

TFLEx Guide for Transit Newbies

Module 1

History and Benefits of Transit

Introduction

The Transit Finance Learning Exchange (TFLEx) – created and run by your transit finance colleagues – exists as a strategic alliance of transit agencies. TFLEx has developed a body of reference material (“TFLEx Guide for Transit Newbies”) to educate finance staff in the field of transit without extensive costs. This coursework can be accessed at www.TFLEx.org.

Welcome

Welcome to the History and Benefits of Transit module!

This module provides information and resources on the history of public transportation in the United States. It will also illustrate the benefits of public transportation and give you a sense of what the transit customer experiences.

After completing this module, you will be able to:

- Discuss the history of public transportation
- Define U.S. public transit ridership trends over the last 100 years
- Describe the different modes of public transportation
- Identify the major classes of benefits of public transit
- Describe the importance that public transportation has in reducing traffic congestion.
- Identify the benefits that public transportation provides to communities and metropolitan areas.
- Demonstrate your awareness of how public transportation plays an important role in reducing air pollution and conserving energy.

Please see the Table of Contents, below, for the location of the glossary for this module.

Additional Information

Field of Study: Finance

Prerequisites: None

Program Level: Basic

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Advanced Preparation: None

Delivery Method: QAS Self-study

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CPE Credits

TFLEx members will earn 1.0 CPE credit upon successfully completing a knowledge test (qualified assessment) for this module (History and Benefits of Transit). Upon gaining an understanding of the material in this work and completing the review questions, contact Joe Costello, TFLEx Executive Director, at CostelloConsultingCorporation@gmail.com. He will provide you with a final knowledge test. You will have 30 days to send your answers to Mr. Costello. Upon answering at least 70% of these questions correctly, you will receive a certificate of completion for the 1.0 CPE credit, as well as evaluative feedback.

Not a member of TFLEx? Please reach out to Joe Costello, TFLEx Executive Director, at CostelloConsultingCorporation@gmail.com to find out how your agency can join. We encourage you to do so. We know you would get great value in being part of this organization!

About TFLEx

The Transit Finance Learning Exchange was founded in 1999 by a number of transit agencies and continues to be run by your transit agency colleagues.

TFLEx offers semi-annual workshops, Forum and Special Interest Group Calls, training and professional development, comparative metrics, and, of course, invaluable networking. Of note, TFLEx members meet twice annually to explore topics of mutual interest, share relevant experiences, and develop best practices. These are facilitated workshops where all attendees participate in the discussions. As TFLEx is run by your transit finance colleagues, the workshops offer an opportunity for further follow up at the next workshop and Forum and SIG (special interest group) calls – Zoom calls on topics of interest held between workshops. The workshops and calls provide continuing education credits.

Visit www.tflex.org for more information and dates of upcoming calls and workshops.

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HISTORY OF TRANSIT

Overview

In this section of the module, you will be able to:

- Discuss the history of public transportation
- Define U.S. public transit ridership trends over the last 100 years
- Describe the different modes of public transportation

A Brief History of Transit

The history of paying another party for transportation services traces back literally thousands of years. Water transports are some of the earliest known examples of this. Greek mythology discusses payment to Charon, the ferryman of the underworld to cross the river Styx, in order to cross into the afterlife. If they were writing about it, the concept of paying for transportation must not have been a new one.

Canals were built in ancient Egypt circa 600 BCE and in China circa 500 BCE. They were known to be used for freight but the it likely they were also used to transport people for payment as well.

The first known attempt at an urban public transportation system was started by mathematician and philosopher Blaise Pascal in Paris in 1662. The system was called *Carrosses a cinq sols*, or ‘*Five penny carriages*’, and consisted of 8-passenger horse-drawn carriages and were staffed by a coach driver and a footman. ^[1].

Public transportation in this context meaning ‘available to the public’, not meaning ‘funded by the public’. The system was approved by King Louis XIV and allowed to run as a monopoly.

However, the system wasn’t open to the entire public. Defying the King, the Parlement of Paris barred soldiers, pages, and other liveried men from riding in the carriages "to assure the greater comfort and freedom of the bourgeois and meritous classes". This was done under the umbrella of ‘safety measures’. Other ordinances under that umbrella

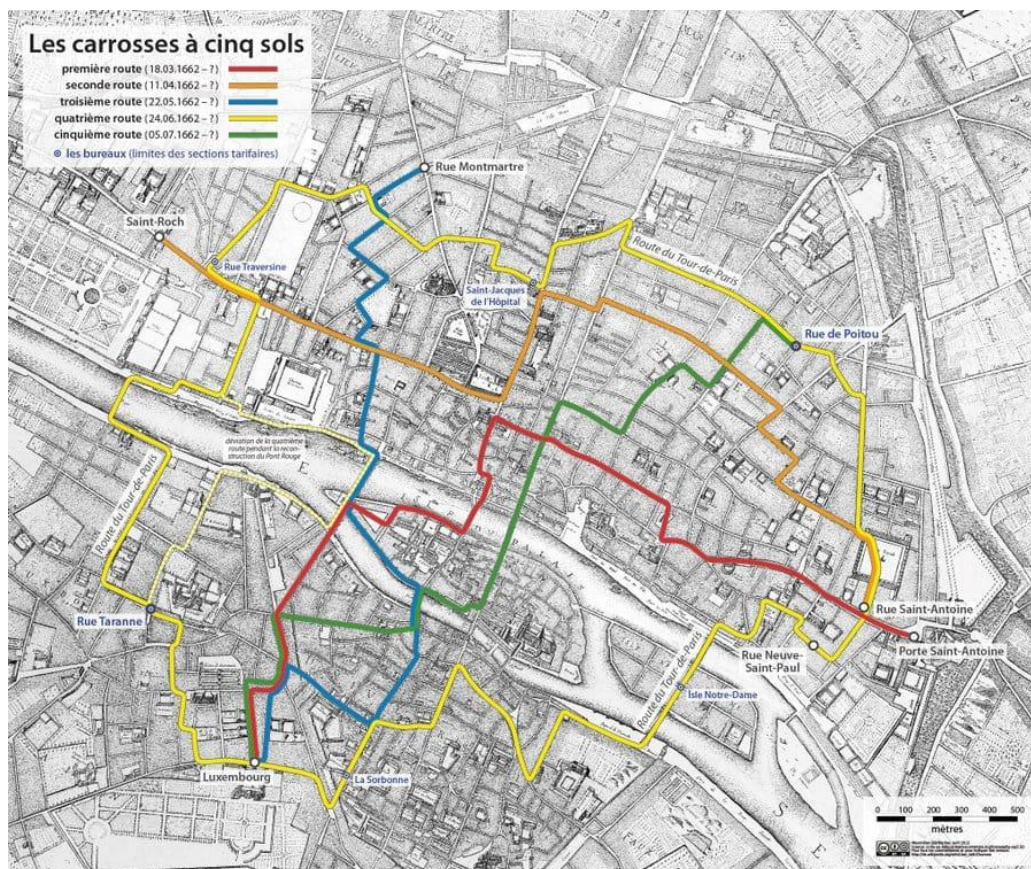
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threatened "whipping and greater penalties" for those who interfered with proper operation on the service ^[2]

Considering it was the first such system, it was remarkably modern in concept with five routes that intersected with each other including four crosstown routes and one loop around the city (see the map below). There were even time schedules, with frequencies ranging from 7.5 minutes to 15 minutes, and fares that varied by distance travelled.^[2]



Even though Pascal died approximately five months after the start of the service, the system remained in operation for 15 years, until 1677.

Urban public transportation all but disappeared for almost 130 years, before reappearing in 1806 along the Swansea and Mumbles Railway on the southern coast of Wales.^[3] It then began popping up in multiple locations in the 1820s and 1830s.

Several other public transit firsts include:

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- The first steam-powered public transportation opened in 1825 on the Stockton and Darlington Railway in northeastern England.^[4]
- The first streetcar and first horse-drawn rail cars in America begin operation in New York City in 1832.^[5]
- The first railway in Asia opened in India in 1853, between Mumbai and Thane, covering a distance of approximately 21 miles.^[6]
- The world's first steam-powered underground railway opened in London in 1863.^[7]
- The first successful electric street railway began operating in Richmond, VA.^[5]
- The first use of federal capital funding to build a public transportation rail line in Chicago, IL in 1936.^[5]
- The National Railroad Passenger Corporation, doing business as Amtrak, was founded May 1, 1971 by combining some two-dozen privately-owned U.S. passenger rail routes after being created by the Rail Passenger Service Act of 1970.

Additional United States Transit firsts can be found at the National Transit Database (NTD) website here: <https://www.transit.dot.gov/ntd/history-ntd-and-transit-united-states>

Modes of Transit

The National Transit Database recognizes 18 distinct transit modes, split between rail and non-rail modes:

- Rail Modes
 - o Alaska Railroad – A public transportation system in Alaska that shares vehicles and facilities with freight Rail operations.
 - o Cable Car – A type of railway propelled by moving cables located beneath the street. Currently, the only operational system is in San Francisco.
 - o Heavy Rail – An electric railway that operates service in exclusive ROW. The Nation's traditional subway systems are classified as Heavy Rail.
 - o Hybrid Rail – Systems primarily operate routes on the national system of railroads but do not operate with the characteristics of Commuter Rail. This service typically operates Light Rail-type vehicles as diesel multiple-unit trains.
 - o Inclined Plane – A railway that operates on steep slopes and grades with vehicles powered by moving cables.

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- Light Rail – An electric railway that operates in mixed traffic or intersects with roadways at grade crossings. The service is characterized by short trains of one to four passenger cars that travel relatively short distances between stops within a city and the immediate suburbs with vehicles powered by from an overhead electric line via a trolley or a pantograph.
- Monorail/Automated Guideway – An electrically powered mode that operates in an exclusive guideway. The service is characterized by either Monorail systems with automated or human-operated vehicles straddling a single guideway or by people mover systems with automated operation over relatively short distances.
- Streetcar Rail – Systems predominantly operate routes on streets in mixed traffic. This service typically operates with one- or two-car trains powered by overhead catenaries and has frequent stops.
- Non-Rail Modes
 - Aerial Tramway – A system of aerial cables with suspended vehicles. The vehicles are propelled by separate cables attached to the vehicle suspension system and powered by engines or motors at a central location not on board the vehicle.
 - Bus – A transit mode using rubber-tired passenger vehicles operating on fixed routes and schedules over roadways. Vehicles are powered by a motor and fuel, or by electricity stored on board the vehicle.
 - Bus Rapid Transit (RB) – A Fixed-Route Bus system that:
 - Operates over 50 percent of its route in a separate ROW dedicated for transit use during peak periods
 - Has defined stations that are accessible for persons with disabilities and offer shelter from weather with information provided on schedules and routes
 - Uses active signal priority in separated guideway and either queue-jump lanes or active signal priority in non-separated guideway
 - Offers short headway, bidirectional service for at least a 14-hour span on weekdays and a 10-hour span on weekends
 - Applies a separate and consistent brand identity to stations and vehicles.
 - Commuter Bus – A local, Fixed-Route Bus transportation that primarily connects outlying areas with a central city and operates predominantly in one direction during peak periods. It has limited stops in outlying areas, limited stops in the central city, and at least five miles of closed-door service.

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- Demand Response (DR) – A transit mode operating on roadways in response to requests from passengers or their agents to the transit operator, who groups rides together when possible and dispatches a vehicle to provide the rides. Vehicles do not operate over a fixed route or on a fixed schedule unless temporarily satisfying a special transit need. Many transit systems operate DR service to meet ADA requirements.
- Ferry Boat – This transit mode carries passengers over a body of water.
- Público – This mode is comprised of passenger Vans or small Buses operating with fixed routes but no fixed schedules in Puerto Rico.

Transit by the Numbers

What follows in this section are a lot of numbers, facts and figures tables and graphs regarding transit infrastructure, capacity and usage within the United States. Hopefully, you will find the interesting! The information in this section comes from the American Public Transportation Association (APTA) 2024 Public Transportation Fact Book.^[8] The APTA Fact Book has annual transit data in certain categories going back more than 100 years, to 1917. The most recent data is from 2022.

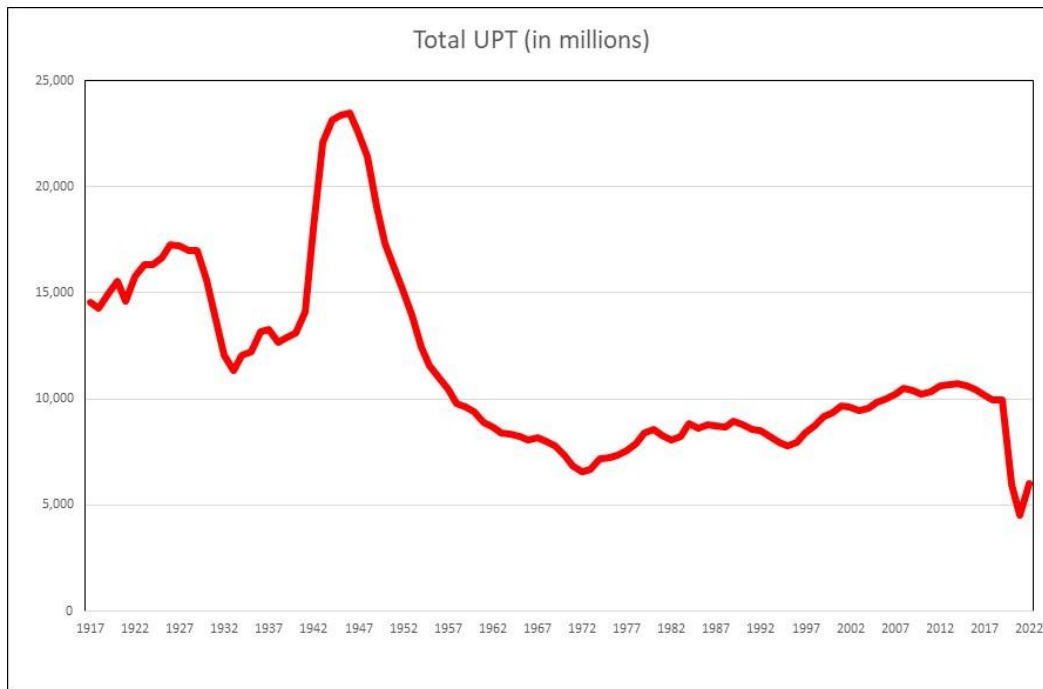
Transit Ridership History

Transit ridership (all modes) has undergone several significant trends and reversals over the last century. This can be seen in the following graph.

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Total US Transit ridership grew rapidly in the early 20th century and peaked at nearly 23.5 billion trips annual nationwide during and after World War II (1943-1947). Due to the war effort, the availability of new vehicles for private use was limited.

After the war, it took several years for factories to retool from tanks, jeeps and other wartime vehicles, etc. to civilian vehicles. Post-war prosperity led to the quadrupling of new sales between 1945 and 1955, and by the end of the 1950s, some 75 percent of American households owned at least one car. This had a severe dampening effect on public transit. By 1959, national ridership had declined by almost 60% from its wartime highs, to less than 9.6 billion passenger trips.

A slow steady decline continued until 1973, with ridership bottoming out at a mere 6.7 billion passenger trips.

The 1973 Oil Crisis resulted in substantially increased gasoline prices, which in turn, resulted in increased transit ridership. The federal government responded to this crisis by substantially increasing funding for transit. Transit ridership grew fairly steadily through 2014, topping out at 10.8 billion passenger trips.

The 35% drop in gasoline prices from the beginning of 2014 to 2015, and continued low prices resulted in decreasing demand for transit with ridership dropping to just under 10 billion passenger trips.

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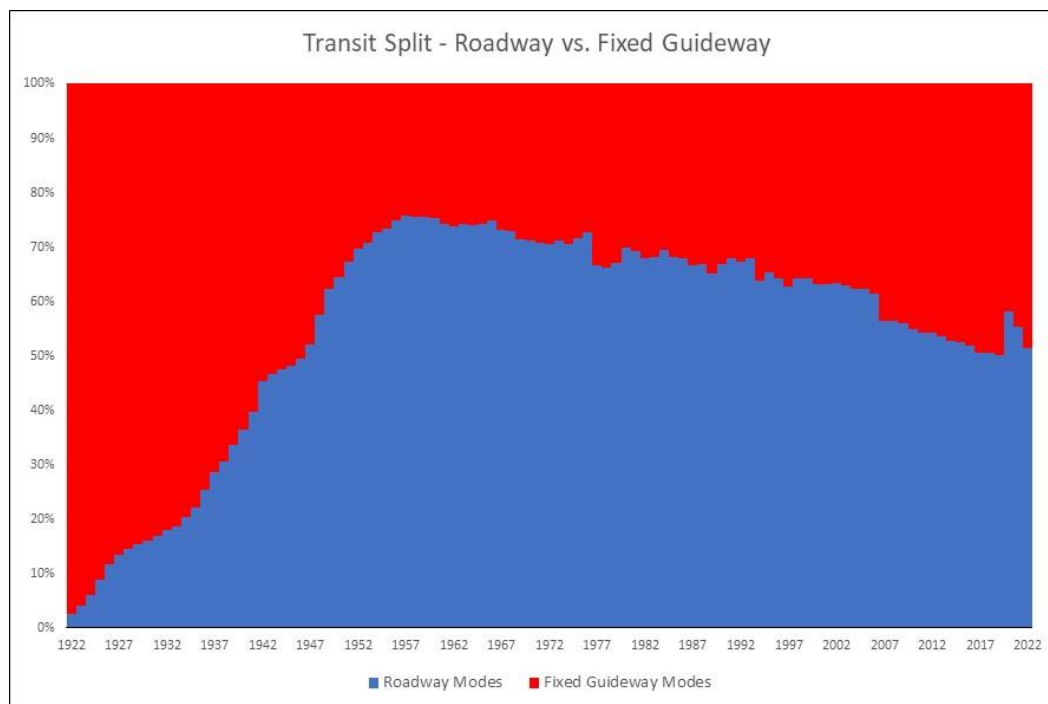
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Then the COVID pandemic hit in 2020, resulting in a massive drop, with Ridership bottoming out in 2021 at less than 4.5 billion trips, just 42% of its 2014 peak.

Through 2022, ridership was bouncing back, increased by 59% off of the previous lows, to 6 billion riders but it continues to be impacted by the economy and the increasing trends of employees telecommuting, working from home either some or all of the time.

Also interesting, are the modal splits over time. In the early years, transit was operated almost exclusively on fixed guideway. Buses and other roadway modes increased steadily through the 1950s, topping out at 76% share in the late 1950s. Since then, Roadway modes have been slowly but steadily losing back some of that share to Fixed Guideway.



The Current State of Transit

As of 2022, over 6,700 organizations in the United States provided public transportation through the modes listed earlier in this section. More than two-thirds of these 6,700 organizations (an estimated 4,600) are non-profit organizations. 95% (6,360) of these organizations provide demand response service. This compares to only about 1,300 that provide fixed route service or both.

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The number of rail systems (light rail, heavy rail and commuter rail) has more than doubled in the last 30 years, from 46 in 1992 to 99 in 2022.

Approximately 2,200 public transit agencies report their information through the National Transit Database. About 57% (1,253) of these organizations are rurally-based and 43% (941) provide at least some of their service in an urban area.

Nearly \$82 billion was spent on public transit in 2022. Two-thirds of these expenditures were for operating expenses and one-third for capital

As was previously mentioned, in 2022, nearly 6 billion transit rides were provided in 2022. These trips covered over 31 billion passenger miles.

These trips were provided through the use of 73.4 million buses, 70.2 million demand response vehicles, 11.9 million vanpools, 21.6 million rail cars and some 700,000 other transit vehicles (e.g. aerial tramway, inclined plane, ferries, etc.). These vehicles provided 286 million revenue hours and 4.3 billion revenue miles of service were provided to accommodate those 6 billion rides.

Learning objectives

You've made great progress so far! By now you should be able to define the history of public transportation and U.S. public transit ridership trends over the last 100 years, as well as describe the different modes of public transportation. Let's test that knowledge.

Review Questions

1. In which US city was the first streetcar?
 - A. Atlanta
 - B. Boston
 - C. New York
 - D. Philadelphia
2. When did transit ridership peak?
 - A. During and right after World War II
 - B. During the peak of post-war prosperity in the late 1950s
 - C. During the Oil Embargo/Crisis during the 1970s
 - D. Just prior to the COVID pandemic

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3. How many organizations provided public transportation in the U.S. in 2022?
 - A. 1,300
 - B. 6,700
 - C. 2,200
 - D. 18
4. The history of paying another party for transportation services traces back literally thousands of years. What are some of the earliest known examples of this.
 - A. Bus
 - B. Monorail
 - C. Cable car
 - D. Water transport
5. Which of the following is NOT a characteristic of Bus Rapid Transit:
 - A. Operates on roadways in response to requests from passengers or their agents to the transit operator
 - B. Operates over 50 percent of its route in a separate right-of-way dedicated for transit use during peak periods
 - C. Has defined stations that are accessible for persons with disabilities and offer shelter from weather with information provided on schedules and routes
 - D. Uses active signal priority in separated guideway and either queue-jump lanes or active signal priority in non-separated guideway

Answers

1. C is correct. New York was the first US city with both streetcars and horse-drawn rail cars.
2. A is correct. The strong wartime economy and rerouting of industry to support military rather than civilian vehicles contributed to the highest transit ridership in US history.
3. B is correct. In 2022, 6,700 organizations in the United States provided public transportation through the modes listed earlier in this section.

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4. D is correct. Water transports are some of the earliest known examples of paying another party for transportation services.
5. A is the correct answer. Demand Response, not Bus Rapid Transit, operates on roadways in response to requests from passengers or their agents to the transit operator.

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The Benefits of Public Transit

Overview

In this section of the module, you will be able to:

- Identify the major classes of benefits of public transit
- Describe the importance that public transportation has in reducing traffic congestion.
- Identify the benefits that public transportation provides to communities and metropolitan areas.
- Demonstrate your awareness of how public transportation plays an important role in reducing air pollution and conserving energy.

Public transit boasts a myriad of benefits straddling a wide range of areas. From providing mobility to individuals without other transportation options to reduced greenhouse gas emissions. From neighborhood enhancement to reduced traffic congestion. From safety to community connection. And these benefits accrue to both users and non-users of transit.

These benefits can generally be classified into five different categories:

1. Improved Mobility
2. Economic Benefits
3. Environmental Impact/Sustainability Benefits
4. Public Health and Safety Benefits
5. Improved Urban Development, Community Connection and Land Use

Improved Mobility

The main purpose of public transit is, obviously, to provide mobility. But to someone unfamiliar with the industry, the variety of ways this is accomplished can be surprising. Both in the number of modes available and in reason for the usage of transit.

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The variety of modes were detailed in the previous section so there is no need to repeat them here so in this section we will focus on the types of trips and motivations and/or purposes of the trip.

Transit dependent riders – Probably the first thing that comes to mind when people think of public transit are transit dependent riders. Those who have no other means to travel. Public transit opens up the world to these individuals. For work. For medical appointments. For shopping. For social interaction.

But it isn't just those who don't own vehicles who may be transit dependent. There is situational transit dependency. There may be a car in the household but, for a variety of reasons, the car is not available. Perhaps both spouses need a vehicle but only one is available. Maybe the rider has a car but it is in the shop or is otherwise situationally unavailable. According to an APTA survey in 2017, 46% of respondents said they generally have no vehicle available to them at all (truly transit dependent) whereas 61% said they had no vehicle available to them for the specific trip they were surveyed about (situationally transit dependent).

What do people use public transit for?

50% of all trips taken on public transit were commuter/work-related trips. 37% of trips were for shopping or entertainment. The remaining 13% of trips were for a variety of purposes including school, medical appointments, local tourism, leisure, etc.

Another major driver of ridership, particularly among choice riders are for sports, concerts, and other special events. Taking transit into and out from these crowded events is often much more convenient (and cheaper, too) than driving and parking.

Agency Spotlight – Metropolitan Atlanta Rapid Transit Authority (MARTA)

Transit plays a critical role in moving large numbers of people to and from sports venues and special events, such as the busy MARTA stations – the Sports, Entertainment and Convention District (SEC) and World Congress Center stations – that sit right next to State Farm Arena and near Mercedes-Benz Stadium, which will host eight World Cup games in 2026.

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Public transit also enhances mobility through connections. Depending on the city, public transit may connect to other regional or national transportation rail carriers (such as Amtrak), local airports or seaports.

Agency Spotlight – Denver Regional Transportation District (RTD)

Transit connections to area airports attract local and international travelers. Examples include the Denver RTD A Line rail service and SkyRide bus service that provide easy, affordable, and reliable transportation to Denver International Airport with direct access to airline check-in, baggage check, security screening, and baggage claim.

And public transit services have dramatically improved with regards to accessibility. In 1990, The Americans with Disabilities Act (ADA) was passed, prohibiting discrimination and ensuring equal opportunity and access for persons with disabilities. At that time, only 51% of public transit buses, 32% of commuter and hybrid rail vehicles, 41% of light rail and streetcar vehicles, 83% of heavy rail vehicles and 47% of trolley buses were accessible.^[10]

As of 2024, 83% of all transit stations and 96% of all transit vehicles were accessible to people with mobility devices or other disabilities affecting travel.

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Agency Spotlight – Miami-Dade Transit

Transit offers accessible service for persons with limited mobility, providing freedom to travel throughout the region, with online enrollment, such as the Miami-Dade Transit Mobility program – often in connection with transportation network companies, such as the Miami-Dade Better Bus Network.

Reduced congestion and time savings

Depending on the route or corridor and time of day, an actual trip on public transit may take longer than a car trip. However, the time spent on a transit vehicle can still result in time savings. Since the traveler isn't required to spend that time driving, it replaces that 'dead' time with 'free' time on board the vehicle that can be used for additional work and/or leisure activities (answering emails, reading, playing games on the phone, etc.). That is a significant quality of life benefit!

But public transit doesn't only provide mobility benefits to those who ride. By taking additional cars off the road, everyone in the region also benefits through reduced traffic and travel time savings. According to a 2011 study, use of public transportation saved Americans an estimated 865 million hours in travel time through reduced congestion.^[11]

Statistics have been collected over the past several decades about the additional traffic volume that would be created if public transit operations were to cease. Let's take a look at two cities in particular, St. Louis and Las Vegas. Without public transportation, St. Louis would have 29,238 more cars on the road, and 155 more lane miles of new freeway!

Likewise, without public transportation, Las Vegas projections for growth of personal trips in the next 20 years would result in a need for 18 new North-South freeway lanes, as well as 20 new East-West freeway lanes.

As you can plainly see from these two examples, public transit greatly reduces congestion and the need for road construction.

Somehow these costs are lost by the critics of transit. 'If we got rid of transit, we could save all that tax money!' Well... no, you couldn't. You would forever be building and

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maintaining even more roads than we are now. And not just extra freeway lanes, but arterial streets, too. And all that road construction leads to more congestion, more traffic delays and more disruption to the homes and business along those corridors.

Economic Benefits

Much like time savings above, there are economic benefits both those who use public transportation as well as for those who don't.

In the micro sense, public transit provides a clear economic benefit for those who ride transit because buying a transit pass is significantly cheaper than the cost of owning and operating a car.

Consider the following calculations of annual savings by using public transit. In 2023, APTA developed a model that shows that using public transit that currently saves the average two-car household \$13,218 per year over owning a second car. The model assumes that a person making a switch to public transportation purchases an unlimited ride pass on the local transit agency, typically available on a monthly basis. APTA then compares the average monthly transit fare to the average cost of driving 15,000 miles per year (based on the current average cost of driving formula). The table below shows an estimate of how much savings can be gained in the top 20 cities throughout the U.S, based on ridership.^[12]

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Potential Savings from Using Public Transit Top 20 US Cities by Ridership

City	Monthly Savings	Annual Savings
San Francisco	\$1,403	\$16,837
New York	\$1,377	\$16,527
Boston	\$1,310	\$15,714
Seattle	\$1,265	\$15,181
San Diego	\$1,244	\$14,929
Chicago	\$1,219	\$14,631
Los Angeles	\$1,219	\$14,629
Honolulu	\$1,218	\$14,612
Philadelphia	\$1,198	\$14,380
Portland	\$1,192	\$14,298
Houston	\$1,127	\$13,522
Minneapolis	\$1,120	\$13,441
Baltimore	\$1,110	\$13,319
Washington, DC	\$1,101	\$13,217
Denver	\$1,084	\$13,010
Miami	\$1,083	\$13,000
Phoenix	\$1,046	\$12,552
Las Vegas	\$1,035	\$12,422
Dallas	\$1,028	\$12,334
Atlanta	\$1,026	\$12,306
National	\$1,102	\$13,218

Go to www.APTA.com for ongoing public transportation research and current industry statistics.

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As you can see, the annual savings are significant! And that doesn't include savings on tolls or parking which could easily add additional hundreds or thousands of dollars in savings. Think about giving yourself an \$13,218/year raise...tax free! Take Transit!

Now, in fairness, many people could not completely eliminate the need for a car just by using transit, based on their specific needs, travel patterns and availability of transit in their area. But even replacing commuter miles with transit would save a significant amount of money based on reduced gas, reduced maintenance and repairs and extended life of the car. In 2025, the average retail cost of a mid-size sedan is in the \$35,000 range. A mid-size SUV, around \$45,000. Say those vehicles lasted for 200,000 miles. Just the capital cost alone (excluding any interest cost if the car was financed) at 15,000 miles per year is \$2,635 - \$3,375. If you only drove half those miles, you save roughly \$1,300 - \$1,700 in capital cost per year or, your trade in value is thousands of dollars higher for a car with half the mileage. For example, compare the trade-in value for two 10-year old Toyota Camrys. Both in good condition, one with 100,000 miles and one with 200,000. The lower mileage vehicle would be worth \$5,000 - \$6,000 more.

On the macro side, the economic benefits manifest in multiple ways, both direct and indirect. Here are some facts and figures regarding macroeconomic benefits of public transit, according to the APTA 2024 Public Transportation Fact Book.^[8]

- **Jobs.** More than 430,000 people work for US public transit agencies and each \$1 billion in investment creates and/or supports 50,000 jobs, both public and private sector.
- **Access to Jobs.** Without public transit, many employers would be unable to hire the people they need, and many people would be unable to get to where the jobs are, increasing unemployment and poverty rates.
- **Private Sector Economic Activity.** Public transit is supported by more than 2,000 suppliers of goods and services and 77% of federal funding for transit flows back to the private sector.
- **Investment Multiple.** A 5-to-1 investment return is produced by long-term investment in public transit. This means that every \$1 investment in public transit infrastructure generates an additional \$5 in economic activity.
- **Increased Tax Revenues.** Each \$1 billion investment supports \$382 million in tax revenues.

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Agency Spotlight – Dallas Area Rapid Transit (DART)

A study by the University of North Texas shows that DART Rail stations have attracted over \$17 billion in transit-oriented development projects, generating important tax revenues and jobs.

Environmental Impact and Sustainability Benefits

Public transit makes a significant positive impact on the environment and sustainability. The replacement of single occupancy vehicles with higher capacity buses and trains results in a tremendous reduction in both greenhouse gasses and other air pollutants.

Public transportation naturally supports the three pillars of sustainability: society, economy, and environment. A well utilized public transit system is vital to a sustainable city because it creates fewer emissions than single occupancy vehicles, supports the development of more walk-able and bike-able spaces, spurs economic development and increases social equity by giving all citizens equal access to a metro area.

As was highlighted earlier in this module, the removal of cars from the roadways saves everyone time in their commute, it also reduces emissions that contribute to climate change and cause smog.

Agency Spotlight – Valley Metro (Phoenix)

Research calculated that the existence of Phoenix's Valley Metro prevented 136,000 tons of greenhouse gases and 248 tons of criteria air pollution from entering the atmosphere – equivalent to taking over 26,000 cars off the road.

According to the International Energy Agency in 2019, cars emit between 130 – 198 gCO₂-eq/passenger km (210 – 319 g/passenger mile) in urban areas. By comparison, Buses and a composite of rail modes emit just 54 g/passenger km (97g/passenger mile).

[13]

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Contributing to lowering emissions is the continuing trend towards electric and hybrid electric buses. The percentage of these vehicles in public transit fleets has grown from 7% in 2010 to more than 20% in 2024 and more than 1,600 zero-emission vehicles are currently deployed across the country.

Agency Spotlight – San Diego Metropolitan Transit System (MTS)

The San Diego MTS has enacted a plan to transition its bus fleet to zero-emission buses (ZEBs), in combination with the zero-emission light rail car fleet currently operated by MTS, to reduce the agency's carbon footprint. It's the equivalent of taking 26,000 cars off the road.

Public transit also contributed towards sustainability. From an environmental standpoint, sustainability means ensuring that natural resources are used responsibly and efficiently so that future generations can also benefit from them. It involves practices that maintain ecological balance, minimize pollution, and conserve resources like water and energy. Ultimately, environmental sustainability aims to protect the planet's capacity to support life, both now and in the future.

Agency Spotlight – Utah Transit Authority (UTA)

To improve local and regional connectivity, the Utah Transit Authority (UTA) in partnered with area public and private organizations to complete the TechLink TRAX Study that developed an equitable and sustainable transit plan.

The 2023 Urban Mobility study by Texas A&M showed that nationally, in 2022 traffic congestion resulted in 8.5 billion wasted hours, 3.3 billion wasted gallons of fuel and 34 million tons of excess greenhouse gas emissions.^[14] This would have been even higher without the 6 billion passenger trips provided by public transit.

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US Census Bureau data^[15] showed that 3.1% of workers used public transit to get to work in 2022. This is down from 5.0% in 2019, but substantially higher than the mid-pandemic levels of 2.5%. An additional 8.6% of workers carpooled in 2022. Carpool matching services are often provided through public transit agencies.

Public Health and Safety Benefits

The previous section highlighted CO₂ reductions achieved by public transportation vs. private automobiles. Reduced pollution also positively impacts public health. In addition to CO₂, the burning of fossil fuels also emits harmful pollutants like nitrogen oxides (NO_x), particulate matter (PM), and volatile organic compounds (VOCs). These pollutants, in addition to the environmental and climate impacts mentioned above, also have a very real impact on public health.

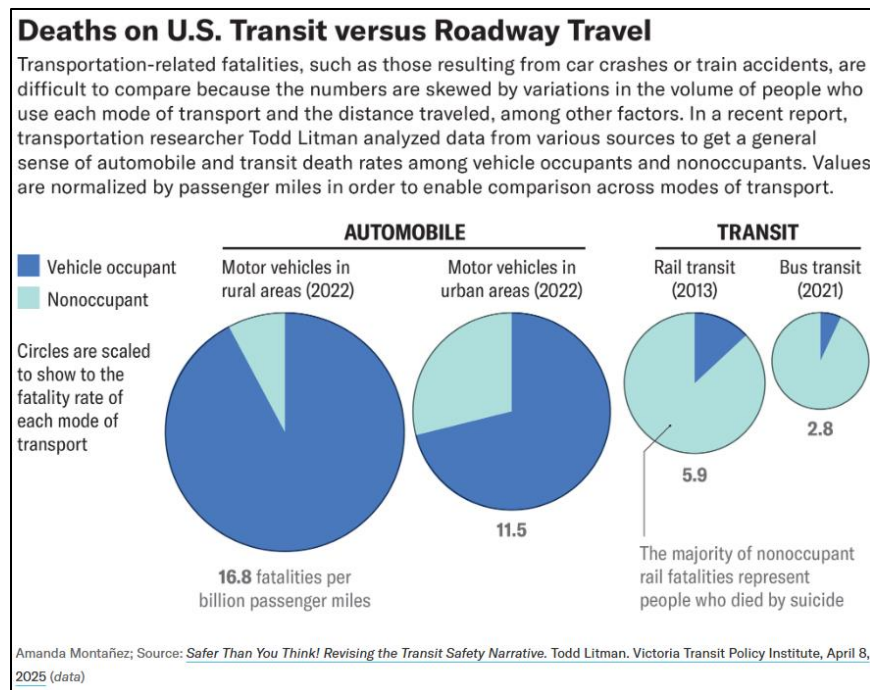
These pollutants contribute to many negative health conditions such as asthma, chronic obstructive pulmonary disease (COPD), bronchitis, and pulmonary fibrosis. All of these conditions are markedly worse in dense, 'polluted' urban environments than cleaner rural environments. According to the World Health Organization, rates of asthma can be 2-3 times higher in urban areas. COPD is generally 30-40% higher. Any reduction in these pollutants helps those numbers from being even higher.

Travelling by public transit also provide a dramatic safety advantage as compared to travelling in a private automobile. The graphic below, taken from Scientific American,^[16] shows comparisons of fatalities in automobiles in both rural and urban environments as compared to rail and bus transit.

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The differences are dramatic. For the same miles travelled, you are six times more likely to die in an automobile-related accident in a rural area and four times more likely in an urban area than you are in a public transit bus-related incident. The numbers drop to three times more likely (rural) and two times more likely (urban) to die in an automobile-related incident than a rail related incident.

But even these numbers are low because they include both occupants (the vast majority of automobile fatalities) and non-occupants (the vast majority of transit fatalities). Looking only at vehicle occupants, rural automobile fatalities per passenger mile are 20 times higher than rail transit and almost 70 times higher than bus transit. Urban auto fatalities are five and 15 time higher, respectively.

Another health benefit is that use of transit encourages walking and biking. From the trip origin to the bus stop or rail station. From the stop or station to your final destination. It will obviously vary depending on the trip in question, but every step helps improve your health!

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Improved Urban Development and Land Use

Public transit agencies provide important benefits in improved urban development and land use, particularly around rail stations, transit centers and transfer stations through Transit-oriented development. Providing hubs like this is important for development of nearby multi-family housing. For those residents, with transit options so close and convenient, may be less likely to need independent means of transportation or may choose to use them only for leisure, relying for transit for their daily commute.

The FTA describes Transit Oriented Development, or TOD, as a compact, mixed-use development within walking distance of public transportation.

- **Accessible:** TOD allows all residents of the community to have access to transportation and housing choices by increasing location efficiency and allowing people to walk, bike and take transit for their daily trips.
- **Attractive:** TOD is attractive to its residents because it fosters a convenient and affordable lifestyle where housing, jobs, restaurants, and entertainment are all in convenient proximity.
- **Value:** TOD increases transit ridership and reduces automobile congestion, providing value for both the public and private sectors.
- **Funding:** Although the FTA has no grant program that specifically funds TOD, most FTA funding programs can be used for capital projects that support TOD. See the publications in the FTA web site at www.fta.dot.gov for more information.

These transit hubs also encourage mixed-use development where housing, employment, retail and entertainment often spring up within blocks, or even within the same buildings.

Agency Spotlight – Dallas Area Rapid Transit (DART)

The mixed-use development at the Mockingbird light rail station included 17,000 sqft of diverse retail and dining establishments, the Angelika Theater and other entertainment venues, and 485 residential units at a cost of \$2 million. The project cost was funded through public-private partnerships.

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And here are a few additional examples of transit-oriented development:

- **Tourism and Local Use:** Both tourists and local residents have benefited from the Memphis trolley.
- **Real Estate:** In Los Angeles, the Gold Line has spurred an influx of new renters and home buyers along its route.
- **Businesses:** A new, high-tech training center has been built at a MetroLink stop.
- **Entertainment:** In Portland, Oregon, a stadium, mall, and convention center are all near MAX Light rail line stations.

We encourage you to think of your city, and some of the benefits it has reaped from public transportation.

Community

Transit also fosters a sense of community.

Many friendships relationships have been built because transit vehicles are a shared space. You can see the same faces day after day and sometimes, conversations spring up. Bonds are formed. Relationships develop.

The sense of community also happens through the connections to places, not just people. Transit can take you to public facilities...libraries, public parks and community centers. Or to local businesses, regional heritage districts, cultural events and entertainment. Voter pride on election days.

Agency Spotlight – Greater Cleveland Regional Transit Authority (GCRTA)

The GCRTA bus route #9 in Cleveland represents a vital link for residents and visitors alike, with this now familiar route that offers more than just transportation; it presents a new way of connecting with the community through the thoughtful installation of Asian-inspired art on its bus stop signs in the AsiaTown neighborhood.

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Transit agencies also build community through a variety of events. Local art projects and beautification initiatives, such as for input on art design at transit hubs that will be developed for or rehabilitated in a particular neighborhood. Many transit agencies have citizens advisory committees to provide input and feedback to the agencies on how to provide the best services to that community.

Agency Spotlight – LA Metro

LA Metro created the "Metro Art" program, which integrates public art and community input into its transit system. The program has featured art installations that reflect local culture and engage riders. The agency held community workshops, including local artists, to gather feedback on the types of art and installations that resonate with passengers. These art installations became a cultural conversation starter and a way to bring different communities together.

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Several additional examples of that are:

- Seattle's Sound Transit has hosted "Listening Sessions" to hear from specific communities and adjust service plans accordingly.
- Vancouver's TransLink launched the "Sustainability Roadmap", a plan to reduce emissions and improve the transit system's environmental impact, and sought community feedback during the process.
- New York City's MTA initiated a campaign called "MTA Talks" where transit officials directly interacted with commuters and answered questions about service issues.

Agency Spotlight – Charlotte Area Transit System (CATS)

Transit agencies universally engage with the community with programs such as Charlotte Area Transit System's "60 Minutes for Clean Air – Clean Up Challenge" to play an active role in upholding the cleanliness of the community with a united commitment to maintain a clean and beautiful environment for everyone to enjoy.

Learning objectives

You've made it to the end! In this last section, you learned the major classes of benefits of public transit, the importance that public transportation has in reducing traffic congestion, the benefits that public transportation provides to communities and metropolitan areas, and how public transportation plays an important role in reducing air pollution and conserving energy. Let's check your knowledge. You will be shown several statements. Read each statement and select the correct answer.

Review Questions

1. The Americans with Disabilities Act (ADA) of 1990 provided a push to accessibility in transit. As of 2024, what percentage of transit vehicles are wheelchair accessible?

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- A. 51%
 - B. 67%
 - C. 84%
 - D. 96%
2. On a per passenger mile basis, how much higher is your fatality rate as a passenger in an automobile in a rural setting vs. being a passenger on a public bus?
- A. Two times higher
 - B. Six times higher
 - C. 20 times higher
 - D. 70 times higher
3. Identify the incorrect statement regarding the beneficial impact of transit.
- A. Transit improves mobility only for transit riders
 - B. Using transit can provide cost savings over owning and using a car
 - C. Transit improves air quality
 - D. Transit has a positive impact on public health
4. What is the single most purpose for taking public transit?
- A. Special events such as concerts and sports competitions
 - B. Shopping and entertainment
 - C. School and medical
 - D. Work-related trips
5. Which of the following statements is true regarding “transit dependent” riders?
- A. Transit dependency refers to all public transit riders
 - B. They may have situational transit dependency
 - C. All transit dependent riders do not have a car available to them
 - D. Transit dependent riders do not travel to shopping or medical appointments

Answers

1. D is correct. As of 2024, 96% of all public transit vehicles were accessible.

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2. D is correct. For each passenger mile travelled in an automobile in a rural environment, you are 70 times more likely to die than the same number of miles travelled on a public bus.
3. A is the incorrect statement. Public transit doesn't only provide mobility benefits to those who ride. By taking additional cars off the road, everyone in the region also benefits through reduced traffic and travel time savings.
4. D is correct. Fifty percent of all trips taken on public transit are commuter and work-related trips.
5. B is correct. Transit dependent riders may have situational transit dependency. There may be a car in the household but, for a variety of reasons, the car is not available.

CONCLUSION

Congratulations! You have completed the **History and Benefits of Transit** module. You should now know how to:

- Discuss the history of public transportation
- Define U.S. public transit ridership trends over the last 100 years
- Describe the different modes of public transportation
- Identify the major classes of benefits of public transit
- Describe the importance that public transportation has in reducing traffic congestion.
- Identify the benefits that public transportation provides to communities and metropolitan areas.
- Demonstrate your awareness of how public transportation plays an important role in reducing air pollution and conserving energy.

For further information, review the remaining modules in the TFLEEx website, and the information under "Additional Resources," as well as the Federal Transit Administration website www.transit.dot.gov and the APTA website www.APTA.com.

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Final Knowledge Test

TFLEx members will earn 1.0 CPE credit upon successfully completing a knowledge test (qualified assessment) for this module (History and Benefits of Transit). Upon gaining an understanding of the material in this work and completing the review questions, contact Joe Costello, TFLEx Executive Director, at CostelloConsultingCorporation@gmail.com. He will provide you with a **final knowledge test**. You will have 30 days to send your answers to Mr. Costello. Upon answering at least 70% of these questions correctly, you will receive a certificate of completion for the 1.0 CPE credit, as well as evaluative feedback.

Not a member of TFLEx? Please reach out to Joe Costello, TFLEx Executive Director, at CostelloConsultingCorporation@gmail.com to find out how your agency can join. We encourage you to do so. We know you would get great value in being part of this organization!

Glossary of terms and abbreviations

ADA – The Americans with Disabilities Act (1990). The ADA is a civil rights law that prohibits discrimination based on disability in all areas of public life. It ensures that individuals with disabilities have the same rights and opportunities as everyone else.

APTA – American Public Transportation Association. APTA is a nonprofit group of approximately 1,500 public and private sector member organizations that promotes and advocates for the interests of the public transportation industry in the United States.

COPD - Chronic obstructive pulmonary disease. COPD is a long-term lung disease usually caused by years of smoking.

NOx – Nitrogen oxides. A component of pollution.

NTD – National Transit Database. The NTD a comprehensive system that collects and maintains financial, operating, and asset condition data from U.S. transit systems. It's managed by the Federal Transit Administration (FTA).

PM – Particulate matter. A component of pollution.

Sustainability - Ensuring that natural resources are used responsibly and efficiently so that future generations can also benefit from them. It includes maintaining ecological balance, minimizing pollution, and conserving resources like water and energy.

TOD – Transit Oriented Development. A compact, mixed-use development within walking distance of public transportation.

VOCs – Volatile organic compounds. A component of pollution.

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