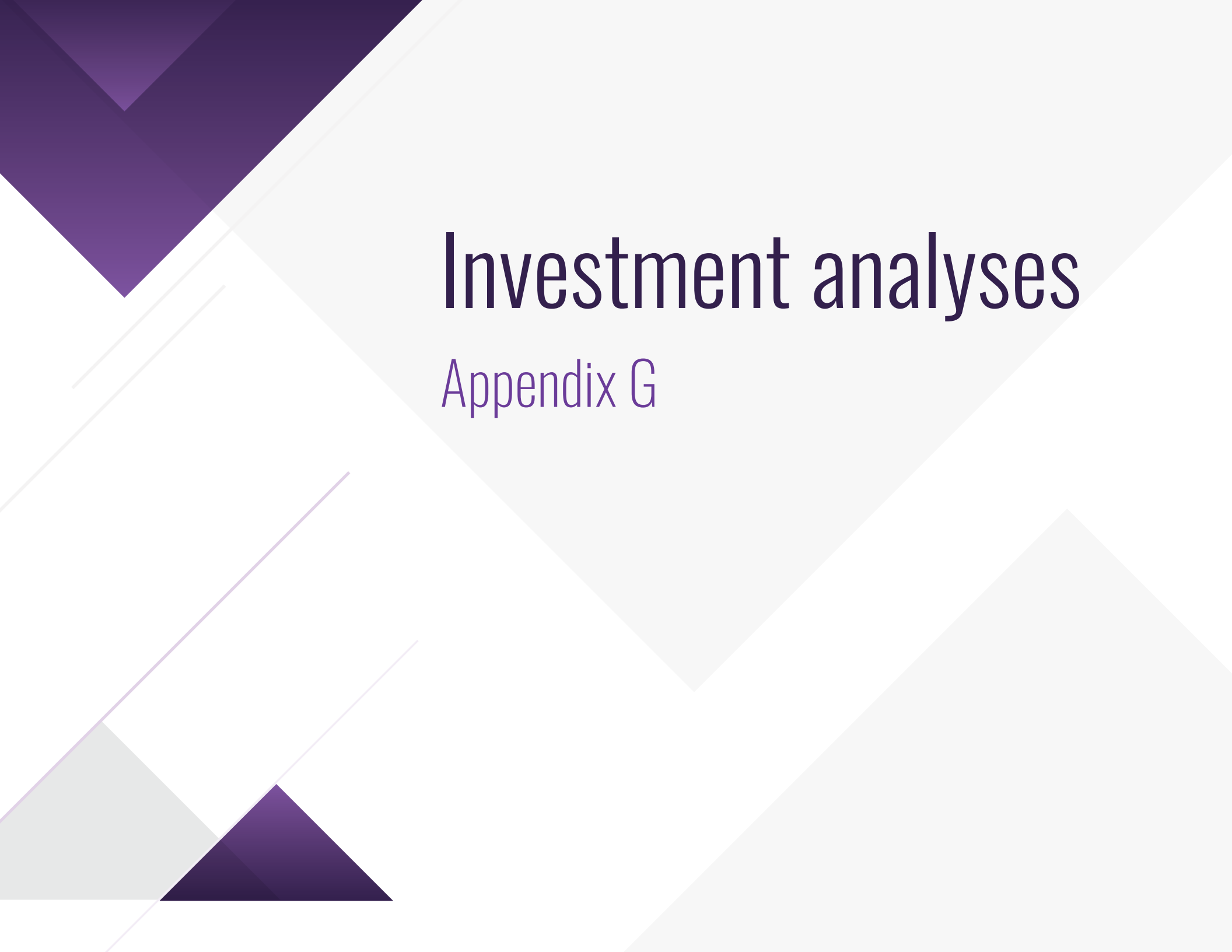




Investment analyses

Appendix G

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If you need digital accessibility assistance, submit a request at drcog.org/access or call 303-455-1000. Please expect a response within 72 hours (three business days).

The 2050 Metro Vision Regional Transportation Plan will guide investments to improve safety, mobility, community, environment and quality of life for residents of the Denver region. Through the project and program investments listed in Chapter 3, the Regional Transportation Plan will influence many regional outcomes. Denver Regional Council of Governments staff measure and evaluate these outcomes in several ways. This appendix provides an overview of how the projects and programs included in the plan might affect mobility, community and resilience in the region.



Photo by DRCOG staff

Community impact analysis

The community impact analysis details how selected projects in the Regional Transportation Plan may affect local communities. In particular, DRCOG staff considered the benefits and burdens on marginalized communities, which are determined by the 10 indicator characteristics included in DRCOG's Community Index.

DRCOG strives to improve the quality of life of all residents in the region and avoid potential discriminatory impacts of its programs, in accordance with Title VI and related federal regulations.. As such, DRCOG adheres to federal and state nondiscrimination requirements that relate to its role as a metropolitan planning organization, among other functions. At the time of the analysis, the federal and state regulatory framework included:

- Title VI of the Civil Rights Act of 1964, which prohibits discrimination based on race, color or national origin.
- The Older Americans Act of 1965, which requires funding for people with the greatest economic or social need, particularly older adults of color, with low incomes, with limited English proficiency or living in rural areas.
- The Americans with Disabilities Act of 1990, which prohibits discrimination against people with disabilities in all areas of public life.
- Colorado Revised Statutes Section 43-1-128, Environmental Impacts of Capacity Projects, which requires the Colorado Department of Transportation and metropolitan planning organizations to “fully evaluate the potential environmental and health impacts on disproportionately impacted communities” during the planning process.

DRCOG's [nondiscrimination webpage](#) provides more information on DRCOG's policies.

The region's marginalized communities

DRCOG staff use 10 indicators to determine the level of marginalization in particular neighborhoods:

- People of color.
- Households with low incomes.
- People with limited English proficiency.
- People with a disability.
- Housing-cost-burdened households.
- People 60 and older.
- People 17 and younger.
- Households with no motor vehicle.
- People born outside the U.S.
- Single-parent households.

Staff derived three of the indicator characteristics (households without a vehicle, people 60 and older, people 17 and younger) from peer reviews and relevant literature, and two (single-parent households, people born outside the U.S.) from engagement with community-based organizations. Staff added the remaining five indicators based on state or federal mandates. DRCOG staff developed a Community Index dataset to better understand the geography of marginalized communities in the region. The data for all indicators comes from the U.S. Census Bureau's 5-year American Community Survey estimates. The data for this analysis is from the 2019-2023 estimates.

DRCOG's Community Index uses U.S. Census Bureau tract geography. DRCOG staff assigned each tract a final index score based on the 10 indicators. Staff also grouped indicators into domains based on three common themes: economic status, mobility barriers, and race and ethnicity. Because each domain has equal weight, the index does not overemphasize themes that have more indicators. The domains can be used separately if one topic is of interest.

More information on the methods used to develop the index [is available via the Regional Data Catalog](#).

Benefits and burdens

Table 1: List of potential benefits and burdens

Topic	Benefits	Burdens
Access	Increases access to opportunities and services that allow the community to thrive, often through improved connectivity, lowered barriers or expanding service areas; improves education.	Reduces access to opportunities and services through reductions in accessibility, including through the construction of facilities that may divide or disconnect a community.
Mobility	Increases access to high-quality mobility choices through the expansion or improved reliability of transit service, active transportation facilities or travel options; reduces costs; improves education; improves ease and comfort of use.	Creates physical, technological or financial barriers that limit or remove access to mobility choices.
Congestion	Mitigates congestion (often through increased reliability and optimized capacity).	Increases traffic congestion.

Table 1: List of potential benefits and burdens (continued)

Topic	Benefits	Burdens
Environment and health	Reduces exposure to environmental risk factors or negative health outcomes.	Increases the probability of exposure to environmental risk factors and negative health impacts (often due to increased emissions, noise, air toxins, particulate matter or other harmful pollutants).
Safety	Reduces injuries, fatalities and crashes.	Increases the risk or frequency of injuries, fatalities and crashes (often the result of higher speeds or traffic volumes).
Resilience	Reduces the risks and effects of natural and human-created hazards on lives, property, equipment and infrastructure.	Increases the risk or frequency of loss of life, trauma, or damage to property, equipment, or infrastructure by building in a way that does not account for natural and human-created hazards.
Development	Encourages development that meets the needs of current residents and people of all ages, incomes and abilities.	Increases the risk of displacement of residents or businesses; prioritizes the needs of future or new residents; may result in further concentration of poverty.

Likelihood of benefits findings

All project types are likely to provide some benefits to surrounding communities. Transit projects are the most likely to provide benefits, followed by active transportation and safety or operational projects. And while less likely to provide benefits than other project types, roadway projects may still provide benefits. Notable potential benefits include increasing access to mobility choices and essential opportunities and services, as well as reducing injuries, fatalities and crashes.

Likelihood of burdens findings

Roadway projects are more likely to result in burdens to surrounding communities than transit, active transportation and safety or operational projects. A notable burden is the potential for increased exposure to environmental risk factors or negative health outcomes. While transit, active transportation and safety or operational projects are less likely to result in burdens overall, some notable potential burdens are possible, including increased risk of displacement or traffic congestion.

DRCOG staff worked with community-based organizations to identify a list of potential benefits and burdens, detailed in Table 1, that a project's implementation could bring to surrounding communities. Staff evaluated project types to determine the likelihood and magnitude of benefits and burdens. This classification and framework is carried forward in the analysis of project types by index quartile.

Project type distribution

DRCOG staff categorized projects into four types: active transportation, safety, roadway or transit. For more information on project types, refer to [DRCOG's Title VI Implementation Plan](#).

Table 2: Project types

Category	Project focuses on ...
Active transportation	Improving or maintaining walking or biking facilities as the project's primary goal
Transit	Improving or maintaining public transportation facilities related to bus service, rail service or human services transportation
Roadway	Improving or maintaining driving facilities such as roads, interchanges and bridges
Safety	Improving roadway operations and safety, transit operations and safety, or bike and pedestrian safety

The DRCOG Community Index illustrates where marginalized communities are located. Census tracts are categorized as one of four quartiles. Quartile 1 has the lowest concentration of marginalized people, and Quartile 4 has the highest.

Map 1 displays the Regional Transportation Plan's recommended projects with index tracts. The light blue tracts are in Quartile 1, while the dark blue tracts are in Quartile 4. Projects are distributed throughout all four quartiles; Quartile 4 tracts have the most projects, and Quartile 1 tracts have the least.

Many of the projects are part of RTD's light rail upgrades project, which has several locations along or near state highways that are either in or adjacent to communities in the two most marginalized quartiles.

Map 1: Project distribution by Community Index quartile

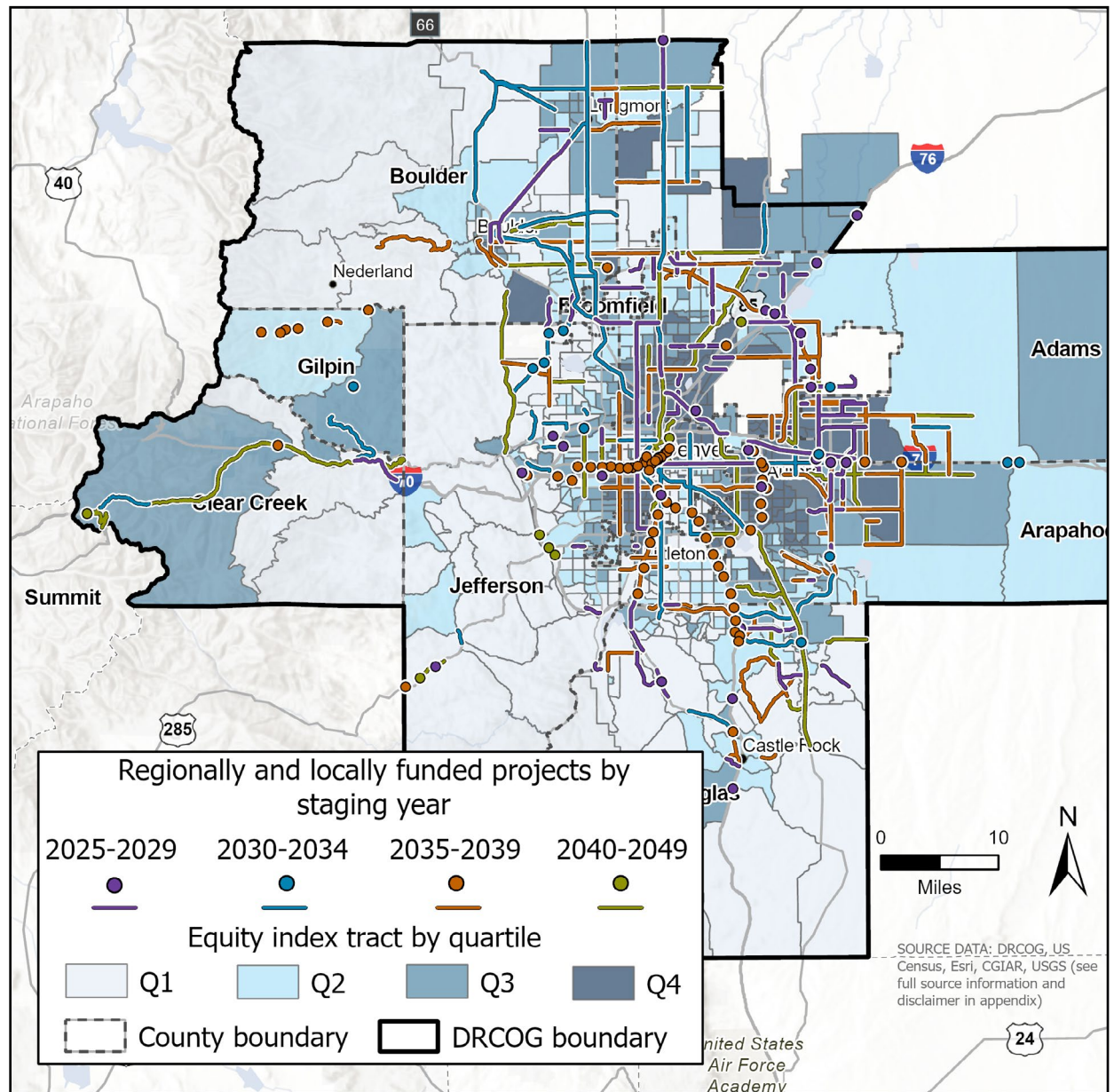
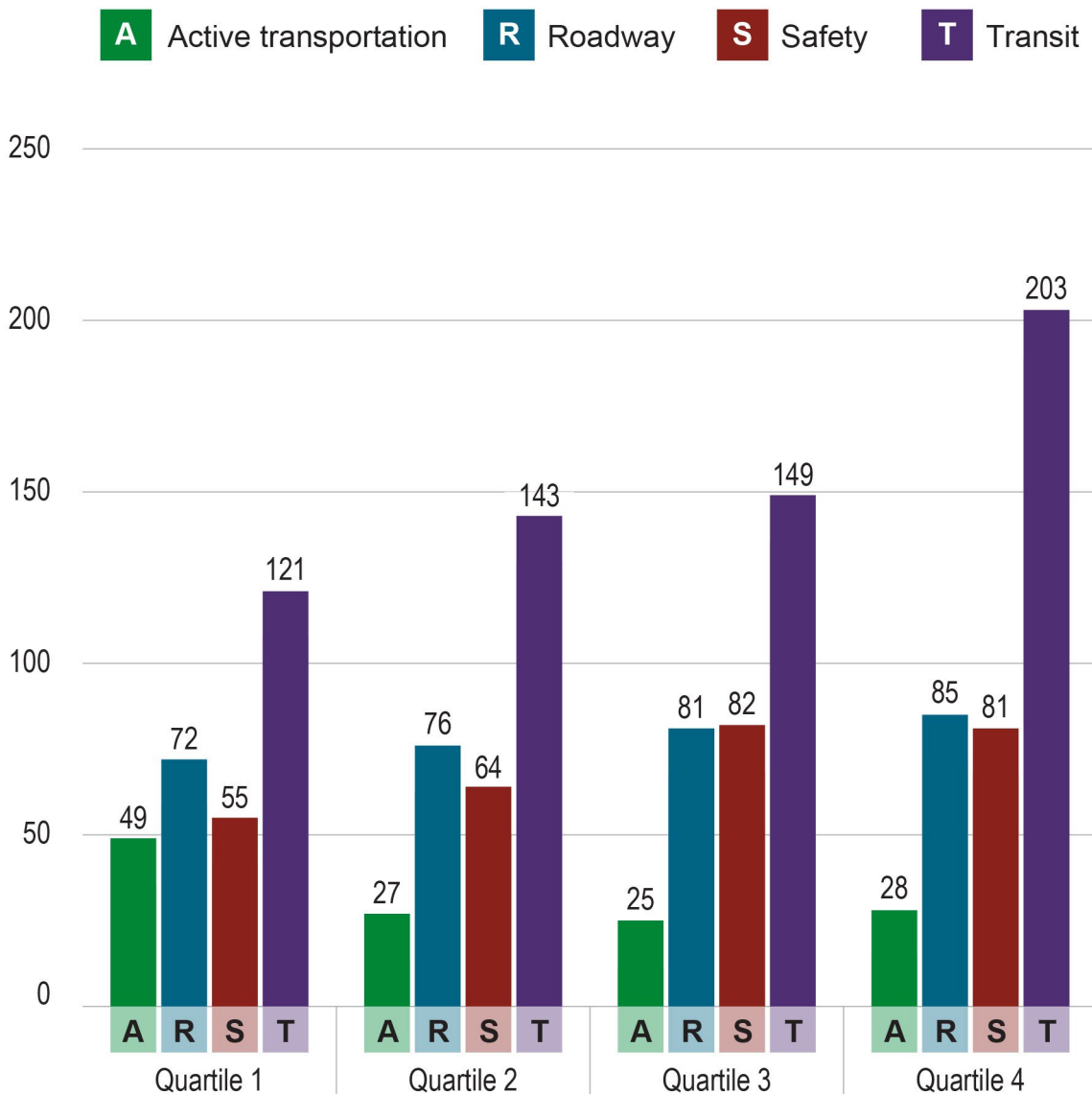


Figure 1 illustrates the distribution of census tracts adjacent to projects in the plan. In addition to the map of project locations, the chart can aid in understanding the distribution of tracts related to project types and potential marginalization.

Nearly twice as many tracts in Quartile 1 (representing the tracts with the least likelihood of marginalization) are adjacent to active transportation projects than in any of the other quartiles. However, since active transportation projects are not required to be listed in the Regional Transportation Plan, it is possible many smaller active transportation projects are planned elsewhere in the region and not captured by the plan data.

Figure 1: Number of tracts per quartile adjacent to each project type



Roadway projects are relatively evenly distributed throughout the region, although they are slightly more likely to be in more marginalized areas. Project sponsors should take care to ensure roadway projects in marginalized areas avoid displacement of residents or businesses, increased emissions or noise, or other negative impacts associated with roadway capacity projects.

Quartiles 3 and 4 have the most tracts adjacent to safety projects. Focusing safety improvements on the most dangerous roadways, such as those on DRCOG's Regional High-Injury Network, can have the greatest impact on reducing fatalities and serious injuries, making the region's roadways safer for all.

Transit improvements are largely located in more marginalized areas. As previously stated, RTD's light rail station upgrades are heavily located in Quartiles 3 and 4, which is one of the primary drivers of this outcome. Considering people of color and people with low incomes tend to use transit at higher rates, locating transit improvements in more marginalized areas can have significant positive outcomes, especially when the improvements make transit more accessible for people with disabilities. However, project sponsors should take care to ensure that transit improvements do not increase displacement pressures.

Paying attention to benefits and burdens improves project outcomes

During the plan update, DRCOG staff leveraged the Community Index to provide an additional way to evaluate projects submitted for inclusion in the plan. Staff also developed a proximity analysis to highlight some geographic features that may cause burdens on communities near project locations. The proximity analysis served as a resource for project sponsors, not as a requirement or evaluation metric. Each county received a spreadsheet with the results for their applications, along with a guide on interpreting and using the results.

DRCOG staff reviewed submitted projects for their proximity to particular features and neighborhood characteristics that could bring either benefits or burdens, depending on how projects are implemented. Staff provided the results of the analysis to reviewers during project selection to ensure marginalized communities were considered. A summary of the results for the 147 selected projects is provided in this section.

Table 3: Proximity analysis methodology

Benefits and burdens category	Measure	Method
Access	Is the project near green space?	Staff selected features from DRCOG’s Parks, Recreation and Open Space dataset that represent parks and conservation spaces and determined if any feature is within 1/4 mile of the project location.
Access	Is the project near a concentration of jobs?	Staff determined if the project is within 1/4 mile of a transportation analysis zone in the fourth quartile of employment density, or within 1/4 mile of a statistically significant jobs hot spot (determined based on neighbors of 1/2-mile grids to capture locally important job centers).

Table 3: Proximity analysis methodology (continued)

Benefits and burdens category	Measure	Method
Mobility	Is the project near a Regional Active Transportation Corridor or quality bike facility?	Staff selected bicycle facilities from DRCOG's Bicycle Facility Inventory dataset that represent designated Regional Active Transportation Corridors or separated bicycle lanes and determined if any features are within 100 feet of the project location. This captures Active Transportation Corridors or separated bicycle facilities that either intersect or run parallel to the project.
Mobility	Is the project near transit stops?	Staff determined if any bus stops or rail stations are within 50 feet of the project location.
Environment and health	Is the project near a Colorado EnviroScreen sensitive population?	Staff selected census tracts from the fourth quartile of the Colorado EnviroScreen sensitive populations dataset — the most sensitive quartile to environmental risks — and determined if any tract is within 1/4 mile of the project location.

Table 3: Proximity analysis methodology (continued)

Benefits and burdens category	Measure	Method
Environment and health	Is the project near a Superfund site?	Staff determined if a Superfund site is within 1/4 mile of the project location.
Resilience	Is the project located in a floodway or a floodplain?	Staff determined if the project is within a floodway, 100-year floodplain or 500-year floodplain based on the Federal Emergency Management Agency's flood hazard dataset.
Resilience	Is the project located in an area of high burn probability?	Staff determined if the project is located in an area where burn probability is rated 7 or higher (most likely to burn) in the Colorado State Forest Service's burn probability dataset.
Safety	Is the project on the Regional High-Injury Network?	Staff determined if any Regional High-Injury Network roadways are within 100 feet of and run parallel to the project, for at least a portion of the Regional High-Injury Network path.

131 projects are near green space

Green space is a key community resource for recreation, socializing and connection to nature. Projects are often designed to increase access to green space, representing a significant benefit. For instance, a roadway improvement may facilitate easier travel to a park, while a trail connection may allow residents to easily bike or walk to reach the park. However, projects may also decrease access if designed in a way that cuts off the green space from surrounding neighborhoods. A roadway widening or a new rail line could increase access to a park for those traveling from elsewhere in the region, but prevent neighbors from safely walking to the park. In this example, safe crossings or underpasses could be included in the design to ensure continued access for cyclists and pedestrians.

84 projects are near job centers

Similarly, job centers are another key destination to which many transportation projects strive to improve access. Making job centers easier to access can improve employment outcomes, particularly for low-income communities. While transportation projects can both increase and decrease access to job centers, project sponsors should ensure there are low-cost options, such as transit service and safe active transportation facilities, that lower-income individuals can use to reach the job center.

89 projects are near transit

Transit is an important mobility choice that is used disproportionately by marginalized communities. All projects should consider the potential benefits or burdens to transit. Benefits could include an active transportation project that improves access to bus stops or rail stations, a roadway project that incorporates bus lanes, or an operational project that includes transit signal priority. Burdens may include displacing transit from regular routes, reducing access or comfort at stops, or causing increased congestion that slows buses.

103 projects are along the Regional High-Injury Network

Most of the region's fatal and serious injury crashes occur on roadways on the Regional High-Injury Network. Increasing safety for all users, and particularly for vulnerable roadway users such as pedestrians and cyclists, is a priority in the region. Projects that are on or adjacent to the network may have a disproportionate impact on safety. Projects that result in elevated speeds or traffic volumes on these already dangerous roads may result in increased crashes and a further safety burden.

103 projects are near Regional Active Transportation Corridors

The Regional Active Transportation Corridors are a set of existing and planned active transportation facilities that together create a unified regional network. Active transportation is a lower-cost option that can lead to improved health outcomes, making it an attractive choice for many users, including those from marginalized communities. Projects of any type constructed near the corridors may cause a burden if they reduce access or comfort for people biking and walking. However, they may result in a benefit by improving the corridors or access to them.

79 projects are near Colorado EnviroScreen sensitive populations

The Colorado Department of Public Health and Environment developed the Colorado EnviroScreen dataset to map health and environmental burdens. Sensitive populations include areas with a high asthma hospitalization rate; cancer, diabetes or heart disease burdens; low life expectancy; low birth weight; mental health indicators; and populations under age 5 or over age 64. Sensitive populations are more susceptible to environmental impacts such as emissions, noise or other pollutants, and projects near them may increase health burdens if they increase environmental stressors.

39 projects are near Superfund sites

Superfund sites are heavily polluted areas designated for cleanup by the Environmental Protection Agency. Projects in or near a Superfund site may cause a burden if the

project sponsor doesn't take proper measures to mitigate the potential release of pollutants, which could affect the health of neighboring populations.

29 projects are in high burn risk areas

The Colorado State Forest Service maps wildfire risk and burn probability. While transportation projects are unlikely to directly impact burn probability, they can encourage development in high-risk areas. Additional development could decrease resilience and endanger the people living and working in high-risk areas.

115 projects are in high flood risk areas

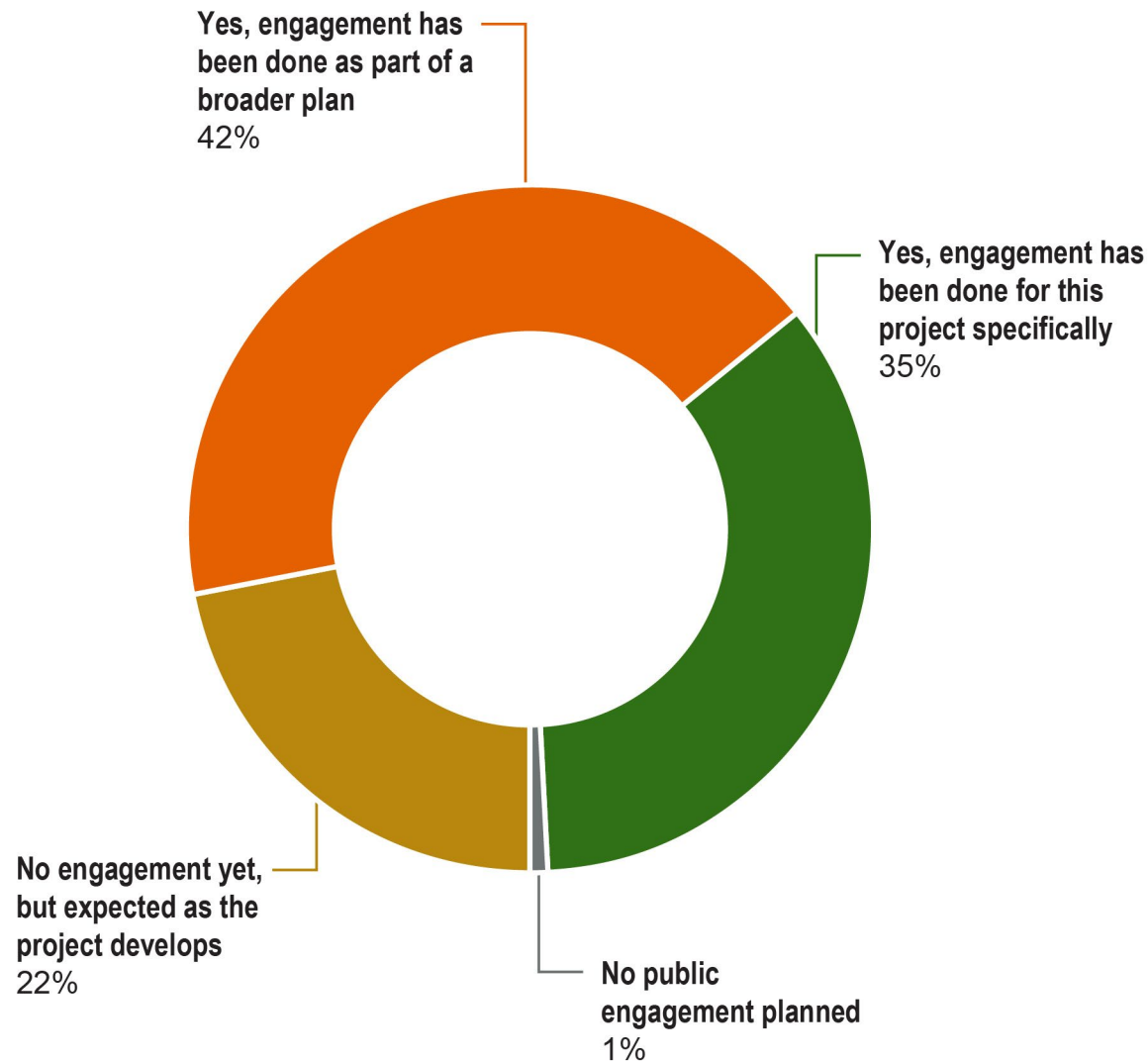
The Federal Emergency Management Agency maps flood hazard areas. As in high burn risk areas, transportation projects may facilitate development in areas prone to flooding. If projects increase impervious surfaces, they may also increase localized flooding if proper stormwater infrastructure is not included.

The region's residents care about how projects affect their lives

Planned public engagement

When submitting project concepts for potential inclusion in the Regional Transportation Plan, sponsors were asked to include information about planned community engagement for their projects. Of the selected projects, 42% were drawn from larger plans (such as comprehensive plans, transportation master plans or small area plans) that identified the project as a priority. This reflects the long-range nature of the Regional Transportation Plan — most project sponsors have not directly engaged residents yet since they are still many years out from construction. Of the remaining selected projects, 35% have had some type of engagement specific to the project, while another 22% anticipate engagement as the project develops. Only one selected project had not undergone any engagement and had none planned. The project is a trail resurfacing; the sponsor anticipates the final outcome to be similar to the existing condition.

Figure 2: Project sponsors' planned public engagement



In general, engagement is a critical aspect of project development, both to mitigate burdens on local communities and to improve project design and readiness. Ultimately, transportation projects should improve the public's ability to move around and through the region. Engaging residents and stakeholders throughout project identification, design and implementation can ensure the project best addresses the needs of the community without burdening those who live near the project location. The earlier project sponsors engage with the community, the earlier they can identify and address concerns.

Planned construction mitigation

Project sponsors also identified any anticipated actions they planned to take to reduce the negative impacts of construction on neighboring residents and businesses, keeping in mind that many projects are still conceptual in nature and may not be implemented for many years. (Sponsors could choose multiple answers, so the results do not total 100%.)

- Eighty-five percent noted that while they planned to mitigate impacts, they had not yet determined mitigation strategies. In most cases, sponsors reported that they would determine mitigation methods during final project design, when specific impacts could be identified.
- Sixteen percent of project sponsors anticipated having access plans for the public, including planning detour routes ahead of time (for vehicles, bikes, pedestrians and transit), installing detour signage, and communicating with residents and businesses on access changes due to construction.
- Eleven percent anticipated physical mitigation strategies such as limiting work hours to reduce noise in surrounding neighborhoods, mitigating environmental contamination and mitigating endangered species impacts.
- No project sponsors anticipated that mitigation would not be needed, recognizing that all projects may produce temporary negative impacts during construction.
- Key to many of the mitigation strategies identified was ongoing communication with impacted residents and businesses through methods like distributing flyers, holding public meetings, maintaining project websites and hosting project hotlines.

Project sponsors can employ a range of strategies to reduce their projects' displacement impact. For example, to reduce displacement of businesses during the East Colfax bus rapid transit project, project sponsors hosted events at local businesses, created a local business passport, held watch parties for station construction, developed a business toolkit with project information and tips to navigate construction, and provided direct financial assistance to local businesses through grants.

Paying attention to community needs improves project outcomes

One of the most important steps in a project is engaging with community members to understand their needs and experiences. Their expressed needs should guide the establishment of project priorities. For example, if a community's top need is for residents to feel safer walking along a corridor and crash data indicates a concern with pedestrian safety, the project's final recommendations and design may prioritize the needs of pedestrians to address the safety concerns.

Project design and implementation that directly addresses community needs will help the project be successful. Community members will be more likely to support the project if they can understand how it addresses their needs. Project staff can demonstrate how specific project recommendations or design elements address the needs and experiences gathered during the community engagement process. Paying attention to community needs will help guide project priorities, recommendations and final design, as well as facilitate community support through a sense of ownership.

Resilience analysis

One of Metro Vision's five main themes calls for a safe and resilient natural and built environment. Metro Vision helps lay a foundation for regional cooperation to safeguard natural resources for all residents and to ensure access to nature remains inclusive regardless of cultural identity, gender and socioeconomic level. In addition to ensuring clean water and air and lowering greenhouse gas emissions, creating a safe and resilient environment also means creating strategic plans to mitigate injuries, trauma and loss of life during disaster response and recovery efforts.

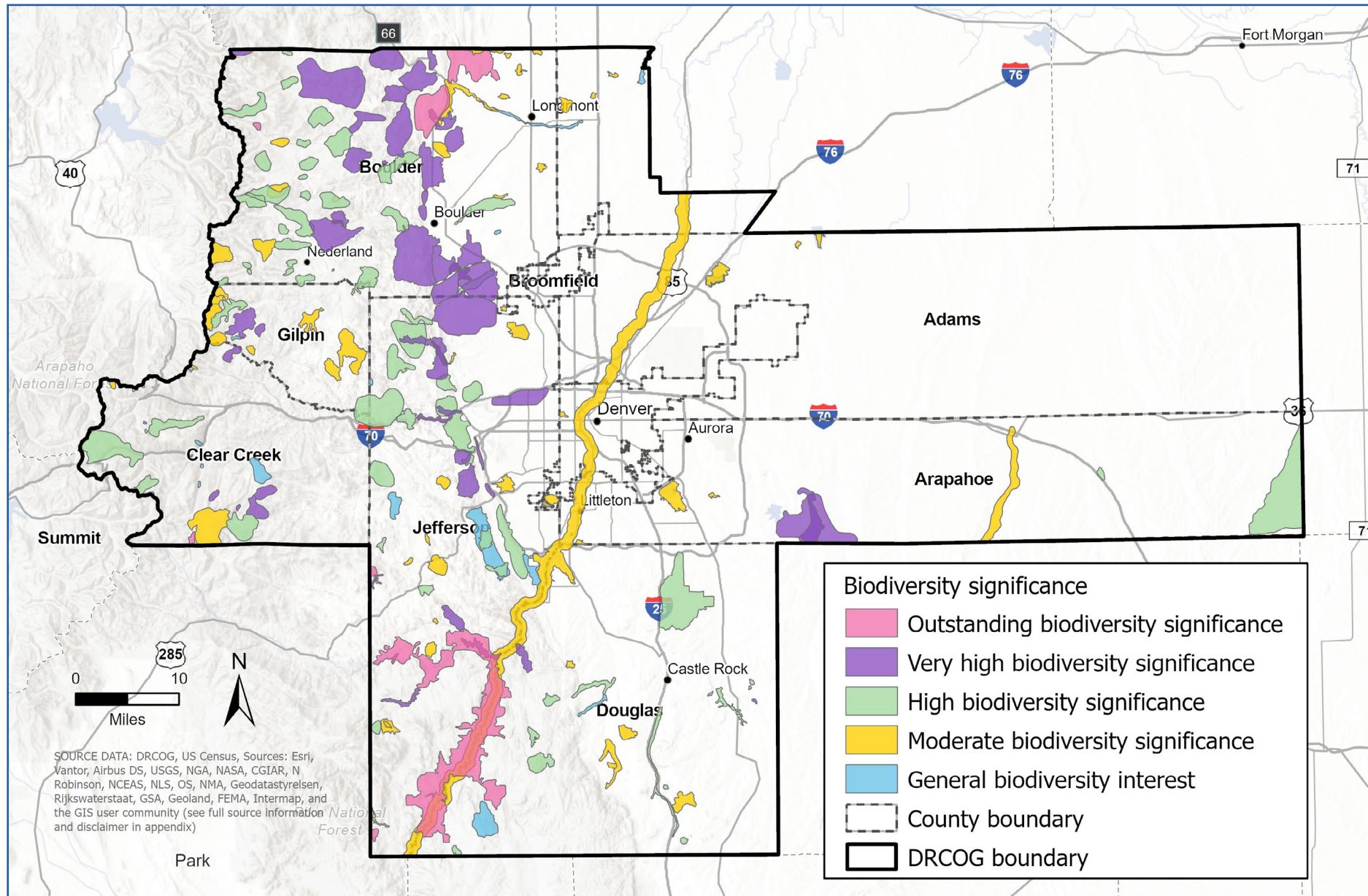
DRCOG staff conducted an enhanced analysis on the projects included in the Regional Transportation Plan to identify the potential impacts of selected projects on the natural environment. The analyses used geographic information systems to map projects and their intersections with critical environmental features, as well as case studies that explore how the region is adapting and responding to a changing climate.

Biodiversity

For the biodiversity analysis, DRCOG staff mapped the Potential Conservation Areas included in the Colorado Natural Heritage Program's Colorado Conservation Data Explorer. The organization defines Potential Conservation Areas as a "best estimate of the primary area supporting the long-term survival of suitable habitat." The areas "may require ecological management or restoration to maintain their functionality."

Transportation infrastructure can be disruptive to wildlife. Highways can cut through animal territories, road noise can disrupt the natural environment, and rail lines need to be kept clear of animals for the safety of transit users. There are ways to reduce wildlife conflicts, such as creating wildlife crossings. This improves outcomes for both humans and wild animals.

Map 2: Areas of biodiversity significance



One project is near an area of outstanding biodiversity significance

The U.S. Route 36 (North Foothills) safety project is near an area that the Colorado Natural Heritage Program has ranked as having outstanding biodiversity significance (its highest ranking). Known as Red Hill south of Lyons, the site “merits an outstanding biodiversity significance rank due to its concentration of globally rare communities and invertebrates in excellent and good condition.” The project’s desired safety improvements include the construction of a dedicated detached bikeway, wildlife crossings (both overpasses and underpasses), intersection safety improvements and realignments, and transit stop improvements. As the project develops, the sponsor will need to pay attention to preserving biodiversity during construction.

Eight projects are near an area of very high biodiversity significance

The following projects are near one or more areas of very high biodiversity significance (the second highest ranking) according to the Colorado Natural Heritage Program:

- Wadsworth Boulevard roadway project.
- U.S. Route 36 (North Foothills) safety project.
- South Boulder Road transit project.
- McCaslin Regional Trail active transportation project.
- State Highway 93 roadway project.
- State Highway 119 and Sugarloaf Safety project.
- Quincy Avenue (Hayesmount Road to Watkins Road) roadway project.
- Jefferson Parkway roadway project.

Projects in this plan touch 11 areas of very high biodiversity significance or higher

Overall, the projects in the plan touch 11 areas of outstanding or very high biodiversity significance, including:

- Red Hill south of Lyons.
- Prospect Park.
- North Boulder Grasslands.
- Lykins Gulch.
- South Boulder Creek.
- Marshall Mesa.
- Rocky Flats.
- Doudy Draw.
- Boulder Foothills.
- Gordon Creek.
- Lowry Piedmont Grassland.

High-risk areas

Metro Vision provides for [two measures](#) related to developing in high-risk areas, tracking the share of the region’s housing and employment in areas that are known to be susceptible to wildfires and flooding.

Table 4: Performance on development in high-risk areas

Measure	Baseline (2020)	Target (2040)
Share of the region’s housing in high-risk areas	3.7%	Less than 3.1%
Share of the region’s employment in high-risk areas	1.8%	Less than 1.6%

While existing residents and certain types of businesses and jobs may need to remain in high-risk areas, growth in housing and employment could be prioritized outside such high-risk areas as the region grows.

Burn probability

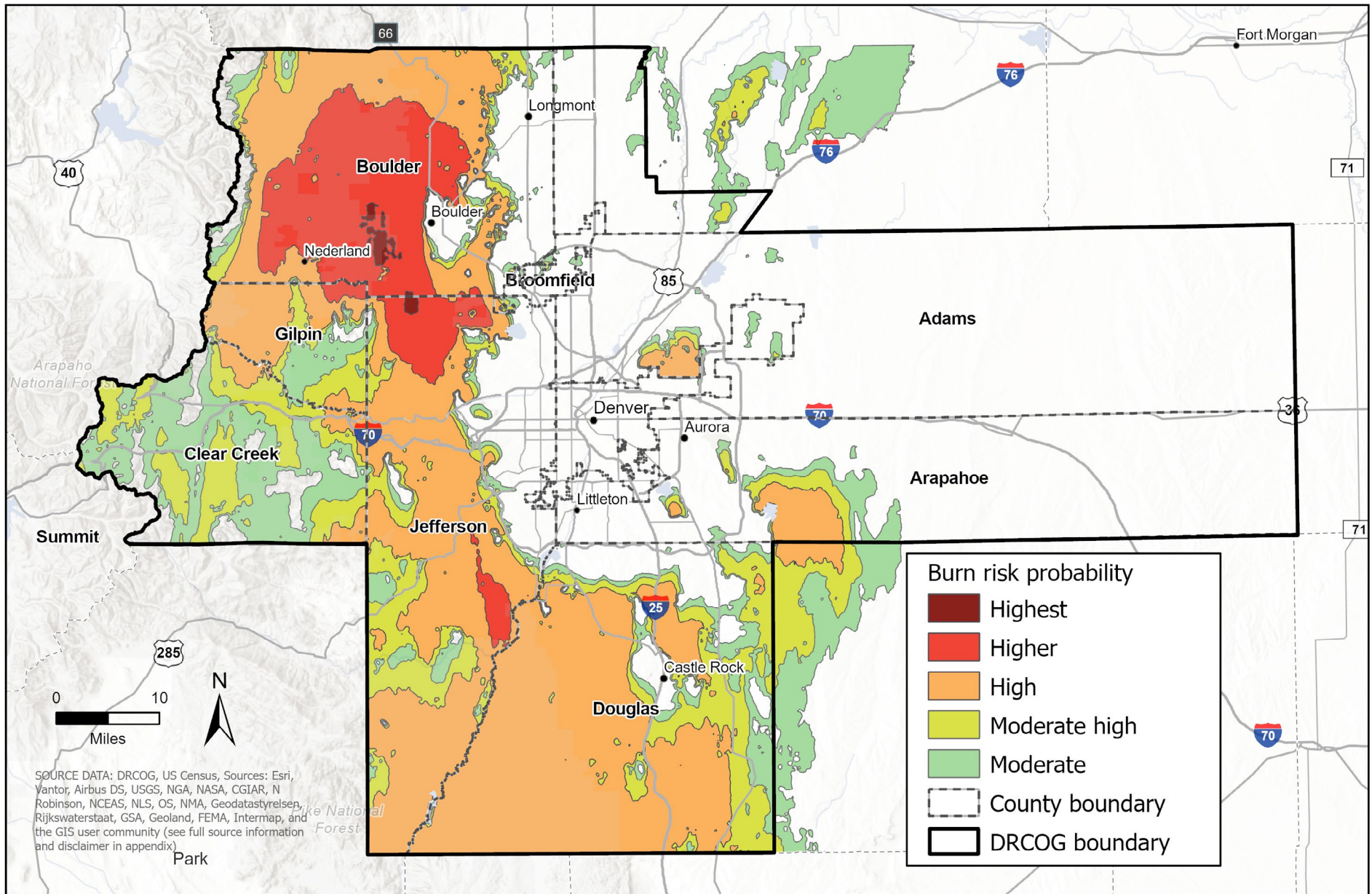
The Colorado State Forest Service provides [data on wildfire risk across the state](#).

Burn probability, the metric DRCOG staff chose for the resilience analysis, ranks areas in the state on a nine-point scale from lowest to highest. In Colorado, the areas of highest burn probability are wilderness areas next to human infrastructure — cities and highways.

Much of the wildfire risk in the Denver region is where urban areas meet the mountains. Boulder County has the highest risk, but every county in the region has some wildfire risk. The transportation system interacts with wildfires in several ways:

- During a wildfire emergency, people will need to evacuate. [The presence of multiple evacuation routes is important](#).
- During a wildfire emergency, [firefighters may use roadways as a “fire line”](#) — a boundary they fortify against fire spread.
- The region’s transportation network [changes growth and development patterns](#). Some development patterns [increase wildfire risk by moving people closer to the wilderness](#).

Map 3: High burn probability areas



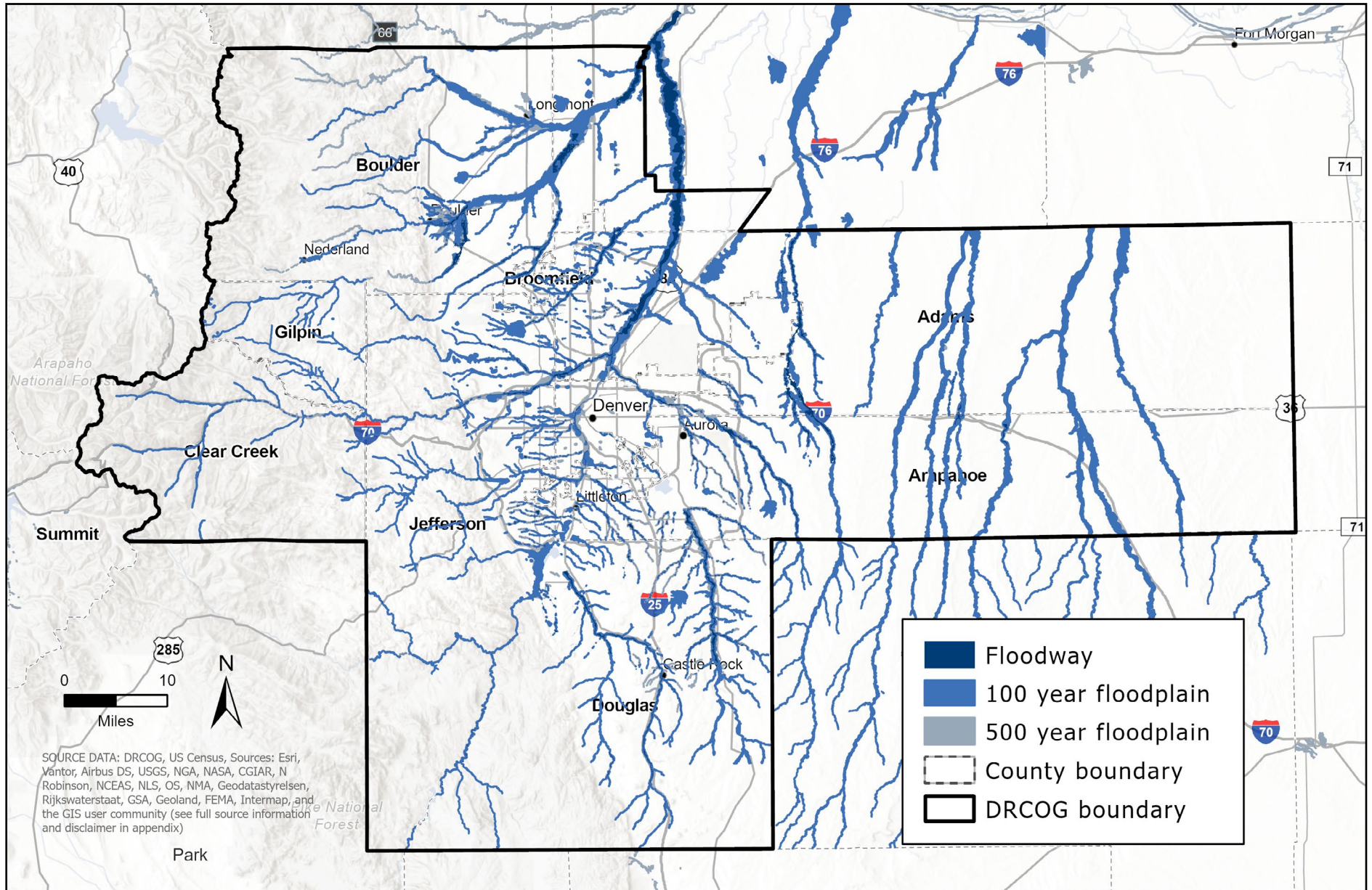
Flood risk

The U.S. Federal Emergency Management Agency tracks [data related to flood risk](#). The data is categorized into areas that are considered a floodway (when it floods, it will flood there), part of a 100-year flood risk area (which has a 1% annual flood risk) or part of a 500-year flood risk area (which has a 0.2% annual flood risk).

The transportation system interacts with flooding in several ways:

- Roadway pavement can increase flood risk because [the road cannot absorb rainwater as easily as the ground](#).
- Transportation infrastructure can add resilience to the system — for example, if [rain gardens are planted in key locations along the street](#).
- Transportation infrastructure can change land use patterns. Smart [land use planning can make the region more resilient to flooding](#).
- During a [flood event](#), roads and rail lines [may need to close](#).

Map 4: High flood risk areas



Weather events

Extreme heat can cause roads to buckle, and the typical freeze-thaw cycle in Colorado can crack pavement and form potholes, requiring increased funding for maintenance or replacement. As the climate continues to change, green infrastructure can be a powerful tool for improving resilience to current and anticipated impacts.

High wind events

High wind events, while not often thought of as a natural disaster, are expected to increase in frequency, according to research by the National Center for Atmospheric Research. Dangers from high winds include flying debris, reduced visibility due to dust, damaged or destroyed structures, downed power lines and overturned vehicles. Impacts from high wind events, especially when coupled with high fire danger, can lead to long-lasting recovery efforts.

There were more than 120,000 weather-related outages across Colorado in December 2025, about 50,000 connected to a public safety power shutoff and another 68,500 related to severe weather. For the first time in the state's history, the National Weather Service in Boulder issued a "Particularly Dangerous Situation" red flag warning on December 19. High winds, gusting over 100 miles per hour, caused widespread impacts, especially on the transportation system:

- Over 1,200 flights were delayed at Denver International Airport, along with 80 cancellations.
- The Colorado Department of Transportation closed multiple highways within the region, including State Highway 93, U.S. Route 36 and State Highway 128.

- Within CDOT’s Region 1 (which encompasses most of the Denver region), 49 traffic signals lost power.
- Numerous school districts closed, including Jeffco Public Schools, the second-largest district in the state.

Extreme storm events

Transportation system impacts from storms include capacity reductions due to flooding or lane obstruction from wind-blown debris. Adverse weather can also increase costs for agencies working in maintenance, traffic management, emergency management and law enforcement, as well as for commercial vehicle operators.

Traditionally, cities have managed storm flooding and rainwater by shuttling it away via storm sewers. In extreme storms, sewer systems can get overwhelmed. New storm management techniques (often called “green infrastructure”) focus on reducing stormwater runoff instead of increasing sewer capacity.

Local examples of innovative storm management include a [trailside “green gutter”](#) at 21st and Broadway, which uses plants to control stormwater around trails and roads. The approach improves water quality and reduces the volume of floodwater that enters the city’s sewer system.

Cherry Creek and the South Platte River near downtown are examples of [creek “daylighting” and water retention](#). When waterways are open to the air (as opposed to in a pipe running underground), it can reduce the pressure on the storm sewer system. During flooding events, some of the floodwater can be held in the waterway and surrounding green space. It can then be slowly reabsorbed by the ground, instead of shuttled into the stormwater system.

Mobility analysis

The mobility analysis illustrates projected changes in regionwide travel measures between 2023 and 2050 using forecasts from DRCOG's Focus transportation model. The Focus model uses the projected growth in population and employment from DRCOG's small area forecast, along with other input variables, to predict transportation trends and performance. The region's population and employment growth, the distribution of growth, and the provision of transportation facilities and services will affect future travel patterns.

Projected changes in regionwide travel measures between 2023 and 2050

Table 5: Population, household and employment growth

Demographic	2023 baseline	2050 forecast
Population	3,321,786	4,131,283
Households	1,354,631	1,753,907
Employment	2,248,985	2,757,723

Table 6: Number of trips via single-occupant vehicle per weekday

Type of trip	2023 baseline	2050 forecast
Within the modeling area, excluding Denver International Airport	5,462,987	6,874,353
To and from Denver International Airport	158,396	240,803
To destinations outside the modeling area	287,802	412,484
Through the modeling area (from an external origin to an external destination)	13,426	19,059
Commercial vehicle trips	1,717,531	2,145,026
Total single-occupant vehicle driver trips	7,640,142	9,691,725

Table 7: Number of transit trips (bus and rail) per weekday

Type of trip	2023 baseline	2050 forecast
Transit accessed by driving	33,249	57,643
Transit accessed by walking	117,768	212,435
Total transit trips	151,017	270,078

Table 8: Number of shared ride trips per weekday

Type of trip	2023 baseline	2050 forecast
Shared ride driver, excluding Denver International Airport	2,118,901	2,560,660
Shared ride passenger, excluding Denver International Airport	2,890,484	3,442,394
Shared ride driver, to and from Denver International Airport	19,119	30,180
Shared ride passenger, to and from Denver International Airport	23,525	37,112
Total shared ride trips	5,052,029	6,070,346

Table 9: Number of trips by other modes per weekday

Type of trip	2023 baseline	2050 forecast
School bus trips	209,672	226,559
Bicycling trips	388,761	479,211
Walking trips	1,513,650	1,946,685

Table 10: Total person trips in the region per weekday

Category	2023 baseline	2050 forecast
Total person trips	14,955,271	18,684,604
Total person-miles traveled	118,995,364	153,929,560

Table 11: Vehicle and congestion performance measures per weekday

Measure	2023 baseline	2050 forecast
Person trips by automobile or commercial vehicle	12,692,171	15,762,071
Vehicle trips	9,778,162	12,282,565
Vehicle miles traveled	85,516,891	110,154,527
Vehicle miles traveled per capita	25.74	26.66
Vehicle hours traveled	2,312,626	3,091,563
Vehicle hours of delay	354,195	580,029
Person-miles traveled in-vehicle	115,447,802	148,708,612
Person-hours traveled in-vehicle	3,122,045	4,173,640

Table 11: Vehicle and congestion performance measures per weekday (continued)

Measure	2023 baseline	2050 forecast
Person-hours of delay in-vehicle	478,164	783,039
Average vehicle speed, all day	36.98 miles per hour	35.63 miles per hour
Average vehicle speed, peak hours	32.19 miles per hour	30.44 miles per hour
Average person-delay per trip	2.26 minutes	2.98 minutes
Severely congested lane miles	934	1,733
Percentage of vehicle miles traveled in severe congestion	0.11%	0.17%

Note: Severely congested lane miles are roadways with three or more hours of severe congestion, measured as a volume-to-capacity ratio greater than or equal to 0.95.

Table 12: Job accessibility by transit

Measure	2023 baseline	2050 forecast
Total population with good job accessibility by transit (100,000-plus jobs within a 45-minute transit trip)	1,635,553	2,668,783
Total Denver region population	3,321,786	4,131,283
Share of total population with good job accessibility by transit	49.2%	64.6%

Table 13: Fixed-route transit performance per weekday

Measure	2023 baseline	2050 forecast
Rail boardings	76,227	118,007
Bus boardings	129,442	281,422
Total transit boardings	205,669	399,429
Person-miles traveled on transit	1,164,942	2,223,788
Transit share of daily work trips	4.8%	6.9%
Transit share of all daily trips	1.2%	1.7%
Percentage of households making transit trips	5.0%	6.7%

Sources for Tables 6-13: DRCOG travel models (activity-based model, commercial vehicles, external and Denver International Airport). Trips to and from Denver International Airport use a special generator model, not the activity-based model used for all other metrics. Base year: 2023; forecast year: 2050.

Travel time to community destinations changes by mode

Grocery store case studies

In the last update to the Regional Transportation Plan, DRCOG staff analyzed how the plan will change community access to destinations such as hospitals, schools and grocery stores. To improve on the previous analysis, staff focused on one type of destination (grocery stores) and added maps.

Access to grocery stores is an important determinant of health. Grocery stores can be especially difficult to access for people without personal vehicles or poor public transit. Additionally, the Regional Transportation Plan's Civic Advisory Group ranked grocery stores as one of the most important community locations to improve access to.

DRCOG staff used a travel model for the analysis. DRCOG's travel model groups the region into transportation analysis zones, so the maps in this section are only as granular as the zones are. For more information on DRCOG's travel model methodology, please reach out to DRCOG staff.

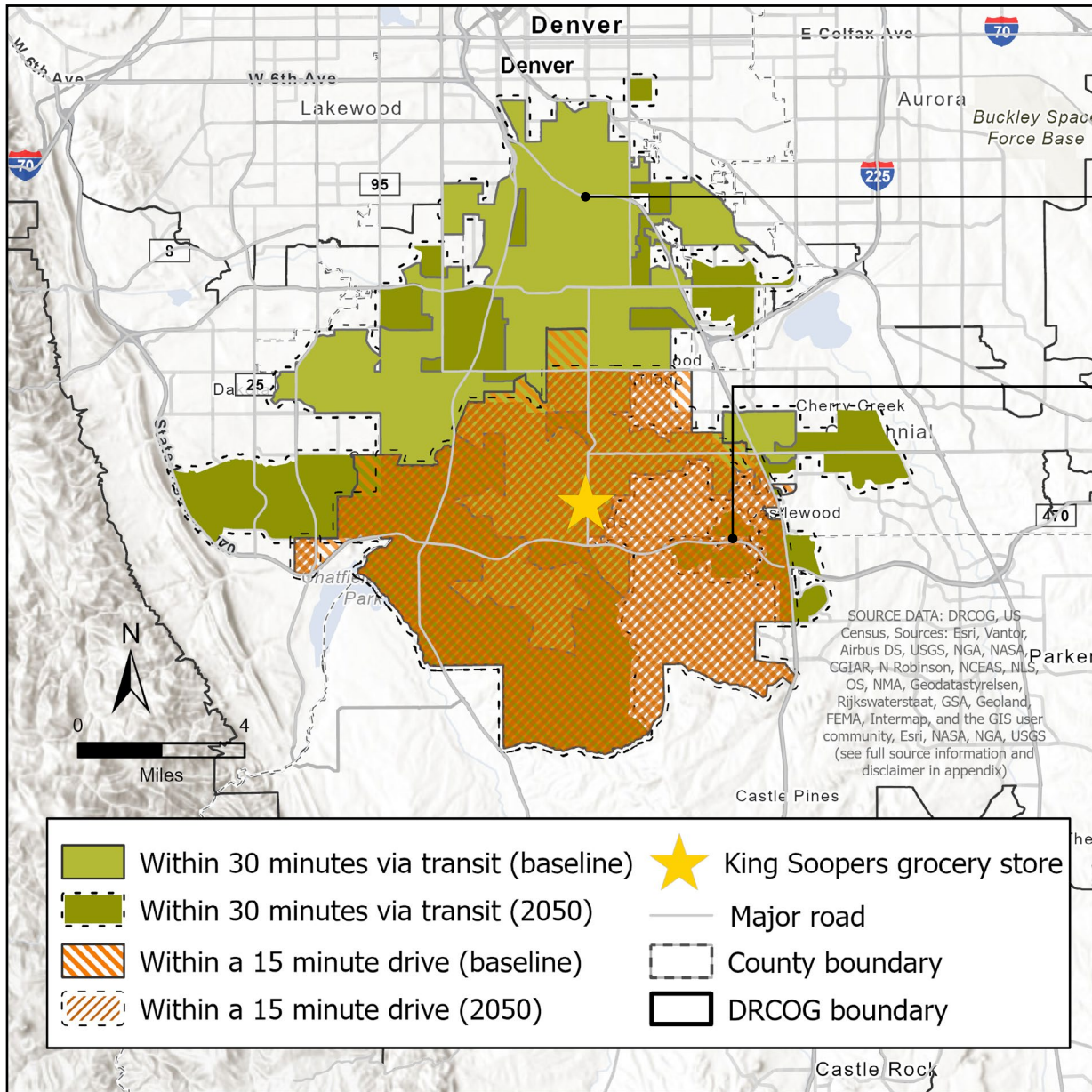
Staff selected three grocery stores to model access by driving and transit. The three stores represent a variety of Community Index quartiles, mobility options and land uses. The King Soopers in Centennial (7575 South University Boulevard) is in Quartile 1, which has the lowest concentration of marginalized communities; the King Soopers in Longmont (995 South Hover Street) is in Quartile 3; and Decatur Fresh in Denver's Sun Valley neighborhood (995 Decatur Street) is in Quartile 4, which has the highest concentration of marginalized communities.

Decatur Fresh is in a [food desert](#) and was established to help address food access in one of Denver's most diverse neighborhoods. In addition to representing a variety of Community Index quartiles and land uses in the Denver region, all three grocery stores have transit service nearby.

There are many types of community destinations. DRCOG staff only analyzed travel to select grocery stores, but other types of destinations could include jobs, healthcare facilities, community centers, libraries and many more.

The analysis only considers one barrier: travel time. Other barriers (such as costs, accessibility or work conflicts) are not included. The analysis also does not take into account the presence of closer grocery stores in the same areas, so the likelihood of all residents traveling to the selected grocery stores, either by driving or taking transit, is low.

Map 5: Travel times to King Soopers in Centennial



The grocery store is in a suburban neighborhood in the south metro area.

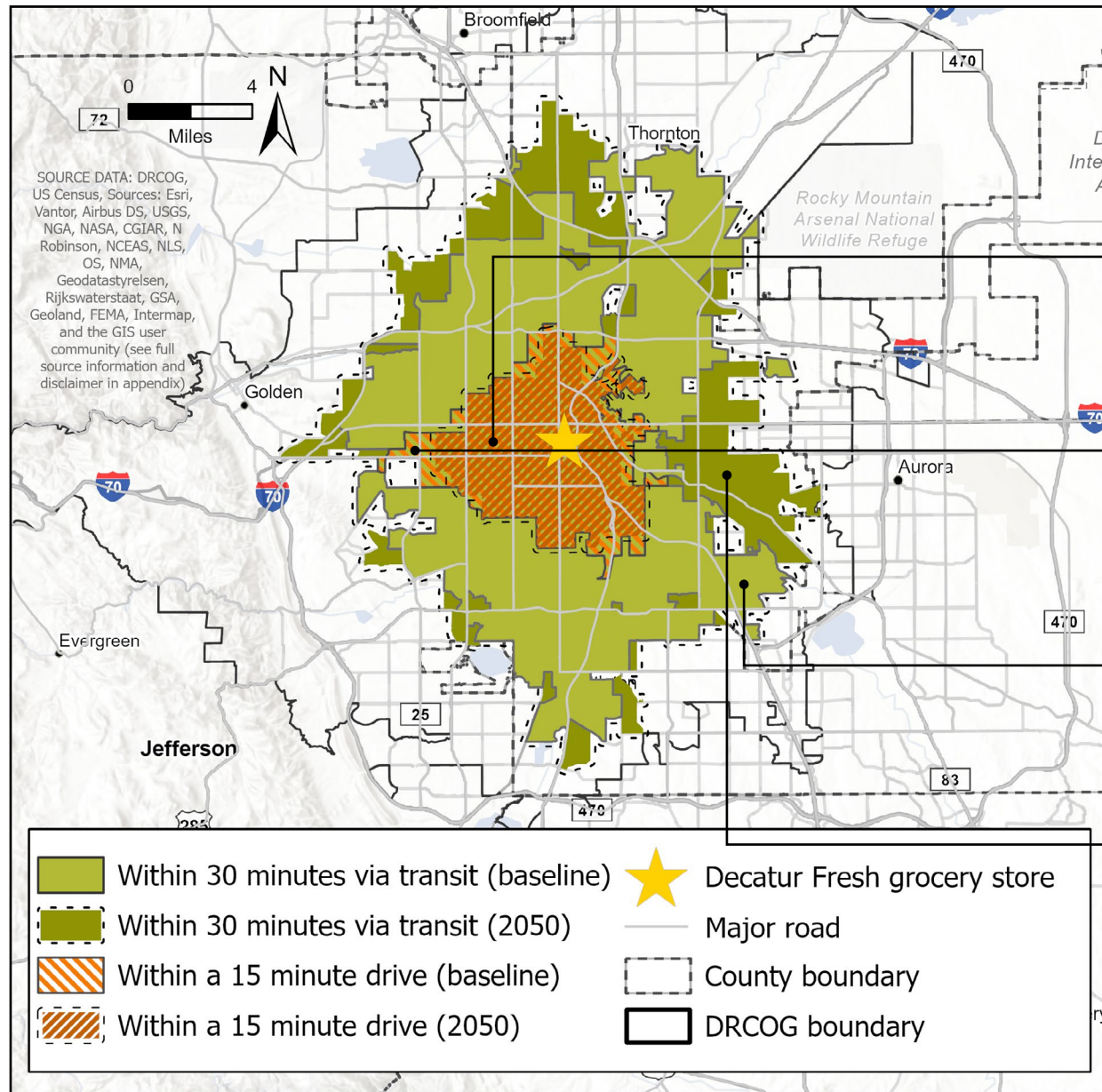
Currently, transit access to the store is mostly to the north, but some routes may not run on weekends or in the evening.

Having access to a car makes more of the region reachable.

The immediate area around the grocery store is Quartile 1 and 2 tracts, which represent the least marginalized neighborhoods.

Douglas County's microtransit project could increase access to this grocery store.

Map 6: Travel times to Decatur Fresh in Denver's Sun Valley neighborhood



The grocery store is in an urban area that is experiencing active redevelopment, with many industrial buildings being replaced with multifamily housing.

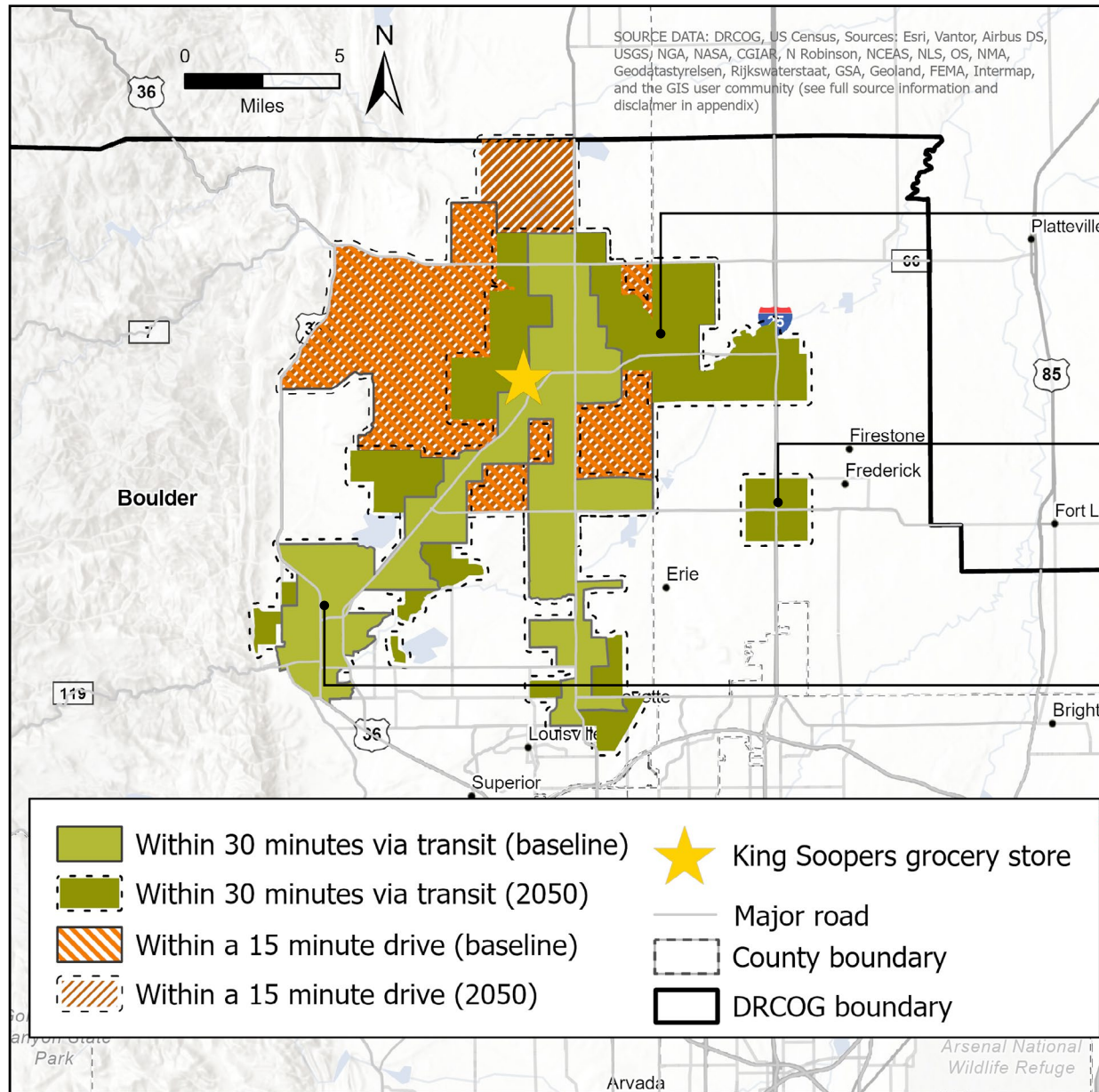
The store has good drive access from surrounding areas, including areas slightly farther west along U.S. Route 6.

More cars on the road will decrease driving distances slightly, particularly to the west along U.S. 6.

The store has very good transit access, although access from the east is more difficult due to barriers such as Interstate 25.

Planned transit improvements, such as the Colfax and Federal bus rapid transit lines, will enhance transit access from the east and north.

Map 7: Travel times to King Soopers in Longmont



The grocery store is in a demographically mixed suburban neighborhood in the far northern portion of the region.

The Highway 119 Extension bus rapid transit from Firestone to Longmont could greatly improve access from the east.

The North I-25 bus rapid transit, in conjunction with the Highway 119 Extension, could allow residents from as far away as northeastern Erie to access the grocery store by transit.

The Highway 119 bus rapid transit project will improve transit access along the corridor and in western Longmont.