



Regional Economic Impact of the Pioneer Valley Transit Authority





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prepared by EBP
for the Pioneer Valley Planning Commission

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Acronyms and Definitions

Acronym	Definition
ACS	American Community Survey
BCA	Benefit Cost Analysis
CO2	Carbon Dioxide
CRTP	Comprehensive Regional Transit Plan
EPA	Environmental Protection Agency
FPL	Federal Poverty Level
FRTA	Franklin Regional Transit Authority
FTA	Federal Transit Administration
KPIs	Key Performance Indicators
LEHD	Longitudinal Employer-Household Dynamics
LODES	LEHD Origin-Destination Employment Statistics
MassDOT	Massachusetts Department of Transportation
MOVES	Motor Vehicle Emission Simulator
NOx	Nitrogen Oxide
NTD	National Transit Database
PM	Particulate Matter
PUMS	Public Use Microdata Sample
PVPC	Pioneer Valley Planning Commission
PVTA	Pioneer Valley Transit Authority
SATCo	Springfield Area Transit Company
SO2	Sulfur Dioxide
UMTS	University of Massachusetts Transit Services
USDOT	US Department of Transportation
VATCo	Valley Area Transit Company
VOC	Volatile Organic Compounds

Executive Summary

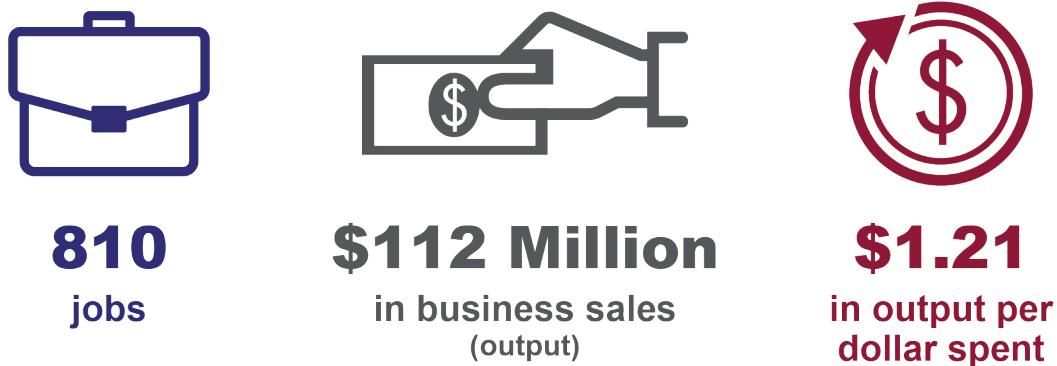
The Pioneer Valley Transit Authority (PVRTA) provides essential mobility across the Pioneer Valley, connecting residents to jobs, education, healthcare, shopping, and other daily activities. This report finds that PVRTA's fixed-route and paratransit services generate substantial annual economic and societal value for the region, both through agency spending and through the benefits riders and communities receive from transit access.

To measure the economic value of PVRTA, this study employs two types of analysis: (1) economic impact analysis assessing the effects of agency expenditures in the regional economy, and (2) a societal benefit analysis that monetizes out-of-pocket and community cost savings resulting from transit use.

Regional economic impact: PVRTA spending supports regional jobs and business activity.

Annual operations and capital spending supports approximately 810 full and part-time jobs and \$112 million in business output in the Pioneer Valley. For every \$1 dollar invested in transit, the Pioneer Valley region generates \$1.21 in regional business sales (output), representing a 21 percent return on investment. This is in addition to the ways in which transit services more broadly support the regional economy, such as helping people to save money and connecting people with jobs.

Figure 1. Annual regional economic impact of PVRTA spending



Societal benefits analysis: riders and the Pioneer Valley benefit from PVRTA services.

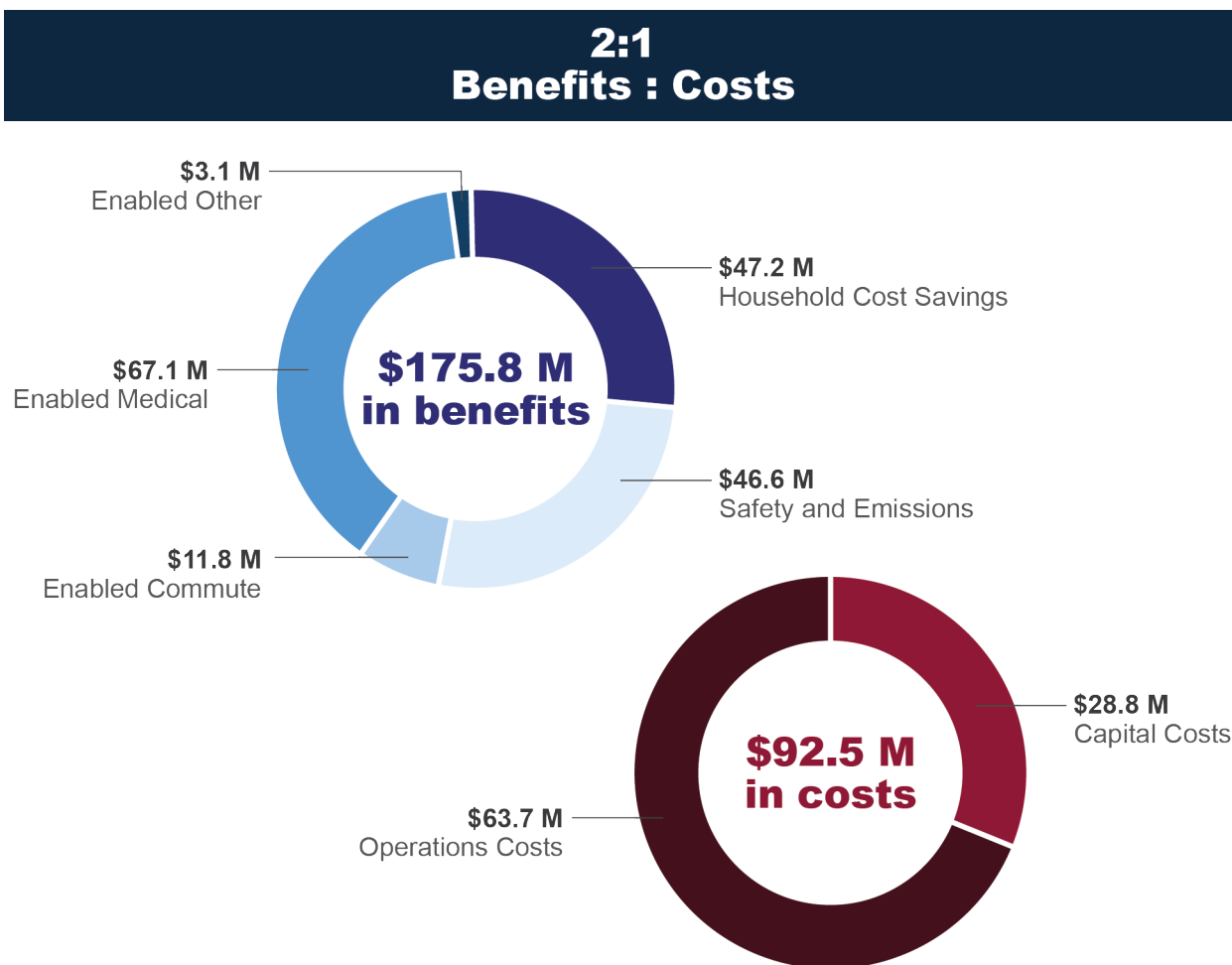
To capture the ongoing benefits of transit services, this report quantifies benefits of transit based on a scenario comparison of current PVRTA operations to a theoretical “world without transit.” Overall, PVRTA's annual benefits are estimated at \$175.8 million compared with \$92.5 million in annual costs, yielding a benefit-cost ratio of 2 to 1 (Figure 2). Additional key findings include:

- **Transit delivers significant household cost savings.** PVRTA saves households an estimated \$47.2 million annually by providing an affordable alternative to taxis, rideshare, driving, and additional vehicle ownership.

- **PVTA enables access to work, healthcare, and other destinations that would not be reachable without transit.** Transit service supports an estimated \$11.8 million in annual benefits from commute trips that would otherwise not occur, \$67.1 million from enabled medical trips, and \$3.1 million from other enabled trips.
- **Transit improves safety and environmental outcomes.** PVTA provides a lower emissions alternative to driving modes and improves roadway safety relative to driving. As a result, the region sees an estimated \$46.6 million in benefits annually.
- **PVTA provides critical mobility for residents with limited transportation options.** Riders are more likely than the overall regional population to have lower incomes, limited vehicle access, and reliance on transit for essential trips; paratransit also serves many older adults and people with disabilities.

The report also finds that PVTA performs well compared to peer transit agencies, carrying more passengers per mile than the peer average while requiring a lower subsidy per passenger. Recent service improvements and ridership increases have strengthened PVTA's role as a regional connector and economic asset.

Figure 2. PVTA Benefit Cost Ratio of 2 to 1



Introduction

Study Purpose

This study assesses the value of the Pioneer Valley Transit Authority's (PVTA) existing fixed-route and paratransit services for the Pioneer Valley region, its member communities, and area residents. The analysis quantifies and describes the economic benefits that PVTA services generate. The study reports the impacts of PVTA capital and operations on regional economic activity, and it assesses monetized societal benefits such as household costs savings, improved safety, and the value of connecting people to employment, healthcare, and other opportunities.

An analysis of transit and the workforce in the Pioneer Valley also characterizes the industry sectors and occupations that benefit most from transit service and the ways in which bus operations connect people to key job centers across the region.

Overview of Economic Analysis

Public transit is a vital service to connect people with important services like healthcare, provide access to economic opportunities like jobs, education, or shopping, and support social connections. Transit services benefit the whole community. To measure the value of transit, this study employs two types of analyses:

- **Economic Impact Analysis of Agency Expenditures:** This analysis characterizes economic activity such as jobs, income, value added, and output stemming from transit operations and capital investments. This analysis uses an economic model including input-output industry relationships to measure the direct, supplier (indirect), and worker spending (induced) economic impacts of transit activities.
- **Societal Benefit Analysis:** A type of benefit-cost analysis, this approach measures the value of benefits to society that are generated by the provision of public transit. This analysis includes monetized benefits based on actual costs (e.g., comparing transit fares to the cost of a taxi) as well as people and society's "willingness to pay" for certain positive outcomes like safety and reduced emissions. To capture the ongoing benefits of transit services, the societal benefit analysis in this report is based on a scenario comparison of current PVTA operations to a theoretical "world without transit."

Additional details on each of these two types of analyses are provided in the following sections.

Economic Impact Analysis of Agency Spending

The economic impact analysis measures the regional economic activity that is generated by direct transit agency operations and capital expenditures. Impacts are categorized as direct and

multiplier (indirect and induced) effects as direct transit spending ripples throughout a regional economy:

- The **direct effect** is driven by the activities of a transit agency, including directly hiring drivers and dispatchers as well as purchasing fuel or vehicles.
- The **indirect effect** is driven by purchasing goods and services from suppliers.
- The **induced effect** is driven by transit employees and supplier employees spending their earned income at businesses within their community.

Economic activity measured by impact type (direct, indirect, and induced) is expressed in terms of the following four metrics:

- **Jobs:** The total annual average of sustained full-time, part-time, and seasonal employment.
- **Labor Income:** The total value of all forms of employment income, including both employee compensation and proprietor income.
- **Value Added (GDP):** Equal to the contribution to GDP, this is the difference between an industry's or establishment's total output and the cost of its intermediate inputs.
- **Business Output:** The total value of a business' production or revenues, measured as the value added plus intermediate expenditures.¹

These metrics are different ways of describing the same economic activity and as such can never be added together.

Societal Benefit Analysis

Within the societal benefit analysis, benefits can be categorized into two general types:

- **Efficiency benefits** represent the benefits to society that stem from enabling transit users to make a trip with transit instead of a different mode. Some benefits accrue directly to users of the transit system. For example, people can save on fare costs by taking transit instead of a taxi or rideshare. There are also categories of benefit affecting the broader community. For example, transit can remove private vehicles from the road and thereby improve overall safety.
- **Value of Enabled Trips (Mobility Benefits):** Transit enables people to make trips that would otherwise go foregone. There are varying approaches to valuing these enabled trips based on the trip purpose (commute trips, medical trips, and other trips).

Some benefits directly affect the movement of money within the economy, like vehicle operating costs or per trip costs, and can thus be directly measured. Other benefit categories deliver societal improvements that people value, but that do not directly affect the movement of

¹ IMPLAN, "Understanding IMPLAN: Direct, Indirect, and Induced Effects", 2025, <https://blog.implan.com/understanding-implan-effects>

money (e.g., savings associated with safety improvements, reduced emissions). These benefits are measured based on a “willingness to pay” framework, in which we assign value that people give to these improvements. Table 1 outlines benefit metrics by category that are included in this report.

Table 1. Transit Societal Benefit Evaluation – Categories and Metrics

Benefit Category	Benefit Metric
Efficiency Benefits: Benefits to society that stem from enabling transit users to make a trip with transit instead of a different mode.	Fare Cost Savings: Transit is more affordable on a per trip basis compared to the price of relying on taxis or rideshare, yielding out of pocket cost savings for people.
	Vehicle Operating Cost Savings: These include costs associated with tires, maintenance, depreciation, and fuel. When people are able to use transit instead of driving or riding with family or a friend, this reduces the costs associated with operating these vehicles.
	Safety Benefits: Transit modes can have lower safety incident rates compared to non-transit modes. In those cases, the availability of transit enhances safety by reducing roadway collisions and associated insurance costs, personal losses associated with crashes, injuries, and fatalities, and the costs of emergency response and traffic enforcement.
	Avoided Emissions Benefits: The use of transit can yield environmental benefits resulting from reduced pollutants from automobile usage. This category is based on comparing emissions for transit versus alternative modes and reflects the monetized societal value for each type of pollutant. Pollutants considered are Carbon Dioxide (CO ₂), Nitrogen Oxide (NO _x), Sulfur Dioxide (SO ₂), Volatile Organic Compounds (VOC), and Particulate Matter (PM).
Value of Enabled Trips: These benefits represent the value of trips enabled by the availability of transit that an individual would otherwise not have made	Enabled Commute Trips: For some transit users, transit is the only available mode for them to commute to work. The availability of transit enables some workers to maintain employment, earn income, and reduce reliance on public assistance programs.
	Enabled Medical Trips: Transit enables some individuals to travel to medical appointments that they may have otherwise foregone. When individuals can access preventative care or attend medical appointments to manage and treat chronic conditions, this reduces higher medical costs paid by individuals and society associated with providing emergency care or acute care.
	Other Enabled Trips: For all other trips that are not for commute or medical purposes, the value of an enabled trip can be estimated as being equal to half the difference between the cost of taking a taxi or rideshare and the cost of taking transit. This is known as consumer surplus and assumes the average person's willingness to pay to make a non-commute or non-medical trip.

Report Structure

The remainder of this report is organized as follows:

- **About the Pioneer Valley Transit Authority:** This section introduces PVTA, providing information on recent service and ridership changes and describing transit riders.
- **Economic Impact of Spending:** The chapter presents results of an analysis of the economic impacts of PVTA spending on capital projects and service operations.
- **Transit and the Workforce:** We describe the industries and occupations in which transit commuters work in the region, the benefits of enabled commute trips, and the ways in which bus service provides regional job access and connects people to key employer locations and other destinations.
- **Household Cost Savings:** By comparing available modal alternatives in the absence of transit, this section quantifies household cost savings including per trip vehicle operating and fare costs as well as impact on car ownership.
- **Safety, Health, and the Environment:** This section describes the ways in which transit makes Pioneer Valley communities more livable through impacts on roadway safety, health, and the environment.
- **Value of Enabled Trips:** In this section, we additionally quantify the benefits associated with enabled medical and other trips that would not be possible without PVTA services.



PVTA fixed-route passenger bus at MassMutual Headquarters in Springfield

About the Pioneer Valley Transit Authority

The PVTA provides public transportation throughout the Pioneer Valley, connecting residents to jobs, education, healthcare, shopping, and other destinations across the region.

Mission, Vision, and Operations

PVTA's mission:

The PVTA is committed to providing the highest quality of convenient and accessible public transportation service that meets the needs of our customers in an efficient and cost-effective manner.

PVTA's vision:

Assisting the Pioneer Valley in making communities more livable through transportation services.

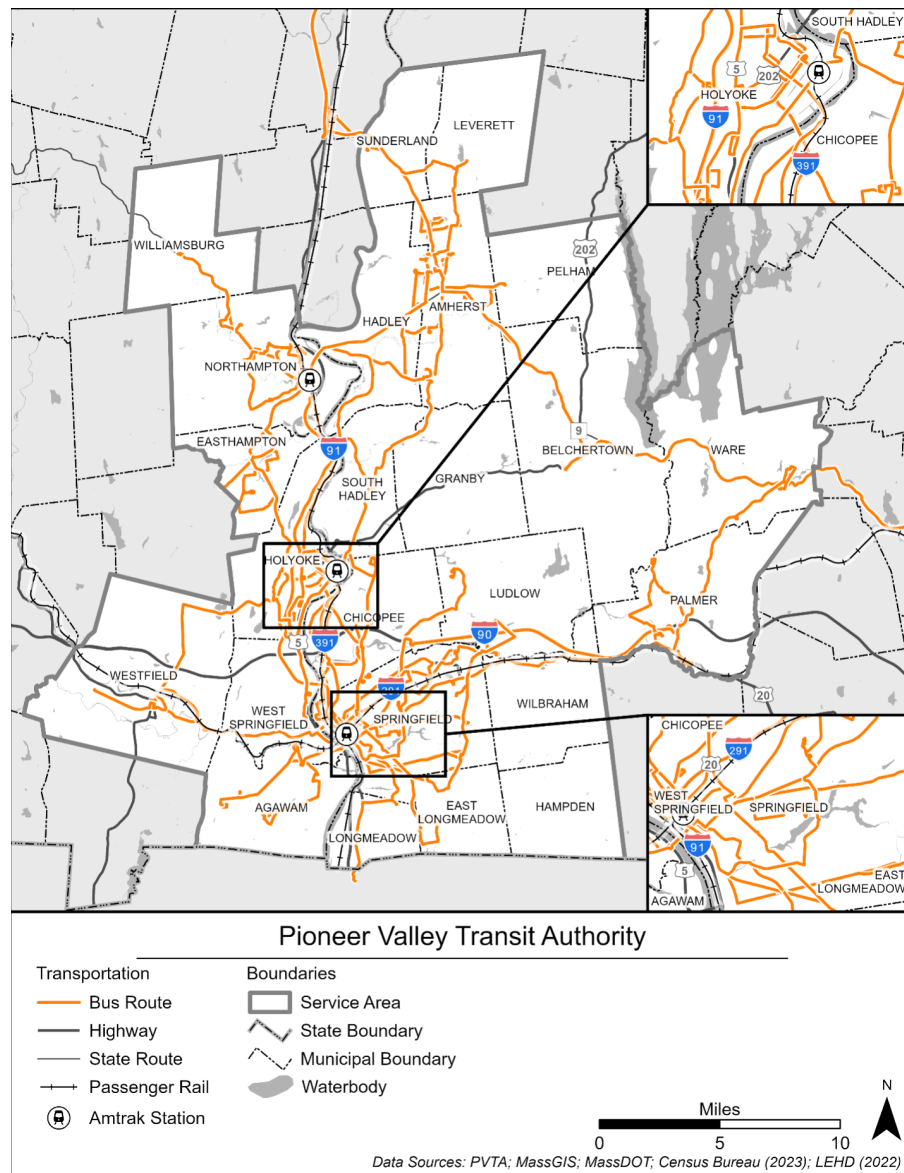
PVTA is the largest regional transit authority in Massachusetts, serving 24 member communities across Hampden, Hampshire, and Franklin Counties. As of Fiscal Year 2026, PVTA operated a fleet of 196 buses and 120 vans. The agency provides fixed-route bus service as well as ADA demand-responsive paratransit service, helping residents travel within and between communities throughout the Pioneer Valley. PVTA is supported by a combination of local, state, and federal funding.

PVTA was established in 1974 under Massachusetts General Laws Chapter 161B to provide funding, oversight, and coordination of public transportation within the Pioneer Valley region. Its service area is divided between the Northern Tier, which includes member communities in Hampshire and Franklin Counties, and the Southern Tier, which includes member communities in Hampden County. As shown in the figure below, PVTA's service area extends across a diverse region that includes the major population and employment centers of Springfield, Chicopee, Holyoke, Northampton, and Amherst, including the University of Massachusetts (UMass) Amherst, the Commonwealth's flagship campus with more than 38,000 students and employees.

PVTA services are delivered through several contracted operators:

- Northern Tier service is operated by Valley Area Transit Company (VATCo), UMass Transit Services (UMTS), Hulmes Transportation Services, and MV Transportation.
- Southern Tier service is operated by Springfield Area Transit Company (SATCo), Hulmes Transportation Services and MV Transportation.

Figure 3. PVTA Service Area



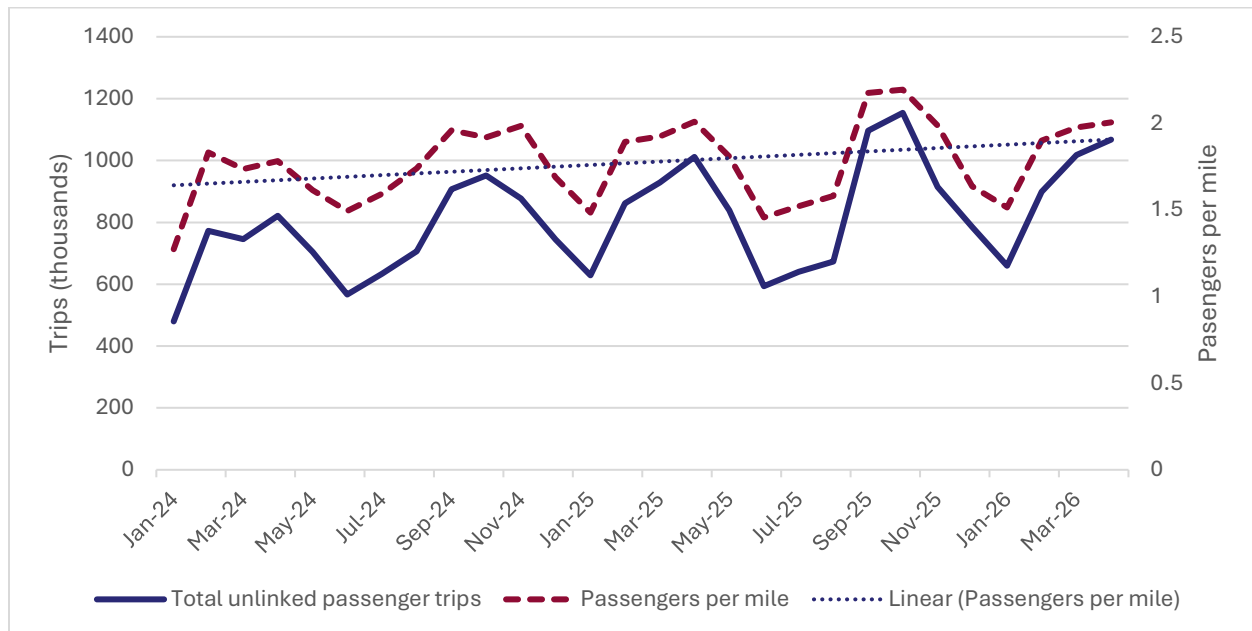
Source: CRTP 2025 Update (Figure 3).

Recent Service and Ridership Trends

Since 2020, PVTA has expanded and enhanced service throughout the region. Changes have included increased service frequency between the Northern and Southern Tiers, initiating intercity service between Amherst and Worcester; expansion of the fixed-route system, partnering with the Franklin Regional Transit Authority (FRTA) to provide service between Pelham and Greenfield, increasing service frequency and weekend service and extending morning and evening hours on select routes, and implementing same-day paratransit service in four communities. PVTA also has procured electric vehicles and implemented fare-free service, further expanding access to public transportation across the region.

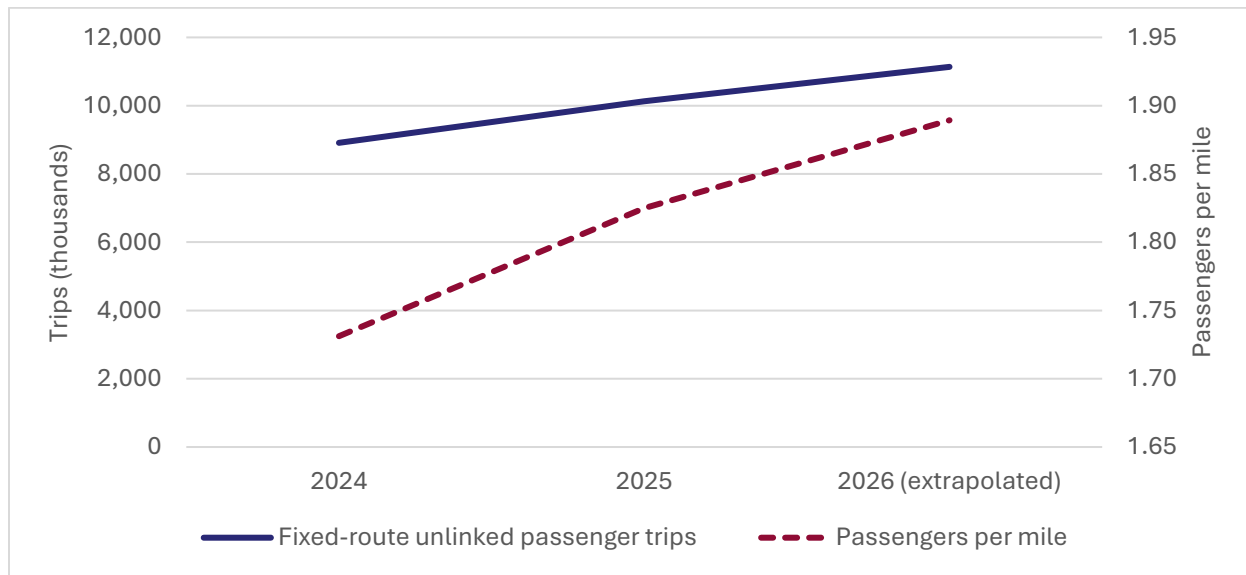
These recent service expansions have contributed to an increase in ridership. Ridership is one of the main key performance indicators (KPIs) that PVTA measures to track and enhance operational efficiency, improve customer experience, and meet other goals. Unlinked passenger trips have been increasing from 2024 through the present (Figure 4). Ridership follows consistent seasonality, dropping during the summers and January when colleges and universities are not in session. In addition, ridership peaks annually from September through October during the fall semester. While PVTA runs less service during the off-peak months, the passengers per mile KPI follows the same trends proportionally (Figure 4), meaning that utilization of the provided service also drops when school is not in session. Overall utilization, however, has been increasing over time. The total annual ridership and passengers per mile show these trends of increasing usage more clearly (Figure 5).

Figure 4. Monthly ridership and fixed-route passengers per mile (January 2024 - April 2026)



Source: EBP analysis of PVTA data. Linear fit trendline added for passengers per mile.

Figure 5. Annual fixed-route ridership and passengers per mile 2024 through 2026



Source: EBP analysis of PVTA data. 2026 ridership (unlinked passenger trips) extrapolated based on 2024 and 2025 monthly and annual data and actual data from January through April 2026.



Bus Berths at PVTA Holyoke Transportation Center.

Performance Relative to Peers

Compared to its peers, PVTA serves more passengers per hour at a similar cost per hour and with lower subsidies required per passenger. Table 2 shows how PVTA's performance compares to ten of its peers.

Table 2. Comparison System Performance

System	Passengers per Hour	Cost per Hour	Subsidy per Passenger
City of Greensboro	8.99	\$120.13	\$12.40
Lehigh and Northampton TA (Allentown, PA)	10.63	\$143.86	\$11.55
Ann Arbor Area TA	12.62	\$133.27	\$9.62
Central New York Regional TA	15.96	\$174.31	\$9.37
Greater Dayton Regional TA	12.52	\$149.68	\$10.93
Capital District TA (Albany)	16.99	\$137.61	\$6.80
Hartford (CTTransit and GHTD DR)*	13.17	\$131.24	\$8.94
New Haven (CTTransit and GNHTD DR)*	11.72	\$133.96	\$10.46
Stamford CTTransit	18.90	\$146.57	\$6.45
Worcester Regional TA	18.63	\$129.87	\$6.95
Peer Average	14.01	\$140.05	\$9.35
PVTA	18.63	\$139.21	\$6.83

TA = Transportation/Transit Authority. *Includes multiple agencies of data to cover both fixed route and demand response in the region. Source: National Transit Database (NTD) 2024.

Peers were identified in PVTA's 2025 Comprehensive Regional Transit Plan (CRTP) Update and by PVTA as a part of this study.

Profile of Transit Riders

PVTA serves a diverse population across the Pioneer Valley. Rider characteristics vary between the Northern and Southern Tiers and paratransit services, reflecting differences in the communities and populations these services are designed to serve. PVTA collected transit rider data through ridership surveys of the Northern Tier (2025), Southern Tier (2025), and paratransit service (2023). This analysis supplements ridership survey data with data from the 5-year 2020-2024 US Census Bureau American Community Survey (ACS) Public Use Microdata Sample.² Overall, the data show that PVTA plays a particularly important mobility role for students, lower-income households, people without consistent access to a vehicle, older adults, and people with disabilities.



Passengers boarding PVTA in Downtown Northampton at the Academy of Music.

Age

PVTA fixed-route riders generally skew younger than the region's overall population. This is particularly pronounced in the Northern Tier, where 55 percent of surveyed riders are between the ages of 18 and 24, reflecting the large student population in the Amherst area. Southern Tier riders are more evenly distributed across working-age groups. Given the populations it is intended to serve, paratransit serves a substantially older population, with 70 percent of surveyed riders being 65 or older.

Sex

Fixed-route ridership is evenly distributed between male and female riders in both the Northern and Southern Tiers, with a small share of respondents identifying as non-binary or another gender. Women comprise a 65 percent of paratransit riders.

Race

PVTA serves riders from a range of racial and ethnic backgrounds, with notable differences across the service area. The majority of PVTA's riders are White, including 74 percent of

² Given the geographic aggregations of ACS data, the analysis using these data extends beyond PVTA's service area and includes the entire populations of Hampden County, Hampshire County, and Franklin County.

paratransit riders. In the Southern Tier, 38 percent of riders are Hispanic or Latino compared to under ten percent for the Northern Tier and paratransit. 26 percent of Northern Tier riders are Asian. ACS data indicates that the share of population that is non-White is larger within the transit-commuting population (55 percent) compared to the general population (33 percent).

Household Size, Employment, and Income

PVTA riders live in smaller households than the overall population, particularly among paratransit riders, of whom 58 percent live alone.

Employment characteristics differ considerably by service area and type. In the Southern Tier, close to half of riders work full-time or part-time, while almost another fifth is retired or medically unable to work. In the Northern Tier, two-thirds of riders are college students, and another fifth are working full-time or part-time. Over three-quarters of paratransit riders are either retired or medically unable to work, and twelve percent work part-time.

Across the system, PVTA riders have lower incomes than the region's overall population. According to the ACS, transit commuters on average earn approximately \$43,000 annually compared to other commuters, who travel using other modes and earn approximately \$47,000 annually. While 12 percent of the general population in the service area has an income level below the federal poverty level (FPL):

- 51 percent of Southern Tier riders are in households with incomes under the FPL
- 42 percent of paratransit riders are in households with income levels below the FPL
- 31 percent of Northern Tier riders are in households with income levels below the FPL

These differences demonstrate the important role that PVTA plays in providing affordable mobility for households with limited financial resources.

Vehicle Ownership and Access

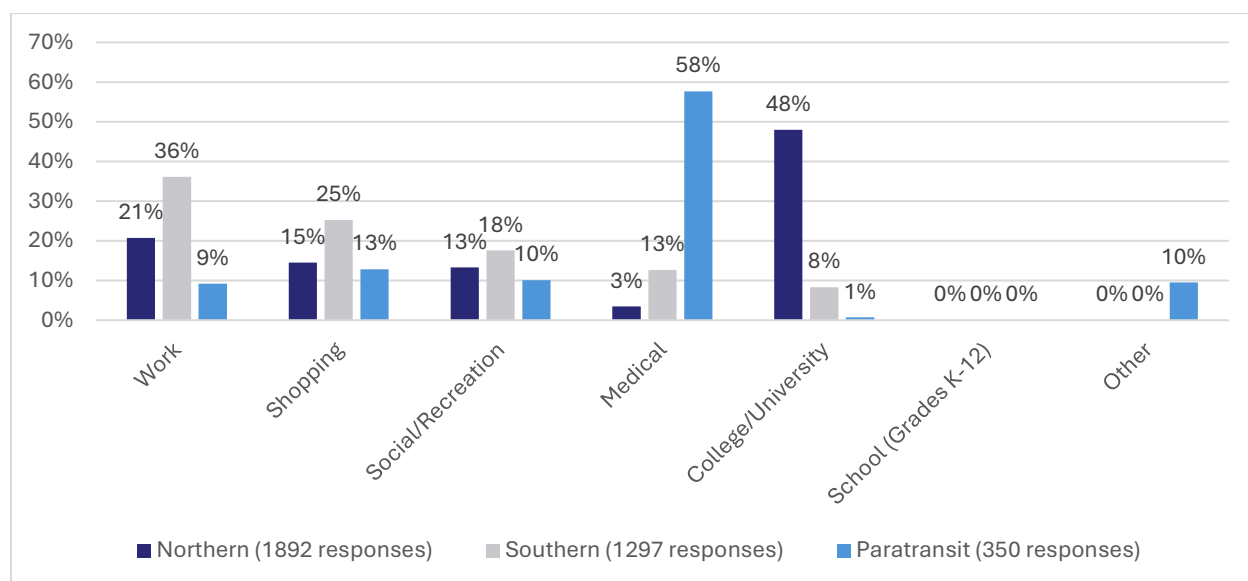
Many PVTA riders have limited or no access to a personal vehicle. Nearly half of surveyed fixed-route riders report that they never have access to a car, although 40 percent of these respondents in the Northern Tier and 25 percent of these respondents in the Southern Tier belong to households that own vehicles. Household vehicle ownership, however, does not guarantee that a rider has access to that vehicle, since it may be used by another household member.

ACS data similarly show that households with transit commuters are substantially likelier to have no vehicle available than households without transit commuters. Together, these findings indicate that PVTA provides an important transportation option both for households without vehicles and for people who cannot access a vehicle within their household consistently.

Trip Purpose

PVTA riders use transit to access a variety of destinations and activities, with notable differences by service type and geography. In the Northern Tier, nearly half of fixed-route trips are for college or university, reflecting the area's large student population. Beyond education, work, shopping, and social and recreational activities are the most common purposes for fixed-route trips in both the Northern and Southern Tiers (Figure 6). Paratransit serves a different role, with nearly 60 percent of trips made for medical purposes. Work is the next most reported purpose for paratransit trips, though it represents a much smaller share.

Figure 6. Trip purposes



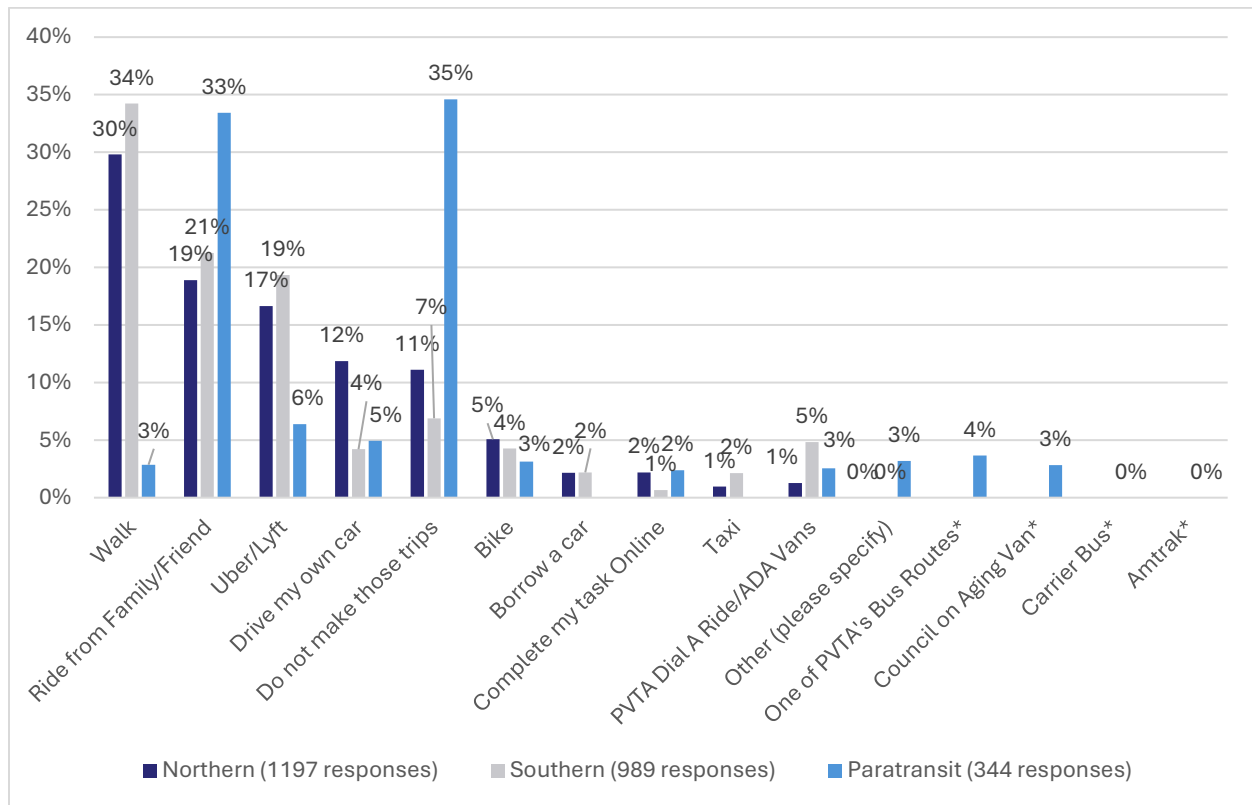
Source: EBP analysis of PVTA 2025 Northern System Customer Survey, PVTA Southern System Customer Survey 2025, and PVTA Paratransit Rider Survey Report 2023.

Modal Alternatives

In the surveys, PVTA riders reported which alternative mode of transportation they would use, if PVTA were to not serve their routes. For fixed-route riders, walking is the most common alternative, followed by getting a ride from family or friends and using Uber or Lyft, as shown in Figure 7. Relatively few riders would drive themselves. This result is consistent with responses to another survey question that stated that lack of access to a car is an important reason for riders using PVTA.

Reported alternatives are more limited for paratransit riders. Over one-third of respondents indicate they would not make their trip at all if PVTA Van service were unavailable, while another third of people report that they would rely on a ride from family or friends. The prevalence and impacts of each of these modal alternatives inform the economic and societal value of PVTA's existing service.

Figure 7. Modal alternatives



Source: EBP analysis of PVTA 2025 Northern System Customer Survey, PVTA Southern System Customer Survey 2025, and PVTA Paratransit Rider Survey Report 2023. * These responses were options only in the paratransit survey.

Economic Impact of Spending

The economic impact of spending analysis evaluates the direct, indirect, and induced economic impacts that PVTA's operational activities and capital spending have in the region. The inputs for the analysis are the 3-year average (in 2024 dollars) of PVTA's 2024-2026 operational and capital spending by category. The following sources were used to organize input data:

- 2024 NTD Operations and Capital Spending Data
- 2025 PVTA NTD Submission
- FY2026 PVTA Budget
- PVTA Capital Activity FY2026

This analysis uses the IMPLAN input-output economic model (2024) to estimate the impacts of spending in the Pioneer Valley region, including Hampden, Hampshire, and Franklin counties.

Understanding Spending Impacts

PVTA spends money to provide mobility options, acquire and maintain vehicles, and improve customer experience. These investments are an economic engine for jobs and business activity throughout the region.

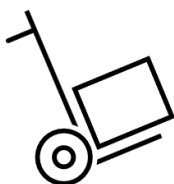
The total economic impacts of PVTA's transit operations, maintenance, and capital expenditures include activity that is directly supported by PVTA as well as additional multiplier effects on suppliers in the region and on businesses where workers spend their income.

Figure 8. Direct and Multiplier Impacts of PVTA Expenditures



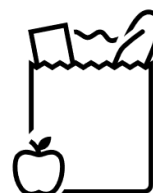
Direct Impacts

Jobs in transit operations, purchase of services and supplies



Indirect Impacts

Jobs and sales at regional supplier business



Induced Impacts

Jobs and sales at regional businesses where employees spend their income

Operations and Capital Spending

Table 3 shows PVTA's total operations and capital expenditures by year and the 3-year average of expenditures. Note that all dollar amounts are adjusted to 2024 dollars.

Table 3. PVTA Operations and Capital Spending, 2024-2026 (in millions of 2024 dollars)

	2024	2025	2026	3-Year Average
Operations Expenditures	\$59.9	\$63.2	\$68.0	\$63.7
Capital Expenditures	\$24.5	\$24.3	\$37.7	\$28.8
Total Expenditures	\$84.4	\$87.5	\$105.7	\$92.5

Source: EBP analysis of NTD data and PVTA finances.

Operations and capital spending were organized into the input metric categories shown in the tables below for use in the IMPLAN input-output economic model. The tables respectively show the 2024-2026 3-year average of operating expenditures and capital expenditures by input metric. There are no recorded capital expenditures for PVTA's demand response services between 2024-2026. Replacement of paratransit vehicles is funded by MassDOT directly and therefore not included in the analysis.

Table 4. Operating Expenditure Input Metrics, 3-Year Average (in millions of 2024 dollars)

Category	Input Metric	Demand Response	Fixed Route	Total
Administration	Administrative Salaries and Wages (\$)	\$0.27	\$1.31	\$1.59
	Administrative Fringe Benefits (\$)	\$0.25	\$1.19	\$1.44
Contracted Services	Vehicle Operations (\$)	\$9.15	\$31.02	\$40.16
	Vehicle Maintenance (\$)	\$0.29	\$9.22	\$9.51
	Non-Vehicle Maintenance (\$)	\$0.16	\$2.43	\$2.59
	General Administration (\$)	\$1.11	\$3.34	\$4.45
Non-Labor Expenses	Fuel and Lubricants (\$)	\$0	\$2.85	\$2.85
	Tires and Tubes (\$)	\$0	\$0.02	\$0.02
	Other Materials and Supplies (\$)	\$0.01	\$0.03	\$0.04
Other Administrative Costs	Utilities (\$)	\$0.05	\$0.22	\$0.27
	Casualty and Liability Costs (\$)	\$0.01	\$0.04	\$0.05
	Taxes (\$)	\$0	\$0	\$0
	Services (Outside Support) (\$)	\$0.10	\$0.54	\$0.65
	Other Admin (\$)	\$0.01	\$0.07	\$0.08
Grand Total Operating Expenditures		\$11.41	\$52.29	\$63.70

Source: EBP analysis of NTD data and PVTA finances for 2024-2026.

Table 5. Capital Expenditure Input Metrics, 3-Year Average (in millions of 2024 dollars)

Category	Input Metric	Total
Construction	Guideway (\$)	\$0
	Passenger Stations (\$)	\$0
	Administrative Buildings (\$)	\$0
	Maintenance Buildings (\$)	\$12.64
Vehicles	Revenue Vehicles (\$)	\$11.41
	Service Vehicles (\$)	\$0.19
Other Equipment Purchases	Fare Revenue Collection Equipment (\$)	\$0
	Communication Information Equipment (\$)	\$2.49
Soft Costs	Design Engineering (\$)	\$0
	Legal (\$)	\$0
	Public Outreach and Education (\$)	\$0
Right of Way	Right of Way Acquisition (\$)	\$0
Other	Other Capital Expenditures (\$)	\$2.1
Grand Total Capital Expenditures		\$28.83

Source: EBP analysis of NTD data and PVTA finances for 2024-2026.

Table 6 shows the peak number of employees per year per service type and organization. PVTA contracts its vehicle operations to several organizations in the region, whereas PVTA's direct employees work in administrative roles. For economic modeling, IMPLAN relies on labor income as an input as opposed to employment count to generate induced impacts of worker spending on consumer goods and services. Employment count is used for reporting purposes only.

Table 6. Transit Employment by Service Type and Organization

Service Type	Organization	2024	2025	2026	3-Year Average
Fixed Route Operations	SATCo	258	268	286	271
	VATCo	50	52	55	52
	UMTS - Staff	8	10	14	11
	UMTS - Students FTE	60	64	60	61
Paratransit	MV Transportation	119	120	126	122
Shuttles	Hulmes	4	6	6	5
Administration	PVTA	24	25	25	25
Grand Total		523	545	572	547

Source: PVTA. Note: Individual values may not sum to Grand Total due to rounding.

Sources of Funding

PVTA's operations and capital expenditures are funded through a mix of state, federal, local, and directly generated revenue, which includes fares and university payments for student fare-free access. Table 7 shows the dollar amount from each type of funding source, as well as its share of PVTA's overall funding for 2024 and 2025. Note that all dollar amounts are adjusted to 2024 dollars for comparison purposes. Federal funding decreased by 28 percent from 2024 to 25; state funding made up for it by increasing by 29 percent.

Table 7. PVTA Sources of Funding, 2024-2025 (in millions of 2024 dollars)

Funding Source	2024		2025	
	\$	%	\$	%
Federal	\$24.0	28%	\$17.3	20%
State	\$44.9	53%	\$58.0	65%
Local	\$10.1	12%	\$10.1	11%
Other & Directly Generated	\$6.3	7%	\$3.5	4%
Total	\$85.3	100%	\$88.9	100%

Source: NTD 2024-2025.

Economic Impact Results

Impact of Operations

Table 8 shows the annual economic impacts of PVTA's operations and maintenance spending. Every \$1 invested in transit operations and maintenance generates \$1.39 in regional business sales (output), representing a 39 percent return on investment. Operations and maintenance spending supports nearly 700 jobs in the region, contributing over \$52 million to gross regional product (value added).

Table 8. Economic Impact of PVTA Operations (in millions of 2024 dollars)

Impact	Employment	Labor Income	Value Added	Output
Direct	547	\$22.3	\$34.9	\$58.2
Indirect	78	\$4.7	\$7.4	\$14.2
Induced	99	\$5.5	\$10.2	\$16.5
Total	694	\$32.5	\$52.5	\$88.8

Source: EBP analysis with IMPLAN. Average annual impacts based on 2024-2026 expenditures.

Impact of Capital Purchases

Table 9 below shows the estimated annual direct, indirect, and induced impacts of PVTA capital investments. Impacts of capital investments are significantly lower than impacts of operations and maintenance both because the majority of PVTA's spending is on operations and maintenance and because a large share of capital spending is on vehicles (41 percent) and communications equipment (9 percent) that is largely produced outside the PVTA region. While capital expenditures total \$28.8 million annually, approximately \$14.8 million of that is spent directly in the region.

Table 9. Economic Impact of PVTA Capital Investments (in millions of 2024 dollars)

Impact	Employment	Labor Income	Value Added	Output
Direct	72	\$5.5	\$7.0	\$14.8
Indirect	18	\$1.3	\$2.1	\$4.1
Induced	25	\$1.4	\$2.6	\$4.2
Total	115	\$8.2	\$11.7	\$23.1

Source: EBP analysis with IMPLAN. Average annual impacts based on 2024-2026 expenditures.

PVTA's capital investments also support economic activity beyond the region. Purchases of buses, communications equipment, and other capital assets manufactured elsewhere in the United States support jobs and economic activity in the communities where those goods are produced. As a result, the economic impacts of PVTA's capital program extend beyond the impacts occurring within the Pioneer Valley and contribute to employment and economic activity elsewhere in the national supply chain. These impacts, while important, are beyond the scope of this report. This is particularly relevant given the use of federal funding to support these expenditures.

Total Impact of Spending in the Regional Economy

Table 10 shows the impacts of PVTA's total transit spending. Total PVTA expenditures supported the following economic activity in the Pioneer Valley region each year:

- For every \$1 dollar invested in transit, the Pioneer Valley region generates \$1.21 in regional business sales (output), representing a 21 percent return on investment. This is in addition to the ways in which transit services more broadly support the regional economy, such as helping people to save money and connecting people with jobs.
- Total spending supported over 800 jobs in the region, contributing over \$64 million in gross regional product (value added).

Table 10. Total Annual Impacts of PVTA Spending (in millions of 2024 dollars)

Impact	Employment	Labor Income	Value Added	Output
Direct	619	\$27.9	\$42.0	\$73.0
Indirect	95	\$6.0	\$9.6	\$18.3
Induced	124	\$6.8	\$12.7	\$20.7
Total	810	\$40.7	\$64.3	\$111.9

Source: EBP analysis with IMPLAN. Average annual impacts based on 2024-2026 expenditures.

The regional impact of PVTA spending is also influenced by where its funding comes from. Federal and state funding bring resources from outside the Pioneer Valley into the region, allowing those dollars to support local jobs, purchases, and economic activity. Local and directly generated funding plays an important role in leveraging these outside resources: because these sources account for about 15 percent of PVTA funding but leverage significant outside funding, each \$1 of local and directly generated funding helps support more than \$7 in regional economic activity. Similarly, each \$1 of state funding supports \$1.86 in regional output. Investment from multiple funding sources is required to collectively support PVTA services, thereby generating economic activity within the Pioneer Valley.

Table 11. Spending to Impact Ratio of different Funding Sources

Funding Source	Share of Funding 2025	Average annual funding by source*	Output per \$1 invested
Federal	20%	\$18.0	6.22
State	65%	\$60.3	1.86
Local, Directly Generated, and Other	15%	\$14.2	7.87
Total	100%	\$92.5	1.21

Source: EBP analysis. *Average annual expenditures from 2024-2026 distributed by funding percentage from 2025 as a proxy for most current funding sources.



PVTA passenger bus at Holyoke City Hall.

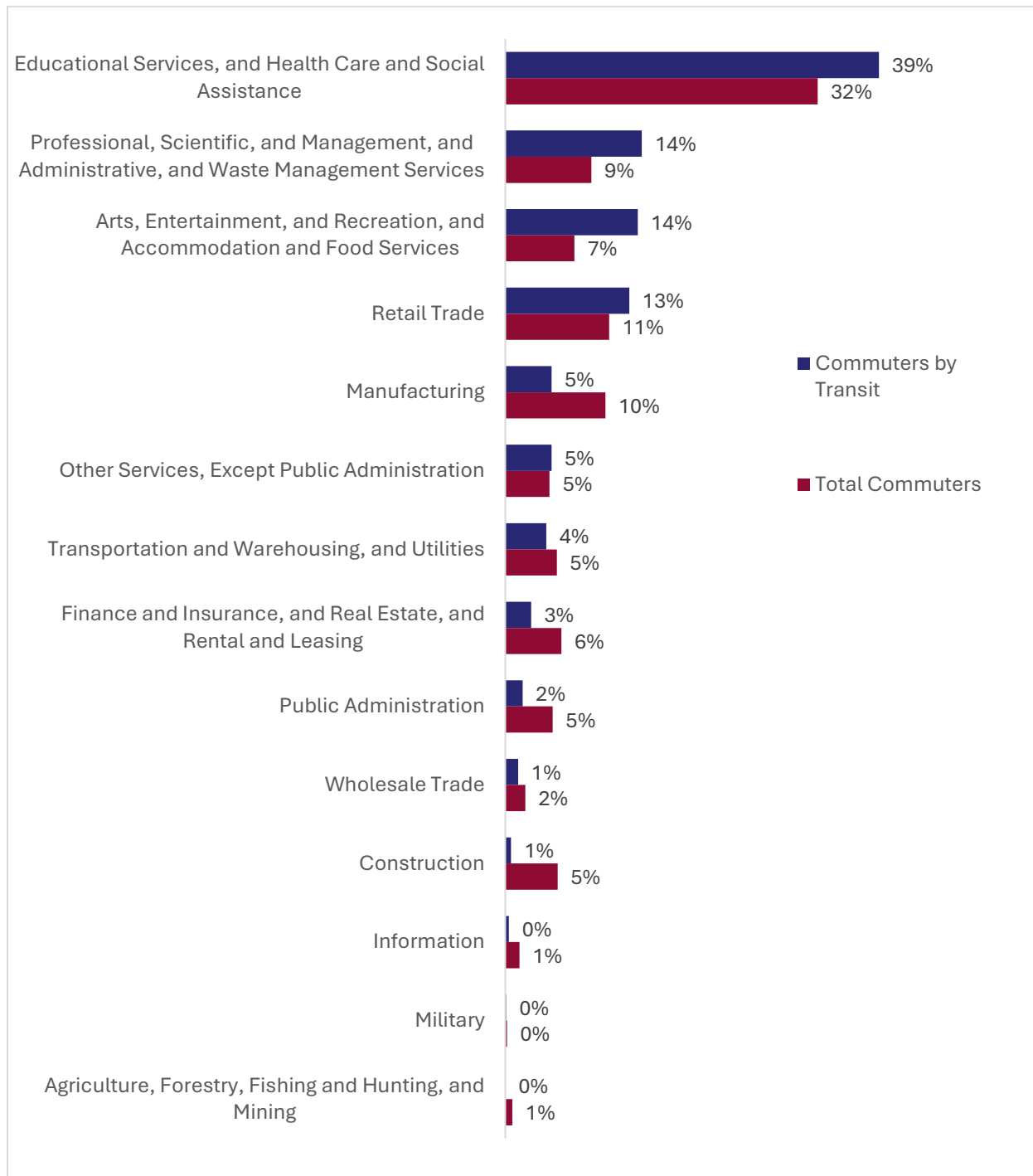
Transit and the Workforce

Transit access in the Pioneer Valley increases the size of the available labor pool for regional employment centers and broadens work opportunities for households across the region.

Transit Commuters

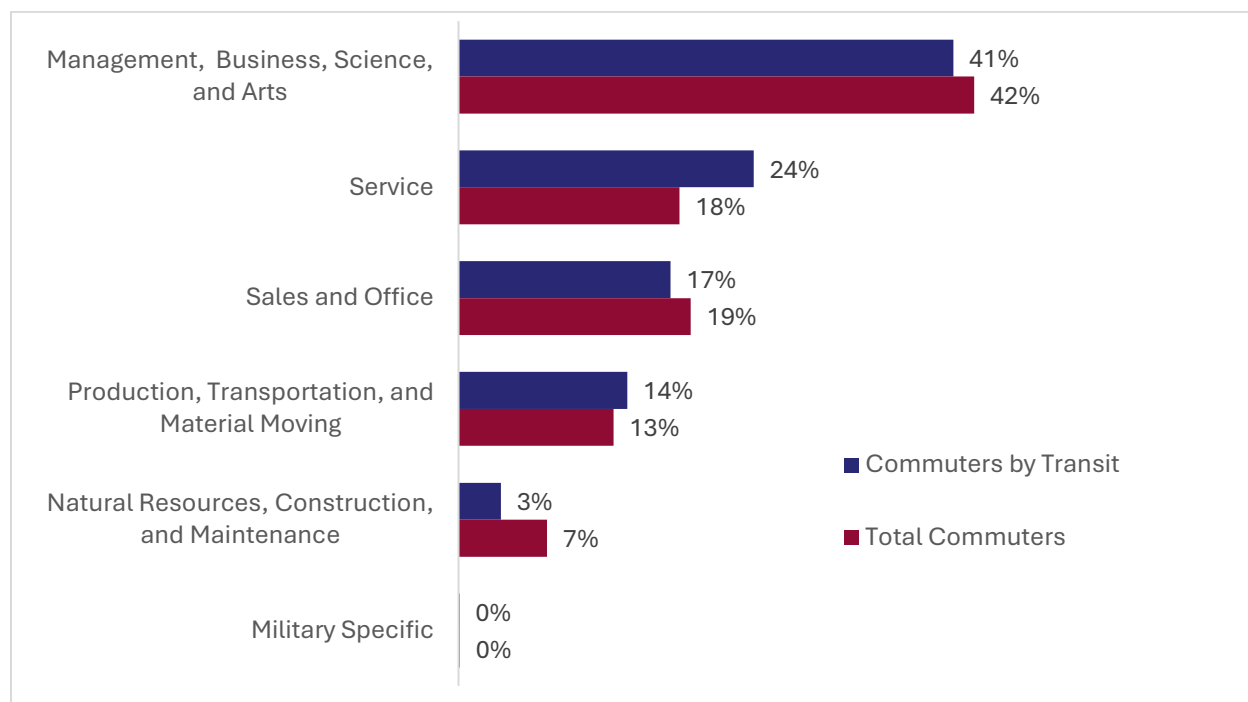
While transit connects people to employment in many industries and occupations, there are particular sectors for which transit is relatively more important.

In the PVTA region, transit commuters work in the following industries at higher rates than the entire commuting population: educational services and healthcare and social assistance; arts, entertainment, recreation, and accommodation and food services; and professional, scientific, and management, and administrative and waste management services (Figure 9). In contrast, the region's commuters as a whole work for the following industries at higher rates than transit commuters: manufacturing; construction; finance, insurance, and real estate, and rental and leasing; and public administration. Other industries have smaller differences between transit commuters and all commuters.

Figure 9. Percent of commuters by industry

Source: ACS 5-year 2020-2024 Public Use Microdata Sample (PUMS).

Transit commuters in the region work in service occupations at a higher rate than all commuters in the region (Figure 10). Transit commuters work in occupations related to natural resources, construction, and maintenance at a lower rate than the entire commuting population.

Figure 10. Percent of commuters by occupation

Source: ACS 5-year 2020-2024 PUMS.

Benefits of Enabled Commute Trips

Many workers depend on PVTA service to access their jobs and support their employment. As presented in Table 12, approximately 31 percent of PVTA trips (approximately 2.3 million trips) are for work purposes. Evaluating customer survey responses shows that approximately six percent (i.e., 138,201) of these trips would not be made without PVTA service. As transit commuters in the PVTA region earn about \$42,700 annually on average³ and there are an estimated 500 work trips per commuter per year,⁴ each commute trip supports \$85 of income benefit for every commuter. In total, the benefits provided to commuters by trips serviced by PVTA that otherwise would not be made are \$11.79 million.

³ Source: ACS

⁴ Estimate based on an average of two work trips per day, five days per week, and 50 weeks per year for each commuter.

Table 12. Enabled commute trips and benefits (dollar values in 2024 millions)

	Total trips (linked)	Percent of work trips	Work trips (linked)	Percent of work trips that would not be made without PVTA	Enabled commute trips	Benefits of enabled commute trips (\$ M)
Northern Tier	2,405,914	20.25%	487,312	7.7%	37,341	\$3.19
Southern Tier	4,598,472	38.05%	1,749,778	5.4%	94,960	\$8.10
Paratransit	208,484	9.07%	18,913	31.2%	5,900	\$0.50
Total	7,212,870		2,256,004		138,201	\$11.79

Source: EBP analysis based on NTD and PVTA for trips, alternative modal alternatives from rider surveys, and income data from ACS. Analysis assumes 500 work trips per commuter per year.

Regional Job Access

PVTA provides access to jobs throughout the region. To evaluate regional job access, we used the Conveyal Analysis tool to model access using actual transit schedules and regional demographic data, including job locations and salaries and the number of individuals in households with incomes below the poverty level by census block groups.⁵ The analysis divides the region into a grid of over 100,000 squares of equal dimensions and area and calculates the number of jobs within a 60-minute trip by transit to each of these areas.⁶

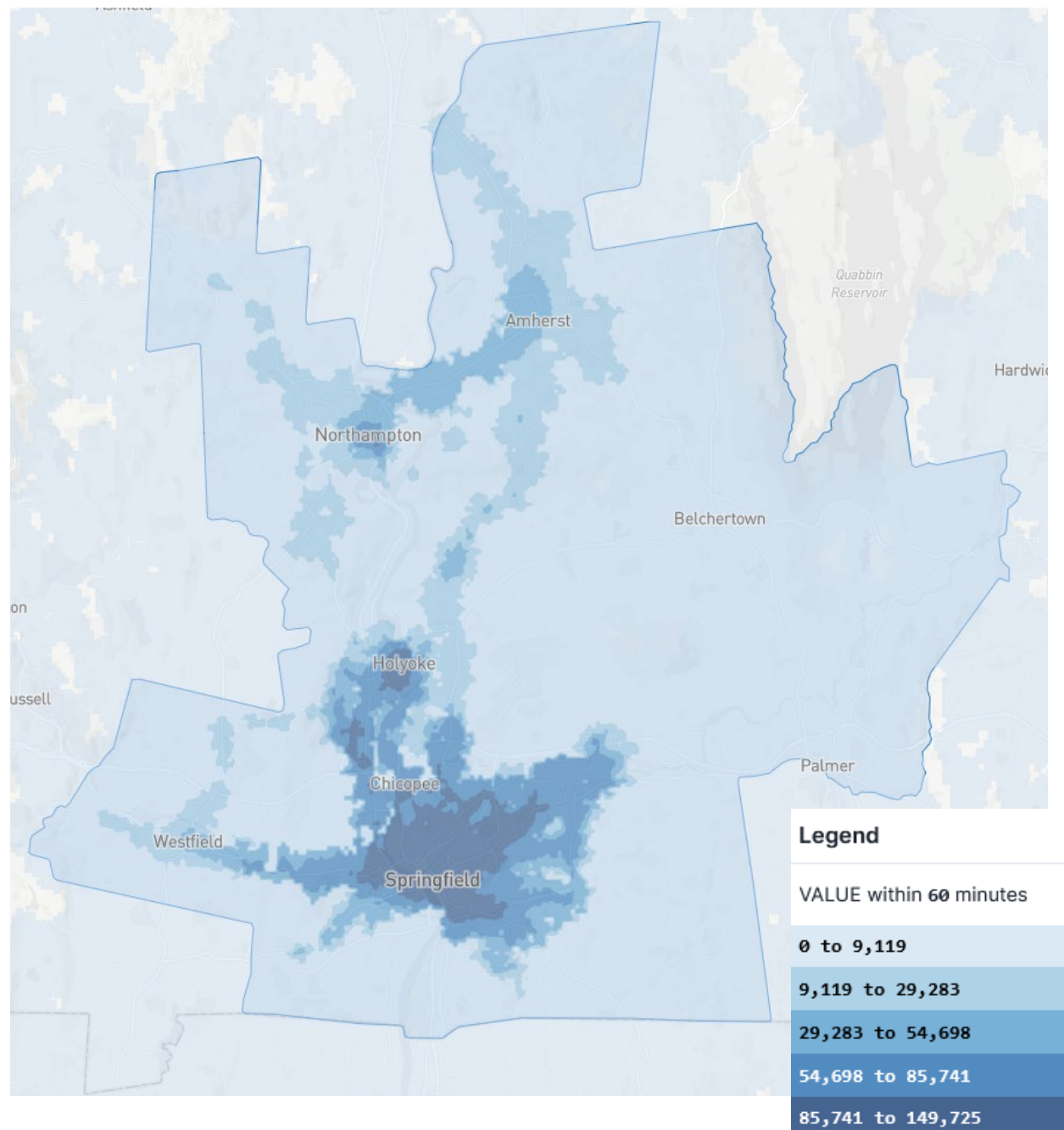
As shown in Figure 11, much of Springfield and the Southern Tier has access by transit to at least 85,000 jobs. In addition, a corridor of areas from Northampton to Amherst in the Northern Tier have access to close to 30,000 jobs and greater. Further from PVTA's routes and the region's population centers, job access decreases. Weighted by population, the average job access for each area is 40,784 jobs.

Weighted by the number of individuals in households with incomes below the poverty level in the areas' census block groups, the average job access is 64,794 jobs. This is likely because census block groups with higher poverty levels are located closer to PVTA's routes and in population centers. PVTA service provides affordable mobility to low-income residents.

⁵ Data on jobs is sourced from the Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES) published by the U.S. Census for 2023. Data on poverty is sourced from the ACS.

⁶ A job is considered accessible to a location if it is within a 60-minute trip combining PVTA's regular weekday transit service during the UMass semester with at most three transfers and a maximum of 20 minutes of walking at least 25 percent of the time. Choosing 25 percent factors in that many travelers will plan their trips according to bus schedules.

Figure 11. Regionwide access to jobs (outline is of the PVTA service area)



Employer Access

Figure 12 shows 20 of these key job locations within the PVRTA service area. Five are in the Northern Tier, and 15 are in the Southern Tier with eight in Downtown Springfield. PVRTA serves all of these locations, which cover many of the system's stops with the highest ridership. To determine the extent of workers' access to these locations, we used the Conveyal Analysis tool to model access⁷ Table 13 presents the results of this analysis, including the locations' annual ridership and the number of workers, categorized into three income brackets, who can access each of the locations within a 60-minute trip by transit⁸.

Most of the 20 key job locations are accessible to significant portions of the over 260,000 workers, who live in the PVRTA service area. Twelve are accessible to over one fifth of this regional population. There are, however, significant differences in the number of workers with access to key job locations in the Southern and Northern Tiers. This is likely because there are fewer workers living in the Northern Tier rather than there being insufficient transit service, and many of the riders in this area may not be commuting for work. The University of Massachusetts has the second highest ridership count, even though it has the second lowest number of workers with access by transit to the location. On the other hand, the location of MGM Springfield is accessible to a high number of workers, but it has the lowest ridership of the 20 key job locations. Locations such as these may be relevant to employers seeking workplace locations with access to transit for their workforce.

Among the 20 key job locations, the proportions of workers with transit access to the locations in each income bracket remain consistent. Around half of the workers earn greater than \$3,333 per month, one fifth earn \$1,250 or less per month, and the remainder earn between those amounts.

⁷ Data on workers is sourced from the LODES published by the U.S. Census for 2023.

⁸ Accessibility of location to a worker is determined using the same criteria as those used for the job access analysis.

Figure 12. Map of key job locations within the PVTA service area



Source: PVTA

Table 13. Workers living within a 60-minute trip using transit of key job locations by monthly income bracket ordered by annual ridership

Location	Ridership	Income Bracket			Total Workers
		\$1,250 and below	\$1,251-3,333	Greater than \$3,333	
Springfield Metro Center	1,480,127	25,383	36,417	61,118	122,918
University of Massachusetts	1,144,940	3,073	3,038	8,698	14,809
Downtown Holyoke	276,602	16,655	23,658	38,853	79,166
Amherst Center	200,515	3,213	3,200	9,261	15,674
Downtown Northampton	184,918	7,268	8,965	18,301	34,534
Holyoke Mall	155,796	11,247	15,805	24,409	51,461
Hampshire Mall	112,692	2,842	2,825	8,047	13,714
Tower Square	98,917	25,052	36,037	60,183	121,272
Chicopee Marketplace	92,628	13,993	20,636	30,610	65,239
Mass Mutual Center	90,691	24,334	35,112	58,220	117,666
Walmart Plaza Shopping Center	73,290	13,634	20,019	28,964	62,617
Mason Square	66,827	20,370	29,616	46,944	96,930
US Federal Court House	64,347	23,350	33,837	55,305	112,492
Technology Park	62,837	22,619	32,804	53,101	108,524
Amherst College	55,836	3,189	3,174	9,237	15,600
Riverdale Shops	53,694	12,108	17,617	25,060	54,785
Chicopee Center	53,552	17,308	25,511	37,781	80,600
The South End	53,001	20,765	30,195	47,945	98,905
Springfield Plaza	52,644	13,977	20,648	29,689	64,314
MGM Springfield	49,447	23,477	33,980	55,680	113,137

Source: EBP analysis using the Conveyal Analysis tool with input data on workers' locations and incomes from the LEHD LODES published by the U.S. Census for 2023. Ridership from PVRTA covering the period July 1, 2025 to June 30, 2026.

Household Cost Savings

PVTA service supports households in making trips for a wide range of purposes, including work, medical, education, shopping, and social and recreation. Without transit, some people likely would continue to make similar trips, including frequency and destinations, but would use other modes of transportation that often are more expensive. The costs of these alternative transportation modes can be compared to the current costs of using transit on a per trip basis. Additionally, in the absence of PVTA, some households may buy an additional vehicle, a major expense. This section also evaluates the costs of increased car ownership.

Alternatives to Transit

To obtain consistent values for all aspects of the analysis, the distribution of trips by alternative modes was recalculated using survey responses that included answers both to the questions about alternative modes and to the questions about trip purpose. The results are slightly different from but follow a similar pattern as those calculated using all responses that answered at least the alternatives questions (Figure 7).

Table 14 presents the distribution of trips by mode alternatives that likely would be costlier to customers. The costs for the remaining alternatives (i.e., walking, not making a trip, biking, or completing the task online) are not calculated in this analysis. Together, the alternatives that carry either vehicle operating or fare costs comprise over 50 percent of trips for the Northern Tier, Southern Tier, and paratransit. Around 20 percent of fixed-route trips and close to 40 percent of paratransit trips instead would be driven by a family member or friend. Similarly, around 20 percent of fixed-route trips would be taken by taxi or rideshare instead, while only seven percent of paratransit trips would shift to taxi or rideshare. The remainder of these trips, approximately 15 percent in the Northern Tier, seven percent in the Southern Tier, and five percent for paratransit, would be taken by driving one's own car or borrowing a car.

Table 14. Distribution of trips that would use alternative modes that carry costs

Metrics	Northern Tier	Southern Tier	Paratransit
Drive my own car	12.5%	4.2%	5.5%
Borrow a car	2.3%	2.5%	0.0%
Ride from family/friend	18.9%	22.3%	36.9%
Taxi and rideshare	18.0%	23.2%	7.1%
Council on Aging van	NA*	NA*	3.1%
Total	51.6%	52.2%	52.6%

Source: EBP analysis of PVTA 2025 Northern System Customer Survey, PVTA Southern System Customer Survey 2025, and PVTA Paratransit Rider Survey Report 2023. Note: As respondents were able to select multiple options, each response was split proportionally among the multiple options, so that modal alternatives would be represented by a fraction of a trip. These results, therefore, are different from those in the survey reports. *This response option was only available in the paratransit survey.

Avoided Per Trip Costs

Driving, borrowing a car, or getting a ride from a family member or friend require fuel and vehicle maintenance. These costs are combined to produce a rate of \$0.37 per mile (factoring in per-mile maintenance and vehicle depreciation cost values from AAA and expected fuel efficiency and gas prices in Massachusetts). In addition, it is assumed that every trip for any of these three alternatives produces new mileage for the full length of the trip, meaning that some rides from family or friends involve carpooling and some are completely new trips. In total, these approximately 2.2 million annual trips would cost travelers \$4.1 million.

Instead of using PVRTA, approximately 1.5 million trips annually would be performed by taxi or rideshare. Including prices for base fares and fees, per-mile charges, and per-minute charges, these trips would cost travelers \$24.1 million annually.

Approximately 6,500 trips would be performed by Councils on Aging/Senior Centers instead of PVRTA's paratransit system. At \$2 per trip, this would cost travelers \$13,000 annually.

Based on the per-trip cost of fares for PVRTA service in 2023 (before the fully fare-free policy was instituted), customers would have spent \$9.1million dollars on these trips. This leads to PVRTA's service providing a net savings of \$19.1 million per year.

Car Ownership Cost Savings

Without PVRTA services, some transit riders who choose to drive instead will need to purchase vehicles that they currently do not own. As shown in Table 15, the annual fixed costs of car ownership, including insurance, license and registration, depreciation, and financing, total approximately \$8,500.

Table 15. Annual fixed costs per vehicle owned in 2024 dollars

Category	Cost Per Car (2024\$)
Insurance	\$1,715
License and registration	\$815
Depreciation	\$4,680
Finance charge	\$1,332
Annual fixed cost	\$8,542

Source: AAA "Your Driving Costs" report (2024)

Another way to evaluate the costs of increased car ownership involves using ACS data to compare car ownership rates between households that include transit commuters and those that do not. In the PVRTA region, households with a transit commuter have 0.43 cars per person, while those without transit commuters have 0.72 cars per person. If the households with a transit commuter were to obtain cars to meet the per-person car ownership rates of the households without transit commuters, they would need to purchase 3,300 cars, leading to approximately \$28 million additional in fixed costs annually.

Safety, Health, and the Environment

PVTA advances its mission of making Pioneer Valley communities more livable in part through its impact on roadway safety, health, and the environment.

Safety Benefits

PVTA's service is a safer alternative to driving. Because PVTA services result in fewer crashes compared to travel by personal vehicle, taxi, or rideshare, the region avoids costly fatalities, injuries, and property damage.

Table 16 compares average annual counts of safety incidents from 2023-2025 for PVTA to those expected if people used alternative modes. Because of PVTA service, the region avoids more than 3 fatalities, 4 injuries, and 61 instances of vehicle damage. These savings are then monetized using factors from the US Department of Transportation (USDOT). PVTA is estimated to deliver \$48 million in safety benefits every year.

Table 16. Safety Benefits from PVTA Service (dollar values in 2024 millions)

Metrics	Fatality	Injuries	Crash Involved Vehicles	Total
PVTA 2023-2025 average annual counts	0.33	61.33	20.33*	
Expected from alternative modes	3.75	65.59	81.62	
Count Avoided	3.42	4.26	61.30	
PVTA Crash Costs (\$M)	\$4.57	\$14.63	\$0.11	\$19.31
Alternative Mode Crash Costs (\$M)	\$51.36	\$15.64	\$0.45	\$67.45
Safety Benefit (\$M)	\$46.79	\$1.02	\$0.34	\$48.15

Source: EBP calculations using crash data from NTD, crash rates from the Bureau of Transportation Statistics, and crash costs from USDOT BCA guidance. *PVTA crash involved vehicles are estimated using national crash rates.

Health Benefits

Public transit supports healthy communities by inducing walking and cycling as means for accessing public transit services. According to regional survey data, 95 percent of Northern Tier riders and 82 percent of Southern Tier riders report walking to the bus stop to start their journey. An additional 2 percent of riders bike to transit.⁹ Physical activity improves heart health and

⁹ PVTA 2025 Northern System Customer Survey and PVTA Southern System Customer Survey 2025.

reduced mortality risk. USDOT benefit cost guidance reports an annual mortality risk reduction of 8.6 percent per daily mile walked and 4.3 percent per daily mile cycled.¹⁰

Environmental Benefits

Over time, PVTA has made a concerted effort to reduce its environmental impact through investment in low and no tailpipe emissions vehicles as well as other energy efficiency projects. In 2022, PVTA secured \$54 million in federal funding and \$13.5 million in state match through the Federal Transit Administration's Low- and No-Emission and Bus and Bus Facilities grant program to electrify and modernize bus facilities. As a result, PVTA has been able to add additional electric vehicles and chargers to its operations.¹¹ PVTA also operates hybrid buses which have improved fuel efficiency compared to traditional diesel vehicles. As of 2026, the PVTA bus fleet includes 27 electric vehicles and 25 hybrid vehicles.

If PVTA service were unavailable, we expect that approximately half of current riders would instead rely on an alternative vehicular mode that generates harmful tailpipe emissions, given responses to the ridership surveys. PVTA operates approximately 7.6 million vehicle miles of service annually (based on FY24-26 data). By applying the rates of alternatives that current riders reported in the surveys, we estimate that in the absence of transit, 3.7 million trips each year would use other emissions-generating modes, including driving their own car, borrowing a car, getting a ride from a family or friend, taking a taxi or rideshare, and taking a Council on Aging van service. These alternative modes would result in 19.7 million vehicle miles of travel, costing approximately \$2 million in emissions disbenefits annually. When compared to the emissions produced by transit for those same trips, the region sees net savings of 6 cents per trip or \$208,000 annually.

According to the survey results, we expect that the remaining riders would, in the absence of PVTA services, walk, bike, or not make their trips at all. While these alternatives do not generate emissions, they are typically more costly and inconvenient for riders in other ways. Because transit services create a small amount of emissions for trips that our analysis assumes would not otherwise be in vehicles, we see a net environmental disbenefit from PVTA (Table 17). However, these disbenefits are more than compensated by other benefit categories

¹⁰ USDOT. Benefit-Cost Analysis Guidance for Discretionary Grant Programs. December 2025.

<https://www.transportation.gov/sites/dot.gov/files/2025-12/Benefit%20Cost%20Analysis%202026%20Update%20%28Final%29.pdf>

¹¹ USDOT. FY22 FTA Bus and Low- and No-Emission Grant Awards.

<https://www.transit.dot.gov/funding/grants/fy22-fta-bus-and-low-and-no-emission-grant-awards> ;

MassLive. PVTA gets \$67.5 million jolt in federal, state funding for electric buses, chargers and workforce training. <https://www.masslive.com/business/2022/10/pvta-gets-675-million-jolt-in-federal-state-funding-for-electric-buses-chargers-and-workforce-training.html> ; PIRG. Regional transit authority in Massachusetts takes next step toward electrification. <https://pirg.org/updates/regional-transit-authority-in-massachusetts-takes-next-step-toward-electrification/>

This analysis also varies by type of pollutant and shows that PVTA provides net savings overall in volatile organic compounds, sulfur dioxide, and small particulates (Table 18).

These results are contingent on the mode shift assumptions we developed based on survey results (see “Modal Alternatives”), which we hold consistent across the analyses of all benefit categories. In the long term, if PVTA services were unavailable, residents of the Pioneer Valley might make different choices such as relying even further on emissions-generating vehicular modes.

As PVTA continues to move towards its goal of a fully electric fleet, emissions costs will further reduce, making it an even more environmentally sound mode.

Table 17. Environmental benefits of PVTA services (dollar values in 2024 Millions)

Variable/Equation	Metric	Benefit (2024\$ Millions)
A	Transit emissions for share of trips that would otherwise be in vehicles	-\$1.940
B	Emissions from replacement trips in vehicles	\$2.148
C = A + B	Net savings for trips that would otherwise be in vehicles*	\$0.208
D	Additional emissions for trips that would otherwise not be in vehicles	-\$1.789
E = C + D	Total environmental benefits**	-\$1.580

Source: EBP analysis based on NTD and PVTA data for trips, mileage, and fuel consumption, alternative modal alternatives from rider surveys, emissions cost factors from USDOT guidance (2020, 2024, and 2025), and national emissions rates by vehicle types from the Environmental Protection Agency (EPA) Motor Vehicle Emission Simulator (MOVES) model. *Net savings are equal to the sum of the first two rows in the table (A and B). **Total environmental benefits are equal to the sum of net savings for trips that would otherwise be in vehicles (C) and the additional emissions for trips that would otherwise not be in vehicles (D). A negative value indicates a small environmental disbenefit.

Table 18. Environmental benefits by pollutant (dollar values in 2024 Millions)

Pollutant	Benefit (2024 \$Millions)
Volatile Organic Compounds (VOC)	\$0.008
Nitrous Oxides (NOX)	-\$0.252
Sulfur Dioxide (SO2)	\$0.001
Small Particulates (PM2.5)	\$0.013
Carbon Dioxide (CO2)	-\$1.351
Total	-\$1.580

Source: EBP analysis based on NTD and PVTA data for trips, mileage, and fuel consumption, alternative modal alternatives from rider surveys, emissions cost factors from USDOT guidance (2020, 2024, and 2025), and national emissions rates by vehicle types from the EPA MOVES model.

Value of Enabled Trips

Transit connects people in the Pioneer Valley to many key destinations. Without transit, a significant number of PVTA riders report that their trips would simply not be possible. In the “Transit and the Workforce” section above, we considered the benefits of enabling commute trips so that community members can reliably hold jobs and earn income. In this section, we additionally quantify the benefits associated with enabled medical and other trips that would not be possible without PVTA services.

Enabled Medical Trips

Healthy communities require reliable access to preventative care, such as vaccinations and cancer screenings, and treatment for chronic conditions such as asthma, diabetes, and heart disease. By providing access to medical appointments, PVTA helps prevent costs of poorly managed care such as visits to the emergency room and declining quality of life.

Each year, PVTA fulfills over 885,000 medical trips. Survey data indicates that nearly 135,000 of these trips would not be possible without PVTA services. Research by Godavarthy et al. (2014) on the costs of well versus poorly managed care estimates the value of an enabled medical trip at nearly \$500 per trip, of which 14 percent represents transportation and medical costs and 86 percent represents costs of improved quality of life.¹² As a result, the benefits of PVTA enabled medical trips are estimate at \$67 million per year.

Table 19. Benefits of Enabled Medical Trips (dollar values in 2024 Millions)

	Total trips (linked)	Percent medical trips	Medical trips (linked)	% of medical trips that would not be made without PVTA	Enabled medical trips	Benefits of enabled medical trips (\$ M)
Northern Tier	2,405,914	3.97%	95,448	14.7%	14,060	\$7.00
Southern Tier	4,598,472	14.57%	669,998	11.1%	74,165	\$36.94
Paratransit	208,484	57.69%	120,268	38.7%	46,557	\$23.18
Total	7,212,870		885,715		134,782	\$67.11

Source: EBP analysis based on NTD and PVTA data for trips, trip purpose and alternative modal alternatives from rider surveys, and valuation from Godavarthy et. al (2014).

¹² Godavarthy et. al (2014). Cost-Benefit Analysis of Rural and Small Urban Transit. Originally reported in 2011 dollars and adjusted to 2025 dollars per one-way medical trip.

Consumer Surplus Benefits

For trips other than commuting or medical travel, the value of a trip that would otherwise not be made is estimated as one-half of the difference between the cost of using a taxi/rideshare and the cost of riding transit. This approach, known as consumer surplus, reflects the assumed willingness of the average person to pay for a non-commute, non-medical trip.

This benefit figure is conservatively estimated using transit fares from 2023 before PVTA went fare free. In total, we estimate a consumer surplus benefit of \$3.09 million annually (Table 20).

Not included in this quantification approach are additional benefits provided by PVTA through its major role in connecting students to higher education. 51 percent of Northern Tier, 9 percent of Southern Tier bus trips, and 1 percent of paratransit trips served by PVTA are for college or university access.¹³ According to research by the Massachusetts Department of Higher Education, graduates who attended Massachusetts' public colleges and universities make \$20,000 to \$30,000 more per year five years after graduation compared to others with a high school diploma.¹⁴

Table 20. Consumer Surplus Benefits of Other Enabled Trips (dollar values in 2024 Millions)

Metrics	Norther Tier	Southern Tier	Paratransit	Total
Other Enabled Trips	223,487	152,504	27,073	403,064
Transit Fare Per Trip*	\$1.23	\$1.23	\$2.86	
Taxi/Rideshare Fare Per Trip	\$17.10	\$15.38	\$20.59	
Value Per Trip	\$7.94	\$7.08	\$8.86	
Consumer Surplus Benefit (\$M)	\$1.77	\$1.08	\$0.24	\$3.09

Source: EBP analysis based on NTD and PVTA data for trips, fares, and trip length; trip purpose and alternative modal alternatives from rider surveys; and fare data from Internet Archive March 2023 snapshot of <https://www.lyft.com/pricing/SGF>.

¹³ PVTA 2025 Northern System Customer Survey, PVTA Southern System Customer Survey 2025, and PVTA Paratransit Rider Survey Report 2023.

¹⁴ Massachusetts Department of Higher Education. The Earnings Outcomes of Public Postsecondary Education in Massachusetts. <https://www.mass.edu/datacenter/2025earningsreport.asp>



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