 2)	Complete Year 4	CLV	Clark County (CC)
2.1.5.3 Streetlight upgrades on Charleston Boulevard from I-15 to Nellis Boulevard (Ward 3)	Complete Year 4	CLV	NDOT
2.1.5.4 Streetlight upgrades on Cheyenne Avenue from CC-215 to US-95 (Ward 4)	Complete Year 6	CLV	CC, NDOT
2.1.5.5 Streetlight upgrades on Lake Mead Boulevard from US-95 to Rancho Drive (Ward 5)	Complete Year 6	CLV	City of North Las Vegas (CNLV)
2.1.5.6 Streetlight upgrades on Decatur Boulevard from Iron Mountain Road to El Campo Grande Avenue (Ward 6)	Complete Year 6	CLV	-
2.1.6 Implement traffic signal system and operational modifications that are proven to reduce serious injury and fatal crashes.	Yearly	CLV, RTC FAST	-
2.1.7 Evaluate the feasibility of road diets/reassignment of lanes on streets targeted for overlays.	Ongoing	CLV	-

Strategies and Action Items

Action	Timeframe	Lead	Support
 2.2 Implement transportation safety enhancements to improve safety and operations for vulnerable users.			
2.2.1 Plan/fund/construct improvements strategically and equitably from CLV's Pedestrian Safety Master List.	Yearly	CLV, VZ Task Force	-
2.2.1.1 Safety improvement project at Charleston Boulevard and Rainbow Boulevard (Ward 1)	Complete Year 4	CLV	NDOT
2.2.1.2 Safety improvement project at Charleston Boulevard and Warbonnet Way (Ward 2)	Complete Year 4	CLV	-
2.2.1.3 Safety improvement project at St. Louis Avenue and Eastern Avenue (Ward 3)	Complete Year 4	CLV	-
2.2.1.4 Safety improvement project at Buffalo Drive and Gilmore Avenue (Ward 4)	Complete Year 6	CLV	-
2.2.1.5 Safety improvement project at Decatur Boulevard and Washington Avenue (Ward 5)	Complete Year 6	CLV	-
2.2.1.6 Safety improvement project at Decatur Boulevard and El Campo Grande Avenue (Ward 6)	Complete Year 6	CLV	CNLV
2.2.2 Analyze all new and existing arterials with a posted speed limit of 35 MPH or less for incorporation of buffered bicycle lanes, cycle tracks, and/or shared-use paths.	1 every 3 Years	CLV, VZ Task Force	CLV Planning, RTC
2.2.3 Continue building the enhanced bikeway network and the amenities that support it (bicycle detection, parking), and phase implementation to ensure connectivity.	Ongoing	CLV	CLV Planning, Tech Vendors, Bicycle Coalition
2.2.4 Improve pedestrian safety and access to transit stops and stations.	Ongoing	CLV, VZ Task Force	RTC
2.2.5 Require all new developments to assess walkability, bikeability, access to transit, and micromobility.	Ongoing	CLV	City Development Committee (DevCo), CLV Planning, Developers
2.2.6 Create a quick planning program to assess all Wards every two years for low-cost pedestrian safety improvement projects.	Complete Year 5	VZ Task Force	-



Strategies and Action Items

Action	Timeframe	Lead	Support
 2.3 Implement programs to improve transportation safety focused towards users at schools, parks, and senior facilities.			
2.3.1 Establish a Safe Routes to School (SRTS) Program to provide transportation safety education to students, identify safety enhancements around schools, and promote walking and bicycling.	Complete Year 5	VZ Task Force	SRTS, Schools
2.3.2 Establish a Safe Routes to Parks Program to support safe and equitable access to parks through community engagement and education, park design, and signage.	Complete Year 5	VZ Task Force	Community
2.3.3 Establish a Safe Routes for Seniors program that provides transportation safety education to seniors, identifies transportation safety enhancements in areas populated or frequented by older adults, and promotes walking, bicycling, and transit use.	Complete Year 5	VZ Task Force	Community
2.3.4 Perform SRTS walk audits and implement improvement recommendations at public elementary, middle, and high schools.	2/Year	VZ Task Force	SRTS, Schools, Las Vegas Metropolitan Police Department (LVMPD)
2.3.5 Improve coordination among agencies regulating site selection for new education facilities. When new public school facilities open or relocate to a new site, ensure appropriate agencies work together to develop a transportation plan for the new school facility.	Ongoing	VZ Task Force	Clark County School District (CCSD)





3

Implement Safe Speeds

City of Las Vegas Vision Zero Action Plan – August 2022

Strategies and Action Items

Action	Timeframe	Lead	Support
 3.1 Determine safer vehicle speeds for all users.			
3.1.1 Create and implement a uniform procedure of setting safe speeds.	Complete Year 2	VZ Task Force	RTC, NDOT, Zero Fatalities, LVMPD
3.1.2 Perform a pilot project to reduce arterial speed limits, with an emphasis along the HIN.	Complete Year 2	CLV	VZ Task Force FAST
3.1.3 Lower speed limits when implementing street design changes with capital or adjacent development projects.	Ongoing	CLV	-
3.1.4 Implement a speed feedback sign policy.	Complete Year 2	VZ Task Force	-
3.1.5 Perform a citywide evaluation of speed limits vs. speeds vehicles are traveling.	Complete Year 10	CLV	-
 3.2 Pilot reduced speed limits in areas with high concentrations of vulnerable users.			
3.2.1 Create and implement a policy for the setting of speed limits adjacent to residential, Downtown, schools, parks, and other areas with high concentrations of vulnerable users.	Complete Year 2	CLV	VZ Task Force
3.2.2 Perform a pilot project to reduce residential area speed limits, with an emphasis along the HIN and within CoC.	Complete Year 5	CLV	VZ Task Force
3.3.3 Perform a pilot project to reduce Downtown area speed limits, with an emphasis along the HIN and within CoC.	Complete Year 5	CLV	VZ Task Force
3.3.4 Perform a pilot project to reduce school area speed limits, with an emphasis along the HIN and within CoC.	Complete Year 5	CLV	VZ Task Force
3.3.5 Perform a pilot project to reduce park area speed limits, with an emphasis along the HIN and within CoC.	Complete Year 5	CLV	VZ Task Force
3.3.6 Reevaluate the NTMP and expand to a shared street implementation program which prioritizes people walking and biking, and includes countermeasures to slow vehicle speeds.	Complete Year 5	VZ Task Force	-



4



Promote a Culture of Safety

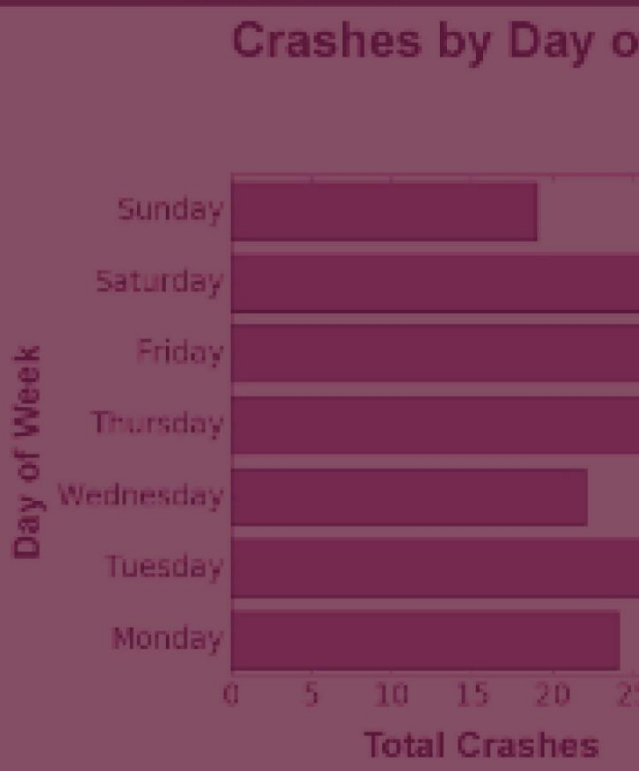
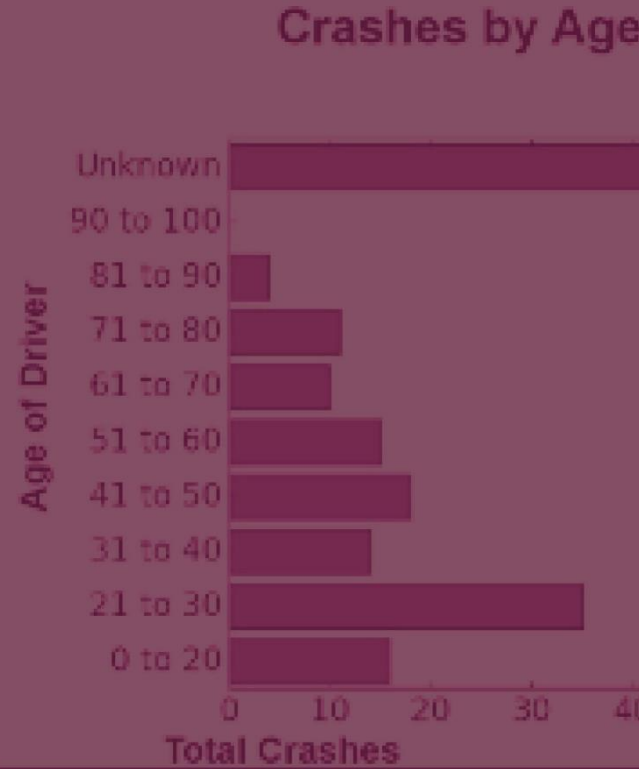
City of Las Vegas Vision Zero Action Plan – August 2022

Strategies and Action Items

Action	Timeframe	Lead	Support
4.1 Implement a communications campaign to promote awareness and understanding of transportation safety.			
4.1.1 Create a public brand for CLV Vision Zero efforts and implement procedures for incorporating it into engagement, construction, education, and evaluation work for transportation safety-focused projects.	Ongoing	VZ Task Force	Office of Communications
4.1.2 Develop the City's Vision Zero webpage.	Complete Year 1	VZ Task Force	Office of Communications
4.1.3 Share Vision Zero messages regularly on City-owned communications media.	Ongoing	VZ Task Force	Office of Communications
4.1.4 Create a message toolkit to get key safety messages out consistently.	Complete Year 2	VZ Task Force	-
4.1.5 Create Vision Zero communications and education materials in multiple languages.	Ongoing	VZ Task Force	-
4.1.6 Utilize and reinforce messages created through the State's Zero Fatalities program.	Ongoing	VZ Task Force	Zero Fatalities
4.1.7 Develop City-specific Vision Zero signage to be displayed with Vision Zero improvement projects during construction.	Complete Year 2	VZ Task Force	Vision Zero TAC, Local Public Agencies
4.1.8 Create a collaborative Public Service Announcement (PSA) program regarding driver safety.	Complete Year 2	VZ Task Force	Vision Zero TAC, Office of Communications
4.1.9 Coordinate a communications campaign around speed limit change to educate travelers about the key connection between speed and safety, and increase understanding of new speed limits.	Complete Year 2	VZ Task Force	Office of Communications, Zero Fatalities
4.2 Strengthen the public's knowledge of transportation safety.			
4.2.1 Develop demographic, geographic, and modal-specific safety outreach materials, including SRTS and pedestrian safety materials for seniors.	Complete Year 2	VZ Task Force	Community, Professional Societies, Schools, Office of Communications
4.2.2 Develop transportation fact sheets to educate all roadway users on safety countermeasures and rules of the road.	Complete Year 2	VZ Task Force	Community, Professional Societies, Schools, Office of Communications
4.2.3 Partner with advocacy organizations and other agencies to create a transportation safety education kit that community groups, schools, and others can use to promote Vision Zero.	Complete Year 2	VZ Task Force	Community, Professional Societies, LVMPD, Schools, Media
4.2.4 Conduct targeted outreach in schools – educating students about protecting themselves as safe pedestrians and cyclists, and working with their families for safer school zones.	2 meetings (2 different schools) /Year	VZ Task Force	SRTS, Schools, Youth Development and Social Innovation (YDSI)
4.2.5 Conduct targeted outreach in senior communities to discuss transportation safety concerns.	2/Year	VZ Task Force	Senior Communities, Ward offices

Strategies and Action Items

Action	Timeframe	Lead	Support
 4.3 Engage with the community and partners on transportation safety improvements.			
4.3.1 Engage with the community to deliver effective and relevant transportation projects to improve safety and serve community needs.	Ongoing	VZ Task Force	Community
4.3.2 Perform follow-up engagement efforts to determine effectiveness of transportation safety improvements as part of project evaluation.	Ongoing	VZ Task Force	-
4.3.3 Identify a Transportation Safety Liaison within each interested Homeowners Association (HOA) or Neighborhood Association to discuss transportation safety topics.	Ongoing	VZ Task Force	Community
4.3.4 Work with local employers to commit to the Vision Zero initiative and disseminate safety messaging to their employees.	Ongoing	VZ Task Force	Community
4.3.5 Collaborate with businesses that sell alcohol and/or marijuana to partner with TNCs/Taxis to offer discounted rides for patrons.	Ongoing	VZ Task Force, CLV Business Licensing, CLV Planning	TNCs/Taxis
4.3.6 Identify strategies for integrating art and culture into Vision Zero outreach and projects.	Ongoing	VZ Task Force	Office of Communications
 4.4 Prevent dangerous driving by leading by example.			
4.4.1 Establish safety targets and track performance for City-owned fleet.	Complete Year 2	VZ Task Force	City Fleet, City Risk Management
4.4.2 Work with CLV Fleet to recommend safety-related devices and designs for City vehicles.	Complete Year 5	VZ Task Force	City Fleet, City Risk Management, Tech Vendors
4.4.3 Use technology to track speed and other dangerous driving behaviors in City fleet vehicles.	Complete Year 5	VZ Task Force	Tech Vendors
4.4.4 Provide access to Defensive Driving transportation safety education for operators of City fleet vehicles.	Ongoing	VZ Task Force	City Fleet, City Risk Management






5

Enhance Communication, Transparency, and Accountability

Vehicle 1 Driver Factor

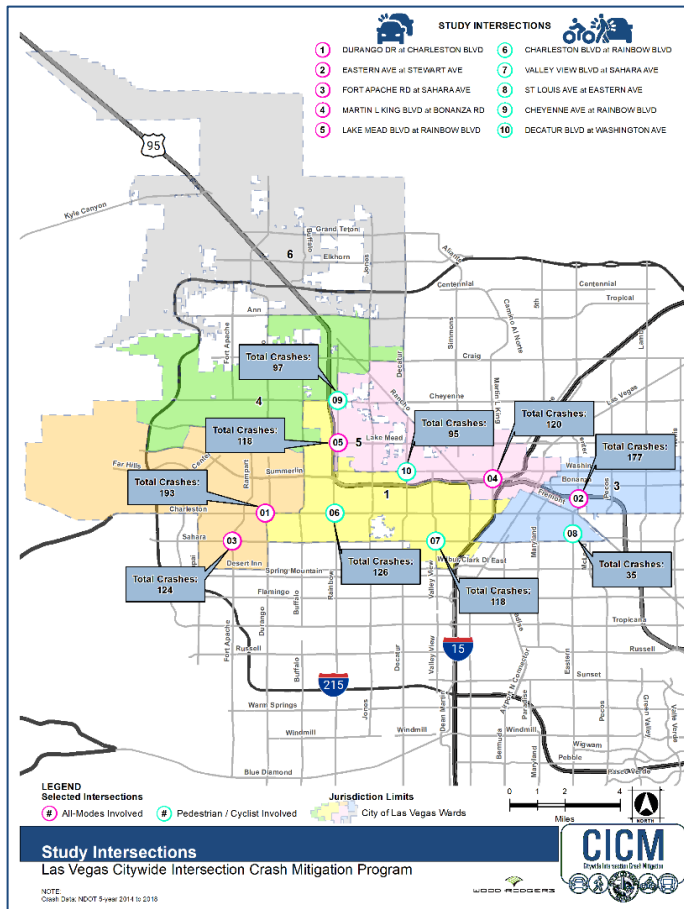


Strategies and Action Items

Action	Timeframe	Lead	Support
 5.1 Report Vision Zero efforts and effectiveness to the public.			
5.1.1 Maintain a Vision Zero website that shows progress on implementing the Action Plan.	4 Updates/Year	VZ Task Force	Office of Communications
5.1.2 Create a publicly available data dashboard to visually communicate transportation safety metrics, trends, and maps.	Complete year 5	VZ Task Force	Office of Communications
5.1.3 Provide publicly accessible ways for residents to contribute qualitative data regarding transportation safety and risks.	Complete Year 2	VZ Task Force	Office of Communications
5.1.4 Update procedures for responding to community transportation safety requests to make responses more transparent, consistent, and equitable.	Complete Year 5	VZ Task Force	CLV
5.1.5 Conduct Vision Zero presentations across the City.	Complete Year 5	VZ Task Force	-
 5.2 Improve the quality of relevant transportation safety data.			
5.2.1 Develop and implement a speed data collection program that covers a high percentage of the city street network, focusing on the HIN. Publish citywide existing conditions, slow zone information, and speed data collection results on the CLV Vision Zero site.	Complete Year 2	VZ Task Force	Office of Communications
5.2.2 Use speed data to proactively identify areas that need enforcement or engineering measures.	Complete Year 2	VZ Task Force	LVMPD, CLV
5.2.3 Explore traffic data collection technologies to supplement the City's collection efforts, including data on vulnerable users.	Complete Year 2	VZ Task Force	Tech Vendor
5.2.4 Develop data-driven citywide enforcement strategy.	Complete Year 5	VZ Task Force	LVMPD
 5.3 Conduct evaluation studies to determine impacts of the Vision Zero program.			
5.3.1 Conduct crash data analysis post project implementation to identify populations impacted and trends.	Ongoing	VZ Task Force	-
5.3.2 Document effects of all transportation infrastructure projects, including speed reduction along the HIN (if applicable), and share findings with the public.	Ongoing	VZ Task Force	-
5.3.3 Develop City-specific corridor and intersection crash rates, Crash Reduction Factors (CRFs), and Crash Modification Factors (CMFs).	Complete Year 5	VZ Task Force	NDOT
5.3.4 Study and evaluate potential for autonomous and connected vehicles to improve safety through vehicle-to-vehicle and vehicle-to-infrastructure data transmission to reduce crash frequency and severity.	Ongoing	VZ Task Force	Tech Vendor
5.3.5 Partner with the RTC Unified Planning and Work Program (UPWP) and/or the University of Nevada, Las Vegas (UNLV) to study the most effective form of traffic citation penalty.	Ongoing	VZ Task Force	CAO
5.3.6 Evaluate potential changes in LVMPD reporting for traffic crashes.	Ongoing	VZ Task Force	LVMPD

The strategies and action items developed for this Action Plan will help the City of Las Vegas continue their efforts to reach the goal of Vision Zero. For example, the specific improvement locations, identified in the Strategy 2 Action Items, were selected and prioritized based off a variety of factors, including:

- HIN
- CoC
- Wards
- Citywide Intersection Crash Mitigation Program (CICMP)



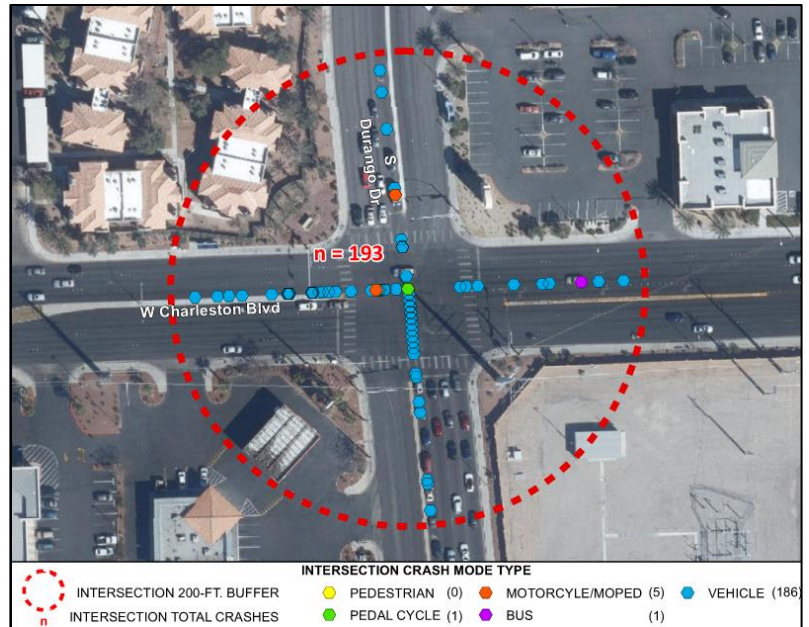
In 2021, the City of Las Vegas developed the CICMP to identify City intersections with the highest number of crashes and highest crash rates, with a particular focus on the most vulnerable users, including vehicle-pedestrian and vehicle-bicyclist involved crashes. The program utilized the FHWA's Systemic Approach to develop countermeasures within future intersection improvements and traffic operations improvements to prevent fatalities and serious injuries, and reach the goal of Vision Zero. Hence, the development of the CICMP led to the development of the *Vision Zero Action Plan*.

Similar to the City's *Vision Zero Action Plan*, the CICMP utilized data to develop safety recommendations. The CICMP analyzed crash locations, crash types, crash contributing factors, and crash severities over the course of multiple years; including developing FHWA Highway Safety Manual (HSM) crash modification factors (CMFs), benefit-cost ratios, and an implementation plan for the systemic safety improvements. The intersections analyzed for the CICMP included:

- ▶ **Crashes Involving All Transportation Modes:**
 - Durango Drive & Charleston Boulevard
 - Eastern Avenue & Stewart Avenue
 - Fort Apache Road & Sahara Avenue
 - Martin Luther King Boulevard & Bonanza Road
 - Rainbow Boulevard & Lake Mead Boulevard
- ▶ **Crashes Involving Pedestrians and Bicyclists:**
 - Rainbow Boulevard & Charleston Boulevard
 - Valley View Boulevard & Sahara Avenue
 - Eastern Avenue & St. Louis Avenue
 - Rainbow Boulevard & Cheyenne Avenue
 - Decatur Boulevard & Washington Avenue

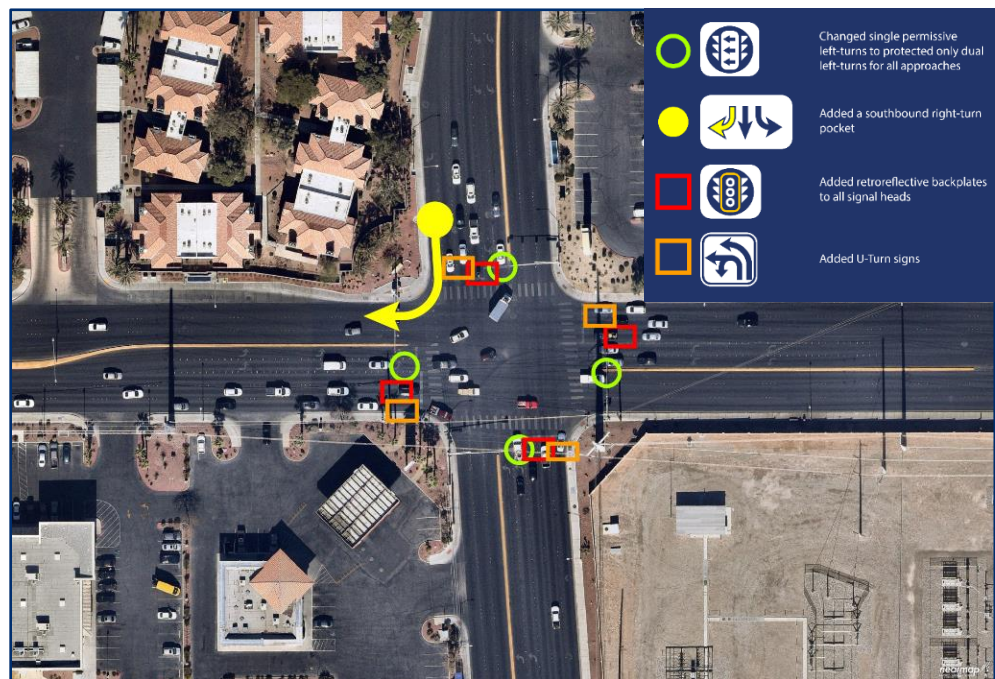
The crash data for each of the CICMP ten analyzed intersections, including the vehicle action/contributing factor, impairment factor, crash type, crash severity, and crash mode can be found in Appendix D.

The first intersection improvements constructed based off the CICMP recommendations were at the intersection of Durango Drive and Charleston Boulevard. This intersection had a total of 193 crashes with 6 serious injuries from 2014 to 2018, or an average of 39 crashes/year and 1.2 serious injuries/year.



Based off of the CICMP data-driven analysis, a variety of systemic safety recommendations were provided to the City, and the City implemented the following safety improvements at Durango Drive and Charleston Boulevard:

- Changed single permissive left-turns to protected only dual left-turns for all approaches
- Added a southbound right-turn pocket
- Added retroreflective backplates to all signal heads
- Added U-Turn signs



After the construction of the safety improvements, the number of crashes declined from 39 crashes/year to 6 – *a decrease of 33 crashes/year*. Additionally, *zero of the crashes resulted in a fatality or serious injury* – reaching the goal of Vision Zero at this intersection for the year 2021.

DEDICATION AND REMEMBRANCE

The Las Vegas Vision Zero Action Plan is dedicated to all the lives lost or seriously injured on Las Vegas roadways. If you would like to share your remembrance story, please go to <https://www.lasvegasnevada.gov/Vision-Zero>.

Lindsay Bennett (4/20/1990- 4/17/2009) was a former architectural student, UNLV Rebel Girl dancer, and inspiration to all those lucky enough to have met her. She died three days before her nineteenth birthday from fatal injuries sustained as the victim of a tragic head-on crash caused by an impaired driver. She was coming home that evening from a dance practice at UNLV.

Born and raised in Southern Nevada, she was educated at a young age about accountability and responsibility through her participation in church and school programs, organized youth sports, and years of dance instruction. Lindsay found happiness in all things big and small, including banana pancakes for breakfast; kisses on the forehead; acquiring her driver's license; car rides with her brother Andrew; leading her high school dance team to their first national title; voting in her first presidential election; and securing a spot on a collegiate athletic team. An honors graduate from Coronado High School (class of 2008), she was looking forward to earning a degree in architectural design. Lindsay cherished the time she spent with family and friends and believed in the importance of contributing to her community. This beautiful young woman was taken from us too soon, but her integrity and her love for life has inspired many.

Lindsay's Brother Andrew





Appendix A: Definitions

Vision Zero Definitions

Communities of Concern (CoC): Federal law requires transportation departments and public transit agencies to consider the needs of underserved communities by conducting environmental justice analyses. The departments and agencies must first identify the location and demographics of areas where these communities live, which are called "communities of concern" and are defined by census tracts or blocks. A basic starting point for most definitions of a community of concern is any geographic unit with a population of people of color and/or a population experiencing poverty that is higher than a certain threshold.

Complete Streets: Complete Streets are roadways designed to safely and comfortably accommodate all users, regardless of age, ability or mode of transportation. Users include motorists, cyclists, pedestrians, and all vehicle types, including public transportation, emergency responders, and freight and delivery trucks, among others. In addition to providing safety and access for all users, Complete Street design treatments take into account accommodations for disabled persons as required by the ADA. Design considerations for connectivity and access management are also taken into account with regards to non-motorized users of the facility.

Countermeasure: A countermeasure is an action taken to counteract a danger or threat. For example, FHWA's Proven Safety Countermeasures is a collection of countermeasures and strategies effective in reducing roadway fatalities and serious injuries.

Crash: Crashes are violent collisions, typically of one vehicle with another or with an obstacle. Crashes are identified as reported roadway crash data for the City of Las Vegas limits between 2015 and 2019, which was provided by NDOT's Traffic Safety Engineering Division.

Crash Modification Factor (CMF): A crash modification factor (CMF) is used to compute the expected number of crashes after implementing a countermeasure on a roadway or intersection.

Disadvantaged: Disadvantaged refers to a person in unfavorable circumstances, especially regarding financial or social opportunities. The U.S. Department of Transportation ("USDOT") developed a definition for disadvantaged communities ("DACs") to be utilized in connection with certain criteria under Justice40-covered grant programs. This definition comprises data for 22 indicators collected at the U.S. Census tract level, which are then grouped into six (6) categories of transportation disadvantage. The six (6) grouped categories of transportation disadvantage are as follows:

- Transportation access disadvantage
- Health disadvantage
- Environmental disadvantage
- Economic disadvantage
- Resilience disadvantage
- Equity disadvantage

Equity: *Equity is the quality of being fair and impartial. Equity focus areas are Census tracts that include an above average percentage of minority, senior, disabled, low-income, limited English proficiency populations, and which have no vehicle per household.*

Fatality: *A fatality is an occurrence of death by accident, in war, or from disease. It is a reported Type K (fatal) crash in NDOT's crash data reports that results in death within thirty (30) days of the crash.*

High Injury Network (HIN): *A network map of designated corridor-level segments where the highest concentrations of fatalities and serious injury crashes occur (usually designated as "KSI" crashes), typically over the course of the most recent five-year period of crash data.*

Impairment: *Comprises of being in physical control of a vehicle while either impaired by alcohol (drunk driving), while impaired by drugs (drugged driving), or while having illegal levels of drugs in the blood.*

KSI Crash: *KSI crashes refer to "Killed or Seriously Injured" crashes, which is a standard metric for safety policy, particularly in transportation and road safety. KSI crashes are documented as Type K (Fatal /Killed) or Type A (serious injury) in NDOT's crash data reports.*

Multimodal: *A transportation system consisting of roadways, buses, sidewalks, and bicycle facilities.*

Safe System Approach: *The Safe System Approach aims to eliminate fatal and serious injuries for all road users. It is a holistic and comprehensive approach that provides a guiding framework to make places safer for people. This is a shift from a conventional safety approach because it focuses on both human mistakes and human vulnerability, and designs a system with many redundancies in place to protect everyone.*

Safety: *Safety is the condition of being protected from or unlikely to cause danger, risk, or injury. Safety is the top priority of the USDOT. For FHWA, this means a road system that is designed to protect its users, through implementing life-saving programs and infrastructure safety solutions.*

Serious Injury: *Serious injury means bodily injury which involves a substantial risk of death; protracted and obvious disfigurement; or protracted loss or impairment of the function of a bodily member, organ, or mental faculty. A reported Type A (serious injury) crash in NDOT's crash data reports that results in an incapacitating injury. The injury prevents the injured party from walking, driving, or normally continuing the activities that he/she was capable of performing prior to the crash.*

Task Force: *A task force is a group of people who come together from diverse branches, positions, and points of view to facilitate the development of ideas, create new opportunities, answer questions, or solve a problem. The City of Las Vegas Vision Zero Action Plan Task Force consists of members of the City of Las Vegas Department of Public Works Transportation Engineering Division.*

Technical Advisory Committee (TAC): *A team of professionals who conduct resource inventories, evaluate the inventory data, and suggest management strategies that may meet the objectives identified by the Planning Committee. The City of Las Vegas Vision Zero Action Plan TAC consists of City of Las Vegas staff, elected officials, safety stakeholders, and the public.*

Vision Zero: *Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all.*

Vulnerable User: *Vulnerable users are those unprotected by an outside shield, as they sustain a greater risk of injury in any crash with a vehicle and are therefore highly in need of protection against such crashes. Vulnerable road users, such as bicyclists and pedestrians, are inherently less likely to survive a motor vehicle crash, particularly when speeding is a factor.*



Appendix B: Virtual Public Meeting and Survey Results

Virtual Public Meeting and Survey Results

The City of Las Vegas hosted a virtual public meeting and survey regarding the development of the *Vision Zero Action Plan*. The meeting served to update the public on the plan, and the survey allowed participants to provide input on priorities for improving safety. The meeting and the survey were open August 4th through August 18th, and the survey included an interactive map to provide feedback on potentially problematic traffic safety locations.

Key Findings

283 participants responded to the survey, of which 96% (271 people) use a personal vehicle as their main form of transportation, and 36% (103 people) responded that they feel “unsafe” or “very unsafe” when traveling in a personal vehicle around Las Vegas. 52% (148 people) responded that they feel or would feel very unsafe when traveling on a motorcycle. 53% (151 people) responded that they feel or would feel unsafe to very unsafe when walking, and an overwhelming 66% (187 people) responded that they feel or would feel unsafe to very unsafe when bicycling or using an e-bike.

Participants ranked the following as a “high priority” to “essential” for roadway improvement strategies:

- Reduce Impaired Driving: 90% response (22.26% high priority and 67.84% essential)
- Reduce Red Light and Stop Sign Running: 85% response (20.85% high priority and 64.31% essential)
- Reduce Distracted Driving: 82% response (25.80% high priority and 56.18% essential)
- Increase Visibility at Intersections: 77% response (33.92% high priority and 43.46% essential)
- Increase Enforcement: 76% response (22.61% high priority and 53.36% essential)

For those who participated in the survey, 71% replied that they or someone they are close to have been involved in a traffic crash in Las Vegas.

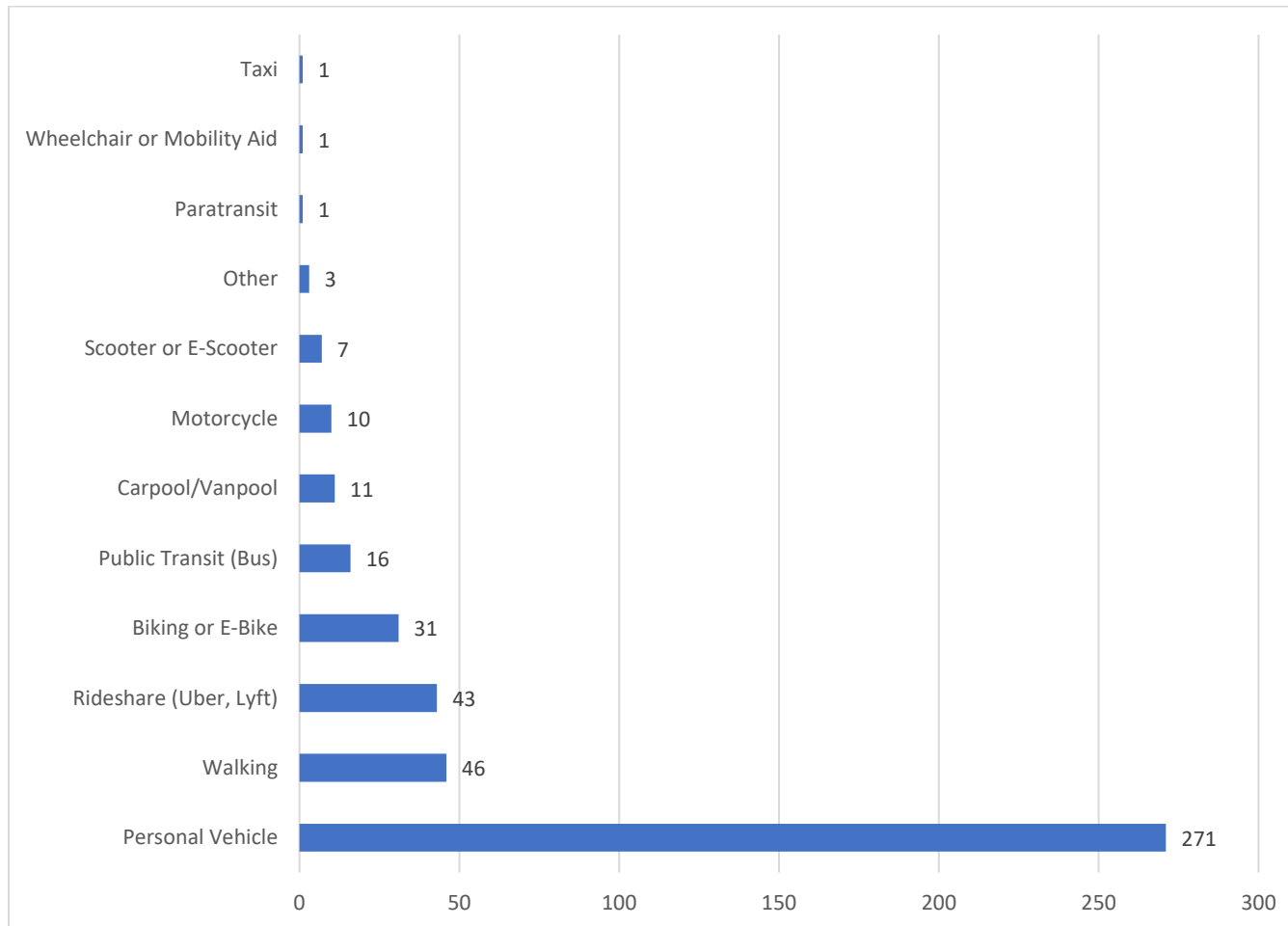
Additional Survey Comments

Respondents had an opportunity to share additional thoughts. Some shared specific feedback on local roadways and intersections, and others gave feedback on specific roadway improvement strategy needs in the community. 172 respondents provided comments and shared thoughts for the following concerns:

- Approximately 65 mentioned speeding as an issue
- Approximately 35 mentioned the need for traffic enforcement
- Approximately 27 mentioned DUI, impaired driving, and alcohol establishments as an issue
- Approximately 26 mentioned red light running as an issue and the need for automated enforcement

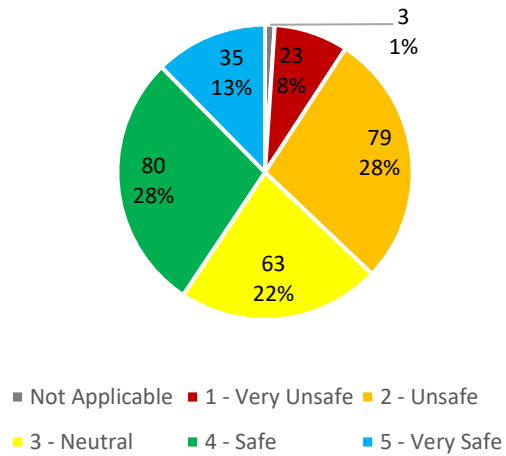
The following pages illustrate the findings of the survey.

Question 1: How do you typically travel around Las Vegas (select all that apply)?

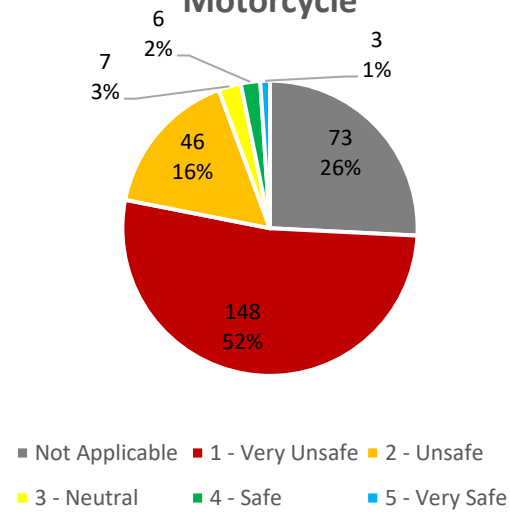


Question 2: How safe do you feel or would you feel using the following modes to travel around Las Vegas?

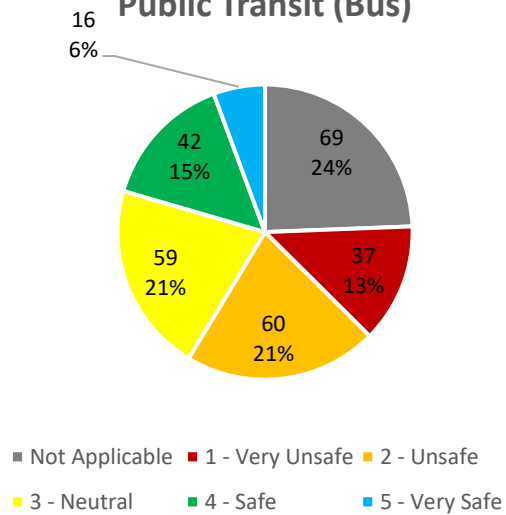
Personal Vehicle



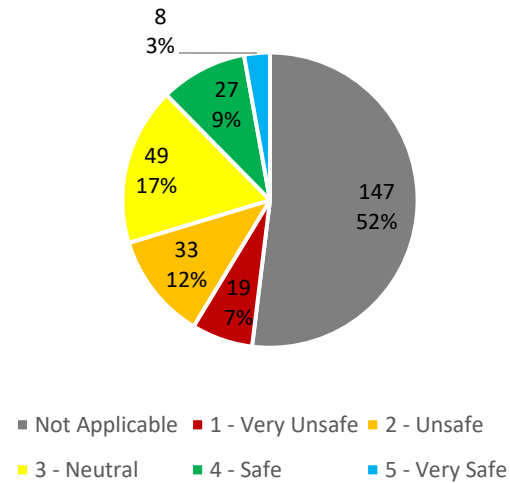
Motorcycle



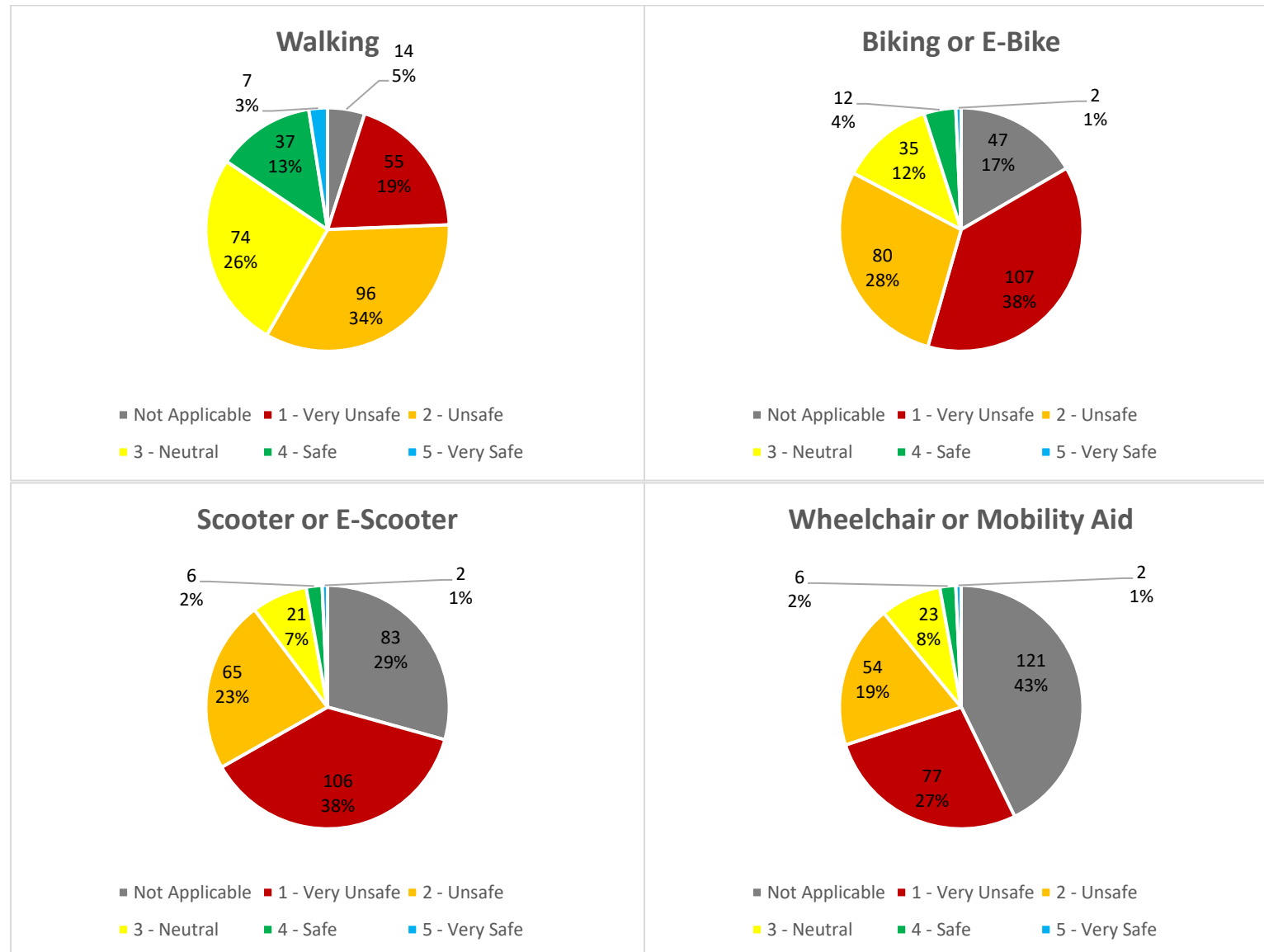
Public Transit (Bus)



Paratransit

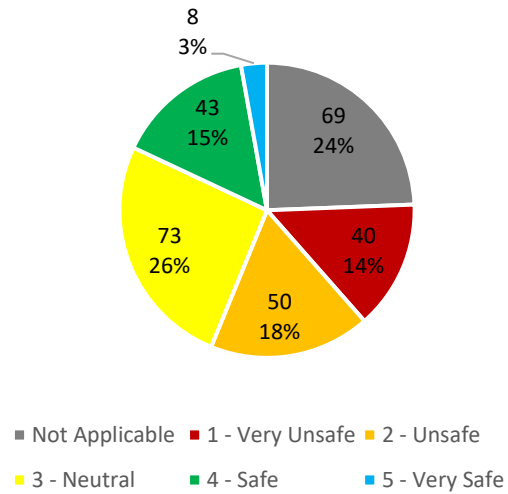


Question 2 (continued): How safe do you feel or would you feel using the following modes to travel around Las Vegas?

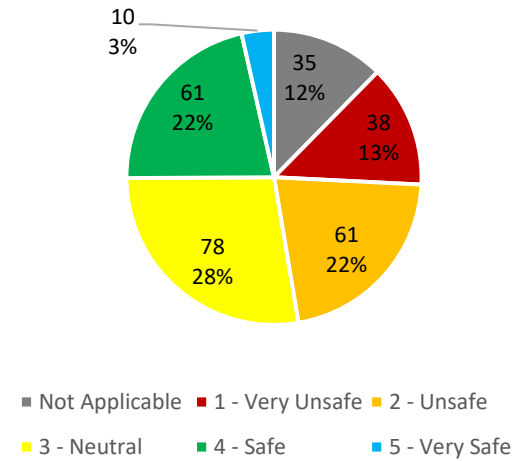


Question 2 (continued): How safe do you feel or would you feel using the following modes to travel around Las Vegas?

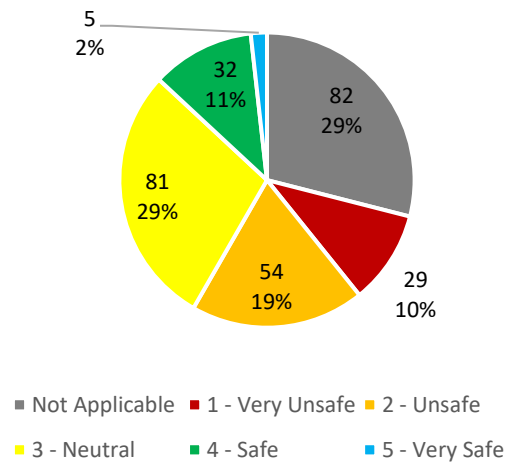
Taxi



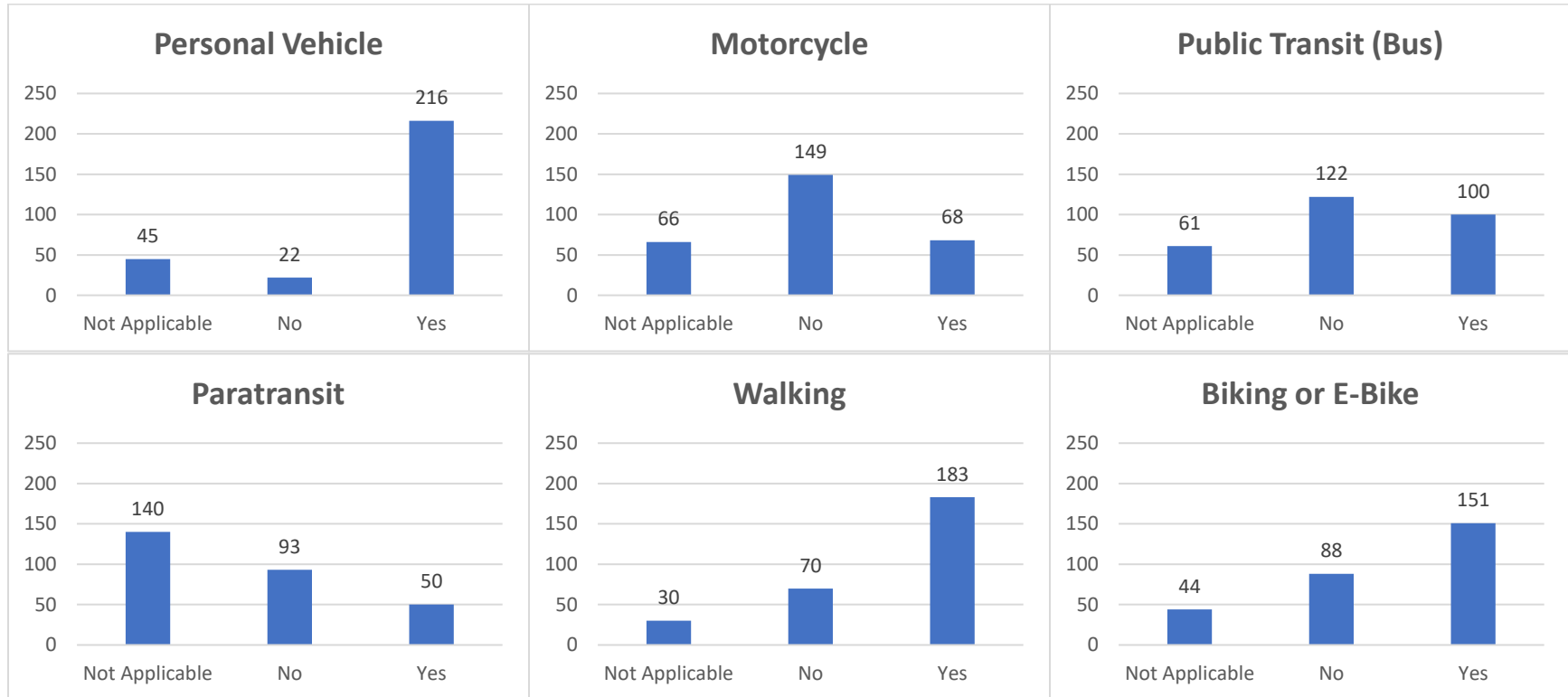
Rideshare (Uber, Lyft)



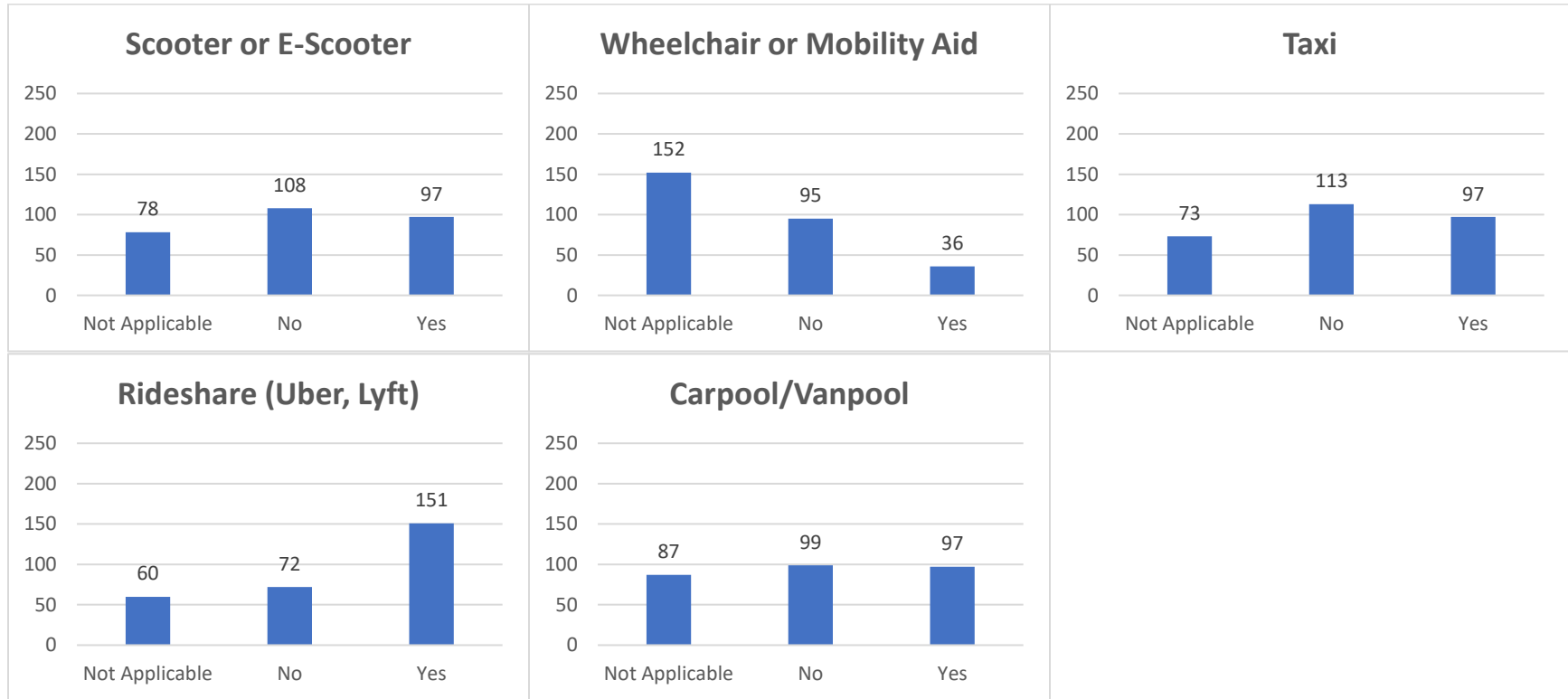
Carpool/Vanpool



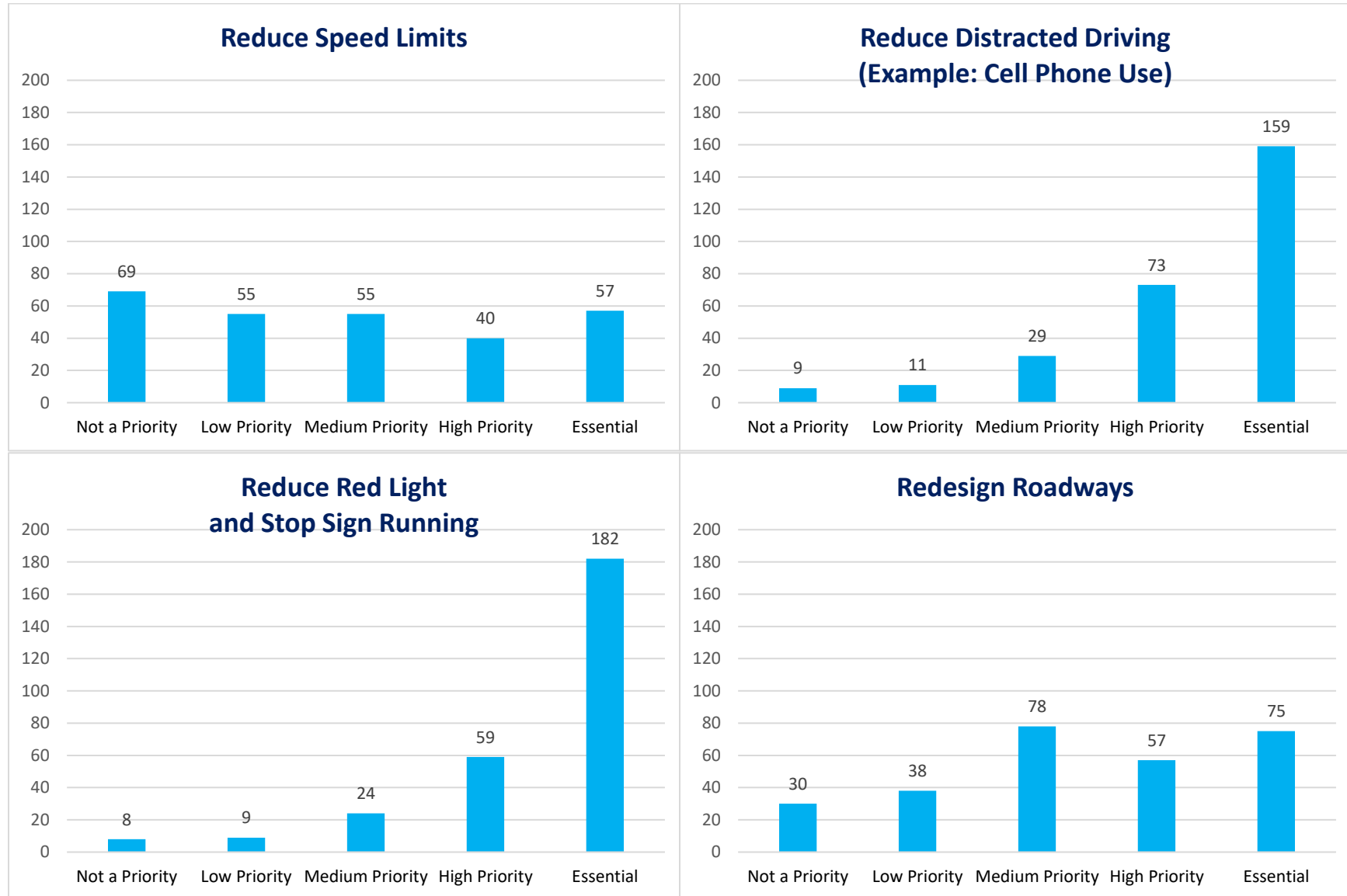
Question 3: Would you be more likely to use the following modes of travel if you felt safer?



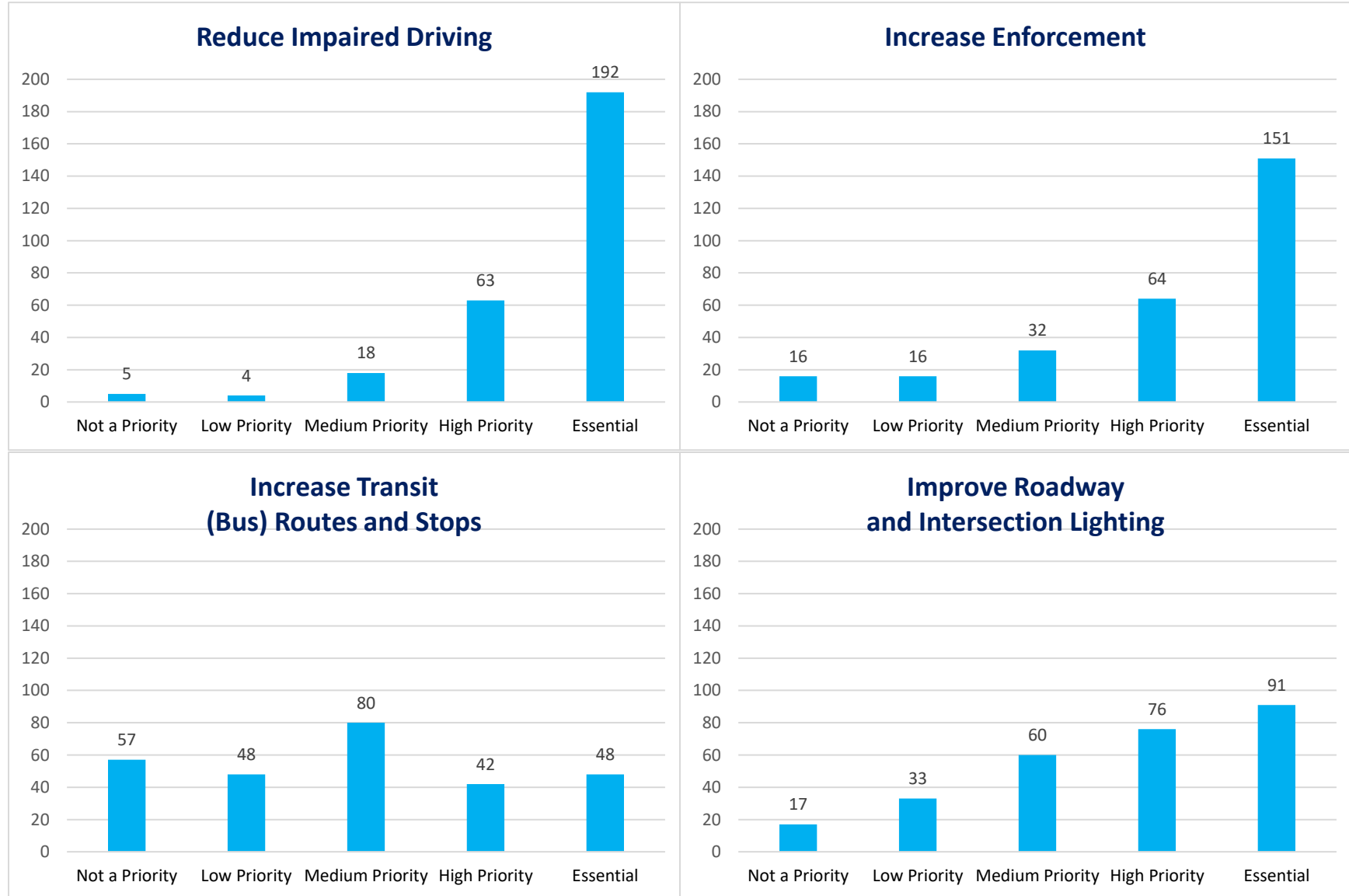
Question 3 (continued): Would you be more likely to use the following modes of travel if you felt safer?



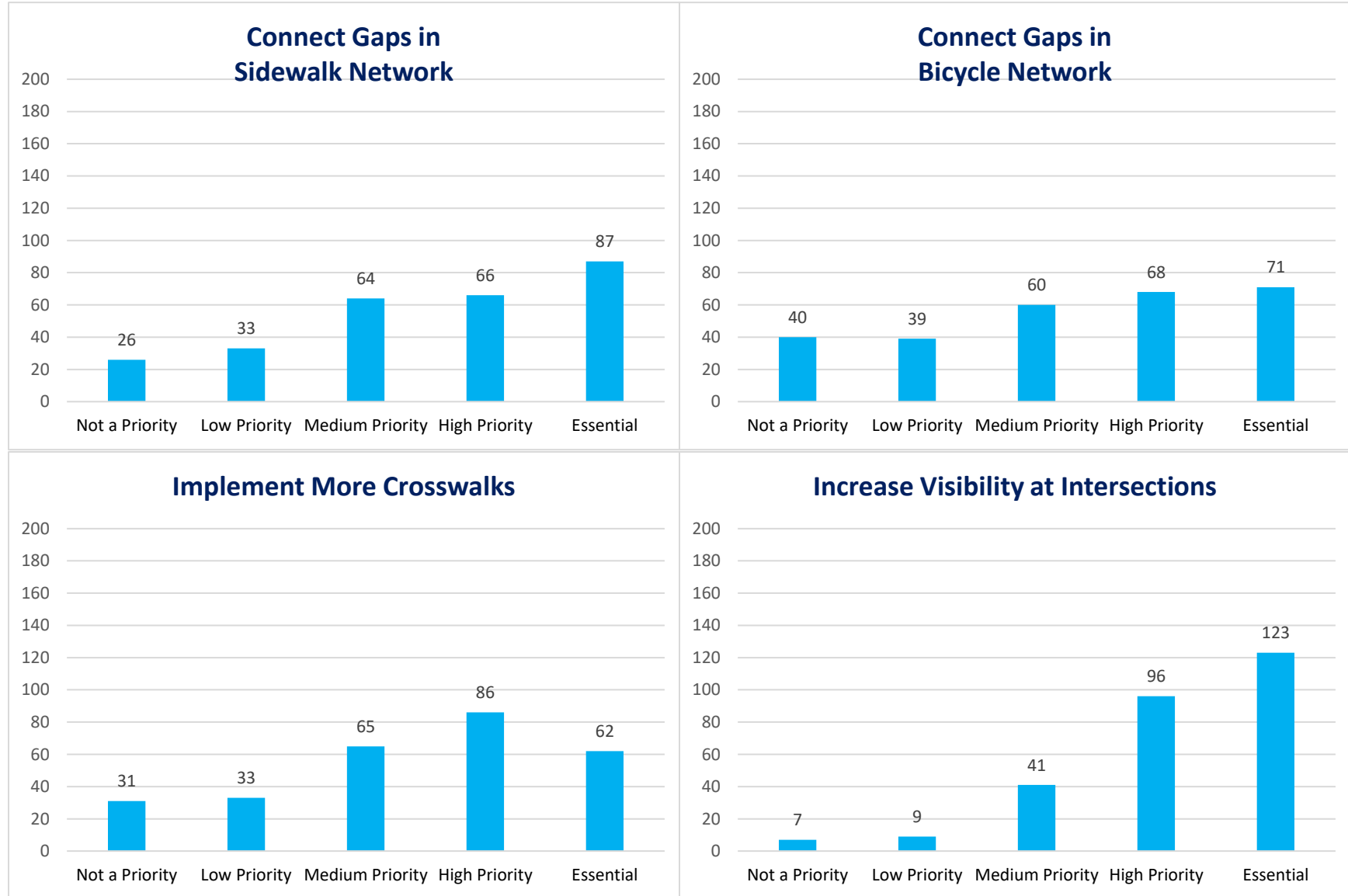
Question 4: How important is it for Las Vegas to implement the following to improve roadway safety for all travelers?



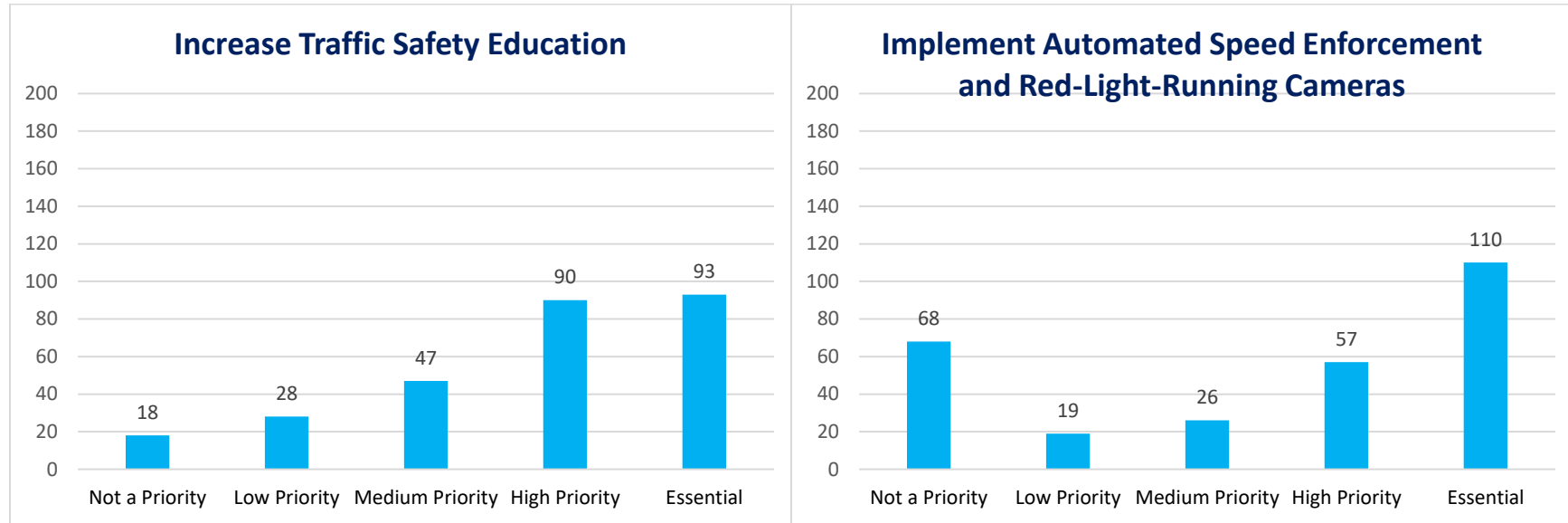
Question 4 (continued): How important is it for Las Vegas to implement the following to improve roadway safety for all travelers?



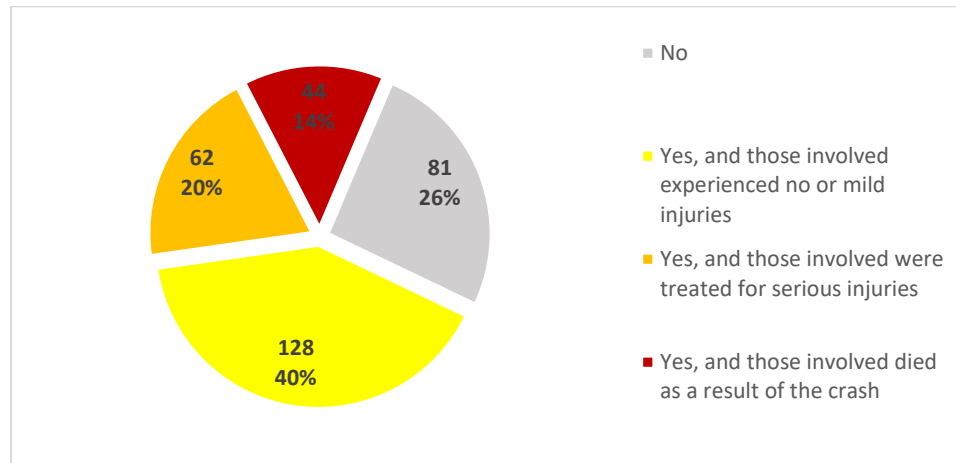
Question 4 (continued): How important is it for Las Vegas to implement the following to improve roadway safety for all travelers?



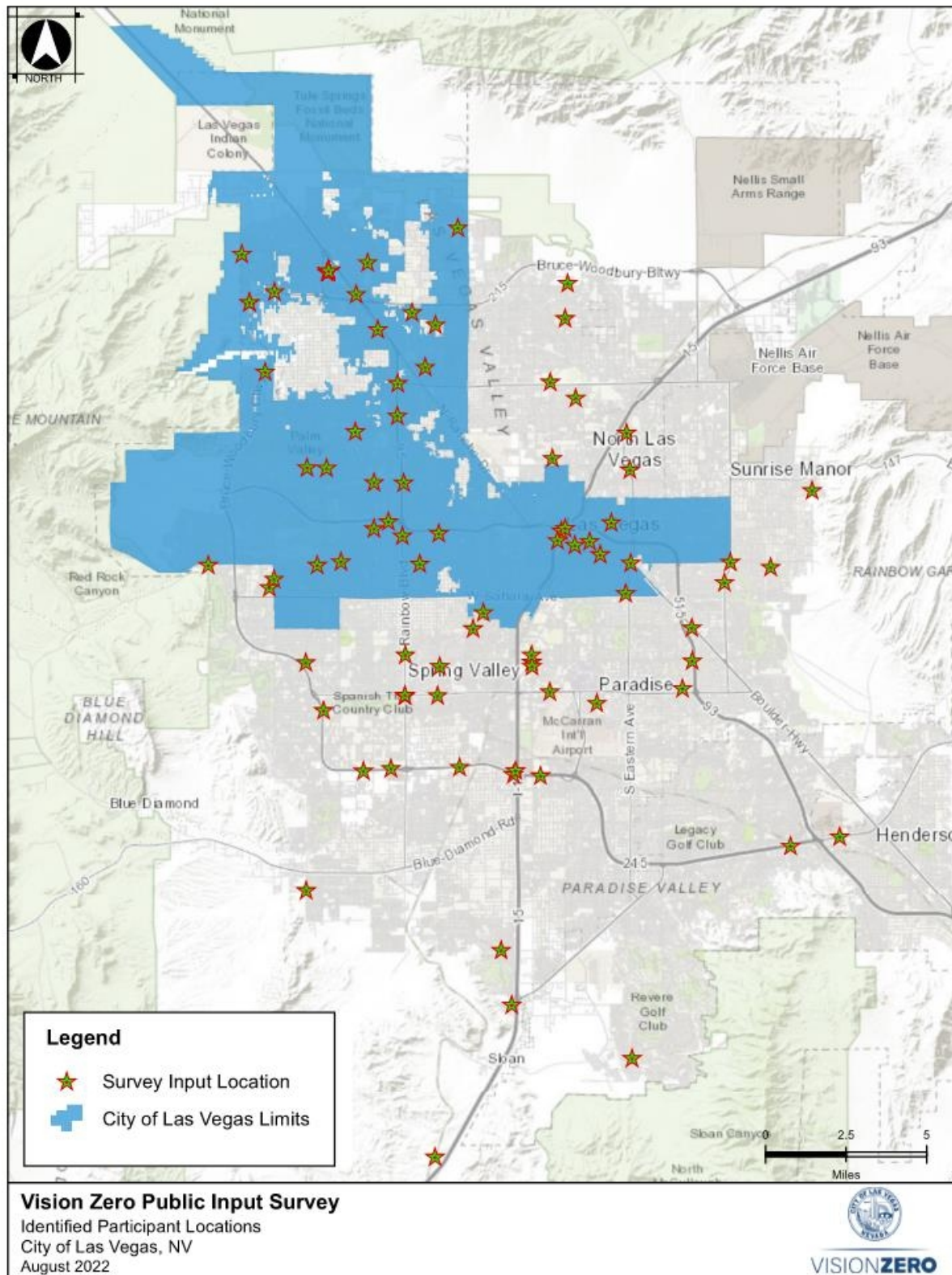
Question 4 (continued): How important is it for Las Vegas to implement the following to improve roadway safety for all travelers?



Question 5: Have you or someone you are close to ever been involved in a traffic crash in Las Vegas? If so, how serious was the crash (select all that apply)?



Survey Results Map



Appendix C: HIN and CoC Development

Appendix C – HIN & CoC Development

TECHNICAL MEMORANDUM - City of Las Vegas Vision Zero High Injury Network and Communities of Concern

Technical Supplement

This memorandum has been prepared to describe and summarize the analyses performed in the development of the High Injury Network (HIN) and Communities of Concern (CoC) for the City of Las Vegas (City) as part of the *Vision Zero Action Plan*. The document describes the data sources used, summarizes the crash data evaluation process, and explains the Geographic Information System (GIS) steps utilized to identify the HIN and CoC. Additionally, a summary of the City of Las Vegas existing conditions crash summary is provided.

Data Sources

Introduction

Several GIS data sources and datasets were obtained in the development of the City of Las Vegas *Vision Zero Action Plan*. The data sources and datasets include:

- The Nevada Department of Transportation (NDOT): latest crash data files, years 2015 to 2019
- City GeoCommons Hub website: Land use, traffic signal, speed limit, school, ward jurisdictions limits, street centerline file
- The Regional Transportation Commission of Southern Nevada (RTC): Transit stop and routes, pedestrian facilities, bicycle facilities, socio-economic data files, and the *Regional Bicycle and Pedestrian Plan* equity files¹
- Other data sources

Each of these datasets is discussed in more detail below.

NDOT Crash Data

Crash data is originally recorded by the Las Vegas Metropolitan Police Department (LVMPD or Metro) while responding to crashes involving a motor vehicle, and then the data is received and processed by NDOT before being available for public use. The crash data does not include crashes involving a single bicyclist, multiple bicyclists or a bicyclist and a pedestrian without having a reported motor vehicle involvement in the crash. Additionally, crashes where Metro or law enforcement is not called out to the scene are also not reported in the dataset. These data limitations result in underreporting of injury crashes for all modes; however, the extent of this underreporting in Las Vegas (and in most cities²) is unknown.

NDOT provided crash data for Southern Nevada for the years 2015 to 2019. The reported fatal and serious NDOT crash data was then used to identify and map corridors with the highest crashes in the development of the HIN. As reported in the NDOT dataset and defined by the U.S. Department of Transportation Federal Highway Administration (FHWA), the following KABCO injury severity classification scale and definitions were identified:

- K – Fatal injury: An injury that results in death within thirty (30) days of the crash. As part of this memorandum and HIN analysis, fatal crashes refer to type “K” fatal injuries.

¹ RTC of Southern Nevada Access 2050 Appendix K: Environmental Justice Analysis.

² City and County of Denver Technical Memorandum, 2017 and San Francisco’s Vision Zero High Injury Network: 2017 Update

Appendix C

- A – Incapacitating Injury: Any injury that prevents the injured party from walking, driving, or normally continuing the activities that he/she was capable of performing prior to the crash. Examples: Severe laceration, broken or distorted limbs, unconscious when taken from the crash scene; unable to leave crash scene without assistance. As part of this memorandum and HIN analysis, serious/severe injuries refer to type “A” incapacitating injuries.
- B – Non-incapacitating Injury: Any injury that is evident to any person other than the injured at the scene of the crash. Includes lumps on head, abrasion, minor lacerations. Examples: Pedestrian is unconscious on the ground after a crash, his/her clothes are torn and blood oozes from abrasions; when the ambulance arrives he/she is conscious, able to give information, and walks around; he/she goes to the hospital in the ambulance, but is able to sit up; there is no evidence that he/she is incapacitated.
- C – Possible/Claimed Injury: Any injury reported or claimed that is not a fatal, incapacitating, or non-incapacitating evident injury. Possible injury includes momentary unconsciousness, claim of injuries not evident, limping, complaint of pain, nausea, or hysteria. Possible injuries are those that are claimed or reported, or indicated by behavior, but not by wounds.
- O/PDO – Property damage only crashes.

The received crash data was then analyzed to include all crashes within a 250-foot buffer from City limits. Since the City does not have jurisdiction over interstates/highways, crashes not owned/maintained by the City were not included in the dataset. The crash data was used as the basis for identifying overall trends and in-depth analysis of crash injury type, crash mode, and crash contributing factors. The summary of findings from the crash data are provided online through a Dashboard (<https://www.arcgis.com/apps/dashboards/3a0c39f1edf74ef693ad083db2910d16>), which provides historical 5-year crash data and highlights the crash severity type, involved mode, and location of the reported crash. Summarized findings can be found in the Action Plan.

Statistics and analysis based on 2015 to 2019 NDOT crash data appear in the Action Plan as follows:

- Page(s) 2-3, Crash severity infographics
- Page 9, HIN map with fatality and serious injury statistics

City of Las Vegas GeoCommons Data Files

The analysis developed in identifying the distribution of crashes throughout the City’s roadway network included street centerline data (including the latest roadway inventory, provided as **Attachment “A”**), speed limit data, and City jurisdictional and ward boundary parcel data. City crashes were analyzed based on roadway type and other roadway variables. The City’s street centerline files served as the base for this GIS analysis. Functional class data within these files were used to identify roadway mileage, classification, and speed limit information.

The City’s roadway centerline files were incorporated into the HIN map and appear in the Action Plan on page 9:

RTC Data Sources

RTC data sources, including the Regional Transportation Plan: Access 2050 (RTP), were used as references for identifying and defining the CoC areas within the City of Las Vegas limits. The RTP outlines Southern Nevada’s future transportation investments by identifying projects that align with the plan goals, program funding, phasing for implementation, and community input. As part of the RTP’s environmental justice analysis section within the document, datasets including a regional map were developed and provided as geographic depictions of equity focus areas. The identified areas represent census tracts with a higher known need and typically embody low-income, minority neighborhoods which rely on walking, bicycling, or transit as their primary form of transportation.

Appendix C

Other Data Sources

Other data sources were used as references for the Action Plan, including the City of Las Vegas Mobility Master Plan (published May 2016) mode share to work data. Statistics were used to compare fatalities by mode with commute patterns (Vision Zero Action Plan, page 3).

Interpretations and Assumptions

Although the NDOT crash data used for this analysis are the most reliable source of crash information, the data does have limitations. By the time that the data is recorded in a crash record, it has undergone several rounds of interpretation (by the victim(s), then by the officer, and finally the Metro and NDOT analyst). Crash recordings are also limited by the data that is documented, as some fields are left blank at the time of the incident. Additionally, reported crash locations are limited by the recorded longitude and latitude in the dataset, where the report might list an alternative direction of where the crash occurred. However, these limitations do not lessen the value of the data provided in the crash reports, it simply highlights the complexity of the crash reporting process, and the need to identify additional improvements to the recording and processing data. For more information about the Nevada Crash Report Form, see [Nevada's Zero Fatalities](#) Analysis Report.

High-Injury Network Development & Methodology

Introduction

A HIN identifies roadway streets with a high concentration of traffic fatalities and serious injuries using the City's roadway network, NDOT's crash data, and GIS software to develop and create the graphical representation. This section of the technical memorandum describes the processes used to develop the HIN. It is divided into sections for each major component of the analysis as recommended in published peer city HIN development document reviews: inputs, key assumptions, core components, and GIS process.

Definition

Based on a review of the HIN methodologies collected³, the most basic definition of an HIN is a network of designated corridor-level segments where the highest concentrations of fatalities and serious injury crashes occur (usually designated as "KSI" crashes), typically over the course of the most recent five-year period of crash data. The HIN represents a defined prioritized subset of the overall transportation network. HINs by themselves do not assess whether a location or street is dangerous, but rather identify where there is a greater opportunity for serious injury or death at a location.⁴

Review of National HIN Methodologies

The development of the HIN was based on publicly available HIN methodology recommendation documents and California Statewide guidance publications. The review of existing plans, policies, and documented methodologies of peer city HINs include the following:

- Lessons Learned from Development of Vision Zero Action Plans, U.S. Department of Transportation Federal Highway Administration, January 2021
- Recommendations for California Statewide Guidance on High Injury Networks, September 2021
- Technical Supplement – Denver Vision Zero Action Plan, December 2017
- Using Data to Craft a Safety Narrative: High Injury Networks - Collision Concentration Corridors in Los Angeles County Presentation, Southern California Association of Governments, June 2021
- Vision Zero High Injury Network: 2017 Update – A Methodology for San Francisco, California, July 2017
- Vision Zero High Injury Network Methodology – City of Philadelphia, October 2017

³ Recommendations for California Statewide Guidance on High Injury Networks, September 2021

⁴ Southern California Association of Governments. "Regional High Injury Network." SCAG, n.d. <https://scag.ca.gov/regional-high-injury-network> (Accessed March 20, 2022).

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Inputs

Two main sources of GIS data were used to develop the HIN: NDOT 2015 to 2019 crash data and the latest 2022 City of Las Vegas centerline roadway network. The NDOT dataset was used to determine crashes within the City's jurisdictional limits and was then modified to account for serious and fatal crashes by the crash mode type (i.e. pedestrian or bicyclist involvement). The crash dataset was then transposed onto the City's roadway network to identify the corridors/segments with the highest fatal and serious injury crashes.

Key Assumptions

Crashes in the NDOT crash database were assigned to the nearest intersection node in the City's street centerline data. It should be noted that placement of the crash point in the source data could have resulted in a crash being assigned to an incorrect intersection leg or distance from the actual crash location for a miniscule amount of the dataset. Moreover, with the omission of highway/freeway facilities, intersections located at ramps were modified to only include crashes within 250-feet of the intersection node. Finally, the analysis excluded the local streets and alleys from the analysis. This process is assumed to have no effect on the overall outcome of the analysis.

HIN Core Components

Based on a review of the HIN methodologies surveyed and collected, there are several core components that nation-wide jurisdictions had in common and were used as part of the City's analysis. These include:

- 5-years of crash data
 - Majority of HINs used three to five years of crash data to determine locations with higher frequency. Using more years of data could capture irrelevant information, conversely using fewer years of data may result in difficulty producing the network.
- Corridor-level focused analysis
 - Majority of HINs analyzed were developed at the corridor level. Certain jurisdictions develop complementary high injury intersections around customized buffered areas. The cities of San Francisco and Seattle consider both types of analysis.
- Roadway facility types
 - Majority of HINs chose not to incorporate freeways/highways, local roads, and alleys in their network due to the jurisdiction's inability to set speeds on highway specific facilities. Additionally, KSI crashes seldom occur on low-speed traveled local neighborhood roads or alleys.
- Consideration of modes
 - Majority of HINs incorporate crashes by all modes. The analysis included crashes that involve pedestrian, bicyclists, automobiles.
- Weight assignment, such as assigning more weight to crashes involving certain populations
 - Majority of HINs included additional weight assignments to highlight inequities or certain considerations. Most HINs assign weights specific to KSI crashes involving vulnerable users (e.g. bicyclists, pedestrians, disadvantaged communities, etc.). As an example, the Los Angeles County applied a 0.5-times factor to crashes resulting in a fatality, and a 0.25-times factor to crashes resulting in a KSI crash involving vulnerable users.
- Normalization
 - Many jurisdictions normalize crashes by mile or segment length. As an example, the City of San Francisco considered the number of injuries per mile for network eligibility (e.g., KSI per mile).

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- Establishing overall thresholds, determines the cut-off for including a roadway on the HIN
 - After normalizing crashes, jurisdictions establish a threshold, which can be defined as a percentage of network which will be categorized as a priority.³ By establishing thresholds, an agency is able to implement countermeasures on a specific percentage of corridors depending on the availability of funding and other additional factors. Among the HINs analyzed, thresholds vary on how they are established. For example, jurisdictions can use thresholds based on the volume of collisions that take place on a segment. The Los Angeles County uses a threshold for a half-mile segment that contained 3 or more KSI crashes per mile. Additionally, jurisdictions can make adjustments to ensure HINs are continuous networks by merging together roadway fragments that have met the threshold for crashes but were not of sufficient in the minimum segment length.
- Equity
 - Communities and jurisdictions across the nation use diverse terminology to refer to high need areas including, but not limited to: environmental justice areas, communities of concern, disadvantaged communities, equity priority communities, priority focused communities, etc. Majority of HINs take equity into account by documenting how much of the proposed HIN falls into communities of concern. The following section of this technical supplement defines the methodology used to develop the City of Las Vegas's CoC areas based on the RTC's "environmental justice analysis" publication in the *Access 2050 RTP*.
- Maintenance
 - Many jurisdictions re-evaluate HINs when relevant roadway changes occur, such as speed limits, land use characteristics, or other data changes. It is important to remember that keeping a HIN updated maintains its effectiveness. As recommended, jurisdictions may consider refreshing their HIN with updated data every three to seven years, and may additionally introduce refinements, including data improvement and changes in the HIN post-improvements.²

GIS Analysis Process

The data analysis followed five major steps:

1. Collection of Datasets
 - Crash Data and Roadway Network
2. Data Cleaning
 - Categorize by crash mode involvement and street facility
3. Crash Data Analysis
 - Summarize and develop statistics for crashes along each corridor segment
4. Filter for high crash locations
 - Provide a weighted assignment score
 - Normalize segments based of corridor length
5. Finalize the HIN
 - Prioritized corridors based on established thresholds

The development of the HIN was created using the crash data, roadway network, and GIS software. The NDOT crash data was joined spatially to the City roadway network, allowing for analysis at the roadway corridor segment level. Crash densities were then developed for each roadway segment, and fatal and serious/severe injuries crashes were weighted. Based on evaluation of various peer city and county HINs, a weighted factor was applied to crashes resulting in a fatality and KSI crashes involving pedestrian and cyclist. The added factor included a 0.5-times multiple for crashes resulting in a fatality and a 0.25-times for crashes involving pedestrians and cyclist. In alignment with the Los Angeles County's "Collision Concentration Corridor Priority Score", these weighted segments were then ranked based on their weighted KSI per mile. Then roadways with the highest weights were added together to identify the roadway segments in the City's network that contribute to the largest number of KSI crashes. The priority scores for the segments were normalized by dividing by the total segment length. The minimum segment length for any location experiencing three (3) or more KSI collision was assumed to be a half-mile. Roadway segments with the highest weights were aggregated to create a set of corridors that contribute to the most

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KSI crashes. Segments were extended if the adjacent road segments met the three (3) or more KSI crashes per half-mile threshold. The length of the segments and total KSI crashes along the segments were summed. **These segments accounted for 77 percent of the KSI crashes along almost 11 percent (or 148 miles) of the City roadway network.** The result is an initial HIN for the City of Las Vegas's roadway network. The HIN is provided as **Attachment "B"**, and the detailed GIS analysis process steps taken in the development of the HIN map are provided as **Attachment "C"**.

Communities of Concern Methodology

The defined Vision Zero CoC areas for the City builds on the published RTC's Equity Composite web application methodology, that serves as a reference of current health and equity factors in Southern Nevada. The web application map and Equity Composite Score Methodology are located in the *RTC's Access 2050 RTP* Appendix K: Environmental Justice Analysis plan (Plan). A detailed description of the steps taken by the RTC in defining the areas is provided as copy of Appendix K as **Attachment "D"** and the web application model representation of the census tract areas can be found in the following website link: <https://arcg.is/1n8Dm0>. The processes used to develop the CoC for the defined area in the City limits are summarized on the following pages.

Equity

According to the RTC's Access 2050 RTP Plan, "Approximately 13% of Southern Nevada's population lives at or below the poverty level, and 74% of adults over age 25 have less than a Bachelor's Degree-level education." Regionally, an average of 8% of households do not have a car, which is overwhelmingly the primary mode of transportation to work in the region.⁵

The RTC's RTP published Equity Focus Areas census tracts developed to include areas that have a low equity/ high inequity composite score based on Title VI factors and the inclusion of displaying households with no vehicles. Title VI are census tracts that include an above average percentage of minority, senior, disabled, low-income, and limited English proficiency populations.

Moreover, the RTP includes five sub-maps based on census-tract data that were used in the development of the composite score. The census-tract data and defined population groups are as follows:

- Low Income: Low-income means a person whose median household income is at or below the Department of Health and Human Service (HHS) poverty guidelines for 2017. 2017 poverty guideline was \$12,060 per one person in a family/household, and adding \$4,180 for each additional person. 2022 poverty guideline was \$13,590 per one person in a family/household, adding \$4,720 for each additional person.
Source: 2013-2017 American Community Survey, 5-Year Estimates, Table C17002, "Ratio of Income to Poverty Level in the Past 12 Months"
- Minority: Non-white means a person who is Black / African American, Hispanic, Asian American, American Indian, or Alaskan Native. White refers to a non-Hispanic Caucasian.
Source: 2013-2017 American Community Survey, 5 year Estimates, Table B02001, "Race"
- Limited English Proficiency: Limited English proficiency means a person who speaks English "less than very well".
Source: 2013-2017 American Community Survey, 5 year Estimates, Table B16004, "Age by Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over"
- Seniors: Senior means a person who is at 65 years of age or older.
Source: 2013-2017 American Community Survey, 5 year Estimates, Table B01001, "Sex by Age"

⁵ Access 2050, Regional Transportation Commission of Southern Nevada, January 2021

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- **People with Disabilities:** People with disabilities refers to individuals with one or more of the following: hearing difficulty, vision difficulty, cognitive difficulty, ambulatory difficulty, self-care difficulty, and independent living difficulty.

Source: 2013-2017 American Community Survey, 5 year Estimates, Table S1810, "Disability Characteristics"

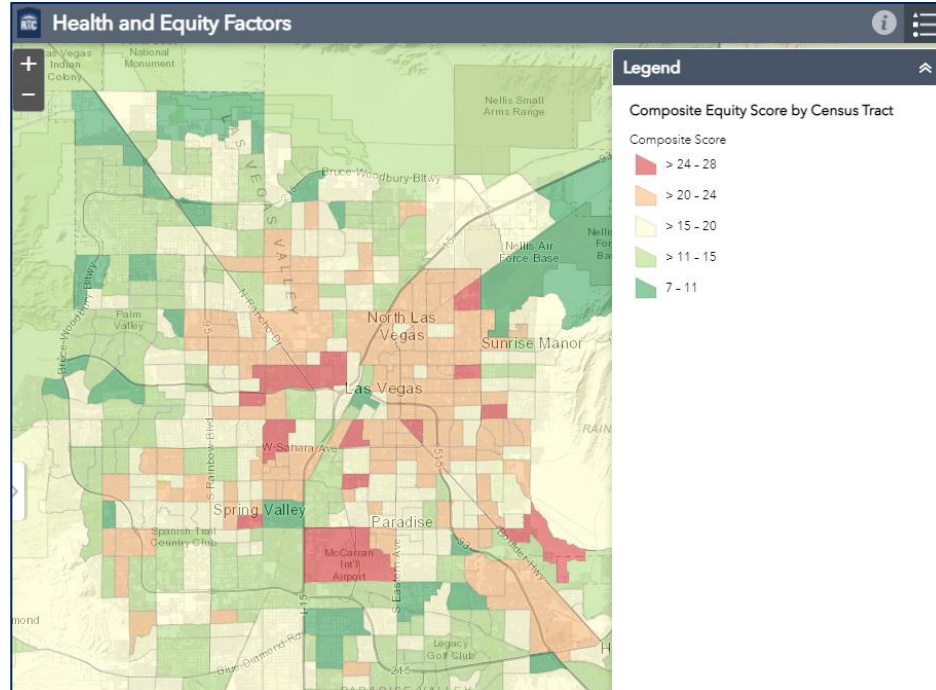
As reported in the Access 2050 RTP and displayed in the WebApp map (screenshot displayed below), the analysis of the Composite Equity Score summary consisted of:

The analysis utilized quartiles for each of the health and equity factors, so that census tracts were assigned a score for each variable based on the percentile the data represents. For tracts that were located in the 75th percentile, a score of 1 (lowest) was assigned; census tracts located in the 25th percentile were assigned a score of 4 (highest). The scores for all indicators were combined into a composite score, ranging from 7 (lowest score) to 28 (highest score).

Based on this analysis, score rankings are defined as:

- **Low Score:** Areas with lower scores generally represent more affluent neighborhoods, where access to an automobile is more readily available, and where poverty levels are low.
- **High Score:** Tracts that scored higher have a higher identified need and typically represent low-income, minority neighborhoods who rely more heavily on bicycling, walking, or transit as their primary form of transportation.

Full detailed methodology and steps taken in the development of the RTC scoring ranges used to determine the location and concentration of the identified population equity factors is provided as Appendix K in the Plan and provided as **Attachment "D"** of this memorandum.



Composite Score Groups: percentage of minority, senior or youth, disabled, low-income, limited English proficiency populations, and no vehicle access households	Low Score Ranking: 7 - 20	High Score Ranking: 21 - 28
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As the regional Metropolitan Planning Organization (MPO), the RTC continues to “encourage RTP project sponsors to consider the transportation needs of Title VI population groups in comprehensive master plans in order to develop an equitable, sustainable transportation system for all.” Therefore, for the development of the Vision Zero HIN, the census tracts identified in the high scoring Composite Equity Score map were identified as the base of the defined CoC in the City’s jurisdiction.

GIS Analysis Model: Process to Allocate Communities of Concern to the City’s Network

The analysis followed four steps:

1. Extraction of data from the Composite Equity Score methodology
 - Downloaded dataset
 - Added dataset to the HIN map layers
2. Data Cleaning
 - Buffered City jurisdiction census parcel tract limits
3. Defined CoC
 - Applied a threshold and included only parcels with a Composite Score of 21 or higher
4. Finalized CoC
 - Overlaid HIN network on CoC parcels

The development of the CoC was created using the RTC’s Composite Score census tract dataset, City’s parcel information, and GIS software. The RTC data was downloaded and joined spatially to the City’s jurisdictional limits, allowing for the extraction of boundary limits meeting the defined score for a parcel qualifying as a CoC. The categorized ranking above 21 was set as the threshold for parcels being classified/categorized as a CoC (parcels with a score of 21 to 28 are considered “high ranking” in score, and therefore defined for this analysis as a CoC). The HIN features (lines) were then buffered by 100-feet to cover parcels adjacent to the street centerline. The buffered segments were assigned as a COC corridor if captured based on the proximity “Select by Location” feature in ArcMap. Based on the coverage of the defined CoC layer, a summation of the total acres in the City jurisdictional limits was calculated. These results were joined to the original buffered HIN layer and added to the HIN as a field attribute. The coverage accounted for 58 percent of the HIN being within the CoC, additionally **roughly 33 percent of the City roadway network falls within the CoC areas**. The CoC is graphically represented and provided as **Attachment “B”**, which also displays the HIN and its coverage.

U.S. Department of Transportation Disadvantaged Community Definition Methodology

At the time of the finalization of the City’s Action Plan, the U.S. Department of Transportation (USDOT) released census tract information identifying disadvantaged communities. According to the USDOT definition of a disadvantaged community, the identified disadvantaged Census Tracts needed to exceed the 50th percentile (75th for resilience) across at least four of six transportation disadvantaged indicators, which are as follows:

- Transportation Access Disadvantage: identifies communities and places that spend more, and take longer, to get where they need to go.
Source: *CDC Social Vulnerability Index, Census America Community Survey, EPA Smart Location Map, HUD Location Affordability Index*
- Health Disadvantage: identifies communities based on variables associated with adverse health outcomes, disability, as well as environmental exposures.
Source: *CDC Social Vulnerability Index*
- Environmental Disadvantage: identifies communities with disproportionate pollution burden and inferior environmental quality.
Source: *EPA EJ Screen*
- Economic Disadvantage: identifies areas and populations with high poverty, low wealth, lack of local jobs, low homeownership, low educational attainment, and high inequality.
Source: *CDC Social Vulnerability Index, Census America Community Survey, FEMA Resilience Analysis & Planning Tool*

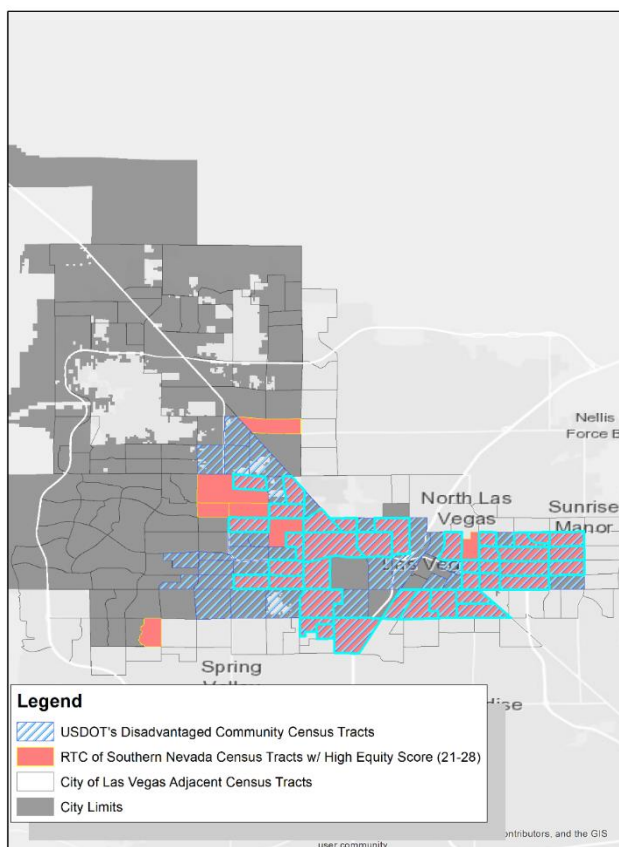
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- Resilience Disadvantage: identifies communities vulnerable to hazards caused by climate change.
Source: FEMA National Risk Index
- Equity Disadvantage: identifies communities with a high percentile of persons (age 5+) who speak English "less than well."
Source: CDC Social Vulnerability Index

Each of the six disadvantage indicators were assembled at the Census Tract level using data from the CDC Social Vulnerability Index, Census America Community Survey, EPA Smart Location Map, HUD Location Affordability Index, EPA EJ Screen, FEMA Resilience Analysis & Planning Tool, and FEMA National Risk Index. A web application model representation of the census tract areas was also provided and can be found in the following website link:

<https://usdot.maps.arcgis.com/apps/dashboards/d6f90dfcc8b44525b04c7ce748a3674a>. The online map tool contains the underlying data and disadvantage theme indicators for the *Justice40* Initiative. According to the USDOT, *Justice40* Initiative intends to confront and address decades of underinvestment in disadvantaged communities. The initiative will bring resources to communities most impacted by climate change, pollution, and environmental hazards. Steps taken to identify census tracts that could be considered transportation disadvantages are provided with copy of the *Justice40* Initiative as **Attachment "E"**.

The map below overlaps the RTC's defined CoC coverage and USDOT's interim definition to identify disadvantaged communities for the *Justice40*-covered programs.



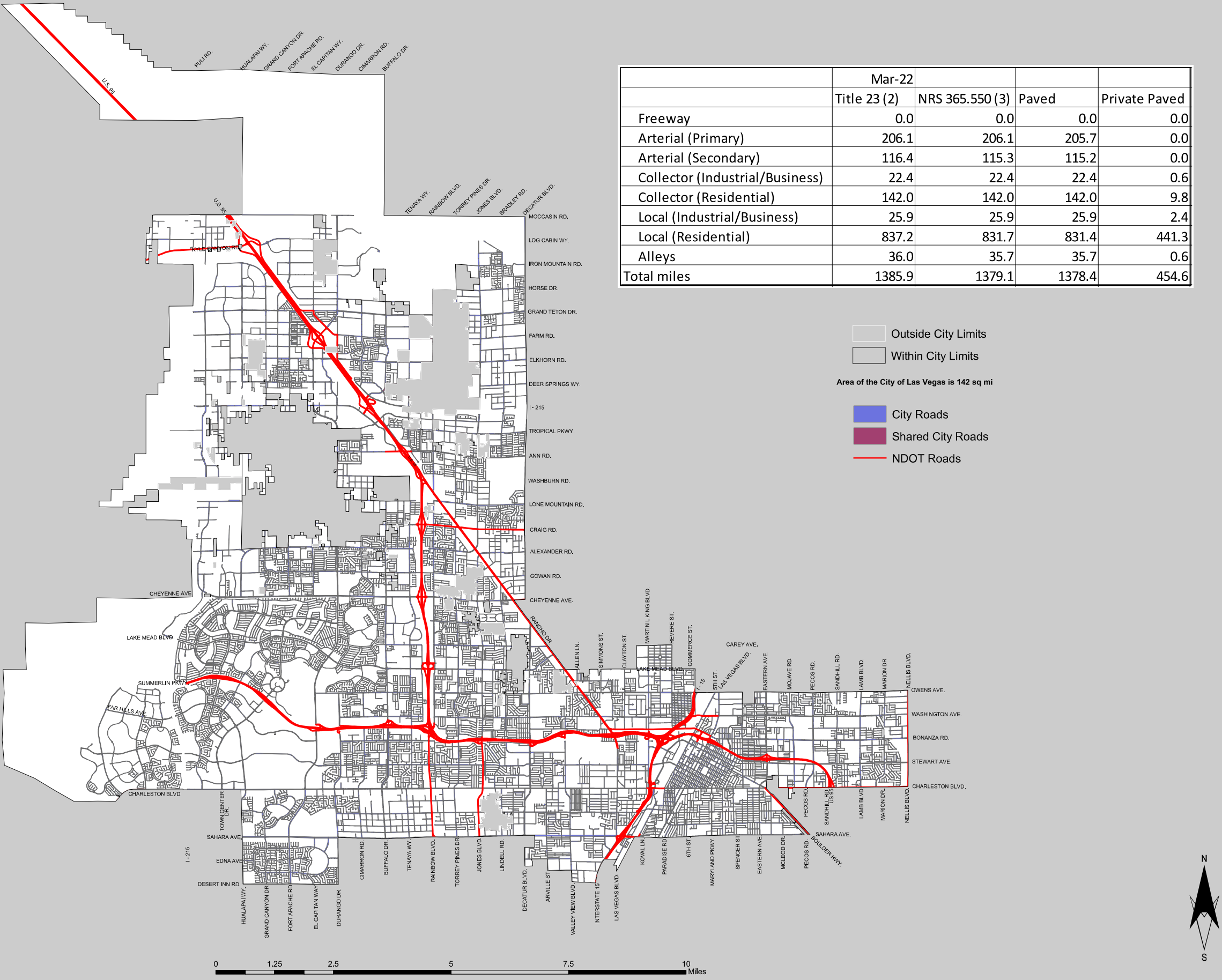
As shown on the map, 38 of the 67 USDOT census tracts within the City's limits are also covered by the RTC's defined Communities of Concern.



ATTACHMENT “A” – 2022 CITY ROADS

2022 Nevada Department of Transportation Certification of Public Road Mileage
City of Las Vegas

	Mar-22			
	Title 23 (2)	NRS 365.550 (3)	Paved	Private Paved
Freeway	0.0	0.0	0.0	0.0
Arterial (Primary)	206.1	206.1	205.7	0.0
Arterial (Secondary)	116.4	115.3	115.2	0.0
Collector (Industrial/Business)	22.4	22.4	22.4	0.6
Collector (Residential)	142.0	142.0	142.0	9.8
Local (Industrial/Business)	25.9	25.9	25.9	2.4
Local (Residential)	837.2	831.7	831.4	441.3
Alleys	36.0	35.7	35.7	0.6
Total miles	1385.9	1379.1	1378.4	454.6



DATE: 2/28/2022

The City of Las Vegas makes no warranty, representation, or guarantee of any kind regarding either any maps or other information provided herein or the sources of such maps or other information. Although best efforts were made to ensure the accuracy of the data the City of Las Vegas assumes no liability either for any errors, omissions, or inaccuracies in the information provided regardless of the cause of such or for any decision made, action taken, or action not taken by the user in reliance upon any maps or information provided herein.

Source data: City of Las Vegas
Clark County Assessors Office
Nevada Department of Transportation



ATTACHMENT “B” – HIN AND COC MAP



City of Las Vegas High Injury Network


The Vision Zero High Injury Network (HIN) guides the city's investments in infrastructure and programs, and ensures that Vision Zero projects support those most in need.


77%
of Las Vegas' severe and fatal traffic injuries occur on just

11%
of our streets.

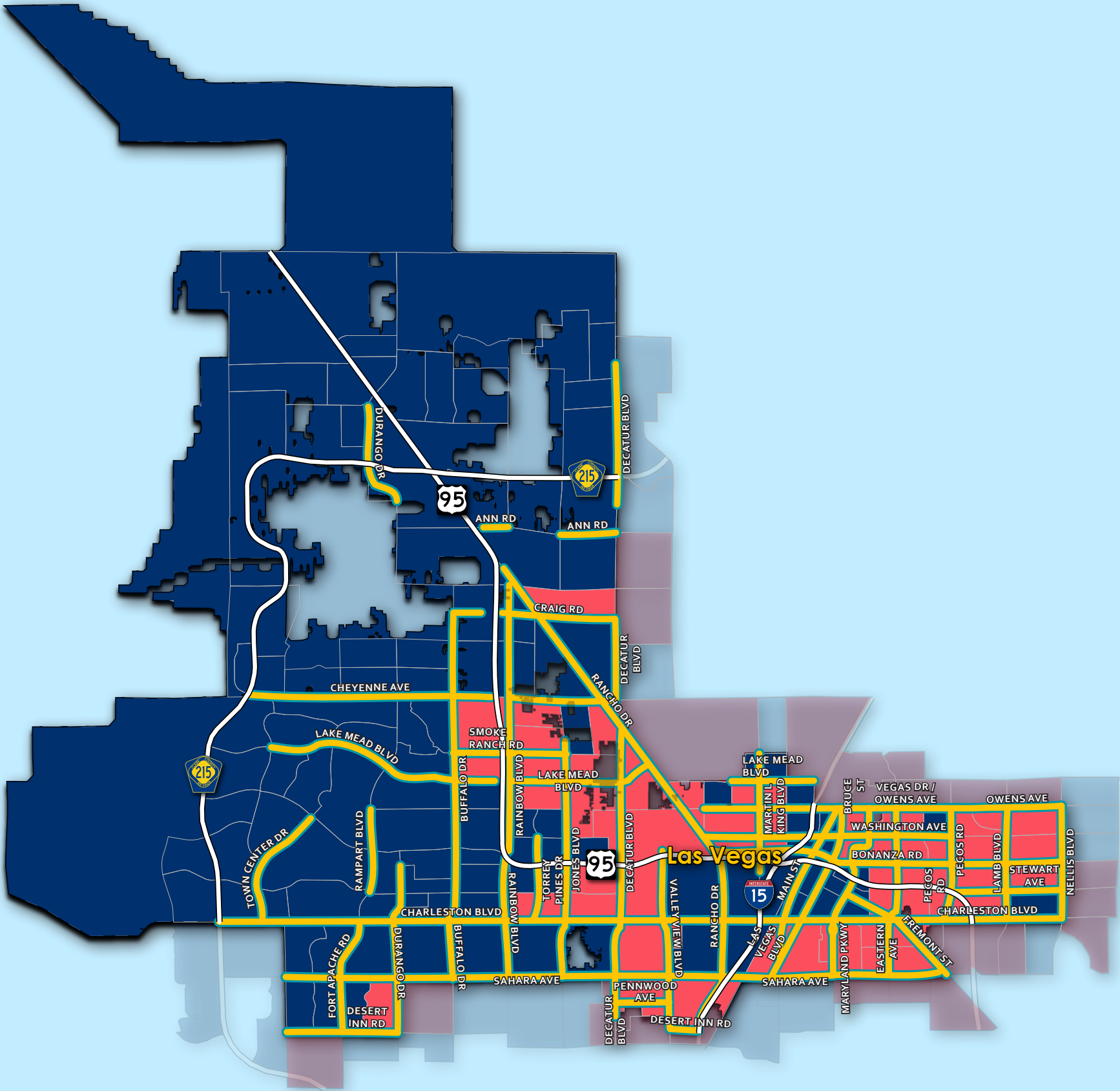
33%
of city streets are in Communities of Concern, and

58%
of the High Injury Network is in those same communities.

 High Injury Network

 The RTC of Southern Nevada Equity Focus Areas / Communities of Concern (CoC)

The CoC represents areas that have a higher identified need and typically represent low-income, minority neighborhoods who rely more heavily on bicycling, walking, or transit as their primary form of transportation





ATTACHMENT “C” – GIS ANALYSIS PROCESS

VISION ZERO HIGH INJURY NETWORK

GIS ANALYSIS PROCESS

COLLECTION OF DATASETS

1. Reported crashes in Nevada from 2015-2019, available as crash data request through NDOT.
2. Street Centerline geographic layer, maintained by the City of Las Vegas Office of Geographic Information Systems, available as open data through City of Las Vegas GeoCommons.
3. Street Speed Limits geographic layer, maintained by the City of Las Vegas Office of Geographic Information Systems, available as open data through City of Las Vegas GeoCommons.
4. City of Las Vegas Jurisdictional / Council Wards geographic layer, maintained by the City of Las Vegas Office of Geographic Information Systems, available as open data through City of Las Vegas GeoCommons.

DATA CLEANING

NDOT provides crash data in tabular format, with latitude and longitude coordinates of the crash as reported by first response officials at the scene of the crash and, when available, plotted longitude and latitude coordinate locations of each crash as a geodatabase or shapefile. Using ArcGIS Desktop, the following steps were taken to filter and update the provided NDOT dataset:

- Removed crashes outside the 250-foot buffer around the geographical layer of City limits.
- Removed crashes that were either within the interstates / freeways or on local neighborhood roads, including alleys. Crashes located on ramp intersections mainly retained to capture crashes along City roadways.
- Identified and assigned a crash mode based on the reported vehicle-to-vehicle, vehicle-to-transit, vehicle-to-motorcycle / moped, vehicle-to-cyclist, or vehicle-to-pedestrian crash mode involvement.
- Categorized crashes based on the location within the City's roadway network and whether the crash occurred at a signalized intersection, mid-block, and the contributing behavior factors (if reported).

Using ArcGIS Desktop, the following steps were taken to aggregate the provided City of Las Vegas roadway network datasets:

- Identified the nearest roadways to the remaining crash dataset and retained the roadways identified as major, collector, and local as their street class attribute.
- Accumulated posted street speed limit data and added the attribute to the remaining updated roadway centerline network.

The next step was to identify the street and/or intersection where the crash occurred along the revised City roadway network. Using ArcGIS Desktop, the following steps were taken:

- Identified the nearest street to each remaining crash and the distance using the buffer selection function in ArcGIS. Inspected crashes further than 100-feet from the closest street and removed remaining crash datapoints located in parking lots, alleys, or back driveways. No reported fatalities occurred among these removed crashes.
- Identified crashes along each corridor segment identified by the following unit types:
 - Fatal vehicle-to-vehicle crashes
 - Fatal vehicle-to-transit crashes
 - Fatal vehicle-to-motorcycle/moped crashes
 - Fatal vehicle-to-cyclist crashes
 - Fatal vehicle-to-pedestrian crashes
 - Total fatal crashes involving all modes
 - Type A vehicle-to-vehicle crashes
 - Type A vehicle-to-transit crashes
 - Type A vehicle-to-motorcycle/moped crashes

- Type A vehicle-to-cyclist crashes
- Type A vehicle-to-pedestrian crashes
- Total crashes involving all modes and injury severities

Additionally, the street centerline segment linework was dissolved (process tool in ArcGIS which unifies linework based on a common attribute) by the full street name attribute and the identified posted speed limit at intersecting intersection nodes.

- Finally, the aggregated streets centerline attribute data was used to create single-line crash corridors for the network by using the ArcGIS join process. Segments were then examined where the centerlines were split across two adjacent corridors with the same name by making sure to create a contiguous roadway network.

DATA ANALYSIS

With each crash and attribute geo-located to a respective street, several levels of granularity analysis were performed to identify the HIN.

A Python script was developed to efficiently quantify the crash totals per roadway segment, as well as break down the total into specific categories, listed below. The script uses several ArcPy modules to select crashes within a specified distance of each roadway segment and perform the summary steps.

A general outline of the script functionality follows:

- Convert the crash point feature class into a Feature Layer using “Make Feature Layer” for access within the script
- Open a “Search Cursor” on the road segment feature class
- Within the Search Cursor, run the “Select Layer by Location” tool with the crash point feature layer as the input, and the geometry of the road segment as the “Select Feature”
- Create a dictionary with the unique segment ID as the keys, and a list of the unique crash ID as the value
- Within a “for” loop of the dictionary created in the previous step, run a “Search Cursor” on the crash feature class using appropriate logic to summarize the crash data within a second dictionary
- Use an “Update Cursor” to write the crash summary values to the appropriate fields in the segment feature class

The summarized crash categories are as follows:

FATAL_CRASHES, INJURIES_A, INJURIES_B, INJURIES_PDO, INJURIES_C, FATAL_VEHICLE, TOTAL_CRASHES, FATAL_PEDAL_CYCLE, FATAL_PEDESTRIAN, FATAL_BUS, FATAL_MOTORCYCLE, INJURY_VEHICLE, INJURY_PEDAL_CYCLE, INJURY_PEDESTRIAN, INJURY_BUS, INJURY_MOTORCYCLE

To calculate the frequency of crashes a count of the number of crashes per the respective unit type for the street network was performed. Note: due to intersections being counted towards each corridor, the total number of crashes on all corridors will be greater than the actual total number of crashes and therefore do not represent the actual total incidence of crashes on each along each intersection leg.

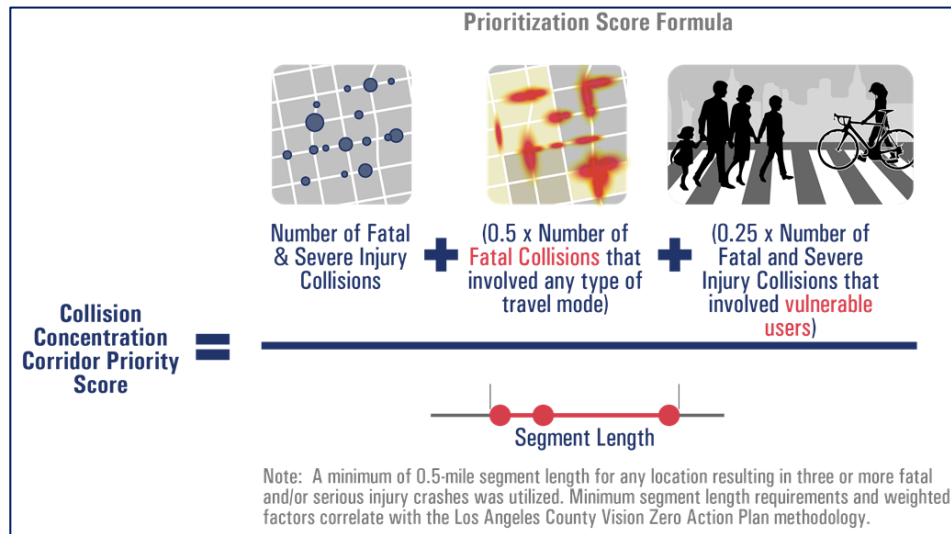
For the analysis, an assessment of crashes that resulted in either killed or significantly injured (KSI) crash, with special emphasis on crashes that involved either a pedestrian or cyclist fatality was performed.

- Each crash was highlighted for the above conditions and the counts were aggregated in the same way as described above for total corridor network crashes.
- With the initial roadway network and crash frequencies accounted for, a prioritization the highest documented KSI crash sections for the network was evaluated. After evaluating the methods used by various peer cities, it was determined that a weighted measure of KSI per mile was the best metric for prioritization to generate a High Injury Network.

The project team assigned a weight representing the severity of the crash based on Los Angeles County’s scoring methodology. A Collision Concertation Corridor Priority Score (score), was calculated using the following process:

- For each corridor, a new field was created to record this metric.
- Assessment of crashes that resulted in either fatality or serious injury were totaled. An emphasis on crashes that resulted in a fatality were weighted by a factor of 0.5 and an emphasis on crashes that involved either a pedestrian or cyclist KSI crashes were weighted by a factor of 0.25 in order to highlight these crashes. Since compared to

vehicular crashes, pedestrian and cyclist crashes (vulnerable users) are significantly more likely to result in death or serious injury. These factors reflect the degree of higher risk.



For corridors, an additional calculation was done to normalize scores by corridor length and to reduce occurrence of outliers by using a measure of KSI crashes per mile to determine high crash segments.

- Each corridor score was divided by the corridor's length in miles.
- All corridors shorter than ½-mile or with (3) three or fewer KSI crashes were not included in the HIN. Note: that all KSI are of crashes, not counts of individuals involved, as an example a crash in which 3 people were killed or a crash in which 1 person was seriously injured get counted as 1 KSI crash.

HIGH INJURY NETWORK CRITERIA

Using the network with a score for each corridor, roadway segments with a score higher than three (3) were documented. Then by addressing over 70% of all KSI crashes in the City the HIN was finalized.

- By using the attributes table in ArcMap a spreadsheet was exported, the table lists streets in descending order of their KSI per mile score. Including of cumulative total of KSI crashes and road length. Additionally, the collision concentration corridor priority score was also provided.
- Based on 3.5 KSI crashes per mile, a target of approximately 77% of KSI crashes in the City was achieved.
- 77% of all KSI crashes within the City's network are within 11% of City roadways.

VISION ZERO DATASETS

1. HIGH INJURY NETWORK
<https://arcg.is/0eeGOH>
2. HIGH INJURY NETWORK & COMMUNITIES OF CONCERN MAP
<https://wrgis.maps.arcgis.com/sharing/rest/content/items/71697b3683a04cfcab76a9f8690952e9/data>
3. SUMMARY OF STEPS AND DATA USED FOR THE DEVELOPMENT OF HIGH INJURY NETWORK
<https://arcg.is/SPbW5>
4. NDOT CRASH DATA

Available through NDOT Crash Data Request Submission:

<https://survey123.arcgis.com/share/2361c89935aa497183387106ec46e18d>



ATTACHMENT “D” – RTC ENVIROMENTAL JUSTICE ANALYSIS

APPENDIX K

ENVIRONMENTAL JUSTICE ANALYSIS



Environmental Justice

According to FHWA, “environmental justice principles and procedures improve all levels of transportation decision-making by enabling practitioners to make transportation decisions that meet the needs of all people.” The Regional Transportation Commission Metropolitan Planning Organization (MPO) is committed to promoting and advancing environmental justice in regional transportation planning.

Projects in the Regional Transportation Plan, including roadway, sidewalk, bike facilities, and transit improvements, have potential social, economic, and health impacts on daily lives, such as:

- ✓ Access to work, education, healthcare, shopping, recreation, and social destinations;
- ✓ Indirect and costs, such as travel time, congestion delay, pollution, and land use impacts;
- ✓ Costs as a significant share of household expenses, which impact the affordability of other essentials (e.g. housing, healthcare);
- ✓ Land values and economic development opportunities; and
- ✓ Health costs and impacts related to physical activity, air quality, and crashes.

Therefore, the MPO considers environmental justice and equity impacts in its transportation and regional plans and related outreach efforts. Additionally, maps provided in *Appendix K: Environmental Justice* depict the geographic distribution of Regional Transportation Projects in relationship to:

- 1) **Title VI:** Census tracts that include an above average percentage of minority, senior, disabled, low-income, and limited English proficiency populations; and
- 2) **Composite Equity Factors:** Census tracts that have a low equity/high inequity composite score based on the factors shown above plus no vehicle households and youth.

Legal Framework

As a recipient of federal funds, the MPO is subject to the laws and regulations related to environmental justice, including:

- **Title VI of the Civil Rights Act of 1964**, which prohibits discrimination on the basis of race, color, or national origin in programs receiving federal assistance;
- **Environmental Justice Executive Order 12898**, which aims to identify and address disproportionately high and adverse human health or environmental effects on minority populations and low-income populations; and
- **FHWA Title VI Program (23 CFR 200)**, which ensures that federal funding recipients comply with Title VI and related civil rights authorities. Additionally, FHWA is broader than Title VI and EJ requirements and protects populations based on race, color, national origin, sex, age, disability, low-income, and limited English proficiency.

Related Plans

The MPO implements Title VI laws and regulations and encourages transportation decision-makers to consider the needs of all people through planning documents and tools, including:

- **Title VI Report Update** (2019), which summarizes non-discrimination policies and procedures, demographic changes, Language Assistance Plan, recent outreach and committees, and Title VI maps;
- **Public Participation Plan** (2019), which establishes outreach requirements for transportation plans; and
- [Southern Nevada Community Data](#) and [Health and Equity](#) maps that provide access to key demographic data through online interactive tools.

Transportation Equity Maps

MPO staff has completed GIS analysis to identify equity focus areas. Based on the adopted *2017 Regional Bicycle and Pedestrian Plan* equity map, the Composite Equity Score Map (right and available at [this link](#)) serves as a tool for integrating the needs of all people in transportation plans, projects, and outreach.

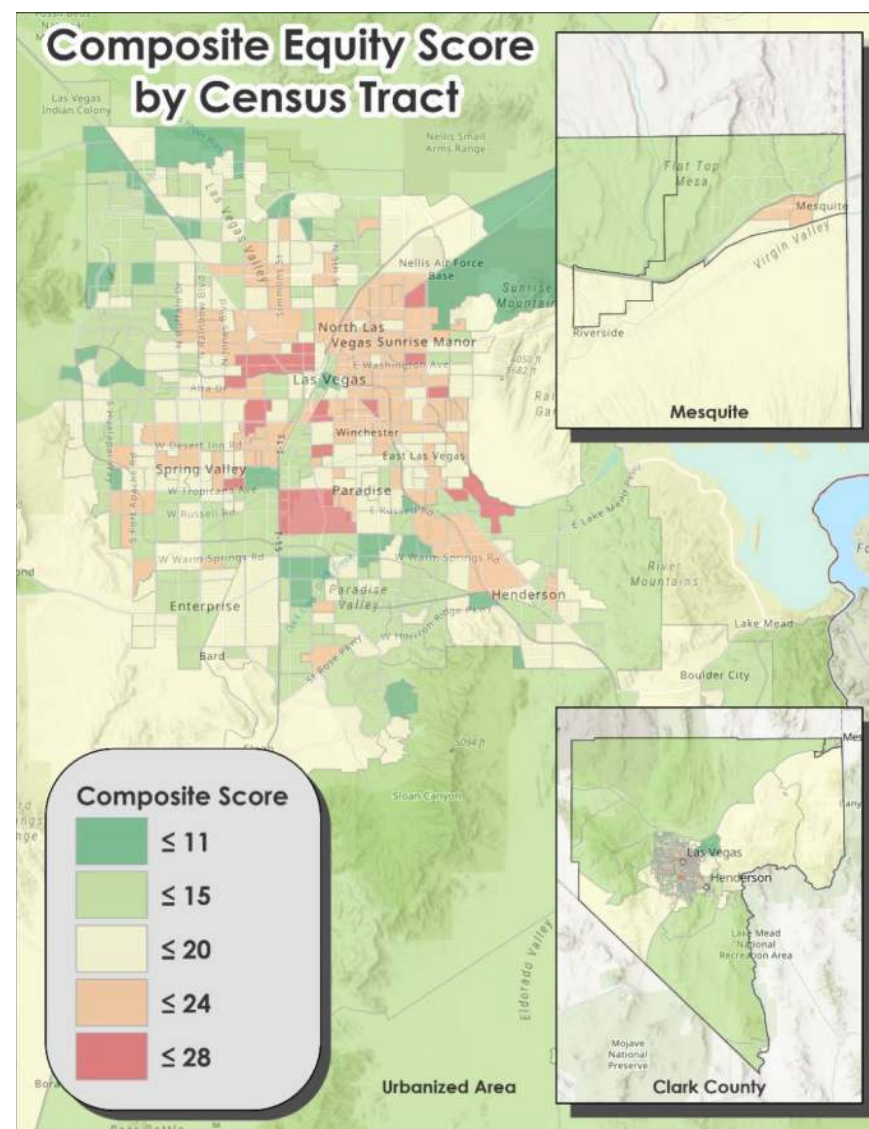
Methodology

The analysis utilizes quartiles of the following equity factors: limited English proficiency, youth, seniors, people with disabilities, low-income, minority, and no vehicle households. Scores are assigned to census tracts for each variable based on the percentile the data represents. For tracts that were located in the 75th percentile, a score of 1 (lowest) was assigned; census tracts located in the 25th percentile were assigned a score of 4 (highest). The scores for all indicators were combined into a composite score, ranging from 7 (lowest) to 28 (highest), as follows:

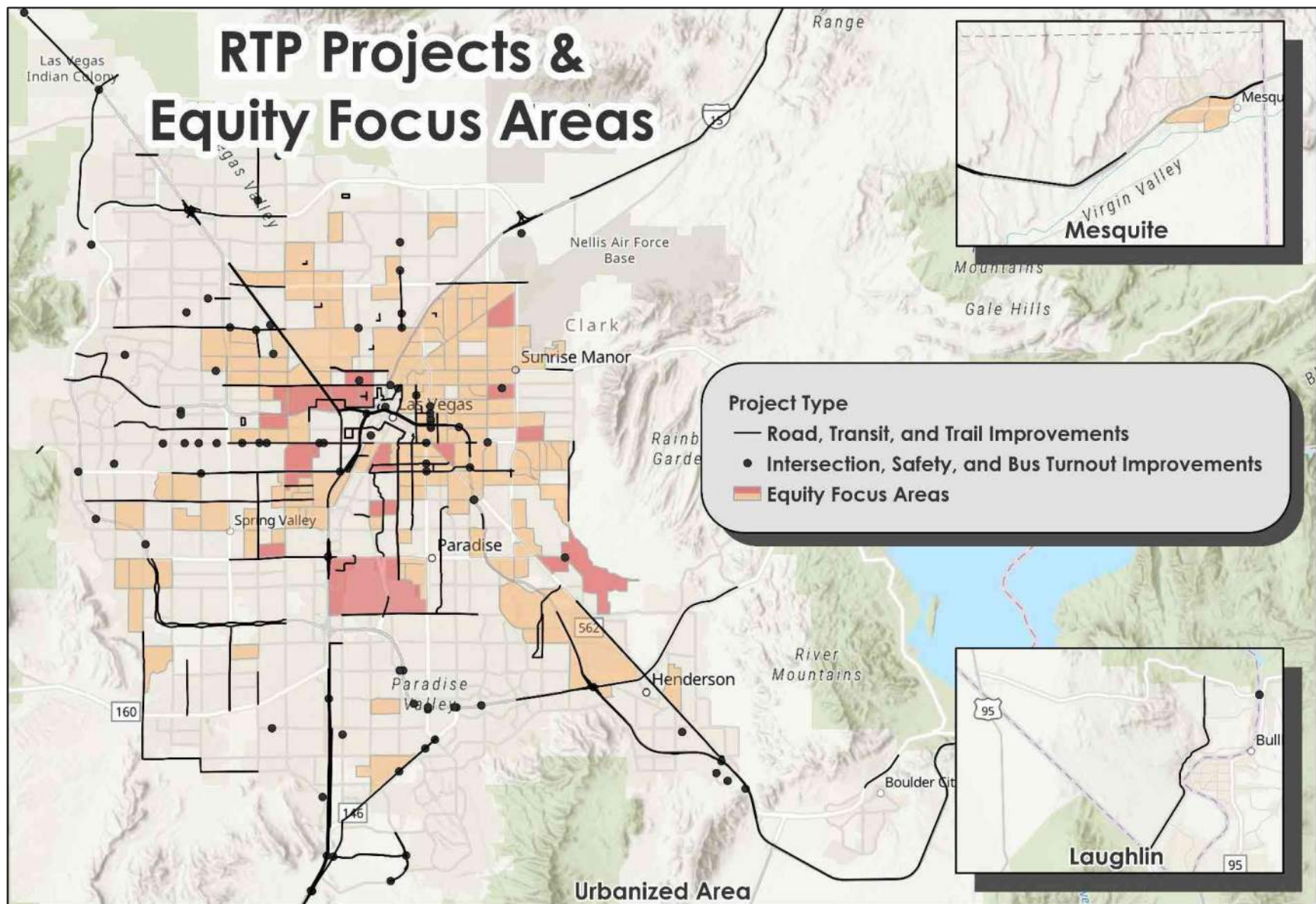
- **High Score:** Tracts that scored higher have a higher identified need and typically represent low-income, minority neighborhoods who rely more heavily on bicycling, walking, or transit as their primary form of transportation.
- **Low Score:** Areas with lower scores generally represent more affluent neighborhoods, where access to an automobile is more readily available and where poverty levels are low.

RTP Equity Focus Area Maps

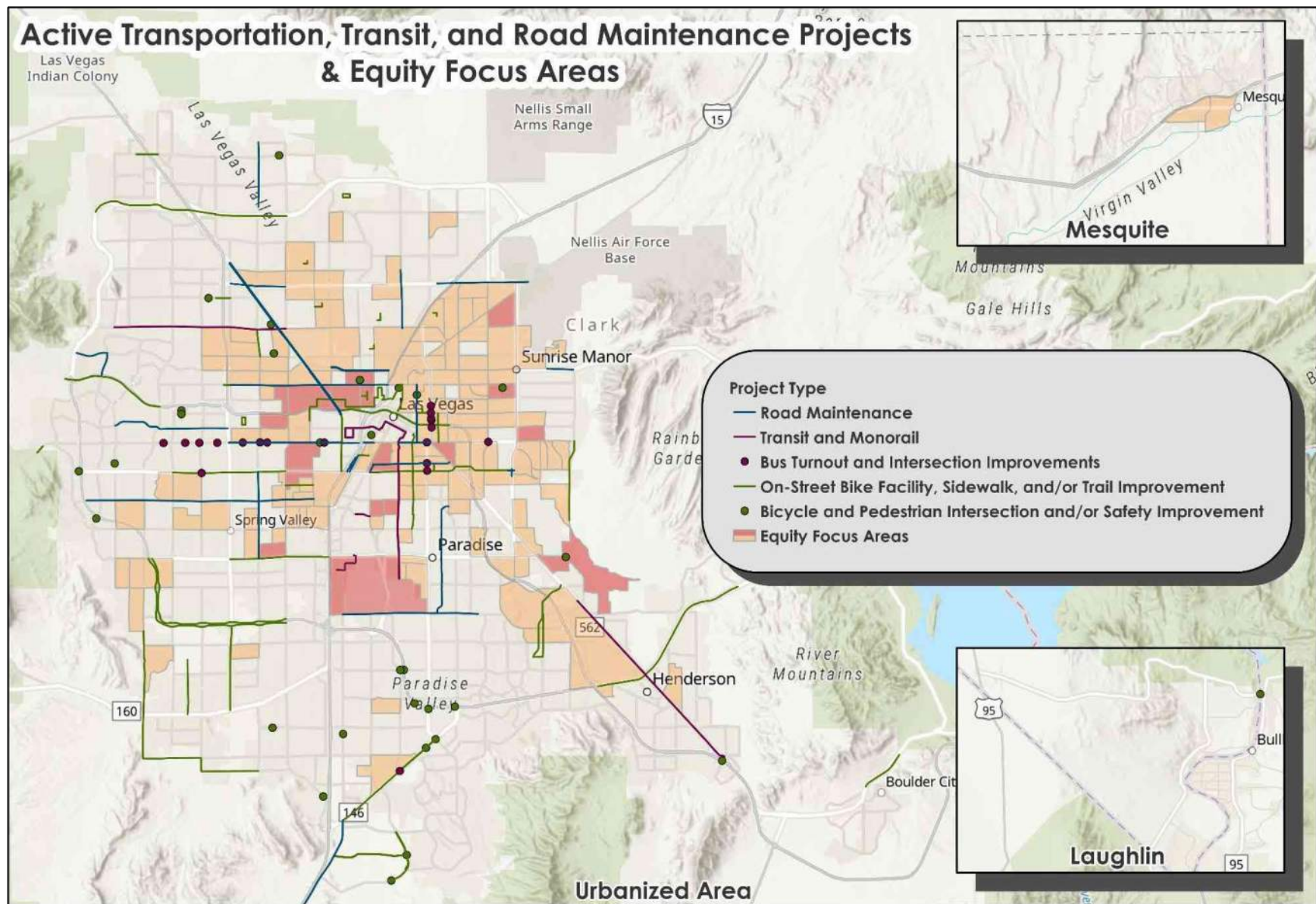
The following maps illustrate the geographic distribution of active transportation, roadway maintenance, transit, and all Regional Transportation Plan projects in relationship with locations with the highest equity scores, shown in orange and red on the *Composite Equity Score by Census Tract Map* (right).



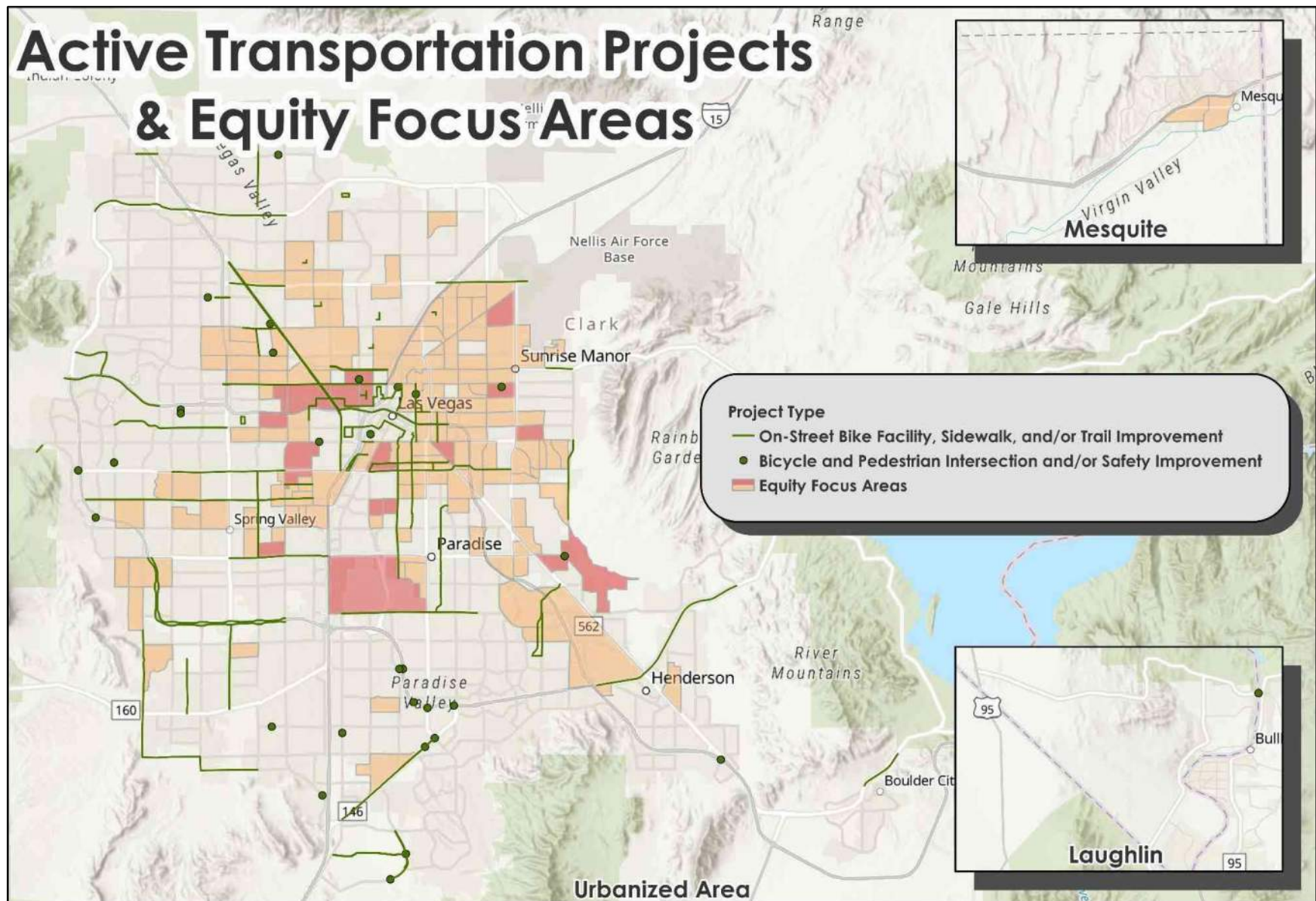
Data Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates



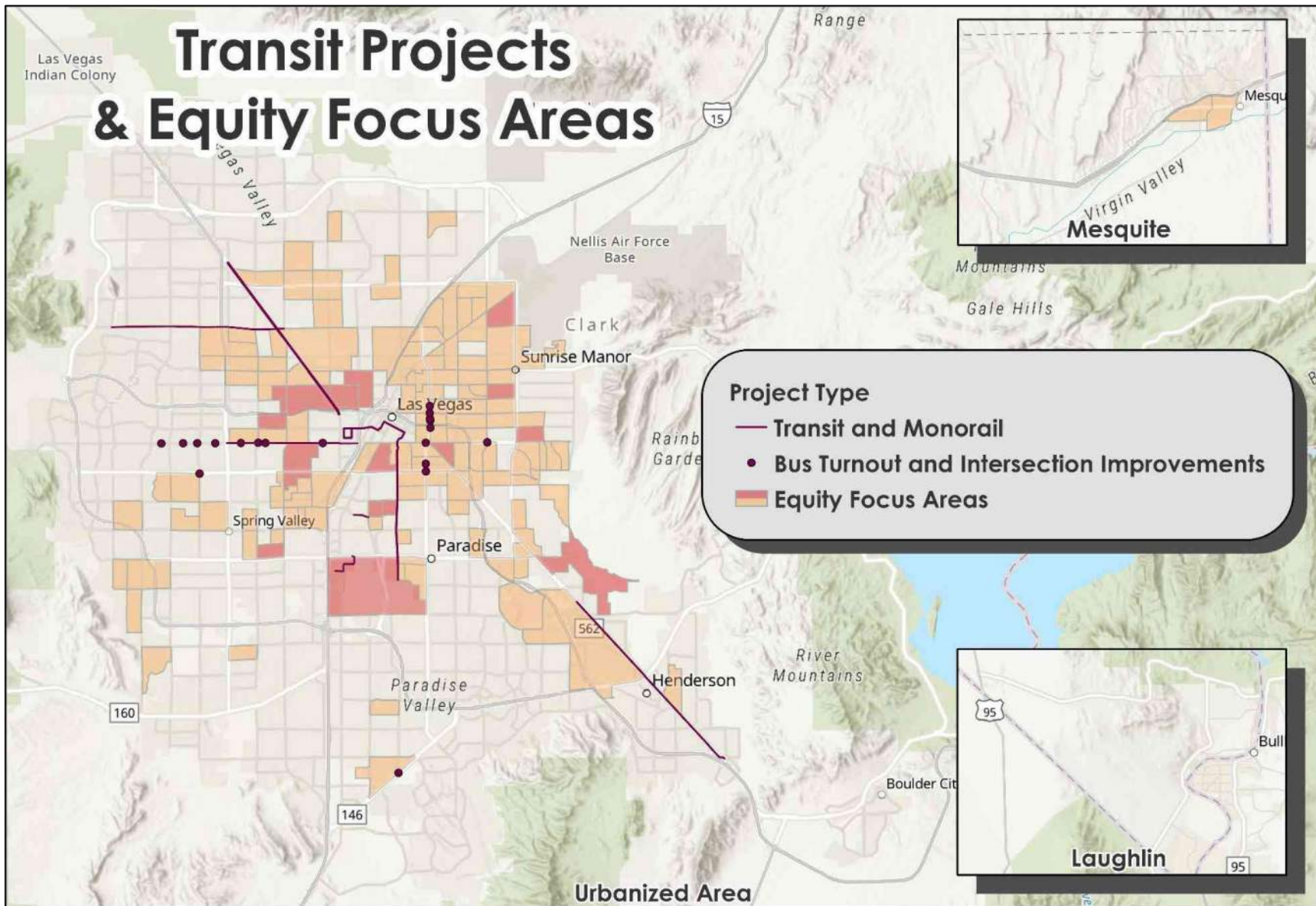
Map: Regional Transportation Plan projects, including highway, major roadway, transit, trail, intersection and safety improvements, are located throughout the region and in equity focus areas, which have a high percentage of no vehicle households and minority, low-income, low English proficiency, disabled, senior, and youth populations.



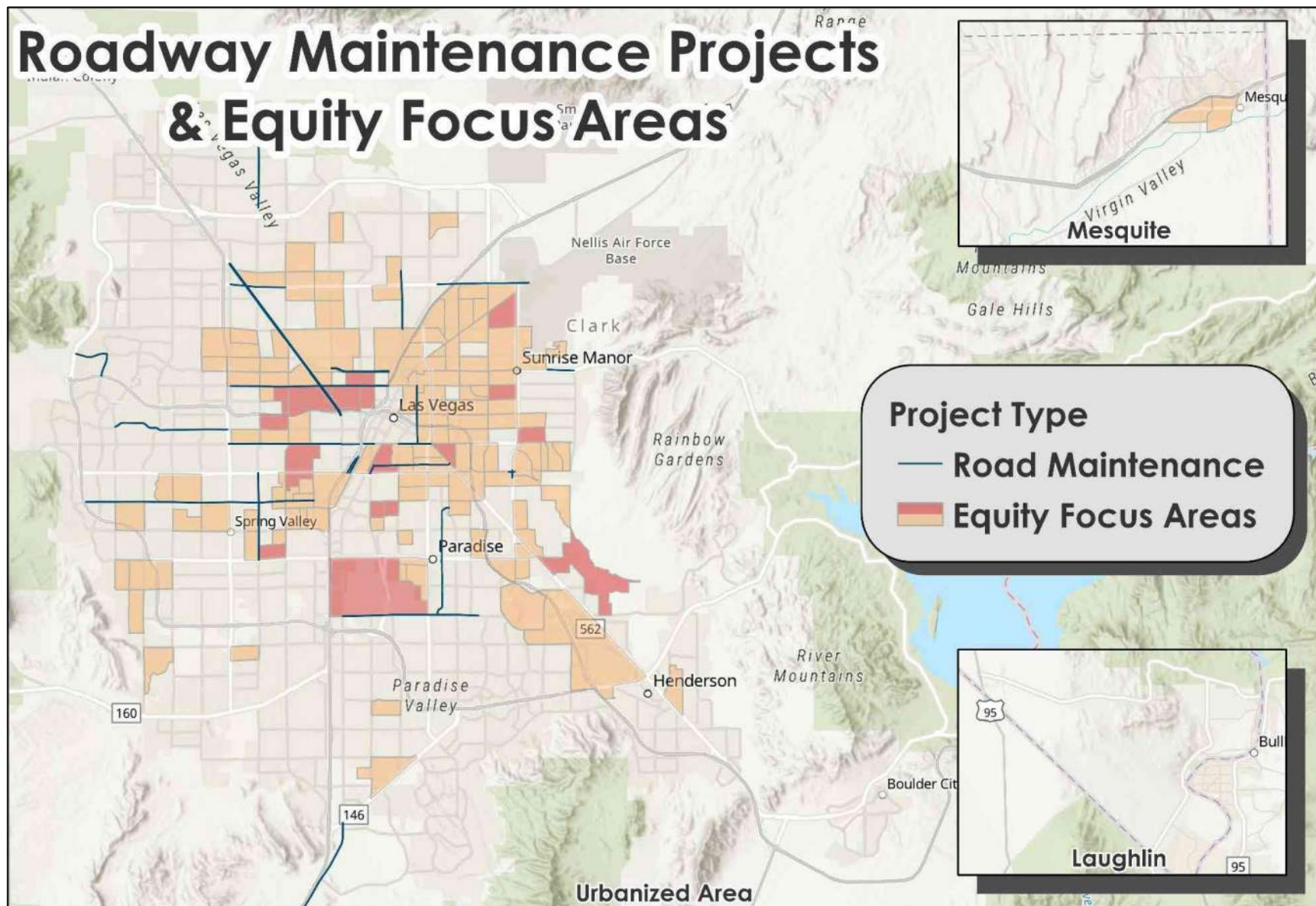
Map: Active transportation and transit projects, which improve health and increase mobility for people without access to cars or the ability to drive, and roadway maintenance projects, which demonstrate reinvestment in existing neighborhoods, are located across the valley and in equity focus areas.



Map: Active transportation projects in equity focus areas include Complete Streets at Sahara Avenue and Boulder Highway, trails along CC-215, Saint Rose Parkway, and Spencer Greenway, bicycle and pedestrian bridges at US-95, and Safe Routes to School and pedestrian improvements at multiple locations.



Map: Transit projects in equity focus areas include projects that implement the On Board Mobility Plan, such as transit lanes along Boulder Highway, Rancho Drive, Charleston, and Maryland Parkway, monorail improvements, and bus turnouts at multiple locations.



Map: Roadway maintenance projects planned along several corridors cross equity focus areas, including Charleston Boulevard, North 5th Street, and Nellis Boulevard. Additionally, roadway maintenance projects will occur in conjunction with many RTP active transportation and transit projects.

Title VI Demographic Maps & Analysis

As completed in the Title VI MPO Report, the geographic distribution of RTP projects is evaluated through mapping analysis. Population data comes from the U.S. Census Bureau, American Community Survey (ACS) 2013-2017 Five Year Estimates. The RTC uses census block-level data with the exception of the analysis of locations with people with disabilities, which uses census tract-level data. Data sources are shown below:

- **Low Income:** 2013-2017 American Community Survey, 5-Year Estimates, Table C17002, "Ratio of Income to Poverty Level in the Past 12 Months"
- **Minority:** 2013-2017 American Community Survey, 5 year Estimates, Table B02001, "Race"
- **Limited English Proficiency:** 2013-2017 American Community Survey, 5 year Estimates, Table B16004, "Age by Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over"
- **Seniors:** 2013-2017 American Community Survey, 5 year Estimates, Table B01001, "Sex by Age"
- **People with Disabilities:** 2013-2017 American Community Survey, 5 year Estimates, Table S1810, "Disability Characteristics"

Map Methodology

The methodology to determine the location and concentration of identified population groups involves the following three steps:

Step 1: Define the population groups.

- Low-income means a person whose median household income is at or below the Department of Health and Human Service (HHS) poverty guidelines for 2017.
- Non-white means a person who is Black/African American, Hispanic, Asian American, American Indian, or Alaskan Native.

- White refers to a non-Hispanic Caucasian.
- Limited English proficiency means a person who speaks English "less than very well."
- Senior means a person who is at 65 years of age or older.
- People with disabilities refers to individuals with one or more of the following: hearing difficulty, vision difficulty, cognitive difficulty, ambulatory difficulty, self-care difficulty, and independent living difficulty.

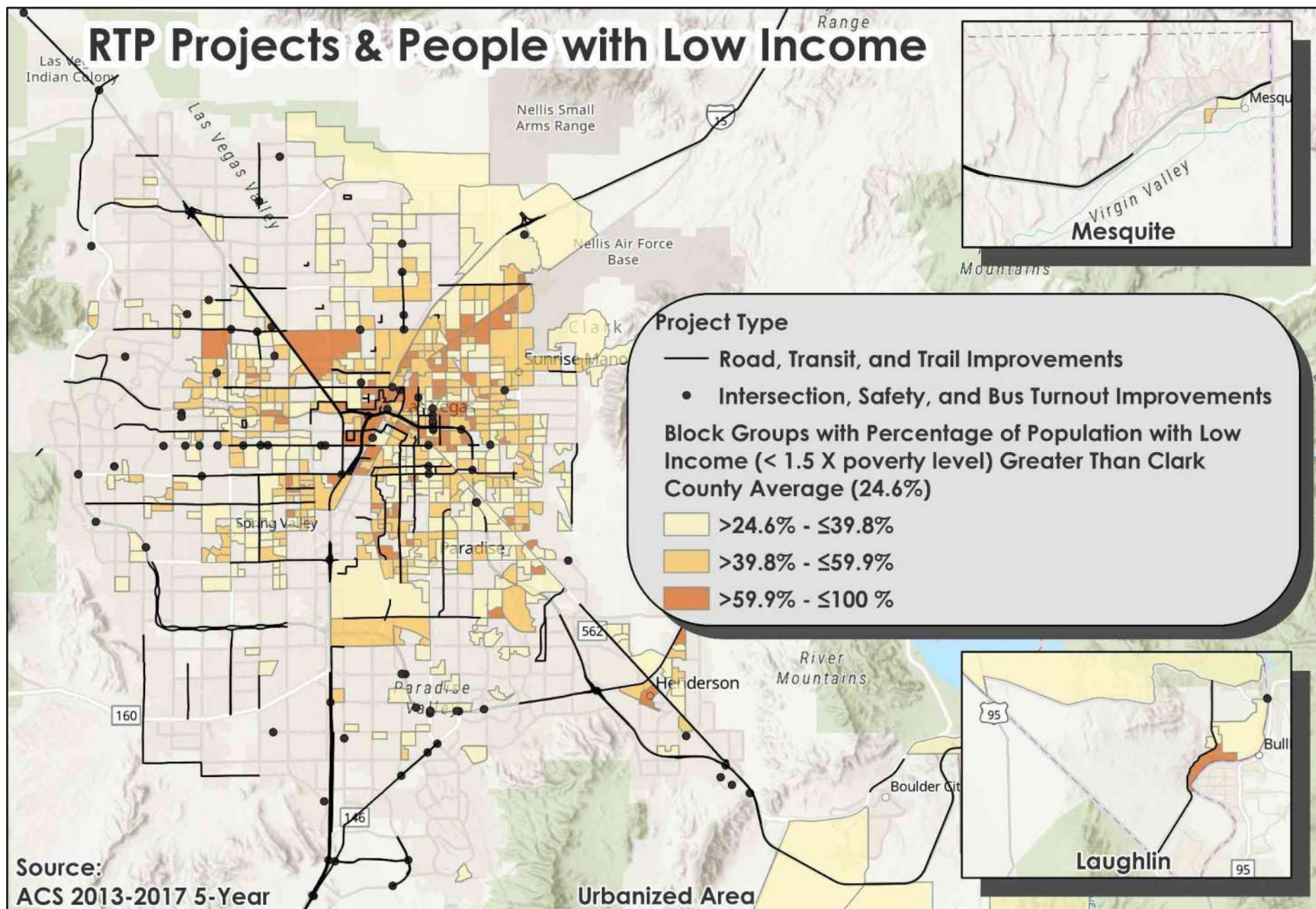
Step 2: Determine the average percentage for each population group.

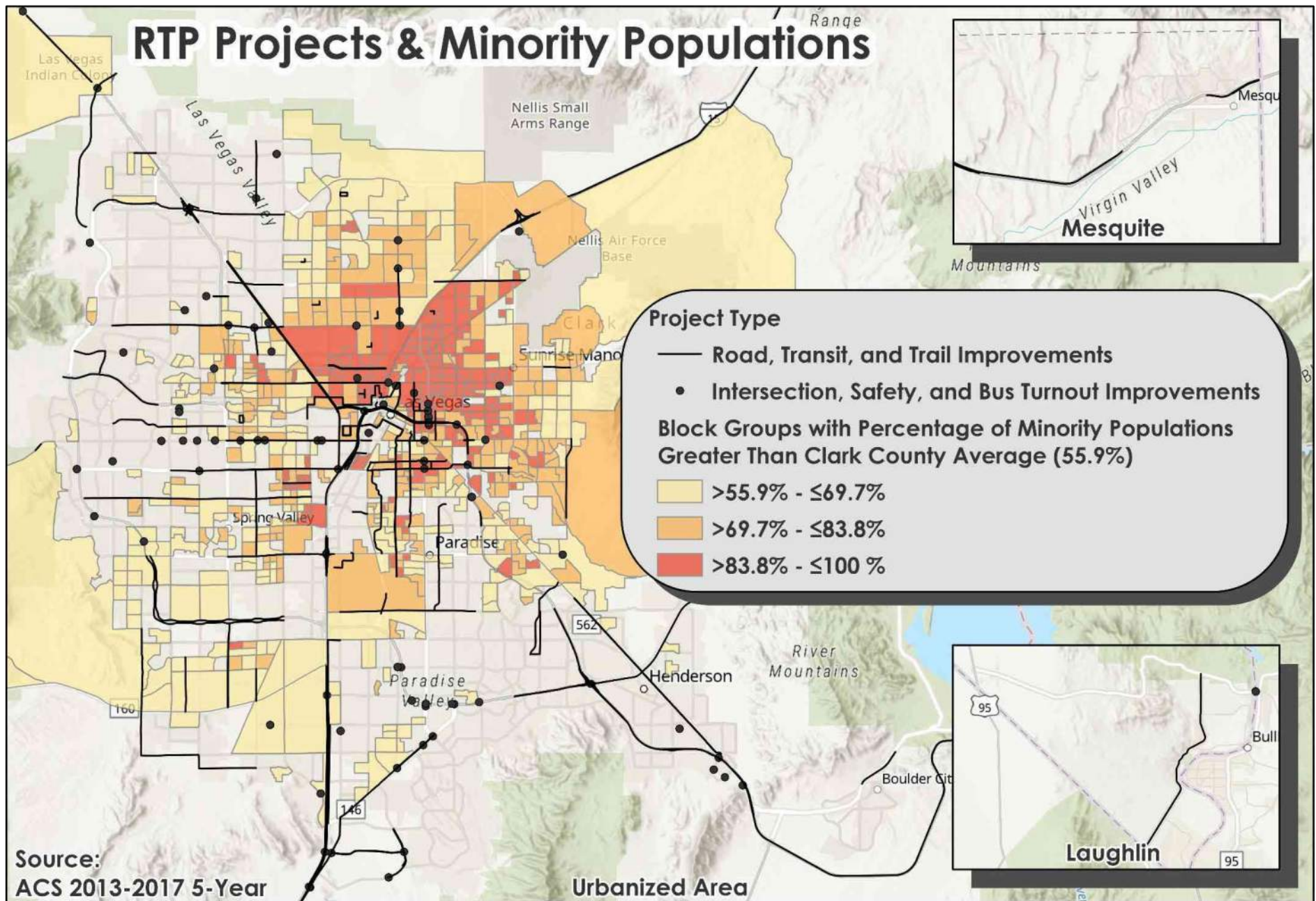
- For each census block group or tract, the total number of each population group is tallied using the definitions in step 1.
- To obtain the census block group or tract percentage for a given population group, the total population group number is divided by the total population number of the census tract.
- To obtain the average County percentage for a given population group, the total of all census block group or tract percentages is divided by the number of census block groups or tracts in Clark County, Nevada.

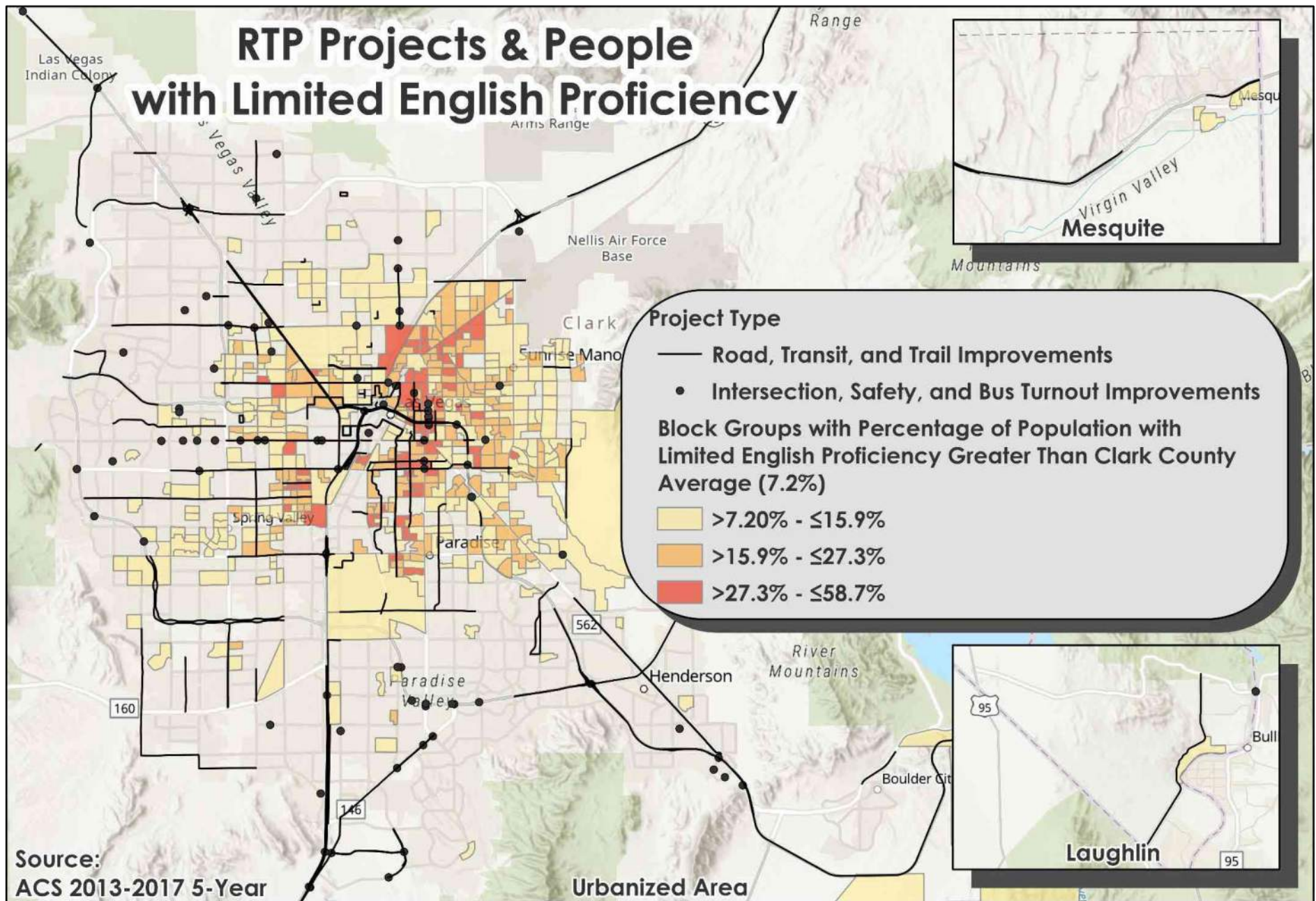
Step 3: Develop demographic maps by census block group or tract.

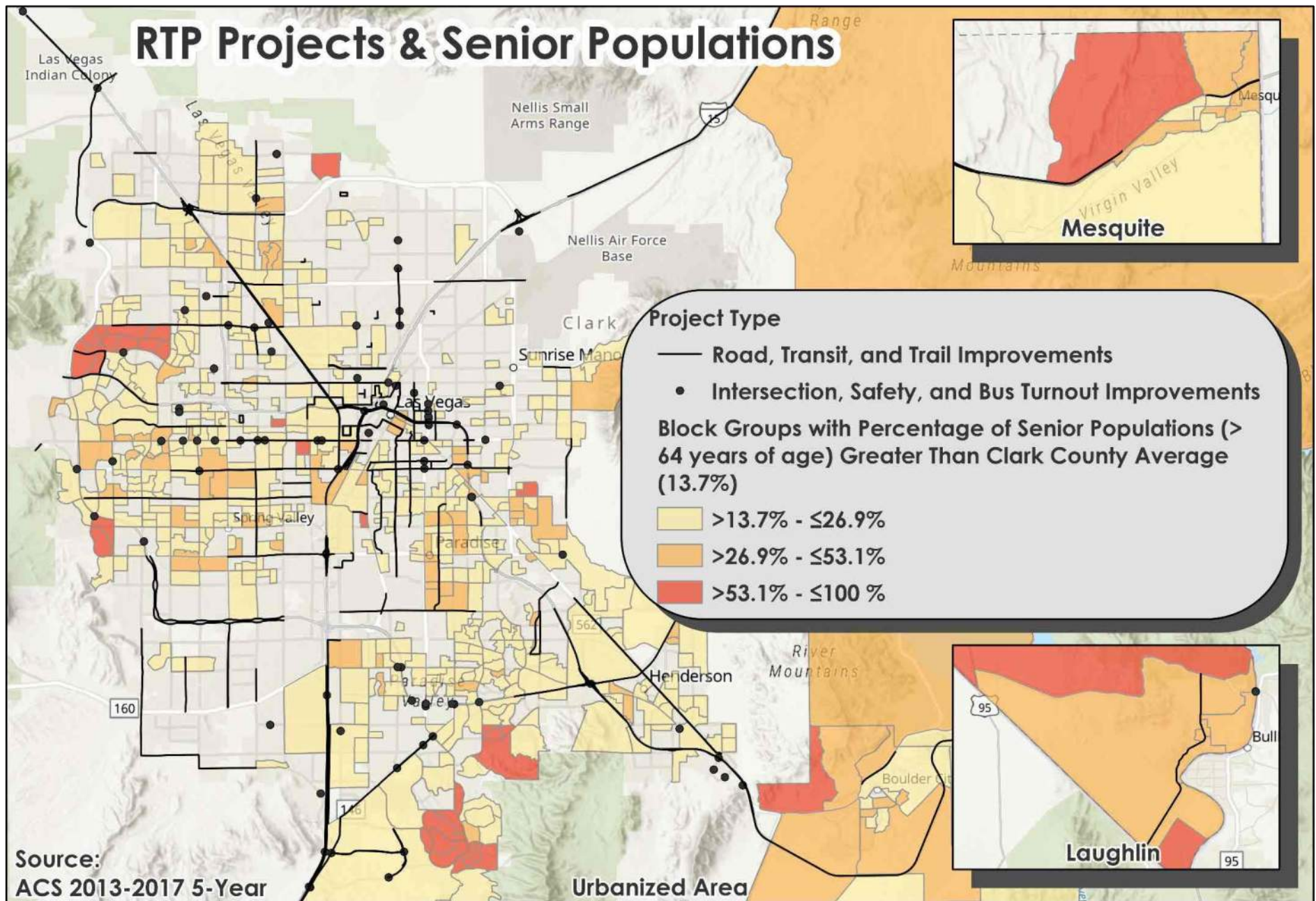
For census block groups or tracts at or above the average Clark County percentage for a given population group, that block group or tract was assigned colors on the map. Census block groups or tracts below the average percentage do not include a corresponding color.

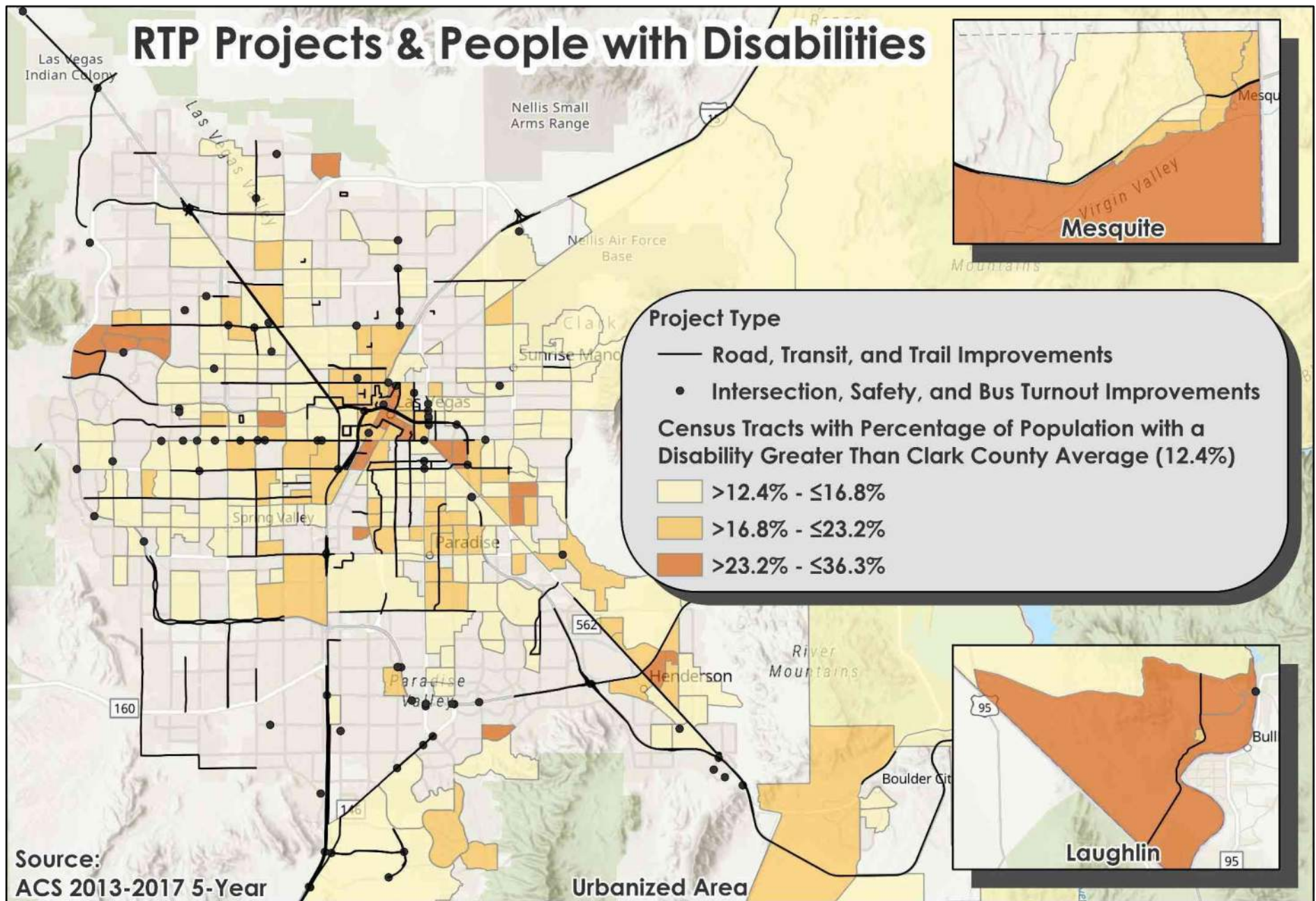
Maps on the following pages show the location of RTP projects in relationship to target population groups.











Demographic Map Analysis

Demographic maps are used to analyze the impacts of RTP projects on minority, low income, LEP, senior, and populations with disabilities. These projects serve regional transportation needs such as access to and from locations outside of Southern Nevada, major activity centers in the region, major planned developments such as new retail malls, sports complexes, or employment centers, or transportation terminals.

Projects included in the MPO Title VI analysis are: 1) included in the Transportation Improvement Program (TIP), 2) federally funded, and/or 3) a regionally significant project included in the Access 2050: Regional Transportation Plan. Access 2050 implements five primary strategies (improve safety, manage congestion, enhance multimodal connectivity, maintain current infrastructure, promote economic development) by funding transportation projects that are intended to advance one or more of those strategies and achieve outcomes that improve conditions for Southern Nevadans.

The MPO Title VI analysis is limited since not all RTP projects may fully benefit target populations. Additionally, the analysis does not include the following project types:

- Projects that are not regionally significant or funded by federal dollars, such roadway maintenance projects funded by local fuel taxes;
- Projects not measured in miles, such as bus stop improvements; and
- Transit capital projects, such as purchasing new buses.

Mapping software is used to find the aggregate amount of regionally significant projects crossing census block groups or tracts with a greater than average concentration of minority, low income, senior, LEP, and disabled populations. The following table shows the approximate total portion in miles of regionally significant projects that cross each EJ population group by census block group or census tract.

Regionally Significant Projects in Locations with Above Average Populations of Title VI Groups

Title VI Population	Total RTP Project Miles	% of RTP Projects in Title VI Block Group Location
Low Income Block Groups	188.248	32%
Minority Block Groups	150.4133	25%
Senior Block Groups	289.4719	49%
Limited English Proficiency Block Groups	149.0165	25%
Disability Block Groups	327.3962	55%
Total projects	590.8761	-

Next Steps

The MPO will continue to expand equity analysis of RTP projects through the *Southern Nevada Transportation Impacts on Health* study, which will evaluate disparate health benefits and costs related to transportation and performance measures. Additionally, future transportation modeling capabilities may allow for analysis of multi-modal accessibility, scenario planning, and impacts of transportation and land use decisions across demographics.

Several plans have documented transportation needs of vulnerable populations through community outreach, including the On Board Mobility Plan, Regional Bicycle and Pedestrian Plan, Coordinated Public Transit-Human Services Transportation Plan, and Southern Nevada Strong. The MPO continues to encourage RTP project sponsors to consider the transportation needs of Title VI population groups in comprehensive/master plans and at the project level in order to develop an equitable, sustainable transportation system for all.



**ATTACHMENT “E” –
USDOT TRANSPORTATION DISADVANTAGED CENSUS TRACTS**

[Home](#) \ [Priorities](#)

Justice40 Initiative

The Biden-Harris Administration created the Justice40 Initiative to confront and address decades of underinvestment in disadvantaged communities. The initiative will bring resources to communities most impacted by climate change, pollution, and environmental hazards.

Here at the U.S. Department of Transportation, Justice40 is an opportunity to address gaps in transportation infrastructure and public services by working toward the goal that many of our grants, programs, and initiatives allocate at least 40% of the benefits from federal investments to disadvantaged communities. It is not a one-time investment, but a series of changes that will be implemented across the Department.

Through Justice40, DOT will work to increase affordable transportation options, that connect Americans to good-paying jobs, fight climate change, and improve access to resources and quality of life in communities in every state and territory in the country.

The initiative allows DOT to identify and prioritize projects that benefit rural, suburban, tribal, and urban communities facing barriers to affordable, equitable, reliable, and safe transportation. DOT will also assess the negative impacts of transportation projects and systems on disadvantaged communities and will consider if local community leaders have been consulted in a meaningful way during the project's development.

[Department of Transportation's Justice40 Informational Video](#)

Implementation Update

Covered Programs

On August 18, 2022 the White House announced DOT's official Justice40 covered programs list. Please visit the links below to learn more about each program. Programs without a link are new and still under development.

Federal Highway Administration (FHWA)

1. [Carbon Reduction Program \(CRP\)](#)
2. Charging & Fueling Infrastructure Grants
3. [Congestion Mitigation and Air Quality Improvement Program \(CMAQ\)](#)
4. Congestion Relief Program
5. [Disadvantaged Business Enterprise Supportive Services \(DBE/SS\) Program](#)
6. [National Electric Vehicle Infrastructure \(NEVI\) Competitive Program](#)
7. [National Electric Vehicle Infrastructure \(NEVI\) Formula Program](#)
8. [Nationally Significant Federal Lands and Tribal Projects \(NSFLTP\)](#)
9. [On the Job Training Supportive Services](#)
10. [Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation \(PROTECT\) Formula Program](#)
11. Protect Grants
12. Reduction of Truck Emissions at Port Facilities
13. [Transportation Alternatives \(TA\) \(Surface Transportation Block Grant set-aside\)](#)
14. Tribal High Priority Projects Program
15. [Tribal Transportation Program Bridge Program \(Bridge Investment Program Set Aside\)](#)
16. [Tribal Transportation Program Bridge Program \(Bridge, Replacement, Rehabilitation, Preservation, Protection and Construction Set Aside\)](#)
17. [Tribal Transportation Program](#)

Federal Railroad Administration (FRA)

18. [Consolidated Rail Infrastructure and Safety Improvements Program](#)
19. [Federal-State Partnership for Intercity Passenger Rail](#)
20. [Railroad Crossing Elimination Grant program](#) - NOFO closes September 30, 2022

Federal Transportation Administration (FTA)

21. [All Stations Accessibility Program](#) - NOFO closes September 30, 2022
22. [Buses and Bus Facilities Competitive Program](#)
23. [Buses and Bus Facilities Formula Program](#)
24. [Low or No Emission Vehicle Program](#)
25. [Capital Investment Grants Program \(CIG\)](#)
26. [Electric of Low Emitting Ferry Pilot Program](#) – NOFO closes September 6, 2022
27. [Passenger Ferry Grant Program](#)> - NOFO closes September 6, 2022
28. [Innovative Coordinated Access and Mobility](#)Pilot Program
29. [Public Transportation on Indian Reservations Program; Tribal Transit Competitive Program](#)
30. [Pilot Program for Transit-Oriented Development Planning](#)

Maritime Administration (MARAD)

31. [America's Marine Highway Program](#)
32. [Port Infrastructure Development Program](#)

Office of the Secretary of Transportation (OST)

33. [National Infrastructure Project Assistance Program - Mega Grant Program](#)
34. [Nationally Significant Multimodal Freight & Highway Projects- INFRA Grants Program](#)
35. [Rebuilding America's Infrastructure with Sustainability and Equity- RAISE Discretionary Grants](#)
36. [Reconnecting Communities Pilot Program](#) - NOFO closes October 13, 2022
37. [Safe Streets and Roads for All \(SS4A\) Grant Program](#) - NOFO closes September 15, 2022
38. [Strengthening Mobility and Revolutionizing Transportation \(SMART\) Grants Program](#)
39. [Thriving Communities Program](#)

Transportation Disadvantaged Community Definition Methodology

In February 2022 the White House Council on Environmental Quality (CEQ) released [The Climate and Economic Justice Screening Tool \(CEJST\)](#) in beta form. The tool aims to help Federal agencies identify disadvantaged communities (DACs) that are marginalized, underserved, and overburdened by pollution as part of the Justice40 Initiative. While CEJST is still in beta, the Department is using an interim definition to identify disadvantaged communities for Justice40-covered programs, consistent with OMB guidance and relevant statutory authorities. DOT is using this interim definition to ask applicants to Justice40-covered programs to identify how their projects benefit DACs.

Consistent with OMB's Interim Guidance for the Justice40 Initiative, DOT's interim definition of DACs includes (a) certain qualifying census tracts, (b) any Tribal land, or (c) any territory or possession of the United States. DOT has provided a mapping tool to assist applicants in identifying whether a project is located in a Disadvantaged Community, available at [Transportation Disadvantaged Census Tracts \(arcgis.com\)](#). A shapefile of the geospatial data is available [Transportation Disadvantaged Census Tracts shapefile \(version 2.0, posted 5/10/22\)](#).

The DOT interim definition for DACs was developed by an internal and external collaborative research process ([see recordings from November 2021 public meetings](#)). It includes data for 22 indicators collected at the census tract level and grouped into six (6) categories of transportation disadvantage. The numbers in parenthesis show how many indicators fall in that category:

- **Transportation access disadvantage** identifies communities and places that spend more, and take longer, to get where they need to go. (4)
- **Health disadvantage** identifies communities based on variables associated with adverse health outcomes, disability, as well as environmental exposures. (3)
- **Environmental disadvantage** identifies communities with disproportionately high levels of certain air pollutants and high potential presence of lead-based paint in housing units. (6)
- **Economic disadvantage** identifies areas and populations with high poverty, low wealth, lack of local jobs, low homeownership, low educational attainment, and high inequality. (7)
- **Resilience disadvantage** identifies communities vulnerable to hazards caused by climate change. (1)
- **Equity disadvantage** identifies communities with a high percentile of persons (age 5+) who speak English "less than well." (1)

To identify the census tracts that could be considered *transportation disadvantaged*, the DOT Justice40 team took five steps:

1. For each census tract, the percentile value is calculated for each of the 22 indicators, where the 99th percentile represents the most disadvantaged.
2. Within each category, the average percentile for each tract is calculated.
3. For each category, a tract is assigned a value of one (1) if it is in the 50th percentile of disadvantage (percentile ranking average = .5 or higher) and zero (0) otherwise. For the resilience category only, a tract is assigned a value of one (1) is it is in the top 75th percentile of disadvantage (.75 or higher).
4. The scores for each category are summed for each census tract, resulting in a score ranging from zero (0), not in the 50th percentile of disadvantage in any category, to six (6), ranking in the 50th percentile of disadvantage in each of the six categories.
5. A census tract is considered transportation disadvantaged if it has a score of four (4) or higher, interpreted as ranking in the top 50% of the average scores in each category, where higher scores represent more disadvantage.

Underlying Indicators and Sources in DOT Definition of Disadvantaged Communities

Variable	Description	Data Source
>30 min commute	Percent of total population with a drive time to employment greater than or equal to 30 minutes	(1)
No Vehicle	Percent of total population with no vehicle(s) available	(2)
Walkability	A composite index of economic and built environment characteristics representing the extent to which the location is not supportive to walking	(3)
Transportation Burden	Transportation Costs % Income for the Regional Typical Household	(1) + (6)
Population 65 and older	Percent of total population over age 64	(2)
Uninsured	Percent of population without health insurance	(2)
Disability	Percent of the non-institutionalized population with any disability	(2)
Homes Built Before 1960	Percent of housing units built before 1960 (lead paint indicator)	(4)
Diesel	EJ Index for Diesel particulate matter level in air	(4)
Cancer	EJ Index for Air toxics cancer risk	(4)
Traffic Proximity	EJ Index for Traffic proximity and volume	(4)
PM25	EJ Index for PM2.5 level in air	(4)
Ozone	Ozone level in air	(4)

Variable	Description	Data Source
Less HS Education	Percent of total population, age 25 and older, whose reported education is short of a high school diploma	(2)
Renters	Proportion of occupied housing units not occupied by property owners	(1)
Unemployment	Percent of civilian labor force reported as unemployed	(2)
GINI Index	Endemic inequality	(7)
Low Income	Percent of total population reported at or below area median income	(2)
Poverty	Percent of population below Federal Poverty Level	(2)
Housing Costs	Housing Costs % Income for the Regional Typical Household	(1)
Climate Hazards	Expected annual loss of life, building value and agricultural value from 18 climate hazards	(5)
Linguistic Isolation	Percent of households (interpreted as individuals) in linguistic isolation	(2)

Data Sources

1. U.S. Census Bureau. American Community Survey (ACS) 5 Year Estimates 2015-2019. 2019.
2. Center for Disease Control. Social Vulnerability Index (SVI) [Internet]. 2018 [cited 2021 Oct 20]. Available from: <https://www.atsdr.cdc.gov/placeandhealth/svi/index.html>
3. Ramsey K, Bell A. Smart Location Database: Version 2.0. Environ Prot Agency EPA. 2014;1–52.
4. U.S. Environmental Protection Agency. EJSCREEN: Environmental Justice Screening and Mapping Tool [Internet]. 2021 [cited 2021 May 5]. Available from: <https://www.epa.gov/ejscreen>
5. U.S. Department of Homeland Security Federal Emergency Management Agency. National Risk Index [Internet]. 2021 [cited 2022 Jan 6]. Available from: <https://hazards.fema.gov/nri/>
6. HUD Exchange [Location Affordability Index - HUD Exchange](#)
7. FEMA Resilience Analysis and Planning Tool (GINI Index) – >[FEMA.gov/RAPT](https://www.fema.gov/rapt)

Technical Assistance

DOT is establishing a [Thriving Communities Program](#) to provide technical assistance and capacity building resources to improve and foster thriving communities through transportation improvements. This includes launching a new online portal, the [DOT Navigator](#)> to access technical assistance resources available across the Department; and introducing the new Thriving Communities Program to support communities with planning and project development of transformative infrastructure projects that increase affordable transportation options, enhance economic opportunity, reduce environmental burdens, improve access and quality of life, and provide other benefits to disadvantaged communities. DOT is partnering with the Department of Housing and Urban Development (HUD), which will provide complementary technical assistance as part of the Thriving Communities program to improve the coordination of housing and transportation planning to advance residents’ access to opportunity and increase housing supply.

Seeking Public Input to Help Shape Thriving Communities

On August 5, 2022, DOT published a [Thriving Communities Request for Information \(RFI\)](#) in the Federal Register [Document Number 2022-16860] to hear directly from transportation professionals, local officials, community partners and other stakeholders about the specific issues and technical areas where those living and working in disadvantaged communities need more direct assistance from capacity building providers and the federal government to successfully access infrastructure funding and advance transformative transportation projects. The RFI can be [viewed and comments submitted](#) through August 26, 2022.

Public Meetings

In November 2021, USDOT hosted two virtual public meetings related to the Justice40 Initiative. During these interactive meetings, participants heard from senior USDOT leaders about the Justice40 Initiative and were asked for input on it. Both sessions were open to the public, but content differed based on the expected prior knowledge of participants. We anticipate the information covered will be of interest to members of impacted communities, potential USDOT funding recipients such as state, regional, and local government agencies, tribal nations, academic institutions, community-based, non-profit, and private-sector organizations.

Please see the description of these sessions below and watch the recordings based on your interest.

Session #1: On November 9, USDOT hosted the first session in a two-part interactive series on the Justice40 initiative. This first session introduced the Justice40 initiative and discussed the benefits that transportation investments can bring to disadvantaged communities. The session assumed no prior knowledge of USDOT structure, programs, funding mechanisms, or terminology.

- [View the session #1 recording](#)> using passcode %qNM7hdQ
- [View the session #1 presentation](#)

Session #2: On November 16, USDOT hosted the second session in a two-part interactive series on the Justice40 initiative. This second session asked participants to provide input on the types of data and metrics that USDOT can use to develop a framework for transportation programs impacting communities. The session assumed some prior knowledge of USDOT structure, programs, funding mechanisms, and terminology as well as the types of data used in environmental justice and related fields. Though not required, participants are encouraged to watch session #1 for additional context ahead of session #2.

- [View the session #2 recording](#) using passcode @5#0SqDD
- [View the session #2 presentation](#)

Additional Resources

- [White House Publishes Draft Climate and Economic Justice Screening Tool](#)
- [White House Interim Guidance for the Justice40 Initiative](#)
- [White House Blog Post on The Path to Achieving Justice40](#)
- [U.S. Department of Transportation Request for Information on Transportation Data and Assessment Methods and Related Information Session](#)

Interested in hearing the latest on our equity work?

Join our mailing list
To sign up for updates, please enter your contact information below.

★Email Address

Submit

If you would like to request the Transportation Disadvantaged Census Tracts shapefile (version 1) please email your request to gmo@dot.gov

Last updated: Monday, August 29, 2022



Appendix D: CICMP Crash Data

Table D1 - Intersection Crash Data: Vehicle 1 Action Summary

Vehicle 1 Action \ ID. Intersection	1. Durango Dr at Charleston Blvd	2. Eastern Ave at Stewart Ave	3. Fort Apache Rd at Sahara Ave	4. Martin L King Blvd at Bonanza Rd	5. Lake Mead Blvd at Rainbow Blvd	6. Charleston Blvd at Rainbow Blvd	7. Valley View Blvd at Sahara Ave	8. St Louis Ave at Eastern Ave	9. Cheyenne Ave at Rainbow Blvd	10. Decatur Blvd at Washington Ave	Total
BACKING UP	1	1	2	1	3	0	2	0	0	2	12
CHANGING LANES	11	8	8	20	11	10	5	3	12	7	95
GOING STRAIGHT	55	106	89	73	66	78	83	17	54	49	670
MAKING U-TURN	8	2	0	0	0	1	2	0	0	0	13
NOT REPORTED	10	10	10	10	13	7	8	3	15	13	99
OTHER TURNING MOVEMENT	0	1	0	0	0	0	0	0	0	0	1
PASSING OTHER VEHICLE	0	0	0	1	0	1	0	0	0	2	4
RACING	0	1	0	0	0	0	0	0	0	0	1
STOPPED	0	3	1	1	1	0	1	0	0	1	8
TRAVELING WRONG WAY	0	0	0	0	0	0	1	0	0	0	1
TURNING LEFT	98*	33	5	4	7	11	9	9	7	14	197
TURNING RIGHT	8	8	7	8	13	12	5	2	5	6	74
UNKNOWN	2	3	2	2	4	4	1	1	4	0	23
(blank): not recorded	0	1	0	0	0	2	1	0	0	1	5
Grand Total	193	177	124	120	118	126	118	35	97	95	1,203
<p>Notes:</p> <p>* accounts for 54.9% (50.7 %: Turning Left + 4.01 %: Making U-Turn) of V1 Action crashes at this intersection</p> <p>Sources:</p> <p>Crash Data: NDOT 5-year 2014 to 2018 Database</p>											

Table D2 - Intersection Crash Data: Vehicle 1 & 2 Driver Factors Involving Drinking

V1 & V2 Driver Factors\ ID. Intersection	1. Durango Dr at Charleston Blvd	2. Eastern Ave at Stewart Ave	3. Fort Apache Rd at Sahara Ave	4. Martin L King Blvd at Bonanza Rd	5. Lake Mead Blvd at Rainbow Blvd	6. Charleston Blvd at Rainbow Blvd	7. Valley View Blvd at Sahara Ave	8. St Louis Ave at Eastern Ave	9. Cheyenne Ave at Rainbow Blvd	10. Decatur Blvd at Washington Ave	Total
HAD BEEN DRINKING	7	8	8	7	5	6	4	3	2	3	53
HAD BEEN DRINKING (V2 Driver Factors)	0	0	0	1	1	0	0	0	1	0	3
HAD BEEN DRINKING: DRUG INVOLVEMENT	2	0	0	0	0	0	3	0	0	0	5
HAD BEEN DRINKING: OTHER IMPROPER DRIVING	0	0	1	0	0	1	0	0	0	0	2
Grand Total	9	8	9	8	6	7	7	3	3	3	63
% of All Crashes	5%	5%	7%	7%	5%	6%	6%	9%	3%	3%	100%
<i>Sources:</i> Crash Data: NDOT 5-year 2014 to 2018 Database											

Table D3 - Intersection Crash Data: Crash Type Summary

Crash Type \ ID. Intersection	1. Durango Dr at Charleston Blvd	2. Eastern Ave at Stewart Ave	3. Fort Apache Rd at Sahara Ave	4. Martin L King Blvd at Bonanza Rd	5. Lake Mead Blvd at Rainbow Blvd	6. Charleston Blvd at Rainbow Blvd	7. Valley View Blvd at Sahara Ave	8. St Louis Ave at Eastern Ave	9. Cheyenne Ave at Rainbow Blvd	10. Decatur Blvd at Washington Ave	Total
ANGLE	131	98	54	26	47	43	30	12	33	39	513
BACKING	1	1	2	1	2	0	1	0	1	2	11
HEAD-ON	1	0	1	0	0	0	3	0	0	1	6
NON-COLLISION	9	9	7	11	12	17	11	10	10	14	110
REAR-END	42	48	57	59	45	58	62	11	33	30	445
REAR-TO-REAR	0	0	0	0	1	0	1	0	0	0	2
SIDESWIPE, MEETING	2	9	1	2	2	1	0	1	2	0	20
SIDESWIPE, OVERTAKING	4	10	2	21	8	7	9	1	17	8	87
UNKNOWN	1	1	0	0	1	0	0	0	0	0	3
(blank): not recorded	2	1	0	0	0	0	1	0	1	1	6
Grand Total	193	177	124	120	118	126	118	35	97	95	1,203
Sources: Crash Data: NDOT 5-year 2014 to 2018 Database											

Table D4 - Intersection Crash Data: Crash Injury Severity Summary

Injury Severity \ ID. Intersection	1. Durango Dr at Charleston Blvd	2. Eastern Ave at Stewart Ave	3. Fort Apache Rd at Sahara Ave	4. Martin L King Blvd at Bonanza Rd	5. Lake Mead Blvd at Rainbow Blvd	6. Charleston Blvd at Rainbow Blvd	7. Valley View Blvd at Sahara Ave	8. St Louis Ave at Eastern Ave	9. Cheyenne Ave at Rainbow Blvd	10. Decatur Blvd at Washington Ave	Total
A	6	2	2	3	1	4	4	0	2	3	27
B	32	12	11	7	8	16	13	8	4	11	122
C	69	59	42	35	41	41	36	10	31	37	401
K	0	0	0	1	0	0	0	0	0	0	1
PDO	86	104	69	74	68	65	65	17	60	44	652
Grand Total	193	177	124	120	118	126	118	35	97	95	1,203
Sources: Crash Data: NDOT 5-year 2014 to 2018 Database											

Table D5 - Intersection Crash Data: Crash Mode Summary

Crash Mode \ ID. Intersection	1. Durango Dr at Charleston Blvd	2. Eastern Ave at Stewart Ave	3. Fort Apache Rd at Sahara Ave	4. Martin L King Blvd at Bonanza Rd	5. Lake Mead Blvd at Rainbow Blvd	6. Charleston Blvd at Rainbow Blvd	7. Valley View Blvd at Sahara Ave	8. St Louis Ave at Eastern Ave	9. Cheyenne Ave at Rainbow Blvd	10. Decatur Blvd at Washington Ave	Total
BUS	1	3	1	3	2	4	2	0	0	4	20
MOTORCYCLE/MOPED	5	5	2	3	3	2	5	3	2	1	31
PEDAL CYCLE	1	0	1	1	1	3	4	2	2	3	18
PEDESTRIAN	0	4	1	5	4	7	6	7	6	5	45
VEHICLE	186	165	119	108	108	110	101	23	87	82	1,089
Grand Total	193	177	124	120	118	126	118	35	97	95	1,203
Sources: Crash Data: NDOT 5-year 2014 to 2018 Database											