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Private Sector Roles in Public Transportation

White Paper

Oregon Public Transportation Plan

Roles of Private Transportation Providers

Public transportation in Oregon encompasses a wide variety of services. The Oregon Public Transportation Plan (OPTP) policies are primarily focused on publicly-provided transportation services, including fixed route bus, light rail, and demand response services. However, the private sector also plays important roles in providing public transportation – for example, many public agencies contract with the private sector to provide certain services (such as demand response service), and private companies directly own and operate transportation services open to the public (for example, Greyhound intercity bus). Furthermore, transportation developments in the private sector, including the advent of Uber and carsharing, present opportunities to enhance public transportation services, and leverage each sector's strengths. This white paper explores the significance and roles that the private sector may play in the provision of public transportation services in Oregon, drawing on examples from other states to illustrate differences in roles. Finally, this paper reviews several current and emerging trends in the private sector that are likely to affect public transportation and policy in the future.

"Public transportation," broadly defined, includes any transportation service open to the general public. The OPTP policies are focusing on public transportation services that are provided or funded by public entities, such as:

- Mass Transit Districts
- Transportation/Transit Districts
- Counties
- Cities
- Tribes
- Councils of Government
- Non-profits
- State of Oregon

The private sector has multiple roles in the provision of public transportation services, including:

- As a contractor to public agencies for services
- Privately owned and operated services (for example, Greyhound intercity bus)
- Complementary services, like carsharing, ridesharing, employer shuttles, and others

This paper provides an overview of private transit provider roles and trends in Oregon and other states to inform the discussion of policies and strategies for the OPTP. Although the OPTP will include policies and strategies for which the state and other governmental agencies have authority, understanding the relationship between public and private sector providers is essential to a comprehensive statewide policy framework for public transportation. The private sector plays an integral role in the overall transportation system, complementing public transportation and contributing to trends that will shape the transportation industry moving forward. State policy can help ensure that the public and private sectors are able to contribute their strengths to providing a comprehensive system of public transportation options.

Private providers operate a wide variety of services nationally and in Oregon, including intercity bus, fixed-route and demand-response transit, shuttles, taxis, carsharing services, and facilitating ridesharing, as described below.

Intercity Transportation

The Federal Transit Administration (FTA) defines intercity bus services as "regularly scheduled public service…with limited stops between two urban areas or that connects rural areas to an urban area [...]"[1] In Oregon, intercity transportation options are typically interconnected with local public transportation systems at community transit hubs or stations, providing intercity connections for many residents statewide. Oregon intercity services include public agency services such as those provided by Lane Transit District and Tillamook County Transportation District and private providers' services such as Valley Retriever Busline, Greyhound, and Amtrak (although government funded, Amtrak is operated as a private, for-profit corporation[2]).

Intercity Bus

Private intercity bus companies operate scheduled bus service across an expansive network spanning the continental United States, providing low-cost intercity connections for many. For example, in Oregon, Greyhound serves several large cities along interstate corridors, including Medford, Grants Pass, Eugene, Corvallis, Salem, Portland, The Dalles, and Pendleton, connecting to cities across the country.[3] Greyhound and other interstate bus services, however, do not provide service to many rural areas of Oregon. Several Oregon intercity bus companies serve rural communities, for example, Pacific Crest Buslines operates daily service between Coos Bay, Florence and Eugene, where service connects to Greyhound and Amtrak. Federal deregulation of the private bus industry in the 1980s allowed interstate private carriers to set their own fares and routes, resulting in private carriers dropping many rural routes, including most in Oregon outside of the major interstate highway corridors.[4] As a result, the private interstate bus network primarily serves the most urban areas of Oregon. Public services, regional intercity bus operators, and public-private partnerships like the POINT fill in many of the gaps.

The growing services of low-cost, non-stop, and limited-stop bus carriers, known as "curbside buses" augment traditional intercity bus transit. These curbside bus providers may not service bus terminals, but rather pick-up and drop-off passengers at designated places on city streets, traditionally in a city's downtown core. These services also lack many traditional features such as ticket counters and waiting rooms and rely on online sales. However, they may provide relatively low cost trips with competitive travel times and in-vehicle services that include electronic outlets and WiFi. These electronic services increasingly appeal to millennials who prefer to work or digitally socialize while they travel.[5] The added amenities make non-stop and limited-stop services

[1] Federal Transit Administration. (2016). National Transit Database Glossary. Retrieved from https://www.transit.dot.gov/ntd/national-transit-database-ntd-glossary

[2] https://www.amtrak.com/ccurl/50/238/Annual%20Report%20Fiscal%20Year%202015.pdf, page 4. Retrieved 1/19/2017.

[3] Greyhound. (n.d.). Route Map - US 2014 EXPRESS and GH routes only 9-14. Retrieved from https://www.greyhound.com/en/~/media/greyhound/pdf/discovergreyhound/farefinder_express1_20140919_160731_routemappdf.pdf

[4] Meyer, J. R., & Oster, C. V. (1987). Deregulation and the future of intercity passenger travel. Cambridge, MA: MIT Press

[5] American Public Transportation Association (APTA). (2013). Millennials & Mobility: Understanding the Millennial Mindset. Retrieved from https://www.apta.com/resources/reportsandpublications/Documents/APTA-Millennials-and-Mobility.pdf

an attractive alternative to driving. While growing in popularity, these types of services from national companies are unlikely to serve rural or smaller urban locales where service may not be profitable.[6]

Bolt Bus, a curbside service owned by FirstGroup, who also owns
Greyhound, expanded into the Pacific Northwest in 2012 with service between Portland, Seattle, Vancouver, B.C., and Bellingham, as well as limited service to Albany and Eugene (fares vary based on demand and distance travelled). Similar low-cost intercity bus services are operating in other parts of the country, including Megabus which provides non-stop and limited-stop services throughout the Eastern United States and Canada. While these companies are unlikely to serve rural areas, other private solutions are in place to serve some rural needs. For example, Estrella Blanca is a curbside service that enables access to work opportunities and other destinations in Mexico, California, Oregon, Washington and British Columbia.

Thruway Motorcoaches or "Thruway bus" are various intercity bus services that work with Amtrak and Greyhound services. Riders can buy tickets through Amtrak or Greyhound and the services are designed to feed into or complement the rail service. The Thruway Motorcoaches system extends the reach of the passenger rail system and adds capacity to popular rail corridors. This redundancy can provide temporary service in the event of rail service disruptions as well.

California has an extensive network of Thruway Motorcoaches. Customers purchase their train and Thruway Motorcoach tickets together from Amtrak. Connections are timed to provide reliable transfers from rail to bus. Thruway Motorcoaches in Oregon are operated by numerous private operators including Pacific Crest Buslines, POINT services, Crater Lake Trolley, Klamath Shuttle, and Valley Retriever.[7] Increasingly, public sector providers are participating in the Thruway program, for example, Lane Transit District offers Amtrak connections to Oakridge. These services close mobility gaps between major rail transit hubs and undeserved areas, but some communities in Oregon, including parts of eastern Oregon and the Oregon coast, are still lacking meaningful intercity connections.

In Oregon, the intercity bus service POINT is planned and managed by ODOT, but operating the buses is contracted out to private carriers.[8] The POINT service is funded with Federal Transit Administration Section 5311 rural intercity bus funds. Many state DOTs distribute their Section 5311 rural intercity bus funds through grant programs to private providers for routes or services proposed and operated by the private sector. However, Oregon uses a portion of its intercity portion of Section 5311 dollars to contract with private providers to provide service on several routes established by the state. This allows the state to develop routes where need is greatest

[6] Klein, N. J. (2015). Get on the (curbside) bus: The new intercity bus. *Journal of Transport and Land Use*, *8*(1), 155.
[7] Amtrak. (n.d.). Amtrak System Timetable Winter-Spring 2016. Retrieved from https://www.amtrak.com/ccurl/294/1015/Amtrak-System-Timetable-Winter-Spring-2016-rev,0.pdf
[8] Oregon Department of Transportation. (n.d.). POINT website. Retrieved from http://www.oregon-point.com/

(often on routes which private intercity providers do not serve), while leveraging private transportation services and capital throughout the state.

Similarly, Minnesota and Washington operate a network of intercity buses, primarily in underserved rural areas of each state. The Minnesota Department of Transportation (MnDOT) manages the intercity bus program and has several private subcontractors that provide service. Services funded under the 5311 program provide a link between rural communities and major metropolitan areas. Minnesota and Washington, like Oregon, uses the FTA 5311 rural intercity bus program that allows states to use the value of the operating costs of private services like Greyhound as in-kind match for the operating costs of rural intercity bus feeder service. [9] This cost-sharing approach reduces the amount of local cash needed for match, helping to address the challenge that many states face in finding enough local funds to leverage federal funds for intercity bus service. In Minnesota, Washington, and Oregon, Section 5311 rural intercity bus funds are critical to providing intercity services, and can be used to leverage private sector resources and funds to increase service where it would not otherwise exist.

Intercity Rail

Amtrak provides intercity passenger rail service across the continental United States connecting 500 communities in 46 states. Amtrak receives federal funds, but operates as a for-profit corporation. Two national Amtrak routes (Coast Starlight and Empire Builder) and one Oregon and Washington service operated by Amtrak (Cascades) serve stations in Oregon and with connections to other destinations throughout the country. The Cascades route is managed by the Departments of Transportation of Washington, Oregon, and British Columbia, with operation of the train service currently contracted to Amtrak. The route operates between Eugene, Oregon and Vancouver, B.C, making additional stops in major cities including Portland and Seattle. Amtrak service, especially in the Willamette Valley, adds capacity to the increasingly congested I-5 corridor and provides an important intercity travel option as well as connecting Oregon residents with regional and interstate destinations.

The Coast Starlight service operates between Seattle and Los Angeles, making stops at several Oregon cities including Portland, Salem, Albany, Eugene, Chemult, and Klamath Falls. The Empire Builder provides rail service to the eastern portion of the United States, originating in Chicago, with western termini in Portland and Seattle, after the line splits in Spokane, Washington. Amtrak provides affordable intra- and inter-state connections, often connecting to local public transit networks where riders may start or finish their trips.

[9] National Cooperate Highway Research Program. (2011). Analysis Of State Rural Intercity Bus Strategies: Requirements For Utilization Of S.5311(F) Funding (Digest 356). Retrieved from https://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rrd_356.pdf

Demand-Response (DRT) and Local Fixed Route Contracted Services

DRT is characterized by flexible routing and scheduling, often using small or medium sized vehicles. DRT can operate as a shared ride between a passenger's pick-up and drop-off locations, or as in individual ride in a taxi or other private service. DRT systems are typically found in rural or suburban areas where there is low density development, dispersed destinations, and relatively low passenger demand. In these conditions, fixed-route bus service is often not a feasible service design. Provision of DRT for certain populations is also a federal requirement of some public transportation providers; this is called "complementary paratransit," a specific type of DRT, and is found in both rural and urban settings.

While some DRT is operated directly by transit agencies, a few are contracted to private operators who may provide the service at a lower cost. In Oregon, Cherriots (Salem-Keizer Transit), for example, contracts with MV Transportation Inc. to operate CherryLift, its complementary paratransit service, and the RED Line, a DRT system available more generally to older adults and those with disabilities. The agency also recently started a deviated fixed route service called the West Salem Connector using private contractors.

Local fixed route (routed bus service present in many communities) is also contracted to private providers in some instances; for example, the Columbia County Rider public transportation system owns the transit vehicles plans and creates the policies associated with the service, such as the routes, schedules and fares, but uses contract drivers. Similarly, City of Canby, Yamhill County, City of Corvallis, as well as other transit agencies contract out all or a part of their service. Some transit agencies look to private contractors when starting new services because it can save on high startup costs (such as the purchase of new vehicles) associated with providing the service themselves.[10]

Private providers can offer advantages to transit agencies such as handling logistics and scheduling, and sometimes reducing the need to budget for some replacement vehicles, though in Oregon, it is usually the transit agency that owns the vehicles. In a Government Accountability Office report on the use of contractors by transit agencies in the United States, surveyed providers cited cost savings and the ability to start new services as two of the most important reasons that transit services are contracted to the private sector.[11]

Public transportation providers may use taxis as a means of providing public transportation[12]. In Oregon, public transit agencies offer vouchers for taxi rides, primarily for riders in rural communities where there is a lack of other transportation options. Taxis may provide a more flexible resource that requires fewer dedicated vehicles owned by the transit agency and increased availability of service for riders. However, using taxis as a means of public transportation may mean

[10] Government Accountability Office. (2013). Transit Agencies' Use of Contracting to Provide Service. Retrieved from https://www.gao.gov/assets/660/658171.pdf

[11] Ibid.

[12] Use of Taxis in Public Transportation for People with Disabilities and Older Adults, TCRP Report Synthesis 119, published 2016.

a lack of accessible equipment in the fleet (which are mostly passenger cars) and a need for close monitoring regarding driver training, safety, and fiscal oversight.

Transit operators have also begun to use TNCs as a means of providing DRT services. Pinellas Suncoast Transit Authority in Florida became the first transit agency in the country to subsidize Uber rides to and from designated transit stations in underserved neighborhoods.[13] The ability to use private resources including TNCs in the provision of DRT service could have profound effects on the way DRT service is offered by public providers throughout Oregon as TNCs expand throughout the state. First, public agencies could potentially provide service more efficiently through TNCs; the cost per-trip for complementary paratransit provided through public agency-owned vehicles is typically very high (over $25 per trip). Second, the platforms that TNCs operate – web apps used for reserving (and paying) for rides – make reserving trips convenient and easy for riders. However, the current TNC model requires users to have a smartphone, which may be a barrier to using TNCs as paratransit for some users. TNCs also presently have limited ability to serve customers with disabilities (as discussed later in this paper), which may limit the ability of TNCs to serve DRT and paratransit customers who are disabled. They are also currently operating only in the Portland metro region.

Social Service Transportation Services

Social service transportation providers often serve people with limited mobility options and who are usually clients of a human service agency. These services may provide transportation for purposes including medical visits, meals, shopping, and recreation. These services are operated by a variety of public agencies or private parties including senior centers, elder care facilities, religious institutions, etc. There are a variety of social service providers and types of services; social service transportation often is specific to a particular need such as veteran's needs or seniors, or people with intellectual or developmental disabilities, and Medicaid-eligible non-emergency transportation.

Social service transportation services can provide both door-to-door service or operate on a fixed-route. Some may operate on a deviated fixed-route, which allow passengers to request a vehicle to make a unique pick-up or drop-off within a certain distance from the route. An example of this service is Ride Connection, which operates as a non-profit organization that encompasses a network of transportation providers that serve older adults, people with disabilities, and lower-income individuals in the Portland metro area.

A second example is non-emergent medical transportation (NEMT), a transportation service provided as a benefit through Medicaid to connect people with medical care. Oregon's Coordinated Care Organizations (CCOs) contract with NEMT brokers to provide these services, following rules

[13] CityLab. (n.d.). Pinellas County Partners With Uber to Offer Free Dial-a-Ride Services. Retrieved from https://www.citylab.com/transportation/2016/06/pinellas-county-uber-dial-a-ride/487568/?utm_source=SFFB

established by the Oregon Health Authority (OHA). CCOs are a fairly new type of organization within Oregon (launched in 2012). CCOs are community networks of all types of health care providers. Medicaid gave Oregon a grant to demonstrate the concept as a national model. CCOs have agreements to serve their communities for people who receive health coverage under the Oregon Health Plan.[14] In Oregon, there are 16 CCOs approved for the Oregon Health Plan, covering most areas of the state. CCOs have the ability to provide transportation services themselves or contract with brokerages or other transportation providers, allowing CCOs to manage their transportation costs effectively.

Qualifying customers can call a NEMT broker who will verify eligibility and in turn determine the mode of transportation required, which may include private transportation services such as taxis. A NEMT broker will dispatch a trip to a transportation provider to complete the transportation request, who in turn will submit claim information after the trip is completed.

Most NEMT brokers in Oregon are governmental entities, such as an existing transit district (Lane Transit District, for example), or a regional council of governments (Central Oregon Intergovernmental Council); however private organizations can act as brokers as well. The service area with the largest number of NEMT rides is the Portland area; and the broker is Ride To Care, a private business.[15] NEMT brokers typically subcontract to private individuals or companies to provide the actual rides for Medicaid customers. Subcontractors must meet vehicle standards and other requirements established by OHA.

In contrast to Medicaid, Medicare does not generally fund NEMT services. Medicare will reimburse medical transportation costs only if the service is provided by an ambulance, and a doctor certifies that a person cannot use any other means of transport without endangering his or her health. As a consequence, lower-income elderly people who do not qualify for Medicaid may struggle to find affordable transportation for non-emergency medical care. Doctors may be faced with prescribing ambulance transport for non-emergency patients with no other means of accessing medical care. The expansion of TNC services in the future could help to bridge this gap for lower-income Medicare patients, and other elderly, disabled and lower-income travelers. However, as of this writing, the major TNC companies have limited means of accommodating customers with disabilities; Uber is exploring ways to serve customers with disabilities through more specialized services like UberASSIST, which are intended to specifically serve riders who have disabilities.[16]

Non-profit Public Transit Agencies

Non-profit public transit agencies, such as South Lane Wheels and Community Connection of Northeast Oregon (CCNO), provide fixed-route, deviated fixed-route and demand response services

[14] Oregon Health Authority. Oregon Health Policy Board Coordinated Care Organizations. (n.d.). Retrieved from https://www.oregon.gov/oha/HSD/OHP/Pages/Coordinated-Care-Organizations.aspx

[15] Oregon Health Authority, Division of Medical Assistance Programs. (n.d.). Non-Emergent Transportation Brokerages for Oregon Health Plan members Retrieved from https://www.oregon.gov/oha/HSD/OHP/Tools/Transportation%20Brokerage%20Map.pdf

[16] CNN. (2016). Uber's services for the disabled lack actual cars. Retrieved from http://money.cnn.com/2016/05/02/technology/uber-access/

to provide or supplement transit services in specific locations. Typically, a non-profit provides transportation services as part of its independent mission, usually providing accessible and economical transportation services to the public to reach local destinations or nearby metro areas. The agency may choose to serve either a specific group of people (e.g. seniors or persons with a disability) for social service purposes, or may operate public transportation for any member of the public. Like other transportation providers, these organizations set their own fare structure. While non-profits are privately operated, they are often funded from federal, state, and local grants, as well as donations. Non-profits such as CCNO help to fill transportation gaps not served by public agencies; they may partner with local governments and public transportation providers to coordinate service, share costs, or access grants.

Another example is the Linn Shuttle, based at the Sweet Home Senior & Community Center in Sweet Home, Oregon. The Shuttle receives grant funding from Linn county and City of Sweet Home, and also has several service contracts with human service agencies such as Linn county Mental Health. The shuttle serves the general public in addition to client populations. The Shuttle connects to other transportation providers in the region, including Amtrak, the Linn Benton Loop, and Albany Transit. Dial-a-bus services are also provided by the Sweet Home Senior and Community Center during limited hours and offer connections to the Linn Shuttle.

Transportation Network Companies (TNC) and Carshares

A TNC is a service that allows for paid, prearranged rides that uses a digital platform to connect a passenger with a driver using a personal vehicle. Both the passenger and driver connect to the TNC via a mobile app or website. The digital platform creates an online marketplace that allows passengers to meet drivers for hire as well as facilitate the delivery of payment to the driver upon completion of a trip. TNCs operating in Oregon include Uber and Lyft in the Portland metro region. Regulation of TNCs vary from place to place, and unlike taxis, can be exempt from certain business requirements due to its nature as a marketplace rather than a company employing drivers and maintaining vehicles. They typically operate in medium and large urban areas and are less available in rural or small communities.

The rollout of TNCs has been occasionally controversial, including in Portland, due to issues and concerns over regulation and safety.[17] In Austin, Texas, residents recently voted to remove Uber and Lyft from the city due to these concerns.[18] TNCs, unlike taxis, do not own their vehicular assets, and allow drivers to make use of their own private vehicles to provide services; the TNCs provide the means to connect riders to drivers and facilitate payment. TNCs also have greater

[17] The Oregonian. (2014). Uber agrees to leave Portland for 3 months as City Hall works out rideshare rules. Retrieved from https://www.oregonlive.com/commuting/index.ssf/2014/12/uber_agrees_to_leave_portland.html

[18] Austin Business Journal. (2016). Uber, Lyft defeated in Proposition 1 Referendum. Retrieved from https://www.bizjournals.com/austin/news/2016/05/07/uber-lyft-defeated-in-prop-1-referendum.html

ability to provide service to locations outside of the urban core and can collect data to understand mobility demand patterns.[19]

Carsharing refers to a model of car rental where customers can rent a vehicle for a short period of time (e.g. by the hour), and available cars are usually distributed throughout the service area. Carshare companies mostly attract customers who need occasional use of a vehicle; by filling an occasional need, carshare services can reduce the need to own a private vehicle or own a second vehicle as customers know they can rent a vehicle for specific trips.

There are several types of carshare business models and interfaces, including companies owned by traditional car rental companies and those owned by car manufacturers. Carsharing networks owned by traditional rental companies such as ZipCar (a subsidiary of Avis Budget Group) or Enterprise CarShare allow customers to make vehicle reservations via website, mobile app, or by phone, and can be billed by the hour or day, or enroll in a monthly or annual plan. Other carshare companies, such as Car2Go, owned by car manufacturer Daimler AG, exclusively uses two-passenger vehicles that are designed for local, short-distance trips that are charged per-minute with discounts for hourly and daily usage.

TNCs complement public transit usage by providing a solution for the last mile problem. These services provide a way for customers to get to and from transit stations without relying on a personal vehicle. In addition, while carsharing may take the place of some public transportation trips, it can also encourage more public transportation use overall by allowing more people to choose not to own a vehicle. In a study of traveling habits of people across seven cities, researchers found that the more people used shared services such as TNCs, the more likely they will use public transportation. Among people who use Uber and Lyft, 50% of respondents say they use a train and 45% report using a bus frequently.[20] Travelers who use many shared services (carshare, bikeshare and on-demand TNC's) owned a few number of cars than transit-only users.[21]

Ridesharing and Ridematching

Ridesharing is any service that allows groups of people to share a ride on a larger scale; ridematching services connect individuals to form rideshares.[22] Examples of ridesharing options include vanpools or carpooling. Transportation Management Associations (TMAs) and other transportation options organizations may facilitate or operate ridesharing services. (TMAs are associations of businesses and neighborhood organizations that manage and promote travel options, primarily in congested urban places; Oregon TMAs are primarily in Portland and include

[19] National Research Council, Committee for Review of Innovative Urban Mobility Services. (2016). Between public and private mobility: Examining the rise of technology-enabled transportation services. Retrieved from https://onlinepubs.trb.org/onlinepubs/sr/sr319.pdf

[20] American Public Transportation Association. (2016). Shared Mobility and the Transformation of Public Transit. Retrieved from https://www.apta.com/resources/reportsandpublications/Documents/APTA-Shared-Mobility.pdf

[21] Ibid.

[22] American Public Transportation Association (APTA). (2016). Shared Mobility and the Transformation of Public Transit (Rep.). Retrieved from https://www.apta.com/resources/reportsandpublications/Documents/APTA-Shared-Mobility.pdf

ones for Washington Park, the Lloyd district, and downtown Portland. Transportation options organizations may be public or private and are found in both urban and rural areas; an example is Commute Options, a non-profit organization serving central and eastern Oregon.) Ridesharing provides several benefits to users, including personal cost savings (insurance, gasoline, etc.), fixed schedules, and road incentives such as access to High Occupancy Vehicle (HOV) lanes. Vanpool vehicles may be provided by individuals, public or private programs, or employers. Individuals who choose to rideshare typically select a common meeting location and travel to a common destination or employment center.

Ridesharing can occur informally, or through ridematching services like Oregon's DriveLessConnect. DriveLessConnect is a publicly-funded online tool used to connect individuals in both urban and more rural areas with public and private carpools and vanpools, such as those offered by Enterprise RideShare[23]. This service is a resource for those interested in ridematching by allowing people to setup and manage their carpool or join an existing carpool.

In Washington State, public and private sector employers are required to facilitate services like ridematching and carpooling to reduce single occupant vehicle trips. The state Commute Trip Reduction (CTR) Law, passed in 1991, requires employers with over 100 employees to develop and implement plans to reduce single-occupant vehicles commute trips. Employer programs include encouraging ridesharing and matching employees for carpools/vanpools, subsidizing transit passes, developing work-from-home programs, implementing parking management policies, and providing infrastructure to encourage biking and walking to work. In addition, the state legislature passed a grant program called the Vanpool Investment Program (VIP) that provides $6 million per year to expand vanpool programs, primarily through funding the purchase of vans and subsidizing a statewide transit insurance pool for vanpools.[24] The CTR program has reported a reduction of over 154 million statewide vehicle miles traveled since 2007 with over 1,000 worksites participating in the program.[25] The program also reports an annual cumulative monthly savings of $30 million for CTR participants.

TNCs, like Via and Uber, also provide ridesharing services in some markets; TNCs currently offer on-demand transportation services in Oregon, but TNC ridesharing services (where riders heading in the same direction can share the cost of a trip to a common destination) are not yet available in Oregon. These private ridesharing services are currently operating in cities like Seattle and Chicago. They allow users to book and share a ride (and the costs) with others heading in the same direction or to the same destination. Ridesharing via a TNC platform provides users a convenient, fast, and cost-effective form of transportation. Although ridesharing and taxis have been well-

[23] https://www.enterpriserideshare.com/vanpool/en.html. Retrieved 1/19/2017.

[24] Washington State Department of Transportation. (2007). 8 CTR 2007 Report to the Washington State Legislature, "Vanpool Investment Program". Retrieved from http://www.wsdot.wa.gov/NR/rdonlyres/78774733-2E96-48E3-9CEC-237C5B1848BA/0/Vanpool.pdf

[25] Washington State Department of Transportation. (2016). Commute Trip Reduction Overview Webpage. Retrieved from https://www.wsdot.wa.gov/Transit/CTR/overview.htm

established as transportation options, the use of mobile applications has spread its appeal to new, younger users.

The popularity of TNC services is increasing, for example, in the Portland metropolitan area (including Vancouver, WA), Uber reports that 312,000 riders took more than one trip in the quarter leading up to September 2016; this was a significant increase over the 223,000 such riders in the previous quarter.[26] Use of TNCs both competes with and encourages transit trips, as the expansion of transportation options has encouraged travelers to give up second vehicles or live entirely car-free.[27] These individuals may be more likely to mix in public transportation trips, particularly on high-quality, frequent transit service vehicles, with other private ridesharing services.

Shuttles

Shuttle services are any type of bus service intended to transport passengers typically between two fixed points. Shuttle services are often provided by the private sector to serve particular destinations such as between airports and hotels; sometimes a public agency such as a college may provide a shuttle service to ensure transportation to its campus. Often shuttles both fill a gap in public transportation services and meet a location's specific need, allowing expanded use of public transportation services.

Shuttle services often use passenger vans or large coach buses, and are usually short or medium distance trips taking less than an hour. Shuttles may be open to the public, such as transporting passengers between airport facilities and major transportation hubs or residences, such as the Cascade Airport Shuttle in the Rogue Valley. They may also serve private employers where companies such as Intel or Nike provide service to their employees and visitors between worksites and transportation hubs like MAX light rail stations in Washington County, Oregon.

Nike's world headquarters, located in Beaverton, offers an employee shuttle that circulates through the large campus and connects to the nearest TriMet light rail station. Employees are also offered monthly incentives to use alternative modes of transportation to commute to work, including organized carpools/vanpools, transit or walking and bicycling. Nike employees are eligible for TriMet passes and reserved carpool parking in exchange for recording the number of alternative commute trips they take using Nike's online commute portal. The shuttle service, coupled with incentives and other transportation options, works together to solve the "last mile" problem (the distance between where a rider gets off or on public transportation and their final destination) for Nike employees connecting between public transportation and their workplace. As a complement to public transportation, shuttles help to extend the reach of public transportation investments like MAX light rail, as well as boosting ridership by providing connecting services between destinations and major transit hubs.

[26] Uber, Oregon Public Affairs Director via email November 2016.

[27] American Public Transportation Association. (2016). Shared Mobility and the Transformation of Public Transit (Rep.). Retrieved from https://www.apta.com/resources/reportsandpublications/Documents/APTA-Shared-Mobility.pdf

Similarly, Apple's Cupertino, California headquarters provides free shuttles to employees to connect its campus to strategic points in the San Francisco metro region, including stops in neighborhoods throughout San Francisco, Santa Cruz, Berkeley, and other cities. Their buses include amenities such as power connectors and WiFi connectivity. The company also encourages private carpool and vanpooling through its Apple Commuter Program, in which each commuter is eligible for up to $100 per month of their commuting cost. Apple also maintains a database of employees' cars, addresses, and work schedule in order to facilitate ridesharing between employees. Apple's employee shuttles complements public transportation, but also competes for some trips. Many of Apple's shuttle stops are located within walking distance to BART stations, allowing employees to take BART and transfer to a shuttle. However, some shuttle stops are also located within residential neighborhoods and provide a "one-seat" ride to employees.[28]

Shuttle services are also common on college campuses, such as the Xpress Shuttle at Oregon's Clackamas Community College (CCC), which connects the college campus to major commercial and residential areas, transportation hubs, and connecting the different CCC branches to each other. The CCC shuttle also acts as a transportation demand management strategy in order to reduce the number of single occupancy vehicle trips that are made to the different CCC campuses, reducing the need for additional parking. Public providers also may not experience enough demand to serve campuses outside of typical service hours when many students and staff may attend classes (e.g., night classes).

Charters and Tours

Charters and tour services transport people or organizations that have contracted exclusive use of a vehicle intended for travel to a specific destination. Typically, a charter is hired for a flat fee or based on mileage traveled. This type of service is important for providing transportation for people attending same events, such as a conferences, tours, etc. Charter services are almost exclusively offered by private providers in Oregon because Federal Transit Administration regulates the opportunity for federal grant recipients to compete with private sector charter businesses. FTA funds cannot be used for charter services.

[28] Community Transportation Association of America. (2012). Success Stories of Employer-Sponsored Transportation Programs. Retrieved from website: http://www.ctaa.org/webmodules/webarticles/articlefiles/2014_SuccessStoriesEmpTranspPrograms.pdf

Emerging Private Sector Trends and the Future Role of Private Providers in Public Transportation

Evolving technologies and trends in the private sector will impact public transportation in the future. This section reviews some of the major transportation trends occurring in the private sector and the potential implications for the future of public and private transportation.

Public-Private Partnerships

Public resources available to support large infrastructure projects are increasingly scarce, which has led many public agencies to leverage public-private partnerships (P3s) to accomplish public transportation projects. P3s provide a role for both the government and private industry in building transportation infrastructure, which lessens the burden of one party being responsible for all project finances. This type of partnership typically allows projects to be built more quickly, but often privatizes previously public assets and can forgo future potential returns on those assets.[29] P3s can also include the maintenance and operation of a transit project; The Regional Transportation District (RTD) in Denver, Colorado currently has a P3 project in which the rail line will be constructed, operated, and maintained by a private consortium for a set period of time.[30]

In Oregon, TriMet's MAX Red Line in Portland was developed jointly with Bechtel Enterprises, which funded 23% of the extension's project costs. In return, Bechtel received development rights to a 120-acre mixed-use commercial site near the entrance to the airport, which was owned by the Port of Portland.[31] The P3 arrangement allowed the Red Line to be funded without federal appropriations, state funds, or increase in property taxes. Innovative P3s like this could become more important to developing major transit capital projects in the future if public funding does not keep pace. However, public agencies encounter significant challenges when contemplating P3 arrangements, due to differing laws in each state around such arrangements, political concerns, and the inherently complicated nature of P3 agreements and legal processes.

P3s are also used for projects of smaller magnitude such as financing mixed use developments on or near transit stations. In King County, Washington, King County Metro has negotiated several P3s for developments that support ridership at major public transportation hubs. In recent years, King County has planned or completed five major transit-oriented developments (TODs) at Renton, the Village at Overlake Station, downtown Redmond, and Burien.[32] The developments are a mix of

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[29] Organization for Economic Cooperation and Development. (2014). Private Financing and Government Support to Promote Long-term Investments in Infrastructure. Retrieved from https://www.oecd.org/daf/fin/private-pensions/Private-financing-and-government-support-to-promote-LTI-in-infrastructure.pdf

[30] Regional Transportation District. (2016). Eagle P3 project website. Retrieved from http://www.rtd-denver.com/FF-EagleP3.shtml

[31] US Federal Highway Administration. (n.d.). Innovative Program Delivery Project Profiles – Airport Max Red Line. Retrieved from https://www.fhwa.dot.gov/ipd/project_profiles/or_airport_max.aspx

[32] King County. (n.d.).Transit-Oriented Development. Retrieved from https://www.kingcounty.gov/depts/transportation/planning.aspx

residential units with other ground-floor uses like retail, commercial or office space. Developer incentives to participate in TODs typically include public agency write-downs of agency-owned property to reduce the costs of development, as well as state and federal housing tax credits. The TODs are co-located with major transit stations and include transportation incentives for residents such as free or subsidized transit passes and bicycle parking. With P3s developers may receive a tax incentive on the cost of the development parcel, or be granted design exceptions to build more residential units or leasable space. In other scenarios, a public agency may enter into an agreement to reimburse a developer for construction costs through taxes captured through a special assessment district. The conditions for P3s in building a TOD are often dependent on real estate market conditions.[33]

Autonomous Vehicles

Autonomous vehicles[34] encompass a wide range of vehicles that have advanced control systems that navigate a vehicle on a path, avoid obstacles, and interpret signage.[35] Numerous technology and automotive companies, including Google and GM, have been designing and testing autonomous vehicles.[36] While not yet available to consumers, the capabilities of autonomous vehicles have been successfully demonstrated and policymakers are beginning to prepare for the introduction of autonomous vehicles on roadways. While fully autonomous vehicles on public roads will likely occur in the long-term, there are emerging applications for autonomous vehicles in controlled environments in the near-term.

Autonomous vehicles will have numerous effects on the transportation network. First, automation will help to avoid traffic collisions caused by human error. Second, autonomous personal vehicles are likely to result in a modest increase in roadway capacity, but could potentially result in increased congestion if the number of vehicles miles or trips increases as predicted by some studies.[37] As autonomous vehicle technology progresses (greater integration into the vehicle market could occur as soon as the mid-2020s),[38] consumers are likely to see vehicles as a service, rather than traditional ownership-based models where private individuals make one-off purchases of autonomous vehicles. One mobility model includes the use of autonomous vehicles as taxis. A TNC would have the potential to be always available without the cost of a hired driver. Autonomous taxis could work on a similar ride-hailing or ride-sharing platform like Uber, Lyft or

[33] US Environmental Protection Agency Smart Growth Office. (2013). Infrastructure Financing Options for Transit-Oriented Development. Retrieved from http://ctod.org/pdfs/20130122-TOD-infrastructure-financing-report.pdf

[34] Throughout this white paper, "autonomous vehicles technology" refers to new non-fixed guideway technologies; it does not refer to autonomous fixed guideway technology, like airport "people movers," or driverless rail systems.

[35] "Connected vehicles" are a related field, but will be addressed in a separate white paper.

[36] CB Insights. (2016). 30 Corporations Working On Autonomous Vehicles. Retrieved from https://www.cbinsights.com/blog/autonomous-driverless-vehicles-corporations-list/

[37] Bierstedt, J., Gooze, A., Grey, C., Peterman, J., Raykin, L., & Walters, J. (2014). Effects of next-generation vehicles on travel demand and highway capacity. Retrieved from https://orfe.princeton.edu/~alaink/Papers/FP_NextGenVehicleWhitePaper012414.pdf

[38] Ibid.

Via. This type of service would require a fleet of autonomous vehicles that would be 'dispatched' to users who request a ride. These services are likely to be very cost-competitive with car ownership, as the lack of a driver could reduce the costs of on-demand autonomous vehicle services [39] These services have great potential to serve the needs of on-demand transit in rural areas, or with patrons needing door-to-door service. Additionally, the potential mobility benefits of autonomous vehicles may compete with trips on traditional public transportation services.

Autonomous buses and shuttles have also been developed and tested. EasyMile, a Northern California based company who designed an autonomous shuttle called the EZ10, has been piloting their driverless shuttles at a 500-acre office park at slow speeds on a dedicated route.[40] The EasyMile shuttles demonstrate some of the many capabilities that autonomous vehicles might have as a shared transportation solution. The EZ10 has three modes of operation, including:

- 'Metro' mode: The shuttle makes stops at all stations along the route. It follows a set timetable and passengers can get on and off at every station.
- 'Bus' mode: The shuttle stops at stations on request. The shuttle will follow a predefined route and passengers can request the shuttle to stop either on the shuttle or at a station.
- 'On demand' mode: The shuttle can be requested like a taxi using a smartphone application.

Autonomous buses present significant implications for the future of public transportation. If implemented in the public sector, they could have significant effects on capital costs for the purchase of required infrastructure and vehicles, labor costs due to the reduction in need for drivers, and transformative changes in public provider operations, dispatching, and routing. Personal autonomous vehicles are likely to have equally significant effects on travel behavior and congestion, but, as with autonomous buses, the exact results are difficult to predict and dependent on many factors. Some of the implications of this technology that should be considered include:

- Depending on the business model that emerges, autonomous vehicles may render some transportation services obsolete, while creating markets for new services.
- Potential infrastructure upgrades to accommodate new vehicles (roads, signaling, signage, dedicated guideways, etc.) could be very costly.
- The vehicles themselves may be costly, requiring agencies to carefully weigh the benefits and costs of implementing an autonomous fleet; personal autonomous vehicles, if implemented, may also be expensive, limiting market penetration.
- Literature is mixed on the potential effects of autonomous personal vehicles on congestion and mobility.
- Public transportation employees may be affected due to potentially reduced labor needs.

[39] Fagnant, D. J., & Kockelman, K. (2015). Preparing a nation for autonomous vehicles: opportunities, barriers and policy recommendations. *Transportation Research Part A: Policy and Practice*, *77*, 167-181. doi:10.1016/j.tra.2015.04.003
[40] Easymile. (n.d.). Shared transportation for the last mile. Retrieved from http://easymile.com/mobility-solution/

Evolution of Transportation Network Companies

Several TNCs provide digital marketplaces connecting drivers and passengers (e.g., Uber, Via) using mobile and web applications. These marketplaces provide on-demand ridesharing and the ability to book and share rides with other users, which are not yet available in Oregon. Another trend in TNCs are 'luxury' services, which include bus, van, and black car on-demand transportation. Bridj, a TNC founded in Boston, makes use of high-tech buses outfitted with in-vehicle WiFi and promise riders that they will always have a seat on-board. Bridj allows riders to choose two points within a service area and request a ride days or minutes in advance. Bridj follows the footsteps of the now-defunct Leap, a luxury bus service that operated in San Francisco. Leap mirrored some of Muni's high-ridership routes and provided buses with high-end amenities including leather seats and on-board food and drinks. Leap declared bankruptcy in 2015 after many issues, including operating without permit from the state of California or the City of San Francisco.

Integration of Private Transportation Providers in Public Transportation Mobile Applications

In considering the role of private transportation providers, most public transit agencies have focused on the providers' ability to solve the last mile problem. In support of this, several agencies have looked to increase awareness of, and provide easier access to private transportation services, including TNCs. Agencies have engaged in joint-marketing and integration with existing services, such as trip planning and mobile ticketing applications. TriMet's mobile ticketing app, RideTap, is piloting a feature that allows users to identify other transportation options as part of their trip planning, including Lyft and Car2Go. The ability to pay for and use BIKETOWN bike sharing in Portland, Oregon will likely be included in a future update of the application. Dallas Area Rapid Transit (DART) has also integrated private operators into their mobile ticketing application, including Lyft, Uber, and ZipCar. Coordination and communication among private and public providers stands to benefit customers, as well as providers, by boosting ridership on both services, solving last mile issues, and creating a more seamless transportation experience for riders.

These integrations and partnerships focus on providing customers with more last mile options and easier access to those options. Private operator integration has also aided in helping customers find transportation alternatives during planned and unplanned transit outages. Integrating payment systems (i.e., enabling payment for public and private transportation services in a single transaction) is also a growing service offered by transit agencies, however public agencies accepting funds on behalf of private operators, and vice versa, presents significant challenges. In lieu of this, the public agencies and private operators have reached agreements to provide discounts when the two services are used together (e.g., discount given on Lyft or Uber when used at a transit stop).

Conclusion and Key Findings

The private sector is integral to the provision of transportation in Oregon and the United States. Privately-operated services connect riders to major employment centers, universities, to cities and towns throughout Oregon, to special events, tourist destinations, and many other key locations. Public agencies often contract with the private sector to provide some public transportation services, resulting in cost efficiencies and the ability to more easily start new services. Technologies and innovations developed in the private sector – like the advent of TNCs, mobile apps, and autonomous vehicles – present opportunities for public agencies to provide services in different ways, improve the rider experience, and create a more seamless transportation system.

However, an overall lack of coordination between the public and private sector may limit the benefits listed above, resulting in unrealized connectivity that is possible between many private and public services. Additionally, not everyone is served by private transportation services. Private transportation services – of all kinds – are generally only available in the more urban and densely populated areas of the state, while many newer private services, like TNCs, are just now increasing their ability to serve riders with disabilities. Finally, the advent of new private services like TNCs and carsharing, and to a greater extent, autonomous vehicles, have enormous potential to affect the transportation system as whole – in short, emerging private sector technologies are likely to have profound effects on the future of transportation, but it is difficult to confidently assess what the exact effects are likely to be.

Additional key findings of this paper are discussed below, beginning with the implications of these findings on the OPTP and state policy.

Implications for Oregon

- A framework for responding to change, in light of rapidly evolving transportation technologies in the private sector, is important for addressing opportunities, challenges, and concerns that may emerge.
- Fostering new or better partnerships between public agencies and the private sector (across all types of transportations services, from workplace shuttles to TNCs) would result in benefits for everyone: private providers could see increased business, public providers could realize reduced costs and better connections for their riders, and riders could benefit from a more seamless and easy-to-use transportation system.
- TNCs are a rapidly evolving transportation service. Presently offered in the Portland urban area, it is possible that expansion to medium-sized or smaller communities in the state will occur (or areas on the “urban fringe”). TNCs present a number of regulatory issues and concerns for communities – the state could help ease the entry of TNCs into new marketplaces by establishing model policy and/or code for communities.

- Pilot projects present an opportunity to implement new models in the public and private sector, for example, using TNCs in the provision of complementary paratransit services. The state has significant experience with implementing pilot projects (e.g., the Road Usage Charge Pricing Pilot Project). In some cases public agencies may lack the financial or technical resources to implement a pilot project and support may be required.
- P3 arrangements represent a potentially promising way of funding (and operating) public transportation services. However, P3 arrangements are often complicated due to state and local regulations. Evaluating policy and regulations that affect P3s could make them easier to implement, while still ensuring that public agencies are not exposed to undue financial risk.
- Intercity bus services, like Greyhound, BoltBus, and others, along with contracted intercity services like POINT, provide much of the state's intercity public transportation. However, some intercity markets are currently unserved or underserved (including some routes that were served in the past but discontinued because private providers found them unprofitable). Regulations governing intercity transportation could be examined for any restrictions on popular or competing routes. Additionally, increased coordination and communication between private and public services, including local public transportation, could improve the transportation experience for riders.
- TNCs present a number of opportunities for public transportation. However, the potential benefits they present could be greater if they served additional markets and enhanced their ability to serve individuals with disabilities.

General Findings

- The proliferation of carsharing, on-demand transportation services, and private ridesharing services through TNCs may serve to increase the number and frequency of travelers using public transportation due to their complementary nature. Research shows that users accessing these services have lower rates of car-ownership overall and are more likely to use all types of non-single-occupant vehicle modes of transportation.
- TNCs, and other technology and software advances like smartphone apps that facilitate fare payment, are private sector developments. Public agencies are partnering with the private sector to take advantage of these developments (like TriMet's new Hop efare system and smartphone ticketing app).
- Autonomous vehicle technology may significantly impact the operation of transit systems and the overall transportation system. Privately-owned autonomous vehicles are expected to reduce collisions attributed to driver errors and will require less space for travel, since vehicles could travel more closely together. Autonomous or semi-autonomous shuttles could help to expand the reach of transit to previously underserved areas by reducing operating costs and contribute to the first and last mile access to transit. If implemented in the public sector, the technology could have significant effects on capital costs for the purchase of required infrastructure and vehicles, labor costs due to the reduction in need for drivers, and changes in public provider operations, dispatching, and routing. These new

vehicle technologies may even result in entirely new means of transportation, the effects of which are at present difficult to assess. Because of the uncertainly around these technologies, public providers and policymakers will need to actively monitor development in this field and be prepared to respond to change.

- The ability to use TNCs in the provision of DRT service could have profound effects – including reduced costs for public providers and increased ease of use for riders – on the way DRT service is offered by public providers throughout Oregon as TNCs expand throughout the urban areas of the state.
- As private on-demand transportation services such as TNCs, carsharing, and others increase in coverage and use, they expand available transportation options. It is possible that these private services may compete for trips on public transportation systems.
- Contracting with private providers for services offers advantages to transit agencies such as handling logistics and scheduling, as well as reducing the need to budget for replacement vehicles.

Coordination, Communication, and Collaboration

- Coordination and communication among private and public transportation providers is presently limited. Coordination occurs with intercity bus services (for example, ODOT's POINT service coordinates its schedules with Amtrak), and among some TNCs and public providers (for example, to develop apps that include TNC options for the last mile of transit user's trips).
- Most coordination efforts occur informally or opportunistically between private and public providers. Fostering collaboration between the many private transportation services operating in the state and public providers (among others) could result in benefits to riders, including more options and seamless connections.

Accessibility and Connectivity

- Private operators often complement public transportation services by serving as the first and last mile connection for public transportation riders, or bridging gaps where public transportation services are not present. In this capacity, they provide essential services in some communities and contribute to the success and ridership of public transportation services in others.
- TNCs and taxis help bridge the last mile for users, and can potentially fulfill demand-response trips in areas that are difficult to serve through traditional transit service. However, there are concerns over the accessibility of TNC vehicles, as many do not currently accommodate customers with disabilities. Additionally, TNCs currently operate primarily in urban areas; and rural areas may not have taxi service.
- Private shuttles leverage existing transit investments by operating as last mile solutions from transit hubs to an employment center, universities, or other major destinations.

- Though private providers operate many intercity bus routes in Oregon, public services and agency partnerships like POINT fill in some of the service gaps where private providers do not operate.

Community and Economic Vitality

- The private curbside bus industry (such as BoltBus) is growing rapidly and competing for single-occupant vehicle trips. While curbside services are increasingly important options for travel between major urban centers, these services are limited in Oregon and have not expanded into smaller suburban or rural communities, leaving these populations not served by these private intercity transit services.

Strategic Investment

- Transit agencies are contracting with private providers, particularly for paratransit and demand-response trips where private providers may be able to operate more efficiently. However, the ability to contract out these services is limited for some public providers (due to existing agreements and contracts, for example).
- Public-private partnerships are becoming more widespread as an innovative financing tool to fund transportation infrastructure (as well as operations and maintenance in some places), or to build transit-supportive developments.
- Oregon manages its intercity allocation in a manner that allows ODOT to establish service where need is greatest.
- Federal Section 5311 rural intercity funds are critical to providing intercity services, and can be used to leverage private sector resources and funds to increase service where it would not otherwise exist.
- Private providers will continue to play an integral role in non-emergency medical transportation (NEMT) and coordinated care organizations (CCOs); TNCs present an important opportunity to provide service at lower cost and increased ease of use for customers.

Safety and Security

- Though TNCs and taxis present many opportunities for public transportation, there are ongoing concerns about safety and security with these services in many communities, due to differing regulations and safety requirements among states and communities, and difficulties in oversight of contracts.