Appendix A

State of the Active Transportation System

DRCOG Planning Region, 2024

May 2024

This report provides an image of the state of active transportation in the DRCOG region, focusing specifically on the period following adoption of the current regional Active Transportation Plan in 2019. The purpose of this report is the following:

- To provide the DRCOG Active Transportation Plan project team with a basis in relevant plans, policies, regulations.
- To benchmark recent trends in activity and ridership, safety and crashes, and design and implementation.
- To document progress toward previous recommendations made in the 2019 Active Transportation Plan.
- To identify potential focus areas and topics of interest to pursue during the 2024-2025 major update to the regional Active Transportation Plan.

While this report aims to be thorough, there are some analyses not included that are planned to be completed during the update process to the Active Transportation Plan, including:

- Queries to the current DRCOG regional FOCUS travel model.
- Demographic data for the region, which will be drawn from the most recent American Community Survey estimates and DRCOG's area forecasts.

Contents

1 Benchmarking active transportation infrastructure

Sidewalks and pedestrian infrastructure

Using Planimetric data, which uses aerial imagery to locate sidewalk centerlines and calculate width, 79% of existing constructed sidewalks are estimated to be at least four feet wide, the minimum dimension to provide an accessible path. However, Planimetric data is unable to account for obstructions, surface quality and traversability, adjacency to traffic or other stressors, or high pedestrian demand, all of which may impact accessibility and comfort for people walking.

Table 1 Regionwide sidewalk inventory (Planimetric Sidewalk Centerlines, 2022)

Sidewalk status	Sidewalk centerline length (mi)	Percent of total
No sidewalk	467	2%
Sidewalk may be non-compliant width (< 4ft)	4,126	21%
Basic sidewalk exists (≥ 4ft)	11,593	59%
Bidirectional sidewalk (≥ 8ft)	3,482	18%
Total	**19,669**	-

In subareas identified in the 2019 Active Transportation Plan (the Pedestrian Focus Areas and Short Trip Opportunity Zones), sidewalk coverage and basic width is consistent with regionwide averages. However, where both subarea types overlap, basic sidewalk coverage is more consistent that the regional mean (due to these generally aligning in more urban settings).

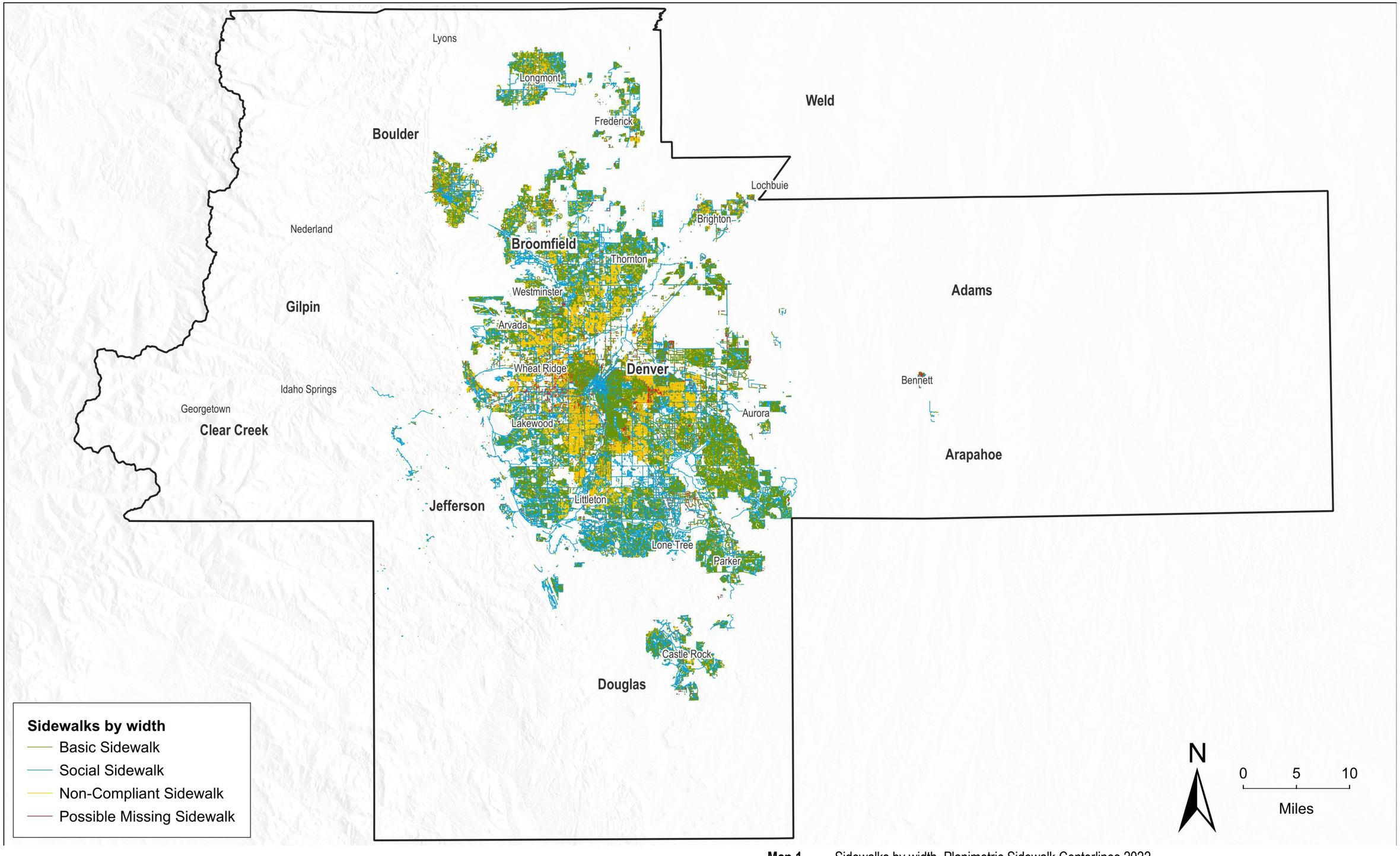
Table 2 Sidewalk inventory in active transportation network areas (Planimetric Sidewalk Centerlines, 2022)

Sidewalk type	DRCOG Region	Pedestrian Focus Areas	Short Trip Opportunity Zones	Overlapping Zones
Sidewalk exists, at least 4 ft wide	79%	78%	81%	87%
Sidewalk exists, may be substandard width	21%	22%	19%	13%

As illustrated in Map 1, while the Planimetric is accurate where data exists, there are roadways in the region where sidewalk centerline data is missing for one of a few reasons:

- No sidewalk or sidepath infrastructure exists, but a sidewalk gap was not identified; this is most common on rural roadways that have not been constructed with urban infrastructure (e.g., curbs and gutters).
- New developments may have been constructed after aerial imagery was collected.
- In rare instances, sidewalk centerlines may have only been collected for one side of a street.

Therefore, while this data is a helpful tool for surveying gaps regionally, it does not provide a comprehensive picture of the total sidewalk needs for the region's transportation system.



Map 1 Sidewalks by width, Planimetric Sidewalk Centerlines 2022

New and innovative designs

These designs may be explored and discussed during the plan update to develop regional best practices, especially for universal design and constructability.

Shared or curbless streets

Curbless streets, which may or may not operate as exclusive pedestrian spaces, have blossomed in the region since 2019, with new implementations at the following locations:

- 39th Avenue Greenway, Denver (shared street with vehicles and active users)
- Larimer Street Bridge, Denver (bicycle and pedestrian only)
- 16th Street Mall, Denver (bus and pedestrian only)
- Cannon Street, Louisville (shared street with vehicles and active users)
- McGregor Square, Denver (pedestrian only)

Questions still being explored include best practices to provide non-visual wayfinding, and providing clear guidance for motorists to operate and park vehicles correctly so as not to impede accessible paths and circulation routes.

Key design iterations include:

- Perpendicular corduroy strips along entrances to curbless streets provide blind or low-vision pedestrians with non-visual guidance.
- Chamfered curbs and differentiated paving surfaces similarly give tactile guidance to help users understand the edges of modal travelways (i.e., busways, bicycle lanes, and pedestrian walkways).
- Truncated domes still exist in early iterations of curbless streets, but are not preferred due to their understood meaning for blind users as transition to a crossing and lack of directional guidance.

Paint-and-post refuge islands and curb extensions

Jurisdictions across the region have begun to roll out interim and quick-build treatments to shorten crossing distances and improve sight triangles.

Key design iterations include:

- Turn prohibitions and removal of either left- or right-turn pockets can shorten crossing distances and eliminate (or at least reduce exposure to) common conflict maneuvers.
- Daylighting of corners seek to improve visibility without removing any existing curbside parking supply.

Median refuge islands

In addition to quick-build refuge islands, some jurisdictions have advanced designs for concrete median refuge islands. These are particularly important in locations with left-turn conflicts, one of the most common pedestrian crash types in the region.

Key design iterations include:

- Raised median tips (also known as “bull noses”), especially adjacent to left turn lanes, can enforce a sharper turn radius and narrow the aperture of the receiving street, especially where left turns concurrent with pedestrian crossings are an observed conflict. Median tips can be beveled to improve durability and reduce risk of infrastructure damage when struck by vehicle tires, while still enforcing low-speed turns.

Raised Crosswalks

Raised crosswalks provide a vertical traffic calming feature, while also providing a continuous experience for pedestrians without having to change grades when crossing the street. Similar to speed humps, raised crosswalks are compatible with local street crossings.

Key design iterations include:

- Raised crosswalks that regrade corners and curb ramps to create a gentler transition for pedestrians (e.g., Moss Street in Golden).
- Where drainage is a barrier, the crosswalk can be gently raised while the gutter is retained or gently regraded to allow stormwater to continue its flowline along the curb.

Bikeways and facilities

DRCOG began to maintain a regional inventory of bicycle facilities in 2018, and conducts an annual call to members for updated geospatial data on jurisdictions' new and improved bikeways. Since 2019, the total mileage of bikeways in the region has grown nearly 26%, including a quadrupling of separated bicycle lane mileage and a 19% increase in high-comfort off-street paths. Additionally, DRCOG began to track Bicycle Boulevards (also known as in some municipalities as either Neighborhood Bikeways or Neighborhood Green Streets) in 2023, developing a methodology for differentiating between streets with shared lane markings and those with additional design elements that communicate and affirm bicycle primacy.

Table 3 Regional bicycle network mileage by facility type, 2019 - 2023

Bicycle facility type	2019	2020	2021	2022	2023
Shared Use Path	1,256	1,301	1,330	1,448	1,476
Sidepath	61	63	67	72	86
Separated Bicycle Lane	8	12	13	20	32
Bicycle Lane	626	659	695	821	857
Bicycle Blvd	-	-	-	-	8
Local Path	220	234	243	282	329
Unpaved Path	416	408	416	461	469
Total	**2,596**	**2,684**	**2,771**	**3,107**	**3,260**

The region has invested in connected, high-comfort bikeways on more streets and extending shared-use paths across jurisdictions; the existing bikeway network is shown in Map 2.

New and innovative designs

The Denver region has emerged as a national leader in implementing a number of innovative design approaches to improve user comfort and experience while prioritizing safety. Some of these design elements are itemized and discussed below.

Bikeway means of separation

Separated bicycle lane mileage has quadrupled since the adoption of the 2019 Active Transportation Plan. In addition to rolling out more mileage, jurisdictions have iterated on materials and barriers used to provide separation between bikeways and either parking or general purpose travel lanes, with the goal of enhancing comfort, preventing incursions, and improving maintainability while spending public dollars effectively.

Key design iterations include:

- Raised cycle tracks provide complete vertical separation for the bikeway (e.g., Brighton Blvd, Denver; Pearl Parkway, Boulder).
- Concrete curbs, typically between 18 – 36 inches wide, that are either pre-cast or cast-in-place in the bikeway buffer (Marion Parkway, 19th Avenue or City Park Esplanade, Denver; Garrison Street, Lakewood).
- Concrete or rubber parking stops are bolted onto the roadway surface in the buffer (e.g., Central Park Boulevard or 16th Avenue, Denver).
- Flexible delineators (Five Points, Stout/Champa).

Protected corner / turn wedge

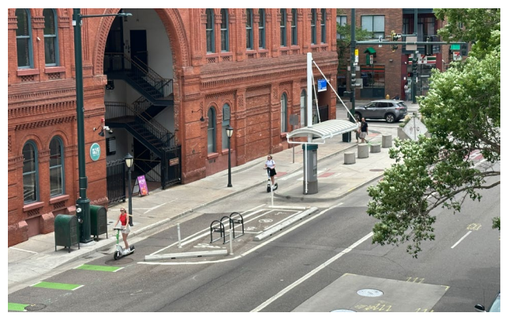
One of the most significant design approach changes has been the expansion of protected corner designs. This approach aims to provide spatial separation for bicyclists up to and into the intersection rather than forcing bicyclists to merge with vehicle traffic prior to the intersection, working to provide a safe and comfortable crossing by improving sight angle for vehicles and sharpening their turning radius to minimize turn speeds.

Key design iterations include:

- Maximizing lateral offset width between the vehicle approach lane and bicycle lane entering the intersection so that turning vehicles must turn across the bikeway at near-90 degrees.
- Installing small, hardened features at the corner apex to allow trucks and large vehicles to encroach the corner if needed (control vehicle radius), while passenger vehicles are discouraged from traversing vertical features.

Transit boarding islands

While transit boarding islands had been installed in select locations prior to 2019, the design treatment has become more ubiquitous around the region, with numerous installations around downtown Denver especially.



Key design iterations include:

- Replacing heavy bollards and concrete barriers with object markers to discourage vehicle incursions.
- Designing bikeway channels with sufficient width for sweep and snow removal vehicles to access (≥7.5 feet).

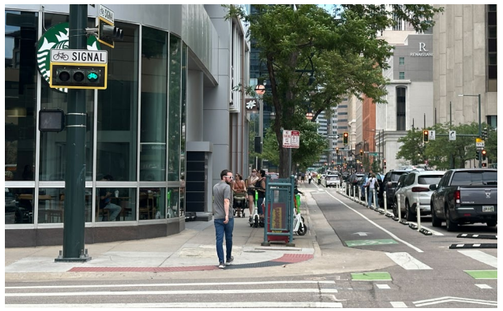
Speed humps and cushions

Vertical deflection features are a crucial speed management design, especially on shared roadways such as bicycle boulevards. While many jurisdictions in the Denver region have only recently started to install speed humps and cushions on public streets, the tool is gaining traction.

Key design iterations include:

- Some jurisdictions have leaned toward installation of speed cushions rather than humps to allow emergency vehicles to traverse more easily. However, both speed humps and cushions are nationally adopted best practice
- Logarithmic markings on approach to alert motorists (examples include Boulder and Denver).

Bicycle signal faces



Especially with on-street bikeways where bicycle volumes or vehicle turns per hour are moderate to high, but also at trail crossings and hybrid beacons, Denver, Boulder, and other jurisdictions have implemented bicycle signal faces to indicate exclusive crossing phases for bicyclists.

Signal backplates can be used to visually distinguish signal faces and offer indication of signal position that is not color-based, which is especially useful for color-blind users (examples include Lakewood, Denver, and Aurora).

Green conflict markings

While there is still regional variation in how intersection conflict markings for bikeway crossings ("crossbikes") are marked, the federal interim approval (IA-14) for green colored markings amending the MUTCD has clarified allowed marking patterns. More recent implementations in the region include the dashed "green box" style of conflict marking to guide bicyclists through the intersection. The dashed white with chevrons conflict marking has been disallowed by the interim approval, though still exists in the region on projects predating FHWA's ruling.

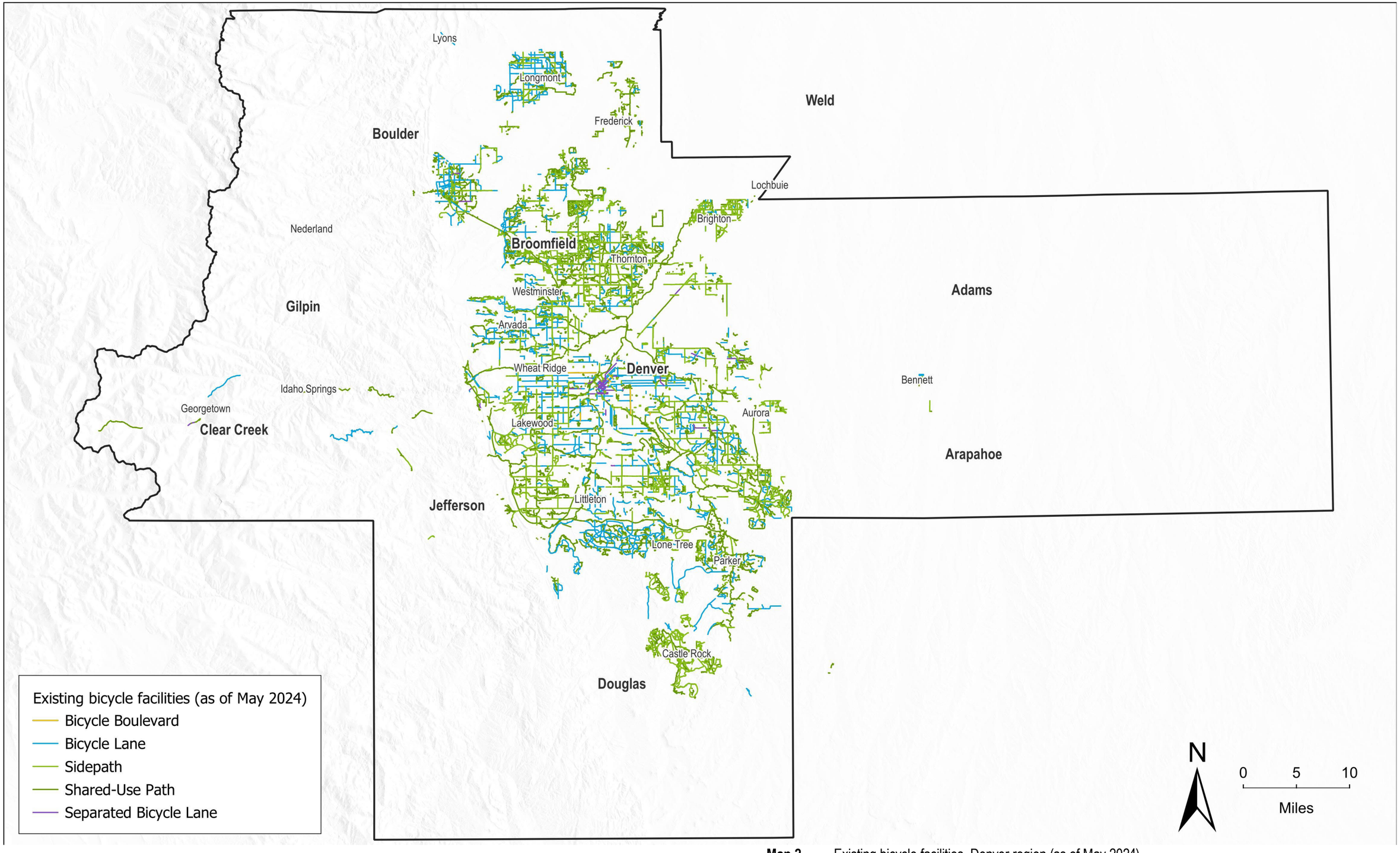
Mini traffic circles and traffic diverters

Bicycle boulevard volume management devices have been installed around the region as well, such as mini traffic circles and diverters that attenuate or prohibit through motor vehicle traffic while encouraging bicycle through-travel. These devices have been installed using quick-build materials (e.g., parking stops, flexible delineators, or formed asphalt) and with cast-in-place concrete for permanent capital project installations.

On- and Off-Street Bicycle Parking

Secure bicycle parking and storage facilities continue to be a crucial tool to enabling functional active transportation trips. The Regional Transportation District (RTD) and its partners continue to invest in secure storage facilities such as **Bike-n-Rides** and **bicycle lockers** at major transit stations, while local jurisdictions and Transportation Management Associations (TMAs) expand programmatic, development, and right-of-way solutions to expand bicycle and scooter parking. Recent advances include:

- Updates to local **TDM ordinances** that provide incentives for secure bicycle parking facilities.
- DRCOG's Transportation Demand Management Strategic Plan includes parking facilities in an associated **Toolkit**.
- In addition to expanding on-street bicycle parking corrals, local governments have **partnered with shared micromobility operators to enhance parking corrals** for private bicycle and shared micromobility parking stalls with art and physical hardware.



Map 2 Existing bicycle facilities, Denver region (as of May 2024)

Benchmarking activity and ridership

DRCOG maintains several assets or subscriptions to track region-wide bicycle and pedestrian activity. Some of these are based on real, tracked activities, such as manual and automated counts, bicycling and walking trips logged in Strava, and shared micromobility trips reported by operators and tracked in the Ride Report regional micromobility dashboard. While each of these sources offers only a partial image of activity and ridership across the region, together they can provide insights into where active transportation is particularly pronounced, and how it is changing over time.

MetroVision Regional Transportation Plan: Mobility Performance Measures

In support of the MetroVision Regional Transportation Plan (adopted in 2022), DRCOG staff used the organization's FOCUS travel model to estimate average weekday person trips by mode throughout the region, both in the Baseline year (2020) and in the Plan Forecast year (2050). As a note, the 2020 Baseline values assumed smoothed travel trends, rather than being specifically calibrated to the first year of the COVID-19 pandemic:

Table 4 Modeled trips by mode, 2020 - 2050, DRCOG region (FOCUS Travel Model)

Modeled Weekday Person Trips for DRCOG Region	2020 Baseline	2050 Forecast	Change
Single-occupant vehicle driver	7,392,232	10,120,169	37%
Shared ride driver	2,205,376	2,786,834	26%
Shared ride passenger	3,349,011	4,652,120	39%
School bus	135,323	149,343	10%
Transit (fixed route & paratransit)	264,048	417,646	58%
Drive to transit	69,892	103,113	48%
Pedestrian or bicycle to transit	458,204	732,179	60%
Bicycle	207,418	264,281	27%
Pedestrian	1,242,170	1,723,848	39%
Total person trips	**15,323,674**	**20,949,533**	**37%**

These modeled trips estimate that a little more than 12% of regionwide trips use active modes of transportation.

Streetlight

Streetlight, a big data platform that uses an agglomeration of location-based service, connected vehicle, and verified count data to model and track multimodal travel, has tracked active transportation trends within the DRCOG region from 2019 to 2022. According to this model, from the year immediately preceding the COVID-19 pandemic to three years after, average daily bicycle travel increased more than 30% while pedestrian travel fell more than 30%.

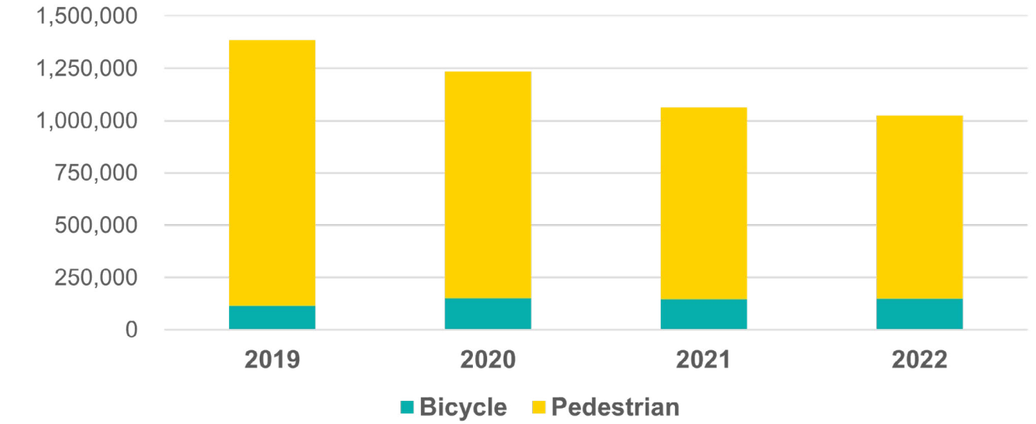


Figure 1 Average daily walking and bicycling volumes, DRCOG region 2019 - 2022 (Streetlight)

Strava Metroview

Strava—a popular fitness tracking app—compiles logged trips in a public agency-facing platform called Metroview. Trips are categorized by Activity Type, which are then categorized by Mode (walk, run, and hike activities are sorted into Walking Trips, and bicycle or e-bike activities are sorted into Bicycle Trips) and Trip Type (Commute and Leisure) for bicycle trips.

Because of the app's orientation toward exercise, roughly 80% of bicycle trips logged are categorized as "Leisure," which means the user did not manually classify as a "Commute" trip.

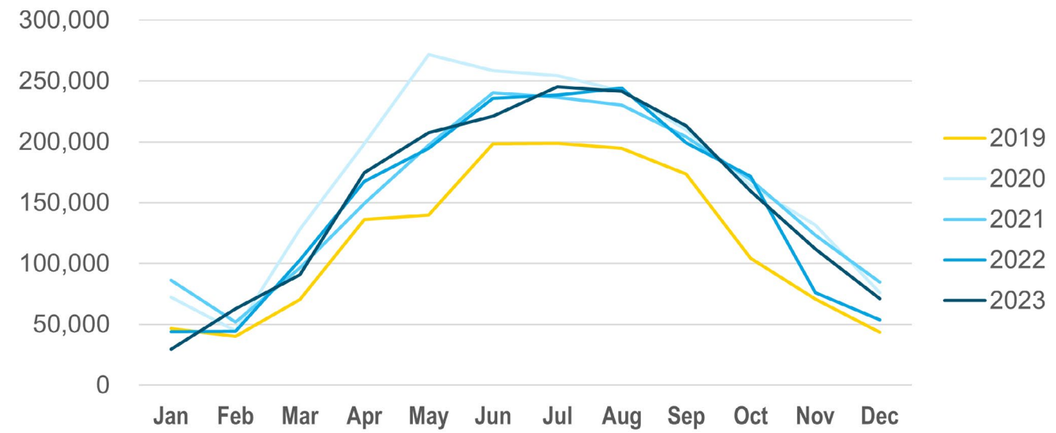


Figure 2 Monthly logged bicycle trips, Strava Metroview (2019-2023)

INRIX Ride Report Shared Micromobility Dashboard

DRCOG leads the Regional Micromobility Data Partnership, which contracts with Ride Report to operate a micromobility data platform to regulate, manage, and collect data on shared micromobility trips in jurisdictions across the region. As of this writing, the following jurisdictions operate micromobility programs:

- City of Aurora (Discontinued)
- City of Boulder
- City of Brighton
- City and County of Denver
- City of Littleton (Discontinued)
- Meridian Metropolitan District
- City of Thornton

The City of Aurora operated a shared micromobility program as well from 2021 to 2022.

Since the introduction of publicly regulated, privately operated micromobility systems in the region in late 2018, annual ridership more than tripled between 2019 and 2023, from 1.6 million trips to more than 5.2 million trips. Additionally, the City of Boulder continues to be served by a station-based bike share system (Boulder B-Cycle) that has served more than 100,000 trips per year; Boulder B-Cycle data is not currently included on the public data dashboard.

In 2023, 94% of shared micromobility trips across the region originated in Denver's city limits with 4.9 million so far in 2023. Nearly all the region's trips (99.6%) and available shared micromobility vehicles (97.6%) were either in Denver or Boulder, with significant year-over-year ridership growth in those two jurisdictions.

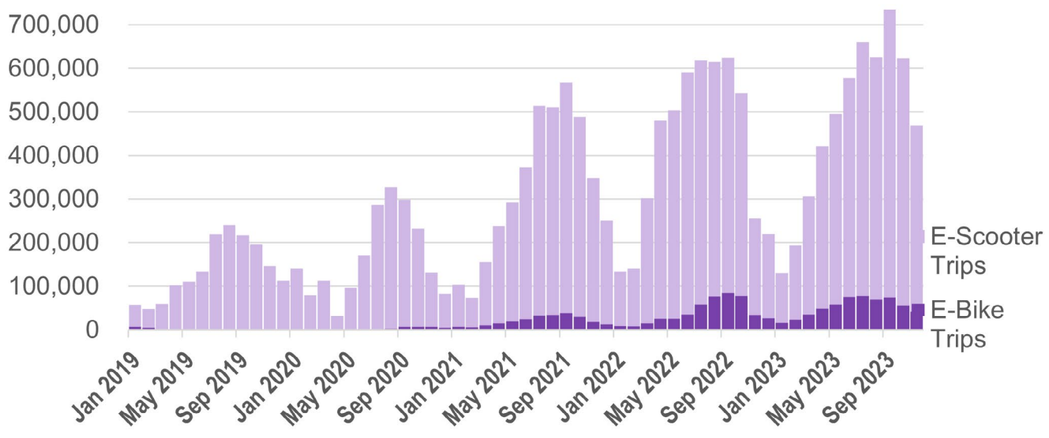
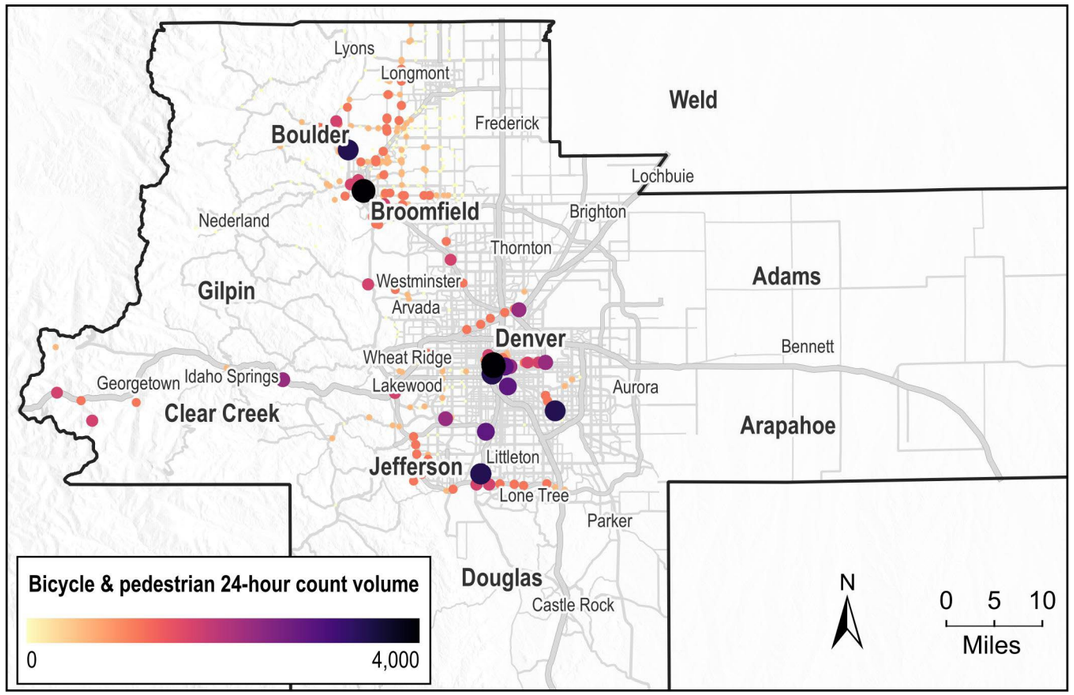


Figure 3 Monthly Dockless Shared Micromobility Trips, DRCOG Region

Screenline Counts

DRCOG maintains a GIS database of bicycle and pedestrian counts collected at numerous locations by member jurisdictions and partner agencies throughout the region.



Map 3 Bicycle and pedestrian 24-hour counts

Conclusions

Because each of these resources offers only a partial image of activity and ridership across the region, we can make only limited inferences:

- Streetlight suggests significant shifts in active transportation travel in the region from before the COVID-19 pandemic to the present day. Possible explanatory factors may include:
  - Data and modeling limitations;
  - Pandemic-driven behavior changes.
- Based on Strava data, leisure bicycling increased sharply during the COVID-19 pandemic, peaking in 2020 and maintaining a 30–40% increase over the 2019 baseline in 2022 and 2023. Commute bicycle trips dropped significantly in the first years of the pandemic and have since rebounded to 80-90% of pre-pandemic baseline in the most recent years.
- Shared micromobility trips have grown significantly each year since 2019 when the first privately-operated e-scooter and e-bike systems were deployed in the region.
- While the current inventory of counts are limited, ridership on major trail facilities has been relatively stable between 2013 and 2022.

Benchmarking crashes and safety

Active Modes Crash Report (2023)

In fall 2023, DRCOG completed an updated report on crash and safety trends involving bicyclists and pedestrians. For a detailed analysis of active transportation crash trends and causes, refer to the Active Modes Crash Report. This section summarizes broad findings from that report.

Between 2010 and 2019 (prior to the COVID-19 pandemic's outset), pedestrian-involved fatal and severe injury crashes increased 42%. Bicycle-involved fatal and severe injury crashes increased from 2010 to 2014, and then fell from 2014 to 2019.

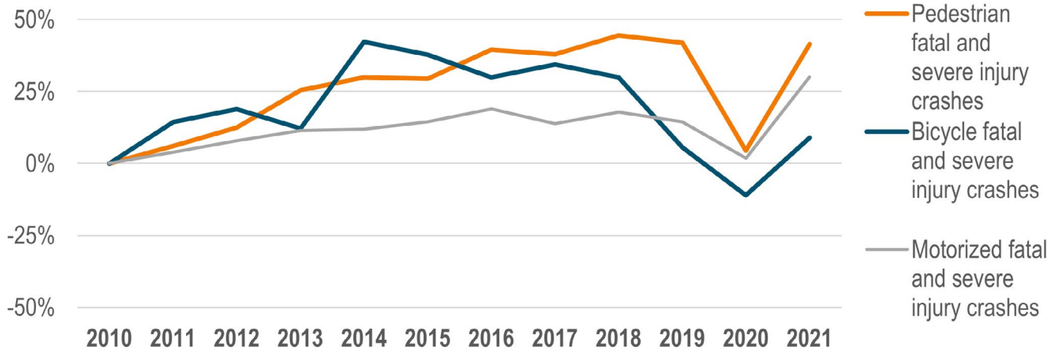


Figure 4 Change in fatal and severe injury crashes since 2010

The report focuses primarily on the period between 2015 and 2019, choosing to isolate 2020 and 2021 because the travel environment changed so dramatically at the pandemic's onset. During that period, active mode crashes constituted 3% of all crashes, but 22% of fatal and severe injury crashes across the region. There were 263 fatal crashes involving people walking, and 55 involving people bicycling.

A consistent finding across the region is that speed amplifies severity. In crashes that occurred on streets where posted speed was 35 miles per hour or greater, pedestrian crashes were more than twice as likely to result in fatality or severe injury.

The report also finds that men were over-represented in pedestrian and bicycle-involved crashes—men represented 67% of those involved in pedestrian fatal and severe injury crashes, and 77% of those involved in bicycle fatal and severe injury crashes. This finding is consistent with national trends—however, based on National Household Travel Survey data for Colorado, men and women take roughly similar numbers of walking trips, which confounds the finding that men are so over-represented in pedestrian-involved crashes. Survey data for the region does suggest that men taking roughly three-quarters of bicycle trips, which may account for the disparity in bicycle crashes.

The report found some seasonal variations in crashes as well, with pedestrian crashes increasing during the late afternoon and early evening hours, while bicycle crashes were more concentrated to peak commute times.

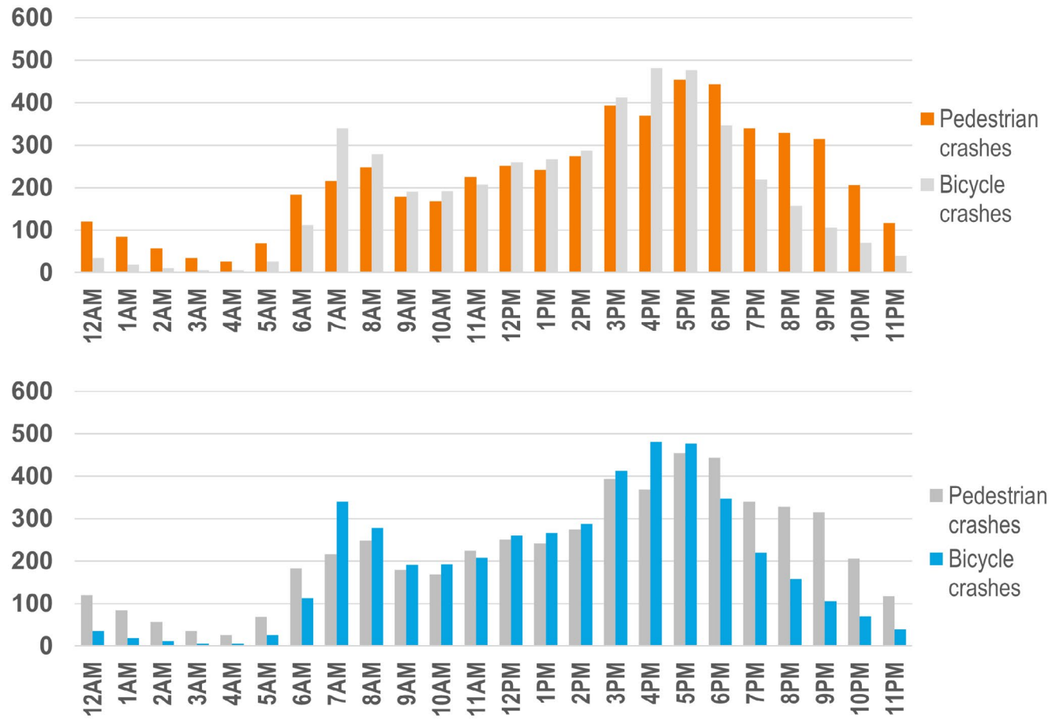


Figure 5 Pedestrian- (orange) and bicycle-involved (blue) crashes by hour, 2015-2019

Pedestrian crashes tended to increase during the fall and winter months, while bicycle crashes trend up during the summer and early fall months when weather is most advantageous to bicycling.

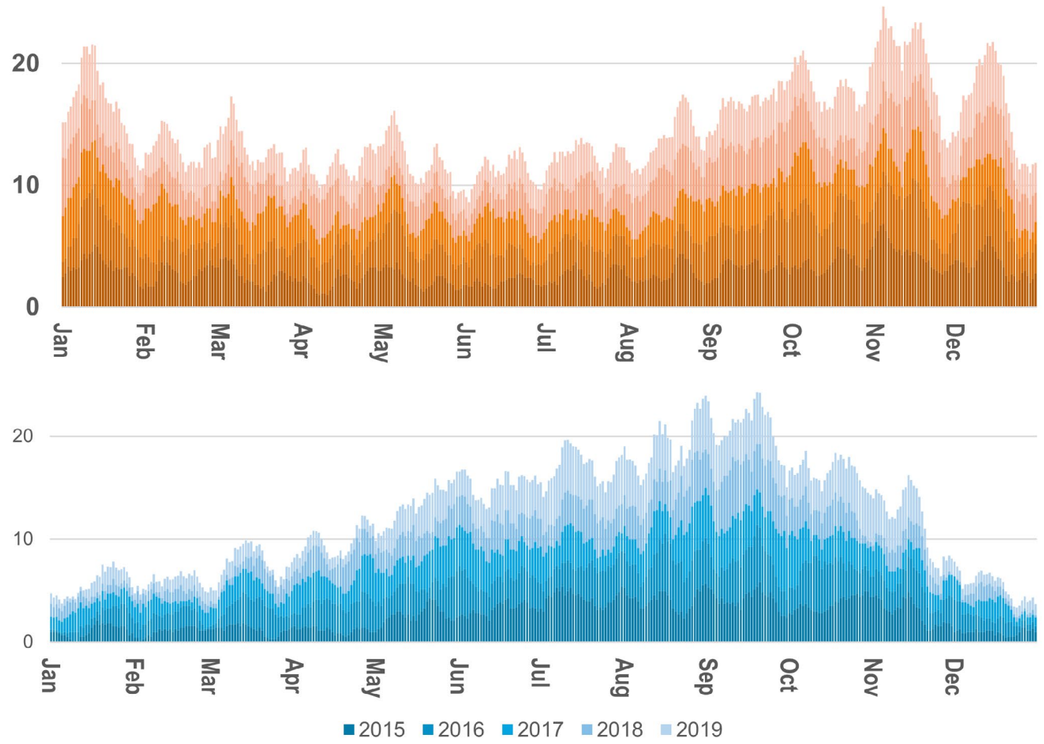


Figure 6 Pedestrian (orange) and bicycle (blue) crashes per day (seven-day rolling average), 2015 - 2019

The Crash Report dives deep into crash types, roadway or intersection classifications, land use contexts, and pre-crash maneuvers to better understand if there are common types of locations or movements that indicate risk for people walking and bicycling. First, the report finds that the majority of fatal and severe injury pedestrian crashes (54%) and bicycle crashes (66%) occur at intersections. For severe pedestrian intersection crashes across the region, 41% involve left turns, and 38% involved broadside collisions. These crashes were concentrated to intersections where a major and minor street cross—in urban areas, 32% took place at major arterial-to-local junctions, and 60% occurred at where either a major or minor arterial intersected either a local or collector street. In suburban areas, 52% occurred where a major arterial crossed either a collector or local street.

Bicycle crashes exhibited similar skew in location types, with 39% of fatal and severe injury intersection crashes occurring at major to minor street crossings in urban areas, and 36% in suburban areas. In suburban areas, bicycle crashes involving right turn movements also jumped out as a common crash type, with 32% of fatal and severe injury crashes having a right turn conflict.

Benchmarking economic growth

In 2016, CDOT completed a report entitled Economic and Health Benefits of Bicycling and Walking, which estimated that bicycling adds $1.1 billion to Colorado's economy each year (including household goods and equipment, bicycle event and vacation participation, and bicycle tourism from out-of-state visitors), and that walking activities add a further $497 million to the state's economy. Additionally, the resultant health benefits from bicycling saves the state $511 million annually, and walking saves $2.7 billion in health benefits from reduced chronic health conditions and early mortality.

Plans, policies, and regulations

Metro Vision

Most recently updated in 2017, Metro Vision is DRCOG's regional plan, with five organizing themes that set a vision for growth and development across the region. This section details each of those themes, with implications for the Regional Active Transportation Plan.

An efficient and predictable development pattern

This theme names three desired outcomes:

- "The region is comprised of diverse, livable communities."
- "Through a coordinated effort between DRCOG and local communities, new urban development occurs in an orderly and compact pattern within regionally designated growth areas."
- "Connected urban centers and multimodal corridors throughout the region accommodate a growing share of the region's housing and employment."

The primary planning tool with relevance to the Regional Active Transportaion Plan from this theme is the creation of Designate Urban Centers, which are discussed further below. However, it is critical to align the region's land use planning with active transportation strategies because the relationship between land use and mobility choices is so direct. In 2020, DRCOG completed a complementary Scenario Planning Technical Memo, which used the regional travel model to analysis the potential impacts of different planning approaches to reaching the region's mode shift goals; of all the possible tools assessed, dense infill development concentrated to regional centers had the most significant positive impact toward increase active and multimodal transportation.

Designated Urban Centers

The plan designates geographies within the region as "Urban Centers" among three categories: Existing, Emerging, and Planned. These 105 urban centers make up about 1% of the region's land area, 10% of the region's housing, and over a third of the region's jobs.

Designated urban centers will:

- be active, pedestrian-, bicycle- and transit-friendly places that are more dense and mixed in use than surrounding areas
- allow people of all ages and incomes to access a range of housing, employment and service opportunities without sole reliance on having to drive
- promote regional sustainability by reducing per capita daily vehicle miles traveled, air pollution, greenhouse gas emissions and water consumption
- respect and support existing neighborhoods

These Urban Centers should be considered in the development of active transportation networks.

A connected multimodal region

This theme names two desired outcomes:

- "The regional transportation system is well-connected and serves all modes of travel."
- "The transportation system is safe, reliable and well-maintained."

Additionally, the Mobility theme has five key performance measures, with the following observations of progress in Table 5.

Table 5 Metro Vision mobility performance measures

Performance Measure	Baseline (year)	Most Recent Observation	2040 Target	Trajectory
Non-Single Occupant Vehicle Travel to Work mode share	25.1% (2014)	25.7% (2019)	35%	↑
Vehicle Miles Traveled per capita per day	25.2 (2010)	25.4 (2019)	10% decrease from 2010	↑
Travel Time Variation average ratio of peak period to off-peak travel time	1.22 (2014)	1.22 (2019)	< 1.30	↔
Person Delay minutes per capita per day	5.7 (2014)	5.8 (2019)		↑
Traffic Fatalities per year	185 (2014)	270 (2019)	0*	↑

The Active Transportation Plan provides recommendations intended to increase non-SOV mode share, reduce vehicle miles traveled, and reduce traffic fatalities. Additionally, with sufficient mode shift to active modes of transportation alongside other recommendations, person delay and travel time variation can also be improved.

A safe and resilient natural and built environment

While this theme primarily focuses on open space protection and housing or employment areas at high risk for environmental hazards, one of the key performance indicators is a 60% reduction in surface greenhouse gas emissions per capita. Mode shift to zero emissions (or lower emissions) transportation will be critical to achieving this goal, which the active transportation plan supports.

Healthy, inclusive and livable communities

This theme names three desired outcomes:

- “The built and natural environment supports healthy and active choices.”
- “The region’s residents have expanded connections to health services.”
- "Diverse housing options meet the needs of residents of all ages, incomes and abilities.”

Investment in connected, affordable, and high-comfort active transportation options are a crucial supportive component of livable and healthy communities that enable residents to age in place and access essential services. The Active Transportation Plan must consider access for historically marginalized groups, especially older adults, communities of color, low income households, and people with disabilities or chronic health needs.

A vibrant regional economy

This theme names two desired outcomes:

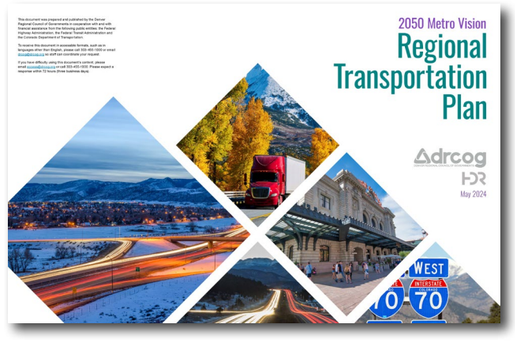
- “All residents have access to a range of transportation, employment, commerce, housing, educational, cultural and recreational opportunities.”
- “Investments in infrastructure and amenities allow people and businesses to thrive and prosper.”

As the final theme in the regional plan, active transportation is a critical support for the region’s economy. People and goods must be able to move freely and reliably, with a mobility system providing redundant travel options and removing barriers to access. While the key performance indicators center around housing and employment access to high-frequency or rapid transit, the Active Transportation Plan must consider multimodal access to the transit system, as well as to final destinations.

Metro Vision Regional Transportation Plan

The Metro Vision Regional Transportation Plan adopted investments to promote active transportation, including:

- 154 miles of new regional shared-use paths
- $180 million in 2050 RTP projects specifically dedicated to bicycling and walking
- $32 million set aside for other bicycle and pedestrian improvements



The Regional Complete Streets Toolkit to encourage routine incorporation of active transportation into street projects to support delivery of the active transportation network.

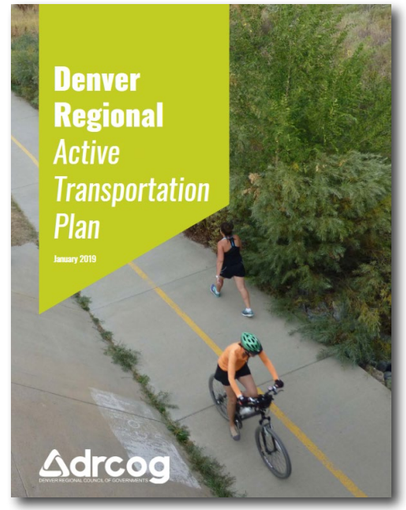
Together, these investments are projected to increase total bicycling trips 32% by 2050, and walking trips by 44%.

Denver Regional Active Transportation Plan (2019)

The current Regional Active Transportation Plan includes guidance and resources to assist member governments with developing and implementing active transportation infrastructure. However, the centerpiece of the plan is its three-pronged active transportation network:

- Regional Active Transportation Corridors,
- Short-Trip Opportunity Zones, which represent geographic areas where a high level of bicycling currently occurs or where it would likely occur if comfortable and safe biking facilities were present.
- Pedestrian Focus Areas, which represent geographic areas where a high level of walking currently occurs or where it would likely occur if comfortable and safe walking facilities were present.

The geographies from the 2019 Active Transportation Plan are illustrated in Map 4.



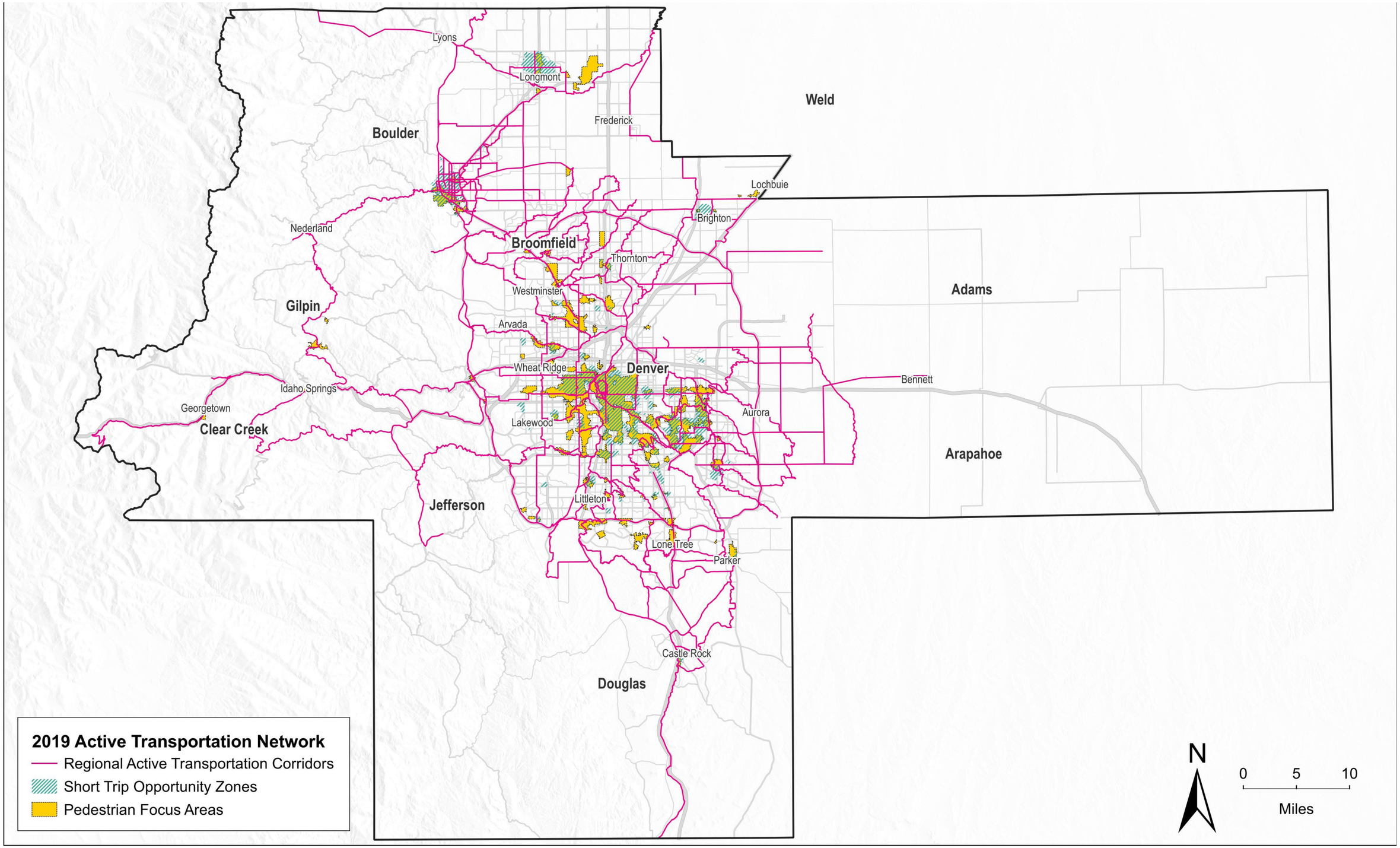
Application

Aside from being a core component of the Regional Transportation Plan and an essential planning product for DRCOG, the Denver Regional Active Transportation Plan is regularly used by the agency’s member governments for their regular planning work. The first use case of the plan is its application in the Transportation Improvement Program—the Regional Active Transportation Corridors are a key scoring criteria for the Regional Share of TIP funding. Additionally, elements of the Active Transportation Plan are utilized to score TIP Set-Aside applications, including the TDM, RTOT, and CCLIP Set-Asides.

In addition to leveraging funding opportunities and developing or advancing their regional projects, member jurisdictions use the Active Transportation Plan to develop their own local and countywide bicycle and pedestrian plans. The networks created by DRCOG are often reviewed and referenced in network development by member jurisdictions, especially those who participated in the 2019 plan’s development. Especially on regionally significant roadways and trails, DRCOG’s plan networks are a critical reference to coordinate interjurisdictional efforts.

The region’s bicycle and pedestrian infrastructure geospatial data is collected and catalogued by DRCOG, as further discussed in the Regional Data Catalog section of this report. These data inventories are updated annually and used by planning entities to tie projects and facilities into neighboring jurisdictions to advance a more regionally cohesive network.

The current ATP makes a series of plan recommendations both for DRCOG to lead (Regional Actions) and for member governments to consider (Local Actions). These recommendations since 2019 are listed in Table 6 and Table 7



Map 4 Regional active transportation network, DRCOG 2019 Active Transportation Plan

Table 6 Regional actions, DRCOG Active Transportation Plan (2019)

Category	#	Regional Actions	Progress (as of 2024)
Collaboration	1	Convene local, regional and statewide bicycle and pedestrian stakeholders to ensure cross-jurisdictional coordination on implementation of active transportation projects in the region and provide opportunities for local governments to learn from or adapt local approaches to bicycle and pedestrian planning.	Member governments meet quarterly at the Micromobility Working Group.
	2	Coordinate with local partners and TMAs to expand the regional transportation demand management program to include greater emphasis on bicycling and walking.	The TDM Strategic Plan is slated for adoption by the end of 2023.
	3	Convene local, regional and statewide bicycle and pedestrian stakeholders to coordinate policy efforts on active transportation-related issues such as e-bikes, small mobility devices, data and stop-as-yield legislation.	CO Safety Stop implemented in 2022. CO E-bike regulations. CO E-bike rebate. Regional Crash Data Consortium.
	4	Coordinate with local partners to further explore traffic safety in the Denver region and develop a Vision Zero Action Plan.	DRCOG's board adopted Taking action on regional Vision Zero in 2020. DRCOG created a full-time safety planner position to implement the plan in 2022.
	5	Collaborate with transit providers, local communities, CDOT and stakeholders to enhance active transportation connections to and from transit.	RTD First & Last Mile Study.
Education and assistance	6	Collect and share information on local policies, plans and regulations as they pertain to active transportation plans.	Ongoing.
	7	Conduct analyses and provide data on topics such as level of traffic stress and crashes.	Active Modes Crash Report completed in 2023.
	8	Continue to collect and disseminate bicycle facility inventory data, including current and proposed facilities.	DRCOG updates a GIS Bicycle Facility Inventory annually.
	9	Collect bicycle and pedestrian counts and enhance count data sharing.	DRCOG updates a GIS Bicycle & Pedestrian Counts dataset annually, and conducts manual counts.
	10	Provide tools, information and education to local governments on facility design, emerging trends and related topics.	The Complete streets design toolkit was completed in 2021.
Investments	11	Support development of regional wayfinding for active	Member governments have implemented local wayfinding plans. Regional wayfinding may be discussed during the active transportation plan update.
	12	Consider prioritization criteria that encourage investment in high-comfort bicycling and walking facilities that are part of the regional active transportation network.	The Complete Streets Typology was augmented with prioritization scheme in 2022, which has been integrated into the TIP selection criteria.
	13	Prioritize walking and biking investments in transportation-disadvantaged areas.	DRCOG has developed an Equity Index data tool to weight project scoring and urge member governements to prioritize investments in historically marginalized communities.

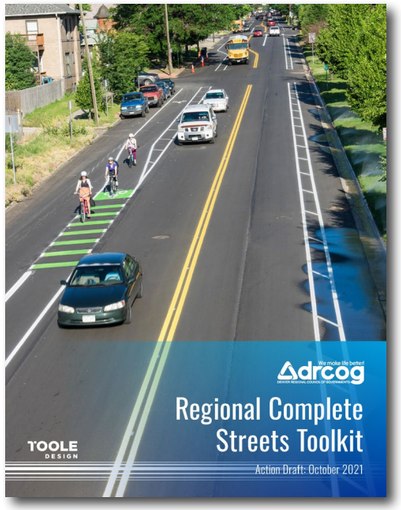
Table 7 Local actions, DRCOG Active Transportation Plan (2019)

Category	#	Local Actions	Progress (as of 2024)
Collaboration	1	Coordinate with neighboring jurisdictions to ensure continuity and connectivity of the active transportation networks and share best practices in bicycle and pedestrian planning.	Ongoing
	2	Work with RTD and other transit providers on transit-supportive infrastructure, including first- and last-mile connections.	RTD adopted the First Mile Last Mile Strategy in 2019 to support connections to transit.
	3	Work with DRCOG and local TMAs to inform and promote the use of transportation demand management strategies and services.	Way To Go partnership and TDM set-aside continue to invest in local efforts to increase walking and bicycling for transportation.
Education and assistance	4	Adopt policies, regulations or standards promoting Complete Streets principles and context-sensitive design for users of all ages, incomes and abilities, including mobility-limited residents.	Colorado DOT and the Cities of Boulder, Denver, Golden and Parker have adopted Complete Streets plans, policies or design manuals.
	5	Adopt local active transportation, bicycle or pedestrian plans that consider land use/zoning compatibility to complement comprehensive and master planning efforts.	Many jurisdictions have adopted bicycle and/or pedestrian plans, which are detailed later in this section.
	6	Adopt a Vision Zero policy with the goal to eliminate traffic fatalities and serious injuries.	Denver, Boulder, Boulder County, Brighton have each adopted Vision Zero plans or policies.
Investments	7	Design and build low-stress bicycle networks and complete sidewalk networks that facilitate on- and off-street facility connectivity.	See page 8 for detailed update on implementation progress.
	8	Improve multimodal connectivity throughout the transportation network and prioritize investment in first- and last-mile connections to transit.	RTD adopted the First Mile Last Mile Strategy in 2019 to support connections to transit.
	9	Incorporate wayfinding into active transportation projects.	Broomfield, Jefferson County, Superior, and Denver are among jurisdictions that have either created or updated wayfinding plans and schemes.
	10	Promote educational and promotional events to encourage bicycling and walking.	Bike to Work Day, Winter Bike to Work Day and Biking School Buses are among the educational and promotional events that have expanded throughout the region.
	11	Implement safety projects that improve conditions for bicyclists and pedestrians and track their effectiveness by analyzing crash data.	Many member governments share practices for safety projects through the Regional Vision Zero Working Group.
	12	Develop a regular maintenance schedule to ensure existing sidewalks and bicycle facilities are well-maintained.	Some member governments have invested in dedicated sweep and snow removal equipment for active transportation infrastructure.

Finally, the current Active Transportation Plan includes the results of statistically valid survey conducted in 2018 concerning attitudes about bicycling and walking. The results of this survey are used by members and partner organizations to guide planning activities and tell a compelling story about advancing active transportation in the region. For example, the City and County of Denver has incorporated DRCOG's findings about the "four types of cyclists" into its public messaging about the need for investing in the bicycle network, as shown in Figure 7.

Figure 7 Four types of cyclists, Denver region (2018)

Regional Complete Streets Toolkit



In 2021, DRCOG developed a Regional Complete Streets Toolkit for the Denver region. Complete Streets are safe, context-sensitive, inclusive, equitable and flexible. The Complete Streets approach gives pedestrians, cyclists, transit riders and other multimodal travelers the same access to safe and comfortable streets as motor vehicles.

Adopted by the DRCOG Board in October 2021, the toolkit provides guidance for local governments to plan, design and implement Complete Streets. The toolkit also:

- Supports the development of a safe and comfortable transportation network for all modes and all users.
- Promotes the use of the latest Complete Streets design criteria and guidelines.
- Establishes a vision for how local governments could adopt and apply a Complete Streets policy.
- Develops a multimodal street design typology to supplement the traditional functional classification systems by identifying design elements linked to all modes of travel.
- Provides guidance on a variety of street design measures available to local jurisdictions in planning and engineering safe and comfortable Complete Streets for all users of the regional transportation system.

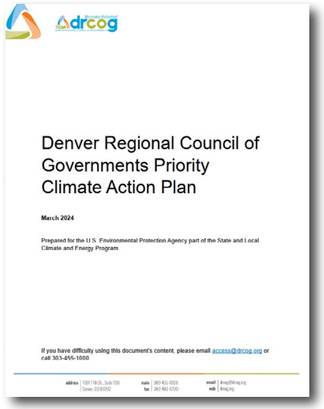
Story Map and Prioritization Analysis

DRCOG staff developed a story map to serve as a companion resource to the toolkit. The story map introduces the toolkit, describes the street typology and provides context around the 10 street types. Current federal legislation includes a requirement to develop a Complete Streets prioritization plan that identifies a specific list of Complete Streets projects to improve the safety, mobility or accessibility of a street.

DRCOG executed a prioritization analysis following adoption of the Regional Complete Streets Toolkit. The analysis illustrates locations in the Denver region scoring highest for being ideal areas to take action and invest in funding that addresses multiple planning priorities, including safety, accessibility and mobility.

This prioritization analysis is another tool member governments can use to identify priority project candidates for funding programs such as the Transportation Improvement Program and federal grant programs. The prioritization analysis can be found in the Prioritizing Complete Streets section of the story map.

Priority Climate Action Plan



In 2023, DRCOG received (on behalf of the Denver-Aurora-Lakewood MSA) a federal planning grant (the Climate Pollution Reduction Grant) to develop climate action plans with regional stakeholders. The planning grant funds are required to be used to complete the following tasks:

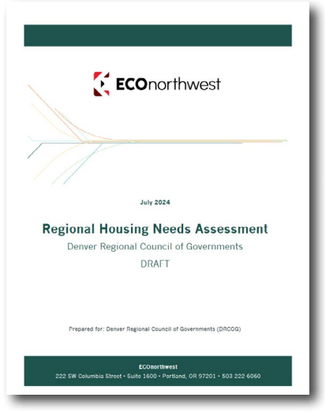
- Priority Climate Action Plan, completed March 1, 2024.
- Comprehensive Climate Action Plan due Aug. 1, 2025.
- Status Report due Aug. 1, 2027 at the close of the four-year grant period.

In the first phase—the Priority Climate Action Plan—the project team led by DRCOG completed a Regional Greenhouse Gas Inventory (finding the transportation comprises 34% of GHG emissions in the region) and developed a series of strategies cutting across sectors and subject areas to address climate change. The Plan identifies two Transportation and Mobility strategies:

1. Develop a Bus Rapid Transit (BRT) network in the CPRG planning region prioritizing low-income and disadvantaged communities while supporting existing regional transit connectivity. Utilizing the framework established by CDOT, DRCOG, and RTD, prioritize the development of the following corridors by 2030:
   - East Colfax BRT: Colfax Avenue from Union Station to Interstate 225.
   - East Colfax BRT Extension: Colfax Avenue from Interstate 225 to Interstate 70.
   - Federal Boulevard BRT: Federal Boulevard from Dartmouth Avenue to 120th Avenue.
   - State Highway 119 BRT: Downtown Boulder to Longmont (Ute Highway).
   - Colorado Boulevard BRT: Colorado Boulevard from Interstate 25 to Interstate 70.
2. Expand active transportation infrastructure in the CPRG region, prioritizing low-income and disadvantaged communities and key corridors identified in frameworks established by CDOT, DRCOG, and CPRG local jurisdictions. Infrastructure projects should align with adopted plans for the respective project area, with a focus on first/last mile connectivity and the completion of missing links in the network.

The second strategy in particular overlaps with the planned Active Transportation Plan update, which will set forward a network and set of strategies to support the emissions reduction goals set forward in the Comprehensive Climate Action Plan in 2025.

Regional Housing Needs Assessment



In October 2023, in response to a request from DRCOG's Board of Directors, DRCOG staff initiated a Regional Housing Needs Assessment to better understand the state of housing production and supply in the region, and to develop strategies to address increasing costs both to access and build housing. The assessment is being conducted in two phases: a needs assessment (phase 1), and a strategy development (phase 2).

During phase 1, the project team made the following key findings:

- Housing production has largely kept pace with population growth, but is happening in a context of historic underproduction.
- Low-income households (below 60% Area Median Income) represent the greatest need for additional housing.
- Aging population and smaller household trends will require more diverse housing types.
- Housing types and affordability are unevenly distributed across the region.

Additionally, the assessment has concluded that by 2050, the Denver region will need to produce more than 511,000 new housing units to meet current and future regional housing needs—26,000 units to address homelessness and accommodate people who are unhoused, 26,000 units to address the gap created by historic underproduction, and 459,000 to address anticipated future need through population growth and demographic churn.

Related to active transportation, and key challenge to meeting this housing need cited by many jurisdictions in the region is the need to develop necessary infrastructure to support these new housing units. Shifting travel growth and demand away from single-occupancy vehicle trips (which requires expansive road infrastructure and footprint) to more efficient travel modes—especially walking, bicycling and transit—will be key to supporting housing and economic growth within the fiscal constraints that local governments face.

Programs

Transportation Improvement Program

The Transportation Improvement Program (TIP) is one of the primary mechanisms by which DRCOG promotes active transportation in the region. The TIP process allocates federal funding to local jurisdictions and sponsors to study, plan, design, construct and operate transportation infrastructure. Project applicants are evaluated using a diverse set of criteria; following the adoption of the Regional Active Transportation Plan, the three-pronged active transportation network (Regional Active Transportation Corridors, Short-Trip Opportunity Zones, and Pedestrian Focus Areas) has been integrated into the TIP's scoring criteria. Applicants are encouraged to use DRCOG's TIP Data Tool, a web-based GIS platform to screen projects and provide TIP application information.

Since the current Regional Active Transportation Plan's adoption in 2019, 80 active transportation projects have been awarded funding through DRCOG's Transportation Improvement Program, or 30% of all new projects awarded TIP funding during the three TIP cycles since 2019.

The current Policies for TIP Program Development include detailed requirements for applying for both Regional and Sub-Regional Share Calls for Projects. Regional Share projects must focus on regionally-significant roadways (highways and principal arterials identified here), while Sub-Regional Share projects are selected through county forums and may include a wider range of project contexts.

TIP Set-Asides

The TIP Policy designates a number of set-aside programs to achieve targeted goals, including several that directly impact active transportation.

DRCOG Corridor Planning

Kicked off in 2023, the Corridor Planning program identified regionally significant corridors, and convenes relevant local agencies and partners in collaborative planning efforts to develop corridor visions and plans. While the corridor candidates are centered around the regional bus rapid transit network, each of these corridor efforts deeply considers and integrates active transportation connectivity. The first two corridor plans—Alameda Avenue and South Boulder Road—are due to be completed in 2024.

DRCOG Community-Based Transportation Plans

Also initiated in 2023, the Community-Based Transportation Planning set-aside makes grants to local partners to work with DRCOG staff on small area plans that support hyper-local mobility, specifically targeting the needs of historically marginalized communities. The first of these plans is a school transportation plan in the City of Edgewater.

DRCOG Livable Centers Small Area Plans

This set-aside seeks to fund plans for small centers and nodes around the region's multimodal transportation system—the Regional Roadway System, the Regional Rapid Transit System, or the Active Transportation Network. The set-aside makes funding available for activities including (but not limited to) active transportation plans, first and final mile studies, transit-oriented development plans, or land use and zoning-related plans. The call for letters of interest is expected to be released in 2024.

Innovative Mobility

Due to open in 2024, the Innovative Mobility Set-Aside will solicit proposals for planning, demonstration, and pilot projects focused on emerging mobility. This may include studies or projects related to curbside management, shared mobility or Mobility as a Service (MaaS), electrification, connected and autonomous vehicles, mobility data, and mobility hubs. Many of the accepted projects or plans may have explicit active transportation intersection, or may include active transportation as a key consideration. The Active Transportation Plan update will also consider policy recommendations related to emerging modes, which intersect with key safety topics, mode shift and demand for bicycling and walking, and equity issues related to multimodal transportation.

Transportation Demand Management

The Transportation Demand Management Services set-aside was developed to support marketing, outreach and research projects that reduce single-occupant vehicle travel and ultimately reduce traffic congestion and improve regional air quality. The specific goals of the program are:

- Reduce single occupant vehicle travel.
- Reduce traffic congestion.
- Improve regional air quality.
- Pilot new approaches to transportation demand management.
- Improve awareness of and access to mobility options for people of all ages, incomes and abilities.

In 2023, DRCOG recommended awarding the first $1 million of projects to seven project sponsors, including the following with direct active transportation implications:

- The Denver Streets Partnership proposed to develop an East Colfax Mobility Benefits District, primarily focused on parking demand management but also intended to increase awareness of transportation alternatives.
- The Downtown Denver Partnership proposed to expand the Viva! Streets program for two additional years, to close streets for active use on event days each year.
- West Corridor TMA proposed to create sustainable transportation marketing materials for Sun Valley residents.

Regional Data Catalog

DRCOG maintains a catalog of geospatial and tabular data at data.drcog.org, including several datasets with direct relevance to active transportation planning:

Bicycle facility inventory

A geospatial inventory of bikeways by type, status and design features is maintained by DRCOG staff, with annual requests for updated data sent annually to all member governments Currently, updates are being made based on 2022 data received from member jurisdictions. The inventory categorizes the following facility types:

Facility type	Classification criteria	Min. width	Level of Traffic Stress
Shared-Use Path	Paths or trails that are fully separate from roadways—paths that run adjacent to roadways are categorized as "sidepaths."	8 ft.	1
Separated Bicycle Lane	Vertical barrier of any type (e.g., bollards, curbs, parking, etc.) is required.	7 ft. (inc. buffer)	1-2
Sidepath	Sidepaths are adjacent to the roadway, with a buffer of no more than 9 feet wide.	8 ft.	1-2
Local Path	Narrow (substandard) paths that are bikeable. Typically found in multi-home or HOA developments..	3 – 8 ft.	Not used
Unpaved Path	Natural surface path, may have limited utility as a transportation route (i.e., intended for recreational use).	8 ft.	Not used
Bicycle Lane	Bicycle lanes may be striped or marked with a buffer.	5 ft.	2-4
Paved Shoulder	Striped, unmarked shoulders on rural roads with bike signage.	4 ft.	3-4
Shared Lane	Shared lane markings are visible on street, but no other traffic calming or management observed.	n/a	1-4
Bicycle Boulevard	Shared lane markings plus at least one traffic speed or volume management device (e.g., speed humps, diverters or mini traffic circles)..	n/a	1-2

Considerations:

- 4-foot minimum widths for bike lanes are not considered best practice. Consider revising this standard to a 5-foot minimum width, with 6 feet as a preferred minimum and increase with volume. These dimensions include operable space (e.g., 4-foot bike lane with 2-foot marked buffer would constitute 6 feet of operable width).
- 8-foot minimum widths for shared-use paths are no longer considered best practice. Consider revising this to a 10-foot minimum width (the minimum space required for two bicycles to comfortable pass), with 12 – 14 feet as the desired minimum width.

Crashes, 2010 – 2021

Traffic crashes by all modes received annually from the Colorado Department of Transportation, who receives crash data from the Colorado Department of Revenue (that is agglomerated from local police departments and reporting agencies. DRCOG completes its own quality control and curation process before posting to the regional data catalog. Crash data provides fields to denote pedestrian- and bicycle-involved crashes, as well as pre-crash maneuvers, directionality, and suspected crash causes or factors.

Beginning in 2020, the state crash reporting form was significantly overhauled, resulting in a more detailed and granular dataset. There are significant quality issues with the 2020 data specifically as received, with dramatic improvements made to 2021 data.

Active transportation crash trends and characteristics are exhaustively detailed in the Active Modes Crash Report, which summarizes crash and safety issues primarily between 2015 and 2019 (with high-level information about 2020-2021).

Finally, through a grant made by the National Highway Traffic Safety Administration (NHTSA), DRCOG convenes a Regional Crash Data Consortium,

Bicycle and pedestrian counts

Building on a recommendation from the 2019 Regional Active Transportation Plan, DRCOG has compiled and maintains a counts database, which includes submitted counts from member governments; counts collected by DRCOG's Traffic Operations team; and manually collected short-duration counts.

The Counts dataset includes directional and summed screenline counts, as well as count duration (by hours) and collection source. Counts are compiled as raw data, and have not undergone adjustment for seasonal variation.

DRCOG is in the process of purchasing mobile bicycle and pedestrian count equipment to expand the number of count locations, duration of counts collected, and capability of member governments to document TIP-funded projects.

Planimetric data

As part of the Regional Planimetric Data Project, DRCOG collects sidewalk and shared-use path data throughout the Denver region (approximately 17,700 miles of sidewalk). This project uses high-resolution imagery to digitize features of the built environment including sidewalks (polygons and lines), sidewalk ramps (points) and trails (lines). These data sets are updated every other year and are available via DRCOG's Regional Data Catalog.

The most recent year available with a complete sidewalk inventory for the region is 2020. This dataset identifies sidewalk centerline locations and includes calculated widths, as well as identifying potential sidewalk gaps for both sides of each roadway. However, sidewalk gaps are not generally identified for rural contexts throughout the region, especially unpaved roads. Additionally, because it relies on aerial imagery, the dataset is not able to assess sidewalk condition or accessibility; sidewalks may be obstructed or have surface quality issues that would need to be documented through field audit.

Transportation Demand Management

Way to Go TMA Partnership

Way to Go is a regional partnership between the Denver Regional Council of Governments (DRCOG) and a dedicated group of Transportation Management Associations (TMAs) that work together to reduce traffic congestion, improve air quality, and make life better for the region's residents.

The Way to Go team organizes the region's annual Bike to Work Day in June, the state's largest commuter encouragement event—an estimated 18,000 people participated in both 2022 and 2023, 15% of whom had never ridden a bicycle to work before. (Prior to the pandemic, more than 35,000 people participated each year, though that number has fallen as a large portion of commuters have transitioned to teleworking or hybrid working schedules.) Additionally, the Way to Go team organizes Winter Bike to Work Day and Go-Tober, the region's other marquee mode shift events.

Beyond events to encourage Denverites to walk and bicycle more, the Way to Go program administers Carpool, Vanpool and Schoolpool ride-matching services, and a variety of employer-based commuter services including Colorado Clean Commute tax credit assistance, Guaranteed Ride Home services and other benefits programs to incentivize non-single occupancy vehicle trips.

Transportation Demand Management Strategic Plan

In December 2023, DRCOG adopted the Transportation Demand Management Strategic Plan, which makes recommendations for enhancing the region's TDM efforts. The following recommendations are most relevant to the Active Transportation Plan:

3 Support and expand Safe Routes to School programs across the region.

Currently, Safe Routes to School programs are administered at the municipal level, and cities, towns, counties and school districts partner to plan, seek funding for, and implement Safe Routes programs and projects. The recommendation in this plan to develop a regional blueprint would bolster and support local activities, including conducting equity mapping to target efforts to historically marginalized schools and communities; collecting case studies and best practice resources for local partners; and building collaboration among partners and institutions.

9 Expand the focus of Way to Go to include all trips.

Recognizing the historic focus of TDM programs on commute trips, expanding Way to Go's focus to include non-commute trips can unlock more opportunities to capture short trips by walking or bicycling.

10 Collaboratively develop and share an annual work plan for the Way to Go partnership.

The Way to Go program works extensively with the region's transportation management associations (TMAs). The TDM Strategic Plan recommends a collaborative annual work plan development process to strengthen partnerships and focus efforts on equity, which would include efforts related to rider encouragement and enhancement of multimodal trip tools.

Transportation Demand Management Toolkit

The Toolkit is a resource for TDM stakeholders and partners to understand, select, and implement supportive strategies. Below is a summary list of tools that either are explicitly active transportation-related, or support active modes of travel:

- Fixed-route transit
- Shared micromobility
- Mobility as a service
- Traveler information
- First and last mile infrastructure
- Mobility hubs
- Active transportation facilities
- Active transportation supportive infrastructure
- Transit supportive infrastructure
- Curbside management
- Mode shift subsidies, rebates, and rewards
- Roadway usage and vehicle fees
- Development review
- Zoning

Each tool is situated in a land use, transit, target audience, and active transportation context.

Mobility Choice Blueprint

The 2030 Mobility Choice Blueprint is a collaborative strategy helping to define the region's mobility future through a more connected, mobile, adaptable and user-driven network. Developed as a partnership between CDOT, RTD, the Denver Metro Chamber, and DRCOG, the Mobility Choice Blueprint sets forward a vision for the future of regional transportation, along with a set of Tactical Actions to achieve future goals. The following actions are most relevant to active transportation, with notes or context added:

1.4 Make Mobility as a Service available to all

MaaS may in the future provide holistic mobility menu, which would depend upon complete, connected, and comfortable active transportation infrastructure that is broadly comfortable and accessible to extend options to all residents, workers, and visitors in the region.

2.1 Evaluate technology upgrades and interoperability in projects in DRCOG's Transportation Improvement Program

Active transportation accommodation is a critical component of these technology upgrades to ensure people biking and walking are not further pushed to the sidelines as new emerging modes disrupt the transportation ecosystem.

2.3 Accelerate testing of bicycle/pedestrian detection at crossings

Passive detection that gives multi-sensory information (and confirmation) supports universal accommodation. Detection that relies on personal devices or wearables are fundamentally inequitable and should not be deployed.

2.5 Implement smart traffic signal control technology on all major regional arterial corridors

Major regional arterial corridors are generally where active mode fatal and severe injury crashes are most concentrated. Operations that prioritize safety and

3.2 Adopt a regional compact defining common standards for micromobility services

Data standards, privacy and service regulations ensure fair and equitable access to shared micromobility. Public right-of-way regulations can promote safe mobility, but must consider equity in enforcement.

3.4 Implement curbside management standards

Curb regulations can mitigate or ensure safe interactions between active and motorized users where they frequently compete for space and use. Additionally, curb and parking pricing and availability exert influence on decision to drive versus using other modes.

3.5 Pilot neighborhood-scale mobility hubs

The 2023 TDM Toolkit includes regional guidance for implementing and managing mobility hubs.

4.1 Establish a regional mobility data platform

Increasing access and usability of street data can enable better safety and access for active users, if used proactively.

5.2 Create an electrified mobility development program

Electrified mobility development strategies should and must include e-bikes and e-scooters, the fastest-growing electrified mobility options in the region.

6.1 Pilot driverless microtransit to increase public exposure to automated vehicle technology

6.3 Support legislative efforts to ensure that automated vehicles operate safely

Autonomous vehicles are currently in testing phase and have struggled to properly recognize and protect people walking and bicycling near vehicles. Strong oversight during testing phases is critical to ensure safety.

7.1 Expand DRCOG funding earmark for a mobility technology innovation fund

DRCOG's Innovative Mobility Set-Aside will issue its first LOI in spring 2024. Projects and programs that are selected or supported should consider implications on active users to support regional safety, air quality, and congestion/mode shift goals.

7.2 Explore the concept of a road usage charge for Colorado

Availability and access to active transportation options is a critical support leg for implementing road usage charges, especially to ensure that those who would be adversely impacted by usage charges have affordable, reliable, and equitable mobility options.

When updating the Active Transportation Plan, these recommendations should be considered and integrated into any new or revised strategies.

DRCOG Policy Positions

DRCOG publishes policy position documents for both the state and federal level each year, focusing on legislative priorities and proposals that especially affect the Denver region or DRCOG's programs. Below is a summary of relevant policy statements to the Active Transportation Plan.

From the 2022 State Policy document:

DRCOG supports legislation that promotes efforts to fund, maintain and expand a multimodal transportation system. DRCOG also supports measures to improve safety for users of alternative modes, especially pedestrians and bicyclists. DRCOG supports funding for programs that provide transportation for access to jobs for low-income workers who cannot afford to live near where they work, and for safe routes to schools.

From the 2022 Federal Policy document:

As Congress and the U.S. Department of Transportation consider additional transportation issues and rulemaking for the Infrastructure Investment and Jobs Act, DRCOG will evaluate each for consistency with the following policies.

- DRCOG supports an energy-efficient, environmentally sustainable, multimodal transportation system that ensures America's economic competitiveness and supports livable communities for its residents.

DRCOG supports adding multimodal transportation capacity appropriate to meet national and regional objectives.

- Maintain and expand funding programs that allow states and planning regions to develop, fund and implement integrated transportation solutions should be maintained and expanded. In addition, transportation funding must allow flexibility to address the multimodal, energy and environmental needs of individual urban areas.
- Establish national performance objectives and measures for increasing access and mobility for people of all ages, incomes and abilities should be established in addition to those for traffic congestion.
- Permit flexibility to allow each state and region to decide how to best make investments to show progress toward national safety, mobility and accessibility goals.

DRCOG urges Congress and the administration to take the following actions in support of transit in the Denver region:

- Continue the federal investment for transit and multimodal projects in the Denver region.
- Continue to provide federal funding for the FasTracks corridors (over time this could include corridors that have had to be removed from the fiscally constrained regional transportation plan).
- Clarify with regard to transit-oriented developments that up to a half-mile from an existing or proposed transit station, parking and transportation infrastructure, transit-oriented development planning, land acquisition and a project or program that supports compact, mixed-use, mixed-income, bicycle/pedestrian friendly development are eligible for federal transportation funding and require that this clarification be incorporated in funding program decisions, and work to identify additional sources of funding.
- Incorporate the Partnership for Sustainable Communities' livability principles into federal policy and investment decisions.
- Improve transportation services for older adults and individuals with disabilities by giving states added flexibility in utilizing their federal funds; enhancing the planning and coordination process; providing technical assistance; and promoting innovative community programs.

DRCOG supports actions that minimize the barriers to the use of alternatives to the single-occupant vehicle and encourage changes to normal work patterns to avoid peak traffic conditions. DRCOG also supports efforts to provide incentives to employers, schools, rideshare agencies, and individuals to encourage alternative transportation use.

DRCOG supports transportation legislation that addresses metropolitan mobility and accessibility issues, specifically with consideration for the following:

- Enable major metropolitan areas to establish and implement overarching plans for mobility and accessibility with focus on:
  - Increased accessibility, modal choices and seamless transfers.
  - Elimination of traffic chokepoints and reduction of severe traffic congestion.
  - Strategies that manage transportation demand, provide transit service and implement nonmotorized methods of travel.
  - Strategies for accommodating inter-regional movement of people and goods within and through the metropolitan areas.
  - Fostering livable communities for people of all ages, incomes and abilities.
  - Promoting the urban infrastructure necessary to support high-density development around transit.
  - Performance metrics that extend beyond existing traffic congestion and motor vehicle emissions measures and consider vehicle miles traveled. reduction, economic development, environmental sustainability, global competitiveness, accessibility, etc.

The Active Transportation Plan update may consider and recommend changes or new additions to DRCOG's policy positions.

State and local plans

DRCOG's Active Transportation Plan acknowledges and supports the state and local planning efforts to promote bicycling, walking, and other micromobility. Below is a summary of active or recent plans directly related to active transportation. Where local jurisdictions have bicycle network plans or sidewalk and bikeway prioritization schemes, DRCOG's network recommendations aim to support and bolster those efforts. While not every network link will likely be included in DRCOG's Regional Active Transportation Corridors, Short Trip Opportunity Zones, or Pedestrian Focus Areas, the regional networks certainly do not contradict the implementation efforts. Our pending network updates will seek to work closely with member governments to identify links that are regionally significant, or that should be prioritized for regional funding programs.

Statewide

Colorado DOT's most recent Statewide Bicycle and Pedestrian Plan was adopted in 2012, and amended in 2015. CDOT plans to update the Statewide Transportation Plan, which is expected to include an Active Transportation Plan, concurrently with DRCOG in 2024.

The current Statewide Bicycle and Pedestrian Plan sets out a vision and series of goals (e.g., enhance safety, increase bicycling and walking activity, expand recreational opportunities, improve public health and environment, provide transportation equity, maximize investments and improve the statewide economy), and crucially sets out Investment Decision Criteria, followed by Performance Measures to assess progress. The Plan sets out a table of scoring

criteria based on the Goal areas, with systemwide performance metrics suggested to score individual projects.

These criteria and metrics are likely to be updated in the forthcoming plan update.

In 2023, CDOT's Region 1 office completed the Denver Metro Bicycle & Pedestrian Safety Study, which conducted a network screening or crashes and systemic safety risk factors to identify high-crash and high-risk corridors in the Region (encompassing Adams, Arapahoe, Broomfield, Clear Creek, Denver, Douglas, and Jefferson counties), and identifying countermeasures for the highest ranked locations both from the crash screening and systemic safety screening. Those locations with identified countermeasures include the following:

- Colfax Avenue from Moline to Peoria (Aurora)
- Colfax Avenue and Havana Avenue (Aurora)
- Colorado Boulevard and Mississippi Avenue (Glendale)
- Colfax Avenue and Moline Street (Aurora)
- Colfax Avenue and Chambers Street (Aurora)
- U.S. 287 (Federal Boulevard) and 70th Avenue (Westminster)
- Wadsworth Boulevard from 32nd to 35th Avenues (Wheat Ridge)
- Wadsworth Boulevard from 26th to 29th Avenues (Lakewood/Wheat Ridge)
- Colfax Avenue and Adams Street (Bennett)
- Palmer Avenue from Colfax to 8th Avenue (Bennett)
- 1st Street and Centennial (Bennett)

Locations scored and prioritized during the Safety Study should be considered and potentially weighted in the Active Transportation Plan network development process.

Counties

Where both counties and their constituent municipalities have streets master plans or active transportation plans, county plans generally defer to local jurisdictions' plans as the owner-operators of most streets and roads. County plans are most relevant on rights of way in unincorporated areas. Consolidated city/county governments are included among county plans.

Table 8 County bicycle and pedestrian plans, DRCOG planning region

County	Year	Plan
Adams County	2022	The County's **Transportation Master Plan** includes both pedestrian and bicycle network plans.
Arapahoe County	2017	The County's **Bicycle/Pedestrian Master Plan** includes a Bike and Trail Network and Land Use Typologies for Pedestrian Improvements; the Implementation Plan includes a list of Trail projects, On-Street Bike projects, and Sidewalk projects.
Boulder County	2020	The County's **Transportation Master Plan** includes a trail vision and bikeable paths and shoulders network.
Broomfield, City and County	2019	The **Bicycle and Pedestrian Assessment** was completed as a supplement to the 2016 **Transportation Master Plan**, and includes a Major Trails Network, an Arterial Bike Lane Network, and a land use-based Pedestrian Improvement Typology.
Clear Creek County	-	While Clear Creek County does not have active transportation master plans, it adopted a **Floyd Hill Open Space Trail Master Plan** in 2018 to phase trail construction in part of the county.
Denver, City and County	2015*	Denver Moves: Bicycles is currently being updated, with planned completion in 2024. The **current bicycle network** is available as an online map. **Denver Moves: Pedestrians & Trails** was completed in 2019 and prioritizes geographies for filling in the sidewalk network. Additionally, Denver voters passed Question 307 in 2022, which created a dedicated funding stream for completing the citywide sidewalk network.
Douglas County	2009	The **comprehensive bicycle plan** is a network map, most recently updated in 2020.
Gilpin County	2020	The County's **Comprehensive Plan** adopts CDOT's Bicycle Policy for recommended Bicycle Corridors.
Jefferson County	2022	The County's **Bicycle Plan** includes near- and long-term networks.
Weld County (Southwest)	-	The **2045 Transportation Plan** does not include bicycle or pedestrian components.

Cities and towns

Local jurisdictions throughout the region are the primary operators and implementers of active transportation infrastructure. The Regional Active Transportation Plan will generally retain and reinforce local bicycle and pedestrian plans, with emphasis on developing an active transportation on regionally-significant roadways or urban centers.

Local jurisdictions in the Denver region implement active transportation networks through a set of common approaches:

- Many agencies, especially those without dedicated funding programs for walking and bicycling infrastructure, primarily implement their networks through regular resurfacing and roadway maintenance (i.e., if a street is planned to be milled and paved, it can be restriped with bicycle lanes at minimal cost). This approach is cost effective, but can struggle to build out a complete and connected network.
- Jurisdictions with a Capital Improvement Program can also designate local funds to a list of prioritized projects that include active transportation efforts.
- Some jurisdictions (e.g., the City and County of Denver) have in recent years gone directly to voters approve and fund multimodal projects. Bond packages (with specific project lists) as well as more open-ended tax initiatives can create reliable funding sources, especially for small and medium-sized projects that might be more difficult to fund than major infrastructure

investments, which are often more competitive for state and federal grants and funding programs.

- As discussed in the DRCOG Programs section, the regional Transportation Improvement Program allocates federal funding to local and county agencies to implement transportation projects, many of which are active transportation focused.
- Several important federal grant programs, such as Safe Streets for All and RAISE, have unlocked new funding opportunities for agencies to pursue project-specific funding.
- Finally, many jurisdictions rely on redevelopment to support or implement infrastructure improvements, including active transportation links. It is critical to have an adopted active transportation network and roadway design templates for redevelopment to be successful in supporting a complete network.

Table 9 contains a summary of local active transportation master plans.

Table 9 Local bicycle and pedestrian plans, DRCOG planning region

Municipality	Year	Plan
Arvada	2017	The **Bicycle Master Plan** includes a low-stress network.
Aurora	2012	Aurora's first Transportation Master Plan is currently under development. Aurora's current **Bicycle and Pedestrian Master Plan** was adopted in 2012. It's existing bicycle network can be viewed as an **online map**.
Bennett	2023	The active transportation network can be found on page 27 of its **Transportation Master Plan**.
Black Hawk	-	No bicycle or pedestrian plans were identified as of this writing.
Boulder	2019	Boulder has adopted a **Low-Stress Walk and Bike Network Plan** that identifies priorities and projects.
Bow Mar	-	No bicycle or pedestrian plans were identified as of this writing.
Brighton	2023	The **Bicycle, Pedestrian, and Multimodal Plan** was recently completed and includes a Bicycle Network, trailhead recommendations,
Castle Pines	-	No bicycle or pedestrian plans were identified as of this writing.
Castle Rock	2017	The **Transportation Master Plan** includes both Pedestrian and Bicycle Networks.
Centennial	2022	The **Transportation Master Plan** includes both Pedestrian and Bicycle Networks.
Central City	2020	The **Trails Master Plan** includes a recreational trail system for walking and bicycling.
Cherry Hills Village	2022	The **Village Master Plan** includes example roadway templates and recommends improvements to the High Line Canal, but does not include a transportation network.
Columbine Valley	-	No bicycle or pedestrian plans were identified as of this writing.
Commerce City	-	Commerce City's Transportation Master Plan is currently in development, and is expected in 2024.
Dacono	-	The City of Dacono is currently preparing to update the Transportation Master Plan, last adopted in 2003 with no active transportation component.
Deer Trail	-	No bicycle or pedestrian plans were identified as of this writing.
Edgewater	2019	The **Traffic Calming Mobility Plan 2023 Update** notes progress on implementing priority projects from the 2019 plan. Edgewater is also currently developing an ADA Transition Plan.
Empire	-	No bicycle or pedestrian plans were identified as of this writing.
Englewood	2022	The **Englewood Forward Walk & Wheel Master Plan & Program** includes prioritized bicycle corridor and pedestrian spot improvement projects.
Erie	-	The Comprehensive and Transportation & Mobility Plan are currently being updated.
Federal Heights	2016	The **Trails & Sidewalks Master Plan** is a map of existing and proposed active use facilities.
Firestone	2022	The **Transportation Master Plan** includes an Active Transportation element, with a bicycle network and a short list of crossing improvements.
Foxfield	2014	Foxfield's **Trail Plan** includes a citywide network of active use facilities and design guidelines.
Frederick	2021	The Town's **Transportation Master Plan** includes an active transportation network with bike/ped mobility gaps.
Georgetown	-	No bicycle or pedestrian plans were identified as of this writing.
Glendale	-	No bicycle or pedestrian plans were identified as of this writing.
Golden	2023	Golden's **Bicycle and Pedestrian Master Plan** includes both a scored Pedestrian Capital Project Prioritization Framework (pg. 23) and a Bicycle Network Map (pg. 39)
Greenwood Village	-	No bicycle or pedestrian plans were identified as of this writing.
Idaho Springs	2022	The **Downtown Plan** proposes pedestrianizing a network of downtown streets.
Lafayette	2023	The City's first **Transportation and Mobility Master Plan** was adopted in 2023, including a Bicycle and Pedestrian Plan chapter. 287, Baseline, and Dillon Road are identified as Regional Connector streets.

Municipality	Year	Plan
Lakewood	2018	Lakewood's current **Bicycle System Master Plan** is currently being updated and is anticipated to be completed in 2025.
Larkspur	-	No bicycle or pedestrian plans were identified as of this writing.
Littleton	2019	Littleton's **Transportation Master Plan** references the 2011 Bicycle and Pedestrian Master Plan and supersedes that plan with updated information about the City's active transportation network.
Lochbuie	2017	The Comprehensive Plan is currently under **update**, but the adopted **2017 plan** identifies multimodal corridors and complete street templates by functional classification.
Lone Tree	2020	Lone Tree adopted a **2040 Transportation Plan** which includes an assessment of the City's existing and future multimodal network.
Longmont	2024	Longmont began the process of updating the citywide multimodal transportation plan in late-2023.
Louisville	2019	The **Transportation Master Plan** identifies a proposed bicycle network and crossing & walkability improvements.
Lyons	2024	The Town adopted a **Pedestrian Network Plan** in February 2024, which includes prioritized pedestrian corridors and phased project recommendations to complete the core area walking network. Additionally, the **2023 Comprehensive Plan** identifies the St Vrain Trail Extension and US-36 Bikeway as priority multimodal facilities.
Mead	2018	The **Transportation Plan** includes a Bikeway and Trails Network, as well as recommending completing the downtown sidewalk network. St. Vrain is identified as a regional trail.
Morrison	2022	The Town has both a **2013 Downtown Revitalization Plan** with recommended bikeway routes and pedestrian circulation (much of which is currently being designed and implemented with a Safer Main Streets grant), as well as the **2022 Trails Connectivity Plan** with proposed trail network.
Nederland	2019	While the Town does not have an adopted bicycle or pedestrian plan, the Town's TIP (funded by DRCOG) includes a network of downtown streets where pedestrian facilities are being implemented.
Northglenn	2018	The City adopted its first bicycle and pedestrian master plan, **Connect Northglenn**, in 2018, including a recommendations map and implementation plan.

Municipality	Year	Plan
Parker	2023	The Town's recent Bike and Pedestrian Master Plan includes a bicycle and sidewalk network, as well as identifying four priority locations for high active trip potential: • Jordan Rd & Lincoln Av • Cottonwood Dr & Parker Rd • Downtown along Main St and Parker Rd • Gap infill in the multi-use trail along Parker Rd
Sheridan	-	No bicycle or pedestrian plans were identified as of this writing.
Silver Plume	-	No bicycle or pedestrian plans were identified as of this writing.
Superior	2014	The **Transportation Plan** includes a Bikeway and Trails Plan, most of which has been implemented. However, the plan predates the platting and development of Downtown Superior.
Thornton	2022	Thornton's **Transportation and Mobility Master Plan** includes the City's bicycle and pedestrian networks.
Westminster	2021	Westminster's **Transportation and Mobility Plan** includes bicycle and pedestrian plan chapters.
Wheat Ridge	2017	Wheat Ridge's **Bicycle and Pedestrian Master Plan** was most recently updated in 2017, and includes Priority Pedestrian Routes and a Bicycle Network.

Policy Adoption

The following member jurisdictions have adopted Complete Streets policies:

- The State of Colorado has an adopted Complete Streets policy entitled 1602 (2009).
- The City and County of Denver has adopted a Complete Streets policy (2011) and design guide (2022).
- The City of Boulder adopted a complete streets policy in its Transportation Master Plan.
- The City of Golden adopted by resolution in 2010.
- The Town of Parker has an adopted Complete Streets policy (2018)
- The Town of Lafayette adopted DRCOG's Complete Streets Toolkit and Street Typology in 2023.
- The City of Thornton adopted a Complete Streets policy in 2011.

Additionally, the follow member governments have adopted a Vision Zero goal or action plan:

- City of Boulder
- Boulder County
- City of Brighton
- City and County of Denver
- City of Longmont

Many more participate in the Regional Vision Zero working group and undertake robust transportation safety efforts as well.

Legislation and regulation

Laws and regulations governing how modal users are permitted to operate, what rights each group of users is entitled to, and planning and design implications of these regulations. It is important to note that there is a difference between policy and practice.

Responsibilities and priorities in the right of way

The permissions and responsibilities people using the right of way have informs and guides design and implementation.

- In April 2022, the State of Colorado implemented the **Safety Stop**, which allows people bicycling and using "low-speed conveyences" (further defined as bicycles and electric bicycles, scooters, electric scooters excluding mopeds, "one wheels," skateboards, and wheelchairs) to functionally treat stop signs and yield conditions, and traffic signals as stop signs. Low-speed users may proceed through stop-controlled intersections at no more than 10 miles per hour without stopping if they have the right of way, and may proceed straight or turn right through red signals at signal-controlled intersections after coming to a complete stop, and yielding to pedestrians and oncoming traffic.
  - Potential implications: Improve sightlines and minimize crossing distance at stop- and signal-controlled crossings to support safe movement for all. Stop controls are a common tool for neighborhood bikeways, and should be designed with anticipated bicycle movements in mind. Likewise at signalized crossings, roadway right-sizing and refuge islands can shorten crossing distances while improving sight distances, maximizing red signal crossing safety.
- Pedestrian rights and responsibility when using the public right of way are enumerated in the Colorado Code § 42-4-801 through 808. Key considerations for the Regional Active Transportation include:
  - Rights to cross the roadway are identical at marked and unmarked crosswalks. While pedestrians are required to cross at crosswalks on multilane roadways and between traffic signals, a crosswalk does not need to be marked to constitute a legal crosswalk.
  - Potential implications: Design tools such as pedestrian hybrid or rectangular rapid-flash beacons, curb extensions, median refuge islands, turn wedges, hardened centerlines, signs and high-visibility markings can be utilized to better emphasize pedestrian rights and legal movements throughout the region.

Classifying and regulating emerging vehicles

With electric bicycles ("e-bikes") as a rapidly emerging mode of active transportation that will figure prominently in the pending update to the Regional Active Transportation Plan, there are several important legal, regulatory, and policy considerations to keep in mind.

First, the State of Colorado distinguishes three classes of e-bikes:

- Class 1: pedal-assist electric bicycles, which ceases to provide motorized power at 20 miles per hour.
- Class 2: throttle-driven electric bicycles, which allow but do not require the rider to pedal.
- Class 3: while also a pedal-assist electric bicycle, these are designed to provide motorized power up to 28 miles per hour. They cannot be legally operated by persons under the age of 16, and riders under 18 must wear a helmet.

Additionally, Colorado law defines Electric Scooters as devices weighing less than 100 pounds that are powered by an electric motor and have a maximum speed of 20 miles per hour when operated solely using the motor.

All types of electric bicycles and scooters are permitted to operate on-street throughout the Denver region, excluding limited-access highways and streets where a conventional bicycle would be permitted to operate. Unless explicitly restricted, all Class 1 and 2 e-bikes as well as e-scooters are permitted to operate on the paths and rights of way as conventional bicycles. Class 3 e-bikes are only permitted to operate on-street unless explicitly permitted by an operating jurisdiction.

Within the region, there is some slight variation on where e-bikes and scooters are permitted to operate by jurisdiction on bicycle and pedestrian paths or trails. For instance, in Jefferson County, the Open Space division has codified that Class 1 e-bikes are permitted on natural surface trails within public parks (where conventional bicycles are not prohibited), while Class 1 and 2 e-bikes are permitted on paved trails. Similarly, Boulder County permits Class 1 and 2 e-bikes on most public space paths, though enforces prohibitions on select paths that are primarily in more mountainous terrain. In general, across the region, Class 1 and 2 e-bikes are permitted to operate on paths that serve functional transportation purposes.

Electric scooters, similarly, are permitted to ride where e-bikes are permitted to ride. For local shared micromobility programs, jurisdictions can and do create "geofenced" areas where

shared e-scooters aren e-bikes are not permitted to be either ridden or parked, but private e-scooters can be operated on public rights of way and permissible paths throughout the region.

Finally, in support of the rapid expansion of electric micromobility vehicles, several jurisdictions have implemented or are planning to implement rebate programs to encourage individuals to purchase e-bikes. These include:

- The City and County of Denver, who rolled out a nationally recognized e-bike rebate program beginning in 2021.
- The City of Longmont began offering rebates in 2022.
- The City of Boulder began offering incentives in 2023.
- The State of Colorado is preparing to launch a statewide rebate program in 2024.

These programs have generally been funded through a dedicated tax scheme as part of climate and sustainability efforts.

Manual on Uniform Traffic Control Devices

An update to the MUTCD has arrived! 25,000 people and organizations submitted comments during rulemaking, many requesting significant changes to the Manual to better accommodate active users.

Improvements to better recognize the needs of pedestrians and bicyclists have been accomplished through the issuance of Interim Approvals:

- **IA-14, Optional Use of Green Colored Pavement for Bike Lanes**,
- **IA-16, Optional Use of Bicycle Signal Faces**, already deployed in Denver, Boulder, and perhaps other places throughout the region.
- **IA-17, Optional Use of Three-Section Flashing Yellow Arrow Signal Faces**, which can be deployed in conjunction with pedestrian- and bicycle-focused crossing safety treatments such as high-visibility crosswalks or leading intervals.
- **IA-18, Optional Use of Intersection Bicycle Boxes**, which facilitate efficient intersection operations and mitigate right-hook conflicts.
- **IA-19, Optional Use of an Alternative Signal Warrant 7 - Crash Experience**, which provide greater flexibility for identifying and addressing common safety issues at intersections.
- **IA-20, Optional Use of Two-Stage Bicycle Turn Boxes**, which support comfortable and intuitive intersection maneuvers for bicyclists.
- **IA-21, Optional Use of Pedestrian-Actuated Rectangular Rapid-Flashing Beacons at Uncontrolled Marked Crosswalks**, which can enhance unmarked or marked crosswalks to enhance safety and comfort.

Public Right-of-Way Accessibility Guidelines

Officially adopted by the federal government in 2023, the Public Right-of-Way Accessibility Guidelines provide clear and comprehensive standards and guidance for agencies that own and operate public right of way to provide accessible routes and facilities for all users.