Appendix 4: Implementation

Vision Zero Implementation Plan

August 2024 City of San Antonio Transportation Department *RS&H*

San Antonio **Vision Zero Action Plan** 2024 Update

City of San Antonio
San Antonio, Texas

August 2024

Version #3

Implementation Plan

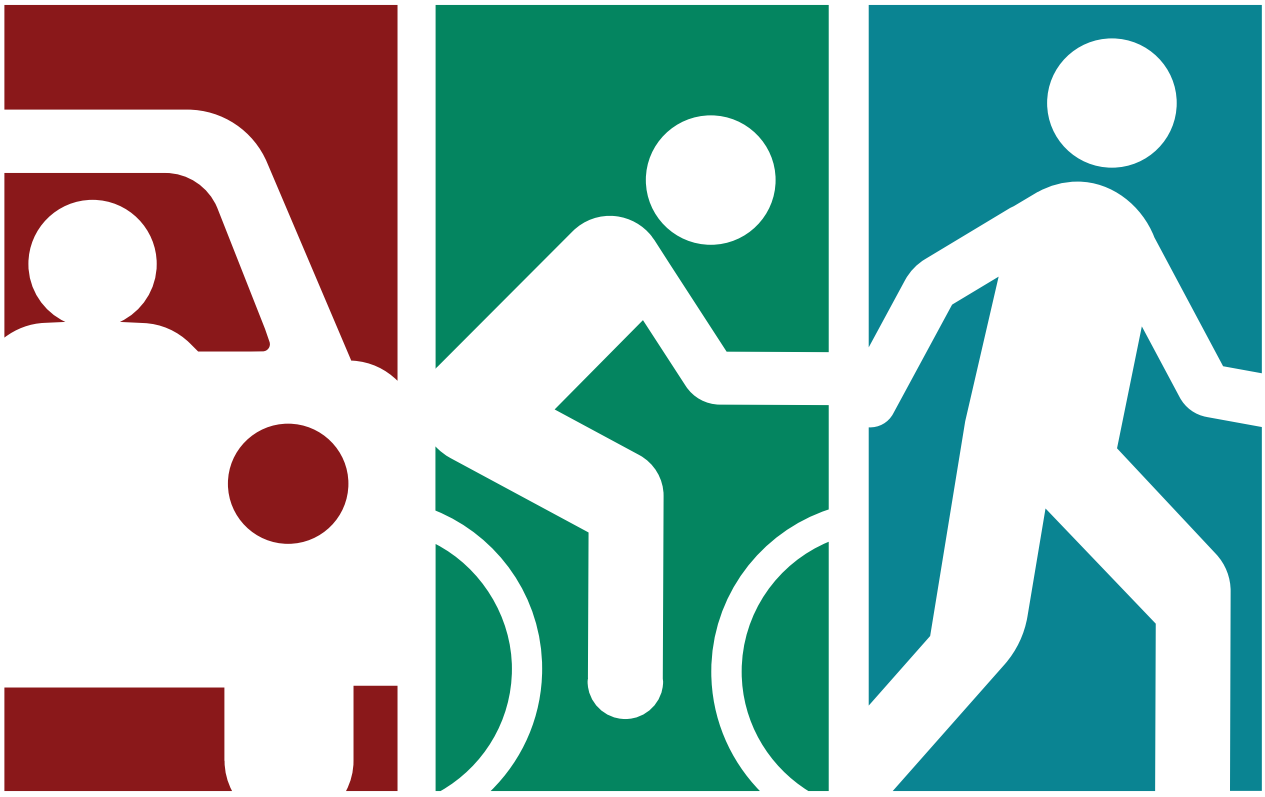

Table of Contents

Plan Tables

Introduction

Vision Zero is the movement to end all traffic deaths and serious injuries through implementing safe street design and safety-focused transportation policy. It is rooted in the principle that traffic deaths and serious injuries are preventable and that no one should lose their life while using any system of mobility. Multiple cities across the country and the world have successfully achieved Vision Zero, while many more are seeing progress in the reduction of serious crashes.[1]

In San Antonio, Vision Zero was first declared by Mayor Ivy Taylor in 2015, with the goal to end all traffic deaths and serious injuries in the City of San Antonio (the City or COSA) by 2040. The City's Vision Zero Action Plan (VZAP) was published in 2016.[2] The first plan of its kind in Texas, it focused on preventing serious crashes by implementing key actions grouped into strategies following the "Five E-s" of traffic safety: *education, encouragement, engineering, enforcement,* and *evaluation*.[3] After nearly a decade of new research and case studies, industry standards now focus on the outsized role that street design has on safety, rather than personal behavior and responsibility alone.[4]

Known as the *Safe System Approach*, this perspective of traffic safety emphasizes that everyone has a responsibility to end traffic deaths and serious injuries and is rooted in six foundational principles:[5]

Deaths and serious injuries are unacceptable. The Safe System Approach focuses on eliminating serious and fatal crashes rather than all crashes.

Humans make mistakes. No one is perfect, and it is inevitable that road users will make mistakes. Roads should be designed to be forgiving of human error, so serious crashes are unlikely to occur.

Humans are vulnerable. Humans can only withstand minimal crash impacts before serious injury or death occurs.

Responsibility is shared. From roadway engineers to vehicle manufacturers to road users, all stakeholders must work together to eliminate serious and fatal crashes.

Safety is proactive. Cities must use data-driven tools to identify where serious crashes could occur, rather than reacting after they happen.

Redundancy is crucial. All safety features must be strengthened, so if one element fails, the others still provide protection.

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[1] Vision Zero Network, "What is Vision Zero?" 2024, https://visionzeronetwork.org/about/what-is-vision-zero/
[2] Joan Vinson, "San Antonio Calls for Safer Streets with Vision Zero," San Antonio Report, 2015, https://sanantonioreport.org/san-antonio-calls-for-safer-streets-with-vision-zero/
[3] City of San Antonio, "Vision Zero Action Plan," 2016, Vision Zero Action Plan, https://www.sa.gov/files/assets/main/v/1/transportation/documents/vision-zero-action-plan.pdf
[4] United States of America, Department of Transportation, "Safe Systems Approach," 2022, https://www.transportation.gov/NRSS/SafeSystem
[5] USDOT, "Safe Systems Approach," 2022

These principles inform five key objectives for creating a Safe System:[6]

Safe Road Users. All modes of travel—walking, biking, taking transit, and driving—are all equitably addressed.

Safe Vehicles. Vehicles are designed and regulated to reduce the frequency and severity of collisions.

Safe Speeds. Lower speeds reduce impact forces, provide drivers more time to stop, and improve visibility.

Safe Roads. Road design should accommodate human mistakes and provide physical separation for people traveling at different speeds.

Post-Crash Care. Emergency response to crashes and forensic analysis at the crash site is crucial for stabilizing injuries and understanding why a crash happened.

The COSA Vision Zero Implementation Plan is the comprehensive list of recommended actions to transition San Antonio to a Safe Systems Approach City. It is a major component of, and appendix to, the City's 2024 Update to the VZAP. It recommends Strategies, Actions, and Tasks to be addressed by COSA, groups some of these actions into Priority Implementation Initiatives, and designates priority corridors for new safety-focused re-designs.

These recommendations are supported by localized research and analysis of multiple data sources. The City's High Injury Network (HIN) and High Risk Network (HRN) Study analyzed crash data from the past five years (2019-2023) alongside roadway attribute data to identify roadways with high historical concentrations of serious and fatal crashes (HIN) and roadways where there is a high risk of future severe and fatal crashes (HRN).[7] The City's Vision Zero Equity Report analyzed these networks in conjunction with demographic data to identify neighborhoods that are disproportionately impacted by traffic violence.[8] Throughout the development of the VZAP, community and stakeholder engagement was conducted to gain a comprehensive view of San Antonio's most vulnerable and concerning roadways. These efforts and the feedback collected are summarized in the City's Vision Zero Community and Stakeholder Engagement Report.[9]

This Implementation Plan is the synthesis of the above three documents — using data and community input to craft tailored actions to end roadway fatalities and serious injuries in San Antonio. In the following sections, this document will:

- Outline San Antonio-specific principles to root all recommendations
- List key performance metrics for the City to study and report progress
- Describe all recommended actions, larger initiatives, and corridors for implementation

[6] USDOT, "Safe Systems Approach," 2022, https://www.transportation.gov/NRSS/SafeSystem
[7] City of San Antonio, "Vision Zero Action Plan – High Injury Network and High Risk Network Study, 2024
[8] City of San Antonio, "Vision Zero Action Plan – City's Vision Zero Equity Report," 2024
[9] City of San Antonio, "Vision Zero Action Plan – Community Engagement Appendix," 2024

Plan Principles

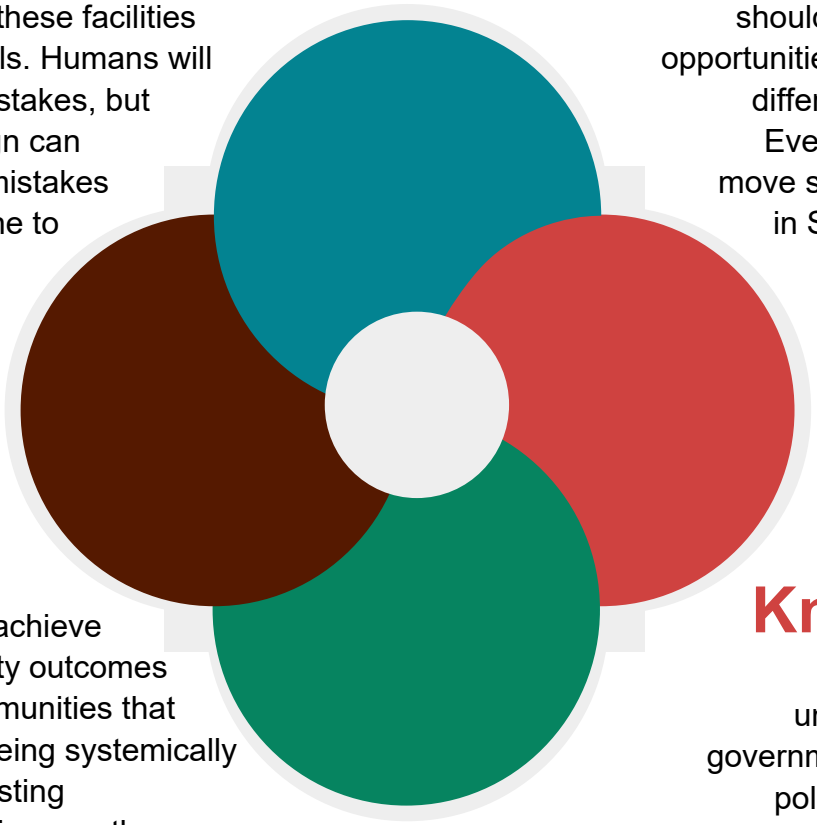
The first step in building a strong Vision Zero Implementation Plan is determining plan principles. These principles are specific to the implementing agency and serve as a foundation for action while informing the selection of performance metrics. The principles below encompass the *Safe Systems* principles while introducing other key concepts foundational to the City's ongoing efforts, such as equity and citizen engagement.[10]

Responsibility

Any death or serious injury on San Antonio's streets is unacceptable. We all have a responsibility to travel safely, but those who design, maintain, and operate roads have an obligation to prioritize safety on these facilities above all other goals. Humans will inherently make mistakes, but safe roadway design can ensure that those mistakes do not cause anyone to suffer a fatal or serious injury.

Mobility

How someone moves is not always their choice, so every type of mobility must be safe and viable. Whether due to disability, cost, or age, the inability to access a motor vehicle should not limit access to opportunities or put persons at differential levels of risk. Everyone has a right to move safely and efficiently in San Antonio, even if they do not use a vehicle.



Equity

The City strives to achieve parity in traffic safety outcomes for persons or communities that have been or are being systemically underserved by existing infrastructure, policies, or other systems – recognizing that different abilities and life experiences may result in different vulnerabilities, but that all people have physical limits for tolerating crash forces before death or serious injury occurs.

Knowledge

Citizens deserve to understand how their government is approaching policy action and to be informed about the seen and unseen conditions on the roads. Proactive identification of problem areas can help the City get ahead of the problem and keep the public informed.

[10] City of San Antonio – Office of Equity, "Office Of Equity Key Priorities – Fiscal Years 2020-2022," 2022, https://www.sanantonio.gov/Equity/Initiatives

Performance Metrics

The Plan's principles help organize trackable metrics to ensure that the City monitors its implementation in alignment with both the *Safe System Approach* and the City's overarching goals. Performance metrics will be monitored by City staff across departments including the Transportation Department (TD), Public Works (PWD), and the San Antonio Police Department (SAPD). Data to inform these metrics will be developed by the City or partner organizations such as the Texas Department of Transportation (TxDOT). **Table 1** lists the Plan's metrics with descriptions. As the principle of Equity is overarching, the table below highlights equity-centered versions of metrics in green, delineating metrics either by personal demographic identifications or by certain geographic areas. In the Expanded Action Tables, metrics to track implementation are provided for each task.

TABLE 1: SAN ANTONIO VISION ZERO PERFORMANCE METRICS WITH DESCRIPTIONS

	Name and Description	Source	Principle
#	*Method of measurement* for the **Name of the Metric** with a description **– and its applicable equity-centered metric.**	Source or Department	Principle
1	*Count* of **crashes resulting in deaths (K) and serious injuries (A)** retrieved from TxDOT Crash Records Information System (CRIS) with a standard query **– sorted by High Equity Concern Areas in comparison to all others & the percentage of K&A crashes by different demographics.**	TxDOT Crash Records Information System (CRIS)	Overall
2	*Count* of projects **implementing safety improvements along streets** across implementing agencies in San Antonio **– sorted by High Equity Concern Areas in comparison to all others.**	Transportation Department	Responsibility
3	*Count* of **intersection and signal safety improvements** across implementing agencies in San Antonio **– sorted by High Equity Concern Areas in comparison to all others.**	Transportation Department	Responsibility
4	*Percentage* **change in commute mode share** retrieved from a standard data query from ACS data yearly **– by persons of differential self-reported demographics & percentage change in commute mode share within High Equity Concern Areas in comparison to all others.**	US American Community Survey (ACS) Data	Mobility
5	*Count* of **traffic stops** with citation information with geocoordinates from SAPD systems **– within High Equity Concern Areas in comparison to all others and sorted by persons of differential officer-perceived demographics.**	San Antonio Police Department	Responsibility
6	*Count* of **policies** implemented or amended, new **programs** created, or **grants** applied for and received.	Transportation Department	Responsibility
7	*Count* of **new signs deployed** as part of safety improvements across implementing agencies across San Antonio **– within High Equity Concern Areas in comparison to all others.**	Public Works Department	Knowledge
8	*Count* of all **digital and print engagement materials** distributed by category: Data Portals, Reports, etc.	Transportation Department	Knowledge
9	*Count* of the number of **residents and students reached** by Vision Zero activities by direct counts or counts of survey responses **– by self-reported residence in High Equity Concern Areas in comparison to all others and by self-reported demographics.**	Transportation Department	Knowledge
10	*Count* of the total number of **in-person or online education and safety events** held in support of Vision Zero **– within High Equity Concern Areas in comparison to all others.**	Transportation Department	Knowledge

Strategies, Actions, and Tasks

Supported by stakeholder engagement as well as data analysis, the Implementation Plan recommends a list of actions the City may implement to transition its approach to engagement, roadway infrastructure, maintenance, and other operations in alignment with the Safe System Approach. These actions are summarized in the main VZAP; these Expanded Action Tables list, in detail, the smaller tasks associated with implementing each action.

Organization of the Actions

The Implementation Plan actions are grouped and organized as follows:

- **Objectives** are based on those of the Safe Systems Approach and organize all actions - working together to comprehensively make speeds, roads, people, and vehicles safer and improve post-crash response and analysis.
- **Strategies** summarize and organize actions into an overall aim, grouping them into strategies that affect the same metrics or parts of the objective.
- **Actions** are specific activities and programs that are implementable, metric and time bound, and led by specific entities.
- **Key Actions** are those that have an outsized impact on the success of the VZAP and should be implemented within the next five years.
- **Tasks** are the smaller components of actions – sometimes time or geographically phased parts of actions or individual policies to be amended.

The expanded action tables below are organized along these levels (Objective, Strategy, Action, and Task). A sample of the following Expanded Action Tables is provided in **Table 2**. **Tables 3**, **4**, **5**, **6**, and **7** contain Strategies, Actions, and Tasks for the Safer Streets, Safer People, Safer Speeds, Safer Vehicles and Post-Crash Response & Analysis objectives, respectively. Associated with each action are metrics for evaluation, an estimate of impact on reducing the number of severe and fatal crashes and a general timeline for implementation. The metrics for each action were selected from the 10 metrics in **Table 1** and used if clearly associated with each action. The impact was determined by reviewing applicable studies and peer cities' successes with a similar action to produce a planning-level estimate for an action's potential to reduce the number of severe and fatal crashes in San Antonio. Those actions less frequently studied or shown to be less impactful received a lower rating than well-studied or proven successful actions.

COSA TD's Implementation Partners listed in **Tables 3**, **4**, **5**, **6**, and **7** include:

- Partner COSA Departments
  - Public Works Department (PWD)
  - Attorney's Office
  - Center City Development & Operations (CCDO)
  - Communications & Engagement (C&E)
  - Development Services (DSD)
  - Government Affairs (GA)
  - Municipal Court (Muni-Court)
  - Planning
  - San Antonio Police Department (SAPD)
- Partner Agencies
  - Alamo Area Metropolitan Planning Organization (AAMPO)
  - Bexar County Sherriff (BCSO)
  - Federal Highway Administration (FHWA)
  - VIA Metropolitan Transit
- ActivateSA
- American Association of Retired Persons (AARP)
- Standing Transportation Committee (STC)

TABLE 2: EXAMPLE EXPANDED ACTION TABLE

OBJECTIVE Description of the Safe System Objective					
	Action	**Implementation Lead**, *Support*	Impact	Metrics	Timeline
Strategy	A complete description of the Action • A description of any Task associated with the above Action	**Implementation Lead**, *Support*	High, Medium, or Low	#, #, #	Ongoing, X Years, Visionary
	A Key Action, with associated description • Any Task associated with the Key Action	**Implementation Lead**, *Support*	High, Medium, or Low	#, #, #	Ongoing-X Years, Visionary

TABLE 3: SAFER STREETS EXPANDED ACTION TABLE

SAFER STREETS	Safer Streets calls on the City to design roadways that anticipate human mistakes, account for injury tolerances when mistakes are made, encourage safer behaviors, and facilitate safe travel by the most vulnerable users.				
	Action	**Implementation Lead**, *Support*	Impact	Metrics	Timeline
Establish and Utilize a Comprehensive Quick-Build Program	**Identify Funding to Support a Quick Build Program.** • Apply for federal grants to support implementation of a quick build program to explore new roadway designs and quickly build new, connected, and protected bicycle or pedestrian spaces.[11] • Establish a quick build process and program that is integrated into city procedures.	**TD**, *PWD, GA, FHWA* **TD**, *PWD*	Medium High	6 6	Ongoing 1-5 Years

[11] U.S. Department of Transportation, “Safe streets and roads for all (SS4A) grant program,” https://www.transportation.gov/grants/SS4A.

Amend Policies to Make Safe Infrastructure More Implementable	Update Applicable Design Manuals and Toolkits. • Review processes to increase efficiency of the integration of national best practice and safety standards for different policies and handbooks such as the Design Guidance Manual, UDC, Traffic Calming Toolkit, Standard Specification Detail.[12] • Review current design guidelines and recommend integrating new or missing safety counter measures when applicable.	**TD**, *PWD, DSD* **TD**, *PWD, DSD*	Low Medium	6 6	Ongoing Ongoing
	Make Required Traffic Studies More Deployable and Impactful. • Develop citywide guidelines for the installation of mid-block crosswalk locations and placement supported by engineering judgement.[13]	**TD**, *PWD*	Medium	6	1-5 Years
	Conceive of Roads Safety-First. • Use an updated Complete Streets Checklist to identify if safety improvements could be incorporated into qualifying street maintenance projects.	**PWD**, *TD*	Medium	6	1-5 Years

[12] Federal Highway Administration, “Strengthening Our World-Class Highway System,” 2024, https://highways.dot.gov/
[13] FHWA, “Medians and pedestrian refuge islands in urban and suburban areas,” https://highways.dot.gov/safety/proven-safety-countermeasures/medians-and-pedestrian-refuge-islands-urban-and-suburban-areas

Operate Infrastructure Safety-First	**Adjust Signals for Pedestrian Safety.** • Update existing signals in Central Business District, new transit-oriented development corridors, HIN and HRN corridors with pedestrian leading intervals signals. Research other pedestrian safety interventions for intersections to address any other safety concerns and the need to upgrade equipment.[14]	**PWD**, *TD, CCDO*	Medium	3, 4	1-5 Years
	Require Safer Vehicle Operations in High-Risk Areas. • Evaluate and determine the addition of "Don't block the box" signage at intersections in Central Business District or along new transit-oriented development corridors, HIN and HRN corridors.[15] • Beginning in the Central Business District, research introducing no turning right on red at intersections where feasible. Following this implementation, consider similar requirements along HIN and HRN Corridors.[16]	**TD**, *PWD, DSD, CCDO* **TD**, *PWD, DSD, CCDO*	Medium High	6,7 6,7	1-5 Years 1-5 Years

[14] Federal Highway Administration, “Leading Pedestrian Interval,” https://highways.dot.gov/safety/proven-safety-countermeasures/leading-pedestrian-interval#:~:text=A%20leading%20pedestrian%20interval%20(LPI,to%20turn%20right%20or%20left.
[15] City of San Antonio, “Don’t block the box program,” https://311.sanantonio.gov/kb/docs/articles/transportation/dont-block-the-box-program
[16] Federal Highway Administration, “Right turn on red restrictions,” https://safety.fhwa.dot.gov/saferjourney1/library/countermeasures/44.htm

Implement Priority Projects	**Analyze and Implement Infrastructure Solutions along Recommended Corridors.** • Evaluate and determine proven safety countermeasures to incorporate into the design of projects in the City's bond programs in alignment with HINs and HRNs identified in the VZAP. • Integrate HIN, HRN, and prioritized corridors into the City's capital improvements and bond programs to help determine new projects and prioritization of all projects.	**TD**, *PWD* **PWD, TD**	High High	2,3,5 2,3,5	Ongoing Ongoing
	Use Infrastructure to Create a Safer and more Accessible Pedestrian Experience. • Explore updating the Sidewalk Reconstruction Program to focus on arterial rather than residential streets, particularly those in the HIN and HRN.[17] • Improve safety at night by analyzing serious and fatal nighttime crashes to determine if additional streetlights could improve safety and installing consistent street lighting and safety call boxes as a part of rolling maintenance.[18] • Evaluate the utilization of COSA's existing tree fund to install street trees along new sidewalk reconstructions and the HIN and HRN.	**PWD**, *TD, DSD* **TD**, *DSD, FHWA* **TD**, *PWD, DSD*	High Medium Low	2,3,5 2,3,5 2,3,5	1-5 Years 1-5 Years 1-5 Years
	Collaborate on Grant Opportunities • Work collaboratively and strategically interdepartmentally to identify projects that can be grant funded.	**TD**	Low	6	Ongoing

[17] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. 2022. https://www.sciencedirect.com/science/article/abs/pii/S0001457521005790

[18] Federal Highway Administration, “EDC-7: Nighttime Visibility for Safety,” https://www.fhwa.dot.gov/innovation/everydaycounts/edc_7/nighttime_visibility.cfm#:~:text=The%20nighttime%20fatality%20rate%20on,pedestrian%20fatalities%20occur%20at%20night.

TABLE 4: SAFER PEOPLE EXPANDED ACTION TABLE

SAFER PEOPLE	Safer People aims to encourage responsible driving and create conditions that prioritize all road users' abilities to reach their destination unharmed. Crashes have a disproportionate impact on road users who are not in a vehicle – discouraging dangerous driver behavior helps everyone. A robust approach to influencing human behavior requires using all tools at the City's disposal.				
	Action	**Implementation Lead**, *Support*	Impact	Metric	Timeline
Engage and Educate All San Antonians Clearly and Consistently	**Educate Users of High Injury and High Risk Roadways.** • Conduct safety education and information campaigns including press releases, social media posts, and other materials focused on the safety concerns of HIN and HRN corridors. • Implement responsive speed signs on HIN and HRN streets where speeding is an issue.[19]	**TD**, *C&E* **PWD**, *TD*	Medium Low	8, 9, 10 7	Ongoing 1-5 Years
	Develop An All-Ages Educational Curriculum. • Develop a detailed educational curriculum targeting youth in classrooms, driving schools, and other programs to instill the value of operating vehicles safely. • Develop a detailed educational curriculum that will be used with older adults in targeted programs and organizations such as but not limited to senior centers. • Collaborate with public health experts to develop an intervention for distracted driving based on behavioral change practices.	**TD** **TD** **TD**	Medium Medium Medium	6, 8, 9, 10 6, 8, 9, 10 6, 8, 9, 10	1-5 Years 1-5 Years 1-5 Years

[19] National Highway Traffic Safety Administration, "Intelligent speed assistance," https://www.nhtsa.gov/book/countermeasures-that-work/speeding-and-speed-management/countermeasures/other-strategies-behavior-change/intelligent

	Continued Education for Transportation Professionals. • Provide funding for the continued education of city transportation planners, engineers, and managers taking the form of online classes, certifications, conference attendance, and others. • Conduct walk audits with COSA staff, contractors, and stakeholder agencies such as schools, AAMPO and AARP, targeting all those involved in the construction of multimodal facilities. • Encourage all employees of the Planning, Transportation, and Public Works Departments to take a localized Vision Zero course outlining where and why high injury areas exist in San Antonio and solutions to implement safe design.	**TD**, *Planning* **TD**, *AAMPO, AARP, ActivateSA* **TD**	Low Medium Low	6, 8, 9, 10 6, 8, 9, 10 6, 8, 9, 10	Ongoing Ongoing Ongoing
	Improve Vision Zero's Public Presence and Support Existing Safety Education Initiatives. • Improve Vision Zero's relationship with the public by attending community events, participating in local, state, national, and worldwide safety events, continual engagement through different forms of media, active reporting on new infrastructure, and partnerships with other organization on their safety campaigns. • Standardize all language relating to crashes and traffic violence in the Municipal Code and other guidance documents to note "crash" or “collision” instead of an "accident," in alignment with Texas House Bill 2190.	**TD** **TD**, *Planning, DSD*	Medium Low	8, 9, 10 8, 9, 10	Ongoing 1-5 Years

Highlight and Analyze New Infrastructure	Increase Visibility Around New Infrastructure. • Create and deploy a communication strategy for new projects and infrastructure including standardized educational or informational materials which may be distributed before, during, and after construction of roadway improvements to inform the public of changes to the roadway design.	**TD, PWD**	Medium	6, 8, 9, 10	1-5 Years
	Ensure Infrastructure Deployments are Planned for and Studied Comprehensively. • Integrate training and enforcement of traffic control plans that incorporate routes for biking and walking. • Amend the Code of Ordinances to require construction crews provide alternative pathways adequate for bike and pedestrian use. The City will explore strategies and procedures discouraging the closure of sidewalks and bike lanes to include temporary vehicular lane closure to provide pedestrian with alternative access.	**PWD**, *TD, DSD* **TD***, PWD, DSD*	Medium High	7 6	1-5 Years 1-5 Years

TABLE 5: SAFER SPEEDS EXPANDED ACTION TABLE

SAFER SPEEDS	The City will promote Safer Speeds in all roadway environments through a combination of thoughtful, equitable, context-appropriate roadway design, appropriate speed-limit setting, targeted education, and enforcement. Unsafe speeds are a well-documented and understood factor in death and injury, especially among people outside of a vehicle.				
	Action	**Implementation Lead**, *Support*	Impact	Metric	Timeline
Build Robust Partnerships and Advocate for Change.	**Advocate at the State Level for Greater Municipal Flexibility.** • Support lowering the prima facie speed limit in Texas from 30mph to 25mph.[20] • Advocate for a change to the Texas Transportation Code to remove the requirement for an engineering or traffic investigation to declare a speed limit below 20 mph if the street is in a residential area.	**TD**, *TxDOT, PWD, GA* **GA**, *TxDOT, TD*	High Medium	6, 8, 9 6, 8, 9	Ongoing 1-5 Years
	Coordinate with Partner Agencies to Highlight Efforts and Build Robust Partnerships. • As new roadway designs are implemented and proven successful, work with partner agencies to highlight and promote successful infrastructure. • Coordinate with TxDOT, County, and surrounding municipalities to introduce speed limit changes & countermeasures on non-COSA HIN streets.	**TD, PWD**, *AAMPO, TxDOT, VIA, SAPD, FHWA* **TD**, *TxDOT, FHWA*	Medium Low	6, 7, 8, 9, 10 6, 8, 9	Ongoing 1-5 Years
Systemically Slow Speeds	**Slow Speeds in Every Neighborhood.** • Neighborhood by neighborhood, systematically perform traffic studies on all streets in the city where a specific speed limit has not been posted to analyze a reduction in speeds from 30mph to 25mph.[21]	**TD**, *PWD, DSD*	High	6, 7, 8, 9, 10	Visionary

[20] B.C. Tefft, "Impact Speed and a Pedestrian's Risk of Severe Injury or Death (Technical Report)," Washington, D.C.: AAA Foundation for Traffic Safety (2011)
[21] National Highway Traffic Safety Administration, "Lower Speed Limits," https://www.nhtsa.gov/book/countermeasures-that-work/speeding-and-speed-management/countermeasures/legislation-and-licensing/lower-speed-limits

TABLE 6: SAFER VEHICLES EXPANDED ACTION TABLE

SAFER VEHICLES

Expanding the availability of vehicle safety features that help to prevent crashes and injuries will minimize the impact of a crash on both occupants and non-occupants. This objective includes promoting the safety of both passenger cars and commercial vehicles.

	Action	Implementation Lead, *Support*	Impact	Metric	Timeline
Make All Mobility Safe	Support Safer Transit. • Perform a walkshed survey within a half-mile of transit centers and high ridership stops to identify locations with unsafe, missing, or non-accessible sidewalk infrastructure, including deficiencies such as ADA ramps absent or not flush with the roadway pavement or missing clearly striped crosswalks. • Review and update transit-oriented development zoning along VIA's planned Advanced Rapid Transit (ART) corridors to encourage active transportation and reduce trips made by personal motor vehicles.	**TD**, *PWD, DSD, Planning, VIA* **TD**, *PWD, DSD, VIA, Planning*	High Low	6 6	1-5 Years 1-5 Years
	Empower Pedicabs. • Increase the number of pedicab operating licenses and expand the pedicab operating area. • Lift restrictions on pedicab operations on Commerce, Market, and Cesar Chavez, and amend the Code of Ordinances to remove the 1 a.m. pedicab curfew.	**SAPD**, *TD, CCDO, DSD* **SAPD**, *TD, CCDO, DSD*	Low Low	6 6	Visionary Visionary

Encourage Safer Mobility Contexts	Update Development Requirements. • Explore incentive-based options or alternative measures to encourage new developments that are on existing pedestrian and bike networks to include connecting infrastructure.	**TD**, *Planning, PWD, DSD*	High	6	Visionary
	Encourage Safe Vehicle-Parking Practices. • Ban the construction of new front-in parking spaces on all arterial and collector roadways and begin converting existing front-in parking spaces to parallel or angled parking areas.[22]	**TD**, *Planning, PWD, DSD*	Medium	2, 6	1-5 Years
	• Evaluate the city-wide removal of parking minimums through the UDC amendment process.	**DSD**, *TD, Planning, PWD*	Medium	6, 9, 10	1-5 Years
	• Recommend dedicated bikeways and walkways through parking lots.	**TD**, *Planning, PWD, SAPD, DSD*	High	6	1-5 Years
	• Require large bike and micromobility parking areas at major sporting and other events.[23]	**TD**, *Planning, PWD, SAPD, DSD*	High	6, 10	1-5 Years
Advocate for Safer Vehicles	Advocate for Safer Vehicles Designs and Regulations at the Federal and State Levels. • Advocate at the federal level for smaller vehicles sizes, improved safety regulations and continued improvements to New Car Assessment Program.	**GA**, *TD, PWD, TxDOT*	Low	6, 9	1-5 Years
	• Advocate for federal amendments to Corporate Average Fuel Economy standards to require more stringent regulations for all vehicles.	**GA**, *TD, PWD, TxDOT*	Low	6, 9	1-5 Years
	• Advocate for federal amendments to the Federal Motor Vehicle Safety Standards to consider safety for those outside of the vehicle before the safety of those inside the vehicle.	**GA**, *TD, PWD, TxDOT*	Low	6, 9	1-5 Years

[22] Findley et al. “Safety effects of parking maneuvers,” (2020), https://www.sciencedirect.com/science/article/abs/pii/S1369847819308812
[23] Federal Highway Administration, “Lesson 17: Bicycle parking and Storage,” https://www.fhwa.dot.gov/publications/research/safety/pedbike/05085/pdf/lesson17lo.pdf

TABLE 7: POST-CRASH RESPONSE AND ANALYSIS EXPANDED ACTION TABLE

POST-CRASH RESPONSE & ANALYSIS

Post-Crash Care and Analysis means to enhance the survivability of crashes through expedient access to emergency medical care, while creating a safe working environment for vital first responders and preventing secondary crashes through robust traffic incident management practices. The city will commit to supporting resources and activities that improve post-crash care.

	Action	**Implementation Lead**, *Support*	Impact	Metric	Timeline
Collaborate with First Responders	**Coordinate with Officers for Strategic Development.** • Use Data-Driven Approaches to Crime and Traffic Safety (DDACTS) program to organize high visibility enforcement along the HIN and HRN, specifically along these roadways as new infrastructure is deployed and tested. • Work with SA Fear Free Environment (SAFFE) officers for selective deployment along quick build infrastructure and at new traffic management deployments for high visibility enforcement role at certain times of day and lead community outreach to raise awareness on traffic safety.	**SAPD**, *TD* **TD**, *SAPD*	Medium Medium	5 5	1-5 Years Visionary
	Coordinate with Officers on New Mobility Laws. • Through collaboration identify traffic offenses that can be established to address driving behaviors. • Brief law enforcement agencies about new ordinances, including no parking in bike lanes and no right turn on red, once implemented, to ensure enforcement of new laws.	**TD**, *SAPD, Muni-Court, Attorney's Office* **TD**, *SAPD, BCSO*	Medium Low	6 6	1-5 Years Ongoing

Understand Infrastructure and Roadway Behaviors Wholistically	Collect Data to Understand the Effects of New Infrastructure. • Measure average speeds and the percentage of speeding cars before and after the installation of new infrastructure. • Work with PW to streamline the process of maintaining an improvements inventory.	**TD**, *PWD, SAPD* **TD, PWD**	Medium Low	5 2, 6, 7	1-5 Years 1-5 Years
	Standardize and Expand Data Collection. • Create a speed count program to count the number of drivers exceeding the speed limits into a single geo-data source. • Improve citation reporting by partnering with SAPD to identify funding to update all patrol vehicles to an E-ticket system to allow for improved geocoordinates and reporting. • Work with SAPD to analyze blood alcohol data for crashes resulting in a fatality to identify appropriate countermeasures. • Take targeted bike and pedestrian counts to better understand travel behavior and plan for multi-modal uses across San Antonio.	**TD**, *SAPD* **TD, SAPD**, *Muni-Court* **TD, SAPD** **TD**, *PWD*	Medium Medium Low Medium	6 6 6 4, 6	1-5 Years Visionary Ongoing Ongoing
Collaborate with Partners	Commission Implementation Partners with Tasks Associated with Strategy and Project Implementation • Charge the Standing Transportation Committee with the analysis of lower speeds, implementation of new safe designs, monitoring progress on HIN and HRN roadways across jurisdictions. • Charge the Vision Zero Team with reviewing and identifying gaps, loopholes, or deficiencies in local ordinances, codes, standards, and practices to update policies, codes, and standards that are more sensitive to Vision Zero safety concerns. Including a review and recommendation from any appropriate committee/commission.	**TD** **TD**, *Planning*	Low Medium	5, 6 6	1-5 Years 1-5 Years

	• Charge the Stranding Transportation Committee with recommending any updates to the Vision Zero Policy.	**TD**	Low	6	1-5 Years

Priority Implementation Initiatives

Many of the actions described above sort logically into larger initiatives that can be undertaken by the City to implement new infrastructure, connect with the community, and enforce new policies. These initiatives are not accomplished by implementing a specific policy change, but rather require continued effort over the long term and will inform much of COSA TD's Vision Zero-related work. All initiatives in this Implementation Plan focus on the deployment of new infrastructure or significant, coordinated action across scales and teams within the City, and while policy changes, education, and data collection are an essential part of them, their primary function is to deploy infrastructure to slow traffic and save lives.

Initiative 1: Quick-Builds

The City's Quick-Build Initiative will identify new roadway designs and streamline City procedures to quickly implement safer and more connected spaces for cyclists and pedestrians.[24] This initiative will also test and evaluate new designs before final construction begins. Upon completion of quick-build projects, new signage will be deployed to keep the public educated about changes to the roadway. Quick-build initiatives utilize small-scale, easy-to-implement pieces of infrastructure such as striping, parking stops, jersey barriers, and armadillo bumps to ensure rapid results in high injury/high risk areas. Quick-build interventions can be low-cost, temporary solutions ahead of larger-scale projects, but they can also be long-term, simple solutions where small adjustments can have a large impact to be undertaken alongside calming installations.[25] However, not all projects are eligible for quick-build applications based on the design features, such as roadway realignment projects, physical signal modifications, or significant right-of-way acquisition.

Peer City Initiatives:

Earlier this year, the City of New Braunfels, Texas, published its *Street Safety Action Plan*, detailing numerous strategies to incorporate Vision Zero principles into future city plans. The Safe Streets Toolkit frequently recommends quick-build options as alternatives or precursors to permanent interventions. New Braunfels recognizes the ability of quick-build projects to test and refine street improvement projects.[26] Tampa, Florida also utilizes quick-build construction to support its Vision Zero goals. The City emphasizes the ability of quick-builds "to support cost effective, rapid deployment of safety and multimodal treatments to deliver the maximum safety impact." [27]

Justification:

The City's Quick-Build Initiative is supported by an application to the Safe Streets and Roads for All (SS4A) grant program established by the Bipartisan Infrastructure Law. This program can provide the City with millions in funding and better position the City to compete for future federal grants.[28]

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[24] Vision Zero Network. Use these tools to save lives: Quick, low-cost, effective street redesigns. https://visionzeronetwork.org/use-these-tools-to-save-lives/

[25] US FHWA. Traffic Calming Basics. https://highways.dot.gov/safety/speed-management/traffic-calming-eprimer/module-2-traffic-calming-basics

[26] City of New Braunfels, "Street Safety Action Plan," 2024, 40, 48, 62, 67

[27] City of Tampa, "Tampa Vision Zero Action Plan," 2021, 46, 57

[28] Steve Davis, "Supercharge your community's quick-build safety demonstration projects with Safe Streets for All," Transportation for America, 2024, https://t4america.org/2024/02/13/supercharge-your-communitys-quick-build-safety-demonstration-projects-with-safe-streets-for-all/

Quick-build infrastructure can support road reallocations to redistribute space to accommodate more types of road users without impacting traffic flow.[29] The FHWA found that a redesign of a four-lane road to a three-lane road can reduce the crash rate by 19 to 47 percent while not impacting emergency response time.[30,31,32] This can provide separate space for pedestrians and cyclists. According to an analysis conducted during the San Antonio Bike Network Plan update, quick build infrastructure can be constructed for about 1/5 of the cost in 1/7 of the time it takes to build permanent infrastructure.[33] Vision Zero Committee meetings conducted during the creation of this plan showed wide support for quick builds, as they are convenient for both the public and the City, and they can make a big difference with minimal resources. Furthermore, as shown on the Barton Springs Road redesign in Austin, surveying the community can build support for similar roadway projects in the future.[34]

Public Comments:

At a community meeting conducted April 18, 2024, community members were asked what kinds of traffic calming tools they would like to see and where. In response, they listed several types of quick-build interventions, and one community member mentioned quick-builds specifically, requesting "More than just speed bumps! Chicanes, roundabouts, and more – make it easier to build through quick-build infrastructure programs."[35] Specific interventions mentioned included speed bumps in high traffic areas, more one-way streets downtown, raised pedestrian crosswalks, narrower streets, the addition of medians and curb extensions, reducing lane quantities on local streets in favor of bike and pedestrian traffic, as well as repeated mentions of reduced and more heavily enforced speed limits. It was also noted that drivers are more likely to modify their speed for changes in the physical road as opposed to abiding by slower speed limit signs.

[29] People for Bikes. 2016. Quick Builds for Better Streets: A New Project Delivery Model for US Cities cchrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://nacto.org/wp-content/uploads/2016/05/2016PeoplefoBikes_Quick-Builds-for-Better-Streets.pdf

[30] Pawlovich, M. D., Li, W., Carriquiry, A., & Welch, T. (2006). Iowa's Experience with Road Diet Measures: Use of Bayesian Approach to Assess Impacts on Crash Frequencies and Crash Rates. *Transportation Research Record*, *1953*(1), 163-171. https://doi.org/10.1177/0361198106195300119

[31] Bhagwant Persaud, Bo Lan, Craig Lyon, Ravi Bhim, Comparison of empirical Bayes and full Bayes approaches for before–after road safety evaluations (2010). https://doi.org/10.1016/j.aap.2009.06.028.

[32] Corcoran, N., Hamann, C. J., Reyes, M. L., Jansson, S., & Cavanaugh, J. E., " Impact of 4-to-3 lane conversions on emergency response," *Transportation Research Interdisciplinary Perspectives* (2024), *26*, 101158. https://doi.org/10.1016/j.trip.2024.101158

[33] City of San Antonio, "Bike Network Plan – SS4A Grant Appendix," 2024

[34] City of Austin, "Barton Springs Road Safety Pilot," May 2024, https://www.austintexas.gov/sites/default/files/files/TPW/VisionZero/BSR_5_2024_Midpilot_Report.pdf

[35] City of San Antonio, "Vision Zero Action Plan – Community Engagement Appendix," 2024

Initiative 2: All-Ages Educational Roadway Safety Education

Using separate curricula developed for different age groups, the City will conduct educational outreach on relevant topics such as Vision Zero goals, safe driving behaviors, and existing safety initiatives. City Staff will teach lessons quarterly and will reinforce important topics as well as discuss new or relevant events and ideas, tailoring these lessons to be most impactful for the audience.

Peer City Initiatives:

In the Hoboken Master Plan Reexamination, study results suggest the adoption of lower speed limits throughout the city. Additionally, the study suggests a need for an "educational campaign directed at residents, businesses, students, and community organizations about bike safety and laws, safe streets laws, and driver safety."[36] Hoboken's Vision Zero Plan from 2020 elaborates on this, mentioning the integration of traffic education in school curricula and prioritizing education as an action item several times throughout their Vision Zero Implementation Plan.[37] Likewise, Houston's 2020 Vision Zero Action Plan's action items 1.7-1.10 prioritize education, and all these items fall under their priority umbrella of "Outreach."[38] These campaigns range from elementary educational programs for walk, bike, and bus safety, to outreach programs for adults, to expanded emphasis on "reducing traffic fatalities in Defensive Driving course[s]." [39]

Justification:

The continued efficacy and efficiency of COSA's VZAP is predicated on the continued education of and support from the community. This means deliberate engagement with San Antonians beyond the passage of the VZAP will ensure that residents stay informed and are active participants in reducing traffic deaths and severe injuries. Raising awareness about traffic safety can help create a culture of safe driving and road use. Improving data sharing and communication with residents of San Antonio will increase transparency and public trust. COSA TD has already begun the process of developing and deploying roadway safety curricula and materials. Continued coordination between TD, other COSA departments, local schools and other community groups will be necessary to ensure diverse coverage.

Public comments:

Results from both public meetings showed majority support for educational campaigns. Participants highlighted similar initiatives in other cities which provide signage near roadway improvements that educate the public on how it will increase their safety. Multiple educational topics were mentioned, such as pedestrian safety, defensive driving, and new infrastructure. When asked which specific street-related issues required more education to improve road safety, top responses included drivers' etiquette lessons or refreshers, bicyclist regulations, and emphasized pedestrian safety. Singular comments also mentioned reintegration of Drivers' Education programs into San Antonio public schools.

[36] City of Hoboken, "Master Plan," 2018, 20.
[37] City of Hoboken, "Vision Zero Action Plan," 2021, 70
[38] City of Houston, "Vision Zero Action Plan," 2020, 26-29
[39] City of Houston, "Vision Zero Action Plan," 2020, 229

Initiative 3: Distracted Driver Behavior Change Initiative

Working with Public Health Professionals, the City will develop a behavioral change initiative. The initiative will be rooted in behavioral change best practice research. The development of the initiative will focus on identifying a target audience of drivers and developing targeted outreach. The goal of the outreach will be to decrease distracted driving behavior within the target audience. Once the initiative is tested it can be replicated for other audiences and topics.

Peer City Initiatives:
As part of its Vision Zero initiative, Washington D.C. has several educational videos to educate citizens on dangerous driving behaviors. One such video focuses on distracted driving.[40]

Justification:
As with **Initiative 2**, a Distracted Driver Behavior Change Education will play an important role in the continued efficacy and efficiency of COSA's VZAP. Educating San Antonians specifically about the dangers of distracted driving can help raise awareness and contribute toward creating a culture of safe road use.

Leveraging public health practices is a goal put forward by the U.S. Department of Transportation[41] and there is national recognition and effort by the Centers for Disease Control and Prevention (CDC) and the National Highway Traffic Safety Administration (NHTSA) to address distracted driving in the United States.[42]

Public Comments:
Though the public did not receive direct inquiry as to the education programs specifically targeting distracted driving behaviors, their responses to the query of "How can the City better involve and include residents from diverse backgrounds and neighborhoods in the planning and implementation of the VZAP?" can help inform the distracted driving behavioral change initiative. Top responses included:

- more in-person outreach at community events
- social media campaigns
- print campaigns
- inclusion of a diverse range of organizations
- efforts to reach younger populations

As the City makes strives to better educate and inform citizens of safe driving practices, they can use the perceived needs of the public to prioritize initiatives like this one.

[40] District of Columbia, "Vision Zero DC" https://visionzero.dc.gov/pages/education"
[41] National Roadway Safety Strategy, U.S. Dept. of Transportation, January 2022, https://www.transportation.gov/sites/dot.gov/files/2022-02/USDOT-National-Roadway-Safety-Strategy.pdf
[42] Distracted Driving | Distracted Driving, CDC, May 2024, https://www.cdc.gov/distracted-driving/about/index.html?CDC_AAref_Val=https://www.cdc.gov/transportationsafety/distracted_driving/index.html#problem

Initiative 4: Strategic Enforcement

When new quick-build or permanent infrastructure is installed on major thoroughfares, SAPD will deploy a Traffic Patrol to conduct high visibility enforcement (HVE) to ensure that new street configurations are being complied with for up to a month after installation. New HVE patrols will be publicized through press releases and social media in collaboration with TD. This initiative will utilize DDACTS funding to support the successful implementation of new roadway infrastructure and speed limits.

Peer City Initiatives:

From October 2016 to September 2017, the city of San Francisco, California implemented a high visibility enforcement program targeting driver speeds. The city likewise conducted a study analyzing the efficiency of the program and found that during the campaign the corridors that had HVE saw a 5% reduction in 85th percentile speeds during enforcement.[43] Following the conclusion of the year-long campaign, reductions in driver speeds began to diminish only one week after the end of enforcement. This suggests that in order for high visibility enforcement to be an effective traffic calming measure, it needs to be implemented consistently, and well-communicated to the public.

Justification:

Drivers can be encouraged to abide by new roadway designs or reduced speed limits through HVE patrols. Publicizing HVE can also encourage drivers to be safe, even without visible patrols.[44] While, SAPD already participates in the state-funded DDACTS program, coordination with the TD will be necessary to identify what new ordinances, speed limits, or street designs need to be enforced.

Public Comments:

Although there were a few isolated comments in support of police presence in general, the public has not been explicitly polled on interest in an initiative like this. Further engagement and polling would need to be done to determine public support for this initiative.

[43] Vision Zero SF, “Executive summary: safe speeds sf high visibility enforcement Campaign findings,” 2020, https://www.sfmta.com/sites/default/files/reports-and-documents/2020/02/safespeedssfhvecampaignfindingswithappendices_2020.01.pdf

[44] National Highway Traffic Safety Administration, “High Visibility Enforcement (HVE) Toolkit,” https://www.nhtsa.gov/enforcement-justice-services/high-visibility-enforcement-hve-toolkit

Initiative 5: E-ticketing and Data Collection

Currently, spatial data from traffic citations is not standardized, preventing the City from analyzing where traffic citations frequently occur. SAPD will utilize grants to upgrade ticketing systems to allow for geospatial analysis or citation data and allow for more flexibility in collection of stop data.

Peer City Initiatives:

Fort Worth, Texas recently purchased and is utilizing a new electronic ticket writer solution. This allows the city to expand their fleet of devices from 20 units to 150. It will expedite the process of entering the tickets into the court management system and will simultaneously reduce time spent at traffic stops, thereby increasing safety for both violators and officers.[45] Because of the very specific nature of this initiative, limited data is available to support efficacy. Current sources on increased efficiency and safety come from sources affiliated with the e-ticketing technology.[46]

Justification:

Citation data, if properly recorded, can help reveal trends about where traffic violations occur. This data can be used to identify where additional traffic calming is needed, as well as measure equitable outcomes. Implementing e-ticketing will make it easier and more efficient for both the distribution of tickets and the analysis of ticketing data, with the added potential benefit of easing the process of ticket entry into the court system. Upgrading ticketing systems to collect spatial information will require significant capital investment. To pursue this initiative, it is recommended that TD work in equal partnership with SAPD to identify state or federal grants that could support the introduction of system-wide E-ticketing for SAPD officers.

Public Comments:

Although there were a few isolated comments in support of police presence in general, the public has not been explicitly polled on interest in an initiative like this. This is a very specific initiative, and members of the public may not yet know that there is a need for it. Further engagement and polling would need to be done to determine public support for this initiative.

[45] Fort Worth Police Department, “Electronic Ticket Writers,” https://police.fortworthtexas.gov/CCPD/electronic-ticket-writers

[46] Brother Mobile Solutions, “4 Ways eCitations Improve Efficiency & Increase Safety During Police Traffic Stops,” https://brothermobilesolutions.com/insights/article/4-ways-ecitations-boost-officer-safety/

Initiative 6: Quarterly Information Sharing and Discussion Meetings

As City ordinances change and new infrastructure is deployed, close collaboration with SAPD is needed to ensure that new infrastructure is properly used, and new laws are enforced. TD will meet with SAPD every quarter to share updates about new infrastructure and ordinances, and SAPD will share citation data.

Peer City Initiatives:

In its 2024 Vision Zero Action Plan, New Braunfels, Texas outlines a goal of "Focused Enforcement," and details how safer designs in line with Vision Zero goals will help alleviate the quantity of roles the police are expected to perform, allowing them to better allocate their resources. However, this program does not explicitly detail a scheduled information sharing initiative.[47]

The VZAP for Tampa, Florida includes "More regular coordination amongst the Mobility Department, Tampa Police Department, and Tampa Fire Rescue," as a theme for its Crash & Countermeasures Committee. [48]

Justification:

Briefing law enforcement about new ordinances and infrastructure can help ensure that new laws and road designs are effective. While enforcement is a last resort in the Vision Zero strategy, it is necessary for SAPD to understand new traffic safety laws and how safety infrastructure is meant to be used. Coordination between the TD and SAPD will not require any capital expenditures and will require fewer than eight hours to complete every quarter – this work should be undertaken at the soonest possible date as a continuation of the VZAP Planning process.

[47] City of New Braunfels, "Street Safety Action Plan," 2024, 70
[48] City of Tampa, "Vision Zero Action Plan," 2021, 41

Priority Corridors

To move the VZAP HIN and HRN toward a focus on the implementation of new infrastructure, twenty priority corridors were identified across the city. Recommended potential safety countermeasures along these corridors were identified for future consideration by COSA TD and PWD.

Corridor Identification and Prioritization Methodology

Development of the list was a data-driven scoring and prioritization process. The top two scoring corridors by each of the 10 City Council Districts received two levels of analysis to create planning-level recommendations for further study. The background, methodology, resulting list, and planning-level recommendations for the top 20 corridors are described below.

Corridor Prioritization Principles

The prioritization process was developed using principles similar to those of the overall VZAP.

- **Safety & Responsibility:** The goal of the San Antonio VZAP 2024 Update is to end roadway fatalities and serious injuries in San Antonio by 2040. All recommended corridors must be prioritized and designed to have the greatest impact reducing the likelihood of future severe crashes with preference given to vulnerable road users who do not have the protection of a motor vehicle.
- **Equity:** The prioritization of new safety infrastructure should support reparative outcomes for areas of the city that have been historically marginalized by transportation infrastructure and government policy.
- **Existing Community Visions:** Prioritization should be influenced by community preferences as outlined in VZAP surveys, community engagement, and applicable previous COSA council-approved plans.
- **Connectivity:** Corridor implementations should respond to the attributes outside the roadway such as the density of businesses, employment areas, and other destinations.

High Injury Network (HIN) Analysis

The HIN identified road segments with high frequencies of traffic-related injuries and fatalities. By mapping out disproportionately unsafe corridors, the HIN helps the City to prioritize interventions in its most problematic areas, maximizing the impact of safety measures. The Study analyzed crash data from the TxDOT Crash Records Information System (CRIS) covering the period from 2019 to 2023 on the streets within the City, excluding limited access highways and their associated ramps. Crash data were joined with corresponding roadway segments. During the analysis, the HIN analysis applied a twelvefold increase in weight for crashes resulting in fatalities or severe injuries, while minor injury crashes were not given additional weight. Based on the weighted crash rates per centerline mile, the HIN identified groups of roadway segments that exhibited significant patterns. These groups were delineated at logical breakpoints, typically at intersections, and separated into three distinct networks:

- All-Modes High Injury Network [All Streets and COSA-owned streets] (AHIN or All-Modes HIN)
- Pedestrian High Injury Network (PHIN or Pedestrian HIN)
- Bike High Injury Network (BHIN or Bike HIN)

High Risk Network (HRN) Analysis

Following the HIN analysis, the Study analyzed nine roadway attributes to understand the variation in weighted crash totals for attribute categories and to determine a risk factor to assess the relative safety of road attributes:

- Functional Classification
- Annual Average Daily Traffic (AADT)
- Truck Volumes
- Speed Limit
- Road Type
- Lane Width
- Sidewalk Coverage
- Equity Score
- Bus Stop Proximity

Using these risk factors and weights, an overall Risk Score was created and validated against crashes to create an HRN, providing a forward-looking network of segments that are particularly vulnerable to fatal and severe injury crashes in the future. The mean risk score for all streets was 4.81 and the standard deviation was 6.50.

From Network to Corridors

Together, these four networks (AHIN, PHIN, BHIN, and HRN) create a baseline on which priority corridors can be determined. To transform the HINs and HRN into distinct corridors, the prioritization process organizes network street segments along any HIN and above a risk score threshold into numbered corridors at logical breaking points. It then creates a 100-point, data-informed priority score for each corridor and selects the top two highest scoring corridors by COSA council district. Finally, it uses applicable design guidance, traffic calming toolkits, and academic studies to recommend potential improvements, aiming to prevent similar crashes along these corridors in the future.

Corridor Extents

Corridor extents were defined using the three-step GIS process below:

1. Select high scoring roadways:
    a. Definition Query only roadway segments either on one of the three HINs or with a risk score above one standard deviation above the mean (11.3). These segments have either a history of severe and fatal crashes or a higher risk of future severe or fatal crashes.
2. Organize roadway segments at logical breaking points:
    a. Organize roadway segments of the same linear facility or smaller groupings of facilities into corridor numbers at logical breaking points such as major highways without crossings, the end of a roadway, city boundaries, rail lines, or waterways. Corridors still extending longer than three miles are subdivided into three-mile or smaller segments at other logical breaking points such as council districts or intersections.
    b. An artifact of this method is that some corridors will not be contiguous, as not all road segments along them meet the threshold of “high scoring.” This result is intentional, allowing segments along corridors to be targeted if they have higher risks. Conversely, if the full corridor is included, it emphasizes the need to address the corridor as a whole.
3. Attribute Corridor by three likely agencies involved in the delivering improvements:
    a. City of San Antonio Public Works Department – Major Improvements on San Antonio roadways with greater than three lanes or above a Collector Functional Class.
    b. City of San Antonio Transportation Department – Collaboration with Public Works on Rolling Maintenance and Traffic Calming on all other San Antonio Roadways.
    c. Texas Department of Transportation (TxDOT), Suburban City, or County Public Works and Improvements Departments - Roadway facilities owned by other entities.

Priority Scores and Recommendations

The VZAP uses various data sources as prioritization metrics to attribute a 100-point maximum total "priority score" to each corridor. These data sources are grouped into four categories based on the prioritization methodology principles, each with a 15-to-35-point maximum score. It is important to note that while both the COSA Equity Atlas scores and proximity to transit were included in the calculation of the HRN, their inclusion in this prioritization process is not duplicative. While these data sources are used in the HRN to reflect their potential to increase the risk factor of roadways, their use below is in support of prioritization based on the methodology principles, namely Equity and Demand & Connectivity. **Table 8** lists all metrics by category with a brief description of each and how it is measured and scored. The top two scoring corridors by council district received two levels of analysis to create planning-level recommendations of potential implementations for consideration by COSA TD and PWD Staff pending further analysis:

1. Determination of potential improvements
    a. Referencing applicable roadway design manuals, the VZAP recommends multiple potential implementations on the corridor based on the contributing factors or recorded severe and fatal crashes along the corridor and the risk factors associated with the corridor attributes.
    b. If a corridor lies along the PHIN or BHIN, improved pedestrian or bike facilities are the focus of recommendations, respectively.
    c. Manuals referenced include, but are not limited to:
        i. COSA Traffic Calming Handbook
        ii. Federal Highway Administration (FHWA) Traffic Calming ePrimer
        iii. NHTSA Countermeasures That Work
        iv. TxDOT Roadway Design Manual
        v. National Association of City Transportation Officials (NACTO) Urban Street Design Guide
        vi. NACTO Urban Bikeway Design Guide
        vii. FHWA Manual of Uniform Traffic Control Devices

2. A paragraph long justification is provided to support recommendations alongside a description of corridor attributes and crash contributing factors. Recommendations provided below are based on a high-level review of crashes and will require further evaluation, observation, and analysis depending on the treatment proposed. In some cases, education and enforcement will also be an important component to address crashes depending on the cause. Funding for any corridor should also be identified and programmed as appropriate and within feasibility of COSA TD and partners.
    a. An example of this determination follows:

A high scoring corridor featured 15 fatal or severe crashes along it, 60% of which involved left turns, 50% involved right turns, and 30% involved speeding. It is on the AHIN, PHIN, and BHIN, has a speed limit of 40 mph, 7 lanes each at 12 feet wide, bike lanes, and poor sidewalk coverage. A reasonable treatment here would be the implementation of narrowed lanes and a center island to limit errant left turns, roundabouts at intersections to limit errant right turns, lowering the speed limit to 30 mph, and potentially the removal of a travel lane to create shared-use paths on both sides of the roadway. FHWA lists Roundabouts as appropriate for this type of facility at intersections and having the ability to slow traffic and limit errant turns. A Johns-Hopkins Study found that 10-foot lanes along roadways significantly limit the number of severe and fatal crashes. NHTSA notes that lowering speed limits by greater than 6 mph can reduce fatal and serious crashes by 50%. FHWA also notes that road diets can reduce the number of overall rashes by up to 47%.

TABLE 8: PRIORITY SCORING METHODOLOGY

Category		Metric	Data Source	How is it Measured	Scoring
Equity	25	The mean **Equity Atlas Score** per the City's Equity Atlas for each corridor, which considers high concentration of People of Color and households with below median income	San Antonio Equity Atlas	Density of underserved populations	Scale Range of 0 - 25 points 25 = Equity Scores of 7+ 15 = Equity Scores of 5 or 6 5 = Equity Scores of 3 or 4 0 = Equity Score of 2
Community	15	**Public Support** as determined by the public engagement associated with the 2024 VZAP Update	COSA VZAP Analysis	Total number of comments on facility	Scale Range of 0 - 10 points 10 = 3 or more public comments received 5 = Public comments received 0 = No public input received
		Previous Plan Consistency reflecting a known safety issue, or recommendation in another plan.	SATomorrow, SATomorrow Corridors	Total number of plans reflected	Scale Range of 0-5 points 5 = reflected in any plans 0 = reflected in 0 plans
Safety & Responsibility	35	Corridor is on the **All-Modes HIN**	COSA VZAP Analysis	On or off this HIN	Scale Range of 0 - 5 points 5 = On HIN 0 = Not on HIN
		Corridor is on the **Pedestrian HIN**	COSA VZAP Analysis	On or off this HIN	Scale Range of 0 - 5 points 5 = On HIN 0 = Not on HIN
		Corridor is on the **Bike HIN**	COSA VZAP Analysis	On or off this HIN	Scale Range of 0 - 5 points 5 = On HIN 0 = Not on HIN
		How many **fatal and severe injuries crashes** occurred on this corridor?	CRIS	Total number of KA non-interstate/ freeway Crashes from 2019-2023	Scale Range of 0 – 8 8 = Greater than 10 crashes 4 = Greater than 5 crashes 2 = Any crashes 0 = No crashes
		The maximum **Total Risk Score** from the HRN for the roadways on a corridor	COSA VZAP Analysis	The maximum risk score for each corridor	Score Range of 0 – 12 points 12 = 4 SDs above the mean: 30.8 8 = 3 SDs above the mean: 24.3 4 = 2 SDs above the mean: 17.8 0 = 1 SD above the mean: 11.3
Connectivity	25	**Employment Density** as measured by the number of employers of greater than 15 persons along the Corridor.	US Census	Total number of employers along a roadways	Scale Range of 0 - 10 points 10 = along 5 or more employers 5 = along less than 5 employers 0 = not along any employers
		Corridor is along facilities providing **direct access to everyday needs** such as health centers, grocery stores, and schools	US Census	Total number of everyday needs within 1/8 mile	Scale Range of 0 - 10 points 10 = along 3 or more types of destinations 5 = along 1-2 types of destinations 0 = not along any destinations
		Corridor features roadways with **transit stops**	VIA	Bus stop located with 1/8 miles	Scale Range of 0 - 5 points 5 = Along transit route(s)/stop(s) 0 = No transit route/stop

Recommended Corridors for Implementation

Table 9 lists the top scoring corridors by City Council District.

During the analysis of the top scoring corridors listed below, certain recommendations to resolve safety issues and respond to crash attributes lead to unused roadway space on City streets. Depending on a roadway's inclusion in the San Antonio Bike Network Plan, corridors were recommended to consider the implementation of bike-specific infrastructure to further increase safety for other modes of travel. Other recommendations use one new roadway design to address several crash attributes as the addition of some infrastructure in a roadway setting can serve to reduce the likelihood of many future crash types.

TABLE 9: TOP SCORING CORRIDORS BY CITY COUNCIL DISTRICT

Council District	Total Score	Corridor Number	Roadway Name	Start	End
1	**85**	256	**Fredericksburg Rd**	*Near* Spencer Ln	Hildebrand Ave
	82	202	**West Ave**	Loop 410	I-10
2	**77**	280	**New Braunfels Ave**	Houston St	I-10
	75	279	**Commerce St**	New Braunfels Ave	Houston St
3	**76**	326	**Goliad Rd**	Southcross Blvd	I-37
	72	331	**Goliad Rd**	I-37	Loop 410
4	**71**	144	**Marbach Rd**	Tumbleweed Way	Loop 410
	56	402	**Five Palms Dr**	SW Military	Old Pearsall Rd
5	**90**	450	**General McMullen**	Commerce St	US-90
	85	447	**General McMullen**	Bandera Rd	Commerce St
6	**72**	410	**W Military Dr**	TX-151	US-90
	66	169	**Grissom Rd**	Culebra Rd	Lost Ln
7	**80**	419	**Culebra Rd**	Callaghan Rd	36th St
	76	187	**Callaghan Rd**	I-10	Loop 410
8	**86**	182	**Wurzbach Rd**	Babcock Rd	I-10
	62	189	**Babcock Rd**	Huebner Rd	Wurzbach Rd
9	**67**	77	**West Ave**	Lockhill-Selma Rd	W North Loop Rd
	46	93	**Wurzbach Rd**	I-10	Lockhill-Selma Rd
10	**57**	69	**Nacogdoches Rd**	Loop 410	Wurzbach Pkwy
	57	56	**Thousand Oaks**	Wetmore Rd	I-35

Top Scoring Corridors Analysis and Recommendations

District 1: Fredericksburg Road

Existing Conditions:

This 1.8-mile corridor had seven severe and three fatal crashes from 2019 to 2023. Out of these ten crashes, eight involved pedestrians. The most prevalent factors for crashes occurring along this corridor were driver failure to yield right of way, and pedestrian failure to yield right of way. The road, which is on the Pedestrian and All-Modes HINs, has a speed limit of 40mph when it is seven lanes in the north and a speed limit of 30 mph when it reduces to four-lanes at Pasadena Street in the south. Lanes are about 12 ft wide in the northern section and 10.5 ft in the southern section. The corridor does not have bike infrastructure.

Recommendations:

To reduce pedestrian crashes, the City should consider installing more Pedestrian Hybrid Beacon (PHB) crossings and updating existing crosswalks to leading pedestrian intervals, in accordance with guidance from the FHWA, which found that PHB crossings can reduce pedestrian crashes by 69%.[49] The City should evaluate the impact of removal of slip lanes at Babcock Road to improve pedestrian safety.[50] Finally, the posted speed could be reduced to 30mph. The IIHS found that as posted speed limits increase, the amount of speeding increases, but that lowering the posted speed limit can reverse this trend.[51]

District 1: West Avenue

Existing Conditions:

This 2.4-mile corridor had 11 severe and four fatal crashes from 2019 to 2023. Out of these 15 crashes, one involved a cyclist and four involved pedestrians. Prevalent contributing factors included driver failure to yield right of way when turning left, and pedestrian failure to yield right of way to driver. The road, which is on the Pedestrian and All-Modes HINs, has four lanes that are about 10.5 ft each and a speed limit of 35 mph. The corridor does not have bike infrastructure, and sidewalks are in poor condition, with many being 5-ft wide or less.

Recommendations:

To reduce rates of speeding, an effective road design would be to reduce the number of vehicle lanes from four to three, providing space for bike and pedestrian facilities. The FHWA found that this type of road design can reduce the total number of crashes by up to 47%.[52] The City should consider installing more PHB Crossings at intersections and in the middle of blocks to reduce the number of pedestrians crossing illegally – shown to significantly reduce pedestrian crashes.[53] Finally, the posted speed could be reduced to 30mph.

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[49] K. Fitzpatrick, E. S. Park. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment. FHWA. 2010. https://www.fhwa.dot.gov/publications/research/safety/10045/10045.pdf

[50] Jiang et al. Impact of right-turn channelization on pedestrian safety at signalized Intersections. (2019). https://www.sciencedirect.com/science/article/abs/pii/S0001457519308802

[51] Teoh, Eric, and Richard Retting, “Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit,” 2008, https://www.researchgate.net/publication/5453488

[52] Pawlovich et al. Iowa’s Experience with Road Diet Measures: Use of Bayesian Approach to Assess Impacts on Crash Frequencies and Crash Rates. (2006). https://doi.org/10.1177/0361198106195300119

[53] K. Fitzpatrick, E. S. Park. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment. FHWA. 2010. https://www.fhwa.dot.gov/publications/research/safety/10045/10045.pdf

District 2: New Braunfels Avenue

Existing Conditions:
This 1.6-mile corridor had nine severe crashes and one fatal crash from 2019 and 2023. Three of these ten crashes involved pedestrians and one of which involved a cyclist. Disregard of traffic signals and driver failure to yield right of way were common crash factors. The road, which is on the Pedestrian and All-Modes HINs, has four lanes that are about 10.5 ft wide and a speed limit of 30 mph. The corridor does not have bike infrastructure, and sidewalks are in poor condition, with many being 5 ft wide and missing completely in some locations.

Recommendations:
To reduce rates of speeding, an effective road design would be to reduce the number of vehicle lanes from four to three, providing space for a two-way protected bike lane. The addition of robust protected bike infrastructure can reduce severe crash rates by as much as 50%, depending on roadway characteristics.[54] The City should consider rebuilding sidewalks to be continuous and wider, as well as install PHB Crossings at minor intersections between signalized intersections to reduce improper crossings.[55,56]

District 2: East Commerce Street

Existing Conditions:
This 2.25-mile corridor had ten severe crashes and one fatal crash from 2019 and 2023. Three of these 11 crashes involved pedestrians. A large number of crashes were caused by driver failure to yield right of way when turning left, as well as speeding. The road, which is on the Pedestrian and All-Modes HINs, has four lanes that are about 11 ft wide and a speed limit of 40 mph that reduces to 35 mph west of Spriggsdale Avenue. The corridor does not have bike infrastructure, and most sidewalks are in good condition, although many are placed directly against the street, which reduces comfort levels.

Recommendations:
To reduce the rate of unsafe left turns by drivers, an effective road design would be to reduce the number of vehicle lanes from four to three, providing a dedicated turning lane and recovering space for protected bike lanes, as this roadway is on the San Antonio Bike Network Plan's Primary Network.[57] Reducing the number of lanes makes left turns easier, and can reduce the total number of crashes by up to 47%.[58] The speed limit could also be lowered to 30 mph to discourage speeding.[59] The presence of severe and fatal crashes at intersections with Houston, Gevers, and Walters Streets indicates that roundabouts could be beneficial to install, reducing injury-

[54] Wesley E. Marchall, Nicholas N. Ferenchak, "Why cities with high bicycling rates are safer for all road users," 2019, https://doi.org/10.1016/j.jth.2019.03.004.
[55] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. (2022). https://doi.org/10.1016/j.aap.2021.106548
[56] K. Fitzpatrick, E. S. Park. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment. FHWA. 2010. https://www.fhwa.dot.gov/publications/research/safety/10045/10045.pdf
[57] City of San Antonio. Bike Network Plan. 2024. sabikenetwork.com
[58] Pawlovich et al. Iowa's Experience with Road Diet Measures: Use of Bayesian Approach to Assess Impacts on Crash Frequencies and Crash Rates. (2006). https://doi.org/10.1177/0361198106195300119
[59] Teoh, Eric, and Richard Retting, "Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit," 2008, https://www.researchgate.net/publication/5453488

causing crashes as much as 80%.[60] The City should consider rebuilding sidewalks to be continuous and wider, as well as install PHB Crossings at minor intersections between signalized intersections to reduce improper crossings.[61,62]

District 3: Goliad Road

Existing Conditions:
This 1.4-mile corridor had four severe crashes from 2019 to 2023, one of which involved a pedestrian. Failure to yield right of way to pedestrians and disregard of traffic signals were two common contributing factors in these crashes. The road, which is on the All-Modes HIN, has four lanes that are about 10.5 ft wide and a speed limit of 35 mph. The corridor does not have bike infrastructure, and sidewalks are not ADA compliant, with some sidewalks being less than 4 ft wide.

Recommendations:
To reduce driver inattention and improve pedestrian access, an effective road design would be to reduce the number of vehicle lanes from four to three, providing a dedicated turning lane and recovering space for shared-use paths to improve disconnected and narrow sidewalks.[63] The addition of robust protected bike infrastructure can reduce severe crash rates by as much as 50%, depending on roadway characteristics.[64] The City should also consider installing roundabouts at intersections with Clark Avenue and Pecan Valley Drive, which can reduce injury-causing crashes by up to 80%.[65]

District 3: Goliad Road

Existing Conditions:
This 2.4-mile corridor had four severe crashes and two fatal crashes from 2019 to 2023. One of these six crashes involved a pedestrian. Failure to yield the right of way while turning left and to private drives were the most attributed causes of these crashes. The road, which is on the All-Modes HIN, has four lanes that are about 10.5 ft each in its northern

Recommendations:
To reduce speeding, control left turns, and improve driver attention, an effective road design would be to reduce the number of vehicle lanes in the northern stretch of the corridor from four to three and extend the bike infrastructure as studies have shown that protected bike infrastructure makes roadways safer for all modes.[66] Providing a dedicated

[60] Retting et al. Crash and Injury Reduction Following Installation of Roundabouts in the United States. (2001). 11291378.pdf (nih.gov)
[61] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. (2022). https://doi.org/10.1016/j.aap.2021.106548
[62] K. Fitzpatrick, E. S. Park. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment. FHWA. 2010. https://www.fhwa.dot.gov/publications/research/safety/10045/10045.pdf
[63] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. 2022. https://doi.org/10.1016/j.aap.2021.106548
[64] Wesley E. Marchall, Nicholas N. Ferenchak, "Why cities with high bicycling rates are safer for all road users," 2019, https://doi.org/10.1016/j.jth.2019.03.004.
[65] Retting et al. Crash and Injury Reduction Following Installation of Roundabouts in the United States. 2001. 11291378.pdf (nih.gov)
[66] Wesley E. Marchall, Nicholas N. Ferenchak, "Why cities with high bicycling rates are safer for all road users," 2019, https://doi.org/10.1016/j.jth.2019.03.004.

portion and three lanes south of Military Drive that are about 12 ft each. The road has a speed limit of 40 mph. The corridor has painted bike lanes south of Military Drive that are about 4 ft wide, and sidewalks appear to be in good condition, although some of them are only five feet wide and others are missing from the left side of the road.

District 4: Marbach Road

Existing Conditions:

This 2.7-mile corridor had six severe crashes and three fatal crashes from 2019 to 2023, Out of these nine crashes, four involved pedestrians. Speeding, unsafe lane changes, and driver failure to yield right of way were prevalent factors along this corridor. The road, which is on the Pedestrian and All-Modes HINs, has five lanes that are about 12 ft wide and a speed limit of 40 mph. The corridor does not have bike infrastructure, and sidewalks are not ADA accessible, with some being only 4 ft wide.

Recommendations:

To provide safe crossings for pedestrians, PHB Crossings could be installed in strategic locations, and to improve driver attention, vehicle lane widths could be reduced from 12 ft to 10 ft.[71] The number of lanes could be analyzed for reduction, shared use paths could be installed to improve disconnected sidewalks,[72] and slip lanes at Columbia Square could be removed to increase pedestrian safety.[73] Reducing the number of lanes and reducing lane widths encourages drivers to slow down, while frequent PHB crossings enable people walking to cross safely.[74] Left turns could be better controlled turn lane reduces conflicts between traffic and left-turning vehicles. South of Military Drive, the City should consider lowering the posted speed limit to 30 mph,[67] narrowing vehicular lanes from 12 ft to 10 ft,[68] and using reclaimed space to add physical barriers to the existing bike lanes – all with the potential to reduce speeding. The City should consider rebuilding sidewalks to be continuous and wider, as well as install PHB Crossings between signalized intersections to reduce improper crossings.[69,70]

[67] Teoh, Eric, and Richard Retting, “Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit,” 2008, https://www.researchgate.net/publication/5453488

[68] Shima Hamidi, PhD, Reid Ewing, PhD. National Investigation on the Impacts of Lane Width on Traffic Safety. (2023). JHU-2023-Narrowing-Travel-Lanes-Report.pdf

[69] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. (2022). https://doi.org/10.1016/j.aap.2021.106548

[70] K. Fitzpatrick, E. S. Park. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment. FHWA. 2010. https://www.fhwa.dot.gov/publications/research/safety/10045/10045.pdf

[71] Shima Hamidi, PhD, Reid Ewing, PhD. National Investigation on the Impacts of Lane Width on Traffic Safety. (2023). JHU-2023-Narrowing-Travel-Lanes-Report.pdf

[72] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. 2022. https://doi.org/10.1016/j.aap.2021.106548

[73] Jiang et al. Impact of right-turn channelization on pedestrian safety at signalized Intersections. 2019. https://www.sciencedirect.com/science/article/abs/pii/S0001457519308802

[74] Theofilatos et al. To cross or not to cross? Review and meta-analysis of pedestrian gap acceptance decisions at midblock street crossings. 2021.

and median islands should be installed.[75] Additionally, the City should also consider installing roundabouts where Marbach intersects with other major roads, including Hunt Lane and Horal Drive, due to the presence of severe and fatal crashes. The IIHS found that this installation can reduce injury-causing crashes by as much as 80%.[76]

District 4: Five Palms Drive

Existing Conditions:

This 2.25-mile corridor had one severe motor vehicle crash from 2019 to 2023. Driver inattention and speeding were the primary contributing factors on this corridor. The road, which is on the All-Modes HIN, has two lanes that are about 12 ft wide north of Medina Base Road and two lanes that are about 16 ft wide south of the Medina Base Road. There are speed humps in portions of the corridor and the speed limit is 30 mph. The corridor has painted bike lanes south of Medina Base Road that are about 5 ft wide. Sections of the sidewalk are only 3 ft wide and are therefore not ADA accessible.

Recommendations:

To improve driver alertness and cyclist safety, physical barriers could be placed between bike lanes and vehicle lanes and vehicle lanes could be narrowed from 16 ft to 10 ft.[77] In the northern section of the road where right of way constraints prevent the construction of bike lanes, the speed humps could be repaired to slow speeds. Narrowing vehicle lanes causes drivers to slow down while speed humps can reduce speeds by nearly 10 mph, according to the FHWA.[78] Finally, the City should consider adding widened and connected sidewalks along the entirety of the corridor to significantly improve pedestrian safety and accessibility.[79]

District 5: General McMullen Drive

Existing Conditions:

This 1.8-mile corridor had 14 severe and ten fatal crashes between 2019 and 2023. Out of these 24 crashes, four involved cyclists and nine involved pedestrians. The primary reported factors along this corridor were driver failure to yield right of way when turning left,

Recommendations:

To improve pedestrian and cyclist safety, an effective road design would be to reduce the number of vehicle lanes from seven to five, recovering space for protected bike lanes and widened sidewalks.[80] The speed limit could be lowered to 30 mph, and the slip lane at

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[75] Dohyung Kim. The transportation safety of elderly pedestrians: Modeling contributing factors to elderly pedestrian collisions. 2019.

[76] Retting et al. Crash and Injury Reduction Following Installation of Roundabouts in the United States. 2001) 11291378.pdf (nih.gov)

[77] Shima Hamidi, PhD, Reid Ewing, PhD. National Investigation on the Impacts of Lane Width on Traffic Safety. (2023). JHU-2023-Narrowing-Travel-Lanes-Report.pdf

[78] Pawlovich et al. Iowa's Experience with Road Diet Measures: Use of Bayesian Approach to Assess Impacts on Crash Frequencies and Crash Rates. (2006). https://doi.org/10.1177/0361198106195300119

[79] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. (2022). https://doi.org/10.1016/j.aap.2021.106548

[80] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. (2022). https://doi.org/10.1016/j.aap.2021.106548

pedestrian failure to yield right of way to vehicle, and speeding. The road, which is on the Pedestrian, Bicycle, and All-Modes HINs, has seven lanes that are about 10.5 ft wide and a speed limit of 40 mph. The corridor does not have bike infrastructure and sidewalks are in poor condition, where some lack curbs and others are less than 5 ft wide.

District 5: General McMullen Drive

Existing Conditions:

This 1.6-mile corridor had nine severe crashes and four fatal crashes between 2019 and 2023. Two of these thirteen crashes involved pedestrians and two involved cyclists. Disregard of traffic signals, speeding, and driver inattention were common crash factors. The road, which is on the Pedestrian, Bike, and All-Modes HINs, has four lanes that are about 13 ft wide north of Culebra Road and seven lanes that are about 11 ft wide south of Culebra Road. The speed limit is 35 mph in the northern section of the road and 40 mph in the southern section. The corridor does not have bike infrastructure, and sidewalks are in

Recommendations:

To improve pedestrian and cyclist safety and improve driver attention, an effective road design for the northern section of this corridor would be to reduce the number of lanes from four 13 ft lanes to three 10-11 ft lanes, recovering space for protected bike lanes and widened sidewalks.[86] In the southern section of this corridor, an effective road design would be to reduce the number of lanes from seven 11 ft lanes to five 10-11 ft lanes, creating space for protected bike lanes and widened sidewalks. Removal of vehicle travel lanes on larger roadways can reduce speeds, leading

Castroville Road could be removed.[81] The IIHS found that as posted speed limits increase, the amount of speeding increases, but that lowering the posted speed limit can reverse this trend.[82] PHB crossings could be installed to provide safe ways of crossing the street between signalized intersections. According to the FHWA, PHB crossings can reduce pedestrian crashes by 69%,[83] while adding protected bike lanes will make the road safer for all users.[84] Additionally, the City should also consider installing a roundabout where General McMullen intersects Commerce Street, due to the presence of two severe crashes. The IIHS found that this installation can reduce injury-causing crashes by as much as 80%.[85]

[81] Jiang et al. Impact of right-turn channelization on pedestrian safety at signalized Intersections. (2019). https://www.sciencedirect.com/science/article/abs/pii/S0001457519308802

[82] Teoh, Eric, and Richard Retting, “Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit,” 2008, https://www.researchgate.net/publication/5453488

[83] K. Fitzpatrick, E. S. Park. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment. FHWA. 2010. https://www.fhwa.dot.gov/publications/research/safety/10045/10045.pdf

[84] Wesley E. Marchall, Nicholas N. Ferenchak, “Why cities with high bicycling rates are safer for all road users,” 2019, https://doi.org/10.1016/j.jth.2019.03.004.

[85] Retting et al. Crash and Injury Reduction Following Installation of Roundabouts in the United States. (2001). 11291378.pdf (nih.gov)

[86] Pawlovich et al. Iowa’s Experience with Road Diet Measures: Use of Bayesian Approach to Assess Impacts on Crash Frequencies and Crash Rates. (2006). https://doi.org/10.1177/0361198106195300119

poor condition, with some being 4 ft wide or less.

to safer crash outcomes.[87] PHB Crossings could be installed to provide safe ways of crossing the street between signalized intersections. According to the FHWA, PHB crossings can reduce pedestrian crashes by 69%,[88] while adding protected bike lanes will make the road safer for all users. The City should also consider lowering the speed limit for the entire corridor to 30 mph. The IIHS found that as posted speed limits increase, the amount of speeding increases, but that lowering the posted speed limit can reverse this trend.[89] Additionally, the City should also consider installing a roundabout where General McMullen intersects Culebra Road and Martin Street, due to the presence of two severe crashes and one fatal crash. The IIHS found that this installation can reduce injury-causing crashes by as much as 80%.[90]

District 6: West Military Drive

Existing Conditions:

This 2.4-mile corridor had five severe crashes and three fatal crashes from 2019 to 2023. Two of these eight crashes involved pedestrians. Common crash factors included driver failure to yield right of way to a pedestrian or when turning left, and speeding. The road, which is on the All-Modes HIN, has five lanes that are about 11 ft wide and a speed limit of 35 mph. The corridor does not have bike infrastructure. Many sidewalks are

Recommendations:

To reduce speeding and improve driver attention, an effective road design would be to reduce the number of lanes from five to three and reduce the width of lanes from 11 ft to 10 ft.[91] This could encourage drivers to slow down and providing space for shared-use paths.[92] The City should also consider reducing the speed limit to 30 mph - as higher posted speed limits may increase speeding, but lowering the posted speed limit can

[87] Saak, J. (2013, May). Joshua_Saak_Charlotte_Road_Diets_-_East_Selwyn.pdf. Referenced 2024 in "An Evaluation of “Road Diet” Projects on Five Lane and Larger Roadways." 2017. NACTO.

[88] K. Fitzpatrick, E. S. Park. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment. FHWA. 2010. https://www.fhwa.dot.gov/publications/research/safety/10045/10045.pdf

[89] Teoh, Eric, and Richard Retting, “Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit,” 2008, https://www.researchgate.net/publication/5453488

[90] Retting et al. Crash and Injury Reduction Following Installation of Roundabouts in the United States. (2001). 11291378.pdf (nih.gov)

[91] Shima Hamidi, PhD, Reid Ewing, PhD. National Investigation on the Impacts of Lane Width on Traffic Safety. (2023). JHU-2023-Narrowing-Travel-Lanes-Report.pdf

[92] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. (2022). https://doi.org/10.1016/j.aap.2021.106548

only 3 ft wide, while parts of the corridor are missing sidewalks altogether.

District 6: Grissom Road

Existing Conditions:

This 2.9-mile corridor had 11 severe crashes and four fatal crashes from 2019 to 2023. Two of these 15 crashes which involved pedestrians. Speeding, pedestrian failure to yield right of way to vehicle, and driver failure to yield right of way were common factors along the corridor. The road, which is on the All-Modes HIN, has five lanes. The outer two lanes of this road are 15 feet wide, while the inner two lanes are 11 feet wide with a 14-foot two way left turn lane. Grissom Road has a speed limit of 45 miles per hour. This corridor does not have bike infrastructure, and the existing 4-foot sidewalks directly abut the road. Ten cyclist crashes and ten pedestrian crashes occurred along this corridor to varying severity. Most pedestrian crashes occurred at intersections, indicating the need for safer infrastructure. Multiple cyclist crashes occurred at the entrance to Cathedral Rock Park, which connects to the Leon Creek Greenway Network. A crash also occurred at the Timberhill intersection, which has a bike lane. Furthermore, the Leon Creek Greenway passes under this corridor, but the existing bridge over the greenway features no bike infrastructure, a very narrow sidewalk, and an unusable two-way left turn lane.

Recommendations:

A useful treatment for this corridor would be to reduce the lane width to 10-11 feet, remove the two-way left turn lane with intermittent left-turn pockets, and add shared use paths on both sides of the roadway.[95] This would create a safer environment for cyclists and pedestrians and encourage drivers to be more vigilant along this road. In addition, a reduction of the speed limit to 30 mph would increase safety for drivers, pedestrians, and cyclists. The IIHS found that as posted speed limits increase, the amount of speeding increases, but that lowering the posted speed limit can reverse this trend.[96] PHB crossings could be installed in areas which pedestrians are likely to cross improperly,[97] and the slip lanes at the Culebra/Tezel intersection could be removed to discourage fast turning movements that endanger pedestrians.[98]

[93] Teoh, Eric, and Richard Retting, “Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit,” 2008, https://www.researchgate.net/publication/5453488

[94] K. Fitzpatrick, E. S. Park. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment. FHWA. 2010. https://www.fhwa.dot.gov/publications/research/safety/10045/10045.pdf

[95] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. (2022). https://doi.org/10.1016/j.aap.2021.106548

[96] Teoh, Eric, and Richard Retting, “Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit,” 2008, https://www.researchgate.net/publication/5453488

[97] K. Fitzpatrick, E. S. Park. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment. FHWA. 2010. https://www.fhwa.dot.gov/publications/research/safety/10045/10045.pdf

[98] National Association of City Transportation Officials, “Urban Street Design Guide,” https://nacto.org/publication/urban-street-design-guide/

District 7: Culebra Road

Existing Conditions:

This 4.6-mile corridor had ten severe crashes and four fatal crashes from 2019 to 2023. Out of these 14 crashes, seven involved pedestrians and two involved cyclists. The road, which is on the Pedestrian and All-Modes HINs, has five lanes and a speed limit of 40 miles per hour. Lanes are 12 feet wide. The corridor has subpar pedestrian infrastructure, with most sidewalks being extremely narrow and near to traffic. Bike infrastructure is nonexistent. There were 18 pedestrian-involved crashes and four cyclist-involved crashes along the corridor to varying severity. Four pedestrian crashes were fatal, and three were serious. Two cyclist crashes were serious. Three of these crashes occurred away from an intersection. More multimodal infrastructure is needed on Culebra. Many crashes were caused by speeding, driver failure to yield right of way, and pedestrian failure to yield right of way.

Recommendations:

Useful interventions on Culebra would include reducing the number of travel lanes from five to four by removing the two-way center left turn lane and hardening the center line to control left turn actions. Vehicle lanes could be reduced to a range of 10-11 feet as studies have shown that narrow lanes lead to improved corridor safety.[99] The speed limit could be reduced to 30 mph. The IIHS found that as posted speed limits increase, the amount of speeding increases, but that lowering the posted speed limit can reverse this trend.[100] This would create room for protected bike lanes and more robust pedestrian infrastructure.[101] Adding infrastructure like this would make the corridor much safer for multimodal travel and increase driver awareness. Another useful intervention would be PHB Crossing installation in areas which pedestrians tend to cross improperly.[102]

District 7: Callaghan Road

Existing Conditions:

This two-mile long corridor had one fatal pedestrian crash from 2019 to 2023. The road, which is on the All-Modes HIN, is a four-lane undivided design in most cases. This corridor has a speed limit of 35 miles per hour and lane widths ranging from 10 to 11 feet wide. There are no bike facilities along the corridor. The sidewalks are in disrepair, narrow, and

Recommendations:

Recommended treatment for much of the roadway would be to reduce travel lanes from four to three, including a center turn lane to protect drivers turning left. This would also provide room for improved and widened sidewalks on both sides of the roadway.[103] A speed limit reduction from 35 miles per hour to 30 miles per hour is also recommended. The

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[99] Shima Hamidi, Reid Ewing. National Investigation on the Impacts of Lane Width on Traffic Safety. (2023). JHU-2023-Narrowing-Travel-Lanes-Report.pdf

[100] Teoh, Eric, and Richard Retting, “Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit,” 2008, https://www.researchgate.net/publication/5453488

[101] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. (2022). https://doi.org/10.1016/j.aap.2021.106548

[102] K. Fitzpatrick, E. S. Park. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment. FHWA. 2010. https://www.fhwa.dot.gov/publications/research/safety/10045/10045.pdf

[103] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. (2022). https://doi.org/10.1016/j.aap.2021.106548

are located most often directly next to the road. For long stretches in the middle of the corridor, no sidewalks are provided on either side of the street, requiring pedestrians to walk in the vehicle lanes. Many crashes were caused by speeding, the failure to yield right of way when turning left, disregard of traffic signals. Driver inattention and speeding were also issues on this roadway.

District 8: Wurzbach Road

Existing Conditions:

This 2.5-mile corridor had 13 severe crashes from 2019 to 2023, three of which involved pedestrians. The roadway has a speed limit of 35 miles per hour, and is mainly a two-lane, two-way roadway with a landscaped or paved median. To the north, the roadway has a center turn lane. Lanes along this road range from 11 to 12 feet wide. This roadway has sections on the All-Modes HIN and the pedestrian HIN. Portions of the roadway have been redone recently, with wider sidewalks in some areas. However, the sidewalks still abut the roadway in numerous places. The corridor has no bicycle facilities. Wurzbach does have safer pedestrian infrastructure near the Medical Center and most pedestrian-involved crashes occurred to the north of this development. Speeding is an issue along this corridor, as well as failure to yield right of way and disregard of traffic signals.

Recommendations:

Improvements along this corridor could include PHB Crossings to encourage more pedestrian activity and reduce risk for pedestrians crossing the roadway.[106] Adding shared-use paths along this corridor would increase safety, encourage drivers to be more alert, and provide safe spaces for pedestrians.[107] Consider reducing the vehicle travel lanes from five to four by removing the two-way center left turn lane and hardening the center line to control left turn actions.[108] For those sections of this corridor which feature a center median, that median will need to be narrowed to reallocate right-of-way for improved facilities for vulnerable road users. Vehicle lanes could be reduced to a range of 10-11 feet as narrow lanes can lead to improved corridor safety.[109] The City should also consider reducing the speed limit to 30 mph. Higher posted speed IIHS found that as posted speed limits increase, the amount of speeding increases, but that lowering the posted speed limit can reverse this trend.[104] Intersections could also be made safer for pedestrians, by implementing wider paths and removing slip lanes which cause unsafe turning behaviors.[105] These interventions could create safer areas for vulnerable road users and encourage drivers to pay attention to the road.

[104] Teoh, Eric, and Richard Retting, “Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit,” 2008, https://www.researchgate.net/publication/5453488

[105] Jiang et al. Impact of right-turn channelization on pedestrian safety at signalized Intersections. (2019). https://www.sciencedirect.com/science/article/abs/pii/S0001457519308802

[106] National Association of City Transportation Officials, “Urban Street Design Guide,” https://nacto.org/publication/urban-street-design-guide/

[107] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. (2022). https://doi.org/10.1016/j.aap.2021.106548

[108] Qu et al. Two-way left turn or raised median? A truck safety based study. (2020). https://doi.org/10.1016/j.jsr.2020.04.013

[109] Jiang et al. Impact of right-turn channelization on pedestrian safety at signalized Intersections. (2019). https://www.sciencedirect.com/science/article/abs/pii/S0001457519308802

limits may increase speeding, but lowering the speed limit can reverse this trend.[110]

District 8: Babcock Road

Existing Conditions:

This 1.9-mile corridor had 11 severe crashes and three fatal crashes from 2019 to 2023. Out of these 14 crashes, four involved pedestrians and one involved a cyclist. Pedestrians are particularly vulnerable along this corridor as there were an additional 12 *possible or minor* injury-causing crashes involving pedestrians in addition to the severe/fatal mentioned above. Most of this corridor is a six-lane divided roadway with 10-foot-wide lanes and a speed limit of 45 miles per hour. The corridor had no bicycle facilities; sidewalks are narrow and abut the roadway, discouraging pedestrian activity. It is on the All-modes HIN and the Pedestrian HIN. Prevalent contributing factors for this roadway include speeding, unsafe turning movements, and pedestrian failure to yield right of way to vehicle.

Recommendations:

Improvements along this corridor could include PHB Crossings to encourage more pedestrian activity and reduce risk for pedestrians crossing the roadway.[111] Consider reducing the speed limit along the corridor, reducing the number of lanes from six to four, and implementing protected bike infrastructure and safer pedestrian infrastructure would not only make travelling on this roadway safer for cyclist and pedestrians, but would encourage safer driving behaviors. Removal of vehicle travel lanes on larger roadways can reduce speeds, leading to safer crash outcomes.[112] The IIHS found that as posted speed limits increase, the amount of speeding increases, but that lowering the posted speed limit can reverse this trend.[113]

District 9: West Avenue

Existing Conditions:

This 2.2-mile corridor had three severe crashes from 2019 to 2023, one of which involved a pedestrian and four of which involved a cyclist. Prevalent contributing factors included driver failure to yield right of way when turning left and turning when unsafe. Much of the corridor is four lane undivided roadway with a speed limit of 40 miles per hour. There are no bicycle facilities

Recommendations:

A beneficial intervention for this roadway would be a reduction in the number of travel lanes from four to three, providing protected turns for vehicles turning left and creating space for protected bike infrastructure as this roadway is on the San Antonio Bike Network Plan's Primary Network.[114] Increased infrastructure would also encourage drivers to pay more attention. A reduction in the speed

[110] Teoh, Eric, and Richard Retting, "Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit," 2008, https://www.researchgate.net/publication/5453488

[111] National Association of City Transportation Officials, "Urban Street Design Guide," https://nacto.org/publication/urban-street-design-guide/

[112] Saak, J. (2013, May). Joshua_Saak_Charlotte_Road_Diets_-_East_Selwyn.pdf. Referenced 2024 in "An Evaluation of "Road Diet" Projects on Five Lane and Larger Roadways." 2017. NACTO.

[113] Teoh, Eric, and Richard Retting, "Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit," 2008, https://www.researchgate.net/publication/5453488

[114] City of San Antonio. Bike Network Plan. 2024. sabikenetwork.com

along the corridor. Sidewalks abut the roadway in some areas and are inconsistent, with some areas only having sidewalks on one side of the road. The lane widths vary from 10 to 11 feet. This roadway is on the All-modes HIN. Crashes at intersections at Lockhill-Selma and at several neighborhood roads all occurred due to a failure to yield right of way when turning left. Another prevalent factor was turning when unsafe.

limit from 40 miles per hour to 30 miles per hour would also reduce the risk faced by pedestrians and cyclists along the corridor. The IIHS found that as posted speed limits increase, the amount of speeding increases, but that lowering the posted speed limit can reverse this trend.[115] Additional investment in greater separation from motor vehicles and connectivity in existing pedestrian infrastructure would make the corridor much safer for multimodal travel and increase driver awareness.[116]

District 9: Wurzbach Road

Existing Conditions:

This 1.9-mile corridor had five severe and one fatal crash from 2019 to 2023, all of which were motor vehicle crashes. This corridor, which is on the All-modes HIN, is a majority two-lane, two-way undivided roadway with a center turn lane. Lanes are 10 feet wide, and the speed limit is 35 miles per hour. This stretch of road lacks bicycle facilities of any kind and the sidewalks are four feet wide. Approximately half of all crashes that occurred in this corridor were intersection related. Other significant contributing factors were speeding and driver failure to yield right of way.

Recommendations:

To reduce these types of crashes, a useful intervention would be reducing the number of travel lanes from five to three, creating room for more robust pedestrian infrastructure such as shared use paths along the corridor and at the intersections.[117] The City should consider adding a crosswalk to the south end of the Expo Boulevard intersection to reduce the risk faced by pedestrians crossing; currently, there are only three crosswalks. Mid-block crossings could also be placed along the roadway where pedestrians tend to cross improperly.[118] Finally, the posted speed limit could be reduced to 30 mph as lowering the posted speed limit can reduce speeding.[119]

District 10: Nacogdoches Road

Existing Conditions:

This 2.8-mile corridor had ten severe crashes and two fatal crashes from 2019 to 2023, five of which involved pedestrians and one of

Recommendations:

This corridor would benefit from a reduction in the number of lanes from four to three (including a center turn lane), and the addition

[115] Teoh, Eric, and Richard Retting, “Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit,” 2008, https://www.researchgate.net/publication/5453488

[116] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. (2022). https://doi.org/10.1016/j.aap.2021.106548

[117] Abou-Senna et al. Investigating the correlation between sidewalks and pedestrian safety. (2022). https://doi.org/10.1016/j.aap.2021.106548

[118] Theofilatos et al. To cross or not to cross? Review and meta-analysis of pedestrian gap acceptance decisions at midblock street crossings. (2021).

[119] Teoh, Eric, and Richard Retting, “Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit,” 2008, https://www.researchgate.net/publication/5453488

which involved a cyclist. Over half of all crashes occurred at an intersection. This corridor is on the All-Modes and the Pedestrian HIN. Much of this corridor is a two-lane, two-way undivided roadway with 10-ft wide lanes. Nacogdoches Rd. does not have any bike facilities, and the sidewalks provided are narrow and in some stretches at grade with the roadway. Most crashes occurred either from faulty decision making at intersections, pedestrian failure to yield right of way, or speeding. The intersection at Salado Cliffs Dr. had multiple pedestrian crashes, and no marked crosswalks across Nacogdoches Rd.

District 10: Thousand Oaks Drive

Existing Conditions:

This corridor is three miles long and had six fatal and 12 severe crashes between 2019 and 2023. Four of these crashes involved pedestrians. Prevalent crash factors along the corridor included disregard of traffic signals, speeding, and pedestrian failure to yield right of way. All four serious pedestrian crashes, and one minor pedestrian crash occurred away from an intersection. The lane widths along Thousand Oaks Drive range from 11-12 feet over most of the roadway, but some areas have lanes that are 10 feet wide. The speed limit for the entire corridor is 30 miles per hour, and much of the corridor is a two lane, two-way divided roadway or two lane, two way with a center turn lane. From the Perrin Beitel intersection to the Schertz Parkway

Recommendations:

Possible interventions for this roadway include more frequent PHB crossings as most pedestrian-involved crashes were due to pedestrians failing to yield right-of-way.[123] This corridor would also benefit from reducing the amount of space allocated towards the landscaped median to provide space for protected bike infrastructure and more robust pedestrian infrastructure.[124] In areas with the center turn lane, the number of lanes could be reduced from five to four by removing the two-way center left turn lane and hardening the center line to control left turn actions and accommodate connected and protected bike infrastructure and more robust pedestrian infrastructure. Removal of vehicle travel lanes

of protected bike infrastructure.[120] The speed limit could be reduced to 30 miles per hour. The IIHS found that as posted speed limits increase, the amount of speeding increases, but that lowering the posted speed limit can reverse this trend.[121] Multiple intersections along this corridor lack adequate signage, as well as pedestrian infrastructure. Removing slip lanes to discourage unsafe turning behavior would reduce the danger faced at these intersections.[122] The City could research the relocation of the bus stop at Salado Rd. to potentially address the crossing issue.

[120] National Association of City Transportation Officials, “Urban Bikeway Design Guide,” https://nacto.org/publication/urban-bikeway-design-guide/

[121] Teoh, Eric, and Richard Retting, “Traffic speeds on interstates and freeways 10 years after repeal of National Maximum Speed Limit,” 2008, https://www.researchgate.net/publication/5453488

[122] Jiang et al. Impact of right-turn channelization on pedestrian safety at signalized Intersections. (2019). https://www.sciencedirect.com/science/article/abs/pii/S0001457519308802

[123] Theofilatos et al. To cross or not to cross? Review and meta-analysis of pedestrian gap acceptance decisions at midblock street crossings. (2021).

[124] Pawlovich et al. Iowa’s Experience with Road Diet Measures: Use of Bayesian Approach to Assess Impacts on Crash Frequencies and Crash Rates. (2006). https://doi.org/10.1177/0361198106195300119

intersection, there is a roughly 40-foot-wide landscaped median. North of Perrin Beitel Rd, the roadway has a center turn lane. Thousand Oaks does not have any bike infrastructure and most of the corridor has sidewalk infrastructure. Portions of this corridor are on the All-modes HIN and Pedestrian HIN.

on larger roadways can reduce speeds, leading to safer crash outcomes. [125]

[125] Saak, J. (2013, May). Joshua_Saak_Charlotte_Road_Diets_-_East_Selwyn.pdf. Referenced 2024 in "An Evaluation of “Road Diet” Projects on Five Lane and Larger Roadways." 2017. NACTO.

Additional High-Scoring Corridors

In addition to the top 20 highest-scoring corridors, other corridors that scored highly were not selected for further study due to these corridors being owned and operated by entities outside the City or featuring ongoing projects supported by or led by the City. The VZAP is an implementation-focused plan – thus, corridors not owned by the City were not included in **Table 9** because the implementation of new infrastructure is largely outside of the City's control on those roadways. However, as shown in **Table 10**, many of these roads scored very highly in the prioritization methodology and should be considered for future safety implementations in partnership with TxDOT.

TABLE 10: 20 HGHEST SCORING CORRIDORS OWNED BY TXDOT

Total Score	Corridor Number	Roadway Name	Start	End	Council District
95	347	**SE Military Dr**	I-35	Roosevelt Ave	3
90	384	**SE Military Dr**	Quintana Rd	Zarzamora St	4
90	423	**Bandera Rd**	Hillcrest Dr	Culebra Rd	7
85	308	**WW White Rd**	Houston St	Rigsby Ave	2
85	424	**Culebra Rd**	Bandera Rd	I-10	1
80	196	**Fredericksburg Rd**	Woodlake Dr	Wurzbach Rd	8
80	235	**Austin Highway**	Eisenhauer Rd	Loop 410	2
80	311	**Rigsby Ave**	Roland Ave	WW White Rd	2
77	47	**Perrin Beitel Rd**	Thousand Oaks Dr	Industrial Ctr	10
76	67	**Wurzbach Pkwy**	Nacogdoches Rd	Thousand Oaks Dr	10
76	383	**SE Military Dr**	Zarzamora St	Ascot Ave	4
75	68	**Wurzbach Pkwy**	Thousand Oaks Dr	I-35	10
75	237	**Broadway St**	Burr Rd	Pearl Parkway	2
75	330	**WW White Rd/SE Military Dr**	Southcross Blvd	I-37	3
75	335	**SE Military Dr**	Presa St	Goliad Rd	3
75	346	**SE Military Dr**	Roosevelt Ave	Presa St	3
75	399	**SW Military Dr**	Five Palms Dr	Quintana Rd	4
75	422	**Bandera Rd**	Loop 410	Hillcrest Dr	7
72	353	**Roosevelt Ave**	I-10	Southcross Blvd	3
72	375	**Nogalitos St**	I-35	Zarzamora St	5
71	355	**Roosevelt Ave**	SE Military Dr	Herbst St	3

Additionally, many high scoring corridors are already included in roadway redesign projects aimed to improve safety, including new roadway designs in conjunction with VIA Metropolitan Transit and funded by the City's 2022-2027 Bond Program.[126] As these corridors are either already in design or currently under construction, recommended additional safety countermeasures would not be

[126] City of San Antonio. 2022-2027 Bond. 2023. https://www.sanantonio.gov/2022Bond

implementable in the near term. A list of the highest scoring corridors with ongoing projects are listed in Table 11.

TABLE 11: 11 HIGH SCORING CORRIDORS WITH ONGOING PROJECTS

Project Type	Total Score	Corridor Number	Roadway Name	Start	End	Council District
VIA – Advanced Rapid Transit	95	211	**San Pedro Ave**	Basse Rd	Cypress St	1
	87	491	**Commerce St**	Gen. McMullen	I-35	5
	85	208	**San Pedro Ave**	Loop 410	Basse Rd	1
	77	529	**San Pedro Ave**	W Cypress St	Camden St	1
COSA – Projects in Design or Under Construction	81	453	**Old Highway 90**	TX-151	Gen. McMullen	6
	81	480	**Zarzamora St**	Culebra Rd	Buena Vista St	5
	81	481	**Zarzamora St**	Buena Vista St	Frio City Rd	5
	74	359	**Pleasanton Rd**	Southcross Blvd	SE Military Dr	3
	72	360	**Pleasanton Rd**	SE Military Dr	Loop 410	3
	72	385	**Zarzamora St**	Southcross Blvd	I-35	4
	72	407	**Old Highway 90**	TX-151	US-90	6

However, the VIA Advanced Rapid Transit (ART) Planned Green Line, currently in design along three high scoring corridors (211, 208, and 529) on San Pedro Avenue, is early enough in its process to recommend new safety countermeasures for consideration in its traffic calming analysis.

VIA ART Greenline - San Pedro Avenue Corridors

At its widest, San Pedro Avenue has six 12-foot travel lanes three each direction with one 15-foot-wide two-way left turn lane. This section spans from Basse to Loop 410 and is just over 2 miles. Another section just over one mile (from Basse to Olmos) is 4 lanes with a two-way turn lane. The narrowest section of the corridor is the 1.5 miles between Olmos and Ashby where it is 4 lanes without a two way left turn lane. The one-mile stretch from Ashby to Quincy also includes the two way left turn in addition to 4 lane section. The speed limit ranges from 35 to 40 mph. The corridor does not include bike facilities, and sidewalks are mostly present but consistently inadequate in slope and width and include many obstructions. Some sections of this corridor have greater than half a mile distance between signalized or marked pedestrian crossings. COSA's UDC recommends that crosswalks be included at all signalized intersections and that mid-block crosswalks be included on all blocks longer than 550 feet.[127] Furthermore, the TxDOT Roadway Design Manual approves PHB crossings be evaluated so long as the crossing is not less than 300 feet from an existing, traffic controlled pedestrian crossing.[128] Because this road contains a high density of educational, medical, commercial and multi-family residential land uses there are many generators of transit ridership.

[127] COSA. Unified Development Code. App. G, Ch. 8, Sec C App. G, Ch. 8, Sec C
[128] TxDOT. 2022 Roadway Design Manual. Section 7.3.6.5.3. https://onlinemanuals.txdot.gov/TxDOTOnlineManuals/TxDOTManuals/rdw/pedestrain_separation_ramps.htm#i1218496

The lack of appropriately spaced signalized or marked crosswalks encourages pedestrians to cross illegally between destinations and transit stops. From 2019 to 2023, San Pedro Avenue between Loop 410 and I-35 had nine fatal crashes and 15 serious crashes (13 involved pedestrians and one involved a cyclist). Parts of the corridor are on the All-Modes HIN and Pedestrian HIN. Of all serious and fatal crashes during the study period, 38% were attributed to pedestrians failing to yield the right of way to vehicles, while 33% were attributed to distracted driving and 25% were attributed to failing to yield while turning left. This crash data supports the connection between facility design and travel behaviors.

The redesign of San Pedro Avenue for the VIA Green Line ART project will limit left turns in sections of the roadway where transit runs in the center of the road. This will eliminate a significant crash factor from the corridor. The new design of the roadway will also include narrower private vehicular lanes where no transit or trucks run. Researchers at Johns Hopkins University found wide vehicle lanes encourage people to speed, increasing the number and severity of crashes.[129] Along this corridor – maintaining one 11-foot right travel lane to allow for freight movements may be necessary. In addition to physical design changes that discourage speeding, the City should consider lowering the posted speed limit to 30 mph.

Sidewalk facilities could be reconstructed to accommodate higher pedestrian volumes and meet ADA requirements. To improve pedestrian comfort and safety, a landscaped buffer could be included between the sidewalks and the vehicle lanes. To slow vehicles as they turn into driveways, sidewalks could maintain a continuous level instead of dropping to street level. The City should also consider constructing shared use paths at least ten-feet-wide to accommodate cyclists, especially in areas near trail connections or other bike facilities. Most existing intersections on San Pedro are spaced 350 ft apart, but few are signalized, meaning there is no safe way for pedestrians to cross the roadway for up to a half mile distance in certain locations. Shorter crossing spacing may have a significant impact in reducing errant pedestrian crossings,[130] so intersections along this corridor should be evaluated for signalization. If these intersections do not meet warrant analysis for full signalization, the City should consider the implementation of PHB crossings at all blocks along the corridor, as all blocks exceed TxDOT's standard for the minimum distance between PHB crosswalks (300 ft), and NACTO's minimum distance of 200 ft.[131] These crossings could additionally include pedestrian refuge islands where possible, as research from the FHWA shows that these facilities significantly reduce pedestrian crash rates.[132]

[129] Shima Hamidi, Reid Ewing. National Investigation on the Impacts of Lane Width on Traffic Safety. (2023). JHU-2023-Narrowing-Travel-Lanes-Report.pdf

[130] Zhang et. Al., Analysis of pedestrian illegal crossing at unmarked segments: Environmental factors, pedestrian characteristics and crossing behaviors, Transportation Research Part F: Traffic Psychology and Behaviour, Volume 99, 2023.https://www.sciencedirect.com/science/article/pii/S1369847823002279

[131] National Association of City Transportation Officials, "Urban Street Design Guide," https://nacto.org/publication/urban-street-design-guide/

[132] FHWA. Safety effects of marked versus unmarked crosswalks at uncontrolled locations. 2005. https://www.fhwa.dot.gov/publications/research/safety/04100/04100.pdf.

Complete List of Corridors for Implementation Consideration

The complete list of all 555 prioritized corridors for consideration for future safety related roadway upgrades is included in **Table 12**.

TABLE 12: COMPLETE LIST OF CORRIDORS FOR IMPLEMENTATION CONSIDERATION

Total Score						
95	211	**San Pedro Ave**	Basse Rd	Cypress St		1
95	347	**SE Military Dr**	I-35	Roosevelt Ave	TxDOT	3
90	384	**SE Military Dr**	Quintana Rd	Zarzamora St	TxDOT	4
90	423	**Bandera Rd**	Hillcrest Dr	Culebra Rd	TxDOT	7
90	450	**Gen. McMullen Dr**	Commerce St	US-90		5
87	491	**Commerce St**	General McMullen Dr	I-35		5
86	182	**Wurzbach Rd**	Babcock Rd	I-10		8
85	208	**San Pedro Ave**	Loop 410	Basse Rd		1
85	256	**Fredericksburg Rd**	Balcones Heights Rd	Hildebrand Ave		1
85	308	**WW White Rd**	Houston St	Rigsby Ave	TxDOT	2
85	424	**Culebra Rd**	Bandera Rd	I-10	TxDOT	1
85	447	**Gen. McMullen Dr**	Bandera Rd	Commerce St		5
82	202	**West Ave**	Loop 410	I-10		1
82	255	**Fredericksburg Rd**	Hildebrand Ave	Woodlawn Ave		1
81	453	**Old Highway 90**	TX-151	General McMullen		6
81	480	**Zarzamora St**	Culebra Rd	Buena Vista St		5
81	481	**Zarzamora St**	Buena Vista St	Frio City Rd		5
80	196	**Fredericksburg Rd**	Woodlake Dr	Wurzbach Rd	TxDOT	8
80	235	**Austin Highway**	Eisenhauer Rd	Loop 410	TxDOT	2
80	311	**Rigsby Ave**	Roland Ave	WW White Rd	TxDOT	2
80	419	**Culebra Rd**	Callaghan Rd	36th St		7
80	420	**Culebra Rd**	36th St	Gen. McMullen Dr		5
77	47	**Perrin Beitel Rd**	Thousand Oaks Dr	Industrial Ctr	TxDOT	10
77	280	**New Braunfels Ave**	Houston St	I-10		2
77	454	**Castroville Rd**	Acme Rd	Gen. McMullen Dr		5
77	529	**San Pedro Ave**	W Cypress St	Camden St		1
76	67	**Wurzbach Pkwy**	Nacogdoches Rd	Thousand Oaks Dr	TxDOT	10
76	187	**Callaghan Rd**	I-10	Loop 410		7

Total Score					Owned	District
76	326	**Goliad Rd**	Southcross Blvd	I-37		3
76	383	**SE Military Dr**	Zarzamora St	Ascot Ave	TxDOT	4
75	68	**Wurzbach Pkwy**	Thousand Oaks Dr	I-35	TxDOT	10
75	108	**Rittiman Rd**	I-35	Castle Cross Dr		2
75	237	**Broadway St**	Burr Rd	Pearl Parkway	TxDOT	2
75	279	**Commerce St**	New Braunfels Ave	Houston St		2
75	330	**WW White Rd/SE Military Dr**	Southcross Blvd	I-37	TxDOT	3
75	335	**SE Military Dr**	Presa St	Goliad Rd	TxDOT	3
75	346	**SE Military Dr**	Roosevelt Ave	Presa St	TxDOT	3
75	399	**SW Military Dr**	Five Palms Dr	Quintana Rd	TxDOT	4
75	422	**Bandera Rd**	Loop 410	Hillcrest Dr	TxDOT	7
74	359	**Pleasanton Rd**	Southcross Blvd	SE Military Dr		3
73	203	**Basse Rd**	US 281	West Ave		1
73	210	**Blanco Rd**	Basse Rd	Fredericksburg Rd		1
73	281	**Hackberry St**	Houston St	I-10		2
72	323	**Southcross Blvd**	I-37	Pecan Valley Dr		3
72	331	**Goliad Rd**	I-37	Loop 410		3
72	353	**Roosevelt Ave**	I-10	Southcross Blvd	TxDOT	3
72	360	**Pleasanton Rd**	SE Military Dr	Loop 410		3
72	366	**S Flores St**	Pleasanton Rd	Southcross Blvd		3
72	375	**Nogalitos St**	I-35	Zarzamora St	TxDOT	5
72	385	**Zarzamora St**	Southcross Blvd	I-35		4
72	407	**Old Highway 90**	TX-151	US-90		6
72	410	**W Military Dr**	TX-151	US-90		6
72	489	**Martin St**	Gen. McMullen Dr	I-35		5
71	144	**Marbach Rd**	Tumbleweed Way	Loop 410		4
71	201	**Vance Jackson Rd**	Loop 410	I-10		1
71	355	**Roosevelt Ave**	SE Military Dr	Herbst St	TxDOT	3
71	386	**Zarzamora St**	Frio City Rd	Southcross Blvd		5
71	396	**Gen. McMullen Dr**	Menefee Blvd	Calgary Ave		5
71	485	**Colorado St**	I-10	Alazan Creek		5

Total Score					Owned	District
70	122	**US-87 and Rigsby Ave**	Loop 410	Arriola Ln	TxDOT	2
70	157	**Potranco Rd**	Culebra Rd	SH 151	TxDOT	6
70	181	**Fredericksburg Rd**	Clarke Dr	Wurzbach Rd	TxDOT	8
70	309	**WW White Rd**	Rigsby Ave	Southcross Blvd	TxDOT	3
70	310	**Rigsby Ave**	WW White Rd	Loop 410	TxDOT	3
70	374	**Nogalitos St**	S Flores St	I-35		5
70	501	**Roosevelt Ave**	Tunstall St	King Roger St	TxDOT	5
70	520	**E Commerce St**	S Flores St	US 281		1
69	100	**Walzem Rd and Woodlake Pkwy**	Gibbs Sprawl Rd	Montgomery Dr	TxDOT	2
68	242	**Hildebrand Ave**	Fredericksburg Rd	I-10		1
68	254	**Fredericksburg Rd**	Woodlawn Ave	N. Flores St		1
68	289	**Iowa St**	I-37	New Braunfels Ave		2
68	338	**New Braunfels Ave**	I-37	SE Military Dr		3
67	77	**West Ave**	Lockhill-Selma Rd	W North Loop Rd		9
67	207	**Blanco Rd**	Loop 410	Basse Rd		1
67	248	**Woodlawn Ave**	I-10	McCullough Ave		1
67	282	**Walters St**	Houston St	I-10		2
67	319	**New Braunfels Ave**	I-10	I-37		3
67	334	**Presa St**	SE Military Dr	Southton Rd		3
67	358	**S Flores St**	Southcross Blvd	SE Military Dr		3
67	363	**Commercial Ave**	SE Military Dr	Loop 410		3
67	492	**Buena Vista St**	Commerce St	Frio St		5
66	169	**Grissom Rd**	Culebra Rd	Lost Ln		6
66	200	**Jackson-Keller Rd**	McCullough Ave	Loop 410		1
66	498	**Frio St**	I-10	I-35		5
66	515	**S Presa St**	Arciniega St	Wilkens Ave		1
65	99	**Walzem Rd and Montgomery Dr**	Windsor Cross	Windrock Drive	TxDOT	2
65	168	**Culebra Rd**	Loop 410	Grissom Rd		6
65	285	**Houston St**	I-10	Loop 410	TxDOT	2
65	376	**New Laredo Hwy**	Zarzamora St	SE Military Dr	TxDOT	4
65	417	**Culebra Rd**	Loop 410	Callaghan Rd		6

Total Score						
	479	**Zarzamora St**	Fredericksburg Rd	Culebra Rd		1
	278	**Commerce St**	I-37	New Braunfels Ave		2
	357	**S Flores St**	SE Military Dr	Roosevelt Ave		3
63	313	**Rigsby Ave**	Hackberry St	Roland Ave		3
63	337	**Southcross Blvd**	Roosevelt Ave	I-37		3
	398	**Cupples Rd**	US-90	Quintana Rd		5
	403	**Marbach Rd**	Loop 410	Pinn Rd		6
	421	**Culebra Rd**	General McMullen	Bandera Rd		5
63	430	**Hillcrest Dr**	Babcock Rd	Bandera Rd		7
63	433	**36th St/Esmeralda Dr**	Culebra Rd	US-90		5
63	434	**Commerce St**	Callaghan Rd	Old Highway 90		6
	12	**UTSA Blvd**	Babcock Rd	I-10		8
	188	**Babcock Rd**	Loop 410	Wurzbach Rd		7
62	189	**Babcock Rd**	Huebner Rd	Wurzbach Rd		8
62	243	**Vance Jackson Rd**	I-10	Fredericksburg Rd		1
62	354	**Roosevelt Ave**	Southcross Blvd	SE Military Dr	TxDOT	3
	365	**Pleasanton Rd**	S Flores St	Southcross Blvd		3
	400	**Old Pearsall Rd**	SW Military	Loop 410	TxDOT	4
62	416	**Ingram Rd**	Loop 410	Ridge Dr		7
62	495	**Castroville Rd/Guadalupe St**	General McMullen	Zarzamora St		5
62	499	**Laredo St**	Brazos St	S. Flores St		5
	76	**Blanco Rd**	Vista View St	Loop 410	TxDOT	1
61	253	**Cypress St**	N. Flores St	McCullough Ave		1
61	272	**Houston St**	New Braunfels Ave	Frost Bank Center Dr		2
61	307	**WW White Rd**	I-10	Houston St	TxDOT	2
61	352	**Presa St**	I-10	Southcross Blvd		3
	414	**Callaghan Rd**	Loop 410	Bandera Rd		7
	439	**Woodlawn Ave**	Bandera Rd	Zarzamora St		7
61	484	**Brazos St**	Alazan Creek	Apache Creek		5
61	513	**Roosevelt Ave**	S St Marys St	I-10		5

Total Score					Owned	District
60	127	**US 281**	Loop 410	Mitchell Lake Trailhead	TxDOT	3
60	172	**Eckhert Rd**	Caribou St	Babcock Rd		7
60	339	**Presa St**	Southcross Blvd	SE Military Dr		3
60	340	**Steves Ave**	Probandt St	I-37	TxDOT	3
60	531	**St Marys St**	Navarro St	E Cesar Chavez Blvd		1
59	287	**MLK Dr**	I-10	WW White Rd		2
59	316	**Hackberry St**	I-10	Regina St		3
58	231	**Rittiman Rd**	Harry Wurzbach Rd	I-35		2
58	265	**New Braunfels Ave**	I-35	Houston St		2
58	320	**Fair Ave**	I-37	Walters St		3
58	325	**Pecan Valley Dr**	Southcross Blvd	I-37		3
58	393	**Quintana Rd**	Malone Ave	Southcross Blvd	TxDOT	5
58	412	**Callaghan Rd**	Ingram Rd	Culebra Rd		6
58	427	**Babcock Rd**	Loop 410	Laddie Pl		7
58	431	**Hillcrest Dr**	Bandera Rd	Culebra Rd		7
58	456	**24th/26th St**	Culebra Rd	Castroville Rd		5
58	524	**N/S Flores St**	W Quincy St	E Cesar Chavez Blvd		1
58	530	**Navarro St**	Camden St	E Nueva St		1
57	56	**Thousand Oaks**	Wetmore Rd	I-35		10
57	69	**Nacogdoches Rd**	Loop 410	Wurzbach Pkwy		10
57	92	**Huebner Rd**	I-10	Vance Jackson		8
57	234	**Walzen Rd**	Austin Highway	I-35		2
57	267	**Walters St**	I-35	Houston St		2
57	318	**Clark Ave**	Rigsby Ave	Lennon Ct		3
57	324	**Southcross Blvd**	Pecan Valley Dr	Loop 410		3
57	377	**New Laredo Hwy**	SE Military Dr	I-35	TxDOT	4
57	413	**Callaghan Rd**	Bandera Rd	Ingram Rd		7
57	415	**Evers Rd**	Loop 410	Bandera Rd		7
57	440	**Woodlawn Ave**	Zarzamora St	I-10		1
56	138	**Valley Hi Dr**	Truemper St	Ray Ellison		4
56	245	**N. St. Mary's St**	I-35	US 281		1
56	252	**Culebra Rd**	I-10	Fredericksburg Rd		1

Total Score						
	283	**WW White Rd**	Loop 410	I-10	TxDOT	2
	321	**Goliad Rd**	Fair Ave	Southcross Blvd		3
56	332	**Pecan Valley Dr**	I-37	New Braunfels Ave		3
56	350	**Southcross Blvd**	I-35	Roosevelt Ave		3
56	364	**Zarzamora St**	I-35	Loop 410		4
	367	**S Flores St**	Lubbock St	Pleasanton Rd		5
	379	**Theo Ave**	Zarzamora St	I-35		5
56	381	**Southcross Blvd**	Zarzamora St	I-35		5
56	402	**Five Palms Dr**	SW Military	Old Pearsall Rd		4
	457	**Cupples Rd**	Castroville Rd	US-90		5
	488	**Poplar Rd**	24th St	I-10		5
	152	**Potranco Rd**	Rousseau St	SH 151	TxDOT	4
55	527	**N/S Alamo St**	E Jones Ave	E Cesar Chavez Blvd		1
54	120	**FM 1346**	FM 1516	Peggy Dr	TxDOT	2
	184	**Hamilton Wolfe Rd**	Fredericksburg Rd	Oakdell Way		8
	294	**Roland Ave**	J St	Rigsby Ave	TxDOT	2
	336	**Hot Wells Blvd**	Presa St	I-37		3
54	496	**Guadalupe St**	Zarzamora St	Frio St		5
53	58	**Nacogdoches Rd/Naco-Perrin Blvd/Bulverde Rd**	Wurzbach Pkwy	Thousand Oaks Dr		10
53	90	**Vance Jackson Rd**	Wurzbach Rd	De Zavala Rd		8
53	194	**Medical Dr**	Fredericksburg Rd	Babcock Rd		8
	212	**McCullough Ave**	Basse Rd	I-35		1
	229	**Eisenhauer Rd**	Austin Highway	I-35		2
53	244	**West Ave**	I-10	Hildebrand Ave		1
53	368	**Probandt St**	I-10	Pleasanton Rd		3
53	394	**Bynum St**	Southcross Blvd	SE Military Dr		4
	500	**S. Flores St**	Cesar Chavez	Lubbock St		5
	533	**W/E Martin St, 3rd St**	N San Saba St	Broadway St		1
52	72	**Isom Rd**	Sandau Rd	Lockhill-Selma Rd		1
52	103	**Eisenhauer Rd**	I-35	Woodlake Pkwy		2

Total Score					Owned	District
52	171	**Wurzbach Rd/Ingram Rd**	Seville Dr	Loop 410		7
52	241	**Hildebrand Ave**	I-10	US 281		1
52	247	**N. Main St.**	Mulberry Rd	San Pedro Ave		1
52	249	**N. Flores St**	I-10	Ashby Pl		1
52	277	**Gembler Rd**	Frost Bank Center Dr	WW White Rd		2
52	295	**Roland Ave**	Rigsby Ave	WW White Rd		3
52	344	**E White Ave**	S Flores St	Presa St		3
52	382	**Southcross Blvd**	Quintana Rd	Zarzamora St		5
52	401	**Medina Base Rd**	Five Palms Dr	SW Military		4
52	464	**Sahara St**	San Pedro Ave	Isom Rd		1
51	62	**Broadway St**	Wetmore Rd	Loop 410		10
51	193	**Medical Dr**	Fredericksburg Rd	I-10		8
51	224	**Harry Wurzbach Rd**	Eisenhauer Rd	Loop 410		10
51	268	**Nolan St**	Live Oak St	Walters St		2
51	312	**Pecan Valley Dr**	Rigsby Ave	Southcross Blvd		3
51	369	**Theo Ave**	I-35	San Antonio River		5
51	370	**Malone Ave**	I-35	Probandt St		5
51	380	**Malone Ave**	Frio City Rd	I-35		5
51	446	**Saint Cloud**	Babcock Rd	Bandera Rd		7
51	519	**E Market St**	S St Marys St	Tower of the Americas Way		1
51	536	**E Travis St**	N Flores St	Avenue E		1
50	85	**NW Military HWY**	Shavano Park City Limit	Winston Ln	TxDOT	8
50	161	**Culebra Rd**	Loop 1604	Tezel Rd		6
50	227	**Austin Highway**	New Braunfels Ave	Eisenhauer Rd	TxDOT	10
50	250	**Cincinnati Ave**	I-10	Fredericksburg Rd		1
50	333	**New Braunfels Ave**	SE Military Dr	Global Way		3
50	341	**Mission Rd**	Steves Ave	Hansford St		3
50	518	**Dolorosa St/W Market St**	S Frio St	S St Marys St		1

Total Score					Owned	District
50	526	**N Flores St**	E Fredericksburg Rd	W Elmira St		1
49	192	**Louis Pasteur Dr**	Fredericksburg Rd	Babcock Rd		8
49	288	**MLK Dr**	New Braunfels Ave	I-10		2
49	371	**Division Ave**	I-35	S Flores St		5
49	387	**Somerset Rd**	Zarzamora St	SE Military Dr		5
49	406	**Pinn Rd**	Marbach Rd	US-90		6
49	486	**Colorado St**	Fredericksburg Rd	I-10		1
48	219	**Broadway St**	Nacogdoches Rd	Loop 410		10
48	258	**N. Alamo St.**	Broadway St	Jones Ave		2
48	361	**Mousund Blvd**	Pleasanton Rd	Loop 410		3
48	455	**Wilson Blvd**	Babcock Rd	Culebra Rd		7
47	105	**Midcrown Dr**	Rosillo Creek	Walzem Rd		2
47	112	**Seguin Road**	N Foster Rd	Putter	TxDOT	2
47	195	**Floyd Curl Dr**	Louis Pasteur Dr	Huebner Rd		8
47	215	**Fresno Dr**	Fredericksburg Rd	I-10		1
47	216	**Olmos Dr**	Fredericksburg Rd	I-10		1
47	263	**New Braunfels Ave**	Grayson St	I-35		2
47	300	**Porter St**	Aransas Ave	Clark Ave		2
47	315	**Gevers St**	Hammond Ave	Monticello Ct		3
47	322	**Dollarhide/Skyridge Ave**	Hiawatha St	Bolmore Dr		3
47	373	**Commercial Ave**	I-35	SE Military Dr		3
47	389	**Barlite Blvd**	SE Military Dr	Cascade Pkwy		4
47	391	**Kirk Pl**	Cupples Rd	Zarzamora St		5
47	435	**Acme Rd**	Zarzamora Creek	US-90		6
47	458	**Ceralvo St**	Dahlgreen Ave	Trinity St		5
47	487	**Ruiz St**	General McMullen	Frio St		5

Total Score	Corridor Number	Roadway Name	Start	End	TxDOT-Owned	Council District
	547	**Broadway Ave**	Roy Smith St	E Houston St		1
47	551	**Old Sky Harbor Dr**	Old Pearsall Rd	Mariner St		4
46	80	**Blanco Rd**	Old Bitters	Loop 1604	TxDOT	9
46	93	**Wurzbach Rd**	I-10	Lockhill-Selma Rd		9
	145	**Hunt Ln**	Potranco Rd	Ingram Rd		4
	183	**Wurzbach Rd**	Babcock Rd	Evers Rd		7
	186	**Evers Rd**	Forest Dell	Loop 410		7
46	226	**Harry Wurzbach Rd**	Eisenhauer Rd	Towers Park Ln		10
46	240	**Hildebrand Ave**	US 281	New Braunfels Ave		2
	276	**Houston St**	Frost Bank Center Dr	I-10		2
	293	**Pecan Valley Dr**	I-10	Rigsby Ave		2
	348	**Fair Ave**	Presa St	I-37		3
46	390	**Somerset Rd/Palo Alto Rd**	SE Military Dr	I-35		4
46	392	**Frio City Rd**	Brazos St	Zarzamora St		5
46	411	**Callaghan Rd**	Culebra Rd	TX-151		6
	517	**N Main Ave**	Camden St	W Commerce Ave		1
	534	**Rossy St, W/E Pecan St**	W Martin St	Broadway St		1
	106	**Fratt Rd**	Eisenhauer Rd	Rittiman Rd		2
45	140	**Ray Ellison Blvd**	Loop 410	Five Palms Dr		4
45	205	**Oblate Dr**	Blanco Rd	El Montan Ave		1
	257	**Josephine St**	San Antonio River	N. Alamo St.		1
	286	**Lord Rd**	WW White Rd	Loop 410		2
	349	**Eads Ave**	Roosevelt Ave	Presa St		3
45	409	**Callaghan Rd**	TX-151	US-90		6
45	505	**S Alamo St**	E Cesar Chavez Blvd	TX 536 Spur		1
45	553	**Beatrice Ave**	Pleasanton rd	S Flores St		3
	142	**Horal St**	Tarasco St	Marbach Rd		4
	275	**Frost Bank Center Dr**	I-35	Houston St		2
44	372	**Division Ave**	Nogalitos St	I-35		5
44	511	**Carolina St**	S St Marys St	37 Service Rd		1

Total Score						
	126	**Loop 1604 and Rockport Rd**	I-37	Campbellton Rd	TxDOT	3
	130	**Zarzamora St**	SH 16	Loop 410		4
43	214	**Fresno Dr**	I-10	Papa Bear Ln		1
43	504	**N/S Santa Rosa**	Kingsbury St	El Paso St		1
42	30	**Stone Oak Pkwy**	E Sonterra Blvd	Loop 1604		9
	46	**Nacogdoches Rd**	Thousand Oaks Dr	Oconnor Rd	TxDOT	10
	48	**Oconnor Rd**	Nacogdoches Rd	I-35		10
	101	**Gibbs Sprawl Rd**	Miller Rd	Rittiman Rd	TxDOT	2
42	137	**Ray Ellison Blvd**	Paradise Valley	Lake Vis		4
42	139	**Medina Base Rd**	Moon Valley Dr	Palm Valley St		4
	158	**Reed Rd**	Culebra Rd	Terra Ferna		6
	190	**De Zavala Rd / Babcock Rd**	I-10	Huebner Rd		8
	204	**Dresden Dr**	Allena Dr	Blanco Rd		1
42	225	**Eisenhauer Rd**	New Braunfels Ave	Austin Highway		10
42	251	**Trinity St**	Woodlawn Ave	Culebra Rd		1
42	292	**Springsdale Ave/Amanda St**	Ferris Ave	Sewanee St		2
42	298	**Aransas Ave**	Denver Blvd	Wellhausen St		2
	301	**Florida St**	I-37	Hackberry St		2
	343	**Mission Rd**	Belden Ave	E White Ave		3
42	404	**Westfield Blvd**	Spur Dr	W Military Dr		6
42	443	**Rivas St**	34th St	General McMullen		5
	445	**Cincinnati Ave**	Camino Santa Maria	Elmendorf St		7
	460	**19th St**	Albert St	Beechaven Dr		5
	465	**Weidner Rd**	I-35	Randolph Blvd		10
42	475	**Iroquois St**	Somerset Rd	Palo Alto Rd		4
42	483	**Brazos St**	Apache Creek	US-90		5
	522	**W/E Houston St**	N Frio St	N St Marys St		1
	523	**E Houston St**	N St Marys St	Avenue E		1
42	532	**Soledad St**	Navarro St	E Commerce St		1
42	555	**Eldridge Ave**	Sw 37th St	Valencia St		6

Total Score						
	89	**Vance Jackson Rd**	De Zavala Rd	Loop 1604		8
	91	**Vance Jackson Rd**	Wurzbach Rd	Loop 410		1
41	129	**Pleasanton Rd / Moursund Blvd**	Mauermann Rd	Loop 410		3
41	136	**Old Pearsall Rd**	Loop 410	Railroad	TxDOT	4
41	176	**Bandera Rd**	Mystic Park	Eckhert Rd	TxDOT	7
	178	**Huebner Rd**	Babcock Rd	I-10		8
	233	**Perrin Beitel Rd**	Austin Highway	Loop 410		2
41	317	**Steves Ave**	I-37	Clark Ave		3
41	356	**Ashley Rd**	Mousund Blvd	Acequia Rd		3
	507	**E Cesar Chavez Blvd**	Pancoast St	S Bowie St		1
	544	**3rd St**	Broadway St	E Houston St		1
40	27	**Stone Oak Pkwy**	Huebner Rd	E Sonterra Blvd		9
40	141	**Springvale Dr**	Chadwick Dr	Appleton Dr		4
40	259	**Grayson St**	Avenue B	Hackberry St		2
	260	**Carson St**	Austin St	Olive St		2
	290	**Nevada St**	St Anthony Ave	Connelly St		2
	328	**Pickwell Dr**	Palfrey St	SE Military Dr		3
40	362	**Gillette Blvd**	Nagel St	Pleasanton Rd		4
40	425	**Broadview Dr**	Highview Dr	Bandera Rd		7
	426	**Donaldson Ave/Quill Dr.**	Early Trl	Saint Cloud Rd		7
	436	**Maiden Ln**	Woodlawn Ave	Culebra Rd		7
40	444	**San Felipe Ave**	Culebra Rd	Ruiz St		5
40	448	**San Joaquin Ave**	Commerce St	Jewett St		5
40	449	**34th St**	El Paso St	Eldridge St		6
	459	**Morelia St**	General McMullen	21st St		5
	477	**Whitewood Dr**	SW Military	Medina Base Rd		4
40	482	**Brady Blvd**	Keck	Calaveras		5
40	493	**Saunders Ave**	Murry St	Chupaderas St		5
40	540	**W Elmira St**	Camaron St	N Flores St		1
	546	**N St Marys St**	E Elm St	Navarro St		1
	550	**Lone Star Blvd**	TX 536 Spur	Union Pacific RR		5
40	554	**Timbercreek Dr**	Grassfield Dr	Canyon Ridge Dr		6
39	73	**San Pedro Ave**	Loop 410	Sandau Rd		1

Total Score					Owned	District
39	78	**Wurzbach Pkwy**	Lockhill-Selma Rd	Bluffton Oaks	TxDOT	9
39	271	**Houston St**	I-37	New Braunfels Ave		2
39	525	**E Main Plz**	Dolorosa St	E Cesar Chavez Blvd		1
38	14	**Hausman Rd**	Magnolia Way	I-10	TxDOT	8
38	119	**Peggy Dr**	FM 1346	Eunice St		2
38	125	**Loop 1604 / Rockport Rd**	I-37	Priest Rd	TxDOT	3
38	160	**Ingram Rd**	Parking lot road	Parking lot road		6
38	191	**Babcock Rd**	Clear Rock Dr	Hausman Rd		8
37	5	**La Cantera Pkwy**	Loop 1604	Worth Pkwy		8
37	21	**Stone Oak Pkwy**	Huebner Rd	Evans Rd		9
37	40	**Culebra Rd**	Geronimo Dr	Westwood Loop	TxDOT	6
37	42	**Oconnor Rd**	Loop 1604	Nacogdoches Rd		10
37	44	**Nacogdoches Rd**	Judson Rd	Pleasantville Rd	TxDOT	10
37	66	**Wurzbach Pkwy**	Mud Creek	Nacogdoches Rd	TxDOT	10
37	86	**De Zavala Rd**	Lockhill-Selma Rd	I-10		8
37	110	**N Foster Rd**	Windfield Path	Castle Cross		2
37	143	**Hunt Ln**	US HW 90 turn around	Marbach Rd		4
37	146	**Ellison Dr**	Hayloft Ln	Loop 1604		4
37	175	**Bandera Rd**	Loop 1604	French Creek	TxDOT	7
37	177	**Huebner Rd**	Redbird Ln	Babcock Rd		7
37	185	**Cinnamon Creek Dr and Ewing Halsell Dr**	Hamilton Wolfe Rd	Cinnamon Trail		8
37	246	**Ashby Pl**	Fredericksburg Rd	N. St. Mary's St		1
37	296	**Rice Rd**	Salado Creek	Diane Dr		2
37	306	**Pine St**	Graves Alley	Iowa St		2
37	314	**Walters St**	I-10	Steves Ave		3
37	327	**Hot Wells Blvd**	Goliad Rd	I-37		3
37	342	**Mitchell Ave**	S Flores St	Presa St		3
37	345	**Padre Dr**	Padre Cir	Pyron Ave		3

Total Score					Owned	District
	397	**36th St**	US-90	Billy Mitchell Rd		4
	437	**Woodlawn Ave**	Maiden Ln	Bandera Rd		7
37	461	**Vance Jackson Rd**	La Cantera Pkwy	Loop 1604		8
37	474	**Mayfield Blvd**	Somerset Rd	Zarzamora St		4
37	509	**Labor St**	E Cesar Chavez Blvd	Carolina St		1
37	514	**S St Marys**	King William St	Jacob St		1
36	84	**Huebner Rd**	Vance Jackson Rd	NW Military Hwy		8
36	109	**Seguin Road**	N Foster Rd	Binz Engleman Rd	TxDOT	2
36	395	**Quintana Rd**	Bynum St	SE Military Dr		4
36	506	**W/E Cesar Chavez Blvd**	S Frio St	Dwyer Ave		1
36	516	**S Main Ave**	E Nueva St	E Cesar Chavez Blvd		1
35	10	**Security Service Pkwy**	I-10	Security Service Ln		8
35	74	**Sandau**	US-281	Gulfdale		9
35	104	**Ray Bon Dr**	Gawain Dr	Excalibur		2
35	111	**Summer Fest Dr**	Sunrise Creek Dr	N Foster Rd		2
35	128	**US 281**	Mitchell Lake Trailhead	Palo Blanco Creek	TxDOT	3
35	273	**Gevers St**	Gulf St	Canton St		2
35	274	**Mel Walters Way**	Gulf St	Canton St		2
35	291	**Yucca St**	Clark Ave	Amanda St		2
35	297	**Brooksdale Dr**	MLK Dr	Rice Rd		2
35	299	**Gevers St**	Delmar St	Denver Blvd		2
35	305	**Denver Blvd**	Cherry St	Hackberry St		2
35	378	**Huron St**	Brighton	Linden Ave		5
35	405	**Westfield Blvd**	Andros Pl	Old Highway 90		6
35	408	**Castroville Rd**	Callaghan Rd	TX-151		6
35	418	**Benrus**	Quill Dr	Culebra Rd		7
35	428	**Sunshine Dr**	Overbrook Dr	Dickinson Dr		7
35	442	**34th St**	Culebra Rd	Cornelia Ave		5

Total Score						
	494	**Navidad St**	Elvira St	Del Valle Alley		5
	510	**Florida St**	S St Marys St	US 281 Service Rd		1
35	512	**W Drexel Ave**	S Presa St	Hoefgen Ave		2
35	537	**N Presa St**	W Crockett St	W Market St		1
35	539	**Camaron St**	Walsh St	W Elmira St		1
	548	**N Laredo St**	Haven for Hope Way	Perez St		5
	70	**Starcrest Dr**	Barrington St	Loop 410		10
	132	**SH 16**	Fest Rd (before)	Leon Creek	TxDOT	4
34	209	**McCullough Ave**	Loop 410	Basse Rd		1
34	264	**Walters St**	Bee St	I-35		2
	302	**Carolina St**	I-37	Cherry St		2
	542	**McCullough ave, Nolan St**	I-35 Service Rd	Live Oak St		1
	61	**Wetmore Rd**	Broadway St	Wurzbach Pkwy		10
33	97	**Randolph Blvd**	Loop 410	Bludau Bishop Rd		10
32	45	**Nacogdoches Rd**	Oconnor Rd	Judson Rd	TxDOT	10
	49	**Judson Rd**	Nacogdoches Rd	I-35		10
	81	**Blanco Rd**	Salado Creek	Old Bitters	TxDOT	9
	95	**Jackson-Keller Rd**	Loop 410	Vance Jackson		1
32	170	**Timberhill**	Border Brk	Ambling St		7
32	221	**Basse Rd**	US 281	Broadway St		1
	388	**Somerset Rd**	Palo Alto Rd	Owasso St		4
	429	**Donaldson Ave**	Saint Cloud Rd	Fredericksburg Rd		7
	452	**El Paso St**	San Joaquin Ave	General McMullen		5
32	469	**Hardy Oak Blvd**	Steubing Oaks	Loop 1604		9
32	470	**Hood St**	Frank St	Ervin St		2
32	476	**W Hutchins Pl**	Palo Alto Rd	I-35		4
	528	**S Bowie**	Bonham St	E Market St		1
	13	**UTSA Blvd**	I-10	Vance Jackson		8
31	31	**E Sonterra Blvd**	Renoir	US-281		9
31	60	**Bitters Rd**	US-281	Jones Maltsberger Rd		9

Total Score			Start	End	TxDOT-Owned	Council District
	65	**Wurzbach Pkwy**	W Coker Loop	Mud Creek	TxDOT	9
31	94	**Callaghan Rd**	I-10	Vance Jackson		1
31	102	**Walzem Rd**	Congressional Blvd	Woodlake Pkwy	TxDOT	2
31	166	**Tezel Rd**	Mainland Dr	Grissom/Culebra Rd		6
31	222	**Nacogdoches Rd**	Broadway St	Loop 410		10
	236	**New Braunfels Ave**	Burr Rd	Eleanor Ave		2
	266	**Hackberry St**	I-35	Houston St		2
31	497	**Guadalupe St**	Frio St	S Flores St		1
30	79	**Braesview**	Larkspur	Vista Nogal St		9
30	83	**Huebner Rd**	NW Military Hwy	Loop 1604		9
	114	**Wehman Dr**	Loop 410	Springfield Rd		2
	115	**Cornerway Blvd**	I-10	Dietrich Rd		2
	133	**Somerset Rd**	Senior Rd	Indian Creek	TxDOT	4
30	135	**Robert Glenn Rd**	Old Pearsall Rd	Unnamed Road		4
30	159	**W Military Dr**	Ingram Rd	SH 151		6
	213	**Wildwood Dr**	San Pedro Ave	Belknap Pl		1
30	269	**Hays St**	Hudson	Mittman		2
30	284	**Pop Gunn St**	Houston St	I-10		2
30	329	**WW White Rd**	SE Military Dr	Loop 410		3
30	438	**Camino Santa Maria**	Woodlawn Ave	Fordham Ave		7
	441	**Freeman Dr**	Hillcrest Dr	36th St		7
	472	**Hicks Ave**	Vista Rd	Salado Creek		3
30	473	**Hiawatha St**	Meeks Ave	Meadow Ridge St		3
30	538	**W/E Euclid Ave**	San Pedro Ave	McCullough Ave		1
29	87	**Lockhill-Selma Rd**	Huebner Rd	NW Military Hwy		9
	217	**Jones Maltsberger Rd**	Basse Rd	Rector Dr		1
	261	**Casa Blanca St**	Broadway St	N. Alamo St.		1
29	502	**S Main Ave**	E Arsenal St	TX 536 Spur		1
28	18	**Bulverde Rd**	Marsahll Rd	N Loop 1604 E		10
28	54	**Thousand Oaks**	US-281	Jones Maltsberger Rd		10

Total Score						
	55	**Thousand Oaks**	Jones Maltsberger Rd	Wetmore Rd		10
	123	**New Sulphur Springs Rd**	Friesenhahn St	Loop 410		3
	466	**Jones Maltsberger Rd**	Wurzbach Pkwy	Thousand Oaks Dr		10
27	7	**W Bitters Rd**	Treble Crk	Ashton Village Dr		9
27	19	**US-281**	TPC Pkwy	Encino Rio	TxDOT	9
27	35	**Hardy Oak Blvd**	Wilderness Oak	Stone Oak Pkwy		9
	57	**Wetmore Rd**	Wurzbach Pkwy	Stahl Rd		10
	124	**US-181**	I-37	Western Trl	TxDOT	3
27	149	**Wiseman Blvd**	Cottonwood Way	N Ellison Dr		6
27	156	**Hunt Ln and Wiseman Blvd**	SH 151	SH 151		6
27	167	**Guilbeau Rd and Bristlecone St**	Woods End St	Loop 1604		7
27	206	**Rector Dr**	San Pedro Ave	Jones Maltsberger Rd		1
	463	**McCarty Rd**	Mider Dr	San Pedro Ave		1
	471	**Lamar St**	Muncey	New Braunfels Ave		2
26	20	**Stone Oak Pkwy**	Canyon Golf Rd	US-281		9
26	28	**Blanco Rd**	Huebner Rd	Loop 1604	TxDOT	9
26	34	**Nacogdoches Road**	Bexar County Line	Dolente Road	TxDOT	9
26	75	**Lockhill-Selma Rd**	NW Military Hwy	PVT Rd		1
26	218	**Sunset Dr**	Jones Maltsberger Rd	New Braunfels Rd.		1
	223	**New Braunfels Ave**	Austin Highway	Loop 410		10
	6	**La Cantera Pkwy/Nina Louise Dr**	Fiesta Texas Dr	Nina Louise Dr		8
	53	**Henderson Pass**	Loop 1604	Turkey Point St		9
25	59	**Starcrest Dr**	Sky Blue St	Wurzbach Pkwy		9
25	107	**Castle Cross**	Midcrown Dr	Castle Hunt Dr		2
25	118	**N Foster Rd**	FM 1346	I-10		2

Total Score	Number	Roadway Name	Start	End	TxDOT-Owned	Council District
25	131	**Lone Star Pass**	SH 16	Applewhite Rd		4
25	230	**Rittiman Rd**	Austin Highway	Harry Wurzbach Rd		10
25	303	**Hoefgen Ave**	Florida St	Carolina St		2
25	304	**Cherry St**	Delaware St	Denver Blvd		2
25	543	**Avenue A, Auditorium Cir, Jefferson St**	McCullough Ave	E Martin St		1
24	26	**Huebner Rd**	Stone Oak Pkwy	Hardy Oak Blvd		9
	197	**S. Presa St**	US HW 181	Loop 410	TxDOT	3
	151	**W Military Dr**	Loop 1604	SH 151		4
	25	**Huebner Rd**	Blanco Rd	Stone Oak Pkwy		9
22	43	**Judson Rd**	Loop 1604	Nacogdoches Rd		10
22	116	**Loop 1604**	Schuwirth Rd	Stanush	TxDOT	2
22	174	**Mainland Rd**	Coral Spgs	Bandera Rd		7
22	220	**Nacogdoches Rd**	Basse Rd	Fair Oaks Pl		1
22	468	**Green Mountain Rd/Stahl Rd**	Loop 1604	Nacogdoches Rd		10
21	71	**Airport Blvd**	Loop 410	John Saunders Rd	TxDOT	9
20	8	**Paesanos Pkwy**	Loop 1604	Loop 1604		9
20	11	**Anthem Pkwy**	Interplace	Vance Jackson		8
	148	**W Military Dr**	Kingsbridge	Loop 1604		6
20	153	**Christus Pkwy**	SH 151	Parking lot road		6
20	162	**Timber Path**	Les Harrison Dr	Hidden Glade		6
20	180	**Prue Rd**	Laureate Dr	Fredericksburg Rd		8
20	239	**Devine Rd**	Stadium Dr	Mount Erin Pass Dr		1
	270	**Pine St**	I-35	Houston St		2
	478	**Burr Rd**	Broadway St	New Braunfels Ave		2
	503	**S Laredo St**	El Paso St	Sharp St		5
20	541	**Lexington Ave**	Augusta St	San Antonio River		1
19	50	**Toepperwein Rd**	Nacogdoches Rd	I-35		10
18	15	**US-281**	Cibolo Creek	Overlook Pkwy	TxDOT	9

Total Score						
	16	**US-281**	Overlook Pkwy	Stone Oak Pkwy	TxDOT	9
	134	**US HWY 90**	Luckey Ranch	Cagnon Rd	TxDOT	4
17	29	**Huebner Rd**	Blanco Rd	Loop 1604		9
17	51	**Bulverde Rd**	Loop 1604	Long Creek		10
	98	**Oconnor Rd**	Robards Row St	Antares Park		10
	154	**Westover Hills Blvd**	Rogers Rd	SH 151		6
	179	**Prue Rd and Research Dr**	Auburn Ln	Fredericksburg Rd		8
16	17	**TPC Pkwy**	US-281	Bulverde Rd		9
16	147	**Potranco Rd**	Empresario Dr	Loop 1604	TxDOT	4
	163	**Leslie Rd**	Westwood Loop	Parking lot road		6
	63	**Mac Arthur View**	Wetmore Rd	Nacogdoches Rd		10
	88	**Lockhill-Selma Rd**	Huebner Rd	De Zavala Rd		8
15	113	**Woodlake Pkwy**	Woodlake Club Dr	FM 78		2
15	164	**Dover Ridge**	Lands Point St	Tezel Rd		6
	199	**Corporate Woods Dr**	Redriver Song	Loop 1604		9
	228	**Vandiver Rd**	Austin Highway	Sir Phillip Dr		10
	545	**Austin St**	Sherman St	Brooklyn Ave		2
13	3	**NW Military Hwy**	Salado Creek Greenway	Calle del Oro	TxDOT	8
13	23	**Blanco Rd**	Wilderness Oak	Huebner Rd	TxDOT	9
12	36	**Wilderness Oak**	Hot Spgs	Blanco Rd		9
	52	**Jones Maltsberger Rd**	Thousand Oaks Dr	Redland Rd		10
	173	**Prue Rd**	Bandera Rd	Babcock Rd		7
	462	**Braun Rd**	Old Tezel Rd	Bandera Rd		7
12	467	**Brook Hollow Blvd**	Searcy Dr	Oakshire St		9
12	549	**Stahl Rd**	Turn-in for Circle K	Wagon Gap Dr		10
11	41	**Bandera Rd**	Cedar Trl	Loop 1604	TxDOT	8
	150	**Alamo Ranch Pkwy**	Loop 1604	Westwood Loop		6
	4	**Carrie Louise St**	I-10	Leon Creek		8
10	32	**Angora Palms Dr**	US-281	Hardy Oak Blvd		9
10	64	**Nakoma**	West Ave	N North Loop Rd		9

Total Score					Owned	District
10	82	**Bitters Rd**	Blanco Rd	Panther Spring Creeks		9
10	198	**Kyle Seale Pkwy**	Loop 1604	Kyle Seale Pkwy		8
9	39	**Bulverde Rd**	Ravello Hills	Bulverde Rd		10
8	22	**Blanco Rd**	West Oak Estates Dr.	Wilderness Oak	TxDOT	9
7	37	**E Evans Rd**	Bulverde Rd	E Evans Rd		9
7	38	**TX-211**	Santa Loma	Culebra Rd	TxDOT	6
5	9	**Pinnacle Oaks**	Loop 1604	Bacon Rd		9
5	96	**I-35 Access Rd**	Toepperwein Rd	Gunn Rd	TxDOT	10
5	121	**FM 1516**	Real Rd	Key Windy Way	TxDOT	2
4	1	**Ralph Fair Rd**	Dietz Elkhorn Rd	Pimlico Ln	TxDOT	8
4	2	**Ralph Fair Rd**	Old Paseo Way	Curres Creek	TxDOT	8
4	117	**FM 1518**	I-10	Trainer Hale Rd	TxDOT	2