Enhancing Southwest New Mexico Connectivity in Grant County Communities of: Silver City, Arenas Valley, Santa Clara, Bayard, & Hurley

Final Report Draft

Prepared by:

Natalie Villwock-Witte, PhD, PE
Associate Research Professor/Research Engineer

Karalyn Clouser
Research Professional

Western Transportation Institute at Montana State University

&

Carrie Kissel
Associate Director

Bret Allphin
Senior Program Manager

National Association of Development Organizations Research Foundation (NADORF)

July 2024

About WTI & NADORF

The Western Transportation Institute (WTI) was founded in 1994 by the Montana and California Departments of Transportation, in cooperation with Montana State University. WTI concentrates on rural transportation research; as stewards and champions of rural America, WTI also has a strong interest in sustainability. WTI research groups create solutions that work for clients, sponsors, and rural transportation research partners. WTI Research Centers include the Montana Local Technical Assistance Program, the National Center for Rural Road Safety, the Small Urban, Rural and Tribal Center on Mobility, the Federal-Public Lands Transportation Institute, and the West Region Transportation Workforce Center.

Founded in 1988, the NADO Research Foundation is the nonprofit research affiliate of the National Association of Development Organizations (NADO). The NADO Research Foundation identifies, studies, and promotes regional solutions and approaches to improving local prosperity and services through the nationwide network of regional development organizations (RDOs). The Research Foundation shares best practices, offers professional development training, analyzes the impact of federal policies and programs on RDOs, and examines the latest developments and trends in small metropolitan and rural America. Most importantly, the Research Foundation is helping bridge the communications gap among practitioners, researchers, and policymakers. Learn more at www.NADO.org and www.RuralTransportation.org.

Disclaimer

Any opinions, findings and conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the Southwest New Mexico Council of Governments (SWNMCOG), NADO, or the United States Department of Agriculture (USDA). USDA is an Equal Opportunity Provider.

The authors and sponsoring agencies do not endorse products of manufacturers. Trademarks or manufacturers' names appear herein only because they are considered essential to the subject of this document.

Acknowledgments

We would like to thank Cerisse Grijalva and Priscilla Lucero of the SWNMCOG. The authors also express appreciation to all of the individuals and organizations who provided information or consented to be interviewed. In addition, the authors would like to thank Beth Foreman (formerly of the New Mexico Department of Transportation (NMDOT)) for assistance in securing the JAMAR counters and Roland Padilla of NMDOT for providing recommendations for JAMAR counter installation. We would also like to thank Dana May and Anna Price for technical editing and Neil Hetherington for creating some of the graphics found within; all are with WTI.

Table of Contents

List of Figures

List of Tables

1 Introduction

Located approximately 235 miles south of Albuquerque, New Mexico and 150 miles northwest of El Paso, Texas, Grant County, New Mexico, is an international destination for elite and recreational cyclists, and host to annual bicycling events such as the Tour of the Gila Criterium Race. The Town of Silver City (hereafter referred to as Silver City) is the county seat and serves as a gateway to the 3.3 million acres of Gila National Forest (NF). The Gila NF is home to the Continental Divide National Scenic Trail's path across southwestern New Mexico. Silver City, the unincorporated community of Arenas Valley, the Village of Santa Clara, the City of Bayard, and the Town of Hurley, (Figure 1) in coordination with the county and the Southwestern New Mexico Council of Governments (SWNMCOG), are pursuing opportunities to expand on the region's natural resources (New Mexico State Park's City of Rocks State Park and National Park Service's Gila Cliff Dwellings National Monument), outdoor recreation, hospitality, retail, and tourism economies. These efforts include improving connections to hiking and cycling trails, as well as enhancing safety and active transportation access along the U.S. 180 corridor, the primary focus of this technical assistance effort.

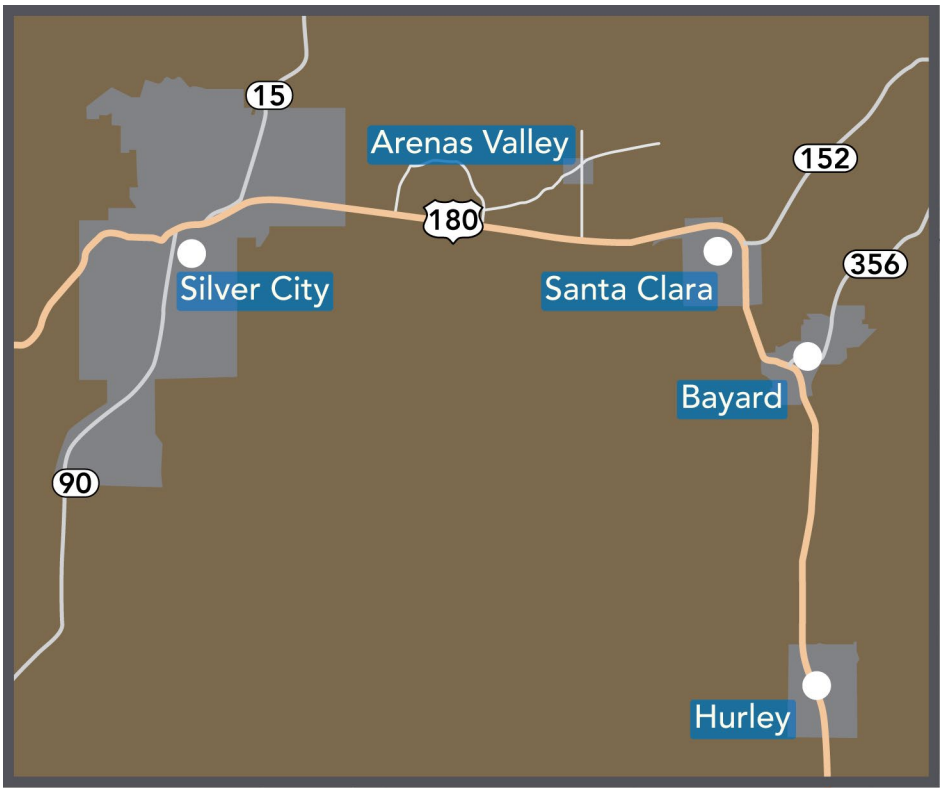


Figure 1: Focus Communities Along U.S. 180.

The National Association of Development Organizations Research Foundation (NADORF) Team, composed of the National Association of Development Organizations (NADO) and the Western Transportation Institute at Montana State University, worked in cooperation with SWNMCOG to document the current active transportation use along the U.S. 180 corridor between Silver City, Arenas Valley, Santa Clara, Bayard, and Hurley. Additionally, the NADORF Team documented crash experiences of both motorized and active transportation users of the corridor. The NADORF Team also investigated the best practices and outcomes achieved by high performing states that benefit from bicycle tourism.

Finally, this research effort provided recommendations on improving active transportation along the U.S. 180 corridor and the potential to improve connections to the Continental Divide Trail (CDT) and the associated trailhead to be established along Little Walnut Road in Silver City.

This technical assistance effort was intended to provide transportation information and analysis to support regional mobility, safe and reliable travel opportunities, and community and economic development. As presented in Section 5, the analysis and recommendations contained in this document are consistent with state, regional, and local planning efforts. This includes New Mexico 2045 Plan (New Mexico Department of Transportation's statewide long-range transportation plan) and the Southwest New Mexico RTPO Long Range Transportation Plan. In addition, state, regional, and local economic development plans, comprehensive plans, outdoor recreation plans, and active transportation plans were reviewed for consistency with potential future bicycle and pedestrian facilities on the Highway 180 corridor. Of note, the New Mexico Prioritized Statewide Bicycle Network Plan identifies this corridor as a priority for bicycle facility development. Information contained in this document may benefit future statewide and regional transportation planning efforts, as well as local project development or grant applications.

2 Active Transportation & ATV Use Along U.S. 180 in Grant County

The NADORF Team was tasked with quantifying the use of U.S. 180 in Grant County by active transportation users and all-terrain vehicles (ATVs). A more qualitative understanding (low, medium, and high) of the number of users can be established using Strava data. In addition, image captures from Google Street View identified people walking and biking along the corridor. Two quantitative options were available: short-term counts or using pedestrian and/or bicycle counters. First, Strava data taken from the focus area is presented. Next, screen captures of people walking and bicycling in the corridor as shown in Google Street View are shown. Then after, highlights from the *Guidebook on Pedestrian and Bicycle Volume Data Collection* (National Academies of Sciences, Engineering, and Medicine, 2014) are identified, which were used to guide the collection of quantitative active transportation counts summarized in this section.

2.1 Strava Data

Data from Stava was utilized to better understand where bicycling and walking/running may be occurring in the region. Stava's global heatmap displays public user data over the last year (Strava, 2022). More well-traveled roads, trails, or routes by people walking and biking are shown as hot spots. Heatmaps were generated to show both pedestrian and bicycle activity for the U.S. 180 corridor and for each of the five communities involved in this project (see Appendix A – Strava Heatmaps). Pedestrian activity in the region tends to be concentrated within each community, with some activity along U.S. 180 (Figure 2). The pedestrian activity also demonstrates where people may be walking on trails that surround the communities. In contrast, bicycle activity is much more prevalent along the U.S. 180 corridor between Silver City and Hurley (Figure 3). The map suggests that people use bicycles to connect between the communities, whether for recreational or utilitarian purposes. A significant drawback to Strava data is that the heatmaps may under-represent certain segments of people walking and biking (Lee & Sener, 2021). It is important to note that Strava is a smartphone application, and only records the activity of individuals who have access to a connected device, have downloaded the application, have signed up for a Strava account, and have actively chosen to record their activity. Any users who do not meet all these criteria are not captured in the activity symbolized on the provided heatmap.

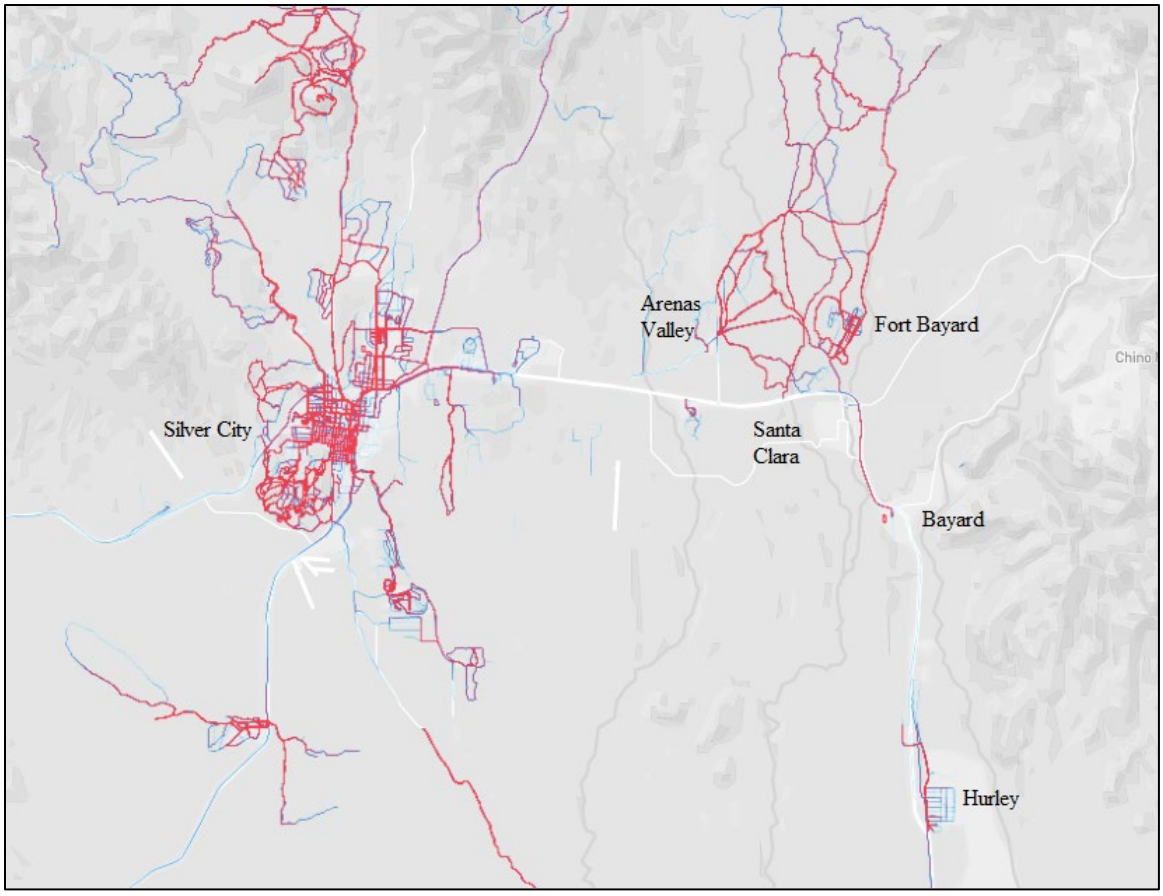


Figure 2. Strava Global Heatmap - Pedestrian Activity (Strava, 2022)

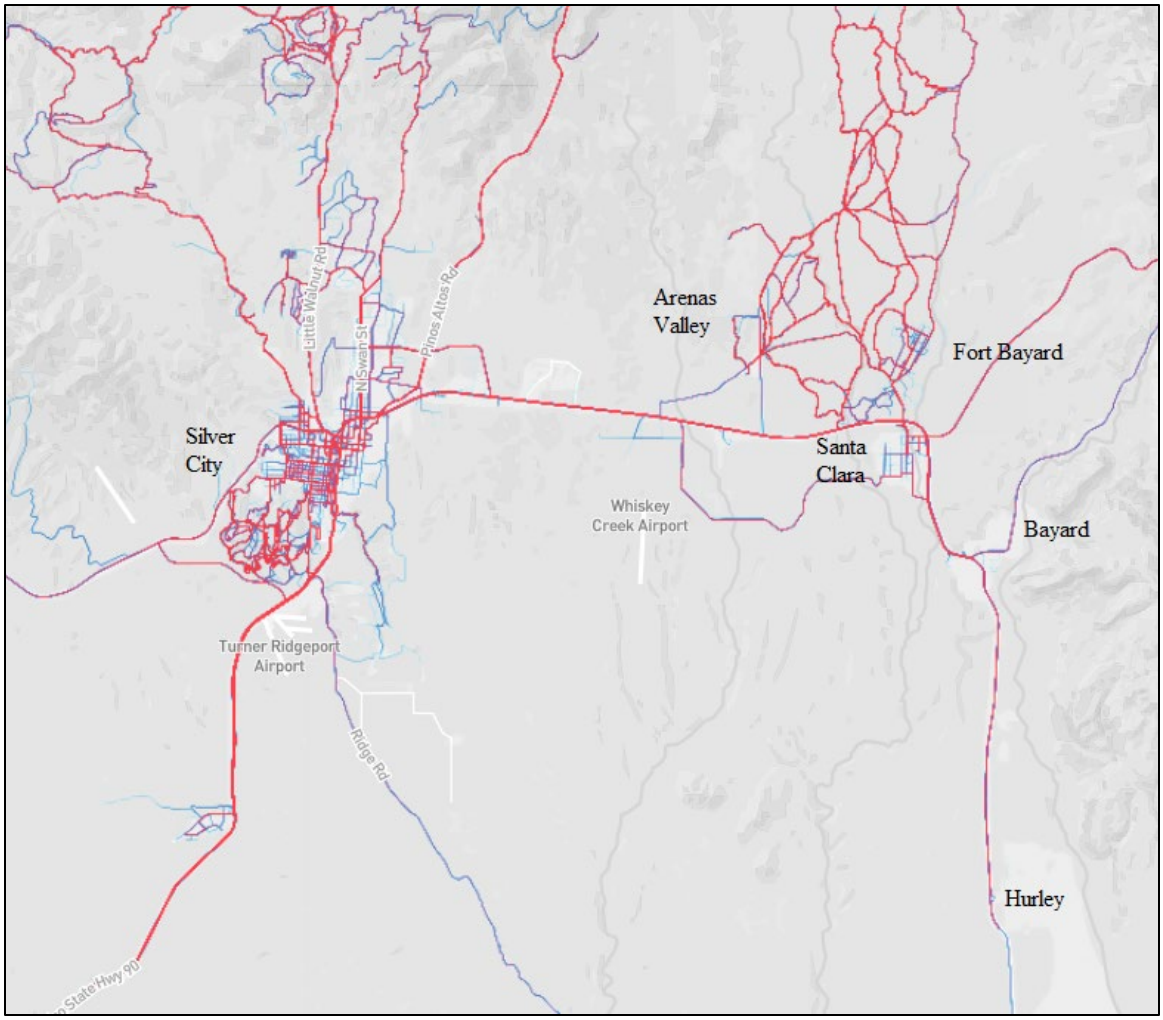


Figure 3. Strava Global Heatmap - Bicycle Activity (Strava, 2022)

2.2 Walkers and Bicyclists Captured in Google Street View

As the researchers were becoming familiar with the corridor and while planning for potential locations to conduct bicycle and pedestrian counts, they employed Google Street View. As they moved through the corridor using this tool, they observed individuals walking and bicycling in the corridor. Those captured through this tool are shown in Figure 4.

Figure 4. People Walking & Bicycling Along U.S. 180 as Found in Google Streetview (Google, n.d.)

2.3 Guidebook on Pedestrian and Bicycle Volume Data Collection

While numerous literature sources were considered when it came to counting, ultimately, the best resource found was the *Guidebook on Pedestrian and Bicycle Volume Data Collection* (National Academies of Sciences, Engineering, and Medicine, 2014). It provided numerous recommendations regarding how to most accurately count bicycle and pedestrians, although admittedly, as counts have been conducted in only a limited fashion in the rural context, the NADORF Team drew on their experience working in rural areas to consider how recommendations within the guidebook should be modified. The following sections highlight important information pulled from the guidebook relevant to the project.

The guidebook highlighted the more variable nature of pedestrian and bicycle volumes when compared with motor vehicle volumes. The variability was caused by many things, including the relatively low counts of people walking and bicycling, a greater sensitivity to one's environment [weather (precipitation, temperature) and darkness], and influences by the time of the day and season (i.e., people may not want to walk in the heat of the day or when it is cold during the winter). Consequently, automated counting techniques are best equipped to address the variability associated with counting pedestrians and bicyclists. In addition, as a result of the variability associated with counting pedestrians

and bicyclists, rather than expanding short-term counts with a day-of-week and month-of-year factors, a single day-of-year factor was recommended by the guidebook.

Another challenge when comparing pedestrians and bicycles with motor vehicles is that pedestrians and bicycles can more easily travel outside of spaces designated for them (if such facilities, like a sidewalk, are available). Motor vehicles, in contrast, "are large, metal objects that move in lanes and travel with relatively sizeable gaps between each vehicle." The technology for counting pedestrians and bicycles was still evolving, with most guidance produced since 2004. Since 2008, the National Bicycle and Pedestrian Documentation (NBPD) Project had been counting pedestrians and bicyclists across the U.S. Counting was typically done using one of the following technologies: manual counts, passive infrared, active infrared, radio beam, pneumatic tubes, inductive loops, piezoelectric sensor, radio beam, and automated video. Passive infrared and inductive loops were identified as the most common automated technology, although passive infrared can be combined with pneumatic tubes. Most of the current technology was intended for "screenline counts," defined as the "number of pedestrians or bicycles crossing an imaginary line." Correction factors may be applied to automated counts and expansion factors may be applied to short-term counts to extrapolate to annual counts.

Manual counts, conducted by human data collectors in the field, was the most common data collection method identified. Two hours was the typical time block recommended for manual counts (which were restricted to less than twelve hours); in large part, this is to account for the fatigue of the observer that may occur with longer duration counts. Manual counts are useful in that they can help to identify other aspects of pedestrians and bicyclists, like gender (to the best of the observer's understanding), helmet use, use of assistive devices, and improper user behaviors (which may need to be addressed with improvements to the multimodal streetscape). They can also allow for a broader geographic diversity of count data to be collected. Time of day, day of week, season of year, and weather conditions may all influence the level of pedestrian and bicycle use.

Pneumatic tubes were identified as one of the least expensive automated counting technologies. The longevity of the pneumatic tubes depends upon the number of vehicles (and weight) riding over them.

Data accuracy was the difference between the automatic counter's count and that of a manual count. Occlusion (an example of which is shown in Figure 5), where more than one pedestrian and/or bicyclist passes a counter at the same time, was one potential source for differences.

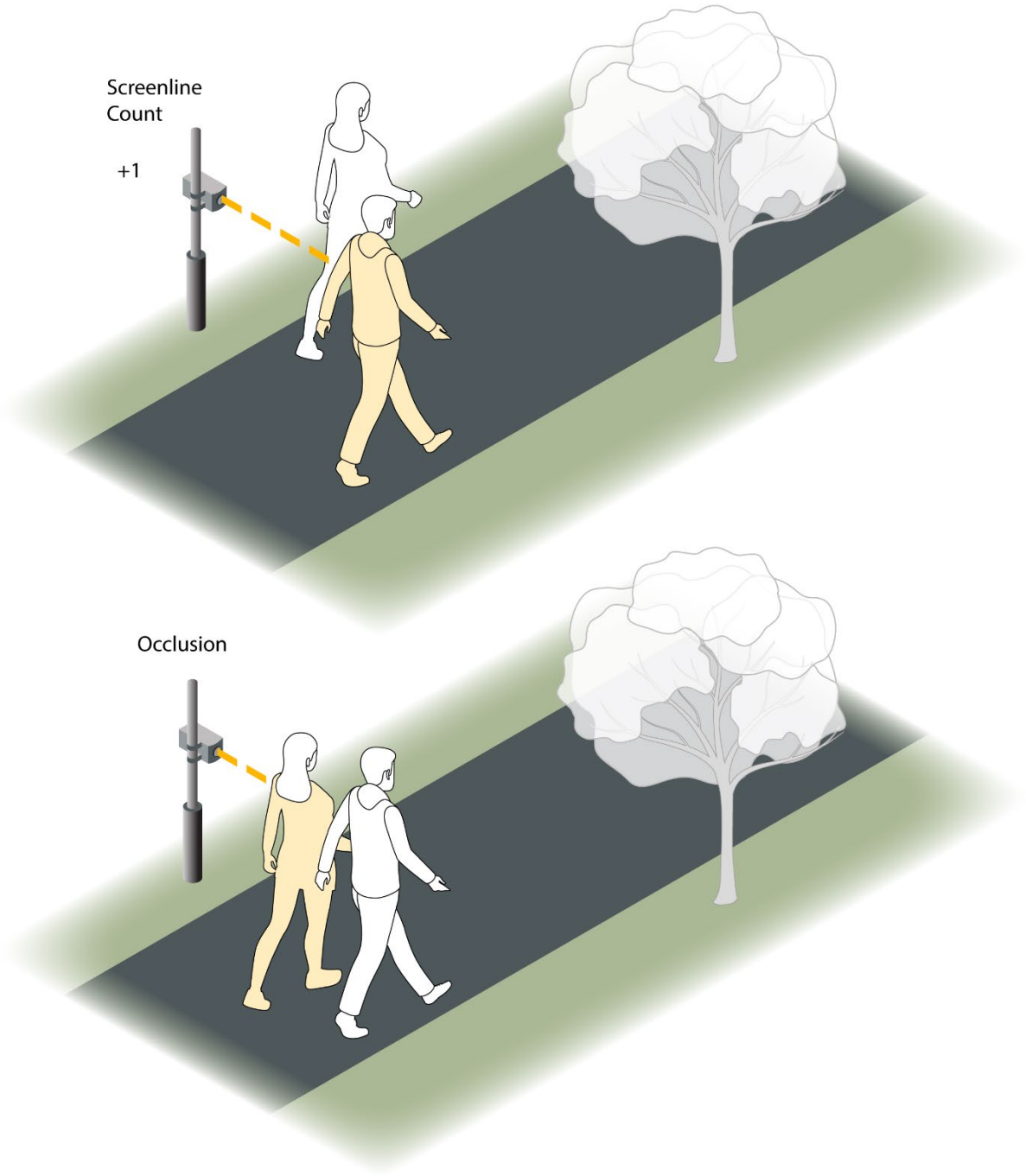


Figure 5. An example of occlusion

The guidebook suggests that four to seven days of counts can reduce the annual estimated volume to less than twenty percent. However, realizing that the cost associated with longer counts may be insurmountable, it provides four recommendations to minimize the error in the volume estimates: 1) count at times with high activity levels, 2) count during good weather, 3) conduct several counts during different time periods, and 4) extrapolate using a single day-of-year factor. While the guidebook

identifies summer as a time with high activity, in southwestern New Mexico, where temperatures can get very hot in the summer, fall may have a higher level of activity than summer.

If volunteers were used, the guidebook recommends training them. Volunteers can help to collect more data in a cost-effective manner. College students were identified as one potential source of volunteers. The days that volunteers were available, the times that volunteers were available, and a volunteer's ability to travel to certain locations may be limited. The training should include:

- The purpose of the counting effort
- Definitions of what constitutes a pedestrian and a bicyclist
- When a person should be counted
- Priority of characteristics (e.g., gender)

Skateboarders, babies being pushed in a stroller, people walking their dogs, people riding tandem bicycles, and people walking their bicycles are examples where more clarity may be needed for the volunteer so they know how to count that person(s). A person may be counted if they pass an imaginary line or walk within a certain distance of an intersection. Characteristics like gender, age, helmet use, assistive-device use, and/or improper movements could also be captured as a part of a counting effort depending upon the purpose of the effort. The more data that a volunteer is asked to record, the more difficult the task.

The goal(s) behind counting pedestrians and bicycles can influence the type of counts, how many counts, and where counts were conducted. The guidebook does not suggest limiting count sites to those that were convenient, have the greatest pedestrian or bicycle volumes, and which were expected to have the greatest increase in volumes, as they will not result in a representative sample. The guidebook recommends "pinch points," locations where pedestrians and bicyclists were funneled into a barrier like a river, freeway, or railroad crossing as they can document large portions of a community's pedestrians and bicyclists.

Two types of factor groups have been identified: weekend-to-weekday index (WWI) and average morning to mid-day index (AMI). WWI divides weekend traffic volume by weekday traffic volume. AMI divides the morning peak (7-9am) traffic volume by the mid-day (11-1pm) traffic volume. The document suggests that there were two bicycle activity patterns: utilitarian and recreational. Utilitarian was defined as that which show peaks during the morning and evening rush hours. In contrast, a recreational activity pattern shows a peak in the middle of the day.

There were two types of factors that can be applied to raw counts: correction and expansion. Correction factors address systematic errors that are present in automatic counter technology. As an example, if a passive infrared counter was intended to count pedestrians on a sidewalk, if they walked side-by-side past the counter, it is possible that the counter may only count one pedestrian (again, see Figure 5). This particular phenomenon has been called occlusion. Passive infrared counters, which depend upon a temperature gradient between the people walking past the counter and the outside environment, have been reported as presenting problems; however, research conducted as a part of the guidebook did not identify any issues. For pneumatic tubes, there was a potential that if a group of bicyclists passed over the tubes, the number of bicyclists may not be counted correctly. They have also been found to potentially present issues in cold weather, when the tubes harden. Consequently, the guide does not

recommend using pneumatic tubes when snow was expected and in "leaf-fall conditions." Expansion factors expand short-term counts to estimate volumes over a longer duration. For example, a two-hour short-term count may be expanded to estimate the volume of pedestrians or bicyclists over a day, a month, or even a year.

Through the Seamless Travel Project, San Diego County in California, evaluated the "effects that land use, density, access, roadway traffic volumes, facility type, and other factors have on walking and bicycling rates." The count set a goal to obtain a "comprehensive count of pedestrian and bicycle activity in the county." To do so, the county conducted two hours of manual, peak-period counts at eighty locations as well as one year of continuous automated counts at five locations.

Potential reasons for incorrect counts include a blocked sensor, multiple counts of the same person, equipment malfunction, and incorrect initial installation. One identified approach to determine if a count may be incorrect is if it was more than two standard deviations above or below the average of eight counts that were conducted at the same time during a week, not including holidays. Another approach was to use interquartile ranges.

2.4 Bicycle and Pedestrian Count Data

Four locations along the U.S. 180 corridor from Silver City to Hurley had JAMAR pneumatic tube counters borrowed from the New Mexico Department of Transportation (NMDOT), through their Bicycle Counter Lending Program (New Mexico Department of Transportation, 2021), installed to count bicyclists; additionally two of the NADORF Team's Eco-Counters were installed at two locations along the U.S. 180 corridor to count pedestrians and bicyclists (Figure 6). The location near Santa Clara had a JAMAR counter installed on the roadway and an Eco-Counter installed along the pathway. Therefore, from a bicycle count perspective, it was the most comprehensive count, as the researchers did their best to ensure that the tubes from the counting devices were stretched across the entirety of the pavement. Therefore, in theory, any bicyclist passing this point would be counted.

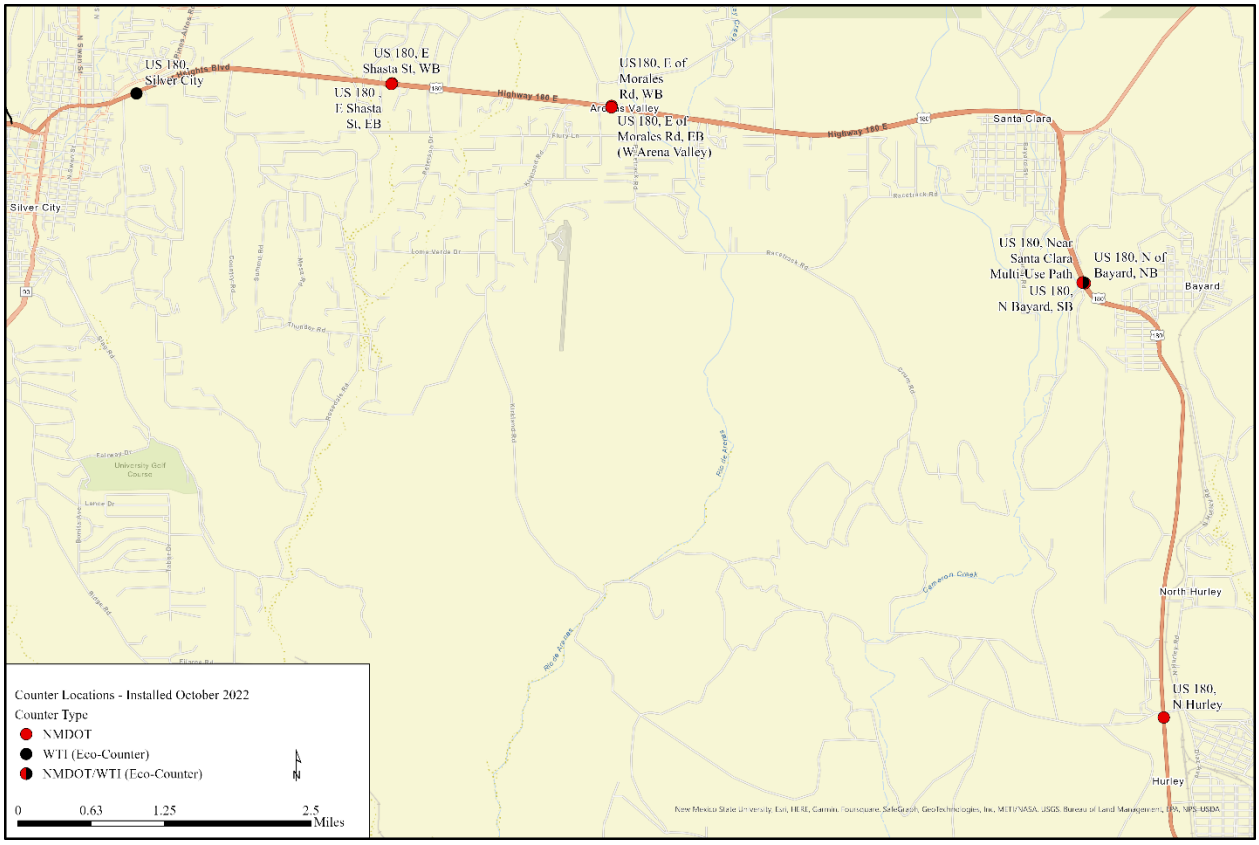


Figure 6. Bicycle and Pedestrian Counter locations

The counters were installed between September 27-28, 2022, and were uninstalled between October 17-18, 2022. Data from September 30 – October 16, 2022, was analyzed for each location, accounting for over two weeks of data as recommended by the guidebook (National Academies of Sciences, Engineering, and Medicine, 2014). During this time period, the weather was primarily partly cloudy with average temperatures ranging from 52.2°F to 68°F (Table 1). There were a few days with precipitation, most notably the weekend of October 8-9, 2022. The Gran Fondo was scheduled for October 8th: https://tourofthegila.com/gran-fondo/. With the rain, one might expect fewer pedestrians and bicyclists out. However, as it is the desert southwest where afternoon thunderstorms are a well-known phenomenon to locals, there is the potential that travel might be more clustered to time periods before or after the storms come through.

Table 1. Weather Conditions During Data Collection Period (Weather Underground, 2023)

Date	Average Temperature (°F)	Precipitation (in)	Condition
9/29/2022	68	0	Mostly Sunny
9/30/2022	67.8	0	Mostly Sunny
10/1/2022	67.8	0	Mostly Sunny
10/2/2022	65.8	0	Mostly Sunny
10/3/2022	64.8	0	Mostly Sunny
10/4/2022	62.5	0.07	Mostly Sunny
10/5/2022	58.9	0.06	Mostly Sunny
10/6/2022	61	0.35	Cloudy
10/7/2022	57.6	0	Cloudy
10/8/2022	56.2	0.51	Scattered Showers
10/9/2022	57.5	1.27	Scattered Showers
10/10/2022	58.3	0	Partly Cloudy
10/11/2022	60.1	0	Partly Cloudy
10/12/2022	63.7	0	Partly Cloudy
10/13/2022	63.6	0	Partly Cloudy
10/14/2022	62.7	0	Partly Cloudy
10/15/2022	65.9	0	Cloudy
10/16/2022	58.4	0	Cloudy
10/17/2022	52.2	0.49	Cloudy
10/18/2022	53.6	0	Mostly Sunny

2.4.1 Bicycle and Pedestrian Counters Used

Two Mobile MULTI Eco-Counters were used to collect data. The Mobile MULTI counters use a PYRO-box and pneumatic tubes to detect road users (Eco-Counter, 2019a). A PYRO-box houses a sensor which uses passive-infrared and a precision lens to detect road users passing by the sensor using their body temperature (Eco-Counter, 2019b). The benefit of this type of counter is that it is able to differentiate between pedestrians and bicyclists, as a pneumatic tube is used to separate out bicyclists. Presently, the counter cannot differentiate between bicyclists and scooters, although none were observed in the U.S. 180 corridor.

Seven JAMAR Trax Cycles+ counters, on loan from the New Mexico Department of Transportation, were used to count bicycles on the U.S. 180 corridor. These counters are no longer sold by JAMAR. Instead, JAMAR offers Trax Pinnacle for mixed-use traffic applications (e.g., where vehicles and bicycles may share the road).

The next section describes the Eco-Counter count results. Then after, the JAMAR count results are described.

2.4.2 Eco-Counters

This first section describes the results of the Eco-Counter located near Silver City; the section then after presents the results of the Eco-Counter near Santa Clara.

2.4.2.1 Silver City Eco-Counter

The first Eco-Counter was installed on the eastbound sidewalk along U.S. 180 in Silver City between N. Mountain View Road and Hilltop Road (Figure 7). This location was chosen because it was not facing traffic, which could result in erroneous counts. The authors specifically chose this location because it was felt that there were minimal bushes and shrubs that the beam was facing, which can potentially result in erroneous counts. During the data collection period (September 30, 2022, to October 16, 2022) this location saw a total of 358 pedestrians and 172 bicyclists. The data collected at this location showed a preponderance of pedestrian users (68%). As the pneumatic tube installed with the counter ran across the sidewalk, not the roadway, only bicyclists using the sidewalk were captured. It did not account for any bicyclists that may have ridden in the parallel bicycle lane. The pneumatic tubes were installed on the sidewalk because the researchers had observed people biking on the sidewalk during previous site visits. With 32% of users that were captured at this location being bicyclists, this may suggest that these individuals may not feel comfortable using that bicycle lane in the roadway. Another key point to note is that the data is only relevant to those traveling on the south side of U.S. 180. It does not capture the entire cross-section of potential users.

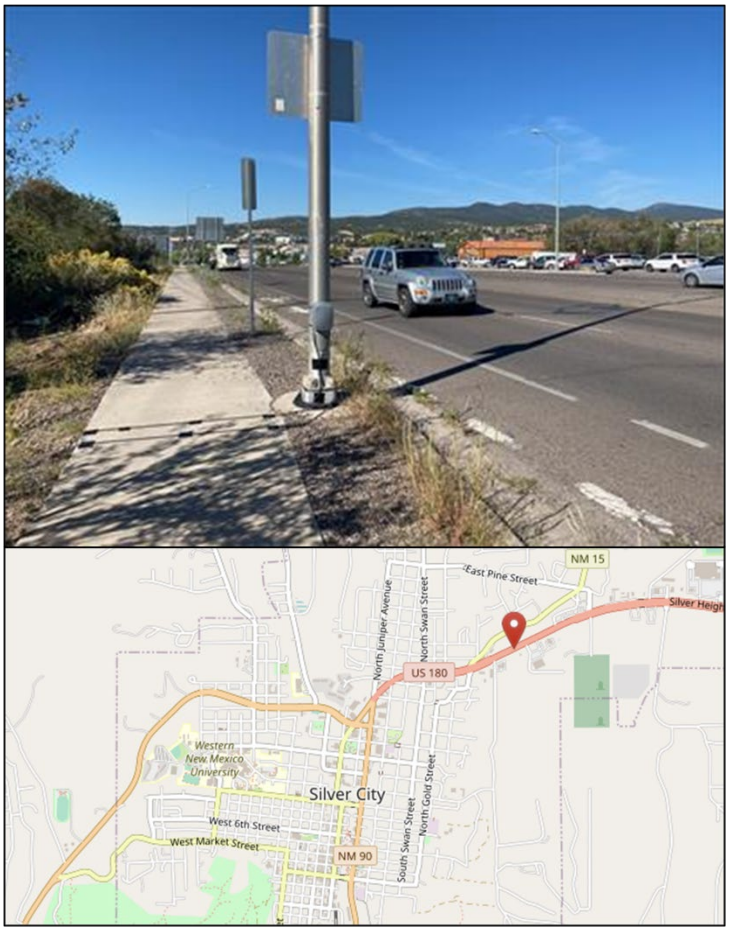


Figure 7. Silver City Eco-Counter (OpenStreetMap, 2023)

The figures that follow first show the daily counts, then the daily directional counts, and finally the hourly counts, separated by weekday and weekend. Over the data collection period, this counter saw an average of 18 pedestrians per day, with a peak of 29 pedestrians on October 4, 2022, and an average of 10 bicyclists per day with a peak of 20 bicyclists on October 15, 2022 (Figure 8).

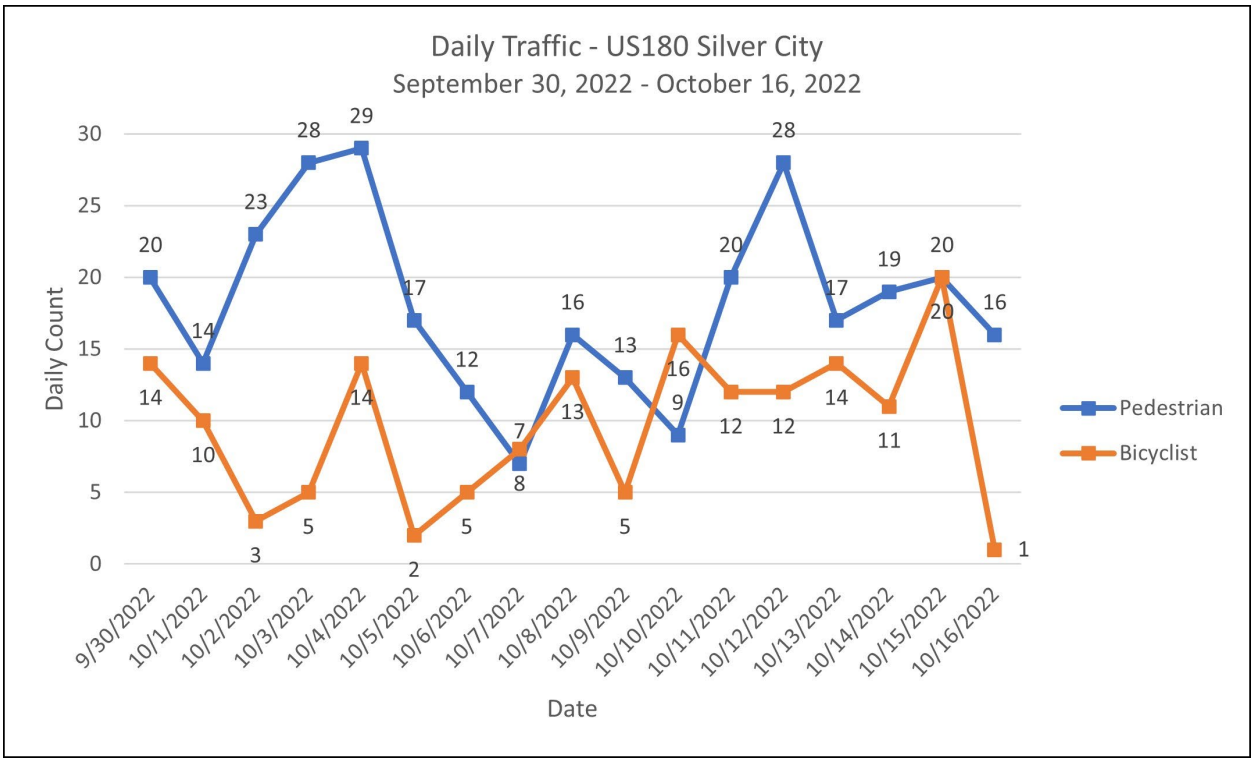


Figure 8. Silver City Eco-Counter, Daily Pedestrian and Bicycle Count

Breaking the data down by weekday versus weekend, for weekdays (9/22/22, 10/3/22-10/7/22, and 10/10/22-10/14/22), this location saw a daily average of 20 pedestrians and 9 bicyclists. For weekends (10/1/22, 10/2/22, 10/8/22, 10/9/22, 10/15/22, and 10/16/22), this location saw a daily average of 17 pedestrians and 9 bicyclists. Therefore, indications are such that more pedestrian travel is occurring during the week whereas bicyclist travel is consistent when comparing the week with the weekend.

Considering direction of travel, the Silver City location saw slightly more pedestrians traveling westbound into Silver City (see Figure 9 and Figure 10). An average of 10 pedestrians and 5 bicyclists traveled westbound past the Silver City counter during the data collection period, whereas an average of 9 pedestrians and 5 bicyclists traveled eastbound.

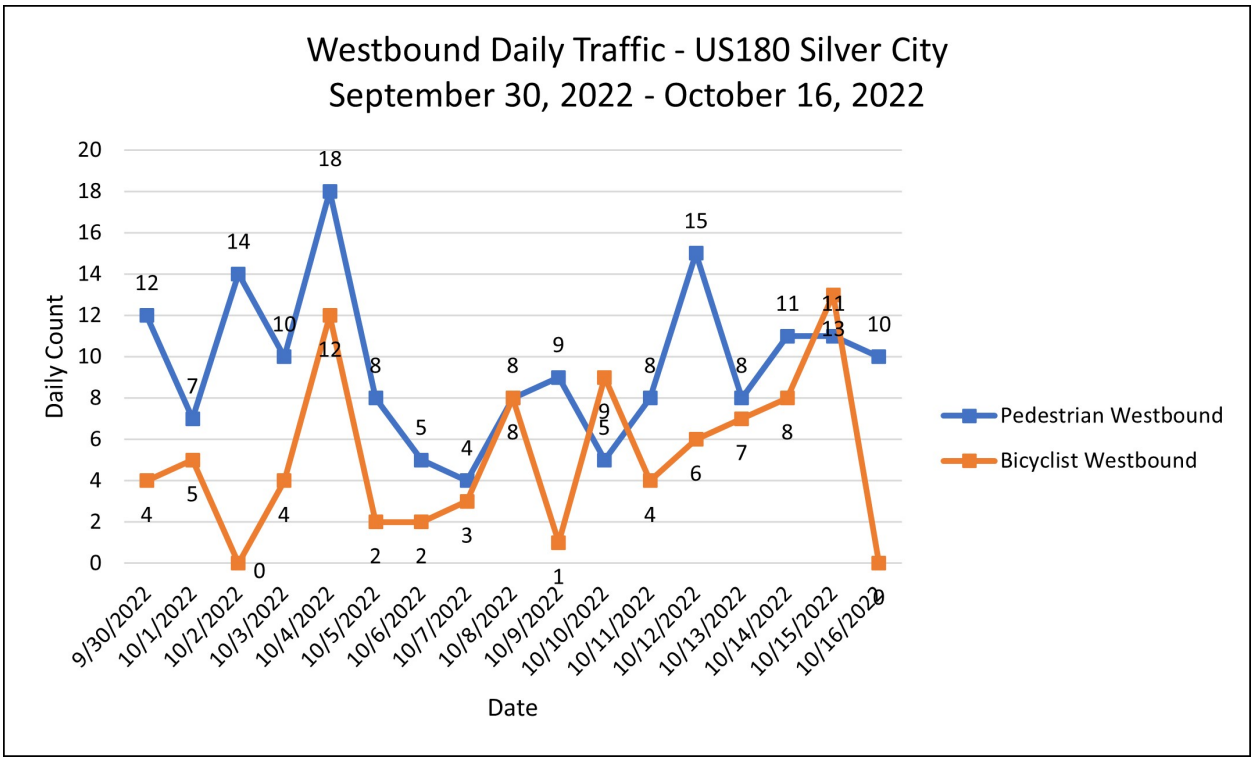


Figure 9. Silver City Eco-Counter, Daily Pedestrian and Bicycle Count, Westbound

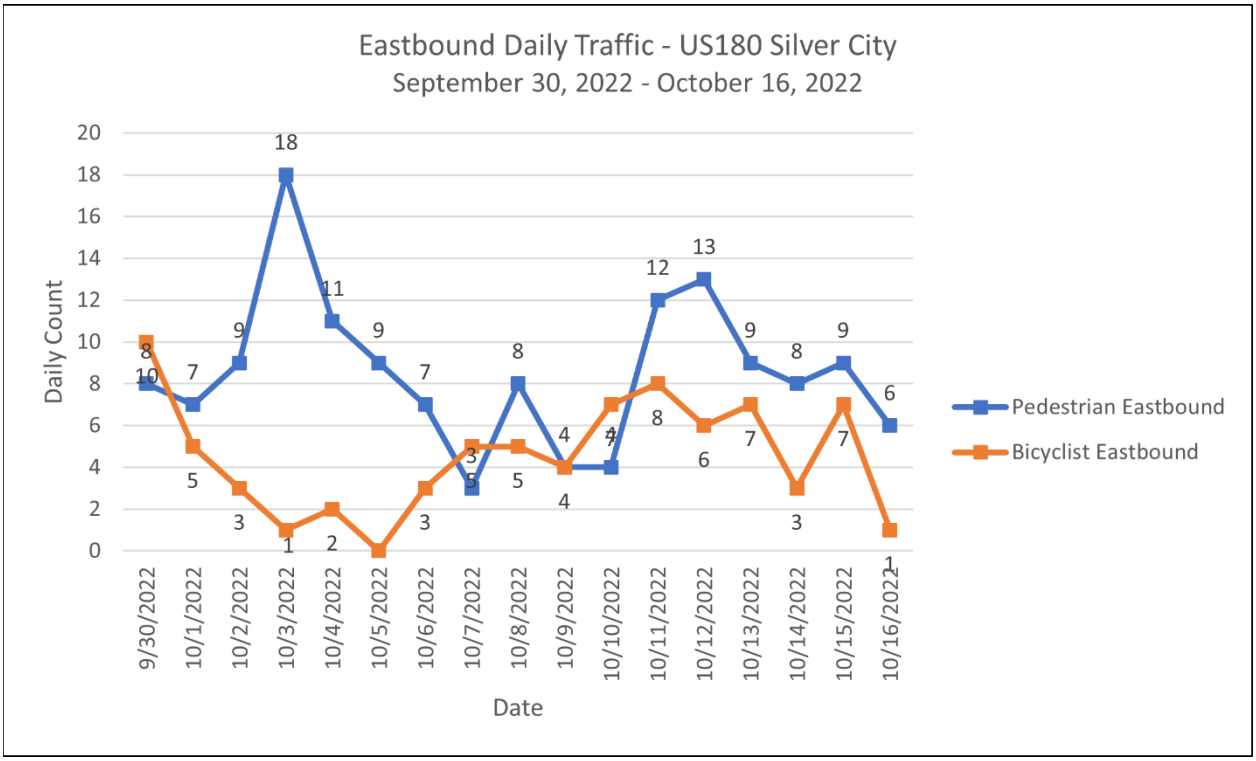


Figure 10. Silver City Eco-Counter, Daily Pedestrian and Bicycle Count, Eastbound

On weekdays, this location saw a peak of pedestrian users in the morning around 9 AM and again in the afternoon around 2 PM – 4 PM. A similar morning and evening peak is seen for bicyclists (Figure 11). As suggested by the guidebook (National Academies of Sciences, Engineering, and Medicine, 2014), where two peaks are indicative of utilitarian users, both bicyclists and pedestrians traveling past this point would seem to be doing so for utilitarian purposes.

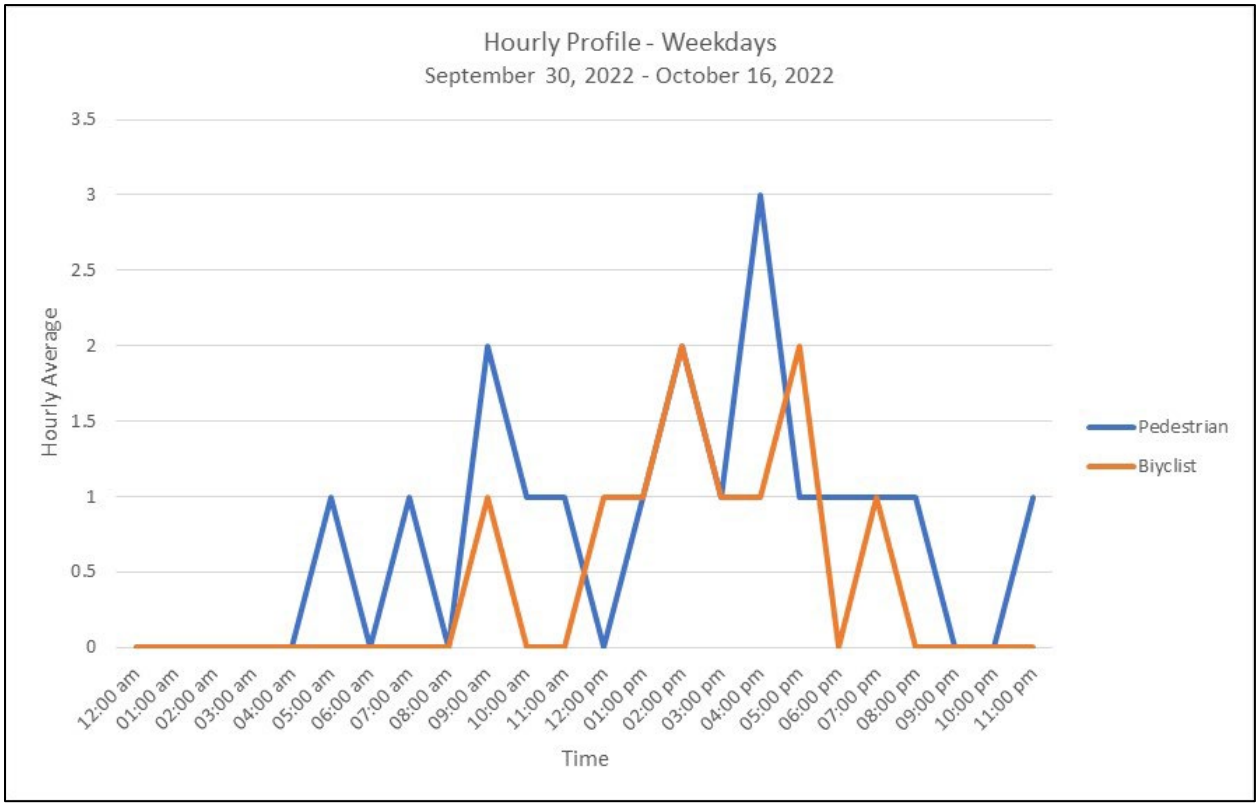


Figure 11. Silver City Eco-Counter, Hourly Profile, Weekdays

Possible hourly peaks are seen for both pedestrians and bicyclists in the evening from about 4 PM – 6 PM, suggesting more recreational travel on the weekend, which is to be expected (Figure 12).

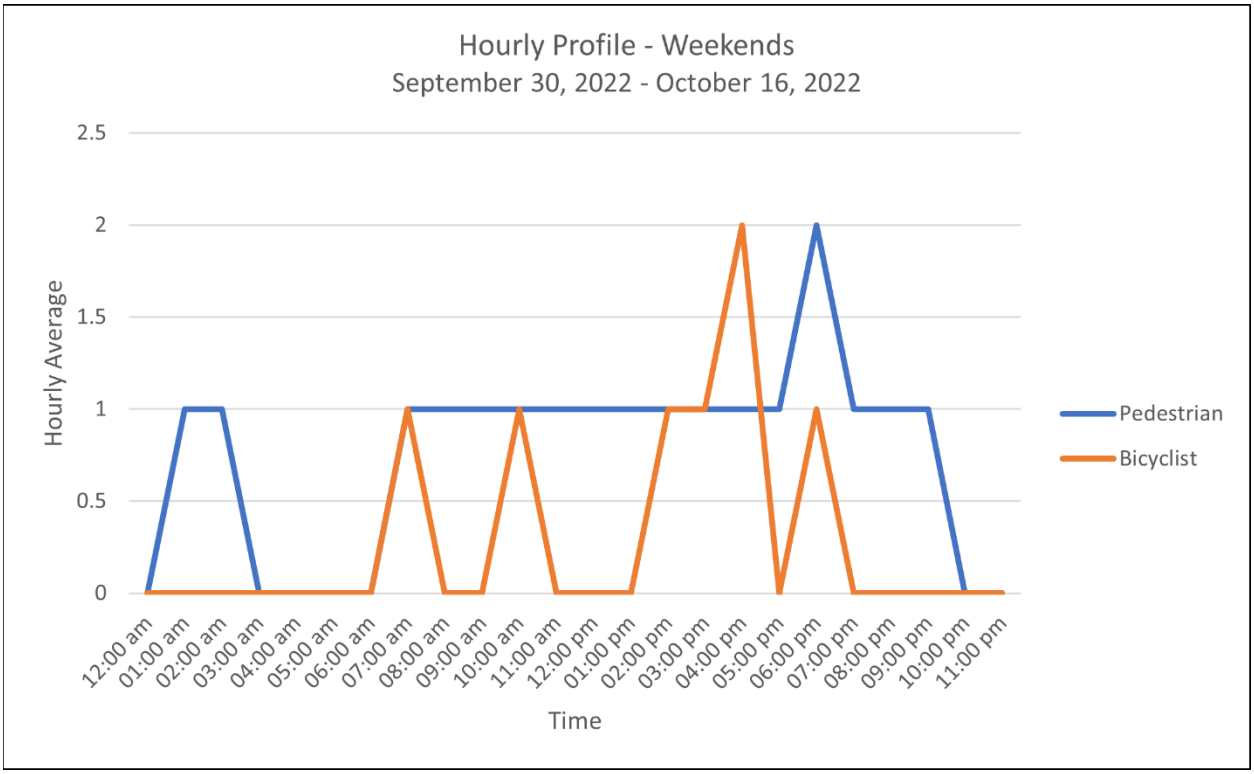


Figure 12. Silver City Eco-Counter, Hourly Profile, Weekend

2.4.2.2 Santa Clara Eco-Counter

The second Eco-Counter was installed on the separated multi-use pathway between Santa Clara and Bayard near Momsen Road (Figure 13). During the data collection period, this location saw a total of 347 pedestrians and 180 bicyclists. Similar to the Silver City location, this counter saw primarily pedestrian users (66% of users captured).

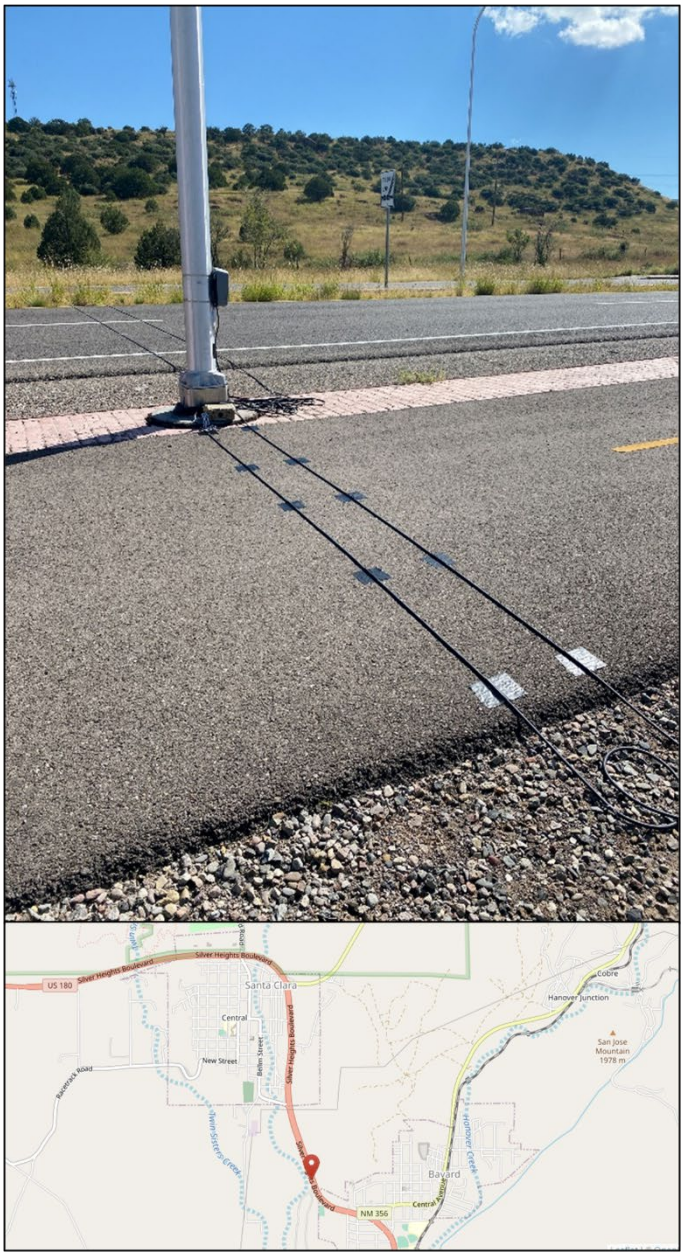


Figure 13. Santa Clara Eco-Counter (OpenStreetMap, 2023)

The figures that follow first show the daily counts, then the daily directional counts, and finally the hourly counts, separated by weekday and weekend. Over the data collection period, this location saw an average of 20 pedestrians per day with a peak of 37 pedestrians on October 4, 2022 (Tuesday) and an average of 11 bicyclists per day with a peak of 21 bicyclists on both October 1, 2022 (Saturday) and October 12, 2022 (Wednesday) (Figure 14). Therefore, while the average numbers are similar to the Silver City location counts, the maximums at this location are much greater.

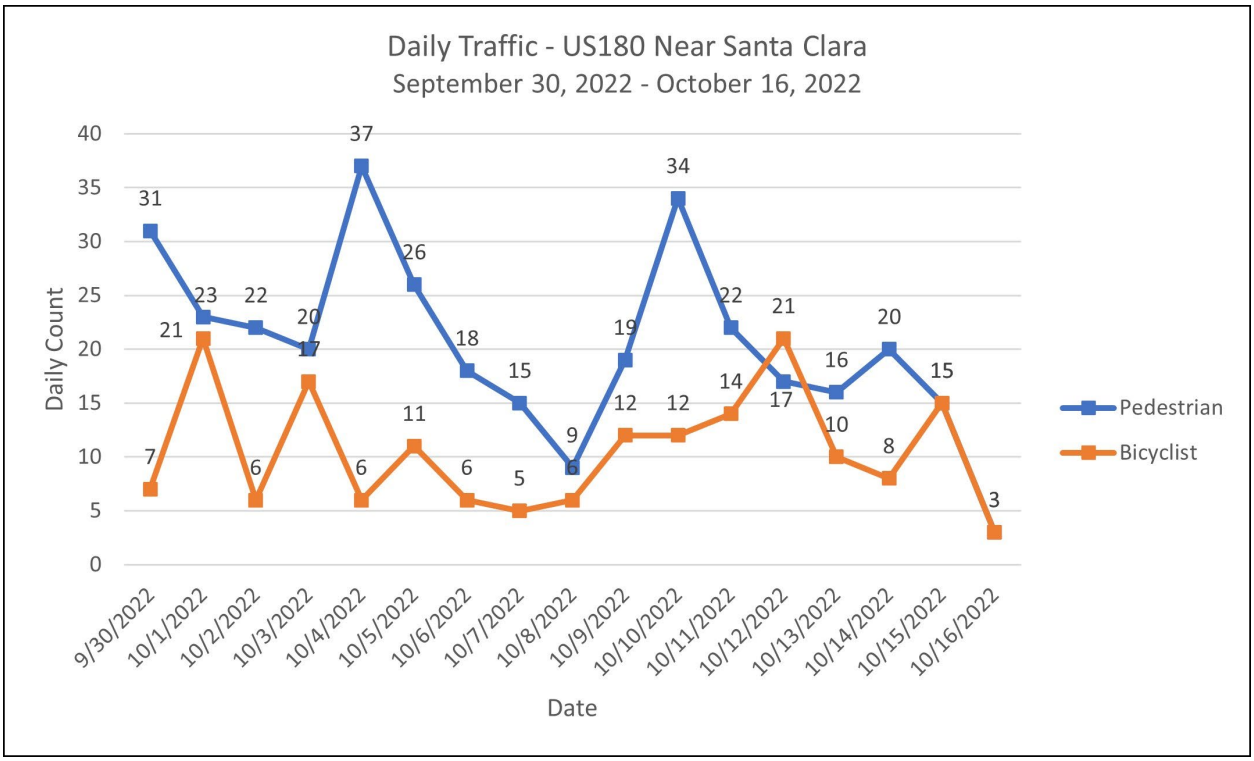


Figure 14. Santa Clara Eco-Counter, Daily Count

Breaking the data down by weekday versus weekend, for weekdays (9/22/22, 10/3/22-10/7/22, and 10/10/22-10/14/22), this location saw a daily average of 23 pedestrians and 11 bicyclists. For weekends (10/1/22, 10/2/22, 10/8/22, 10/9/22, 10/15/22, and 10/16/22), this location saw a daily average of 15 pedestrians and 11 bicyclists. Therefore, indications are such that more pedestrian travel is occurring during the week whereas bicyclist travel is consistent when comparing the week with the weekend.

Looking at the direction of travel, slightly fewer pedestrians and bicyclists travel northbound on the multi-use pathway (Figure 15 and Figure 16). However, this difference is small. This location saw a daily average of 11 pedestrians traveling northbound and 9 traveling southbound, and 6 bicyclists traveling northbound and 5 traveling southbound.

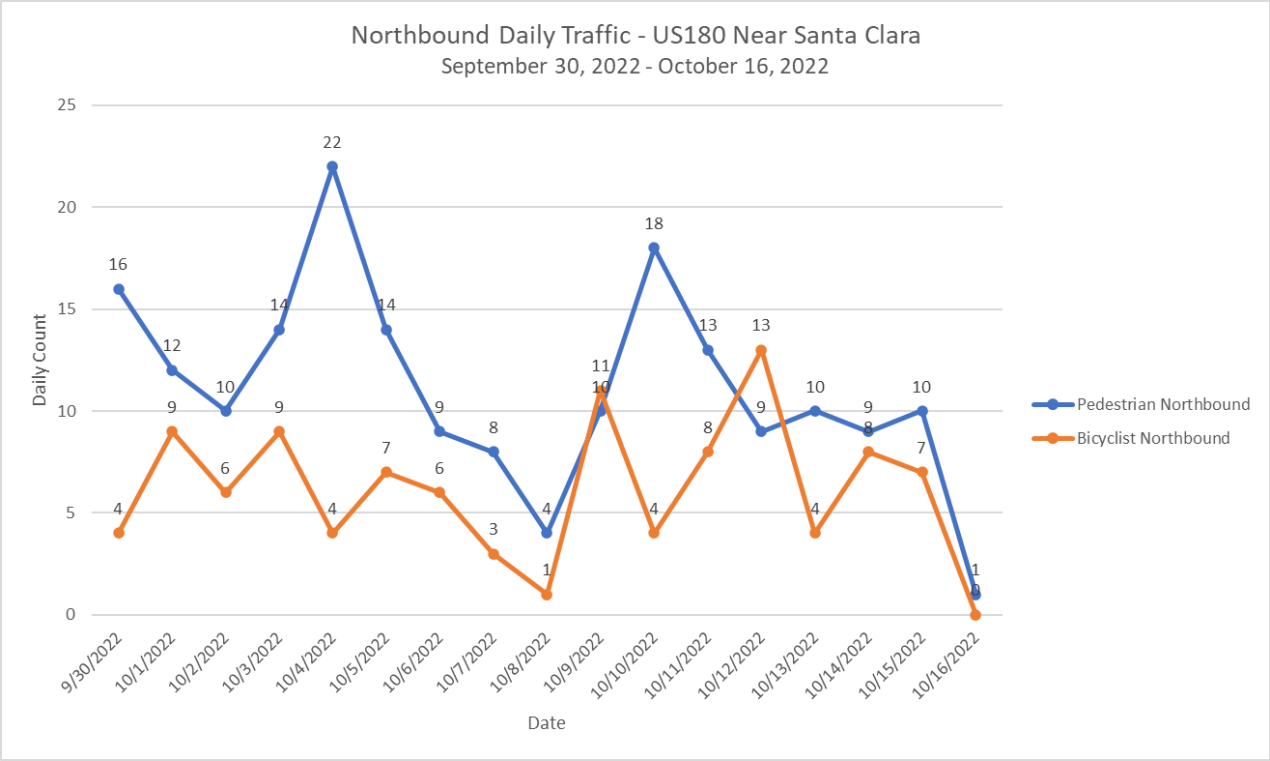


Figure 15. Santa Clara Eco-Counter, Northbound Daily Count

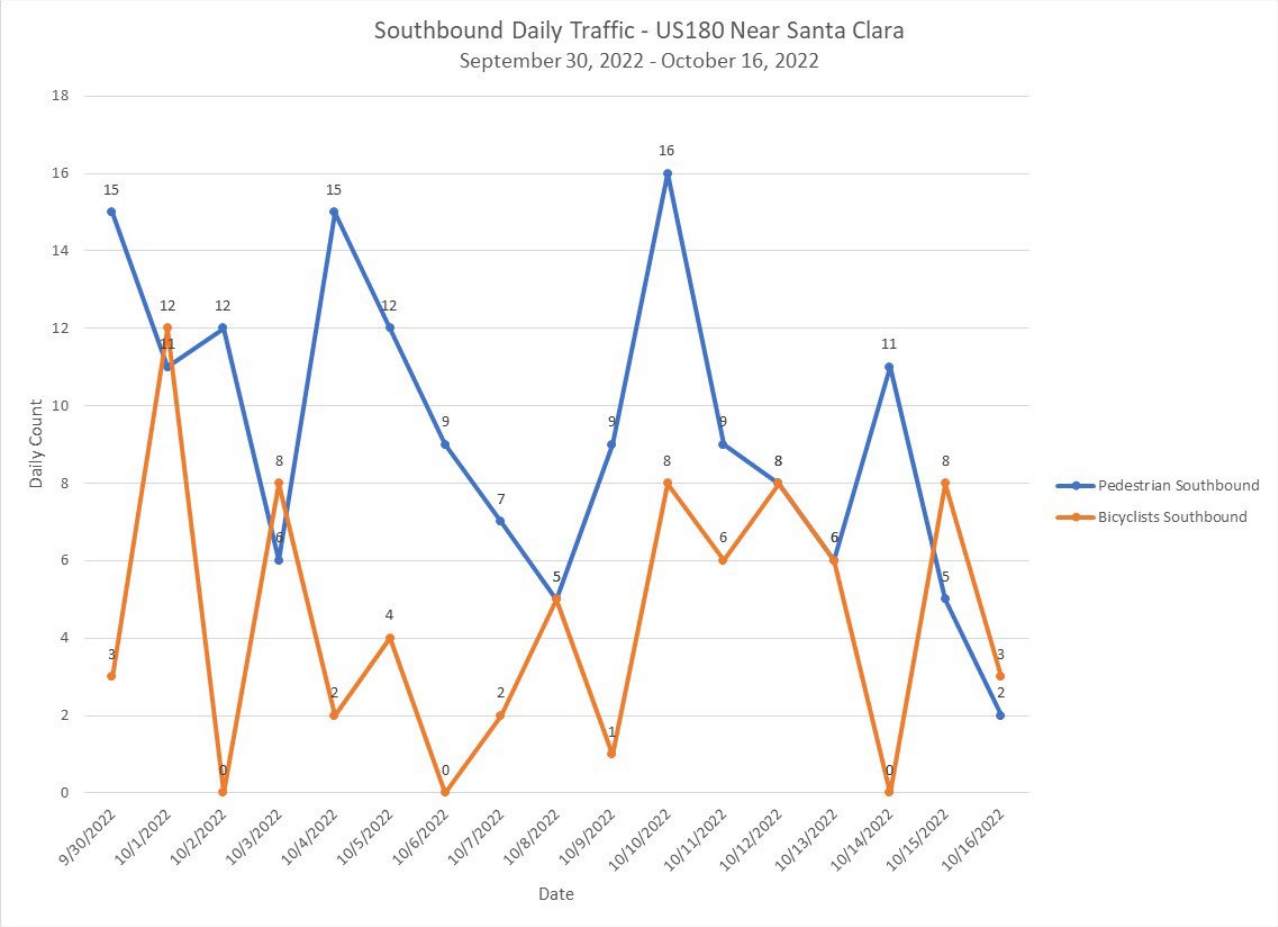


Figure 16. Santa Clara Eco-Counter, Southbound Daily Count

On weekdays, this location saw an hourly average peak of two pedestrians in the morning around 6 AM – 7 AM and a higher hourly average peak of four pedestrians in the evening around 4 PM – 8 PM (Figure 17). This wider evening peak could indicate users out recreating in the evening after work. This may suggest that the multi-use pathway in this part of the corridor has multiple benefits, including health, for the residents that live nearby. For bicyclists, there is a wider hourly average peak (one bicyclist) in the morning from 8 AM – 12 PM and a higher hourly average peak of three bicyclists in the evening around 6 PM.

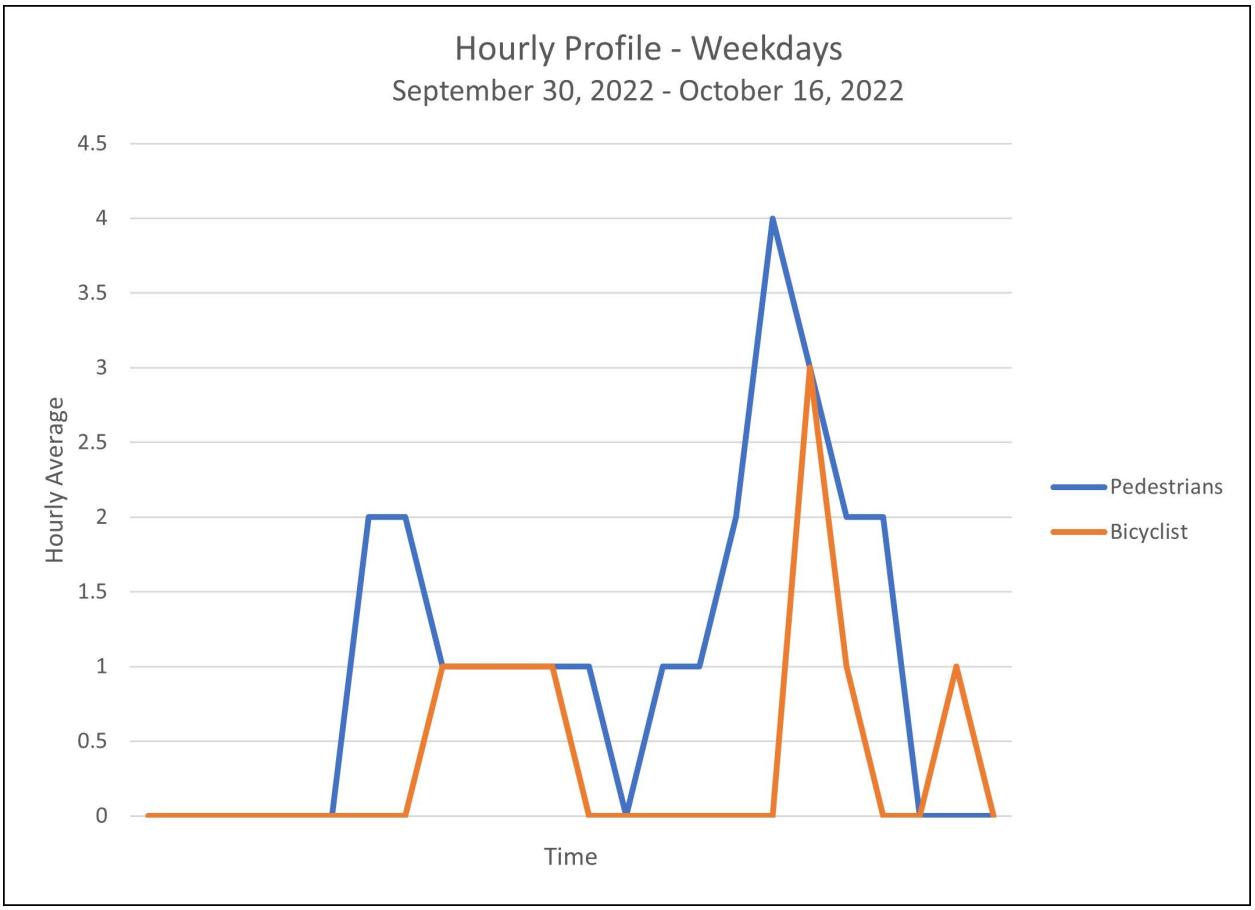


Figure 17. Santa Clara Eco-Counter, Hourly Profile, Weekdays

Similar to the Silver City counter location, the weekend hourly averages look sporadic, with both pedestrians and bicyclists using the multi-use path throughout the day with a peak hourly average for bicyclists from around 10 AM – 1 PM and a peak for pedestrians later in the day around 4 PM – 7 PM (Figure 18).

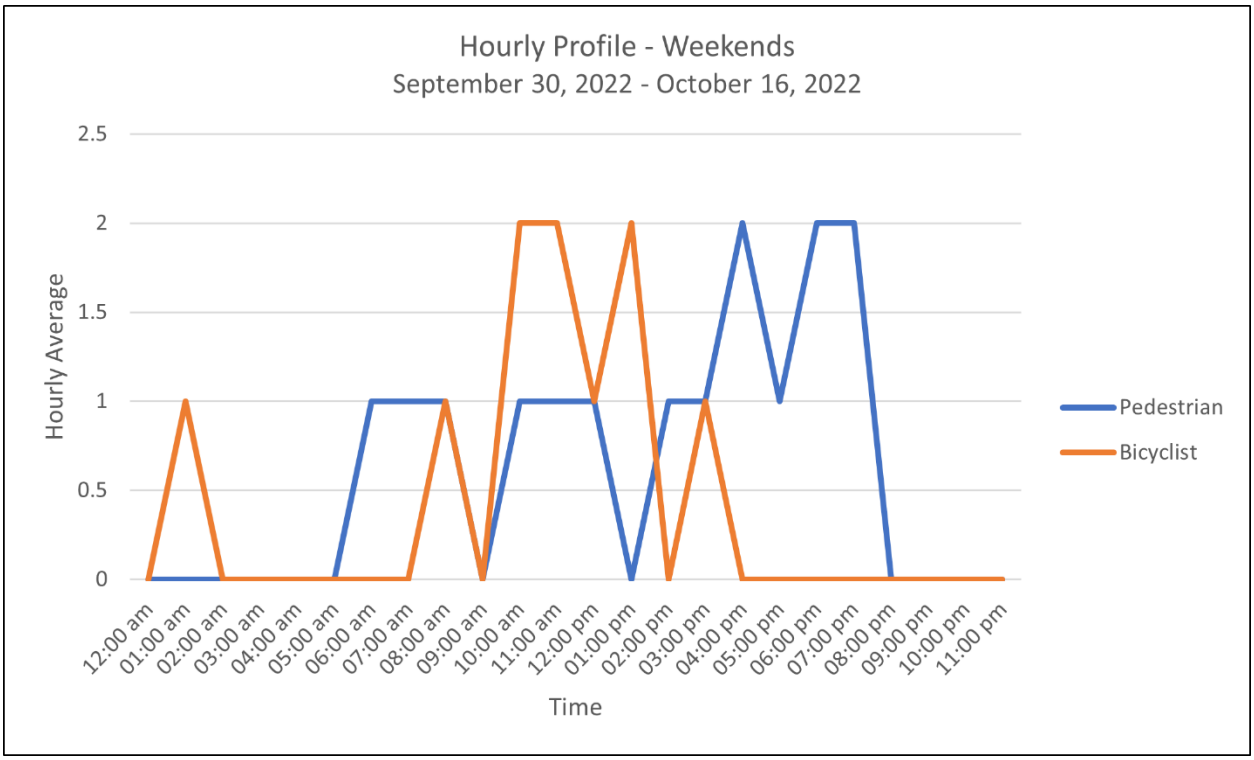


Figure 18. Santa Clara Eco-Counter, Hourly Profile, Weekends

2.4.3 JAMAR Counters

JAMAR pneumatic tube counters were installed at four locations along the U.S. 180 corridor from Silver City to Hurley: 1) East of Shasta Street, 2) East of Morales Road, 3) North of Bayard, and 4) North of Hurley. The counters (one for each direction of traffic) located east of Shasta Street were closest to Silver City. The counters (one for each direction of traffic) located east of Morales Road were closest to Arenas Valley. The counters (one for each direction of traffic) north of Bayard was at the southern terminus of the multi-purpose trail that connects to Santa Clara. Only one counter was set up north of Hurley, as the highway was not split by travel direction at this location.

2.4.3.1 East of Shasta Street

Two JAMAR counters were installed on the roadway East of Shasta Street along U.S. 180, one for westbound traffic and one for eastbound traffic (Figure 19). During the data collection period (September 30, 2022, to October 16, 2022) this location saw a total of 132 bicyclists for both directions. (Recall: Only bicyclists are discussed in reference to the JAMAR counts, as they are not designed to count pedestrians.)

Figure 19. JAMAR Counters, Near E. Shasta Road (Esri, HERE, Garmin, FAO, NOAA, USGS, OpenStreetMap contributers, and the GIS User Community, 2023)

Over the data collection period, this counter saw an average of 8 bicyclists per day with a peak of 19 bicyclists on Saturday, October 8, 2022 (Figure 20).

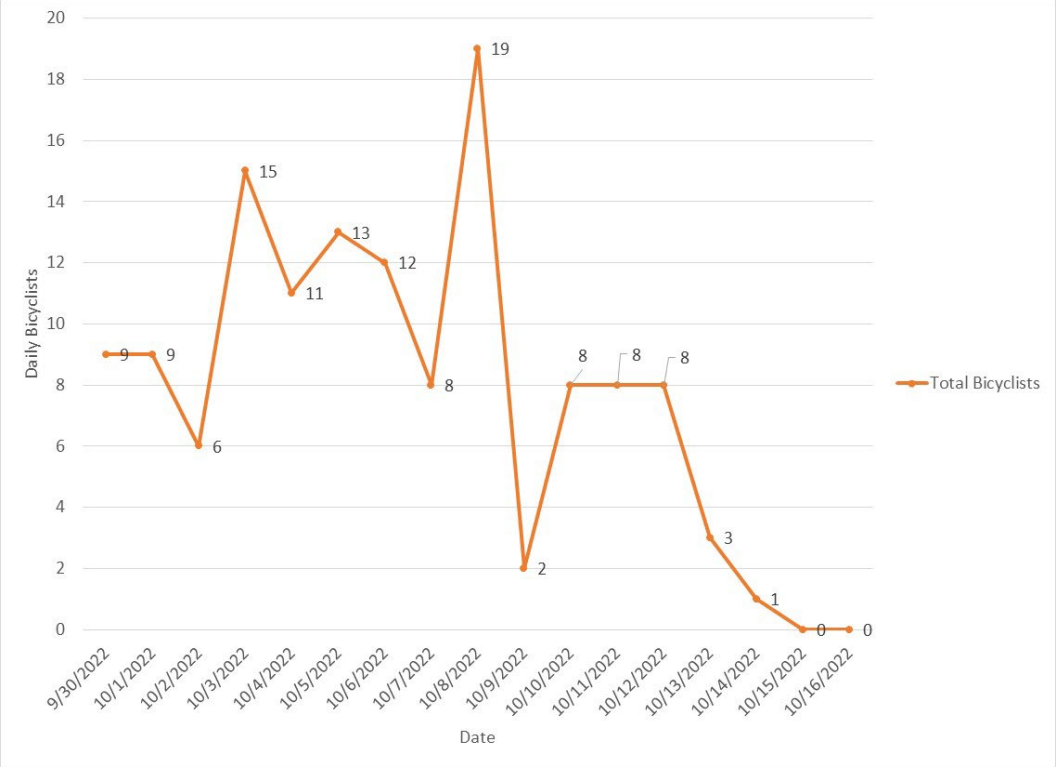


Figure 20. JAMAR Counter, Near E. Shasta Road, Total Daily Bicycle Count

Breaking the data down by weekday versus weekend, for weekdays (9/22/22, 10/3/22-10/7/22, and 10/10/22-10/14/22), this location saw a daily average of 9 bicyclists. For weekends (10/1/22, 10/2/22, 10/8/22, 10/9/22, 10/15/22, and 10/16/22), this location saw a daily average of 6 bicyclists, which is lower than the weekday average count.

Considering direction of travel, the E. Shasta Road location generally seemed to record more bicyclists traveling eastbound towards Arenas Valley (Figure 21). An average of 3 bicyclists traveled westbound towards Silver City, whereas an average of 5 bicyclists traveled eastbound towards Arenas Valley.

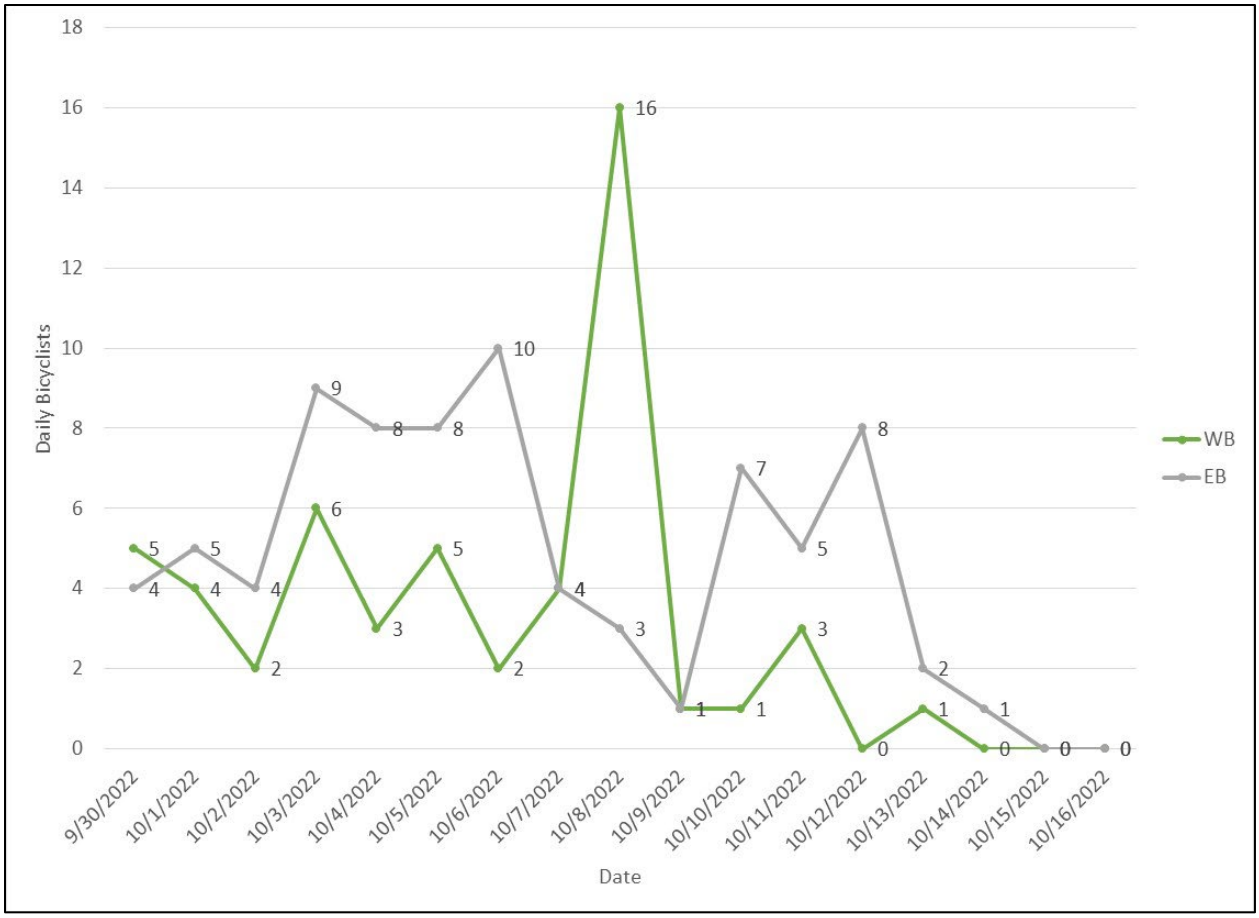


Figure 21. JAMAR Counter, Near E. Shasta Road, Daily Bicycle Count, Westbound & Eastbound

On weekdays, this location saw a peak of bicycle users in the morning around 7 AM – 9 AM and again in the afternoon around 2 PM – 6 PM (Figure 22).

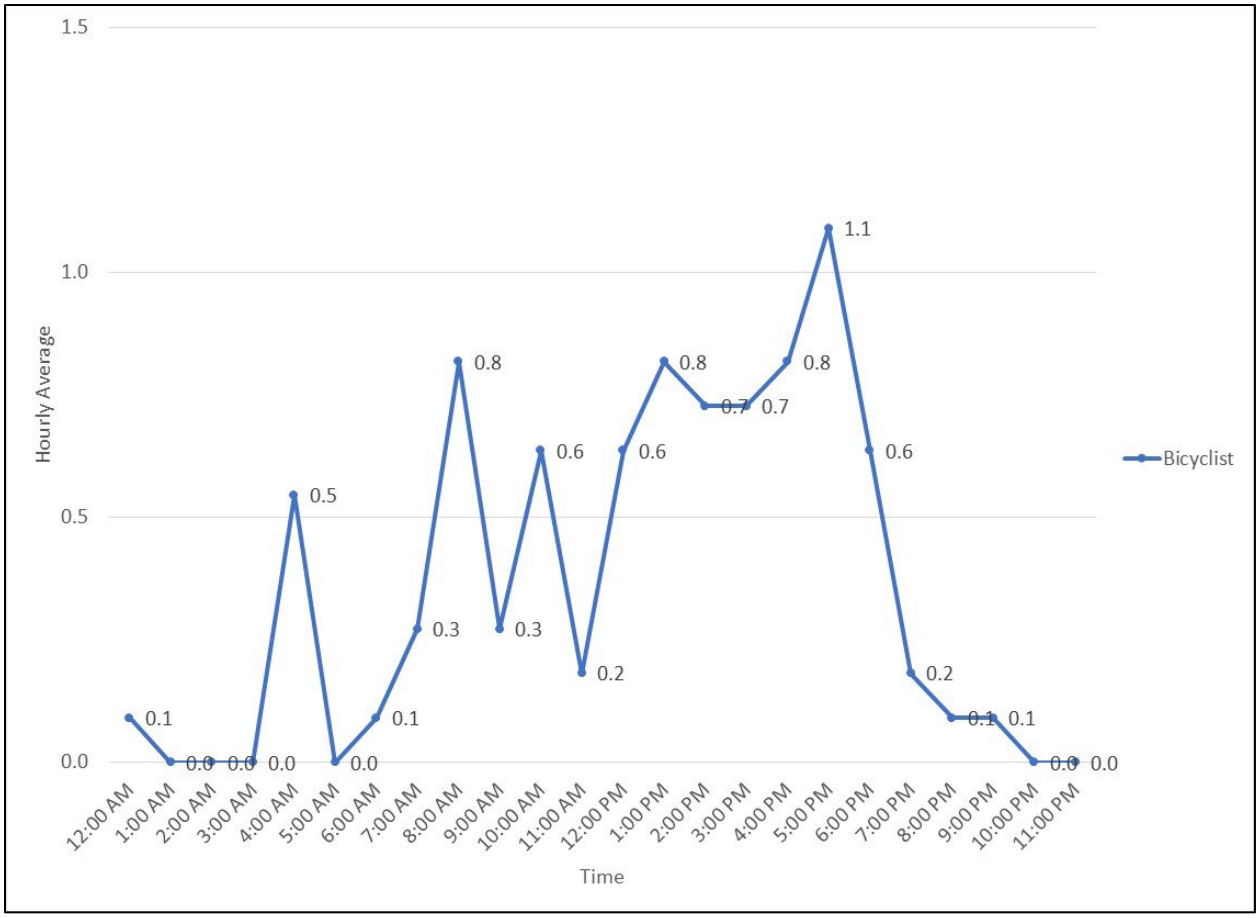


Figure 22. JAMAR Counter, Near E. Shasta Road, Hourly Profile, Weekdays

Weekend counts have fewer bicyclists per hour (Figure 23), suggesting that more bicyclists pass this point during the week. This likely suggests a slight bias for utilitarian travel as compared with recreational travel being counted at this location. For weekends, the morning peak is later, 9 AM – 11 AM, and the afternoon peak is more confined, from 3 PM – 5 PM (Figure 23).

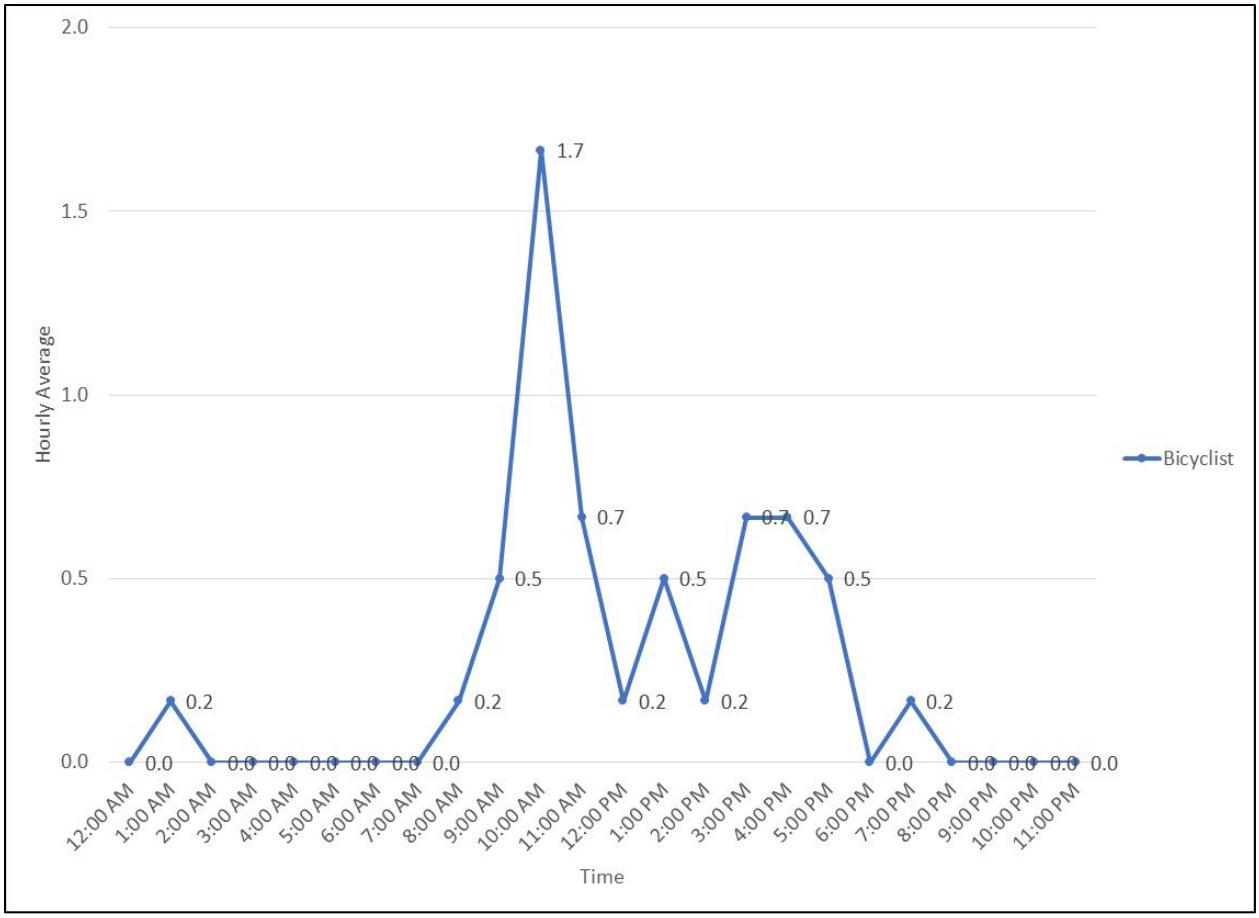


Figure 23. JAMAR Counter, Near E. Shasta Road, Hourly Profile, Weekend

2.4.3.2 East of Morales Road

Two more JAMAR counters were installed on the roadway East of Morales Road along U.S. 180, one for westbound traffic and one for eastbound traffic (Figure 24).

Figure 24. JAMAR Counter, East of Morales Road (Esri, HERE, Garmin, FAO, NOAA, USGS, OpenStreetMap contributers, and the GIS User Community, 2023)

The counter east of Morales Road (Arenas Valley) for the westbound direction had its pneumatic tube cut some time around Monday, October 3, 2022 (Figure 25 and Figure 26). Consequently, a more thorough data analysis, as was done for the counts near E. Shasta Road, was not conducted, as the data was limited.

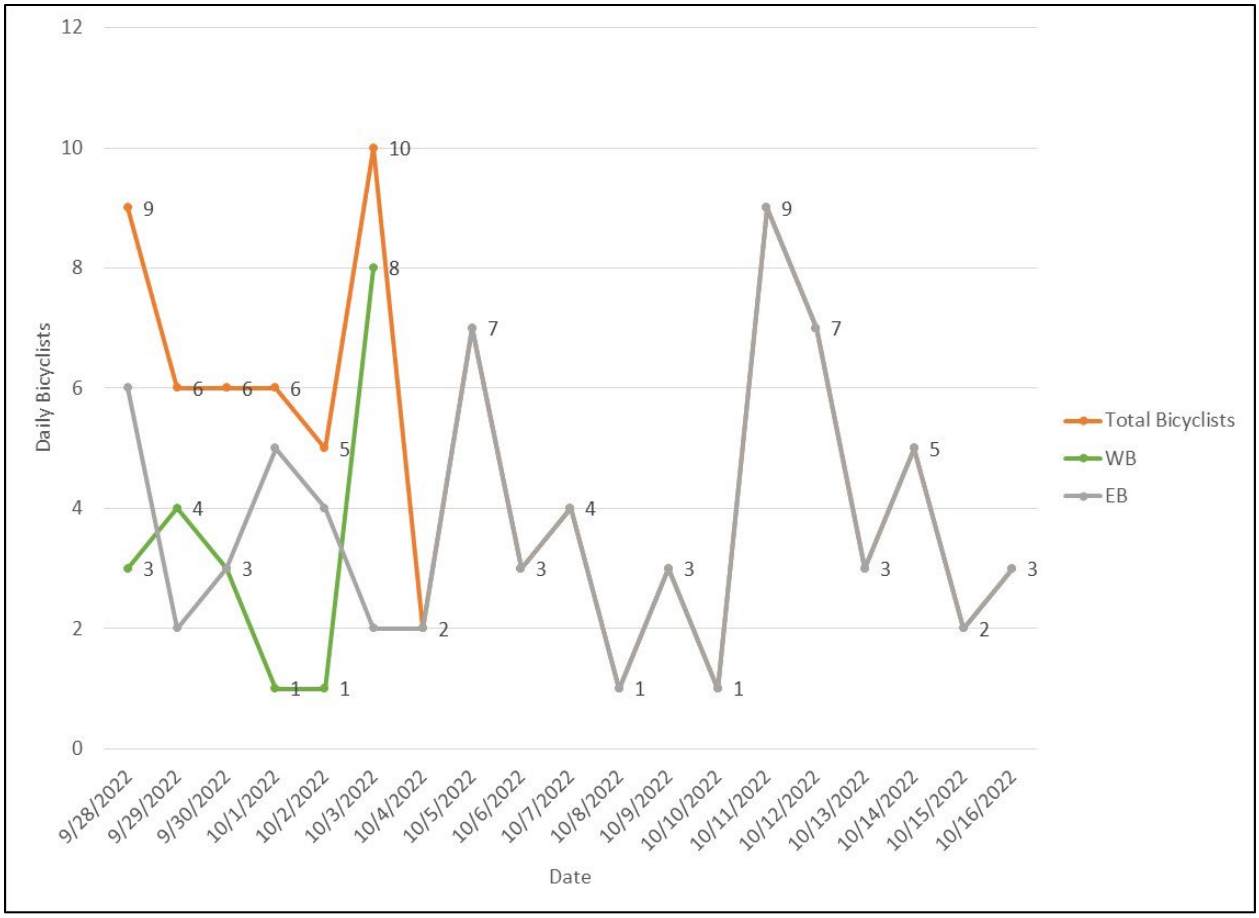


Figure 25. JAMAR Counter, East of Morales Road, Total Daily Bicycle Count

Figure 26. Cut Counter, East of Morales Road

2.4.3.3 North of Bayard

Two JAMAR counters were installed on the roadway north of Bayard, along U.S. 180, one for westbound traffic and one for eastbound traffic (Figure 27).

Figure 27. JAMAR Counter, North of Bayard (Esri, HERE, Garmin, FAO, NOAA, USGS, OpenStreetMap contributers, and the GIS User Community, 2023)

The installation location is in line with the Eco-Counter installed along the pathway. Therefore, in theory, any bicyclist passing this point during this study would be counted, as the vast majority of the roadway and pathway was covered with pneumatic tubes that should detect bicyclists. During the data collection period (September 30, 2022, to October 16, 2022) this location saw a total of 88 bicyclists for both directions.

Over the data collection period, this counter saw an average of 5 bicyclists per day with a peak of 12 bicyclists on October 7, 2022 (Figure 28).

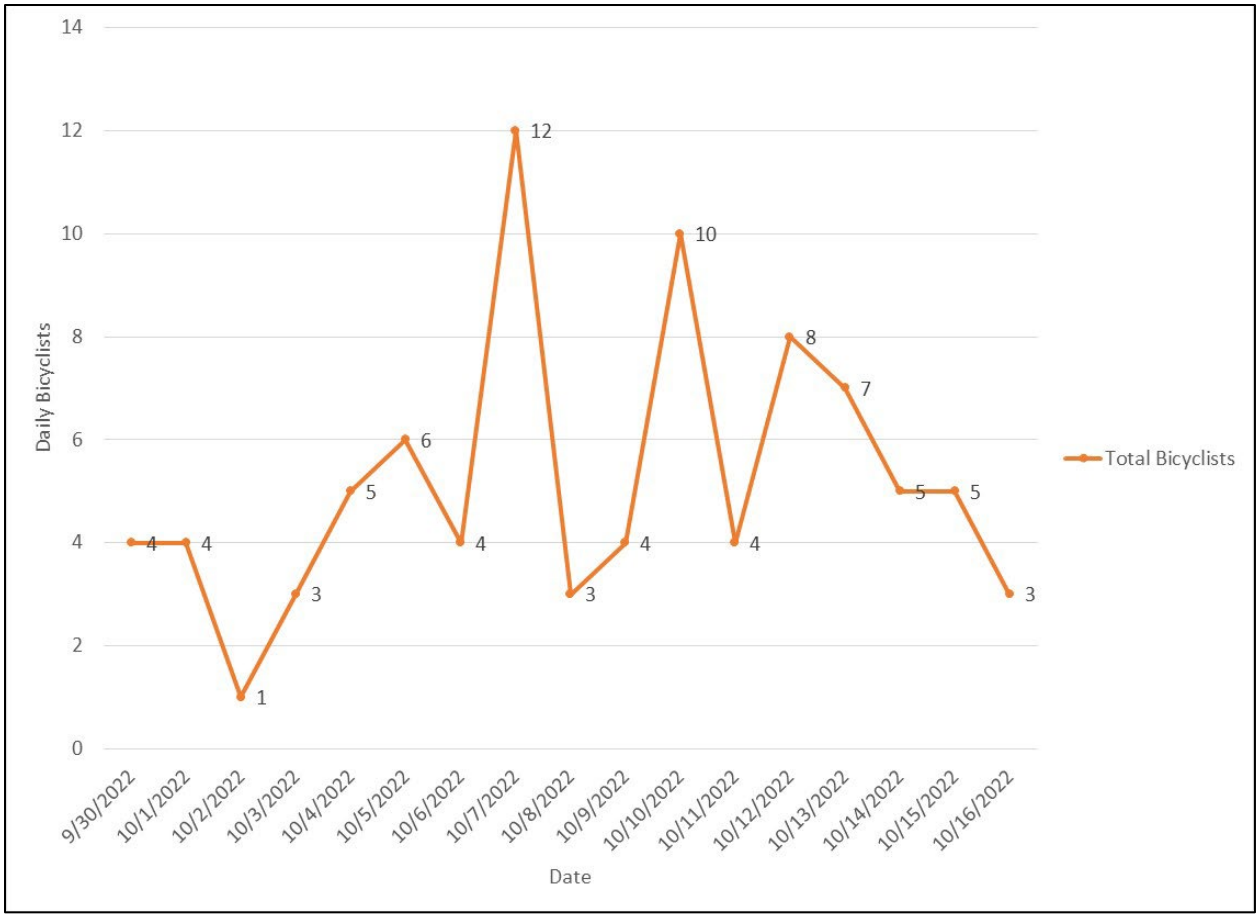


Figure 28. JAMAR Counter, North of Bayard, Total Daily Bicycle Count

Breaking the data down by weekday versus weekend, for weekdays (9/22/22, 10/3/22-10/7/22, and 10/10/22-10/14/22), this location saw a daily average of six bicyclists. For weekends (10/1/22, 10/2/22, 10/8/22, 10/9/22, 10/15/22, and 10/16/22), this location saw a daily average of three bicyclists, which is lower than the weekday average count.

Considering direction of travel, the North of Bayard location typically saw more bicyclists traveling northbound away from Bayard towards Santa Clara (Figure 29). An average of three bicyclists traveled northbound away from Bayard towards Santa Clara during the data collection period, whereas an average of two bicyclists traveled southbound.

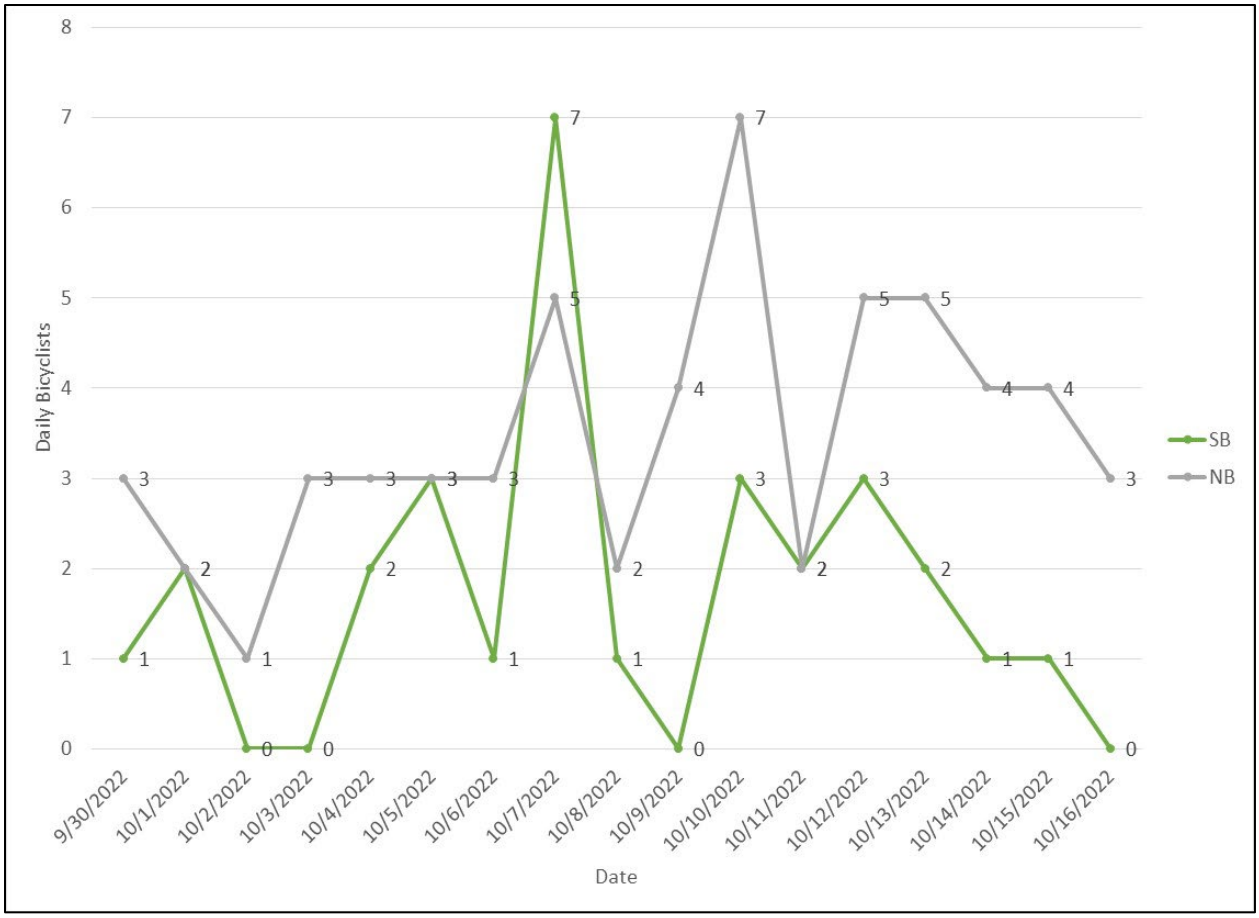


Figure 29. JAMAR Counter, North of Bayard, Daily Bicycle Count, Northbound & Southbound

On weekdays, this location saw a peak of bicycle users in the morning from 7 AM to 10 AM and again in the afternoon from 1 PM – 4 PM (Figure 30).

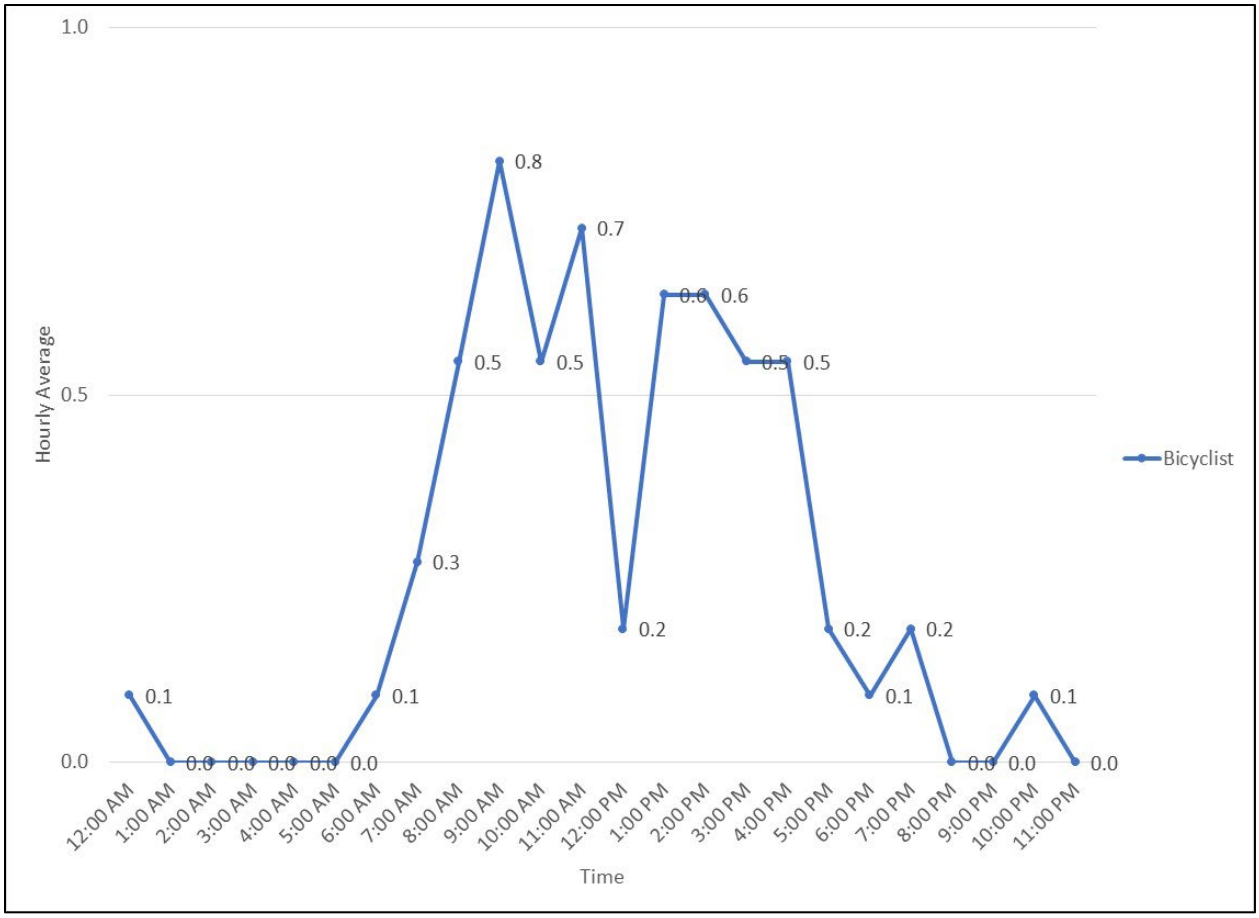


Figure 30. JAMAR Counter, North of Bayard, Hourly Profile, Weekdays

Weekend counts had fewer bicyclists per hour (Figure 31), suggesting that more bicyclists pass this point during the week. This likely suggests a slight bias for utilitarian travel as compared with recreational travel being counted at this location. Weekend peaks were 10 AM and 1 PM, although there was limited data (Figure 31).

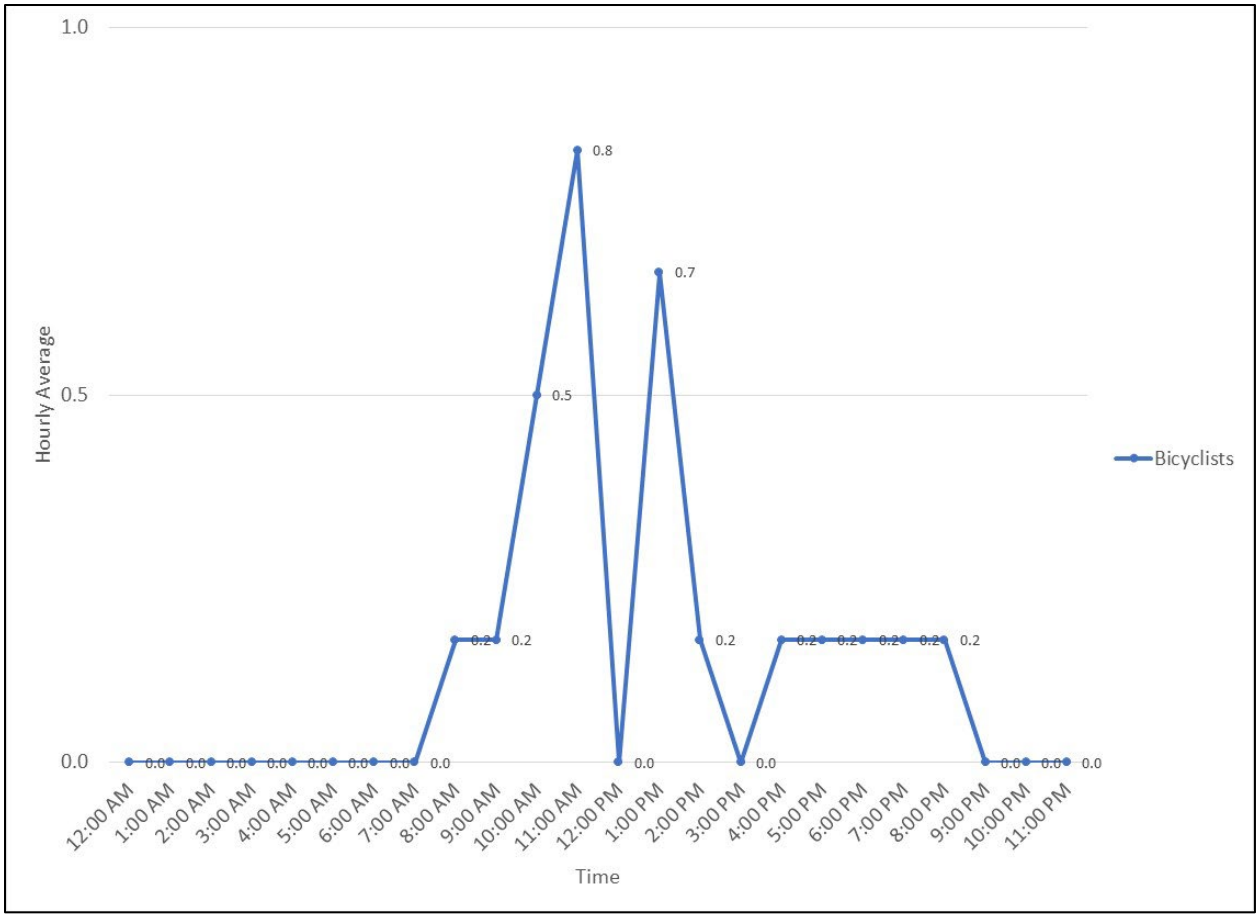


Figure 31. JAMAR Counter, Near E. Shasta Road, Hourly Profile, Weekend

2.4.3.4 North of Hurley

One JAMAR counter was installed on the roadway North of Hurley along U.S. 180, which was able to count northbound and southbound traffic (Figure 32). During the data collection period (September 30, 2022, to October 16, 2022) this location saw a total of 117 bicyclists for both directions.

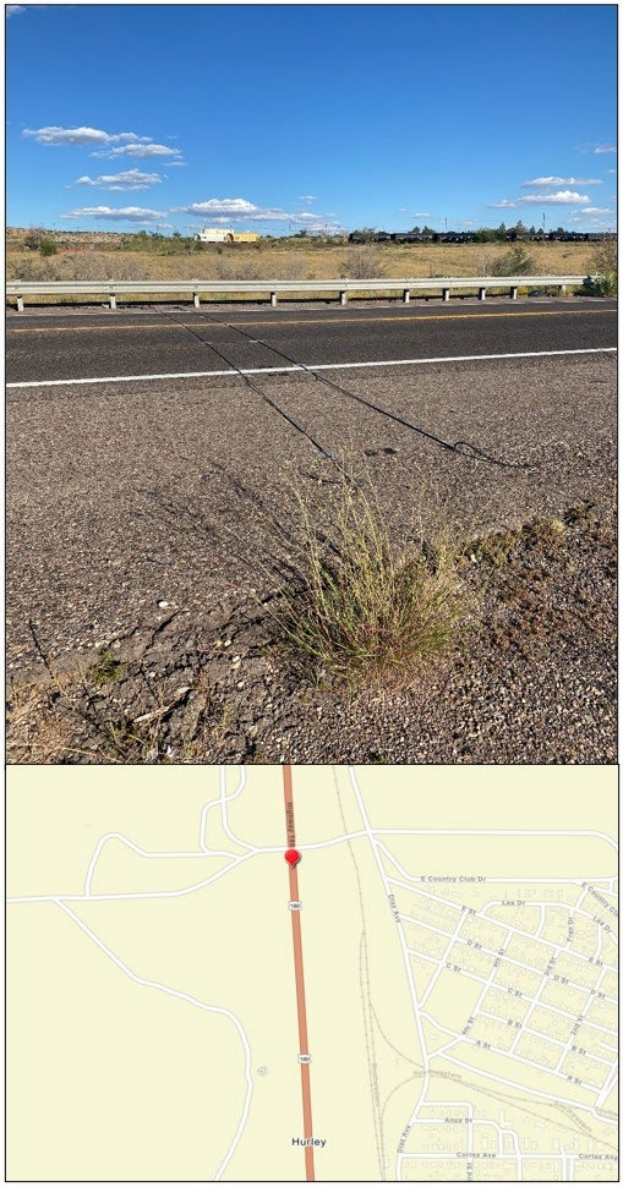


Figure 32: JAMAR Counter, North of Hurley (Esri, HERE, Garmin, FAO, NOAA, USGS, OpenStreetMap contributers, and the GIS User Community, 2023)

Over the data collection period, this counter saw an average of 7 bicyclists per day with a peak of 20 bicyclists on October 16, 2022 (Figure 33).

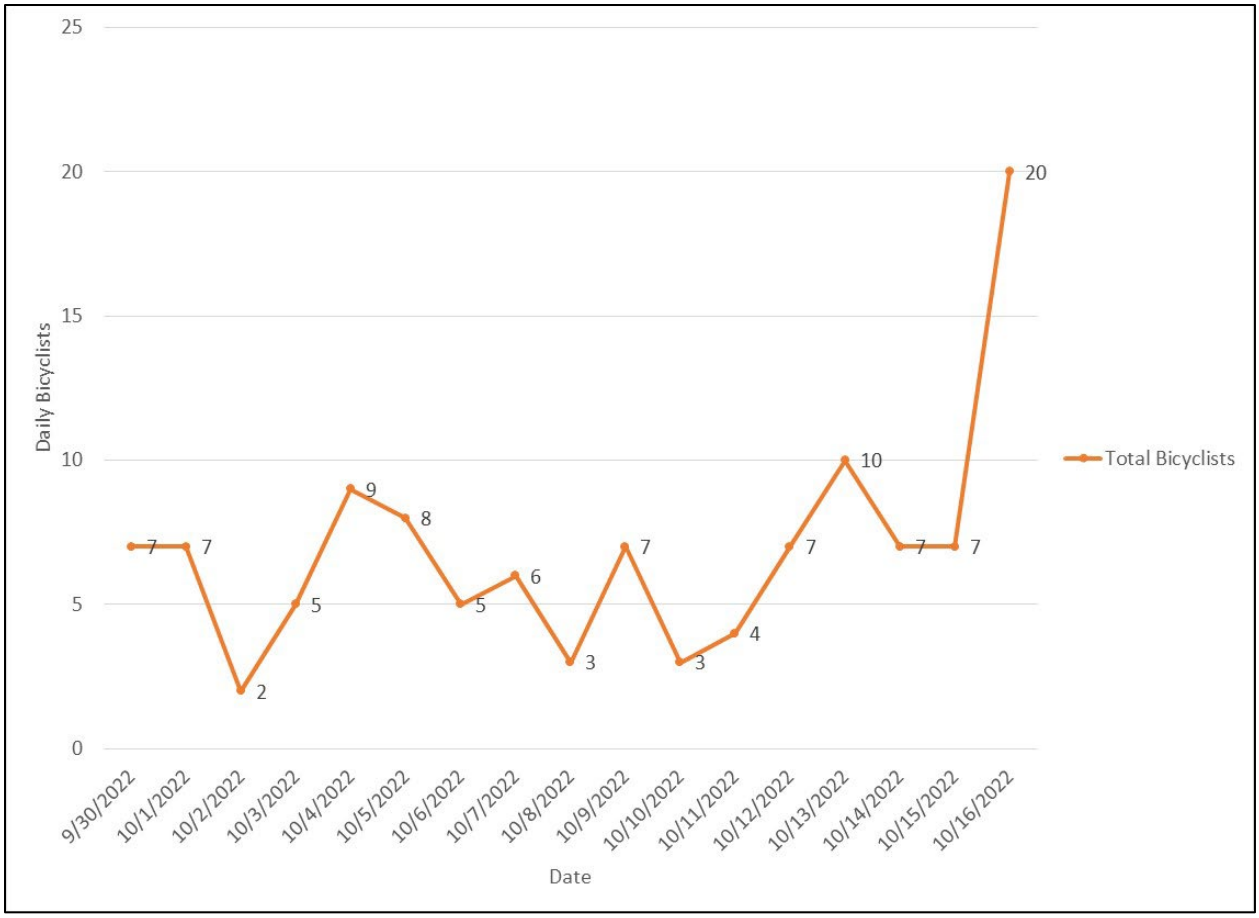


Figure 33. JAMAR Counter, North of Hurley, Daily Bicycle Count (both directions)

Breaking the data down by weekday versus weekend, for weekdays (9/22/22, 10/3/22-10/7/22, and 10/10/22-10/14/22), this location saw a daily average of 6 bicyclists. For weekends (10/1/22, 10/2/22, 10/8/22, 10/9/22, 10/15/22, and 10/16/22), this location saw a daily average of 8 bicyclists. This is the only JAMAR counter site where the daily weekend average count was greater than the daily weekday average count. It appears that the count on October 16, 2022, was highly influential. It hints at the challenges associated with limited data, and a potential influential event, like an event occurring, that could inflate values.

Considering direction of travel, the North of Hurley location saw slightly more bicyclists traveling northbound towards Bayard (Figure 34). An average of 4 bicyclists traveled northbound towards Bayard from Hurley during the data collection period, whereas an average of 2 bicyclists traveled southbound.

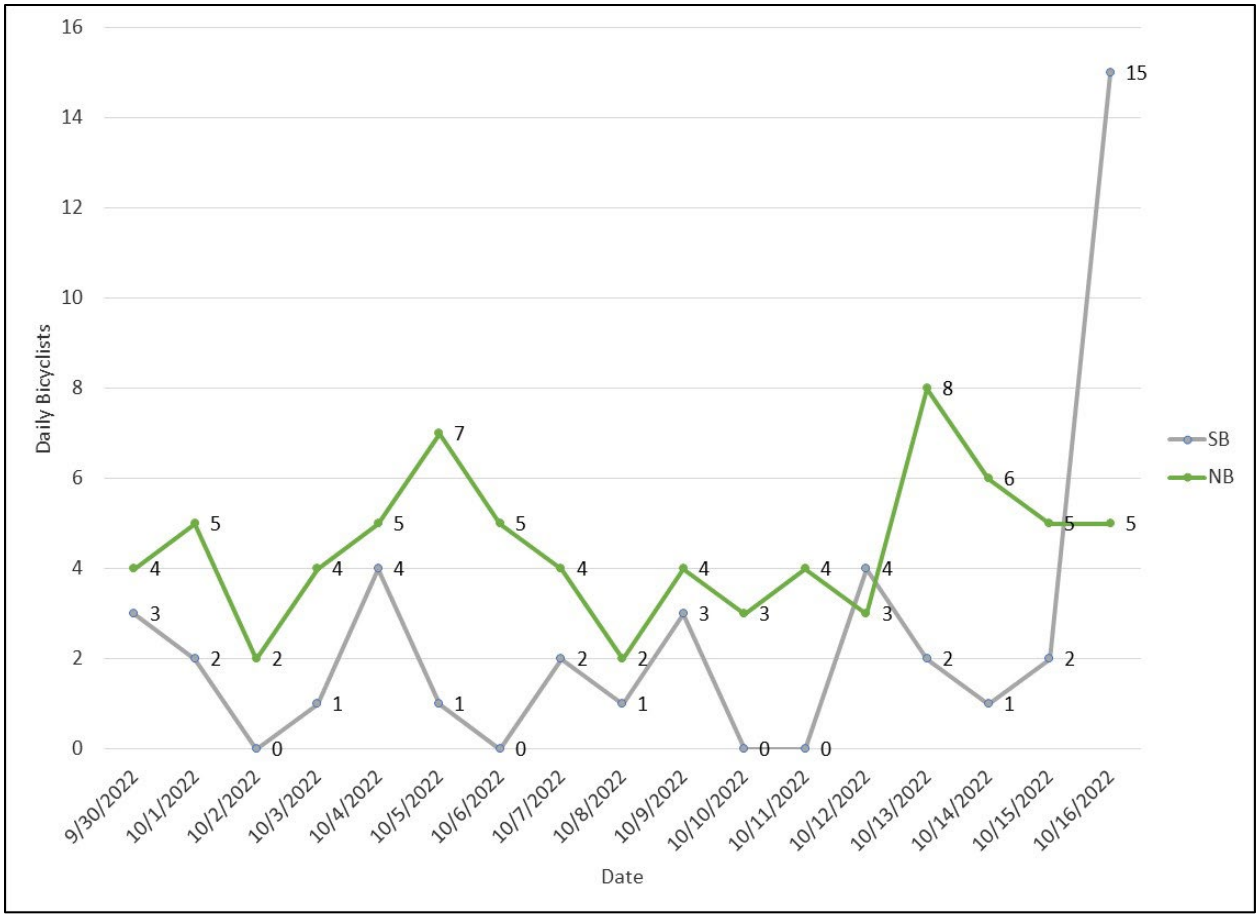


Figure 34. JAMAR Counter, North of Hurley, Daily Bicycle Count, Northbound & Southbound

On weekdays, this location saw a peak of bicycle users from 1 PM – 3 PM (Figure 35).

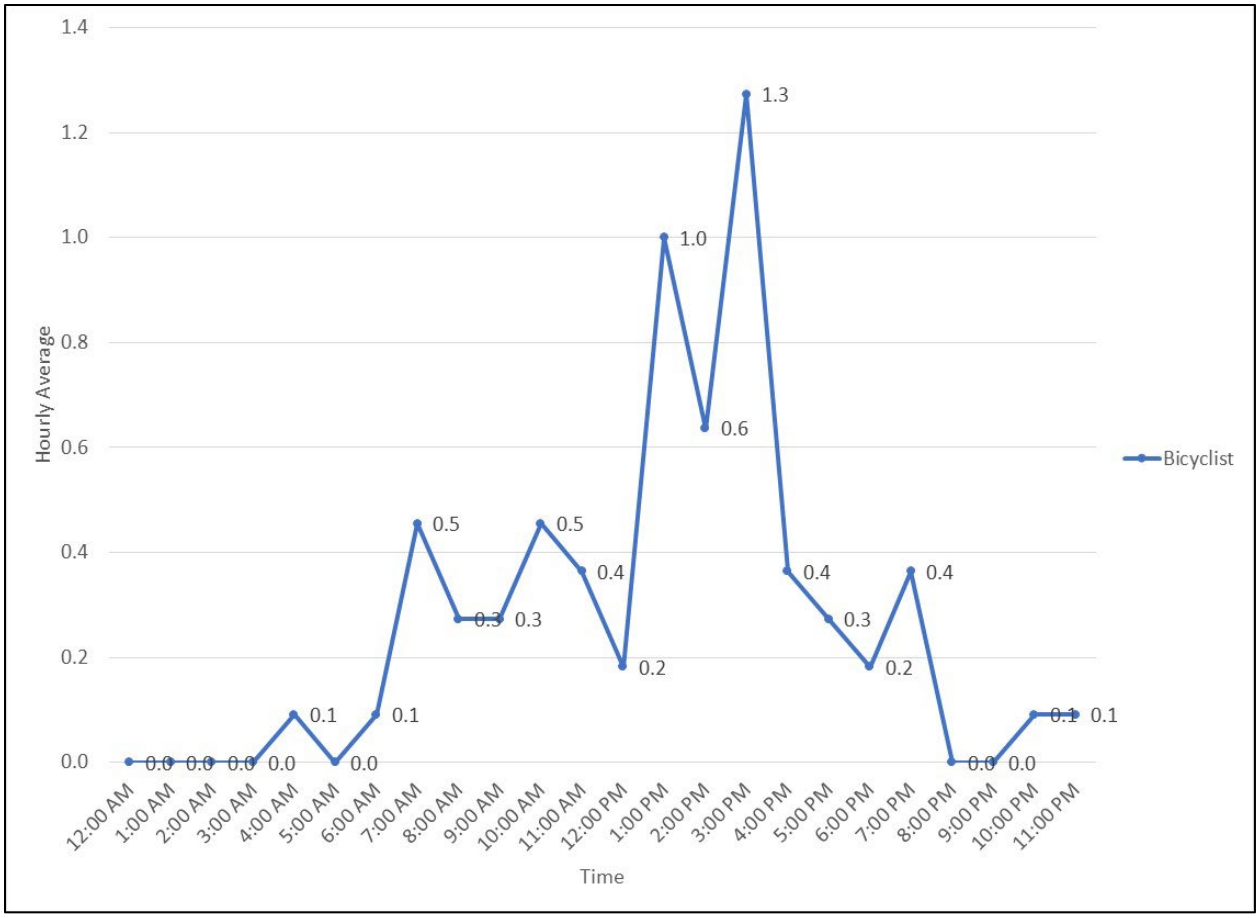


Figure 35. JAMAR Counter, North of Hurley, Hourly Profile, Weekdays

Weekend counts have the same number of bicyclists per hour (Figure 36). The only weekend peak is at 1 PM (Figure 36). This is also seen in Figure 36, where the 1 PM – 2 PM hour had a weekend hourly average of 2 bicyclists.

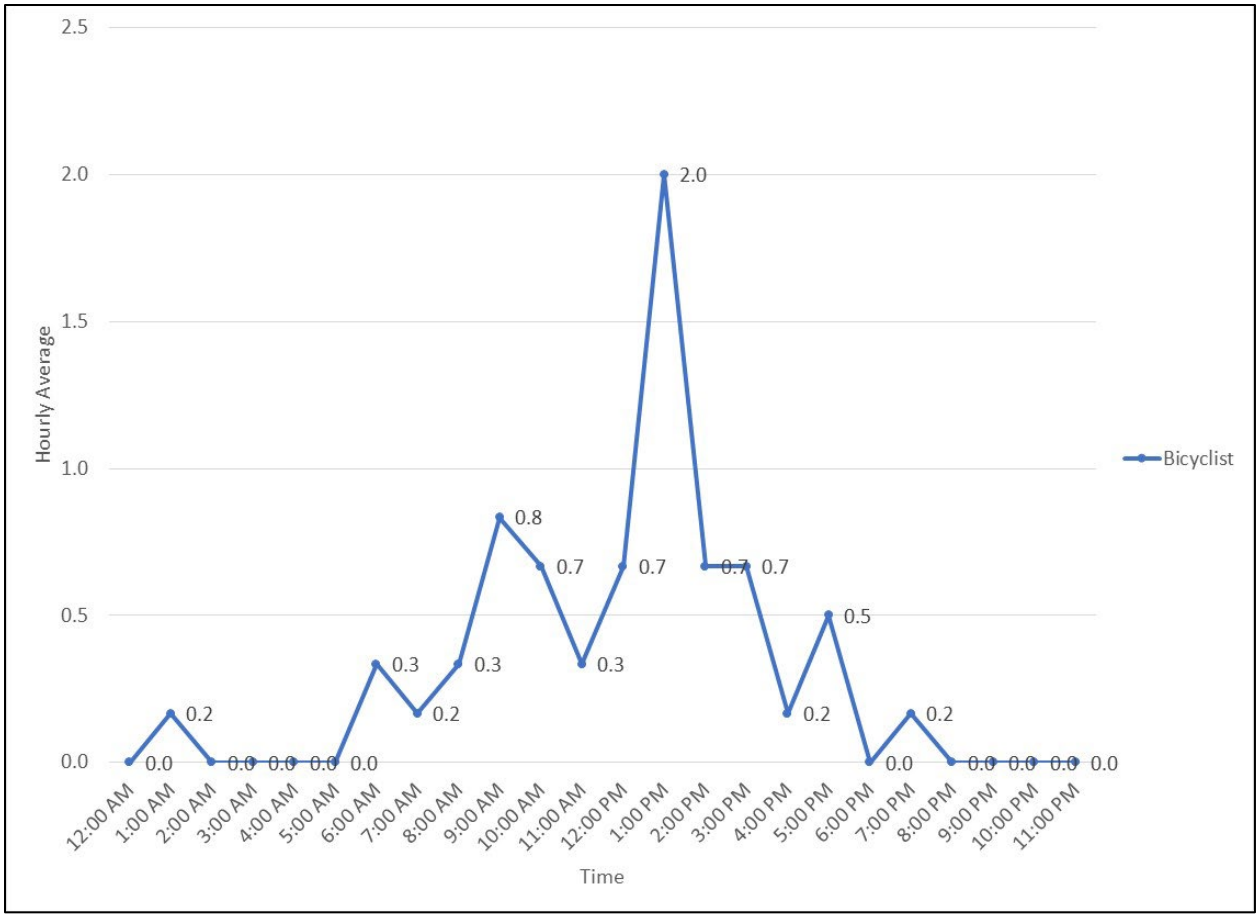


Figure 36. JAMAR Counter, Near E. Shasta Road, Hourly Profile, Weekend

2.4.4 Manual Counts

Six manual counts were also collected along the U.S. 180 corridor (Figure 37):

1. U.S 180 and Little Walnut Road (intersection)
2. U.S. 180 and Arenas Valley Road (intersection)
3. U.S. 180 and Maple Street (intersection)
4. U.S. 180, near the Eco-Count and JAMAR counter, near Santa Clara (verification)
5. U.S. 180 and N. Hurley Ave. (intersection)
6. U.S. 180, near N. Hurley Counter (verification)

Two of these were collected in order to compare them to the counts from the automatic counters. Four were at intersections, where the JAMAR and Eco-Counters counter should not be applied, as they are intended for screenline counts, not counts at intersections.

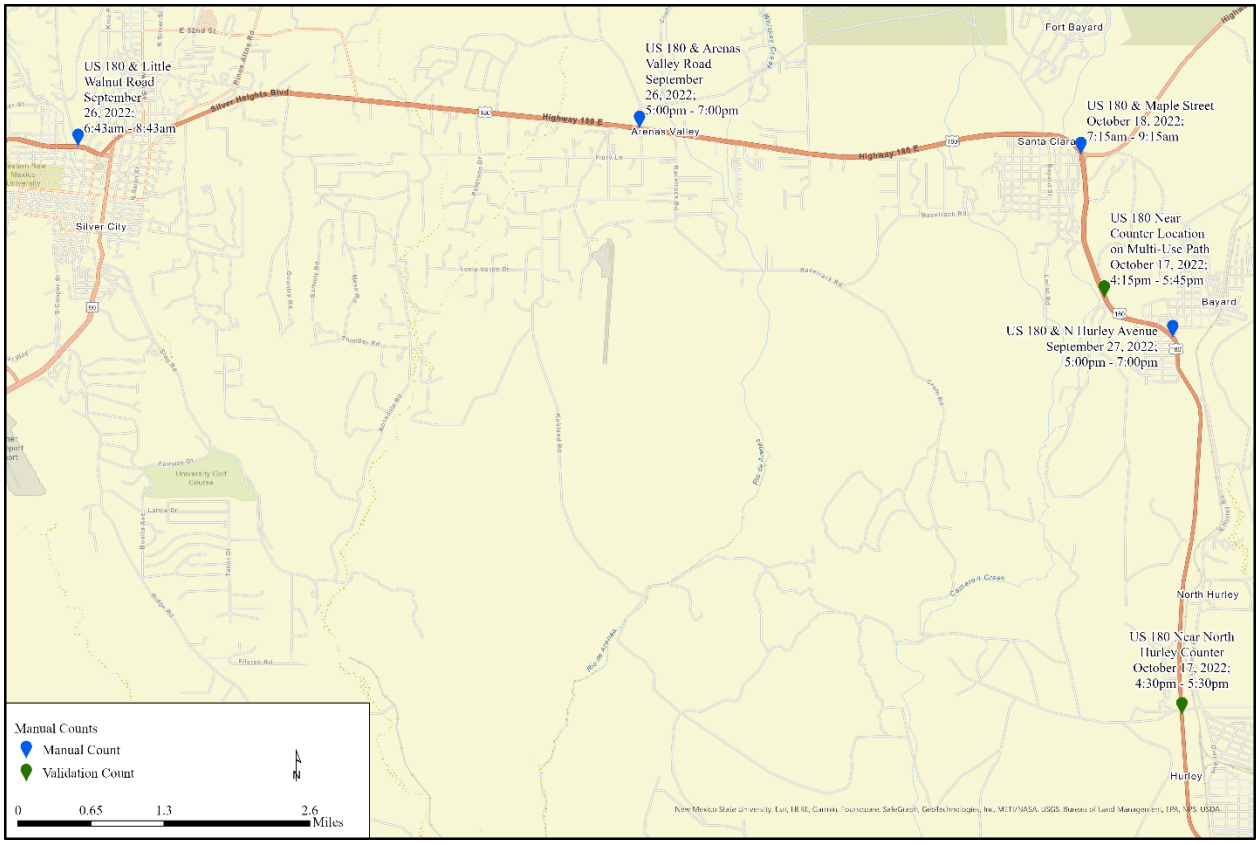


Figure 37. Manual Counts – Intersection & Comparison

No bicyclists or pedestrians were observed during the U.S. 180 and Maple Street count, the U.S. 180 and N. Hurley Avenue count or the U.S. 180, North of Hurley validation count. Notes from the counts can be found in Appendix B – Manual Count.

2.4.4.1 U.S. 180 & Little Walnut Creek

A count was conducted at U.S. 180 and Little Walnut Creek (Figure 38), located within Silver City, New Mexico, for two hours, from 6:43-8:43am on September 26, 2022.

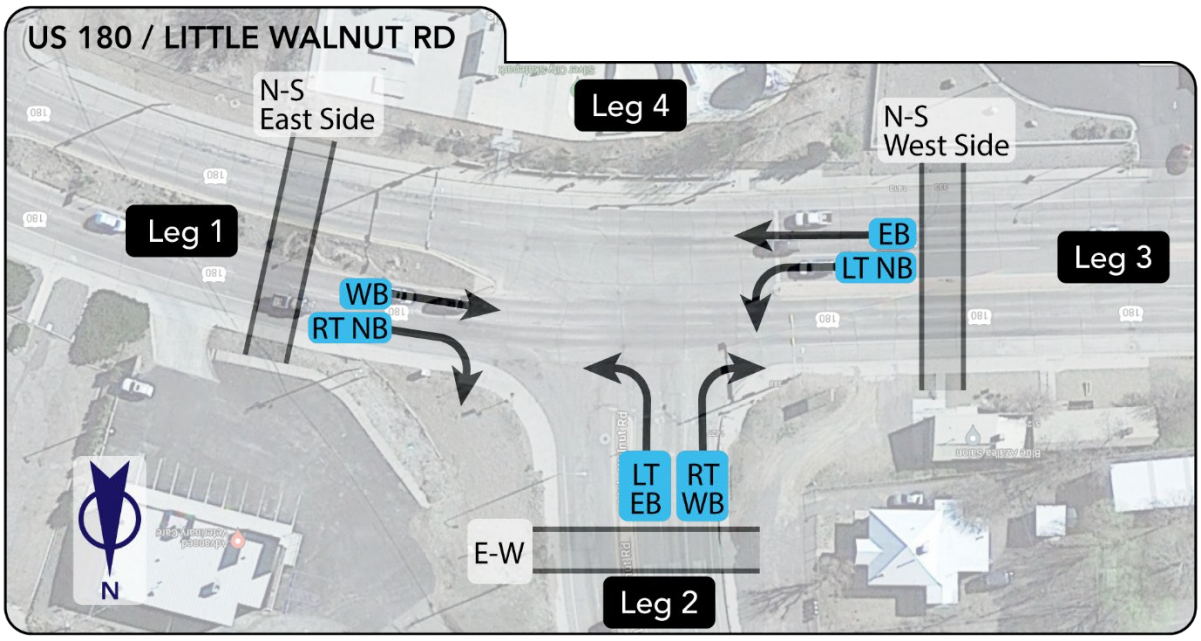


Figure 38. Two-Hour Manual Count, U.S. 180 and Little Walnut Creek (Google, n.d.)

It is a three-legged intersection for motor vehicles. Pedestrians are restricted by signage from crossing on the west leg of the intersection. Table 2 shows the number of bicycles and pedestrians that traversed the intersection, with those bicycles operating in the motor vehicle space identified by **bold**.

Table 2. U.S. 180 and Little Walnut Creek Bicycle and Pedestrian Count, September 26, 2022, 6:43-8:43am

Time	Leg 1			Leg 2			Leg 3			Leg 4
	WB	RT NB	Crossed N-S	LT EB	RT WB	Crossed E-W	LT NB	EB	Crossed N-S	Crossed E-W
6:43-6:58am	0	PED	0	0	0	0	0	0	0	0
6:58-7:13am	0	0	0	0	0	0	0	**BIKE**	PED	PED
7:13-7:28am	0	0	0	PED	**BIKE**	0	0	0	2*PED	2*PED
7:28-7:43am	0	0	0	0	0	0	0	0	PED	PED
7:43-7:58am	0	0	0	0	0	0	0	0	PED	PED
7:58-8:13am	0	0	0	**2*BIKE**	**BIKE**	0	0	0	0	PED
8:13-8:28am	0	0	0	0	0	0	0	0	0	0
8:28-8:43am	0	0	0	0	0	0	0	0	0	0

Figure 39 through Figure 41 show people captured in the above counts, ranging from a young child to women walking together to a man commuting on his bike. More photos of the captured users can be found in Appendix B – Manual Counts, Photos of Users.

Figure 39. U.S. 180 & Little Walnut Rd, Two Female Pedestrians, 7:13-7:28am

Figure 40. U.S. 180 & Little Walnut Rd, One Young Girl, 7:28-7:43am

Figure 41. U.S. 180 & Little Walnut Rd, One Male Bicyclist, 7:58-8:13am

2.4.4.2 U.S. 180 & Arenas Valley/Yucca Valley Drive

A count was conducted at U.S. 180 and Arenas Valley Road/Yucca Valley Drive (Figure 42) for two hours, from 5-7pm on September 26, 2022.

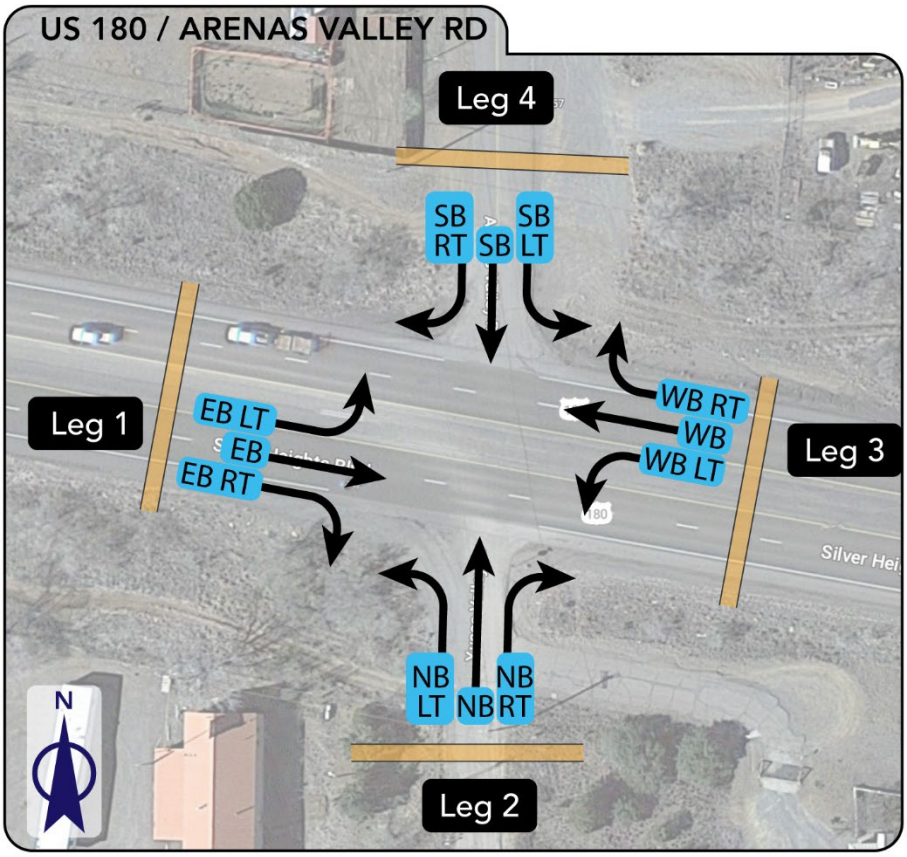


Figure 42. Two-Hour Manual Count, U.S. 180 and Arenas Valley Road/Yucca Valley Drive

It is a four-legged intersection for motor vehicles. Table 3 shows the number of bicycles and pedestrians that traversed the intersection, with those bicycles operating in the motor vehicle space identified by **bold**.

Table 3. U.S. 180 and Arenas Valley Road/Yucca Valley Drive Bicycle and Pedestrian Count, September 26, 2022, 5-7pm

Time	Leg 1: US 180				Leg 2: Yucca Valley Dr				Leg 3: US 180				Leg 4: Arenas Valley Road			
	EB LT	EB	EB RT	Crossing, N-S	NB LT	NB	NB RT	Crossing, E-W	WB LT	WB	WB RT	Crossing, N-S	SB LT	SB	SB RT	Crossing, E-W
5-5:15pm	0	BIKE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15-5:30pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30-5:45pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Time	Leg 1: US 180				Leg 2: Yucca Valley Dr				Leg 3: US 180				Leg 4: Arenas Valley Road			
	EB LT	EB	EB RT	Crossing, N-S	NB LT	NB	NB RT	Crossing, E-W	WB LT	WB	WB RT	Crossing, N-S	SB LT	SB	SB RT	Crossing, E-W
5:45-6pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6pm-6:15pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15-6:30pm	0	BIKE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30-6:45pm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45-7pm	0	0	0	0	0	0	0	0	0	BIKE	0	0	0	0	0	0

No pedestrians were observed in the corridor during this time period at this location. However, two bicyclists were observed going westbound and one was observed going eastbound during this time period at this location.

2.4.4.3 U.S. 180, Near Santa Clara, Eco-Counter and JAMAR Counter

A validation count was conducted at U.S. 180, near Santa Clara, where the Eco-Counter was installed along the multi-use pathway and the JAMAR counter along the roadway (Figure 43), from 4:15-5:45pm on October 17, 2022.

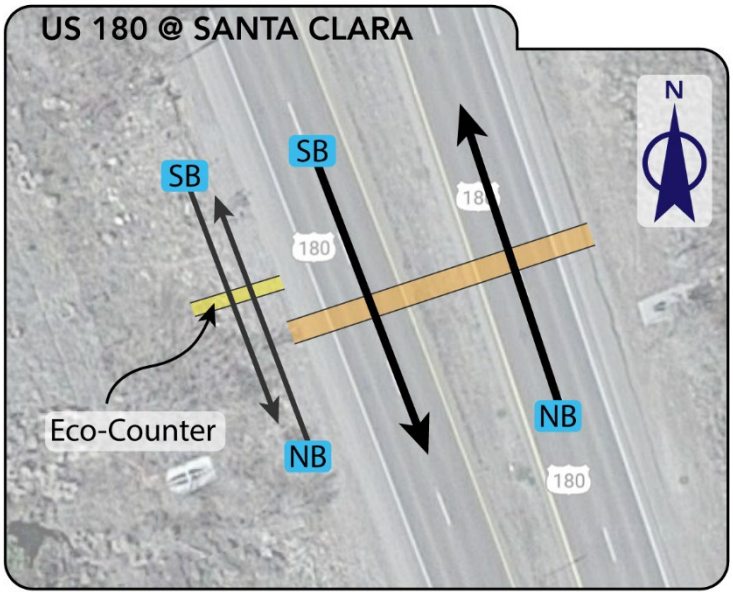


Figure 43. Manual Verification Count, U.S. 180, North of Hurley, near Eco-Counter and JAMAR Counter

This is a screenline location, where counters spanned the entire width for bicycle detection. Only pedestrian detection was available for the pathway to the west of the roadway. Table 4 shows the number of bicycles and pedestrians that moved across the screenline.

Table 4. U.S. 180, Near the Eco-Counter and JAMAR Counter Near Santa Clara, October 17, 2022, 4:15-5:45pm

Time	Eco-Counter				JAMAR			
	NB		SB		Southbound Travel Lanes		Northbound Travel Lanes	
	Bike	Ped	Bike	Ped	NB Bike	SB Bike	NB Bike	SB Bike
4:15-4:30pm	0	0	0	0	0	0	0	0
4:30-4:45pm	0	0	0	0	0	0	0	0
4:45-5pm	0	0	0	0	0	0	0	0
5-5:15pm	0	0	0	0	0	0	0	0
5:15-5:30pm	0	1	0	1	0	0	0	0
5:30-5:45pm	0	4*	0	1	0	0	0	0

*One of the pedestrians was a child being pushed in a stroller (Figure 44).

Figure 44. Pedestrians Counted During Validation Count Near Eco-Counter Near Santa Clara, New Mexico

The validation count was compared with the Eco-Counter's count, and even though correspondence with the vendor suggested that children pushed in strollers may not be counted, it would appear in this case that the child was counted.

When comparing what the JAMAR counter recorded with the on-site observations, one bicyclist northbound and one bicyclist southbound were recorded by the JAMAR device whereas the observations recorded none. As acknowledged by the guidebook, there will always be errors when comparing automatic counters with manual counts; however, this does not provide reassurance regarding the counts provided by the JAMAR counter. Yet, it is only one hour of many counts, and we know that people are traveling the corridor by bicycle along the roadway, as shown in Figure 45.

Figure 45. Bicyclist Traveling on U.S. 180 Corridor, on Roadway, North of Hurley

2.4.5 Summary, Bicycle and Pedestrian Count Data

First, the data related to bicycle counts will be summarized. Then after, the data related to pedestrian counts will be summarized.

2.4.5.1 Bicycle Counts

The bicycle counts collected with the Eco-Counters and the JAMAR counters are summarized in Table 5, Table 6, and Figure 46. All data presented spans from the period of September 30, 2022, through October 16, 2022.

Table 5. Total Number of Counted Bicyclists Over Time Period, Average Daily Bicyclists, and Peak Day and Count of Bicyclists

Counter Type	Location of Counter	Total Number of Bicyclists	Average Daily Bicycle Counts	Peak Daily Bicycle Counts	Date of Peak
Eco-Counter	Silver City	172	10	20	10/15/22
	Santa Clara	180	11	21	10/1/22
JAMAR	E. of Shasta Street	132	8	19	10/8/22
	E. of Morales Road	*No data for entire period; counter cut*			
	N. of Bayard	88	5	12	10/7/22
	N. of Hurley	117	7	20	10/16/22

Table 6. Average Weekday and Average Weekend Bicycle Counts

Counter Type	Location of Counter	Weekday		Weekend	
		Average	Peak Period	Average	Peak Period
Eco-Counter	Silver City	9	9 AM; 2 PM – 4 PM	9	4 PM – 6 PM
	Santa Clara	11	8 AM – 12 PM; 6 PM	11	10 AM – 1PM
JAMAR	E. of Shasta Street	9	7 AM – 9 AM; 2 PM – 6 PM	6	9 AM – 11 AM; 3 PM – 5 PM
	E. of Morales Road	*No data; counter cut*			
	N. of Bayard	6	7 AM – 10 AM; 1 PM – 4 PM	3	10 AM – 1 PM
	N. of Hurley	6	1 PM – 3 PM	8	1 PM

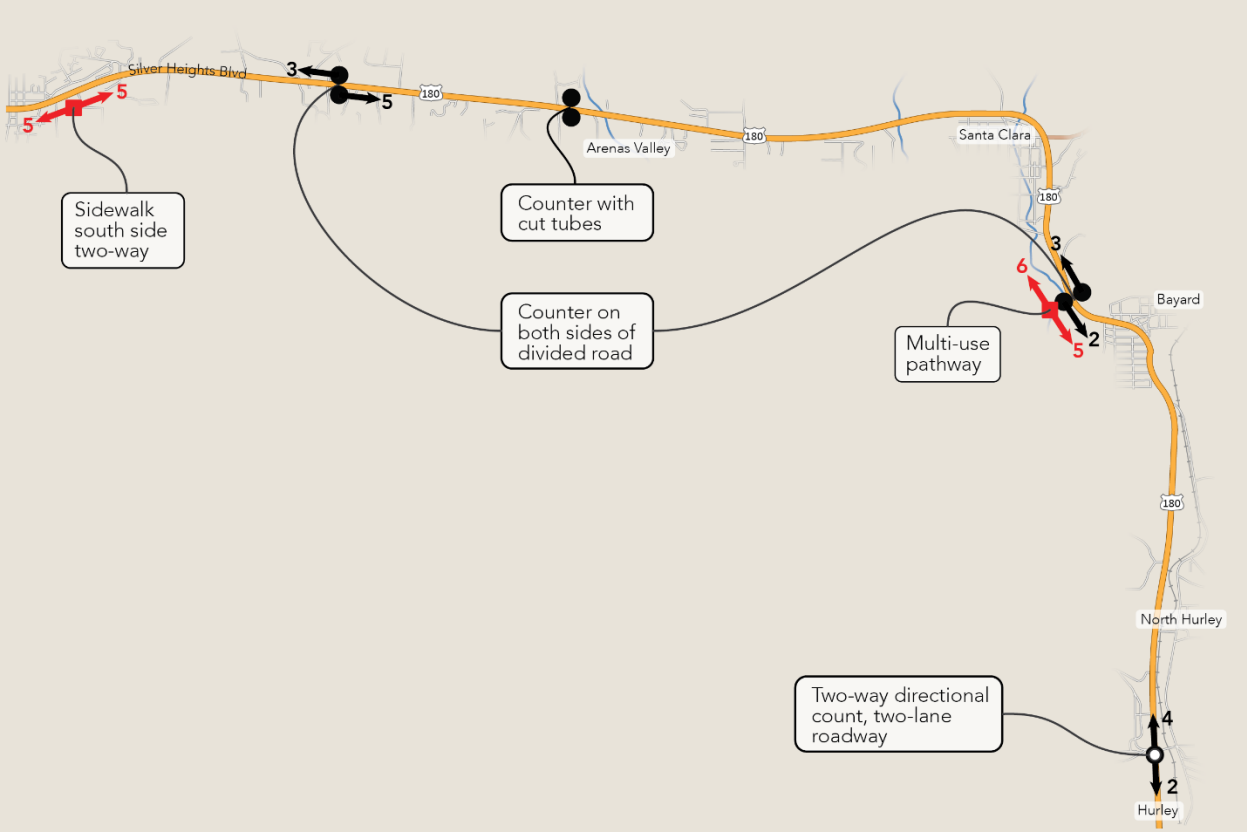


Figure 46. U.S. 180, Average Daily Bicycle Counts by Direction

2.4.5.2 Pedestrian Counts

The bicycle counts collected with the Eco-Counters and the JAMAR counters are summarized in Table 7, Table 8, and Figure 47. All data presented spans from the period of September 30, 2022, through October 16, 2022.

Table 7. Total Number of Counted Pedestrians Over Time Period, Average Daily Pedestrians, and Peak Day and Count of Pedestrians

Counter Type	Location of Counter	Total Number of Pedestrians	Average Daily Pedestrian Counts	Peak Daily Pedestrian Counts	Date of Peak
Eco-Counter	Silver City	358	18	29	10/4/22
	Santa Clara	347	20	37	10/4/22

Table 8. Average Weekday and Average Weekend Pedestrian Counts

Counter Type	Location of Counter	Weekday		Weekend	
		Average	Peak Period	Average	Peak Period
Eco-Counter	Silver City	20	9 AM; 2 PM – 4 PM	17	4 PM – 6 PM
	Santa Clara	23	6 AM – 7 AM; 4 PM – 8 PM	15	4 PM – 7 PM

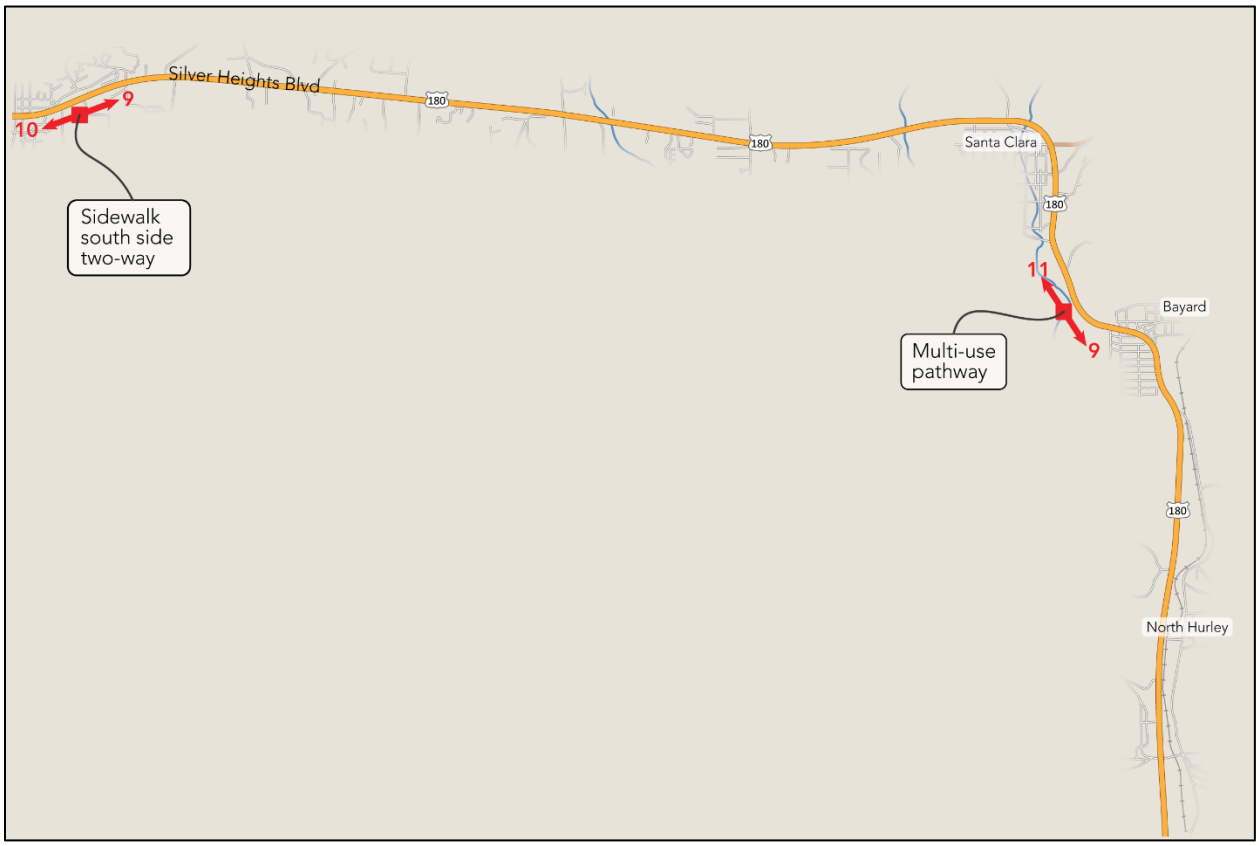


Figure 47. U.S. 180, Average Daily Pedestrian Counts by Direction

2.5 Counting Bicyclists & Pedestrians – Closing Thoughts

This section described counts that were conducted to describe both qualitatively and quantitatively the number of users of the U.S. 180 corridor. The primary conclusion based on the counts is that people are walking and bicycling along the U.S. 180 corridor. People were observed walking and bicycling in still images from Street View, through publicly available Strava mapping data, through on-site observations, and capture through automated bicycle and pedestrian counters. More importantly, the results suggest

a greater use by people walking and bicycling where facilities are available, including sidewalks and a separated multi-use pathway. These observations suggest that there is unmet demand for such facilities. In particular, a measurable number of bicyclists were recorded utilizing the sidewalk along U.S. 180 between Mountain View Road and Hilltop, suggesting that the bicycle lane provided along U.S. 180 does not address the needs of all bicyclists. Consequently, the NADORF Team is recommending enhanced bicycling and pedestrian infrastructure, like a separated pathway, be provided throughout the corridor to ensure the safe travel of those walking and bicycling.

Generally, the Eco-counters saw a higher number of bicycle users when compared with the JAMAR counters. This may indicate that users are more comfortable utilizing a dedicated pedestrian and cyclist space like a sidewalk or multi-use trail. However, the counts do make it clear that there are active transportation users along the entirety of the U.S. 180 corridor between Silver City and Hurley.

The collected counts suggest that most users are walking and bicycling for utilitarian purposes, particularly during the week. Therefore, while recreational benefits were clearly suggested by the counts along the existing Santa Clara pathway which can provide health benefits for rural residents, these users would be in addition to the users already using this corridor for daily travel.

The data showed that the highest counts were captured during peak commuter periods in both the morning and evening between 7am-9am and 4pm-6pm. Additionally, bicycle and pedestrian average counts tended to be higher on weekdays than weekends. This may suggest utilitarian travel is occurring by bicyclists and pedestrians in the area. Should SWNMCOG continue to collect data annually, it is recommended that data be collected during these identified time periods. Any combination of the five count locations utilized by the NADORF Team would be sufficient for future collection efforts. SWNMCOG could leverage volunteers for assistance in this effort, as it may help build awareness as well. It would be recommended that any future data be collected at a similar time-of-year to enable comparisons to the data collected for this project.

The guidebook recommended collecting data at “pinch points” (National Academies of Sciences, Engineering, and Medicine, 2014). The Santa Clara location best represents one of these locations, where the Eco-Counter captured both bicycle and pedestrian data on the pathway and the JAMAR counters captured bicycle data on the roadway. Pedestrians, however, who may walk along the roadway, were not counted (Figure 48). The researchers were not able to have JAMAR counters in proximity to the Eco-Counter near Silver City as the location had turn lanes, which can result in erroneous counts by a tool like the JAMAR counters.

Figure 48. Pedestrians Walking Along U.S. 180 near Silver City

ATV users were not observed in the project area by the NADORF Team during site visits. This does not mean that there are not ATVs using the corridor. Rather, our counting tools and observations were unable to capture such users. Additional counting efforts, utilizing video camera recordings over an extended duration could potentially capture such users.

The guidebook (National Academies of Sciences, Engineering, and Medicine, 2014) also recommended counts be conducted to coincide with anticipated high activity levels and good weather. The fall was chosen for this effort, as it was expected to meet these recommendations, with moderate temperatures, likely leading to "high activity levels." With the ability of the Eco-Counter and JAMAR counters to collect extended durations of data, this provides a wealth of information that can be used to develop specific expansion factors for the U.S. 180 corridor. Correction factors and expansion factors were not applied to the bicycle and pedestrian counts. The counts presented herein are raw counts. New Mexico-specific or rural-specific counts would need to be deduced to accurately apply such factors to the collected counts.

San Diego was highlighted within the guidebook (National Academies of Sciences, Engineering, and Medicine, 2014) as collecting counts where there were different land uses, densities, roadway traffic volumes, and facility types. The counters were installed in locations that represented a variety of conditions. Locations close to Silver City have a very different type of land use, density, and access than those closer to Arenas Valley. The roadway cross-section and traffic volumes differ throughout the corridor, with some of the largest cross-sections and traffic volumes in and near Silver City, decreasing as you travel east along the corridor to Hurley. Facility types where the data was collected varied as well, from a sidewalk to a separated multiuse pathway to a roadway.

3 Crash Experience on U.S. 180 in Grant County

This section will examine crash data from 2016 to 2020 along U.S. 180 in Grant County, with a focus on crashes involving bicyclists and pedestrians. Crash data was obtained by SWNMCOG from the University of New Mexico Traffic Research Unit (TRU). The crash data from 2016 to 2020 included 955 crashes along U.S. 180 in the region extending from West of Silver City to Hurley. The NADORF Team also reached out to the Gila Regional Hospital but received no response, so data that may have described the crash experience of pedestrians and bicyclists but was not included within the vehicular crash database is not considered further here.

3.1 Crash Severity

There was a peak of 226 total crashes in 2018, with 175 most recently recorded in 2020 (Table 9). For injury crashes, there was a peak of 57 injury crashes in 2017, with 40 injury crashes recorded in 2020. When considering the five-year time span, one fatal crash was recorded in 2020. The corridor saw an average of around 190 crashes per year. Most of these crashes (497, 52.0 %) are with another vehicle followed by animal-related crashes (309, 32.4 %) (Figure 49).

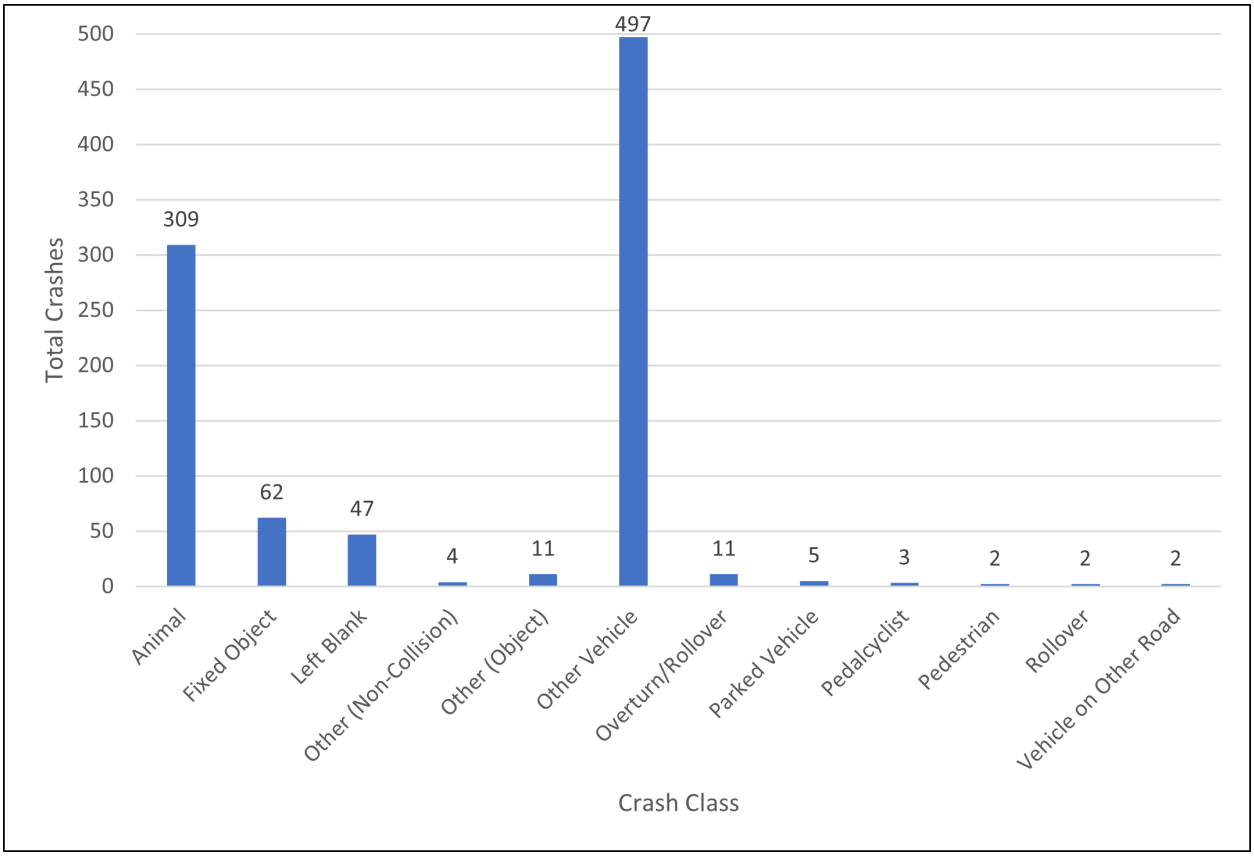


Figure 49. 2016-2020 Crashes by Crash Class

Table 9. Crash Data Severity by Year

Year	Fatal Crash	Injury Crash	Property Damage Only Crash	Grand Total
2016		49	107	156
2017		57	135	192
2018		48	178	226
2019		35	171	206
2020	1	40	134	175
Total	1	229	725	955

The majority of crashes (75.9 %) were property damage only; one crash involved a fatality (Figure 50). The fatal crash occurred on March 4, 2020, in Silver City near U.S. 180 and Hilltop Road. The crash occurred in the morning around 8 AM during clear weather conditions. Neither alcohol nor drugs were reportedly involved.

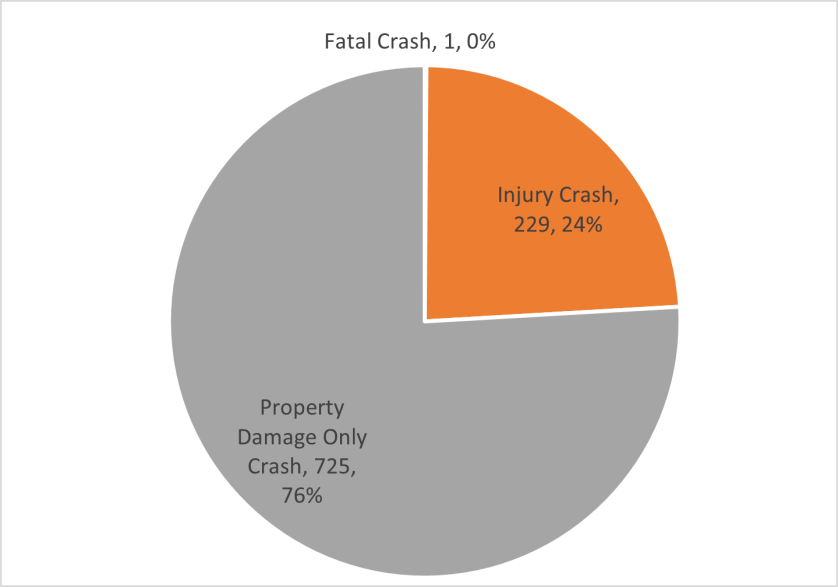


Figure 50. Total Crashes by Crash Severity

3.2 Pedestrian and Pedalcycle Involved Crashes

A total of five crashes involved either a pedestrian (two crashes) or pedalcycle (three crashes) (Figure 51). (Note: A pedacycle is another more specific descriptor for what is otherwise described as a bicycle throughout the report.) Four of the crashes occurred in or near Silver City (Figure 52) and one occurred just South of Santa Clara (Figure 53).

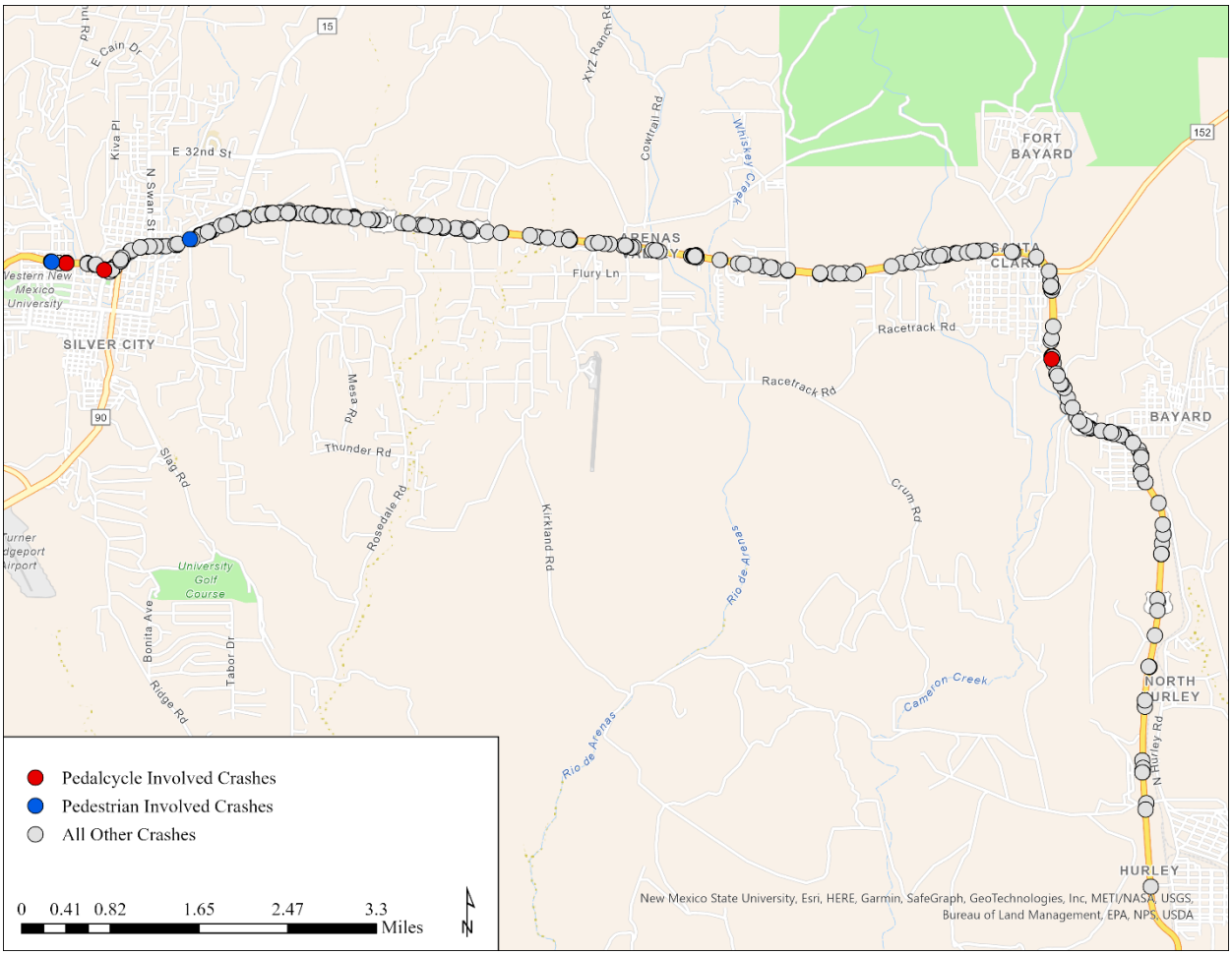


Figure 51. Pedestrian or Pedalcycle Involved Crashes Along U.S. 180 from 2016-2020

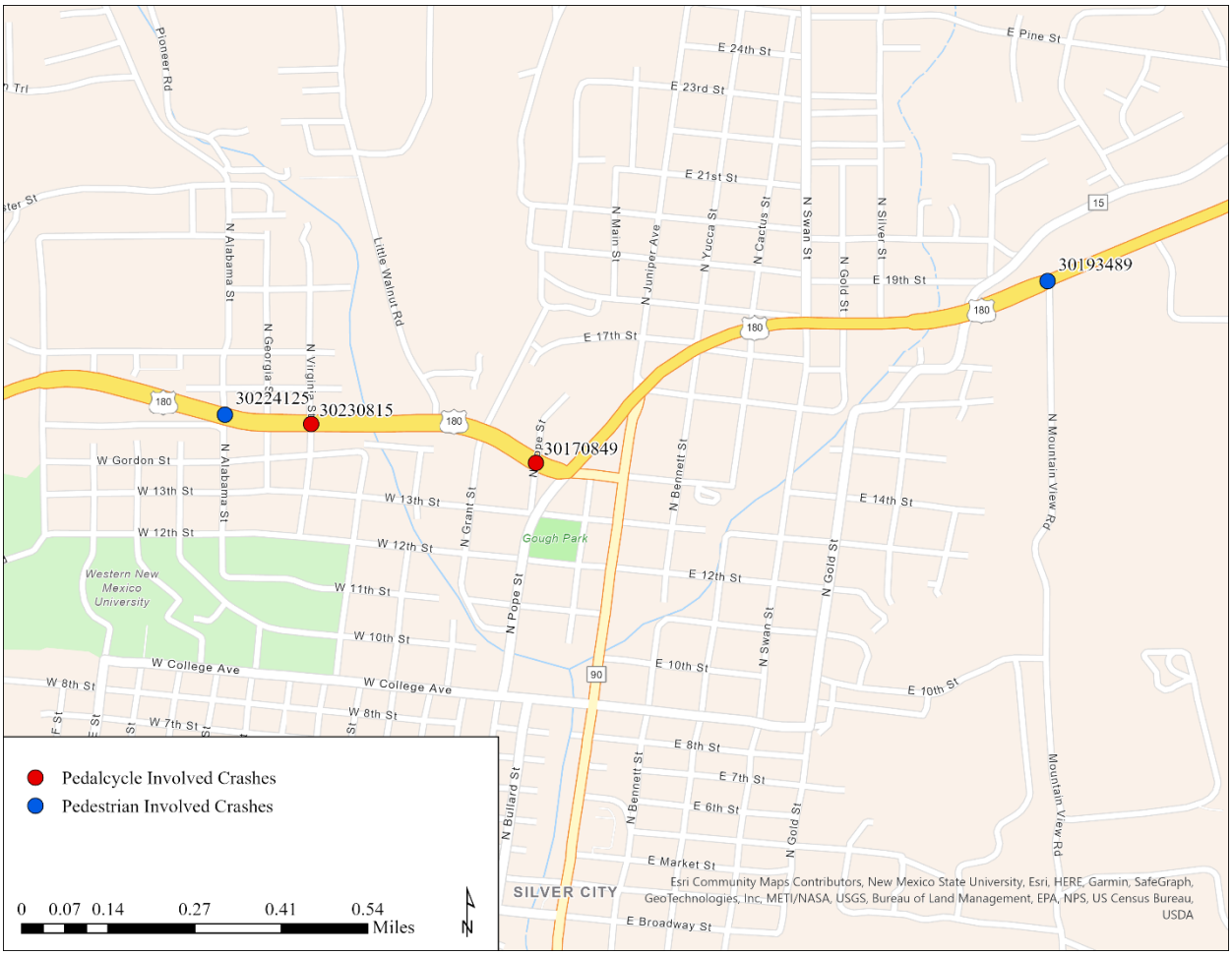


Figure 52. Pedestrian or Pedalcycle Involved Crashes Along U.S. 180 In and Near Silver City from 2016-2020

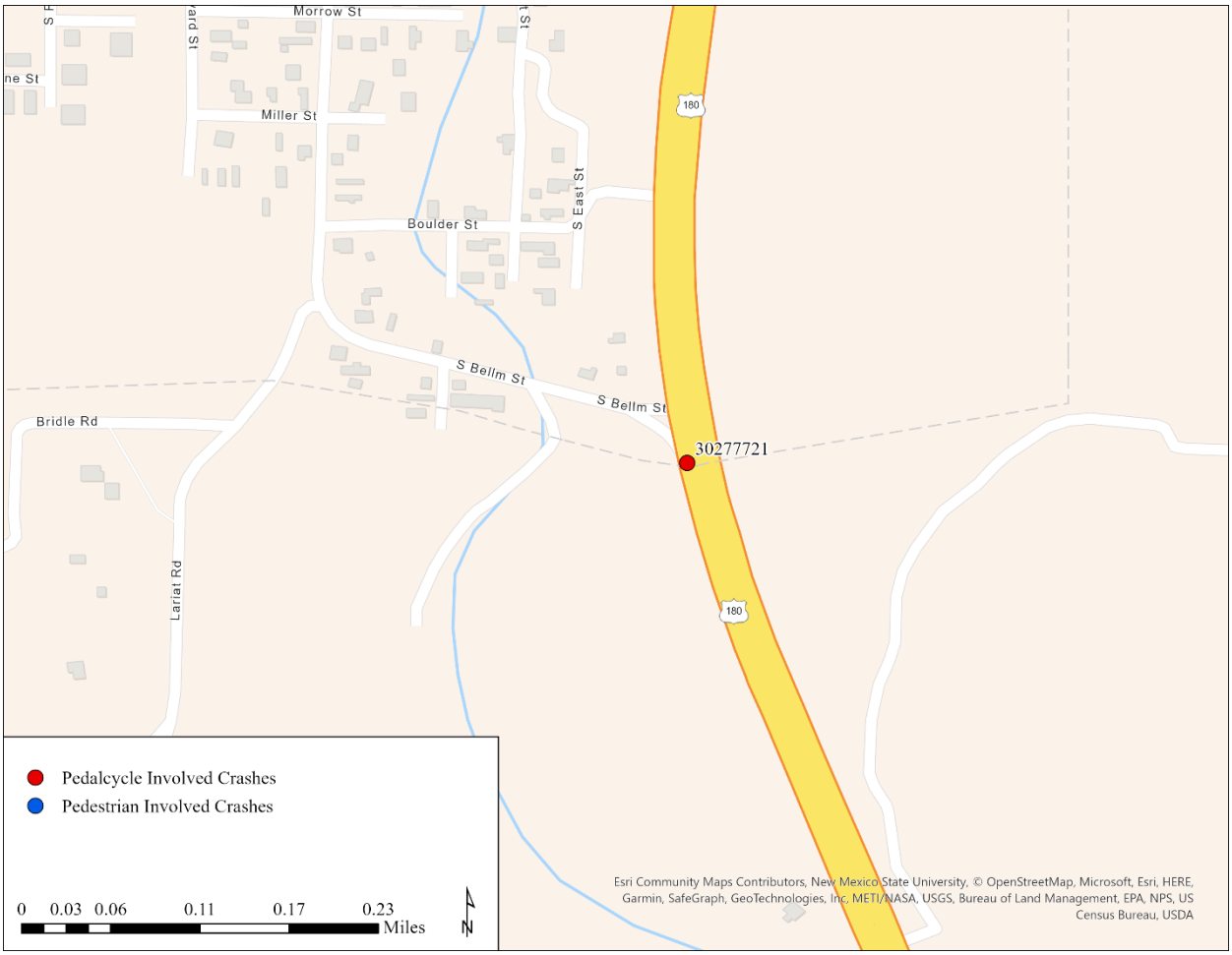


Figure 53. Pedestrian or Pedalcycle Involved Crashes Along U.S. 180 Near Santa Clara from 2016-2020

3.2.1 Silver City Pedestrian and Pedalcycle Involved Crashes

The Silver City area had a total of four pedestrian or pedalcycle-involved crashes from 2016 to 2020; two crashes involved a pedestrian and two involved a pedacycle (Figure 52 and Table 10). More exact details of the crash locations can be found in Appendix C – Crash Details. Crashes occurred in the spring (April, May) and fall (September, November). All crashes occurred during daylight hours ranging from 8 AM to 3 PM when the weather was clear. None of these crashes involved alcohol or drugs; one was a hit and run crash (Report Number: 30193489).

Table 10. Crash Details for Silver City Pedestrian or Pedalcycle Involved Crashes from 2016-2020

Crash Report	**30170849**	**30193489**	**30224125**	**30230815**
Date	4/17/2016	5/25/2017	11/1/2018	9/1/2019
Year	2016	2017	2018	2019
Month	April	May	November	September
Time	15:44	11:52	8:15	12:47
Hour	3 p.m.	11 a.m.	8 a.m.	12 p.m.

Crash Report	**30170849**	**30193489**	**30224125**	**30230815**
Day	Sunday	Thursday	Thursday	Sunday
Law Enforcement Agency	Silver City Police Department	Silver City Police Department	Silver City Police Department	Silver City Police Department
County	Grant	Grant	Grant	Grant
City	Silver City	Silver City	Silver City	Silver City
Primary Street	US HIGHWAY 180 W	HIGHWAY 180 EAST	HIGHWAY 180 W	HIGHWAY 180 W.
Secondary Street	POPE ST	SILVER STREET	ALABAMA RD	VIRGINIA ST.
Route Name	US 180	US 180	US 180	US 180
Milepost	113	114	113	113
Direction	E	E	E	W
Severity	Injury Crash	Injury Crash	Injury Crash	Injury Crash
# of Fatalities	0	0	0	0
# of Class A Injuries	1	0	0	0
# of Class B Injuries	0	0	0	1
# of Class C Injuries	0	1	2	0
Crash Class	Pedalcyclist	Pedestrian	Pedestrian	Pedalcyclist
Crash Analysis	Pedalcyclist Struck Vehicle	Pedestrian Collision - Vehicle Turning Left	Pedestrian Collision - Vehicle Going Straight	Pedalcyclist Struck Vehicle
First Harmful Event	Collision with Person	Collision with Person	Collision with Person	Collision with Person
Event Analysis	Pedalcycle	Pedestrian	Pedestrian	Pedalcycle
Weather	Clear	Clear	Clear	Clear
Lighting	Daylight	Daylight	Daylight	Daylight
Hit and Run	No	Yes	No	No
Alcohol	Not Involved	Not Involved	Not Involved	Not Involved
Drugs	Not Involved	Not Involved	Not Involved	Not Involved
Pedestrians	Not Involved	**Involved**	**Involved**	Not Involved
Motorcycles	Not Involved	Not Involved	Not Involved	Not Involved
Pedalcycle	**Involved**	Not Involved	Not Involved	**Involved**
Heavy Truck	Not Involved	Not Involved	Not Involved	Not Involved
Commercial Vehicles	Not Involved	Not Involved	Not Involved	Not Involved
School Bus	Not Involved	Not Involved	Not Involved	Not Involved
HAZMAT	Not Involved	Not Involved	Not Involved	Not Involved
Non-Local	Local Drivers	Local Drivers	Local Drivers	Local Drivers
Vehicle Damage	Appearance	Not Available	Functional	Appearance
Road Character	Straight	Straight	Straight	Straight
Road Grade	Level	Level	On Grade	Level

3.2.2 Santa Clara Pedestrian and Pedalcycle Involved Crashes

A single crash involving a pedalcycle occurred in August 2020 just south of Santa Clara near Caddel Crossing (Figure 54 and Table 11). This crash occurred in the evening around 9 PM. The area was dark without illumination. Neither alcohol nor drugs were involved in this crash.

Table 11. Crash Details for Santa Clara Pedestrian or Pedalcycle Involved Crashes from 2016-2020

Crash Report	**30277721**
Date	8/13/2020
Year	2020
Month	August
Time	21:23
Hour	9 p.m.
Day	Thursday
Law Enforcement Agency	Grant County Sheriff's Office
County	Grant
City	None
Primary Street	U.S. HIGHWAY 180
Secondary Street	CADDEL CROSSING
Location	U.S. HIGHWAY 180 AND CADDEL CROSSING
Route Name	US 180
Milepost	122
Direction	E
Severity	Injury Crash
# of Fatalities	0
# of Class A Injuries	1
# of Class B Injuries	0
# of Class C Injuries	0
Crash Class	Pedalcyclist
Crash Analysis	Pedalcyclist Struck Vehicle
First Harmful Event	Collision with Person
Event Analysis	Pedalcycle
Weather	Clear
Lighting	Dark-Not Lighted
Hit and Run	No
Alcohol	Not Involved
Drugs	Not Involved
Pedestrians	Not Involved
Motorcycles	Not Involved
Pedalcycle	**Involved**
Heavy Truck	Not Involved
Commercial Vehicles	Not Involved
School Bus	Not Involved

Crash Report	**30277721**
HAZMAT	Not Involved
Non-Local	Local Drivers
Vehicle Damage	Functional
Road Character	Straight
Road Grade	Level

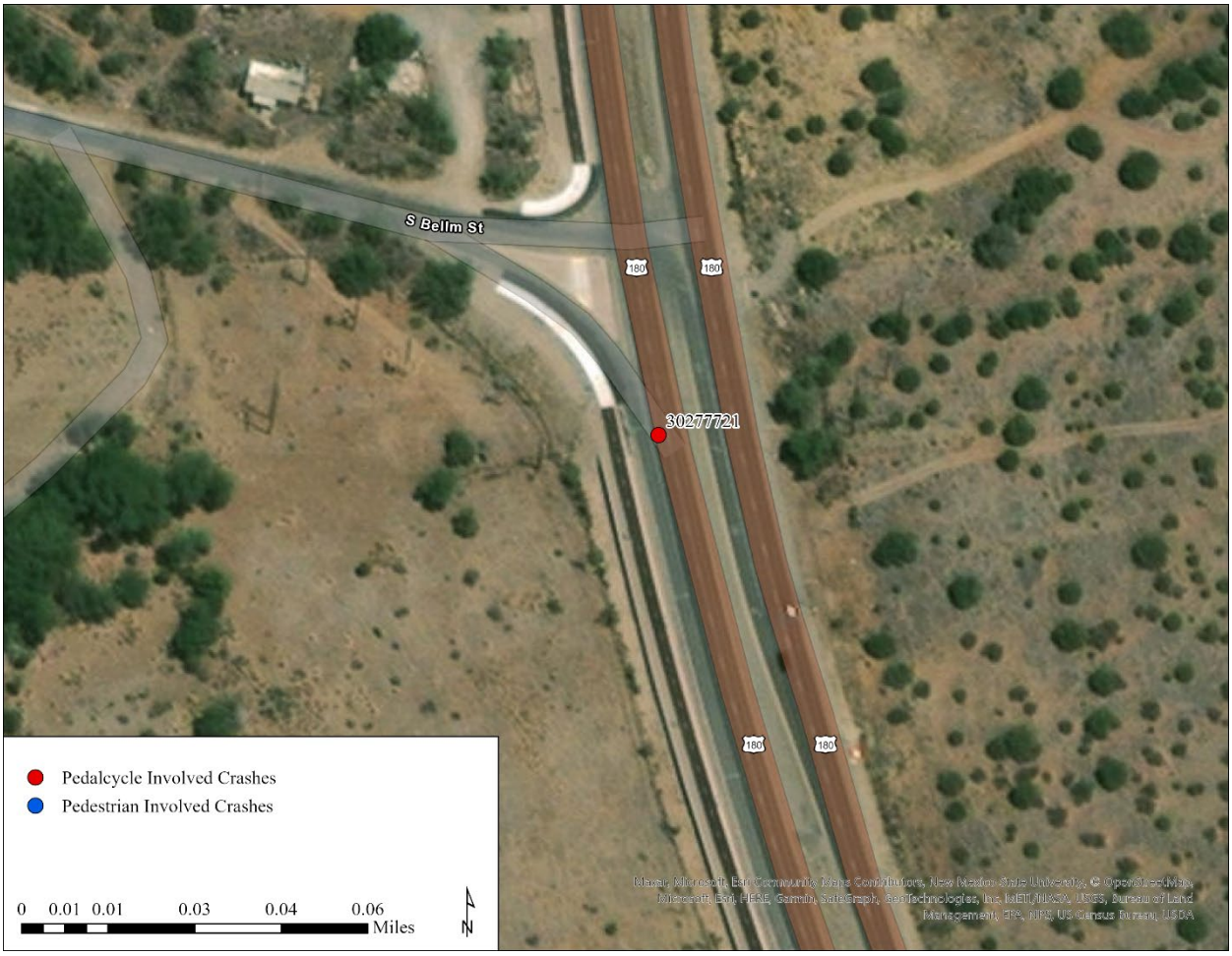


Figure 54. Crash Report Number: 30277721, Crash Involving Pedalcycle, Occurred on August 13, 2020 near U.S. 180 & Caddel Crossing

3.3 Crash Summary

On average, there was one pedestrian or bicycle injury crash observed annually along the U.S. 180 corridor. No alcohol or drug factors were reported in the identified crashes. Four crashes were reported as occurring during daylight hours. One could compare the traffic volume with that of bicycles and pedestrians and easily conclude that there are significantly more vehicles than bicycles and pedestrians moving through the corridor. However, this is not surprising considering that the infrastructure along the corridor is designed to support vehicular travel. When considering the observed number of injuries for non-vehicular road users, this raises concerns. This may indicate an overrepresentation of injury crashes for bicyclists and pedestrians along the corridor when compared with these traffic volumes. With one bicyclist or pedestrian injured annually, this indicates a need to provide improved infrastructure for these vulnerable road users to facilitate safe travel along the corridor.

4 Economic Impacts of Bicycle Tourism & Walkability

SWNMCOG and the member communities of Silver City, Arenas Valley, Santa Clara, Bayard, and Hurley, are well situated to build and support a robust ecosystem of resources that will bolster the regional outdoor recreation economy, specifically the focus area of bicycle tourism. As identified in the New Mexico Prioritized Statewide Bicycle Network Plan released in December 2018 by NMDOT, the aforementioned communities in Grant County are located on the U.S. 180, State Route 90 corridor, which was identified as a 'Tier 1' priority network area. This classification indicates that these areas have the "highest current or potential demand for bicycling" as well as potential benefits stemming from bicycle assets (New Mexico Department of Transportation, 2018). Additionally, this designation reflects scoring undertaken by NMDOT that includes considerations for demand, equity, public input, state route designation, local/regional designation, existing infrastructure, and transit access among other considerations. While this designation by the State of New Mexico is important, additional support is needed to build and support a robust ecosystem that fosters and benefits from bicycle tourism.

As an investigation of best practices and outcomes achieved by high performing states that benefit from bicycle tourism, the NADORF Team reviewed relevant and available economic impact reports produced by states ranked in the top ten of bicycle friendliness as established by the League of American Cyclists (LAB). This ranking is generated annually by assessing individual state positions on bicycle related legislation, active transportation planning, educational programming, commute rideshare, and per-capita spending on bicycle and pedestrian projects. Other assessments by third parties regarding similar friendliness measures do exist; however, it is our observation that the ratings provided by LAB are the most widely adopted, with some state departments of transportation utilizing these rankings as an indication of success for statewide bike/ped planning initiatives. The most bike friendly states, as rated in 2022 are:

1. Massachusetts
2. Oregon
3. Washington
4. California
5. Minnesota
6. Colorado
7. Virginia
8. Florida
9. Delaware
10. Utah

As of July 2022, economic impact reporting for bicycling/bicycle tourism, and to a greater extent active transportation, was still in a fledgling state. Few states appear to have collected authoritative data via surveying or interviews that would strongly inform such an economic impact report. The strongest example from our literature review would be the State of Colorado, who conducted a statewide public opinion survey regarding bicycle and walking activities during 2015, collecting over 2,255 responses. Most other states utilized smaller data samples and information provided from general tourism data. These data points were used as baseline information for input/output computations performed with commercial modeling software packages such as IMPLAN. These computations formed the basis of best available estimations of bicycling and bicycle tourism on state economies. Highlights from available economic impact reports are provided in the following sections. It is important to note that not all of the identified top ten bicycle friendly states had dedicated, bicycle-related economic impact reports available at the time of this report.

4.1 Massachusetts

As of this report, the state of Massachusetts does not have a single statewide plan that summarizes the economic impact of bicycling or bicycle tourism. During March 2021, MassDOT, the Executive Office of Energy and Environmental Affairs (EEA), and the Department of Conservation and Recreation (DCR) released a study of the impacts of shared use paths in the state, focusing on four selected trail systems (Dartnell, et al., 2021). Analyzing the Minuteman Commuter Bikeway, the Northern Strand Community Trail, the MCRT-Norwottuck Trail, and the Cape Cod Rail Trail, the following economic impacts were reported. In total these trails contributed to the support of 149 jobs, approximately $13.9 million in economic impact, and approximately $2.16 million in state and local tax receipts.

The State of Massachusetts installed four permanent bicycle and pedestrian counters on each trail to collect user data for these assets. Across the four trail networks, daily average weekend day counts observed during a one-month survey in June 2019 ranged from 735 users on the Northern Strand Community Trail to 3,023 users on the Minuteman Commuter Bikeway. The average weekday volumes ranged from 776 users on the Northern Strand Community Trail to 2,466 on the Minuteman Commuter Bikeway. In total, counts across all four trails yielded over 666,000 users during the survey period.

4.2 Oregon

In January 2021, the 'Outdoor Recreation Economic Impact Study' for the state of Oregon was released, resulting from a partnership between Travel Oregon, the Oregon Parks and Recreation Department (OPRD), the Oregon Office of Outdoor Recreation (OREC), Oregon Fish & Wildlife (ODFW) and Earth Economics (Mojica, Cousins, & Madsen, Economic Analysis of Outdoor Recreation in Oregon, 2021).

This report provides a broad summary of all outdoor recreation activities in the State of Oregon, including bicycling, and their economic impacts. Similar to many other states reviewed as part of this research effort, input/output modeling using commercially available software was employed to calculate the estimated economic impacts.

Focusing only on bicycle related impacts, details are provided on two categories of outdoor recreation - 'bicycling on roads/streets/sidewalks/paved trails' and 'bicycling on unpaved trails.' The measures of impact provided are activity days, spending per activity day, and total spending (Table 12).

- Bicycling on roads/streets/sidewalks/paved trails – 10,871,311 activity days, $119 spent per activity day, $1,291,540,000 in total spending.
- Bicycling on unpaved trails – 2,717,844 activity days, $77 spent per activity day, $209,582,000 in total spending.

Table 12: Measures of Impact.

	Activity Days	Spending Per Day	Total Expenditures
Bicycling on roads/streets/sidewalks/paved trails	10,871,311	$119	$1,291,540,000
Bicycling on unpaved trails	2,717,844	$77	$209,582,000

4.3 Washington

During August 2020, Washington produced an update to an earlier 2015 economic analysis of outdoor recreation in the state (Mojica & Fletcher, Economic Analysis of Outdoor Recreation in Washington State: 2020 Update, 2020). The update was a partnership between the Washington State Recreation and

Conservation Office, the Washington State Department of Natural Resources, Recreational Equipment Inc. (REI), and Earth Economics.

Produced by the same partner as the Oregon report, the information and data are structured similarly, providing high level summaries of all outdoor recreation activities in the state of Washington. Economic impacts are provided in a variety of categories including by activity, including a more robust collection of seven bicycling activities. The individual categories include 'bicycling on paved or gravel trail,' 'bicycling on roads or streets,' 'BMX or pump track,' 'electric bicycling,' 'fat tire on snow,' 'mountain biking on paved or gravel trail,' and 'mountain biking on natural or dirt trail.' The measures of impact offered for these activities are activity days, spending per activity day, and total spending (Table 13).

Table 13: Measures of Impact.

	Participant Days	Number of Participants	Total Expenditures
Bicycling on paved or gravel trails	24,796,115	1,127,096	$733,965,013
Bicycling on roads or streets	43,007,616	1,483,021	$1,273,025,441
BMX or pump track	1,127,096	59,321	$33,362,046
Electric bicycling	1,067,775	59,321	$31,606,149
Fat tire on snow	207,623	29,660	$6,145,640
Mountain biking on paved or gravel trail	9,965,903	474,567	$479,306,886
Mountain biking on natural or dirt trail	7,474,427	415,246	$359,480,164

Across these categories for the report period, Washington experienced over 87 million participant days, more than 3.6 million participants, and total expenditures of $2.9 billion related to bicycling activities and bicycle tourism.

4.4 California

A single comprehensive statewide report detailing the economic impact of bicycling, bicycle tourism, or outdoor recreation in general was not identified. Several sub-state regional reports were identified but omitted from this survey of statewide impacts. Some limited information from the Bureau of Economic Analysis was provided for 2020 as part of the Outdoor Recreation Satellite Account (ORSA) (Bureau of Economic Analysis, U.S. Department of Commerce, 2020). This report detailed that bicycling in 2020 contributed an estimated $420,552,000 in value added contributions to the state economy, which was the largest value add contribution observed in the nation.

A specific bicycle tourism report was produced by CalBike (the California Bicycle Coalition) in partnership with the Tuolumne County Transportation Commission in 2021 focused on the disadvantaged rural regions of the state, specifically the counties of Alpine, Calaveras, San Joaquin and Stanislaus. Uniquely,

this report focuses on opportunities for these localities to support investments that would capitalize on three separate opportunities: leisure riding, non-competitive bicycle events, and competitive bicycle events.

4.5 Minnesota

As in many other states, the report 'Assessing the Economic Impact and Health Effects of Bicycling in Minnesota' released in December 2016 was the first comprehensive effort at trying to summarize this issue in a statewide manner (Qian, et al., 2016). This report was the result of a partnership between the Minnesota Department of Transportation, the University of Minnesota, and the University of Minnesota Extension. In keeping with other identified states, input/output modeling using commercially available software was a key tool in developing these findings. Limited interviewing and surveying of bicycle-related businesses, event attendees, and other stakeholders was also undertaken as part of the study effort.

Impacts from bicycling were separated into three categories: retail sales, wholesalers and manufacturers, and advocacy groups (Table 14).

Table 14: Total Direct Effects.

	Output	Employment	Labor Income
Retail Sales	$95,900,000	1,827	$34,300,000
Wholesalers and Manufacturers	$383,100,000	1,738	$66,300,000
Advocacy Groups	$7,000,000	85	$4,500,000
Total	$486,000,000	3,650	$105,100,000

When including indirect and induced impacts calculated through software modeling, the totals increase to $779.9 million in economic output, 5,519 jobs impacted, and $208.8 million in labor income.

4.6 Colorado

The 'Economic and Health Benefits of Bicycling and Walking' was released by the State of Colorado on October 6, 2016, (BBC Research & Consulting, 2016). This project was a partnership between the Colorado Department of Transportation (CDOT), the Colorado Office of Economic Development and International Trade (OEDIT), the Colorado Department of Public Health & Environment (CDPHE), and BBC Research & Consulting.

As stated in the introduction of this report, Colorado has significantly stronger health outcomes among citizens compared to the nation at large, due in large part to historically robust access to recreational facilities and significant past public investment to develop and support those assets. Health benefits to citizens are the primary motivation for the identified study efforts, not economic development or tourism. For each measure of analysis offered in the report, a monetary value reflecting health benefits

was offered. A significant statewide survey was conducted to gather information for this study. Over 2,200 residents responded to the survey. This level of survey response was by far the highest level of survey response interaction observed from the documents evaluated as part of this report.

It was estimated that bicycling economic impacts (excluding economic health impacts) totaled $1.1 billion for the state of Colorado. The total includes $448 million from bicycling tourism, $434 million in household spending, and $185 million from related retail and manufacturing. Of note, the indicated $434 million highlighted in the tourism category includes an estimated $318 million from general out of state visitation. Further, $130 million is attributed to the US Pro Challenge, a major multi-day road cycling event traditionally that concludes in Denver.

4.7 Virginia

Similar to California, no single statewide report on outdoor recreation (that includes breakdowns for impacts of bicycling) or bicycle-specific impact report could be identified at the time of this report. Several local and regional reports do exist, including information for the central Shenandoah Valley, Hampton Roads, and the Capital Trails Network.

Some limited information from the Bureau of Economic Analysis was provided for 2020 as part of the Outdoor Recreation Satellite Account (ORSA) (Bureau of Economic Analysis: U.S. Department of Commerce, 2020). This report detailed that bicycling in 2020 contributed an estimated $35,834,000 in value added contributions to the state economy.

4.8 Florida

The State of Florida Department of Environmental Protection partnered with the Balmoral Group to produce the 'Economic Impact of Outdoor Recreation Activities in Florida' in August 2017. This report provides statewide economic impacts of outdoor recreation across 35 specific categories, including limited information on bicycling related activities. According to the report, 'Bicycle Riding on Paved Roads/Trails' was the third highest category of recreational spending by residents, estimated at $2.3 billion of financial impact. No information on visitor spending was readily available in this report. Bicycle riding on paved roads/trails was the 10th most reported activity according to visitor survey responses, with bicycle riding on unpaved roads and trails being 26th.

A State of Florida Department of Environmental Protection data infographic released in 2018 indicates that 'bicycle riding on paved roads and trails brings in more than $6 billion in Florida annually' (Outdoor Industries Association, 2017).

4.9 Delaware

No single statewide report on outdoor recreation (that includes breakdowns for impacts of bicycling) or bicycle-specific impact report could be identified at the time of this report. Reports concerning advocacy for completing various trail network projects across the state, including the East Coast Greenway, were identified as part of this research, but did not provide specific state level bicycle tourism impacts or information.

Some limited information from the Bureau of Economic Analysis was provided for 2020 as part of the Outdoor Recreation Satellite Account (ORSA) (Bureau of Economic Analysis, U.S. Department of Commerce, 2020). This report detailed that bicycling in 2020 contributed an estimated $4,875,000 in value added contributions to the state economy.

4.10 Utah

In March 2017, the Utah Transit Authority, along with eleven collaborating agencies, released a study entitled "Economic Impacts of Active Transportation – Utah Active Transportation Benefits Study" (Urban Design 4 Health, Inc., Fehr and Peers, and HDR Engineering, Inc., 2017). In the introduction to the study, while acknowledging the success Utah has had in regularly being recognized as a bike friendly state and benefitting from physical assets that bolster this ranking, the authors state that "little has been done to quantify and monetize the benefits that result from active transportation facilities and active travel."

As found in other state reports identified here, the use of input/output modeling software was heavily utilized to create the data estimates offered in the report. Three specific sectors as provided in IMPLAN modeling software were selected for analysis: 404 – Sporting goods, hobby, musical instrument and bookstores; 365 – Motorcycle, bicycle, and parts manufacturing; 496 – Other entertainment (including Tours). The direct sales and spending output from the selected cycling related industries were estimated as resulting in $132 million in output, support for 805 jobs, and producing $26.8 million in income. When considering indirect and induced impacts, these totals grow to $303.9 million in output, 1,974 jobs, and $77.2 million in income in 2015.

Utah was one of few states that did produce specific statewide bicycle/cycling tourism impacts. It was estimated that bicycle tourism activities generated $61 million in direct sales and spending, supported 1,076 jobs, and produced $28.77 million in income. Induced and indirect impacts raise these totals to $121.9 million in total output, 1,499 jobs supported, and $46.7 million in income produced.

4.11 Summary of Economic Impacts of Bicycle Tourism and Walkability

New Mexico is nationally recognized as a state with a strong outdoor recreation economy. Identifying opportunities and resources for future investment by stakeholders into bicycle assets and tourism in the Grant County region could yield significant benefits. Coupled with increased data collection efforts to ascertain the current state of outdoor recreation, tourism, and cycling in the region, these efforts could lead to opportunities to attract significant resources. As outlined in this section, states that have made conscious and sustained investments of time and effort into growing a bicycle tourism economy have experienced statewide economic benefits.

5 Planning for U.S. 180 Pathway Extension

As a key deliverable of the technical assistance effort provided to SWNMCOG, the research team has prioritized in this report all available information to help determine the conditions surrounding the potential to extend the existing Copper Trail multi-use path along U.S. 180 near the Village of Santa Clara west to Silver City and south to Hurley. Completed in late 2020, the current bike/pedestrian pathway extends from the intersection of U.S. 180 and Oak Street in the Village of Santa Clara south approximately one mile to the Bayard City limits on U.S. 180 (shown in red in Figure 55). The pathway was the recommended outcome of a road safety audit (RSA) supported by the Village of Santa Clara. The total project construction costs were approximately $3 million and was funded through New Mexico Highway Safety Improvement Program (HSIP) funds.

This research effort was also working in parallel and in support of on-going work initiated by Southwest New Mexico ACT (swnmACT) and other local stakeholders around the 'Five Points Initiative' (American Institute of Architects' Communities by Design, 2021). This initiative is focused on revitalizing the five communities along the U.S. 180 corridor (Silver City, Arenas Valley, Santa Clara, Bayard, Hurley), starting with redeveloping a culturally significant historic property in each community (Figure 55). These redeveloped properties will serve as key drivers of community and economic development activities within these communities in the future. The five points' historic properties will be highlighted in the various figures and maps generated as part of this effort (Figure 56). This is to illustrate how enhanced bike and pedestrian facilities along the U.S. 180 corridor could further catalyze the 'Five Points Initiative.'

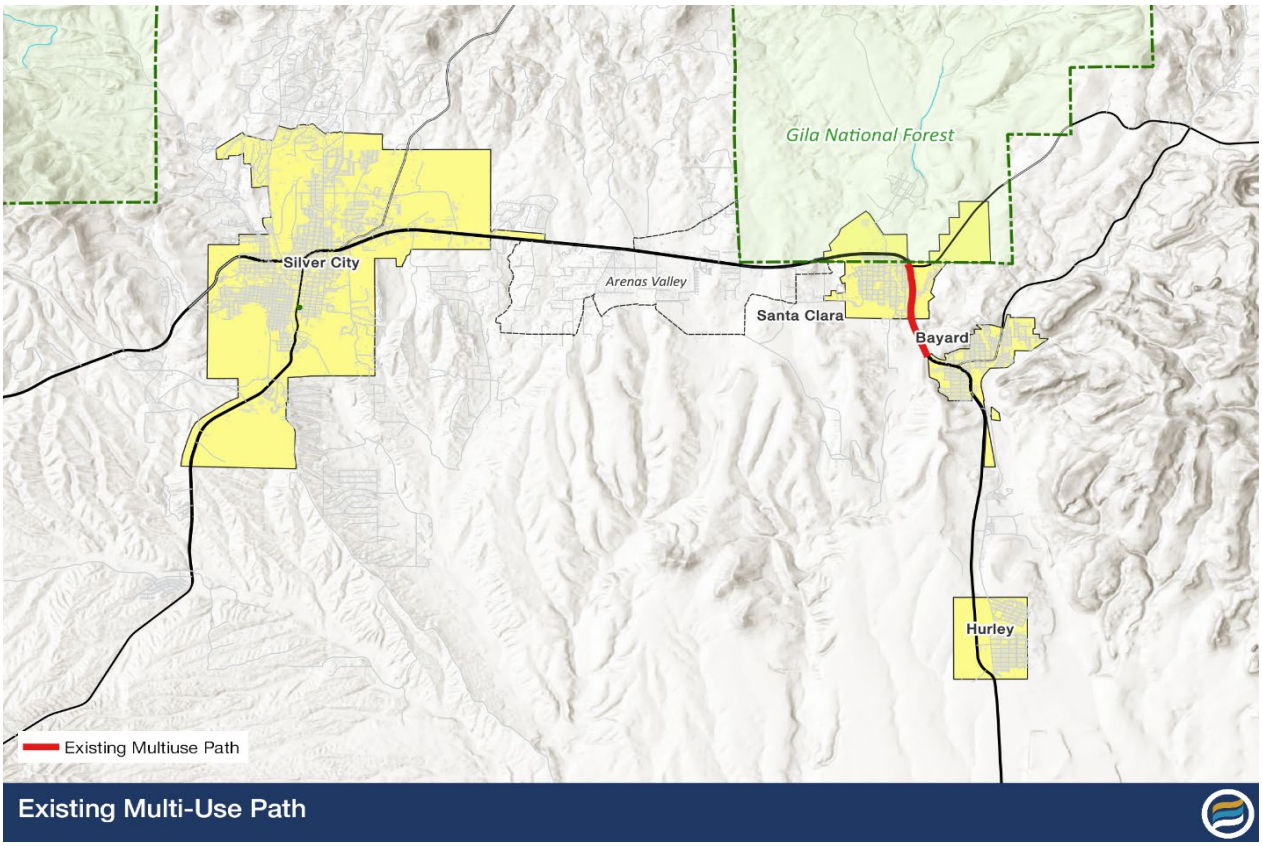


Figure 55. Existing Multi-Use Path

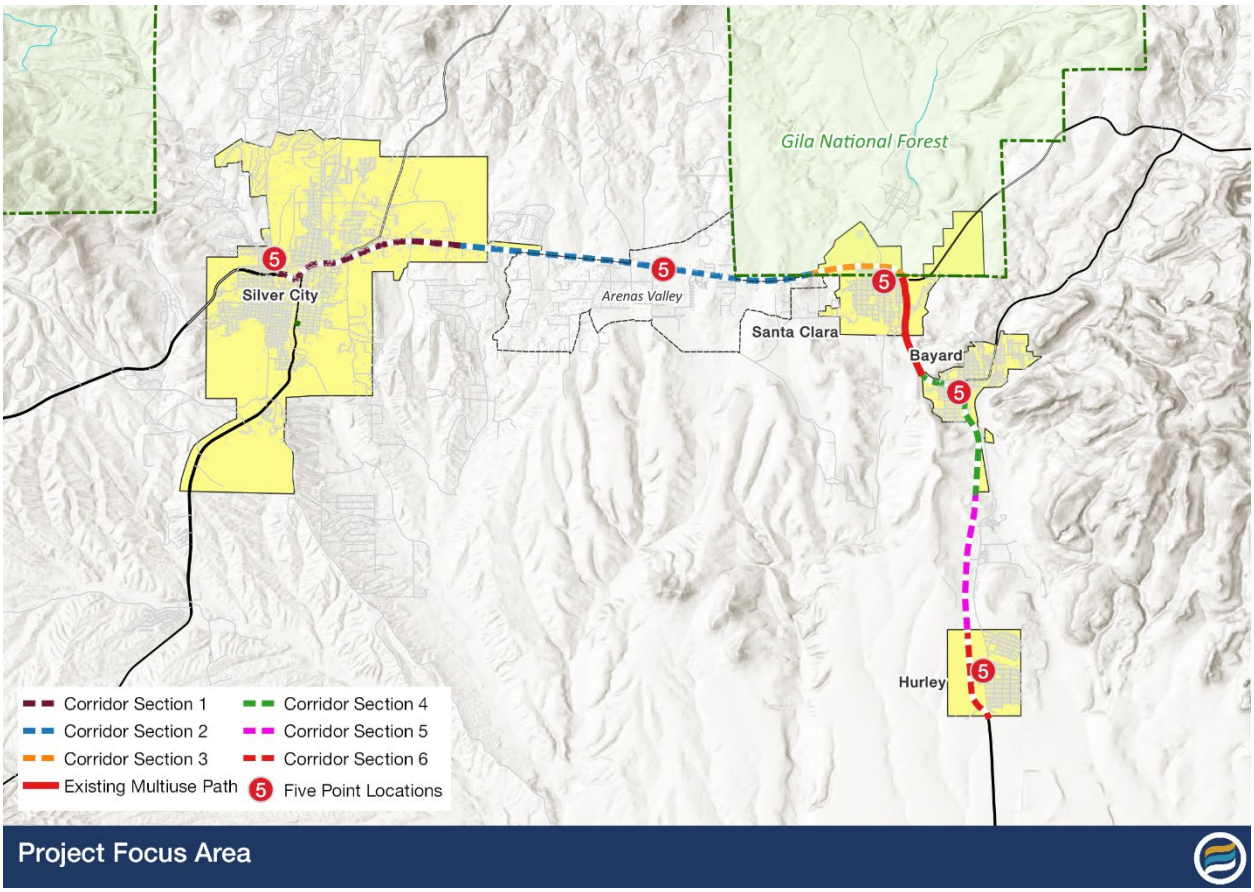


Figure 56. Project Focus Area

5.1 Project Purpose and Need

This project is needed to provide safe passage for bicyclists and pedestrians along the U.S. 180 corridor between Silver City and Hurley, as existing facilities are insufficient to support current and future needs. The only existing bike and pedestrian facilities available along this corridor are found between Little Walnut Road and the 32nd Street Bypass in Silver City, and along the 2.5-mile Copper Trail shared use pathway found between Santa Clara and Bayard.

The lack of bike and pedestrian infrastructure in these areas forces users to travel along road shoulder areas, as was witnessed by the research team during a site visit in September 2022 (see Figure 45). While a select few may prefer to travel along the roadway, most bicyclist and pedestrians prefer separation between them and fast traveling vehicles (which can be oversized). Multiple individuals were observed walking or riding along the road shoulder in close proximity to vehicle travel lanes. This exposes vulnerable road users to serious safety risks when traveling in this portion of the U.S. 180 corridor.

5.2 Project Scope

In total, the U.S. 180 corridor of interest spans from Little Walnut Road in Silver City east to the area near the end of Diaz Avenue in Hurley, just north of milepost 128. The corridor length is approximately 13.25 miles. The 32nd Street Bypass (where corridor sections 1 and 2 meet) is where the research team observed that significant bike and pedestrian infrastructure in the Silver City area begins and continues

to the section end at Little Walnut Road. There are no significant bicycle or pedestrian facilities except for the aforementioned pathway near the Village of Santa Clara on corridor sections 2 through 6.

To provide for more detailed analysis in subsequent sections, the entirety of the corridor has been segmented into six distinct pathway sections. The sections and their logical termini are illustrated in Figure 56 and outlined in Table 15.

Table 15: Corridor Description and Length.

Corridor Section	Description	Length
1	Little Walnut Road (Silver City) to 32nd Street Bypass	2.3 miles
2	32nd Street Bypass (Silver City) to Santa Clara Corporate Limit	4.3 miles
3	Santa Clara Corporate Limits to U.S. 180/Maple Street Intersection	1.25 miles
4	End of Copper Trail Near Bayard Corporate Limits to Southern Bayard Corporate Limits	2.1 miles
5	Southern Bayard Corporate Limits to Hurley Northern Corporate Limits	2 miles
6	Northern Hurley Corporate Limits to Southern Hurley Corporate Limits	1.3 miles

Corridor sections 1-6, in addition to the U.S. 180 segment where the Copper Trail already exists as a paved multiuse path, represent a logical complete scope for a corridor containing bicycle and pedestrian facilities. The communities are connected by shared travel patterns along the U.S. 180 corridor to accommodate travel to work, school, essential services, social connections, and recreation.

This analysis identifies sections within the overall project area that may be appropriate for phasing of implementation. The termini for these sections were delineated primarily on the basis of political jurisdictions. At the city corporate limits, the character of the land use surrounding the highway corridor tends to shift, with more densely located residences, businesses, and community institutions such as schools that may serve as origins or destinations for bicycle and pedestrian trips.

While Corridor Section 1 would appear to have more infrastructure that would support the movement of bicyclists and pedestrians (e.g., bicycle lanes, sidewalks), bicyclists in this corridor were often observed riding on the sidewalk (Figure 57), suggesting a discomfort in riding with the large vehicles and high volumes of traffic.

Figure 57. Bicyclist Riding on Sidewalk

Furthermore, there are infrequent crossings. In fact, in several cases, pedestrians in the corridor were observed crossing at locations without crossing facilities (see Figure 48). The crossing lengths are also long because of the medians and right and left turn lanes. Therefore, there is much opportunity to improve the pedestrian and bicyclist infrastructure, even in this section.

Sections 2 through 6 (which do not include the existing multi-use pathway) have essentially no infrastructure to support walking and bicycling. Therefore, the need is especially great for improvements at these locations.

5.2.1 Project Area Description/Existing Conditions

The U.S. 180 corridor of focus is under the ownership and jurisdiction of NMDOT. The adjacent communities of Silver City, Arenas Valley, Santa Clara, Bayard, and Hurley have no authority over the locations discussed in this report. Regardless, their input, feedback, and cooperation will be critical in identifying and moving forward any project concepts that may develop as a result of these conversations. The general characteristics of the study area are highlighted below.

5.2.1.1 General

The corridor area consists of a four-lane divided highway with limited two-lane segments (Figure 58). The four-lane divided portion of the corridor originates outside the focus area near Western Hills Road in western Silver City and continues to the western end of Corridor Section 1 and continues east through an area between Lusk and Guinevan Street, near Snell Middle School, in Bayard. From this point south the remainder of the corridor is two-lane. Traffic volumes provided by the NMDOT for Sections 1 and 2 were observed to be in some cases more than four times greater than Sections 3 through 6. Traffic volumes will be discussed in greater detail in later sections. (Note: Lane information was gathered from OpenStreetMap.)

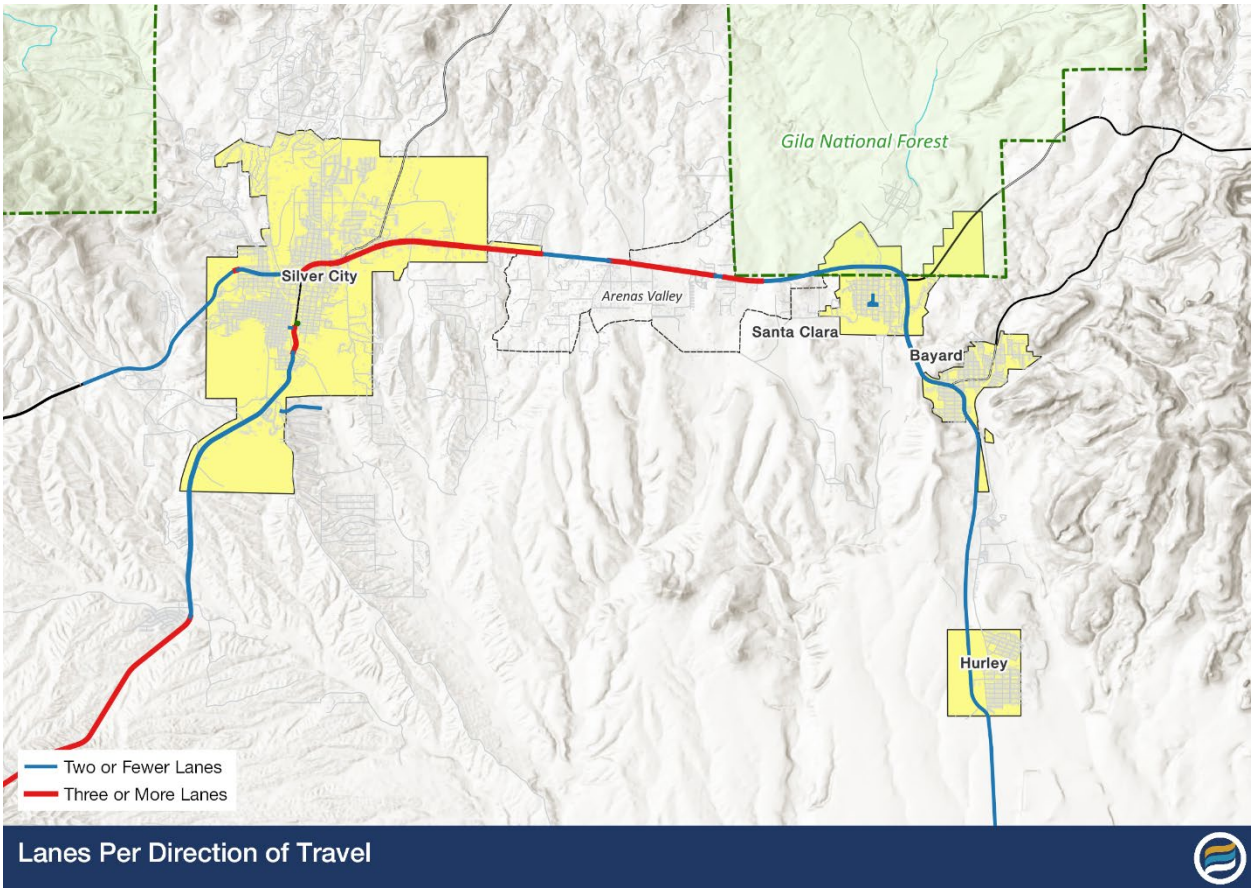


Figure 58. Lanes Per Direction of Travel

5.2.1.2 Speed Limits, Geometry, Grade

Roadway characteristics such as speed limit and roadway geometry are important to managing safety, particularly when considering the movement of vulnerable road users such as bicyclists and pedestrians. The speed limit across the corridor varies from 45 to 55 miles per hour (Figure 59). The corridor sections contain horizontal curves and vertical grades generally less than 3% in either direction. Figure 60 through Figure 66, included below, show general profile conditions along the corridor area.

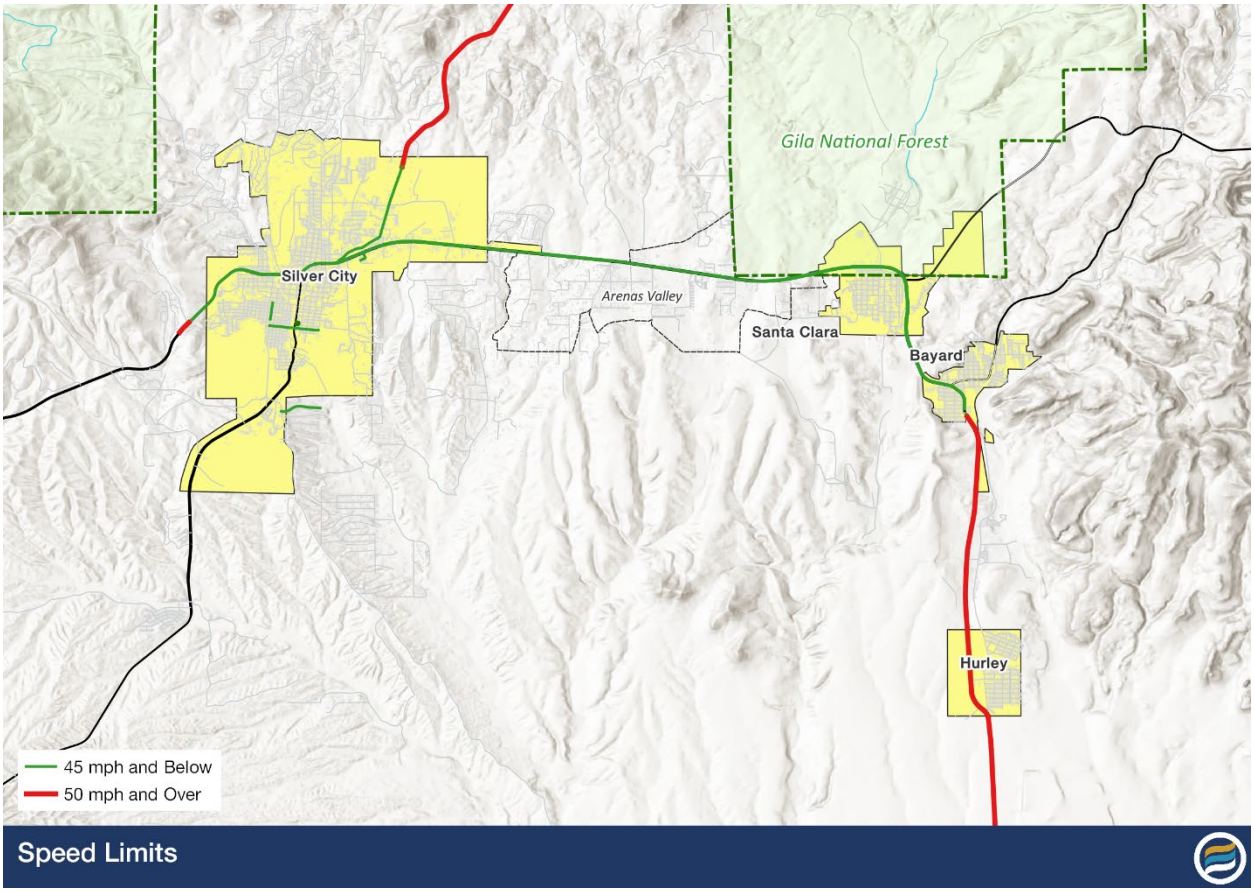


Figure 59. Speed Limits (Google, n.d.)

Figure 60. U.S. 180 East at Casa Loma Road – Corridor Section 1 (Google, n.d.)

Figure 61. U.S. 180 East at Arenas Valley Road – Corridor Section 2 (Google, n.d.)

Figure 62. U.S. 180 East Near Santa Clara Municipal Boundary – Corridor Section 3 (Google, n.d.)

Figure 63. U.S. 180 East South of Santa Clara. Copper Trail Multi-Use Path Visible at Right. (Google, n.d.)

Figure 64. U.S. 180 East at Bayard Municipal Limit – Corridor Section 4 (Google, n.d.)

Figure 65. U.S. 180 East at Bayard Cemetery – Corridor Section 4 (Google, n.d.)

Figure 66. U.S. 180 East at Overpass Near Hurley Corporate Limits – Corridor Section 5 (Google, n.d.)

5.2.1.3 Roadway Traffic Volumes

The research team identified six traffic counting locations along the project corridor (Figure 67). Traffic volume data from these stations for the period of 2017 to 2021 is provided in Table 16. All traffic volume data referenced here was gathered from the New Mexico DOT Midwestern Software Solutions (MS2) website (New Mexico Department of Transportation, n.d.). The traffic stations illustrated in Figure 67 are labeled with their 'Location ID' attribute as indicated on the MS2 website.

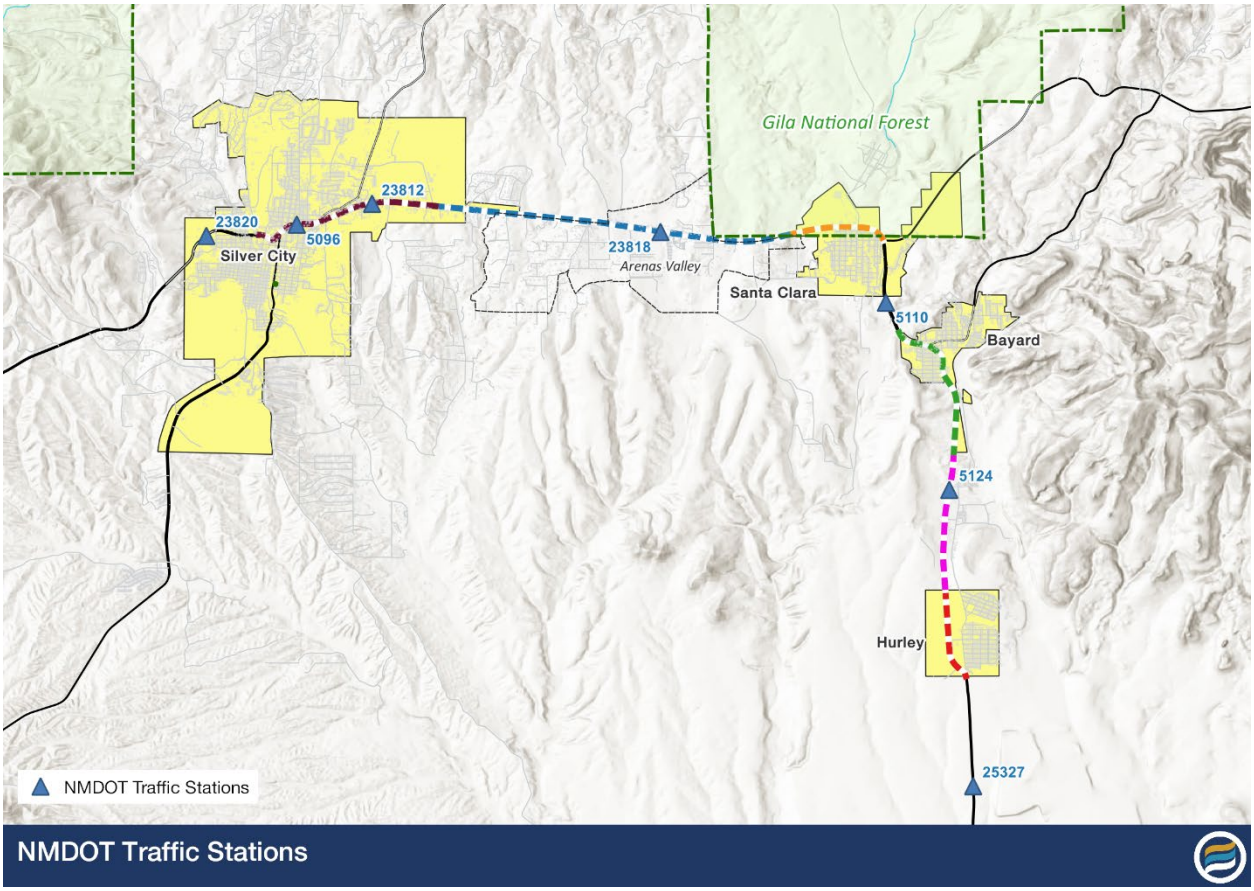


Figure 67. NMDOT Traffic Stations

Traffic volumes reported by NMDOT from these stations along U.S. 180 are detailed in Table 16 and Table 17. Note that stations are listed moving from west to east along the corridor.

Table 16: 2017-2021 Traffic Volumes.

Location	Name	2017	2018	2019	2020	2021
23820	W. U.S. Highway 180	3,235	3,280	3,303	2,699	2,823
5096	Silver Heights Blvd.	25,732	26,092	26,275	21,467	20,587
23812	E. U.S. Highway 180	3,140	3,184	3,206	2,619	21,258
23818	U.S. Highway 180	14,024	14,220	14,320	11,699	11,278
5110	U.S. Highway 180	9,351	9,164	7,927	9,005	6,887
5124	U.S. Highway 180	6,607	6,699	6,565	5,679	6,057
25327	U.S. Highway 180	2,991	3,033	2,972	2,571	2,963

Table 17: Change in 2017-2021 Traffic Volumes.

Location	Name	Number	Percent
23820	W. U.S. Highway 180	-412	-13%
5096	Silver Heights Blvd.	-5,415	-20%
23812	E. U.S. Highway 180	18,118	577%
23818	U.S. Highway 180	-2,746	-20%
5110	U.S. Highway 180	-2,464	-26%
5124	U.S. Highway 180	-550	-8%
25327	U.S. Highway 180	-28	-1%

With the exception of Station 23812, located near Hummingbird Lane on U.S. 180 east, traffic volumes have been trending down, on average 17.4%, across the corridor since 2017 (Table 17). Local planning staff at SWNMCOG were consulted regarding the 577% increase in traffic at station 23812 between 2017 and 2021. They were not aware of a specific reason for the increase; however, this location is near many businesses. It could be that the station is capturing more commerce as a result of the efforts of agencies and advocates in improving the economic outlook of the region. Another possible explanation is that depending upon the exact location of the counter, it could be erroneously counting vehicles if there are any new access and egress points. Aerial images of the general location from 2016 and 2022 are included below for comparison (Figure 68 and Figure 69). In particular, note the new building with the red roof whose access and egress are just west of the counter location.

Figure 68. 2016 NAIP Aerial Image

Figure 69. 2022 NAIP Aerial Image

5.2.1.4 Roadway Conflicts

There are approximately 117 points of ingress/egress along the route as identified through a desktop GIS review of road centerline data and aerial photography in locations where features intersect (Figure 70). The analysis found limited access control present outside of intersections. Fifty-seven of these observed conflicts are found at intersections. Roadway access conflicts have been identified by the Federal Highway Administration as an item of concern, as exemplified in policy briefing sheets including one entitled 'Making Local and Rural Roads Safer for Pedestrians and Bicycles" (Federal Highway Administration, U.S. Department of Transportation, 2014). This document offers brief commentary on safety concepts including intersection offsets, driveway locations, number of driveways, and sight distance as items local stakeholders can consider to reduce the potential for crashes involving bicyclists and pedestrians.

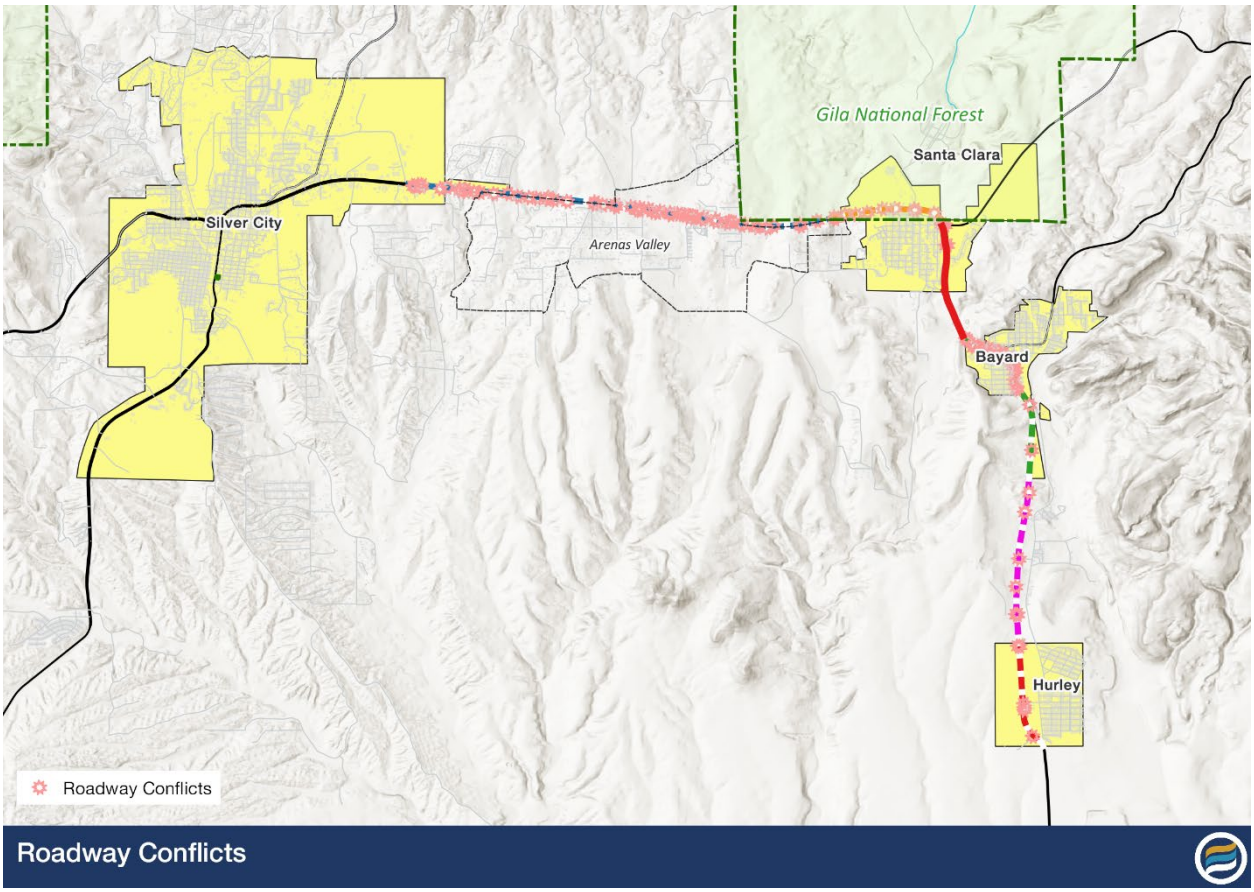


Figure 70. Roadway Conflicts

As future projects that may provide additional bicycle or pedestrian facilities in these areas are considered, potential interactions between facility users and motor vehicles should be a top consideration.

When considering pedestrian safety improvement strategies and reducing potential conflicts that may be taking place in relation to locations found on Corridor Section 1 (32nd St. Bypass to Little Walnut Road), research completed by the National Institute for Transportation and Communities may be of assistance. A 2018 report entitled 'Addressing Bicycle-Vehicle Conflicts with Alternate Signal Control Strategies' (Kothuri, et al., 2018) provides case study examples of crash typologies that can be addressed through approaches including signal timing and phasing strategies.

5.2.1.5 Bike/Pedestrian Facilities

Pedestrian and other supporting infrastructure (e.g., crosswalks parallel to the roadway, bike lane markings, signage) are generally non-existent. These deficits accompany large observed crossing distances between the north and south sides of U.S. 180 at all points of Corridor Sections 2 through 6 (areas east of Silver City). There were no observed pedestrian crossings of U.S. 180 outside of municipal areas.

Shoulders were mostly found to be four feet wide or greater along the corridor, with small sections ranging between two and four feet. Rumble strips were observed in centerline median areas of the four-

lane segments. Shoulder areas were not observed to have rumble strips. Rumble strips in shoulder areas can often conflict with bicycle travel, if not designed to accommodate cycling.

Corridor Section 1 (32nd Street Bypass to Little Walnut Road) does have bicycle and pedestrian infrastructure including bike lanes, sidewalks, and crosswalks at signalized intersections. However, the sidewalks generally have no buffer between them and high-volume vehicle traffic, thereby limiting the comfort and consequently the number of people willing to use these facilities. Crosswalks were not observed at each intersection leg, prioritizing instead turning for motorized vehicles. Some of these turning legs were long, thereby exposing pedestrians and bicyclists crossing at these locations to motor vehicle traffic for extended durations. Note the image below near 411 Silver Heights Boulevard in Silver City. The bike lanes are not well marked, and a portion of the bike lane as identified includes the gutter for drainage (Figure 71); bicycle lane design no longer recommends the inclusion of gutters. Furthermore, the pavement in the area is badly deteriorated, which can more significantly impact bicyclists, whose tires are smaller than motor vehicles.

Figure 71. Cross-Section of U.S. 180 with Bicycle Lane

5.2.1.6 Right-of-Way

Right-of-way (ROW) considerations along the U.S. 180 corridor will be central to the discussion of any additional bicycle or pedestrian infrastructure improvements in the future. In this section the research team will offer information and perspectives on the general state of ROW in the focus area, and how ROW conditions may impact future project development.

As observed in tax parcel GIS data obtained from the Grant County Assessor's Office, publicly owned ROW areas exist in areas adjacent to the roadway along the entire length of the corridor. The ROW along the corridor is approximately 250 feet wide, which is typically 100 to 120 feet beyond the lanes of

vehicle travel. It is also important to understand that observations provided are based only on available GIS information and not survey grade measurements or other data that would be suitable for construction activities. No additional ROW information was able to be obtained by the research team for the purposes of this project.

Figure 72 illustrates generalized ROW areas along Corridor Section 2. Corridor Section 2 is utilized here as an example. Sections 3 through 6 have similar ROW profiles as Section 2.

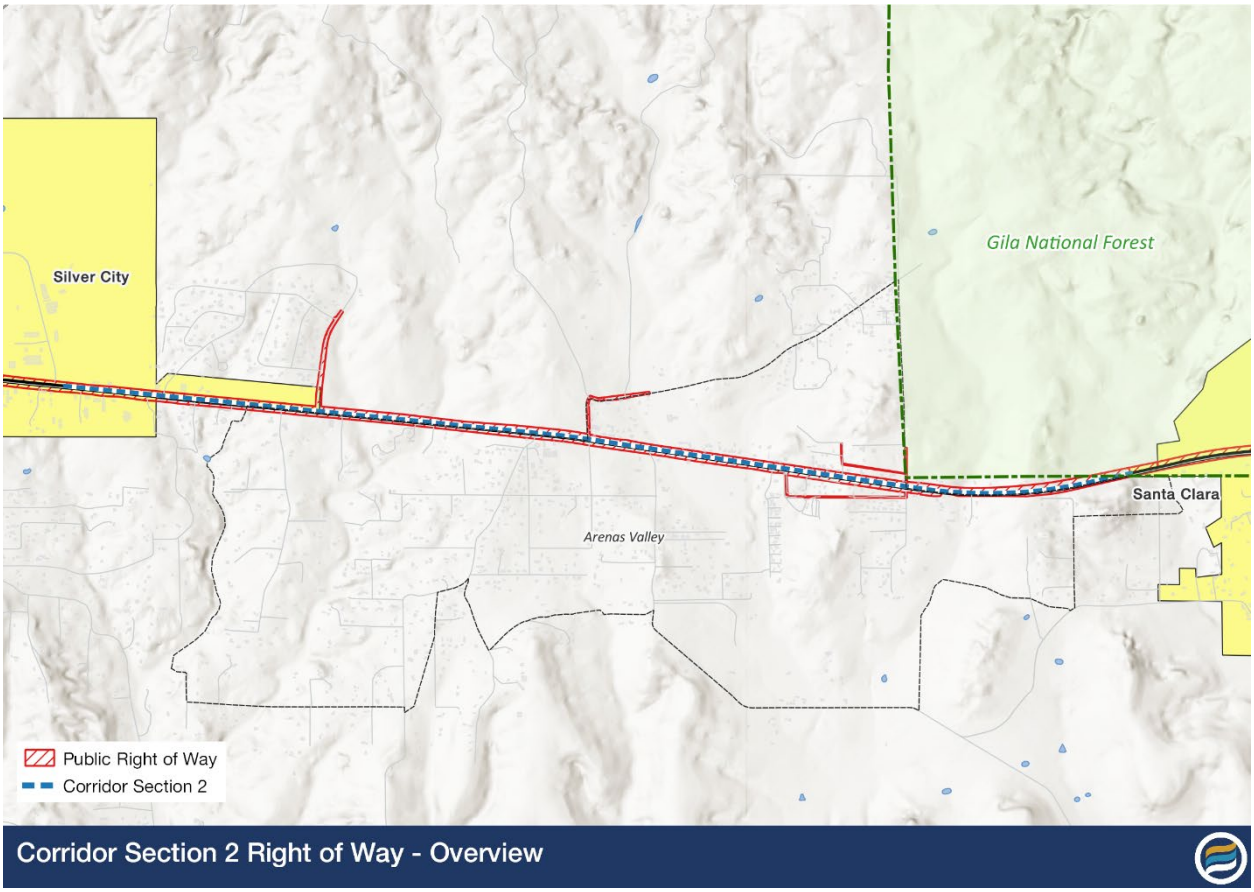


Figure 72. Section 2 ROW Overview

Figure 73 illustrates the ROW area immediately surrounding the Whiskey Creek Zocalo which is found along Corridor Section 2 and is one of the Five Points Initiative properties. The approximate distance of the ROW area from in front of the Whiskey Creek Zocalo to the ROW boundary on the northern side of U.S. 180 is approximately 250 feet. The distance from the same area in front of the Whiskey Creek Zocalo to the eastbound travel lane of U.S. 180 is approximately 106 feet. The distance to the westbound travel lane is approximately 150 feet.

Figure 73. Section 2 ROW Detail

Figure 74 illustrates the multi-use path as it exists between Oak Street and Manhattan Park Drive in the Village of Santa Clara. The path is clearly visible on the west side of U.S. 180 and is located completely within State of New Mexico ROW areas.

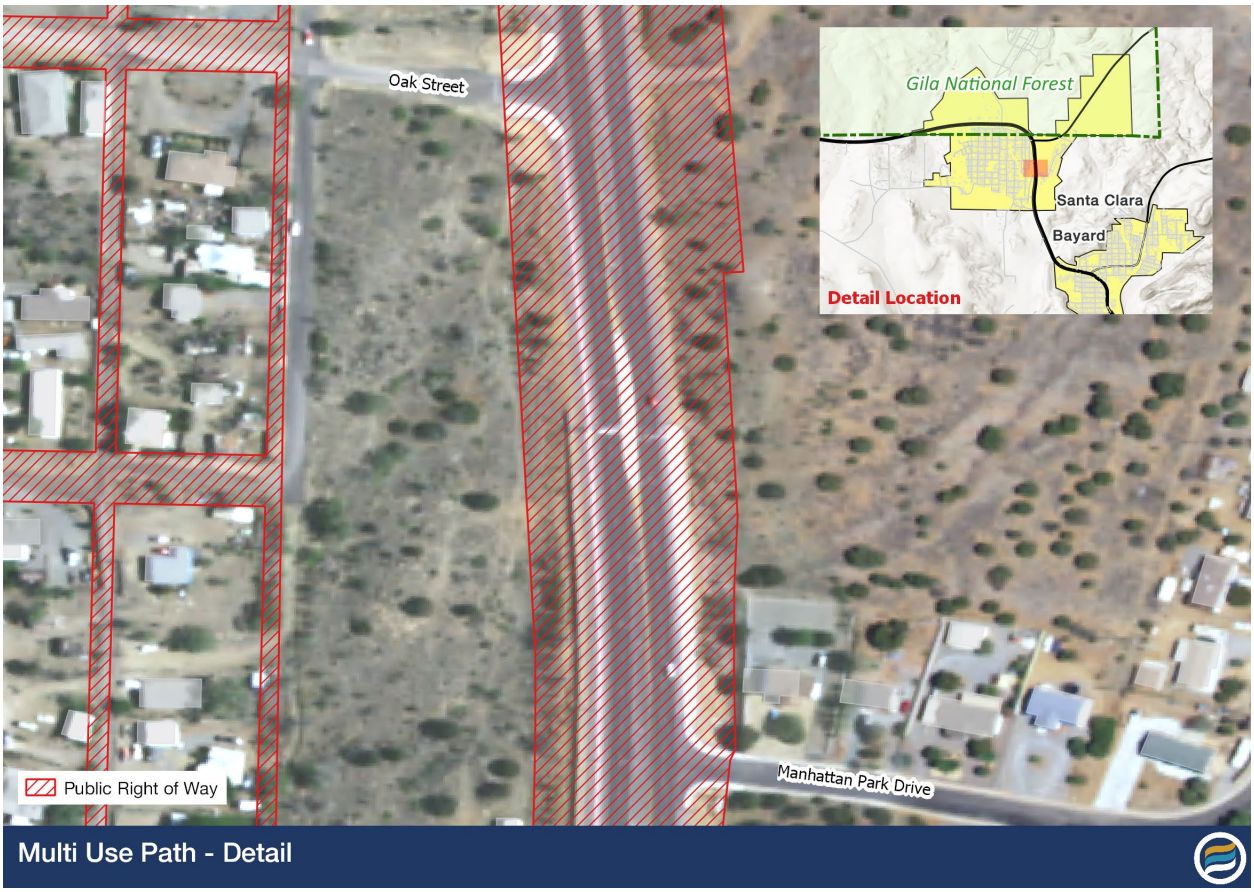


Figure 74. Multi-Use Path Detail

In order to better understand the space needs that additional future multi-use path facilities in the project focus area may require, the research team identified two external resources that may assist in the preliminary project development process.

FHWA has created a 'Shared-Use Path Level of Service Calculator' (Patten, Schneider, Toole, Hummer, & Rouphail, 2006) to help entities understand the level of service (LOS) that exists on existing multi-use path segments. LOS scoring is frequently used in transportation planning to express the conditions of delay related to automobile traffic. This tool allows practitioners to utilize the same concept of analysis to understand non-motorized conditions on multi-use facilities. This LOS score is based on observations including multi-use width, presence of a centerline, one-way volume per hour, and mode splits. An LOS analysis utilizing this tool on existing segments of the Copper Trail could be useful in understanding if the physical design of the multi-use trail in its current state would be sufficient to replicate for future segments and the anticipated demand. Future design scenarios could be scaled up or down based on the results of such an analysis.

As local stakeholders better understand the ROW availability for potential future projects, the "Small Town and Rural Design Guide: Facilities for Biking and Walking" (Alta Planning + Design, n.d.) offers recommendations for design specifications of physically separated multi-use paths. Table 18 offers the following recommendations based on observed or expected user volume.

Table 18: Recommended Pathway Widths and User Mix.

Volume	Mix	Recommended Minimum Width
Low Volume – Less than 50 users in one direction per hour	Low Mix – 75% bicyclists, 25% pedestrians	8-10 feet
Low Volume – Less than 50 users in one direction per hour	Heavy Mix – 50% bicyclists, 50% pedestrians	12 feet
High Volume – More than 150 users in one direction per hour	Low Mix – 75% bicyclists, 25% pedestrians	12-14 feet

Generally, the guide recommends a minimum path width of 10 feet to accommodate mixed mode, two-way travel in a low volume area (less than 50 users per direction per hour). Shoulder widths of two feet on either side of the path are also recommended for safe horizontal clearance. In total, a minimum width of fourteen feet should be utilized in conceptualizing any future multi-use path segments along the corridor.

Based on these recommendations and the general observation of ROW availability in non-municipal areas along the project focus area, it would appear that sufficient ROW is available to support such a project without additional property acquisition. Locations within municipal areas would require further analysis due to the existence of signage, utility infrastructure (above and below ground), and other obstacles that may be found in available ROW.

5.2.1.7 Proximity to Transit Locations

Transit bus services operate in the vicinity of the project focus area and the adjacent communities. The Corre Caminos transit service operates the Copper Route in this area, providing service from Silver City to Hurley. This route operates Monday through Friday with no weekend service. Hours of service operation are 8 a.m. to 4 p.m. Corre Caminos also operates a Silver Route that provides service to locations within Silver City but does not travel to points beyond. Transit stop locations for both the Copper and Silver Routes are illustrated in Figure 75. More information on available transit services in the general Grant County can be found on their website at https://correcaminosnm.com/.

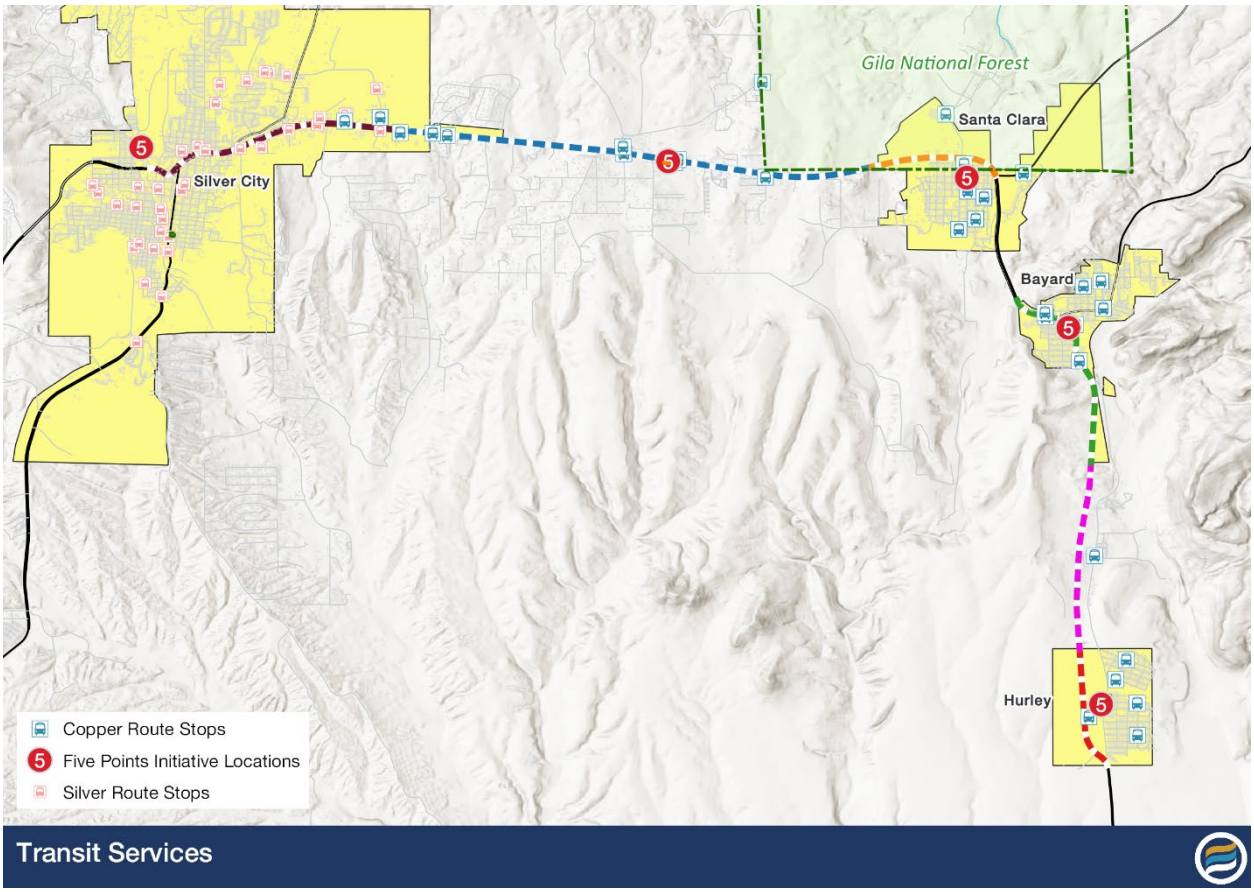


Figure 75. Transit Services

The development of additional bike and pedestrian facilities along the U.S. 180 corridor could encourage increased ridership of the Copper Route transit service. As illustrated in Figure 76, many of the existing Copper Route stops are within a five or ten minute walkshed to locations along the various corridor sections, including the Five Points historic structures themselves, as well as other points of interest and essential services. In addition, Corre Caminos vehicles have bicycle racks, enabling bus riders to travel further before or after their transit trip.

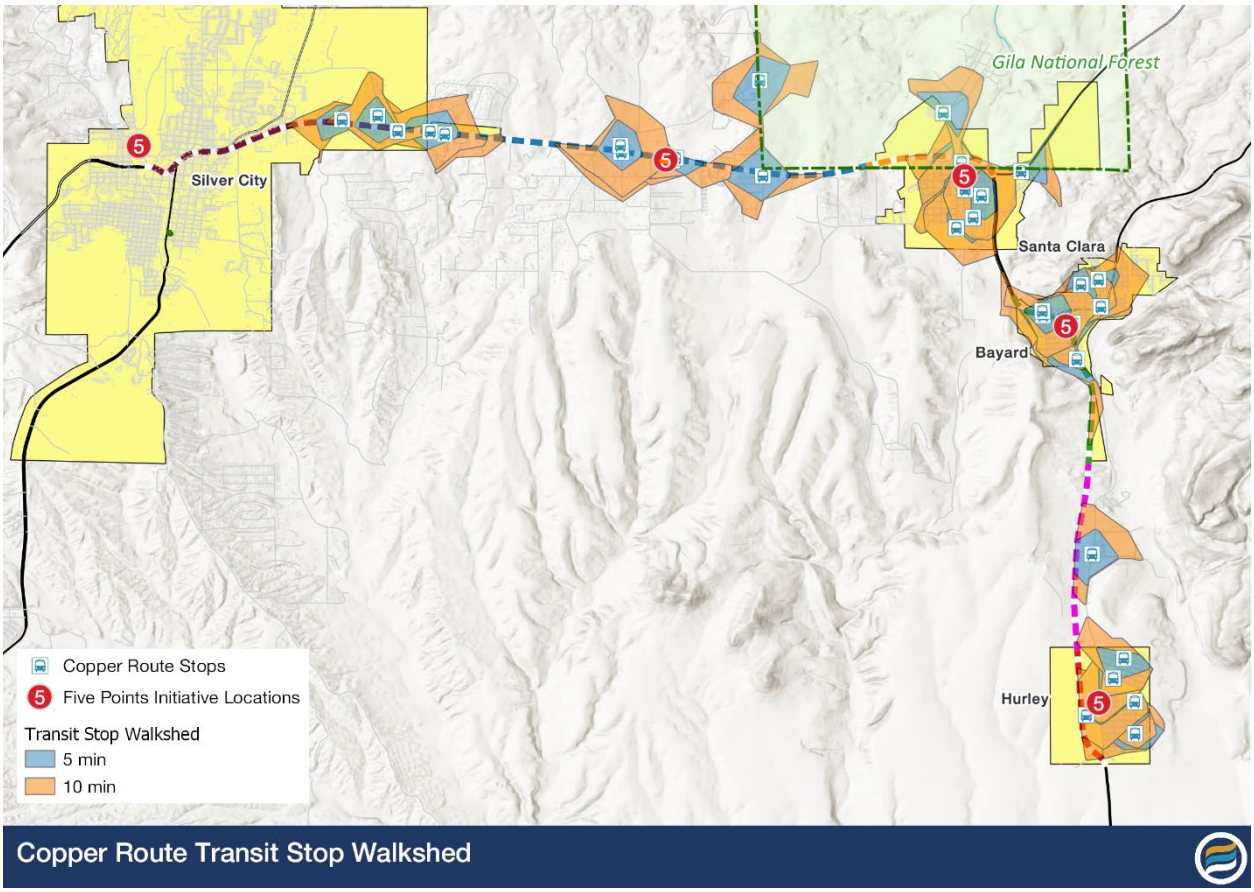


Figure 76. Copper Route Transit Stop Walkshed

5.2.1.8 Current Project Development Status

At the time of this report, the research team was unaware of any active projects under development that would establish new pedestrian or bicycle facilities along the U.S. 180 corridor. The research team is aware of a significant project listed on the New Mexico DOT Statewide Transportation Improvement Program website (eSTIP) that proposes to widen a 5.14-mile section of U.S. 180 from Bayard to Hurley (mileposts 123.13 to 128.57) (New Mexico Department of Transportation, n.d.). The project costs are estimated to be $28.7 million as reported on the eSTIP, with funding coming from the American Rescue Plan. This project has a scheduled letting date of October 20, 2023. In conversations with local stakeholders including staff at SWNMCOG, this project does not appear to include bike or pedestrian facilities as part of the proposed scope of work.

5.2.1.9 Existing Conditions Summary

Based on the information reviewed and presented by the research team in preparing the existing conditions summary, the following general conclusions can be offered.

Sufficient available ROW for the establishment of a new multi-use pathway exists in the areas immediately surrounding the U.S. 180 corridor connecting Silver City to Hurley. This potential pathway would be well served by existing Corre Caminos transit services operating in the area, thereby extending both recreation and transportation options for residents. The potential pathway would also be well situated to access areas of interest along the corridor including Five Points Initiative locations. However,

existing safety considerations would need to be addressed during project development, including conflict point locations where vehicles and pedestrians may interact and increase the potential for crashes. Corridor access considerations may need to be revisited during any project development process as well.

5.2.2 Existing Plan Document Review

In order to further investigate the conditions for any future pathway extension along the U.S. 180 corridor, the research team has reviewed existing planning documents to ascertain the support and justification that currently exists within these documents for such a project. The reviewed documents include relevant regional or statewide planning documents, any available Safe Routes to School plans for the Silver Consolidated Schools and Cobre School Districts (Santa Clara, Bayard, and Hurley); relevant outdoor recreation plans; and any comprehensive plan documents or information outlining conditions and future objectives for the communities of Silver City, Arenas Valley, Santa Clara, Bayard, and Hurley.

This section contains a summary of these reports and their relevant goals, objectives, and other information that could be used to support a pathway extension project. The key reports in this review include (in chronological order of publication):

- Southwest New Mexico RTPO Long Range Transportation Plan – 2015
- Bicycle Master Plan – Silver City - 2016
- Town of Silver City Comprehensive Plan – 2017
- New Mexico Prioritized Statewide Bicycle Network Plan - 2018
- Southwest New Mexico Regional Economic Development Innovation Action Plan – USDA Rural Development - 2019
- 2021 – 2026 Comprehensive Development Strategy (CEDS) – Southwest New Mexico Council of Governments – 2020
- City of Bayard Comprehensive Plan - 2021
- New Mexico 2045 Plan – New Mexico Department of Transportation - 2021
- New Mexico's 2022 - 2026 Statewide Comprehensive Outdoor Recreation Plan (SCORP) - 2021
- Comprehensive Outdoor Recreation & Trails Master Plan – Grant County New Mexico - 2022

5.2.3 Southwest New Mexico RTPO Long Range Transportation Plan

Completed in 2015, the regional transportation plan produced by the Southwest New Mexico Regional Transportation Planning Organization (RTPO) (Figure 77) is a document that collects the long-range vision, goals, objectives, and strategies for the region as determined by local leaders and transportation stakeholders. The document provides transportation guidance and planning information for the performance period of 2016 to 2040 and is created in partnership with NMDOT. The scope encompasses four counties in southwest New Mexico: Grant, Hidalgo, Luna, and Catron.

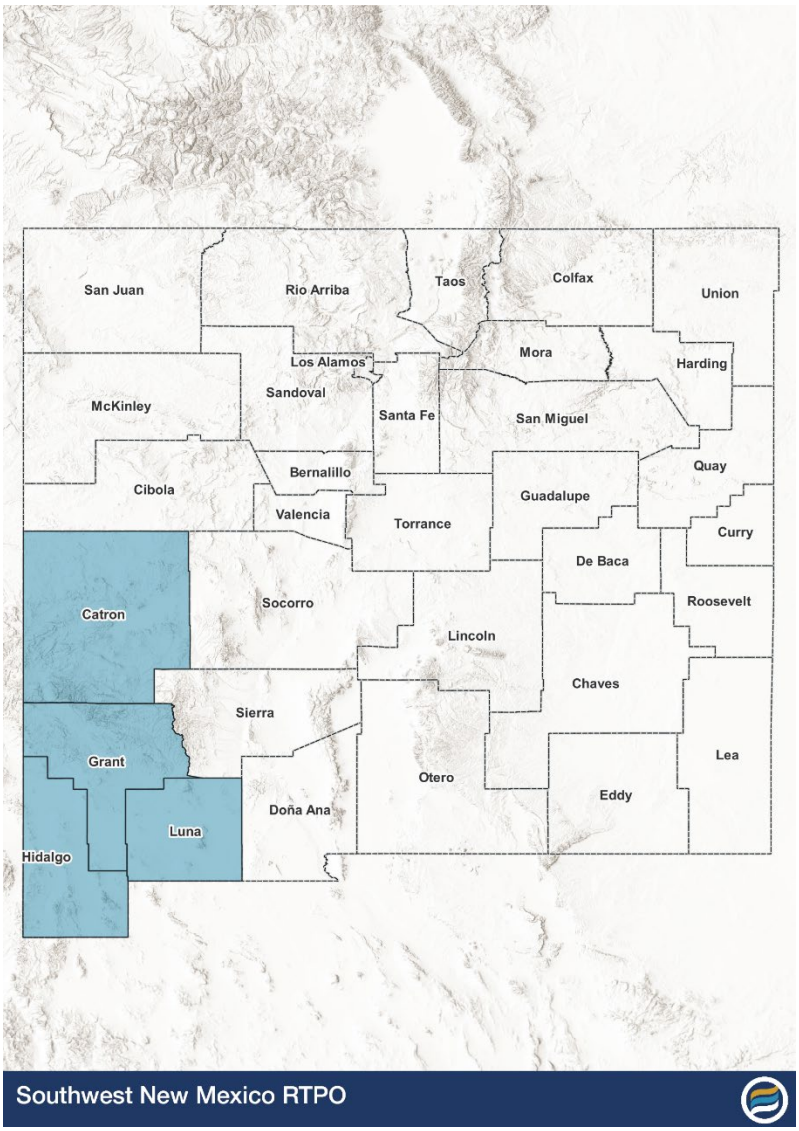


Figure 77. Southwest New Mexico RTPO

The document itself is presented in four sections: 1) existing and future conditions, 2) transportation system overview, 3) goals and strategies, and 4) next steps. Reviewing these sections, supporting statements and concepts were found in the existing and future conditions, goals and strategies, and next steps, and are highlighted below. The existing pathway between Santa Clara and Bayard is highlighted in the 'Region Overview' description as a future project prior to its completion in late 2020:

"Grant County has also been looking at adding the Copper Trail which is a multi-use pathway along Highway 180 between the Village of Santa Clara and the City of Bayard due to pedestrian traffic along the highway."

In summary the following supporting statements and concepts were identified in the Southwest New Mexico RTPO Plan document as reviewed:

Supporting Statement 1: Land Use and Communities – Grant County – "The U.S. 180 East corridor has established itself as the most important strip commercial corridor in the region." (P. 7)

Supporting Statement 2: Land Use and Communities – Grant County – "The location of major retail and commercial businesses in Silver City along Highway 180 East is reinforced by the fact that this roadway connects Silver City with the mining district towns and the Mimbres Valley communities where the majority of the remaining population is located." (P. 7)

Supporting Statement 3: Key Challenges and Opportunities – Key Challenges – "Increased demand for multimodal transportation including sidewalks, trails, and bicycle lanes." (P. 12)

Supporting Statement 4: Identified Regional Needs – Active Transportation – "Members of the regional working group recognized the need for other modes of transportation facilities which include bicycle routes, trails, sidewalks, etc. Active transportation has recently had an increase in interest in the southwest region." (P. 13)

Supporting Statement 5: Identified Regional Needs – Improve Safety While Updating Aging Infrastructure – "Improving safety is always a concern. Aging infrastructure is a key issue in this region. There is a recognized need to increase safety by maintaining pavement. The RWG (Regional Working Group) identified areas where bicycle lanes and alternative routes for pedestrians do not exist and this has been an arising concern that is expressed often by the public." (P. 13)

Supporting Statement 6: Goal 2: Improve Safety and Public Health for All System Users – Key Priorities Raised in Working Group – "More multi use pathways." (P. 29)

Supporting Statement 7: Goal 4: Enhance Multimodal Mobility, Connectivity, and Accessibility – Key Priorities Raised in Working Group – "Improve inter-modal systems for pedestrians and bicyclists." (P. 33)

Supporting Statement 8: Goal 4: Enhance Multimodal Mobility, Connectivity, and Accessibility – Key Priorities Raised in Working Group – "Public transit between rural and urban areas (connect rail, to bus, pedestrian or bike). (P. 33)

5.2.4 Bicycle Master Plan – Silver City

Adopted in August 2016, the Silver City Bicycle Master Plan outlines work undertaken by a ten-member steering committee focused on growing the use of bicycles for health, safety, environmental, and economic benefits. The purpose and objective statement section of the document state that "the Silver City Bicycle Master Plan will serve as the guiding document for the development of a safe and functional network of bicycle routes linking destinations in and around the Town of Silver City."

A review of existing conditions is provided and covers many topics, including discussion regarding challenges presented by street crossings, particularly those on U.S. 180. The review states that while most intersections are signalized, the crossing distances are long and coupled with high levels of vehicular activity.

Recent projects outlined in the document include reconstruction of U.S. 180 from New Mexico Highway 15 to 32nd Street, and improvements to U.S. 180 west of 32nd Street. At the time of writing, bike lanes were anticipated to be included in both projects. Bike lanes were constructed on U.S. 180 between New Mexico Highway 15 and 32nd street. No bike lanes extend beyond 32nd Street travelling east on U.S. 180 leaving Silver City. Other supporting projects are identified as underway including the Waterworks Building renovation, which is one of the Five Points Initiative locations.

The following supporting statements were identified in the recommendations of the Silver City Bicycle Master Plan:

> **Supporting Statement 1:** Recommendation 1: Routinely accommodate bicycles along major roads through bike lanes or shoulders that meet national guidelines with respect to width and surface quality. “Encourage NMDOT to consider alternatives to five-lane cross section of Little Walnut Rd. north of U.S. 180.” (P. 18)
>
> **Supporting Statement 2:** Recommendation 1: Routinely accommodate bicycles along major roads through bike lanes or shoulders that meet national guidelines with respect to width and surface quality. “Town of Silver City can work with NMDOT to study the feasibility and potential benefits of converting four-lane and five-lane state highways (NM 90 and U.S. 180) into three-lane facilities (“road diet”), including significant opportunities to improve wayfinding and alternative methods to avoid crossings such as the intersection of NM 90 and U.S. 180.” (P. 19)
>
> **Supporting Statement 3:** Recommendation 2: Continue the development of a system of multi-use trails and other non-motorized connections that complement the road system and provide convenient transportation and recreational opportunities for bicyclists, pedestrians, and other non-motorized users. “Carefully consider selected off-road trail alignments along or parallel to busy, major arterial roadways, so long as conflicts with motorized cross-traffic can be minimized.” (P. 21)
>
> **Supporting Statement 4:** Recommendation 5: Encourage and otherwise facilitate the use of bicycles to come to, stay in, and travel within Silver City. “Help to develop a safe and desirable route for the proposed Copper Trail/ Sendero del Cobre connecting communities along U.S. 180.” (P. 27)
>
> **Supporting Statement 5:** Recommendation 5: Encourage and otherwise facilitate the use of bicycles to come to, stay in, and travel within Silver City. “Improve connectivity to Continental Divide Trail via Little Walnut Creek/ Little Walnut Rd., working with Grant County.” (P. 27)

5.2.5 Town of Silver City Comprehensive Plan

Last updated in September 2017, the Town of Silver City Comprehensive Plan was a significant update to the previous plan which was completed in 2004. As stated in the document, the focus of the updated plan was to “guide the development and growth of the Town now and into the future, for the next ten to twenty years.” Sections required by the State of New Mexico can be found in the plan, including land use, housing, transportation, infrastructure, economic development, water, hazards, and implementation. The plan was created with the guidance of the comprehensive plan steering committee, town staff, planning and zoning commission, elected officials, and citizens of Silver City.

Ultimately the Comprehensive Plan drives decision making that takes place locally and in partnership with other partners in the local area and across the region. These activities manifest in efforts and documents including the Economic Development Strategy, Intergovernmental Coordination and Community Collaboration Strategy, Affordable Housing Strategy, Parks, Trails and Open Space Strategy, Transportation and Land Use Strategy, and Downtown Enhancement Strategy.

The following supporting statements and concepts were identified in the 2017 Town of Silver City Comprehensive Plan:

> **Supporting Statement 1:** Chapter 3: Land Use and Design – Corridors – "The location of major retail and commercial businesses in Silver City along Highway 180 East is reinforced by the fact that this roadway connects Silver City with the mining district towns and Gila and Mimbres Valley communities where the majority of the remaining population of the county is located." (P. 18)
>
> **Supporting Statement 2:** Chapter 3: Land Use and Design – Corridors – "The Highway 180 East Corridor has established itself as the most important strip commercial corridor in the region." (P. 18)
>
> **Supporting Statement 3:** Chapter 3: Land Use and Design – A Pedestrian Friendly Community – "A major community design improvement for Silver City is the focus on pedestrian friendly elements, including sidewalks and pathways, bike routes, and public transit throughout the Community." (P. 20)
>
> **Supporting Statement 4:** Chapter 3: Land Use and Design – A Pedestrian Friendly Community – "All evolving neighborhoods should grow as pedestrian-friendly places." (P. 20)
>
> **Supporting Statement 5:** Chapter 3: Land Use and Design – A Pedestrian Friendly Community – "Significant open space, parkland and trail systems should be protected and enhanced in each neighborhood." (P. 20)
>
> **Supporting Statement 6:** Chapter 3: Land Use and Design – Summary of Goals, Policies and Implementation Measures – "The Town should continue to collaborate with the adjacent jurisdictions including Grant County, particularly with regards to the ETJ (extraterritorial jurisdiction), the Village of Santa Clara, the City of Bayard, the Town of Hurley as well as local and regional organizations, such as the Council of Governments, and state and federal agencies in implementing appropriate land use planning and community design for the Town and throughout the region." (P. 25)
>
> **Supporting Statement 7:** Chapter 3: Land Use and Design – Summary of Goals, Policies and Implementation Measures – "The Town of Silver City has done exemplary work in this area and should continue work related to creation and implementation of a Master Pedestrian Plan that identifies new roads and improvements to existing roads necessary to incorporate facilities for pedestrians. Ultimately, a Master Pedestrian Plan can complement efforts to revitalize areas in and around the Town of Silver City." (P. 25)
>
> **Supporting Statement 8:** Chapter 3: Land Use and Design – Summary of Goals, Policies and Implementation Measures – "Significant numbers of Silver City residents enthusiastically

support policies that promote and sustain amenities for pedestrians and bicyclists, as well as access for physically challenged individuals and wheelchair users." (P. 28)

Supporting Statement 9: Chapter 3: Land Use and Design – Summary of Goals, Policies and Implementation Measures – Implementation Measures – "Create a Master Pedestrian and Recreation Trails Plan, in conjunction with a Master Parks, Recreation, Open Space & Trails Plan." (P. 28)

Supporting Statement 10: Chapter 3: Land Use and Design – Summary of Goals, Policies and Implementation Measures – Implementation Measures – "The Town should review each new project to provide sidewalks and other amenities for pedestrians and cyclists as a means to encourage alternative modes of transportation as well as improve the safety, efficiency and aesthetics of streets." (P. 29)

Supporting Statement 11: Chapter 3: Land Use and Design – Summary of Goals, Policies and Implementation Measures – Implementation Measures – "Continue to collaborate with adjacent jurisdictions, including Grant County, Santa Clara, Bayard and Hurley. The Town shall also coordinate with the Southwest New Mexico Council of Governments, New Mexico Department of Transportation (NMDOT), the MainStreet Program, Western New Mexico University, and other applicable agencies and organizations to ensure an effective and efficient transportation system for Town residents." (P. 29)

Supporting Statement 12: Chapter 6: Public Facilities & Services – Summary of Goals, Policies and Implementation Measures – Implementation Measures – "In fact, trails straddle several categories, including transportation, natural resources, and economic development. But they are truly public facilities in that they are conducive to a healthy lifestyle physically and mentally. They also reflect and embody the "sense of place" Silver City residents find so endearing and unique." (P. 50)

Supporting Statement 13: Chapter 7: Economic Development – Silver City as a Regional Economic Center – "Many of the major businesses that serve the region have established themselves primarily along Highway 180 East. The anchors for regional retail are the local Wal-Mart Super Store, Walgreens, CVS, Tractor Supply, Denny's, Dominos, Ace Hardware, Albertsons, and Bealls to name a few." (P. 52)

5.2.6 New Mexico Prioritized Statewide Bicycle Network Plan

The New Mexico Prioritized Statewide Bicycle Network Plan released in December 2018 provides a comprehensive review of existing and prospective bicycle infrastructure across the State of New Mexico. The plan document also provides information regarding the many benefits of bicycling, design guidelines, facility descriptions, safety, and performance, as well as details regarding public outreach efforts undertaken as part of this planning effort.

Perhaps most critically, the document outlines a priority network of New Mexico highways that reflect current and forecasted demand for bicycling and bicycling facilities. The U.S. 180 corridor area that is the subject of this effort is listed as a 'Tier 1' network location. This is the highest level of current or potential bicycling demand. The Tier 1 definition offers the following description: "Tier 1 routes exhibit high existing or latent demand for bicycling and are highly appropriate for implementation of bikeway

facilities. These facilities may appeal to recreational and utilitarian bicyclists and demonstrate high tourism potential and recreational demand. Tier 1 routes are typically high-volume and/or high-speed roadways where additional separation between bicyclists and motorists is needed. In urban areas, Tier 1 routes generally provide connections to destinations and activity centers of high regional value."

The plan offers the following disclaimer regarding the priority tier definitions: "The tier designations do not indicate the order in which NM [New Mexico] highways may be improved for bicyclists. Rather, the designations indicate the benefits derived from improving conditions for existing and potential bicyclists."

> **Supporting Statement 1**: IX Implementation and Recommendations – Recommendations - US Bicycle Route Designations: "The Priority Network considers proposed alignments for USBRs 66 and 90, and all NM [New Mexico] highways included in the proposed alignments are either Tier 1 or Tier 2. As bikeway infrastructure on these roads is built and NMDOT meets the requirements outlined in the AASHTO Purpose and Policy Statement, 41, NMDOT may consider applying to AASHTO for USBR designations. Coordination with other states is necessary to ensure the USBR alignments in New Mexico serve local needs while connecting appropriately to infrastructure in surrounding states." (P. 113)
>
> **Supporting Statement 2**: IX Implementation and Recommendations – Recommendations – Bicycling Tourism Campaign and Promotional Efforts: "Bicycling in New Mexico is an economic development opportunity, and events such as the Tour of the Gila currently attract world-class bicyclists to the state each year. New Mexico has the ingredients to become an attractive recreational cycling destination: identified Adventure Cycling routes, national attractions, excellent weather, and a variety of terrain and landscape that appeal to a range of bicyclists." (P. 113)
>
> **Supporting Statement 3**: IX Implementation and Recommendations – Recommendations – Agency Coordination: "Several municipalities across New Mexico have undertaken city-level bicycle master plans, while regional bicycling planning is conducted regularly by MPOs [Metropolitan Planning Organizations], either as stand-alone efforts or as part of updates to metropolitan transportation plans (MTPs) and regional transportation plans (RTPs). Updates to these local and regional plans can reference and integrate the NM [New Mexico] Bike Plan to support implementation of the statewide priority network and promote a connected network along state and local roadways. Coordination at the state, regional, and local levels can also consider the desired timing of improvements and evaluate needed connections and alternative or parallel facilities that may be more conducive to bicycling than some NM [New Mexico] highways, which are often arterial roadways characterized by high speeds and traffic volumes." (P. 114)

5.2.7 Southwest New Mexico REDI Action Plan – USDA Rural Development

Completed in 2019, the Southwest New Mexico Regional Economic Development Innovation (REDI) Action Plan is a document completed as part of a competitive program offered by the United States Department of Agriculture (USDA) Rural Development Innovation Center. This program offered participants an opportunity to work with collaborating partners identified by USDA to complete efforts that advance local economic competitiveness and growth. The SWNMCOG was the lead applicant for this effort and Grant County was the recipient of this award. McClure Placemaking and CO.STARTERS were selected as the technical assistance providers for this effort.

The stated purpose of the effort was to 'assess the community's current competitive position and identify strategic themes and opportunity areas that can be focused on in the REDI Action Plan.' The following supporting statements and concepts were identified in the Southwest New Mexico Regional Economic Development Innovation (REDI) Action Plan:

> **Supporting Statement 1:** Chapter 4: A wealth of tourism assets to leverage – "Perhaps even more than historical tourism and arts, Grant County can claim a wealth of assets in recreation and eco-tourism." (P. 19)
>
> **Supporting Statement 2:** Strategic Opportunity Categories – Recreation – "Strengthening and expanding Grant County's outdoor recreation sector can also create new opportunities for gateway communities in the Mining District [including the communities of Santa Clara, Bayard, and Hurley] and elsewhere in the county to expand their assets and activity in the recreation economy."

5.2.8 2021-2026 Comprehensive Development Strategy (CEDS) – SWNMCOG

Adopted in October 2020, the 2021 – 2026 Comprehensive Development Strategy is an effort undertaken as part of an on-going economic development planning process that is supported by the Economic Development Administration and completed by the SWNMCOG. This effort convenes local economic development and business leaders to analyze the regional economic development environment and craft strategies to build economic resilience and capitalize on opportunities over the course of five years.

The plan is separated into two sections: Part 1: Economic Development and Transportation and Part 2: Specific Strategic Action. The following supporting statements and concepts were identified in the 2021 – 2026 Comprehensive Development Strategy document:

> **Supporting Statement 1:** Part 1: Economic Development and Transportation – Transportation – "Southwest New Mexico is a great destination for most facets of outdoor recreation, the trails in the region are no exception." (P. 29)
>
> **Supporting Statement 2:** Part 2: Strategic Action – Top Priority Strategies – "Enhance multimodal transportation and trail connectivity and accessibility to create a region that is friendly for all facets of transportation." (P. 34)

Supporting Statement 3: Part 2: Strategic Action – Hospitality, Tourism, and Recreation – Strategies – "Maintain/expand connectivity of trails throughout the region including the Continental Divide Trail." (P. 44)

Supporting Statement 4: Part 2: Strategic Action – Hospitality, Tourism, and Recreation – Strategies – "Increase outdoor infrastructure to help recruit outdoor economy and other types of businesses throughout the region." (P. 44)

5.2.9 City of Bayard Comprehensive Plan

Updated in February 2021, the City of Bayard Comprehensive Plan is a strategic document providing a blueprint for development in the City for the next 20 years. The plan was developed through the cooperation of City of Bayard staff, community members and professional consulting partners. The plan covers eight key topic areas: land use, housing, economic development, community services, transportation, infrastructure, hazard mitigation, and implementation.

It is noted that the State of New Mexico encourages all communities to update any comprehensive plan documents every five years. It also stated that completing these updates makes communities more competitive for state grant funding and support.

Chapter 8 discusses the transportation system of Bayard, most notably the Santa Clara to Bayard multi-use trail in a brief section provided for reference below:

BAYARD TO SANTA CLARA MULTI-USE TRAIL

In partnership with the Village of Santa Clara, the NMDOT is sponsoring a 2.5-mile paved multi-use trail from mile markers 120 to 122.5 along U.S. 180 between Bayard and Santa Clara…Construction is underway. The project was identified following a road safety audit (RSA) conducted by the Village of Santa Clara that identified various safety concerns along U.S. 180, including issues related to pedestrian travel. Among the recommendations of the RSA was a multi-use trail along the highway. The project is funded through Highway Safety Improvement Program Funds and includes street lighting and drainage improvements in addition to the paved multi-use trail. Maintenance and lighting will be provided by the Village of Santa Clara under an agreement with NMDOT. Among the intended benefits are improved access for students accessing schools in Bayard and for recreational travel between the communities.

Alternative trail connection ideas, including a potential use of railroad ROW owned by Southwest Railroad to connect Bayard to Hurley were also briefly discussed.

Complementing this direct project reference and suggestions of alternatives, the following supporting statements and concepts were identified in the remainder of the City of Bayard Comprehensive Plan:

Supporting Statement 1: Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis – "Bayard's proximity to Western New Mexico University (WNMU) and location on U.S. 180, which is the eastern gateway to Silver City and the Gila National Forest are strengths that can help the City." (P. 7)

Supporting Statement 2: SWOT Analysis – "The community would like more safe places to walk. The arroyo downtown could be a beautiful place to walk. Trails along the arroyo are privately owned; if there were connections from Bayard to Hurley it would be a great resource. The mine

is interested in helping with this improvement; there are other mining sites that have trails and Bayard's arroyo has undergone reclamation." (P. 9)

Supporting Statement 3: SWOT Analysis – "The State's newly established Outdoor Recreation Department and the nation's Great American Outdoors Act put Bayard in a prime position for resources to enhance its recreational trails and amenities." (P. 10)

Supporting Statement 4: Historic Preservation – Goals, Policies, and Actions – Action 1.2.B – "Identify potential sites that can be redeveloped as parks or open space and link them to the local and regional trail network." (P. 42)

Supporting Statement 5: Regional Economic Development Initiatives – Outdoor Recreation – "An enhanced trail network that follows the railroad and connects to Bayard community facilities could improve residents' daily quality of life and attract more visitors, especially if the trails connect to Fort Bayard and the Bayard Mining Park." (P. 66)

Supporting Statement 6: Law Enforcement – Goals, Policies, and Actions – Action 1.1.B – "Conduct a trails and open space plan that identifies the network of walking and biking connections throughout the City and connects to community facilities, regional trails, and open spaces, and beyond to Gila Wilderness Area. The network of trails can provide a comprehensive walking and biking network for Bayard residents and boost recreational tourism. Participate in the Grant County Trails and Outdoor Recreation Plan that was initiated in December 2020." (P. 76)

Supporting Statement 7: Transportation System – Bikeways and Trails – "U.S. 180 and NM 356 are included in the NMDOT Prioritized Statewide Bicycle Network Plan (NM Bike Plan) as Tier 1 and Tier 2 facilities. These tier designations reflect the level of benefits from bikeways and the quality of desired infrastructure rather than priority for implementation. When reconstruction or major rehabilitation takes place on the roadways, the NM Bike Plan recommends at least 5-foot bike lanes on Tier 1 and Tier 2 facilities within municipal limits. Buffers are desirable on higher speed and volume roadways such as U.S. 180." (P. 84)

Supporting Statement 8: Transportation System – Bikeways and Trails – "Many communities are pursuing trails along underutilized railroad rights-of-way as means of providing connections between communities. One such option is for a trail from Bayard to Hurley along the Southwest Railroad corridor. Other options that should be explored include a trail along the irrigation ditch that runs between Foy Street and East Street and along Whitewater Creek. Grant County will be developing a county-wide trails plan that could identify additional routes in the area." (P. 85)

Supporting Statement 9: Transportation System – Goals, Policies, and Actions – Action 1.1.C – "Pursue multi-use trails within the city and between Bayard and surrounding communities." (P. 87)

Supporting Statement 10: Transportation System – Goals, Policies, and Actions – Action 1.1.E – "Coordinate with NMDOT on locations for additional pedestrian crossings along U.S. 180 and NM 356." (P. 87)

Supporting Statement 11: Transportation System – Goals, Policies, and Actions – Action 3.1.A – "Work with the Southwest Regional Transportation Planning Organization to identify funding opportunities for study and implementation of potential trails and roadway improvements." (P. 88)

Supporting Statement 12: Transportation System – Goals, Policies, and Actions – Action 3.1.B – "Participate in regional trails planning efforts; explore feasibility of a rail trail along Southwest Railroad corridor between Bayard and Hurley." (P. 88)

5.2.10 New Mexico 2045 Plan – New Mexico Department of Transportation

Released in July 2021, the New Mexico 2045 plan is the performance based long range transportation plan produced by the NMDOT. The 25-year plan provides goals and objectives for transportation related activities in the state as they work to make investments in programs and projects that best serve the residents of New Mexico.

Following an extensive public outreach and stakeholder feedback process, goals and objectives for the plan were gathered into four categories: 1) safety, 2) mobility & accessibility, 3) program delivery, and 4) asset management. During this effort, a public perception survey was administered asking respondents to provide a satisfaction rating for various assets and resources provided by NMDOT. Of the questions asked, the lowest satisfaction rating (2.23 out of 5) was given in response to a question regarding the availability of bicycle facilities.

A subsequent section outlining transportation investment needs, potential funding, and resulting resource gaps included bicycle and pedestrian need areas which were highlighted in Table 19.

Table 19: Recommended Pathway Widths and User Mix.

Need Area	Needs*	Funding*	Gap*
Bicycle + Pedestrian	$536.1	$120.7	$415.7

* All values expressed in millions of dollars.

While this resource gap is concerning for the ultimate execution of a future expansion of the U.S. 180 pathway, this does indicate that NMDOT is aware of the increasing need for additional bike and pedestrian assets across the state and has executed the necessary effort to quantify the level of need.

Reviewing the performance measures listed for each category, there are items that support the potential expansion of the U.S. 180 pathway in the safety, mobility & accessibility, and program delivery categories.

In summary, the following supporting statements and concepts were identified in the New Mexico 2045 Plan as reviewed:

Supporting Statement 1: Safety – "Invest in infrastructure and programs that improve pedestrian safety." (P. 39)

Supporting Statement 2: Mobility & Accessibility – "Improve mobility and accessibility in strategic corridors." (P. 39)

Supporting Statement 3: Mobility & Accessibility – "Expand transportation choice through multimodal investments and complete street design." (P. 40)

Supporting Statement 4: Program Delivery – "Deliver projects that adhere to local plans and respect New Mexico's unique cultural resources and community context." (P. 40)

Supporting Statement 5: Program Delivery – "Implement projects and programs that reduce negative impacts on the natural environment." (P. 40)

Supporting Statement 6: Asset Management – "Continue to expand the scope and improve the quality of data collected to inform asset management decision-making. Examples include expanding data collection to pedestrian assets and improving the quality of Geographic Information System (GIS) spatial data." (P. 43)

Supporting Statement 7: Mobility and Accessibility – "Update Guidance Manuals and processes to include Complete Streets Principles. Develop and conduct training for staff on process changes. Integrate Complete Streets approaches into the development process of new and reconstruction projects." (P. 44)

5.2.11 New Mexico's Statewide Comprehensive Outdoor Recreation Plan

Completed in December 2021, the New Mexico Statewide Comprehensive Outdoor Recreation Plan produced by the National Park Service and the New Mexico Energy, Minerals and Natural Resources Division is an extensive document that outlines trends, resources, findings, and recommendations for outdoor recreation activities. This document reflects a 5-year planning period from 2022 to 2026.

This collaborative document includes findings from an extensive statewide community engagement effort including a steering committee, focus groups, resident surveys, visitor surveys, provider surveys, as well as virtual town hall meetings both statewide and regional in nature.

The following supporting statements and concepts were identified in the New Mexico Statewide Comprehensive Outdoor Recreation Plan document:

Supporting Statement 1: Outdoor Recreation Trends: Outdoor Tourism – "Outdoor recreation is an important catalyst for attracting tourism." (P. 24)

Supporting Statement 2: Outdoor Recreation Trends: Satisfaction & Desired Improvements – "When asked about recreation facilities that they would like to see more of in their area, the most common survey responses were trails for hiking and biking, parks, and water access." (P. 29)

Supporting Statement 3: Economic Development – Economic Development and Outdoor Recreation – "New Mexico's 2020 Climate Strategy highlights development in the outdoor recreation and eco-tourism sectors as a sustainable way for the state to grow its economy while transitioning away from dependence on fossil fuels." (P. 32)

Supporting Statement 4: Economic Development – Tourism Economy – "Participants in this planning process reinforced the importance of outdoor recreation tourism to local economies and identified promotion, wayfinding and improved connections to resources and services as

general improvements needed to support economic development through outdoor recreation tourism." (P. 36)

Supporting Statement 5: Access & Equity – Contemporary Barriers to Equitable Outdoor Recreation – "Outdoor recreation resources are often far from low-income communities; low-income people are more likely to use alternative transportation methods such as bikes and buses to access recreation resources, but connectivity is often poor." (P. 80)

Supporting Statement 6: Regional Findings and Recommendations – Public Outreach Findings and Recommendations – "There is a need to connect local planning efforts with regional, state, and national resources." (P. 90)

Supporting Statement 7: Regional Findings and Recommendations – Public Outreach Findings and Recommendations – "There is a need for multimodal trails connecting communities with outdoor recreation resources." (P. 90)

Supporting Statement 8: Regional Findings and Recommendations – Public Outreach Findings and Recommendations – "Improve trail connectivity to town centers in the region including the Silver City area." (P. 90)

Supporting Statement 9: Regional Findings and Recommendations – Public Outreach Findings and Recommendations – "Improve cycling amenities along designated US bike routes and other popular routes in the region." (P. 90)

5.2.12 2022 Comprehensive Outdoor Recreation & Trails Master Plan – Grant County, New Mexico

Completed by Grant County with consulting assistance from SE Group and Terradynamics LLC as well as a steering committee (consisting of ten local stakeholders), this plan was finished in winter 2022 following over a year of data collection, outreach, and analysis.

The plan was crafted to outline a strategy to capitalize on Grant County's many unique and defining outdoor recreation assets that support a broad range of activities from fishing to mountain biking and bird watching. This document also works to outline relationships between the numerous entities that control land interests in Grant County and how they build partnerships that foster a spirit of promotion and stewardship that ensures the resources are available for generations to come. The theme of supporting all outdoor activities was captured in a slogan adopted by the participants; 'If you're out, you're in!'

Three surveys, four open houses, ten discussions, and one tabling event were organized to produce the public input and stakeholder feedback necessary to substantiate the report.

Six major recommendations were offered as a result of this effort. Below is a summary of relevant goals, passages, and statements that indicate support for the development of bicycle and pedestrian infrastructure along the U.S. 180 corridor.

Supporting Statement 1: Executive Summary – Major Recommendations – Goal 2: "Establish Critical Trail Connections to Communities. Copper Trails Greenway – Build an inter-community

connectivity route that links together communities, parks, trail systems, and other recreational assets in Grant County; ensure that trail system serves a variety of non-motorized users and provides both transportation and recreational values." (P. 13)

Supporting Statement 2: Executive Summary – Major Recommendations – Goal 2: "Towns as Trailheads – Enhance connectivity between recreational assets and adjacent communities and residents. Encourage and promote towns as destinations and seek to empower both residents and visitors to start and end their trail trips and recreational activities right in town or from home where possible." (P. 13)

Supporting Statement 3: Executive Summary – Major Recommendations – Goal 2: "The Copper Trails Greenway System Expansion trail connections (#1 on the Recommendations Map) extend the multi-use path connecting Santa Clara and Bayard to connect to Silver City and Hurley. This concept predates this plan and has been previously named the 'Copper Trails' initiative. With spur trails leading to key recreational assets such as Bataan Park and Fort Bayard, this path system could enhance close-to-home recreational opportunities for Grant County's most populous communities. (P 13, 14)

Supporting Statement 4: Stakeholder Perspectives – Perspective 3: Quality of Life – Key Priorities – Enhance Recreation Access & Opportunities: "At the Visioning Open House and in several User Groups calls, participants expressed interest in creating Universal Access trail opportunities in Grant County. These types of trails have a very gentle grade and would be accessible to individuals with different mobility needs. Participants also expressed support for community connector trails along major highway corridors, such as Hwy 180. These trails, which would be paved, multi-use paths, could also connect to existing trailheads and recreation areas, such as Bataan Park." (P. 60)

Supporting Statement 5: Stakeholder Perspectives – Perspective 3: Quality of Life – Key Priorities – Improve Transportation Access for All Residents Through Multi-Use

Community Connector Trails: "As described above, community connector trails can help residents access recreational opportunities adjacent to their community. These trails can also help residents meet their daily needs. For instance, an individual who does not own a car but uses a wheelchair could use a connector path to access medical offices or a grocery store. This is especially important in rural areas like Grant County, where some communities do not have essential businesses and services. Santa Clara, for instance, lacks a grocery store. Residents without a car were forced to walk or roll along a busy highway to access the nearest grocery store in Bayard. A paved path that was recently constructed between the two communities has helped Santa Clara residents safely access the grocery store. Prior to this planning effort, there was an ongoing initiative to extend this trail and connect it to other communities – this project is known as the "Copper Trails" initiative. (P. 60)

Supporting Statement 6: Stakeholder Perspectives – Perspective 6: Culture and Heritage – Key Priorities – Supporting Adaptive Reuse Projects that Combine Heritage Tourism and Recreational Access: "Several initiatives in Grant County, including the Five Points Initiative and the Fort Bayard revitalization plan, aim to transform abandoned buildings into recreation assets and social hubs. In the open comments of the Visioning Survey, some respondents expressed

support for these initiatives and urged the planning team to include them in the final report." (P64)

Supporting Statement 7: Stakeholder Perspectives – Perspective 8: Casual Users – Key Priorities – Providing Safe Bike/Ped Connections: "Some residents might not consider taking a walk around the neighborhood or using a motorized wheelchair on a paved path to be "recreation." This plan, which covers walking and biking connections, considers these trips critical facets of a healthy community. Most casual users might not attempt an ambitious through-hike in the Gila Wilderness, but they might make use of a paved multi-use path connecting their neighborhood with nearby shopping opportunities and parks." (P. 65)

5.2.13 Safe Routes to School Planning and Programming

As of November 2022, there were no active Safe Routes to School (SRTS) plan documents or projects observed for the Silver Consolidated or Cobre School Districts. During the research team's stakeholder outreach meetings held in Bayard and Silver City on October 28 and October 29, 2022, respectively, there was discussion around SRTS efforts in the past, and the desire to catalyze future projects utilizing the program. Notes from the meetings indicate that barriers to participation included the lack of staff capacity to manage and lead SRTS application processes and resulting project activities.

During these conversations the research team also discussed whether students were currently observed riding bikes to school. Answers varied between stakeholders in Silver City and Bayard. Stakeholders from Silver City, including Superintendent William Hawkins observed that there was limited bike riding to the various Silver Consolidated School facilities, and that activity was strongly related to infrastructure that was located near the facilities. Those facilities with sidewalks and more defined routes consisting of city streets saw more bicycle use by students. The research team observed a student likely walking to Jose Barrios Elementary School during data collection at the intersection of U.S. 180 and Little Walnut Road (see Figure 40).

Stakeholders in Bayard stated that there were very few if any students riding bikes to school due to lack of basic items that would support this activity, including bike racks. In addition, stakeholders reported that congestion routinely occurs around schools due to parents driving children to and from school or for special events outside of the school day. School-related congestion is not unique to Grant County; however, this congestion is significant for the area compared to typical traffic patterns and could be alleviated with support for non-motorized transportation to school.

Members of the research team contacted Rosa Kozub, Chief of the New Mexico Department of Transportation Multimodal Planning & Programs Bureau, regarding inquiries for historic SRTS documentation for the Silver Consolidated and Cobre School Districts. No historic SRTS information was found for the Cobre School District. Information for Silver City Consolidated was received, including an action plan from 2010 for Jose Barrios Elementary 600 feet north of U.S. 180, and G.W. Stout Elementary (0.6 miles north of U.S. 180) (Figure 78). The action plan for Jose Barrios does highlight the need for improved crosswalk markings, curb extensions, and signal timing improvements at the U.S. 180 and Little Walnut Road intersection. Multiple bicyclists and pedestrians were observed during a short-duration count as a part of this study at this intersection (see U.S. 180 & Little Walnut Creek). Non-motorized crossings of this intersection are currently restricted to the west leg of the intersection.

Figure 78. Safe Routes to School Planning

5.3 Future Project Cost Estimation

In order to prepare SWNMCOG and local stakeholders for future bike/ped infrastructure project development efforts along the U.S. 180 project corridor, the research team has undertaken an activity to estimate potential future costs of such a project. These estimates are offered for planning purposes and are not intended to reflect actual costs to be utilized for project bidding or any other official construction activity. The information shared here is produced based on data gathered from available sources including past projects, national studies, and index information provided by public sources and private third parties. Cost estimates are provided for corridor segments 2 through 6, where no substantial bike or pedestrian infrastructure exists. Section 1 is within the confines of Silver City and is a much more complex environment, where the available cost estimation tools may not produce a worthwhile estimate.

To develop these cost estimate values, the research team leveraged a 2013 document published by the University of North Carolina (UNC) Highway Safety Research Center entitled “Costs for Pedestrian and Bicyclist Infrastructure Improvements – A Resource for Researchers, Engineers, Planners, and the General Public” (Bushell, Poole, Zegeer, & Rodriguez, 2013). This document provides observed maximum, minimum, and average costs for various structures and appurtenances related to bike and pedestrian infrastructure based on bid tabulation sheets collected from various state departments of transportation (DOTs) across the United States, as well as interviews with state DOT employees in North Carolina, Tennessee, Florida, Nebraska, Wyoming, Ohio, and California. These cost factors are applied to

the distances and quantities needed to produce a basic paved muti-use pathway. Additional treatments based on specific individual conditions are not included in this exercise.

Utilizing these cost factors, the research team has identified three cost index values (one public and two private) that will be applied to generate a range of estimated current costs that could be expected based on the quantity and type of items installed as part of a future project. These index values include the National Highway Construction Cost Index (NHCCI) (Federal Highway Administration, U.S. Department of Transportation, 2023) produced by the U.S. Department of Transportation – Federal Highway Administration; the Turner Cost Index (Turner Construction Company, 2023) produced by the Turner Construction Company; and the Mortensen Cost Index for the Phoenix Market produced by the M.A. Mortensen Company. The NHCCI is a measure that illustrates the change in prices paid over time by state DOTs for highway construction materials and projects; the Turner and Mortensen indices illustrate commercial construction costs paid for non-residential projects across the country. These factors will be applied to the average reported costs identified in the UNC study to bring those values to 2022 dollars. Index values are generated utilizing a base year as the basis for calculation. Reference values for 2012 will be utilized as the basis as this complies with the information found in the UNC publication. For this report, index values found in Table 20 were utilized.

Table 20: Cost Index Factors.

Factor	2012	2022
NHCCI	1.61	2.79*
Turner	830	1,095
Mortensen	104	182

*2022 average, Q1 through Q3

5.3.1 Example – Santa Clara Multimodal Project

As an example, the research team will apply these index values to scale the cost of the Santa Clara Multimodal Project as reported in the New Mexico eSTIP, to produce a 2022/2023 estimation of cost for this project. The total reported cost for the construction of this 2.5-mile project in 2020 was $4,119,046.

The formula for this calculation is as follows:

$$Estimated\ 2022\ Cost = \frac{(Project\ Cost * 2022\ Factor)}{2020\ Factor}$$

Based on the methodology outlined above, the cost range for this project in 2022 dollars could be expected to be between $4,532,000 and $5,449,155 (Table 21). In this example, the reported project year of 2020 was utilized as the reference year for cost indexing. In subsequent sections, the base year of 2021 is utilized for the base year of itemized cost indexing, as this corresponds to the date of the aforementioned UNC report (Bushell, Poole, Zegeer, & Rodriguez, 2013), which provided the reference item costs.

Table 21: Santa Clara Multimodal Project.

Factor	2012	2022	Estimated Cost
NHCCI	1.92	2.54	$5,449,155
Turner	1177	1295	$4,532,000
Mortensen	140	182	$5,354,760
Reported Cost			$4,119,046

This general methodology will be utilized to calculate potential costs for improvements anticipated for pathway sections 2 through 6. Base cost totals as identified for items outlined in the 2013 UNC report will replace 'reported cost' in the equation above.

5.3.2 Cost Estimation Assumptions

The following assumptions were utilized to create the calculations necessary to provide cost estimation values. These assumptions can be modified based on new or additional information being received or on feedback from stakeholders that may produce more accurate results.

5.3.2.1 Location

For this exercise, all proposed improvements will be located on the southern side of the U.S. 180 corridor. This is to create a future condition where all pathway segments can integrate with the existing Copper Trail near Santa Clara, creating a continuous route from Silver City to Hurley. These cost estimations do not include any proposed improvements or multi-use trail infrastructure on the northern side of U.S. 180.

5.3.2.2 ROW

All activities outlined here are intended to take place within the State of New Mexico ROW; as such, ROW costs are not factored into the results. The reference source for construction costs that will be referenced as the core source of construction costs does not indicate that ROW costs were included in their assumptions. If future projects are not able to be completed within available public ROWs, costs of acquisition should be added.

5.3.2.3 Crossings

Any future multi-use path that may be constructed in the project focus area will include crossings of roads that intersect with U.S. 180, and not crossings of U.S. 180. Potential crossing locations have been identified and counted as identified on available aerial photography, and only crossings of named roads have been accounted for in cost estimation. However, as a part of a more detailed planning process, a project team should obtain data to better understand where those walking and biking would want to cross U.S. 180, whether it would be at an existing motor vehicle intersection or at a mid-block crossing location. Each identified crossing has been assumed to require four bollards, a crosswalk, two wheelchair ramps, and sixteen square feet of detectable warning/truncated dome treatment for cost

estimation purposes. This configuration was ascertained by observing what is present at road crossings along the existing Copper Trail. The following three locations have defined crossings on the existing Copper Trail: 1) U.S. 180 and Fellner Road, 2) U.S. 180 and Boulder Street, and 3) U.S. 180 and East Oak Street.

An example of a crossing of a named road with the identified appurtenance items is shown in Figure 79. The intersection shown is East Oak Street and U.S. 180 in the village of Santa Clara.

Figure 79. Crossing of East Oak Street

Eight crossings of U.S. 180 (north and south) have been identified across the corridor and are highlighted following the cost estimation section below. These crossings will be similar in configuration for cost estimation purposes to what has been outlined above.

5.3.2.4 Lighting

Lighting for future multi-use path extensions was included using the value of 'streetlights' from the UNC report. The average unit price as reported was $4,880 in 2012. Based on observed conditions, it was estimated that lights would be placed every 150 feet along the multi-use pathway.

5.3.2.5 Signage

It is assumed that all intersections where road crossings have been identified are already equipped with necessary traffic control signage for vehicles such as stop signs, yield signs. Cost for 'Stop/Yield Signs' are offered in the UNC report and were estimated at an average of $300 per unit in 2012.

Sections below will outline general improvements and expected costs for pathway segments 2 through 6. A cumulative project summary will be offered at the end of the report.

5.3.3 Pathway Section 2

Pathway Section 2 is 4.3 miles long and extends from the 32nd Street Bypass (Silver City) to Santa Clara corporate limit (Figure 80).

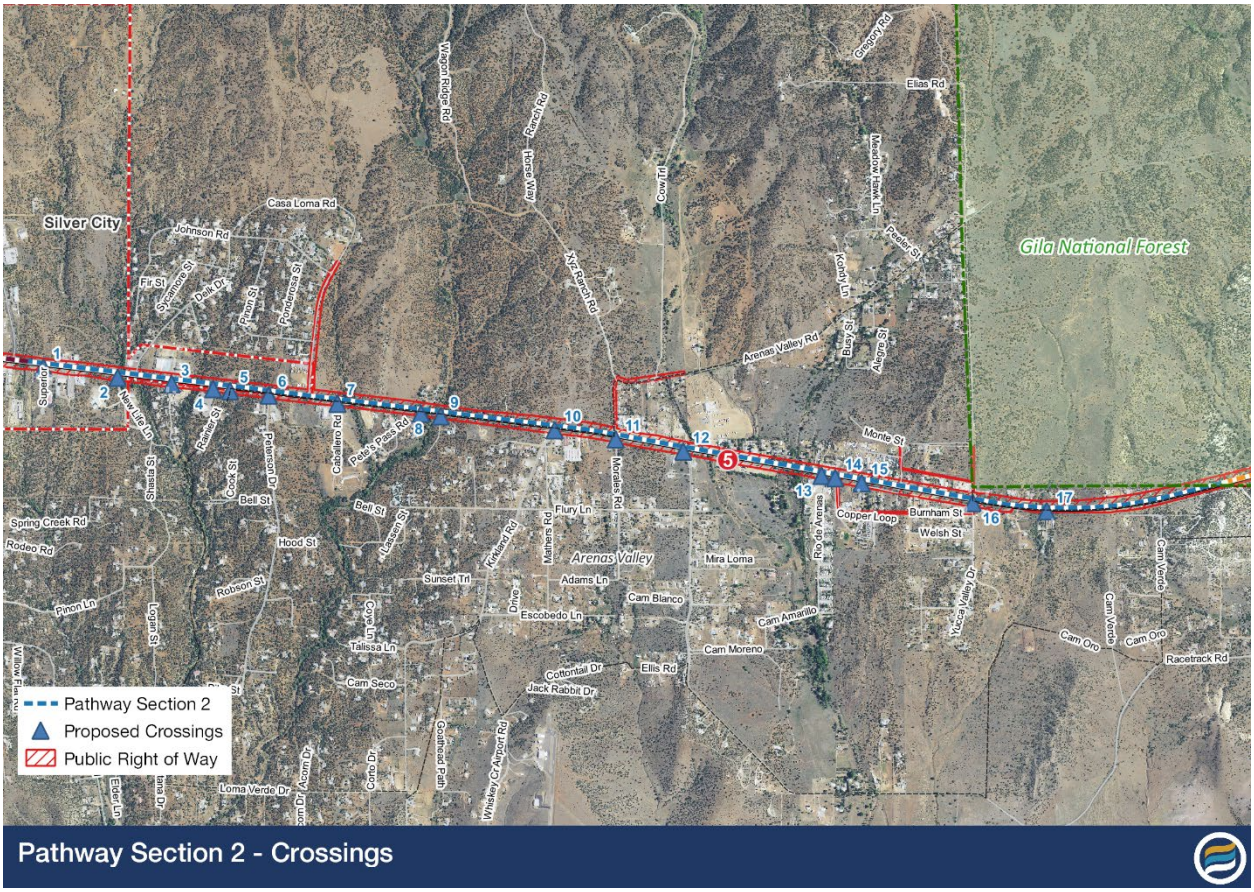


Figure 80. Section 2 – Crossings

On the southern side of the corridor, seventeen crossings of named streets were identified. Numerous other ingress/egress points were also observed. Inclusion of crossings at these locations could be included based on future access considerations. Based on these observed conditions, Table 22 presents estimated costs for Pathway Section 2.

Table 22: Pathway Section 2- Itemized Base Costs.

Item	Cost Unit	Amount	Unit Cost	Total Cost
Multi-Use Trail – Paved	Mile	4.3	$481,140	$2,068,902
Striped Crosswalk	Each	17	$770	$13,090
Detectable Warning	Square Foot	272	$42	$11,424
Wheelchair Ramp	Each	34	$810	$27,540
Bollard	Each	68	$730	$49,640
Streetlight	Each	230	$4,880	$1,122,400

Item	Cost Unit	Amount	Unit Cost	Total Cost
Base Cost - Total				$3,292,996

Table 22 represents the identified cost items, unit costs, and the anticipated amount of each item. The base cost outlined above represents the total cost of these items as presented in the 2013 UNC report. Cost indexing factors to bring these identified 2012 prices to 2022 dollars is offered in Table 23.

Table 23: Pathway Section 2 – Cost Index.

Factor	2012	2022	Estimated Cost
NHCCI	1.61	2.54	$5,195,161
Turner	830	1295	$5,137,867
Mortensen	104	182	$5,762,743
Base Cost			$3,292,996

Based on the identified cost items and price indexing, it is estimated that a paved multi-use path along pathway section 2 would cost between $5,137,867 and $5,762,743.

5.3.4 Pathway Section 3

Pathway Section 3 is 1.25 miles long and extends from the Santa Clara corporate limits to the U.S. 180/ Maple Street intersection (Figure 81).

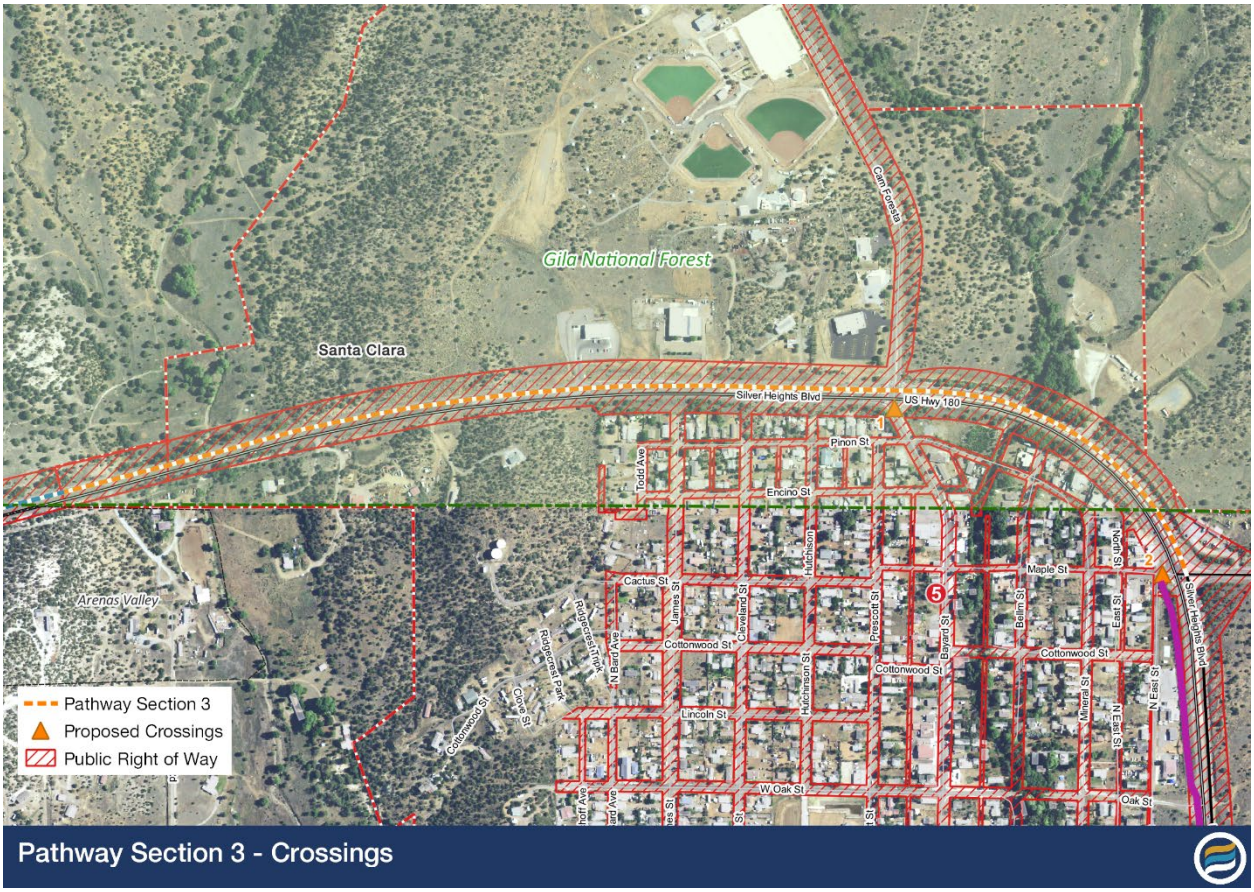


Figure 81. Section 3 – Crossings

Along this section on the southern side of U.S. 180 only two crossing locations were identified. The Copper Trail begins in the area where this section ends, and a detailed configuration of how to best connect to the existing facilities was not generated as part of this cost estimation exercise.

Table 24: Pathway Section 3- Itemized Base Costs.

Item	Cost Unit	Amount	Unit Cost	Total Cost
Multi-Use Trail – Paved	Mile	1.25	$481,140	$601,425
Striped Crosswalk	Each	2	$770	$1,540
Detectable Warning	Square Foot	32	$42	$1,344
Wheelchair Ramp	Each	4	$810	$3,240
Bollard	Each	8	$730	$5,840
Streetlight	Each	44	$4,880	$214,720

Item	Cost Unit	Amount	Unit Cost	Total Cost
Base Cost - Total				$828,109

Table 24 represents the identified cost items, unit costs, and the anticipated amount of each item. The base cost outlined above represents the total cost of these items as presented in the 2013 UNC report. Cost indexing factors to bring these identified 2012 prices to 2022 dollars is offered in Table 25.

Table 25: Pathway Section 3 – Cost Index.

Factor	2012	2022	Estimated Cost
NHCCI	1.61	2.54	$1,306,458
Turner	830	1295	$1,292,050
Mortensen	104	182	$1,449,191
Base Cost			$828,109

Based on the identified cost items and price indexing, it is estimated that a paved multi-use path along pathway section 3 would cost between $1,292,050 and $1,449,191.

5.3.5 Pathway Section 4

Pathway section 4 is 2.1 miles in length and extends from the end of the Copper Trail near Bayard corporate limits to the southern Bayard corporate limits (Figure 82).

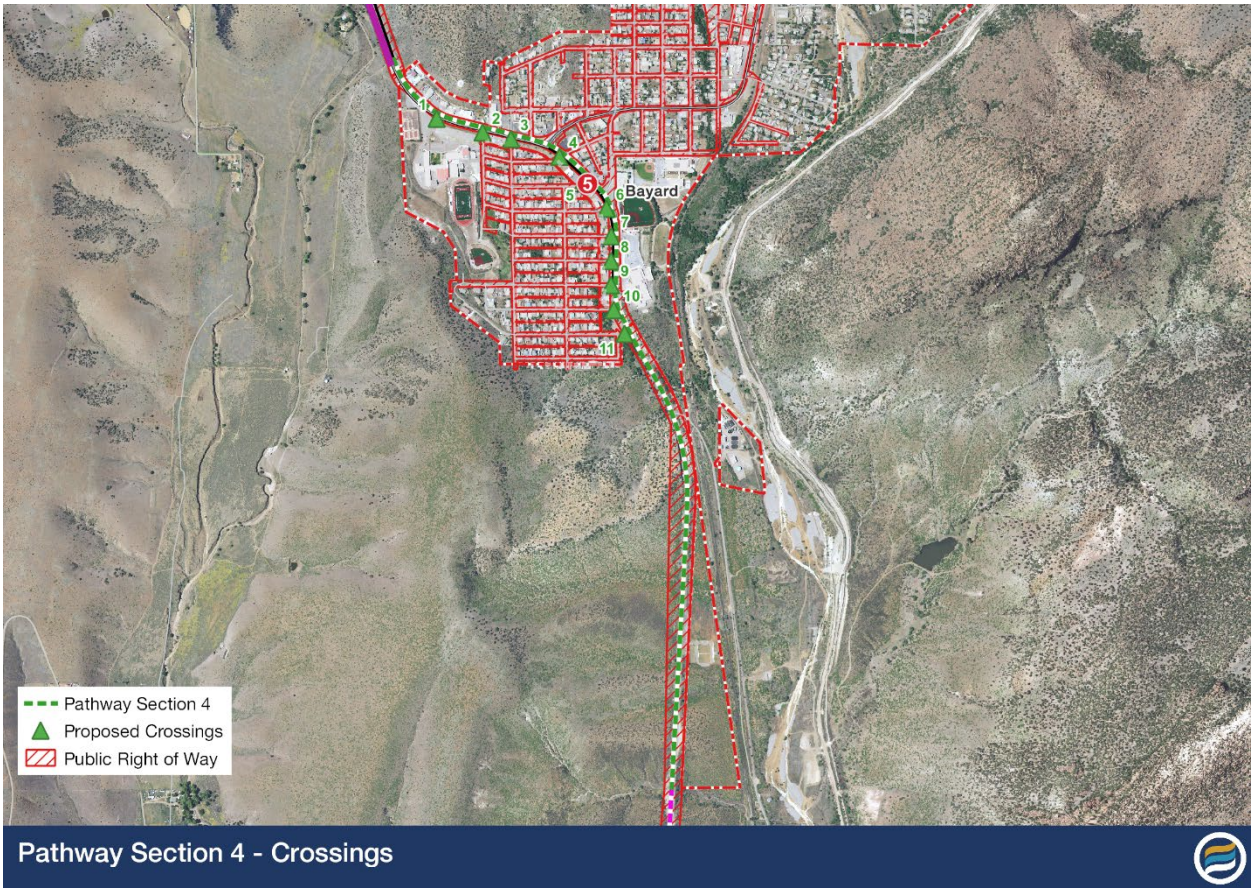


Figure 82. Section 4 – Crossings

Along this route, eleven crossings were identified, including one that was not clearly an official road crossing west of Joan Street at Cobre Consolidated High School.

Table 26 represents the identified cost items, unit costs, and the anticipated amount of each item. The base cost outlined above represents the total cost of these items as presented in the 2013 UNC report. Cost indexing factors to bring these identified 2012 prices to 2022 dollars is offered in Table 27.

Table 26: Pathway Section 4- Itemized Base Costs.

Item	Cost Unit	Amount	Unit Cost	Total Cost
Multi-Use Trail – Paved	Mile	2.1	$481,140	$1,010,394
Striped Crosswalk	Each	11	$770	$8,470
Detectable Warning	Square Foot	176	$42	$7,392
Wheelchair Ramp	Each	22	$810	$17,820
Bollard	Each	44	$730	$32,120

Item	Cost Unit	Amount	Unit Cost	Total Cost
Streetlight	Each	74	$4,880	$361,120
Base Cost - Total				$1,437,316

Table 27: Pathway Section 4 – Cost Index.

Factor	2012	2022	Estimated Cost
NHCCI	1.61	2.54	$2,267,567
Turner	830	1295	$2,242,559
Mortensen	104	182	$2,515,303
Base Cost			$1,437,316

Based on the identified cost items and price indexing, it is estimated that a paved multi-use path along pathway section 2 would cost between $2,242,559 and $2,515,303.

5.3.6 Pathway Section 5

Pathway Section 5 is 2 miles long and extends the southern Bayard corporate limits to Hurley's northern corporate limits (Figure 83).

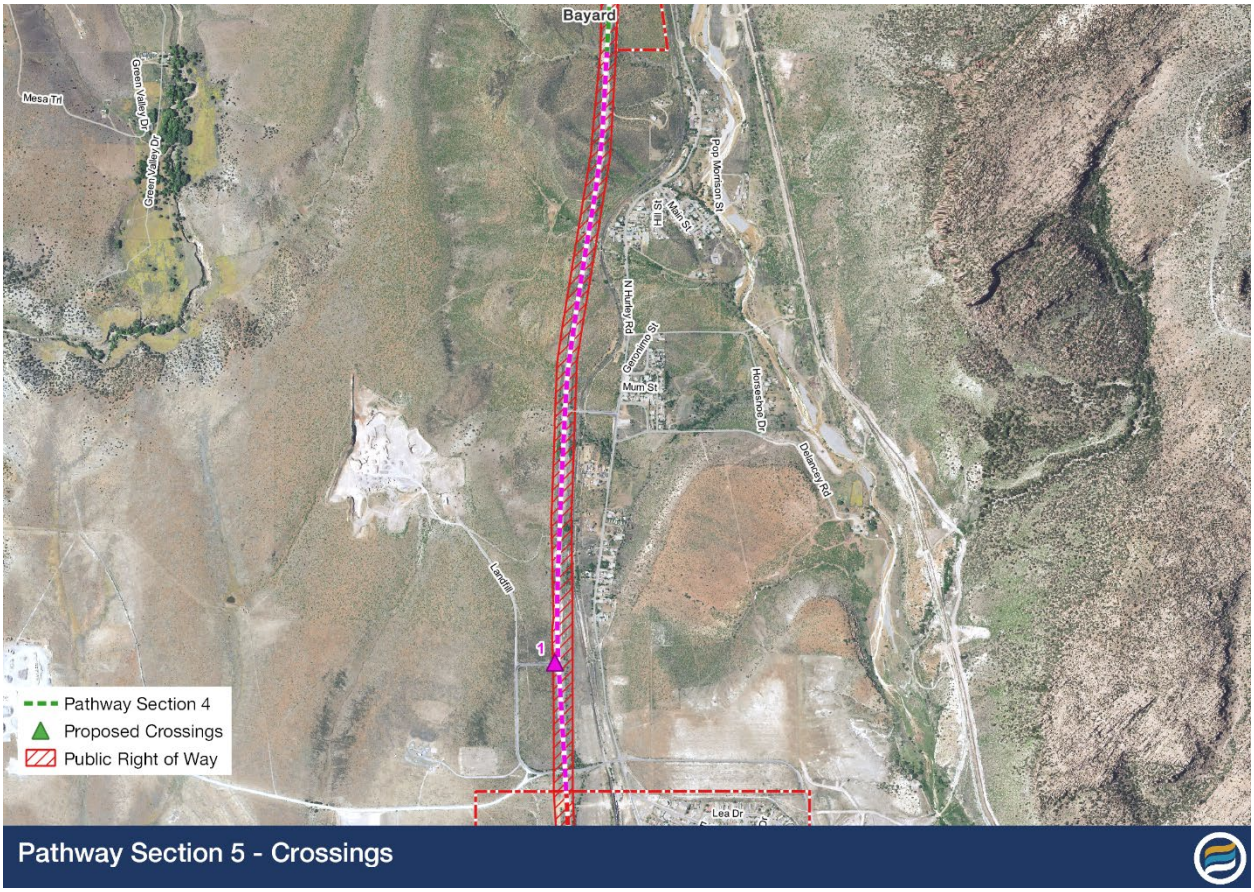


Figure 83. Section 5 – Crossings

Along this section, one road crossing was identified; the road appears to be related to the landfill but was lacking data according to available GIS information. Based on these observed conditions, Table 28 presents estimated costs for Pathway Section 2.

Table 28: Pathway Section 5- Itemized Base Costs.

Item	Cost Unit	Amount	Unit Cost	Total Cost
Multi-Use Trail – Paved	Mile	2	$481,140	$962,280
Striped Crosswalk	Each	1	$770	$770
Detectable Warning	Square Foot	16	$42	$672
Wheelchair Ramp	Each	2	$810	$1,620
Bollard	Each	4	$730	$2,920
Streetlight	Each	70	$4,880	$341,600

Item	Cost Unit	Amount	Unit Cost	Total Cost
Base Cost - Total				$1,309,862

Table 28 represents the identified cost items, unit costs, and the anticipated amount of each item. The base cost outlined above represents the total cost of these items as presented in the 2013 UNC report. Cost indexing factors to bring these identified 2012 prices to 2022 dollars is offered in Table 29.

Table 29: Pathway Section 5 – Cost Index.

Factor	2012	2022	Estimated Cost
NHCCI	1.61	2.54	$2,066,490
Turner	830	1295	$2,043,700
Mortensen	104	182	$2,292,259
Base Cost			$1,309,862

Based on the identified cost items and price indexing, it is estimated that a paved multi-use path along pathway section 5 would cost between $2,043,700 and $2,292,259.

5.3.7 Pathway Section 6

Pathway Section 6 is 1.3 miles long and extends from northern Hurley corporate limits to Hurley's southern corporate limits (Figure 84).

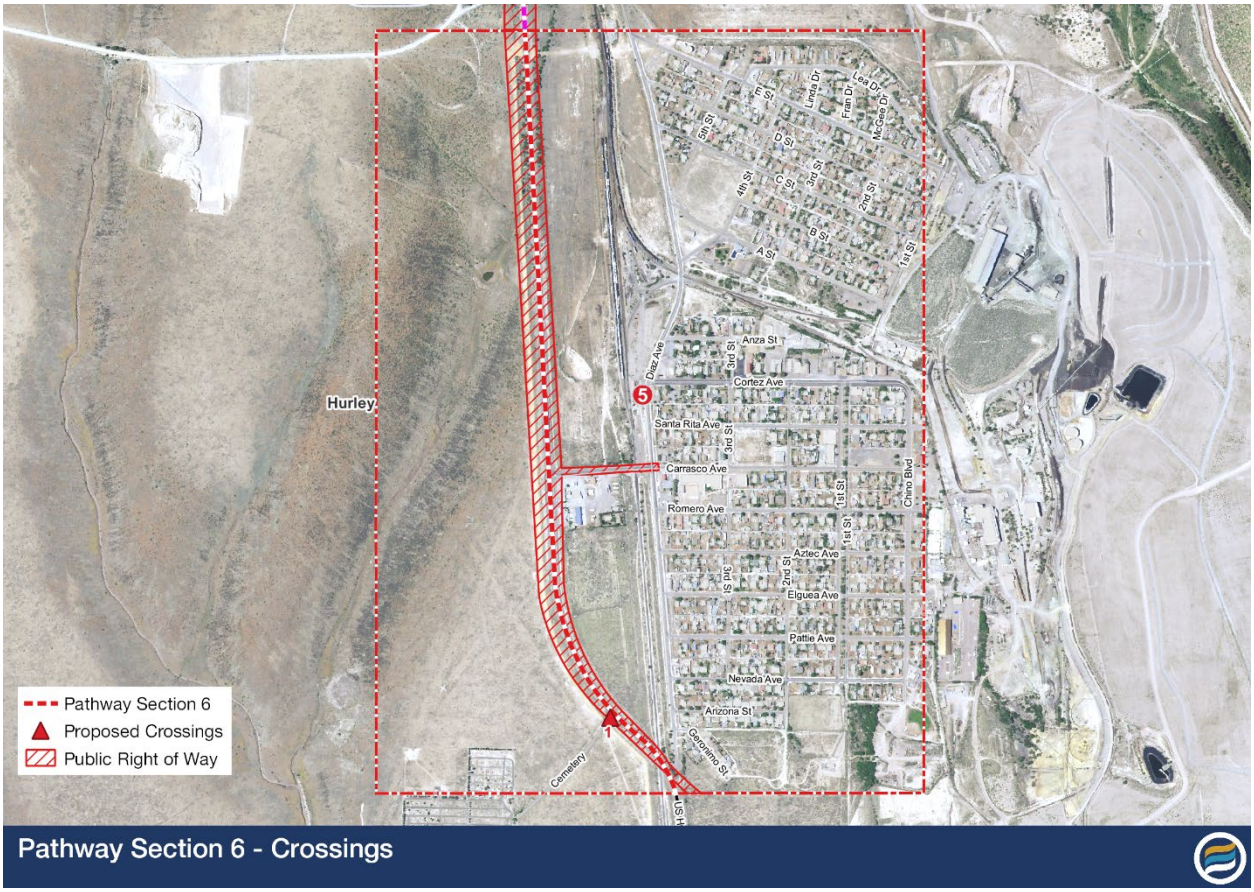


Figure 84. Section 6 – Crossings

One road crossing was identified at the road servicing the Hurley Cemetery. Based on these observed conditions, Table 30 presents estimated costs for Pathway Section 6.

Table 30: Pathway Section 6- Itemized Base Costs.

Item	Cost Unit	Amount	Unit Cost	Total Cost
Multi-Use Trail – Paved	Mile	1.3	$481,140	$625,482
Striped Crosswalk	Each	1	$770	$770
Detectable Warning	Square Foot	16	$42	$672
Wheelchair Ramp	Each	2	$810	$1,620
Bollard	Each	4	$730	$2,920
Streetlight	Each	46	$4,880	$224,480

Item	Cost Unit	Amount	Unit Cost	Total Cost
Base Cost - Total				$855,944

Table 30 represents the identified cost items, unit costs, and the anticipated amount of each item. The base cost outlined above represents the total cost of these items as presented in the 2013 UNC report. Cost indexing factors to bring these identified 2012 prices to 2022 dollars is offered in Table 31.

Table 31: Pathway Section 6 – Cost Index.

Factor	2012	2022	Estimated Cost
NHCCI	1.61	2.54	$1,350,371
Turner	830	1295	$1,335,479
Mortensen	104	182	$1,497,902
Base Cost			$855,944

Based on the identified cost items and price indexing, it is estimated that a paved multi-use path along pathway section 2 would cost between $1,335,479 and $1,497,902.

5.3.8 Total Combined Estimated Project Costs

In total, the combined estimated quantities of materials and their unit costs as estimated based on values from the 2013 UNC report and identified index values are outlined below in Table 32 - Table 34.

Table 32: All Sections – Itemized Base Costs.

Item	Cost Unit	Amount	Unit Cost	Total Cost
Multi-Use Trail – Paved	Mile	10.95	$481,140	$5,268,483
Striped Crosswalks	Each	32	$770	$24,640
Detectable Warnings	Square Foot	512	$42	$21,504
Wheelchair Ramps	Each	64	$810	$51,840
Bollards	Each	128	$730	$93,440
Streetlights	Each	464	$4,880	$2,264,320
Base Cost – Total				$7,724,227

Table 33: All Sections – Estimated Cost Ranges.

Section	Base Cost	Estimated Low	Estimated High	Estimated Average
2	$3,292,996	$5,137,867	$5,762,743	$5,365,257
3	$828,109	$1,292,050	$1,449,191	$1,349,233
4	$1,437,316	$2,242,559	$2,515,303	$2,341,810
5	$1,309,862	$2,043,700	$2,292,259	$2,134,150
6	$855,944	$1,335,479	$1,497,902	$1,394,584
Base Cost - Total	$7,724,227	$12,051,655	$13,517,397	$12,585,033

Table 34: All Sections – Cost Index.

Factor	2012	2022	Estimated Cost
NHCCI	1.61	2.54	$12,186,048
Turner	830	1295	$12,051,655
Mortensen	104	182	$13,517,397
Base Cost			$7,724,227

In total, the construction of a paved multi-use path along the identified sections of the U.S. 180 corridor could cost between $12,051,655 and $13,517,397. The average total of all indexed costs is $12,585,033. (Actual costs are likely to be higher than indicated here, as the Turner Building Cost Index has already increased 4.16% through Q1 2023. All values utilized in this estimation exercise were based on 2022 data, as this was the most recent data available for NHCCI and Mortensen.)

A comparative estimate can be offered by taking the reported fully constructed per mile cost of the Copper Trail as found in the New Mexico eSTIP: $4,119,046 for 2.5 miles of fully loaded (all costs included) multi-use path, resulting in a $1,647,618 per mile cost. Applying this cost to the 10.95 miles of proposed multi-use pathway conceptualized for sections 2 through 6 results in a total estimated cost of $18,041,422.

Therefore, considering both methods of cost estimation, particularly as the UNC resource is more historic, to build out the entire network, the total cost can be estimated to range from $12 million to $18.1 million. Yet, these estimates should not dissuade their pursuit, as motor vehicle projects are often significantly greater than these estimates. The partners should continue to monitor use of the infrastructure, ideally on an annual basis, to demonstrate how increased connectivity may impact the

number of users. Similarly, the partners should leverage funding sources as a result of the Bipartisan Infrastructure Law (BIL) and other similar funding packages, as the purpose behind these projects are to enhance economic vitality for a rural region as well as providing mobility for rural residents, including many low-income individuals.

5.3.9 Corridor Crossings

In the event that a multi-use pathway extension is able to be constructed as outlined, the need for users to cross U.S. 180 to access the facilities will be critical. Evaluating locations along the corridor where these crossings may be recommended, the team utilized the following basic criteria: general observations of housing density, proximity to destinations of interest (health care facilities, stores, community facilities), as well as proximity to other services including public transportation. Based on these factors, nine locations were identified for further consideration and are outlined in Table 35 and Figure 85.

Table 35: Proposed U.S. 180 Crossing Locations.

Number	Location
1	Casa Loma Road
2	Arenas Valley Road (West)
3	Arenas Valley Road (East)
4	Maple Street
5	Manhattan Park Drive
6	Central Avenue
7	Taylor Street
8	North Hurley Road
9	Carrasco Avenue

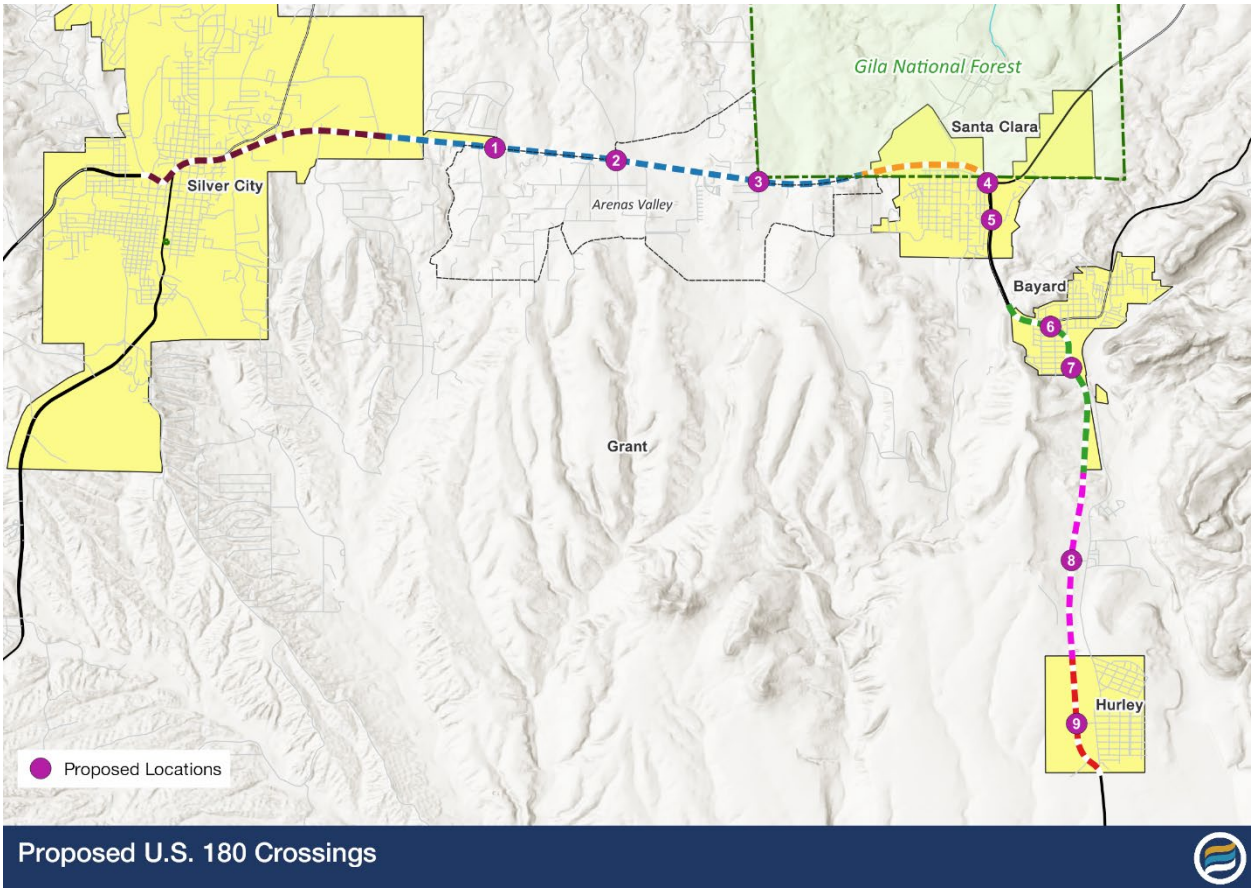


Figure 85. Proposed U.S. 180 Crossings

Utilizing the same base cost calculations based on the UNC report and cost indexing factors as utilized in the sections above, the following cost estimations have been calculated (Table 36 and Table 37). These costs were not included in the individual section and total calculations offered in the previous section. These are offered separately as they could be completed at any time to increase pedestrian and bicyclist safety along the corridor and do not necessarily have to be part of a larger construction project.

Table 36: Proposed 180 Crossings – Itemized Base Costs.

Item	Cost Unit	Amount	Unit Cost	Total Cost
Striped Crosswalk	Each	9	$770	$6,930
Detectable Warning	Square Foot	144	$42	$6,048
Wheelchair Ramp	Each	18	$810	$14,580
Base Cost - Total				$27,558

Table 37: Proposed 180 Crossings – Cost Index.

Factor	2012	2022	Estimated Cost
NHCCI	1.61	2.54	$43,477
Turner	830	1295	$42,997
Mortensen	104	182	$48,227

5.3.10 Final Observations and Recommendations

Accompanying the general topical support identified in the selected planning documents from the region and cost estimation regarding a future extension of bike and pedestrian infrastructure between Silver City and Hurley along the U.S. 180 corridor presented in this task report, the research team offers the following additional observations and recommendations based on the information and observations included in this section.

Access Control – The research team observed 117 ingress and egress points of named roads along the U.S. 180 corridor focus area outlined in this task report. There were numerous other intersections with unnamed roads and private drives also visible on aerial photography in areas immediately adjacent to the corridor. As stated earlier, each of these locations creates an opportunity for pedestrians and bicyclists to come into conflict, potentially raising the likelihood of crashes. Access control considerations should be evaluated as key focus of any project development process that may result from these collective efforts. Access control could also be evaluated at any time as a standalone effort to support increasing safety considerations along the corridor that would benefit individuals already utilizing these facilities.

Shoulder Improvements – During a site visit in September 2022, the research team observed bicyclists and pedestrians utilizing the shoulder of both the east and west bound lanes of U.S. 180. In the event that the establishment of separated bike/pedestrian infrastructure cannot be realized, making improvements to the shoulder areas of U.S. 180 could be a way to implement immediate improvements for all users. Improvements could include widening of shoulders and the removal or relocation of any obstacles including rumble strips.

The Adventure Cycling Association released a report in February 2021 entitled 'Solutions for Making Rumble Strips Safer for Cyclists: Best Practices for Transportation Decision Makers' (Adventure Cycling Association, 2021). This report takes known AASHTO and FHWA standards bike and pedestrian safety and provides suggested bike friendly improvements that NMDOT could consider implementing along the U.S. 180 corridor. Reports such as this can provide information on potential short-term, low-cost improvements that could be implemented to improve safety conditions for existing users.

Additional Signals – In the event that a separated multi-use pathway is established along the southern edge of the U.S. 180 corridor, crossings may be necessary to support safe access to those facilities. Signals may be necessary to best facilitate these crossings. This is a general observation based on the site visit and the nature of infrastructure being sought by

stakeholders. The research team has not evaluated signal warrant qualification factors for any of the proposed locations in this report.

Pedestrian Safety Considerations – Specifically referencing Pathway Section 1 (Little Walnut Road to 32nd Street Bypass in Silver City), re-evaluation of pedestrian safety implementations should be considered. Items like additional pedestrian refuge islands and tighter turning radiuses could reduce non-motorized users' exposure to motor vehicles and may encourage additional use. Other improvements including additional pedestrian crossing signal heads and signal phase changes could be targeted as items that could be implemented quickly. A more in-depth review of conditions found in this pathway section may be required to determine the most appropriate countermeasures or improvements that might support safety considerations.

Bike Lane Design Standards – Silver City and Pathway Section 1 are generally well served by bike lanes and sharrows implemented on public roadways. The research team did observe road segments where the bike lane included road gutters and other obstacles that may be dangerous to bicyclists. It is recommended that all current and proposed bike lanes are reviewed for compliance with current design standards.

Complete Streets Policies – In order to memorialize community commitment to organizational focus on pedestrian and bike issues, communities along the U.S. 180 corridor should consider adopting complete streets policies outlining how bike and pedestrian infrastructure may be implemented in the future. In several instances during the site visit, members of the research team observed individuals choosing to ride their bicycles on the sidewalk as opposed to the bike lane that was available in the same area (see Figure 57). This type of behavior suggests that available bicycle infrastructure may need to be re-evaluated for comfort and safety of users.

Wayfinding – As local stakeholders work to connect residential areas, commercial locations, cultural attractions, and other locations of interest utilizing bike and pedestrian infrastructure, informative wayfinding signage should be considered for implementation. Wayfinding utilizing local art is a key focus of the Five Points document (AIA Communities by Design, 2021) authored by the American Institute of Architects in December 2021. This is another initiative that could be initiated separate from any major infrastructure project and would provide immediate benefit to current users and visitors to the area.

Bike Sharing Programming – In order to promote bike use and accessibility, the research team recommends investigating the potential to establish a bike sharing program.

The National Association of City Transportation Officials (NACTO) in December 2022 released a report on micromobility that details the use of station-based bikes, dockless bikes, and e-scooters during 2020 and 2021 (National Association of City Transportation Officials (NACTO)). While this report is more focused on urban areas, the discussion around mobility patterns and cost considerations could be informative for local stakeholders. For a more focused look at bike sharing considerations for smaller communities, the National League of Cities has published information on best practices that includes programs in Colorado, Alabama, Ohio, and Iowa (Funk, 2022). *Bikeshare and Bicycle Libraries in Small Communities* (Villwock-Witte & Clouser, 2021), looks at how small communities across the United States are improving access to bikes.

Bike sharing considerations could especially benefit cultural and tourism locations like the Five Points Initiative facilities by providing additional accessibility options.

Safe Routes to Schools – The research team recommends that the Silver City and Cobre Consolidated School Districts both complete Safe Routes to Schools planning and programming. These types of activities can occur along a spectrum, from applying to NMDOT for funding to develop plans that analyze existing student travel patterns to engaging adult volunteers to begin leading informal bicycle trains or walking "school buses," which can begin with few resources.

5.3.11 Preliminary Identification of Project Alternatives

The project alternative with the most analysis in this report includes the development of a paved multiuse path that would effectively extend the existing Copper Trail to connect all the communities along the Highway 180 corridor, from Hurley north and west to Silver City. This represents a scenario that was widely shared as a preferred outcome for accommodating safe bicycle and pedestrian travel throughout the corridor. However, other alternatives exist and could be considered as planning proceeds.

Preliminary Alternative 1: No Build

This alternative would involve no changes to bicycle and pedestrian infrastructure along the U.S. Highway 180 corridor. Non-motorized travel would continue to occur on the highway shoulder, as was observed through the counting methodology and observations used by the research team and reported by local residents.

Preliminary Alternative 2: Paved Multiuse Path

This alternative, as described in detail throughout this report, would provide a new, paved multiuse bicycle and pedestrian facility within the existing NMDOT ROW. This alternative would represent a significant safety improvement by separating non-motorized travelers from high-speed vehicular traffic.

Preliminary Alternative 3: Targeted Safety Improvements

This alternative would entail small-scale improvements that would facilitate safer use of the existing roadway shoulder. Examples of potential improvements could include bicycle friendly rumble strips, enhanced alert signage that would communicate the presence of non-motorized users, speed feedback signage to counter speeding in the corridor in lieu of an ongoing investment of additional enforcement, and other similar improvements that may be identified by users and stakeholders.

Preliminary Alternative 4: Alternative Non-Motorized Routes

Data from available sources including Strava indicates that some cyclists are already using alternative routes between Silver City to Santa Clara, most notably along Racetrack Road near the Whiskey Creek Zocalo, illustrated in Figure 86. Efforts to identify and highlight similar alternative routes could be investigated by local stakeholders. While these routes may not be advantageous for expedient commuting purposes, they could provide value as recreational or scenic routes that may appeal to recreational users. As illustrated in Figure 86, this particular alternative route does exist in close proximity to two of the five locations in the Five Point Initiative corridor area.

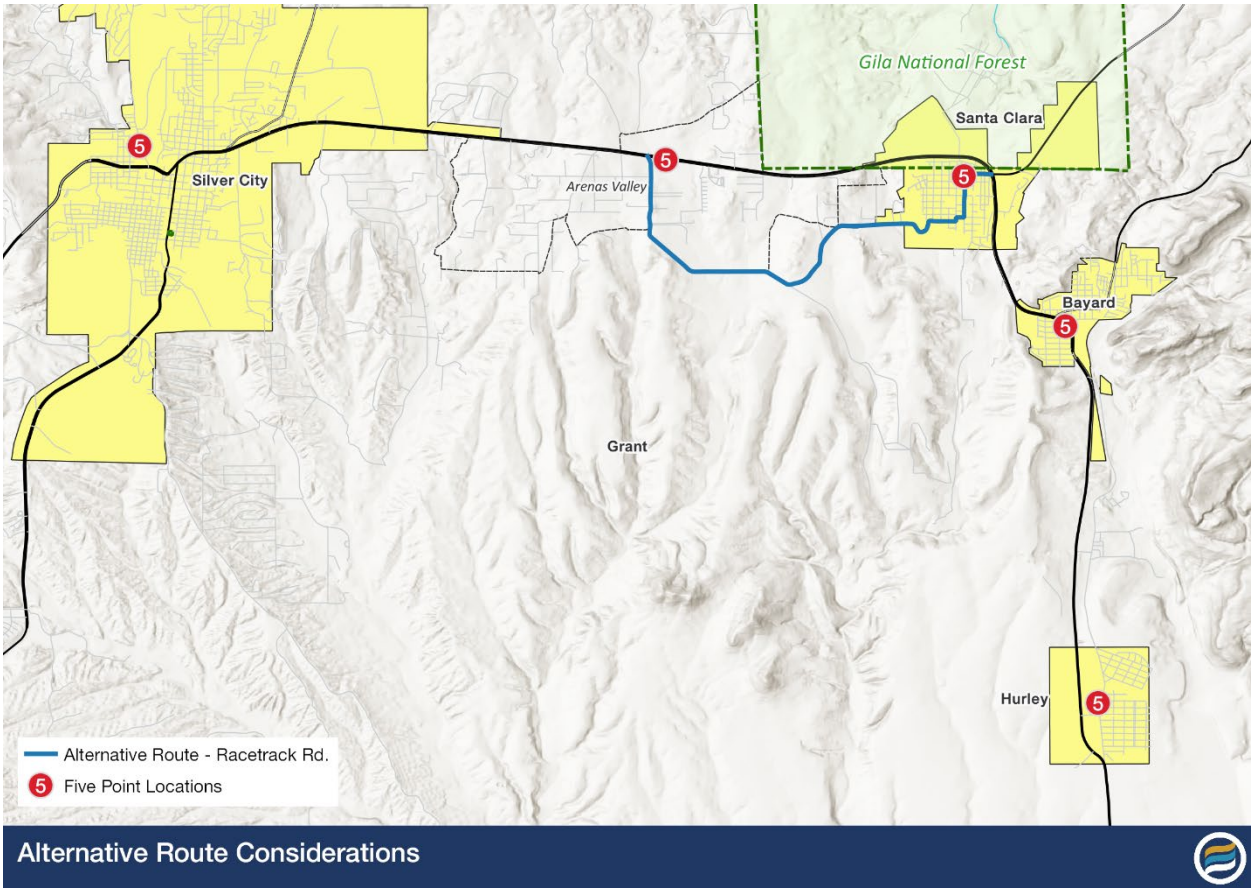


Figure 86. Alternative Route Considerations

6 Conclusions & Recommendations

Qualitative observations and quantitative counts have documented pedestrians and bicyclists using the U.S. 180 corridor between Silver City and Hurley, New Mexico. An analysis of the crash data in this corridor found that when considering all crashes from 2016 to 2020, only 24% of crashes were injury crashes and 0.1% fatal crashes, whereas all bicycle and pedestrian crashes (100%) were injury crashes. This suggests, particularly when considering the vehicular traffic counts when compared with the bicycle and pedestrian counts, that bicyclists and pedestrians recorded in vehicular crash data within the corridor are significantly overrepresented in reported injury crashes.

User counts were conducted as a part of this research effort. It is recommended that SWNMCOG continue to conduct counts at one or all of the selected locations, at least annually, potentially leveraging volunteers to do so. The counts can be short, two-hour counts, at the same screen line locations used for this study, or they could be at other intersections along the corridor, or a combination of the two. Future counters should be conducted in the fall, similar to the time period that these counts were collected, and during the peak hours identified in this report. This would allow SWNMCOG to compare the counts over time. In addition, should the Copper Trail be extended, it is recommended that at least one permanent counter be installed as a part of the project to allow for expansion factors specific for the region to be developed as well as to document how expanded connectivity in the network impacts the use by people walking and bicycling. Such efforts could be augmented by surveys conducted as the multi-use pathway is extended to better understand why people are using it(e.g., health, transportation, recreation or a combination of the above).

Suggested bicycle and pedestrian improvements along the U.S. 180 corridor between Silver City and Hurley include nearly eleven miles of paved multi-use trail, striped crosswalks, detectable warnings, wheelchair ramps, bollards, and lighting. These improvements are estimated to cost between $12,061,655 and $13,517,397. In addition, the NADORF Team recommends evaluating the nine locations as potential bicycle and pedestrian crossings across U.S. 180 so that residents can safely access these improvements. These crossings are estimated to cost between $42,997 and $48,227.

Based on available right-of-way (ROW) data, this corridor has sufficient ROW to extend the Copper Trail for the entire corridor, thereby creating a safe bicycle and pedestrian connection between communities and supporting economic improvement efforts, like the Five Points Initiative, along the corridor. With the significant amounts of federal funding being allocated into transportation projects, the NADORF Team recommends that SWNMCOG lead a cooperative effort to make application to competitive discretionary federal funding programs to extend the Copper Trail. A successful project would provide both increased mobility and safety for the residents and visitors to these communities as they travel between locations along the U.S. 180 corridor.

Future improvements to Highway 180 project in Grant County will rely on availability of funding. The New Mexico 2045 Plan indicates an expected shortfall in funding between projected needs and expected revenues between 2020 and 2045, demonstrated in FIGURE.

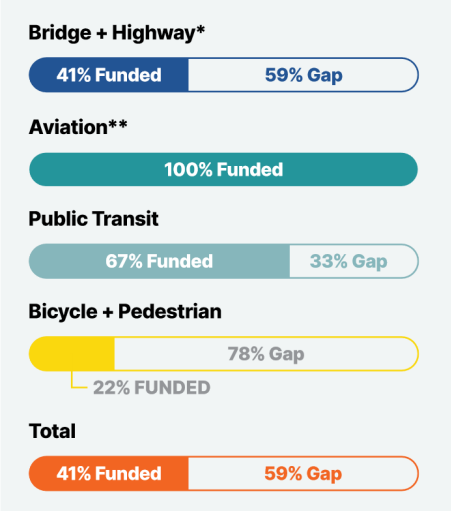


Figure 87. New Mexico 2045 Plan Expected Funding and Shortfall by Transportation Mode

As a result, it is likely that any Highway 180 project that moves forward would be proposed in a highly competitive environment, competing for funding with many other needs in other parts of the region and state. The ultimate project funding could come from a range of sources, including the federal programs below. This list is not exhaustive, and other programs might also fit the potential for future bicycle and pedestrian facility improvements along Highway 180.

6.1 U.S. Department of Transportation Programs

The following U.S. Department of Transportation Programs may be considered for possible funding.

6.1.1 FHWA Surface Transportation Block Grants (STBG)

STBG is a formula program distributed to states that can be used for a wide range of projects. According to FHWA, the program funds eligible projects that "preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals." Learn more about STBG at https://www.fhwa.dot.gov/specialfunding/stp/.

6.1.2 FHWA National Highway Performance Program (NHPP)

NHPP supports projects on the National Highway System (NHS). Projects on the Highway 180 corridor may be eligible for consideration for NHPP funding if they support the state's performance targets. For more information, visit https://www.fhwa.dot.gov/specialfunding/nhpp/.

6.1.3 FHWA Transportation Alternatives Program (TAP)

TAP is a set-aside within the STBG program that tends to fund small-scale projects. These include "pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity." Learn more at https://www.fhwa.dot.gov/bipartisan-infrastructure-law/ta.cfm.

6.1.4 FHWA Federal Lands Access Program (FLAP)

FLAP is a flexible program that can be used to improve transportation facilities that provide access to or are adjacent to Federal lands. This program emphasizes high-use recreation sites and economic

generators. With the Gila National Forest access located north of Highway 180 in Arenas Valley, it is possible that a plan or project for this corridor could be eligible for FLAP funding.

Each state has Programming Decisions Committee that issues a periodic call for FLAP projects. This occurs approximately every three years. New Mexico is anticipated to have a call for projects in 2025. Previous successful projects include facility reconstruction or rehab, along with bridge reconstruction or new bridge projects, for a total of 11 projects selected through the 2021-2022 round. These are being completed with Federal Land Management Agency partners such as the U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Reclamation, and Bureau of Land Management (U.S. Department of Transportation, n.d.). Members of the Programming Decisions Committee are listed here: https://highways.dot.gov/federal-lands/programs-access/nm. Learn more about FLAP at https://highways.dot.gov/federal-lands/programs-access.

6.1.5 USDOT Active Transportation Infrastructure Investment Program (ATIIP)

ATIIP is a USDOT discretionary grant program that was created in the Bipartisan Infrastructure Law (BIL). The first funding opportunity for this program opened in spring 2024. The program can fund planning and design grants as well as construction grants. Eligible projects include sidewalks, bikeways, and trails. These projects can be located within one community to tie into local destinations or can establish connections between multiple communities. Planning projects must cost at least $100,000 to be eligible, and construction projects must cost at least $15 million. Find out more about ATIIP at https://www.transportation.gov/rural/grant-toolkit/active-transportation-infrastructure-investment-program-atiip.

6.2 Other Federal Programs

The following other federal programs may be considered for possible funding.

6.2.1 Community Facilities

U.S. Department of Agriculture Rural Development provides a combination of Community Facilities grants, loans, and loan guarantees to support the development of facilities that are essential to rural communities. This can include transportation facilities, along with many other types of infrastructure, facilities, and community services. Learn more at https://www.rd.usda.gov/programs-services/community-facilities/community-facilities-direct-loan-grant-program-20.

6.2.2 Economic Adjustment Assistance (EAA)

U.S. Economic Development Administration's (EDA) EAA program supports planning, technical, and infrastructure assistance in areas experiencing economic change. This can include changing economic patterns, such as reduced employment in mining over time.

6.2.3 Public Works

The EDA Public Works program supports physical infrastructure upgrades to support economic development. Many types of projects are eligible for this funding, but transportation projects are sometimes supported by EDA as one part of a larger funding package that typically includes sources more traditionally used for transportation, such as FHWA formula programs. When multiple federal programs are used on one project, each one generally retains its own requirements, including match. Learn more about EDA Public Works at https://www.eda.gov/funding/programs/public-works.

6.2.4 Community Development Block Grant (CDBG)

The U.S. Housing and Urban Development CDBG program is very flexible and can include the construction of public facilities, as long as program priorities (such as benefit to low- and moderate-income persons) are met. Many other projects can also be funded through this program. Unless they are considered entitlement communities, most communities apply to their state CDBG program. The state might have specific priorities that influence how project selection occurs from among the larger list of eligible activities. More information is available at https://www.hud.gov/program_offices/comm_planning/cdbg.

7 References

Adventure Cycling Association. (2021). *Solutions for Making Rumble Strips Safer for Cyclists: Best Practices for Transportation Decision Makers.* Retrieved October 26, 2023, from https://www.adventurecycling.org/advocacy/safety-advocacy/downloads/solutions-for-making-rumble-strips-safer-for-bicyclists/

AIA Communities by Design. (2021). *Grant County, NM: A Vision for Five Points.* Retrieved October 26, 2023, from https://static1.squarespace.com/static/5c5a41ee7980b37763618634/t/623e175d98db503b87e71ed5/1648236400648/Grant+Co+DAT+Report+FINAL-compressed-compressed.pdf

Alta Planning + Design. (n.d.). *Small Town and Rural Design Guide: Facilities for Walking and Biking*. Retrieved October 25, 2023, from Shared Use Path: https://ruraldesignguide.com/physically-separated/shared-use-path

American Institute of Architects' Communities by Design. (2021, December 6-8). *Southwest New Mexico ACT.* Retrieved 8 25, 2023, from Grant County, NM: A Vision for Five Points: https://static1.squarespace.com/static/5c5a41ee7980b37763618634/t/623e175d98db503b87e71ed5/1648236400648/Grant+Co+DAT+Report+FINAL-compressed-compressed.pdf

BBC Research & Consulting. (2016). *Economic and Health Benefits of Bicycling and Walking: State of Colorado.* Retrieved October 25, 2023, from https://www.codot.gov/programs/bikeped/building-a-bike-ped-friendly-community/bike-walk-study/assets/report-economic-and-health-benefits-of-bicycling-and-walking-in-colorado-2016-report

Bureau of Economic Analysis, U.S. Department of Commerce. (2020). *2020 - California, Outdoor Recreation Satellite Account (ORSA).* Retrieved October 25, 2023, from https://outdoorindustry.org/wp-content/uploads/2015/03/ORSA-California.pdf

Bureau of Economic Analysis, U.S. Department of Commerce. (2020). *2020 - Delaware.* Retrieved October 25, 2023, from https://outdoorindustry.org/wp-content/uploads/2015/03/ORSA-Virginia.pdf

Bureau of Economic Analysis: U.S. Department of Commerce. (2020). *2020 - Virginia, Outdoor Recreation Satellie Account (ORSA).* Retrieved October 25, 2023, from https://outdoorindustry.org/wp-content/uploads/2015/03/ORSA-Virginia.pdf

Bushell, M. A., Poole, B. W., Zegeer, C. V., & Rodriguez, D. A. (2013). *Costs for Pedestrian and Bicyclist Infrastructure Improvements.* Retrieved October 25, 2023, from https://www.pedbikeinfo.org/cms/downloads/Countermeasure%20Costs_Report_Nov2013.pdf

Dartnell, C., Semler, C., Mildner, C., Grosso, R., Cooper, M., Taylor, K., & Carsky, G. (2021). *Impacts of Shared Use Paths.* MassTrails. Retrieved October 25, 2023, from https://www.mass.gov/doc/masstrails-shared-use-path-impacts-study/download

Eco-Counter. (2019a). *MULTI Range Mobile MULTI*. Retrieved October 9, 2023, from Eco-Counter: https://www.eco-counter.com/produits/multi-range/mobile-multi/

Eco-Counter. (2019b). *PYRO-Box*. Retrieved October 9, 2023, from Eco-Counter: https://www.eco-counter.com/produits/pyro-range/pyro-box/

Esri, HERE, Garmin, FAO, NOAA, USGS, OpenStreetMap contributers, and the GIS User Community. (2023, September 7). Navigation Base Map.

Federal Highway Administration, U.S. Department of Transportation. (2014). *Making Local and Rural Roads Safer for Pedestrians and Bicycles.* Retrieved October 25, 2024, from https://safety.fhwa.dot.gov/local_rural/training/fhwasa14090/

Federal Highway Administration, U.S. Department of Transportation. (2023, September 15). *National Highway Construction Cost Index (NHCCI)*. Retrieved October 25, 2023, from https://www.fhwa.dot.gov/policy/otps/nhcci/

Funk, K. (2022, June 3). *Bikeshare Solutions for Small Cities & Towns*. Retrieved October 26, 2023, from National League of Cities: https://www.nlc.org/article/2022/06/03/bikeshare-solutions-for-small-cities-towns/

Google. (n.d.). *Google Street View*. Retrieved from www.google.com/maps

Kothuri, S., Kading, A., Schrope, A., White, K., Smaglik, E., Aguilar, C., & Gil, W. (2018). *Addressing Bicycle-Vehicle Conflicts with Alternate Signal Control Strategies.* National Institute for Transportation and Communities. Retrieved October 23, 2023, from https://rosap.ntl.bts.gov/view/dot/37435/dot_37435_DS1.pdf

Lee, K., & Sener, I. N. (2021). Strava Metro data for bicycle monitoring: a literature review. *Transport Reviews, 41*, 27-47.

Mojica, J., & Fletcher, A. (2020). *Economic Analysis of Outdoor Recreation in Washington State: 2020 Update.* Retrieved October 25, 2023, from https://rco.wa.gov/wp-content/uploads/2020/07/EconomicReportOutdoorRecreation2020.pdf

Mojica, J., Cousins, K., & Madsen, T. (2021). *Economic Analysis of Outdoor Recreation in Oregon.* Tacoma. Retrieved October 25, 2023, from https://industry.traveloregon.com/resources/research/oregon-outdoor-recreation-economic-impact-study/

National Academies of Sciences, Engineering, and Medicine. (2014). *Guidebook on Pedestrian and Bicycle Volume Data Collection.* Washington, DC: The National Academies Press.

National Association of City Transportation Officials (NACTO). (n.d.). *Half a Billion Trips on Shared Micromobility Since 2010.* Retrieved October 26, 2023, from https://nacto.org/wp-content/uploads/2022/12/2020-2021_shared_micro_snapshot_Dec7_2022.pdf

New Mexico Department of Transportation. (2018). *New Mexico Prioritized Statewide Bicycle Network Plan.* Retrieved October 25, 2023, from https://www.bhinc.com/wp-content/uploads/2018/09/NM-Bike-Plan-Public-Review-Draft-September-2018.pdf

New Mexico Department of Transportation. (2021). *Active Transportation and Recreational Programs*. Retrieved October 9, 2023, from https://www.dot.nm.gov/planning-research-multimodal-and-

safety/planning-division/multimodal-planning-and-programs-bureau/active-transportation-and-recreational-programs/

New Mexico Department of Transportation. (n.d.). *Control 1101841*. Retrieved October 25, 2023, from https://estip.dot.state.nm.us/project_info?isReadOnly=True&project_id=1272041&version=6%20&lat=32.731800680820314&lng=-108.13413619995117&redirect=fullmap&site_list=0,1,3,2,&zoom_level=13

New Mexico Department of Transportation. (n.d.). *Transportation Data Management System*. Retrieved from https://nmdot.public.ms2soft.com/tcds/tsearch.asp?loc=Nmdot

OpenStreetMap. (2023, March 13). *OpenStreetMap*. Retrieved from https://www.openstreetmap.org/

Outdoor Industries Association. (2017). *Outdoor Recreation & Trails.* Retrieved October 25, 2023, from https://floridadep.gov/sites/default/files/2018_10Trails_Economics_Infographic_1.pdf

Patten, R. S., Schneider, R. J., Toole, J. L., Hummer, J. E., & Rouphail, N. M. (2006). *Shared-Use Path Level of Service Calculator: A User's Guide.* Retrieved October 25, 2023, from https://www.fhwa.dot.gov/publications/research/safety/pedbike/05138/

Qian, X., Linscheid, N., Tuck, B., Lindsey, G., Schoner, J., Pereira, M., & Berger, A. (2016). *Assessing the Economic Impact and Health Benefits of Bicycling in Minnesota.* Retrieved October 25, 2023, from https://www.cts.umn.edu/publications/report/assessing-the-economic-impact-and-health-effects-of-bicycling-in-minnesota

Strava. (2022). *Strava Global Heatmap*. Retrieved from https://www.strava.com/heatmap#9.74/-108.10018/32.65509/hot/all

Turner Construction Company. (2023). *Cost Index*. Retrieved from Turner: https://www.turnerconstruction.com/cost-index

U.S. Department of Transportation. (n.d.). *Federal Lands Access Program Accomplishment Reports*. Retrieved from https://explore.dot.gov/views/FLAP/Intro?%3Aembed=y&%3Aiid=1&%3AisGuestRedirectFromVizportal=y

Urban Design 4 Health, Inc., Fehr and Peers, and HDR Engineering, Inc. (2017). *Economic Impacts of Active Transportation: Utah Active Transportation Benefits Study.* Retrieved October 25, 2023, from https://static1.squarespace.com/static/5b8b54d1f407b40494055e8f/t/5bdc820c4fa51a4d9f77e014/1541177878083/Utah+Active+Transportation+Benefits+Study+-+Final+Report.pdf

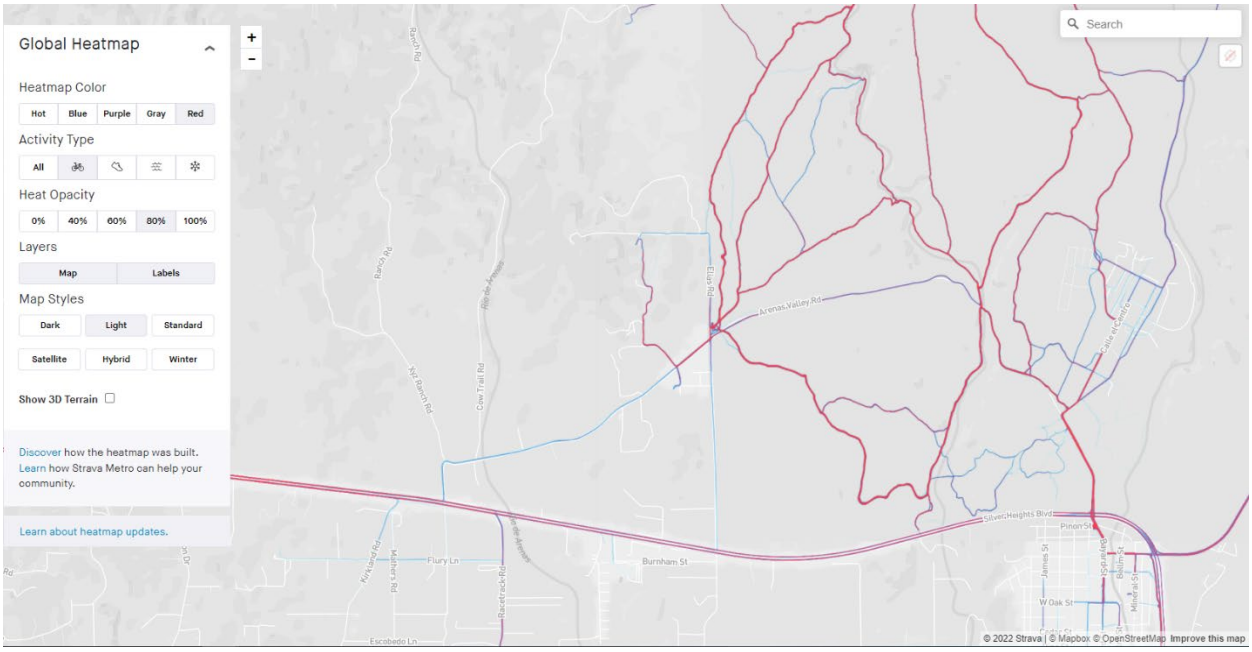
Villwock-Witte, N., & Clouser, K. (2021). *Bikeshare and Bicycle Libraries in Small Communities.* Retrieved October 26, 2023, from http://ruraltransportation.org/wp-content/uploads/2021/12/Bikeshare_Bike_Libraries_2021.pdf

Weather Underground. (2023). *Tyrone, NM Grant County Station Weather HIstory*. Retrieved January 23, 2023, from https://www.wunderground.com/history/daily/us/nm/tyrone/KSVC

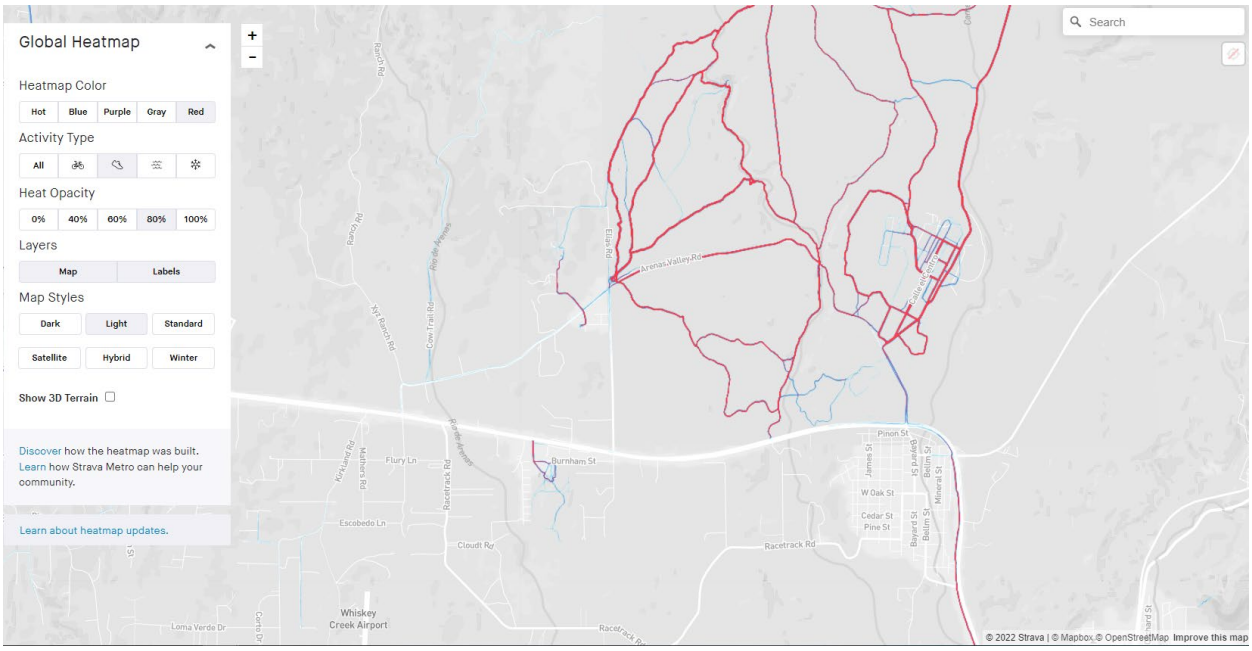
8 Appendix A – Strava Heatmaps

Arenas Valley, NM

Bicycle Activity (Strava, 2022)

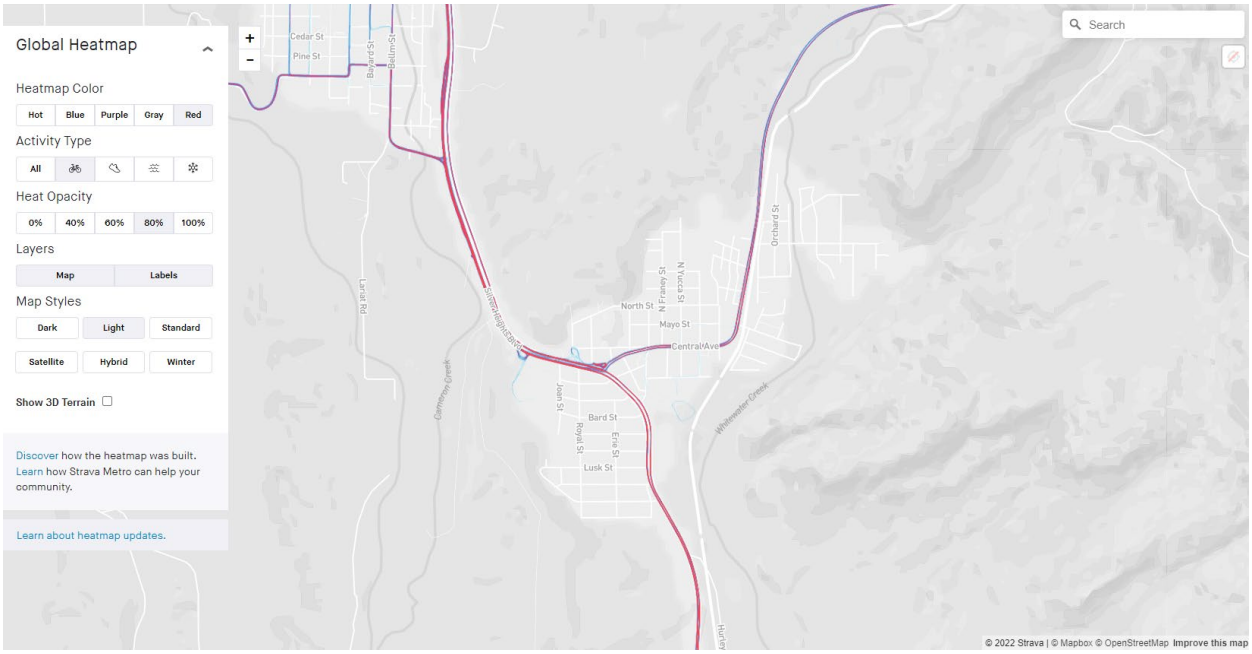


Pedestrian Activity (Strava, 2022)

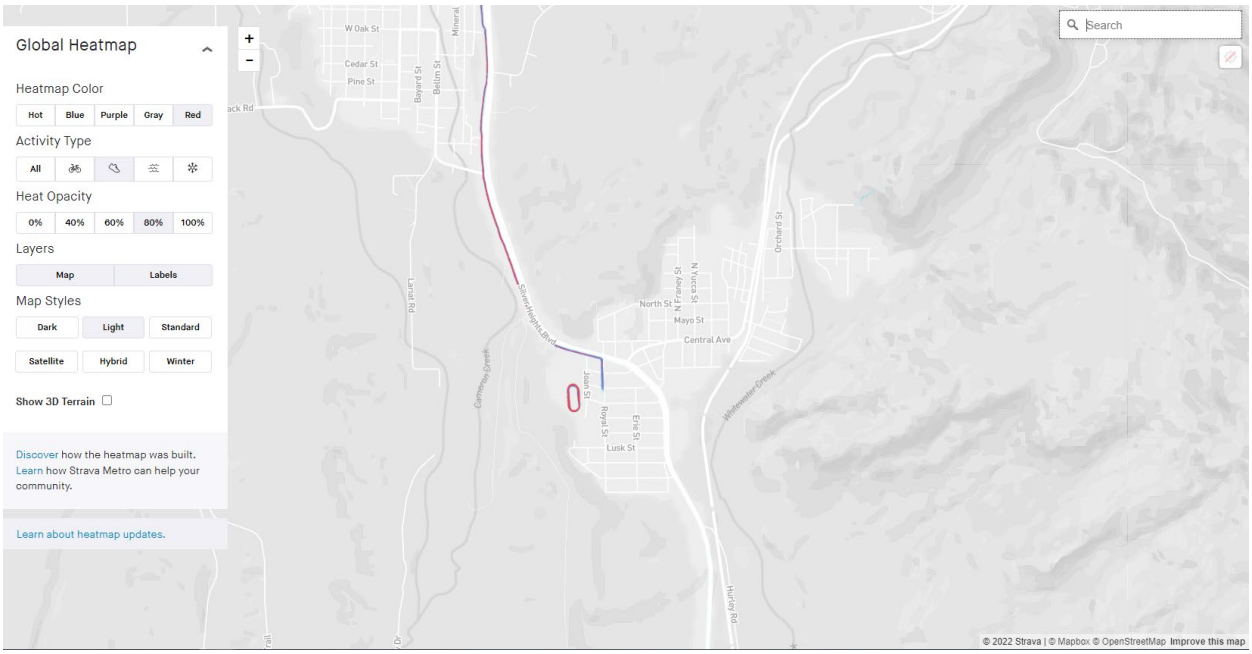


Bayard, NM

Bicycle Activity (Strava, 2022)

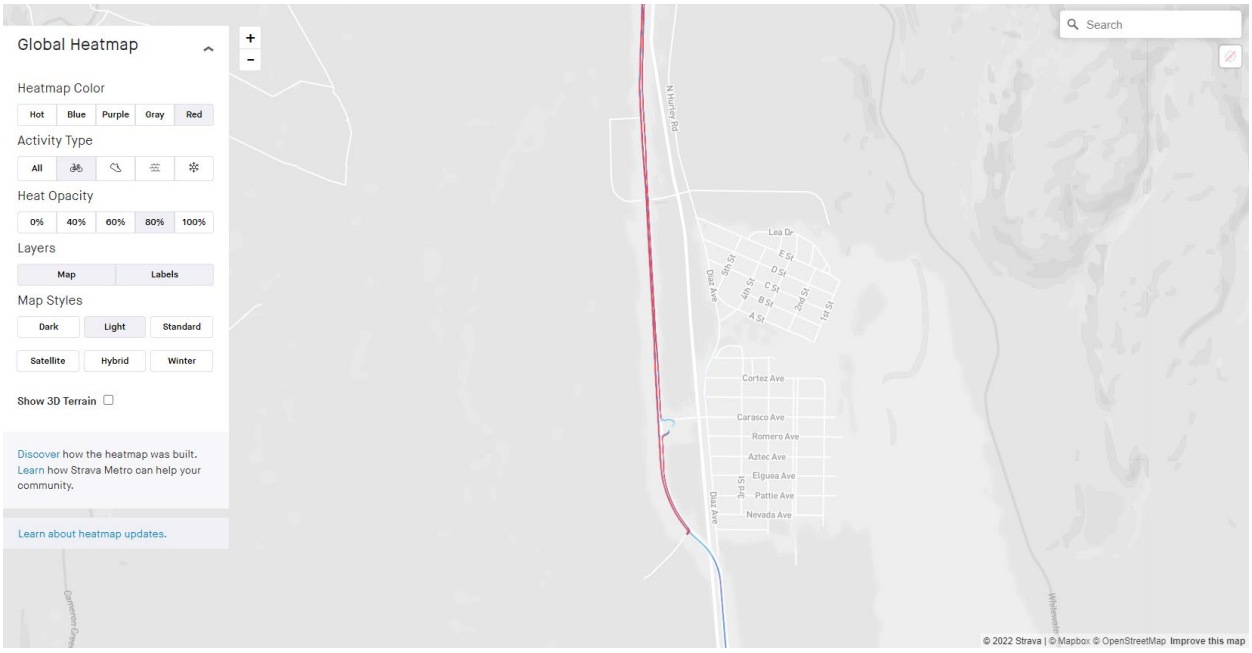


Pedestrian Activity (Strava, 2022)



Hurley, NM

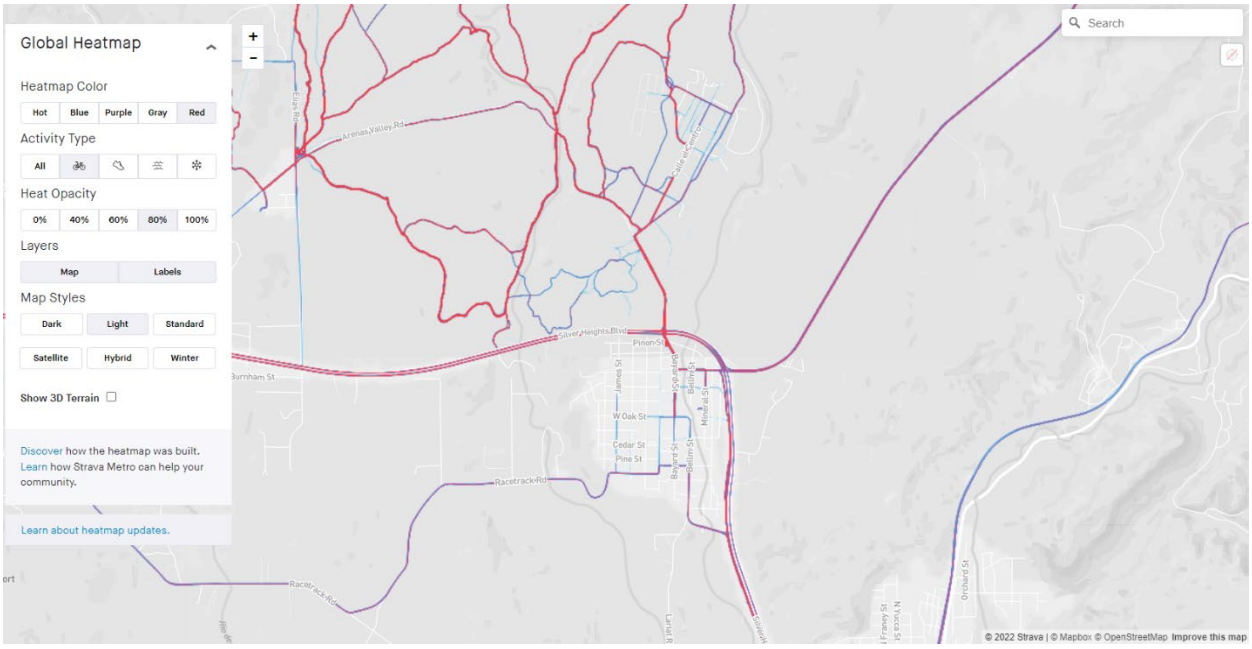
Bicycle Activity (Strava, 2022)



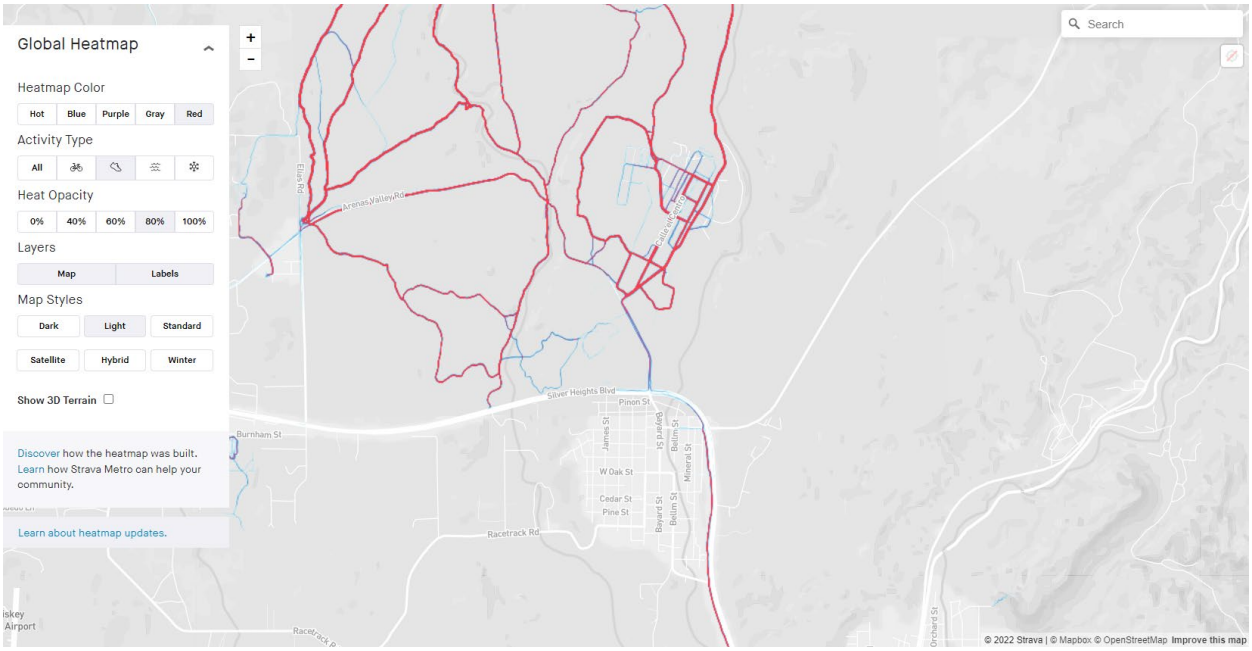
Pedestrian Activity (Strava, 2022)

Santa Clara, NM

Bicycle Activity (Strava, 2022)

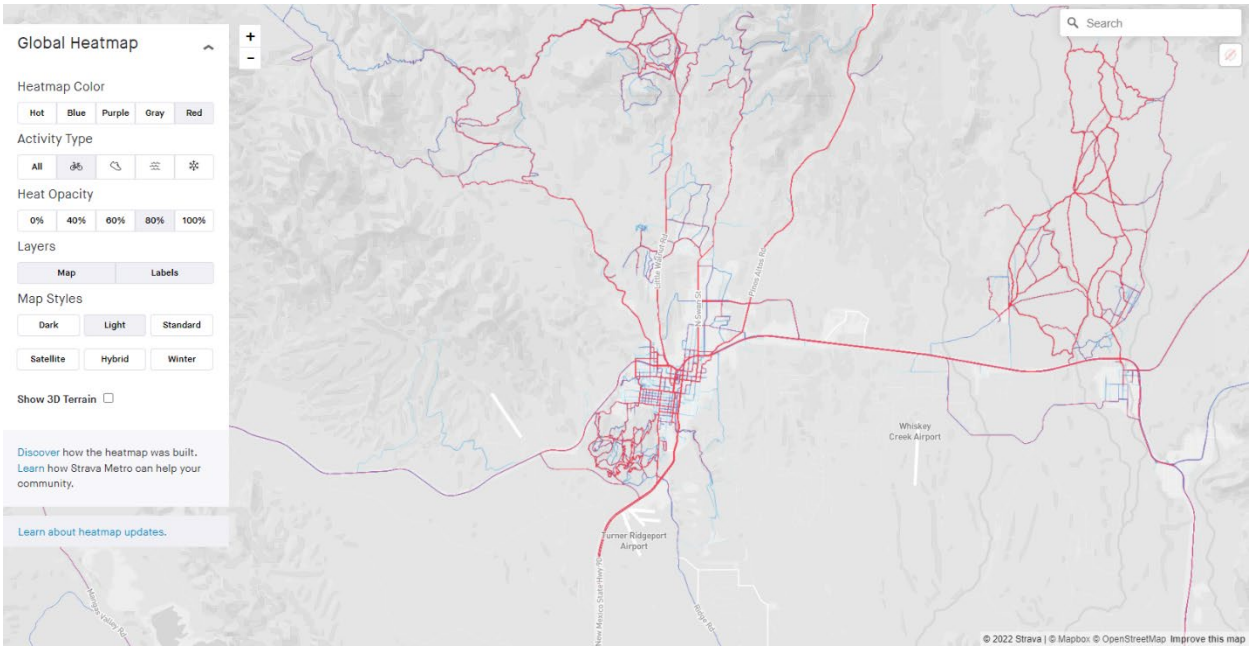


Pedestrian Activity (Strava, 2022)

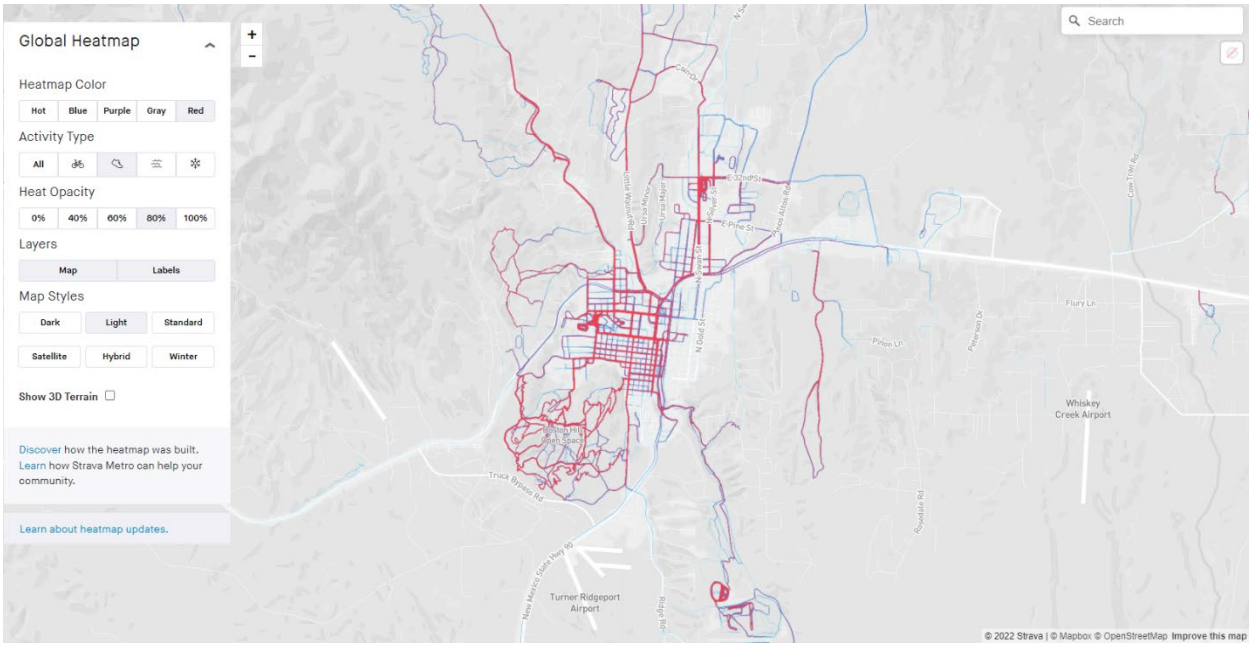


Silver City, NM

Bicycle Activity (Strava, 2022)



Pedestrian Activity (Strava, 2022)



9 Appendix B – Manual Counts, Photos of Users

U.S. 180 & Little Walnut Road

10 Appendix C – Crash Details


N Newsham St
Pinos Altos Rd
Silver Heights Blvd
30193489
Pinos Altos Rd
Silver Heights Blvd
180
N Mountain View Rd
Pedalcycle Involved Crashes
Pedestrian Involved Crashes
0 0.01 0.01 0.03 0.04 0.06
Miles
N


W Hill St
N Florida St
Alabama St
N Georgia St
W Howell St
W Highway 180
30224125
W Florence St
W Gordon St
N Florida St
N Georgia St
N Alabama St
W 13th St
N Virginia St
Pedalcycle Involved Crashes
Pedestrian Involved Crashes
0 0.01 0.02 0.05 0.07 0.09
Miles
N


W Howell St
N Georgia St
N Virginia St
Little Walnut Rd
30230815
W Highway 180
W Highway 180
N Deleware St
W Gordon St
N Georgia St
N Santa Rita St
W 13th St
W 13th St
N West St
Pedalcycle Involved Crashes
Pedestrian Involved Crashes
0 0.01 0.02 0.05 0.07 0.09
Miles
N