West Vail Master Plan: Transportation Existing Conditions

Prepared for: Town of Vail

November 16, 2020

DN20-0655

FEHR PEERS

Introduction

The following report provides an overview of the existing transportation system in West Vail, including profiles of roadway infrastructure, transit service, and walking and bicycling facilities as well as usage of all modes. As a popular destination offering a high quality of life, access to prominent tourist destinations like Vail ski resort, and abundant outdoor recreation opportunities, West Vail attracts a range of transportation users who often travel to the town by vehicle but seek to use active modes for trips within West Vail and to the Vail Village area.

Due to the limited amount of parking, frequent transit services, proximity of destinations, and latent demand expressed by users, West Vail has the foundation for fostering mobility on all transportation modes.

However, multimodal travel in West Vail faces a number of challenges, due to the topography, disconnected street network (lack of a street grid), land use patterns that concentrate commercial activity in one area of the community, and Interstate-70 (I-70) bisecting the community. This report summarizes the existing strengths of West Vail's transportation system and identifies challenges that could be addressed through the *West Vail Master Plan*. These challenges include declining transit ridership both locally and nationally, a lack of connectivity across I-70 for bicyclists and pedestrians, seasonal issues relating to snow and shorter daylight hours, and traffic safety concerns near commercial driveways on the North Frontage Road. These and other challenges will be considered during development of transportation-related recommendations for the *West Vail Master Plan*.

Transportation in West Vail

Roadways

Roadway classifications

I-70, which is managed by the Colorado Department of Transportation (CDOT), runs through West Vail and offers access to other communities throughout Eagle County, as well as Denver, to the east, and Grand Junction and Utah to the west. The North and South Frontage Roads are the two arterials serving the study area providing connectivity to the Vail Village area and East Vail. The Frontage Roads are managed by CDOT. **Figure 1** shows the existing roadway network in West Vail. Within West Vail, destinations are served by a network of public and private local streets.

Figure 1: West Vail Roadway Classifications

Traffic Volumes

When comparing present day traffic volumes with traffic data collected ten years ago during the *2009 Vail Transportation Master Plan* process, it was found that volumes have declined **(Figure 2)**.

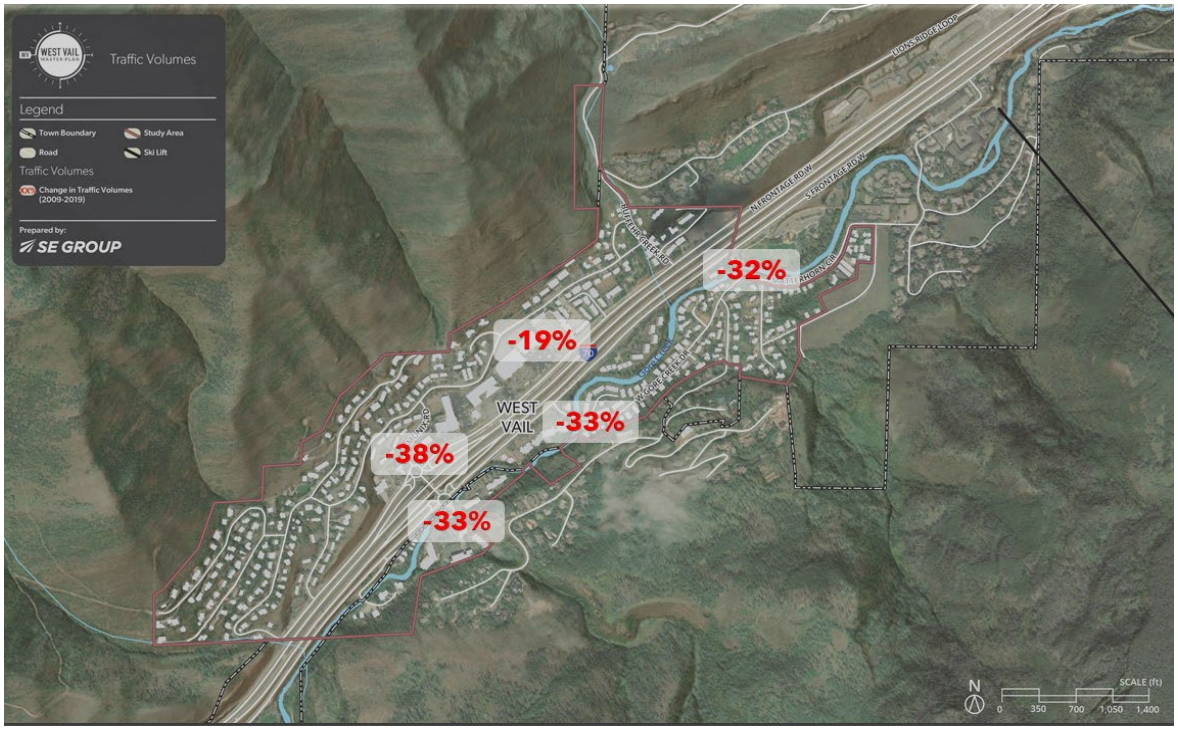


Figure 2: Change in West Vail Traffic Volumes from 2009 to 2019

The traffic volumes (which are shown as percent changes from 2009 to 2019 in **Figure 2),** were both collected during typical peak season travel days in December when a higher rate of visitation can be expected as Vail and Beaver Creek ski resorts were open. The percent changes shown represent the average change in volumes on both the east and west approaches of the North and South Frontage Roads.

The declines on the North Frontage Road shown in **Figure 2** occurred at the following intersections:

- Chamonix Road roundabout (38% reduction)
- City Market driveway (19% reduction)

The declines on the South Frontage road occurred at the following intersections:

- Chamonix Road roundabout (33% reduction)
- Gore Creek Road (33% reduction)
- Matterhorn Circle (32% reduction)

While the declines from 2009 to 2019 are substantial, it should be noted that volumes were only collected during a few day period in December. Due to this small sample size, variation in traffic volumes can occur due to weather, events at the ski resorts that may have attracted additional visitors to the area in 2009, or other factors. Additional study is needed to determine whether the decline in traffic volumes observed in this analysis is part of a trend.

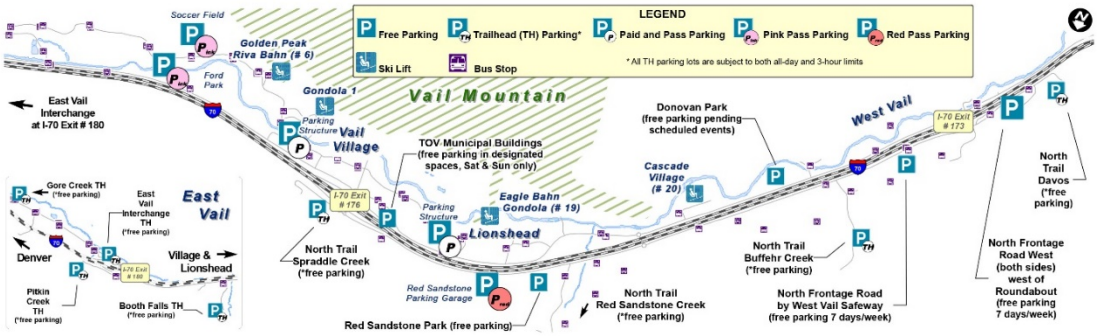
Parking Facilities

There are three Town of Vail parking areas in West Vail and two trailheads with parking facilities recognized by the Town. There is also a significant amount of parking associated with the commercial businesses along the North Frontage Road. The three parking facilities are located at:

- Donovan Park (immediately outside the study area) – approximately 143 parking spaces
- On-street parking on the North Frontage across from Safeway supermarket along the eastbound direction – unmarked with space for approximately 65 vehicles
- On-street parking along both sides of the North Frontage Road west of the roundabout at Chamonix Road – unmarked, gravel shoulder with space for approximately 40 vehicles on the north side of the road and approximately 45 vehicles on the south side of the road. Utilization of these on-street parking spaces is high during the winter due to skiers visiting the area utilizing the free parking.

The two official trailhead parking locations are

- North Trail Parking on Buffehr Creek Road – 8 marked spaces (time limited)
- North Trail Parking on the North Frontage Road east of Arosa Drive – 15 marked spaces (time limited)



The large private surface parking lots associated with the commercial properties along the North Frontage Road serve businesses including a hotel, grocery stores, hardware store, dentist, and bank. There is not data available on the occupancy of these lots. Anecdotally, there is additional parking available at these locations. The businesses also have different peak times of usage, resulting in opportunities for increased sharing of parking between businesses. These lots are private, and therefore only available to customers.

Transit

There are three transit agencies providing service in West Vail—Vail Transit, ECO Transit, and Bustang. This section provides brief profiles of the service each agency offers both system-wide and within West Vail, along with a summary of ridership trends on Vail Transit routes serving West Vail.

Service Providers

West Vail is served locally by Vail Transit and regionally by ECO Transit. CDOT's Bustang service provides intercity connections to Grand Junction and Denver. **Figure 3** shows existing transit service in West Vail and **Table 1** highlights the service characteristics for each provider.

Table 1: Service Characteristics of Transit Agencies Serving West Vail

Provider	Number of Routes	Routes Serving West Vail	Service Hours	Frequency	Fare
Vail Transit	8 (winter) 6 (spring)	4 (winter) 2 (spring)	5:45 AM – 2:10 AM	30 minutes (except West Vail Express, which operates at 10 minute frequencies)	Free
ECO Transit*	5 (winter) 4 (summer)	2 (winter and summer)	5:00 AM – 12:00 AM	12 minutes (peak) 30-60 minutes (off-peak)	$4
CDOT Bustang*	7	1+	6:30 AM – 5:30 PM	3x per day	Destination-based ranging from $5.00 to $26.00

*Due to COVID-19, transit service is temporarily suspended or operating at reduced schedules, and in some cases have suspended fare collection. The service characteristics in this report represent regular service.

+The West Line between Denver and Grand Junction stops at the Town of Vail Transportation Center but does not serve West Vail directly. Connections to West Vail are available via Vail Transit and ECO Transit service.

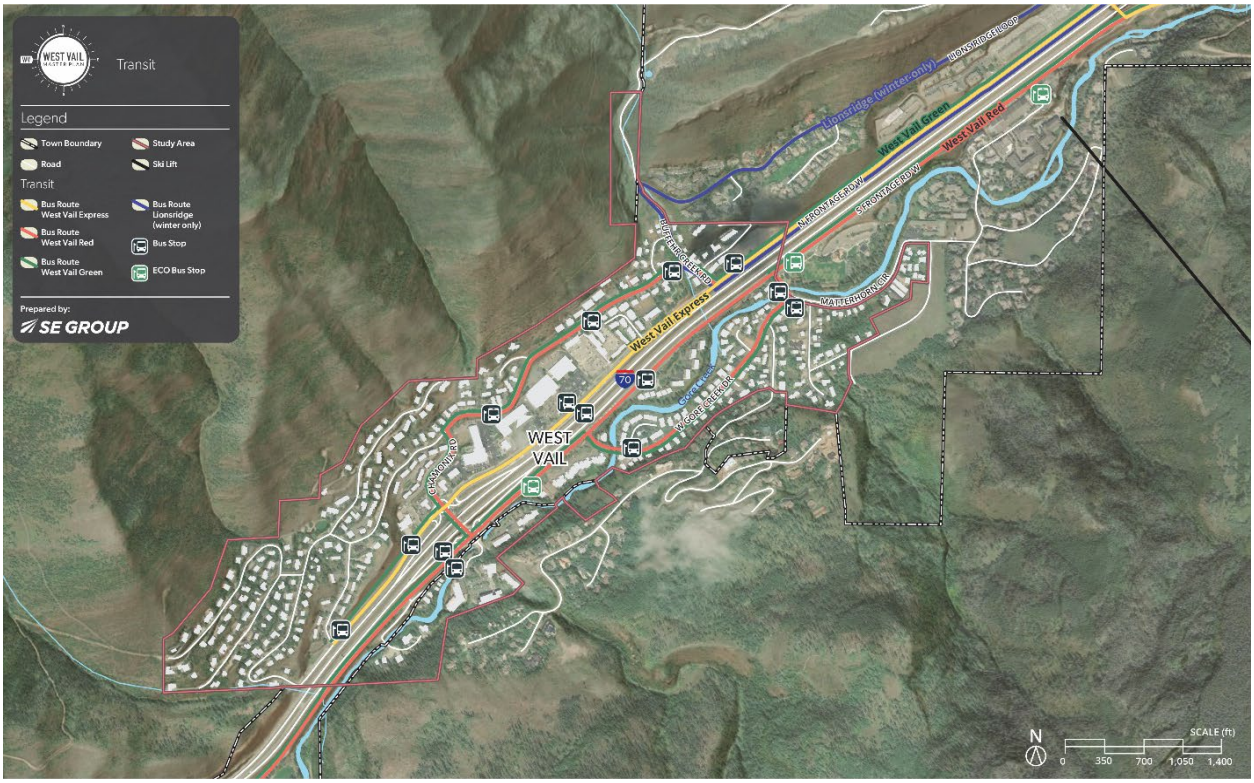


Figure 3: Existing Transit Service in West Vail

Ridership

Ridership on Vail Transit varies seasonally, with the highest ridership during the winter months. **Figure 4** displays ridership on the main routes that serve West Vail – the West Vail Local route and the West Vail Express route. West Vail is also served by the Lionsridge Loop seasonal route, which provides service November through April. Ridership on the West Vail Local and West Vail Express routes is reported jointly in this report.

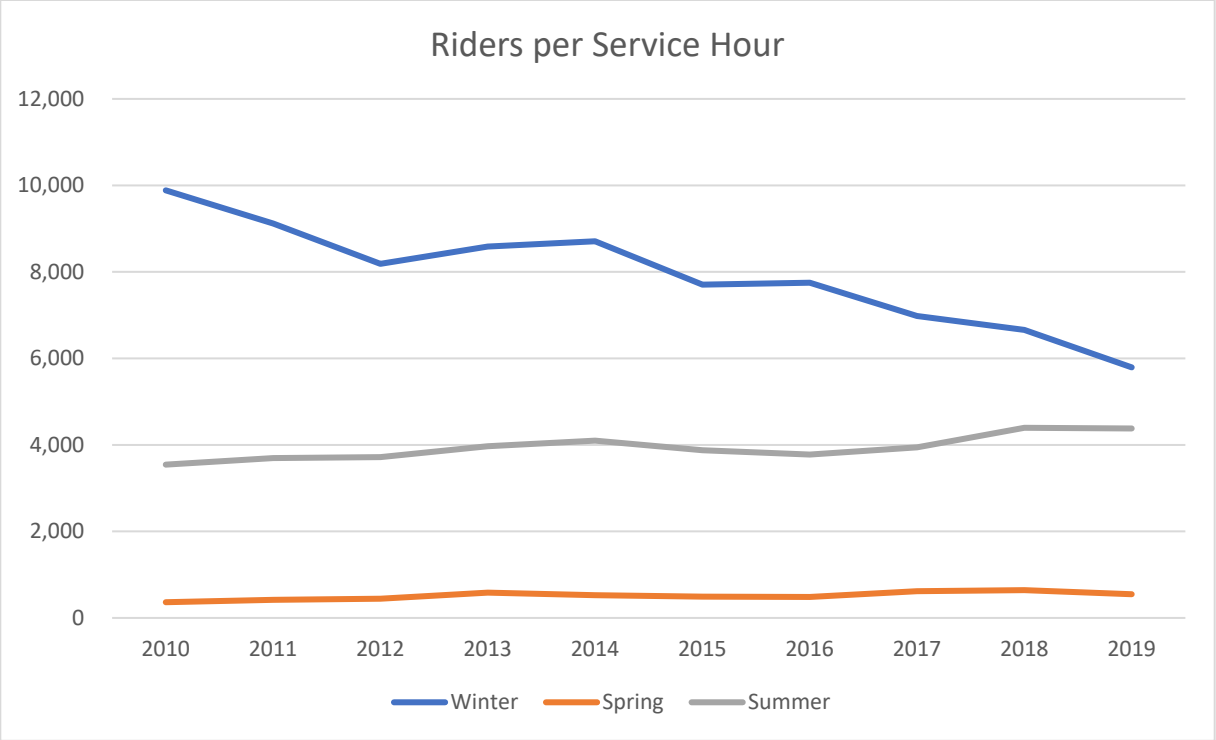


Figure 4: West Vail Route Seasonal Ridership

Total ridership on Vail Transit routes that serve West Vail declined approximately 16% from 2010 to 2019. Vail Transit's West Vail Express route was introduced in late 2017; it now accounts for approximately 4% of system's ridership and contributed to an increase in overall ridership on routes serving West Vail in 2018. The West Vail Express route also accounts for a large share of the ridership in West Vail; in 2019, 17% of joint West Vail routes (Local and Express) ridership was on the West Vail Express route, up from 15% the previous year.

Overall system ridership increased 3% from 2018 to 2019 but remained the same on the routes serving West Vail **(Figure 5)**. The reduction in Vail Transit ridership on routes serving West Vail can largely be attributed to the West Vail Local and West Vail Express routes **(Figure 6)**. Ridership on these routes has declined overall since 2010 and remained fairly flat since 2015. As shown in **Figure 4**, which normalizes ridership data by service hour (accounting for schedule changes over time), the decline in West Vail route ridership has been especially pronounced in the winter season. Whereas in 2010, nearly 10,000 riders utilized the route for every hour of transit service, by 2019 the ridership declined by 40% to just under 6,000 riders per service hour.

There is not an apparent reason for this decline in transit ridership. Some possible contributing factors are changes in parking availability in West Vail and shifts in demographics of short-term and year-round residents of West Vail.

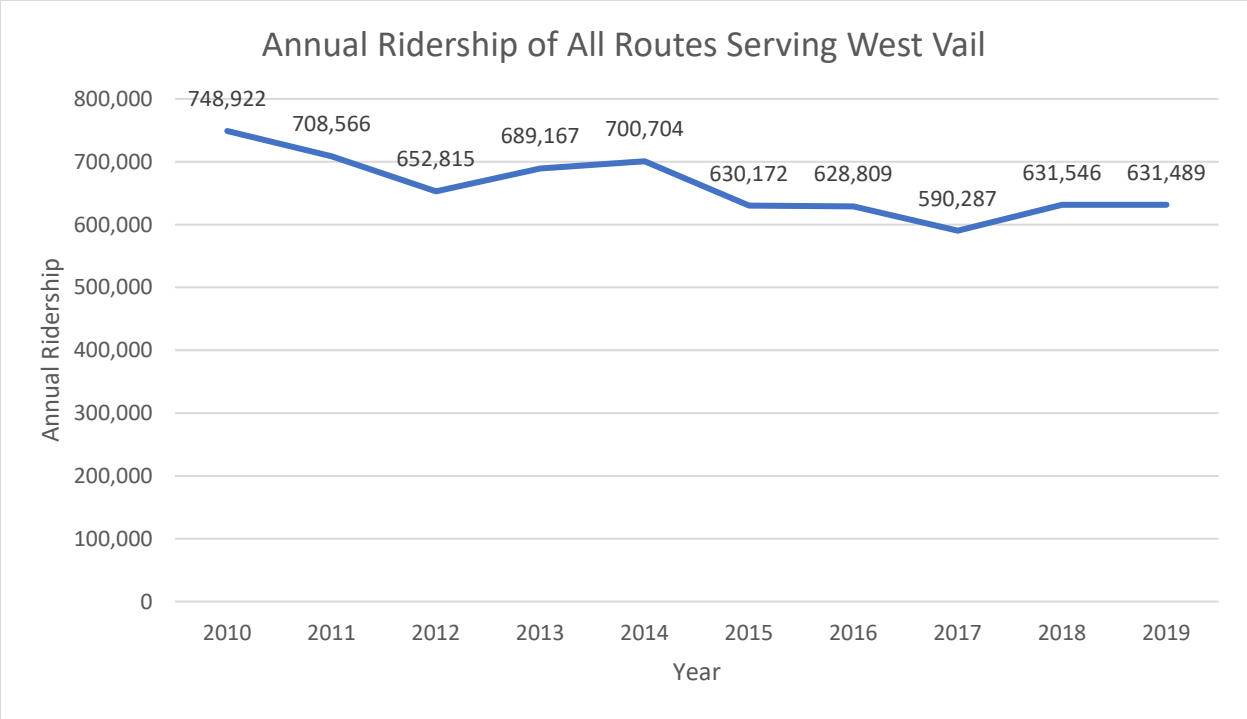


Figure 5: Annual Ridership of All Routes Serving West Vail: 2010-2019

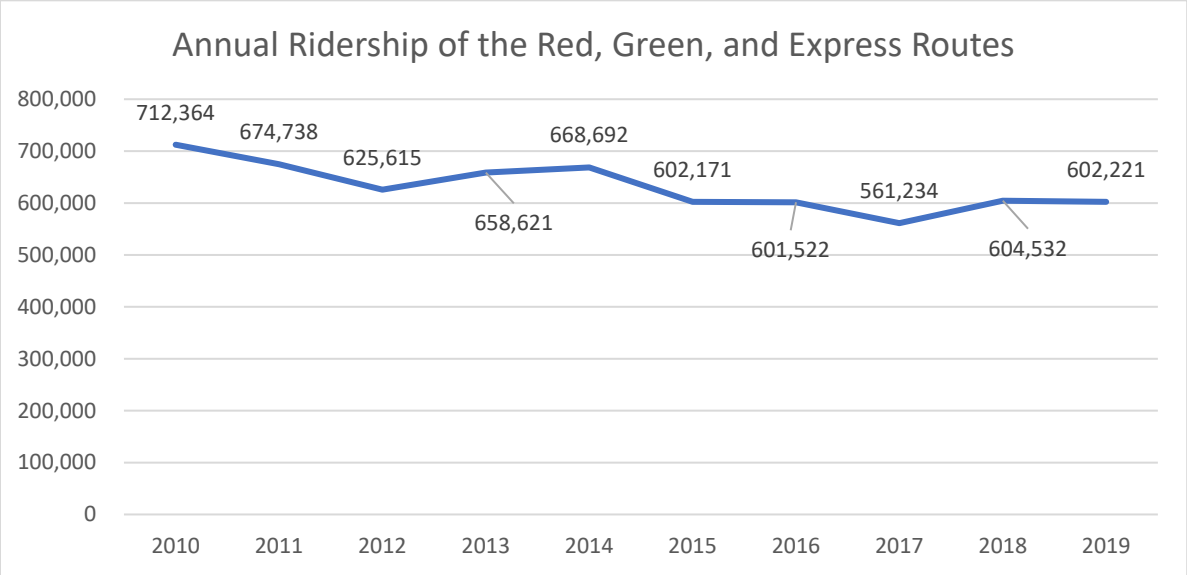


Figure 6: Annual Ridership of the Red, Green, and Express Routes: 2010-2019

Walking and Bicycling

Existing Facilities

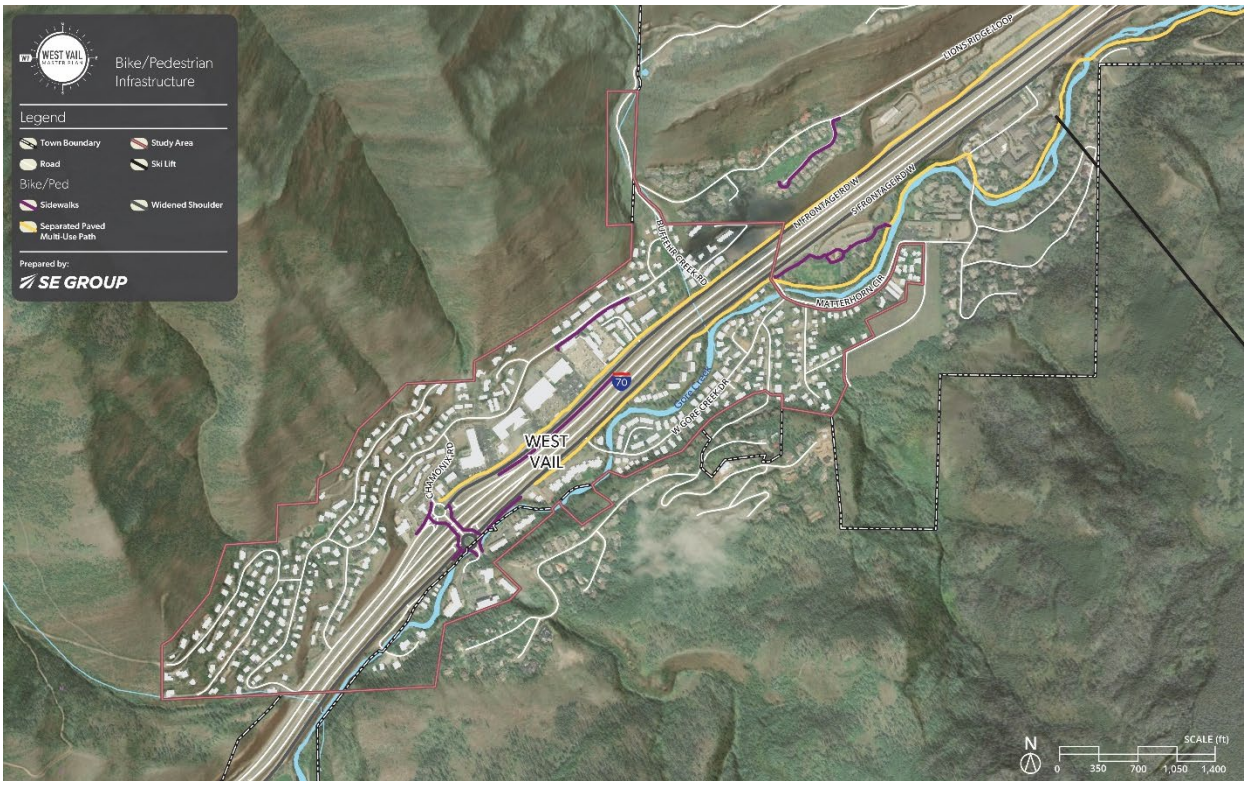


Figure 7: Existing Bicycle and Pedestrian Facilities

Figure 7 shows the existing bicycle and pedestrian facilities in West Vail. Sidewalk presence is mainly limited to the Frontage Roads, with very limited sidewalk presence in residential areas due to topography and maintenance challenges relating to snowfall. Sidewalk types vary from 8-foot-wide attached (no buffer between the roadway and sidewalks) sidewalks to 10-foot wide detached (buffer present between the roadway and sidewalk) sidewalks. A unique aspect of West Vail is that facilities like the North Recreation path (described in the following paragraph) serve as both multi-use paths and sidewalks. The existing sidewalk system chiefly serves the commercial businesses along the North Frontage Road, though with limited sidewalk connections between the Frontage Road and the businesses themselves. A pedestrian connection is available between the North and South Frontage Roads via an I-70 underpass at Chamonix Road. This underpass sidewalk is physically separated from the roadway with a barrier.

Both pedestrians and bicyclists can access the Gore Valley Trail, which is a multi-use path running along the South Frontage Road. The trail is a separated facility with some exceptions. The Gore Valley Trail provides connections to Vail Village area and the Vail Pass Trail into Summit County to the east and the Eagle Valley Trail to the west. The North Recreation path is a multi-use path that connects the commercial core of West Vail with points to the east and also connects to the Gore Valley Trail via the Chamonix Road

underpass. The North Recreation path is separated from the roadway in most areas, with the exception of a segment adjacent to the McDonald's restaurant where it is an attached facility, and a ¼ mile segment east of Buffehr Creek Road where the path is a 12-foot-wide marked shoulder.

Aside from the Gore Valley Trail, there are limiting bicycling facilities. The North and South Frontage Roads both have wide shoulders through the study area, which are utilized by bicyclists, although the shoulders are not marked for bicycle usage. The wider shoulders were striped following a recommendation in the *2009 Vail Transportation Master Plan*.

Topography

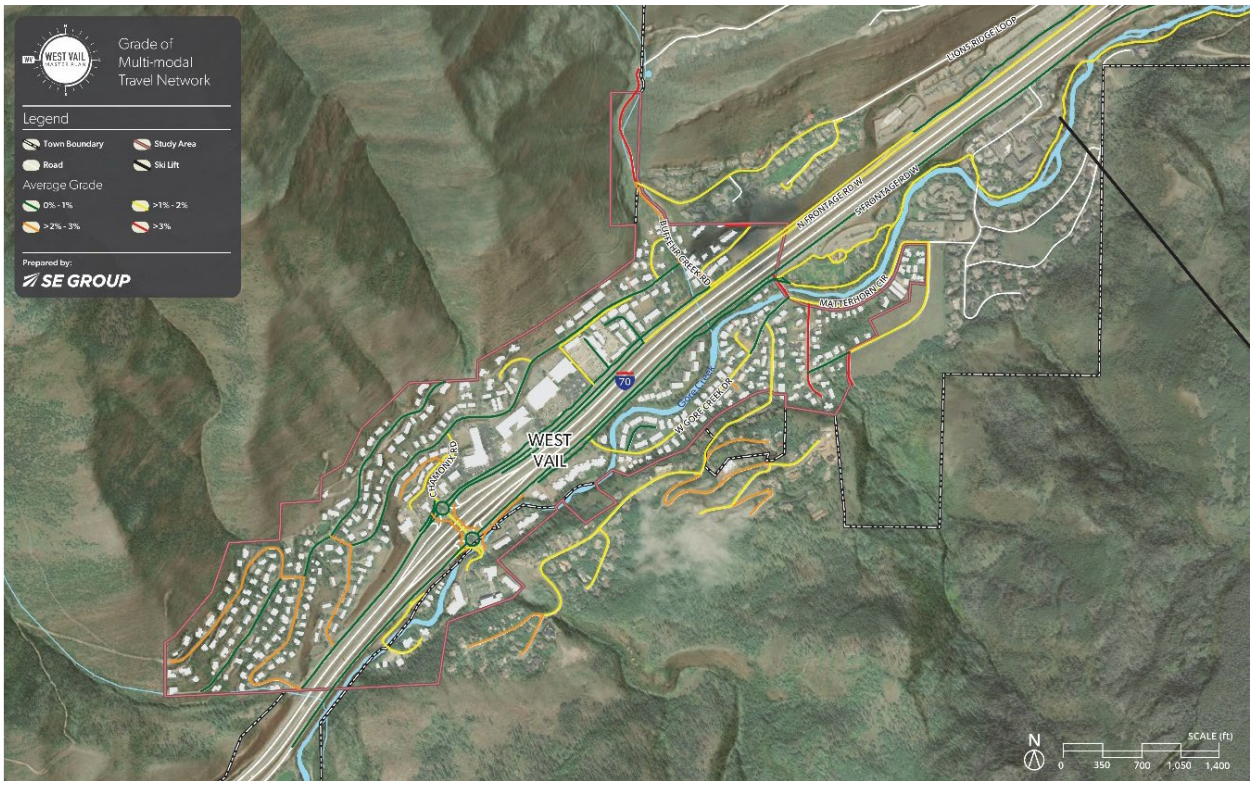


Figure 8: Average grade of roadways and paths in the West Vail walking and bicycling network

Figure 8 displays the average grade of roadways and multi-use paths that constitute the main walking and bicycling network in West Vail. East-west connections that are close to the Frontage Roads on the Vail Valley floor tend to have minimal elevation change. North-south connections into the residential areas of West Vail tend to have more elevation change, which can result in more challenging uphill travel and slippery conditions during the winter.

Usage

Strava Global Heatmap data was used to examine walking and bicycling activity in West Vail. Strava is an internet service with a smartphone application that enables users to track their physical activity; it is

popular among active transportation users. **Figure 9** shows walking activity in West Vail as recorded by Strava users. It is important to note that this Strava data represents only bicyclists and pedestrians who have chosen to record their activity using the Strava application and may also be recording recreational activity like jogging; however, the data provides an opportunity to understand the rate of travel on different roadways separately for walking and biking.

Figure 9: Walking Activity in West Vail (source: Strava)

The thicker red lines represent more popular walking and running routes while the thinner purple and blue routes represent less-used routes. The Gore Valley Trail is the most popular route in the study area, likely due to it being a high-comfort, separated facility that provides regional east-west connectivity, especially on the south side of I-70. The Strava data shown suggests that there is more limited pedestrian activity on local roadways in West Vail, as compared to the Gore Valley Trail. The data shows the I-70 crossing at Chamonix Road as a well-utilized pedestrian route, which suggests that additional north-south pedestrian connectivity across I-70 in West Vail may be desired.

Figure 10 shows bicycling activity in West Vail as recorded by Strava users. The darker and thicker lines represent roadways with more bicycling activity. Similar to the popular pedestrian routes, the Gore Valley Trail along the South Frontage Road and the South Frontage Road are some of the most popular bicycling route. It is interesting to note that there are significantly more riders on South Frontage Road than on the North Frontage Road. This may be because of access to the Gore Valley Trail, that users are connecting to or from. In addition, the South Frontage Road provides more direct access to Vail Village and the beginning of the multi-use path over Vail Pass. Users may be riding on the South Frontage Road rather than the Gore Valley Trail due to the high volumes of pedestrians and recreational bicyclists on the trail, making biking at higher speeds more challenging. It should be noted that Strava data does not distinguish between walking and bicycling for transportation versus recreation. Further study is needed to understand the rate at which West Vail residents and visitors use active transportation modes for daily trips. However, the data does show a demand for bicycle travel along the South Frontage Road.

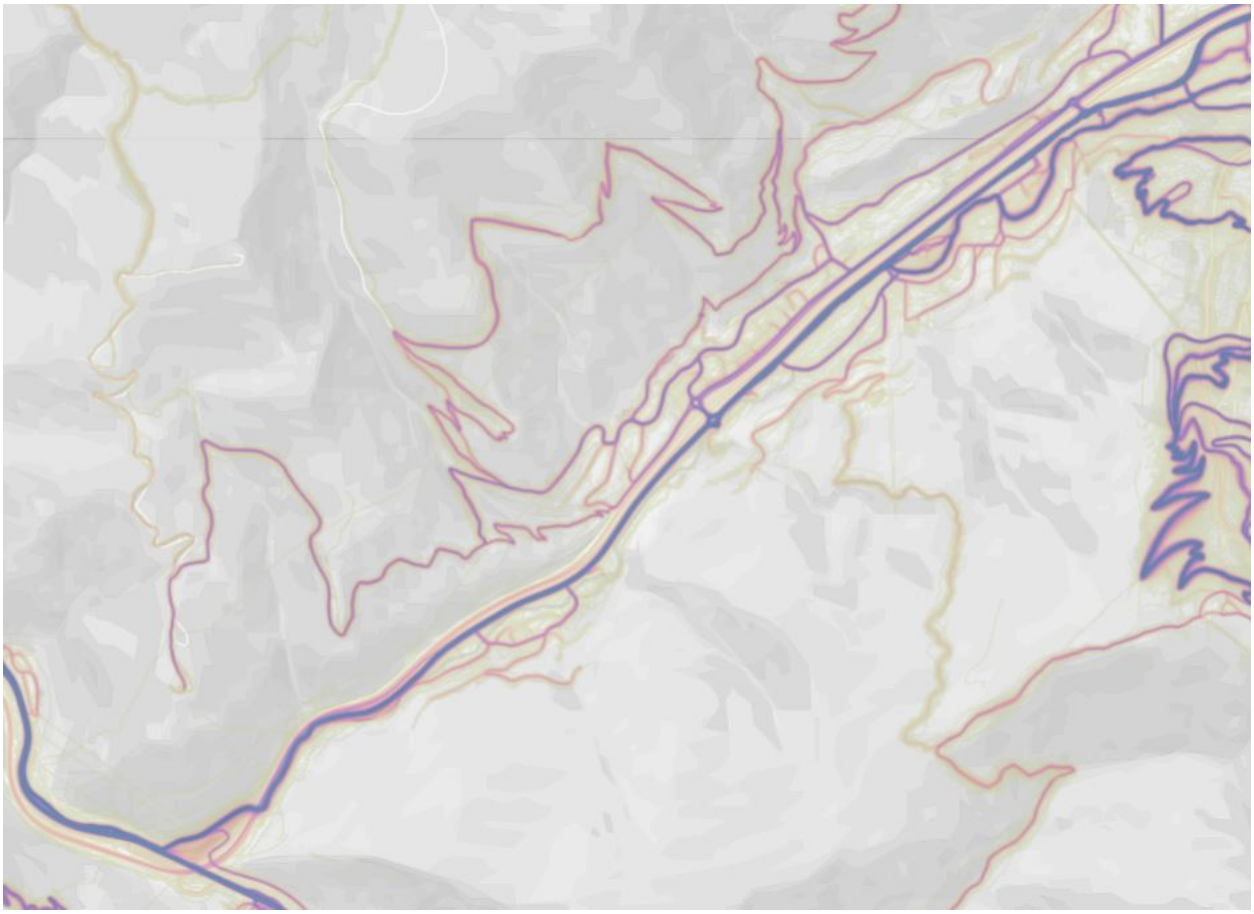


Figure 10: Bicycling Activity in West Vail (source: Strava)

The rate of walking and bicycling in West Vail can vary greatly due to weather and seasonal lighting. Active transportation rates can decline in the winter with colder temperatures, fewer daylight hours, and snow events that may create unsafe paths of travel and increased need for maintenance. By plowing and maintaining bicycle and pedestrian facilities, the Town of Vail can help accommodate the additional challenges associated with active transportation during winter months.

Bike Share Pilot Program

At the time the *West Vail Master Plan* was under development, the Town of Vail piloted a bike share system. The bike share pilot consisted of six stations, three of which were located in West Vail: at Donovan Park, the West Vail Mall Bus Stop, and Ellefson Park. During the first four weeks of the program, the most popular destination for bike share users was Donovan Park, which is in West Vail though immediately outside the study area. The *West Vail Master Plan* will explore whether a bike share system should play a more permanent and longer term role in West Vail's mobility network.

Traffic Safety

Traffic crashes in 2019 reported in West Vail represented 13% of crashes in all of Vail **(Figure 11)**, which is disproportionately low considering the size of West Vail's street network, the 20% share of the overall town's population residing in West Vail, and the commercial center which serves the entire town. Overall, the number of traffic crashes in West Vail has remained relatively consistent since 2017. However, at the time of this report, 23 crashes had been reported for the first quarter of 2020, which is approximately 44% higher than the quarterly average for the previous three years. This may be the result of disproportionally higher crash rates during the winter months when local visitation rates are higher and there is inclement weather, as well as shorter daylight hours.

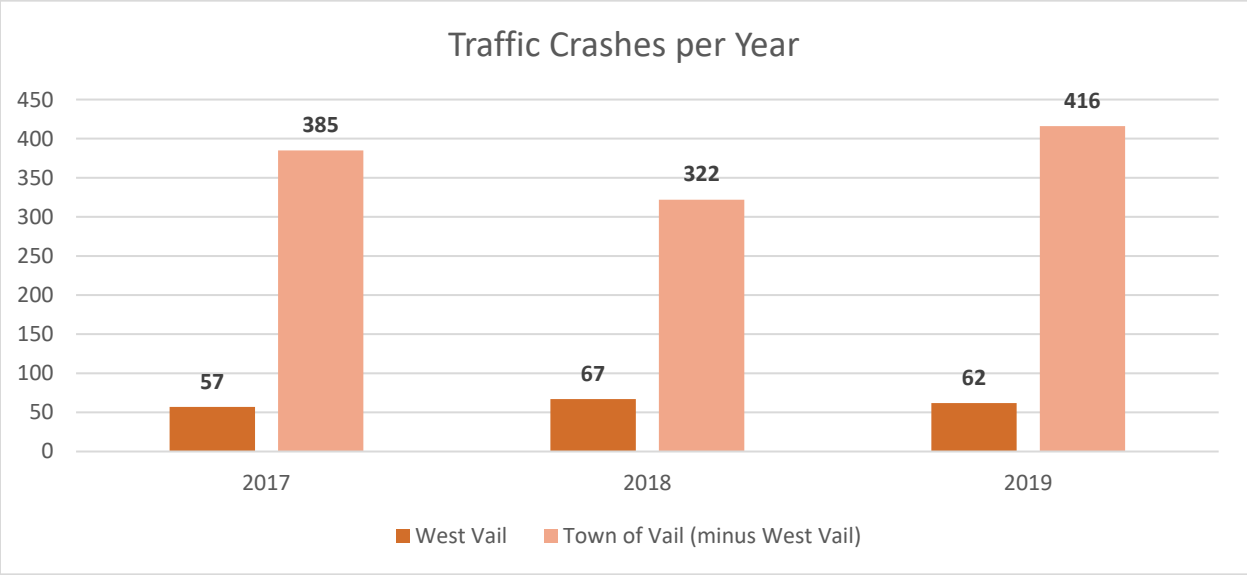


Figure 11: Crashes in West Vail vs. Town of Vail (2017-2019)

Of the 209 crashes reported in West Vail from 2017 to first quarter of 2020, 72% have occurred in six locations (shown in **Figure 12**). Of the crashes occurring at these high-crash locations, 59% were recorded outside of the three gas stations in West Vail. This suggests that traffic volumes and access into and out of the gas stations creates conflict areas and safety concerns. In addition, the gas stations are located in close proximity to the I-70 eastbound and westbound ramps at the Chamonix Road roundabouts, where traffic volumes and speeds are relatively high compared to the rest of the study area.

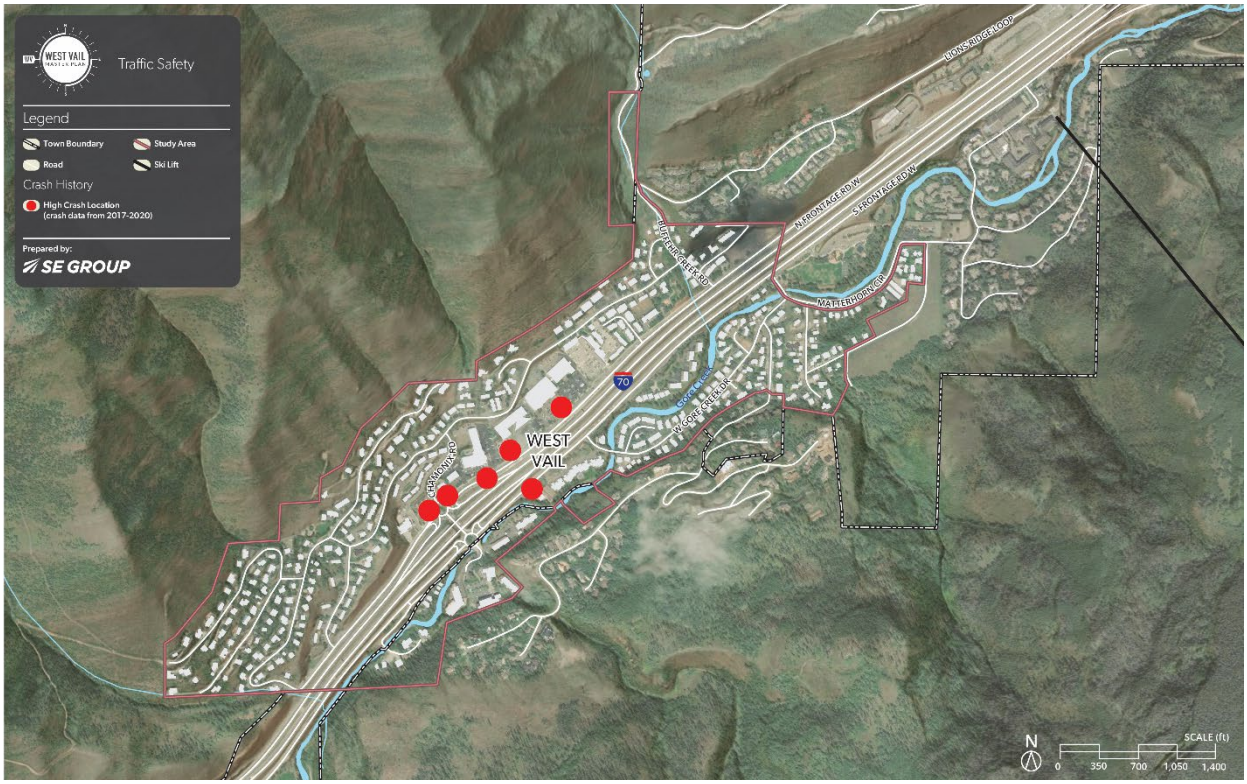


Figure 12: High Crash Locations in West Vail

Aside from the three gas stations, the other high crash locations were outside the McDonalds, Safeway, and Highline Vail entrances, which are all along the North Frontage Road. These preliminary safety findings suggest that commercial driveways are some of the highest-risk locations for roadway user. The *2009 Vail Transportation Master Plan* included an *Access Management Plan* that featured recommendations for either closing certain commercial driveways or restricting left-turn movements into and out of the properties in order to reduce crash risk. Access management recommendations from the 2009 plan have not yet been implemented; the *West Vail Master Plan* will pursue implementation of the *Access Management Plan*.

Conclusion

Despite having a small footprint, West Vail offers a multimodal system that serves a range of users. The existing conditions analysis of the transportation system yielded the following key findings:

- Traffic volumes collected for this study were lower than the same period 10 years ago when the *2009 Vail Transportation Master Plan* was developed. Insufficient data was available to determine whether lower traffic volumes are part of a larger trend or a nuance of the small data sample available.
- Transit ridership on Vail Transit routes serving West Vail has declined over the past 10 years, with ridership on West Vail Red, Green, and Express routes decreasing each winter season. This decline has occurred over a time period when overall ridership on Vail Transit has increased.
- While the Gore Valley Trail is a high-comfort, separated bicycle and pedestrian facility connecting active transportation users to destinations both east and west of the study area, there are limited on-street bicycle facilities that are comfortable for recreational bicyclists. The presence of sidewalks is also limited. Available active transportation usage data suggests that bicyclists travel on the shoulder of the South Frontage Road at a relatively high rate.
- Preliminary analysis of traffic crash data from 2017 to 2020 showed that 72% of crashes in West Vail occur at six locations, and that the roadway segments immediately adjacent to the three gas stations represent the top three crash sites. This suggests that there may be access management challenges which can be addressed through implementation of the 2009 *Access Management Plan*.

These findings will serve as a foundation for identifying challenges and opportunities in the West Vail multimodal transportation network and developing preliminary transportation improvement recommendations for the *West Vail Master Plan*.

FEHR PEERS

Memorandum

Date: July 1, 2020

To: Matt Gennett, AICP – Town of Vail

From: Carly Sieff, AICP and Krystian Boreyko – Fehr & Peers

Subject: West Vail Master Plan – Level of Traffic Stress and 20-Minute Neighborhood Analysis

DN20-0655

Overview

Fehr & Peers analyzed bicycle and pedestrian connectivity in West Vail as a part of the West Vail Master Plan. The ultimate goal of the analysis is to inform recommendations for ensuring key destinations in West Vail are accessible by multiple modes. The analysis sought to:

- identify the existing network of roadways and paths that bicyclists and pedestrians are likely to use,
- determine the Level of Traffic Stress (LTS) of each segment in the bicycle and pedestrian networks,
- analyze connectivity to key destinations in West Vail on comfortable (i.e low Level of Traffic Stress) facilities,
- compile a preliminary list of opportunities for overcoming barriers to walking and biking in West Vail.

This memorandum provides a summary of the Level of Traffic Stress concept, describes the varying Levels of Traffic Stress on bicycle and pedestrian facilities in West Vail under existing conditions, and provides the results of analysis on destination accessibility. This analysis will ultimately inform the Plan's recommendations through the identification of opportunities for enhancing bikeability and walkability in West Vail.

Level of Traffic Stress

Level of Traffic Stress (LTS) is a methodology developed based on national research and best practices for measures both bicycle and pedestrian comfort. The original LTS guidance provided a framework for evaluating bicycle facilities that was adapted to pedestrian facilities based on the National Association of City Transportation Officials (NACTO) Urban Streets Guide and safety research, as well as research from the American Association of State Highway and Transportation Officials (AASHTO).[1]

LTS is a national best practice scoring system used to classify the comfort of specific bicycle facilities. Scoring is from LTS 1 to LTS 4, with LTS 1 being comfortable, "low-stress" bicycling and walking environments for those ages 8 to 80, and LTS 4 being places where bicycling and walking is very uncomfortable or even impossible, with limited or no accommodations for pedestrians or bicyclists. LTS 1 and 2 are considered low-stress facilities, while LTS 3 and 4 are considered high-stress. **Figure 1** and **Figure 2** describe how the LTS scores translate to the user experience, for pedestrians and bicyclists respectively.

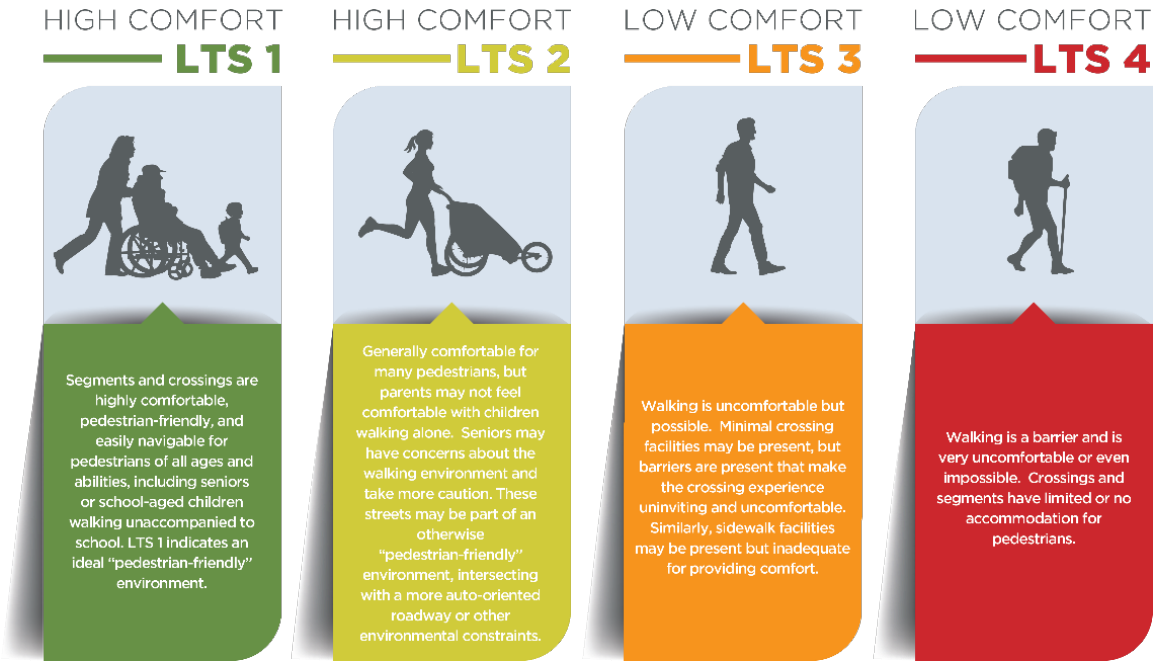


Figure 1: Pedestrian Level of Traffic Stress (LTS) scores

[1] Original LTS guidance: *Network Connectivity for Low-Stress Bicycling (*Mekuria, Furth, Nixon, 2012)

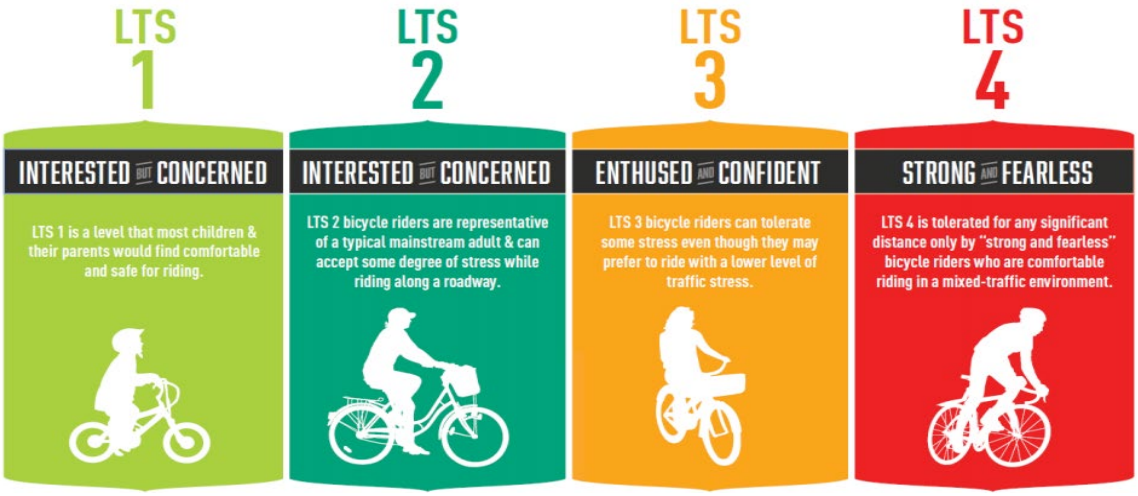


Figure 2: Bicycle Level of Traffic Stress (LTS) scores

Scores are based on characteristics like number of lanes, vehicle speeds, and bicycle/pedestrian facility types. Given the unique blend of travel facilities in the West Vail study area, Fehr & Peers has adapted and customized this methodology to create LTS scoring tables that reflect the nuances of bicycle and pedestrian travel in West Vail.

LTS Scoring Criteria for West Vail

As documented in the West Vail Master Plan Existing Conditions report, the study area has a unique set of travel facilities, with limited sidewalk presence, limited on-street bicycle facilities, a high rate of bicycle travel on the Frontage Roads, and topography that can create challenging walking conditions. LTS analysis traditionally scores travel segments according to traffic volumes, vehicle speeds, number of lanes, sidewalk presence and type (for pedestrian LTS), and bicycle facility type (for bicycle LTS). Fehr & Peers customized this scoring criteria for West Vail in order to reflect that on-street pedestrian travel may be comfortable on local roadways and that steeper segments may dictate that some paths of travel will be high-stress for certain users or may pose more challenging travel conditions during winter.

Table 1 and **Table 2** show the criteria used to score the LTS of each pedestrian and bicycle facility respectively in the West Vail transportation network – both on-street and off-street.

Table 1: Pedestrian LTS Criteria

	LTS 1	LTS 2	LTS 3	LTS 4
Facility Type	Shared-use Path or Sidewalk	Local Street	Local Street	Local Street, Collector, or Arterial
Vehicle Speeds*	N/A	≤ 15 mph	15 mph	≥ 25 mph
Average Grade	< 3%	< 3%	≥ 3%	≥ 3%

*Posted speed limit or travel speed, when available

Table 2: Bicycle LTS Criteria

	LTS 1	LTS 2	LTS 3	LTS 4
Facility Type	Shared-use Path or Local Street	Local Street or Collector	Steep Local or Collector Street Street or Arterial	Arterial
Vehicle Speeds*	≤ 15 mph	25 mph	25 mph	> 25 mph
Average Grade	< 2%	< 3%	≥ 3%	≥ 3%

*Posted speed limit or travel speed, when available

The following assumptions informed the West Vail LTS criteria:

- **Facility Types** – While it is traditionally uncommon for pedestrians to walk on a collector street, like W Gore Creek Drive, with no sidewalk, it was recognized that designated collector streets in West Vail have striping to designate wide shoulders to accommodate a wider cross-section of roadways users and that pedestrians may use those roadways to make walking trips.
- **Vehicle Speeds** – In most instances, the LTS score is tied to the posted speed limit. However, the Town of Vail recently conducted a speed study; any roadway in the study area that was found to have 85% of vehicles traveling at a speed that was different than the posted speed limit (the 85th percentile speed) was scored according to the 85th

percentile speed. The speed survey suggests that most vehicles travel 25 mph on the West Vail collector streets that have posted speed limits of 15 mph.

- **Topography** – West Vail's position on a valley floor dictates that bicyclists and pedestrians will often need to travel uphill or downhill when making trips north and south of the Frontage Roads. Higher road grades can create uncomfortable travel conditions and can also pose travel hazards during winter when road surfaces may be icy. Based on local knowledge and professional judgment, it was determined that an average grade of 3% or higher may create an uncomfortable travel experience; any segment with an average grade of 3% or higher was scored as an LTS 3 if otherwise it would be considered LTS 1 or 2.

West Vail LTS

Figure 3 and **Figure 4** display the LTS results for walking and bicycling facilities in West Vail, respectively. It should be noted that the Frontage Road shoulders are included in the pedestrian LTS analysis due to having wide shoulders intended for accommodating multimodal users, and due to the North Frontage Road Recreation Path traveling adjacent to the roadway east of Buffehr Creek Road.

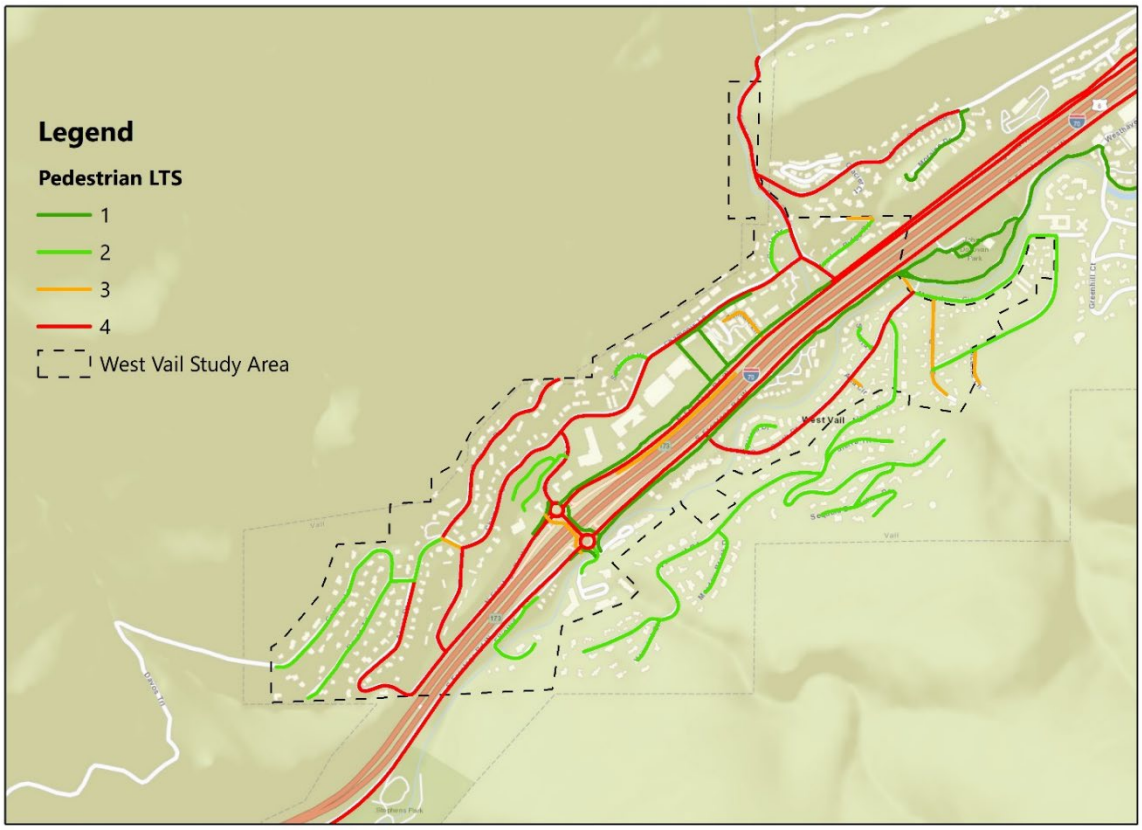


Figure 3: West Vail Pedestrian Level of Traffic Stress (LTS) by Travel Segment

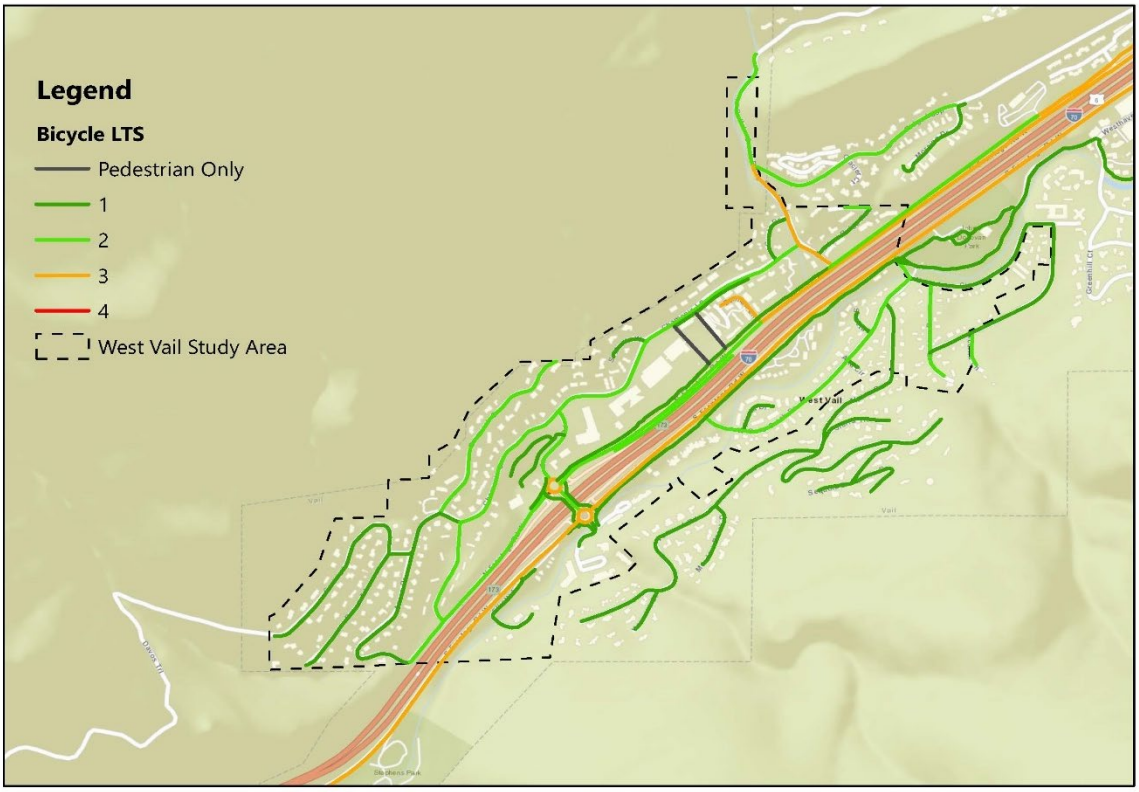


Figure 4: West Vail Bicycle Level of Traffic Stress (LTS) by Travel Segment

Generally, bicycle facilities in West Vail tend to be lower stress than pedestrian facilities. Pedestrians have limited east-west connectivity due to high vehicle speeds on Chamonix Lane and W Gore Creek Road. The North Frontage Road Recreation Path and the Gore Valley Trail both provide critical pedestrian connectivity. However, as noted, the North Frontage Road Recreation Path joins the roadway, causing pedestrians to walk on the road shoulder.

With the exception of the Frontage Roads, bicycling in West Vail is low stress. Notably, Buffehr Creek Road is not included in the low-stress bicycling network due to its average grade and 85th percentile speed of 28 mph.

20-Minute Travelshed Analysis

Fehr & Peers evaluated the accessibility of key destinations in West Vail to bicyclists and pedestrians traveling on exclusively low-stress facilities. The travelshed analysis sought to determine whether different destination types can be reached within a 20-minute low-stress bicycling or walking trip. 20-minutes was determined based on West Vail's goal for creating a neighborhood where residents can access of their most basic, day to day needs within a 20-minute walk or bike ride. The preliminary analysis evaluated three destination types shown in **Figure 5**:

1. Commercial core along the North Frontage Road
2. Parks
3. Tailheads

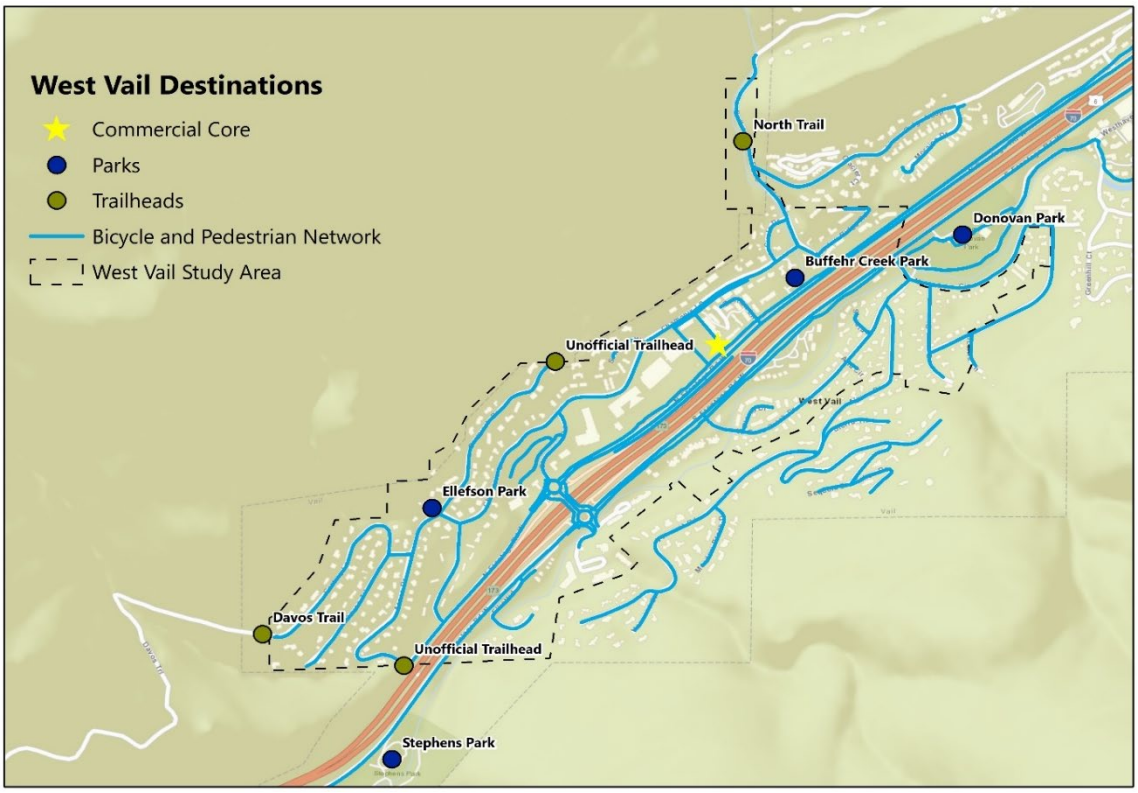


Figure 5: West Vail Destinations for Travelshed Analysis

Methodology

The LTS of the bicycle and pedestrian networks was simplified into low-stress and high-stress networks. Low-stress networks consist of the combination of LTS 1 and 2 facilities. High-stress networks consist of the combination of LTS 3 and 4 facilities.

Using the ArcGIS Network Analyst tool, service areas (or travelsheds) were established for each destination type and travel was restricted to the low-stress networks. A 20-minute trip length was established as the maximum length of time a bicyclist or pedestrian could travel.

Pedestrian Walkshed Results

Figure 6 shows the travelshed for a 20-minute walk from the commercial core of West Vail.

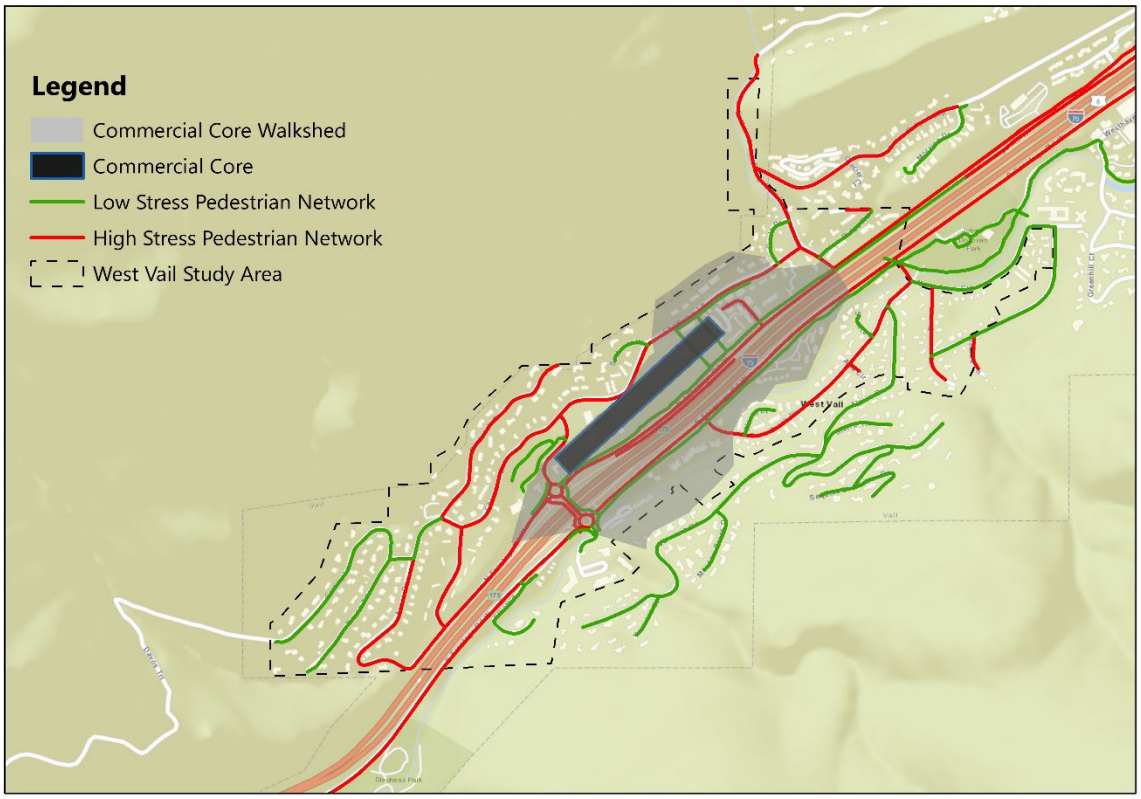


Figure 6: 20-minute walkshed for the West Vail commercial core

The travelshed analysis for the commercial core showed that the limited connectivity between the north and south sides of I-70 present a barrier to pedestrian travel. Additionally, pedestrians can travel comfortably on the multi-use paths but have limited access to residential neighborhoods. The dedicated pedestrian facilities leading from the commercial core north to Chamonix Lane are important connections for residences along Chamonix Lane. Otherwise, pedestrian connectivity within the commercial core is chiefly restricted to walking trips between businesses

The walkshed analysis for West Vail parks found that Donovan Park (which is just outside the study area), Ellefson Park, and Buffehr Creek Park both have good connectivity to the immediate surrounding neighborhoods **(Figure 7)**. Ellefson Park is accessible to residents of Cortina Lane and Davos Trail, while Buffehr Creek Park is accessible to residents of the Chamonix Lane neighborhood as well as to visitors of the commercial core. Donovan Park is well served by the Gore Valley Trail.

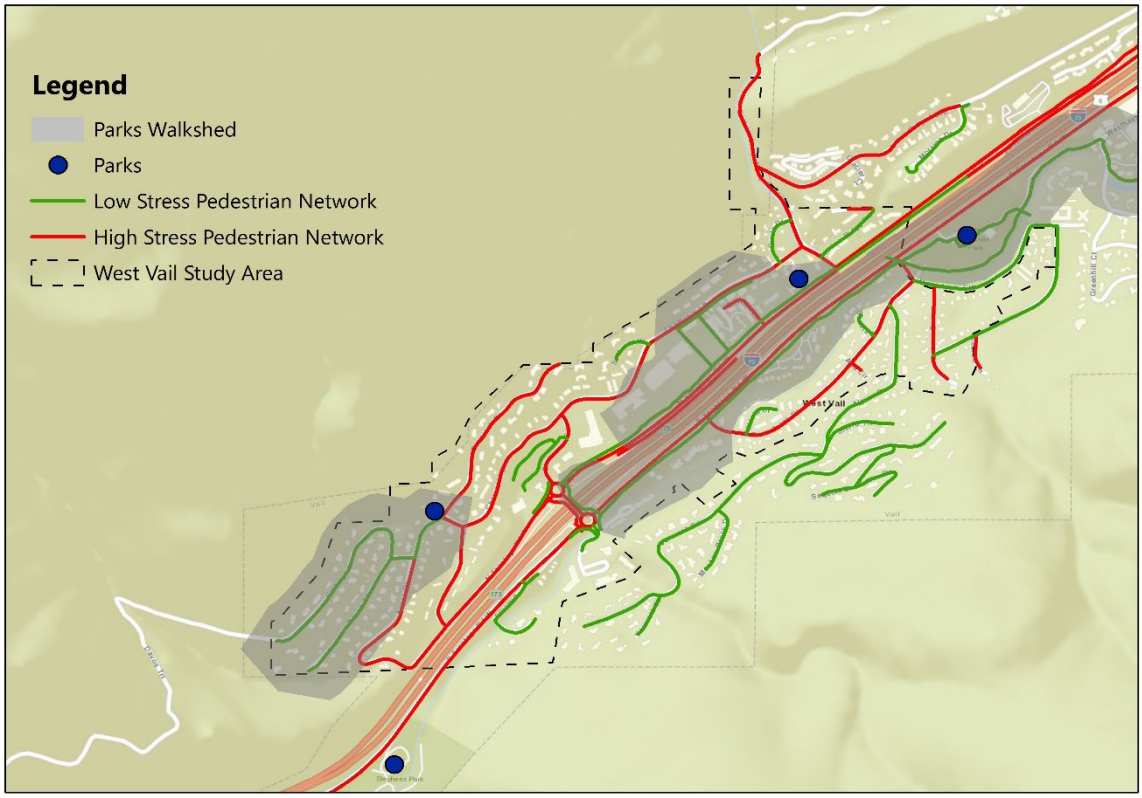


Figure 7: 20-minute walkshed for West Vail parks

The trailheads analysis found that out of the four trailheads, only Davos Trail is accessible to pedestrians using low-stress travel facilities **(Figure 8)**. This trailhead is only accessible to residents of the immediately surrounding neighborhood due to the higher vehicle speeds documented on Arosa Drive and Garmisch Drive. The other trailheads in the study area are located on travel segments with high pedestrian LTS scores.

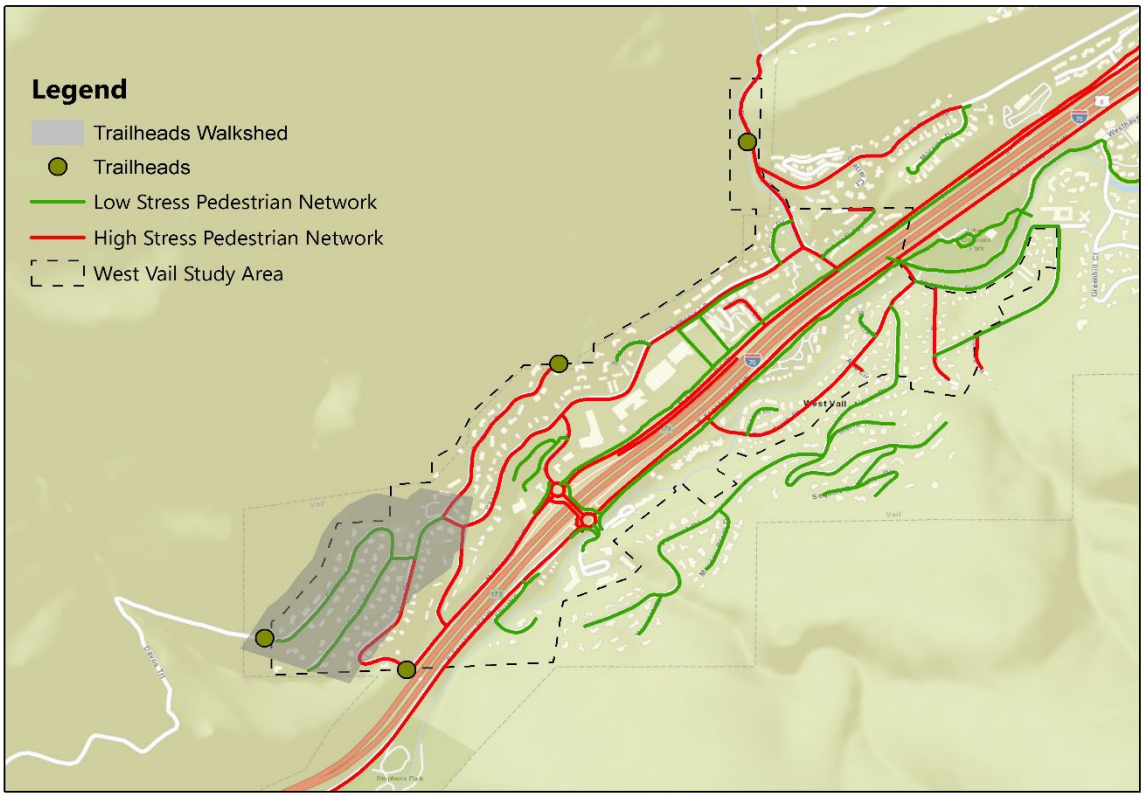


Figure 8: 20-minute walkshed for West Vail trailheads

Bikeshed Results

The low-stress Bikeshed – the travelshed for bicyclists – was also analyzed for each destination type. Given the wider availability of low-stress bicycle facilities, the bikesheds for the three destination types were found to be cover a majority of the study area.

Figure 9 shows the 20-minute bikeshed for West Vail's commercial core along the North Frontage Road. Bicyclists are able to travel to both sides of I-70 using the underpass and can also connect to most of the other key destinations.

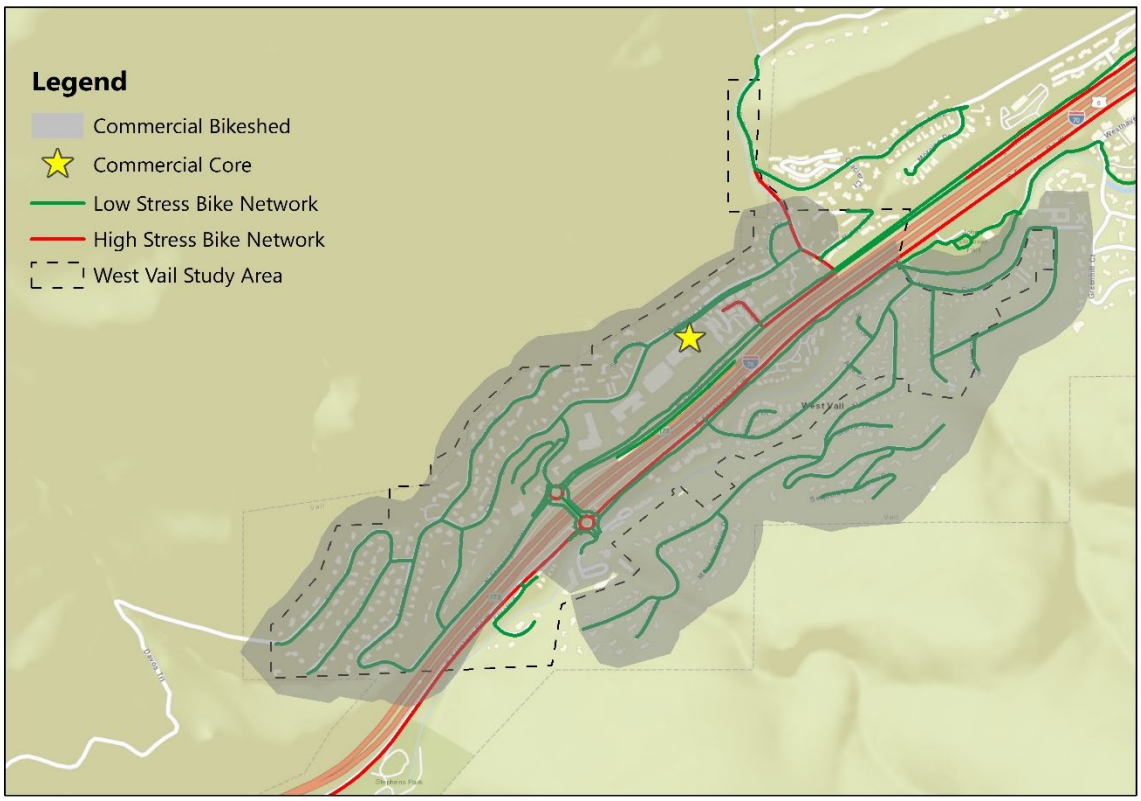


Figure 9: 20-minute bikeshed for West Vail commercial core

With the exception of Stephens Park, west of the study area, West Vail's parks are also accessible via a 20-minute bicycle ride **(Figure 10)**. Donovan Park is accessible both to individuals traveling from within West Vail and bicyclists traveling towards the study area from Vail Village. For the purposes of this analysis, Stephens Park was considered inaccessible due to the higher stress bicycling facility on the South Frontage Road.

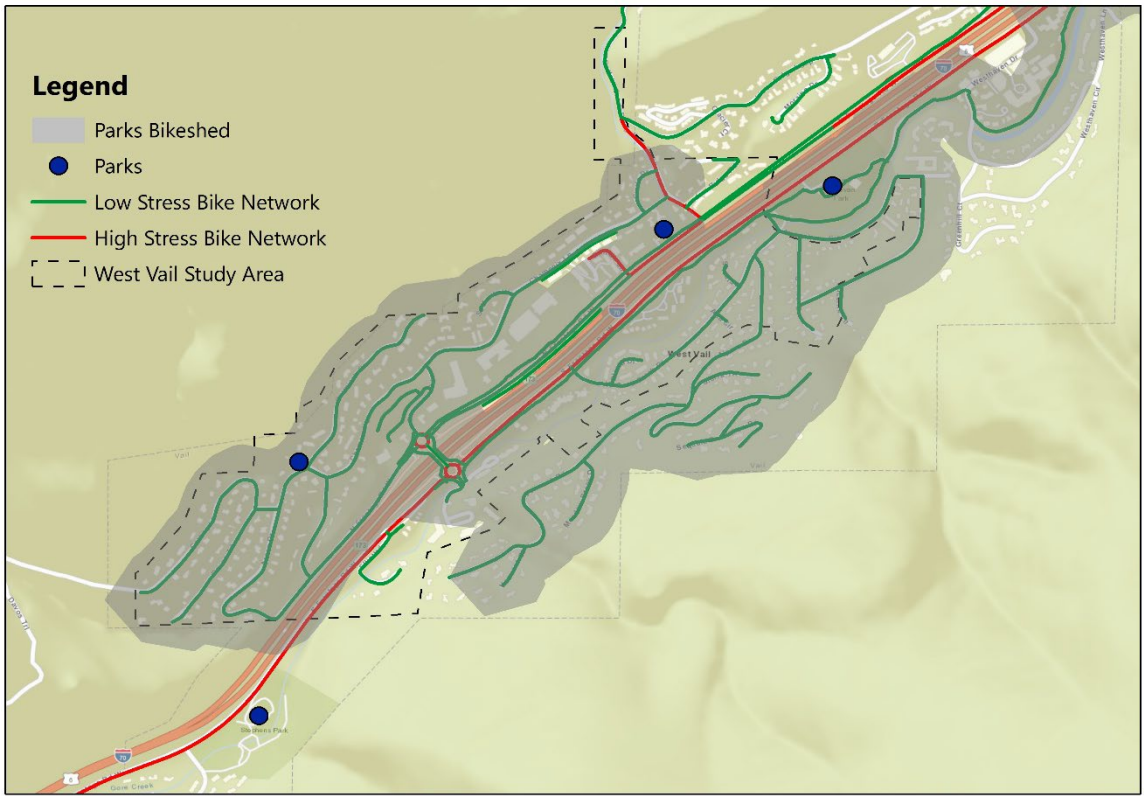


Figure 10: 20-minute bikeshed for West Vail parks

There is also better trailhead access via bicycling than walking **(Figure 11)**. Most of the study area has connectivity to a trailhead via a low-stress bicycle ride.

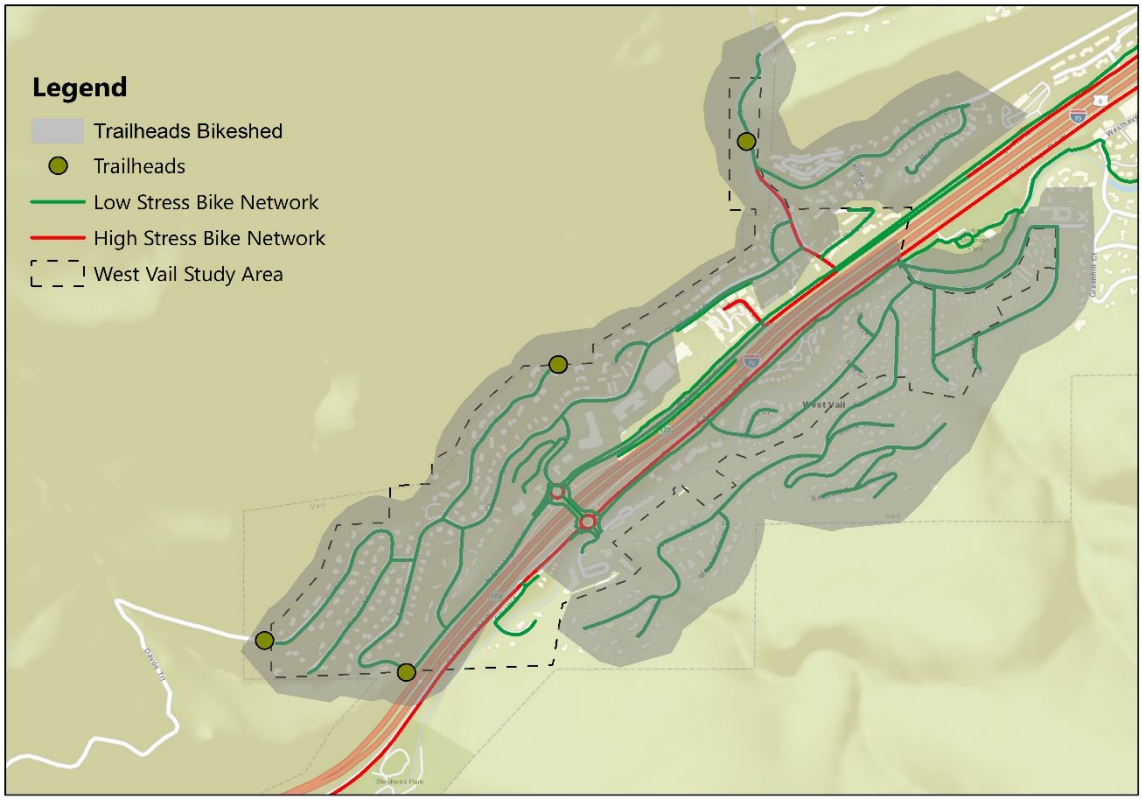


Figure 11: 20-minute bikeshed for West Vail trailheads

While the shared-use paths and the collector/local streets adjacent and parallel to both Frontage Roads provide opportunities for comfortable east-west connectivity, Buffehr Creek Road does present a barrier to bicycle travel for some areas north of I-70. In addition, the single underpass may cause unnecessarily long trips from the north side of West Vail into Vail Village.

Summary of Findings

The LTS analysis found that while bicyclists can access destinations throughout West Vail on low-stress travel facilities, pedestrian travel is more limited due to a lack of comfortable east-west travel options and high vehicle speeds. Additionally, both bicyclists and pedestrians experience north-south travel barriers due to limited opportunities for crossing I-70. Preliminary opportunities for addressing bicycle and pedestrian travel barriers include:

- Identifying an additional underpass opportunity to form a connection under I-70.
- Identifying and implementing countermeasures that will calm vehicle speeds on collector and local streets with a documented 85th percentile speed of 25 mph or higher. This may include horizontal treatments like movable posts or paint that visually narrow travel lanes while providing right-of-way for bicyclists and pedestrians and flexibility for snow removal.
- Identifying opportunities for creating dedicated paths for pedestrian travel through residential areas. This may include formalizing existing "social trails" that demonstrate desire lines for pedestrian travel.
- Adding a sidewalk on the segment of the North Frontage Road Recreation path that is currently only served by the roadway shoulder.