PREPARED FOR THE CITY AND COUNTY OF DENVER BY

In collaboration with:

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• EPS
• Felsburg Holt & Ullevig
• Jarrett Walker + Associates
• Toole Design Group
• Two Hundred
• Zoeller Consulting LLC
“Access to public transit [is] so important for a healthy city.”

– Survey Participant at Taste of Ethiopia
CHAPTER 1
WHAT IS DENVER MOVES: TRANSIT?

The Denver Moves: Transit plan will create a 20-year local transit vision and implementation plan for Denver. Denver Moves: Transit seeks to move more people more efficiently on our existing street network even as we continue to grow and develop as a city by taking the following actions:

- Convening community conversations to understand the existing transit system and how, together, we can make it even better for all Denver residents, employees, and visitors
- Working closely with the community and stakeholders to identify citywide needs, values, and a shared vision for transit
- Analyzing transit opportunities, costs, and potential trade-offs, using data and community input
- Defining transit priorities for new and enhanced transit services, areas that need better access to transit, and programs that make it easier to ride transit
- Reallocating street space to prioritize transit and support moving more people
- Identifying opportunities to use technology to improve transit reliability and legibility
- Exploring shared mobility options to serve lower density neighborhoods and employment areas
- Improving bicycle and pedestrian connections and other first/last mile options to key transit corridors
- Identifying parking and land use policies that support efficient and convenient transit service
- Establishing phased implementation strategies to prioritize local transit improvements
DENVERIGHT: FOUR PLANS, ONE CITY

*Denver Moves: Transit* is one of four plans being developed concurrently as part of Denveright by the City and County of Denver. Launched in May 2016, Denveright connects land use, mobility, parks, and recreational planning into one cohesive community-driven effort to guide Denver for the next 20 years. The other three Denveright plans are:

- **Blueprint Denver** will direct how our city evolves, shaping how certain areas of our city will change and how other areas can remain stable and vibrant. It will also help us decide how our city’s road, bus, rail, bicycle, and pedestrian systems should evolve to meet the needs of the Denver of tomorrow.

- **Game Plan** will update the 2003 plan for recreational spaces that was shaped by the concept of Denver as “a city in a park.” This update will establish the future of Denver parks and recreation, taking into account local population growth as well as climate change, resilience, and changing needs.

- **Denver Moves: Pedestrians and Trails** will build on guidance in the 2001 Bicycle Master Plan and 2004 Pedestrian Master Plan. *Pedestrians and Trails* will focus on making walking a truly viable option for people to use as their primary means of moving around Denver.
WHY DENVER MOVES: TRANSIT?

Denver is experiencing a period of rapid growth that demands enhanced and expanded intracity transit services to improve travel options for residents, employees, and visitors. Significant investment in commuter rail and light rail transit by the Regional Transportation District (RTD) is helping Denver and the region accommodate this growth gracefully and, at times, with stunning results. The Union Station project and the redevelopment it has spurred in the surrounding neighborhood will stand as a crowning achievement for the City and County of Denver, RTD, and local partners for decades to come. At the same time, regional FasTracks investments and upcoming rail implementation continue to drive bus system restructuring in Denver; while the investments are bringing significant benefits to Denver’s neighborhoods, the system restructurings present challenges for community members as well.

These regional projects are critically important but are only one piece of the puzzle. Travelers within the city of Denver require fast, frequent, and convenient connections to jobs, neighborhoods, schools, and services. Leveraging RTD’s investments in rail and bus, Denver Moves: Transit will identify a local vision for transit that enhances the current transit system to attract ridership and build a culture of transit in Denver. A local vision for transit in Denver will help accommodate the city’s unprecedented growth and sustain Denver as the healthy and vibrant community that has attracted such growth.

The City and County of Denver plays an exciting role in framing and supporting a local vision for transit. Cities across the country are realizing that local government must be more active in planning, developing, funding, and even operating transit if they want to deliver on economic and quality of life goals. Denver Moves: Transit will both set the vision for transit in Denver and explore options for the City and County’s role in delivering on that vision, in partnership with RTD.

Leveraging RTD’s investments in rail and bus, Denver Moves: Transit will identify a transit vision that enhances the current transit system to increase ridership and build a culture of transit in Denver.
HOW DOES TRANSIT BENEFIT THE CITY OF DENVER?

1. **Supports a healthy environment.**
   Tailpipe emissions are the leading contributor to ozone and other air pollutants. Meeting new air quality standards will be difficult without a reduction in single occupancy vehicles, congestion, and a move to alternative fuels.

2. **Attracts talent and makes Denver more competitive.**
   Quality transit service helps to attract and retain a talented work force.

3. **Supports accessibility and affordability.**
   Transit reduces household transportation costs and provides access for residents who are not able or cannot afford to drive, allowing them to access work, shopping, medical appointments, and social activities.

4. **Supports sustainable growth.**
   Denver is growing at an unprecedented rate. Transit supports growth by moving more people within the same right-of-way footprint—accommodating new residents and employees efficiently.

5. **Contributes to active, healthy lifestyles.**
   Transit riders walk an average of 19 minutes per day, nearly reaching the Center for Disease Control’s recommendation of 22 minutes a day of moderate aerobic activity.

6. **Makes Denver a better place to visit.**
   Visitors expect quality public transportation to get around a world-class city.

7. **Boosts the region’s economy.**
   By 2035, Denver will add more than 190,000 jobs based on DRCOG projections. Transit can help people reach these jobs and expand economic mobility.
MOBILITY EXPECTATIONS ARE CHANGING

In 2014, Denver was the fifth fastest growing city in the country. More people and more jobs will put pressure on our roadway network. At the same time, transportation preferences among younger generations are changing—young adults are driving less and show a clear preference for options to bike, walk, and take transit. The millennial generation is the first generation in decades that drives less than their parents, and the number of young people with a driver’s license is declining.

Mobile technologies have changed how this generation connects with their peers, how and where they choose to live, how they work, and how they travel. Attracting and keeping the next generation in Denver will require a truly multimodal transportation system that expands the availability of public transit and other shared mobility options like car share, bike share, and on-demand transportation services.

The number of older adults in Denver will also increase, and changing expectations about aging in place will put the safety, accessibility, and convenience of Denver’s transportation system to the test. Unlike older adults and millennials, the number of youth (under 18) in Denver is expected to slightly decrease by 2035.

IN DENVER CITY AND COUNTY BY 2035

145,000 more residents
190,000 new jobs
1 in 4 between the ages of 18-34
1 in 5 age 60+
1 in 5 under the age of 18

Source: DRCOG, 2015; State of Colorado Department of Local Affairs, 2016

1 U.S. Census and Colorado Department of Local Affairs, 2014.
2 According to the Federal Highway Administration, from 2000 to 2010, the share of 14 to 34-year-olds without a driver’s license increased from 21 percent to 26 percent. Federal Highway Administration, Highway Statistics 2010—Table DL-20, September 2011.
3 State of Colorado Department of Local Affairs, 2016.
DENVER MOVES: TRANSIT SUPPORTS LOCAL AND REGIONAL GOALS

Over the last two decades, the Denver region has conducted extensive planning and invested significant funding in transportation. Denver Moves: Transit will build on these efforts. An overview of key local and regional goals and policies from related plans is provided below; complete documentation of relevant plans, goals, and policies is available in Appendix A.

- Provide mobility options (transit, carpooling, biking, walking) that reduce commuting travel in single-occupant vehicles to no more than 60% of all trips (2020 Sustainability Goals)
- Reduce total community-wide CO2e emissions from Denver to below the level of emissions in 1990 (i.e., less than 11.8 million mtCO2e) (2020 Sustainability Goals) and reduce community emissions 80% by 2050 (Denver 80 by 50 Climate Goal)
- Enhance local bus stop amenities (shelters and benches) (2014 Climate Action Plan)
- Offer Denver “Last Mile” transit options (2014 Climate Action Plan)
- Improve current and future high-capacity transit services with enhancements that benefit both pedestrians and transit riders and address the need for “seamless connectivity between modes” (2005 Downtown Multimodal Access Plan)
- Provide increased transit service and facilities that can accommodate an increasing share of daily travel, encourage transit-oriented development, and provide mobility options (2035 Metro Vision Regional Transportation Plan)
- Provide travel choices and mobility opportunities district-wide, balancing equity and accessibility needs for all (2015-2020 RTD Strategic Plan)
- Promote vibrant places by connecting communities to transit and leveraging transportation infrastructure investment (2015-2020 RTD Strategic Plan)
- Ensure that at least 80% of neighborhoods in Denver are rated as “affordable” using the Center for Neighborhood Technology’s Housing + Transportation Index while preserving the diversity of the neighborhoods (2020 Sustainability Goals)
HOW WILL DENVER MOVES: TRANSIT BE DEVELOPED?

VISION & GOALS

Our first task is to develop a vision and set of goals to guide project decisions and recommendations, with input from the Task Force, stakeholders, and the community.

August 2016 – February 2017

SCENARIO DEVELOPMENT

Working closely with the Blueprint Denver team, we'll establish scenarios that match future land uses and potential transit services, demonstrating different outcomes and the trade-offs they would require. These scenarios will be evaluated using a framework grounded in the vision and goals.

January – May 2017

TRANSIT PLAN

Denver Moves: Transit will establish a short- and long-term vision for transit in Denver. The plan will document operating, capital, and programmatic priorities; funding and implementation strategies; and land use and other policies to support a transit system that works for Denver.

August – December 2017

STATE OF THE SYSTEM & MARKET ASSESSMENT

The State of the System Report documents existing conditions of the transit system and provides statistics and trends that will help lay the groundwork to develop the vision for transit in Denver.

August – December 2016

COMMUNITY ENGAGEMENT

Community engagement will occur throughout the project to guide the vision for transit in Denver and ensure the plan meets the community’s needs.

Ongoing

COMPLETE TRANSIT SYSTEM

By identifying gaps in pedestrian and bicycle access to transit, we will create strategies that can be incorporated into the priority transit corridors and the final vision for transit. We will also develop recommendations for improving transit stops and stations, information and wayfinding, and creating a great passenger experience.

May – August 2017

CORRIDOR EVALUATION

Building on the preferred scenario, we will establish priority transit corridors and evaluate them for necessary investments. We'll explore potential modes of transit—rail, bus rapid transit, local bus—for each corridor along with capital projects that can make transit service work better.

May – August 2017

HOW WILL DENVER MOVES: TRANSIT BE DEVELOPED?
HOW CAN YOU GET INVOLVED?

The State of the System Report is just the beginning of our path to a local vision for transit in Denver. Since summer 2016, Denverites have participated in surveys and workshops that have begun to shape the vision for Denver Moves: Transit. Over the next 12 months, we invite you to sign up for updates on the process, attend an event, or participate in our many online forums and surveys. For more information on how you can participate in Denver Moves: Transit, visit https://www.denvergov.org/content/denvergov/en/denveright/transit.html.

WHAT HAVE WE HEARD SO FAR?

Across the board, people are excited that the city is taking such an active role in planning for the future of transit in Denver. There is a lot of support for the regional system that RTD has built, but Denverites want more for Denver:

- They want buses that run more frequently and later in the day
- They want connections to the places they need to go for work, school, and play
- They want it to be easier to reach bus stops and train stations, especially for people walking and bicycling

Equity and affordability have been important themes in our conversations— with Denver’s growth comes challenges for people with lower incomes, for older adults on fixed incomes, and for families who want to use transit. People understand transit’s role in improving economic mobility and supporting a healthy community, and they want to see transit provide better support for fast-growing areas and serve new neighborhoods.

People want it to be easy, safe, and comfortable to ride the bus and train. They need better information about services and programs, better conditions at stops on major arterials, and connections outside of downtown. Fast and frequent service—especially on the bus—is important to those making longer trips, particularly outside of rush hour.
OVERVIEW OF THE STATE OF THE SYSTEM REPORT

The Denver Moves: Transit State of the System Report paints the picture of transit service, access, and programs in Denver today:

- **Chapter 2: Where is Service Today** describes transit service in Denver, including an assessment of system performance and bus stop amenities.
- **Chapter 3: Transit Access and Programs** details the factors that influence people’s ability to access transit service, including street connectivity, pedestrian and bicycle access to transit, first and last mile options, programs that promote transit use, fares, and system information.
- **Chapter 4: Who Rides Transit in Denver** gives an overview of transit riders by neighborhood and rider characteristics.
- **Chapter 5: What Influences the Demand for Transit** documents the factors that influence the demand for transit, including current population and employment growth, travel patterns, demographic characteristics that increase transit reliance, and current land use.
- **Chapter 6: Governance and Funding Best Practices** describes three peer cities and transit agencies that have demonstrated success in delivering local and regional transit service.
- **Chapter 7: Key Findings** summarizes the findings from this analysis and highlights the most prominent transit challenges and opportunities facing Denver today.
- **Appendix A: Plans and Policies Summary** provides an overview of related local and regional plans and policies.
- **Appendix B: Glossary** defines transit- and mobility-related terms used throughout this report.

DEFINITIONS OF GEOGRAPHIC BOUNDARIES

Throughout this report, data is presented at the Denver region or the Denver city level. Using both of these geographies allows for comparisons within the region as well as to peer cities throughout the U.S.

- **Denver Region**: As defined by the Denver Regional Council of Governments (DRCOG), the Denver region includes Adams, Arapahoe, Boulder, Clear Creek, Douglas, Gilpin, and Jefferson counties, the City and County of Denver, the City and County of Broomfield, and southwest Weld County.
- **City of Denver**: Includes the area within the city boundaries, except for neighborhoods that are separate entities, such as Glendale.

Image: Nelson Nygaard
Create a system based on getting people to their destination in a reasonable amount of time. [It] should not require passing Union Station (e.g., North Denver to Broomfield).

– Denveright Community Visioning Workshop Participant (October 2016)
CHAPTER 2
WHERE IS SERVICE TODAY?

The Regional Transportation District (RTD) operates transit in the Denver region, serving eight counties and 40 municipalities—an area of approximately 2,300 square miles, with more than 2.8 million people.

Over the last two decades, the Denver region has made significant investments in its transit system. This includes the development of RTD’s light rail system starting in 1994, with expansions continuing to the present. In 2004, voters approved the Fas-Tracks plan, including a region-wide sales tax to fund new rail and bus rapid transit (BRT) corridors, new and enhanced transit stations and facilities, and improvements to bus service.
HOW HAS TRANSIT SERVICE CHANGED?

Like many U.S. cities, Denver’s investments in transit began in the 1800s with a downtown streetcar and cable-powered rail. By the 1950s, there were nearly 200 miles of railway serving Denver. With the growing popularity of the private vehicle in the 1950s, streetcar ridership declined and streetcar service and infrastructure were removed.

The 1970s energy crisis sparked a renewed interest in transit. Over the next three decades, voter-approved sales taxes and public investments in transit helped to serve the region’s rapidly growing population.

A. 1871 – The Denver Horse Railroad Company (later renamed the “Denver City Railway”) builds and operates Denver’s first streetcar from 7th and Larimer Street to 27th and Champa streets.

B. 1888 – The Denver Tramway puts their first cable-powered railcar into operation.

1924 – After a period of fierce competition between street railway operators, the Denver Tramway achieves a monopoly over all 156 miles of the city’s railway system.

C. 1950-1955 – Denver Tramway ends street railcar service and within five years removes most of the streetcar infrastructure.

1950s-1960s – Denver public transportation ridership decreases as commuters switch to private automobiles.

1969 – The Regional Transportation District (RTD) is established by the Colorado General Assembly to operate regional public transit service for eight counties in the Denver-Boulder metropolitan area.

1971 – Denver transit services shift from a private provider to a public agency, as all assets of the Denver Tramway Company are transferred to Denver Metro Transit, owned by the City of Denver.
1973-1974 – Residents in six counties across the Denver metropolitan area approve a 0.5% sales tax over ten years for RTD to expand bus service. The following year, Denver Metro Transit is absorbed into RTD.

1975 – Exclusive bus lanes are added on Broadway and Lincoln to improve transit reliability in downtown Denver.

D. 1978 – RTD transitions its routes from a radial system to a grid-based system.

E. 1982 – The 16th Street Mall opens, removing hundreds of buses from downtown streets by creating a central transitway for distributing passengers within downtown.

F. 1994 – The Central Corridor, Denver’s first light rail line, begins operating between the Five Points neighborhood and the intersection of Broadway and I-25, bringing rail transit service back to Denver for the first time since 1950.

1994-1995 – The Downtown Express, 6.6 miles of bus/HOV lanes from Denver to US 36 opened providing faster and more reliable travel times for commuter buses coming from the north.

2000 – The Southwest Corridor light rail opens.

2004 – Voters pass the FasTracks ballot initiative to fund six new rapid transit corridors, the extension of three existing rapid transit corridors, a revised feeder bus system, and the redevelopment of Denver’s Union Station.

G. 2006 – The Southeast Corridor light rail line opens.

2013 – The W Line light rail line opens; it is the first new light rail line funded by FasTracks.

H. 2014 – Denver’s Union Station reopens as a transit station, intercity rail station, and hotel; it includes public spaces, restaurants, and retail.

I. 2016 – The University of Colorado A Line opens, connecting Denver International Airport to downtown Denver. Three months later the B Line (Denver to Westminster Station) opens.

2016 – Regional bus service between Denver and Boulder is upgraded to bus rapid transit and rebranded as the FlatIron Flyer. Buses operate in a Bus/HOV/HOT lane and on the shoulder.
STATE OF THE SYSTEM

EXISTING SERVICE

RTD’s service in Denver includes six light rail lines, two commuter rail lines, and 84 bus routes that provide local and regional service.

**Light rail** serves downtown Denver from the west (W Line), southwest (C and D Lines, along US 85), and southeast (E, F, and H Lines, in the I-25 corridor). Most light rail lines operate every 15 minutes or less throughout the day, including evenings and weekends. Light rail lines serve either Union Station or 16th & California/Stout Stations at either end of downtown Denver. The Free Mall-Ride and Free MetroRide shuttles connect these stations.

**Commuter rail** includes two lines that opened in 2016, serving downtown Denver from the northeast (University of Colorado A Line, parallel to I-70 to Denver International Airport), and north to Westminster (B Line).

**Local bus** service operates mostly along Denver’s arterial streets in a grid pattern. Approximately half of the RTD local bus routes that serve Denver provide service to or in downtown. Outside of downtown, routes are spaced approximately one-half to one mile apart. Weekday service operates at least every 30 minutes on a majority of bus routes during the day, with over 15 routes that run every 10-15 minutes throughout the day on major corridors including Colorado Boulevard, Broadway, Federal Boulevard, Colfax Avenue, and Alameda Avenue. Most all-day routes start service between 4-6 AM and run until between 10 PM and 1 AM. Several routes, such as Route 0 on Broadway and Routes 15/16 on Colfax, run until 2 AM or later, nearly 24 hours a day.

**Regional or express bus** routes primarily link downtown Denver and communities around the region. A few regional routes provide all-day service.

**Annual ridership** for RTD—shown below—has increased from approximately 80 million riders (2001) to over 100 million riders (2015) region-wide. Today, more than 340,000 daily transit trips are taken in the region, with over 230,000 trips—approximately two-thirds—taken within Denver.

### Transit Ridership and Service Hour Trends in the Denver Region

![Transit Ridership and Service Hour Trends in the Denver Region](image-url)

**Transit ridership data** represents regional (systemwide) ridership.

Sources: RTD annual performance data
OTHER TRANSIT SERVICES AND PROVIDERS

ADA PARATRANSIT
Access-a-Ride is the paratransit service provided by RTD under the Americans with Disabilities Act (ADA). People who cannot access the fixed-route bus and rail system can receive a ride through Access-a-Ride as long as the starting point and destination are within three-quarters of a mile of the RTD fixed-route system.

COMMUNITY TRANSPORTATION
RTD SeniorRide provides transportation for groups of ten or more seniors to cultural, educational, and entertainment events. Passengers must call or email to schedule their trip, at least three weeks ahead of the event. Similarly, SeniorShopper provides transportation for groups of ten or more seniors for shopping. The service operates on weekdays and picks up at senior housing complexes or community centers. While the title of this service includes “Senior,” it is available to passengers of any age. Costs for these services vary depending on whether the trip is local or regional and the passengers’ age.

Community Ride is provided by RTD and Focus Point Family Resource Center, a nonprofit organization that offers programs and services to the communities of Swansea, Elyria, and Globeville. Community Ride picks up passengers at designated locations and also offers home pick up for seniors over 65 and people with disabilities. A round-trip for all passengers costs $1.

INTERREGIONAL SERVICES
Operated by the Colorado Department of Transportation (CDOT), Bustang is an Interregional Express Bus that provide service between Denver and Glenwood Springs seven days a week. A new daily run between Denver and Vail was recently added. Fares vary depending on the route and the origin and destination.

INTERSTATE SERVICES
Greyhound and Amtrak both provide bus and train service to and from Denver. Passengers can access Greyhound at the Denver Bus Station (located at 19th Street between Arapahoe and Curtis Streets) and Amtrak at Union Station. Amtrak’s California Zephyr service—which extends from Chicago, IL to San Francisco, CA—passes through Denver.

Amtrak also operates the Winter Park Express train service from Denver’s Union Station to the Winter Park Resort on Saturdays and Sundays between January and March for the ski season.

AIRPORT TRANSIT SERVICE
RTD’s University of Colorado A Line commuter rail service operates between Union Station and DIA, with intermediate stops at rail stations. A one-way fare to the airport is $9, which includes a regional day pass valid on all RTD services. RTD also offers three different Skyride bus routes: Route AA Northglenn Thornton to DIA, Route AB Boulder/US 36 to DIA, and Route AT Denver Technological Center (Denver Tech Center)/Aurora to DIA. A one-way fare for this service also costs $9.

CALL-N-RIDE
Call-n-Ride is a personalized bus service provided by RTD that travels within select RTD service areas. Call-n-Ride services are offered to areas like the Denver Tech Center to shuttle employees between the rail lines and the offices. Most of the service operates as a flex route that serves the station at a set time and then travels to various offices. Routes will deviate a short distance if requested.

SPORTSRIDES
Sportsrides, provided by RTD, includes a variety of seasonal services to sporting events, such as Broncos games at Sport Authority Field, Buffaloes games at Folsom Field, Rockies games at Coors Field, and skiing Eldora Mountain Resort.
STATE OF THE SYSTEM

Existing Local Transit Service in the City of Denver

Transit Serving Denver
- Rail Line
- New Rail Line (Scheduled to open in 2017/2018)
- Future Rail Extension (Longer Term)
- Bus Route
- Park-and-Ride
- College / University
- High School

Data Source: RTD 2016, DRCOG, Colorado DOT, OpenColorado, ESRI
WHERE WILL TRANSIT BE IN THE FUTURE?

Approved by voters in 2004, the RTD FasTracks Program is an expansion plan for rail and bus service in the Denver area. All projects currently under construction will be completed by 2019. Completion dates for four remaining projects not yet under construction have not been identified. Complete buildout of all FasTracks projects will include 122 miles of new light and commuter rail, 18 miles of bus rapid transit (BRT), 57 new transit stations, 31 new Park-n-Rides, and 21,000 new parking spaces at rail and bus stations across the eight-county RTD service district.

The RTD Strategic Plan is a five-year plan, presenting RTD’s vision for regional transit progress through 2020. It identifies seven primary strategies that RTD will focus on within this time period:

- **Customer service:** Deliver customer-oriented service
- **Safety:** Foster a safety culture
- **Financial sustainability:** Strengthen fiscal resiliency and explore financial innovation
- **Equity and accessibility:** Improve customer access and support transit-oriented communities
- **System optimization:** Optimize service delivery
- **Technological innovation:** Use technology to operate efficiently and improve the customer service experience
- **Workforce:** Foster a dynamic and sustainable workforce

The Metro Vision Regional Transportation Plan (MVRTP) is the 25-year long-range regional transportation plan produced by DRCOG, the planning agency for the Denver region. The MVRTP presents a vision for a multimodal transportation system, including rapid transit, the regional bus system, the local and regional roadway system, bicycle and pedestrian facilities, and travel demand management services. This multimodal approach aims to accommodate expected growth in the Denver area, guide development patterns, and provide reliable mobility choices to people of all ages, incomes, and physical abilities. The fiscally constrained portion of the MVRTP is the federally required list of all regionally significant roadway and transit projects in the pipeline for the 25-year plan.
RTD’S MULTI-BILLION DOLLAR TRANSIT EXPANSION PLAN: FASTRACKS

2013
- West Rail (W) Line

2014
- Denver’s Union Station redevelopment includes a new bus concourse and a mix of uses that creates activity around the station
- Free MetroRide connects Union Station and Civic Center Station along 18th and 19th Streets

2016
- University of Colorado (A) Line to Denver International Airport
- Northwest Rail (B) Line to south Westminster
- Flatiron Flyer bus rapid transit on US 36 to Westminster, Broomfield, and Boulder

2017
- Gold (G) Line to Arvada and Wheat Ridge
- I-225 Rail (R) Line through Aurora

2018
- North Metro (N) Line to Thornton

2019
- Southeast extension (E, F, and R Lines) to Lone Tree

FUTURE
- Central (L) Line extension to 38th & Blake Station (A Line)
- Southwest extension (C and D Lines) to Highlands Ranch
- Northwest (B) Line extension to Boulder and Longmont
- North (N) Line extension

HOW OFTEN DOES TRANSIT OPERATE?

People are more likely to use transit when service operates frequently, runs at the times they need it, and is easy for them to access within a quarter-to half-mile walk.

- More than 70% of Denver residents live within convenient walking access to transit (i.e., quarter-mile walk to a bus stop or a half-mile walk to a light rail station), but fewer residents have convenient access to all-day frequent service (transit that runs at least every 15 minutes*)

- Over half of residents have convenient access to frequent service during commute periods, and only 36% to all-day frequent service

- Light rail lines have frequent service all day, including evenings and weekends, with very frequent service where multiple lines overlap

- In Denver, there are relatively few frequent bus lines, both during the peak and all day

- Many bus lines that run every 30 minutes during the day transition to hourly service after 7 or 8 PM

- Weekday service starts as early as 4 or 5 AM and runs until midnight on many routes

Note: *For analysis and mapping purposes, frequent service was classified based on an average frequency of 18.5 minutes or less across both directions of a route (or corridor with multiple routes serving similar travel patterns).
Bus and Rail Frequency in the City of Denver: Weekday AM Peak**

** Weekday AM Peak represents the average number of trips per hour (both directions) between 6 AM and 9 AM.

* Does not include regional/express routes (local limited routes are included).

** Weekday AM Peak represents the average number of trips per hour (both directions) between 6 AM and 9 AM.

Average Service Frequency*

- 1 - 10 min: 6+ trips per hour
- 11 - 14 min: 5 trips per hour
- 15 - 19 min: 4 trips per hour
- 20 - 29 min: 3 trips per hour
- 30 - 44 min: 2 trips per hour
- 45 - 60+ min: 1 trip per hour or less

* Does not include regional/express routes (local limited routes are included).

Data Sources: RTD 2016, DRCOG, Colorado DOT, OpenColorado, ESRI

01/19/17
Bus and Rail Frequency in the City of Denver: Weekday Midday**

Average Service Frequency*

- 1 - 10 min: 6+ trips per hour
- 11 - 14 min: 5 trips per hour
- 15 - 19 min: 4 trips per hour
- 20 - 29 min: 3 trips per hour
- 30 - 44 min: 2 trips per hour
- 45 - 60+ min: 1 trip per hour or less

* Does not include regional/express routes (local limited routes are included).

** Weekday Midday represents the average number of trips per hour (both directions) between 9 AM and 3 PM.

Data Sources: RTD 2016, DRCOG, Colorado DOT, OpenColorado, ESRI

01/19/17
Data Sources: RTD 2016, DRCOG, Colorado DOT, OpenColorado, ESRI

Average Service Frequency*

1 - 10 min: 6+ trips per hour
11 - 14 min: 5 trips per hour
15 - 19 min: 4 trips per hour
20 - 29 min: 3 trips per hour
30 - 44 min: 2 trips per hour
45 - 60+ min: 1 trip per hour or less

* Does not include regional/express routes (local limited routes are included).

Weekday evening represents the average number of trips per hour (both directions) between 7 PM and 10 PM.

Bus and Rail Frequency in the City of Denver: Weekday Evening**

** Weekday evening represents the average number of trips per hour (both directions) between 7 PM and 10 PM.
Bus and Rail Frequency in the City of Denver: Saturday**

** Saturday represents the average number of trips per hour (both directions) between 6 AM and 7 PM.

Average Service Frequency*

- 1 - 10 min: 6+ trips per hour
- 11 - 14 min: 5 trips per hour
- 15 - 19 min: 4 trips per hour
- 20 - 29 min: 3 trips per hour
- 30 - 44 min: 2 trips per hour
- 45 - 60+ min: 1 trip per hour or less

* Does not include regional/express routes (local limited routes are included).

Data Sources: RTD 2016, DRCOG, Colorado DOT, OpenColorado, ESRI

01/19/17
Data Sources: RTD 2016, DRCOG, Colorado DOT, OpenColorado, ESRI

Bus Frequency in the City of Denver: Weekday AM Peak**

** Weekday AM Peak represents the average number of trips per hour (both directions) between 6 AM and 9 AM.

Average Service Frequency*
- 1 - 10 min: 6+ trips per hour
- 11 - 14 min: 5 trips per hour
- 15 - 19 min: 4 trips per hour
- 20 - 29 min: 3 trips per hour
- 30 - 44 min: 2 trips per hour
- 45 - 60+ min: 1 trip per hour or less

* Does not include regional/express routes (local limited routes are included).

** Weekday AM Peak represents the average number of trips per hour (both directions) between 6 AM and 9 AM.
Bus Frequency in the City of Denver: Weekday Midday**

Average Service Frequency*

- 1 - 10 min: 6+ trips per hour
- 11 - 14 min: 5 trips per hour
- 15 - 19 min: 4 trips per hour
- 20 - 29 min: 3 trips per hour
- 30 - 44 min: 2 trips per hour
- 45 - 60+ min: 1 trip per hour or less

* Does not include regional/express routes (local limited routes are included).

** Weekday Midday represents the average number of trips per hour (both directions) between 9 AM and 3 PM.

Data Sources: RTD 2016, DRCOG, Colorado DOT, OpenColorado, ESRI

01/19/17
Bus Frequency in the City of Denver: Weekday Evening**

** Weekday evening represents the average number of trips per hour (both directions) between 7 PM and 10 PM.

Average Service Frequency*
- 1 - 10 min: 6+ trips per hour
- 11 - 14 min: 5 trips per hour
- 15 - 19 min: 4 trips per hour
- 20 - 29 min: 3 trips per hour
- 30 - 44 min: 2 trips per hour
- 45 - 60+ min: 1 trip per hour

* Does not include regional/express routes (local limited routes are included).

Data Sources: RTD 2016, DRCOG, Colorado DOT, OpenColorado, ESRI

01/19/17
TRANSIT PERFORMANCE

This section describes the amount of transit service provided in Denver since 2010 and assesses how service performs.

RIDERSHIP AND SERVICE TRENDS

Ridership on RTD rail lines (systemwide) has increased by about 5 million annual riders (29%) since 2010, while service hours increased by 61% with opening of the West Line in 2013. Over this same time period, ridership on local bus routes serving Denver decreased by 800,000 annual riders, while service hours increased modestly (by 6%). Ridership on regional bus routes, while small compared to rail and local bus services, increased by 11% while service hours increased by 7%.

WHAT ARE RTD’S TRANSIT SERVICE PERFORMANCE STANDARDS?

RTD has minimum standards that help determine where it provides service and how often service operates.

**Minimum service frequency and service span** (hours of service) depends on the type of service and how productive the route is (boardings per service hour). For example, Local service must operate at a minimum frequency of 30 minutes during peak periods (M-F, 6-9 AM and 3-6 PM) but routes that fall below the bottom 25% of their service class have a minimum frequency of 60 minutes outside of peak periods.

**Minimum ridership** performance standards vary depending on the route type. **Local and Limited routes** (CBD Local, Urban Local, Suburban Local) must meet or exceed the 10% minimum boardings per service hour threshold (calculated on an annual basis), which for 2015 was 17.0 for CBD Local, 17.4 for Urban Local, and 6.5 for Suburban Local routes.

**RTD Service Performance Standards**

<table>
<thead>
<tr>
<th>SERVICE TYPE</th>
<th>SPAN OF SERVICE</th>
<th>MINIMUM FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local - Peak Period</td>
<td>Mon-Fri 6 AM to 9 AM and 3 PM to 6 PM</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Local - Off-peak below 25% boardings per hour</td>
<td>Weekday midday (9 AM to 3 PM)</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Local - Off-peak above 25% boardings per hour</td>
<td>Weekday midday</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Local</td>
<td>Evenings and weekends</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Regional CBD</td>
<td>3 peak trips, Mon-Fri Trips should target 7, 7:30, &amp; 8 AM shift start times and 4, 4:30, &amp; 5 PM shift end times</td>
<td></td>
</tr>
<tr>
<td>Rail and Enhanced Bus (BRT)</td>
<td>Weekday 6 AM to 6 PM</td>
<td>15 minutes</td>
</tr>
<tr>
<td>Rail and Enhanced Bus (BRT)</td>
<td>Weekday evenings 6 PM to 11 PM and Saturday</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Rail and Enhanced Bus (BRT)</td>
<td>Night after 11 PM</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Rail and Enhanced Bus (BRT)</td>
<td>Sundays and Holidays</td>
<td>60 minutes</td>
</tr>
<tr>
<td>SkyRide</td>
<td>3 AM to 1 AM daily</td>
<td>60 minutes</td>
</tr>
</tbody>
</table>

For **Regional bus routes and rail service** the standard is based on passengers per trip and varies by time of day.

Routes that do not meet the minimum service frequency standard as well as the ridership performance standard (minimum passengers per hour or specific trip ridership standard) are identified as candidates for marketing/promotion or service changes. If service changes and/or promotional efforts do not improve productivity, the route may be eliminated. Routes where 60% or more of the riders are transit dependent have a lower productivity threshold, and service decisions also consider impacts on ADA service.

Source: RTD Service Development Policies and Standards (July 22, 2016), Table 1, p. 5 and RTD East & I-225 Rail Corridors Preliminary Service Plan.
TRENDS BY SERVICE TYPE

- Rail lines carry about a third of the total ridership on all transit routes serving Denver, a percentage that has increased since 2010.
- Rail ridership increased by 30%, while service hours increased by 61%. This resulted in a 20% decline in productivity (boardings per hour).
- Regional/express routes are the only routes that improved productivity as a whole between 2010 and 2015.
- Opening of the West rail line in 2013 may have resulted in lower ridership on some downtown local bus routes, such as 9 (West 10th) and 16L (West Colfax) that closely parallel the rail line. Ridership did increase on some downtown local routes, particularly 15L (East Colfax).

Performance of Transit in Denver by Class, 2010 and 2015

<table>
<thead>
<tr>
<th>SERVICE CLASS</th>
<th>BOARDINGS</th>
<th>% OF BOARDINGS (or % change)</th>
<th>SERVICE HOURS</th>
<th>% OF SERVICE HOURS (or % change)</th>
<th>PRODUCTIVITY (boardings per service hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crosstown Local</td>
<td>19,997,000</td>
<td>30%</td>
<td>692,000</td>
<td>44%</td>
<td>28.90</td>
</tr>
<tr>
<td>Downtown Local</td>
<td>24,902,000</td>
<td>37%</td>
<td>693,000</td>
<td>44%</td>
<td>35.93</td>
</tr>
<tr>
<td>Regional/Express</td>
<td>1,899,000</td>
<td>3%</td>
<td>57,000</td>
<td>4%</td>
<td>33.32</td>
</tr>
<tr>
<td>Light Rail</td>
<td>19,832,000</td>
<td>30%</td>
<td>140,000</td>
<td>9%</td>
<td>141.66</td>
</tr>
<tr>
<td>TOTAL</td>
<td>66,630,000</td>
<td>100%</td>
<td>1,582,000</td>
<td>100%</td>
<td>42.12</td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crosstown Local</td>
<td>20,094,000</td>
<td>28%</td>
<td>734,000</td>
<td>42%</td>
<td>27.38</td>
</tr>
<tr>
<td>Downtown Local</td>
<td>23,988,000</td>
<td>33%</td>
<td>741,000</td>
<td>42%</td>
<td>32.37</td>
</tr>
<tr>
<td>Regional/Express</td>
<td>2,103,000</td>
<td>3%</td>
<td>61,000</td>
<td>3%</td>
<td>34.48</td>
</tr>
<tr>
<td>Light Rail</td>
<td>25,519,000</td>
<td>36%</td>
<td>226,000</td>
<td>13%</td>
<td>112.92</td>
</tr>
<tr>
<td>TOTAL</td>
<td>71,704,000</td>
<td>100%</td>
<td>1,762,000</td>
<td>100%</td>
<td>40.69</td>
</tr>
<tr>
<td>Change (2010-2015)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crosstown Local</td>
<td>97,000</td>
<td>0%</td>
<td>42,000</td>
<td>6%</td>
<td>-5%</td>
</tr>
<tr>
<td>Downtown Local</td>
<td>-914,000</td>
<td>-4%</td>
<td>48,000</td>
<td>7%</td>
<td>-10%</td>
</tr>
<tr>
<td>Regional/Express</td>
<td>204,000</td>
<td>11%</td>
<td>4,000</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td>Light Rail</td>
<td>5,687,000</td>
<td>29%</td>
<td>86,000</td>
<td>61%</td>
<td>-20%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5,074,000</td>
<td>6%</td>
<td>180,000</td>
<td>11%</td>
<td>-3%</td>
</tr>
</tbody>
</table>

Note: Bus service data is for routes serving Denver. Source: RTD Annual Performance Reports
ON-TIME PERFORMANCE

- The chart below shows median weekday on-time performance for each route class (January through August 2016).
- On-time performance is highest for rail services, at 93%.
- Downtown Local has the lowest median on-time performance (approximately 80%).
- Regional/Express, Downtown Shuttles, and Crosstown Local operate on-time 87% of the time.

HOW IS “ON-TIME PERFORMANCE” DEFINED?

RTD’s service standards define “on-time” for fixed-route service as arriving at a stop no more than one minute early and not more than five minutes after the scheduled time. On-time performance of 90% for a particular route means that a route hit 90% of its timepoints on-time.

On-Time Performance for Transit Service in Denver, 2016

Note: Bus service data is for routes serving Denver.
Source: RTD Route-Level Performance Data, 2016
OPERATING COST

- In 2015, bus routes represented 57% of total transit operating costs for rail lines and Denver fixed-route bus service. Among all RTD services in the region, fixed-route bus accounts for approximately 59% of overall operating costs.
- Local fixed-route bus service accounts for approximately half of transit operating costs, both in Denver and regionally.

HOW IS “OPERATING COST” DEFINED?

The sum of all recurring costs (e.g., labor, fuel, etc.) that can be associated with the operation and maintenance of the system during the period under consideration. Operating costs sometimes exclude fixed costs as depreciation on facilities and equipment. However, RTD’s hourly operating cost amortizes capital costs, i.e., spreads these costs out over the useful life of the capital item.

Note: Bus service data in the graphic at left is for routes serving Denver. The graphic at right represents costs for all RTD services. Source: RTD Annual Performance Report, 2015
STATE OF THE SYSTEM

FAREBOX RECOVERY
- Regional/express services recover a larger share (about a third) of their operating costs from fares than other services.
- Local bus service recovers slightly more than 20%, while rail recovers less than 20% of operating costs from fares.

COST EFFECTIVENESS
- In 2015, regional/express services that operate in Denver were the most expensive to operate per passenger (approximately $8 per passenger per trip), while rail service was slightly less expensive (just over $7 per trip).
- Local routes in Denver cost about $5 per trip to operate, while downtown shuttles were very cost effective at less than $1 per trip.
- Overall, RTD service costs approximately $6 to operate per passenger carried (all services), and $5 per trip for services in Denver.

Farebox Recovery (Regional), 2015

Cost per Passenger (Denver and Regional Services), 2015

Note: RTD operating costs include depreciation (spreading out capital costs such as vehicles over their useful life).
Trends Influencing Transit Ridership

Transit ridership is affected by many different factors. These charts compare ridership trends over the past two decades in relation to other important influences on transit demand: employment, population, and fuel prices.

**POPULATION AND EMPLOYMENT**

Population and employment in the Denver region increased steadily from 1999 through the Great Recession in 2008. After one year of decline or no growth, population and employment began to increase again in 2011, with intensifying population growth in recent years. Transit ridership also increased dramatically between 1999 and 2008, but declined with employment during the recession. Ridership returned to its previous level in 2014, before declining slightly in 2015. Given recent population growth, regional boardings per capita declined to the lowest level since 2008; however, this is still higher than historical levels.

**GAS PRICES**

Fuel costs can be a significant factor in a person’s choice of whether to drive or use transit or other non-driving modes. Ridership increased along with fuel prices between 1999 and 2008, and declined along with fuel prices (as well as employment) following a recession in 2001 and the Great Recession in 2008. Gas prices peaked in 2012 but have been declining in recent years to approximately the level following the 2008 recession (in terms of actual prices as well as inflation-adjusted cost). The recent decline in fuel prices may be one factor in the slight decline in regional transit ridership between 2014 and 2015.

HOW DOES DENVER COMPARE?

Peer Cities

The State of the System report also looks at how transit performs in cities similar to Denver. Although each city and transit system are unique, this analysis provides opportunities to identify both where transit is working well and potential areas for improvement. The eight peers listed at right were selected because they match Denver most closely or are applicable in one or more areas. Factors used to select the cities include statistics like population and employment within the primary city, revenue hours per capita, operating cost per capita, and qualitative considerations like modes operated or city-transit agency structure. Seattle is closest to Denver in both city population and service area population. While Washington D.C. is similar to Denver in terms of the city population, the WMATA service area population is the largest of the peer group.

The map on the following page shows the locations of these peers and the proportion of revenue service provided by bus and rail modes. Portland, Salt Lake City, and Atlanta each provide approximately a quarter of their service using rail modes, similar to Denver. Seattle, Minneapolis, and Charlotte provide smaller shares of rail service. Each of these three cities have launched rail service relatively recently—Minneapolis in 2004, Charlotte in 2007, and Seattle in 2009—and all are pursuing light rail expansion plans. Washington D.C. has the greatest emphasis on rail service of any peer due to its extensive Metro system.

Peer City Summary

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Denver</td>
<td>Regional Transportation District (RTD)</td>
<td>682,545*</td>
<td>2,876,000</td>
</tr>
<tr>
<td>Atlanta</td>
<td>Metropolitan Atlanta Rapid Transit Authority (MARTA) &amp; Georgia Regional Transportation Authority (GRTA)</td>
<td>463,875</td>
<td>1,697,633</td>
</tr>
<tr>
<td>Austin</td>
<td>Capital Metro</td>
<td>931,840</td>
<td>1,079,995</td>
</tr>
<tr>
<td>Charlotte</td>
<td>Charlotte Area Transit System (CATS)</td>
<td>827,121</td>
<td>1,098,944</td>
</tr>
<tr>
<td>Minneapolis</td>
<td>Metro Transit</td>
<td>410,935</td>
<td>1,843,207</td>
</tr>
<tr>
<td>Portland</td>
<td>TriMet</td>
<td>632,187</td>
<td>1,542,044</td>
</tr>
<tr>
<td>Salt Lake City</td>
<td>Utah Transit Authority (UTA)</td>
<td>192,660</td>
<td>1,883,504</td>
</tr>
<tr>
<td>Seattle</td>
<td>King County Metro &amp; Sound Transit</td>
<td>684,443</td>
<td>2,873,505</td>
</tr>
<tr>
<td>Washington, DC</td>
<td>Washington Metro Area Transit Authority (WMATA)</td>
<td>672,228</td>
<td>3,719,567</td>
</tr>
<tr>
<td>Peer Average</td>
<td></td>
<td><strong>601,911</strong></td>
<td><strong>1,967,300</strong></td>
</tr>
</tbody>
</table>

The data is from 2014. The revenue hours do not reflect the increased service on Seattle’s Link Light Rail after the extension to the University of Washington in March 2016.

Peer data is limited to bus, trolley bus, commuter bus, light rail, and heavy rail modes. Demand response, vanpool, streetcar, commuter rail, hybrid rail, and other fixed-guideway modes are not included in the analysis.

Bus and Rail Revenue Hours for Transit Systems in Peer Cities, 2014

Revenue Hours of Service
Proportionally sized by total revenue hours

Notes:
Bus includes standard bus, trolley bus, and commuter bus.
Rail includes heavy rail and light rail. Streetcar, commuter rail
and other fixed-guideway modes are not included.
Seattle incorporates data from King County Metro and Sound
Transit. Atlanta incorporates data from Metropolitan Atlanta
Rapid Transit Authority (MARTA) and Georgia Regional
Transportation Authority (GRTA).
Source: National Transit Database, 2014
Peer Comparison

SERVICE AREA CHARACTERISTICS AND TRANSIT USE

- RTD’s service area is among the largest in the peer group, comparable to the Seattle region (King County Metro and Sound Transit).

- Represented by the size of each circle on the chart on page 39, regional transit boardings per capita in the Denver region (with nearly 36 annual boardings per person) are in the middle of the peer group, higher than only the Salt Lake City, Charlotte, and Austin regions. Considering only boardings at transit stops and stations within the city of Denver, there are 80 boardings per capita.*

DATA SOURCES AND METHODOLOGY NOTES

- The data in this section is from the National Transit Database (NTD) for 2014, the most recent year available, and historical years. The data is for individual transit agencies, so comparisons are for the Denver region, rather than the City of Denver (unless specifically noted).

- “Bus” includes bus, trolley bus, and commuter bus modes. “Rail” includes light rail and heavy rail modes. Demand response, vanpool, streetcar, commuter rail, hybrid rail, and other fixed-guideway modes are not included. While RTD service currently includes two rail lines classified as commuter rail, these services opened in 2016 and are not included in this data.

- In some cases, RTD uses different metrics to evaluate service performance* than those used by the NTD, such as an hourly operating cost that includes amortized capital costs (e.g., vehicle purchase cost spread out over the useful life of the vehicle) and in-service vehicle hours instead of vehicle revenue hours (in-service hours do not include “deadhead” time, such as travel between a garage and the first stop on a route, or layover and schedule recovery time). To allow comparisons with other cities, this section uses the NTD definitions, thus the data in this section may not be directly comparable to data from RTD’s annual performance reports* that is presented earlier in this chapter.

* See [http://www.rtd-denver.com/ServiceDevelopment.shtml](http://www.rtd-denver.com/ServiceDevelopment.shtml) for additional information

*City of Denver boardings based on January 2016 bus boardings and January – April 2016 rail boardings, and City and County of Denver population from the American Community Survey, 2015, 1-Year Estimate.
Regional Service Area Size, Population, and Transit Boardings per Capita, 2014

Transit Performance

Total bus and rail ridership in the Denver region is over 100 million annual riders, slightly more than the Minneapolis and Portland regions and somewhat lower than the Atlanta and Seattle regions.

- Buses serve the majority of trips in the Denver region, and the level of bus ridership is most comparable to the Minneapolis, Atlanta, and Portland regions.
- Rail serves a substantial share of trips, most similar to the Salt Lake City, Minneapolis, and Portland regions, as well as Seattle, where expansion of the Link light rail system in 2016 is not reflected in this data.
Productivity measures the number of transit riders relative to the total number of hours a bus or rail vehicle is in service. Light rail typically carries more passengers per hour because each rail vehicle (or a train comprised of multiple rail cars) has higher passenger capacity than a bus.

- Productivity on both bus and rail service is lower than the peer group, with the exception of bus service in the Salt Lake City region.

- There is a greater disparity between rail productivity than bus productivity relative to the peer group. Bus productivity in the Denver region is 22% lower than the Salt Lake City region. Rail productivity in the Denver region is 32% lower than the Salt Lake City region and 44% lower than the Portland region.

- Washington, D.C. and Atlanta have heavy rail (metro) systems, which contributes to the high productivity on rail services in these regions.

Source: National Transit Database, 2014
**Operating cost per hour** is a measure of cost efficiency, and it describes the average cost of operating each hour that a transit bus or rail vehicle is in service.

- The bus cost per hour in the Denver region is in the middle of the peer group, similar to the Atlanta and Austin regions.

- The rail cost per hour is among the lowest (more cost-efficient) of the peer group, similar to the Salt Lake City and Minneapolis regions.

- The higher cost per hour of rail service in the Atlanta and Washington, D.C. regions reflects that these are heavy rail (metro) systems with very high passenger capacity; as noted above, these systems are also the most productive.
Operating cost per trip measures the average cost of serving each passenger trip carried on transit in the Denver region.

- The cost per trip carried on bus service is fairly close to the median cost among the peer group, and most of the peers have similar average costs.
- The rail cost per trip is more dispersed, and Denver’s cost is higher than most of the peers.

The costs reported here based on the National Transit Database do not include capital costs. Operating cost data presented above, from RTD’s annual performance reports, include amortized capital costs, e.g., bus purchase cost spread over the useful life of a vehicle.

Source: National Transit Database, 2014
**Operating speed** measures how fast transit runs, on average, based on the number of miles of service provided divided by the number of service hours.

- The average speed of the Denver region’s bus service (13 miles per hour) is in the top tier among the peer group.
- The average speed of rail service (17 miles per hour) is in the middle of the peers that operate light rail service, though notably slower than the heavy rail systems in the Atlanta and Washington, D.C. regions.

![Regional Operating Speed, 2014](chart)

Source: National Transit Database, 2014
**Ridership and service trends** over the past five years (2010-2014) indicate how ridership and service hours have recovered in the years since the 2008 recession.

- Overall transit ridership in the Denver region has increased by approximately 7%. Most of this growth was on the rail system (31%); bus ridership increased by less than 1%. Overall ridership growth was similar to the Minneapolis region, but lower than the Seattle, Salt Lake City, and Charlotte regions.

- Total revenue service hours in the Denver region increased by 13%, primarily due to new rail service. The increase was fourth highest among the peer group behind the Washington, D.C., Salt Lake City, and Minneapolis regions. All peers increased the amount of service provided, driven by new services and, in some cases, restoring service that was cut during the economic downturn.
IS TRANSIT COMPETITIVE WITH DRIVING?

- Based on transit and driving times for sample travel patterns in Denver, a transit trip would take 1.5 to 3 times as long as driving.

- Transit trips that did not require a transfer were generally the most competitive (only 1.5 to 2.3 times longer).

- Transit was also the most competitive where a driving trip experienced five or more minutes of delay due to congestion.

- Transit trips on light rail are more competitive even when they included a transfer between routes or lines. Light rail often runs in its own right-of-way and is less affected by congestion.

- Several of the trips that were less competitive by transit involved transfers to/from less frequent routes that incurred longer wait times. Passengers are more sensitive to time spent waiting than time on-board transit. Wait time is also less of a factor on longer trips.

- Based on a comparison to two of the peer cities, relative transit travel times in Denver are fairly comparable to Salt Lake City (transit was 1.5 to 2.4 times longer than median driving times), but less competitive with driving than in Seattle (1.1 to 1.7 times longer than median driving times).

### Travel Time Comparison (Table)

<table>
<thead>
<tr>
<th>Trip</th>
<th>Trip Origin</th>
<th>Trip Destination</th>
<th>How many times longer on transit?</th>
<th>How many more minutes on transit?</th>
<th>Which RTD routes are involved?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Villa Park</td>
<td>Denver Tech Center</td>
<td>1.5</td>
<td>12</td>
<td>W, E</td>
</tr>
<tr>
<td>2</td>
<td>Harvey Park</td>
<td>University of Denver</td>
<td>1.5</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>North Park Hill</td>
<td>Auraria Campus</td>
<td>1.5</td>
<td>11</td>
<td>43</td>
</tr>
<tr>
<td>4</td>
<td>Speer</td>
<td>Union Station</td>
<td>1.6</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Chaffee Park</td>
<td>University of Denver</td>
<td>1.6</td>
<td>16</td>
<td>19, E</td>
</tr>
<tr>
<td>6</td>
<td>Elyria Swansea</td>
<td>Auraria Campus</td>
<td>1.7</td>
<td>11</td>
<td>48</td>
</tr>
<tr>
<td>7</td>
<td>Montbello</td>
<td>Union Station</td>
<td>1.9</td>
<td>20</td>
<td>121, A</td>
</tr>
<tr>
<td>8</td>
<td>East Colfax</td>
<td>Cherry Creek</td>
<td>2.0</td>
<td>16</td>
<td>15L, 24</td>
</tr>
<tr>
<td>9</td>
<td>Barnum</td>
<td>Auraria Campus</td>
<td>2.3</td>
<td>15</td>
<td>3, F</td>
</tr>
<tr>
<td>10</td>
<td>Berkeley/Sunnyside</td>
<td>Belmar</td>
<td>2.4</td>
<td>27</td>
<td>31, 1</td>
</tr>
<tr>
<td>11</td>
<td>Quebec &amp; Leetsdale</td>
<td>CU Anschutz Medical</td>
<td>2.4</td>
<td>22</td>
<td>73, 15</td>
</tr>
<tr>
<td>12</td>
<td>Gateway - Green Valley Ranch</td>
<td>Northfield/Stapleton</td>
<td>2.5</td>
<td>32</td>
<td>45, A, 88</td>
</tr>
<tr>
<td>13</td>
<td>Evans &amp; Monaco</td>
<td>Cherry Creek</td>
<td>2.9</td>
<td>25</td>
<td>65, 83L</td>
</tr>
</tbody>
</table>

Source: Auto and Bus travel times are from the Google Maps trips planner for a 5 PM start time. Transit travel times are scheduled times, which generally account for congestion, and auto travel times are actual times including congestion. Transit travel time includes transfer/waiting time (if needed) but not walking time at either end of the trip. The routes provided the shortest total travel time in the Google Maps trip planner for the 5 PM departure time. A broad set of origins and destinations were sampled for this analysis; the comparisons included in the table and map are intended to represent a variety of geographies, modes, trip lengths, and transit travel time relative to driving.
Travel Time Comparison (Map)

<table>
<thead>
<tr>
<th>Trip</th>
<th>Trip Origin</th>
<th>Trip Destination</th>
<th>How many times longer on transit?</th>
<th>How many more minutes on transit?</th>
<th>Which RTD routes are involved?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Villa Park</td>
<td>Denver Tech Center</td>
<td>1.5</td>
<td>12</td>
<td>W, E</td>
</tr>
<tr>
<td>2</td>
<td>Harvey Park</td>
<td>University of Denver</td>
<td>1.5</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>North Park Hill</td>
<td>Auraria Campus</td>
<td>1.5</td>
<td>11</td>
<td>43</td>
</tr>
<tr>
<td>4</td>
<td>Speer</td>
<td>Union Station</td>
<td>1.6</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Chaffee Park</td>
<td>University of Denver</td>
<td>1.6</td>
<td>16</td>
<td>19, E</td>
</tr>
<tr>
<td>6</td>
<td>Elyria Swansea</td>
<td>Auraria Campus</td>
<td>1.7</td>
<td>11</td>
<td>48</td>
</tr>
<tr>
<td>7</td>
<td>Montbello</td>
<td>Union Station</td>
<td>1.9</td>
<td>20</td>
<td>121, A</td>
</tr>
<tr>
<td>8</td>
<td>East Colfax</td>
<td>Cherry Creek</td>
<td>2.0</td>
<td>16</td>
<td>15L, 24</td>
</tr>
<tr>
<td>9</td>
<td>Barnum</td>
<td>Auraria Campus</td>
<td>2.3</td>
<td>15</td>
<td>3, F</td>
</tr>
<tr>
<td>10</td>
<td>Berkeley/Sunnyside</td>
<td>Belmar</td>
<td>2.4</td>
<td>27</td>
<td>31, 1</td>
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<td>11</td>
<td>Quebec &amp; Leetsdale</td>
<td>CU Anschutz Medical</td>
<td>2.4</td>
<td>22</td>
<td>73, 15</td>
</tr>
<tr>
<td>12</td>
<td>Gateway - Green Valley Ranch</td>
<td>Northfield/Stapleton</td>
<td>2.5</td>
<td>32</td>
<td>45, A, 88</td>
</tr>
<tr>
<td>13</td>
<td>Evans &amp; Monaco</td>
<td>Cherry Creek</td>
<td>2.9</td>
<td>25</td>
<td>65, 83L</td>
</tr>
</tbody>
</table>

Source: Auto and Bus travel times are from the Google Maps trips planner for a 5 PM start time. Transit travel times are scheduled times, which generally account for congestion, and auto travel times are actual times including congestion. Transit travel time includes transfer/waiting time (if needed) but not walking time at either end of the trip. The routes provided the shortest total travel time in the Google Maps trip planner for the 5 PM departure time. A broad set of origins and destinations were sampled for this analysis; the comparisons included in the table and map are intended to represent a variety of geographies, modes, trip lengths, and transit travel time relative to driving.
Transit circulation in downtown Denver is organized around the 16th Street Mall, which connects the Union Station and Civic Center Transit Centers with the Free MallRide shuttle that arrives as often as every 3 minutes (90 seconds at peak times). The Free MetroRide shuttle also connects Union Station and Civic Center, running along 18th and 19th Streets during peak hours. Rail lines serve the west end of downtown at Union Station and operate through the central part of downtown along Stout and California Streets, intersecting with the 16th Street Mall. Local bus lines enter downtown from all directions but are concentrated on 15th and 17th Streets.

Downtown Transit Facilities

**UNION STATION**

Union Station is the regional transit center for the Denver area, providing bus, light rail, commuter rail, and intercity services. Average weekday ridership includes 13,300 boardings for buses and 5,280 boardings for light rail. The station was re-opened in May 2014 after an extensive renovation and construction of new rail lines. A 22-gate underground concourse provides stops for 16 bus routes. Platforms for rail lines A, B, C, E, and W, as well as Amtrak’s California Zephyr, are located at street level.
CIVIC CENTER STATION

Civic Center Station is a major regional transit center that serves downtown and central Denver neighborhoods. The station serves 18 bus routes with approximately 15,000 boardings per day.

Starting in summer 2016, the Civic Center Station is being renovated to include a new terminal building, nine bus bays, a bus ramp extension connecting Broadway to Lincoln, and a view of the State Capital from the 16th Street Mall. The station is expected to re-open by late 2017 or early 2018.
Downtown Rail Services

All of Denver’s rail lines terminate in Downtown Denver.* Light rail serves downtown from the south, and commuter rail serves downtown from the north and east. Light rail service is provided on Welton Street and the Stout/California Street couplet, as well as on the west side around the Auraria Campus to Union Station. The D Line is the only rail line that provides service through downtown, although this service only extends eight blocks northeast of the downtown boundary; the planned L Line would run through the middle of downtown, extending light rail to the 38th & Blake A Line station. Rail service on the Stout/California couplet operates in contraflow lanes, against the flow of automobile traffic in a separated guideway.

Downtown Bus Operations

Bus service is provided on many downtown streets. Most routes operate along 15th and 17th Streets serving groups of stops (denoted as X, Y, and Z) in a “skip-stop” pattern (see callout on p. 52). Bus routes also serve other corridors including Colfax Avenue, Stout/California Streets, 20th Street, and Blake/Market Streets.

Civic Center Transit District Plan

The Civic Center Transit District Plan is a long-term visioning process to identify options to revitalize the area surrounding Civic Center Station as a downtown hub. The plan includes a vision that supports transit operations, multimodal connectivity, opportunities to encourage economic development, and enhancements to the public realm. The plan identifies strategies to develop a 20,000 square foot parcel along the south side of the station.

* When the I-225 Rail (R) Line through Aurora opens in late 2016, it will become the first rail line that does not provide direct service to/from downtown Denver.
Free Downtown Shuttles

FREE MALLRIDE

The Free MallRide service began in 1982 as part of the opening of the 16th Street Mall. Transit hubs at either end of downtown (originally Market Street Station and Civic Center Station) were connected with the shuttle to reduce bus volumes through downtown—a reduction of approximately 600 bus trips per day. The 16th Street Mall is a pedestrian-oriented street, with dedicated transit lanes for the Free MallRide service between the sidewalk and a median with café seating and other amenities. The combination of using electric buses for the shuttle and the restriction of private vehicles from 16th Street reduces the ambient noise and improves the pedestrian experience along the corridor. Service operates from 5:00 AM to 1:20 AM each weekday (service begins 30 and 90 minutes later on Saturdays and Sundays, respectively). Service operates every 15 minutes or more frequently (sometimes as often as every three minutes) during the day and every 90 seconds at peak times. The Free MallRide shuttle carries over 44,000 passengers on an average weekday (approximately 13.5 million passengers annually) and operates 60,000-70,000 annual service hours. It is one of RTD’s most productive and cost-efficient services. Ridership activity is consistently strong along the entire route. Civic Center and Union Station are the busiest stops.

16th Street Free MallRide

Source: RTD Annual Performance Reports.
STATE OF THE SYSTEM

FREE METRORIDE

The Free MetroRide shuttle is a weekday peak-only service connecting Union Station and Civic Center Station via 18th and 19th Streets with service every four to six minutes. The Free MetroRide service began in May 2014 with the opening of the Union Station Transit Center as a way for people to make faster connections between Union and Civic Center Stations with fewer stops than the Free MallRide shuttle and to reduce demand on that service. Free MetroRide has “floating bus stops” that provide bicycle access on the right side of the bus stop platform to reduce conflicts with bicyclists, as well as segments with transit-only lanes that are in effect during the peak hour. In 2015, the first full year of operation for which data is available, Free MetroRide carried almost 600,000 passengers, an average of over 2,000 per weekday. The highest ridership stops are at both ends of the line.

SKIP-STOP BUS OPERATIONS

The term “skip-stop” refers to a bus stop pattern in which stops are located on every block along a corridor. However, individual routes skip most of the stops, serving only specific stops (usually stops with a designated number or letter, X-Y-Z in the case of RTD’s skip-stop operations along 15th and 17th Streets in downtown Denver).

This pattern is often used when many routes are placed along a corridor, and individual stops are not be able to accommodate the full load or demand for all the bus lines. This approach diffuses the number of people boarding buses along a corridor and may improve bus speeds if skip-stop patterns are used in conjunction with bus-only lanes alongside bus bays.
HOW DO OTHER CITIES COMPARE?

Seattle

Transit service in Downtown Seattle is focused on the Third Avenue Transit Spine, which carries 2,500 buses and 40,000 passengers per day. Third Avenue is transit-only during peak hours and has one lane for buses to load/unload passengers and another lane for passing. The City of Seattle and King County Metro are planning bus stop and pedestrian improvements to make the corridor more inviting. Buses also operate in the Downtown Seattle Transit Tunnel, which opened in 1990 to reduce bus traffic along downtown streets; the tunnel will be closing to buses as Seattle expands its light rail system. A downtown streetcar is planned to provide additional connectivity from north to south, operating in an exclusive lane along First Avenue, connecting the First Hill Streetcar with the South Lake Union Streetcar.

Atlanta

Downtown Atlanta is served by MARTA buses and trains. The Red and Gold lines run north-south and intersect the east-west Blue and Green lines at the Five Points Station, downtown Atlanta’s regional transit hub. Downtown bus service is concentrated along Forsyth and Peachtree Streets on either side of the station.
Austin

Austin’s downtown transit service is focused along a north-south spine along the Lavaca/Guadalupe couplet on the west side of the Texas State Capitol and University of Texas campus. Some routes diverge to provide service on a parallel couplet (San Jacinto/Trinity) that runs on the east side of the Capitol and University. Most bus lines operate north-south, though the few routes that cross downtown Austin east-west do not use a consistent route pattern. Lavaca and Guadalupe streets have business-access and transit (BAT) lanes along the corridor. MetroRapid, a limited-stop, frequent bus service with its own unique branding, also operates along the Lavaca/Guadalupe couplet connecting north and south Austin through the University and downtown. MetroRail, Austin’s commuter rail service, terminates in downtown Austin near the convention center—five blocks east of Lavaca Street.
Portland

Portland’s Transit Mall is the focus of transit service in downtown Portland. The Transit Mall is a north-south corridor along 5th and 6th Avenues that provides service for many bus lines and three of TriMet’s MAX Light Rail lines; two additional east-west lines cross the Transit Mall on Yamhill and Morrison Streets. Buses use skip-stop operations at four sets of stops. The three-lane roadway provides one lane for private vehicles and bicycles, one lane for through-running transit vehicles, and a third lane for buses and trains to stop at their respective stops and stations. Originally constructed in 1977, the Transit Mall was redesigned in 2009 to add light rail and reintroduce automobile traffic to increase street life and activity. Light rail service was added to the Transit Mall to increase downtown light rail frequency and capacity; TriMet also increased the separation between stop groups to improve transit travel time through downtown, as well as other amenities and elements that enhanced the public realm, such as public art, new transit shelters, and real-time arrival displays. A north-south streetcar line operates a few blocks to the west, connecting Northwest Portland, Portland State University, and the developing South Waterfront neighborhood, which includes an Oregon Health Sciences University campus. In 2012, streetcar service was expanded to the Central Eastside, and became a full loop in 2015 after the opening of the Tilikum Crossing—a transit, bicycle, and pedestrian-only bridge.
Minneapolis

Local bus service in downtown Minneapolis is concentrated along the Nicollet Transit/Pedestrian Mall. Constructed in 1968, the mall was designed to catalyze downtown investment. Beginning in 2009, express lines were moved from Nicollet to Marquette Avenue and 2nd Avenue S (“Marq2”)—where they use dual transit lanes and skip-stop operations. The Nicollet Mall is undergoing a rehabilitation project to install new sidewalks, reconstruct the roadways and install new streetlights, landscaping, and street furniture. Completion is expected in late 2017. The Green and Blue light rail lines run perpendicular to the Nicollet Mall and Marq2 along 5th Street, providing service to St. Paul and the Mall of America. Local transit service is provided on many streets in downtown.
<table>
<thead>
<tr>
<th>CITY</th>
<th>DEDICATED TRANSIT LANES AND BUS OPERATIONS</th>
<th>RAIL, BRT, OR DOWNTOWN CIRCULATOR SERVICE</th>
<th>PEDESTRIAN REALM AND AMENITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denver</td>
<td>Dedicated lanes on 16th Street Mall, Stout/California Streets (light rail), and Broadway/Lincoln. Three stop groups along 15th and 17th Streets.</td>
<td>Rail lines serve Union Station at the west end of downtown and run through the center of downtown on Stout/California Streets. Free MallRide (16th St) and Free MetroRide (18th/19th St) connect Union Station and Civic Center.</td>
<td>16th Street Mall is a pedestrian-oriented street with dedicated transit lanes, café seating, and other amenities. Mall Shuttles are also in the process of being replaced with zero-emission vehicles.</td>
</tr>
<tr>
<td>Atlanta</td>
<td>Heavy rail (metro) lines are grade-separated and exclusive for transit.</td>
<td>Intersecting heavy rail (metro) lines and a streetcar in mixed traffic provide local circulation.</td>
<td>Pedestrian plaza adjacent to downtown rail station provides venue for local events.</td>
</tr>
<tr>
<td>Austin</td>
<td>Business-access and transit lanes on bus spine (Lavaca and Guadalupe Streets).</td>
<td>MetroRail commuter rail line terminates in the southeastern part of downtown; MetroRapid branded frequent bus runs through downtown.</td>
<td>MetroRapid has branded, enhanced bus shelters with real-time arrival information.</td>
</tr>
<tr>
<td>Portland</td>
<td>Two north-south transit lanes in each direction on Transit Mall with four stop groups, and dedicated lanes for intersecting east-west light rail lines.</td>
<td>Light rail and streetcar both serve downtown.</td>
<td>Transit Mall includes public realm enhancements, including public art and distinctive transit shelters.</td>
</tr>
<tr>
<td>Minneapolis</td>
<td>Exclusive lanes on Nicollet Mall and on “Marq2” (Marquette Ave and 2nd Ave S), with stop groups on Marq2 for express routes.</td>
<td>Metro Transit’s two light rail lines provide service along 5th Street, perpendicular to the Nicollet Mall and “Marq2”.</td>
<td>Nicollet Mall is undergoing a rehabilitation project to install new sidewalks, streetlights, landscaping, and furniture.</td>
</tr>
<tr>
<td>Seattle</td>
<td>Bus/rail Transit Tunnel, exclusive peak period transit use of 3rd Ave transit spine, and transit-only lanes on 2nd and 4th Aves.</td>
<td>Link Light Rail runs through downtown in Transit Tunnel; two existing streetcar lines with a planned downtown streetcar connecting both lines. RapidRide bus service through downtown.</td>
<td>Planned bus stop and public realm improvements along 3rd Avenue transit spine.</td>
</tr>
</tbody>
</table>
DENVER MOVES
Transit
STATE OF THE SYSTEM

Image: Nelson Nygaard
[I wish] that the bus will come at the exact time it says, not earlier or later.

– Survey Participant at Auraria Fall Fest
TRANSIT ACCESS AND PROGRAMS

Transit access is influenced by factors related both to the physical design of our city and the programs that increase awareness of transportation options and provide access to reliable and real-time information. While the City and County of Denver (CCD) currently does not operate transit service in the city, CCD can play an important role in improving access to the transit system and enhancing the overall passenger experience. This chapter discusses the following factors that influence transit access:

- **Street Connectivity**: Well-connected streets make it easier and faster for pedestrians, cyclists, and drivers to access transit.

- **Pedestrian Facilities**: Safe and comfortable pedestrian facilities (e.g., sidewalks, crosswalks, pathways, etc.) can be a deciding factor for transit riders when choosing whether or not to take transit at all, especially for those with the option to drive.

- **Bike Connections**: Safe and direct bicycle facilities (e.g., cycle tracks, bike lanes, bike parking, etc.) that provide access to transit encourage multimodal trips and bicycling for first/last mile connections.

- **Shared Mobility Options**: Shared mobility options, such as bike share, car share, and on-demand ride services, can provide first/last mile solutions for transit riders.

- **Park-n-Rides**: Park-n-rides provide all-day parking for transit riders who need to travel by car for a portion of their trip.

- **Programs**: Outreach and educational programs can help promote existing services, educate people about the transit system, and encourage transit use.

- **Fares**: Easy to use fare systems, including monthly passes and mobile ticketing, can improve access to transit. High transit costs can make transit access difficult, particularly for people with lower incomes.

- **Information**: Readily available, easy to understand, and real-time information about the transit system improves the passenger experience and can help to make the system more accessible, particularly for infrequent riders.
Where do people access transit in Denver?

- Rail boardings are highest in downtown Denver, where all lines begin; boardings outside of downtown tend to be highest at park-n-ride lots.

- Outside of downtown, bus boardings are highest along E Colfax Avenue, Colorado Boulevard, North Broadway (approximately I-25 to Blake Street), and Federal Boulevard. These corridors also provide some of the most frequent bus service in the city.
Where do people access transit downtown?

- Rail boardings in downtown are highest at Union Station and on 16th and 18th Streets (at California and Stout Streets).

- In addition to Union Station and Civic Center, bus boardings are concentrated primarily along 16th Street (Free MallRide shuttle) and 15th and 17th Streets.

Average Weekday Boardings in Downtown Denver

Note: Boardings for the 18th/Stout, 18th/California, 16th/Stout, and 16th/California light rail stations include travel in both directions.
STATE OF THE SYSTEM

STREET CONNECTIVITY

Well-connected streets provide shorter travel distances and make it easier and faster for pedestrians, cyclists, and drivers to access transit. When deciding whether to use transit, one of the most important factors people consider is the distance to a transit stop. What matters for the traveler is not the straight-line or “as the crow flies” distance but rather the actual walking distance using the available streets and paths. A lack of street connectivity—longer block lengths and fewer intersections per square mile—can make it less convenient to access transit and can deter people from using transit.

In Denver, streets become less connected further from downtown. Neighborhoods like Sunnyside, Capitol Hill, and Congress Park have a fine-grained street network that supports access to transit. Not surprisingly, these neighborhoods show a higher than average percentage of residents that commute by transit; this is likely due to a combination of connected streets, frequent transit service, and easy access to downtown (see Chapter 4 mode split by neighborhood map).

The importance of intersection density is highlighted in the map on the following page. The Capitol Hill neighborhood has 0.24 intersections per acre, compared to the Northeast Park Hill neighborhood that has only 0.11 intersections per acre. As shown in the inset graphics, the disconnected street network in Northeast Park Hill could more than triple the walk distance to transit.

Compared to other U.S. cities, Denver has relatively short blocks (see graphic at right). Denver’s blocks, on average, are 400’ x 260’, compared to Salt Lake City’s very large blocks that are 660’ x 660.’

Note: The 400’ x 260’ Denver block size represents downtown. The typical block outside of downtown is 660’ x 330’.
A well-connected, grid-like street network enables shorter and more direct walking connections and is easier to serve cost-effectively with transit.

A disconnected street network results in long walking distances and less efficient transit operations.

Intersection Density in the City of Denver

Data Sources: RTD, DRCOG, Colorado DOT, OpenColorado, ESRI
**PEDESTRIAN ACCESS TO TRANSIT**

Every transit rider is at some point a pedestrian. Whether they are dropped off at a park-n-ride or walk from their home to access transit, pedestrian facilities that connect to transit should promote a safe and accessible environment for all. Safe and comfortable pedestrian facilities can be a deciding factor for transit riders when choosing whether or not to take transit at all, especially for those with the option to drive. A quality pedestrian network includes well-marked and convenient crossings, sidewalks that are well-lit and buffered from traffic, and wayfinding that helps direct passengers to transit and destinations.

**Pedestrian Access to Transit Varies in Denver**

The pedestrian experience in Denver varies widely, from bustling Larimer Street downtown with shops, benches, and café seating, to Colorado Boulevard, a six-lane arterial in the Clayton neighborhood that lacks sidewalks and basic pedestrian amenities. Both streets provide important connections to transit, yet the experience walking along them is vastly different.

**The Platte River Bridge spans the South Platte River connecting Commons Park and the Commons West Apartments along the former 16th Street viaduct. The bridge provides a critical pedestrian connection between the Highland neighborhood and trains and buses at Union Station and downtown.**

**Bus stop on E. 6th Avenue that lacks sidewalk access and a concrete pad**
DENVER’S LIVING STREETS INITIATIVE

Motivated by the adoption of the Denver Complete Streets Policy in 2011, the Denver Living Streets Initiative (2014) identifies opportunities for Denver to build a multimodal street network; it supports the importance of an interconnected street network and connected grid to enable pedestrians to access transit and destinations. The “pedestrian realm” toolbox provides design guidance for sidewalk width, street furniture, lighting, trees and planters, and wayfinding to improve the pedestrian experience on all types of streets. The “roadway” toolbox highlights the importance of pedestrian, bicycle, and transit priority signals.

Larimer Street in downtown Denver is a bustling, pedestrian-friendly scene with café seating, wide sidewalks, and benches.

Significant streetscape improvements on Tennyson Street, between W 38th and W 44th Streets, transformed this neighborhood into a walk-friendly destination.

-Caption content from the Denver Living Streets Initiative (2014)
BICYCLE ACCESS TO TRANSIT

Safe and convenient bicycle facilities can provide a first/last mile connection for transit riders and increase the catchment area of transit service. Off-street facilities, such as secure parking and bike storage on transit, are essential amenities to make seamless connections between bicycling and transit.

- **Bicycle Access to Transit**: As of 2016, Denver has over 100 miles of multi-use paths, 147 miles of separated bike lanes (cycle tracks and bike lanes), and 48 miles of enhanced shared roadways. *Denver Moves: Bicycle and Pedestrian Connections* (2011) will add 270 miles of bicycle facilities, many of which will improve connections to transit. The Denver Bikeway Design Guidelines provide recommendations for special consideration at transit stops to manage transit-bike interactions. RTD’s *Bicycle Parking and Accessibility Plan* (2015) also provides a variety of policy, design, and program recommendations to improve safety, access, ease of use, and mobility for bicyclists. The focus area maps on pages 81 to 95 provide a more detailed look at bicycle connections to transit in Denver.

- **Bicycle Parking at Transit Stations**: RTD has approximately 300 bicycle parking racks at transit centers and park-n-rides across Denver.

- **Bicycles on Transit**: Bikes are allowed on light rail and commuter rail services. All RTD buses are equipped with two-bike racks on the front of the bus, except for the Free MallRide and Free MetroRide shuttles. On light rail, bicyclists are allowed to stand with their bikes against the rear or front of the light rail vehicle. On commuter rail, there are vertical bike storage racks in each car.

- **Bicycle Lockers**: RTD has 168 bicycle lockers available for rent at park-n-rides across Denver, of which about 40% are leased. The rental cost is $30 for a six-month lease with a one-time padlock fee of $20.

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"I would like to see more amenities for bicycles. It would help last-mile issues."  
- Denveright Community Visioning Workshop Participant (October 2016)
DENVER MOVES: BICYCLE AND MULTI-USE CONNECTIONS

Denver Moves: Making Bicycle and Multi-use Connections (2011 and updated in 2015) is an action-oriented plan that offers a toolbox of multi-use and bicycle facility types for Denver’s network. It specifically calls out improving bicycle and transit connections through the following actions:

- Create safe, comfortable corridors that link neighborhoods, parks, employment centers, business districts, transit hubs, and other destinations in all parts of Denver
- Implement design considerations to reduce friction with vehicle doors and/or transit stops
- Design grade-separated facilities that provide adequate connections to sidewalks, on-street bike lanes, and transit stops

Scoring criteria to prioritize projects include a score for facilities within a quarter mile of a living street or enhanced transit corridor.

The Cherry Creek Trail is a 42-mile bicycle and pedestrian trail that runs from the heart of downtown Denver southeast through the city along Cherry Creek to the Cherry Creek Reservoir. Approximately 12 miles of this trail are within the City of Denver.
STATE OF THE SYSTEM

SHARED MOBILITY

Shared mobility options like bike share, car share, and shared ride services (such as Uber and Lyft) are changing the face of transportation at an unprecedented rate. These options significantly improve the flexibility and convenience of transit by providing important first/last mile connections—or even a quick connection if you just missed the bus.

Shared Mobility Options in Denver

BIKE SHARE

Denver B-cycle—Denver’s bike share system—has a total of 700 bikes at 88 stations throughout ten central Denver neighborhoods: Downtown Denver, the Highlands, Capitol Hill, Uptown, Cherry Creek, Congress Park, City Park, Baker, and Washington Park. RTD and B-cycle are working together to promote bicycle and transit connections. RTD partnered with Denver B-cycle as a way to reduce demand for in- and on-vehicle bike storage and address first/last mile issues. B-cycle also has a fiscal sponsorship agreement with RTD that allows bike share stations to be built on RTD property. This sponsorship includes coordinated marketing efforts, such as including the RTD logo on some B-cycle bikes; 24-hour, flex, monthly, and annual passes are available.

According to the B-cycle 2015 Annual Report, 46% of B-cycle trips replaced a vehicular trip and 31% of B-cycle riders combine bike share with transit. B-cycle stations are shown on the focus area maps on pages 81 to 95.

CAR SHARE

Zipcar is a “standard” car share model that allows people to access a shared vehicle that is picked up and dropped off at a single location. There are 46 Zipcars available in Denver. Zipcar is available for $8 to $10 per hour.

car2go is available in downtown Denver, north to I-70, east to Monaco Parkway, west to Sheridan Boulevard, and south to E Yale Avenue. Unlike standard car share models, car2go is a point-to-point system that allows
members to access a shared vehicle at or near their trip origin and drop off
the vehicle near their destination. car2go is available for $0.41/minute or
$10/hour.

eGo CarShare is a local nonprofit car-sharing organization serving the Den-
verson-Boulder metro area. Partially funded by a CMAQ (Congestion Mitigation
and Air Quality) grant, eGo CarShare provides 20 types of vehicles at over
50 locations in Denver and Boulder. Hourly and per mile rates are available
depending on membership status.

Enterprise CarShare locations are centrally located in Denver—in neighbor-
hoods such Capitol Hill and Downtown—and are also available at Auraria
Campus, Regis University, University of Denver, and University of Denver, Iliff
School of Theology. Shared vehicles must be picked up and dropped off at
a single location. Some membership plans require a monthly payment while
others calculate cost with mileage and hourly rates.

Maven currently has 32 locations within Denver. Unlike car share models
such as Zipcar and Enterprise CarShare, Maven allows for one-way trips,
meaning members can pick up a shared vehicle at one location and drop it
off at a different designated station. Hourly rates start at $8 but vary de-
pending on the type of car selected.

Turo is another car-sharing service in Denver that allows people to share
their personal vehicle with others. Turo serves as the platform for car shar-
ing but relies on people to offer their own personal vehicles. Rates range
from $22/day up to $500/day depending on the type of car.

ON-DEMAND RIDE SERVICES

On-demand ride services are point-to-point transportation services that are
scheduled and paid for using an online application or platform, such as
smart phone apps. Three companies—Uber, Lyft, and FlitWays—operate in
the Denver region, providing local and regional connections. The following
page has more information about how transit agencies are partnering with
on-demand ride services companies to fill gaps in service and address first/
last mile challenges.

RIDESHARE

Carpool and vanpool programs are available through Way to Go, which offers
a free online ride-matching software at mywaytogo.org for carpools and
assistance with vanpool formation for groups of commuters that travel more
than 15 miles one way to work. In 2015, nearly 5,000 commuters registered
on mywaytogo.org. Way to Go has documented an increase in the number of
vanpools in recent years, from 101 in 2014 to 114 in 2015. The average
number of commuters participating in the vanpool program also increased
from 595 in 2014 to 643 in 2015. Way to Go also tracks carpool registrants
and vehicle miles saved by new carpool commuters. In 2015, new regis-
trants saved an estimated 693,959 vehicle miles traveled, a 29% increase
over 2014.¹


In July 2015, WalkDenver and BBC Research & Consulting, in partnership with Mile High Connects, produced The First and Last Mile Report. The report summarizes how first/last mile connections are currently funded in the Denver region and presents options for future funding (RTD and DRCOG are beginning first/last mile studies at this writing.)

Six focus groups and one online survey provided input on funding solutions for first/last mile connections. Key findings relevant to Denver include:

- 90% of regional stakeholders view first/last mile connections as very important
- 73% of regional stakeholders said major investments are needed
- 88% of survey respondents agree that cities and counties should have a role in funding these connections
- Local plans and policies influence the allocation of funding
- Dedicated revenue sources contribute to long-term success

Additionally, survey respondents ranked pedestrian facilities as the most important and most underfunded first/last mile improvement. This graphic shows the average rank for each desired investment. First/last mile connections related to sidewalks and other pedestrian infrastructure will be coordinated with the Denver Moves: Pedestrian and Trails plan.

Source: First and Last Mile Report, 2015
Transit Agency Partnerships with Ride Services Companies

Jurisdictions and transit agencies across the country are beginning to coordinate with on-demand ride services companies in a variety of ways, ranging from software collaborations to allocation of passenger loading space at transit stops (or other designated zones) to subsidies.

CENTENNIAL, CO

The City of Centennial, CO is partnering with Lyft to provide free rides to and from the RTD Dry Creek light rail station. The program is intended to improve access to the station and bring relief to the station’s park-n-ride lot, which has 235 parking spaces and operates at around 80% capacity. The six-month pilot program began in August 2016 and will cost an estimated $400,000. The City of Centennial contributed $200,000 and the Southeast Public Improvement Metropolitan District provided the other half of the cost. Free Lyft rides are available between 5:30 a.m. and 7:00 p.m. Monday through Friday. Passengers can book the ride using their smartphone either through the Lyft app or the Go Denver app. Those without a smartphone can call the City of Centennial and a city employee will help book the ride with Lyft.

DALLAS, TX

In October 2015, Lyft began its first official partnership with a transit agency, Dallas Area Rapid Transit (DART). The partnership allows people to access Lyft as a transportation option within DART’s mobile application. Through the application, a passenger can view the location of Lyft vehicles and request a ride, enabling an on-demand ride service. Lyft and DART made an agreement that gives people $5 off their first ten Lyft rides. DART also partnered with Uber and Zipcar to connect mobile apps. People who access the DART GoPass app have direct access to Uber, Lyft, and Zipcar mobile applications. DART riders have to arrange and pay separately for the ride share service.¹

SAN FRANCISCO, CA

A San Francisco non-profit, Livable City, partnered with Lyft to designate loading zones for ride share vehicles at the San Francisco regional commuter rail (CalTrain) station to promote the connection between ride sharing and transit.²

The City of Altamonte Springs, FL was the first city in the country to subsidize Uber rides to and from transit stations. Uber passengers starting or ending a trip at the Altamonte Springs SunRail station receive a 25% discount on their fare. Additionally, people traveling anywhere within the city limits via Uber have 20% of their fare paid by the city. The city hopes that this one-year pilot program will boost SunRail ridership, reduce traffic congestion, and provide a more affordable travel option for all residents and visitors. To receive the discount on their ride, people must access Uber using the mobile app and enter a promotional code. The City of Altamonte Springs, FL was the first city in the country to subsidize Uber rides to and from transit stations. Uber passengers starting or ending a trip at the Altamonte Springs SunRail station receive a 25% discount on their fare. Additionally, people traveling anywhere within the city limits via Uber have 20% of their fare paid by the city. The city hopes that this one-year pilot program will boost SunRail ridership, reduce traffic congestion, and provide a more affordable travel option for all residents and visitors. To receive the discount on their ride, people must access Uber using the mobile app and enter a promotional code. 

Livermore-Amador Valley Transit Authority (LAVTA) is the transit operator in Dublin, Livermore, and Pleasanton, CA. In September 2016, LAVTA began a one-year pilot project that promotes shared mobility as an alternative to a low-performing bus route. Transit riders in designated areas of Dublin can access local destinations via Uber, Lyft, or taxi and receive up to $5 off their ride. The City of Altamonte Springs, FL was the first city in the country to subsidize Uber rides to and from transit stations. Uber passengers starting or ending a trip at the Altamonte Springs SunRail station receive a 25% discount on their fare. Additionally, people traveling anywhere within the city limits via Uber have 20% of their fare paid by the city. The city hopes that this one-year pilot program will boost SunRail ridership, reduce traffic congestion, and provide a more affordable travel option for all residents and visitors. To receive the discount on their ride, people must access Uber using the mobile app and enter a promotional code. Livermore-Amador Valley Transit Authority (LAVTA) is the transit operator in Dublin, Livermore, and Pleasanton, CA. In September 2016, LAVTA began a one-year pilot project that promotes shared mobility as an alternative to a low-performing bus route. Transit riders in designated areas of Dublin can access local destinations via Uber, Lyft, or taxi and receive up to $5 off their ride. 

In September 2016, Massachusetts Bay Transportation Authority (MBTA) began a year-long pilot subsidizing Uber and Lyft rides for customers with disabilities. Those who qualify for the MBTA’s door-to-door service pay $2 for an Uber or Lyft ride and receive up to $13 from MBTA for the remainder of the trip. 

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TRANSIT FACILITIES & AMENITIES

Transit Stations

- Rail transit stations in Denver have the highest quality amenities, including shelters, wind screens, lighting, printed information, real-time information, trash cans, wayfinding, and bike parking (both racks and secure enclosures).

- There are limited bus transfer facilities in Denver outside of rail stations, and these have varying levels of facilities. The Federal/Evans and Ulster/Tufts (Denver Tech Center) Transfer Stations have on-street bus bays with benches, shelters, and printed information. The Centrepoint & Sable Transfer Station, located outside of Denver, is in an off-street facility with bus bays and shelters.

RTD Bus Stop Amenities Guidelines: Shelters

The minimum warrant for the placement of a shelter is 40 boardings per day at the stop. Shelters are prioritized at stops with the highest number of average daily boardings.

Electric Vehicle (EV) Charging Stations

- RTD has initiated an EV charging station pilot at the Central Park Station, with space for two vehicles to park. Customers must have a ChargePoint account and can only be parked at the EV Station if their vehicle is plugged in. RTD does not currently charge to use the EV station and plans to evaluate usage at this location before determining whether to implement EV charging at other locations.
Bus Stops and Amenities

Basic bus stop amenities consist of an ADA-accessible concrete pad and a stop pole and sign listing routes serving the stop, including a stop identifier (on the back of the sign) that can be used to find real-time information. High-quality bus stop amenities are similar to amenities at rail stations. The images to the right show examples of bus stops with varying levels of amenities. The sidebar explains RTD standards for stop amenities.

- Approximately 5\% of the over 3,000 RTD bus stops in Denver have shelters, not including shelters placed and maintained through advertising revenues under a City of Denver program.*

- Approximately 25\% of the over 500 bus stops in Denver with sufficient boardings to be eligible for a shelter have a shelter (see sidebar on previous page).*

*Based on RTD shelter maintenance inventory and/or 2015-2016 boarding data. Stops with shelters maintained by RTD represent less than 5\% of the over 3,000 bus stops in Denver. There are additional stops with shelters installed and maintained through a City of Denver advertising contract, but a comprehensive inventory of stops with these additional shelters is not available.
PARK-N-RIDES

Park-n-rides provide important connections for transit riders traveling to stops and stations from longer distances. RTD has a total of 87 park-n-rides, with 14 in the Denver city limits. The table at right shows the capacity and utilization rate for park-n-rides at light rail and bus stations in the Denver region, along with the number of bike lockers and bike racks at each station.

Park-n-rides to the south of Denver are much more heavily used than those to the west and east of the city, and park-n-rides along the W line are significantly underutilized. Decatur-Federal, Sheridan, and 38th/Blake have the lowest utilization rates. Englewood, Evans Station, I-25/Broadway, and Nine Mile stations also show notable differences. These locations likely have large numbers of riders that make other transit connections, walk, bike, or are dropped off at the station.

As of 2016, there are unleashed bike lockers at most park-n-rides (outside of downtown Denver).

The Park-n-Ride station at the Orchard light rail station has capacity to accommodate 48 vehicles. On average, 92% of those spaces are occupied.
Where is park-n-ride demand the highest?

- Park-n-rides are well used throughout Denver, providing important connections to transit.
- The largest park-n-rides are located along the rail lines to the east, west, and south of Denver.
- Park-n-rides to the south of Denver are among the most used in the region; the park-n-ride at Nine Mile Station has 1,225 spaces and is at 95% capacity.
- Park-n-rides to the west and east of Denver have significant capacity available.
DENVER FOCUS AREAS

To provide a more fine-grained look at access challenges and opportunities in Denver, the focus area maps and statistics on the following pages show barriers to transit, major bike facilities, bike share station locations, bus shelters, transit routes, and park-n-ride locations. The map at right provides a key to the focus area maps on the following pages, including the neighborhoods included in each.
NORTHWEST

- The Northwest focus area includes downtown Denver and the neighborhoods to the north and west.

- Bike share stations are plentiful in this area, particularly downtown.

- The South Platte River trail provides convenient bicycle and pedestrian access through downtown, however, this area is bisected by I-25 which can be a barrier for people riding bikes and walking.

- A fine-grained street network paired with access to frequent transit service close to downtown has resulted in average or higher than average transit use in most neighborhoods in this area.

Focus Area 1: Northwest

9% Transit Mode Share (Commute)
7% Transit Mode Share (All Trips)
### NORTHWEST SNAPSHOT

<table>
<thead>
<tr>
<th>Population Density</th>
<th>Employment Density</th>
<th>% Low Income</th>
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<tbody>
<tr>
<td>7.5K people/sq. mile</td>
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</table>

<table>
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<tr>
<th>% No Vehicles</th>
<th>Walk Score</th>
<th>Transit Score</th>
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<td>8%</td>
<td>70/100</td>
<td>53/100</td>
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<table>
<thead>
<tr>
<th>% Living within 1/4-mile of Bus</th>
<th>% Living within 1/4-mile of Frequent Bus</th>
<th>% Living within 1/2-mile of Rail</th>
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</thead>
<tbody>
<tr>
<td>91%</td>
<td>48%</td>
<td>23%</td>
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</tbody>
</table>

Population/employment: DRCOG, 2015. Low-income population: ACS, 2010-2014 5-year estimate. % of population for whom poverty status is determined, earning less than 150% of the federal poverty level. Households without access to a vehicle: ACS, 2010-2014 5-year estimate. WalkScore and TransitScore: describe walkability and transit usability, area-weighted averages of scores for each Denver neighborhood, from Denver Blueprint Community Profile and Center for Neighborhood Technology (CNT). Access to transit: population data from DRCOG, 2015; schedule and routing information, RTD GTFS Feed April 2016. Frequent service is defined as every 15 minutes all-day. For analysis and mapping purposes, frequent all-day bus service was classified based on an average frequency of 18.5 minutes or less across both directions of a route in the weekday midday.
The West Central focus area is served by the C, D, E, F, and H rail lines. However, railroad crossings at the Alameda and I-25/Broadway stations make it nearly impossible for pedestrians and bicyclists to access the stations from the west side of the tracks.

Access to neighborhoods to the north of the University of Denver station is cut off by I-25, as is access to neighborhoods to the northeast of the Louisiana/Pearl station.

The Weir Gulch Trail cuts through the Barnum West and Barnum neighborhoods, providing a connection to the Platte River Trail that travels to downtown.

8% Transit Mode Share (Commute)
6% Transit Mode Share (All Trips)
## WEST CENTRAL SNAPSHOT

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<th>Population Density</th>
<th>Employment Density</th>
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<td>7.2K people/sq. mile</td>
<td>4.6K employees/sq. mile</td>
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<tr>
<td>6%</td>
<td>69/100</td>
<td>50/100</td>
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<th>% Living within 1/4-mile of Bus</th>
<th>% Living within 1/4-mile of Frequent Bus</th>
<th>% Living within 1/2-mile of Rail</th>
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<tbody>
<tr>
<td>79%</td>
<td>42%</td>
<td>12%</td>
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</table>

Population/employment: DRCOG, 2015. Low-income population: ACS, 2010-2014 5-year estimate. % of population for whom poverty status is determined, earning less than 150% of the federal poverty level. Households without access to a vehicle: ACS, 2010-2014 5-year estimate. WalkScore and TransitScore: describe walkability and transit usability, area-weighted averages of scores for each Denver neighborhood, from Denver Blueprint Community Profile and Center for Neighborhood Technology (CNT). Access to transit: population data from DRCOG, 2015; schedule and routing information, RTD GTFS Feed April 2016. Frequent service is defined as every 15 minutes all-day. For analysis and mapping purposes, frequent all-day bus service was classified based on an average frequency of 18.5 minutes or less across both directions of a route in the weekday midday.
Focus Area 3: Southwest

- The Southwest focus area includes the Bear Valley and Harvey Park South neighborhoods, which are two of Denver’s suburban-style neighborhoods.
- Despite its suburban layout, 9% of Bear Valley residents use transit to get to work.
- In this area, there is very limited bus service but the Southwest light rail line has attracted riders who access the service via park-and-rides.
### SOUTHWEST SNAPSHOT

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<th>Population Density</th>
<th>Employment Density</th>
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<td>4.6K people/sq. mile</td>
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<td>2%</td>
<td>31/100</td>
<td>30/100</td>
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<tr>
<th>% Living within 1/4-mile of Bus</th>
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<th>% Living within 1/2-mile of Rail</th>
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<tbody>
<tr>
<td>37%</td>
<td>9%</td>
<td>0.0%</td>
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Population/employment: DRCOG, 2015. Low-income population: ACS, 2010-2014 5-year estimate; % of population for whom poverty status is determined, earning less than 150% of the federal poverty level. Households without access to a vehicle: ACS, 2010-2014 5-year estimate. WalkScore and TransitScore: describe walkability and transit usability, area-weighted averages of scores for each Denver neighborhood, from Denver Blueprint Community Profile and Center for Neighborhood Technology (CNT). Access to transit: population data from DRCOG, 2015; schedule and routing information, RTD GTFS Feed April 2016. Frequent service is defined as every 15 minutes all-day. For analysis and mapping purposes, frequent all-day bus service was classified based on an average frequency of 18.5 minutes or less across both directions of a route in the weekday midday.
The Northeast focus area is bisected by I-70.

The recently opened A line provides east-west rail service, although neighborhoods to the north of the line do not have easy access to stations due to the I-70 corridor.

The Westerly Creek trail connects to the Sand Creek Regional Greenway, providing connections to the north.

The industrial area just south of E 56th Avenue has a very disconnected street work.
### NORTHEAST SNAPSHOT

<table>
<thead>
<tr>
<th>Population Density</th>
<th>Employment Density</th>
<th>% Low Income</th>
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<tbody>
<tr>
<td>3.5K people/sq. mile</td>
<td>3.2K employees/sq. mile</td>
<td>34%</td>
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<tr>
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<tr>
<td>4%</td>
<td>45/100</td>
<td>41/100</td>
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<table>
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<tr>
<th>% Living within 1/4-mile of Bus</th>
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<th>% Living within 1/2-mile of Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>81%</td>
<td>22%</td>
<td>1%</td>
</tr>
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</table>

Population/employment: DRCOG, 2015. Low-income population: ACS, 2010-2014 5-year estimate. % of population for whom poverty status is determined, earning less than 150% of the federal poverty level. Households without access to a vehicle: ACS, 2010-2014 5-year estimate. WalkScore and TransitScore: describe walkability and transit usability, area-weighted averages of scores for each Denver neighborhood, from Denver Blueprint Community Profile and Center for Neighborhood Technology (CNT). Access to transit: population data from DRCOG, 2015; schedule and routing information, RTD GTFS Feed April 2016. Frequent service is defined as every 15 minutes all-day. For analysis and mapping purposes, frequent all-day bus service was classified based on an average frequency of 18.5 minutes or less across both directions of a route in the weekday midday.
EAST CENTRAL

- The East Central focus area has bike share stations in the northwest corner closer to downtown and Cherry Creek.

- The Cherry Creek, Hilltop, and Lowry Field neighborhoods have some of the lowest percentages of residents who take transit to work. Although there is frequent bus service on E Alameda Avenue during the peak, service on E 6th Avenue is less frequent. The majority of stops along these major east-west corridors do not have bus shelters.
### EAST CENTRAL SNAPSHOT

<table>
<thead>
<tr>
<th>Population Density</th>
<th>Employment Density</th>
<th>% Low Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>6K people/sq. mile</td>
<td>3.8K employees/sq. mile</td>
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<td>5%</td>
<td>61/100</td>
<td>45/100</td>
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<table>
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<tr>
<th>% Living within 1/4-mile of Bus</th>
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<th>% Living within 1/2-mile of Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>74%</td>
<td>31%</td>
<td>0.6%</td>
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</table>

*Population/employment: DRCOG, 2015. Low-income population: ACS, 2010-2014 5-year estimate, % of population for whom poverty status is determined, earning less than 150% of the federal poverty level. Households without access to a vehicle: ACS, 2010-2014 5-year estimate. WalkScore and TransitScore: describe walkability and transit usability, area-weighted averages of scores for each Denver neighborhood, from Denver Blueprint Community Profile and Center for Neighborhood Technology (CNT). Access to transit: population data from DRCOG, 2015; schedule and routing information, RTD GTFS Feed April 2016. Frequent service is defined as every 15 minutes all-day. For analysis and mapping purposes, frequent all-day bus service was classified based on an average frequency of 18.5 minutes or less across both directions of a route in the weekday midday.*
The Southeast focus area includes neighborhoods to the east of the University of Denver. Many of these neighborhoods have access to the E and F rail lines; however, neighborhoods to the east of I-25 do not have convenient access to the Yale and Belleview stations and there is no direct access to Southmoor Station from the west.

Around Colorado Station in University Park, there is very limited pedestrian and bicycle access due to I-25. The Colorado Center Bicycle/Pedestrian Bridge was built in 2015 to improve access.
## Southeast Snapshot

<table>
<thead>
<tr>
<th>Population Density</th>
<th>Employment Density</th>
<th>% Low Income</th>
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</thead>
<tbody>
<tr>
<td>6K people/sq. mile</td>
<td>4.5K employees/sq. mile</td>
<td>20%</td>
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</table>

<table>
<thead>
<tr>
<th>% No Vehicles</th>
<th>Walk Score</th>
<th>Transit Score</th>
</tr>
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<tbody>
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<td>4%</td>
<td>53/100</td>
<td>45/100</td>
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<table>
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<tr>
<th>% Living within 1/4-mile of Bus</th>
<th>% Living within 1/4-mile of Frequent Bus</th>
<th>% Living within 1/2-mile of Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>65%</td>
<td>22%</td>
<td>7%</td>
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</table>

Population/employment: DRCOG, 2015. Low-income population: ACS, 2010-2014 5-year estimate. % of population for whom poverty status is determined, earning less than 150% of the federal poverty level. Households without access to a vehicle: ACS, 2010-2014 5-year estimate. WalkScore and TransitScore: describe walkability and transit usability, area-weighted averages of scores for each Denver neighborhood, from Denver Blueprint Community Profile and Center for Neighborhood Technology (CNT). Access to transit: population data from DRCOG, 2015; schedule and routing information, RTD GTFS Feed April 2016. Frequent service is defined as every 15 minutes all-day. For analysis and mapping purposes, frequent all-day bus service was classified based on an average frequency of 18.5 minutes or less across both directions of a route in the weekday midday.
FAR NORTHEAST

- The Montbello and Gateway-Green Valley Ranch neighborhoods have limited bus service. A Line stops at 40th & Airport/Gateway Park and 61st/Pena provide frequent service to Union Station and the airport, but rail fares from this zone (Zone C) to Zone A destinations are $9 roundtrip, which may be unaffordable for people with lower incomes.

- There is a significant east-west divide between the Montbello and Gateway-Green Valley Ranch neighborhoods. Green Valley Ranch Boulevard does connect the two neighborhoods.
FAR NORTHEAST SNAPSHOT

<table>
<thead>
<tr>
<th>Population Density</th>
<th>Employment Density</th>
<th>% Low Income</th>
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<tbody>
<tr>
<td>1K people/sq. mile</td>
<td>1K employees/sq. mile</td>
<td>42%</td>
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<th>Transit Score</th>
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<tbody>
<tr>
<td>2%</td>
<td>26/100</td>
<td>46/100</td>
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<table>
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<tr>
<th>% Living within 1/4-mile of Bus</th>
<th>% Living within 1/4-mile of Frequent Bus</th>
<th>% Living within 1/2-mile of Rail</th>
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</thead>
<tbody>
<tr>
<td>66%</td>
<td>7%</td>
<td>0.2%</td>
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Population/employment: DRCOG, 2015. Low-income population: ACS, 2010-2014 5-year estimate. % of population for whom poverty status is determined, earning less than 150% of the federal poverty level. Households without access to a vehicle: ACS, 2010-2014 5-year estimate. WalkScore and TransitScore describe walkability and transit usability, area-weighted averages of scores for each Denver neighborhood, from Denver Blueprint Community Profile and Center for Neighborhood Technology (CNT). Access to transit: population data from DRCOG, 2015; schedule and routing information, RTD GTFS Feed April 2016. Frequent service is defined as every 15 minutes all-day. For analysis and mapping purposes, frequent all-day bus service was classified based on an average frequency of 18.5 minutes or less across both directions of a route in the weekday midday.
**PROGRAMS**

Outreach and education programs help promote existing services and encourage transit use. A lack of knowledge and understanding are common barriers to transit access and use. Programs that strategically distribute transit information and resources to target audiences can help address these barriers. Although the City and County of Denver and RTD have limited program staff, there are numerous programs and partners within the Denver region that encourage transit use.

**TRANSPORTATION MANAGEMENT ASSOCIATIONS AND ORGANIZATIONS**

36 Commuting Solutions is the Transportation Management Organization (TMO) along the US 36 corridor that works work with commuters, businesses, residents, local governments, and transportation agencies to expand and promote travel options. The US 36 Congestion Mitigation Program offers US 36 solo drivers a free RTD 10-Ride Regional Ticket Book, or a $75 cash incentive to start (or join) a carpool or vanpool. Since its launch in September 2014, this program has helped over 800 solo drivers find a new way of commuting, removing about 500 vehicles from traveling the corridor each day. Other programs include the Love to Ride behavior change application, Friends of the US 36 Bikeway, and the Workplace Ambassador Network.

Northeast Transportation Connections is the Transportation Management Association (TMA) in the northeast Denver area that provides information on transportation options to commuters, residents, students, and visitors to reduce single occupant vehicle travel, improve mobility, and encourage sustainable transportation. Northeast Transportation Connections manages the Community Hub at Northfield, which includes a bike library and informational materials on transportation options (e.g., walking and biking maps, RTD bus and light rail schedules, and brochures on Bike to Work Day, Be Well, car share companies, carpool, and vanpool options).

Transportation Solutions Foundation—a TMA that covers central Denver—sponsored a two-year Trip Assistance Program that promoted multimodal choices to areas within one mile of the Colorado and Alameda light rail stations. Funded through a Congestion Mitigation and Air Quality (CMAQ) Grant, program participants received a customized trip assistance packet, personalized trip assistance, and walking, biking and transit tours.

Denver South TMA (DSTMA) covers the I-25/I-225 corridor from Belleview Avenue to Lincoln Avenue. DSTMA’s priority is to improve mobility and maximize interchange capacity and transit ridership to foster growth of employ-
ment and the tax base within the corridor. In particular, DSTMA encourages the completion of FasTracks, supports transit-oriented development, and promotes the use of transit, carpooling, and telecommuting. The TMA is currently working on an innovative Lyft pilot with the City of Centennial that provides free Lyft Line rides to and from the Dry Creek Light Rail Station.

**Downtown Denver Partnership, Inc.** manages the Downtown Denver Business Improvement District and works on a variety of planning initiatives, such as an Annual Commuter Survey. Select results from the 2015 survey included the following:

- 40.6% of downtown Denver commuters take transit to work
- Biking and walking are on the rise for downtown Denver commuters under age 30
- The number of employees who walk to work (5.6% of all commuters) increased by 25% from 2014
- Downtown Denver commuters are nearly twice as likely to take transit when their employer fully or partially subsidizes their transit pass

**RTD**

RTD offers a free travel training program for older adults (age 60+), people with disabilities, and others living with mobility limitations. Participants learn how to use fixed-route transit, Call-n-Ride services, and Access-a-Ride programs.

**CITY AND COUNTY OF DENVER**

The City and County of Denver’s Transportation Demand Management (TDM) Program Administrator focuses on helping Denverites find ways to travel other than driving alone. Current TDM programs share and track information and improvements, and encourage city staff and Denver residents to use the many travel options available: walking, biking, transit, carpool, and telework.

**ADVOCACY GROUPS**

Several Denver-area organizations provide advocacy services, host events, and support education and outreach for transportation options.

**Transit Alliance** holds a variety of educational and informational events such as an annual transit event, a book club, walking tours, and networking events and presentations. They also sponsor the Citizens Academy, which is designed to “educate and motivate” community stakeholders by encouraging their involvement to advance transit, active transportation, and increased mobility in our communities.

**Bicycle Colorado** is a statewide bicycle advocacy group that encourages and promotes bicycling and advocates for increased safety and improved conditions for people who ride bicycles in Colorado.

**BikeDenver** is a bicycle advocacy group in Denver that collaborates with city agencies, stakeholders, and elected officials to improve policies and infrastructure for bicycling throughout Denver.

**WalkDenver** is an advocacy group that encourages walking through policy advocacy, tactical urbanism projects, and Safe Routes to School programming. In partnership with PlaceMatters, WalkDenver also developed WALKscope, an open-source tool where community members can report data related to sidewalks, intersections, and pedestrian counts via smartphones, tablets, and desktop computers.
STATE OF THE SYSTEM

OTHER PROGRAMS

Way to Go is a regional partnership between the DRCOG and a dedicated group of TMAs that promotes better commuting options for employers and individuals across the Denver region. Way to Go supports ride share through a free online ride-matching software for carpools and assistance with vanpool formation for groups of commuters that travel more than 15 miles one way to work. TMA partners in Denver include 36 Commuting Solutions, Northeast Transportation Connections, Downtown Denver Partnership, and Transportation Solutions. Way to Go provides information on commute options to individuals and employers free of charge.

Denver’s Safe Routes To School (SRTS) program relies on a coalition of partners to develop programs that help to reduce traffic congestion, reduce pollution, and increase physical activity for children by improving students’ ability to safely walk and bicycle to school. Educating students about safe travel behaviors and mobility options besides driving can encourage them to ride transit in the future and maintain a life-long habit of using a variety of travel options.

FARES

The cost of transit can significantly influence ridership and accessibility, particularly for low-income populations and those who do not have access to a car.

RTD has a fare zone system (which only applies to rail service) with four zones: A, B, C, and Airport. One-way fares range from $2.60 for local trips to $4.50 for regional trips. Local trips include rail travel in one or two fare zones, local/limited bus routes, local service on regional or SkyRide bus routes, and Call-n-Ride service. Regional trips include all local travel options plus rail travel in three fare zones, regional service on regional bus routes, and regional service on SkyRide bus routes. Airport service is $9.00 for a one-way fare, which includes a Regional Day Pass.

RTD offers multiple fare pass programs to encourage transit use, such as corporate pass programs (EcoPass and FlexPass), the CollegePass Program, and the Neighborhood EcoPass Program. Additionally, RTD partners with hundreds of area organizations and non-profits to offer discount passes to people with lower incomes and others who need them.

RTD Fare Structure

<table>
<thead>
<tr>
<th>TYPE</th>
<th>LOCAL</th>
<th>REGIONAL</th>
<th>AIRPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-Way</td>
<td>$2.60</td>
<td>$4.50</td>
<td>$9.00</td>
</tr>
<tr>
<td>Day Pass</td>
<td>$5.20</td>
<td>$9.00</td>
<td>Included in the regional/airport day pass</td>
</tr>
<tr>
<td>Day Pass Book (5 day passes)</td>
<td>$26</td>
<td>$45</td>
<td>Included in the regional/airport day pass</td>
</tr>
<tr>
<td>10-Ride Ticket Book</td>
<td>$23.50</td>
<td>$40.50</td>
<td>Airport trips require an upgrade; additional payment in cash required</td>
</tr>
<tr>
<td>Monthly Pass</td>
<td>$99</td>
<td>$171</td>
<td>Included in the regional/airport monthly pass; upgrade required for local monthly pass</td>
</tr>
<tr>
<td>Valupass (annual)</td>
<td>$1,089</td>
<td>$1,881</td>
<td>Included in the regional/airport Valupass; upgrade required for local Valupass</td>
</tr>
</tbody>
</table>

Note: For all fare types, discount fares are available for seniors 65+, individuals with disabilities, Medicare recipients, and elementary, middle school, and high school students ages 6-19. Discount is 50% of standard cost. Children 5 years of age or younger ride free with a paying adult. Source: www.rtd-denver.com/Fares.shtml
RTD Rail Fare Zones

Source: RTD
CHANGE IN FARES
The cost of a one-way fare has increased from $1.25 in 1999 to $2.60 in 2016. Adjusted for inflation, this is a 27% increase in cost from 1999 to 2015.

Transit ridership data represents regional (systemwide) ridership. Sources: RTD annual performance data.
HOW DOES DENVER COMPARE?

RTD Local one-way fares (trips on local bus routes and within two zones on rail) are higher than most of the selected peer agencies. While RTD’s fares are nearly equal to TriMet’s one-way fare, TriMet has only one fare zone. In Seattle, King County Metro also has a similar one-zone fare, but has a lower two-zone fare ($3.25) and offers a discounted off-peak fare of $2.50 in all zones.

RTD’s monthly fares range from $99 for local trips to $171 for regional trips. The cost of RTD’s monthly fares for regional trips is less than UTA and WMATA’s monthly fares, but the majority of peer agency monthly fares are lower than RTD.

The table on the following pages compares the structure, transfer policy, proof of payment policies, time-based surcharge/discount, and payment technology for RTD and the peer city agencies.
### Comparison of Fare Structure

<table>
<thead>
<tr>
<th>CITY &amp; AGENCY</th>
<th>STRUCTURE</th>
<th>TRANSFER POLICY</th>
<th>PROOF OF PAYMENT POLICIES</th>
<th>TIME-BASED SURCHARGE/DISCOUNT</th>
<th>PAYMENT TECHNOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denver, RTD</td>
<td>Bus: Flat fare&lt;br&gt;Rail: Zones (A, B, C, and Airport)</td>
<td>Free – within 3 hours at the same fare level as the initial boarding</td>
<td>Bus, Rail, Stations</td>
<td>None</td>
<td>MyRide Card (currently being piloted)</td>
</tr>
<tr>
<td>Atlanta, MARTA</td>
<td>Flat fare</td>
<td>Free with Breeze Card – up to 4 transfers within 3 hours</td>
<td>Streetcar</td>
<td>None</td>
<td>Breeze Card</td>
</tr>
<tr>
<td>Atlanta, GRTA</td>
<td>Zones</td>
<td>Free transfer to MARTA with Breeze Card – within 3 hours</td>
<td>None</td>
<td>None</td>
<td>Breeze Card</td>
</tr>
<tr>
<td>Austin, Capital Metro</td>
<td>Varies by service</td>
<td>No transfers</td>
<td>Metro Bus, MetroRapid, MetroRail</td>
<td>None</td>
<td>Mobile passes</td>
</tr>
<tr>
<td>Charlotte, CATS</td>
<td>Varies by service</td>
<td>Free – within 90 minutes</td>
<td>LYNX Blue Line</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Minneapolis, Metro Transit</td>
<td>By service and zone; Northstar Commuter Rail by distance</td>
<td>Free – within 2.5 hours; not included in Downtown Zone</td>
<td>METRO lines, Northstar Commuter Rail</td>
<td>Surcharge during peak hours (6-9 am and 3-6:30 pm weekdays) Local Bus/A Line/METRO: $0.50 Express Bus and Northstar Commuter Rail: $0.75</td>
<td>Go-To Card</td>
</tr>
<tr>
<td>Portland, TriMet</td>
<td>Flat</td>
<td>Free – within 2.5 hours</td>
<td>Buses, MAX, WES, and Streetcar</td>
<td>None</td>
<td>Mobile passes and HOP (starting 2017)</td>
</tr>
<tr>
<td>Salt Lake City, UTA</td>
<td>By service</td>
<td>Free – within 2 hours</td>
<td>TRAX</td>
<td>Free fare zone; $0.25 incremental surcharge for diesel price per gallon starting at $4.00 per gallon</td>
<td>UTA FAREPAY and City Hive Pass</td>
</tr>
</tbody>
</table>
### Comparison of Fare Structure (continued)

<table>
<thead>
<tr>
<th>CITY &amp; AGENCY</th>
<th>STRUCTURE</th>
<th>TRANSFER POLICY</th>
<th>PROOF OF PAYMENT POLICIES</th>
<th>TIME-BASED SURCHARGE/DISCOUNT</th>
<th>PAYMENT TECHNOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seattle, King County Metro</td>
<td>Zones (2 zones: City of Seattle and remainder of King County)</td>
<td>Free – within 2 hours</td>
<td>RapidRide</td>
<td>Surcharge of $0.25 to $0.75 during peak hours (arrive in downtown Seattle between 6-9 am and 3:30-6 pm weekdays, or leave downtown Seattle between 6-8:15 am and 3-6 pm weekdays, or leave downtown or trips with half of the trip time between 6-9 am and 3-6 pm weekdays)</td>
<td>ORCA Card</td>
</tr>
<tr>
<td>Seattle, Sound Transit</td>
<td>For bus, Zones (3 zones); for rail by distance</td>
<td>Free – within 2 hours</td>
<td>Link Light Rail and Sounder Commuter Rail</td>
<td>None</td>
<td>ORCA Card</td>
</tr>
<tr>
<td>Washington, DC, WMATA</td>
<td>For bus, flat; for rail by distance</td>
<td>Bus to Bus: Free – within 2 hours Bus to Rail/Rail to Bus: $0.50 discount on fare – within 2 hours</td>
<td>None</td>
<td>Surcharge of $0.40 to $2.30 during peak hours (opening 9:30 am and 3-7 pm weekdays)</td>
<td>SmarTrip Card</td>
</tr>
</tbody>
</table>
INFORMATION

Readily available and easy-to-understand information about the transit system is essential for people to be able to use it. This includes maps and schedule information online, at transit stops and stations, and on mobile apps. Information must also be available in real time—at stops and stations, by phone, and online—to let passengers know exactly when the next bus will arrive.

**Online and Mobile Resources:** RTD offers an online [Interactive System Map](#) that shows rail and bus routes and provides schedule information by transit stop. This can be a useful tool for transit riders using a computer, but real-time data via a smart phone application is much more appealing for transit riders on the go. RTD also offers a mobile site that lists schedules, Next Ride (next arrival times at any stop, station, or park-n-ride), the ability to find nearby stops, and a trip planner.

**Transit Apps:** RTD provides real-time data to app developers, which has resulted in nearly two dozen apps that provide trip planning and real-time transit information. As an example, the City and County of Denver partnered with Xerox to develop the Go Denver app that allows people to plan a trip; compare travel modes by cost, travel time, and environmental impact; and track their commute history. People can compare a variety of travel options, including personal (car, walk, bike, motorbike), shared (ZipCar, car2go, bike share), ride hailing (Lyft, FlitWays, taxi), and public (bus, train) options.

[Go Denver provides a multimodal trip planner with the added benefit of real-time information and associated costs.](#)
**Real-Time Information at Stops:** Real-time information communicates to passengers exactly when the next bus or train will arrive. Currently, electronic displays at RTD rail stations show scheduled arrival times, but RTD is planning to add real-time arrival information on these displays. Passengers can also call RTD’s MyStop phone number to access real-time and schedule information, but the 5-digit stop ID (listed on the front and/or back of bus stop signs) is required.

New RTD bus stop signs include a 5-digit Stop ID that can be used to access real-time bus arrival information, on both the front and back of the sign. The phone number for access to real-time information (available in both English and Spanish) is located only on the back of the sign, which may be easy for unfamiliar riders to miss. Real-time arrivals are also available on smartphones with internet access.

At the Colorado rail station, electronic displays show scheduled arrival times for the next bus.
[I wish] public transport was more understandable to [the] elderly. The system seems complicated and unreliable. I need help using it.

– Denveright Community Visioning Workshop Participant (October 2016)
CHAPTER 4
WHO RIDES TRANSIT IN DENVER?

Transit in Denver serves a range of trip purposes and people. Overall, 7.1% of Denver residents take transit to work. Work trips by bus or train are the most common in neighborhoods to the west of downtown, including Sun Valley, Auraria, Sloan’s Lake, and West Colfax. These neighborhoods are served by the W light rail line and multiple bus routes that run every 10 minutes or better during peak periods.

KEY FINDINGS

■ The percentage of Denver residents who ride transit to work has declined over the last decade

■ People of all ages ride transit in Denver; ages 25-34, 45-54, and 55-65 make up the largest age cohorts

■ People use transit for all types of trips, including getting to work, shopping, and personal business

■ 21% of Denver residents are frequent riders

■ Approximately 25% of transit trips involve a transfer
Mode Share in the City of Denver and Neighboring Counties

Journey to Work Mode Share by Statistical Neighborhood

- Drive Alone
- Carpool
- Transit
- Bicycle
- Walk
- Work from Home
- Other

Data Sources: American Community Survey 2014 5-year Estimates, DRCOG, Colorado DOT, OpenColorado, ESRI

Note: Analysis was performed prior to release of 2015 ACS.
The percentage of Denver residents using transit to get to work has declined from 8% in 2000 to 6% in 2015. This is lower than cities comparable to Denver, with the exception of Austin and Charlotte (see page 36 for an overview of the peer cities).
Approximately 40% of transit passengers in the Denver region use transit for their commute, compared to 33% for shopping and 19% for visiting friends and relatives.
DENVER MOVES

Transit

STATE OF THE SYSTEM

What’s the average age of transit riders?

- 111 -

23% age 55 - 64
8% older than 65
1% under 18
10% age 18 - 24
21% age 25 - 34
22% age 45 - 54
16% age 35 - 44

How far do people travel to access transit?

Most bus trips begin within a convenient walking distance of a bus stop.

Over 50% of bus trips begin less than ¼ mile from the bus stop.

How often do people ride transit?

21% of Denver residents are frequent riders (at least a few times a week)

About a third haven’t used transit in the past year

How do people pay for transit?

About one quarter of riders pay for trips using cash

About 40% of riders use some form of pass (monthly pass or EcoPass)

How do people get transit information?

Bus passengers are more likely to consult schedules on their computer than light rail passengers (44% vs. 25%)

How do people reach transit?

Denver local bus riders are more likely to walk to a stop than light rail riders; 75% of riders walked to the bus, but only 42% of riders walked to light rail. Light rail riders are more likely to drive to a stop.

Do transit riders have access to a vehicle?

46% of Denver local bus riders do not have a personal vehicle available for their trip

What’s the average income of transit riders?

People with lower incomes are more likely to use transit for everyday travel

Source: 2014 RTD Market Segmentation Report

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- 111 -

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Transit needs to be about more than getting to the city center. [I] need to be able to circulate to other major areas like Golden Triangle and Cherry Creek.

– Denveright Community Visioning Workshop Participant (October 2016)
CHAPTER 5
WHAT INFLUENCES THE DEMAND FOR TRANSIT?

Assessing the current market for public transit—within Denver and between Denver and the region—is the foundation of *Denver Moves: Transit*. In 2014, Denver was the fifth fastest growing city in the country and is expected to add 145,000 more residents and 190,000 more jobs by 2035.\(^1\)\(^2\) Understanding how transit can best serve a growing population and workforce is a key outcome of *Denver Moves: Transit*.

Several factors influence the demand for transit in Denver, including the following:

- **Social and technological trends:** Changing demographics and generational preferences, coupled with increased reliance on technology, are shifting mobility expectations and increasing the demand for frequent, efficient transit service.

- **Land use:** The density of our neighborhoods, the diversity of destinations, and the design of our streets influence the attractiveness of transit and play a role in transit’s ability to operate successfully.

- **Population and employment growth:** Denver is experiencing unprecedented growth. The city grew by 78,000 people between 2010 and 2015.\(^3\) The location of jobs and residences influences where transit will be needed and used.

- **Travel patterns:** Employment centers and major destinations draw all types of trips and demonstrate where transit can operate successfully today and where it will likely be needed.

- **Demographic characteristics:** Certain populations—such as low-income households, people with disabilities, older adults, and young people—tend to rely on transit more often than other demographic groups.

\(^1\) U.S. Census and State of Colorado Department of Local Affairs, 2014.
\(^2\) DRCOG, 2015.
\(^3\) U.S. Census Bureau and Economic & Planning Systems.
Trends Affecting the Demand for Transit

It’s an exciting time for transit in U.S. cities—a number of important trends and challenges are shaping the demand for transit in Denver and cities across the country. Young adults are driving less and show a clear preference for options to bike, walk, and take transit; technology is changing the face of transportation; and the number of older adults is growing as baby boomers reach retirement and desire to age in place.

- **Millennials drive less:** The millennial generation (people who are between the ages of 18 and 34 in 2015) is the first in decades that drives less than their parents, and the number of young people with a driver’s license is declining. As of 2015, 31% of Denver’s population is in the millennial generation.

- **Transportation options influence where people live:** A recent study by the Rockefeller Foundation and Transportation for America found that 54% of millennials would consider moving to a city if it had more and better options for getting around; 66% said that access to high-quality transportation options would be one of their top three priorities when considering a move.

- **Technology advancements are a game changer:** Mobile technologies have changed how people connect with each other, how and where they choose to live, how they work, and how they travel. Use of technology has forever changed the expectations of transit riders—dynamic, flexible, and real-time information informs people’s decisions about how to travel and plays a large role in changing travel behavior.

- **Baby boomers prefer to age in place:** The number of people 65 and older in Denver is expected to increase from 11% (2015) to 17% of the population in 2035. According to a recent study by the American Association of Retired Persons (AARP), nearly 90% of those over age 65 want to stay in their residence as long as possible. Accessible and convenient transportation options are key to supporting older adults who want to age in place.

Investing in a flexible, multimodal transportation system provides an opportunity for Denver to respond to these trends and develop an enhanced transit system that supports residents through all stages of their lives.

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1 According to the Federal Highway Administration, from 2000 to 2010, the share of 14 to 34 year olds without a driver’s license increased from 21 percent to 26 percent. Federal Highway Administration, Highway Statistics 2010 – Table DL-20, September 2011.

2 Pew Research Center, 2016 and ACS 2015 1-Year ACS estimates.


LAND USE

THE IMPORTANT CONNECTION BETWEEN TRANSPORTATION AND LAND USE

An extensive body of research has established a strong relationship between the design of our communities, the places people choose to go, and the ways and times that they travel. Recent studies focus on the effect that six key characteristics of land use and urban form have on both choice of transportation mode and trip length. These characteristics, often referred to as “the 6 Ds,” are:

- Destination accessibility
- Distance to a transit station or frequent transit stop or other transit service (see Chapter 3: Access and Programs)
- Design of buildings, public spaces, and street networks
- Density of population and employment
- Diversity of land uses and activities
- Demand management, including education and outreach programs that encourage people to take transit (see Chapter 3: Access and Programs)

Source: Nelson\Nygaard
In 2010, researchers developed aggregate results to describe the ways that land use variables—our built environment—impact rates of driving, transit ridership, and walking. The study found that major changes in each of the measured aspects of built form are associated with differences in travel behavior:

- In more dense, mixed-use areas, people walk and take transit more and drive less.
- The closer people are to transit stops, the more likely they are to walk and take transit. Specifically, a 10% decrease in distance from transit along the shortest street routes corresponds with, on average, a 2.9% increase in transit ridership and a 1.5% increase in walking.
- Design matters: walking and transit use increases along with increases in intersection density and the proportion of four-way intersections.
- People drive more the further they are from downtown, likely due to decreasing proximity to jobs and reduced densities/land use mixes.¹

A more recent study (2016) conducted by Transit Center demonstrates the importance of comfortable and convenient access to transit near a mix of uses:

- Eighty percent of “all-purpose” transit riders—those who ride transit for all types of trips—walk to transit.
- All-purpose ridership is stronger where it is easy to walk to transit and where transit is frequent and provides access to many destinations within walking distance.²


Different modes of transit are best suited to varying densities. For example, light rail and other forms of high-capacity transit services work best in dense areas where many people live or work.

Source: Nelson\Nygaard
The Role of Parking

The availability and price of parking also play an important role in influencing the attractiveness of transit. In neighborhoods where parking is plentiful and cheap, there is little disincentive to drive. Denver’s Strategic Parking Plan (2010) provides a citywide framework and vision for the City and County of Denver’s approach to parking management that supports transit. The Strategic Parking Plan recognizes that parking policies and standards should vary based on the level and frequency of transit service. It also recognizes the value of pricing, coordination with employers, and parking districts among many other tools to manage parking supply and demand.

As part of the Strategic Parking Plan process, Denver’s Zoning Code was updated—the first major revision since 1956. Building on guidance in the 2002 Blueprint Denver plan, the new code took a smarter approach to parking by recognizing that requirements should vary in different parts of the city depending on the neighborhood context and access to transportation options.

HOW DOES THE COST OF PARKING IN DOWNTOWN DENVER COMPARE?

The average daily parking cost in downtown Denver is generally in the mid to high-end of the peer cities considered in Chapter 2.
What is Denver’s current land use?

- The downtown core and the area south to University of Denver include multiple land uses, from office to multifamily housing to mixed-use development.

- Outside of these areas, land use in Denver is primarily single family residential.
BLUEPRINT DENVER (2002) GUIDES DENVER’S INTEGRATED TRANSPORTATION AND LAND USE APPROACH

Blueprint Denver was adopted by City Council in 2002 as a supplement to the Comprehensive Plan. An integrated land use and transportation strategy was central to this plan including:

- Directing growth to Areas of Change, including downtown, Lowery, Stapleton, and Gateway
- Establishing the concept that streets are a means to move people and not just cars
- Emphasizing multimodal streets
- Recognizing the importance of pairing intense, mixed-use development around stations and along transit corridors

Blueprint Denver is being updated as part of Denveright, a community-driven planning process that challenges Denverites to shape how our community evolves in four key areas: land use, mobility, parks, and recreational resources.

Denver Moves: Transit is closely coordinating with the Blueprint Denver update.

Garden Court is a mixed-use transit oriented development at Yale Station located just west of I-25 in southeast Denver. Yale Station provides access to the E, F, and H rail lines and the route 27 bus.

Evans Avenue is an east-west arterial. In many places it has more than four travel lanes, very low-density commercial development, and sidewalks that are narrow with little to no buffer from traffic.
Population and employment density—the number of people and jobs per acre—influence the demand for transit. As density increases, incentives to use transit, such as traffic congestion, parking availability, and parking costs, tend to increase as well. In addition, the more people there are, the more cost effective it is to provide frequent transit service.
Where do people live in Denver?

- Population density is high in downtown and south of E Colfax Avenue between N Broadway and Colorado Boulevard.

- Housing in Denver is relatively low density outside of these areas.
Where do people work in Denver?

Employment is concentrated primarily in downtown Denver and at the southern end of the city limits along I-25.
WHERE DO PEOPLE LIVING OR WORKING IN DENVER TRAVEL?

A key goal of Denver Moves: Transit is to increase transit use within and to Denver. This section presents data about existing travel patterns from regional travel models and surveys. This data will be used to help develop and analyze future transit service concepts.

ORIGIN-DESTINATION MAP METHODOLOGY

This section summarizes “origin-destination” data from DRCOG’s 2010 regional travel demand model (Compass) and RTD’s 2015 onboard survey in a series of maps to illustrate major travel patterns between Denver neighborhoods and to/from other areas in the region. Traffic Analysis Zones (TAZs) from the travel model were grouped into neighborhoods and regional subareas to better illustrate broad travel patterns. For all maps, data was aggregated to these custom zones and the largest origin-destination pairs were mapped. Trip paths are shown “as the crow flies” between the center of the zones.
Where do people travel for work in Denver?

- Within Denver, there is strong demand for work travel between central neighborhoods.
- Nearly one-third of Denver work trips go to/from Downtown. The East, East Central, South Central, and Southeast areas comprise another third of work trips.
- Work travel in the northeast and southwest areas of the region is less than other neighborhood travel patterns.

Data Source: DRCOG, Compass Model, 2010
Where do people travel for non-work trips in Denver?

- Nearly one quarter of non-work trips in Denver go to or from downtown. East, Southeast, and South Central comprise another 40% of these trips.

- East-west, cross-town non-work travel demand is stronger than work travel demand for several travel patterns, including in the northern part of the city (e.g., Northwest-North-Northeast).
Where do people travel via transit in Denver?

- Over 40% of regional transit trips start or end in Downtown.
- Southern and central neighborhoods have strong transit demand to downtown.
- Neighborhoods in the Northwest and North areas of the region have comparatively weak transit demand, especially given how geographically close they are to downtown.

Transit Trips in the City of Denver (2015)
Where do people travel for work in the Denver region?

- Major regional travel patterns to Downtown Denver include trips from the southwest (e.g., Littleton) and the east (Aurora).

- Downtown Denver is a major destination for regional work travel (16% of regional work trips).

- Travel between Aurora and eastern Denver neighborhoods, as well as between Littleton/Centennial and southern Denver neighborhoods, is greater in magnitude than travel to downtown. In the latter case, this is due in part to the Denver Tech Center located directly southeast of Denver.

Work Trips in the Denver Region (2015)

Data Source: DRCOG, Compass Model, 2010
Where do people travel for non-work trips in the Denver region?

- Regional demand for non-work travel is moderately strong to downtown, but is stronger to/from other parts of the city, such as between Aurora and eastern neighborhoods, Lakewood and western neighborhoods, and Littleton and southern neighborhoods.

- One-half of regional non-work trips are for travel within the southern part of the region.

Non-Work Trips in the Denver Region (2015)
Where do people travel via transit in the Denver region?

- Transit captures between 10-20% of work trips to downtown Denver from many parts of the region.

- Transit demand to downtown is strong from the south and southeast (e.g., Littleton, Centennial, and Aurora). Transit riders from Littleton and Centennial likely use light rail while Aurora riders likely use the H Line light rail or bus routes such as 3L and 83L in combination with park-n-rides.

Transit Trips in the Denver Region (2015)
EMPLOYMENT PATTERNS

Denver is the economic center of the region with nearly 500,000 jobs. The majority (over 70%) of employees in Denver commute to work from outside of Denver: over 50,000 employees come into Denver from Aurora, 22,000 from Lakewood, and 16,000 from Thornton. Park-n-ride lots along the region’s rail lines provide important connections to jobs in Denver (see Chapter 3 for more details). Planning for the hundreds of thousands of commuters that travel into Denver for work—in addition to those that live and work in Denver—is important for the Denver Moves: Transit plan.

The Denver Tech Center is a major employment center in southeast Denver bordered by the I-25 corridor to the east, I-225 to the north, and E Arapahoe Road to the south. The Denver Tech Center is accessible by rail lines E and F, however, the walk to the center is more than a mile from Orchard Station. RTD does operate several Call-n-Ride services that serve as shuttles between the rail lines and the offices. Most of them operate as a flex route where they serve Orchard Station at a set time and then travel to various offices, deviating a short distance upon request.

Image: Ken Lund

DENVER
682,500 pop.

300,000 employees commute to Denver for work

Growth of 150,000 people daily

150,000 employees leave Denver for work

Every day, Denver’s population swells with over 300,000 employees that travel from outside of Denver County to work within the county.

Employment Patterns by County

This graphic illustrates the flow of commuters between Denver County and its neighboring counties. With the exception of Boulder County, the majority of workers in counties adjacent to Denver commute to another county for work. Fifty-three percent of the working population in Denver commute to another county; however, when it comes to the neighboring counties represented in this graphic, the total number of commuters traveling into Denver is greater than the total number of commuters going out.

The greatest inter-county flow of commuters in the region is between Denver County and Arapahoe County. This is true in both directions, with about 84,000 Arapahoe County workers (31% of total workers) employed in Denver County and about 50,000 Denver workers (18% of total workers) employed in Arapahoe County. Jefferson County has the second highest number of workers that commute to Denver, followed by Adams, Douglas, and then Boulder counties.

Source: Longitudinal Employer-Household Dynamics (LEHD), 2014
Most people working in Denver live outside of the city. That means 30% of Denver employees (150,000 people) both live and work in Denver.

The highest concentrations of Denver workers live in the Capitol Hill, Country Club, and Congress Park neighborhoods southeast of downtown.
Where do Denver residents work?

- Denver residents primarily work downtown, at the State Capitol, and Cherry Creek.

- Another major employment area is the Denver Tech Center along I-25 and I-225.

Work Locations of Denver Residents in the Denver Region

Data Sources: Longitudinal Employer Household Dynamics 2014, RTD, DRCOG, Colorado DOT, OpenColorado, ESRI
DEMOGRAPHIC CHARACTERISTICS

The demand for transit is strongly influenced by the make-up of our community:

- Youth and older adults typically depend more on transit to meet their daily needs because they are too young to drive, no longer drive, or do not have access to a personal vehicle.

- Low-income residents and residents who do not have access to a personal vehicle typically are more dependent on transit to access jobs and daily services.

In Denver, over 300,000 residents fall within at least one of these groups (see table below). Compared to Colorado as a whole, Denver has a slightly higher percentage of older adults and youth, and a significantly higher percentage of low-income residents and households without access to a vehicle.

The maps on the following pages illustrate the areas of Denver that have concentrations of people who may depend on transit more than the general population. The final map combines the strongest indicators of transit demand into a transit propensity index (TPI). The TPI shows the parts of the city with a greater density of the following demographic groups:

- People with low incomes
- Households without a car
- People with disabilities
- Older adults (65+)
- Youth age 15 to 17

<table>
<thead>
<tr>
<th>DEMOGRAPHIC CATEGORY</th>
<th>CITY OF DENVER</th>
<th>COLORADO</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
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<tr>
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<tr>
<td>Zero vehicle households</td>
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</table>

*Poverty population and zero-vehicle households from 2011-2015 5-Year ACS estimates. Poverty population is based on the population for which poverty status is determined.

Where is transit propensity the highest?

- Neighborhoods east of downtown, such as City Park West and Whittier.
- Villa Park and West Colfax neighborhoods west of downtown.
- The Ruby Hill neighborhood in southwest Denver.
Where do low income residents live?

- Low-income populations are a key indicator for transit demand because they may have a lower likelihood of access to a vehicle.

- Low-income populations are concentrated in the following neighborhoods: Barnum, West Barnum, southwest of City Park, East Colfax, Cole, Whittier, and Montbello.

Low Income (Earning < 150% of Poverty) in the City of Denver

Note: The federal poverty level (FPL) is the set minimum amount of gross income that a family needs for food, clothing, transportation, shelter and other necessities. <150% of the poverty level is calculated by the Census based on the number of people in a household. The family income is compared against an appropriate threshold to determine the percentage.

Source: American Community Survey (ACS) 2010-2014 5-Year estimates (analysis was performed prior to release of 2015 ACS).
Where do residents without access to a vehicle live?

- Households without access to a vehicle are heavily concentrated in downtown, Capitol Hill, Cheesman Park, near the University of Denver, and in the Windsor neighborhood (east of Havana Street and north of Mississippi Avenue).
- On campuses like the University of Denver, there may also be restrictions that prevent people from bringing their cars to campus.

Zero Car Households in the City of Denver

Source: American Community Survey (ACS) 2010-2014 5-Year estimates (analysis was performed prior to release of 2015 ACS).
[Denver needs] to complement RTD’s regional focus with a home-grown transit service for the city proper.

– Denveright Community Visioning Workshop Participant (October 2016)
CHAPTER 6
GOVERNANCE AND FUNDING
BEST PRACTICES

Cities around the country are investing resources in their transit systems and expect greater accountability and service from their transit providers. *Denver Moves: Transit* will help to define the City and County of Denver’s (CCD) role in supporting transit and identify opportunities to enhance coordination and partnerships between CCD and the Regional Transportation District (RTD), including potential funding sources to enhance transit in Denver. This section outlines Denver’s current organizational structure and funding for transit and highlights best practices from three peer cities and transit agencies: Seattle, Los Angeles, and Minneapolis.
DENVER

ROLE OF THE TRANSIT AGENCY

The Regional Transportation District (RTD) provides local and regional service in the Denver metropolitan area, serving nearly 100 million trips over 2,300 square miles. The agency leads both transit investment and planning. It is governed by a 15-member publicly-elected board of directors, each representing part of the district. As of 2016, RTD operates two commuter rail lines, six light rail lines and approximately 125 bus routes.\(^1\)

ROLE OF THE CITY

The City and County of Denver (CCD) is an active partner with RTD in the development of the current transit system; the agencies have worked together on FasTracks, Peoria Crossing, Colfax Corridor Connections, Denver’s Union Station renovation, bus routing and stop locations, the 16th Street Mall, and other transit and multi-modal projects throughout Denver. Together these efforts have greatly expanded mobility options and economic opportunities in Denver and throughout the metro area. CCD has begun to take more of a leadership role to further explore existing and future travel demand in Denver, in partnership with adjacent municipalities, RTD, the Colorado Department of Transportation (CDOT), and other public and private entities.

As CCD becomes increasingly involved with transit planning, similar to other cities including Salt Lake City and Seattle, the importance of establishing a transit plan and further defining transit’s role in helping meet Denver’s mobility needs will continue to grow.


CCD’s Transit Amenities Program allows companies to advertise on bus stop shelters. Participating companies are required to install amenities and maintain the bus stops.
CCD’s Public Works Department has a Transportation and Mobility Division that focuses on multimodal/urban mobility and implementation planning, parking operations, and traffic operations and engineering. The Policy, Planning, and Sustainability Division within Public Works includes planners focused on transportation planning and implementation. CCD supports transit through a number of planning efforts, such as the city’s 2014 Transit-Oriented Development Strategic Plan (2014), the Denver: Moves Bicycles plan (updated in 2015), and the Strategic Parking Plan (2010) (see Appendix A for details).

To date, Public Works’ primary role in transit has been to support bicycle and pedestrian access to transit, develop multimodal corridor studies/plans, manage a Transit Amenities Program, and implement transit-oriented development projects. There are a number of planning efforts underway currently, including Denver Moves: Transit and major corridor planning such as the Colfax Corridor Connections project, that are helping to define CCD’s role in supporting transit. As of 2016, CCD does not pay for the operation of transit service.

CCD’s Transit Amenities Program launched in 2001. Participating companies are allowed to advertise in the right-of-way in exchange for providing amenities, such as benches, shelters, and trash cans, at bus stops. There is no revenue sharing; the participating companies are required to install the amenities and maintain the bus stops.

**TRANSIT FUNDING**

Capital transit projects in the Denver region have been funded primarily by FasTracks over the last decade. FasTracks was approved by voters in 2004 to expand light rail, commuter rail, and bus rapid transit (BRT), across the Denver metro region. Funding for FasTracks is from a sales tax of 0.4%. Local jurisdictions within the RTD service area, including Denver, contribute 2.5% of eligible FasTracks corridor costs, which are roughly equal to 2.1% of total project costs. FasTracks is also funded through a variety of other sources, including public-private partnerships, Transportation Infrastructure Finance and Innovation Act (TIFIA) loans, Certificates of Participation, Federal New Starts funding, and other federal sources.

Aside from FasTracks, RTD’s revenues to operate transit service are primarily from a 0.6% sales taxes (69%) and passenger fares (30%). Another 1% of revenues come from vehicle advertising and grants. Funds generated from the 0.6% sales tax can be used to fund FasTracks, if necessary, but RTD cannot use funds from the 0.4% sales tax to fund transit operations.

**CITY OF BOULDER SERVICE BUY-UPS**

Since 2001, the City of Boulder has invested millions of dollars in transit service to help fund its Community Transit Network. The city has historically funded the HOP route (together with RTD and the University of Colorado) and purchased service on the JUMP and BOUND routes. City buy-ups in transit service operated by RTD peaked in 2008 at $1.5 million; in 2011, the city’s investment had declined to $1.1 million. The City’s funding contribution includes its share of a contract with Via (a non-profit based in Boulder) to operate the HOP route.

STATE OF THE SYSTEM

SEATTLE

ROLE OF THE TRANSIT AGENCY

Transit in the Puget Sound region is managed primarily at the county level (King, Pierce, and Snohomish Counties). King County Metro Transit is the primary transit provider for Seattle, and Sound Transit plans and builds regional transit facilities and provides regional light rail, commuter rail, and bus services.

ROLE OF THE CITY

In 2012, the City of Seattle adopted its first Transit Master Plan (TMP) to articulate transit priorities and identified funding sources to support these priorities. The TMP has resulted in an unprecedented level of consensus on Seattle’s mobility future, led to rapid advancement of a number of transit priorities, and helped shape partnerships with the City of Seattle’s regional transit agency partners. The TMP has also led to the formation of a new Transit and Mobility Division within the Seattle Department of Transportation (SDOT), substantial increases in staff dedicated to transit planning and capital project delivery, and new local funding sources for transit. The TMP was updated in early 2016, ahead of the normal five-year cycle, due to rapid implementation of plan priorities and the need to provide policy direction for use of these local transit funding sources. Specific outcomes of the Seattle TMP include:

- Project development underway on all four High Capacity Transit Priority Corridors identified in the plan
- New Center City Streetcar designed and successful in FTA Small Starts process ($75M award)

Using funding from the Proposition 1 measure approved by Seattle voters in November 2014, the city is purchasing approximately 220,000 additional hours of Metro transit service annually through 2020.
DENVER MOVES
Transit
STATE OF THE SYSTEM

- Madison Bus Rapid Transit at 30% design and FTA Small Starts grant application submitted
- Studies for seven BRT corridors are underway with intent to implement all corridors by 2024
- Local tax measure passed to provide $45M per year in service buy-ups on Seattle bus routes
- Local capital levy passed, including funding for seven BRT corridors and multimodal improvements in those corridors
- Speed and reliability improvements in a number of priority bus corridors
- Partnership formed to improve Center City transit operations
- Transit Advisory Board founded in 2015 to guide City Council decisions; the Board is composed of 12 regular members—six appointed by the Mayor, five appointed by the Council, and one Get Engaged (young adult) member
- City partnerships with Sound Transit and King County Metro to improve wayfinding, station access, and fare collection

SDOT has a number of transit investment programs and generally allocates resources to the following activities:

- Managing local operating funds generated by Seattle Transit Benefit District (STBD); through the establishment of the STBD in 2014, SDOT pays for additional Metro service, purchased on a per-hour basis (with a fully-loaded cost including capital)
- Planning, designing, and constructing speed and reliability improvements on existing bus corridors
- Capital project development for streetcar and BRT projects, including project development for federalized projects
- Program management for a multi-corridor BRT system in development with King County Metro; city is leading capital project development and funding, and Metro will be the operating agency
- Operating the South Lake Union Streetcar; SDOT owns and operates the streetcar through an interlocal agreement with King County Metro
- Rail station access and transit-oriented development planning and agency coordination
- Shared mobility programming, including the development of a shared mobility hub program for major transit hubs and junctures
- Bike share provision and operations; SDOT owns and operates Pronto! bike share and is working to implement a new bike share system with a fleet of 1,200 electric assist bicycles
- Coordinated parking management, corporate and institutional TDM programs, and other programs to manage travel demand

TRANSIT FUNDING

In 2010, the Seattle City Council authorized the creation of the Seattle Transit Benefit District (STBD). Voter approval of the STBD in November 2014 authorized a 0.1% sales tax increase and an annual vehicle license fee (VLF) per registered vehicle. The current VLF is $60 per year, with a $100 cap. Local and regional funding sources are outlined below.

- **King County Metro:** Between 50-60% of King County Metro’s funding comes from a countywide sales tax. Metro’s Community Mobility Contracts Program allows local jurisdictions to purchase additional transit service.
STATE OF THE SYSTEM

■ **Sound Transit**: Sound Transit is funded by the Regional Transit Authority tax and includes a 0.9% retail sales tax, 0.8% rental car tax, and a 0.3% motor vehicle excise tax. These funds are used for capital projects and to operate the system.

■ **Seattle Transit Benefit District (STBD)**: This citywide benefit district uses a $60 vehicle license fee and 0.1% increase in the sales tax to pay for additional bus transit service hours in Seattle. The district is managed by the STBD Governing Board comprised of Seattle City Councilmembers. This funding mechanism raises approximately $45 million per year that is invested in bus service to address overcrowding and reliability issues and to add frequency to meet demand for more transit.

■ **Community Mobility Contract with King County**: In February 2015, the City of Seattle entered into a Community Mobility Contract with King County Metro. Using funding from the Proposition 1 measure approved by Seattle voters in November 2014, the city is purchasing approximately 270,000 additional hours of Metro transit service annually through 2020. Additional service hours have resulted in 27% more RapidRide service hours and more than 7,000 more daily riders on the C-Line, D-Line, and E-Line.¹

■ **Levy to Move Seattle**: In November 2015, voters approved a nine-year, $930 million property tax Levy to Move Seattle to help pay for capital projects in the city.

■ **Sound Transit 3 (ST3)**: In November 2016, Seattle residents passed ST3, which will help fund the next phase of high-capacity transit improvements in the Seattle region, including a significant expansion of Link Light Rail.

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KEY LESSONS

■ Seattle made a policy decision a decade ago that transit investment was a foundation for accommodating rapid growth. The Transit Master Plan has provided structure for the city to advance its transit interests and, align, fund, and construct key projects.

■ Clear city direction on transit priorities has helped to build partnerships with local transit agencies and coordinate adopted service and capital investment priorities. King County Metro’s newly adopted *Metro Connects Long-Range Plan* is well aligned with the city’s TMP.

■ Simultaneous investment in light rail and high-quality bus service and facilities has been needed to meet rapid population and job growth.

■ The City of Seattle has successfully raised local operating and capital funds through city funding measures, including a successful local measure (Proposition 1) that followed a failed countywide measure.

■ SDOT’s Transit and Mobility Division allows the agency to better plan for transit investments and coordinate with other divisions when implementing multimodal projects and making decisions about use of limited rights-of-way.

■ The ORCA (“One Regional Card for All”) regional fare card is accepted by all seven transit providers in the region. Regional agencies are beginning a multi-year process to plan and implement the next generation of regional fare collection.

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LOS ANGELES

ROLE OF THE TRANSIT AGENCY
The Los Angeles County Metropolitan Transportation Authority (Metro) is the regional transit operator for the LA region. It serves more than 9.6 million people in a 1,433-square-mile service area. Metro operates 170 bus routes, four light rail lines, and two subway lines.

ROLE OF THE CITY
The City of Los Angeles Department of Transportation (LADOT) is the lead agency for the planning, design, construction, and operation of transportation systems in the City of Los Angeles. LADOT’s Mobility Management group operates the city’s bus transit system, LADOT Transit. LADOT is the second-largest public transit operator in LA County (next to Metro), providing 25.6 million trips in 2014. LADOT Transit operates the local bus service (the DASH) and a regional bus service (Commuter Express) that supplements Metro’s regional transit system. This service has been incrementally expanded, replacing transit routes formally served by Metro. There are five downtown DASH routes, 26 community DASH routes, and 14 Commuter Express routes. LADOT contracts all service to a private operator. The City Council and Mayor review and approve all of LADOT Transit’s service contracts and fare policies.

TRANSIT FUNDING
Metro receives funding through a regional dedicated sales tax. Los Angeles County voters have approved half-cent sales taxes for Metro three times: Proposition A, Proposition C, and Measure R. A fourth measure, Measure M,
was approved by voters in November 2016 and will add a half-cent sales tax for LA County to finance new transportation projects and programs. Propositions A and C will remain in place indefinitely. Measure M has no expiration date, and its approval makes Measure R permanent. As a condition of voter approval, 25% of the Proposition A tax revenues, 20% of the Proposition C tax revenues, and 15% of Measure R tax revenues are earmarked for the Local Return Programs to be used by cities and the County of Los Angeles in developing and/or improving local public transit, paratransit, and related transportation infrastructure.

Measure M will adhere to a slightly different formula: 35% will be dedicated to transit capital, 20% to bus operations, and 5% to rail operations. Seventeen percent will be dedicated to freeways, 16% to the Local Returns Program, and 1% to regional rail (Metrolink). There are also three new categories of funding: 2% for ADA paratransit, 2% to “state of good repair” maintenance projects, and 2% to bicycle and pedestrian improvements.

LADOT Transit is funded primarily through the transportation sales tax funds noted above. Most DASH transit routes are exclusively funded by the city’s local Proposition A funds. LADOT also uses Federal Transit Administration (FTA) 5307 capital allocations for expenditures such as new vehicles and stop improvements. LADOT has also received earmarks to help purchase buses and improve transit stops. LADOT also receives nearly $1 million in annual revenues from bus advertising ($979K in FY 2014-2015).

**KEY LESSONS**

- Metro and LADOT transit services are not integrated. Each agency has its own online trip planner and fare system. Passengers transferring between LADOT buses and Metro rail or bus or other municipal bus lines are required to purchase an interagency transfer equal to $1.50 or the base fare.

- A 2016 pilot program allowed Metro 7-day and 30-day pass holders to ride DASH buses for free. The pilot program runs through December 2016 and was made possible by a cap and trade grant from the state’s Low Carbon Transit Operation Program. The goal of the pilot is to provide a seamless transfer between Metro and DASH services to increase the use of transit by existing riders and attract new riders to both services.
MINNEAPOLIS

ROLE OF THE TRANSIT AGENCY

The Twin Cities region has two entities that coordinate transit planning and investment. Metro Transit is the Minneapolis-St. Paul region’s primary transit operator and is a division of the Metropolitan Council (Met Council), the metropolitan planning organization for the region. Metro Transit is governed by a 17-person board of appointed members, with 16 representing different geographic districts and one member at large. The Counties Transit Improvement Board (CTIB) is a separate entity that is primarily responsible for funding capital projects. The CTIB was formed in 2008 as a result of a bill passed by the Minnesota Legislature. The Board is comprised of representatives from five counties: Anoka, Dakota, Hennepin (Minneapolis), Ramsey, and Washington.

In 1981, the Minnesota Legislature allowed communities that felt they were not receiving adequate transit service to “opt out” of the regional transit services on the condition that they provide alternative transit services. Twelve communities that have chosen to opt out of Metro Transit as of 2016 make up about 17% of transit service in the Metro Transit district. The opt-out communities receive funding through a formula outlined in the legislation and subsequently determine the level of transit service provided in their communities. All six of the suburban transit providers offer express bus service to downtown Minneapolis; several also offer express service to the University of Minnesota. One suburban provider, the Minnesota Valley Transit Authority, offers express bus service to downtown St. Paul and to the Mall of America. The suburban providers also offer a range of local bus service. By law, all providers in the region are required to charge the same fares for the same type of service.

ROLE OF THE CITY

The City’s 10-year transportation plan—Access Minneapolis (2009)—sets a bold vision for the primary transit network (PTN) in Minneapolis. The PTN sets a standard for all-day transit service that operates at 15-minute frequency or better at least 18 hours per day seven days a week. The plan sets clear roles and responsibilities for the city and Metro Transit. Responsibilities of the City’s Public Works Department include signal prioritization and optimization, bicycle and pedestrian access to transit improvements, and maintenance of amenities at bus stops. Metro Transit is responsible for implementation of system operations.
The City of Minneapolis, in collaboration with Met Council, is also planning a 3.4-mile modern streetcar project in downtown Minneapolis along the Nicollet and Central Avenue corridors. The streetcar project is estimated to cost $200 million and carry over 9,000 daily riders. The project would be funded in part through the value capture district that the City of Minneapolis established for the project in June 2013 (see funding section below); other federal, regional, and local funds will also be pursued.

FUNDING FOR TRANSIT

Transit service provided by Metro Transit is funded by federal sources (10%), state grants (14%), transit fares (28%), and a motor vehicle sales tax (33%). The motor vehicle sales tax was increased by the Minnesota Legislature in 2004 (from 20.5% to 21.5%). By 2012, 36% of motor vehicle sales tax revenue was allocated to transit in the Twin Cities region.

Capital funding comes from the regional Transportation Sales Tax passed by the Legislature in 2008. This is a quarter-cent metropolitan sales tax dedicated to new light rail, commuter rail, and busways in the seven-county metropolitan area. These funds are allocated by a regional partnership made up of the eligible metropolitan counties. The tax is levied county by county and generates about $110 million per year.

The Nicollet and Central Avenue streetcar line is expected to be funded in part through a value capture district established by the city, along with federal, regional, and local funds. The value capture district consists of one city block on either side of the proposed streetcar line, and can be amended if routing changes. The city will retain 100% of the captured net tax capacity of the district, and will allocate the funds for planning, design, and engineering services, acquiring property, and construction of the streetcar line. Tax revenues will not be used for the operation of the streetcar line.

KEY LESSONS

- Metro Transit is unique in that it is operated by the regional metropolitan planning organization. Potentially competing regional and local priorities are balanced by allowing jurisdictions to opt out of Metro Transit’s services and CTIB.

- The governance structure in Minneapolis is complex. For example, the CTIB can decide which transitways to fund, but its funding decisions must be consistent with the Met Council’s Transportation Policy Plan. The opt out policy allows the suburban transit providers to determine the amount of service they provide within their communities, but they must comply with regional standards and federal requirements.

- In Minneapolis, where multiple providers offer regional service into downtown, coordination and communication across providers is needed to ensure the transit system is easy to use for passengers.
GOVERNANCE AND FUNDING SUMMARY

The following table provides a summary of the roles and responsibilities in Denver and each of the peer cities.

Summary of Roles & Responsibilities

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<th>City Role</th>
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*LA County sales tax funds are designated to the City to operate local service
**Planned
Overall it is still more expensive and slower to take public transit instead of driving... [it] would be great to [make transit] faster and cheaper.

– Denveright Community Visioning Workshop Participant (October 2016)
CHAPTER 7
KEY FINDINGS AND NEXT STEPS

Based on a shared understanding of Denver’s existing transit system, the Denver Moves: Transit plan explores existing transit service and will recommend transit improvements to make transit in Denver convenient, reliable, and accessible to all. The State of the System Report provides a detailed assessment of all things transit in Denver—from how often and where transit operates to people’s ability to bike, walk, and connect to transit.

This chapter summarizes the key findings and most prominent transit challenges and opportunities currently facing Denver. Ultimately, these findings will inform recommendations that will help Denver residents, workers, and visitors use transit to more reliably connect to neighborhoods, schools, services, entertainment, cultural venues, work, and social events.

This chapter also highlights the next steps for Denver Moves: Transit.
#1: RAIL

Rail service provides a fast and high-quality transit experience where available.

Compared to other RTD services, rail has the highest on-time performance at 93%. The reliability of rail service combined with fast travel times makes it competitive with driving.

Ridership on RTD rail lines has increased by about 5 million annual riders since 2010 (29%), but Denver must be strategic about this investment to avoid increasing service hours and decreasing ridership. Important considerations include location of the rail corridors, destinations served, and facilities to help people access transit.
#2: ACCESS

Bicycle and pedestrian access to transit stops and stations is challenging in many areas.

Bicycle and pedestrian infrastructure near transit stops and stations is essential to support convenient multimodal connections and to increase the number of people served by transit. Safe and comfortable walking and biking access to transit can be a deciding factor in the decision to ride transit, especially for those with the option to drive.

For pedestrians in Denver, the experience walking to transit stops and stations can vary widely. The Denver Living Streets Initiative “pedestrian realm” toolbox provides design guidance to improve the experience for transit connections. For cyclists, a combination of both on-street and off-street bicycle facilities will help support seamless first/last mile connections to transit.

Note: Sample map; Chapter 3 provides similar maps for seven focus areas around the city.
STATE OF THE SYSTEM

#3: FREQUENCY

Many bus lines run only every 30-60 minutes outside of peak hours.

People are more likely to use transit when service operates frequently, runs at the times they need it, and is easy for them to access within a quarter-to half-mile walk. Less than 40% of Denver residents are within a convenient walk (quarter-mile walk to a bus stop or a half-mile walk to a light rail station) to all-day frequent service (transit that runs at least every 15 minutes*).

While all rail lines provide frequent service, there are relatively few bus lines with frequent service*. Increased frequency, particularly in high-density areas and for bus service, is needed to help enhance the transit experience and increase ridership.

Note: *For analysis and mapping purposes, frequent service was classified based on an average frequency of 18.5 minutes or less across both directions of a route (or corridor with multiple routes serving similar travel patterns).
#4: STREET CONNECTIVITY

Gaps in street connectivity influence access to transit and route design.

Distance is one of the most important factors people consider when deciding whether to use transit. Well-connected streets provide shorter travel distances and make it easier and faster for pedestrians, cyclists, and drivers to access transit.

In Denver, streets become less connected further from downtown. While neighborhoods within and adjacent to downtown have a more fine-grained street network with short blocks and many intersections, some parts of the city have a disconnected street network that can more than triple the walk distance to transit. For example, the Capitol Hill neighborhood has 0.24 intersections per acre, compared to the Northeast Park Hill neighborhood that has only 0.11 intersections per acre. Off-street paths and first/last mile connections can help reduce the travel distance to transit.

Intersection Density in the City of Denver
#5: SYSTEM DESIGN

Inefficiencies in the bus system are counterproductive to a positive rider experience.

The design of both Denver streets and the transit system influence the attractiveness of transit and play a role in transit’s ability to operate successfully.

Transit routes jog between Denver’s streets and have many turns. In some cases, this is due to the street network; in others it reflects how service has evolved to serve the most people. Where deviations can be removed to make the system easier to understand, make transit routes more direct and legible, and reduce travel times, it will improve the rider experience* and make transit a more compelling travel option.

_Denver Moves: Transit_ will include a detailed corridor analysis that will make recommendations for improving the design of the system.

Note: *Passenger experience refers to the overall perceived quality of riding transit, based on both physical characteristics of the system and the way in which it operates. Some contributing factors include route legibility (i.e., simple and easily understood path and schedule); availability and clarity of information; on-board comfort; real time arrival information; quality of access to transit from other modes such as bicycling or walking; the convenience and flexibility of the fare system used; and stop amenities such as lighting, seating, and shelters.
Only 25% of Denver bus stops with 40 or more daily boardings have shelters.*

Transit stop and station amenities can enhance comfort and improve the overall rider experience. Many RTD bus stops—even those that meet RTD’s minimum threshold of 40 or more daily boardings—do not have bus shelters. While a shelter may not be needed at every bus stop, stops without shelters or other amenities can discourage people from using transit, especially during inclement weather.

The City of Denver’s Transit Amenities Program is an advertising-based program that provides amenities at select bus stops. These shelters are in addition to those shown on the map. RTD doesn’t maintain or have consistent information about location of these shelters, and some lack even basic amenities like transit information and system maps.

Reviewing and revising the existing bus stop amenity guidelines could help to enhance transit passenger experience.

*Based on RTD shelter maintenance inventory and 2015-2016 boarding data. There are approximately 500 Denver bus stops with 40 or more daily boardings. Stops with shelters maintained by RTD represent less than 5% of the over 3,000 bus stops in Denver. There are additional stops with shelters installed and maintained through a City of Denver advertising contract, but a comprehensive inventory of stops with these additional shelters is not available.
#7: INFORMATION

Limited information is available to help riders understand the system.

A lack of knowledge and understanding of the transit system are common barriers to transit access and use. Readily available and easy-to-understand information can address this barrier, improve the passenger experience, and help make the system more accessible, particularly for infrequent riders.

Providing simple and clear maps and schedules, promoting the existing online and mobile resources available to transit riders, and implementing real-time transit arrival information at all stops and stations could help to make transit easier to use for Denver residents and visitors.
#8: DOWNTOWN ACCESS & CIRCULATION

The Free MallRide and Union Station contribute to a vital downtown core, but other amenities and facilities have room for improvement.

Downtown Denver is a regional transit hub. Residents and visitors can access downtown via rail or bus routes that enter downtown from all directions. Circulation within downtown is provided by rail, which serves the middle of downtown, or via the Free MetroRide or Free MallRide shuttles.

Downtown facilities like Union Station, Civic Center Station, and the 16th Street Mall are important transit assets, but the quality of other bus amenities and on-street facilities could be significantly enhanced to increase the efficiency and attractiveness of downtown transit.
Fares are relatively high compared to Denver’s peer cities; the zone fare structure can be cost-prohibitive for people with lower incomes.

The cost of transit can significantly influence ridership and accessibility. People with lower incomes are more likely to rely on transit for everyday travel, but high fares can make it difficult for some people to use transit.

One-way fares in Denver range from $2.60 for local trips to $4.50 for regional trips. Compared to its peer cities, Denver has among the highest one-way fares. With the low cost of parking and lack of roadway tolls, driving can be a more appealing travel choice than taking transit and paying a high fare cost.

Local day passes at $5.20 (the cost of a local round trip) can reduce costs for riders making multiple trips in a single day. RTD’s Community Pass Programs can also provide cost savings for some neighborhoods and for college students, but other programmatic improvements could help improve access to transit and increase ridership.

Note: Fares for bus and rail services that use an agency’s standard fare zones, but do not include some commuter rail services with distance-based fares, e.g., Sounder commuter rail service in the Seattle area.
**#10: USE OF TRANSIT**

Denver’s share of commute trips on transit is lower than most peer cities.

The percent of Denver residents using transit to get to work has declined from 8% in 2000 to 6% in 2015. This is lower than most of the cities comparable to Denver, with the exception of Austin and Charlotte. Driving alone is the most popular mode of commuting in Denver.

In order to make transit a more attractive choice, it must be competitive with driving, including reduced travel times and convenient access. Changes to service and new or improved infrastructure can help to address these barriers. Many types of programs can provide transit information and resources to promote existing services and encourage transit use. Although the City and County of Denver and RTD currently have limited program staff, there are existing programs and partners within the Denver region that encourage transit use.

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**DENVER COMMUTE MODE SHARE**

- 73% Drive Alone
- 6% Transit
- 7% Carpool
- 4% Walk
- 2% Bike
- 1% Other
- 7% Work From Home

**Source:** U.S. Census American Community Survey (2015 1-Year Estimate)

**PEER CITY MODE SHARE**

- **ATLANTA:** 10% Transit
- **PORTLAND:** 13% Transit
- **AUSTIN:** 4% Transit
- **SALT LAKE CITY:** 8% Transit
- **CHARLOTTE:** 4% Transit
- **SEATTLE:** 21% Transit
- **MINNEAPOLIS:** 13% Transit
- **WASHINGTON DC:** 36% Transit

**Source:** U.S. Census American Community Survey (2015 1-Year Estimate)

**Note:** Data is for the core city
#11: COMMUTE FLOW

53% of Denver workers commute to another county for work.

Seventy percent of employees in Denver commute from outside of Denver.

While transit is used for many types of trips, one important market to serve is popular commute patterns. Denver has a large number of people who travel into and out of the county for work, which causes the number of people within the city to swell to approximately 875,000 during the day.

Most people working in Denver live outside of the county. To increase the number of people using transit, commute travel patterns should be an important consideration when changing existing service or implementing new service.

Source: Longitudinal Employer-Household Dynamics (LEHD), 2014
NEXT STEPS FOR DENVER MOVES: TRANSIT

Denver Moves: Transit is an 18-month process that will build on the information in this State of the System Report and the key findings to engage Denverites in developing a vision for transit. (A schedule is provided on page 7.)

The State of the System Report presents opportunities for Denver to work with RTD to improve the transit experience by improving frequency, providing better service between neighborhoods and to key destinations, and enhancing access to transit. To do this, the Denver Moves: Transit process will:

- **Establish goals and objectives** that set a vision for transit that is aligned with the community’s values and plans for growth.

- **Develop scenarios** in partnership with the Blueprint Denver team to identify a preferred scenario that supports the land use and transportation connection and the goals and objectives for the plan.

- **Identify corridors** that are best suited for different types of transit—rail, bus rapid transit, and local bus—and the capital improvements that may be needed to ensure transit is a reliable and competitive option to driving alone.

- **Envision a complete transit system** that ensures bicycle and pedestrian access to transit is seamless, stops and stations are comfortable and safe, and information and programs improve the awareness and legibility of transit for all Denverites.

Learn more and find ways to get involved at [https://www.denvergov.org/content/denvergov/en/denveright/transit.html](https://www.denvergov.org/content/denvergov/en/denveright/transit.html).

Community input gathered at Denveright Community Visioning Workshop events in October 2016 will help to shape Denver Moves: Transit.