

REVISED TECHNICAL MEMORANDUM

DATE: March 25, 2022, Revised April 14, 2022
TO: Grant O’Connell, TriMet
FROM: Ryan Farncomb, Nadine Appenbrink, Jason Nolin (Parametrix)
SUBJECT: Task 3: Trends in Transit and Mobility
CC: Evan Landman, Jarrett Walker Associates
PROJECT NAME: TriMet Comprehensive Service Analysis

INTRODUCTION

The purpose of this *Trends in Transit and Mobility* memo is to summarize recent changes in how people travel — and other cultural shifts relevant to transit — while also considering how these trends may continue into the future. This memo examines trends at a national scale as well as a local scale for the TriMet service area. The COVID-19 pandemic had dramatically altered commuting beginning in March 2020, and now, two years later, it appears likely that some of the shifts in travel patterns will endure into the near term and beyond. This memo considers trends that had been identified before the pandemic (2019 and earlier) and trends that have occurred since the pandemic began (2020 and after). These trends will inform the comprehensive service analysis, which will include recommendations for services TriMet can provide to meet community needs in the near term (2022 to 2025) and potentially beyond.

FINDINGS SUMMARY

Findings from the analysis of recent mobility trends and their potential implications for TriMet are summarized in Table 1.

Table 1. Summary of Trends and Potential Solutions

Trend	Potential Solutions
Peak commute demand has declined.	<ul style="list-style-type: none">• Reallocate transit service so it is less focused on peak times and more spread through the day.• Consider reallocating some portion of peak-hour service along downtown segments and reallocate service to that serve all-day destinations.• Eliminate or reduce downtown peak express services.• Invest in articulated buses to absorb increases in peak demand, particularly if service during peak times is reallocated through the day.
Travel has declined less for less-educated and lower-income populations.	<ul style="list-style-type: none">• Increase service for high demand areas and times.• Focus on areas with high equity demand, areas that offer services, and areas where people work in person.

Trend	Potential Solutions
Transit ridership has declined more than other modes.	<ul style="list-style-type: none"> Expand transit access in areas not well served by fixed route transit and areas with equity populations. Focus service on locations where demand for transit is strong now and will likely be strong in the coming years.
People are concerned about potential COVID-19 infection from riding transit.	<ul style="list-style-type: none"> Continue with COVID-19 health and safety protocols. Emphasize COVID-19 protocols in marketing.
Transit ridership has declined since the mid-2010s.	<ul style="list-style-type: none"> Make transit more useful by improving its ability to take people where they need to go. Focus service on locations where demand for transit is strong now and will likely be strong in the coming years. Expand transit access in areas not well served by fixed route transit and with equity populations. Continue implementing transit-priority infrastructure improvements to reduce the impacts of traffic congestion on transit. Work with policymakers to regulate ride hailing services that compete with transit.
Transit agencies and municipalities implementing transit-priority infrastructure improvements.	<ul style="list-style-type: none"> Continue implementing transit-priority improvements, such as with the Enhanced Transit Corridors program.
Lower-income populations are being displaced from the urban core to the urban fringes.	<ul style="list-style-type: none"> Improve transit access in areas not well served by fixed route transit and with equity populations. Improve multimodal facilities (sidewalks, crossings, bike lanes) that make it easier and safer to get to transit. Coordinate with Metro and local jurisdictions to integrate anti-displacement strategies with transit improvements.
Rethinking security on transit and in other public places.	<ul style="list-style-type: none"> Outreach to Black, Indigenous, and people of color (BIPOC) communities and groups. Inclusive safety policies. Training in anti-racism, cultural competency, mental health & de-escalation for TriMet personnel (Recommended from <i>Reimagining Public Safety & Security on Transit</i>) Increased presence of TriMet personnel and unarmed safety presence (recommended from <i>Reimagining Public Safety & Security on Transit</i>). Crisis intervention teams (recommended from <i>Reimagining Public Safety & Security on Transit</i>).
Increase in traffic fatalities.	<ul style="list-style-type: none"> Invest in infrastructure to improve safety, such as illumination, traffic calming, and bike/ped facilities. Work with local jurisdictions to encourage safe driving, particularly near transit stops and routes.
Increasing numbers of people experiencing homelessness in urban areas, as well as non-destination riders and homeless residents at/near transit stops.	<ul style="list-style-type: none"> Consider findings from Portland State University research, expected to be completed summer 2022. Social workers on transit vehicles or at transit stops. Connect with social service providers.
Reduced fare revenue.	<ul style="list-style-type: none"> Consider restructuring revenue sources to reduce dependence on fare revenue.

Trend	Potential Solutions
Driver shortage.	<ul style="list-style-type: none"> • Changes in scheduling practices, such as fewer split runs, to be more effective with operators' time and make the job more attractive. • Increase driver compensation. • Higher capacity vehicles, such as articulated buses, to carry more passengers per operator.

RECENT MOBILITY TRENDS

This assessment is organized into trends at the national level versus local/regional trends. While the Portland metro region is generally experiencing the same trends as the nation overall, the indicators for each differ. This assessment considers two timeframes for mobility trends:

- Before the Covid-19 pandemic (February 2020 and earlier).
- Since the beginning of the COVID-19 pandemic (March 2020 and after).

These trends are reviewed critically to understand which are likely to be durable in the near term, defined as the next several years (to 2025) or longer.

A full list of trends, their national and local indicators, and their potential implications for TriMet is in Table 9. This table also includes references for the study, article, or data that the trend is based on.

National Trends

Before the COVID-19 Pandemic (Prior to February 2020)

Trends in mobility, and transit specifically, had been reported in the years leading up to when the pandemic began in early 2020. Transit ridership nationally, for example, had been declining for years. Total national ridership in 2018 was 9.85 billion unlinked trips — the lowest since 2007, despite the US population growing by approximately 20 million people in those 11 years.¹ Ridership increased modestly to 9.89 billion trips in 2019 but was still below the 2014 peak of 10.7 billion trips. This decline has been studied extensively and is likely to be the result of many contributing factors.² Two of these potential factors are also trends themselves: gentrification of the urban core and the rise of ride hailing services.

Gentrification

Gentrification of the urban core of many US cities had been occurring for decades.³ As the value of real estate goes up in dense urban areas, which are generally well served by transit, lower income communities are pushed to the suburbs, which are generally too low density and spread out for practical fixed-route transit service.⁴ Lower

¹ <https://www.transit.dot.gov/ntd/data-product/monthly-module-raw-data-release>

² <https://la.curbed.com/2017/8/29/16219230/transit-metro-ridership-down-why>

³ <https://www.portland.gov/sites/default/files/2020-01/2-gentrification-and-displacement-study-05.18.13.pdf>

⁴ <https://www.theatlantic.com/business/archive/2015/01/suburbs-and-the-new-american-poverty/384259/>

income populations, who have historically used transit more than wealthier communities, use transit less in the suburban context because land uses are not as well-connected and travel distances and times are longer.⁵ Meanwhile, the wealthier communities that move to the urban core tend to drive alone more and use transit less.⁶ This phenomenon leads to “spatial mismatch,” where lower income people are separated from job opportunities and access to services. It can be challenging for the transit system to respond because of the time it takes to recognize and then accommodate the population shift and because of existing land use patterns.

Ride Hailing Services

Ride hailing services, such as Uber and Lyft, first started in 2010 and became popular in the mid-2010s. These companies sold rides at a loss in an effort to capture market share,⁷ and in the process attracted a portion of trips that could have been made on transit. One report estimates a nearly 2 percent decrease in bus ridership with the introduction of ride hailing services in a city.⁸ However, the continual lack of profitability, the limitations of automobile-based urban mobility, and other challenges contribute to an uncertain long-term future for ride hailing services.⁹

Transit-Priority Investments

The decline in transit ridership and rise of ride hailing services contributed to worsening traffic congestion in urban areas. This slowed transit service for the vast majority of transit vehicles that are in mixed traffic lanes. Transit agencies and local jurisdictions recognized that this congestion caused by people driving personal vehicles was harming transit service and riders. They began planning and implementing transit-priority projects to help buses get out of traffic. Examples include the City of Seattle’s Transit Program¹⁰ and the collaboration between TriMet, Metro, and the City of Portland for the Enhanced Transit Corridors (ETC) Plan¹¹ and the subsequent Rose Lane Project¹². Projects include transit-priority lanes and spot improvements, such as queue jumps at intersections and bus stops in lane.

Since the Beginning of the COVID-19 Pandemic

Travel patterns were dramatically altered in mid-March 2020 when “shutdowns” resulted in a drastic reduction in all trips. The Oregon Department of Transportation (ODOT) reported decreases in daily traffic volumes of over 60 percent on several major highways in March and April 2020.¹³ For the initial few months, people limited their travel to essential jobs or essential services. People who could work from home stayed home. People who could not work from home and who held jobs that were considered “non-essential” did not work. Schools were first

⁵ <https://transitcenter.org/in-portland-economic-displacement-may-be-a-driver-of-transit-ridership-loss/>

⁶ https://www.reimaginerpe.org/files/TRN_Equity_final%282%29.pdf

⁷ <https://nymag.com/intelligencer/2019/04/ubers-plan-to-lose-money-on-each-ride-make-it-up-in-volume.html>

⁸ <https://usa.streetsblog.org/wp-content/uploads/sites/5/2019/01/19-04931-Transit-Trends.pdf>

⁹ <https://www.theverge.com/2021/2/11/22277043/uber-lyft-earnings-q4-2020-profit-loss-covid>

¹⁰ <https://www.seattle.gov/transportation/projects-and-programs/programs/transit-program>

¹¹ <https://www.portland.gov/transportation/planning/enhanced-transit-corridors-plan>

¹² <https://www.portland.gov/transportation/rose-lanes>

¹³ https://www.oregon.gov/odot/Data/Documents/ODOT_TrafficReport_April10_2020.pdf

closed, then embraced remote learning. People adopted e-commerce and home grocery delivery at an unprecedented scale.

People have been taking more trips since those early days of the pandemic. Automobile trips on Portland Interstates in June 2021 were just a few percentage points below levels seen in June 2019.¹⁴ In some Interstate segments outside of Portland, 2021 automobile travel was even higher than 2019. Though, trips to downtown Portland seem to still be below pre-pandemic levels. An analysis of the number of vehicles entering or exiting downtown from the Morrison Bridge reveals that peak travel times were more pronounced in February 2022 than in February 2021, but were still well below the levels seen in 2020. As seen in Figure 1, the 2022 am peak was still substantially lower than 2020, and traffic levels stayed below 2020 for the rest of the day. The reduced number of trips going into downtown suggests that many downtown employees were still working remotely.

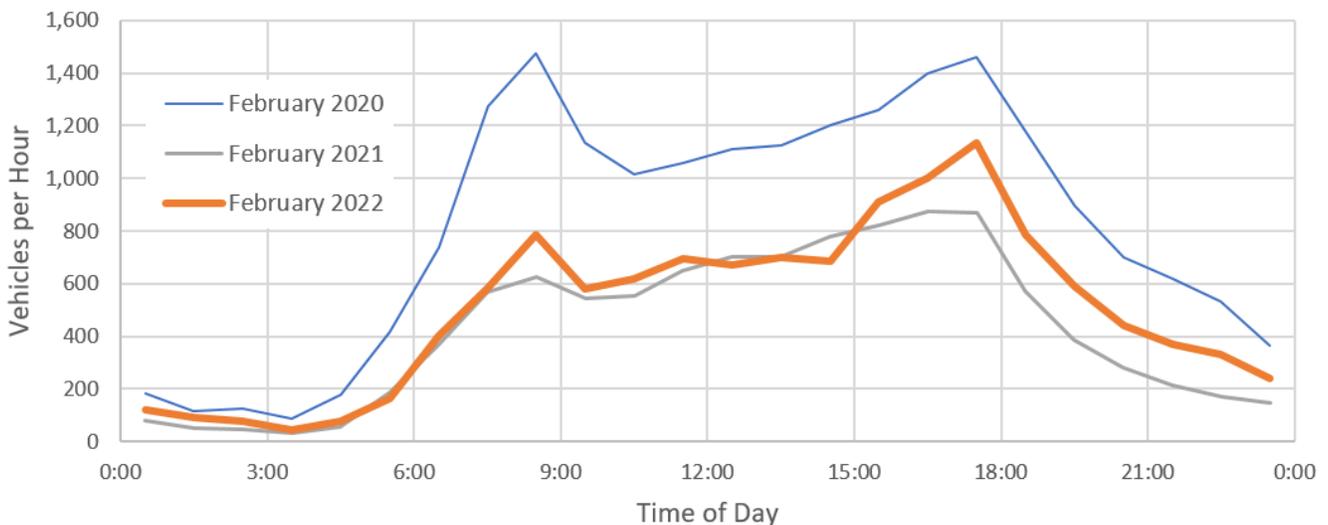


Figure 1. Vehicles Entering/Exiting the Morrison Bridge from SW 2nd Ave by Time of Day (Weekday Average)

Data: <https://portal.its.pdx.edu/>

A return of more traffic does not necessarily mean that patterns have gone back to a pre-pandemic “normal” or that patterns are trending in a predictable direction. Habits change as the pandemic evolves, new variants spread, and public health guidelines are revised. The relaxing of guidelines after vaccines were widely available in the spring of 2021 was reversed in the summer when the delta variant began to spread. Later, as the spread of the delta variant waned in late 2021, the highly contagious omicron variant began to spread in December 2021. This pattern of successive mutation is likely to continue, which means travel patterns may continue to be affected by how severe and contagious the next variant will be.

Commuting and E-Commerce

Though some of the changes from early 2020 were temporary, many have stuck. Working from home, for example, was less common before the coronavirus pandemic and is now commonplace for jobs that do not require in-person work. In January 2022, over 15 percent of US workers teleworked because of the pandemic.¹⁵

¹⁴ https://www.oregon.gov/odot/Data/Documents/ODOT_TrafficReport_July_9_2021.pdf

¹⁵ <https://www.bls.gov/covid19/effects-of-covid-19-pandemic-and-response-on-the-employment-situation-news-release.htm>

This is less than the peak of teleworking in 2020, but substantially higher than in 2019 when less than 6 percent of workers worked from home.¹⁶ As seen in Figure 2, the percentage of workers who teleworked because of the pandemic in Oregon has been consistently higher than the US overall.

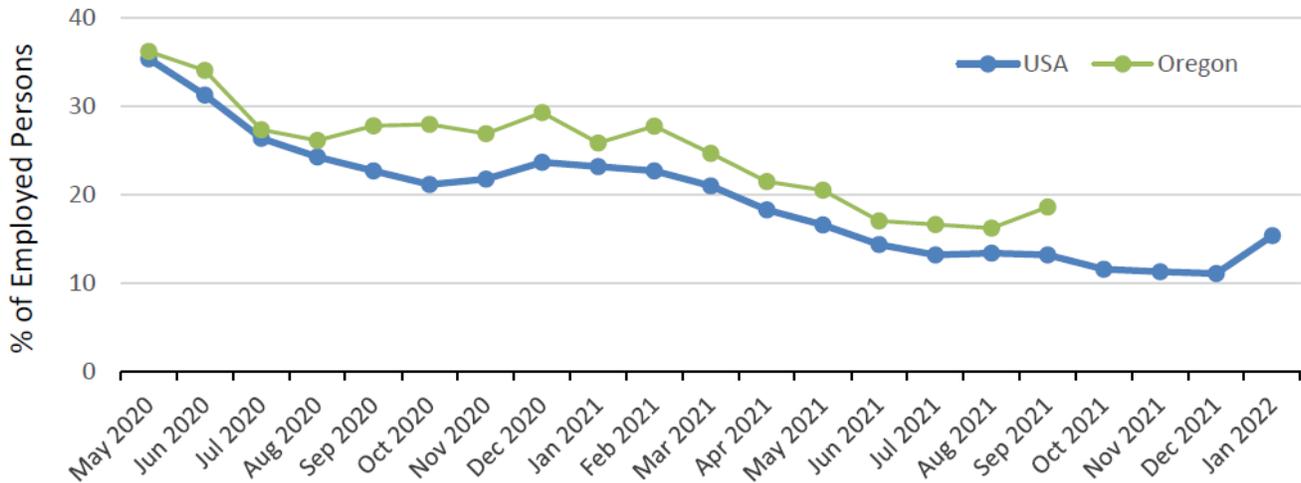


Figure 2. Employed persons who teleworked or worked at home for pay at any time in the last 4 weeks because of the coronavirus pandemic

Sources: U.S. Bureau of Labor Statistics, Oregon Office of Economic Analysis

E-commerce, which had been steadily growing for years, spiked in the second quarter of 2020 when online sales accounted for 15.7 percent of total retail sales.¹⁷ Though it dropped to 13.3 percent in 2021, it is higher than the 10.5 percent of retail sales in 2019. More e-commerce means fewer trips to go shopping, but also more delivery vehicles on the roads and in residential areas.

Road Safety

With the decline in travel from the pandemic response, the number of traffic fatalities increased — despite fewer cars on the road. Traffic fatalities rose sharply in 2020 and remained high in 2021. The total number of fatalities for 2020 was 38,680, an increase of 7.2 percent over 2019.¹⁸ And the number of fatalities for the first nine months of 2021 was 12.0 percent higher than the same period in 2020. Preliminary research suggests that some people who drove during the pandemic engaged in riskier behavior, such as speeding and driving under the influence.¹⁹ ODOT suggests that a reduction in enforcement of traffic laws has also been a contributing factor to the increase in fatalities.²⁰

¹⁶ <https://oregoneconomicanalysis.com/2021/12/16/just-how-much-is-working-from-home-on-the-rise/>

¹⁷ <https://www.census.gov/retail/index.html>

¹⁸ <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813240>

¹⁹ https://www.nhtsa.gov/sites/nhtsa.gov/files/2021-10/Traffic-Safety-During-COVID-19_Jan-June2021-102621-v3-tag.pdf

²⁰ <https://www.oregon.gov/odot/Safety/Documents/2022PerformancePlan.pdf>

Collapse in Transit Ridership

Nationally, the transportation system has seen fewer trips overall since the pandemic began. However, transit use specifically has declined more than other modes. While the vehicle miles traveled (VMT) for motor vehicles nationally have nearly returned to pre-pandemic levels, transit trips still remain depressed. Unlinked trips for October 2021 were 59 percent of what they were in October 2019. Fare revenue has declined with ridership, from over 16 billion dollars nationally in 2019 to just 9 billion dollars in 2020. The loss of ridership can be partly explained by the lower numbers of people commuting to work. The loss can also be partly explained by the fear of potential infection. A survey of adults in Washington DC in July 2021 found that nearly 40 percent of respondents had not used transit and were concerned about transit because of the coronavirus.²¹ A nationwide survey in August 2020 found that “less than 10 percent of transit riders in our sample reported that they were comfortable using transit despite COVID-19 infection risk.”²² Those who have continued riding transit tend to be from low income or from Black, Indigenous, and people of color (BIPOC) populations.²²

Inequities and Social Justice

Impacts from the pandemic have exacerbated already existing socio-economic inequities. Most directly, COVID-19 health outcomes have been disproportionately more severe for American Indian or Alaska Native, Black, and Hispanic or Latino populations.²³ Additionally, industries with lower income workers tended to experience more negative effects from the pandemic. Food service and retail, for example, experienced huge losses in 2020 as lockdowns kept people home. The restaurant industry had 3.1 million fewer jobs than expected at the end of 2020.²⁴ Loss of jobs and health insurance increased financial insecurity for disproportionately more BIPOC populations, bringing with it reduced access to health care and housing instability. As businesses began opening again, restaurant and retail workers (along with healthcare, transit, and other essential workers) were working in person with potential exposure to infection. Meanwhile, people who could work from home tended to have more stable jobs and less health risk. Some industries, especially technology and e-commerce, have made record profits since 2020.²⁵

With the pandemic came heightened awareness to social justice issues, particularly movements for racial justice. This awareness brought attention to historic, systemic disparities in institutions and policing. This has led to discussion in many communities about transit policies regarding safety, security, and enforcement.

Economic Factors

Economic phenomena resulting from the pandemic also have implications for transit. A shortage of workers has created a bus driver shortage. Transit agencies across the country have had to cut service simply because they lack enough operators to staff routes. Agencies are offering bonuses to attract new drivers and higher wages to

²¹ <https://www.washingtonpost.com/context/july-6-21-2021-washington-post-schar-school-d-c-area-poll/9a5fb4d0-7933-4bbd-933e-c32939a67154/>

²² <https://www.sciencedirect.com/science/article/pii/S0967070X21002067>

²³ <https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/racial-ethnic-disparities/index.html>

²⁴ <https://restaurant.org/research-and-media/research/industry-statistics/national-statistics/>

²⁵ <https://www.nytimes.com/2021/04/29/technology/big-tech-pandemic-economy.html>

retain existing drivers.²⁶ Additionally, the costs of goods and fuel are rising as inflation climbs to rates last seen in the 1980s.^{27, 28} Each of these trends lead to higher cost to provide transit service.

Regional and Local Trends

Trends in the Portland metro region have generally reflected national trends.

As seen nationally, telecommuting in Oregon increased greatly in 2020.²⁹ Though 2021 telecommuting rates for the Portland metro region are not yet available, 2020 data has shown the share of people working from home in the metro region was higher than Oregon overall, and that Oregon’s rates have been higher than the US overall.

Declining Transit Ridership

TriMet’s ridership and passenger revenue declined after fiscal year 2016 and plummeted in fiscal year 2021 (Table 2).

Table 2. TriMet Total System Ridership and Passenger Revenue

Fiscal Year (July through June)	Boarding Rides	Passenger Revenue (\$ millions)
2016	101,543,332	118.0
2017	98,986,457	116.9
2018	97,067,672	113.8
2019	96,650,044	114.9
2020	78,504,513	93.6
2021	40,125,645	39.5

<https://trimet.org/about/pdf/trimetridership.pdf>

Meanwhile, driving in the Portland metro region is near where it was in 2019, and in some places in Oregon traffic has surpassed 2019 (Table 3). In fact, peak afternoon traffic speeds in the Portland region are near those observed prior to COVID-19 restrictions.³⁰ Traffic fatalities increased in 2020 and again in 2021 for the state and for Portland (see Figure 3). Metro forecasts that the increase in traffic deaths will continue into the pandemic recovery.

²⁶ <https://www.dotnews.com/2021/mbta-outreach-shortage-drivers-features-bonus-tie>

²⁷ <https://www.wsi.com/articles/soaring-energy-prices-raise-concerns-about-u-s-inflation-economy-11633870800>

²⁸ <https://www.theguardian.com/business/2021/dec/10/us-inflation-rate-rise-2021-highest-increase-since-1982>

²⁹ <https://oregoneconomicanalysis.com/2021/12/16/just-how-much-is-working-from-home-on-the-rise/>

³⁰ https://www.oregon.gov/odot/Data/Documents/ODOT_TrafficReport_July_9_2021.pdf

Table 3. Change in Average Daily Motor Vehicle Traffic Volume Since 2019 (Week of June 14-20)

Segment	2020 vs 2019		2021 vs 2019	
	Weekday	Weekend	Weekday	Weekend
I-5 within Portland	-20%	-23%	-6%	-3%
I-84 within Portland	-13%	-22%	-1%	-1%
I-5 Willamette Valley (outside Portland)	-15%	-11%	-1%	+6%
I-84 outside Portland	-7%	-9%	+8%	+11%

Source: ODOT Observed Statewide Traffic Volume Patterns, July 2021
https://www.oregon.gov/odot/Data/Documents/ODOT_TrafficReport_July_9_2021.pdf

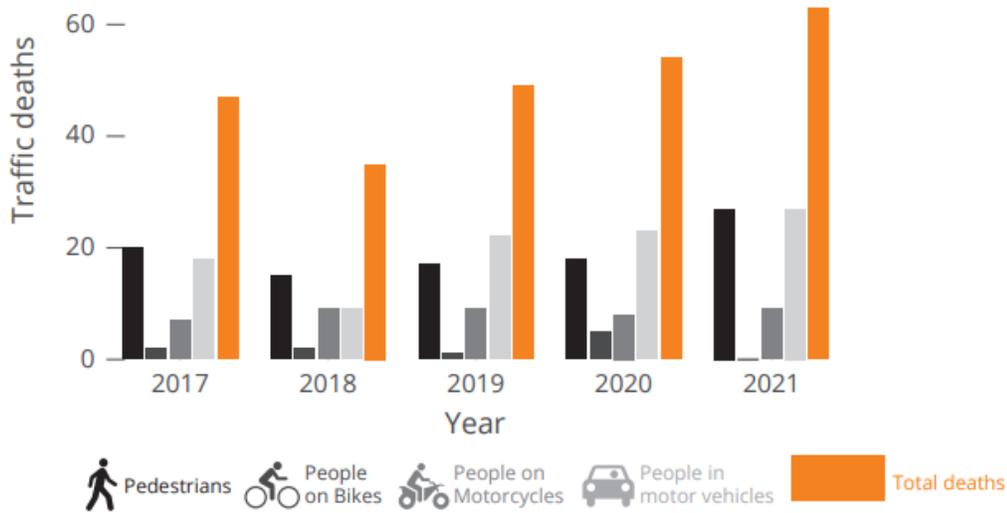


Figure 3. Portland Traffic Deaths by Travel Option, 2017-2021

Source: Portland Traffic Crash Report (2021), January 2022. Data: Portland Police Bureau (2020-2021), ODOT (2017-2019)

Regional Economy and Jobs

Employment in the Portland metro region dropped by 14 percent between January and April 2020.³¹ Many jobs had recovered by November 2021, but as seen in Figure 4, employment was still down 3.2 percent from January 2020. Leisure and hospitality was the hardest sector hit, losing over half of its jobs at the peak (Figure 5). By November 2021, employment in the sector was still down 13.5 percent from before the pandemic.

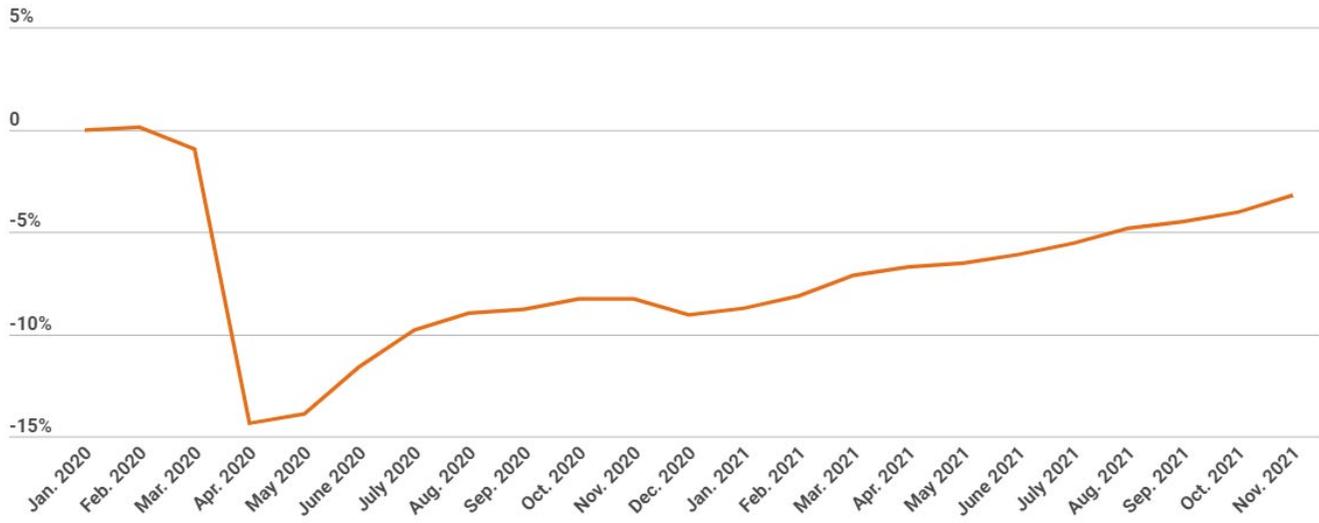


Figure 4. Employment Change During the Pandemic

Source: Portland Business Alliance’s 2022 State of the Economy. Data: Oregon Employment Department, Current Employment Statistics (November 2021).

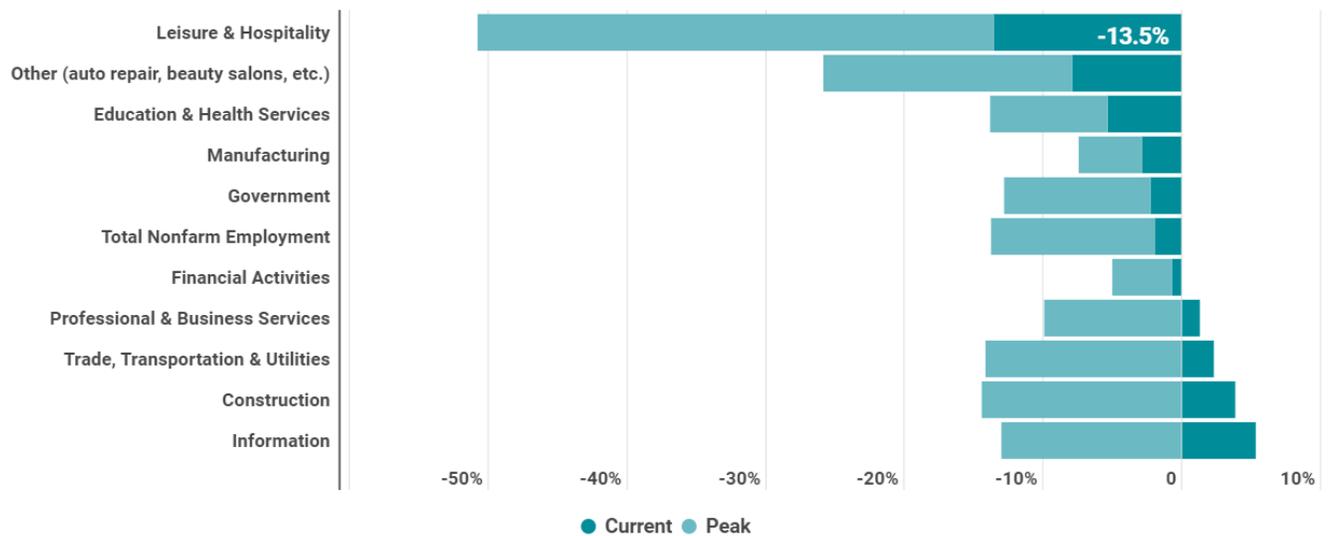


Figure 5. Portland Employment Change During the Pandemic by Industry

Source: Portland Business Alliance’s 2022 State of the Economy. Data: Oregon Employment Department, Current Employment Statistics (November 2021).

³¹ <https://portlandalliance.com/2022>

Where are People Working in Person?

To better understand the geographic distribution of in person jobs, data from the 2020 quarterly census employment and wages (QCEW) was analyzed. (This data is the most recent available, however it does not include growth that occurred in 2021, such as expansion of Amazon distribution centers.) The QCEW includes workplace location, industry, and the number of employees, but it does not include information about how many people are working in person or telecommuting. Instead, the number of people working in person was estimated using the total number of employees at each location and adjusting with national teleworking rates for November 2021 reported by the Bureau of Labor and Statistics (BLS). National teleworking rates, which are likely lower than teleworking rates for the Portland region, were used because recent rates by industry are not available at a local scale. Teleworking rates for each workplace were applied by industry, as shown in Table 5. (Note that these are national rates and local telecommuting rates for the Portland metro region are likely somewhat higher.)

Figure 6 maps densities of estimated in person jobs with an overlay of TriMet transit network. The map shows high concentrations of in-person jobs at:

- Portland Central City (with a very high concentration in Downtown)
- Swan Island
- Beaverton
- Hillsboro
- Highway 217 corridor from Beaverton to Tigard
- Highway 99W corridor from Tigard to Sherwood
- Northeast industrial areas from Portland International Airport to Troutdale
- Unincorporated Clackamas County near Clackamas Town Center
- Highway 26 corridor from Beaverton to the western edge of the metro region
- Wilsonville

Additional jobs are dispersed through the region at lesser densities along the I-5 corridor from Portland's Central City to the Columbia River, throughout Southeast Portland, in Gresham, Oregon City, Forest Grove, and Canby.

Table 4. Number of Jobs Near Existing Transit Stops

	Total Jobs
Total Jobs in Service Area	1,105,571
Jobs within a ½ mile of TriMet stop	66%
Jobs within ½ mile of TriMet frequent service stop (15 min or better service)	44%

Source: Jarrett Walker Associates

TriMet’s transit system is important for providing access to jobs in the region. Analysis of the number of jobs proximate to TriMet’s fixed-route transit network reveals that 66 percent of jobs in the region are within 0.5 miles of a TriMet stop, and 44 percent of jobs are within 0.5 miles of a frequent service stop location (Table 4).

Table 5. Employed Persons in the US Who Telecommuted or Worked at Home for Pay in the Last 4 Weeks Because of the Coronavirus Pandemic (November 2021)

Industry	Persons Who Teleworked	Persons Who Did NOT Telework
Agriculture and Related Industries	0.3%	99.7%
Mining, Quarrying, and Oil and Gas Extraction	0.2%	99.8%
Utilities	1.2%	98.8%
Construction	2.2%	97.8%
Durable Goods Manufacturing	7.0%	93.0%
Nondurable Goods Manufacturing	3.5%	96.5%
Wholesale Trade	1.7%	98.3%
Retail Trade	4.4%	95.6%
Transportation and Warehousing	2.2%	97.8%
Information	4.6%	95.4%
Finance and Insurance	13.6%	86.4%
Real Estate and Rental and Leasing	2.2%	97.8%
Professional and Technical Services	23.1%	76.9%
Management	3.0%	97.0%
Administrative and Support and Waste Management	3.0%	97.0%
Educational Services	7.6%	92.4%
Health Care and Social Assistance		
Hospitals	3.1%	96.9%
Ambulatory Health Care Services, Nursing and Residential Care Facilities	4.3%	95.7%
Social assistance	1.9%	98.1%
Arts, entertainment, and recreation	1.6%	98.4%
Accommodation and Food Services	1.2%	98.8%
Other Services, Except Private Households		
Repair and Maintenance	2.9%	97.1%
Personal and Laundry Services	2.9%	97.1%
Religious, Grantmaking, Civic, Professional, and Similar	2.9%	97.1%
Private Households	0.0%	100.0%
Public Administration	7.8%	92.2%
Miscellaneous (Uses Overall Oregon Rate from September 2021)	18.6%	81.4%

Data sources: Bureau of Labor Statistics (<https://www.bls.gov/cps/effects-of-the-coronavirus-covid-19-pandemic.htm#data>) and Oregon Office of Economic Analysis as reported by the Oregonian (<https://www.oregonlive.com/business/2021/11/oregonians-march-back-to-the-office-has-nearly-halted.html>)

Regional Employers

The project team interviewed 12 organizations to learn about employer COVID-19 responses and their expected plans for transitioning to a long term work arrangement in the coming months or years. Organizations were chosen to represent a diverse set of perspectives and geographic locations in the region (Table 6). Interviews were conducted virtually through WebEx videoconference between February 17 and March 4, 2022. It is worth

noting that, because of the evolving nature of the pandemic, these interviews occurred while the statewide mask mandate was still in effect.

Table 6. Summary of Organizations Interviewed

Organization	Description	Location(s)	Employees (and Students)
Central Eastside Industrial Council (CEIC)	Association of businesses and property owners	Central eastside Portland	Not applicable.
Clackamas Community College (CCC)	Community college.	3 campuses: Oregon City, Milwaukie, Wilsonville.	382 employees. 17,600 students.
Go Lloyd	Transportation management association.	Lloyd neighborhood, Portland.	Go Lloyd represents 28 employers with nearly 4,000 employees participating in transit programs.
Kaiser Permanente	Healthcare provider.	10 work sites.	6,400 employees.
Melvin Mark	Commercial real estate owner and property management.	4 locations, 3 in downtown Portland.	47 employees.
Multnomah County	Large employer. Public and health services.	Over 45 locations.	5,213 employees.
Nike	Large employer. Manufacturing, retail.	8 work sites. 4 retail locations.	14,631 full time employees. 300-400 retail employees.
Oregon Health & Science University (OHSU)	Healthcare provider and university.	5 primary work sites. 12 total locations.	19,136 employees. 4,726 students.
Portland Community College (PCC)	Community college.	4 campuses. 10 centers.	3,553 faculty. 60,000 students.
Portland General Electric (PGE)	Large employer.	4 main offices. 13 total locations.	2,851 employees.
Portland State University	University.	Downtown Portland campus.	2,300 full time faculty. 1,700 temporary/part time faculty. 24,000 students (2,200 live on campus).
Westside Economic Alliance (WEA)	Business advocacy group.	Westside of the Portland metro region.	Not applicable.

A few broad trends emerged from the conversations, as described here. See Table 7 for highlights from each interview.

Flexible, hybrid schedules

Nearly everyone interviewed acknowledged that remote work has largely been successful. Though each employer described a unique approach for the future, most employers expected to continue remote work into the future. Some employers, including Kaiser Permanente and Portland Community College, intend to continue their current practice of encouraging employees to work remotely. Other employers described moving toward a hybrid work schedule where most employees who could work remotely would continue to do so for two or three days per week. Nike has a plan to transition to a hybrid schedule by May. PGE is allowing flexibility by allowing each team to determine its in-office schedule. OHSU is aiming for 20 to 25 percent of work to be done remotely. Other employers, like Multnomah County, are still working out the details.

A few employers mentioned “anchor days,” when all employees or employees on a particular team would be in the office together. This is worth noting because Tuesday, Wednesday, and Thursday were often cited as preferred anchor days, Tuesday especially, which may lead to stronger commute peaks on different days of the week.

Employers also described plans to continue virtual services into the future. Both Kaiser Permanente and OHSU stepped up their virtual patient visits during the pandemic. OHSU estimates that 55 percent of their patient visits are now virtual. Both hospitals intend to continue maintaining or growing their virtual visit services. Similarly, PCC and CCC both intend to continue online course offerings into the future, though they expect to have in person classes again in fall 2022.

Concerns about safety and security

Melvin Mark, the CEIC, and Go Lloyd all described how they have heard concerns about safety and security in Portland’s central city. Some of these concerns seemed colored by how Portland was portrayed in the media during the 2020 protests. Other concerns seemed related to how empty the central city feels with a lack of foot traffic and with business closures. And other concerns are about the increasing trash in the street and numbers of people living in public spaces. Recognizing that people are more willing to walk, bike, or take transit when they feel secure on the street and sidewalks, Go Lloyd has proactively worked during the pandemic to keep their neighborhood clean with graffiti removal and organizing volunteer street cleaning events.

Adopted driving habits

Employers frequently said that their employees are now primarily driving their personal vehicles to work. OHSU said their employees had adopted driving habits during the pandemic, which is filling their limited supply of parking. They attribute the driving habit to a variety of factors, one of which was that parking was easy during the pandemic when few people were commuting. Employees who used transit before the pandemic could easily drive in, and new employees have yet to learn the transit system. OHSU suggested an opportunity for more education about the TriMet system, and suggested that TriMet could implement new onboard surveys to better understand riders’ perspectives.

Table 7. Employer Interview Feedback Highlights

Organization	Feedback Highlights
Central Eastside Industrial Council (CEIC)	<ul style="list-style-type: none"> • 1,000 of 3,500 employees were working in person in November 2021. • Some companies want to try a hybrid approach in 2022, but are staying flexible. • The biggest concern they have heard is for safety and security in the area. • Area is shifting to more entertainment and recreation with more visitors at night and on weekends.
Clackamas Community College (CCC)	<ul style="list-style-type: none"> • Most classes are still online. • Expect 50-100 employees to go back to campus this spring. • Intend to have in-person classes in fall 2022.
Go Lloyd	<ul style="list-style-type: none"> • Large employers plan to continue remote work or a hybrid approach. <ul style="list-style-type: none"> ➢ PacifiCorp is one exception with 70% working in person • Business from entertainment and events is still down. • Go Lloyd has focused more on maintaining and cleaning neighborhood during the pandemic.

Organization	Feedback Highlights
Kaiser Permanente	<ul style="list-style-type: none"> • 95% of administrative staff work from home. • Will continue remote work for the foreseeable future. • Will continue virtual patient visits.
Melvin Mark	<ul style="list-style-type: none"> • Will ask staff to return to the office as restrictions relax. • Have seen parking occupancy at their main building increase to approximately 25-40% of capacity. • Firms are looking at downtown for office space. Haven't heard of any special accommodations from tenants. MM's buildings already have a high-level of filtration systems by CDC standards. • Have heard people questioning the safety of downtown.
Multnomah County	<ul style="list-style-type: none"> • 53% of workers can work remotely. • Intend to continue remote work and are considering different approaches. • Currently piloting work from home strategies with results expected in summer 2022.
Nike	<ul style="list-style-type: none"> • Approximately 80% of non-retail employees have been working remotely. • Moving to a future flex schedule with three days/week in person, Tuesday through Thursday. • Investing in better bike facilities because biking fits their brand and values.
Oregon Health & Science University (OHSU)	<ul style="list-style-type: none"> • 55% of employees currently working remotely. • Aiming for 20-25% remote work in the future with a two to three days per week hybrid approach. • Most classes are already in-person because classes are hands-on. • 55% of appointments are tele-medicine — which they plan to maintain. • Employees are now in the habit of driving. • Parking was back up to 92% utilization in mid-February 2022, after much lower usage at the height of the pandemic. • Used to have ~20,000 people on campus, went down to 5,000; about 8,000 are on campus and will increase to 12,000-15,000 in the future. • OHSU is expanding the hospital on Marquam Hill which may bring 6,000 more employees on campus.
Portland General Electric	<ul style="list-style-type: none"> • 65% of employees working remotely. • Intend to continue hybrid model. • Schedules will be flexible and determined by each team.
Portland Community College (PCC)	<ul style="list-style-type: none"> • Most employees are working remote. • Approximately 1/4 of classes are in person (hands-on classes like labs). • Plans to stay remote at least through summer 2022. • Will continue remote class options into the future.
Portland State University	<ul style="list-style-type: none"> • Approximately 70% of classes were in person in fall 2021. • Planning a big return to in-person classes spring 2022 (beginning end of March); remote classes will not expand. • Will continue some remote working into the future.
Westside Economic Alliance (WEA)	<ul style="list-style-type: none"> • Have heard large employers considering a hybrid return to work with an anchor day approach. • Limited transit access on westside with large gaps in service • Limited childcare options on westside. • Traffic bottlenecks will worsen as more people drive to work.

Gentrification and the Transit Equity Index

The Portland metro region has seen effects of gentrification for decades. Gentrification has displaced many equity populations from the inner Portland, particularly from neighborhoods in North and Northeast neighborhoods to East Portland and the surrounding suburbs, including Gresham, unincorporated Clackamas County near Clackamas Town Center, Beaverton, Tigard, and Hillsboro. The result of this is visible in TriMet's Transit Equity Index map (Figure 7). This index is used to evaluate potential investments and evaluates ten measures:³²

1. Minority population
2. Low-income population
3. Limited English Proficiency (LEP) population
4. Senior population
5. Youth population
6. People with disabilities
7. Limited vehicle access households
8. Low and medium wage jobs
9. Affordable housing units
10. Key retail/human/social services

Index scores are mapped by census block group and are based on 2018 American Community Survey estimates. Block groups with more equity populations or services have higher scores and are displayed with darker colors. Aside from a few block groups with high Equity Index scores in the historic Albina neighborhood (North/Northeast Portland along the I-5/Martin Luther King Boulevard corridor), most inner Portland neighborhoods outside of the central city have low or moderate Index Scores. The areas of the region with clusters of high scoring block groups are:

- Portland Central City (Downtown and Central Eastside).
- East of I-205 in East Portland, Gresham, and Wood Village.
- Clackamas.
- Downtown Beaverton.
- Downtown Hillsboro.
- Cornelius and Forest Grove.
- Tigard.

People Experiencing Homelessness

Anecdotally, the number of people living outdoors appeared to increase substantially in 2020 as the pandemic continued and jobs were lost. Counts of people experiencing homelessness were paused during the pandemic to reduce risk of infection, so official data has not been updated since January 2020. However, polls have found homelessness is a top issue for Portlanders.

³² <https://www.transformca.org/best-practices-item/performance-tri-met-transit-equity-index>

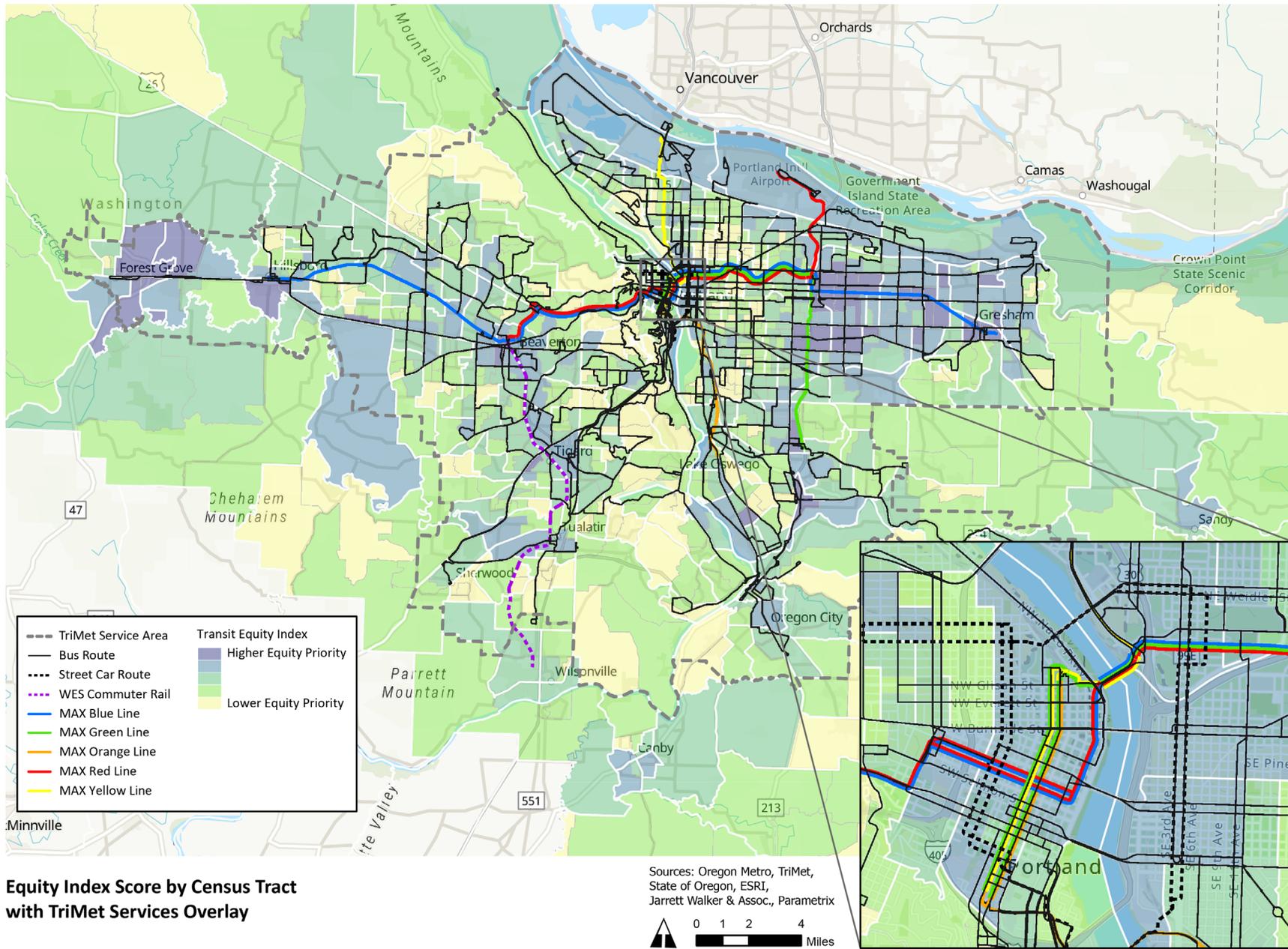


Figure 7. TriMet Transit Equity Index

Micromobility

The City of Portland has continued to adjust their bike share and scooter share programs through the pandemic. The entire bike share (BIKETOWN) fleet was upgraded to electric bikes in September 2020. The service area has also been expanded so it now covers 40 square miles. Portland Bureau of Transportation’s (PBOT) electric scooter pilot program has been allowing private companies to operate scooter share on a temporary basis as they evaluate their impacts. Scooter trips declined from 2019 to 2020, but they recovered some of that loss in 2021. Table 8 reports the number of trips on bike share and electric scooters, as well as the number of TriMet boardings, for the fourth quarter (October, November, and December) of 2019, 2020, and 2021. Though micromobility has potential to play a larger role in the transportation system, it currently has far less ridership than the TriMet system. The number of bike and scooter share trips combined in the fourth quarter of 2021 was 2.1 percent of the number of TriMet boardings in the same period.

Table 8. Electric Scooter, Bike Share, and Transit Use in Portland in Quarter 4 of 2019, 2020, and 2021

Quarter 4 of Year	Bike Share Total Trips	Electric Scooter Total Trips	TriMet Total System Boardings
2019	[not available]	243,000	24,644,317
2020	35,000	105,000	9,877,798
2021	77,000	189,000	12,430,614

Sources: <https://public.ridereport.com/pdx>, <https://trimet.org/about/performance.htm>.

TriMet ridership calculated from average weekly boardings.

IMPLICATIONS FOR TRIMET

Changing travel habits and a fluctuating economy pose potential implications for TriMet’s mission to “connect people with valued mobility options that are safe, convenient, reliable, accessible, and welcoming for all.” TriMet’s current system was designed to serve pre-pandemic travel patterns. Updating the system for post-pandemic trends may improve the safety, convenience, reliability, and accessibility for more people. Trends and potential actions TriMet could consider responding to those trends are listed in Table 9. Sources for these trends are at the end of the document in Table 11.

Table 9. Trends and Potential Strategies for TriMet

Trend	National Indicators	Local Indicators	Implications and Potential Strategies
<p>Peak commute demand has declined.</p>	<ul style="list-style-type: none"> • Percent of employed persons who teleworked because of the coronavirus pandemic: <ul style="list-style-type: none"> ➢ December 2020: 23.7% ➢ December 2021: 11.1% • Percent of U.S. employed persons who usually work from home: <ul style="list-style-type: none"> ➢ 2019: 5.7% ➢ 2020: 15.8% 	<ul style="list-style-type: none"> • ACS estimates Oregon’s work from home (WFH) rate went from 7.3% in 2019 to 18.4% in 2020. • WFH in the Portland Metro region is higher than in the state as a whole. WFH is higher for professional and business workers. • “People traveled less during morning rush hour and more throughout the day” 	<p>Teleworking has increased during the pandemic, though is down from the peak in 2020. However, this trend is likely to persist in the near-term as workplaces adjust their policies more permanently to accommodate teleworking some or all of the time for employees who are able to do so. This implies that peak hour travel demand to areas with higher concentrations of office jobs (e.g., the Portland Central Business District (CBD)) will continue to experience lower overall transit demand in the near-term. However, downtown continues to be the most significant center for in-person work, so any service changes to the downtown core will need to be carefully considered.</p> <p>Potential strategies:</p> <ul style="list-style-type: none"> • Reallocate transit service so it is less focused on traditional morning and evening peak times. • Consider reallocating some portion of peak-hour service along downtown segments and reallocate service to that serve all-day destinations. • Reallocate service hours on routes serving downtown Portland. • Allocate more service hours to frequent routes serving concentrations of non-WFH jobs in the region. • Invest in articulated buses to absorb increases in peak demand, particularly if service during peak times is reallocated through the day.

Trend	National Indicators	Local Indicators	Implications and Potential Strategies
<p>Travel has declined less for less-educated and lower-income populations.</p>	<ul style="list-style-type: none"> • Among transit riders, those of lower income reduced their travel <i>less</i> than others. • “Travel declined considerably less among less-educated and lower-income individuals” • As policy became less restrictive and travel increased, the size of the socioeconomic gap in travel behavior remained stable, and remote work capabilities became increasingly important in explaining this gap” • “Service cuts... resulted in mostly BIPOC essential workers riding, sometimes in cramped conditions, while routes catering to mostly white-collar, white workers emptied.” 	<ul style="list-style-type: none"> • “Throughout the pandemic, bus lines serving lower-income neighborhoods have lost the fewest number of trips overall. These areas include East Portland, East Multnomah County, Tualatin Valley Highway, Forest Grove/Cornelius and Rivergate.” [Note: service levels on most lines to these areas have not been reduced.] 	<p>This trend implies that ridership by people with lower incomes will continue to be stable. Potential strategies:</p> <ul style="list-style-type: none"> • Allocate more service hours to lines where ridership losses have been minimal. • Focus on areas of the TriMet service area that score high on the equity index and have high transit demand, areas that offer services, and areas where people work in person.
<p>People are concerned about potential COVID-19 infection from riding transit.</p>	<ul style="list-style-type: none"> • A nationwide 2020 survey as part of a study found the majority of transit riders were hesitant to use transit due to infection risk. • A Washington Post survey of adults in Washington DC in July 2021 found: <ul style="list-style-type: none"> ➢ 38% of poll respondents had not ridden the bus and said they would be concerned about riding the bus because of the coronavirus. ➢ 37% of poll respondents had not ridden the Metrorail and said they would be concerned about riding the Metrorail because of the coronavirus. 	<ul style="list-style-type: none"> • Almost half of respondents (47%) to TriMet’s 2021 Customer Effort Survey called for mask enforcement as a way to improve safety. 	<p>As the pandemic wanes, it is likely that health concerns related to transit use will also decline. However, there is continued uncertainty: statewide, mask mandates ended in March 2022, while the federal mask mandate on public transportation is set to expire April 18th. These changes might continue to discourage some riders to use transit. Additionally, a resurgence of COVID-19 or the emergence of a new variant could re-ignite health concerns again that discourage transit usage. Additionally, it is very likely that people who have forgone transit due to health concerns have both reduced their overall trip-making, while also substituting other modes for travel. These behavior changes may be durable in the near-term regardless of the course of the pandemic.</p> <ul style="list-style-type: none"> • Consider public health messaging, changes to operations, or other physical modifications to transit infrastructure that increase rider confidence in riding the bus without fear of exposure to COVID-19. • Continue with COVID-19 health and safety protocols. • Emphasize COVID-19 protocols in marketing.

Trend	National Indicators	Local Indicators	Implications and Potential Strategies
<p>Transit ridership has declined since the mid-2010s.</p> <p>Transit use during the pandemic has declined more than other modes.</p> <p>Lower-income populations are being displaced from the urban core to the urban fringes.</p>	<ul style="list-style-type: none"> • The overall number of unlinked transit trips in the US peaked in 2014 at 10.67 billion trips. • Ridership gradually decreased between 2015 and 2019 by 7.3% nationally. • Transit riders reduced their travel more than non-riders. • Vehicle miles traveled for the month of October: <ul style="list-style-type: none"> ➢ 2019: 283 billion (100%) ➢ 2020: 259 billion (92% of 2019) ➢ 2021: 277 billion (98% of 2019) • Unlinked transit trips for the month of October: <ul style="list-style-type: none"> ➢ 2019: 19.1 million (100%) ➢ 2020: 8.9 million (46% of 2019) ➢ 2021: 11.2 million (59% of 2019) • “More people with low incomes now live outside of cities, and some areas are ill-equipped to deal with the influx of the poor.” 	<ul style="list-style-type: none"> • The overall number of boarding rides for TriMet has declined from 2016: <ul style="list-style-type: none"> ➢ Fiscal Year 2016: 78.2 million ➢ Fiscal Year 2019: 75.7 million ➢ Fiscal Year 2020: 67.5 million ➢ Fiscal Year 2021: 34.4 million • “low-income earners are increasingly concentrated in suburban developments with a dispersed street network, low population densities, single-use land development and a lack of pedestrian infrastructure, all factors that discourage bus ridership” • “In the last two decades [prior to 2013], Portland’s North and Northeast neighborhoods have seen significant public and private investments, steep increases in housing prices, and changes in demographic and economic profile of residents that have resulted in displacement (voluntary and involuntary) of low-income residents and community serving small businesses.” • Housing costs increased dramatically for the City of Portland between 2010 and 2019. • Owner-occupied homes, median value: <ul style="list-style-type: none"> ➢ 2010: \$289,800 ➢ 2019: \$449,400 (55% increase) • Median gross rent: <ul style="list-style-type: none"> ➢ 2010: \$838 ➢ 2019: \$1,312 (56% increase) 	<p>Transit ridership had been declining nationally prior to the pandemic due to a number of factors, including the “spatial mismatch” between transit service and locational choices of riders. While not directly related to the pandemic, this trend is still important to consider.</p> <ul style="list-style-type: none"> • Address potential spatial mismatch that has occurred in the region by exploring route modifications to best serve TriMet riders. • Work with policymakers to regulate ride hailing services that compete with transit. • Improve transit access in areas not well served by fixed route transit and with equity populations. • Consider using microtransit service to improve transit connections in underserved areas where it may offer a more efficient means of service provision than traditional fixed-route bus service. • Improve multimodal facilities (sidewalks, crossings, bike lanes) that make it easier and safer to get to transit. • Continue implementing transit-priority infrastructure improvements to reduce the impacts of traffic congestion on transit. • Coordinate with Metro and local jurisdictions to integrate anti-displacement strategies with transit improvements.

Trend	National Indicators	Local Indicators	Implications and Potential Strategies
<p>Transit agencies and municipalities implementing improvements to make transit faster, more reliable, and more attractive.</p>	<ul style="list-style-type: none"> The City of Seattle has been implementing bus-priority lanes and spot improvements through its Transit Program. Transit Center’s research suggests better bus stops and walkable access to stops can encourage ridership and improve the transit experience. 	<ul style="list-style-type: none"> TriMet’s Division Transit Project will improve bus service between downtown Portland and Gresham. The Metro region’s Enhanced Transit Corridors Plan and Portland’s Rose Lane Project, collaborations between TriMet, Metro, the City of Portland, and other jurisdictions, have been implementing bus-priority lanes and spot improvements to enhance transit service along key corridors. 	<p>Transit priority improvements make transit more time-competitive with other modes. As regional traffic volumes have increased to essentially pre-pandemic levels, these strategies will continue being very important for enhancing transit speed and reliability. Potential strategies:</p> <ul style="list-style-type: none"> Continue implementing transit-priority improvements, such as with the Rose Lane program.
<p>Rethinking security on transit and in other public places.</p>	<ul style="list-style-type: none"> Transit Center’s <i>Safety for All</i> recommends to: “Increase system presence through the use of unarmed personnel.” and “Reduce the use of police officers in response to fare evasion, homelessness, and mental health crises.” The Kinder Institute has reported challenges transit agencies face nationally, such as: <ul style="list-style-type: none"> “Transit agencies are still managing and operating systems that have racism embedded in them” “White riders are likely to see a police officer on a train as a comforting presence while many Black riders justifiably will perceive them as a potential threat.” 	<ul style="list-style-type: none"> PBOT’s Walking While Black focus group found poor lighting to be the biggest barrier to walking and was rated as much more important than in citywide survey results. <i>Reimagining Public Safety & Security on Transit</i> makes recommendations for TriMet, including: <ul style="list-style-type: none"> Training in anti-racism, cultural competency, mental health & de-escalation for TriMet personnel Increased presence of TriMet personnel and unarmed safety presence Crisis intervention teams 	<ul style="list-style-type: none"> Outreach to BIPOC communities and groups. Inclusive safety policies. Training in anti-racism, cultural competency, mental health & de-escalation for TriMet personnel (Recommended from <i>Reimagining Public Safety & Security on Transit</i>) Increased presence of TriMet personnel and unarmed safety presence (recommended from <i>Reimagining Public Safety & Security on Transit</i>). Crisis intervention teams (recommended from <i>Reimagining Public Safety & Security on Transit</i>).

Trend	National Indicators	Local Indicators	Implications and Potential Strategies
<p>Increase in traffic fatalities.</p>	<ul style="list-style-type: none"> Estimates for the first 9 months of 2021 shows an estimated 31,720 people died in motor vehicle traffic crashes nationwide. This is an increase of about 12.0 percent as compared to 28,325 fatalities that were projected in the first 9 months of 2020 and is the highest number of fatalities during the first 9 months of the year since 2006. While no single factor has been identified, increased dangerous driving behavior like speeding is to blame, at least in part. 	<ul style="list-style-type: none"> 2021 saw “the highest death toll on Portland streets in three decades: 63.” 	<p>First/last mile access to transit is already a regional priority. Continuing regional work to improve first/last mile access, stop safety and visibility, and regional active transportation infrastructure is critical to addressing this trend. Potential strategies:</p> <ul style="list-style-type: none"> Coordinate with jurisdictions to improve infrastructure for safety, such as illumination, traffic calming. Coordinate with jurisdictions to improve bike/ped infrastructure.
<p>Increasing numbers of people experiencing homelessness in urban areas, as well as non-destination riders and homeless residents at/near transit stops.</p>	<ul style="list-style-type: none"> Metro in Los Angeles adds social workers on the subway as the number of people experiencing homelessness increases on the train. Southeastern Pennsylvania Transportation Authority (SEPTA) has provided dedicated spaces to welcome and support people experiencing homelessness. Bay Area Rapid Transit (BART) has locked after hours accesses to their stations, and has opened bathrooms to improve sanitation. Metro Transit in Minneapolis has a program to provide beds for people taking shelter in the transit system. 	<ul style="list-style-type: none"> Two national research centers at Portland State University have been awarded a new contract from the National Academies of Science (NAS): TCRP J-11/Task 40: Homelessness: A Guide for Public Transportation [expected to finish summer 2022] 	<p>Potential strategies:</p> <ul style="list-style-type: none"> Consider findings from PSU research [final report expected summer 2022]. Social workers on transit vehicles or at transit stops. Connect with social service providers.

Trend	National Indicators	Local Indicators	Implications and Potential Strategies
Reduced fare revenue.	<ul style="list-style-type: none"> • Olympia Transit System goes fareless because “...in terms of access, equity, speed, reliability, addressing the environment, making sure that we’re as efficient as possible – the combination of those things actually led us to zero-fare.” • Los Angeles made buses free in 2020 to reduce potential COVID-19 exposure, and they reinstated bus fares in fall of 2021. During this time, ridership recovered more so than other systems. By September 2021, Los Angeles bus ridership with free fares was only 15 percent below pre-pandemic ridership. The concept of fareless transit has become a national conversation, like in an article from the American Planning Association: “Across the country, transit agencies and cities are considering scrapping or reducing fares to ensure access for disadvantaged communities.” 	<ul style="list-style-type: none"> • TriMet passenger revenue has fallen from a 2016 peak: <ul style="list-style-type: none"> ➢ Fiscal Year 2016: \$118.0 million ➢ Fiscal Year 2019: \$114.9 million ➢ Fiscal Year 2020: \$93.6 million ➢ Fiscal Year 2021: \$39.5 million • TriMet’s Honored Citizen program offers reduced fares for people with low income or disabilities, and people over age 65. Fare capping for riders using the Hop Fastpass means riders will not pay more than the day fee for trips in the same day, or the month fee for trips in the same month. 	<p>Fare revenue represents an important and essential component of TriMet’s overall revenue for supporting agency operations. Declining fare revenues are an obvious source of concern. In the near-term, fare revenue (in step with ridership) is unlikely to recover to pre-pandemic levels quickly.</p> <ul style="list-style-type: none"> • Consider restructuring revenue sources to reduce dependence on fare revenue.
Driver shortage.	<ul style="list-style-type: none"> • Transit providers nationally have had to cut service because of driver shortages, including: <ul style="list-style-type: none"> ➢ Metro (Los Angeles) ➢ Capital Transit (Juneau, Alaska) ➢ Capital Metro (Austin, Texas) 	<ul style="list-style-type: none"> • TriMet temporarily reduces service due to operator shortage. 	<ul style="list-style-type: none"> • Changes in scheduling practices, such as fewer split runs, to be more effective with operators’ time and make the job more attractive. • Increase driver compensation. • Higher capacity vehicles, such as articulated buses, to carry more passengers per operator.

EMERGING MOBILITY STRATEGIES

Emerging mobility strategies offer options for improving transit system access and utility. Table 10 summarizes emerging mobility strategies that have potential implications for transit and example implementations. TriMet is already moving ahead with some of these strategies.

Table 10. Emerging Mobility Strategies

Strategy	Examples	Potential Implications for TriMet
<p>Microtransit On-demand van or shuttle services that connect point-to-point or to transit hubs.</p>	<ul style="list-style-type: none"> • King County Metro is piloting multiple services: <ul style="list-style-type: none"> ➢ Two on-demand, transit-connection services: Via to Transit, Pingo to Transit ➢ One on-demand, point-to-point service: Community Ride ➢ One scheduled service with volunteer drivers: Community Van • The City of Seattle is piloting the “Employer Shared Bus Stop” program, where bus stops are shared with private employer shuttles. • Multnomah County is partnering with TriMet (and Portland and Troutdale) to provide dial-a-ride service to areas outside of TriMet’s service area as well as shuttle service to employment centers in Troutdale and on Swan Island. https://www.multco.us/transit-services 	<p>Microtransit can help connect areas that are not well-served by fixed-use transit. Potential to further develop microtransit partnerships in the region to improve mobility for communities that have been displaced from the urban core.</p>
<p>Rideshare Commuters use a vehicle provided by transit service to commute together. (Driven by commuters.)</p>	<ul style="list-style-type: none"> • King County Metro has two rideshare programs: <ul style="list-style-type: none"> ➢ Vanpool: share a van to commute to work. ➢ Vanshare: share a van to connect to transit. ➢ The 2020 Vanpool and Vanshare program cost \$1.59 per van mile, which comes to \$7.77 per passenger trip for 1,084,802 boardings. (Fixed-route bus was \$12.39/boarding.) • C-Tran has a vanpool program for groups of 5 to 12. • Metro (Minneapolis) has a vanpool program for groups of 5 to 15. https://www.metrotransit.org/vanpool 	<p>Rideshare can help connect people to their workplaces when fixed route transit is not a viable option. It can be a relatively affordable program because it uses smaller vehicles, does not require transit drivers, and has dedicated ridership.</p>
<p>Mobility hubs Locations where multiple modes of transportation come together.</p>	<ul style="list-style-type: none"> • The City of Boston is conducting a pilot program for GoHubs! and have developed a guidebook for implementation. https://www.boston.gov/departments/transportation/gohubs • Bend is studying the feasibility of mobility hubs to create a more multicentric transit system. https://cascadeseasttransit.com/about/bend-mobility-hub-feasibility-study/ 	<p>Mobility hubs can help overcome first and last mile challenges with micromobility and car share options. Establishing a mobility hub is also an opportunity to incorporate placemaking and wayfinding. As space and resources allow, existing transit stations could be improved to fit within the mobility hub spectrum by incorporating other modes and wayfinding.</p>

Strategy	Examples	Potential Implications for TriMet
<p>Mobility as a Service (MaaS) A single trip planner and point of payment system that integrates the multiple mobility options for a trip.</p>	<ul style="list-style-type: none"> • Move PGH: The City of Pittsburgh implemented the first MaaS system in the US in July 2021 using the Transit app. https://pittsburghpa.gov/domi/emerging-mobility • TriMet released its new trip planner in January 2022 with integrated Uber, electric scooter, BIKETOWN, and personal bike options. It also includes real time delay information. 	<p>TriMet’s new trip planner with integrated modes and real time bus locator is a significant advancement toward MaaS. Future development could consider integrating all modes into a single point of payment.</p>
<p>Real time capacity Mobile app displays an estimated number of open seats on the transit vehicle.</p>	<ul style="list-style-type: none"> • Translink (Vancouver, British Columbia) has launched a feature through the Transit app that allows people to see an estimate of the number of open seats on a transit vehicle before boarding. 	<p>Real time capacity information can help riders make informed choices about which bus to take, which can be particularly helpful for people using wheelchairs or with concerns about COVID-19 infection.</p>

TRENDS SOURCES

Table 11. Sources for Trends Identified in Table 9

Trend	National Indicators	Local Indicators
Peak commute demand has declined.	<ul style="list-style-type: none"> US Bureau of Labor Statistics https://www.bls.gov/covid19/effects-of-covid-19-pandemic-and-response-on-the-employment-situation-news-release.htm Oregon Office of Economic Analysis https://oregoneconomicanalysis.com/2021/12/16/just-how-much-is-working-from-home-on-the-rise/ 	<ul style="list-style-type: none"> Just How Much is Working from Home on the Rise? https://oregoneconomicanalysis.com/2021/12/16/just-how-much-is-working-from-home-on-the-rise/ Metro’s Emerging Transportation Trends Presentation (Oct 2021)
Travel has declined less for less-educated and lower-income populations.	<ul style="list-style-type: none"> Public transit use in the United States in the era of COVID-19 https://www.sciencedirect.com/science/article/pii/S0967070X21002067 Understanding socioeconomic disparities in travel behavior during the COVID-19 pandemic https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/jors.12527 What transit agencies get wrong about equity https://kinder.rice.edu/urbanedge/2020/08/31/what-transit-agencies-get-wrong-about-equity-and-how-get-it-right 	<ul style="list-style-type: none"> Checking In on Ridership and Service https://blog.trimet.org/2021/07/27/checking-in-on-ridership-and-service/
People are concerned about potential COVID-19 infection from riding transit.	<ul style="list-style-type: none"> Public transit use in the United States in the era of COVID-19 https://www.sciencedirect.com/science/article/pii/S0967070X21002067 July 6-21, 2021, Washington Post-Schar School D.C. area poll https://www.washingtonpost.com/context/july-6-21-2021-washington-post-schar-school-d-c-area-poll/9a5fb4d0-7933-4bbd-933e-c32939a67154/ 	<ul style="list-style-type: none"> TriMet Customer Effort Survey 2021 https://trimet.org/pdfs/2021-customer-effort-score-report.pdf
<p>Transit ridership has declined since the mid-2010s.</p> <p>Transit use during the pandemic has declined more than other modes.</p> <p>Lower-income populations are being displaced from the</p>	<ul style="list-style-type: none"> FTA Monthly Module Raw Data Release https://www.transit.dot.gov/ntd/data-product/monthly-module-raw-data-release COVID-19 trends impacting the future of transportation https://www.nationalacademies.org/trb/blog/covid-19-trends-impacting-the-future-of-transportation-planning-and-research Public transit use in the United States in the era of COVID-19 https://www.sciencedirect.com/science/article/pii/S0967070X21002067 	<ul style="list-style-type: none"> TriMet Service and Ridership Information 11/30/2021 https://trimet.org/about/pdf/trimetridership.pdf In Portland, Economic Displacement May Be A Driver of Transit Ridership Loss https://transitcenter.org/in-portland-economic-displacement-may-be-a-driver-of-transit-ridership-loss/ https://www.portland.gov/sites/default/files/2020-01/2-gentrification-and-displacement-study-05.18.13.pdf ACS 1-Year Estimates, Tables DP04, S2506, B25031 https://data.census.gov/cedsci/

Trend	National Indicators	Local Indicators
<p>urban core to the urban fringes.</p>	<ul style="list-style-type: none"> US DOT Bureau of Transportation Statistics https://data.bts.gov/Research-and-Statistics/Highway-Travel-All-Systems/geh3-a6ec US DOT Bureau of Transportation Statistics https://data.bts.gov/Research-and-Statistics/Transit-Ridership-Other-Transit-Modes/6k7a-rwnz Suburbs and the New American Poverty https://www.theatlantic.com/business/archive/2015/01/suburbs-and-the-new-american-poverty/384259/ 	
<p>Transit agencies and municipalities implementing improvements to make transit faster, more reliable, and more attractive.</p>	<ul style="list-style-type: none"> Transit Program, Seattle Department of Transportation https://www.seattle.gov/transportation/projects-and-programs/programs/transit-program Transit Center’s <i>From Sorry to Superb: Everything you need to know about great bus stops</i>. 2018. https://transitcenter.org/publication/sorry-to-superb/ 	<ul style="list-style-type: none"> Division Transit Project https://trimet.org/division/ Enhanced Transit Corridors Plan https://www.portland.gov/transportation/planning/enhanced-transit-corridors-plan Rose Lane Project https://www.portland.gov/transportation/rose-lanes
<p>Rethinking security on transit and in other public places.</p>	<ul style="list-style-type: none"> Transit Center’s <i>Safety for All</i>. 2021. https://transitcenter.org/wp-content/uploads/2021/07/SafetyForAll.pdf Racism has shaped public transit, and it’s riddled with inequities https://kinder.rice.edu/urbanedge/2020/08/24/transportation-racism-has-shaped-public-transit-america-inequalities 	<ul style="list-style-type: none"> Walking While Black https://www.portlandoregon.gov/transportation/article/714401 Reimagining Public Safety & Security on Transit https://trimet.org/publicsafety/index.htm
<p>Increase in traffic fatalities.</p>	<ul style="list-style-type: none"> Early Estimate of Motor Vehicle Traffic Fatalities for the First 9 Months (January–September) of 2021 https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813240 	<ul style="list-style-type: none"> Portland Traffic Crash Report (2021) https://www.portland.gov/sites/default/files/2022/traffic-crash-report-2021.pdf
<p>Increasing numbers of people experiencing homelessness in urban areas, as well as non-destination riders and homeless residents at/near transit stops.</p>	<ul style="list-style-type: none"> https://www.latimes.com/local/lanow/la-me-metro-homeless-20180406-htmstory.html https://usa.streetsblog.org/2018/10/26/transit-agencies-are-changing-their-approach-to-homelessness/ 	<ul style="list-style-type: none"> TCRP J-11/Task 40: Homelessness: A Guide for Public Transportation https://www.pdx.edu/news/psu-experts-transportation-and-homelessness-collaborate-national-transit-project
<p>Reduced fare revenue.</p>	<ul style="list-style-type: none"> Olympia Transit System Goes Fareless https://www.opb.org/news/article/northwest-transit-system-fareless-bus-olympia-intercity/ Did free Metro buses bring more riders? https://xtown.la/2021/12/01/free-transit-los-angeles/ 	<ul style="list-style-type: none"> TriMet Service and Ridership Information 11/30/2021 https://trimet.org/about/pdf/trimetridership.pdf

Trend	National Indicators	Local Indicators
	<ul style="list-style-type: none"> Can Zero-Fare Transit Work? https://www.planning.org/planning/2021/fall/can-zero-fare-transit-work/ 	
<p>Driver shortage.</p>	<ul style="list-style-type: none"> https://www.latimes.com/california/story/2022-01-27/metro-slashes-bus-service-amid-driver-shortage https://juneau.org/newsroom-item/du-to-driver-shortage-capital-transit-temporarily-reduces-service-starting-monday-nov-8 https://www.austinmonitor.com/stories/2021/09/capital-metros-driver-shortage-continues/ 	<ul style="list-style-type: none"> https://news.trimet.org/2021/12/trimet-temporarily-reduces-service-due-to-operator-shortage-starting-sunday-jan-9/