Chapter 4
Our Growing and Changing Region
2023 Regional Transportation Plan

July 10, 2023 PUBLIC REVIEW DRAFT

Metro

TABLE OF CONTENTS

FIGURES

TABLES

4.0 INTRODUCTION

Purpose

The greater Portland region is an extraordinary place to call home. It is known for its unique communities, a diverse and growing economy and a world-class transportation system. The region is surrounded by stunning natural landscapes and crisscrossed with a network of parks, trails and natural areas within a walk, bike ride or transit stop from home. It also serves as a freight gateway to domestic and international markets for businesses located throughout the state of Oregon, southwest Washington, the mountain states and the Midwest.

The region did not get this way by accident. Over the years, communities throughout the region have taken a collaborative approach to planning that has helped make the region one of the most livable in the country. Every day, the region's 2.4 million people have places to go – to work or school, to doctors and grocery stores and parks and back home again. All these trips, along with our transportation system, knit the region together – from Forest Grove to Troutdale, Vancouver and Portland to Wilsonville and every community in between.

Through our dedication to planning and working together to make local and regional plans a reality, we have set a wise course for managing growth, but new challenges continue to emerge. Our success in creating a livable region has attracted new residents and employers, but our housing supply hasn't kept up with population growth, and it has become prohibitively expensive for many people to afford homes, particularly in neighborhoods where it is easy to walk, bike or take transit. This may be one of the reasons why some recent investments in transit and trails haven't drawn as many users as they have in past decades. And even the best-laid plans couldn't have anticipated the impact of the COVID-19 pandemic, which dramatically reshaped how people travel and continues to affect the region even as the public health emergency recedes.

This chapter provides a snapshot of current conditions and trends within the Greater Portland region and highlights key regional transportation challenges and needs for the plan to address.

Chapter organization

The RTP Needs Assessment is organized around the five 2023 RTP priorities: mobility, safety, equity, economy, and climate. Each section of this chapter is dedicated to one of these priorities, and contains research, maps and data describing transportation needs with respect to each priority. Because these goals are often aligned – for example, increasing transit service often benefits mobility, climate, and equity – some sections contain similar information, or refer to relevant information in other sections.

4.1 MOBILITY

The draft Regional Mobility Policy included in the 2023 RTP update redefines how the region defines and measures mobility throughout the plan, establishing three performance measures for transportation agencies to use in plans and projects:

- System completeness
- Vehicle miles traveled
- Travel speed reliability on throughways

Development of the draft regional mobility policy has been underway since 2019, through a joint effort of Metro and the Oregon Department of Transportation (ODOT). In late 2022, JPACT and the Metro Council accepted the draft mobility policies and directed further development of the accompanying performance measures as part of completing the 2023 RTP.

The throughway performance measure and thresholds aim to identify future transportation needs on region's throughways using travel speed as a proxy for reliability. The draft policy proposes a minimum throughway performance threshold of no more than four hours per weekday with travel speeds below 35 miles per hour on controlled access freeways (e.g., I-5, I-84, I-205, I-405, US 26 and OR 217) or 20 miles per hour on non-freeways with traffic signals (e.g., OR 99E, US 30, OR 212). If average speeds fall below the relevant speed threshold for more than a total of four hours in a day, it indicates the system is failing at that location and a transportation need exists.

This section provides a general update on how travel patterns have evolved since the last RTP update in 2018 as well as baseline information on the three measures above. Key findings include:

- Travel declined during the COVID pandemic. Between October 2019 and October 2021, daily throughway trips on a sample of regional mobility corridors decreased by five percent, daily arterial trips decreased by 14 percent, and daily transit ridership decreased by 41 percent.
- Overall, the planned motor vehicle network is much more complete than the other modal networks.
- Active transportation networks are mostly complete near transit. However, there are plenty of small gaps that hinder people's ability to walk and bike to transit stations and other important destinations. There are larger bicycle and pedestrian gaps between urban centers and at the edges of the region, many of which are on the trail system.
- Per capita VMT in the Greater Portland region has been significantly lower than the national average since 1997 and has mostly been flat or declining. But in order to meet ambitious VMT reduction targets the region will likely need to take new approaches.
- During rush hour, the average traveler can reach 43% of jobs in the region by driving, and 7% by transit. Metro and partner agencies are working to increase ridership by better connecting activity centers – potentially including many developing suburban centers – with frequent transit.

4.1.1 Evolving travel patterns

Between 2015 (the base year for the 2018 RTP update) and 2020 (the base year for the 2023 RTP update, the region grew significantly – by 135,000 people (an 8.4% increase), 57,000 households (8.9%) and 90,000 jobs (10.1%).[1] This growth is projected to continue, though not necessarily at the same rapid rate as the region saw during the previous decade. As Greater Portland continues to evolve into a major metropolitan area, with increasing housing prices and a more specialized economy, commute patterns are becoming more complex. Figure 4.30 in the Thriving Economy section provides a window into this growing complexity; it shows how workers commute within and between counties in and around the region. Over 45 percent of workers in the 3 Metro-area counties work in a different county than where they live.

Though the number of jobs and homes in the region is growing, the way that people commute hasn't changed much. Table 4.1 shows commute mode shares for 2010 and 2019 (the base year for the 2023 RTP update, and the last year of available data that does not reflect the impacts of the COVID-19 pandemic). The table shows both absolute change in mode shares between 2010 and 2019 (which better captures which modes are dominant in the region, but can understate change for modes other than driving because they are less widely-used to begin with) and relative change (which better captures the extent to which usage of different modes is growing or declining relative to current levels, but can also amplify small variations that are due to margins of error or other reporting issues). This data is built up from Census tract-level estimates for all tracts within the MPA boundary, weighted according to the population in each tract.

Table 4.1: Commute mode shares in the Greater Portland region, 2010-2019 (American Community Survey five-year estimates, 2006-10 and 2015-19 data)

Mode	2010 mode shares	2019 mode shares	Absolute change 2010-2019	Relative change 2010-2019
Drive alone	69.5%	67.8%	-1.7%	-2.4%
Carpool	9.9%	9.2%	-0.7%	-6.6%
Transit	7.7%	8.1%	0.4%	5.3%
Walk	3.7%	3.6%	-0.1%	-2.4%
Bike	2.3%	2.6%	0.2%	10.4%
Work from home	6.0%	7.6%	1.6%	26.4%

Between 2010 and 2019, vehicle commute shares fell slightly, the share of people biking or taking public transportation to work rose slightly, and there were very small changes in how many people walk to work. This reflects the challenges inherent in achieving the RTP's goal of supporting a shift from driving to other modes. Though the region has prioritized investments in transit and active transportation over the past several decades, the motor vehicle network is far more built-out than other networks and people's daily travel habits are deeply ingrained, so even major multimodal investments only produce incremental changes. The rising cost of housing, especially in walkable neighborhoods near transit stations, may also play a role since it makes it

[1] Metro Regional Travel Model.

harder for people with lower incomes – who tend to be more likely to use modes other than driving, particularly transit – to afford a home that offers access to options.

The biggest change captured in Table 4.1 is the growth of working from home. The share of people working from home increased by a relative 25% between 2010 and 2019 – double the growth in transit, which is the next-fastest-growing mode in the region – and as of 2019 there were almost as many people in the region working from home as there were taking transit to work. Furthermore, the data shown above only captures people who work from home full time; if it accounted for people who work from home a few days per week it would show an even larger percentage of people teleworking.

It is important to note that the data shown above only capture commute trips. These trips make up less than 30 percent of all trips in the region, but since commutes are often time-sensitive, longer-distance trips they account for a significant share of congestion and vehicle miles traveled. Metro's travel surveys find that people are significantly more likely to walk and carpool and less likely to drive alone or take transit when taking non-commute trips than they are when commuting.

Impacts of the COVID-19 pandemic on travel

The data discussed above highlights how slowly transportation behavior often changes. However, major events like recessions and natural disasters can have immediate and drastic impacts on how people travel, and it can take a while for conditions to stabilize afterward. The COVID-19 pandemic that began in March 2020 was just such an event. Even though the federal government has now declared the COVID-19 public health emergency over, offices and hotels are still emptier than they were before the pandemic, and the impacts of the pandemic are still rippling through the economy and the transportation system.

The RTP is a plan for the next 20 years. Using pre-pandemic data to assess needs allows the RTP to focus on the long-term demographic and economic changes that shaped the region's growth over the past several decades, and that are likely to continue to determine how the region grows in the future. Most of the data in this chapter is from 2020 or before. 2020 is the base year for the 2023 RTP update, is often the most recent year for which data are available.

Many aspects of life and travel have already returned to their "normal" pre-pandemic state, while others are trending that way. It's possible that some of the impacts of the pandemic will be so long-lasting that they lead to a "new normal" somewhere between conditions at the peak of the pandemic and those beforehand. Considering this possibility – which begins with understanding how transportation patterns have continued to evolve since the pandemic[2] – helps the RTP be more resilient under different potential futures. Figure 4.1 below shows how travel demand changed for transit and on different types of streets during the year following the pandemic.

[2] Most data in this section comes from Metro's Emerging Transportation Trends Study, which can be found at: https://www.oregonmetro.gov/public-projects/2023-regional-transportation-plan/research

Figure 4.1: Trip volumes by mode and by facility type, indexed to February 2020 levels, February 2020-2021 (PBOT freight route and arterial count data; ODOT throughway count data; TriMet transit ridership performance reports; data were compiled in April 2021[3])

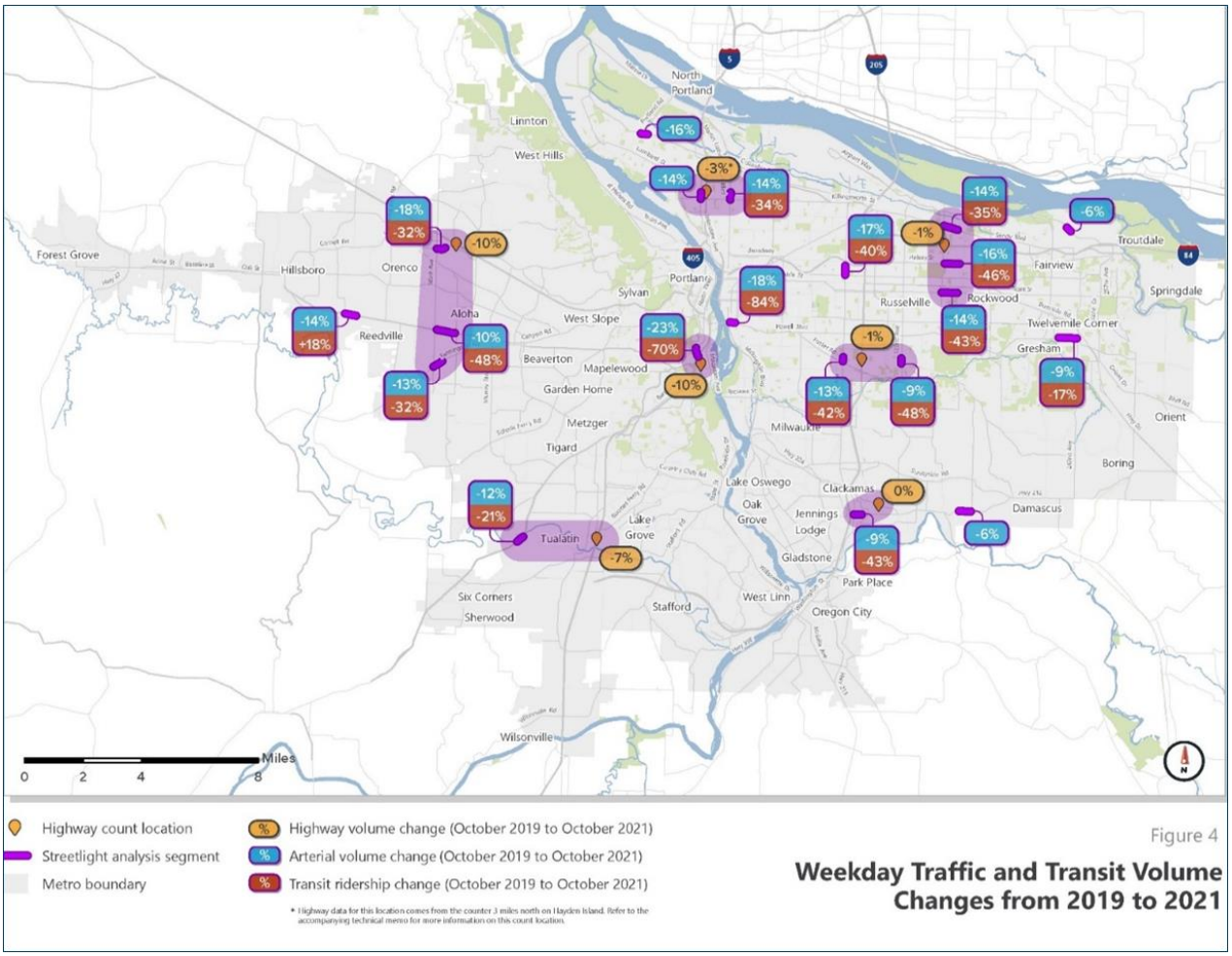
All different types of travel shown fell during the initial months of the pandemic, but some fell more steeply and/or recovered more slowly than others. Trips on freight routes fell the least and recovered most quickly, potentially because goods kept moving during the pandemic and many freight routes also connect workers to jobs that remained in-person during the pandemic. Throughway trips recovered to 80 percent of pre-pandemic levels by May 2020, and then continued to fluctuate, which could reflect normal seasonal changes in travel demand, extreme weather events, and/or the spread of new COVID variants. Arterial travel appeared to be recovering less slowly, but the data shown only covers the first half-year of the pandemic.

Metro collected data for a set of throughways, arterials and transit routes that reflect key corridors in the region.

[3] This figure, as well as some of the other data in this section, reflects the underlying availability of source data at the time of compilation. Some of this data comes from limited-duration collection and reporting efforts that agencies undertook when the pandemic began to understand its impact.

Figure 4.2 below shows the results. Changes in throughway volumes are shown in yellow, changes in arterial volumes are shown in blue, and changes in transit ridership are shown in red.

Figure 4.2: Weekday vehicle and transit volume changes, October 2019-October 2021 (ODOT throughway count data; Streetlight arterial volume data; TriMet transit ridership by route data)



Average daily throughway trips across the study locations decreased by five percent between October 2019 and October 2021, while arterial trips declined by 14 percent and transit ridership fell by 41 percent. In almost every location studied, arterial volumes decreased more significantly than throughway volumes. Transit volumes fell particularly significantly in locations closer to the center of the region.

These findings are consistent with research about the pandemic's broader impacts on transportation, which has found that teleworking reduces vehicle trips and miles traveled, as well as transit ridership, particularly near job centers. Transportation agencies in the region are already responding to these dynamics – for example, TriMet's recent Forward Together concept[4]

[4] https://trimet.org/forward/

realigns transit service to focus on routes that have maintained ridership through the pandemic and that serve people with low incomes, who were more likely to continue to rely on transit over the past several years. If teleworking rates remain high, it would likely lead to slightly lower levels of VMT per capita and transit use than the region would otherwise experience, all other things being equal.

4.1.2 System completeness

Meeting Mobility goals depends on providing a variety of seamless and well-connected travel modes so that people have multiple options for making trips.

Table 4.2 below summarizes the completeness of different regional modal networks, using the planned networks developed during the 2018 RTP. These planned networks are based on extensive analyses of network conditions and deficiencies as of July 2022, as well as relevant policies and performance/design standards that apply across the region.[5] This table also reports on the completeness of the bicycle and pedestrian networks[6] near transit stations and along the arterials, which helps people make safe multimodal trips. Completing active transportation networks in EFAs is a priority under the RTP's Equity policies, and completing networks in 2040 centers and emplyoment/industrial areas is important to supporting a Thriving Economy – see those sections for a discussion of bike/ped system completeness in those specific communities.

Table 4.2: System completeness by modal network and location within the region (2018 RTP networks and 2022 partner agency data)

Network	Total planned miles	Number of miles completed	Percent of miles completed
Region-wide			
Transit network[7]	1,460	788	54%
Pedestrian network	1,040	597	57%
Bicycle network	1,149	626	55%
Trail network	560	245	44%
Motor vehicle network	1,171	1,146	98%
Near transit			
Pedestrian network	837	539	64%
Bicycle network	881	538	61%

[5] For further information, see the Regional Transit Strategy, the Regional Active Transportation Plan, the Regional Trail System Plan, and forthcoming updates to the Regional Mobility Policy.

[6] Metro distinguishes between on-street bicycle and pedestrian gaps in facilities like bike lanes and sidewalks and off-street bike/ped gaps in facilities like trails. On-street facilities are generally needed to provide good active transportation connections in centers, near transit, and along arterials, whereas off-street facilities provide longer-distance connections between these areas. Table 4.2 focuses on the on-street bike/ped network.

[7] Consistent with how completeness is analyzed for other modal networks, the assessment of transit system completeness is based on the financially constrained RTP, and excludes the strategic investments shown in Figure 4.3.

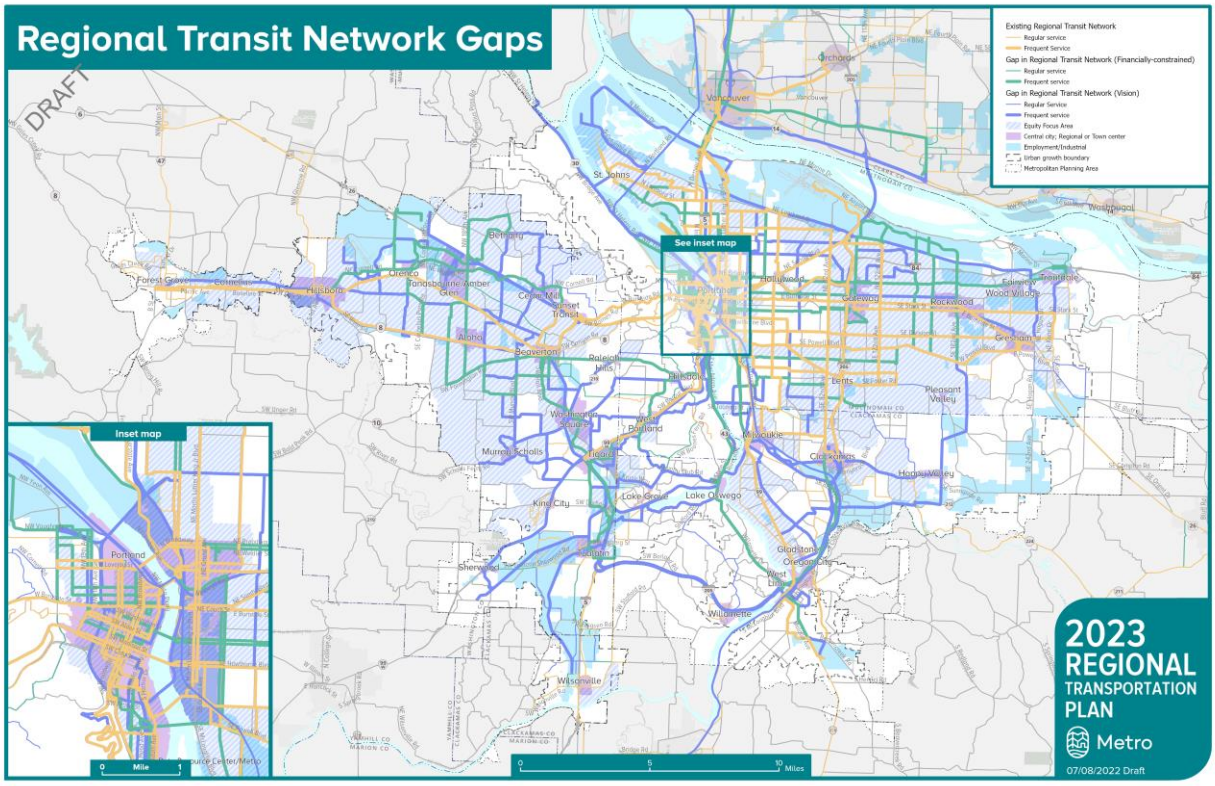
Network	Total planned miles	Number of miles completed	Percent of miles completed
Along arterials			
Pedestrian network	725	414	57%
Bicycle network	619	412	66%

Overall, the planned motor vehicle network is much more complete than the other modal networks. Consistent with the 2040 Growth Concept, the active transportation networks are generally more complete near transit. However, the fact that the pedestrian network along arterials is not significantly more complete than it is in the rest of the region is a concern given that 77 percent of pedestrian crashes occur on arterials.

However, several important gaps remain in these areas. The maps below identify these gaps by comparing the regional visions (i.e., planned systems) for these networks – which are based in extensive coordination with stakeholders and analysis of transportation and land use data – to the facilities that are on the ground today in order to identify gaps in the system.

Figure 4.3 below shows gaps in the transit network where planned transit has not yet been built. The map differentiates between gaps in frequent (thick lines) and regular (thin lines) transit service, and between gaps in the financially constrained network, which the region has identified funding to complete (green), and gaps in the strategic network, which the region has not yet identified funding to complete (purple). It also shows the location of existing regular and frequent service (orange lines). All of this information is overlaid with Equity Focus Areas (violet cross-hatching) to highlight how the current and planned network serves these communities that particularly need improved transit service (see the Equity section for more details on transit-related Equity needs).

Figure 4.3: Regional transit network gaps (2018 RTP networks and 2022 partner agency data)



Filling the gaps in the frequent transit system (thick green lines) are particularly important to meeting the region's Climate goals. The 2018 RTP relied on a planned increase in frequent transit service to meet GHG reduction targets, and the thick green lines indicate routes where this transit has yet to be implemented. These gaps are distributed over most of the more populated parts of the region, and there are large concentrations of them in East Portland and the Orenco/Bethany/Aloha area.

Figure 4.4 and

Figure 4.5 show gaps in the regional pedestrian and bicycle systems. Completed facilities are shown in purple or green; gaps are shown in red. The maps distinguish between gaps in on-street facilities like sidewalks and bike lanes (darker shades) and gaps in off-street facilities like trails (lighter shades). Both the pedestrian and bicycle networks are overlaid with urban centers identified in the 2040 growth concept since RTP policies direct pedestrian and bicycle investments toward centers of activity where short distances between destinations make it easy to travel on foot. As noted above, we encourage readers to look at these maps in detail. Pedestrians and bicyclists are vulnerable users of the transportation system, and even a small gap in the network can make an entire trip feel unsafe and/or inconvenient.

Figure 4.4: Regional pedestrian network gaps (2018 RTP networks and 2022 partner agency data)

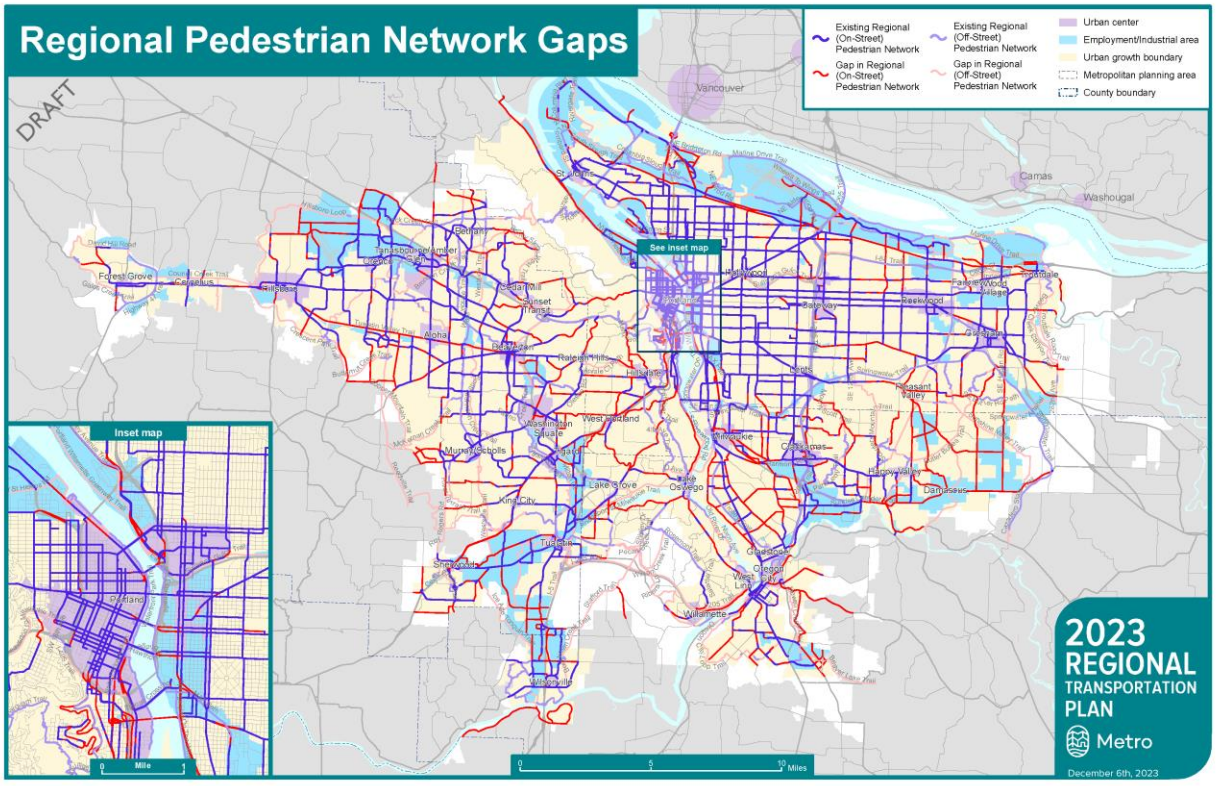
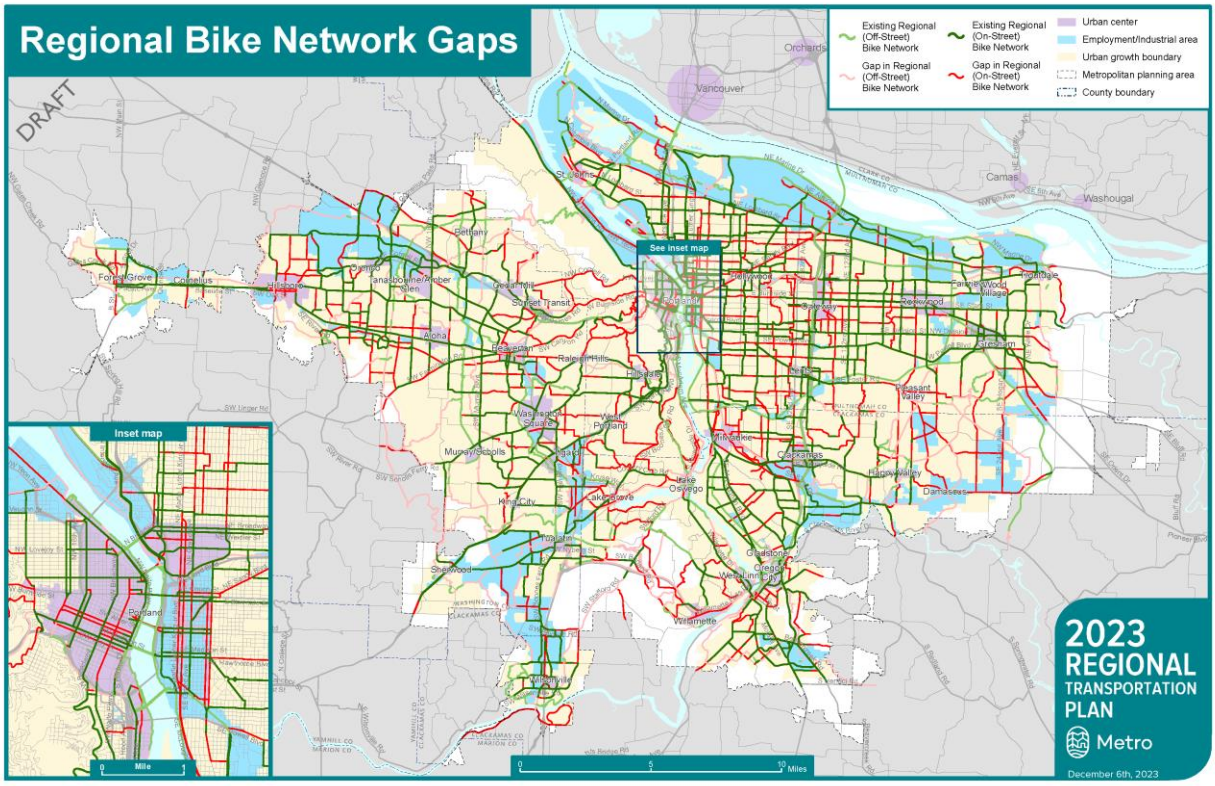


Figure 4.5: Regional bicycle network gaps (2018 RTP networks and 2022 partner agency data)



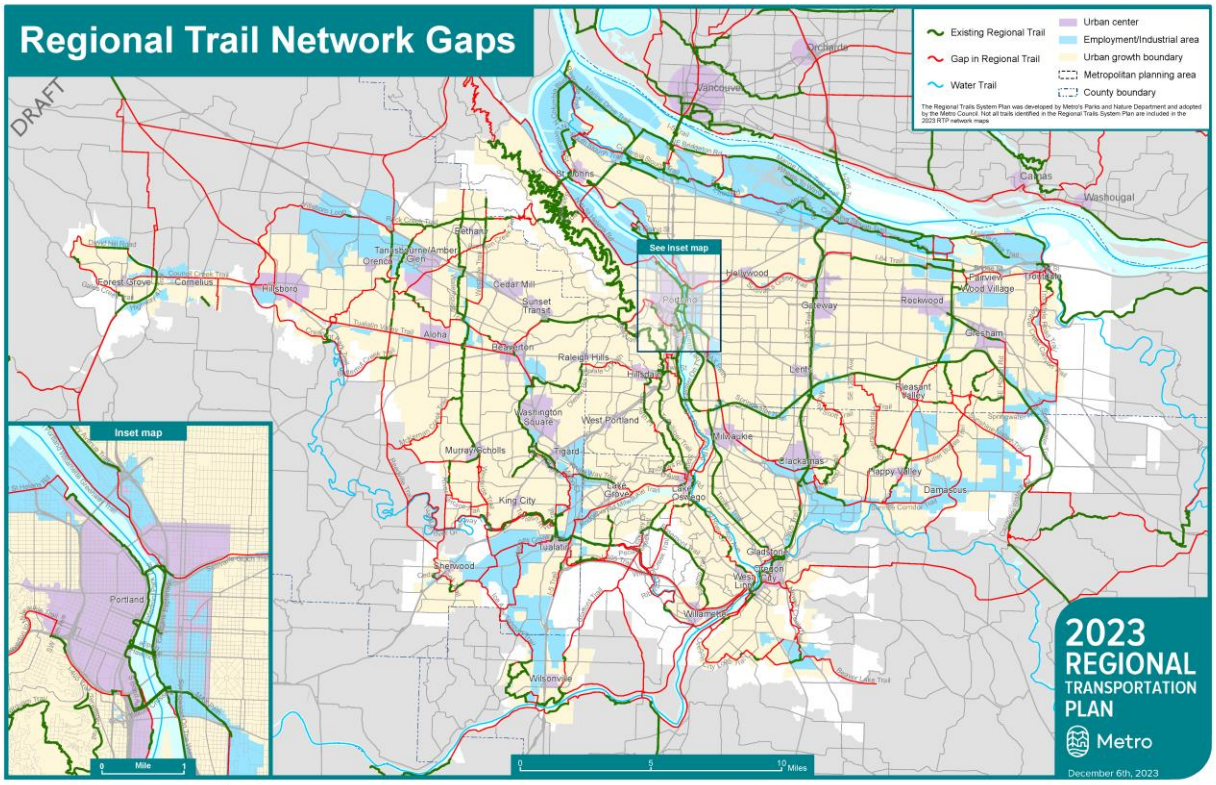
Both the bicycle and pedestrian networks are generally more complete in the region's urban centers, which is consistent with RTP policies that direct transportation investments to support implementation of the 2040 growth concept. But even within those centers there are plenty of small gaps that hinder people's ability to walk and bike – and that can also impact transit use and the economy. Walking is the most primary form of transportation. Whether an entire trip is done on foot or using a wheelchair or similar mobility device, people must walk for at least a part of every trip, even when the rest of the trip takes place on transit, in a vehicle or on a bicycle. Pedestrian activity thrives where the pedestrian facilities are well connected, safe and attractive—meaning well lit, free of debris and in good repair—and where there are frequent protected crossings. A 2022 PSU-Metro study found that pedestrian facilities also had a positive economic effect on surrounding communities.[8]

Closing the gaps shown above can be a relatively low-cost way to complete critical connections in areas that are already generally well-suited for walking and bicycling. There are larger bicycle and pedestrian gaps between urban centers and at the edges of the region, many of which are on the trail system. Closing these gaps has the potential to transform how people travel in communities where most trips are by car, especially when pedestrian projects are accompanied by complimentary investments in transit and community development.

[8] https://www.oregonmetro.gov/active-transportation-return-investment-study

Figure 4.6 below shows gaps in the regional trail network in red and completed trail segments in green, as well as the same urban centers that are included as overlays in the bicycle and pedestrian maps above. Trails are long-distance, high-quality bicycle and pedestrian facilities that provide connect regional centers, and they often pass through natural areas and/or include landscaping and natural features.

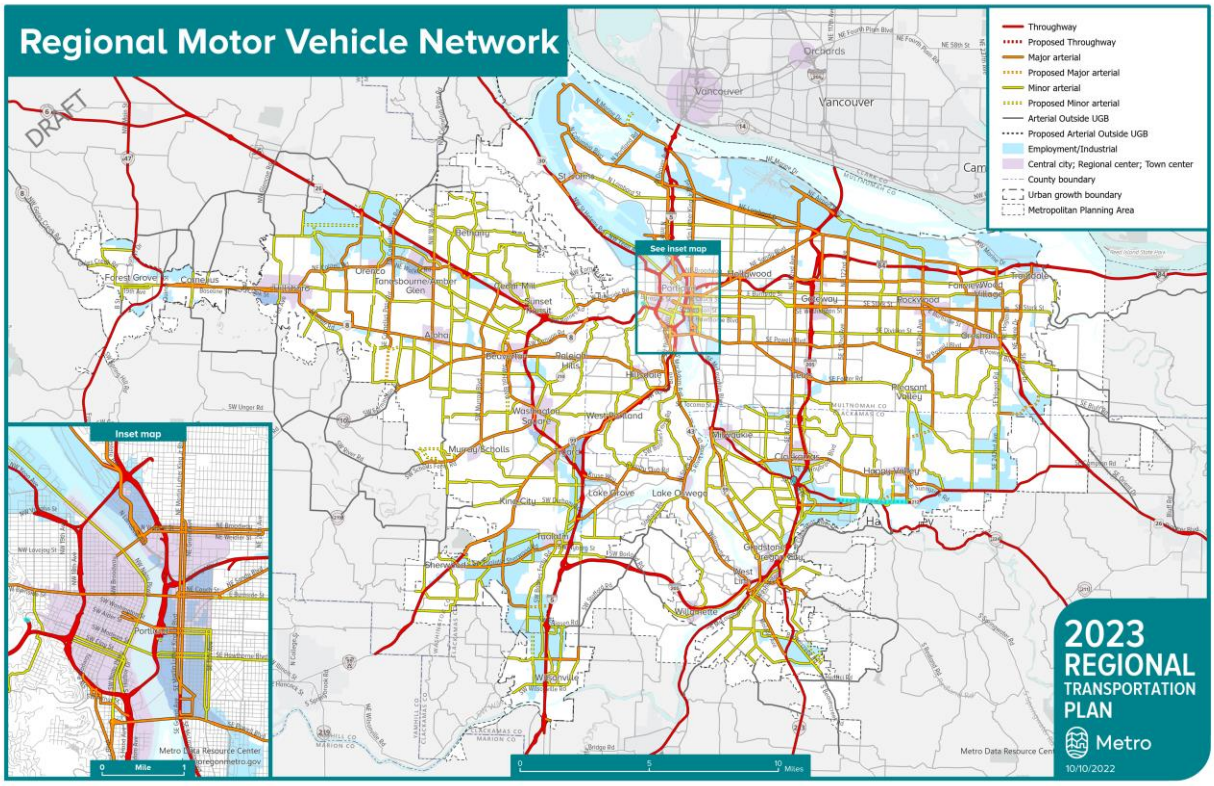
Figure 4.6: Regional trail network gaps (2018 RTP networks and 2022 partner agency data)



Trails are also part of the bicycle and pedestrian networks shown above, and this map underscores how filling many of the longer-distance gaps shown above depends upon completing the regional trail system.

Figure 4.7 shows the planned motor vehicle network by facility type, including planned facilities that have not yet been built, which are shown in dashed lines. As the map below shows, the network is largely built out.

Figure 4.7: 2018 RTP regional motor vehicle network map ((2018 RTP networks and current partner agency data)



4.1.3 VMT per capita

Vehicle miles traveled (VMT) per capita measures much the average person in the Portland region drives each day. Many transportation agencies in the region use VMT per capita to measure progress toward creating vibrant communities and providing multimodal travel options. All other things being equal, VMT per capita tends to be lower in compact communities with a mix of destinations and good access to transit and other options.[9] As discussed at the beginning of this section, the Regional Mobility Policy establishes VMT per capita as a critical performance measure for Mobility, and the State has also established VMT per capita as the key metric used in determining whether the RTP meets its climate targets. See the Climate section for information on historical, current, and projected future levels of VMT in the region.

4.1.4 Throughway travel speed reliability

The draft regional mobility policy for the 2023 RTP identifies *travel speed* on throughways as one of three mobility performance measures. The other two measures – *system completeness* and *vehicle miles traveled per capita* – are discussed above and in the climate section, respectively.

[9] https://nap.nationalacademies.org/catalog/12747/driving-and-the-built-environment-the-effects-of-compact-development

Development of the draft regional mobility policy has been underway since 2019 through a joint effort of Metro and the Oregon Department of Transportation (ODOT). In late 2022, JPACT and the Metro Council accepted the draft mobility policies and directed further development of the accompanying performance measures as part of completing the 2023 RTP.

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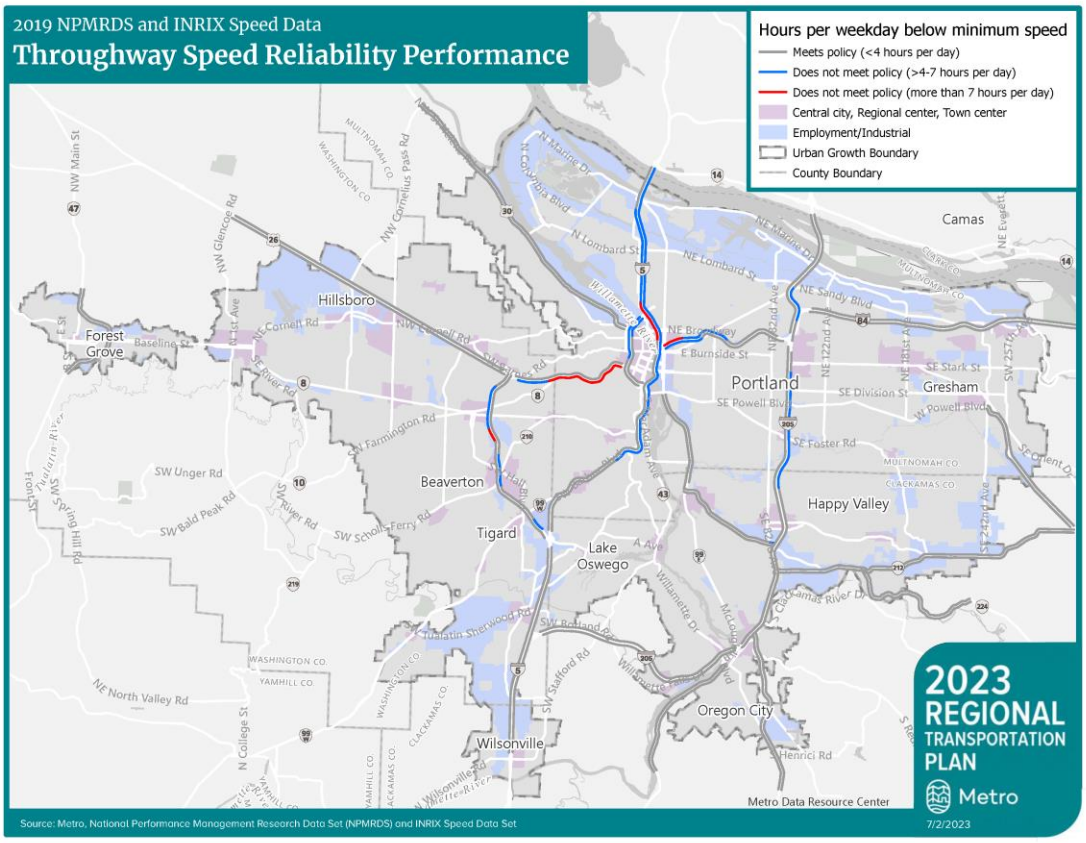
Figure 4.8 maps current throughway reliability results using 2019 weekday speed data collected via the Regional Integrated Transportation Information System (RITIS) platform.

Figure 4.8: 2019 Throughway Travel Speed Reliability Performance (2019 RITIS data)

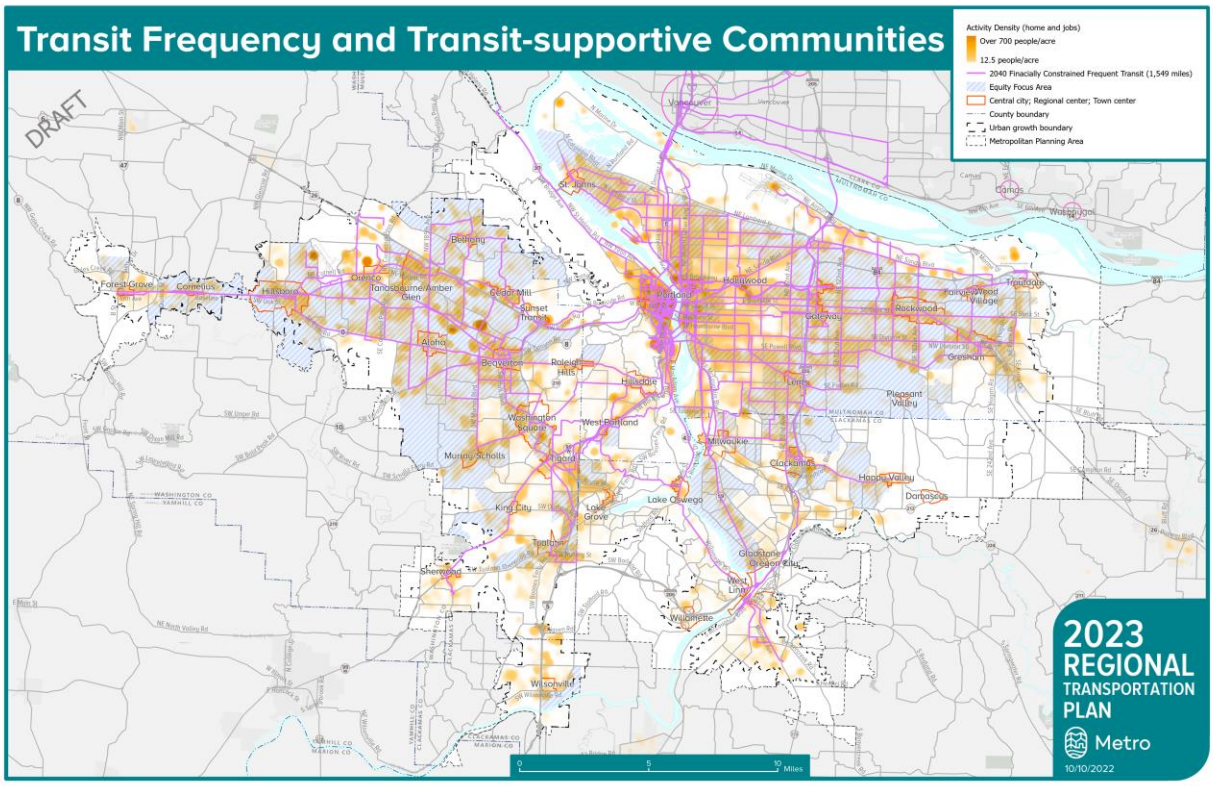


A total of 38 miles (13% of the region's throughway network) currently do not meet the draft mobility policy threshold. More information about the methodology and detailed results for all segments are provided in Appendix I.

4.1.5 Transit frequency

Completing a high-quality transit network is critical to meeting regional Mobility goals. Half of all trips are over three miles, and these trips account for the majority of VMT.[10] Transit is the mode that is best-suited to provide a climate-friendly and affordable alternative to driving for these longer-distance trips. And transit is the most useful when it provides fast, convenient, and accessible transit connections between activity centers. Figure 4.9 below highlights communities that have the densities necessary to support frequent transit[11] (orange) and compares their location with current frequent transit service (i.e., lines with peak headways of 15 minutes, shown in purple). It also shows EFAs in light blue cross-hatching (see the Equity section for additional discussion of this map).

Figure 4.9: Map of high-frequency transit (headways of less than 15 minutes) and transit-supportive communities (12.5 or more people and/or jobs per acre), 2020 (Metro regional travel model and distributed growth forecast)



[10] https://www.bikeleague.org/content/national-household-travel-survey-short-trips-analysis

[11] The High Capacity Transit and Regional Transit Strategies specify a threshold of 5 households or 15 jobs per acre for communities served by frequent transit. In order to map both jobs and housing at the same scale, Figure 4.9 combines jobs and housing into a single measure of activity density (jobs plus residents per acre) and uses a threshold of 12.5 jobs and/or residents per acre to identify communities that support frequent transit. The average household in the region includes 2.5 people, so 5 households per acre is equivalent to 12.5 residents per acre.

If transit service is well-coordinated with land use, this map should show purple lines connecting most of the orange/red clusters of high density. This is the case in much, but not all, of the region, particularly in the south and west and on north/south corridors in the east side of the region.

4.1.6 Access to destinations

Measuring how many destinations people can access via transit and automobile within a given travel time is a common way of understanding the overall utility of transit and driving. The RTP aims to increase access to destinations, particularly for transit. A truly multimodal transportation system is one in which people who travel by transit can reach the same number of jobs via transit within a given travel time as they can via automobile. Table 4.3 below compares accessibility via transit and automobile during peak hours and other times of the day. This analysis uses a 45-minute travel time to measure transit access and 30-minute travel times to measure automobile access,[12] which accounts for the time needed for people to walk between their origins/destination and their car/transit stop and transfer between different transit routes, etc.

Table 4.3: Percent of jobs accessible by driving and by transit, by community type and time of day, 2020 (Metro travel model and land use data)

	Percent of jobs accessible within…	
	… a 30-minute drive	**…a 45-minute transit trip**
During rush hour	43%	7%
Outside of rush hour	50%	6%

The good news is that driving offers good access to jobs throughout the region – the average resident can reach almost half of the region's job within a 30-minute commute. The challenge to creating a multimodal system is that driving offers much better access than taking transit does. Across all times of day, people can reach five to ten times as many destinations by auto as they can by driving.

[12] These travel times were recommended by the 2018 Transportation Equity Working Group to account for the fact that transit trips are typically longer than automobile trips.

4.2 SAFETY

The RTP establishes a Vision Zero goal for the Portland region to eliminate traffic-related deaths and severe injuries by 2035. Safety analysis for the draft needs assessment is based on the most recently available data. To track trends over time, most of the analysis uses a five-year average of crash data because of the random nature of crashes.

Key findings from the draft Safety needs assessment include:

- From 2016 through 2020, 2,814 people were killed or experienced a life-changing severe injury from a traffic crash in the greater Portland region, an average of 563 people per year.
- Traffic fatalities in the Portland region have been increasing for users of all modes, except for people bicycling. Severe injury crashes are also increasing, though not as dramatically as fatal crashes.
- Pedestrians experience a disproportionately high number of traffic deaths.
- Fatal and severe crashes are concentrated at a small number of corridors and intersections, which the RTP refers to as High Injury Corridors and High Injury Intersections.
- There is a high level of overlap between the updated 2023 High Injury Corridors and those identified in the 2018 RTP.
- About 40% of traffic fatalities occur on state owned highways.
- Black, American Indian and Alaska Native people experience a disproportionate number of traffic deaths.
- Three quarters of serious pedestrian and bicycle crashes, and 65% of all serious crashes, occur in areas identified as Equity Focus Areas.
- Safety issues are a concern for children walking and bicycling to school.

Since the 2018 RTP was adopted, city, county, regional and state partners been developing and implementing safety action plans. Metro's 2-Year Progress Report on the Regional Transportation Strategy[13] highlighted this work and identified actions for the next two years, including in the update of the 2023 RTP. While it is discouraging to see traffic fatalities and severe injuries increase as agencies and community partners work to address safety, it often takes a while for the impact of Vision Zero policies to become apparent. Countries and cities that have adopted the Safe System Approach and committed to achieving zero serious crashes typically begin to see substantial results in about 10 years, reducing traffic fatalities upwards of 40-60%.[14]

[13] June 2021. https://www.oregonmetro.gov/sites/default/files/2021/08/03/RTSS-progress-report-20210603.pdf

[14] Road Safety Annual Report 2020, International Transport Forum: https://www.itf-oecd.org/sites/default/files/docs/irtad-road-safety-annual-report-2020_0.pdf

4.2.1 Historical crash analysis

The RTP includes ambitious targets to reduce fatal and serious injury crashes by 16 percent by 2020, by 50 percent by 2025, and to zero by 2035, and identifies a trajectory for the intervening years that allows the region to meet these targets. Table 4.4 summarizes regional progress toward these performance measures.

Table 4.4: Federal Safety Performance Measures for Traffic Fatalities and Serious Injuries, 2016-2020 (Oregon Department of Transportation crash data analyzed by Metro)

	5-year rolling averages		
Performance Measure	**2011-2015 Baseline**	**2016-2020 Target**	**2016-2020 Actual**
Number of fatalities	62	52	93
Fatalities per 100 million vehicle miles traveled	0.6	0.5	0.9
Number of serious injuries	458	384	512
Serious injuries per 100 million vehicle miles traveled	4.5	3.6	4.8
Number of non-motorized fatalities and serious injuries	113	95	129

The region is not on track to meet its targets. In fact, across all the measures summarized in Table 4.4, the region's streets have gotten less safe since Metro established this goal and began collecting baseline data. These findings are consistent with an interim Safety Performance report that Metro published in 2021,[15] which was based on 2019 data. Figure 4.10 shows more detail on recent traffic fatalities in the region, showing past data alongside projected trends and Vision Zero targets.

[15] https://www.oregonmetro.gov/sites/default/files/2021/03/04/Metro-safety-annual-performance-report-2015-2019.pdf

Figure 4.10: Five-year average rates of fatal crashes, 2007-2020, with trendlines and Vision Zero targets (ODOT crash data, analyzed by Metro staff)

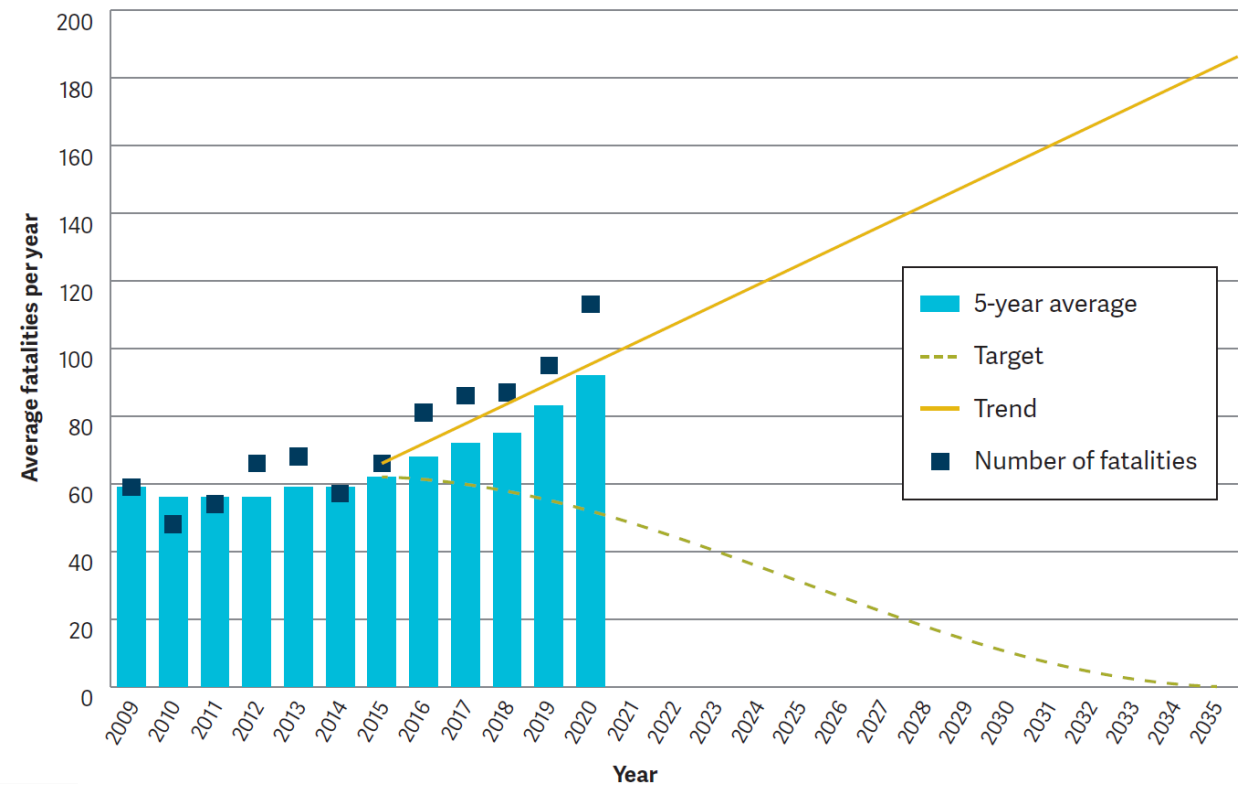
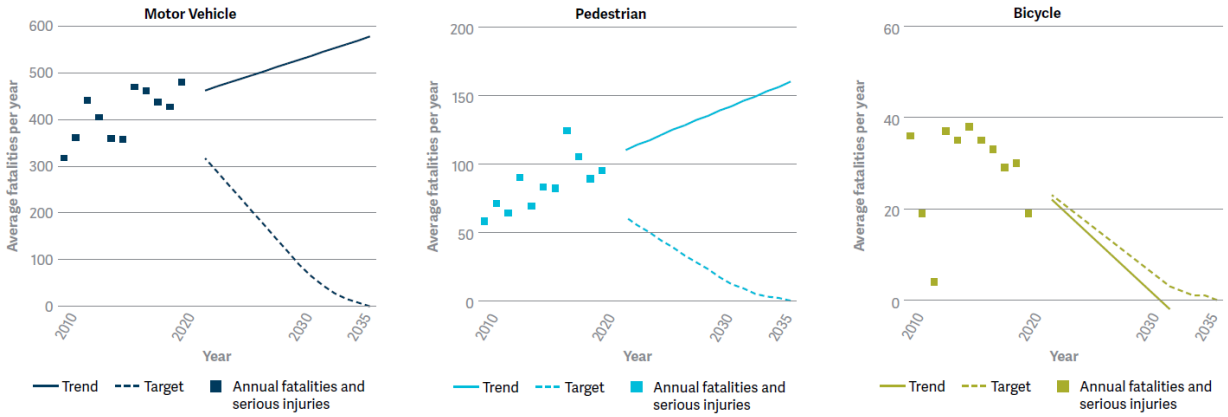


Figure 4.11 shows a similar view of safety data, but it captures both serious injury and fatal crashes and breaks out results by mode to provide more detail on how rising crash rates are affecting different travelers.

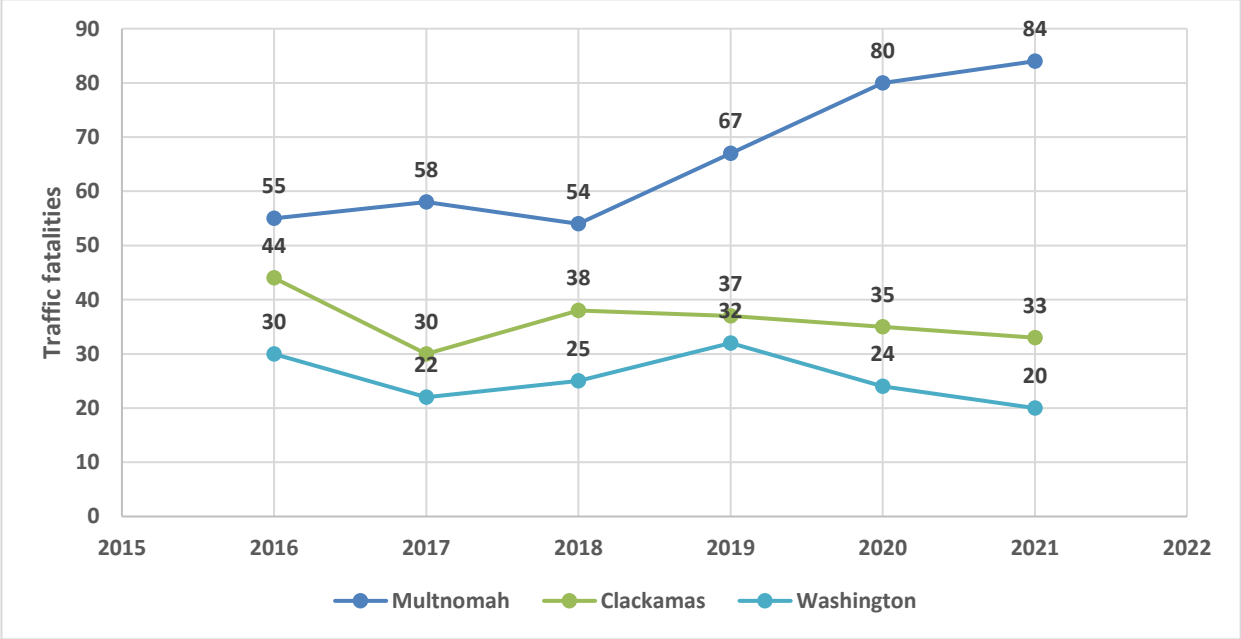
Figure 4.11: Five-year average rates of fatal and serious injury crashes by mode, 2007-2020, with trendlines and Vision Zero targets (ODOT crash data, analyzed by Metro staff)



Serious crashes in the Portland region have been increasing for users of all modes except for people bicycling. Pedestrian crashes are increasing at an especially high rate.

As Figure 4.12 shows, the increase in regional fatalities is driven by an increase Multnomah County. Fatal crashes have remained relatively flat in Clackamas and Washington Counties. The fact that there are more crashes in Multnomah County than in Washington and Clackamas is not surprising; half of the passenger miles traveled in the region take place in Multnomah County, and higher travel volumes mean greater exposure to crashes, all other things being equal. However, the recent increase in fatalities is concerning given that the proportion of travel occurring in Multnomah County does not appear to have increased during that same period. Local analysis is critical to understanding how local conditions, including traffic volumes, percent of people walking and bicycling, and other factors influence traffic safety.

Figure 4.12: Annual fatalities by county, 2016-2021 (ODOT preliminary fatal crash data)



Speed, alcohol, and/or drugs continue to be the most common contributing factors in severe and fatal crashes in the region. During 2016-2020, speed was involved in 35% of fatal and 16% of severe injury crashes, and alcohol or other drugs were involved in 38% of fatal and 14% of severe injury crashes. However, each crash captured in the data above is complex and involves multiple contributing factors and circumstances, including traffic exposure and built environment variables.

Preliminary analysis reveals many safety issues near the region's public elementary, middle and high schools. Within a mile buffer around the average school, there are 8.1 miles of dangerous

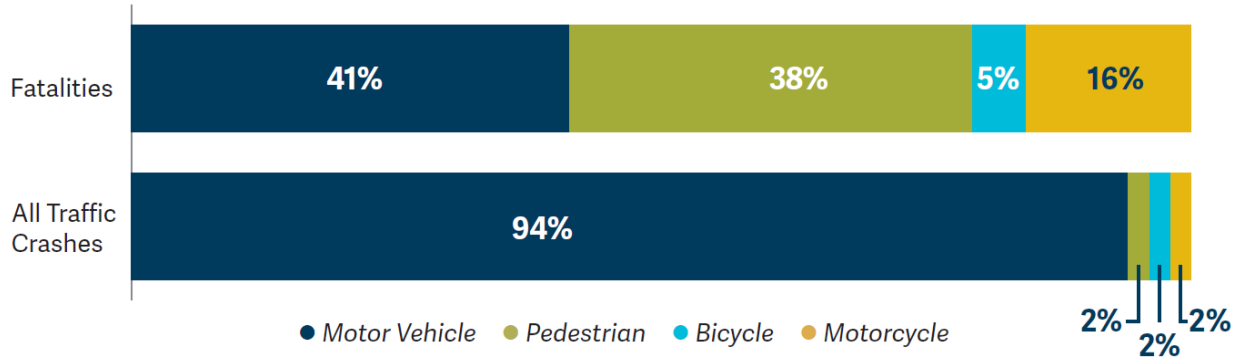
streets and 38 of fatal, severe, or bicycle and pedestrian injury crashes. A quarter of the region's schools are surrounded by streets with mostly incomplete sidewalks.[16]

4.2.2 Crashes by mode

Crashes have different impacts on different users of the transportation system. In general, vehicle crashes are more frequent, because most people in the region drive for most of their trips, but crashes that involve people walking, and riding bicycles and motorcycles are more severe, because their bodies are more exposed.

Figure 4.13 compares fatal crashes by mode to all crashes by mode.

Figure 4.13: All crashes and fatal crashes by mode, 2016-2020 (ODOT data, analyzed by Metro staff)



As this chart illustrates, traffic deaths disproportionately impact people who walk, bicycle and ride a motorcycle. Pedestrians experience the most disproportionate impact. Auto-only crashes comprise 94% of all crashes and 41% of all fatal crashes, whereas pedestrian crashes make up 2% of all crashes and 38% of all fatal crashes. In other words, pedestrians who are involved in a crash are much more likely to die – 26 times more likely – than non-pedestrians. Pedestrian traffic deaths are steadily increasing, are the most common type of fatal crash, and have the highest severity of any crash type. This trend is being seen across the country and is attributed in part to vehicles getting larger over the years. Designing safe streets, particularly on arterials, is critical to pedestrian safety. 77 percent of serious pedestrian crashes occur on arterials.

4.2.3 High Injury Corridors

A majority of the serious and fatal crashes in the region, as well as the crashes that involve vulnerable users,[17] consistently occur on a small number of roads. Metro focuses its analysis on

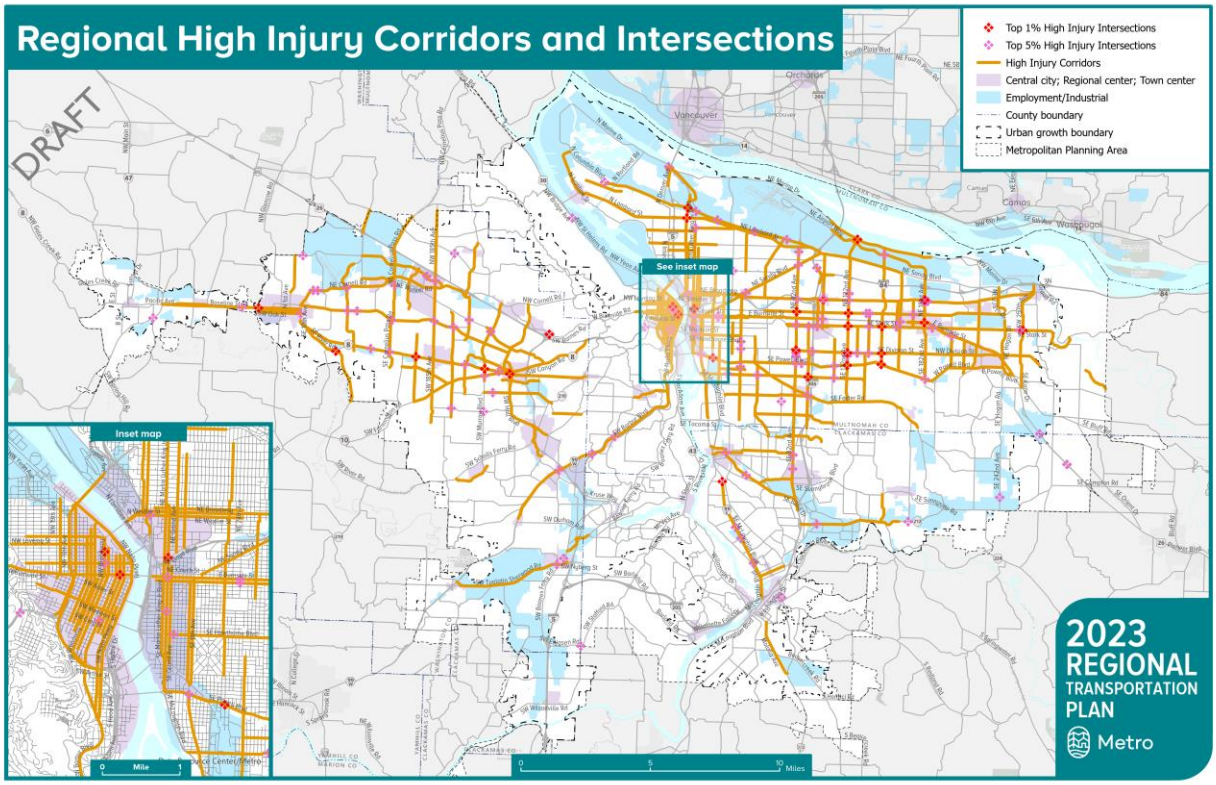
[16] i.e., less than 50% of the sidewalks within one mile are complete. For the purposes of this analysis, a street with a sidewalk on either one or both sides counts as "complete."

[17] When defining High Injury Corridors and Intersections, Metro accounts for pedestrian and bicycle injuries, which are particularly likely to be severe because these travelers' bodies are exposed to traffic. Fatal and severe injury crashes are given a weight of ten and other injury crashes for pedestrians and bicyclists are given a weight

High Injury Corridors, which are the corridors where 60 percent of these crashes occur, and High Injury Intersections, which are the five percent of intersections with the highest rates of these crashes.

Figure 4.14 shows High Injury Corridors (orange lines) and Intersections (those that are in the top five percent for severe injury rates are marked in pink; those that are in the top one percent are marked in red). There is a high level of overlap between the updated High Injury Corridors and those identified in the 2018 RTP.

Figure 4.14: 2023 RTP High Injury Corridors and Intersections, 2016-2020 (ODOT crash data analyzed by Metro staff)



The RTP recommends the use of proven safety countermeasures[18] to address High Injury Corridors and Intersections and locally identified safety needs. Local safety action plans describe

of three. Pedestrian and bicycle involved crashes are less frequent, but compared to vehicular crashes, they are significantly more likely to result in death or serious injury (this is true for motorcycle crashes as well, hence the need for consideration of separating out these crashes in future analysis). This weighting factor reflects the higher degree of risk involved in bicycle and pedestrian crashes. Metro's methodology provides a high-level, planning level analysis that compares all roads in the region, appropriate for identifying and prioritizing needs at the regional scale. Supplemental local analysis, including identification of safety corridors at the county and city geography, should also be used to identify needs and priorities in the RTP.

[18] The Safety Division of the FHWA provides information on proven safety countermeasures at https://safety.fhwa.dot.gov/provencountermeasures/

in detail the projects that are needed to resolve safety issues at these locations and others identified by partner agencies.

4.3 EQUITY

RTP Equity Policy 3 directs Metro and its agency partners to "Prioritize transportation investments that eliminate transportation-related disparities and barriers for historically marginalized communities, with a focus on communities of color and people with low incomes." Through extensive outreach, Metro has heard that these communities need fast, frequent, affordable. and reliable transit connections to key destinations and safer walking and biking infrastructure. The Needs Assessment evaluates equity through that lens and finds:

- The Portland region continues to grow more racially and ethnically diverse.
- The region is aging. The share of people 65 and older is growing while all other age groups are declining. However, people under 44 will continue to be in the majority.
- The COVID-19 impact had particularly severe and long-lasting impacts on people of color and workers with low incomes.
- Regional transportation agencies can advance equity by investing in transit service and safe biking and walking infrastructure in Equity Focus Areas (EFAs), which are communities with concentrations of people of color, people with low incomes, and people with limited English proficiency.
- The region has made significant progress in improving transit service and bike/ped infrastructure in EFAs, but not enough to address deep-seated inequities. Transit still offers much less access to destinations than driving does, and serious crashes are still concentrated in EFAs.

4.3.1 History of discriminatory planning in the Greater Portland region

The disparities described in this chapter are the result of specific decisions made over the years by governments, institutions, and the public to marginalize people of color and other groups. Many of these decisions had generational impacts that continue to contribute to the inequities we see today. Knowing this history is crticial to fully understanding and resolving these diparities.[19]

Oregon has a unique history of passing laws that discriminate against Black people. In the 1840s and 50s, State legislative bodies passed a series of laws that made it illegal for Black people to live in Oregon, and Oregon was the only state with such laws in its constitution. These State policies, along with federal policies such as the Japanese Internment law of 1942, as well as a series of actions that the real estate industry and government agencies took to concentrate people of color in particular neighborhoods and disinvest in those neighborhoods, all contribute to the region's history of discriminatory planning. Throughout the last century, people of color and people with lower incomes have been impacted by planning decisions that targeted struggling areas for development. Major roads and freeways were often built on top of already disadvantaged

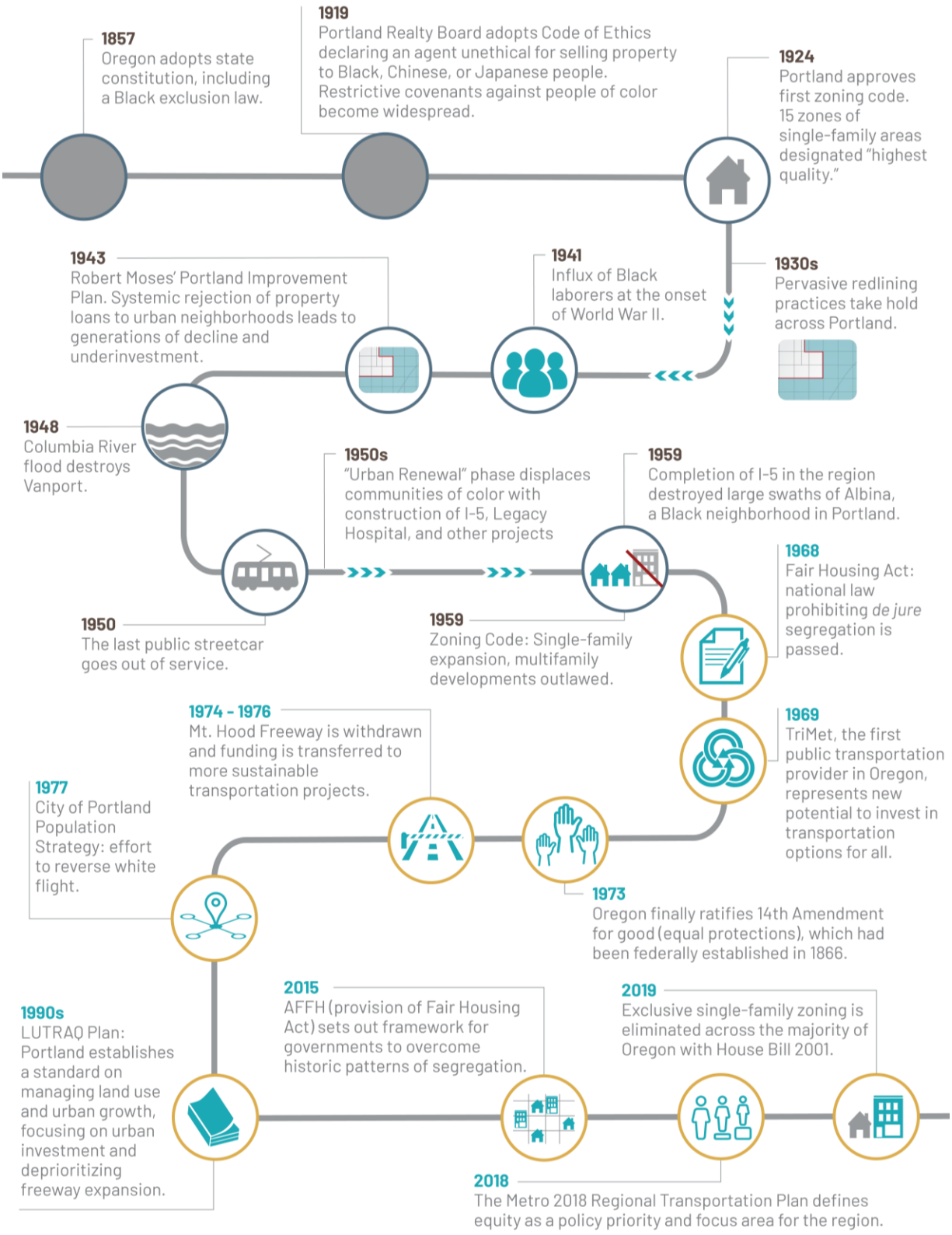
[19] The information in this section is adapted from Metro's Equitable Transporation Funding Research Report: https://www.oregonmetro.gov/sites/default/files/2022/11/16/Equitable-Transportation-Funding-Research-Report-11142022.pdf.

communities to avoid affecting wealthy, white neighborhoods. These decisions split neighborhoods, displaced families, permanently damaged communities, and even led to higher rates of air pollution and chronic illness.[20]

Figure 4.15 provides a visual timeline of discriminatory planning in the greater Portland region from the late 19th century to the present, and also chronicles more recent efforts to restore justice. In the graphic, gold circles reflect the shift away from discrimination and the beginnings of a path towards equity.

[20] Oregon Metro. (2022). "2023 Regional Transportation Plan Update: Work Plan."

Figure 4.15: Timeline of discriminatory planning and advancements toward equity in the Greater Portland region



Beginning in the 1920s, local governments throughout the region used exclusionary zoning to prevent Black, Indigenous, and other people of color from owning property in certain neighborhoods, was common practice in the greater Portland region.[21] The real estate industry – including realtors, bankers, appraisers, and landlords – also used redlining, discriminatory lending, and restrictive covenants to steer people of color toward certain neighborhoods and exclude them from others.[22] Local governments also used single-family zoning to support these practices by forcing multi-family development into segregated neighborhoods.[23] Agencies significantly increased the amount of land zoned for single-family housing throughout the 1930s, 1940s, and 1950s. By the end of this period, multi-family zones accounted for only 5% of residentially zoned lands. These practices created concentrated people of color and people with lower incomes in neighborhoods that were vulnerable to disinvestment, industrial uses, infrastructure development, and urban renewal plans.[24]

Urban renewal, whereby government agencies razed and redeveloped 'blighted' areas in their jurisdictions, swept the United States in the mid-twentieth century. Local governments used this power to implement sweeping redevelopments in marginalized, often Black, communities without consulting residents. The new developments that were created through urban renewal took on many forms: transportation infrastructure, large-scale multi-family housing, event centers, parks, and office buildings, etc. The agencies who led these projects often systematically displaced former residents and bought out landowners for a fraction of their property's value. Portland and many other cities across the U.S. have a long and well-documented history of urban renewal projects – including some that were approved by voters, such as the development of Memorial Coliseum in the heart of Portland's black community.[25]

Portland's Albina neighborhood developed into a thriving business district after the population boom throughout World War II and became a haven and area of opportunity for Black people living in the city. This sudden population growth also led to the development of Vanport in North Portland, which was initially built to provide temporary housing for shipyard workers. Many of these workers were African American and were unable to find other suitable nearby housing. In 1948, Vanport was destroyed by a flood, taking numerous lives and forcing residents to relocate, many of whom moved to Albina. In the 1950s, federal, state and local transportation agencies built the Interstate 5 freeway through Albina, and local governments razed other parts of Albina to build Memorial Coliseum and Emanuel Hospital, destroying homes and businesses, forcing displacement, and tearing the fabric of the neighborhood apart.

[21] https://www.oregonencyclopedia.org/articles/blacks_in_oregon/#.Y0mqhXbMJPY

[22] Department of Land Conservation and Development. (2022). "Housing Choices (House Bill 2001)."

[23] Department of Land Conservation and Development. (2022). "Housing Choices (House Bill 2001)."

[24] Hughes, Jena. (2019). "Historical Context of Racist Planning." *Bureau of Planning and Sustainability*.

[25] Killen, John. (2015). "Throwback Thursday: 60 years ago, Portland began urban renewal plan for South Auditorium district." *Oregon Live*.

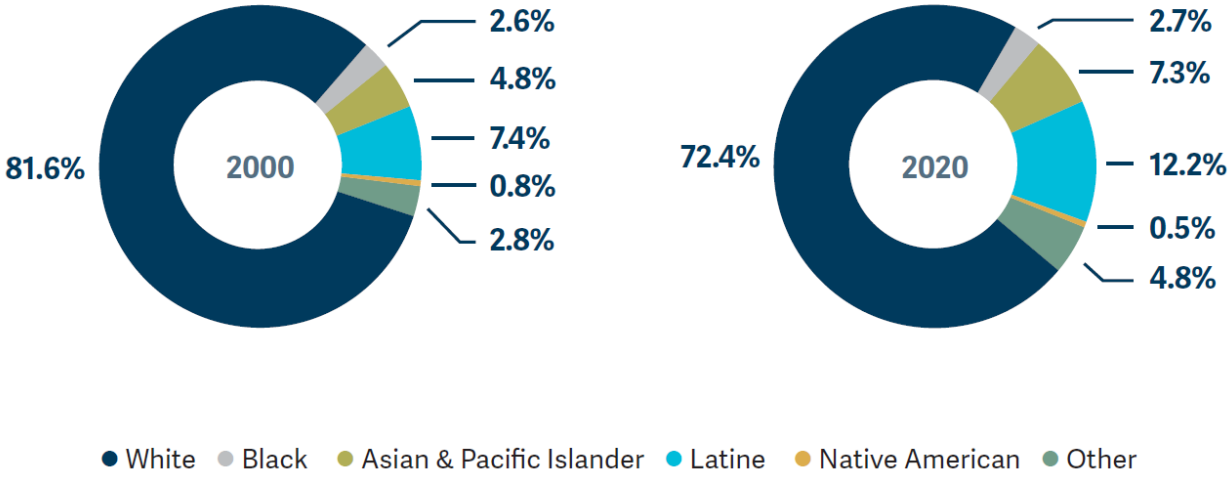
Exclusionary zoning and racial segregation still influence where people live and work today. Exclusive single-family zoning was eliminated in the majority of Oregon through the passing of House Bill 2001. As of June 2022, cities with a population over 25,000 and cities in the greater Portland region must allow duplexes, triplexes, quadplexes, cottage clusters, and townhouses in residential areas. Yet much still needs to be done to untangle the legacy of displacement and damage inflicted in years past. Even with the progress made since the late 1960s, the disproportionate impact of lack of transportation access to opportunities for people of color and people with low-income persists. Gentrification, population growth, and increasing demands on housing continue to threaten to further destabilize people of color and low-income communities. Implementing the recommendations in this report and continuing efforts to advance racial and income equity in future RTPs, plans, and programs, are critical to righting the wrongs of the past.[26]

4.3.2 Demographic and economic changes

People of color make up an increasing share of the regional population. The portion of residents who identify as people of color has been increasing steadily over the past several decades; from under one percent in 1960 to 28 percent in 2020. Figure 4.16 shows how the racial and ethnic makeup of the region's population changed between 2000 and 2020.

[26] Much of the existing academic literature and subsequent discussions are around the City of Portland, however the patterns of exclusion and discrimination are well established to have been rampant across the country, Oregon, and the greater Portland region.

Figure 4.16: Population by race and ethnicity[27] in the Portland region and surrounding counties,[28] 2000 and 2020 (U.S. Census)



Over the 20-year time span captured in the figure above, the share of regional residents who identify as people of color grew from 18 percent to percent. This change was driven primarily by growth among Latines, Asian Americans and Pacific Islanders, as well as an increasing number of people who identify as "other."[29]

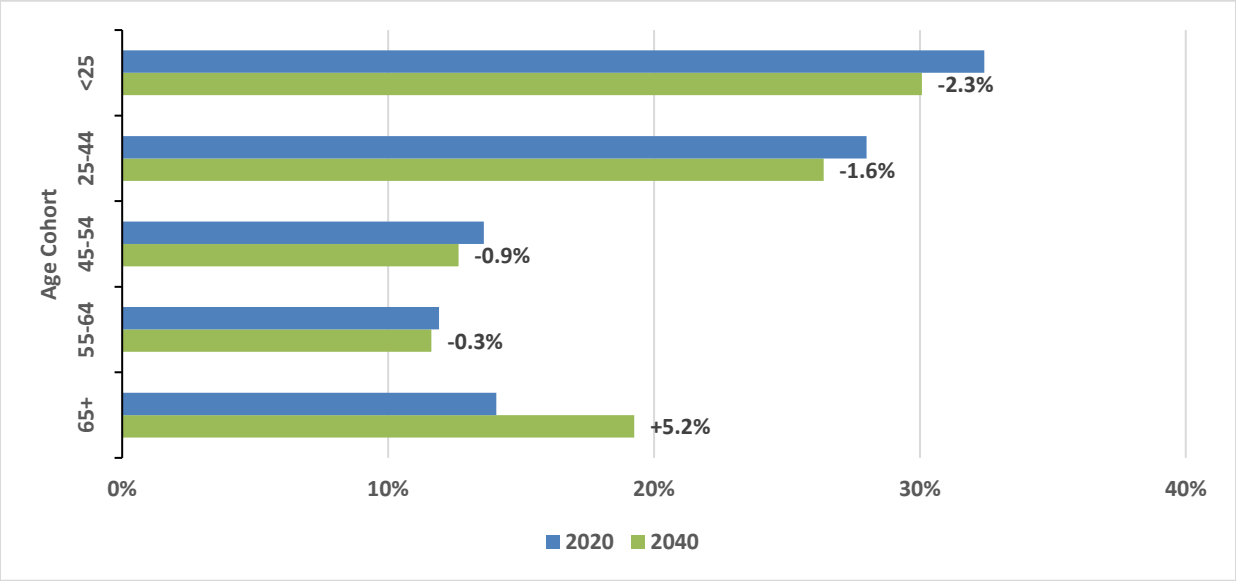
Figure 4.17 shows Metro's forecasts for how the share of population in different age groups will change between 2020 and 2040.

[27] The U.S. Census uses different terms for race and ethnicity than Metro does. This figure uses the terms commonly used by Metro for brevity and consistency, but respondents defined themselves using the options presented by the Census, which include: White alone; Black or African American; Asian, Native Hawaiian, and Pacific Islander; Hispanic or Latino; American Indian and Alaska Native; and Other.

[28] For consistency with regional and state population forecasts, Metro uses a broader 7-county region (Clackamas, Clark, Columbia, Multnomah, Skamania, Washington, and Yamhill counties) in its demographic data.

[29] The Census Bureau increased the number of options for people to classify themselves as members of two or more races between 2000 and 2020. For the purpose of comparing data from 2020 with data from 2000, we use similar race/ethnicity categories as were used in 2000 – combining Asian people and Pacific Islanders in spite of the fact that the Census Bureau now differentiates between the two, and including people who identify as being part of two or more races in the "other" category.

Figure 4.17: Current and forecasted population by age cohort in the 7-county Greater Portland region, 2020 and 2045 (Metroscope)



Just like the national population, our region's population is aging, and the share of people over 65 is projected to grow by 5 percent, while shares of all other age groups are declining. However, the two youngest age groups – people under 25 and people 25 to 44 – are projected to remain the two largest age groups in the region. By 2040, close to 50% of the region's population will either be under 25 or over 65. Though these two groups have very different transportation needs, they also have some important similarities – lower rates of commuting by auto, high proportions of people who cannot drive due to age or disability, and lower participation in the labor force, which means that their travel patterns are less likely to be driven by commuting.[30]

4.3.3 Inequities in housing and employment

The 2018 RTP undertook a wide-ranging review of data and research on equity, both nationally and in the Portland region, and highlighted several inequities in different marginalized groups' access to housing and jobs.

- People with low incomes and most people of color (with the exception of Asian Americans) and people with low incomes are significantly less likely to own a home than white people.
- People of color are being displaced to areas of the region that lack good access to transportation options, jobs, and other important destinations.
- People of color and people with low incomes can access fewer jobs within a typical commute distance than white people.

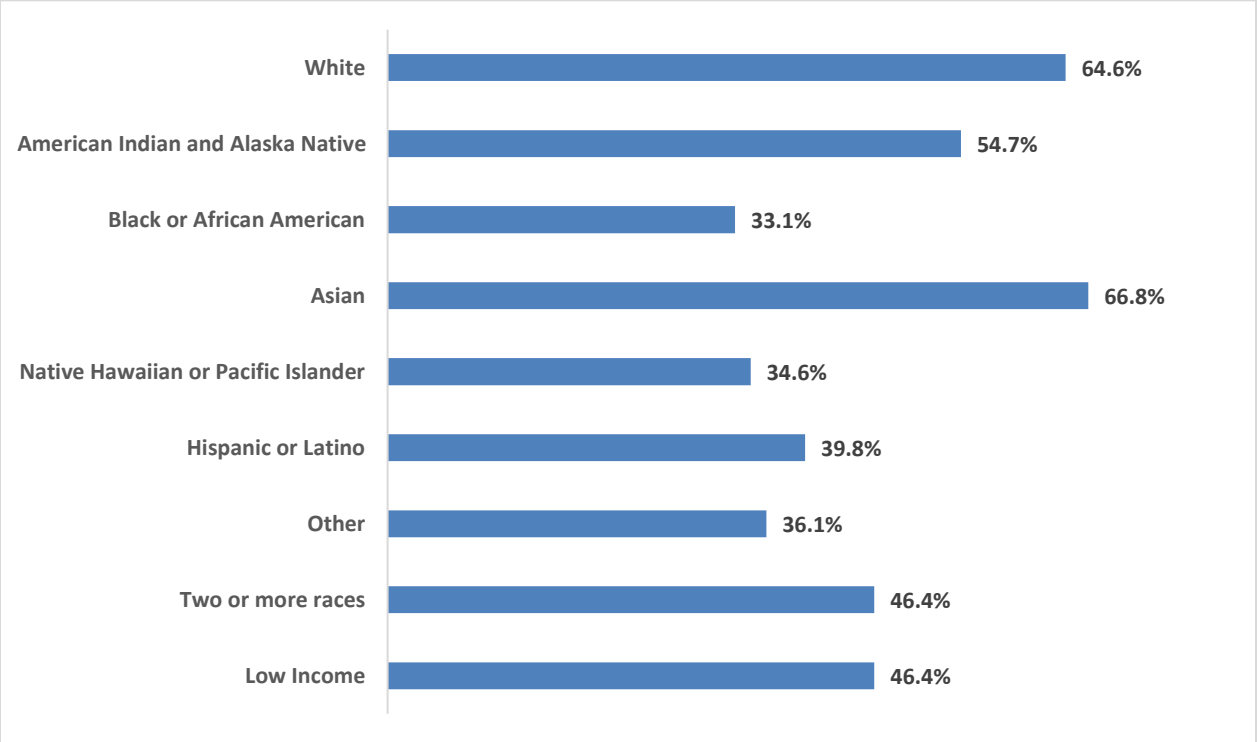
[30] https://www.census.gov/content/dam/Census/library/publications/2020/acs/acs-45.pdf

Many of these inequities were exacerbated by the COVID-19 pandemic. The health impacts of the pandemic fell significantly upon the region's Latine population, and its economic impacts were particularly damaging for people with low incomes – both workers, who were more likely to lose their jobs, and students, who experienced greater learning loss due to the pandemic.

Significant disparities in access to jobs and housing persist. For example,

Figure 4.18 shows how homeownership rates are still much lower for most non-white racial and ethnic groups and for households earning below $75,000 per year than they are for white people.

Figure 4.18: Homeownership rates by race and income for Multnomah, Washington and Clackamas Counties, 2020 (American Community Survey)



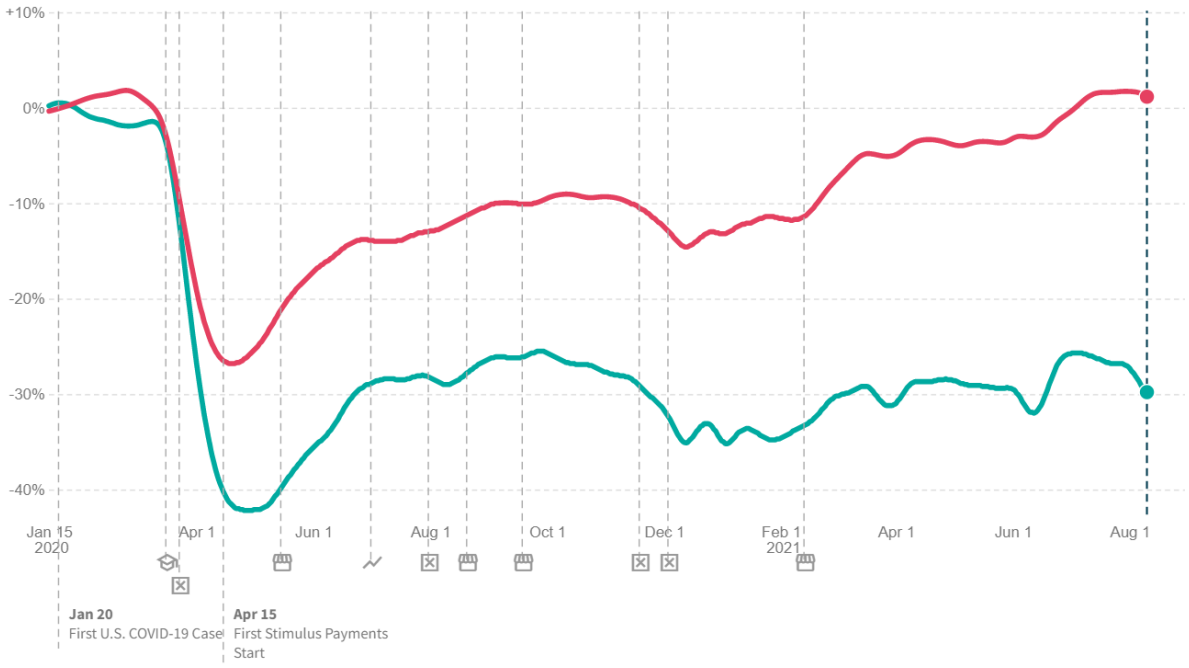
Public agencies are working to address these disparities by creating more affordable housing, supported by a regional affordable housing bond measure, which was passed by voters in 2018. The bond aims to fund the construction of 3,900 designated affordable housing units across the region, with a focus on providing homes for people of color. Though the bond measure represents significant progress in building affordable housing, it only provides a small portion of the roughly 48,000 units in the region that Metro estimates are necessary to meet the region's needs.

Homeownership rates can affect how communities respond to the transportation projects that are the focus of the RTP. Some transportation projects – in particular, new light rail lines and bicycle/pedestrian trails – can potentially increase the value of adjacent properties. This benefits homeowners who live nearby, but it can create higher housing costs and displacement risks for people who rent. This means the groups shown as having low homeownership rates in

Figure 4.18 are more likely to see new transportation investments as threatening their ability to remain in their communities.

The inequities created by the COVID-19 pandemic become very visible when comparing employment patterns for lower- and higher-income workers. Overall, the U.S. experienced historically high levels of unemployment in summer 2020, immediately following the onset of the COVID-19 pandemic. By Spring 2022, the overall unemployment rate had fallen to levels that could be considered low even by pre-pandemic standards. However, this broad trend masks significant differences in the employment rate between workers with lower incomes and those with higher incomes. Figure 4.19 shows unemployment rates over the past three years for both workers who more than the median wage (approximately $30 per hour, or $60,000 per year) and workers who earn less.

Figure 4.19: Regional employment rates for workers earning above and below the median wage (indexed to January 2020) January 2020 – August 2021 (Earnin, Intuit, Kronos and Paychex data, analyzed by Cambridge Systematics for the Commodities Movement Study)



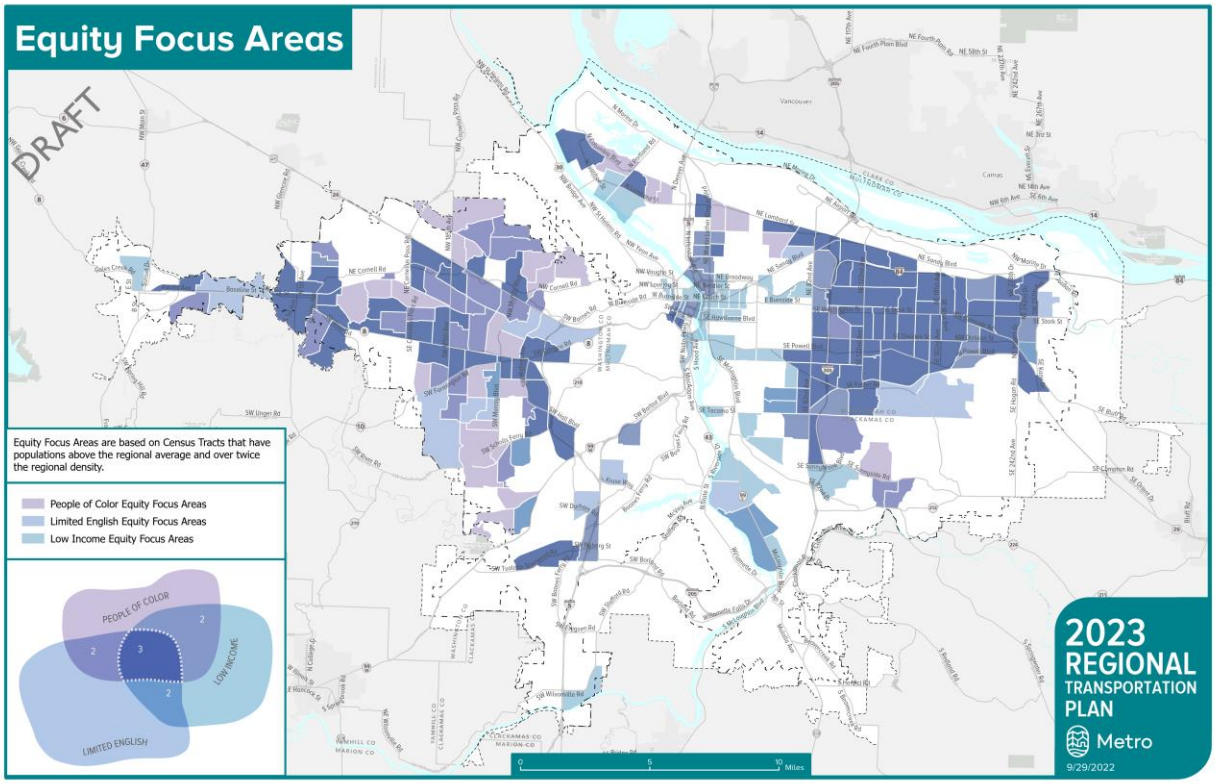
As of August 2021, the employment rate for workers in the Portland region who earned above the median wage had increased by 1.2 percent over pre-pandemic (January 2020) levels, whereas the employment rate for workers earning below the median wage fell by 29.8 percent. In other words, the pandemic opened up a 30-point employment gap between workers earning above the median and workers earning below the median wage.

4.3.4 Transportation needs in Equity Focus Areas

Equity Focus Areas were designed to guide transportation plans toward focusing on communities with the greatest needs, and to benefit as many people in need as possible, while accounting for regional growth and change. They highlight the communities in the region with the highest densities of people of color, people with low incomes, and people who speak limited English.

Figure 4.20 shows the updated Equity Focus Areas used in the 2023 RTP, including which of the three populations included in the definition of EFAs are concentrated within each EFA, and uses shading to illustrate how these different populations overlap with each other. These EFAs are based on 2016-20 American Community Survey data (for income and English proficiency) and 2020 Census data (for race). Appendix C provides more detail on the data sources and calculations used to create and update EFAs.

Figure 4.20: 2023 RTP Equity Focus Areas, (Census and American Community Survey data, 2016-2020)



EFAs are located throughout the region, and there are large concentrations of all three EFA populations in East Portland and Multnomah County and along Tualatin Valley Highway in Washington County. These are largely the same areas that were highlighted during the 2018 RTP

equity analysis.[31] Directing transportation investments – particularly projects designed to meet the needs of the people they serve – toward the EFAs that are highlighted above helps to meet this goal.

The equity policies adopted in the 2018 RTP direct Metro and partner agencies to both learn more about marginalized people's transportation needs[32] and also to act on what they learn.[33] Since the 2018 RTP update, Metro has conducted extensive outreach to people of color, people with low incomes, and other marginalized people to better understand their transportation needs through the development of the 2020 regional transportation funding measure, the Regional Mobility Policy update, and other processes.[34] Metro has consistently heard that these communities need safer and more accessible travel options – specifically better transit service and safer streets for bicycling and walking, including:

- More fast, frequent and reliable transit service for all types of trips (including at off-peak travel times)
- More affordable transit that connects people to the places and things they need to thrive.
- Better conditions for walking and biking, including adequate street lighting, protected crossings and crossing signals, particularly to improve access to transit.
- Connected and separated walking and biking infrastructure.

Access to transit and to destintaions

Figure 4.21, which is discussed in more detail in the following section on Mobility, shows where gaps in the regional transit network are located. These gaps show places where planned transit has not yet been built. The map differentiates between gaps in frequent (thick lines) and regular (thin lines) transit service, and between gaps in service that are based on the financially constrained network (i.e., gaps that the region currently has identified funding to complete, shown in green) and those that are based on the network vision (i.e., gaps that the region has not yet identified funding to complete, shown in purple). It overlays these gaps with Equity Focus Areas, which are shown in violet cross-hatching.

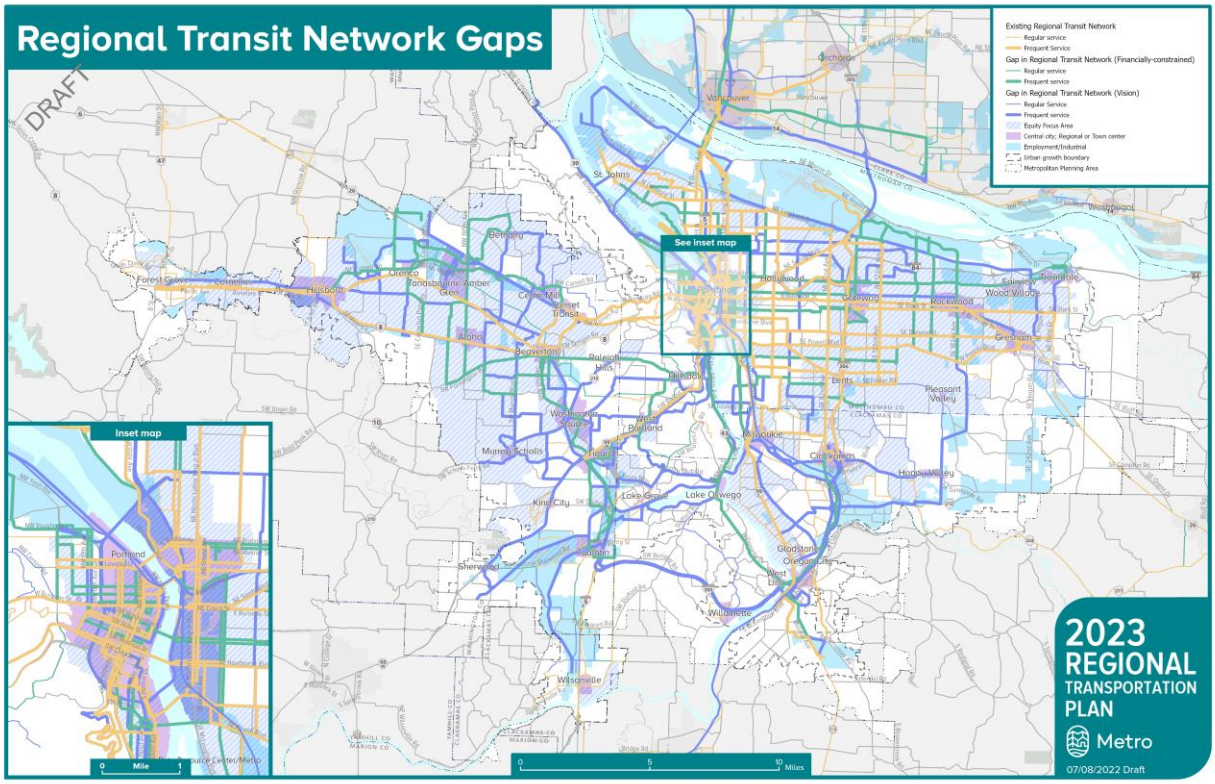
[31] See the Needs Assessment memo that was shared with TPAC as part of the July 13 meeting packet (beginning p. 14) for further discussion of how and why Equity Focus Areas changed as they were updated.

[32] Policy 5: "Use engagement and other methods to collect and assess data to understand the transportation-related disparities, barriers, needs and priorities of communities of color, people with low income and other historically marginalized communities."

[33] Policy 3: "Prioritize transportation investments that eliminate transportation-related disparities and barriers for historically marginalized communities, with a focus on communities of color and people with low income."

[34] https://www.oregonmetro.gov/sites/default/files/2020/11/10/Historically-marginalized-communities-transportation-priorities-summary.pdf

Figure 4.21: Regional transit network gaps (2018 RTP networks, partner agency data)

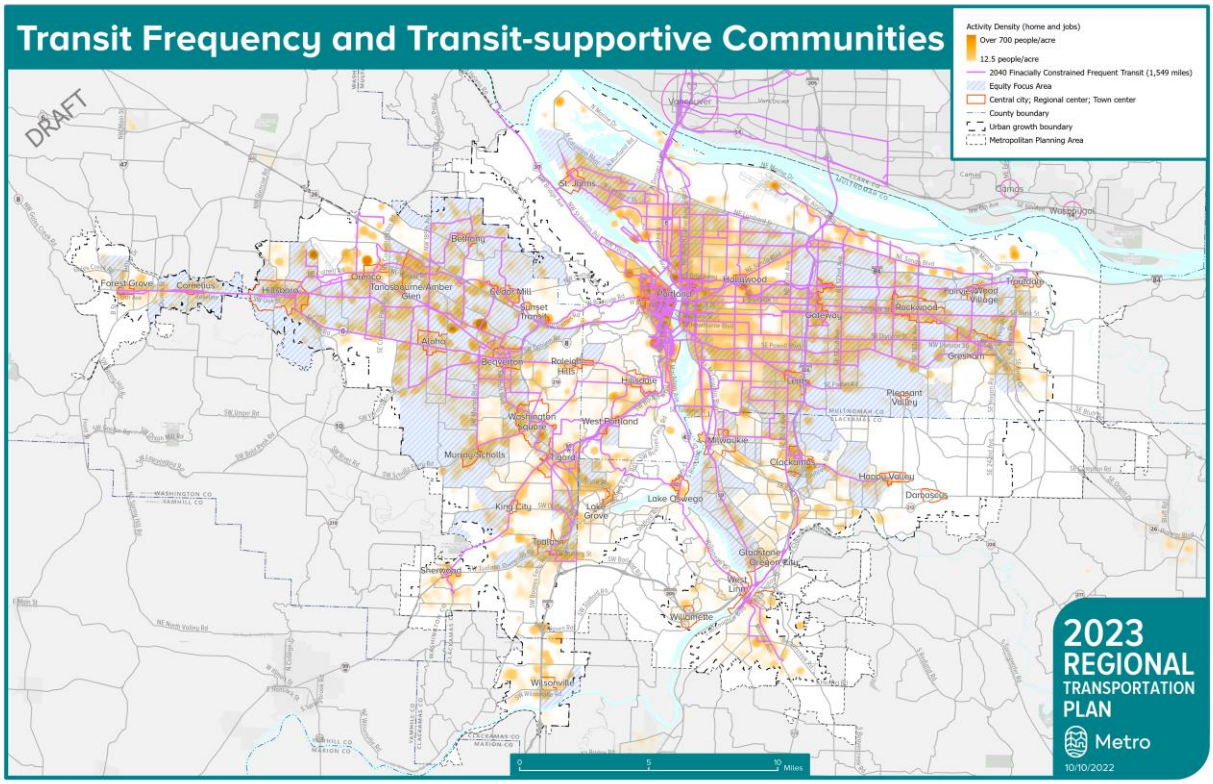


There are many places where transportation agencies have planned to deliver the frequent transit that EFA residents say they need, but where those projects are not being implemented – i.e., where the thick green and purple lines shown in the figure above overlap with the Equity Focus Areas. Completing these transit investments – particularly those shown in green, which can be built with available funds – would address pressing equity needs while also advancing mobility and climate outcomes.

Figure 4.22 below takes a different view of the transit system. Instead of using planned transit lines as a basis for identifying needs, Figure 4.22 highlights communities that have the densities necessary to support frequent transit[35] (orange) and compares their location with current frequent transit service (i.e., lines with peak headways of 15 minutes, shown in purple). It shows EFAs in light blue cross-hatching.

[35] The High Capacity Transit and Regional Transit Strategies specify a threshold of 5 households or 15 jobs per acre for communities served by frequent transit. In order to map both jobs and housing at the same scale, Figure 4.9 combines jobs and housing into a single measure of activity density (jobs plus residents per acre) and uses a threshold of 12.5 jobs and/or residents per acre to identify communities that support frequent transit. The average household in the region includes 2.5 people, so 5 households per acre is equivalent to 12.5 residents per acre.

Figure 4.22: Map of high-frequency transit (headways of less than 15 minutes) and transit-supportive communities (12.5 or more people and/or jobs per acre), 2020 (Metro travel model, 2018 RTP transit network and distributed growth forecast)



People living within EFAs have said that they need better transit connections between their communities and their destinations. If these connections were in place, the map above would likely show purple lines connecting most of the orange/red clusters of high density within the light blue EFAs. This is the case in much of the east side of the region – though there are notable gaps on several north/south corridors – but not as much in EFAs on the west side of the region. This is in part because the built environment in East Portland and Multnomah County has many transit-supportive characteristics, such as a well-connected grid of arterials and relatively high-density residential areas. There may be further opportunities in the long term to better configure the transit network to benefit current and prospective transit riders who live in EFAs.

In addition to identifying where there are needs and opportunities to provide more equitable transit service, the RTP also examines whether the transit system provides the convenient and useful connections that EFA residents have asked for. Measuring how many destinations a traveler can access within a given travel time via different modes has been established as a best practice for understanding and comparing how useful different modes are for different groups of people. This analysis can answer two questions about transit equity.

Does the transit system provide equitable service to marginalized people? If so, people living in Equity Focus Areas should be able to reach the same number of other jobs (or more) as people living in other communities.

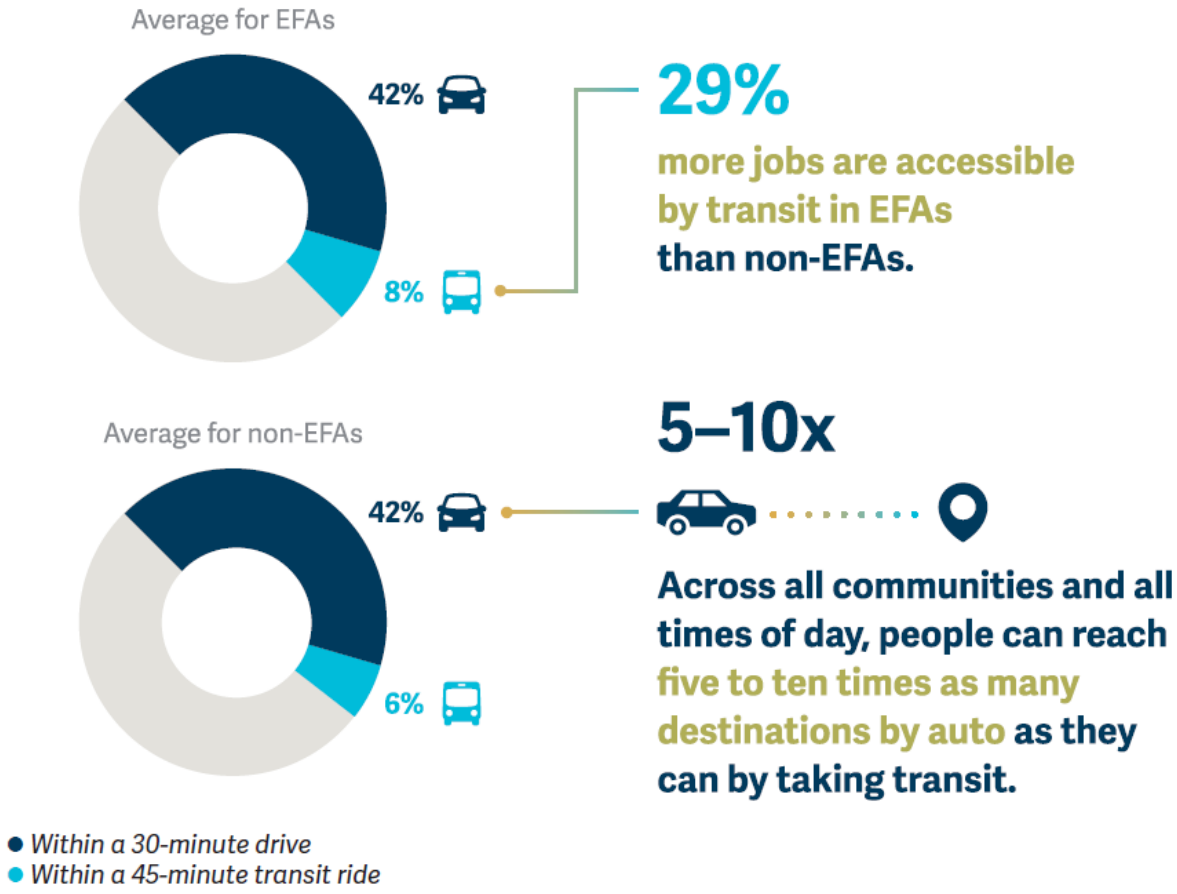
Is transit a competitive alternative to driving? Both community feedback and research stress that people of color and people with low incomes are more likely to rely on transit. It follows that an equitable transportation system is one in which people who travel by transit are not faced with longer, less convenient trips than people who drive – in other words, that people should be able to reach the same number of jobs (or more) via transit as they should via automobile in the same travel time. This is a challenging goal to meet given how built-out the road network is, but meeting this goal would have far-reaching benefits – not just for equity, but mobility and climate.

Figure 4.23 compares access to jobs between modes (transit versus auto) and community types (EFAs vs. non-EFAs) for the RTP base year of 2020.[36] Jobs are not just commute destinations – grocery stores, medical offices, and schools are also places of employment, so jobs are a proxy for many different types of destinations that draw many different types of trips.[37] Metro tested many different measures of access to jobs by income and to community places such as grocery stores, libraries, schools, medical offices, and community services and has found the same patterns in access to these important destinations as for access to all destinations. Similarly, Metro tested results for both peak and off-peak travel and found that off-peak results showed the same trends as the results for rush hour, which are shown below.

[36] This analysis uses a 45-minute travel time to measure transit access and 30-minute travel times to measure automobile access, which accounts for the time needed for people to walk between their origins/destination and their car/transit stop and transfer between different transit routes, etc.

[37] https://ssti.us/wp-content/uploads/sites/1303/2020/12/Measuring-Accessibility-Final.pdf

Figure 4.23: Percent of jobs accessible by driving and by transit by community type, 2020 (Metro travel model, 2018 RTP transit network, and land use data)



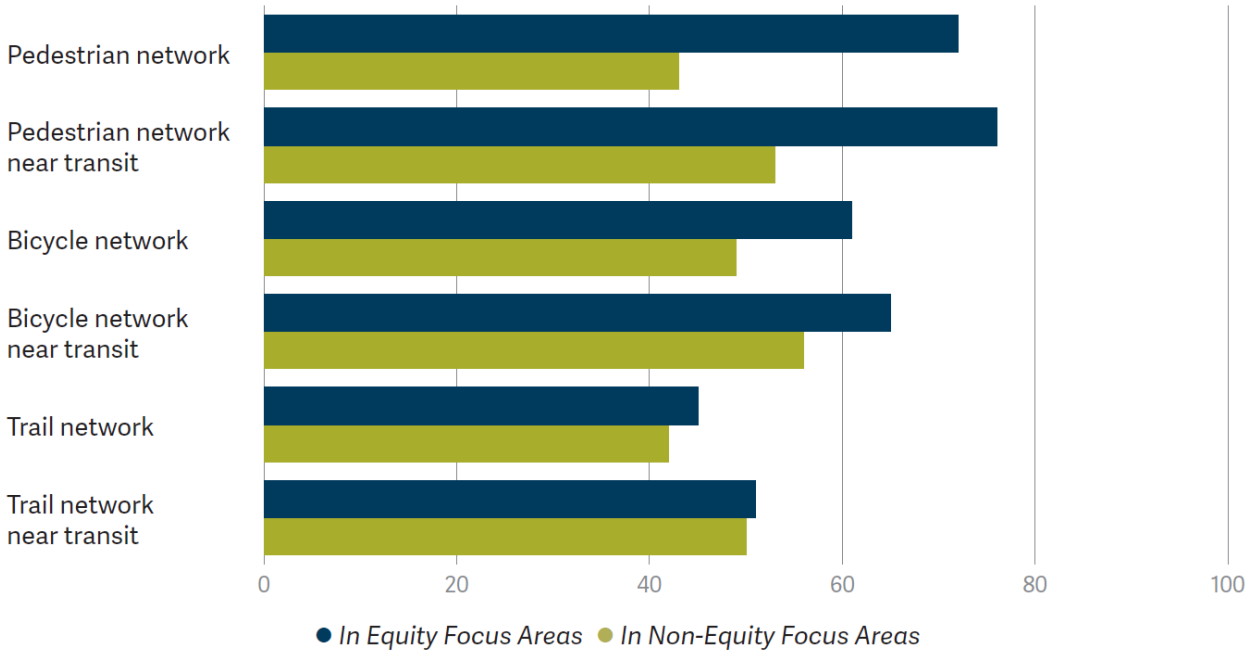
The results above show that people living in EFAs enjoy significantly better access to destinations via transit (and to a lesser extent, via driving) than people living in other communities. This is likely because many communities of color and much of the region's naturally occurring affordable housing stock are located in regional centers that have long been key points in the transit network, but it also reflects more recent efforts by transit agencies to focus on serving marginalized communities even as these communities relocate within the region.

Figure 4.23 also shows the extent to which driving offers better access than taking transit does. Across all communities and all times of day, people can reach five to ten times as many destinations by auto as they can by driving. Though the Portland region has an extensive transit system relative to many other Metro areas, significant parts of the region are not served by transit and (as shown in Figure 4.22 above) do not have the land uses necessary to support frequent transit. Extending and improving transit service can help improve transit access to destinations, and land use changes that create clusters of activity that support high-quality transit can also make a big difference.

Safe conditions for walking and bicycling

Other than the need for better transit service for EFAs, the main need that people of color and people with low incomes have expressed in Metro's outreach is the need for safer and more convenient walking and biking facilities, particularly near transit stations. Bicycle and pedestrian gaps are mapped in the following section on Mobility and Climate, and these maps show which gaps are located in EFAs. Figure 4.24 summarizes how complete the bicycle, pedestrian and transit networks are (including bicycle and pedestrian facilities near transit[38]) in EFAs versus in other areas.

Figure 4.24: Pedestrian, bicycle and trail network completion for EFAs and non-EFAs (2018 RTP networks and current partner agency data)



The region has made more progress completing the active transportation network, and also in providing bicycle and pedestrian connections to transit, in EFAs than in other communities. However, significant portions of the network still need to be completed for everyone in the region to benefit from high-quality walking and biking connections. The results above also reflect slow but steady progress in building out the region's active transportation network. The pedestrian and bicycle networks, both region-wide and in EFAs, are 3% more complete than they were when Metro last conducted for 2015, and the trail network is 6% more complete.

[38] Research has shown that people are willing to travel further to access high-quality, frequent transit than they are normal bus service. The transit access analysis for the 2018 RTP used different travelsheds to examine access to different types of transit: ½ mile for light rail, 1/3 mile for streetcar, and ¼ mile for bus. This analysis uses these same travelsheds to identify bicycle and pedestrian facilities near transit.

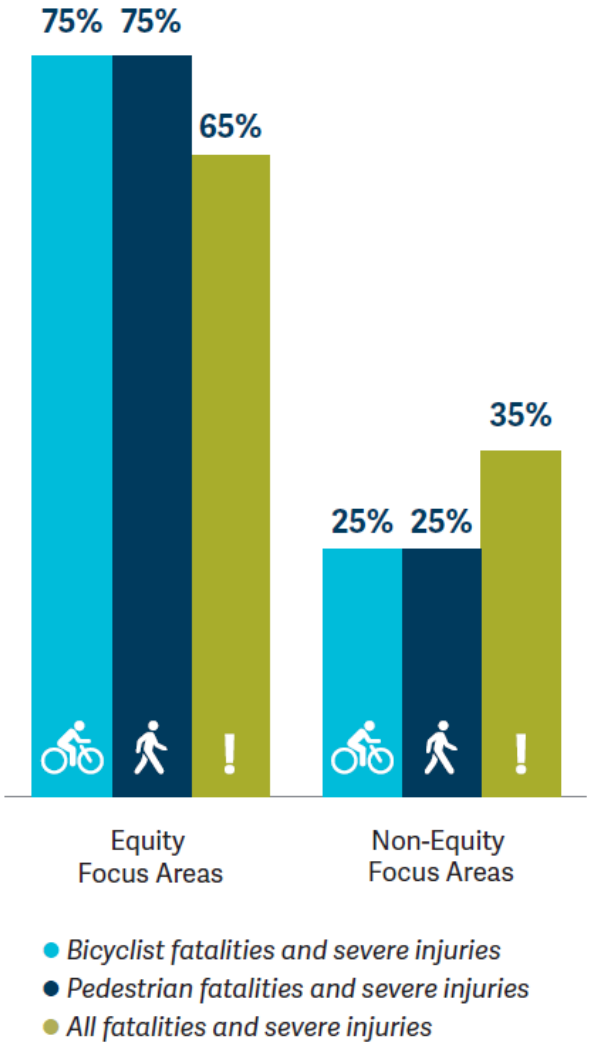
In spite of this progress, crashes are still concentrated in Equity Focus areas, and are particularly likely to involve BIPOC people. Metro analyzed crash data from the Fatality Analysis Reporting System (FARS), which includes race and ethnicity for traffic fatalities,[39] to assess the impact of fatal crashes on different populations in Multnomah, Washington, and Clackamas counties. Normalizing by population, Black, American Indian and Alaska Native people experience double or nearly double the number of traffic fatalities that other groups experience. This finding is consistent with analysis conducted by ODOT in 2019.[40]

As Figure 4.25 shows, three quarters of serious pedestrian and bicycle crashes and 65% of all serious crashes occur in Equity Focus Areas (see the Equity section below for information on these areas). Addressing safety in these areas is critical to making the entire transportation system safer and more equitable.

[39] FARS is a nationwide census providing yearly data regarding fatal injuries suffered in motor vehicle traffic crashes. https://www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars

[40] Josh Roll, Nathan McNeil, Race and income disparities in pedestrian injuries: Factors influencing pedestrian safety inequity, Transportation Research Part D: Transport and Environment, Volume 107, 2022, 103294, ISSN 1361-9209, https://www.sciencedirect.com/science/article/pii/S1361920922001225. This study employs an ecological analysis to explore pedestrian safety disparities in Oregon, incorporating crash data, roadway and land use factors, and sociodemographic data. Lower median income and higher proportions of BIPOC residents are found to be associated with more pedestrian injuries. These variables may be proxies for other traffic exposure and deficient built environment variables, which may reflect a lack of historic investment in the neighborhoods where these populations are concentrated.

Figure 4.25: Percent of average annual traffic fatalities and severe injuries in Equity Focus Areas, by mode, 2016-2021 (ODOT crash data, analyzed by Metro staff)



Though bicycle and pedestrian infrastructure is generally equitably distributed – in fact, the region has a slightly better track record of completing planned infrastructure in EFAs than in other communities – a higher percent of pedestrian crashes are still occurring in EFAs. One explanation for this is that other factors besides the presence of trails, sidewalks and bicycle infrastructure helps reduce crashes for vulnerable users, but other factors, such as the design and posted speed of travel lanes, also influence the overall safety of streets.

4.4 ECONOMY

Transportation and the economy are deeply interrelated. The transportation system plays a critical role in connecting workers to jobs in allowing employers access to the talent that they need, and shifts in the economy often lead to changes in how people and goods travel through the region. The RTP aims to support the region's economy by improving connections to jobs and also to respond to how transportation patterns are changing in the region.

This section examines how the region's economy is growing and changing, how workers and goods move through the region, and how well the transportation system currently serves employment centers. Key findings include:

- Over the past decade, the Portland region's economy has grown stronger relative to the rest of the U.S., and the region has experienced slightly lower-than-average unemployment.
- Trade, transportation and utilities; professional and business services; and education and health services continue to be the largest employment sectors in the region.
- The majority of the region's jobs are located in the centers and employment / industrial areas identified by the 2040 Growth Concept.
- Over 45 percent of workers in the 3 Metro-area counties work in a different county than where they live.
- The number of commuters who travel into the region from surrounding communities is growing, but the majority of commute trips in the region still begin and end within Clackamas, Multnomah, and Washington counties.
- The majority of the region's freight still moves by truck, but high-value freight is more likely to use other modes.
- Anyone who is able to commute by auto enjoys reasonably good access to jobs, but transit does not provide nearly the same level of access as driving does. People can reach five to ten times as many jobs by auto as they can by transit.
- Active transportation networks are generally more complete within regional centers and near transit.

4.4.1 Jobs and growth

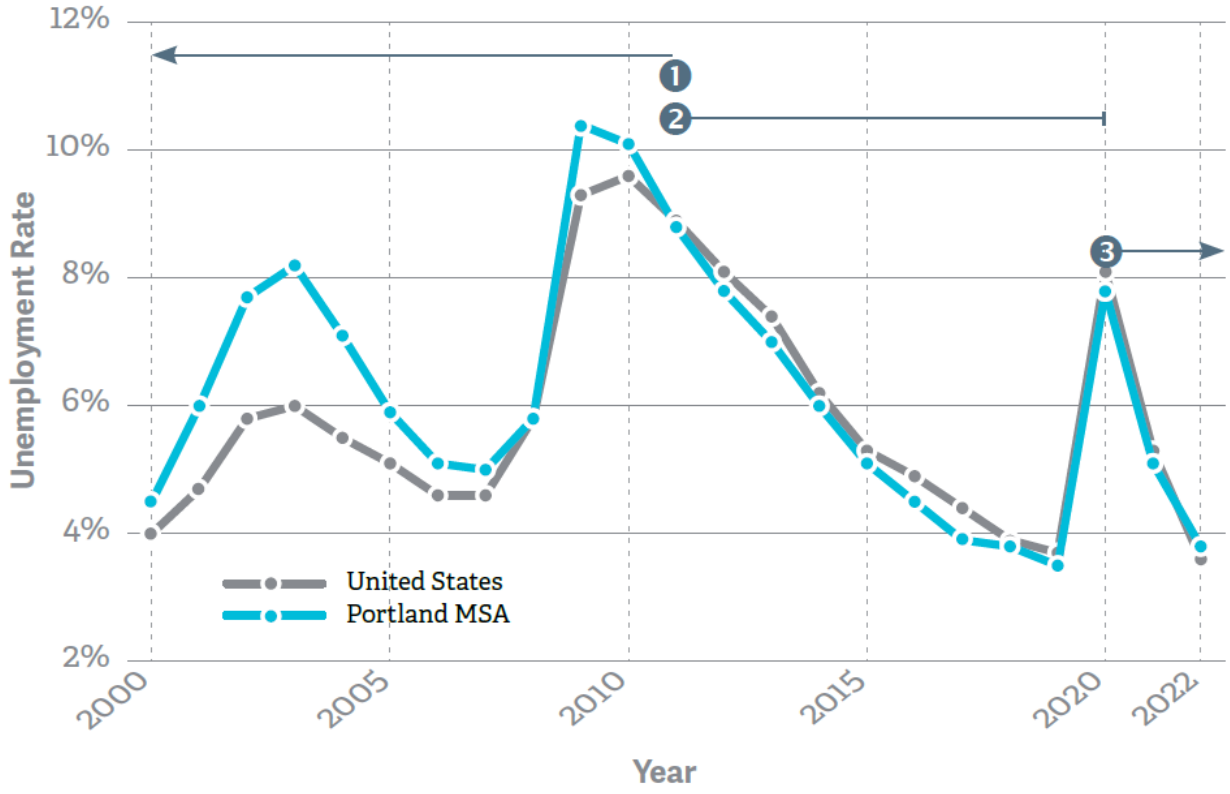
The 2018 RTP described a region that was growing rapidly into a major U.S. metropolitan area, with large numbers of people from other cities migrating to Greater Portland. It described some of the challenges associated with that growth, including growing congestion, rising housing costs, and increased displacement of people of color and people with low incomes to neighborhoods that are harder to serve with transit and other transportation options. These forces still continue to shape the region, though there are signs that growth may be slowing.

Between 2015 (the base year for the 2018 RTP update) and 2020 (the base year for the 2023 RTP update, the region grew significantly – by 135,000 people (an 8.4% increase), 57,000 households

(8.9%) and 90,000 jobs (10.1%).[41] This growth is projected to continue, though not necessarily at the same rapid rate as the region saw during the previous decade. Even prior to the pandemic, State economists and demographers predicted that population growith in Oregon and our region would be slower during the 2020s than it had been during the 2010s, and in 2022 the Census Bureau estimated that the State and region's population declined for the first time in years.[42] Generally, slower population growth also means slower economic growth, and recent State analyses find that businesses in Oregon are having a harder-than-ever time filling vacant positions.

Figure 4.25 shows historical unemployment rates for the greater Portland region, which in this and the following charts include Clackamas, Clark, Columbia, Multnomah, Skamania, Washington, and Yamhill counties – the 7-county region that is commonly used in reporting on the region's economy because it captures the full extent of potential commutes to and from our region's job centers.

Figure 4.26: Unemployment rate in the greater Portland region vs. the U.S., 2000-22 (Oregon Employment Department, 2022)



This chart highlights three different phases in the region's recent economic growth. Prior to 2011, (phase 1) the region generally experienced higher unemployment rates than the national average

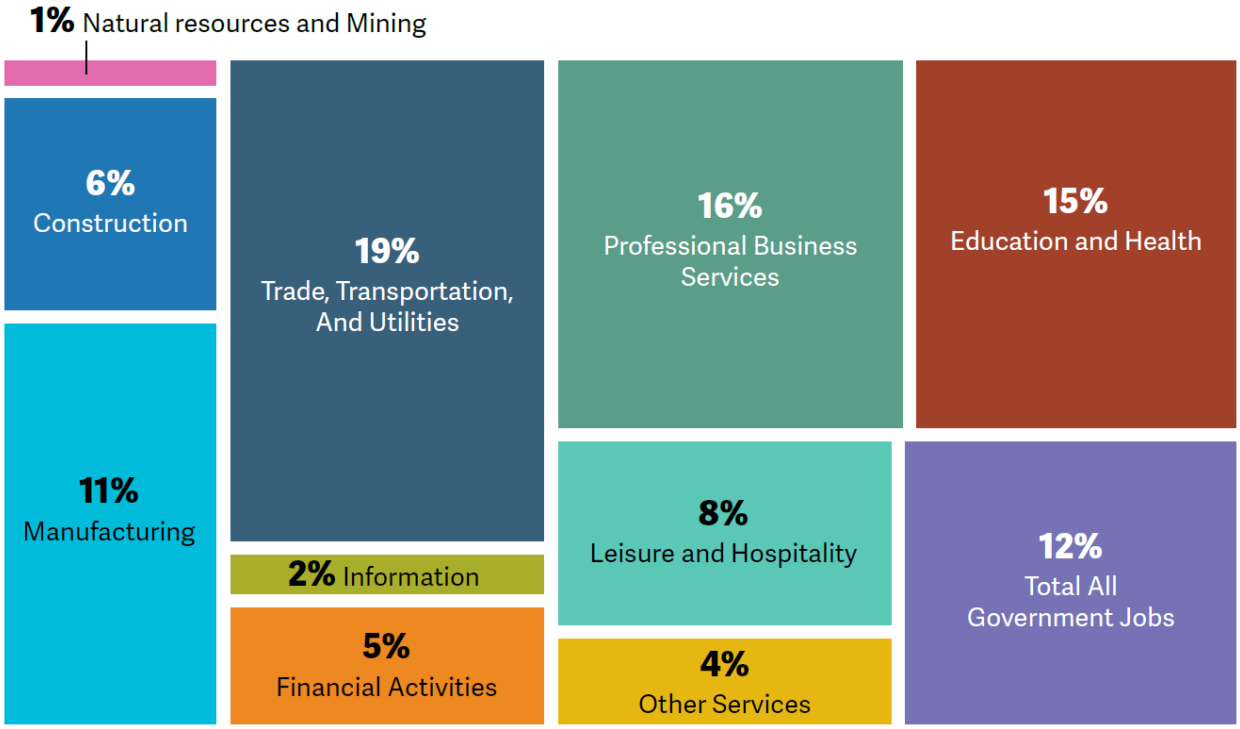
[41] Metro Regional Travel Model.

[42] https://oregoneconomicanalysis.com/2022/12/29/oregon-population-growth-2022/

compared to the U.S. as a whole, particularly during recessions. Between 2011 and 2020 (phase 2) the region has consistently had lower unemployment rates than the rest of the country. In 2020 the COVID-19 pandemic triggered an exceptional recession, both in the region and nationwide, which receded much more quickly than prior recessions (phase 3). Overall, the region's economy has grown stronger relative to the rest of the U.S, and since 2011 the region has consistently had lower unemployment rates than the rest of the country. These recent low unemployment rates are particularly remarkable since they are happening at a time when regional participation in the labor force is increasing, which normally causes unemployment to rise. Between 2011 and 2020, the labor force participation rate in the broader economic region grew or remained constant for every age group of workers, whereas in the U.S. as a whole it fell for many age groups.[43] Figure 4.26 also highlights the exceptional nature of the recent recession triggered by the COVID-19 pandemic, which receded much more quickly than prior recessions. During the prior two recessions in 2002-04 and 2009-14 both the regional and national unemployment rates remained above six percent for several years, whereas they only remained at such high rates for a single year during the most recent 2020 recession.

Figure 4.27 shows the industries in which people hold jobs within the same 7-county region discussed above.

Figure 4.27: Employment by industry in the greater Portland region (Oregon Employment Department, 2019)



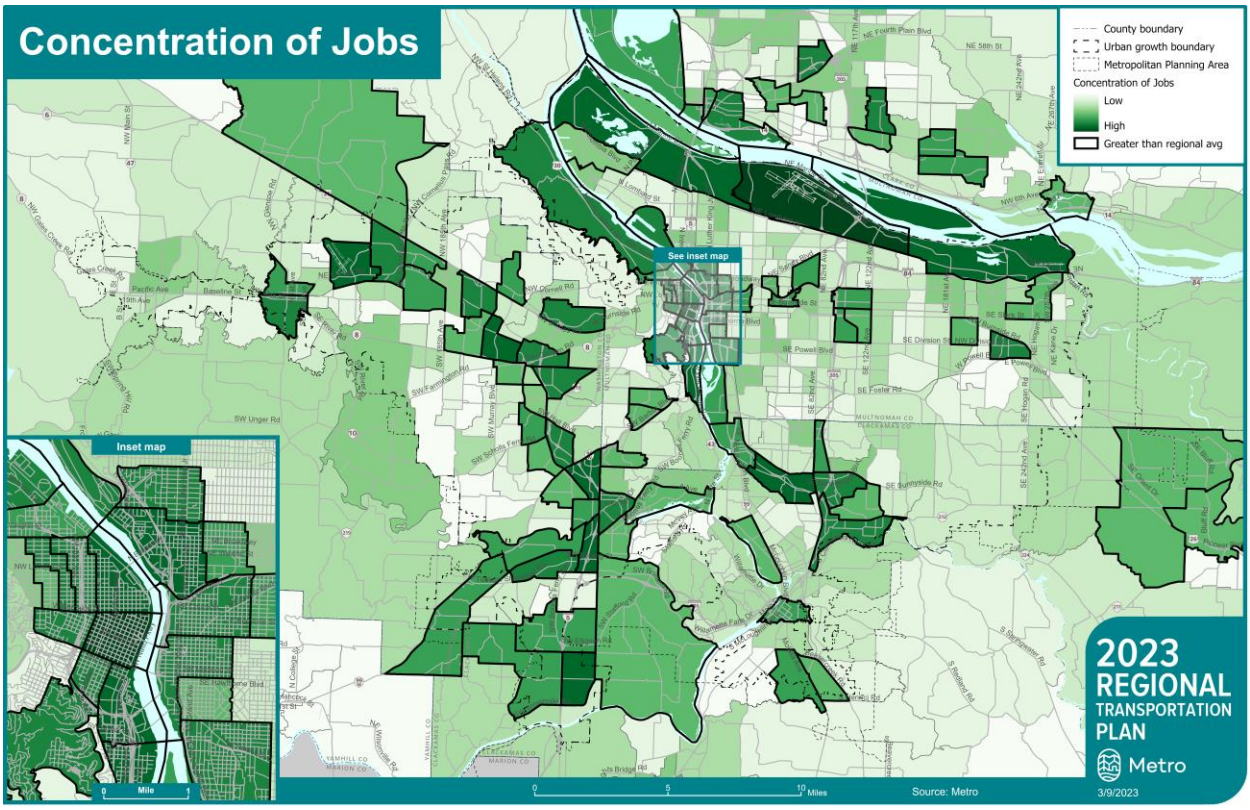
[43] The Columbia-Willamette Workforce Collaborative, State of Workforce Labor Report, 2023. https://www.worksystems.org/news-events/news/columbia-willamette-workforce-collaborative-publishes-latest-state-workforce-report

According to this data, which is from 2019, the most recent non-pandemic data was available, Transportation, Professional Services, and Education and Health are the largest employment sectors in the region, collectively accounting for half of the jobs. Those sectors also dominated the region's economy according to the 2015 data that was included in the last RTP update. Collectively those major employment sectors – along with Information, which is a fast-growing sector in the current economy – have accounted for most of the region's recent economic growth. The pandemic led to a seven percent overall decrease in regional employment in 2020, but all of the sectors shown above have recovered from their losses except the leisure and hospitality sector, which suffered nationwide losses as travel and in-person events ceased and continues to recover slowly due to low levels of tourism.

4.4.2 Where jobs are located

Figure 4.28 shows where jobs are currently located in the Portland region. Census tracts with more jobs are shaded in darker green on the map, and tracts with above average numbers of jobs are outlined in bold.

Figure 4.28: Number of jobs by Census Tract, 2021 (Economic Value Atlas: Esri/DataAxle)

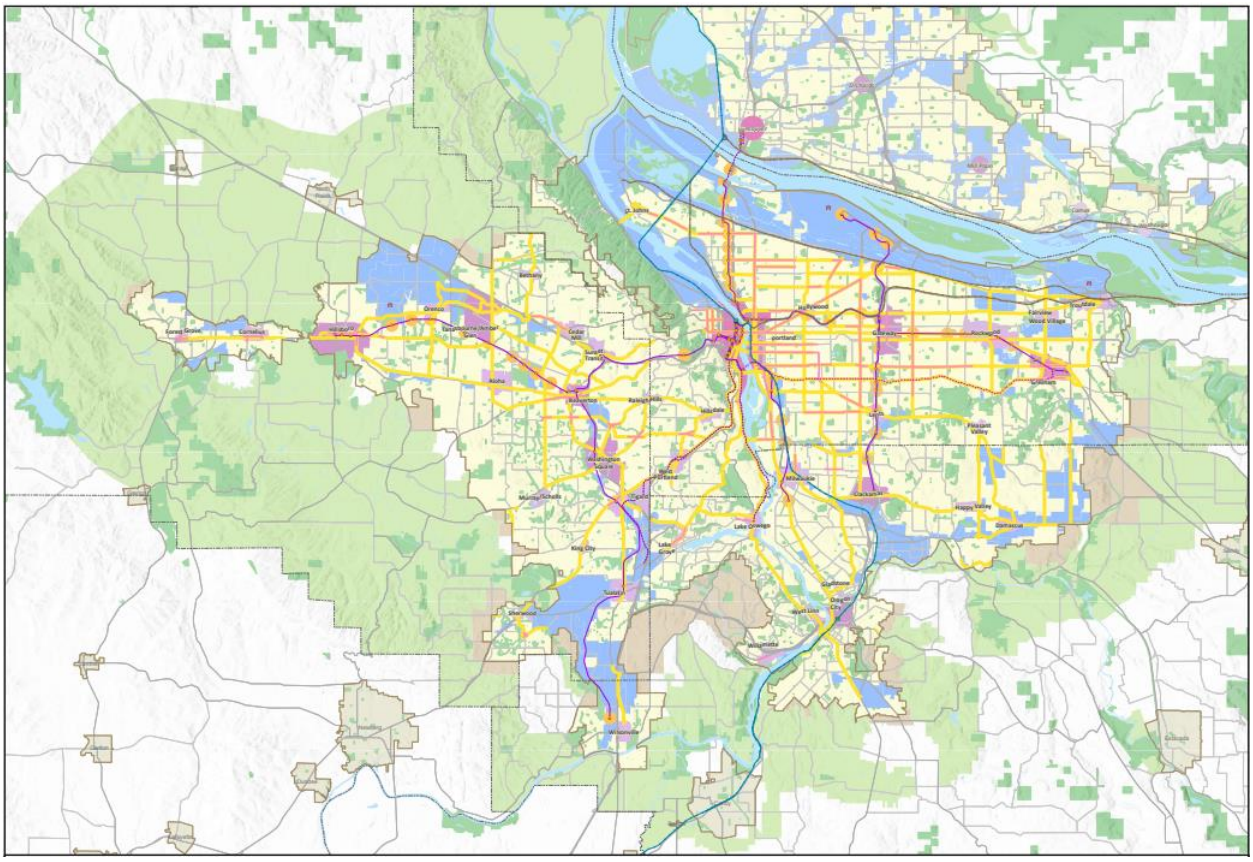


Jobs are distributed throughout the region, but there are higher-than-average concentrations of jobs in the centers of larger cities in the region, including Portland, Beaverton, Gresham, Hillsboro, and Tigard; and in major employment or industrial areas such as the Columbia Corridor, the 224 Corridor, Tualatin-Sherwood, and North Hillsboro.

The 2040 Growth Concept, shown in

Figure 4.29 below, designates where and how the region is planned to grow over the next several decades. It includes a network of regional and town centers (shown in pink) and employment lands (shown in blue). These centers and employment lands include the areas that are currently rich in jobs shown in Figure 4.28 above, as well as areas where the region is planning to develop space for jobs in the future.

Figure 4.29: 2040 Growth Concept Map



The 2040 Growth Concept helps to identify the many different job and activity centers in the region that need to be included in this web of connections. At the same time, local pedestrian, bike and transit connections are necessary in and around these centers to give people safe, affordable and healthy options for shorter trips to shops, services, and other non-work destinations.

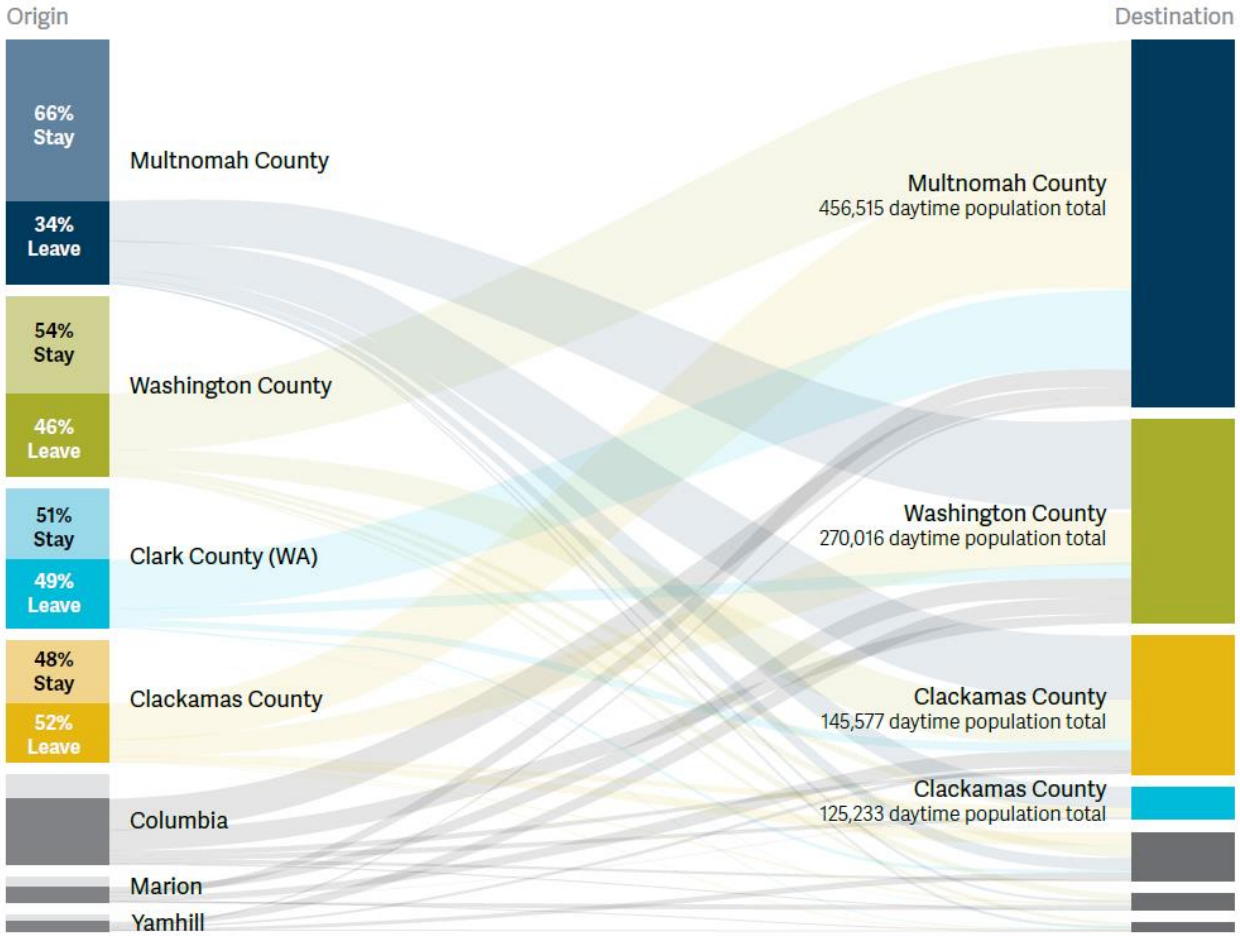
4.4.3 How workers move through the region

Between 2015 (the base year for the 2018 RTP update) and 2020 (the base year for the 2023 RTP update, the region grew significantly – by 135,000 people (an 8.4% increase), 57,000 households (8.9%) and 90,000 jobs (10.1%).[44] This growth is projected to continue, though not necessarily at

[44] Metro Regional Travel Model.

the same rapid rate as the region saw during the previous decade. As Greater Portland continues to evolve into a major metropolitan area, with increasing housing prices and a more specialized economy, commute patterns are becoming more complex. Figure 4.30 shows how workers commute within and between counties in and around the region. It includes data for counties that are outside the region that have significant amounts of workers commuting to or from the Metro region.

Figure 4.30: Where workers live and commute in the Greater Portland region and surrounding counties, 2019 (Census LEHD Origin-Destination Employment Statistics)



This figure highlights how commute patterns in the region are increasingly complex and long-distance. Over 45 percent of workers in the 3 Metro-area counties work in a different county than where they live. Travel patterns like those shown above are typical of major metropolitan areas with large populations, clusters of specialized jobs, and rising housing prices that limit many people from living close to jobs. Most of the longer-distance commute trips highlighted in Figure 4.30 are made by car; frequent and high-capacity transit routes are needed to provide affordable, congestion-free commute alternatives as the region grows.

Though commute patterns are growing more complex and the share of long-distance commutes is increasing, the majority of commute trips pass through the heart of the region – which means that

investing in the transportation system in the central areas of the region continues to be critical to supporting the region's economic growth. Over 70 percent of the commutes within the 7-county economic region discussed above begin and end within the 3 Metro-area counties (Clackamas, Multnomah and Washington). Multnomah County is particularly central to the region's economy – it is the only county that experiences significant population gains during the working day. Washington County has roughly the same amount of workers commuting into the county and workers commuting out of the county, and Clackamas County loses more workers than it gains during the day. These numbers help to contextualize some of the findings elsewhere in this report that show Multnomah County having more crashes, more congestion, and more transit service than other counties; these issues are due in part to the fact that Multnomah County has more people commuting to, from, and through it. This is not to dismiss the growth in long-distance commutes over the past decade; the number of workers traveling into the region from counties such as Columbia and Marion increased significantly between 2015, when Metro last reviewed this data, and 2019. However, even with this growth there are roughly 36,000 of these long-distance commutes happening every day, compared to the 800,000 daily commutes within the region's core.

4.4.4 How goods move through the region

Keeping freight moving is a critical part of regional mobility. Most of the products we buy come from someplace else, and many of the goods we produce in Oregon move on to markets in other states and countries. The global economy is expanding rapidly, and our region's ability to move products to far-flung markets depends on an efficient transportation system. With its location on Interstate 5, the West Coast artery of the Interstate Highway System, the greater Portland region is ideally situated to move freight by truck. But with Portland International Airport, two Class 1 railroads (mainline railroads Union Pacific and Burlington Northern/Santa Fe), the southern terminus of the 400-mile Olympic Pipeline, and a location at the confluence of two major rivers with ocean access and several marine terminals, the region's freight transportation system is a multimodal network.

Figure 4.31 and Figure 4.32 summarize the value and weight of the goods that move through the region by mode. High-value goods make up an increasing share of the freight that moves through the region, and they sometimes take different routes and modes than other goods in order to arrive at their destinations safely and on time. Distinguishing between value and weight helps to identify how goods of different value are moving through the transportation system.

Figure 4.31: Weight of outbound freight by mode in the Greater Portland Region, 2017 (Freight Analysis Framework data)

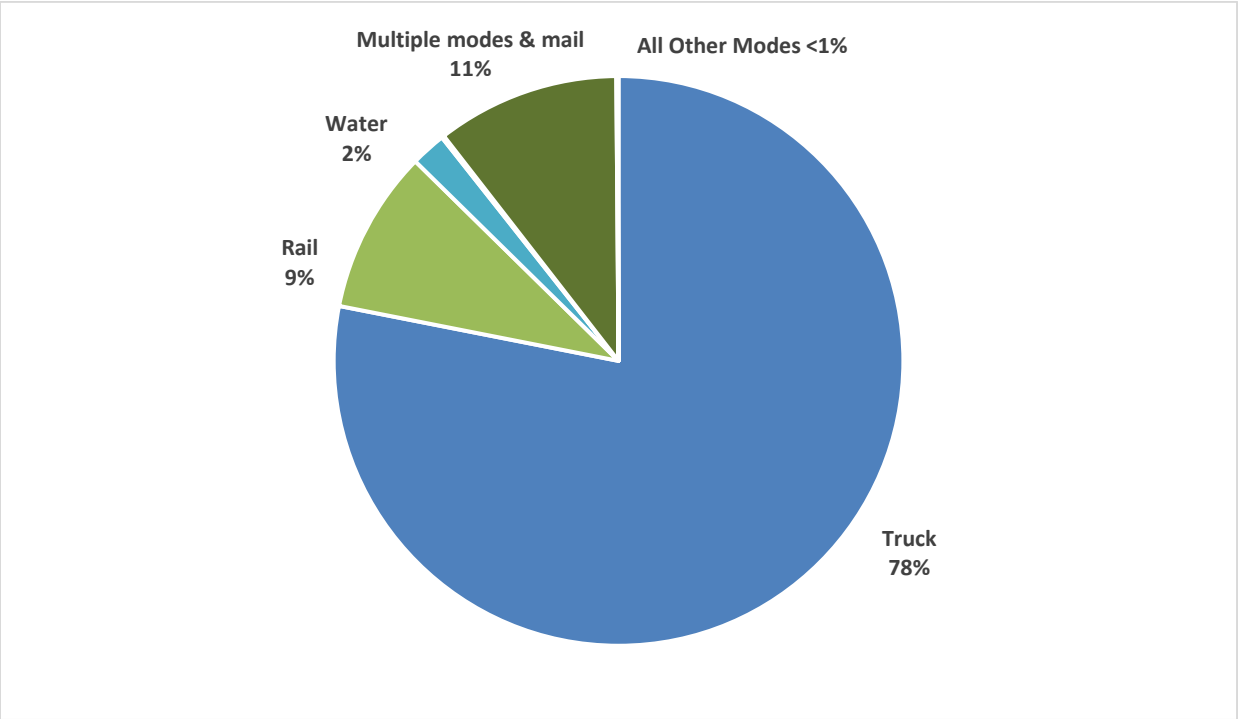
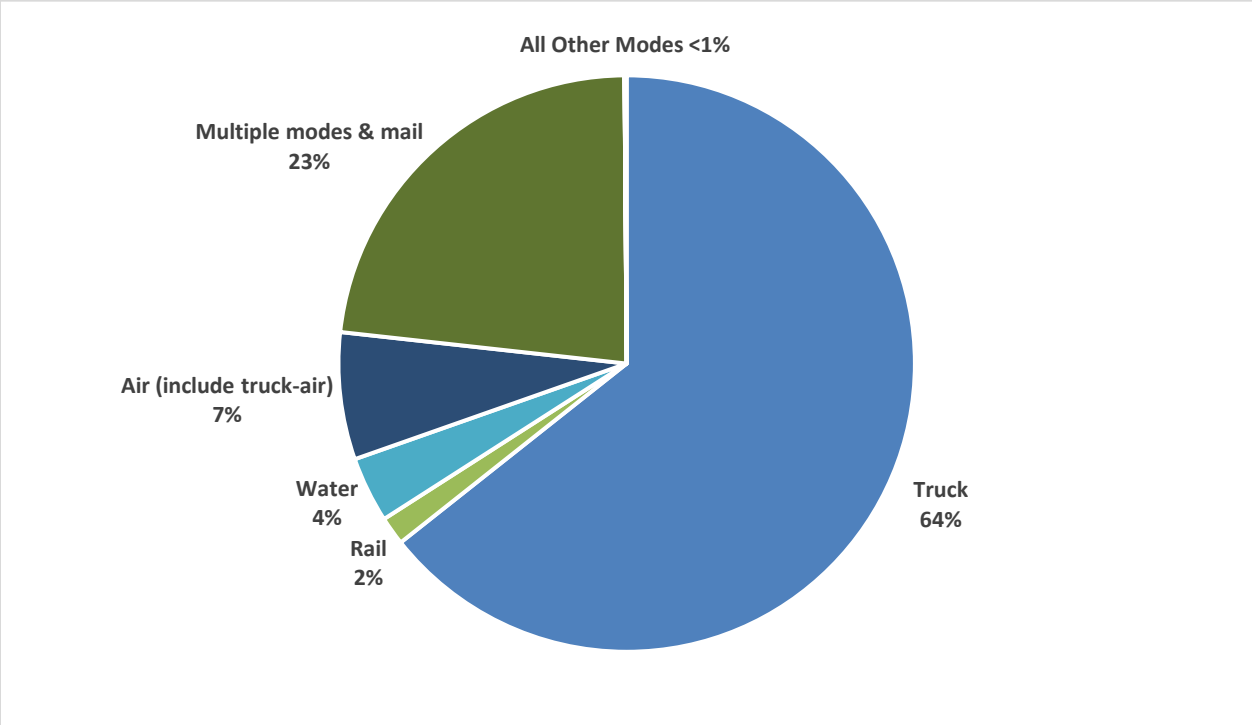


Figure 4.32: Value of outbound freight by mode in the Greater Portland Region, 2017 (Freight Analysis Framework data)



The majority of the region's freight, whether by value or weight, is moved by truck. High value freight is less likely to move by truck and rail, and more likely to use multiple modes, mail, water, and air. As Oregon's economy shifts from bulk products like farm exports and timber to lighter products like semiconductors, electronics and specialized machinery, improving freight connectivity to the airport and other intermodal facilities will help keep goods moving through the region.

4.4.5 Connecting the region's employment centers

The RTP goals envision a region where employment centers are accessible through a variety of multimodal connections. This means that the 2040 centers and employment/industrial lands shown above in Figure 4.29 should be well-connected by vehicle and transit because commutes are often the longest trip people take in a day, and these are the modes best suited for long trips. It also means that these centers need to include solid bicycle and pedestrian infrastructure and a mix of land uses so that people can get meals or run other errands without needing to drive.

This table is also included above in the Mobility section, which provides more details on the methodology and how access to destinations is related to land use patterns and the transportation system.

Table 4.5 below examines how accessible jobs are by driving and transit, comparing access to jobs via transit and automobile during peak hours and other times of the day. This table is also included above in the Mobility section, which provides more details on the methodology and how access to destinations is related to land use patterns and the transportation system.

Table 4.5: Percent of jobs accessible by driving and by transit, by community type and time of day, 2020 (Metro travel model and land use data)

	Percent of jobs accessible within…	
	… a 30-minute drive	**…a 45-minute transit trip**
During rush hour	43%	7%
Outside of rush hour	50%	6%

Anyone who is able to commute by auto enjoys reasonably good access to jobs – the average driver can reach roughly half of the region's jobs outside of rush hour. But transit does not provide nearly the same level of access as driving does; people can reach five to ten times as many jobs by auto as they can by driving. Adding high-frequency transit service that connects the neighborhoods where workers live to employment centers is critical to meeting the RTP's goal of providing multimodal connections to work.

Table 4.6 below compares how complete the bike/ped network is[45] in key 2040 geographies – centers, station communities, mixed-use communities, and employment/industrial lands – versus

[45] Metro distinguishes between on-street bicycle and pedestrian gaps in facilities like bike lanes and sidewalks and off-street bike/ped gaps in facilities like trails. On-street facilities are generally needed to provide good active transportation connections in centers, near transit, and along arterials, whereas off-street facilities provide longer-distance connections between these areas. Table 4.2 focuses on the on-street bike/ped network.

in the region as a whole. Meeting the economy goal in the RTP means prioritizing active transportation investments in these centers.

Table 4.6: Bike/ped system completeness by location within the region (2018 RTP networks and current partner agency data)

Network	Total planned miles	Number of miles completed	Percent of miles completed
Region-wide			
Pedestrian network	1,040	597	57%
Bicycle network	1,149	626	55%
Trail network	560	245	44%
Motor vehicle network	1,171	1,146	98%
Within 2040 centers			
Pedestrian network	181	141	78%
Bicycle network	168	112	66%
Within station communities outside above centers			
Pedestrian network	108	72	67%
Bicycle network	123	69	56%
Within mixed-use zoning outside above centers & station communities			
Pedestrian network	136	106	78%
Bicycle network	114	75	66%
Within employment and industrial areas outside above centers, station communities, and mixed-use zoning			
Pedestrian network	147	60	41%
Bicycle network	133	73	55%

Consistent with the 2040 Growth Concept, active transportation networks are generally more complete within regional centers and near transit. However, several important gaps remain in these areas, which can be seen in the "gap maps" in the Mobility section.

4.5 CLIMATE

Climate change is the defining global challenge of the 21st century. And as the recent increase in climate-induced wildfires and extreme weather events has demonstrated, it is likely to have significant impacts on the Portland region. In 2009, the Oregon Legislature set goals to reduce greenhouse gas (GHG) emissions 10 percent below 1990 levels by 2020 and at least 75 percent below 1990 levels by 2050.46 More recently, Executive Order 20-04 set new emissions reduction goals that call for the State of Oregon to reduce its GHG emissions at least 45 percent below 1990 emissions levels by 2035 and at least 80 percent below 1990 levels by 2050.47 These updated goals are consistent with the reductions that climate scientists now believe are necessary to avoid catastrophic climate change impacts.

The transportation sector is the largest contributor to greenhouse gas emissions in Oregon. It is therefore a key focus of the state's greenhouse gas reduction efforts. And the State, recognizing the role that regional transportation plans (RTPs) play in influencing transportation policies, projects, and outcomes, has relied on RTPs to help reduce transportation emissions. The State is responsible for allocating state and federal funds to reduce GHG emissions by making vehicles and fuels cleaner; it assigns regions targets that are designed to make up the gap between those State-led reductions and State goals. Beginning in 2012, the State set GHG reduction targets for the greater Portland region to meet and has continued to update these targets since, most recently in July 2022. The Portland region's targets are:

- A 20 percent reduction in per capita greenhouse gas emissions by the year 2035 (the target for the Climate Smart Strategy adopted in 2014)[48]
- A 25 percent reduction by 2040 (the target for the 2018 RTP)
- A 30 percent reduction by 2045 (the target for the 2023 RTP)
- A 35 percent reduction by 2050 (the target for the 2028 RTP)
- Targets for the years 2041-2049 steadily increase from 26 to 34 percent in order to maintain progress toward the 2050 target.[49]

These targets are relative to a 2005 base year. They are based on per capita emissions in order to control for population growth and focus on the impact of transportation policies, programs and plans on GHG emissions. Regional targets only apply to certain types of emissions, and therefore only certain reduction strategies count toward Metro's targets:

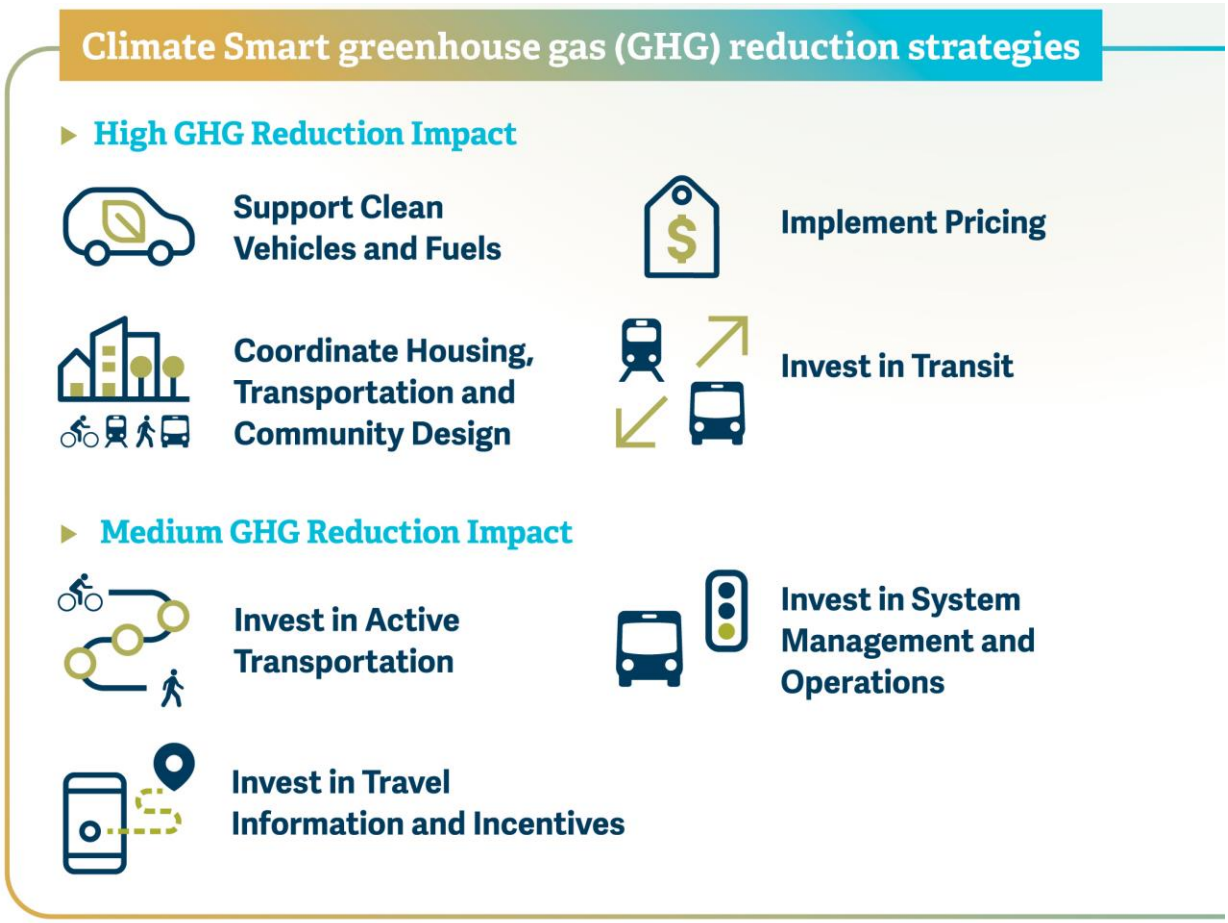
[46] Oregon Department of Environmental Quality, Oregon Greenhouse Gas Emissions, https://www.oregon.gov/deq/aq/programs/Pages/GHG-Oregon-Emissions.aspx
[47] https://www.oregon.gov/gov/Documents/executive_orders/eo_20-04.pdf

[48] The Climate Smart Strategy adopted in 2014 was forecasted to achieve a 29 percent reduction by 2035 if fully implemented.
[49] Oregon Administrative Rule 660-044-0020, https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=3093 https://www.oregon.gov/lcd/LAR/Documents/2022-01_Div44.pdf

- **Strategies that reduce emissions from light vehicles**, including passenger vehicles (cars, pickup trucks and SUVs) and commercial trucks with a vehicle weight rating of 10,000 pounds or less.
- **Strategies that impact household travel,** whether physically traveled by the members of the household or by deliveries and miscellaneous commercial travel to their home.[4]
- **Strategies that benefit the climate by reducing vehicle miles traveled**. The State estimates the impact of State-level vehicle- and fuel-based reductions and then sets regional greenhouse gas targets to fill the remaining gap needed to meet Oregon's emissions goals. It would be double-counting if regions also took credit for vehicle- and fuel-based reductions, which would lead agencies to overestimate progress toward Oregon's climate goals. The state has clarified that **the targets shown above are equivalent to VMT reduction targets.**

The Climate Smart Strategy,[50] adopted in 2014, is the region's blueprint for reducing emissions. It identifies a toolkit of high- and medium-impact GHG reduction strategies, summarized in Figure 4.33 below, that the region's transportation agencies continue to rely on today.

Figure 4.33: Climate Smart greenhouse gas reduction strategies



[50] https://www.oregonmetro.gov/climate-smart-strategy

4.5.1 The 2023 RTP GHG and VMT gap

Though the region's basic toolkit for fighting climate change has remained consistent since 2010, the State regularly updates the region's GHG and VMT targets and requires each RTP update to include a revised climate analysis that demontsrates the region's progress toward these new targets that accounts for state clean vehicle and fuel strategies and that updates the level of implementation of different local and regional strategies to reflect the policies and investments in the RTP. If this analysis finds that the RTP is not sufficient to meet regional targets, JPACT and Metro Council can consider changes to the RTP that further reduce VMT and GHG emissions.

Prior to udpating the 2023 RTP project list, Metro estimated the gap between between the region's existing emissions under the 2018 RTP and its updated GHG reduction targets. The size and nature of the gap help to understand and anticipate the extent to which the 2023 may need to change in order to meet its climate targets, and what the needed changes might look like. Metro used VisionEval, which is the tool the state uses to set regional climate targets and is designed to allow users to evaluate and compare multiple different GHG reduction scenarios, to assess two scenarios:

The **target scenario**, which represents the Portland region's GHG/VMT reduction target. The region's emissions targets are based on a percentage reduction in 2005-level GHG emissions; the Target scenario applies these reductions to daily VMT per capita from 2005 to estimate target levels of daily VMT per capita for different milestone years.

The **STS+RTP18 scenario**, which represents the GHG/VMT reductions due to adopted State and local/regional plans. State-level reductions are based on the Statewide Transportation Strategy (STS),[51] which outlines the strategies that the State will take to reduce transportation-sector GHG emissions on variables such as the share of zero-emission vehicles, the carbon intensity of fuels, the balance of cars and trucks in the passenger fleet, vehicle turnover, and the cost of travel (accounting for the cost of various types of energy as well as state-implemented road pricing). Metro is required to use State assumptions about the carbon intensity of vehicles and fuels in its climate analysis, and can choose whether to adjust some pricing assumptions provided by the state. Local/regional reductions are based on the 2018 RTP, which included significant investments in transit, active transportation, travel demand and system management, and other GHG reduction strategies. In 2020, Metro staff made minor adjustments to some of the VisionEval inputs that represent the 2018 RTP in order to capture progress in implementing these strategies.[52]

[51] https://www.oregon.gov/odot/Planning/Pages/STS.aspx

[52] 2020 adjustments focused on adjusting assumptions regarding participation in traveler information and incentive programs based on updated evaluation data from Metro's Regional Travel Options program demonstrating that participation in these programs is often more limited than anticipated. The 2018 RTP assumed that 30% of workers and 45% of households receive regular travel options programming; Metro revised these assumptions downward to 5% and 0.5%, respectively. Other assumptions from the 2018 RTP climate analysis can be found in Appendix J of the 2018 RTP:

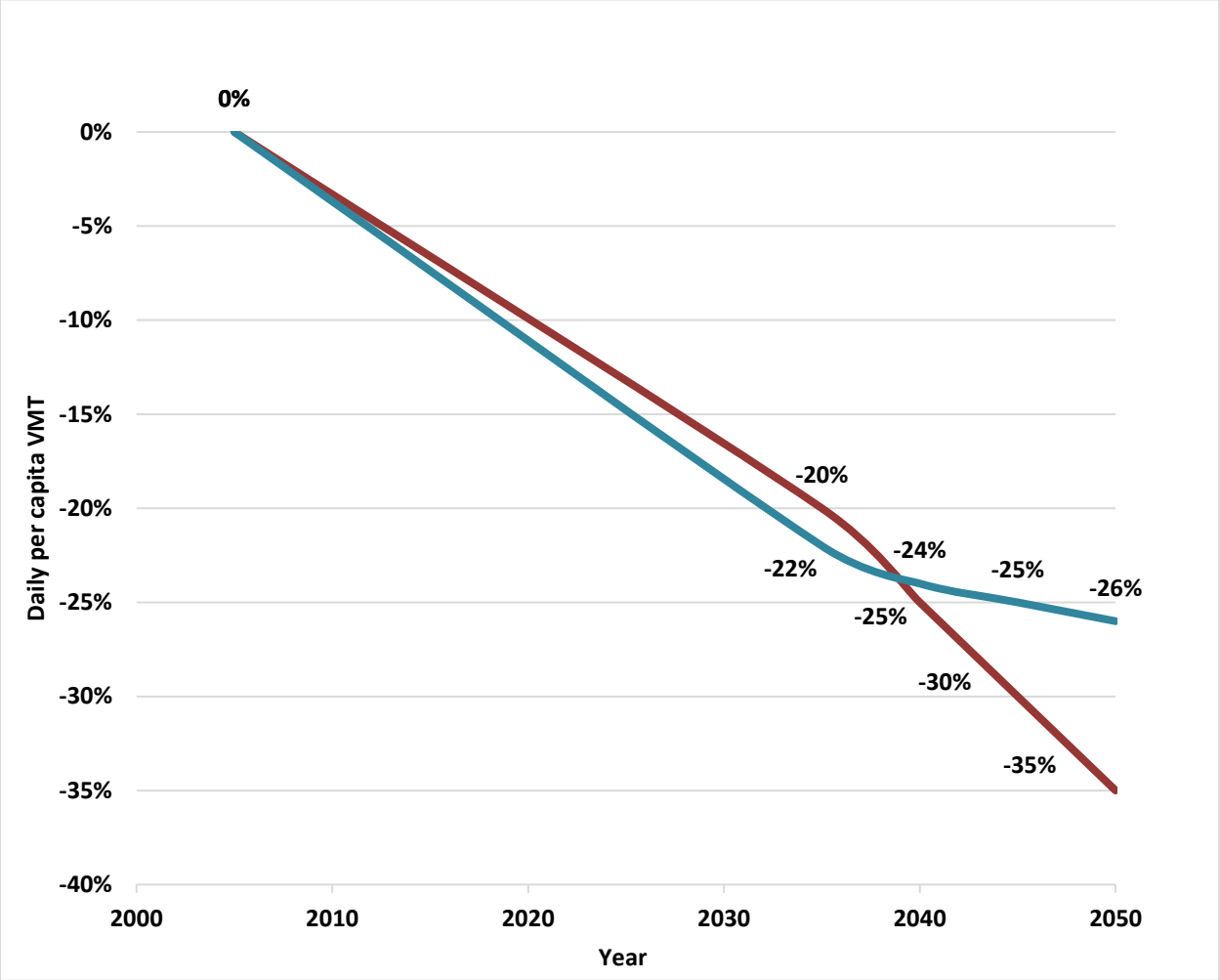
Table 4.7 and Figure 4.34 show GHG reductions under these two scenarios as well as the **RTP23 gap**, which is the remaining reduction in GHG/VMT that the 2023 RTP update needs to achieve in order to meet its climate targets, and which is calculated as the difference between the results of the Target Scenario and those of the STS+RTP18 Scenario. These results are shown in both absolute daily VMT per capita and in the same percentage reductions relative to the 2005 baseline that the State uses when establishing regional targets.

Table 4.7: Estimated absolute and percentage reductions in daily VMT per capita by scenario

Year	Target (absolute)	Target (% reduction)	STS + RTP18 (absolute)	STS + RTP18 (% reduction)	Estimated RTP23 gap (absolute)	Estimated RTP23 gap (% reduction)
2005	19.4	0%	19.4	0%	0	0%
2035	15.5	-20%	15.0	-22%	-0.4	2%
2040	14.5	-25%	14.6	-24%	0.2	-1%
2045	13.5	-30%	14.5	-25%	1.0	-5%
2050	12.5	-35%	14.3	-26%	1.8	-9%

https://www.oregonmetro.gov/sites/default/files/2019/04/02/RTP-Appendix_J_Climate_Smart_Strategy_Monitoring181206.pdf.

Figure 4.34: Estimated percentage reductions in daily VMT per capita, Target vs. STS+RTP18 Scenario



These results confirm that the 2018 RTP Climate Strategy was largely on track to meet its GHG reduction targets. The targets used in the 2018 RTP only extended through 2040, and under the STS+RTP18 Scenario is very close to Target Scenario levels through the year 2040 However, the results also highlight a growing GHG reduction gap for the years 2040-50. This is expected since the State has set targets out to 2050, whereas the GHG strategies adopted in the 2018 RTP only apply out to 2040. Nonetheless, the way that the results of the two scenarios diverge after 2040, when targets become more ambitious while local/regional GHG reductions flatten out, suggests that the region needs to focus on achieving long-term, cumulative emissions reductions to achieve its targets. This analysis estimates that the region needs to reduce 2050 daily VMT per capita by 1.8 miles below currently forecasted levels to meet its targets. This is equivalent to reducing VMT/GHG emissions by roughly a third more than what current plans are expected to achieve.

Coordinated implementation of multiple GHG reduction strategies can help to achieve the necessary reductions, particularly when it is supported by active pricing and/or management of the transportation system. The 2023 RTP update is the first to include roadway pricing policies

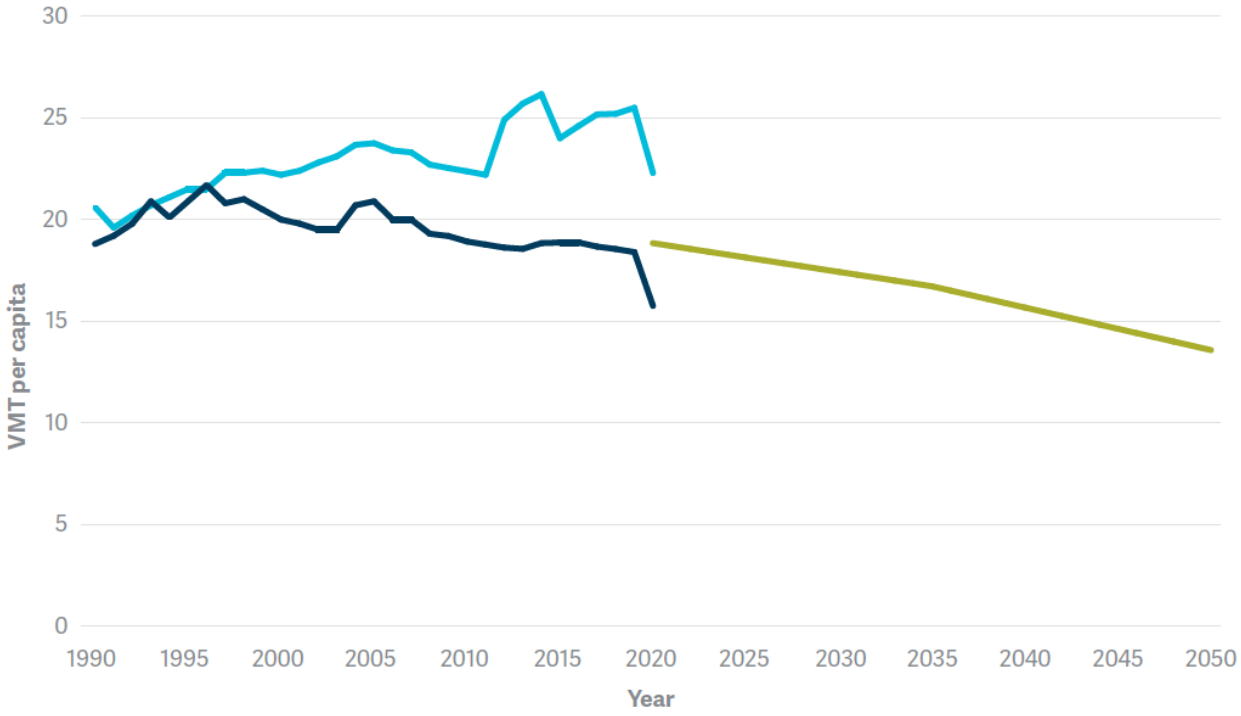
and projects, which creates a major opportunity to reduce VMT and GHG emissions. Chapter 7 updates the analysis above to evaluate the 2023 RTP update's progress toward meeting regional climate targets.

4.5.2 VMT per capita

Vehicle miles traveled (VMT) per capita measures much the average person in the Portland region drives each day. Many transportation agencies in the region use VMT per capita to measure progress toward creating vibrant communities and providing multimodal travel options. As discussed above, the region's climate targets focus on reducing VMT. Understanding current and historical VMT per capita can help identify additional opportunities to reduce emssions and close any gap remaining between emissions under the 2023 RTP update and the region's climate targets.

Figure 4.35 below shows historical trends in VMT per capita between 1990 and 2020 for both the U.S. and the greater Portland region and compares them to the regional

Figure 4.35: Daily VMT per capita for the Greater Portland region (dark blue) and the U.S (light blue), 1990-2020 (Oregon and Washington Highway Performance Monitoring System offices) and regional climate targets (green)



Per capita VMT in the Greater Portland region has been significantly lower than the national average since 1997. There has been a general downward trend, with a few exceptions during

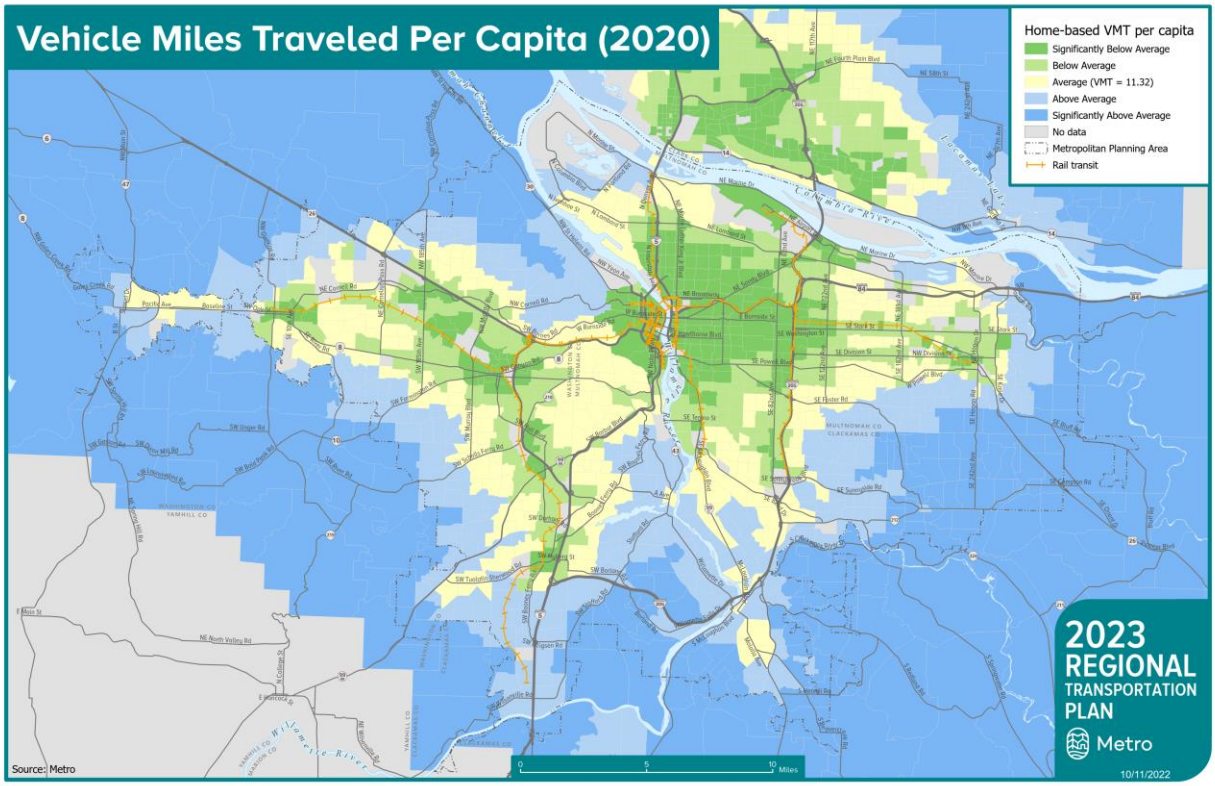
economic booms, over the past 25 years. However, between 2010 and early 2020[53] there was little or no decline in VMT per capita. The region's past successes in transportation and land use planning appear to have had a lasting impact on people's travel choices, and even during periods of growth they may have helped to keep VMT per capita from increasing. But in order to continue to reduce VMT – especially in an era when high housing costs make it challenging for many people to live in neighborhoods with good access to travel options – the region will likely need to take new approaches, such as congestion pricing, or double down on high-impact strategies such as expanding frequent transit, creating affordable housing in regional centers, and managing or pricing parking.

These results help to provide some context for understanding the estimated VMT reduction gap between the 2018 RTP and regional climate targets discussed in the previous section. The estimated gap of 1.8 miles per person per day is roughly the same amount that regional VMT declined between 1997 and 2002 or 2007 and 2013, which are two of the periods when VMT declined the most during the past 30 years. This suggests that closing such a gap is feasible, even during a period of economic growth such as 1997-2002 (all things being equial, VMT tends to increase as the economy grows), but it requires a deliberate and coordinated effort.

Figure 4.36 shows how estimated household-based VMT per capita from Metro's travel model varies across the region. Though these are estimates, they highlight relative differences in VMT per capita based on nearby land uses and transportation options.

[53] Figure **Error! Main Document Only.** also shows a steep decline in both national and regional VMT per capita in 2020. This reflects the onset of the COVID-19 pandemic, which led many people to limit their travel as stay-at-home orders were carried out and many schools and workplaces closed. Metro's Emerging Transportation Trends study (https://www.oregonmetro.gov/public-projects/2023-regional-transportation-plan/research) estimated that the persistence of teleworking and other pandemic-era behaviors could reduce 2050 VMT per capita by three to eight percent, all other things being equal.

Figure 4.36: Home-based VMT per capita by Metro transportation analysis zone, 2020 (Metro regional travel model)



VMT per capita is lower in regional centers, along frequent transit lines, and in many of the region's older neighborhoods. This is consistent with research finding that VMT per capita tends to be lower in compact communities with a mix of destinations and good access to transit and other options.[54] It demonstrates the impact of sound land use planning and diverse travel options on VMT per capita.

[54] https://nap.nationalacademies.org/catalog/12747/driving-and-the-built-environment-the-effects-of-compact-development