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Amy VanGuilder
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Fare Free Public Transportation Bus Systems: An Examination of Funding Strategies to
Replace Passenger Fare Collection

A Dissertation

Presented to the Faculty of the
Department of Public Policy and Administration
West Chester University
West Chester, Pennsylvania

In Partial Fulfillment of the Requirements for
the Degree of
Doctor of Public Administration

By

Amy VanGuilder

December 2020

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Dedication

This dissertation is dedicated to “Savage” and “The Kid.” Although you will never read this, know that it was all done for you just like everything I do.

Acknowledgements

I would like to acknowledge that my husband did all of the cooking, cleaning, and laundry for nearly two years. I have learned during this time that it is not wise to comment on the quality of how these items have been completed. I would also like to acknowledge that my children probably got away many more poor behaviors than I would have normally tolerated. I would like to promise that all will go back to normal now that this is finished, however, I also acknowledge that I do not like to cook nor do I care to do laundry so it likely will *not* change.

Abstract

American public transportation systems have been moving people for more than a century. To some, the transit bus may alleviate frustrations related to finding parking or having to pay expensive parking fees. To others, public transportation may be their lifeline for all travel needs including work, school, medical appointments, and even recreation. While these direct benefits assist those citizens that do use public transportation, public transportation can also bring other benefits indirectly to society in the form of decreased congestion and pollution. As more and more people begin using public transportation systems, they will soon find that public transportation systems are unique from community to community. Some provide routes, others provide curb to curb service, and others charge passengers fares while some systems are free to ride.

This study used a mixed methods approach to evaluate funding information about America's public transportation systems that do not charge fares to their passengers. Using an online survey, transit system interviews, data from the National Transit Database, and information obtained from website examinations, six categories emerged as to how public transportation systems can forgo charging fares to passengers and instead offer a public transportation system within their community that is free to all to ride. The findings obtained from this study can aid additional public transportation systems with deploying a model that allows for fare free public transportation within their communities and may also assist current fare free transit systems with generating additional operational revenue.

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CHAPTER 1: INTRODUCTION

Public transportation has played an important role in the overall development of the United States. Trains and subways were the first modes introduced in American culture to transport multiple people at the same time. Buses and the personal automobile would soon follow at the turn of the 20th century. While people enjoyed the comfort of quicker travel to and from destinations, the impact of the rubber-tired vehicles was greater than simply supplying rides to people so they did not have to walk, ride a horse, or ride in a carriage or coach pulled by animals. Instead, the introduction of buses and cars profoundly changed the landscape of American cities. Public transportation and the private automobile permitted spatial growth which allowed urban areas to expand and new areas and communities (suburban and rural areas) to be developed (Scheurer, 2018).

There are vast differences between public versus private bus transportation systems. Private bus transportation systems can create their schedules, set various pricing schemes, can offer discounts to some riders and not others, and can vary their schedules on demand. They can also choose to transport some riders and not others. For example, Kiessling Transit operates on Dean College and throughout the Massachusetts area will only transport Dean College students with a college ID (Kiessling, 2020). All other individuals are prohibited from using the system regardless if they are at a Kiessling bus stop or not. Kessling Transit is a prime illustration of private bus transportation system. Other common forms of private bus transportation systems include the bus systems operating at theme parks, hotels, and airports. Private bus transportation systems are not funded with government subsidizes. Instead, they operate their systems from the funds collected from passenger fares from those that use the systems (i.e. passengers on the way

to the airport) or by businesses that need to transport their consumers (i.e. visitors to Disneyland).

Public bus transportation systems are distinctly different than private bus transportation systems as they provide services to the entire public. Large transit systems are nearly all public and receive the majority of their funds from taxpayer dollars (Altshuler, 2010). With the acceptance of these funds, these systems adhere to various regulations of the Federal Transit Administration and their state transportation departments. These systems are open to all individuals within the public, must meet American's with Disabilities requirements, have published hours, and adhere to a long list of requirements regarding service hour notifications and public input processes. The many rules and regulations required for public transit systems are made and enforced as a way to ensure that the system is designed to be fair and equitable to all that desire transportation within a given area.

Because of public transit's use, significance, availability, and need, it has received its fair share of academic scrutiny. There have been numerous studies related to public transit service design, safety, cost, funding, and even passenger satisfaction. Some studies include those conducted by Gomez-Ibanez (1996) on the analysis of public transportation ridership and costs of the Boston, Massachusetts public transportation system, the Turley Voulgaris (2020) study on ridership forecasting, the Bezyak, Sabella, and Gattis (2017) examination of public transportation service design and the barriers experienced by passengers with disabilities and a study by Carrel, Mishalani, Sengupta, and Walker (2016) of passenger satisfaction of public transit riders. Indirectly, public transportation has also found itself immersed in academic research. Passengers, bus drivers, dispatchers, and transportation administrative professionals have routinely been popular population samples in studies ranging from job satisfaction to

employee motivation. Some examples of research involving public transit individuals as population samples include Positer, Pasha, and Edwards (2013) study in the *Public Administration Review* related to performance management and outcomes. Another used public transportation directors as a population sample to measure employee incentives in the public sector (Deadrick & Dow Scott, 1987).

This study followed suit and also examined the public transportation or public transit industry. (The terms *public transportation* and *public transit* are used interchangeably throughout this document). This project focused on the scrutiny of a small segment of the American public transportation industry related to public transit bus operations, funding, and passenger fares. Specifically, it examined public transportation bus systems that have removed the collection of passenger fares and rely on other methods to fund their operations. This study concentrated on the identification of funding strategies of fare free public transportation bus systems once they have removed fares and the various benefits and challenges of each. The funding mechanisms that were discovered can assist current fare free systems with deploying additional funding strategies to raise more revenue for their transit operations. It can also aid community leaders that have the desire with implementing a fare free transit program but have yet identified a method to fund the fare free initiative. And finally, in some cases, some strategies identified could potentially be used by public administrators to finance and deliver other non-transit services throughout their communities.

Introduction of Fare Free Public Transportation

Public transportation systems that forgo charging a fare to its passengers are referred to as *fare free* or *zero fare* public transportation systems (Kebrowski, 2018). *Fare free* or *zero fare* transportation terms are often used interchangeably and defined synonymously. Both translate

to the concept of instead of a public transportation system charging a fare to passengers as they board the bus, the system will allow riders to board and continue to their destination without making a payment. Therefore, passengers are not directly funding the transportation with each trip that they take and the transit system instead generates revenue to operate the system in other mechanisms.

There are two basic types of fare free public transportation (FFPT) models, full FFPT and partial FFPT. Full FFPT systems are those that do not charge a fare for the majority of their services, to the majority of the riders, a majority of the time (Kreblowski, 2018). Essentially, a rider utilizing a full FFPT can step on any bus within the system and ride to any destination within the system without being charged a fee.

Partial FFPT are more likely more numerous than full FFPT systems as only certain segments or components of the public transit system are free. In partial FFPT systems, only some riders under certain circumstances can ride for free. These circumstances are typically categorized in relation to whom, where, and when (Kreblowski, 2018). The following synopsis provides examples of successful partial FFPT that operate in regard to who, where, when (Kreblowski, 2018):

- a. Who: The *who* concept can be witnessed by systems that offer free rides to specific groups of passengers on the public transit system buses. For example, a system may require individuals to fill out a form in order to receive free rides within the transit system. Based on the respondent's answers, they may qualify and ride for free based on the information they provide in regards to items such as disability status, veteran status, or income thresholds. Individuals that meet specific criteria or thresholds of criteria may be given tokens or passes to utilize

when they access the system in lieu of purchasing their own passes or putting cash in the fare box when they board.

- b. *Where*: The *where* concept is also a popular partial FFPT model. In this scenario, universities or large employers work with the local public transportation company to allow students and personnel to ride on the bus without collecting a fare when they show their student identification card or employer pass. In this scenario, the rider is not paying for the fare. While it is highly likely that the university or organization is likely giving money to the transit system directly to cover the cost for these select individuals, the passengers themselves are not directly paying each time they board the public transportation bus.
- c. *When*: The *when* has also been utilized by public transportation providers. In this partial FFPT model, riders are allowed to ride the public transportation buses for free at specific times of the day or on specific routes. This is typically done during times when the transit system generally sees lower ridership. Having the rides for free during these times may encourage patrons to ride transit when it is less busy than during the high peak, high volume times when buses may be full. A partial FFPT model can also be used on specific routes that operate in areas of town with high congestion or limited parking. In this scenario, riders may find it more advantageous to ride the designated route for free instead of paying premium parking fees or looking for parking when the streets are crowded with other vehicles.

Full fare free public transit is limited across the world and in the United States. In fact, out of the thousands of different public transportation systems around the globe, only 97

communities around the world offered *full fare free* public transportation as of 2017 with over half in European countries such as Poland and France (Kebrowski, 2018). Appendix E provides a list of the countries and number of FFPT system in each.

In the United States, data is limited as to the quantity of systems that are entirely FFPT. One of the most exhaustive studies on American FFPT was done by Joel Volinski (2012). In his study, Volinski (2012) conducted a comprehensive search and discovered 39 American public transit systems operating exclusively without collecting fares from the majority of its passengers. This data varies significantly from Kebrowski's (2018) study in which he denotes that the United States has 27 FFPT systems. It is unknown if many of these systems have reverted back to charging fares or how many additional systems may have gone fare free in the United States.

While quantifying full FFPT systems proves difficult, quantifying partial FFPT systems is nearly impossible. It is unknown how many American public transportation systems subsidize the rides of specific groups, a certain route or offer specific time periods throughout the day where their service or a portion of their service is free to passengers. While the National Transit Database (NTD) collects data on each public transportation system that receives federal funds, they do not report data in regard to specific routes, times, or to certain populations that are free. To date, there has been no study that has attempted to identify and quantify all of the various partial FFPT options available throughout the United States. Therefore, determining overall how many systems engage in partial FFPT practices and the number of people that benefit from them is unknown.

Fare free public transportation is very controversial. Some grapple with the argument of whether public transportation should be free or not and others wonder why we have public

transportation all together especially in certain areas (i.e. rural, sparsely populated areas) (Ubbels, Enoch, Potter, & Nijkamp, 2004). The debates do not stop there. Others argue that public transportation is a civil right, a service like many others provided by the community, and believe that is a benefit to the community as a whole (Ubbels, Enoch, Potter, & Nijkamp, 2004). For example, children and families often visit parks located through their communities that are owned and maintained by the municipality staff. Most are not charged a fee when they visit them nor are they required to have a pass in order to utilize the slides or swings, access the various bike or walking paths, or have a picnic on the lush lawns. In addition, individuals are not charged a fee every time the city snowplow drives by their home clearing the streets of snow and ice or when individuals walk into the library in search of a book. Thus, the same argument is sometimes made in regard to public transportation. Should individuals enjoy this public service much like other public services without having to pay a fee each time they use them? Many argue that charging a fee for these services can detour individuals from using them much like parks and libraries. If fees were charged for these other services would patronage to them also diminish? Strong supporters for fare free public transportation services maintain that if public transportation were free, many individuals would utilize it versus driving their own vehicles with contributes to ongoing environmental issues such as pollution and congestion.

Conversely, there can also be a strong argument made for riders to pay for the public transportation system as they are the ones that use it. Much like utilities such as water, sanitary sewer, and rubbish removal, those that utilize these public services typically pay a fee to do so. Rubbish removal is often charged based on the size of the garbage container and meters are frequently used to measure the quantity of water a home uses each month. Then based on their consumption (much like paying for a public transportation ride each time a passenger boards a

bus), those that use these public services pay for them. Thus, those that use public transit should pay for it, and what better way, than when they board the bus.

Public Transportation Subsidy

Public transportation carries a heavy price tag to the American public. The federal, state, and local governments subsidize public transit services heavily in order to put services on the road. While passenger fares are collected in the majority of systems, the amounts collected only cover a fraction of the operating expenses. According to data obtained from the Bureau of Transportation Statistics (2020) in Table A, operating assistance provided by the federal, state, and local governments totaled \$31,878,000,000 in 2017 which covered 71 percent of the year’s operating expenses. However, when this is compared to earlier decades, one can see that the percentages of government subsidies are increasing in tandem with costs. For example, in the year 2000, government entities subsidized public transportation at a rate of 53 percent followed by 69 percent in 2010. Not only is the cost of public transportation increasing, but so are the rates that public dollars are used to subsidize the services. In this example, the government rates of subsidy increased by 18 percentage points. By examining the amounts, it can be confirmed that public transportation is a costly public service to Americans and hardly one that is *free*.

Table A.

American Public Transportation Financial Data: 1960 – 2017. (Bureau of Transportation Statistics, 2020).

American Public Transit Financial Data (Millions of Dollars)							
	1960	1970	1980	1990	2000	2010	2017
Pass OP Rev (total)	1,407	1,707	6,522	16,053	22,709	39,034	50,212
OP Rev (total)	1,407	1,707	2,817	6,786	10,766	14,485	18,334
Pass fares, total	1,335	1,639	2,568	5,891	8,746	12,181	15,839
Motor bus	910	1,194	1,791	2,967	4,376	4,924	5,617

Heavy rail	270	369	717	1,741	2,483	3,966	5,511
Light rail	74	47	31	83	181	422	607
Trolley bus	81	30	26	46	60	80	73
Demand Response	U	U	U	41	172	252	373
Ferryboat	U	U	U	56	60	118	205
Commuter Rail	U	U	U	952	1,375	2,233	3,201
Other	U	U	3	6	41	187	253
Other OP Rev	72	68	248	895	2,021	2,304	2,495
OP Asst, total	U	U	3,705	9,267	11,943	24,549	31,878
State and local	U	U	2,611	8,297	10,958	20,626	27,657
Federal	U	U	1,094	970	984	3,923	4,221
OP Exp (total)	1,377	1,996	6,247	15,742	22,646	35,216	44,718
Motor bus	U	U	U	8,903	12,966	18,497	22,234
Heavy rail	U	U	U	3,825	3,931	6,370	8,711
Light rail	U	U	U	237	606	1,522	2,497
Trolley bus	U	U	U	109	178	242	273
Demand Response	U	U	U	518	1,805	3,174	3,899
Ferryboat	U	U	U	171	268	487	632
Commuter Rail	U	U	U	1,939	2,685	4,608	6,061
Other	U	U	U	41	206	316	410

OP = Operating, Exp = Expenses, Asst = Assistance, Pass = Passenger, Rev = Revenue, U=Unknown

It is difficult to compare public transportation systems from one country to the next and from one continent to the next. Many factors contribute to whether individuals use public transportation or not. Population density, landmass size, and the public's perception of public transportation can all contribute toward whether public transportation is highly utilized in some countries and less in others. In addition, tax policies on vehicle and fuel sales can greatly impact the use of the personal automobile and force individuals to seek alternative forms of transportation. For example, the majority of European countries that are part of the European Economic Area (EEA) place tax rates on fuel that are 100 percent of the pre-tax fuel cost (Fridstrom & Ostli, 2017). In these countries, operating a personal automobile may not be feasible due to the cost to purchase the fuel to operate their car and individuals may be forced to

seek out public transportation instead. While EEA countries have high fuel tax rates, the United States does not (Fridstom & Ostil, 2017). Those that own a personal automobile in the United States may not experience the same financial burdens of operating a personal automobile like citizens in the EEA and therefore, may not be forced to rely on public transportation. It is also difficult to compare public transportation systems from one country to the next based on the fact that they are all subsidized by their governments at different rates. Some countries publically invest more in their public transportation systems than others. The United States on average subsidizes its public transportation systems at a rate of 75 percent while the United Kingdom subsidizes its public transit system operations only 25 percent and Italy at 60 percent (Ubbels, Enoch, Potter, & Nijkamp, 2004).

Globally, some communities have successfully allocated funds at the local level through local taxpayer resources and others have implemented a tax through state legislation, adopted at the local level, to benefit the transit authority (Ubbels, Enoch, Potter, & Nijkamp, 2004). Less common practices in European countries include taxation to property owners or employers along public transit lines and even accessing polluter charges to those that own vehicles that produce the largest emissions (Ubbels, Enoch, Potter, & Nijkamp, 2004). While such practices have been implemented in European countries, little is known of what additional methods American public transportation systems use to generate the revenue needed to operate their systems, especially those that do no longer collect fares from their passengers.

Problem Statement

Many communities around the world continue to seek ways to encourage individuals to shift from driving their personal cars to riding on public transport to eliminate challenges such as congestion and pollution (Cats, Reimbal, & Susilo, 2014). Amongst all of the scrutiny

regarding public transportation services, its costs, and ridership trends, fare free public transit is still a popular concept carefully being considered by cities, counties, and transit authorities as they believe it will, directly and indirectly, help to achieve these goals of reduced congestion and many others. Kansas City, Missouri is one of the most recent cities in America to consider offering their public transportation services free to riders. In 2020, the city decided to embark on a venture in which it would eliminate fares across the entire transit system. Consistent with emerging themes, city officials alluded to potential benefits related to eliminating congestion and pollution as they believe residents will park their cars, use the bus, and that free public transportation will assist lower-income individuals who rely on the city's public transit system and currently experience financial hardship (Carey, 2020). However, they have yet to fully implement a fare free system. One problem remains that the city council has been unable to answer. How are they going to pay for it? Who or what will cover the revenue lost once passenger fares have been removed?

This research study quantified and examined the funding models of American fare free public transportation systems with the intent that it will help communities wishing to embark on a fare free public transportation venture as well as assist current FFPT systems with additional revenue generation. Unsure exactly of what funding models exist in the United States and how popular each is amongst fare free systems, this study answered the research question: What funding strategies have American fare free public transportation systems successfully implemented in lieu of charging fares to passengers?

The subsequent chapters provide information related to this research question. Chapter 2 provides an overview of the relevant literature in relation to the need, governance, and funding of American public transportation systems. This chapter also introduces the fare free public

transportation concept and many of the benefits and challenges of fare free transportation operational designs. Chapter 3 identifies the number of fare free transportation systems operating in the United States and details the methods used to analyze information related to fare free public transportation bus systems and their funding strategies. In Chapter 4, an analysis of funding mechanisms used by the fare free systems is highlighted along with a detailed description of the fare free funding mechanisms identified by this study. Finally, Chapter 5 provides an in-depth examination of each funding mechanism and the benefits and challenges of their deployments.

CHAPTER 2: LITERATURE REVIEW

This chapter provides an examination of the previous literature in regard to public transportation systems in the United States. To date, there has been exhaustive academic research conducted pertaining to such topics as public transportation ridership trends, costs, service hours, types of vehicles, and even driver and rider attitudes towards public transportation. Due to the extensive amount of literature available, combined with how large the public transportation industry is, this chapter and study focus on the bus public transportation industry. The chapter addresses its impact on history and the numerous benefits to society. In addition, it will provide an overview of public transit system governance, system administration, complex funding mechanisms, and the various ways bus transportation need is calculated. It will also highlight the types of services public transportation systems offer within communities and how fares are structured. In addition, this chapter will also examine fare free public transportation models and the various benefits and challenges of fare free public transportation design implementation.

History of American Public Transportation

Public transportation has existed in the United States of America for nearly two centuries. The first documented transportation service consisted of horse-drawn carriages in New York City in 1827 followed by electric streetcars (Miller, 1960). Cable cars of San Francisco were introduced by Andrew S. Hallidie in 1868 (Hilton, 1969). Additional modes such as buses, trains, trolleys, and subways have all been introduced throughout the past several centuries and decades to transport individuals from one destination to the next for a small fare. Many of these original modes are still in existence today and contribute significantly to the lifeline of citizens

by transporting thousands of people annually to such places as work, school, medical appointments, and social and recreational activities.

While the modes have increased in number and type, the ownership of the transportation systems along with how they are funded has also changed. When wheeled public transportation services first began operating in the early 1900s, many were provided by private business owners with their personal vehicles. *Jitneys* or *Five Cent Autos* became popular in Los Angeles in 1914 as auto owners transported individuals for five cents a ride in their personal automobile (Miller, 1960). Several riders found jitneys preferable to railways and electric trollies as they were not limited to places along tracks. The increased demand for direct transportation between two points along with the fact that individuals realized they could make a profit operating jitney services created an opportunity for entrepreneurs to capitalize financially. By providing jitney transportation with privately owned vehicles and equipment across the country from New York to Los Angeles, many individuals made a profit from all of the five cent fares they collected along the way (Miller, 1960).

Buses or vehicles that were able to accommodate larger groups of people sprang to life just prior to the Jitney. A steam operated bus was operational in Des Moines, Iowa in 1899, motor buses in 1905, and jitney buses in 1914 (Miller, 1960). Buses were not only operated by private owners for profit by collecting fares from passengers during this time but also railways and other business began operating buses as a way to transport people to their destinations for a fee which not only increased patronage to their business but also brought in revenue for the company (Miller, 1960).

As the number of buses and jitneys increased along popular roadways and corridors, so did the number of problems. With the sheer number of buses and vehicles operating on narrow

streets combined with the lack of structure and regulation, American cities experienced chaos (Miller, 1960). During this time, businesses and private owners found it advantageous to operate their buses or jitneys along trolley lines and trains where the masses of people were located and were able to scoop up passengers before the railed cars arrived (Miller, 1960). Not only did this anger and take business away from the railcars, but it also increased the number of accidents for the passengers on the buses as well as onlookers on the streets.

The congestion along popular streets, jitney cars racing ahead of buses, and an increased number of accidents caused lawmakers to begin regulating transportation services. Limiting the number of vehicles along roadways, requiring scheduled times to diminish congestion and increase frequency for passengers, and requiring permits for those providing services were some of the initial regulations imposed up by lawmakers (Miller, 1960). While these first sets of regulations did alleviate some of the problems, they also forced many of the entrepreneurial focused individuals out of business. As cities continued to become more congested with people and regulations increased dramatically for public transportation service providers, the public transportation industry was in turmoil and needed assistance.

President John F. Kennedy's work on the Urban Mass Transportation Act of 1964 would change the path of public transportation for decades to come (Currier, 2010). The Urban Mass Transportation Act of 1964 not only allowed for the capital improvements (facilities and equipment) needed to propel public transportation into the future, but also allowed for loans and grant funds for planning, development, and coordination (Public Law 33-365, 1964). Signed into law by President Lyndon B. Johnson, this act officially transitioned public transportation from a privately owned and operated industry to a public one as the American public transportation industry received its first allocation of government funding.

Benefits of Public Transportation

American public transportation systems supply many benefits to their communities. These systems are vital to community health by supplying ecological, social, and economic stability and enhancing the quality of life for all citizens (Ruiz, Segui-Pons, & Mateu-LLado, 2017). In addition, American public transportation systems are often relied upon to correct complex problems. Public transportation can play a role in fixing environmental problems (reduction of greenhouse gas emissions by reducing the number of people driving personal automobiles), economic problems (decreasing the percentage of low-income households by providing better access to job opportunities), and societal challenges (providing transportation for individuals who cannot drive so that they may remain independent in their homes) (Taylor & Morris, 2015; Manville, Taylor, & Blumenberg, 2018). Essentially, transit has been found to deliver the “to” in solving problems (Boyle, 2018). For example, transit provides the access for low-income individuals to get “to” job sites.

Public transportation can be defined as “integrated mobility” or “a form of transportation that is used among shared riders” (Watkins, 2018). The primary goals of public transportation are safety, quality, reliability, frequency, and providing access to needed destinations (Boyle, 2018). With these goals in mind, public transportation systems transport individuals to popular destinations such as medical facilities, educational institutions, employment organizations, and cultural establishments (Wellman, 2015). The difference between public transportation and taxi cabs or personal automobiles is that the riders are typically not transported alone. Instead, many individuals utilize the public transportation system, at the same time, to gain access to different, individual destinations for the same or different reasons.

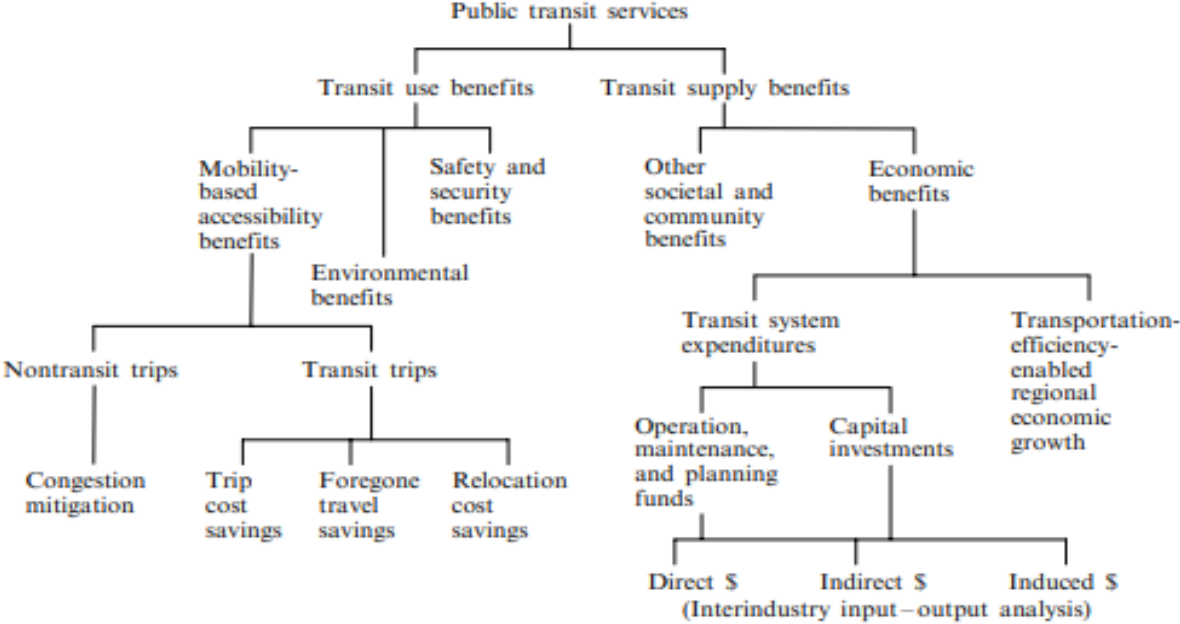
The principal value of public transportation is mobility (Boyle, 2018). Mobility, the ability to travel from place to place independently and conveniently, is one of the aspects associated with enhanced quality of life (Israel Schwarzlose, Mjelde, Dudensing, Jin, Cherrington, & Chen, 2014). Mobility and available public transportation options go hand-in-hand; both aid in increasing the quality of life by providing access to places that meet social, medical, and personal needs (Israel Schwarzlose, et al., 2014). Many Americans view public transit as a source of mobility, especially those that cannot drive an automobile or cannot afford to buy one (Boyle, 2018). Therefore, the demographics of American public transportation's top consumers include the elderly, disabled persons, low-income individuals, and immigrant populations, all of whom experience the most difficulties in driving or having access to a personal automobile (Polzin, 2018).

The benefits to public transit can be multiple, direct, and indirect. Since public transportation impacts are numerous and in several different formats, it can be difficult to quantify public transportation benefits within a community or a society as a whole. To visually supply a sense of the benefits supplied by public transportation systems, Figure 1 showcases the benefits of public transit *supply* and public transit *use*. By supplying public transportation services within a community, users (left side of the inverted tree) can experience benefits such as mobility, safety and security, and financial savings in transportation costs when opting to ride the bus in comparison to purchasing, storing, operating, and insuring their own private automobile. On the right side of the inverted tree in Figure 1, when transportation is supplied within communities, its existence alone also generates benefits within its community. Transportation supply benefits provide communities with opportunities for economic growth as well as create jobs from the public transportations operation and capital ventures. Essentially,

the system will need bus drivers and facilities itself and will assist other companies in recruiting and retaining their workforce.

Figure 1.

Inverted Public Transportation Services Benefits Tree. (Southworth, Vogt, & Curlee, 2005).



Administration of Public Transit Systems

American public transportation systems are governed by local authority and thus, each community’s service, consumption, and financial resources are unique to each transit system (Federal Transit Administration, 2018). Each state utilizes a variety of methods for determining how transit systems will be administered and governed. In Minnesota for example, rural transit programs for specific cities, counties, and/or regional areas are administered by the State of Minnesota’s Office of Transit and Transit Alternatives via separate grants to cities, counties, joint-powers boards, and nonprofits (Minnesota Department of Transportation, 2019). The State of Minnesota then works directly with each public transportation system and provides technical

assistance while local officials make the decisions in accordance with federal, state, and local regulations.

Neighboring state, Iowa, uses a different approach. Based on Code 324(A) of Iowa state legislation, their state is divided into sixteen geographic planning regions and the Iowa Department of Transportation provides funding to each region for public transportation services (The Iowa Legislature, 2019). Participating counties in each region then determine the level of service in their respective county and select one agency to represent the district as the grantee. The selected agency that contracts with the state provides (or passes down) the funding to the other transit systems and provides overhead support to all participating counties (The Iowa Legislature, 2019). Thus, transit systems in the State of Iowa have an additional layer of governance (regional) that others may not.

As seen in the examples of Minnesota and Iowa, each state takes a different approach to fund and assist their public transportation systems. The remaining 48 states can also administer their programs much like Minnesota or Iowa or through other measures. Regardless of which way the funds are administered, public transportation system governance usually takes place at the local level. Decisions regarding how many hours the system will operate, the days of the week the public transportation system will be open, or the amount to charge for fares all are made by local transit officials through their city councils, county commissions, or nonprofit board of directors.

Funding for Public Transit Systems

Grant-in-aid programs are prevalent in the United States. These programs provide funds (which do not have to be repaid) to entities or individuals to support initiatives such as research, education, housing, and even transportation. In the United States, the largest grant-in-aid

programs support infrastructure for road and public transit systems (Altshuler, 2010). This was not always the case. Prior to 1960, the federal government overlooked public transportation and few government resources were used for transportation related projects or operations (Altshuler & Luberoff, 2003).

Public transportation operations relied exclusively on passenger fares during the 1950s. However, rising expenditures forced public transportation systems to increase fares, cut services, and even forgo maintenance and repairs on vehicles due to limited resources (Altshuler & Luberoff, 2003). The 1960s were equally as hard as transit systems continued to survive on meager passenger fares amounts and a small percentage of funds from state and local governments (Altshuler & Luberoff, 2003). It would take significant lobbying by public officials, public transit providers, and business owners before federal funding was made available in the 1970s for public transit (Altshuler & Luberoff, 2003). Eventually, the Urban Mass Transportation Act of 1974 was funded and urban public transportation systems saw their first allocation of federal dollars (Federal Transit Administration, 2016). Since being introduced, the federal percentage of funds used to cover public transportation operating expenses collectively has remained relatively low (1 percent in 1999) compared to the state and local contributions (60 percent in 1999) (Altshuler & Luberoff, 2003).

Today, public transportation systems continue to rely on one or more levels of government funding for their operations and are not self-sustaining. Through a series of contracts with individual states or transit authorities governing a transit system within an urban area, the Federal Transit Administration provides section 5311 and 5307 operating dollars for transit system administration (Federal Transit Administration, 2020). Communities that are over 50,000 persons can contract directly with the federal government for 5307 funds while those

under 50,000 persons can be awarded 5311 federal funds through their state government (Federal Transit Administration, 2016).

Neither section 5307 and 5311 funding provides 100 percent of the funding needed to a community for their transit operations. Transit authorities are required to provide local funds to operate their transit systems. Urban areas must generate 50 percent of their operational dollars in the form of *local match* as the federal 5307 formula only allocates 50 percent of the net operating dollars (Federal Transit Administration, 2020). The *local match* needed by transit systems can be generated in a variety of methods such as through transit passenger fare collection, revenues from the sale of advertising on buses, benches, and shelters, or through other funds allocated by their operating authority (i.e. sales tax dollars).

Non-urban public systems also find themselves in a similar situation in regard to *local match* requirements. Each state can fund their rural transit systems using unique methods. In Minnesota, Minnesota State Statute 174.24 outlines Minnesota's Rural Transportation Program. The statute distinguishes and details that "rural populations" (those with a population less than 2,500 people) shall have a local match requirement of 15 percent where "small urban" (populations of 2,500 - 50,000 people) have a local match requirement of 20 percent (Minnesota Department of Transportation, 2019). Therefore in Minnesota, rural communities receive a combination of federal and state funds from the Minnesota Department of Transportation and Active Transit up to 85 percent for communities with populations of less than 2,500 persons and communities with 2501 – 50,000 people receive 80 percent of the operating dollars from the state in the form of state and federal funds. The remaining operating funds or local match requirement of 15 percent and 20 percent respectfully must be raised by the local public transit system.

Another method for determining local share requirements can be viewed again through the examination of neighboring state, Iowa. Unlike Minnesota, Iowa does not contract directly with each transit system nor does it allocate a certain percentage based on population. Instead, Iowa requires that all sixteen regional transit grantees have a 20 percent local share requirement (State of Iowa, 2017). Transit systems within these regions work together to share funding allocated by the state and all must meet the same local match financial percentage obligations.

Regardless of how large transit budgets are and how much they are subsidized, transit agencies, both urban and rural, typically operate within tight budgets. Designing public transportation services requires finesse as the funds to provide services are finite but the demands for it can be unlimited. Thus, public transportation systems must carefully balance coverage (areas buses will operate within and the number of buses on the road) and potential ridership (Yan, Zhao, Han, Van Gentenryck, & Dillahunt, 2019). While budgets may be tight in both urban and rural systems, the systems operate much differently. Urban systems tend to be larger than their rural counterparts in size, fleet, budget, and number of staff (Ripplinger & Bitzan, 2017). Rural systems tend to have fewer buses on the road, fewer staff to administer and operate the system, and their buses transport individuals further distances across their rural terrain than their urban systems.

Need for Public Transportation

According to the National Transit Database's 2017 *National Transit Summary and Trends Report* distributed by the Federal Transit Administration (2018), public transportation service levels, costs, and the amount of service consumed has increased while ridership overall has declined. Essentially, the costs to deliver the services have continued to grow while overall the number of rides given has declined. In fact, in the past five years, the number of public

transit rides has declined from 10.6 annual rides to just over 10 billion rides (Federal Transit Administration, 2018).

There are likely many reasons for the recent decline in ridership. Some believe it is due to the fact that gas prices have declined which makes it easier for people to afford to drive their personal automobile and others believe that it is due to the emergence of popular private rideshare programs like Uber and Lyft (Manville, Taylor, & Blumenberg, 2018). Other researchers theorize that ridership has declined from elements that may not be related to the transit systems and rather due to changes in society. For example, Volinski (2018) lists the following conditions as other contributing factors affecting the decline in ridership that are outside the parameters of public transit authorities:

- d. Telecommuting: Many individuals have begun to telecommute for not only work but other services (i.e. online medical services such as *Doctor on Demand*). This reduces the need for people to leave their homes and rely on public transportation services.
- e. E-commerce: Online shopping has also affected public transportation as many individuals can order goods for delivery instead of visiting shopping centers and large retailers.
- f. Emergence of Transportation Network Companies (TNC): Car share and bike sharing companies have emerged and individuals have found it advantageous to pay a small fee to ride in an Uber versus waiting for a public transit bus.
- g. Increased discretionary income: As the number of jobs increases and the compensation rates with them, many individuals are left with an increase in discretionary income which can lead to the purchase of an automobile.

- h. Distance Learning: There has been a surge of institutions offering online learning where students can learn from the comfort of their home versus having to travel to educational institutions for in-person instruction.
- i. Generational Shifts: America's largest population (baby boomers) is retiring and seniors typically travel less than when they were in the workforce.
- j. Decline in Immigration: Immigrants, who typically depend upon public transportation, are declining in numbers and thus, will have an effect on transit need.
- k. Decrease in service hours: During the recession of 2008, many transit systems had to cut service hours due to a decrease in funding. Many have not reinstated these hours. Thus, with less service available, the number of rides given on public buses will continue to drop.
- l. Suburban Population Growth: Transit need and ridership is growing in suburban areas where there are currently less public transportation services.
- m. Infrastructure: There has been an increase in safety concerns due to aging infrastructure. Roads, bridges, and vehicles are all aging.

While it is clear that the reason for the decline in America's public transportation usage is varied, the need for public transportation is still expected to grow in certain areas. One such area is that of rural America. Individuals in suburban areas are growing at faster rates than those in urban areas (Volinski, 2018). Since these areas have fewer transportation options than urban areas, researchers theorize that the need for rural public transportation services will increase not only due to this reason but also to other trends that align with population shifts (i.e. aging society).

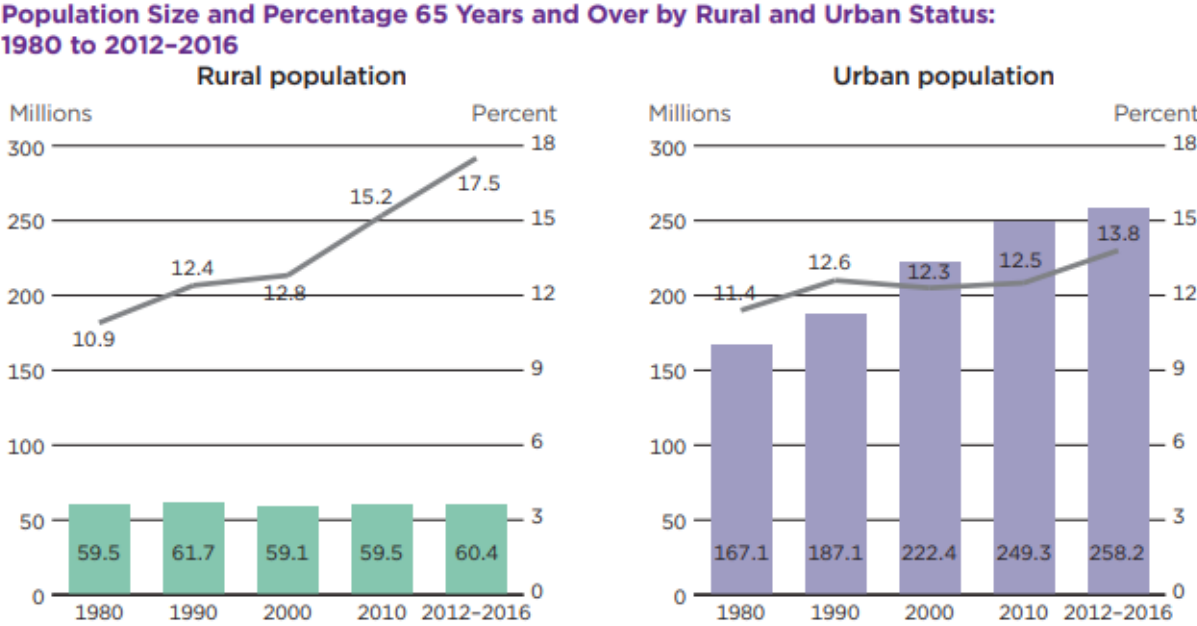
Population shifts and their effects on public transportation are inevitable. As the American population growth continues to slow, it will continue to age and diversify (Hough & Rahim Taleqani, 2018). The term, *Silver Tsunami*, has been cleverly coined to depict the era of baby boomers (those born 1946 between 1964 as they move into retirement) and the vast implications they will have on such components as the healthcare system, social security system, and even the workforce (Henderson, Maniam, & Leavell, 2017). As this population subset ages, they will likely overwhelm hospitals and nursing homes, but as they retire, they will leave the workforce short and there will be fewer workers to fill their positions. It is not a surprise then that the silver tsunami will also be felt amongst America's public transportation systems. As the largest group of America's population moves into retirement, they will inevitably transition from driving to riding and thus will be looking for alternative methods of transportation to get to the grocery store, doctor's appointments, and even recreational activities.

What makes the silver tsunami most concerning to public transit administrators is where America's elderly population reside. The percentage of elderly individuals (those over the age of 65) is greater in rural areas than in urban ones in America (Wood, Brown, Bond, & Suguri, 2016). The U. S. Census Bureau's report, *The Older Population in Rural America: 2012-2016* in Figure 2, showcases that the percentage of seniors living in rural areas was 17.5 while the percentage of elderly in urban areas was only 13.8 percent as of 2016. Moreover, those in rural populations also have a tendency to *age in place* as the desire is typically high for individuals wanting to remain in the homes they were born and raised (Hough & Rahim Taleqani, 2018). Thus, transportation, as well as access to transportation, will likely become an obstacle for

many of the elderly individuals in the United States’ rural and suburban areas (Henderson, Maniam, & Leavell, 2017).

Figure 2

Population and Percentage Size of Elderly Living in Rural versus Urban Areas (Symens Smith and Trevelyan, 2019).



Baby boomers are not the only generation to likely impact the public transportation industry. Millennials (those born between 1981 and 1996) are setting different trends than the generations before them including their propensity to delay taking their drivers test and decreased spending on personal automobiles (Deka, 2018). It appears not only are millennials driving less but they are investing less in private transportation options also. One theory for the increased use of public transit by millennials is hypothesized to be due to their exposure to public transportation on college campuses and that they view it as a viable resource (Boyle, 2018). Others also assert that if you combine this fact with increases in technology available on public transportation systems such as Wi-Fi on buses it may encourage millennials to see and

utilize public transportation as a viable alternative to driving a personal automobile altogether (Boyle, 2018). Many planners believe that millennials are likely to move to urban areas to be close to transit stations and transit lines (Deka, 2018). Thus, while Baby Boomers are impacting the suburban and rural areas, Millennials are likely to impact the urban ones.

The problem with the millennial impact on urban public transit is that there is no way to gauge if it will be a short term or long term effect. Little is known as to whether the trends in usage in millennial's younger years will last as they age into adulthood. This leads researchers to debate whether millennial propensity towards public transit is a cohort effect or a life cycle effect. Some believe that the trend towards public transit reliance for millennials is a cohort effect and that millennials will carry the trend throughout life while others believe that it is a life cycle effect and that millennials views towards transit will diminish into adulthood as they start having children later in life (Boyle, 2018). Either way, the public transportation industry needs to determine some way to gauge their needs and plan appropriately.

Determining how many vehicles to put on the road, how many hours a day to run them, and which days of the week to operate are all difficult decisions for public transportation decision makers. Preparing for transit needs in the future can be even more difficult. This is especially difficult given the fact that public transportation need continues to be due more to circumstance and less a catalyst that drives societal needs; thus predicting and determining transportation needs into the future can be difficult (Volinski, 2018). How exactly do government officials measure the impact of potential generational changes combined and quantify the various pressures to assist with decreasing pollution and congestion? How do these measurements equate with how much public transportation to make available in the community?

Transportation demand modeling was introduced first in the urban sector and next in rural areas to answer such questions. Experts use information detailing items such as the population of the area, income levels, employment availability, transportation networks, and costs to help project levels of need for an area (Minnesota Department of Transportation, 2010). Since the model approach is one that was developed in and for the urban areas, states individually have had to develop new or enhance existing models in order to determine the needs for their rural areas.

Funding needs models vary from state to state and are not universal. The following models are two examples of models that were deployed:

Minnesota Hybrid Model: This model operates under two basic assertions. First, all counties have a level of need which is determined by examining the transit dependent population, and second, some counties have a large urban center (population over 50,000) which can impact the need and travel patterns of residents (Minnesota Department of Transportation, 2010). After recognizing these factors, Minnesota determines nonurban demand for each county using the following formula to determine the level of service needed in the form of one-way trips =

“4.2 X population 65 or older + 15.0 X disabled population less than 65 years + 7.0 X low-income, non-disabled population less than 65 years + “P” X households with zero vehicles in counties with major urban centers and special service conditions counties X 3.0 trips per day X 365 days per year (where “P” = varies by urban center to calibrate to current demand, ranges from 20-50 percent) (Minnesota Department of Transportation, 2010).

Iowa Model: Iowa utilizes a modified version of the Forkenbrock Formula to determine the level of transit need for each of its regions (State of Iowa, 2017). In this model, the state does not determine the levels of service but rather awards funds based on a calculation of the prior year's mileage and ridership. Forty percent of the ridership and 60 percent of the revenue miles help to determine the allotment (State of Iowa, 2017). Once the funding is allocated to the region, the 16 established transit regions individually determine the levels and type of services to be implemented within their communities. Therefore, the State of Iowa determines the level of funding needed, but the individual transit systems determine the level of service hours to implement.

Each model has been carefully examined and implemented by its state; however, they both take different approaches. Minnesota attempts to determine the level of need in the form of service hours while Iowa determines the level of need in terms of dollars. Minnesota uses population, distance to the nearest urban area, and ages of the people within the county to determine the overall number of rides each county should provide in the following year and will fund accordingly. Iowa essentially uses past performance to indicate future need by relying on the prior year's ridership and the number of miles driven by the vehicles.

There are clear benefits and challenges to each model. In the State of Iowa, their future will automatically be limited based on the previous year's calculations. Passengers can only use the bus when it is made available. If there is not enough service on the road for passengers to use, ridership will be limited to what service is available. If Iowa underfunds or does not have enough service on the road in the previous year to meet the need, their ridership and service hours will likely remain limited the following year as funding is dependent upon the previous year's calculations. Conversely, Minnesota uses age and population in their formula. While

these are indicators of who may use transit now or use it in the future, they may also be overfunding or providing more service than actually is being utilized. While it is likely that many people will use transit as they age, there are many that will not.

Both examples provide detail as to how to determine need. Arizona, Arkansas, Washington, and several other states have unique models that their state departments of transportation use to determine need in their areas (Minnesota Department of Transportation, 2010). Some states copy portions of models from other states and *tweak* them to best meet their state's unique characteristics. While there is no one best model, these models all serve as a way for states to determine their need today and in subsequent years.

Types of Public Transportation Services

The types of services provided are also significantly different between urban and rural systems. Rural rides tend to be longer and have fewer stops. Rural public transportation buses typically travel greater distances to take people from homes that are dispersed throughout small communities to clinics and shopping centers. Urban transit buses tend to travel shorter distances along a route and have more frequent stops. Individuals in large cities get on and off frequently as the bus travels along a published route.

The Federal Transit Administration (FTA) categorizes transportation services into two basic groups, fixed route services and demand response services (Federal Transit Administration, 2013). Figure 3 provides a visual categorical representation of services with the two groups clearly defined. Under both the fixed and demand response service categories in the graph, there are various additional subtypes of each public transportation service designs that may be delivered in the rural and urban areas. These vary from neighborhood to neighborhood to meet the needs of their citizens (Sterns, Antenucci, Nelson, & Glasgow, 2003). Depending

upon the size of the community, type and amount of local resources, and a neighborhood's proximity to larger communities, transportation agencies may deploy one or a multitude of transportation options to meet the needs of their public. Each community is different and thus, the services offered are not universal.

The most traditional forms of public transportation options offered in rural areas include demand response and subscription services while less common forms include route deviation, point deviation, and volunteer driver programs (Sterns, Antenucci, Nelson, & Glasgow, 2003). Demand response services are defined under section 49 C.F.R. Section 604.3(g) of the Code of Federal Regulations (Federal Transit Administration, 2013). The rudimentary definition of a demand response service is a trip that results from an advanced scheduling request by a passenger that is not on a fixed route system; this service may be provided by nonprofits, private companies, and public organizations (Federal Transit Administration, 2013). Demand response services can have a variety of names; these include dial-a-ride, door-to-door, curb-to-curb, and shared-ride services (Sterns, Antenucci, Nelson, & Glasgow, 2003). Demand response services are typically booked by a rider calling to schedule a ride from a set pick up location to a pre-determined location at a specific time on a prearranged date (Federal Transit Administration, 2013). A rider would call the dispatcher center, ask to be picked up at 110 Main Street at 1:00 P.M. and be taken to the Wal-Mart at 1345 Liberty St. Depending on other rides already scheduled, the dispatcher will find a time to insert the ride into the schedule (i.e. 12:30 P.M). The transit system dispatcher or scheduler will convey the information to the rider and then also to the bus driver who will pick them up accordingly.

When a demand response passenger is picked up and boards the bus, others may be picked up at the same time from the same location, there may be other individuals already

onboard the vehicle, and other passengers may be picked up along the way. The following four scenarios are common among demand responses services (U.S. Department of Transportation, 1988):

1. There may be many origins and many destinations during a single individual's one-way trip.
2. Many individuals may be traveling to a single destination (i.e. individuals being picked up at various locations and traveling to a senior dining site).
3. Many individuals are picked up at one location and transported to several different locations (i.e. pick up after a school function and transport students to their homes).
4. Many individuals are picked up at the same location and travel to the same destination (i.e. pick up at a daycare of multiple children and take to/from the local swimming pool).

Demand response services have the potential to offer more individualized and direct pickup/drop off locations (Ho, Szeto, Kuo, Leung, Pettering, & Tou, 2018). However, dial-a-ride services are far from perfect and not without problems. In many rural communities, citizens may be forced to go to appointments early or wait after their engagements significant periods of time until the bus is available, or vehicles may be at capacity (no seats left) forcing some to stand or wait and take the bus at a less busy time (Qu & Bard, 2013).

Subscription services are also prevalent in rural areas. These services are offered to individuals at pre-determined times and to and from pre-determined locations. These trips may be repeated daily or weekly depending on the need (Sterns, Antenucci, Nelson, & Glasgow, 2003). Typical subscription services may include the transportation of students from a dorm to

campus and back or for individuals traveling from a group home to a developmental achievement center and back each day.

Route deviation services can also be found in rural areas. These services respond to the public's needs by traveling along a published route with set times. However, this type of service also incorporates a demand response component into its design as the bus will deviate off of the published route line upon request to pick up individuals (Sterns, Antenucci, Nelson, & Glasgow, 2003). Individuals utilizing this system wait at the bus stop at the published, designated time and are picked up by the bus. The person may deviate off the route once on the bus by informing the driver or may request their initial pickup be off the route by calling the dispatch center in advance. Riders may transfer at a hub to other lines or walk to their final destination.

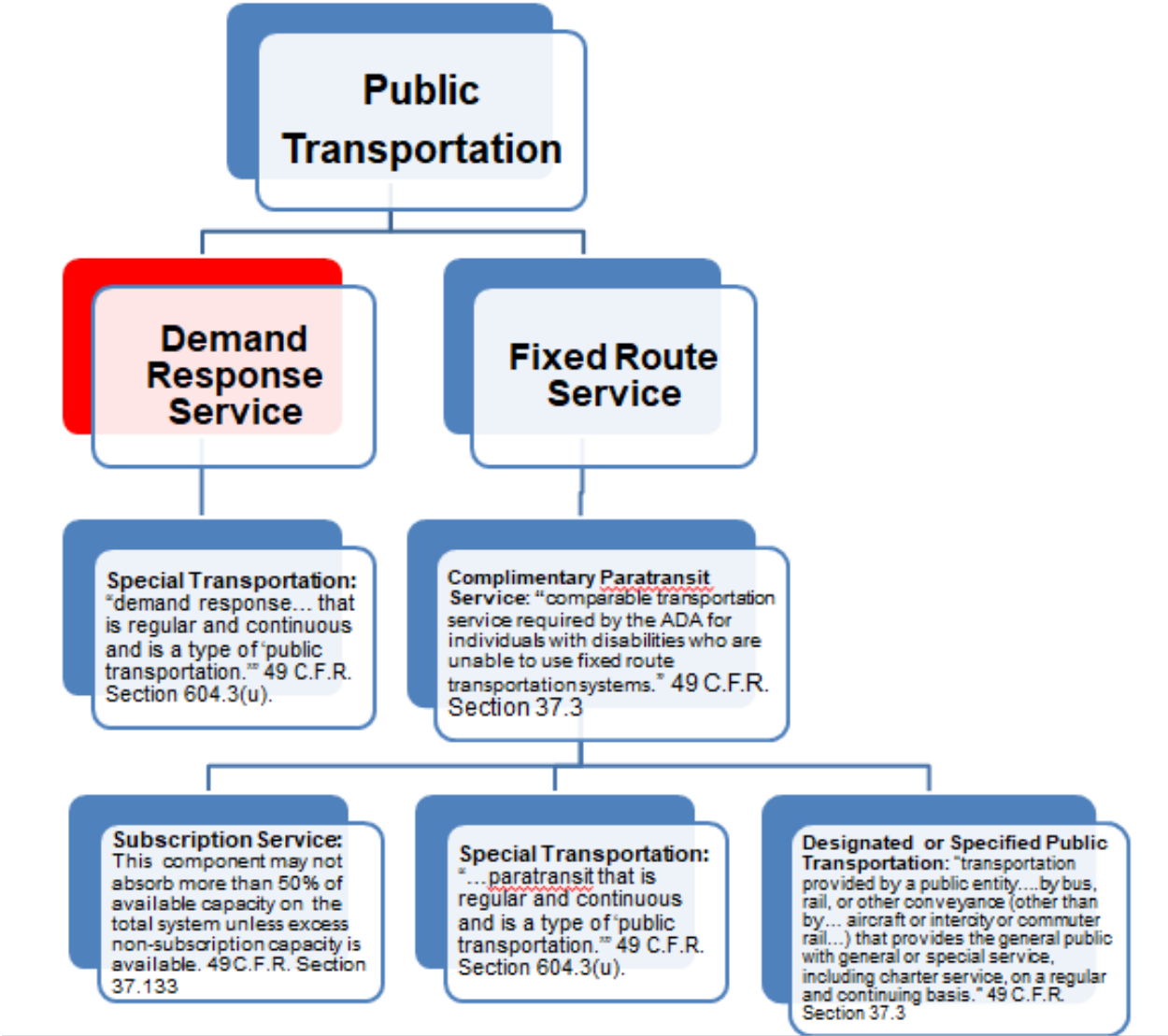
Point deviation services are very similar to route deviated services with the exception of how the bus travels between published stops. In the route deviated services, the bus will deviate off the route to pick up a passenger; however, it will get immediately back on route to continue to its next stop. Point deviated services are those in which buses will make the pre-determined, published stops and will vary off route to pick up call-ins, but will not deviate back to a published route (Sterns, Antenucci, Nelson, & Glasgow, 2003).

Public bus transportation options in urban areas are significantly different from those in rural communities. In urban areas, public transit agencies typically offer fixed route services where the buses travel along specific roads and halt at designated published stops in densely populated areas. Large masses of people use these routes to commute to and from work, school, and various appointments throughout the day. Due to the large number of people in these urban areas, many people will get on a bus at the same time at a designated bus stop and continue

throughout the community to their individual destination. While fixed route services are popular in urban cities, they are rare in rural ones. Due to the distances between homes and businesses in rural areas and the smaller populations, demand response services are more prevalent and in some cases, they may be on the only option available for rural residents (Godavarthy, Mattson, Peterson, & Hough, 2015).

Figure 3.

Types of Public Transportation Service Designs. (Federal Transit Administration, 2013).



Public Transit Fare Structure

A common practice in the United States is for the bulk of public transportation operational costs to be covered by local, regional, and state subsidies (Ubbels, Enoch, Potter, & Nijkamp, 2004). This approach ensures that while the largest part of the funding comes from the federal or state government, the entity providing the public transportation (i.e. city or county) service must also take an active part in funding the transit system. Once the subsidies have been applied by the federal and/or the state government, the remaining portion of the operating budget is devised of local means which are commonly referred to as cost recovery. Cost recovery is the transit agency's ability to generate revenue to cover the remaining cost needed to operate the system, purchase capital items such as buses and software, and to cover overages to the budget (Harmony, 2018). Cost recovery can be generated in several forms. Some of the most common are allocations from the local government's general fund, proceeds from the sale of advertising on benches, shelters, and buses, and the ever popular collection of fares as individuals board the bus (Volinski, 2012).

Passenger fare amounts are set with careful consideration by transit authorities. Setting fares too high may make it cost prohibitive for people to ride the bus. Setting fares too low may leave the transit system with a budget deficit. When a transit authority decides to implement a fare structure, they begin with setting fare policy goals. The following are nine possible fare policy goals that transit systems can utilize within their community (Harmony, 2018):

- a. Enhanced Convenience/Ease of Use – Under this fare goal, the transit system may simplify the system to make it easier for passengers. An example would be to charge \$1.00 per day per rider instead of charging fares based on the number of miles

- traveled or charging a nominal deviation fee to passengers who request the bus to deviate from the published route.
- b. Demand Influenced – Under this fare policy goal, changes in fare structures are due to demand. Systems may offer reduced fares during off peak hours to encourage passengers to ride when the bus is less busy. This can reduce congestion on buses during peak hours and fill buses during nonpeak times.
 - c. Fare Equity – This fare goal is used when the transit system desires equity for passengers. In this scenario, fares are unique to each passenger and typically based on their income levels.
 - d. Revenue Driven – Under this fare goal, pricing is set in order to generate revenue for the transit system. Instead of setting fares to simply assist with covering the annual operational costs, fares are higher to bring in additional revenue for the transit system.
 - e. Ridership Driven – Ridership driven fare goals are a mechanism of increasing or decreasing fares in order to alter ridership levels. In some cases, transit systems may decrease the fare on a route in order to increase ridership.
 - f. Minimize Cash and/or Implement Prepay Options – Some transit systems are implementing fare goals with a focus on minimizing the handling of currency. Fobs, pre-paid cards, and computer systems that allow users to pre-pay for their rides are some of the technologies being implemented so that transit systems do not have to collect cash or ride tickets from passengers.
 - g. Decrease Administrative Burden – Some fare goals seek to decrease administrative workload. It costs money to collect money. The fare boxes in the buses that collect the dollars and coins must be emptied, the money unfolded and counted, and then

- taken to the bank. In addition, these practices increase the workload for financial personnel as well as audits. Setting fare goals that remove such practices can increase operational efficiencies as staff time can be reduced and costly operational practices like audits eliminated.
- h. Fares Related to Operational Costs – Many transit systems set fare goals to coincide with their operational expenses. Therefore, fares can fluctuate as the costs to operate the transit system increase. As costs rise, fares will likely rise to ensure the system has enough money to operate its services.
 - i. Distance Fares – Distance fare goals are when fares are established to correspond with the length of the trip. Longer rides tend to have larger fares while shorter rides do not. Therefore, the cost of the longer rides are charged to the passengers that taking them versus all passengers.

Agencies may utilize one or a combination of the fare policy goals when determining and setting their fare structure. In some cases, these goals are altered as the service and its passengers change. For example, systems that implement fare structures based on rider equity (i.e. lower passenger fares for low-income individuals) may be forced to change their fare structure due to a surge in operational costs (i.e. fuel). While they may still wish to continue providing reduced rides to passengers, they may simply not be able to do so. Thus, the new fares structure would transition to one that is more related to covering operational costs and less about rider equity.

Fare goals are unique to each transit system. Neighboring transit systems may have entirely different fare goals. Those that have high ridership may wish to enact fare goals that minimize the cash and tokens collected as it places a burden on administrative staff. These

transit authorities may decide to implement electronic fares or smart phone applications. While these may cost more to implement and operate, overall they may reduce the amount of time and the number of personnel spent on fare collection. Smaller communities may find that a fare goal aligned with electronic faring options to be inappropriate to implement. Smaller transit systems may find that the technology costs more to purchase and maintain than the number of fares collected annually making it likely not the best investment.

Fare Free or Zero Fare Public Transportation

While fares have been charged since the beginning of public transit with the start of jitneys and *five cent autos*, there is a concept that has emerged with increased popularity within the public transit arena, zero fare or fare free public transit. *Zero fare* or *fare free public transit* (FFPT) systems are those that are fully funded by means other than collecting a fare from passengers (Volinski, 2012). FFPT benefits can come in several forms. There are operational benefits to the system, community benefits to the citizens, and even economic benefits to the community. The following section outlines the benefits, challenges, and alternatives of fare free public transit system mechanisms.

Fare Free Public Transit Benefits.

With the implementation of an entirely fare free public transportation system, transit authorities themselves may benefit from several operational efficiencies that may yield cost savings. One of the most significant benefits is in the reduction of administrative time and costs associated with issuing passes, collecting and recirculating tokens, and collecting, counting, and depositing fare box monies (Wahba, 2015). Many of these activities require personnel to count change by hand and unfold dollars bills, which not only is time consuming, but may at times even cost more in staff wages than the dollar amount collected from the fare boxes. Thus, the

removal of fares and fare collection activities has been considered a form of fiscal responsibility (Perone, 2002).

The removal of fare collection duties also creates efficiencies for many. FFPT can reduce the transit agency's workload in conjunction with the service providers of other agencies. FFPT can free up staff time and can grant them the opportunity to focus on other transit objectives such as marketing, outreach, and other activities related to system enhancement. The same is true for service providers whose clients rely heavily on transit. Public health agencies, for example, which have to purchase and distribute the various passes and tokens to their clientele can save time and increase their operational efficiency with the removal of fares.

Operational benefits can also be experienced in the form of route efficiency. Passengers can board quicker which allows for quicker service (Wahba, 2015). This is due primarily to the fact that riders can forgo digging for change, dollars, or passes from their pockets and purses or trying to find an automatic pass on their smart-phone. Transfer slips, paper passes given to riders transferring from one bus to the next, can also be eliminated which not only reduces printing but also can decrease the wait time at transfer stations as passengers can board quicker. This leads to less confusion and also increases the buses and the system's overall on-time performance (Cats, Reimbal, & Susilo, 2014).

Increased public transportation system effectiveness measures are also another benefit to transit systems implementing a FFPT structure. While there are several ways to measure transit system productivity and effectiveness, some of the most commonly examined and used are the ridership and operating costs. Transit systems often measure their effectiveness in terms of ridership (the number of one-way trips given on each bus) and the cost per rider (the cost to the

system to provide the ride) (Federal Transit Administration, 2018). Effective transit agencies set goals for high ridership numbers and low overall costs to seek an optimal low cost per rider (total ridership divided by total costs). Transit systems that become fare free can see the cost per rider measure plummet as ridership, one of the factors used in the measurement, may surge once fares have been removed. In systems that have implemented FFPT, they experienced on average an increase of 30 percent of their pre-FFPT ridership levels (Volinski, 2012). Austin, Texas was one community that experimented with offering a fare free transit system and saw a large change in their system effectiveness measures. Prior to going fare free, the system had a cost per rider of \$2.51; however, after the system went fare free, the cost per rider plummeted to \$1.51 due to the increase in transit ridership numbers while costs remained relatively flat (Perone, 2002).

Fare free public transportation benefits do just stop at simply operational benefits for the transit system; they also offer many benefits to the communities. The first benefit can be interpreted through the community's overall image and the message they send to citizens and visitors. FFPT can enhance a community's image by making communities more attractive to residents and those wishing to relocate. In fact, several FFPT communities have received national and state awards for being some of the "best places to live" (Volinski, 2012). Many of the communities deemed most livable, often have an array of services available to citizens and visitors. By making public transit free, communities are essentially placing the public transportation service in the same realm as parks, libraries, and schools all of which the general public can use without having to pay a fee (Volinski, 2012).

Communities with FFPT have cited environmental impacts as another benefit to the community. Globally, vehicle emissions account for 22 percent of pollution (Cohen, 2018). By

reducing the number of personal automobiles on the road and increasing the number of individuals that utilize public transportation, the amount of pollution generated can be reduced. In addition, communities can enjoy additional benefits such as a reduction in traffic congestion and a decline in parking related issues (Wahba, 2015).

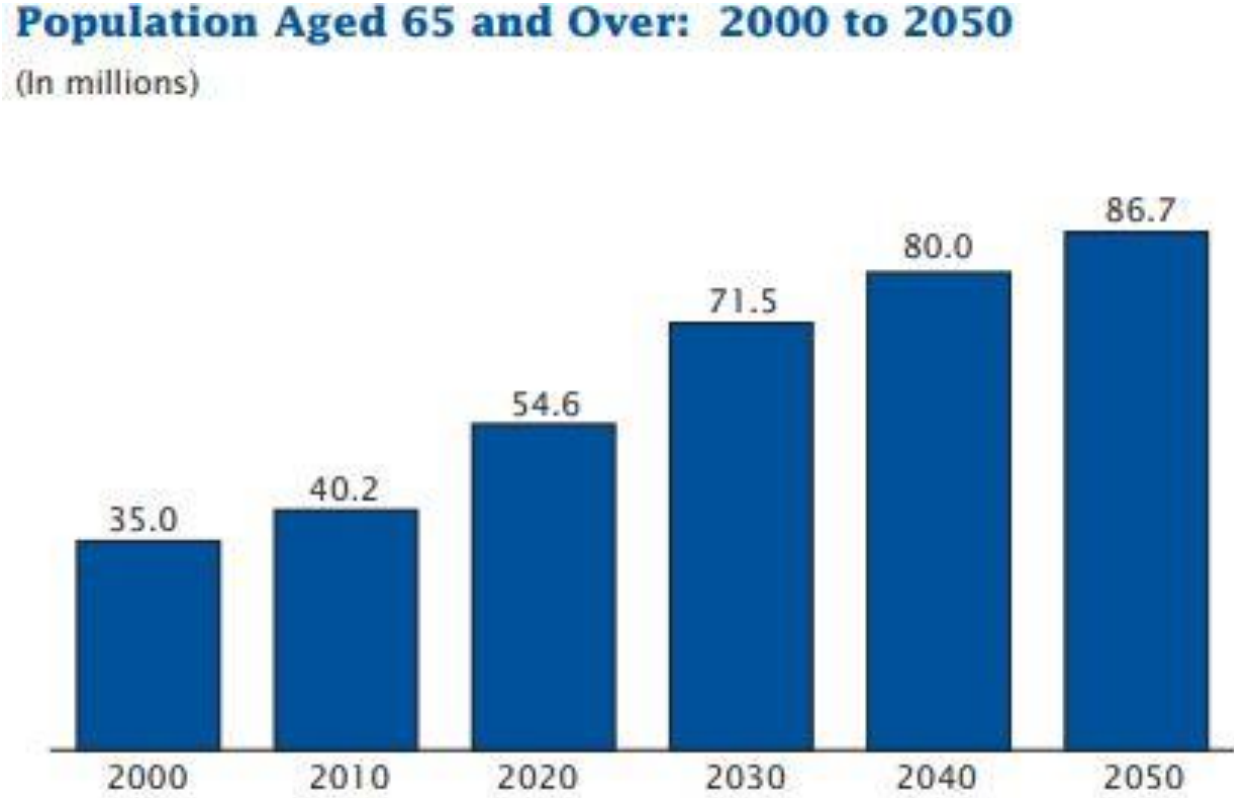
Equity is another benefit provided by communities that offer FFPT. Transportation is the second highest household cost (Cohen, 2018). While public transportation is a viable option for individuals that struggle financially, they are typically required to pay the same fares as the rest of the passengers riding the bus. However, to a low-income person, a \$2 fare is proportionally more of an investment than a person with excess financial resources. In order to provide equity in mass transit, government entities have historically debated policy decisions based on two sets of equity, redistributive equity and return-to-source equity (Altshuler, 2010). In the first set, equity (redistributive) is achieved by decision making that results in support of those that are disadvantaged (poor) versus the second set (return-to-source) where equity is achieved by providing assistance to those that paid for the benefits (Altshuler, 2010). In FFPT systems, removing the fare and offering rides for free to all presents an equitable opportunity for those with limited financial resources.

FFPT can also assist with the problems associated with an aging population. Between the years 2000 to 2030, the elderly population (those aged 65 and over) is expected to double in the United States (He, Sengupta, Velkoff, & Debarros, 2005). Figure 4 provides a visual depiction of the projected growth of individuals aged 65 and older in the United States between 2000 and 2050. Eventually, by 2050, America will have over 80 million seniors living within the nation. The population shift will leave governments and businesses dealing with problems such as workforce shortages and meeting production demands. The surge in the senior population will

cause an increase in the need for senior-related services. One of these services will likely be an increased demand for transportation. As many seniors age, they will likely transition from driving to riding (Stepaniuk, Tuokko, McGee, & Garrett, 2008). Communities that offer free public transportation may increase in appeal to the many seniors needing public transportation options as they age. In order to not only receive the services they need (i.e. medical), many seniors will likely flock to find housing in communities that offer robust transit systems so they can live independently and continue to maneuver throughout the community (Southworth, Vogt, & Curlee, 2005).

Figure 4.

United States Population Aged 65 and Older: 2000-2050. (He, Sengupta, Velkoff, & Debarros, 2005).



FFPT can assist communities in promoting tourism (Wahba, 2015). Those traveling on vacation or to communities for events may find communities with free public transit more appealing to visit. Travelers would be able to forgo the cost of renting cars, paying for parking, and hiring taxi cabs or Uber drivers. In addition, routes and services can be catered to provide accessible services to local businesses and tourist attractions (i.e. theaters or museums) which can also increase local business revenue. In Vale, Colorado, tourism brings nearly 100,000 visitors a day to the community during peak season times (Volinski, 2012). FFPT allows communities like the town of Vale to diminish traffic congestion from the tourists and remove thousands of parked cars from its busy city streets (Volinski, 2012).

In addition to tourism, FFPT is often cheaper for local businesses and universities to partner with than to build additional parking spots for their growing businesses and campuses (Cohen, 2018). Many universities seek out, support, and partner with the local transit system. By doing so, parking space needs on campus for students are likely to decrease and they can then utilize parking space for other campus needs (Volinski, 2012). Campuses find that they can then expand their student base (and employee base) with buildings and dorms rather than parking lots and parking ramps. The cost of partnering with and supporting FFPT within the university's community is typically more cost effective than building, maintaining, and repairing parking infrastructure on campuses or supplying, operating, maintaining, and storing buses to move students (Volinski, 2012).

Even if free, many people in the United States view public transportation as a last resort option (Perone, 2002). Those that drive typically do not support public transportation and view the taxes collected on its behalf as being unfair or unneeded (Perone, 2002). However, complaints like these have not been the cause of any communities reverting back to charging

fares (Volinski, 2012). Communities that implement FFPT not only aim to increase community knowledge about public transportation but also can remove barriers relating to social equity as it is available to everyone regardless of their income level (Wahba, 2015). Transit systems can benefit all individuals regardless of income; however, they are especially important for low-income users. Low-income users are less likely to have access to private vehicles and have less disposable income making them more captive to public transit systems (Beimborn, Greenwald, & Jin, 2003; Harmony, 2018).

Challenges to Fare Free Public Transit.

In addition to the various benefits transit authorities and communities believe they will receive from the implementation of FFPT, there are likely some challenges that can develop in conjunction with it. Some of these come as additional expenses to the transit authority and community and others are in the form of new or unique problems that align with FFPT. The following segment will examine the challenges public transportation companies should recognize and consider before they move forward with FFPT implementation.

Opponents of FFPT believe that while FFPT can increase ridership, it also attracts the wrong *type* of rider (Perone, 2002). Instead of attracting *preferred* riders who forgo driving their automobile, transit systems have found that transitioning to a fare free system may cause increased levels of vandalism, graffiti, and bad behavior due to the increase in the number and frequency of *problem* riders (Pinsker, 2015). In addition, overcrowding on vehicles and in transit stations can occur not only to the increased number of people on the buses during peak times but also because some riders may use the transit system for shelter or entertainment (Pinsker, 2015). In the event these obstacles escalate with the implementation of FFPT, transit systems can find themselves burdened with increased security costs, maintenance, and cleaning

costs to vehicles, shelters, and transit stations (Perone, 2002). This creates further issues for the transit system and its goals to convert new individuals to transit. Crowding, safety issues, and limited seating can make individuals return to driving their personal automobile (Perone, 2002). These problem behaviors not only create headaches for transit system personnel but can be more costly in terms of designing new policies and procedures, training personnel to effectively handle problem passenger situations, and enhancing security measures. Transit authorities may be forced to install security cameras, increase metro (transit) policing, and even train youth on the expectations and proper transit riding practices which can all impact the transit system's budget (Volinski, 2012).

While policymakers routinely cite concerns such as the environment, traffic congestion, and the belief that it will increase ridership, there is significant research that indicates that FFPT will not help in achieving such goals. Over the past two decades, state and federal governments have already increased funding for public transportation while the numbers of those that use it have declined (Brown, Baldwin Hess, & Shoup, 2003). Put simply, the United States is not a nation that heavily utilizes or is overly dependent upon public transportation. In 2003, transit accounted for less than two percent of all rides and found that passengers on public transportation only occupied seats 27 percent of the time (Brown, Baldwin Hess, & Shoup, 2003). Thus, even if a system does revert to being fare free, the preferences of Americans to their personal automobiles may prevent them from making the transition to transit regardless of the cost.

There is further evidence that supports that going *fare free* may work in opposition to the benefits that the FFPT initiative was intended to produce. For example, if the goal was to decrease the number of vehicles on the road, research finds that new riders to FFPT tend to be

those that would otherwise walk, not those that drive (Pinsker, 2015). This proves counterproductive to the goals and decisions to make a FFPT system based on its ability to convert drivers from riders. Secondly, while many will assert that low-income individuals will likely continue to utilize FFPT, much research has found that even the poorest who use public transit will abandon it as soon as they can afford a car (Aggarwala, 2014). Instead of transitioning those to public transportation for life, many will continue to only use it until they can go back to driving a personal automobile again. Third, research has also found that more people will shift from car to public transportation if the price of the car is increased but less likely if the cost of the public transportation fare is reduced (Cats, Reimbal, & Susilo, 2014). Therefore, going fare free will likely not entice people to give up their personal vehicle. However, if the price of fuel skyrockets, interest rates on car loans increase, or the price tags on automobiles surge, the transit system may then see new riders to the system. Until then, past studies confirm that ridership increases a very low percentage by new users to fare free systems and most increased ridership is from its current users (Cats, Reimbal, & Susilo, 2014).

Alternatives to Fare Free Transit Models.

Instead of transitioning to a fare free system, several public transit authorities are choosing to implement alternatives to a completely zero fare public transportation system. Reduced fares or *no fares to those that qualify* are two such methods utilized by local transit authorities (Brown, Baldwin Hess, & Shoup, 2003). Special age groups, those at certain income levels, and unlimited access passes are a few of the methods implemented by transit agencies to accommodate passengers with increased needs or who suffer from limited financial means.

Some transit agencies offer reduced fares to specific age groups such as children (i.e. those under five years old), students, seniors, or those with a disability. In fact, large transit

agencies that receive specific types of federal funding (i.e. 5307 funds) are required to offer discounted fares to those that are disabled or seniors during off peak hours (Clark, 2018). Other transit agencies go an extra step and simply offer discounts as part of their fare structure. The City of Chicago, for example, offers reduced rates for children, disabled, and seniors (Chicago Transit Authority, 2019). Other transit agencies may offer discounts to those that meet income requirements (Harmony, 2018). After completing a series of income verifying documents, transit authorities may issue passes to those needing transportation at a reduced rate or at no cost. The city of New York is another system that recognizes specific subsets of the population. The metro transit authority issues half-priced fares to those that qualify under New York's income guidelines (Jones, 2016).

Unlimited access programs do not provide free transit but instead pay transit systems directly for their services instead of having the transit system collect it from specific passengers (Brown, Baldwin Hess, & Shoup, 2003). Universities tend to be the largest supporter of unlimited access by paying transit systems a lump sum in exchange for students and university personnel to ride the transit buses for no charge when they show their student or employee identification card (Brown, Baldwin Hess, & Shoup, 2003). This arrangement can not only increase the transit systems ridership and revenue for the system, but can enhance the private entity's image, increase their employment applicant pool, and reduce congestion at their facilities due to such issues as parking.

Some transit agencies offer discounts on specific passes (i.e. monthly passes) for those that invest in transit in the long term versus those that pay with a single pass or with cash each time they board. While this may seem like a great opportunity for those that need and utilize transit frequently, it is often not utilized by those that are low-income. Those that have limited

incomes have a hard time making the larger, initial investment of the cost of a monthly pass and are forced to pay the higher price of a single fare; in turn, this serves as a discount to those are moderate to high-income families and not the lower-income that needs the financial assistance (Jones, 2016).

Several public transportation systems may also offer a route or rides to specific places (i.e. universities) free to passengers. Many times, these free routes or stops may be paid for by the university or business. Other times transit authorities will offer certain times of day for free (i.e. 5:00 A.M.) to encourage riders to use the bus during less busy times which can serve to reduce congestion during peak operating times.

Popularity of FFPT.

As of 2012, there were only 39 transit systems in the United States that offered their entire public transit services (all fixed route, deviated routes, subscription routes, and/or dial-a-ride) free to riders (Volinski, 2012). Of these FFPT systems, many are found in communities that are either rural or small urban, university dominated, or resort-oriented communities (Volinski, 2012). Large, urban systems have attempted fare free transit since the 1960s in cities such as Denver, Colorado, Trenton, New Jersey, and Austin, Texas (Pinsker, 2015). For various reasons, all abandoned the fare free initiatives and returned to charging fare when additional problems developed that outweighed the benefits (i.e. increased costs due to problem passengers).

Public transportation has been operational across the globe for centuries. Some systems operate late at night, others on the weekend, and others during the day. Some charge fares, others are free, some provide rides on small buses, and others move large numbers of people on oversized, electric vehicles. Each transit system is as unique as the person that uses it.

Depending on where one lives, their lifestyle, and unique economical and personal situation, public transportation may be their lifeline to work, medical appointments, educational opportunities, and social events. To others, it may not affect them directly. However, even if one does not use it, their daughter, father, or co-worker may rely on it each day. The upcoming trends (e.g. changes in generational needs) in American society will force public transportation systems to evolve to not only assist with complex issues such as congestion and pollution but can also make communities more attractive to residents and newcomers.

CHAPTER 3: METHODOLOGY

The purpose of this study is to examine the segment of the public transportation bus industry related to public transportation systems that do not charge fares to their passengers and instead use a variety of other methods to generate the revenue needed to administer and operate the FFPT system. However, little is known as to what funding mechanisms FFPT system use. This chapter introduces the research framework and approach, theoretical background, epistemology, and design methodology used for this mixed methods study. In addition, this chapter also identifies the process for how FFPT systems were identified, participants selected, timeline of the study, and the processes used for data collection, analysis, and storage.

Research Framework and Approach

One of the greatest obstacles public entities face when delivering services is funding. Simply stated, without funding, public services cannot take place. As funding becomes restricted or costs rise, public organizations are forced to raise additional funds to cover the rising cost or will be forced to decrease levels of service or eliminate services completely. While there are likely many public transportation authorities, community leaders, and residents that would like for their local public transportation service to transition to a fare free system, one of the largest barriers to making the transition are locating and implementing a funding mechanism that will cover the local funds needed to continue operation of services once fare collection from passengers has been removed. The purpose of this research project is to discover and examine funding alternatives that current fare free public transportation systems in the United States have implemented with the removal of passenger fares.

This study used a mixed methods approach to evaluate the funding mechanisms of fare free systems in the United States. Specifically, this study relied on interviews from public transit

professionals, an email survey comprised of closed and open-ended questions focused on the FFPT system's cost recovery mechanisms, online data from the National Transit Database that is administered by the Federal Transit Administration, and online website examination of the fare free systems to gain further information regarding their transit funding. By conducting this careful examination, this study can help uncover and discover what FFPT funding mechanisms are being utilized but also determine any advantages or disadvantages of the each approach.

Theoretical Background

Public transportation system funding is complex and oftentimes difficult to understand. Large metropolitan areas can apply for and receive federal funds directly from the federal government while smaller communities are eligible for federal funds passed down to them from their state's transportation department. This is further complicated by the fact that each state often supplies state funding with the federal funds and then can implement an array of diverse grant funding match requirements for each of the transit systems depending on specific criteria (i.e. certain percent match for smaller communities and a larger match requirement for communities with a larger population). For example, some larger transit systems receive 50 percent federal grant funding while smaller rural systems may receive 85 percent through a mix of federal and state funds (i.e. 40 percent federal and 45 percent state).

Transportation grants typically function on a reimbursement basis (Federal Transit Administration, 2014). The funds that come to the system are not dispersed in advance to the transit system in one lump sum but instead, the transit systems receive a percentage reimbursement (i.e. \$0.50 of every \$1.00 spent) of eligible expenses (i.e. fuel costs). This method forces the public transit system to financially invest (collect the local funding requirements) at the same time they are collecting the public dollars from the federal and state

government. This method also prevents the system from spending all of the grant funding at the start of the contract term and then removing transit services later in the year once the grant funds have been diminished.

Because each system receives funding at different rates and thus has different local match rates, it is likely that the full FFPT systems operating in the United States are all using various methods to collect and fund their transit systems once fares have been removed. In addition, depending on which state the transit system is located, there may be unique FFPT challenges, barriers, or benefits to the transit. For example, some public entities have successfully implemented sales taxes to fund projects or operations (i.e. building a bridge or dredging a lake). Depending on state statute, some transit authorities may be able to adapt and execute the option to collect a portion of a sales tax to gather additional revenue for the transit system but others transit systems may be prevented from executing such a model based on the fact that their state statutes do not allow the collection of sales taxes.

There is a significant difference between publically operated bus transportation and private bus transit systems. With the acceptance of federal funds, public transit systems are forced to implement various regulations and procedures. Private transit systems (those that do not receive federal transit operational dollars) are not bound to the same types of guidelines that public transportation systems are in regard to service hours, types, and design, public notification, and disability requirements. For example, buses found at Disneyland and luxury hotels often operate when convenient for the business, pick up and drop off only at key locations, and may or not charge a fare to passengers. Public transportation officials are bound to requirements for coverage of the entire service, must operate when scheduled, and have fare mechanisms (or no fares) that are consistent throughout the transit system.

The foundation of this case study is to gather information as to how public transportation systems, those that receive federal funds, generate the needed matching dollars to continue operations of their public transportation system once passenger fares have been removed. In addition, it is important that not only these systems receive federal funds, but also have the entire or majority of their services for free. This study sought to avoid partial FFPT systems as they still collect fares. Those fares in partial FFPT systems, depending on usage and cost, can be subsidizing the partially free routes. Therefore, public transit systems must meet the two criteria (accept federal funds and offer the majority of their services for free) in order to be included in this study.

Empiricism Epistemology

This study is centered on an empiricist epistemological paradigm. Empiricism is defined as a philosophy that supports the existence of truth and knowledge through experiences (Ricucci, 2010). Utilizing an inductive methodology, information was gathered, organized, and examined from transit system personnel's perceptions and experiences and the researcher's examination of content from websites to allow for the drawing of conclusions. This knowledge will assist in the development of recommendations to assist other public transportation administrative leaders with cost recovery strategies that allow them to remove the collection of fares from passengers and become a fare free transportation system within their communities. In addition, this information can also assist current FFPT systems. It is likely that even though a transit system is a successful FFPT system, they may experience routine hardships and struggles in their funding model. The information gathered within this study may assist them in altering their current design for a different model or may encourage them to include an additional funding mechanism so they have revenue generating from more than one source.

Design Methodology

This study utilized a nonexperimental design methodology. Nonexperimental designs allow researchers to measure a situation at a given point in time (Johnson, 2014). Due to the small population of transit systems that are full fare free, this study used triangulation to collect fare funding mechanism information from each FFPT. Information was obtained through transit system website examinations, online surveys that were distributed through survey software called Qualtrics, phone interviews, and by downloading data from the National Transit Database of the Federal Transit Administration. Information collected focused not only on the size of fare free transit system budgets and type of legal entity that each operates under, but information was also collected as to the participant's identification of funding choices, elaboration on how they chose each funding mechanism, and also to pinpoint any additional benefits or problems that they have experienced with their fare free funding structure.

Research Question

This study sought to answer the research question:

RQ1: What funding strategies have fare free public transportation systems implemented in lieu of charging fares to passengers?

Study Sample

This study was inclusive of known fare free public transportation systems. Using Volinski's 2012 study as a starting point, each of the 39 FFPT transit systems that participated in his transit system was listed and each website was examined to ensure they do not charge fares and remain fare free. Of the 39 system websites that were examined, four were immediately eliminated because they charge fares and are no longer fare free. These included: Canby Area Transit of Oregon, Glenwood Springs Transit of Colorado, Treasure Valley Transit

of Idaho, and Hele-On Transit of Hawai'i County, Hawaii. The result left 35 known public transit systems from Volinski's original 2012 study, hereinafter referred to as *FFPT Participant Study List*.

A Google search was also conducted to find additional transit systems that may have gone fare free since 2012. The search yielded a website, <https://freepublictransport.info/>, which lists fare free public transportation systems around the globe, including a list of 41 in the United States. Those identified in the United States were cross checked against the *FFPT Participant Study List* to avoid duplication and to ensure the system was fare free. It was found that several of the system listed on <https://freepublictransport.info/> only offered free public transportation on a specific transit route that catered to tourism or colleges and not the entire system. Those systems that were found to only offer a limited service as free instead of the entire service were omitted from this study's list of FFPT systems. Systems that were discovered to be full FFPT systems listed on <https://freepublictransport.info/> and not already included on the *FFPT Participant Study List* were added to it after each website was identified, examined, and confirmed that they are fare free. At the conclusion of the website checking those transit systems listed on <https://freepublictransport.info/>, five more transit systems were added to the list. These included: Town of Avon Transit of Colorado, CharmCity Circulator of Baltimore, Maryland, Mountain Line Transit of Missoula, Montana, PresidiGO of Presidio, California, and Intercity Transit of Olympia, Washington. The *FFPT Participant Study List* concluded with 40 fare free transit systems in the United States. Table 2 provides the detailed name and location of each known FFPT in the United States and the website address of each. The information in Table 2 was current as of April 1, 2020. Figure 5 provides a visual display of each participants geographical location in the United States.

Table 2.

FFPT Participant Study List

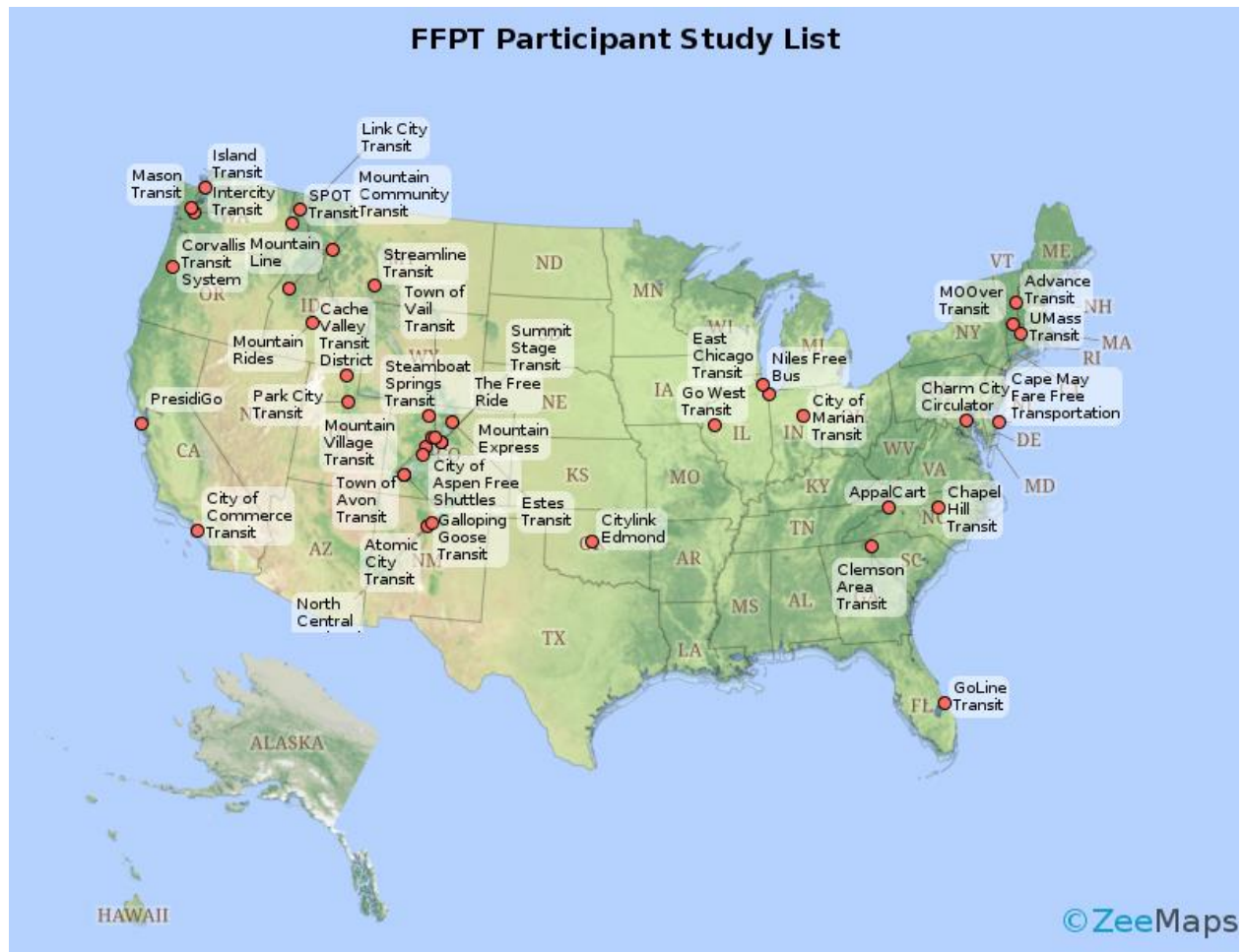
Transit system Name and Location	Transit System Website
Advance Transit, Wilders, VT	https://advancetransit.com/free-fare-policy/
AppalCart, Boone, NC	https://www.appalcart.com/need-a-ride
Atomic City Transit, Los Alamos, NM	https://www.losalamosnm.us/government/departments/public_works/atomic_city_transit/fares_transfers
Cache Valley Transit District, Logan, Utah	https://cvtdbus.org/zero-fare/
Cape May Fare Free Transportation, Cape May, NJ	https://capemaycountynj.gov/470/Passenger-Policy-Guide
Chapel Hill Transit, Town of Chapel Hill, NC	https://www.townofchapelhill.org/government/departments-services/transit/about-chapel-hill-transit
Charm City Circulator, Baltimore City, Maryland	http://www.charmcitycirculator.com/content/reasons-ride
City Link Transit, Coeur d'Alene, ID	https://idahocitylink.com/info.php
City of Aspen Free Shuttles, Aspen, CO	https://www.cityofaspen.com/279/Free-Aspen-Shuttles
City of Commerce Transit, Commerce, CA	https://www.ci.commerce.ca.us/city-hall/transportation
City of Marian Transit, Marian, IN	https://cityofmarion.in.gov/government/departments/transportation
Citylink Edmond, Edmond, OK	https://edmondok.com/205/Citylink-Edmond
Clemson Area Transit, Clemson, SC	https://www.catbus.com/GeneralInfo/tabid/791/Default.aspx
Corvallis Transit System, Corvallis, OR	https://www.corvallisoregon.gov/cts/page/cts-funding
East Chicago Transit (ECT), East Chicago, IN	http://www.eastchicago.com/161/Bus-Transit
Estes Transit, Estes Park, CO	https://estespark.colorado.gov/shuttles
Gallopig Goose Transit, Telluride, CO	https://www.telluride-co.gov/254/Public-Transportation

Go West Transit, Macomb, IL	http://gowesttransit.com/
GoLine Transit (Indian River County), Vero Beach, FL	https://www.golineirt.com/info.html
Intercity Transit, Olympia WA	https://www.intercitytransit.com/zerofare
Island Transit, Coupeville, WA	https://www.islandtransit.org/
Mason Transit, Shelton, WA	http://www.masontransit.org/whyfarefree/
MOOver Transit, Southeast Vermont Transit Inc, VT	https://www.moover.com/moover-news-info/dvta-story
Mountain Community Transit, McCall, ID (provided by Treasure Valley Transit)	https://www.treasurevalleytransit.com/mccall.php
Mountain Express, Crested Butte, CO	http://www.mtnexp.org/about-mtnexp/
Mountain Line, Missoula, MO	https://www.mountainline.com/media-covers-mayors-proposal-for-zero-fare-service/
Mountain Rides, Ketchum, ID	https://www.mountainrides.org/about-mountain-rides/
Mountain Village Transit, Mountain Village, CO	https://townofmountainvillage.com/explore/getting-around/bus-dial-a-ride/
Niles Free Bus, Niles, IL	https://www.vniles.com/154/Free-Bus
North Central Regional Transit District (NCRTD), Española, NM	https://www.ncrtd.org/bus-fares-and-fee-structure.aspx
Park City Transit, Park City, UT	http://www.parkcitygreen.org/Ways-to-Save/Transportation/Public-Transportation.aspx
PresidiGo, Presidio, CA	https://www.presidio.gov/transportation/presidigo
SPOT Transit (Selkirk-Pend Oreille Transit), Ponderay, ID	https://spotbus.org/information/
Steamboat Springs Transit, Steamboat Springs, CO	https://steamboatsprings.net/166/Transit
Streamline, Bozeman, Montana	https://streamlinebus.com/about/why-is-streamline-fare-free/

Summit Stage, Summit County, Breckenridge, CO	https://summitcountyco.gov/444/About
The Free Ride, Breckenridge, Colorado	https://www.breckfreeride.com/about-us/service-overview
Town of Avon Transit, Avon, CO	http://www.avon.org/2199/Bus
Town of Vail Transit, Vail, CO	https://www.vailgov.com/bus-schedules
UMASS Transit Services, Amherst, MA	https://www.umass.edu/transportation/transit

Figure X

FFPT Participant Study List Map



Participant Identification and Survey Dissemination

Fare free transit systems for this study are defined as those that receive federal funds (5307 or 5311 public transportation operating funds) and offer the majority of their services for free. Systems that do not accept federal dollars are not bound to the same rules or regulations of public transit systems and thus can operate as a private operator and forgo such requirements in relation to service hour notifications and service area coverage. In addition, this study sought to exclude the shuttles at hotels or theme parks as they do not cater to the entire population but instead, to a small segment of the population that they choose. PFFT systems that offer one or

two routes for free or only portions of a route during specific time periods (i.e. 2:00 A.M. to 5:00 A.M.) are not considered a full fare free system and thus are not included in this study. Due to the small number of transit systems that were found to be fare free, all of the transit systems on the *Fare Free Participant Study list* all were selected to be surveyed.

Participants for each of the systems on the *Fare Free Participant Study List* were selected by examining each system's public transportation website. Directors, administrators, managers, or general contact emails were discovered, collected, and stored in the Qualtrics system for survey distribution. Once respondents for each system were identified, surveys were disseminated via Qualtrics to the email addresses found online. One system (East Chicago Transit) did not have an email address available online for their transit leadership or administrative professionals but did have an online submission form. The content from the Qualtrics narrative with a survey link was thus uploaded and emailed via their specific website platform to East Chicago transit's director and supervisor.

Timeline

The online survey in Appendix D was disseminated to transit professionals on August 14, 2020. Appendix B showcases the Qualtrics email used to introduce the project, direct the respondents to the link for the survey, and included instructions for the respondents to please complete the survey at their earliest convenience. Any email that was returned immediately for "non-delivery" was saved and the transit systems website was again examined to determine an alternate email address. The survey was then reissued to the following agencies within 24 hours of return. After ten days, reminders (Appendix C) were sent to all transit agencies that had not responded and asked them to please consider participating in the study. After 60 days, the survey was closed and participants were no longer allowed to complete the survey online.

The final question of the online survey asked survey respondents if they would be willing to participate in a follow-up phone interview. Applicants that selected “yes” were asked to provide contact information. Interviews were conducted simultaneously of survey completion. Survey results were examined as soon as they were submitted and systems that indicated they would participate in an interview were contacted to schedule a time for an interview.

Survey Design

The survey consisted of fifteen multiple-choice and open-ended questions regarding fares, the fare removal process, and how the system currently raises the funds to cover the cost recovery portion of their budgets. In addition to questions asking transit system personnel to identify and explain their funding mechanisms, each transit organization’s respondent was asked to provide general information as to their transit system name, location, and types of services offered. Respondents were also able to upload documents directly to the Qualtrics survey (i.e. copies of sponsorship agreements between the transit system and business owners). Sixty days after the survey was disseminated, it was closed and survey information was pulled from Qualtrics into an excel spreadsheet and uploaded to Statistical Package for the Social Sciences (SPSS). Of the 40 transit systems that were on the *FFPT Participant Study List*, 26 systems responded to the survey, a survey response rate of 65 percent.

Interviews

Semi-structured interviews were completed simultaneously with survey participants who agreed to participate in the interview process. These interviews were conducted on the phone at a time convenient for the transit system professional. Some transit professionals preferred to answer questions via email and supply additional information in this manner. This request was

accommodated and email exchanges occurred at the convenience of the transit system professional.

Interviewees remained anonymous and the interviews were not recorded. Notes from the interviews and email exchanges regarding funding information were collected and transcribed into Dedoose. Of the 26 transit systems that completed the surveys, follow-up interviews were conducted with eight transit systems, an interview participation rate of 30.7 or nearly 31 percent.

National Transit Database of the Federal Transit Administration

The National Transit Database of the Federal Transit Administration provides annual data regarding federally funded public transportation systems. Each year the FTA collects information regarding the systems that receive federal funds among diverse categories such as ridership, budget amounts, capital expenditures, safety and security, and assets. In addition, the NTD also provides descriptive information regarding each transit agency's legal formation, passenger per service hour rate, and cost per mile. Each of the 40 public transportation systems identified for participation in this study was examined in the NTD. Information from NTD was obtained (in excel format) regarding ridership, budgets, and legal formation. The study used 2017 data as 2018 and 2019 data was not available on the date of download (August 14, 2020). Data regarding three variables (ridership, annual operating budget, and type of legal formation) were also uploaded into SPSS.

Website Examination

Each system's website was examined for information related to this study. Sites were scrutinized for information regarding the transit system's legal name, type of legal authority, confirmation of being a fare free system, fare free transit history, and types of funding sources

that may be utilized by the transit system. While each transit system’s website was successfully located, the information contained on each was very diverse. Some system information was very limited (i.e. only listed service hours) while others boasted of their fare free funding initiatives, history, and how they fund their systems. Notes related to such content from each of the fare free public transportation system websites were also collected and saved.

SPSS

Responses from the surveys and the NTD data were transcribed into variables into SPSS for analysis.

Variables.

The collected data was nominal from descriptive questions while others were ratio data. Table 3 provides a list of the variable, a description of each, and the level of measurement for each variable.

Table 3.

SPSS Variable Information

Variable	Description	Level of Measurement
Transit System Legal Structure	City, County or Local Government Unit or Department of Transportation, Independent Public Agency or Authority of Transit Service, Private-Non-Profit Corporation, State Government Unit or Department of Transportation	Nominal
State	State in which the transit system primarily operates	Nominal
Transit System Ridership	System wide passengers per service hour	Ratio
Transit System Operating Budget	System wide annual budget (2017)	Ratio

Alternative Funding Types	Self-reported types of funding alternatives utilized - General fund, dedicated tax revenue, fee revenue, partnerships, sponsorships, and philanthropy	Nominal
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DeDoose

Documents collected from interviews and the online survey responses were uploaded into Dedoose. In addition, notes from the website examination, interviews, and email exchanges with various transportation directors or key personnel regarding following up questions were also recorded in the Dedoose software program. Analysis of keywords and themes was conducted to generate additional funding options and potential findings.

Limitations of Study Design and Methodology

Some transit systems may have been unintentionally omitted from this study. To date, there is not a published, current, comprehensive list of the full fare free public transportation providers in the United States. Systems that were not listed in the Volinski study from 2012 nor on the fare free website (<https://freepublictransport.info/>) were omitted due to their unknown existence.

Due to the delivery nature of an email survey, there was no way to control for the email reaching a recipient’s spam folder. Transit systems were asked twice to respond via initial email and reminder email, however, there is no way to know if the email reached a spam folder and the intended recipient never received either the initial communication or follow-up request to complete the survey. In addition, those that did not receive the email communication were also unintentionally not given the opportunity to participate in follow-up interviews for the same rationale.

The list also does not account for transit systems that have gone fare free since April 1, 2020 or any that have gone temporarily fare free due to the COVID-19 pandemic. As of September 1, 2020, numerous systems have ceased charging fares temporarily to passengers in order to maintain and encourage social distancing guidelines on transit vehicles. To cover expenses, the Federal Transit Administration has allocated additional dollars to transit systems temporarily to adhere to these guidelines through funding provided by the Coronavirus Aid, Relief, and Economic Security Act (Cares Act) (Federal Transit Administration, 2020). These systems were not included due to fact that they were implemented due to a pandemic and will likely be only fare free temporarily.

CHAPTER 4: ANALYSIS

This chapter examined and analyzed the information collected from this study's mixed method design to answer the research question: What funding strategies have fare free public transportation systems implemented in lieu of charging fares to passengers? It included an examination of the participants to ensure the system met the qualification of being a FFPT system. For this study, public transportation systems had to be the recipient of federal funding and offer the majority of their services for free. Information regarding those systems that did meet the qualifications was analyzed further regarding FFPT system location, legal entity formation, size, and the types of funding sources these systems use instead of charging fares to their passengers. This study found six funding strategies that are being utilized by full FFPT systems.

Fare Free Public Transit Participant Analysis

On October 15, 2020, the survey collection, interviews with transit systems, and extensive website examinations of the 40 systems concluded. In addition, the information from the National Transit Database of the Federal Transit Administration had been collected, uploaded into SPSS, and had been examined at length. Through this thorough examination, confirmation of whether the transit system was a recipient of federal funds was conducted and that they offer the majority of their routes and services for free to the public. For this study, transit systems must be the recipient of federal funding (5307 or 5311 funding) as well as have the majority of their routes and services free to the public. The National Transit Database only supplies information on federally funded transit systems and not private ones. Based on information collected from the surveys, interviews, websites, and national transit database

information, the following five transit systems were found to not meet the criteria of this fare free public transportation study:

- a. Town of Estes: The Town of Estes offers free, seasonal public transportation throughout Estes for tourists (Town of Estes Park Colorado, 2020). While the system is seasonal and free to everyone, they are not a recipient of federal funding. Outside of its tourist season, the town does not operate buses free or with a fare. Instead, they shut down the public transportation systems all together and therefore, the community and the transit system is not eligible to be a recipient of federal funding (Estes Park, 2020).
- b. Town of Vail: The Town of Vail runs routes throughout their town to transport individuals year round. While they are eligible to receive federal funds, they do not participate in the federal government's 5311 transit funding program (Town of Vail, 2020). An interview with Vail confirmed that they fund their transit system entirely from the municipality's general fund. Using public dollars that include a portion of ticket sales from Mountain Resort (a large ski resort) and parking fee revenue from the parking ramps located within the city, the city funds its system locally (Town of Vail, 2020). They moved away from applying for federal funds due to the restrictions accompanying the acceptance of the federal dollars and now can make to changes to their services hours and areas of coverage without having to meet the requirements of the federal government in regard to public notification of service changes. They prefer to make changes when convenient and immediate. Thus, with the funds to do so, the Town of Vail has transitioned to fully funding their systems independent of any federal funds (Town of Vail, 2020).
- c. City of Aspen: Much like the Town of Vail, the City of Aspen funds their public transportation system without the acceptance of 5311 federal operational funds (City of

Aspen, 2020). Relying on the funds directly available within their community, they fund their public transportation system with funds obtained from sales tax, use tax, and lodging tax.

- d. **UMASS Transit:** UMASS was also eliminated from this study as they are technically collecting fares from passengers. The University of Massachusetts provides public transportation in and around Amherst, Massachusetts via shuttles. In addition, they also operate the Pioneer Valley Public Transportation system (which does expect fares from passengers). While Pioneer Valley Public Transit is a direct recipient of federal funds and UMASS may receive these federal funds indirectly, UMASS *does* expect fares from passengers on the UMASS buses even though they do not collect them on the bus. According to their survey responses, before a passenger boards, it is expected that passengers will have either a University personnel ID, student ID, or have purchased a fare. Checks are made of riders periodically to ensure they have fares even though the drivers do not collect fares on the vehicles. Since the expectation is for patrons to pay for the ride and the actual collection of fares is still occurring, even if offsite, they were eliminated from this study as qualifying as a fare free public transit system.
- e. **Presidio National Park, San Francisco, California:** Presidio National Park offers free shuttles, called the PresidioGo, throughout the Presidio National Park. In addition, the city of San Francisco has a free shuttle that goes throughout the downtown to the Presidio. However, they are not a recipient of federal transit funding and thus were eliminated from the study.

The information regarding these five transit systems was eliminated from the SPSS and Dedoose databases after they were found to not meet the criteria for inclusion in this study. This

left the study with 35 eligible fare free public transportation system within the United States. Of the 35 systems, survey responses were received and examined from 21 participants. This is a response rate of 60 percent. Interview data was also collected from five of the 21 transit systems that completed the survey. This is a 25 percent response rate of interviews conducted of eligible survey respondents. National transit database information was collected from all 35 transit systems and website examinations were also conducted of all 35 transit systems.

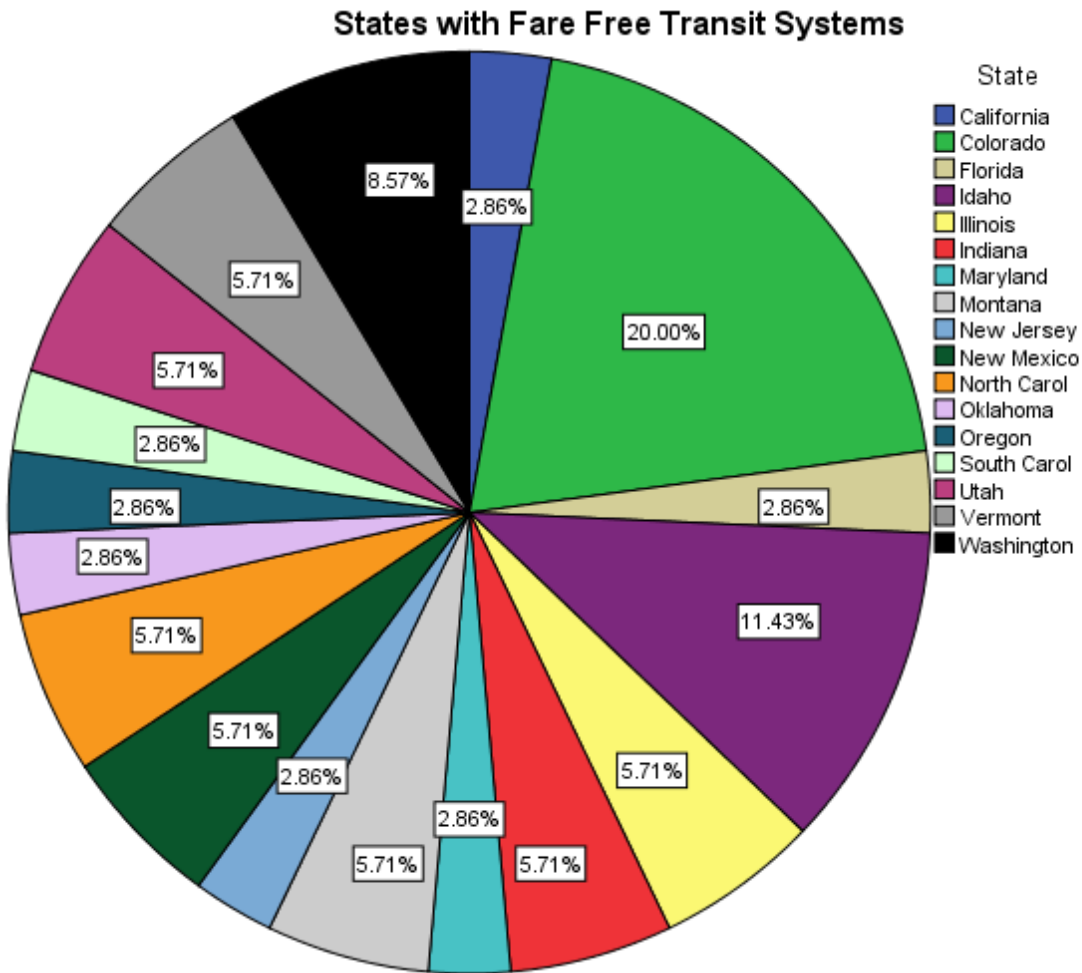
Analysis of Fare Free Transit System Location

Volinski (2012) found that fare free transit systems are typically segregated to small communities, university dominated communities, and those that have high tourism. The data collected in this study supports this claim to date. Of the 35 FFPT transit systems in existence in 2020, seven or 20 percent are found in the state of Colorado among high tourism, ski resort communities. Municipalities such as Breckenridge, Avon, Steamboat Springs, and Telluride all offer free public transportation throughout their communities to not only serve the residents that live there but also the mass number of tourists that visit their towns each year. While public transportation is a convenience to many, it is a necessity for these small, high tourism areas that swell with people during the peak ski season. Due to the small size of the community, limited parking along the busy city streets, and even further restricted parking at the ski resorts upon the mountains, several high tourism towns in Colorado have had to implement parking structures and offer free public transportation to and from the ski resorts as a way to not only decrease congestion and accidents within their communities but also increase the marketability of their towns to continue to attract tourists to the areas. As Figure 6 shows, there are no other states that invest as heavily into fare free public transit designs as Colorado. Instead, the remaining transit systems are spread throughout the rest of the country. There are fare free transit systems

through each region from the northwest (Washington and Oregon), south (New Mexico), east (Vermont and New Jersey), and southeast (Florida).

Figure 6.

States with Fare Free Transit Systems



The remaining transit systems are spread out in small communities or are in university dominated areas. For example, Go West Transit of Illinois is fare free and heavily serves the student population of Western Illinois University, Streamline Transit in Bozeman Montana assists Montana State University, Chapel Hill Transit of Chapel Hill, North Carolina transports students of the University of North Carolina, and Appalachian State University students ride for

free on AppalCart Transit of Boone, North Carolina. Other smaller communities such as Cape May County, New Jersey offer free transportation throughout their sparsely populated county as does Indian River County, Florida.

Analysis of Fare Free Transit System Legal Entity Formation

Careful examination of the 35 FFPT systems also focused on the type of legal entity of each. Public Transportation systems that received federal dollars have been housed in independent public agencies, nonprofits, and various cities and counties. Examination of the NTD of all 35 FFPT systems found that the majority are located in a single city, county, or local unit of government. As Table 4 details, 60 percent are found in various municipalities, counties, or a local unit of government. This is noteworthy because it may be easier within one unit of government to make the transition and determine funding sources than it is for leaders in a regional setting that all share a voice while representing a transit system collectively in a regional setting contained on a joint powers board or private, nonprofits where costs are likely to be shared among several government bodies. For example, it is likely easier for a single city to pass a fare free transit system initiative and determine that it will be funded through the general fund than it would be for a joint powers board, whose transit system is comprised of individuals representing a collection of counties, to implement a fare free initiative and determine how much each county allocate from their respective general funds. In addition, some of the individual government entities may not be as supportive as other surrounding counties and may not wish to allocate their tax dollars. Moreover, how do they determine the amount each county will have to budget? Do counties with more service hours contribute more? Or is contribution based on population with the belief that those that have more people residing with the communities likely ride more and thus should pay more? Thus, there may be additional

challenges for regional transit systems or those that are not housed within a single city or county.

In addition, private, nonprofits may find it poses a bigger challenge to become fare free. They do not have direct access to a city or county’s general fund revenues, cannot receive implement a sales tax and receive revenue according to state statute, or the ability to access fees to residents. Thus, those nestled outside of a government entity may have different challenges when considering a fare free public transit initiative.

Table 4.

Fare Free Public Transit Legal Entity Type

	Frequency	Percent	Valid Percent	Cumulative Percent
City, County or Local Government Unit or Department of Transportation	21	60.0	60.0	60.0
Independent Public Agency or Authority of Transit Service	8	22.9	22.9	82.9
Private-Non-Profit Corporation	5	14.3	14.3	97.1
State Government Unit or Department of Transportation	1	2.9	2.9	100.0
Total	35	100.0	100.0	

Analysis of Fare Free Transit System Size

Fare free public transit systems vary in size. Determining how to measure a transit system’s size is difficult to do. A system can be deemed large or small by several measures including, but not limited to, the examination of the number of buses that transit system operates on the road, the number of service hours the system provides to riders, the number of

rides that the system gives annually or monthly, the number of miles the bus operators drive, or the size of the transit systems budget. Because many of these transit systems are operating in small communities, high tourist areas, or university dominated areas, ridership data or the size of the community may not be good indicators of fare free transit size. A small town could likely see large ridership due to tourism or college students that ride on shuttles. For this study, FFPT size was determined by budget size, the amount of money that it costs to operate their systems.

A review of the 35 FFPT operating budgets using NTD data showed that the operating budgets of these systems range from smaller sized systems (those with less than \$1 million in operating expenses) to those that have extremely large budgets (over \$15 million) (The National Transit Database, 2018). According to the NTD, Selkirks-Pend Oreille Transit Authority (SPOT) of Idaho is the fare free transit system with the smallest operating budget. The National Transit Database reported that its annual budget in 2017 was just over \$500,000. Intercity Transit of Washington, however, has an annual operating budget of over \$40 million. A complete breakdown of the operating budgets of all of the FFPT can be seen in Table 5. While there a few smaller FFPT systems like SPOT and larger ones like Intercity Transit, the vast majority (nearly 63 percent) as seen in Figure 7 have operating budgets in the \$1,000,000 to \$5,000,000 annual range.

Table 5.

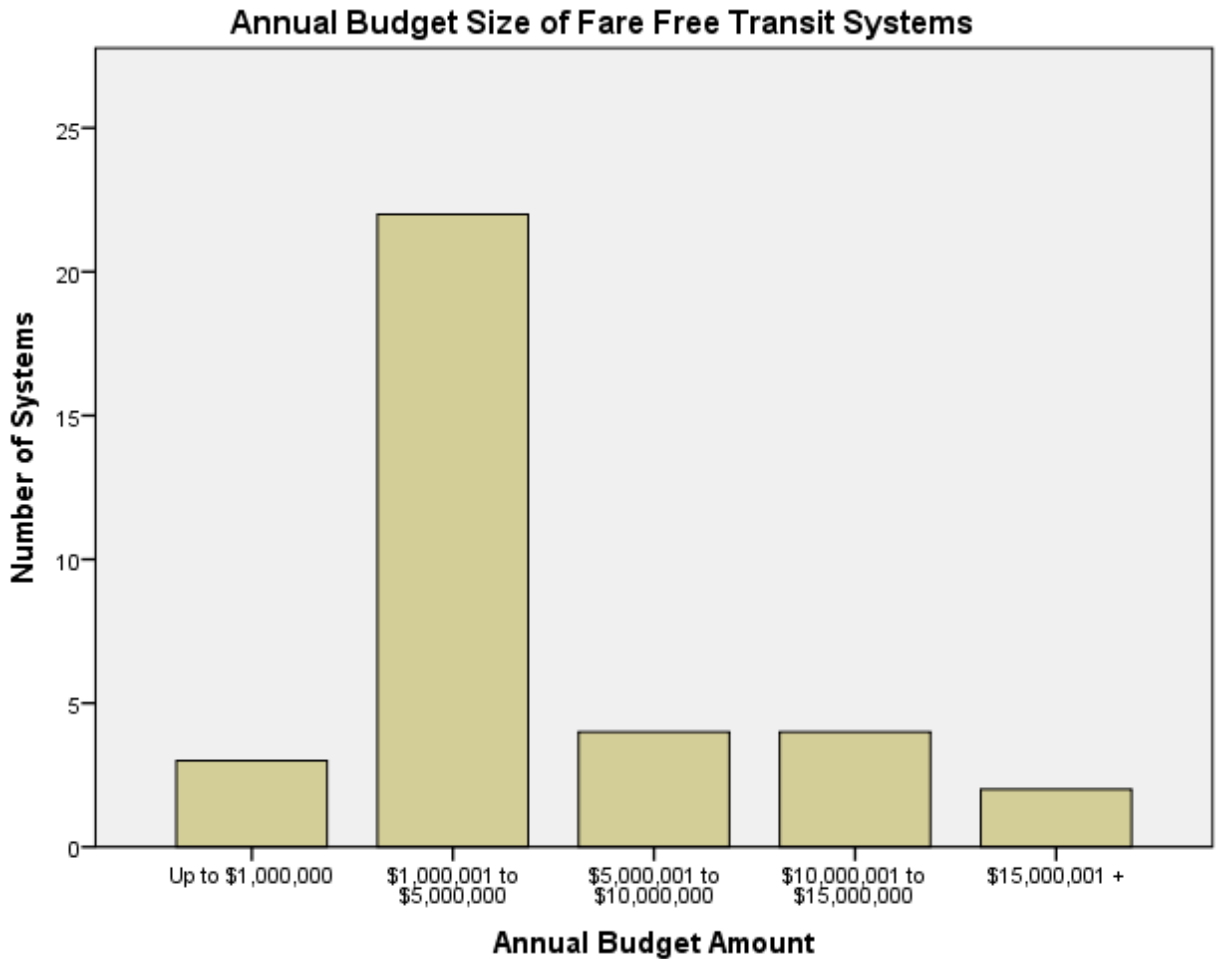
Annual Budget Size of Fare Free Transit Systems

	Frequency	Percent	Valid Percent	Cumulative Percent
Up to \$1,000,000	3	8.6	8.6	8.6
\$1,000,001 to \$5,000,000	22	62.9	62.9	71.4
\$5,000,001 to \$10,000,000	4	11.4	11.4	82.9

\$10,000,001 to \$15,000,000	4	11.4	11.4	94.3
\$15,000,001 +	2	5.7	5.7	100.0
Total	35	100.0	100.0	

Figure 7.

Annual Budget Size of Fare Free Transit Systems.



Types of Funding Alternatives

Fare free public transit systems are not limited to one method of revenue generation. Instead, many transit systems engage in a multitude of these techniques simultaneously to generate the needed revenue to cover costs. When costs increase and general fund appropriations do not, some transit agencies will turn to options such as philanthropy in the form

of grant writing or appeal to local partners such as a university to solicit additional funds for the transit system instead of cutting services. In addition, others find from inception know they may need to engage in more than one method to cover all of the costs of the services they offer.

According to the public transportation system in Missoula, Montana, they started their fare free public transit using sponsors. However, the sponsorship program only covers about 60 percent of the operating local match so the transit system is forced to seek additional funding methods such as grant writing to cover the remaining match needed (Mountain Line Montana, 2020).

After careful examination of the federally funded 35 FFPT system's websites, survey responses, and completion of interviews, data regarding the funding methods was found for 28 of the 35 FFPT systems or 80 percent of participants. Information was not obtained from the remaining seven systems. Of the 28 systems in which data was collected, six categories of FFPT funding emerged. These six areas included: general fund appropriations from a city or county general fund, dedicated tax revenue, fee revenue, philanthropy, partnerships, and sponsorships. Table 6 lists each of the funding alternatives along with the percentage of FFPT systems that use each. Figure 8 shows that usage is mixed amongst the fare free system. Overwhelming, Figure 8 shows that the fare free transit systems have a heavy reliance on partnerships and dedicated tax revenues (31.4 percent each). Twenty percent of the systems also use general fund allocations from the local government to replace passenger fare collection. Fees, philanthropy, and sponsorships were the least utilized methods with a 5.7 percent response rate each amongst the 28 fare free transit systems.

Figure 8.

Fare Free Public Transportation Alternative Funding Mechanisms.

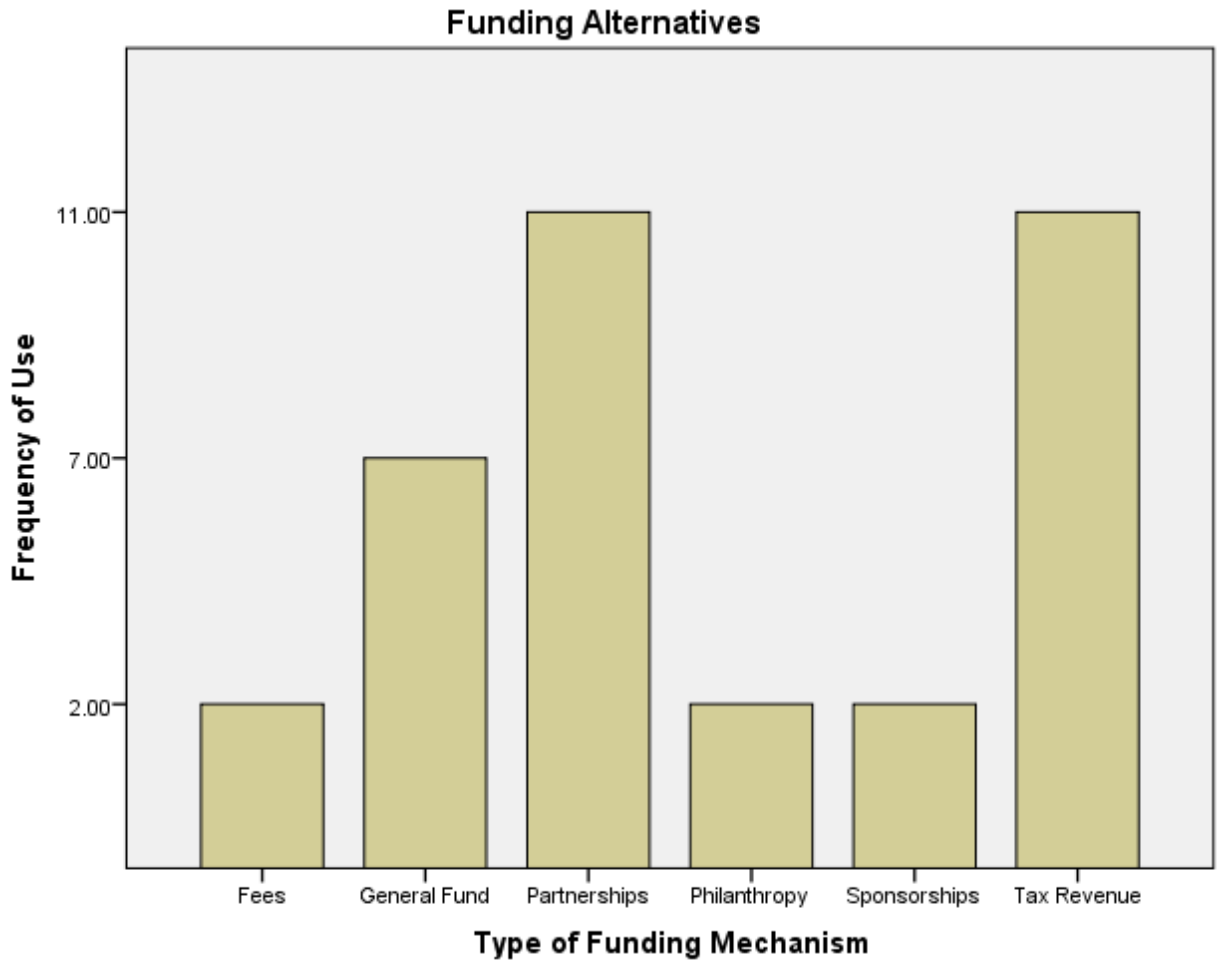


Table 6.

Fare Free Public Transportation Alternative Funding Mechanisms

	Frequency	Percent	Valid Percent	Cumulative Percent
Fees	2	5.7	5.7	5.7
General Fund	7	20.0	20.0	25.7
Partnerships	11	31.4	31.4	57.1
Philanthropy	2	5.7	5.7	62.9
Sponsorship	2	5.7	5.7	68.6

Tax	11	31.4	31.4	100.0
Total	35	100.0	100.0	

Reponses from: Survey response (n=21) and transit websites (n=7). There are still a few unknown (n=7) and thus are not included.

General Fund.

Some cities and counties plan for FFPT transit operations within their annual budget appropriations. These general resources, typically called the *general fund*, are money that the city or counties receive from state aid, property tax dollars, and sales taxes collected within their communities. The communities, at their discretion, turn around and divide these monies between their various departments such as fire, police, public works, and the public transportation system.

Dedicated Tax Revenue.

Depending on local and state laws, some transit systems may be eligible to be the direct recipient of dedicated tax revenue. Unlike general fund dollars that are dispersed according to council priorities annually, public transportation systems may be eligible to be the direct recipient of a percentage of sales tax, property tax allotment, lodging tax, or local options taxes continuously. These funds are dedicated directly to the transit system and are used exclusively for public transportation needs.

Fee Revenue.

There are a few different fee revenue options that are currently supporting FFPT systems. The first is a transportation utility fee that is assessed and collected from all residents (owners and renters) and businesses monthly. This fee is designated and calculated on transportation use rather than property value (U.S. Department of Transportation, 2020). Much like a water or sewer utility fee, property owners are charged a fee monthly which provides the needed revenue

for the local transit service. This monthly fee can be calculated in a variety of ways including a trip generation estimator, examining the number of parking spots at a business, or through the square footage of facilities (U.S. Department of Transportation, 2020).

A second system generates revenue from a real estate transfer assessment fee. This fee is charged to homeowners and renters every time the title of property changes from one owner to the next. This fee is assessed based on the value of the property and use to fund many community services. Public transportation is one such service that has been the recipient of funds obtained from this fee.

Partnerships.

Several public transit systems have found it advantageous to enter into long term partnerships with businesses that typically generate the largest number of transit users within their communities. For example, colleges and universities have reaped the benefits of partnering with the local transit system. By supplying the transit system with funds each year, the universities do not have to find parking for all students coming to live on campus nor do they have to supply their transportation for students that live in and around campus. Instead, many schools find that it is financially advantageous to subsidize the transit system than to create, operate, and maintain their transit services. By doing so, they also do not have to plan for capital replacement of buses, transit garages, or administrative office student transportation and instead can spend the funds and space on classrooms and recreation options for students. Casinos and large employers have also entered into partnerships with the local transit systems for many of the same reasons. These partnerships are typically long term and involve larger quantities of money annually. A transit system may be able to partner with one entity and receive all of the local match requirements needed or maybe partner with several entities.

Sponsorships.

Sponsorships are a funding mechanism in which local businesses invest in the transit system as a means of investing in the community. These sponsoring organizations are usually not entities that have transit dependent populations but instead believe in the vast benefits fare free public transportation can bring to the community. Agreements between sponsors and FFPT systems tend to be reviewed periodically and may not involve as large contributions seen in partnerships. In addition, sponsorships may include other means of support to the transit system instead of financial. For example, the local cable company may sponsor the transit system but instead of giving the transit system a lump financial sum every year to support its operations, they may donate free Wi-Fi to the system for passengers to use when riding on the transit buses.

Philanthropy.

Transit systems may engage in philanthropic efforts in the form of grant writing (beyond writing grants to their state department of transportation or the FTA) and fundraising to generate revenue each year for the transit system's operations. Based on the organization's nonprofit or government status, many are eligible for local, regional, state, and federal grant funds. Many transit organizations will invest in writing grants and performing fundraising initiatives to not only generate funds but also advertise and bring awareness of their system throughout the communities in which they operate.

CHAPTER 5: FINDINGS AND CONCLUSION

Six categorical funding mechanisms were found when answering the research question, “What funding strategies have fare free public transportation systems implemented in lieu of charging fares to passengers?” Due to the unique characteristics of the six funding categorical findings, not all should or can be implemented by systems that desire a FFPT structure.

Depending on state and statutes, some many not even be prohibited. This chapter will provide detail as to the benefits and challenges of deploying each funding mechanism. In addition, this chapter will also highlight the importance of two additional findings that are universal to all FFPT, the importance of dedicated funding and collaborative governance.

Funding Categorical Findings

This study found six categories that fare free transit systems use to generate the revenue needed to operate their systems once passenger fares have been removed. Sometimes one, two, or several may be used in conjunction with each other. Not every type will work for every system. Depending on the legal structure of the organization and state in which they are administered, some options may not be feasible to examine. For example, many states do not charge sales tax, and thus, implementing a sales tax is not a realistic option for the transit system to examine. The same is the case with property taxes as some states do not allow the tax property. As with each option, there are benefits and challenges to each. The following analysis carefully examines each of the six revenue category strategies and outlines benefits as well as precautions that transit systems should consider before determining whether to implement one or all.

General Fund.

Twenty percent of FFPT transit systems receive dedicated funding from the city or county's general fund to operate their fare free public transportation systems instead of collecting passenger fares according to Figure 5. In this funding model, FFPT systems receive a large lump sum allocation from the city or county's general fund annually. There are benefits attached to using general fund revenues but also some challenges to this funding mechanism.

The first benefit of using the general fund model is its ease of allocation. There are no long grants that have to be written. Instead, the city or county can simply budget for and pass a given amount to be spent by the transit system using funds that they collect through a series of methods. The amount is determined and usually set annually. It can also be increased easily if costs escalate. Based on the amount set by the council, transit leaders can adequately plan for their operations and administer their system within the given budget. They can then forgo the hours counting coins and hoping to collect enough to cover their local match. Instead, with a set, fixed amount established, the local transit officials can focus on other functions such as operations, marketing, and expansion needs.

Another benefit to using general fund dollars is the commitment and support of a pro-transit council. Fare free public transit systems that receive general fund dollars typically have local officials that believe in the mission of transit and find value in offering it free to the public. Many survey respondents highlighted how proud their community is to offer fare free transit or that it is "simply the right thing to do." Each year, through the general fund allocations, local officials and staff make transit a priority and fund transit in the same manner as they do other important municipal or county services.

Using a general fund allocation as the primary local match source also has challenges. Competition, regional transit structures, and lack of reserve funds are all concerns that transit systems will need to address or acknowledge before implementing such a model. The following explains each of these challenges in detail.

Fare free public transit systems are typically valued by the local authority and thus receive general fund dollars. However, that value is tested, especially when funds become restricted. If other large expenses come about, new projects develop in the community, or the funds decrease overall in the city's general fund, the council will be forced to make hard decisions about how to allocate their funds. Some departments may receive less than previous years and others may be cut entirely. In this model, public transit is directly competing against other departments that deliver important services to the public. Unfortunately, transit may find itself under more scrutiny than departments such as fire and police.

Some survey respondents indicated that they have found difficulty in maintaining funding when city or county officials change through elections. For example, a city council may be pro-transit and allocate funds generously for years. However, with turnover and new officials coming on board, transit may be a priority one year and not the following. Transit officials may re-advocate for funding along with the importance and impact it has on the community and still find their budgets restricted compared to previous years. Thus, one of the challenges with using general fund dollars is that transit systems need to continually be educating local officials and the public about the benefits of public transit so it remains a priority come budget time. Some will argue back that riders should pay for it, however, some transit systems that responded to the survey have gone on to advocate on behalf of riders by informing the public and politicians that providing funding for public transit is the way to enhance the community overall through

the assistance of providing access to employment or marketing their community. Thus, the message from transit officials is often that a FFPT system is not just for the riders, but for the community as a whole.

One of the disadvantages to general fund allocations is that any excess funds remaining at the end of the fiscal year do not carry over from year to year. Instead, funds that are not spent will be returned to the general fund and reallocated to various departments the following year. In these cases, general fund allocations prevent a transit system from developing a reserve account which many need. Transit reserve accounts or *rainy day funds* are extremely valuable to transit systems as it can assist transit systems when expenses run high (i.e. cost of fuel) so they do not have to cut services, marketing or training budgets, or other items mid-year. In addition, a reserve fund often helps transit systems pilot new routes, embark on new ventures like electric buses, or invest in technology that otherwise the community may not have the resources to do. Consequently, the lack of a reserve fund can restrict capital investments and expansion opportunities.

Not all transit systems serve a single community. Instead, some expand into neighboring communities or are shared between communities and counties. Individual cities or counties typically want to share expenses between the communities and an equal rate to void having one community fund transit for other communities. Thus, general fund allocations can also be harder to obtain for larger, regional, or multi-community systems.

If a transit system is regional or independent of the city or county and is seeking general fund dollars from the communities in which they serve, the process of asking for funds can also be exasperating. Coined “tin-cupping” by one transit official, the act of going in front of city councils each year, asking for funds to be deposited into their outstretched hand, can be

frustrating, especially when the transit system is not housed within the entity (Mountain Rides Idaho, 2020). In this scenario, it may be much easier to restrict or cut funding to a transit system that is independently owned and operated versus one that is directly under its roof. Thus, local officials routinely need to be reminded of why they are supporting and funding a fare free transit system that is independent of their entity versus spending money on services they directly provide.

Things can be even more complicated for those transit systems that are established under an independent transit authority or private, nonprofit. These transit systems are governed by a board of directors that have guidelines or bylaws that detail the number of members, length of terms, and financial contributions. Transitioning to fare free may prove difficult in regional transit systems when communities are forced to provide financial contributions when they may not support the initiative or do not have the funds. For example, if a four-county public transportation system seeks to deploy a fare free model, they will likely seek contributions from all four counties. It becomes difficult to not only determine how much each county should contribute and which methodology to use to determine funding allotments but also what to do if one county does not have the general funds available to contribute to public transportation.

Dedicated Tax Revenue.

Dedicated tax revenues may come in several formats and vary from state to state. There are sales taxes on goods, taxes on property, taxes on lodging, and even local options taxes. However, not all states allow sales tax and laws vary from state to state. When a transit system wishes to explore dedicated tax revenue as an option for funding their transit system, they need to examine their specific state laws in regard to taxes and the possible thresholds allowed by the

state. This study found that FFPT dedicated taxes come from sales tax, property taxes, lodging taxes, and local options taxes.

A sales tax, lodging tax, or local options tax is typically a tax charged to the end-user when they purchase an item or stay in a hotel. For example, when a consumer purchases a television at a store, they may notice on their receipt that there is an additional cost of a sales tax of 7.5 percent. The entire 7.5 percent is likely not going to the state in which the television was purchased. Instead, 4 percent may go to the state, 2.5 percent may go to the county, and 1 percent may be allocated to the city. Depending on the state and adoption by the community, a percentage of a sales tax dedicated to the transit system may be able to be implemented.

Property taxes have also been collected for transit systems. Operating under the assumption that access to public transportation is a benefit to residents and businesses, property tax percentages have been assessed to property owners and are collected for the transit system. By doing so, the transit system can continue to provide access for individuals to get to work or for employers to expand their workforce.

There are various benefits and challenges when using dedicated tax revenues to fund FFPT. One of the benefits of a sales tax is that they allow those that are not residents to contribute to local goods and services. This works exceptionally well in communities of high tourism. Those that are visiting or passing through the community can help to pay for the local transit system instead of relying exclusively on local residents to foot the bill. Property taxes, on the other hand, do just the opposite. They ensure that local residents and businesses pay for the fare free public transit system.

Depending on consumption and the tax rates in an area, taxes can provide the transit service with excess funds. When the transit system does not spend all of the dollars generated

by the dedicated fund, these funds are placed into a reserve account as the excess dollars cannot be reimbursed to every person that contributed to the sales tax throughout the period. Instead, a reserve fund of the excess can be kept by the transit system and used to backfill during the year if costs increase or if the transit system wants to explore new initiatives like technology or to expand their services. These funds provide stability for the transit system and can assist them with long term planning from year to year.

Several challenges come from the implementation of dedicated tax revenue. Unlike a general fund allocation where funds can be dedicated or allocated by council majority vote, getting dedicated tax revenue is a bit more challenging. In order to have a tax implemented, it must be either adopted by the local government within the confines of state statute or be voted on by residents during an election. For example, Missoula, Montana is presenting a mill levy for public transportation to voters at the November 2020 election (Mountain Line Montana, 2020). If it does not pass, the transit system will be forced to examine other alternatives to funding their zero fare transit system.

Another challenge to using taxes to fund the transit system is that the amounts collected vary. Many taxes (such as sales and lodging) are subject to trends in the economy. When an economy grows, it will likely generate additional sales which directly benefit the system. However, when it slows, the transit system may experience hardships especially if the tax collected typically only covers the local match and no excess. If the transit system is narrowly covering its costs, a slowdown in the economy can be costly to the transit system. During the COVID -19 pandemic, many businesses were forced to close temporarily (or permanently) and the amount of sales and lodging taxes collected plummeted in certain areas (i.e. high tourist

areas). Those that rely on this funding for their public transportation operations experienced a decrease in transit system tax revenue.

While property tax levies are one of the most challenging to pass for transit systems. One of the most significant arguments against the use of property taxes to fund public transportation is that often the biggest consumers of public transit systems or clients of the consumers of public transportation systems are exempt from property taxes. Universities, colleges, and nonprofits typically have large transit dependent populations but are also entities that are structured so they are exempt from paying property taxes. Therefore, the users of such systems or those that need it the most are not financially supporting the systems that they rely upon.

Fee Revenue.

Fee revenue assessed through such methods as utilities or real estate transfers is another method used to fund FFPT. These methods are often established within state statute and according to local codes. While fee revenue can supply the transit system with revenue, there are several benefits and challenges to deploying this model as well.

One of the benefits of fee revenue is that it is easier to implement. Local units of government can in general develop and enforce fees much easier than they can implement a dedicated tax (U.S. Department of Transportation, 2020). Fees can usually be executed without having to go out for public vote or referendum and instead, can be assessed to the community at will along with other utilities like water (U.S. Department of Transportation, 2020). Fees also tend to carry fewer restrictions and cover a larger base of individuals. Unlike taxes, fees can be assessed to all residents including renters and not just the property owners. Moreover, nonprofits and public entities that are typically exempt from paying taxes are not exempt from paying for fees. Thus, using a fee mechanism ensures that locally, everyone contributes to the

cost of the public transportation systems including those with high transit dependent populations like universities.

Fee collection can also be collected more frequently (i.e. monthly or after every real estate transaction). For example, the City of Corvallis implemented a utility fee several years ago that replaced a previous property tax that was dedicated to transit. The utility fee for transit is charged monthly along with its other utility fees like water. As of January 2020, the fee was \$3.13 per month from single-family homes and \$2.16 from rental units (City of Corvallis, 2020). Businesses are also charged a higher fee based on the type of business it is. Since its inception in 2011, it has yet to receive complaints. Mountain Village Transit of Mountain Village, Colorado also receives funding to support its fare free transportation system through funds generated by fees. However, their fee is collected each time a property title change occurs. In this scenario, each time real estate property is transferred from one owner to a new owner or renter, a fee is charged. This fee is then used by the community of Mountain Village for a multitude of services including funding their fare free public transportation system.

Fees are easier to calculate and adjust annually if needed. For example, the City of Corvallis knows how many residents, renters, and businesses that will be assessed fees in a given year. Multiplied by the utility fee amounts, the city can calculate if the predicted amount will meet projected budgetary needs or if the fee needs to be raised at the start of the upcoming calendar year to accommodate increased financial needs. The same can be done with real estate transfer fees to a certain degree. Real estate transfer fees can be projected based on past performance (i.e. the number of transactions in the past year, five years, or ten years) but there is no way to guarantee that the projected revenues will be raised. If there is a surge in property

sales, the system will generate more revenue in a given year. However, it will also suffer when property sales stall.

Much like the dedicated tax revenue options, fees can generate reserve balances for FFPT. If the transit system spends less money than what the fees generate, these excess funds can be saved and assist the transit system with funding capital, infrastructure (transit buildings or shelters), covering operating costs, and supporting the implementation of new initiatives and services. FFPT can spend what they need, carry the remainder over to the following year, and avoid spending heavily in the last quarter as they typically have to do with general funds (because general fund dollars typically must be spent or returned).

There are some challenges to implementing fees strategies. Utility fees, specifically, have been questioned as to their legality in the past. Since it is considered a user fee, there have been people that have challenged the fee over the fact that they do not use the transit service. For example, water can be measured according to the units used and patrons are only charged for what they consume. The same argument can be made for sewer and garbage collection. However, if individuals are not users of the transit system, many have contested paying for the transit system based on the fact that they do not use it.

The fees generated by a community also get more difficult to justify when examining coverage. If a community charges the same utility fee to all residents to pay for the transit service, then technically transit should be accessible to all and in the same amounts. If everyone is paying equally, then only supplying transit to some areas or limited hours or vehicles to specific portions of the cities can create conflict as some residents are paying for transit that they cannot access or paying for transit for others. Therefore, transit service should provide coverage to all areas of the community in which it receives a fee. In addition, if the transit

system serves more than one community, this option will have to be creatively explored so that each community is contributing to the transit system and user fees from one community are not covering the costs for other communities.

While the bulk of this funding mechanism discussed fees that are generated to directly support the local transit system, fees have also been charged by communities for various other items such as parking and portions of resort ski lift ticket sales. The community then uses this fee to support its general fund and various services throughout the community. Through the general fund allocation process, the community then can allocate this fee revenue to the fare free transit systems.

Partnerships.

Long term partnerships with organizations that have high transit users are one of the most financially lucrative methods any transit system wishing to transition to fare free should explore. Partnerships not only tend to be long term but are also targeted to those that have a high need for transit. Appalachian State University of North Carolina, University of North Carolina in Chapel Hill, Montana State University in Bozeman, Illinois State University in Macomb, Clemson University of South Carolina, and Dartmouth College in Hanover, New Hampshire have all found it beneficial to partner with their local public transportation systems to not only supply the needed revenue for the system but also to move their students and employees throughout the community.

Universities are not the only entities that partner with local transit companies. Casinos, resorts, hospitals, and large employers within communities have partnered with local transit systems to move tourists, visitors, and employees. As many of these entities grow, they become faced with space needs. Instead of building additional parking structures, partnering with the

local transit systems may prove to be a cost saving measure. For example, if a business grows at an alarming rate, they may not have the funds or the infrastructure available to build parking structures. In some cases, even if they have the funds they may not want to invest in these costly capital needs. If their growth were to subside, they may be left with costly infrastructure that is unusable and unmovable. Thus, partnering with the local public transportation systems is a better option.

Partnerships do not come without their own set of disadvantages. Those investing in or partnering with the transit system have specific needs and are going to want to make sure that the transit system meets their needs. A system cannot expect a university to partner with the transit system if the public transportation system does not stop frequently on campus nor does not visit areas that students wish to go (i.e. shopping). Therefore, many transit systems may have to adjust their routes and service hours (stay open later) to meet the needs of the students. The same can occur with large employers. If the public transportation system does not open until after work has started, likely the public transit systems will not meet the needs of the organization and thus the employer will not partner with it.

While partnerships can be long term and provide the needed local match dollars from one entity or a few, the transit system may suffer if the employer or university experiences a shift in need or funding. For example, with the COVID-19 pandemic, many universities have emptied residence halls and transitioned to online learning. Employers have also increased the levels of telecommuting of employees. Thus, since less students are living on and around campus that needed to be moved and fewer employees needing to commute to work, transit systems can find their funding temporarily halted or even permanently discontinued.

Sponsorships.

Those that sponsor public transportation systems do so for many reasons including many that are outside of the transportation arena. Some may support it due to their desire to have a cleaner environment, decrease congestion, or even simply to support community services. One of the greatest benefits of implementing a fare free public transportation sponsorship program is that it makes businesses and individuals knowledgeable about and invested in public transportation and the local transit system.

Another advantage of a sponsorship program is that it may bring in other benefits to the FFPT system in the form of in-kind trade. Newspapers on buses and radio ads are other ways that community businesses can sponsor their transit system without having to give a direct financial contribution. In Missoula, Montana passengers can enjoy the local paper, the *Missoulian*, while they enjoy their ride on Missoula's fare free transit system (Mountain Line Montana, 2020).

One of the biggest challenges of a sponsorships program is that they are labor intensive. Routine calls to business, letters, and face to face meetings to educate and encourage sponsorship of the transit system are time consuming and require a dedicated transit system person. Contact must happen frequently. Just because an individual or corporation sponsors the transit system one day, does not mean that will do it the next. Sponsorships tend to have a shorter length (i.e. one year) and the dollar amount invested by a sponsorship can be lower than partnering with a large business that directly needs transportation options. The time and energy needed to create, maintain, and solicit sponsors is something that organizations will need to carefully consider when developing such a program.

Getting local businesses and industries to sponsor the local transit system as a fare free venture may be easier in the infancy or development stage. However, once the system is free, the novelty fades and it becomes harder to maintain sponsorships. According to one transit system that relies on sponsors for significant funding, many sponsors feel like they have already given their money to do this and want to move on to other ventures (Mountain Line Montana, 2020). It is difficult to keep and maintain sponsors as many want to get involved in new initiatives. While they very well continue to feel that the fare free transit system is worthwhile, many move on simply because they would like to invest their funds into other new and exciting ventures in the community.

Sponsorships are also subject to current trends in society. If there is a recession or a pandemic like COVID-19, many businesses are faced with making tough financial decisions in order to keep their businesses afloat. Some may have to change their products, reduce their hours, and even lay off employees. As with COVID-19, sponsors are forced between the choice of terminating employees or continuing to support a fare free local public transportation system. In most cases, the fare free transit system will lose out as businesses realign their proprieties and focus on meeting internal needs (Mountain Line Montana, 2020).

Contractually, sponsorships are difficult to implement. While it would preferential to a transit system to have sponsors sign a contract to guarantee investment amounts over a specific period of time, it is often difficult in practice. In real life, the agreements tend to be informal to not bind organizations to the transit system and also so they can opt-out at any point in time. According to one transit system, the practice has been to remind the organizations of what they agreed to contribute, thank them often, and submit a bill to them annually.

Sometimes transit systems and the sponsors they solicit expect some sort of quid pro quo for the funds donated to the transit system. This has forced transit systems that invest in sponsors to develop a recognition program. This can be not only labor intensive but more costly to the transit system than the amount they are receiving. Recognition events, advertising in the form of name recognition on the sides of buses, shelters, buildings, and websites and social media acknowledgments can be costly to update and maintain. For example, bus graphics that boast local transit sponsors will have to be updated frequently when new sponsors are generated and also as others discontinue their support.

Philanthropy.

Philanthropy has also become a source of fare free transit funding. While it is usually not used as a sole, lone source it is used to match grants, fund annual operations, and help build reserve balances. Grants, donations, and fundraising events can all help the transit organizations raise funds. Depending on the type of organization, philanthropy may be easier for some and more difficult for others. Transit systems that are or are part of a private, nonprofit tend to have an advantage when it comes to philanthropy because their organizations are already heavily invested in philanthropy, have a reputation for delivering social service programs, and helping those that are in need (GoLine Transit of Indian River County, 2020). For example, some public transit systems are administered by senior service providers or community action agencies. These organizations rely on connections from various other funding sources (i.e. American Association of Retired Persons), projects, and other departments to not only maintain their presence in the community but also to raise funds. With these valuable connections, transit leaders can locate and obtain potential funding sources for the public transit system.

One of the greatest benefits of using philanthropy to solicit funds for the transit systems is that it builds local awareness much like sponsorship programs do. These methods get people talking about transit. Organizations and private donors become aware of not only the financial need, but of the mission of public transportation, its impact on the local community, and its many challenges.

There are many downsides to using philanthropy for fare free funding. The first drawback is that the processes to obtain funds (i.e. grants) can be lengthy, reporting requirements extensive, and labor intensive. The competitive nature of grants often requires many personnel hours with no guarantee of return. Essentially, the transit system may spend a considerable amount of time, energy, and man-hours on grants and other philanthropic efforts that do not get funded or generate a return on the labor spent.

Many grants must also be reapplied annually with the application materials and criteria changing from one year to the next. There is no guarantee that the funds will be available the following year, what the grant requirements will be, and in what allotments. In addition, if a transit system receives a grant or donation in one year, they may not be eligible the following year. Many funders want to spread their monies around and do not want to fund the same initiative and organization over and over. Much like sponsorships, this model is not self-sustaining. Instead, it should be used in conjunction with other funding strategies to fill shortages and assist with transit-related projects.

Dedicated Funding Finding

While there are six funding strategies that can be easier for some to develop or some funds that are more easily accessible to others, one theme emerged amongst many of the website evaluations, survey responses, and interviews. This theme was *dedicated funding*.

According to many of the fare free public transit systems, FFPT must have a dedicated funding stream to be successful. Models that do not have dedicated funding from one year to the next make offering a FFPT system volatile. Loss of dedicated funding can force transit systems back to charging passenger fares. Link Transit of Wenatchee, Washington was forced to revert back to charging passenger fares after nearly ten years of being fare free once they lost their dedicated funding from the decrease in a transit motor vehicle sales tax percentages and allocations (Link Transit of Washington, 2020).

Partnerships with transit dependent organizations, fees, and taxes were cited as being the most substantial means of dedicated funding according to survey respondents. Once partnerships have been created with universities, taxes adopted by the community, and fees established, these streams provide consistent revenue without the continued hard work of transit personnel to secure each year in the form of grant writing or networking. These revenue sources are committed, should provide consistent revenue annually, and not change drastically from year to year. Transit personnel can budget for, and barring minor changes in the economy, should see the same generally the same allotments from one year to the next.

Sponsorships and philanthropy do not constitute as dedicated funding as their terms tend to be limited and the amounts fluctuate. These funds rarely fulfill the entire local match requirements and cost the system extensive personnel hours. These methods are the least utilized for transit systems as they require organizations as transit systems must carefully consider the amount of time chasing a few dollars.

General funds allotments cannot be as easily classified as *dedicated funding*. While it can be argued that general fund allotments are a significant dedicated fund as they are budgeted and approved annually by a council, a strong argument can also be made that they are not. Some

local transit systems responded in surveys and interviews that while these funds can be easily received, they can also be easily taken away. The volatility of these funds is dependent upon the individual community, their support of FFPT, and their financial health in funding all of their services.

Collaborative Governance Finding

The majority of the FFPT systems were a single county or single city. It has been hypothesized that this may make it easier to develop and implement a fare free initiative due to the decrease in obstacles related to regional or multicounty or multicity systems. However, for those that are not housed within a local government entity, a partnership with local government is advantageous and often needed in order to have access to long term funding. Local governments provide the *access* to general fund allotments, tax options, and the fees that municipalities can typically collect. A weak relationship or no relationship can make these funds difficult to obtain. Thus, a strong partnership must exist between local governments in order to build a sustainable financial base for fare free public transportation initiatives.

Through the examination of dedicated funds and their sources (fees, taxes, partnerships, and even general funds), collaborative governance is prevalent in fare free public transportation systems. Collaborative governance is the “creation, execution, and implementation of activities backed by the shared goals of citizens and organizations, who may or may not have formal authority” (Bingham, Nabatchi, & O'Leary, 2005, p. 548). Fare free public transportation is made possible by the federal government, state governments, local governments, public transportation authorities, universities, students, sponsors, and various other individuals and entities with a diverse set of vested interests. Whether it needs or supplies funds for the transit

system, each has an impact that must be met when the service design and implementation of FFPT.

One of the best examples of collaborative governance can be examined with Streamline Transit of Bozeman, Montana. This independent transit authority partners with the communities of Belgrade and Bozeman and also partners with Montana State University and the Associated Students of Montana State University (ASMSU) to receive a plethora of funding through a variety of sources (Streamline Transit, 2020). The cities, university, and even the student body all have an active role in the FFPT.

While collaborative government mechanisms are important in these partnerships, little is known as to how much partners can influence the decision-making process or even take over decisions. For example, universities that supply the local match to FFPT, expect that the transit system will in some ways cater to the needs of students. However, at what point does the student population perspective overtake the transit system and the needs of others?

Limitations of data and further research

The online survey that was distributed to the fare free transit personnel asked respondents how they funded their systems, gave respondents several categories to select, and instructed them they could select more than one. However, the question did not supply a definition for each funding category. Some may likely have labeled their revenue streams as a *partnership* when it may have perhaps, by definition for this study, should have been a *sponsorship* and vice versa. The sheer interpretation of the situation can also make two responses correct for one funding source. For example, there are independent transit authorities that partner with the city or county government and receive monies each year from the transit system's general fund. Transit personnel may have labeled their survey responses as a *partnership* with the city and

others may have labeled it *general fund allocation* since their partnership provides funding to the transit system in the form of general fund dollars from the city.

Fees revenue generation is another response that is open to interpretation and the perspective of the respondent. Cities can charge an array of fees throughout the city (i.e. parking and resort fees) and use them to supply resources for the community through its general fund allocation. The respondent may have indicated that the funds are being allocated from the community's general fund but they actually may originate through fees charged throughout the city.

Future studies may want to investigate the types of partnerships and lengths of these partnerships. It is unknown how many transit systems do partner with their local governments. Further research should be examined as to the length of these relationships, type, and the financial support that each provides. While this partnership is important to FFPT systems, it also important to systems that charge passenger fares as well. Maintaining a collaborative relationship cannot only assist with funding needs but also with the implementation of special projects and better assist them with meeting the needs of the public as a whole.

Conclusion

Through a mixed methods research approach, this study collected information from the 35 known fare free public transit entities in the United States via thorough website examinations, an online survey, phone and email interviews, and from data provided in the National Transit Database of the Federal Transit Administration. Six categories emerged as viable funding options for transit systems wishing to make the transition from charging passenger fares to one that provides the service fare free to patrons. General fund allotments, dedicated taxes, fee

revenue, partnerships, sponsorships, and philanthropy were all used in various degrees with some transit systems using one, two, or more of these methods concurrently.

While each of the six funding categories has various benefits and challenges, securing a funding source that is dedicated is imperative for FFPT survival. Depending on one's legal formation and type of transit system (i.e. single city versus regional), some of these funding mechanisms may be easier than others to implement. Regardless of which is identified and utilized by a system, two other important factors should be addressed with the implementation. The first factor is that that one of the funding streams must be a dedicated funding mechanism that can support the bulk of the transit operations. Without a dedicated funding source in the form of a partnership, dedicated tax, or fee revenue, FFPT systems are likely to struggle to raise consistent revenue to keep the system operational. Secondly, accessing these dedicated funding streams is made possible through collaborative governance. Collaborative governance allows FFPT systems to not only meet the needs of the populations they are serving but also to have a direct link to the needed dedicated revenue streams (i.e. a city's general fund).

Fare free public transportations are a great benefit to the communities they serve. Directly, they can aid with important issues such as the decrease of congestion within the community, assist in the elimination of pollution as FFPT can encourage individuals to park their cars and ride the bus. FFPT systems can make communities more marketable for visitors in tourist areas, for students on campuses, and for the increasing number of citizens that do not wish to drive (i.e. retiring baby boomers or millennials). While the idea to provide fare free public transportation is simple and likely easy to implement in practice, how to fund it was not as easy a question to answer until now. Using strategies from the six funding categories, having a

dedicated funding source, and engaging in collaborative governance, communities can offer public transportation to all for *free*.

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APPENDIX

Appendix A.

Internal Review Board Study Approval Notification.



Office of Research and Sponsored Programs | West Chester University | Ehinger Annex
West Chester, PA 19383 | 610-436-3557 | www.wcupa.edu

Protocol ID # 20200812A
This Protocol ID number must be used in all communications about this project with the IRB.

TO: Amy VanGuilder & Kristen Crossney
FROM: Nicole M. Cattano, Ph.D.
Co-Chair, WCU Institutional Review Board (IRB)
DATE: 8/11/2020

Project Title: Funding Alternatives for Fare Free Public Transit Systems
Notification of Initial Study Exemption Determination

Exempt From Further Review

This Initial Study submission meets the criteria for exemption per the regulations found at 45 CFR 46.104 (2)(i)(ii). As such, additional IRB review is not required.

The determination that your research is exempt does not expire, therefore, annual review is not required and no expiration date will be listed on your approval letter. If changes to the research are proposed that would alter the IRB’s original exemption determination, they should be submitted to the WCU IRB for approval, using the IRB application form (check off I.G. Revision).

Your research study will be archived 3 years after initial determination. If your Exempt study is archived, you can continue conducting research activities as the IRB has made the determination that your project met one of required exempt categories. The only caveat is that no changes can be made to the application. If a change is needed, you will need to submit a NEW Exempt application. Please see www.wcupa.edu/research/irb.aspx for more information.

However, it is very important that you close-out your project when completed or if you leave the university. Faculty mentors are responsible for oversight of student projects and should ensure exempt studies are completed and closed-out before the student leaves the university.

The Principal Investigator and/or faculty mentor is responsible for ensuring compliance with any applicable local government or institutional laws, legislation, regulations, and/or policies, whether conducting research internationally or nationally. Please contact the WCU Office of Sponsored Research and Programs at irb@wcupa.edu with any questions.

Sincerely,

Co-Chair of WCU IRB

WCU Institutional Review Board (IRB)
IORG#: IORG0004242
IRB#: IRB00005030
FWA#: FWA00014155

Appendix B.

Qualtrics Email Distribution Narrative for Participation in Study.

Dear Transit Professional:

My name is Amy VanGuilder and I am a doctoral candidate at West Chester University in the Department of Public Policy and Administration. I am a co-principal investigator for a research project on Fare Free Public Transit. I am sending this email today to ask you to consider participating in this research project. The goal of this project is to study how organizations fund their transit systems in lieu of charging a fare to passengers. If you chose to participate in this study you will be helping to advance the field of public administration and assist future public transit system make the leap to a fare free system. If you agree to participate, you will be asked to complete a survey. The survey will ask you questions about the following information:

- Information on how your transit system is structured
- Information on where the transit system is located and the types of services you operate
- information on your ridership
- information on how you fund your system
- information on your transit systems funding decision making
- information on financial challenges your system has experienced since moving to a fare free structure

If you are willing to participate, and I hope you are, please complete the consent form via the Qualtrics survey link included in this email. The consent form has a detailed explanation of the project and is where you indicate you want to participate. Once you agree to participate, the consent form will immediately direct you to the research study survey. If you choose to participate and then later decide you don't want to, you can withdraw at any time.

If you have questions that you would like answered before you decide to participate or not participate, please contact me at av924472@wcupa.edu or 507-429-4499.

This study has been reviewed and approved by WCU IRB Protocol #20200812A.

Follow this link to the Survey:

[Take the Survey](#)

Or copy and paste the URL below into your internet browser:

https://wcupa.co1.qualtrics.com/jfe/preview/SV_5dNLspONCn0HThz?Q_CHL=preview

Thank you for your participation in this research project.

Regards,

Amy VanGuilder

Doctoral Candidate, West Chester University

Appendix C.

Qualtrics Participant Reminder Email.

Dear Transit Professional,

Ten days ago, I sent an email asking for your participation in a research project regarding fare free transit funding. This email is a follow up reminder asking you to please consider participating in the study. Not only will this allow me to finish my doctoral studies at West Chester University, but it will help advance the field of public administration as well as guide future transit systems in making the leap to providing fare free public transportation.

Follow this link to the Survey:

[Take the Survey](#)

Or copy and paste the URL below into your internet browser:

https://wcupa.co1.qualtrics.com/jfe/preview/SV_5dNLspONCn0HThz?Q_CHL=preview

Thank you again for your time and consideration,
Amy VanGuilder
Doctoral Candidate, West Chester University

Follow the link to opt out of future emails:

[Click here to unsubscribe](#)

Reply | Forward

Appendix D:

Qualtrics Online Survey.



Participation in this research project is voluntary and is being done by Amy VanGulder as part of her Doctoral Dissertation to determine how transit authorities fund their public transit systems in lieu of collecting a fare from passengers. Your participation will take about 15 minutes to complete a questionnaire. This research will help will advance the field of public administration and also assist other public transit systems with transitioning to a fare free public transit model.

You may ask Amy VanGulder any questions to help you understand this study. If you don't want to be a part of this study, it won't affect any services from West Chester University. If you choose to be a part of this study, you have the right to change your mind and stop being a part of the study at any time.

What is the purpose of this study? to determine how transit authorities fund their public transit systems in lieu of collecting a fare from passengers

If you decide to be a part of this study, you will be asked to do the following: complete a questionnaire. This study will take about 15 minutes of your time.

Are there any experimental medical treatments? No

Is there any risk to me? There are no known or anticipated risks. If you become uncomfortable, you may stop your participation at any time.

Is there any benefit to me? There are no direct benefits.

How will you protect my privacy? Your records will be private. Only Amy VanGulder, Kristen Crossney, and the IRB will have access to your name and responses. Your name will not be used in any reports.

Records will be stored: Records will be stored in encrypted files and will be destroyed three years after study completion.

Do I get paid to take part in this study? No

Who do I contact in case of research related injury? For any questions with this study, contact: Primary Investigator Amy VanGulder at 507-429-4499 or av924472@wcupa.edu or Faculty Sponsor Kristen Crossney at 610-436-5838 or kcrossney@wcupa.edu.

What will you do with my Identifiable Information/Biospecimens? Not applicable.

For any questions about your rights in this research study, contact the ORSP at 610-436-3557.

I have read this form and I understand the statements in this form. I know that if I am uncomfortable with this study, I can stop at any time. I know that it is not possible to know all possible risks in a study, and I think that reasonable safety measures have been taken to decrease any risk.

- I understand and agree to participate in the study
- I do not agree to participate

What is the name and location of your transit agency?

What is the legal governing authority type for your transit system?

- County
- City
- Nonprofit
- Joint Powers Board
- Other

What was your transit systems' annual ridership in 2019?

What type of services does your system operate? (Please select all that apply).

- Dial-A-Ride or Demand Response
- Subscription Routes (i.e. University Routes)
- Deviated Routes
- Other
- Fixed Routes

Are all of your transit services completely free to all riders? If no, please explain.

What year did you cease collecting fares?

Please explain your leadership's financial decision making process in the implementation to go fare free. What options did you consider to generate funds when deciding to go fare free? What were the most important determinants?

What option did your organization implement to generate funds instead of collecting fares? Please select all that apply.

- Allocated money from our general fund
- Created a utility revenue that is charged to home owners
- Implemented a sales tax
- Partnered with an area business for funds
- Created a sponsorship program in which local business invest in the transit system
- Other

How did you determine that this was the best option for your transit agency?

What was your annual operating budget in 2019?

How do you plan for capital purchases, expansion services, and/or cover operating overages that are the result of rising costs (i.e. fuel)?

Do you have formal agreements in place with agencies that contribute funds to replace passenger fare collection?

yes


no



If yes, please provide a sample copy of the agreements you use.

Drop files or click here to upload

Have you experienced any challenges since going fare free? If yes, please explain.



Are there any changes you would make to your funding structure? If yes, please explain.



Has your organization considered reverting back to charging fares? Why or why not?



Would you be willing to participate in a followup interview regarding your transit systems funding mechanism?

- yes
- no

Thank you for agreeing to participate in the follow up interview. Below is a very similar consent form that you have already completed for the survey portion. Once you agree below, you will be asked to provide contact information so that I may contact you at a time most convenient for you. Thank you again for agree to participate in this study.

Participation in this research project is voluntary and is being done by Amy VanGulder as part of her Doctoral Dissertation to determine how transit authorities fund their public transit systems in lieu of collecting a fare from passengers. Your participation may take up to 30 minutes to complete an interview. This research will help will advance the field of public administration and also assist other public transit systems with transitioning to a fare free public transit model.

You may ask Amy VanGulder any questions to help you understand this study. If you don't want to be a part of this study, it won't affect any services from West Chester University. If you choose to be a part of this study, you have the right to change your mind and stop being a part of the study at any time.

What is the purpose of this study? to determine how transit authorities fund their public transit systems in lieu of collecting a fare from passengers

If you decide to be a part of this study, you will be asked to do the following: participate in an interview. The interview may take up to 30 minutes of your time.

Are there any experimental medical treatments? No

Is there any risk to me? There are no known or anticipated risks. If you become uncomfortable, you may stop your participation at any time.

Is there any benefit to me? There are no direct benefits.

How will you protect my privacy? The session will not be recorded. Your records will be private. Only Amy VanGulder, Kristen Crossney, and the IRB will have access to your name and responses. Your name will not be used in any reports.

Records will be stored: Records will be stored in encrypted file records and will be destroyed three years after study completion.

Do I get paid to take part in this study? No

Who do I contact in case of research related injury? For any questions with this study, contact: Primary Investigator Amy VanGulder at 507-429-4499 or av924472@wcupa.edu or Faculty Sponsor Kristen Crossney at 610-436-5838 or kcrossney@wcupa.edu.

What will you do with my Identifiable Information/Biospecimens? Not applicable.

For any questions about your rights in this research study, contact the ORSP at 610-436-3557.

I have read this form and I understand the statements in this form. I know that if I am uncomfortable with this study, I can stop at any time. I know that it is not possible to know all possible risks in a study, and I think that reasonable safety measures have been taken to decrease any risk.

I understand and agree to participate in the followup interview

I do not want to participate in a followup interview



Please provide your contact information

Name

Transit System

Phone Number

Zoom ID

Do you prefer to do the interview via phone or zoom?

Best time to day to reach you

Appendix E.

Location of Known FFPT Systems as of 2017 (Kebrowski, 2018).

Country	Continent	# of Full FFPT
China	Asia	2
Australia	Australia	1
Iceland	Europe	1
Poland	Europe	21
Czech Republic	Europe	1
France	Europe	19
Romania	Europe	1
Slovenia	Europe	2
Italy	Europe	1
Spain	Europe	2

Denmark	Europe	2
Estonia	Europe	2
Sweden	Europe	4
United States	North America	27
Brazil	South America	11