An Empirical Investigation of an Indicator of Economic Efficiency in the Public Transportation Industry During 1994

by

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Introduction and Statement of Purpose

Introduction

Throughout human evolution, technological advancements bring change. The changes indelibly impact the quality of life for those living in the era. These improvements often erase an older technology or alter the typical mode of operation. The creation of bronze ushered out the stone age. The invention of the telegraph eliminated the need for the Pony Express, and similarly, the telephone erased much of the functionality of the telegraph.

The twentieth century technological advancements have grown exponentially. Not only are humans modifying their lots in life, but also they are directly affecting the environment in which they live. The changes of the twentieth century created new markets. Like the advancements that have preceded them, these twentieth century advancements are also not without corresponding market causalities. One of these causalities is privately-owned mass transit operators.

Long extinct are the urban neighborhoods of true convenience in most cities. Modern zoning and suburban planning have separated industrial areas from commercial and residential areas. It is very difficult to find any neighborhood with these three necessities of modern life within walking distance. If one looks at any transportation modal split information provided by a metropolitan planning organization, to go to one's job or to buy groceries, some form of mechanized transportation is necessary.

While the urban landscape changed, so did the perception of government's role in the economic welfare of the country. In the United States, public spending accelerated in the late 1930s. In an effort to stem the suffering of American citizen during the Great Depression, the federal government implemented many programs. These programs, often referred to as the 'New Deal,' changed the perception of the general public on the role of government. The laissez-faire days of government non-involvement were over. Government was now viewed as responsible for the economic welfare of the nation. With the implementation of the Civilian Conservation Corps as well as the Tennessee Valley Authority programs, governments in America began to enter markets in which they had never before directly participated. This proliferation of direct government participation in previously private markets has continued.

Currently, in every major American metropolitan area, there exists some form of government transit authority. To maintain affordable urban transportation, government entities have usually taken the role of directly operating the service. In almost every urban transit system across the country, some form of subsidy is necessary to insure that the service is provided. Subsidies typically range from twenty-five percent to complete subsidization.[1]

Urban mass transportation has existed in some form in the United States since the 1864.[2] Originally mass transit systems were viewed as beacons of progress, civic well-being and growth. In the late eighteen hundreds, the street car was beheld as the pinnacle of mass transit. A turn of the century city-dweller expressed the sentiment well,

> If the streetcar could be made self sustaining, we ought as a matter of pride to have them. Nothing contributes more to give a city the appearance and air of general importance than streetcars.[3]

However, this belief in the importance of urban streetcars did not survive the advent of the internal combustion

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[1] Transit Profiles Agencies in Urbanized Areas Exceeding 200,000 Population for the 1994 National Transit Database Report Year. Federal Transit Administration December 1995. p. 2-282.
[2] Walker, James Blaine. Fifty Years of Rapid Transit 1864-1917. (1918) p.2.
[3] As found in Analysis of Existing Transit Systems Austin Transit Study, Prepared by the City of Austin in cooperation with USDOT and the Urban Mass Transit Administration (UMTA) (1972) p. 5.

engine. The widespread use of the personal automobile changed the nature of mass urban transportation.

By the 1940s, the increasing use of the personal automobile, combined with low-interest, federal new housing loans, as well as other factors lead to the prolific increase of "urban sprawl" as well as "urban flight".[4]

Controversy in Modern Day Transportation Authorities

Across the country, controversial urban mass transportation issues have brought transportation providers and their policy makers into the media limelight. Stories abound, "Bus Drivers, Mechanics picket Metro" in Houston, Texas; "Filling the Subways with Pork" in New York; 'BART Director Pleads Not Guilty Pryor booked, released after arraignment extortion charges" reported in the San Francisco Chronicle; 'VIA pays $3 million for a five-acre eyesore" in San Antonio. From BART in San Francisco to MTA in New York city, negative publicity seems to be the norm rather than the unusual.

[4] These terms are defined in the Research Setting Chapter on page 12.

Research Purpose

The purpose of this research is twofold. The first is to examine the history of public transportation in the United States and set the basis for the current situation. The second purpose is an empirical investigation of one element of economic efficiency (the farebox ratio) of regional transit authorities and how this is effected by the environments in which the transportation agencies operate. The empirical research is explanatory and tests several hypothesis.

The model tests the six hypotheses. These hypotheses may suggest an optimal size or optimal parameter of operation exists to give the transit agency a more efficient or less subsidized level at which to operate. Depending on the results, the effects of diminishing return may outweigh the effects of economies of scale at some point of operation.

The model to be researched has the farebox ratio as a function of calculated city density, service area, service area population, operating expense, fleet size and average fleet age.

While some literature addressees the basic concepts of these transit terms, no previous research examines the relationship between the variables.

Organization of the Research

The research setting of the applied research project is discussed in Chapter Two. It presents information on the history of government expansion. It also furnishes the reader with a brief history of the urban mass transportation industry.

In the third chapter, the literature pertinent to the research topic is presented and discussed. The purpose of this chapter is to present literature that examines the history of mass transit subsidy as well as some basic economics associated with urban mass transit and subsidies. The conceptual framework also is presented, and terms are defined.

Chapter Four introduces the methodology to be used for analysis. It also presents the operationalization of the variables.

Chapter Five presents the findings of the research. Statistical analysis results are interpreted and discussed.

Chapter Six summarizes the findings and focuses on reasons why data may not have supported some hypothesis. Strengths and weaknesses of this research will be discussed as well as possible improvement for further study.

Chapter Two

Research Setting

Introduction

With special attention paid to the mass transit industry, this chapter provides information on the expansion of government. This chapter also describes historical changes in the mass transportation industry which began as private transportation companies and evolved to government subsidized entities.

Local Government Expansion

Excluding school districts, the number of governments in the United States has been growing this century. From the 1940s to the 1970s; municipal, town, and county governments have remained relatively constant in number. During the same time frame, special district[1] governments have tripled and, in total number, surpassed all other forms of government, including school districts. Figure 2.1 illustrates the changing number of governments. School districts have been removed from this graph.

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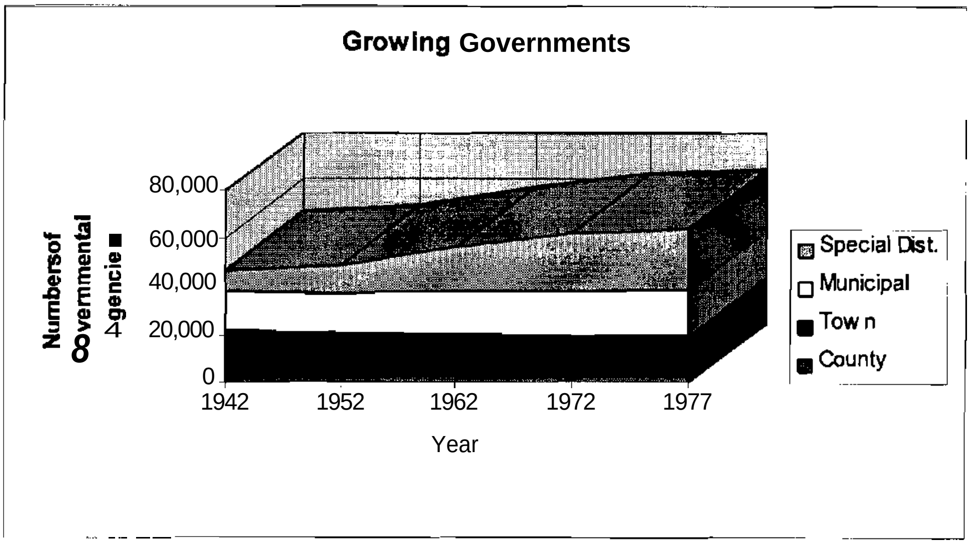
[1] Special Districts are often the government units that operate as Transportation Authorities.

Figure 2.1



Source: Savas, E. Privatizing the Public Sector. P. 8

Government Changing Role in Mass Transit

Urban public transportation began in America in the 1800s. New York City was one of the first cities to experiment with public transportation. The experiment was a necessity created by the growing city's congestion. The earliest modes of urban transportation were typically mule-drawn or cable-drawn trolleys. The pre-existing problems with congestion and rising population are evidenced in a prediction from an anonymous futurist. Due to the rising number of residents in New York City as well as their reliance on private horse drawn carriages, he foresaw dire consequences. The congestion led this futurist to predict,

> ...New York City would be abandoned by the 1930s as unsafe for humans...the number of horses

> necessary to haul all those people (7 million) around would result in a pile of horse manure that would pile to the third-floor window everywhere in Manhattan.[2]

Although his belief may have exaggerated the conditions, changes were necessary to circumvent this impending problem.

One of the changes was the proliferation of mass transit systems. Unfortunately, the same problem that confronted individuals desiring to commute plagued early mass transit systems. There were limited numbers of routes to get citizens from one point to another. Without additional roadways, congestion among rival urban transportation companies would simply replace congestion from personal transportation.

It was then that government took its first steps toward regulating urban transportation. Laws were passed to prevent inefficient congestion among transportation providers.

> The main purpose of the legislation was to insure an orderly extension of routes without unnecessary duplication, while at the same time ensuring that the resultant monopoly powers were not misused.[3]

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[2] **As found in Husted, Bill. "Futurist Can Peer Ahead on the Internet."** ***Austin American Statesman*** **1996.**
[3] **Black, Ian; Gillie, Richard; Henderson, Richard; Thomas, Terry. Advanced Urban Transport. (1975) pp. 10-11.**

By passing legislation prohibiting the duplication of routes and restricting competition, the government practically gave transportation providers an effective monopoly. Any good required by most of the members of a community which has a limited number of suppliers, is subject to monopolistic abuse. In most cases, fixed fare pricing legislation was introduced to protect the public.

Unlike today, the turn of the century legislators designed regulations to protect the public, rather than to support the industry. "As far as public transport is concerned, much of the traditional justification for intervention has been based on the need to restrain the exercise of monopoly powers."[4] Because of the abuses associated with monopoly power, legislation was passed. Not only was this legislation designed to protect the public from the monopolist powers held by the organizations, but also to insure a more balanced distribution of the routes.

The benefits of early mass transportation were easily seen. For example, fixed rail that was laid down could be a boon to any business. Much like an intersection of two

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[4] **Black, Ian; Gillie, Richard; Henderson, Richard; Thomas, Terry.** Advanced Urban Transport. (1975) **p. 10.**

major thoroughfares today, a nearby stop could provide customers with easy access to a business's goods.

> It was clear even then that transport investment impinged on so many spheres of life that the financial costs of a project would not necessarily reflect its true costs -or benefits- to the community.[5]

The impact of public mass transit on a community was so penetrating, the effects were difficult to measure. Mass transit regulations targeted at monopoly abuses, would not last through this century.

With the discovery of electricity, the electric trolley took the center stage of urban mass transportation. In Austin, Texas, the electric trolley was implemented in 1891, and it charged the same fare as the mule-drawn trolleys.[6] The electric trolley dominated urban mass transit until after World War I, when the personal automobile began to allow many people freedom to travel widely, quickly and relatively inexpensively. The demand for mass transportation fell. The subsequent decline in ridership forced urban transit organizations to try to become more competitive They were no longer the only option available to the public.

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[5] Black, Ian; Gillie, Richard; Henderson, Richard; Thomas, Terry. Advanced Urban Transport. (1975) p. 10.

[6] The fares were five cents. Analysis of Existing Transit Systems. Austin Transit Study, Prepared by the City of Austin in cooperation with USDOT and Urban Mass Transit Adminismation (1972) p. 5.

As transit agencies attempted to remain competitive with the convenient automobile, they expanded both hours of operation and numbers of destinations. These actions typically had the opposite effect.

> Because of the increasing imbalance between peak and off-peak demand, efforts to expand service to compete with the automobile increased commuter patronage but reduced profit margins further.[7]

This inability to adapt severely hampered the fixed rail system. By the 1950s, the failure of the private fixed rail trolley system was all but complete. Most transit authorities had begun to use buses.

During the 1940s, buses were commonplace among city streets. Because they did not run on a fixed rail, the buses offered more flexibility than the streetcars that had preceded them. If the community population moved within the city, changing a route no longer required that a track be removed and relaid. Mass transportation planners merely had to decide where the bus should go and what time it should be there. The ability to adapt afforded some longevity to the self-sufficiency of urban mass transportation. Due to this new found flexibility, mass transportation had once again

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[7] Jones, David. Urban Transit Policy: **An** Economic and Political History. Englewood Cliffs, New Jersey **(1985). p. 87.**

become economically competitive with the automobile. But this deceptive competitive era would eventually end, primarily because the use of its main nemesis, the personal automobile, was spreading.

The important part of this competition is not solely the increasing numbers of automobiles, but the effect that the autos had on the urban landscape. Personal autos allow citizens more choices for the location of their residence. Moving to the suburbs to avoid crowded city neighborhoods, was often the choice of individuals who had the means to do so. This process is referred to as 'urban flight.'

'Urban sprawl' occurs as developers create new suburbs in formerly rural areas. These suburbs allow more individuals to leave the urban areas and lower the density of an urbanized zone. Both urban sprawl and urban flight have limiting effects on the efficiency of urban mass transportation. As population areas become less dense, it becomes less cost effective for a transit agency to serve that area.

In the book, Bus Deregulation in the Metropolitan Areas, authors Pickup, et al, refer to higher incomes leading to increased car ownership and use as the source of a 'vicious cycle.' This cycle of increased traffic concentration leads to changes in the economics of bus operation. Ultimately, this cycle changes in the urban structure. The three impacts of this cycle are manifested in very different processes.

> **Increasing congestion.** In the very short term there is increased congestion on the roads, slowing down buses more than cars, making them more unattractive.
> **Changes to the economics of bus operations.** Over a slightly longer period of about a year, reduced demand puts financial pressure on operators, forcing them either to increase fares, or reduce service, or both. This makes the public transport service less attractive and drives away more passengers in the following year. Thus, 'cutting services in line with demand' is not a neutral response. A reduction in the vehicle miles run increases waiting times or walking distances for the remaining passengers.
> **Changes to urban structure.** In the longer term, over ten years or more, the structure of towns change. The pattern of home and job locations and other activities disperse - much more difficult for a public transport systems to serve. Increasingly, cars become not only desirable, but necessary with a further boost to the spiral.[8]

In the United States, there was an extra catalyst that accelerated the changes in the urban structure. The Federal Housing Act (FHA) created loans only for new housing, not for remodeling. These loans made it more attractive for

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[8] Pickup, Laurie; Stokes, Gordon; Meadowcroft, Shirley; Goodwin, Phil; Tyson, Bill; Kenny, Francesca. Bus Deregulation in the Metropolitan Areas. (1991) p. 16.

homeowners to move out of the central city and build. In effect, the federal government subsidized urban flight and encouraged individuals to leave the urban areas.

The death stroke for private urban mass transportation came in **1964**. In an effort to create better urban transportation, federal legislators passed the Urban Mass Transit Act(UMTA) of **1964**. UMTA offered to subsidize 80% of mass transportation capital costs as well as a portion of the operating costs to localities.[9] This act helped set up many regional transit authorities and create the type of system currently in place. Only the agency's name has changed; the Urban Mass Transit Administration(UMTA) also created by the act in **1964**, is now titled the Federal Transit Administration.

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[9] Seligman, Daniel. "Notes from Underground." *Fortune* April 8 1991. p. 127.

Typical Components of a Transit Authority's Budget

Similar to a commercial organization, a transportation agency has sources of income as well as expenses. The operating expenses may be separated into subcategories such as salaries/wages/benefits, materials and supplies, purchased transportation, and other operating expenses.

Unlike a commercial organization, a transportation agency typically has many different sources of income. Typically, these funds come from federal assistance, state funds, local funds and passenger fares. Passenger fares are the only major source of funds that are not some form of subsidy.

This chapter gave the reader some basic essentials regarding urban transportation in the United States. In the following chapter, an abbreviated history of urban transportation will be presented. Also in the following chapter, the changes of the urban form and its contribution to the inability of urban mass transportation providers to return profits will be explored.

Chapter Three

Review of the Literature

Introduction

The purpose of this chapter is to present literature that examines the history of the mass transit subsidy. The history of mass transit shows a trend of organizations moving from self-sustaining to becoming more dependent on subsidies. This chapter also examines reasons to subsidize and not to subsidize. The existence of the subsidy and the policies that sustain it have evolved over the last twenty years. The recovery ratio of mass transit agencies and the hypotheses surrounding this ratio are introduced.

History of Mass Transportation in the United States

In his book, Urban Transit Policy, David Jones separates the development of American urban transportation into eight distinct time periods. Each period, he states, is unique, from the politics to the urban landscape. His time period distinctions follow in Table 3.1:

Table 3.1

The horsecar era	**1855-1890**
Electrification and explosive growth	**1890-1906**
The era of punitive regulation	**1906-1916**
The era of wartime intervention	**1917-1919**
Transition from distress to decline	**1920-1929**
The buffeting of depression and war	**1930-1946**
The era of precipitous decline	**1947-1960**
The period of recovery without stabilization	**1960-1980**

Notably the longest period, the horsecar era, lasted thirty-five years **1855** to **1890**. Some practices from this era still abound in current transit authorities policies. The flat fare is one of these relics.

> ...Many promoter sought a fixed fare so as to insulate their operations from political pressures for fare reduction. But, as a consequence, riders came to view a constant fare as a rightful entitlement.[2]

Although some transit operations, such as the ones in and around Phoenix, Arizona, adopted a zonal method of fare

[1] **Jones, David.** Urban **Transit Policv: An Economic and Polltlcal History. Englewoods Cliffs, New Jersey (1985). p. 28.**
[2] ***Ibid.*** **p. 29.**

charges, the flat fare is still the most common method of charging passengers regardless of distance traveled

With the electrification of urban transportation vehicles came rapid growth.

> Promoters promised that consolidation of small horse railways into larger traction syndicates would produce economies of scale in management, power generation, and operation, permitting the rationalization of service in a fashion that would simultaneously reduce costs and attract new patronage.[3]

The amount of electrified trackage increased over 1600% from 1890 to 1902. As a percent of the total trackage, electrified increased from 16% to 97%.[4] According to David Jones this period of expansion lasted approximately sixteen years from 1890 to 1906. Figure 3.1 illustrates the steady investment in street railways until 1908.

This investment in rail allowed individuals to move further from work. "Many turn-of-the-century observers viewed the inner city...as a social menace from which the masses should make every effort to escape."[5] Urban flight has it's roots in early rail.

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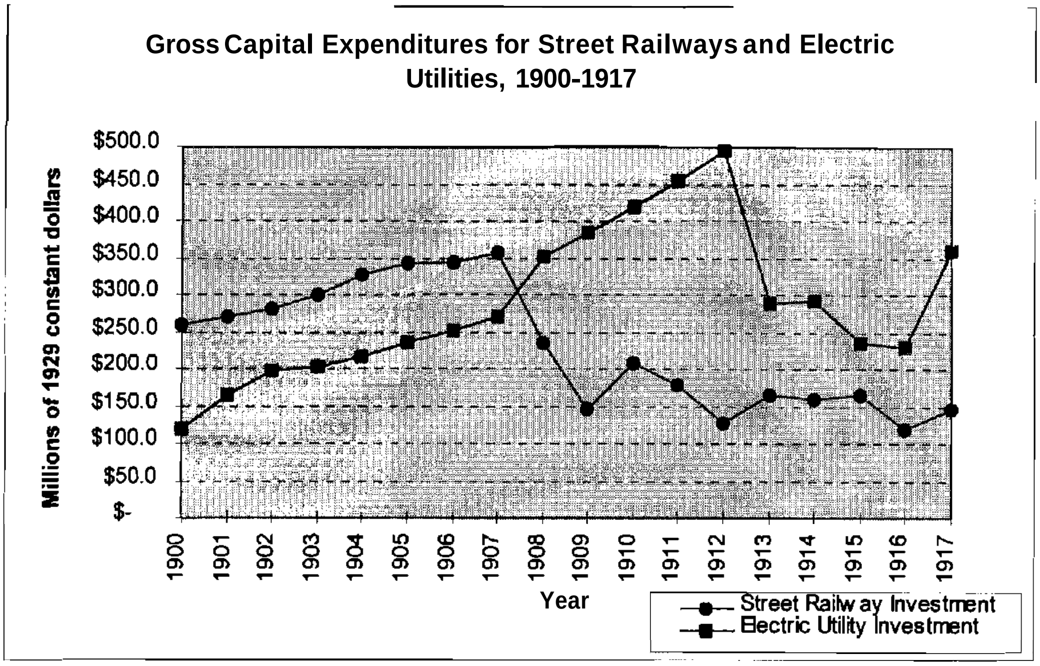
[3] Jones, David. Urban Transit Policv: An Economic and Political History. Englewoods Cliffs, New Jersey (1985). p. 32.
[4] Jones, David. Urban Transit Policv: An Economic and Political History. Englewoods Cliffs, New Jersey (1985). p. 31.
[5] Foster, Mark S. From Streetcar to Superhighway: American City Planners and Urban Transportation, 1900-1940. Temple University Press. Philadelphia, PA (1981) P.7.

Figure 3.1



source: Jones, David. Urban Transit Policy: An Economic and Political History. Englewoods Cliffs, New Jersey (1985). **p. 38**

During the preceding expansion period, windfall profits were made, but during the trust-busting period of the Progressive era this would not go unnoticed. The era of punitive regulation lasted from **1906** to **1916**. The regulations focused on restricting the monopoly powers that transportation systems inherently created. Despite these ordinances, it was during this period in **1908**, rail transit ridership peaked.[6]

During the era of wartime intervention from **1917** to **1919**, labor problems led to unionization. "By **1920**, street

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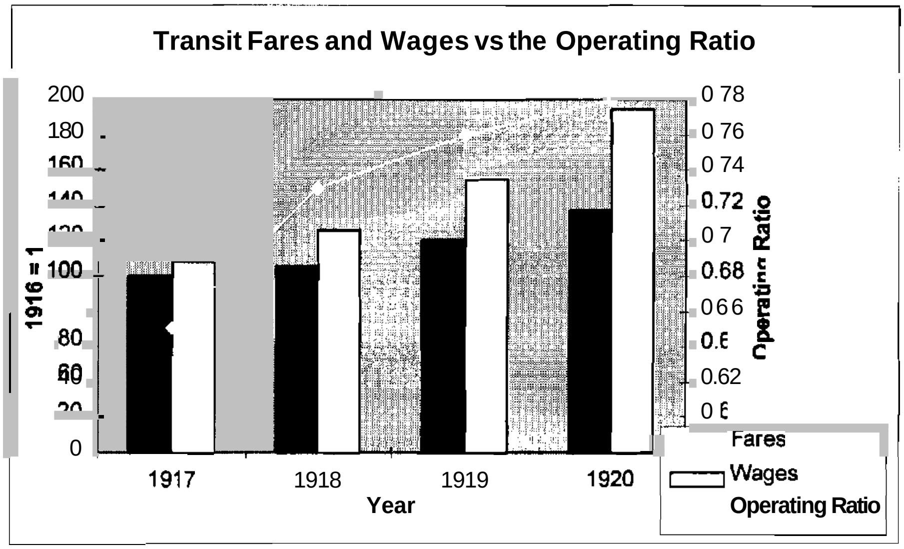
[6] Yago, Glenn. The Decline of Transit. Cambridge University Press, New York (1984). p. 11.

railways ranked among the most heavily unionized industries with a level of union membership comparable to that found in mining and railroading."[7] In turn, higher wages were successfully acquired but without corresponding increases in fares the operating ratio worsened.

Figure 3.2



Source: Jones, David. Urban Transit Policy: An Economic and Political History. Englewoods Cliffs, New Jersey (1985). p. 42

Not only was the worsening operating ratio a problem, but World War I made some policy makers wary of the insufficiency of the United States' transportation infrastructure. "Paralysis of the railroad system in responding to the logistics requirements of the World War I

[7] Jones, David. Urban Transit Policy: An Economic and Political History. Englewoods Cliffs, New Jersey (1985). p. 43.

gives imperative to a national system of defense highways."[8] The development of a highway system would increase the mobility of individuals who purchased personal automobiles.

Although the period from 1920 to 1929 is referred to as the 'Roaring Twenties,' the 1920s were not spectacular for public transit. In Jones' fifth era, transition from distress to decline the automobile begins to play substantial role in the decay in the use of public transportation. Innovations in the manufacture of automobiles allowed for mass production and sale to the general public.

While mass production of automobiles lowered the purchasing cost, it became easier to establish a motorbus operation. Compared to the street railway companies, the motorbus companies of the 1920s had relatively carefree lives. "Driving, maintenance, and bookkeeping were family affairs, unencumbered by union agreements, craft specialization, or strict regulatory oversight."[9]

Figure 3.3 shows the decreasing price index of purchasing and operating an automobile. It also illustrates

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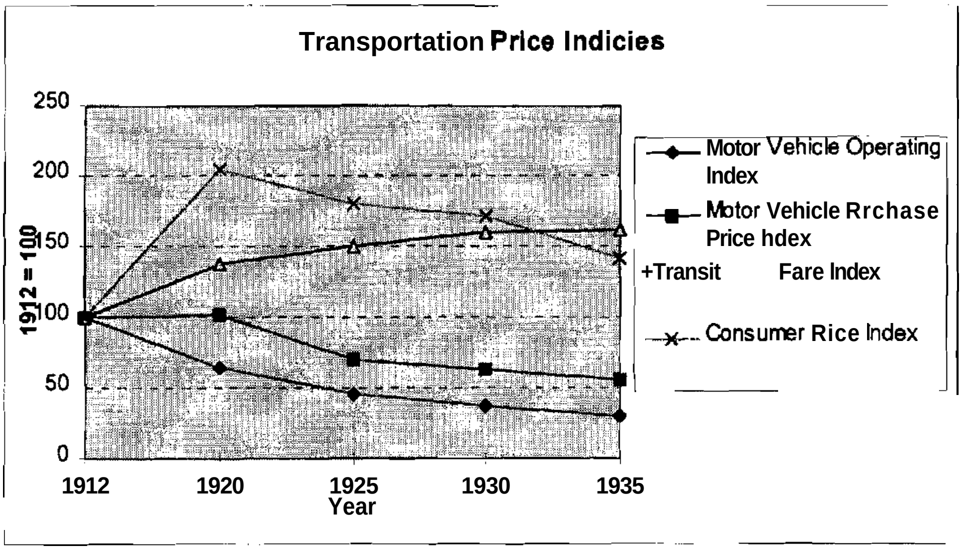
[8] as found in Althshuler, Alan. Current Issues in Transportation Policy. Lexington Books. Lexinton, Massachusetts.(1979). p. 75.
[9] Jones, David. Urban Transit Policy: An Economic and Political History. Englewoods Cliffs, New Jersey (1985). p. 54.

the increase of the transit fare index. This increase is especially interesting when the preceding graph is taken into account. Although the fare price index increased, the operating ratio still declined. It is important to note that the decreasing relative cost of the automobile afforded more people the opportunity to buy one. With an auto, workers were no longer bound to live within walking distance of their place of employment or a transit line that could provide access to employment

Figure 3.3



Source: Jones, David. Urban Transit Policy: An Economic and Political History. Englewoods Cliffs, New Jersey (1985). p. 45

During the period from **1930** to **1946**, the United States experienced a depression and World War II. According to David Jones, these events had a buffeting effect on the impending decline in mass transportation ridership. Public transportation ridership peaked in 1946, just after World War II.

Public transportation, more specifically railway transit, was also under direct attack. In 1937, there were 62 diesel buses being operated by transportation properties.

> General Motors joined with an oil and rubber company to capitalize a transit management organization with the financing necessary to acquire failing streetcar systems and reequip them with diesel buses.
>
> The holding company thus formed-National City Lines- eventually acquired some 100 distressed street railways and converted them to diesel bus operation. By 1940, 75 U.S. transit companies were operating 680 diesel buses.[10]

Not only were the transit authorities under direct attack from General Motors, but also the Federal Highway Act of 1944 eroded its ridership base by making travel by automobile even more enticing.

After the peak in 1946, transit ridership plummeted over the next twelve years. Jones refers to this as the era of precipitous decline. It lasted from 1947 to 1960. Every four years during this period transit ridership fell over

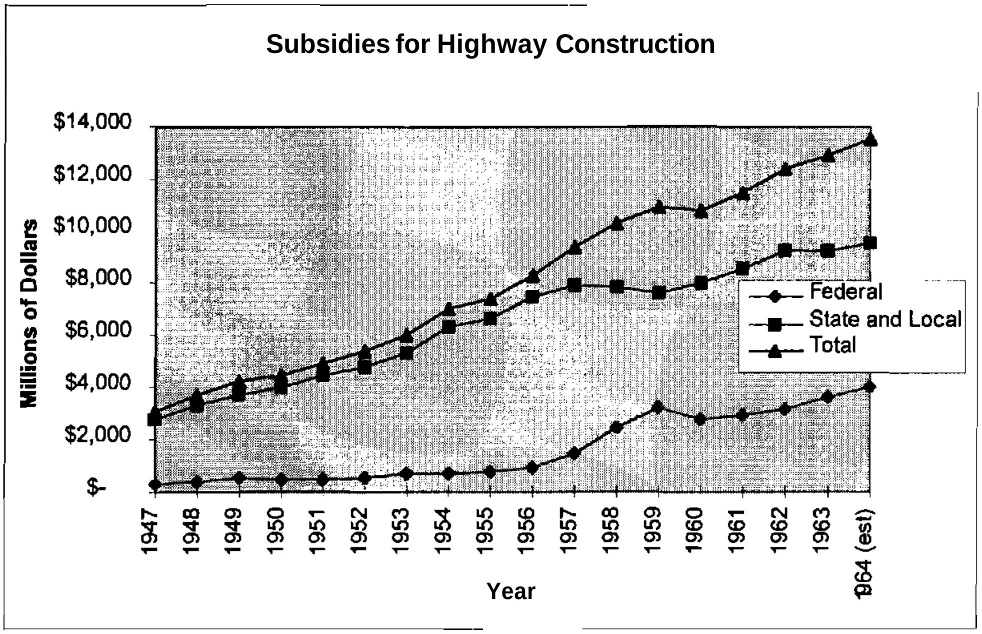
[10] Jones, David. Urban Transit Policy: An Economic and Political History. Englewoods Cliffs, New Jersey (1985). p. 62.

twenty percent.[11] Private mass transit operations were in shambles

> By the early 1950s, electrical transit was largely abandoned and most private transit operators were bankrupt...Automobile, rubber and oil companies faced Federal investigation and prosecution for market manipulations that contributed to the elimination of rail transit.[12]

While mass transit operations floundered, the subsidies for highway construction steadily increased.

Figure 3.4



Source: Ruppenthal, Karl. u s in Transportation Economics. Charles E. Merrill Books, Inc. Columbus Ohio (1965). p. 40

Jones refers to his next era as the period of recovery without stabilization. This is the time when transit

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[11] **Jones, David. Urban Transit Policy: An Economic and Political History. Englewoods Cliffs, New Jersey (1985). p. 74.**

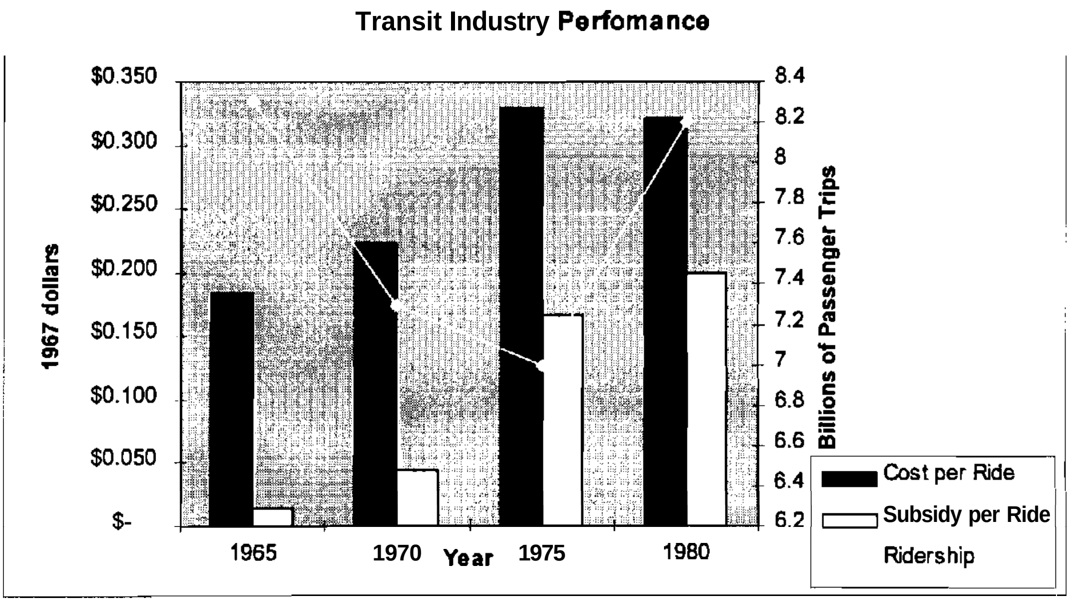
[12] **Yago, Glenn. The Decline of Transit. Cambridge University Press, New York (1984). p. 68.**

operations began to receive subsidies. This period lasted from 1960 to 1980. Although the decline in ridership slowed, transit operating deficits only increased.

> By 1970, US operating deficits were about $2 billion annually, and nearly 90 percent of all operating systems that had existed before World War II had gone bankrupt and were municipalized.[13]

Figure 3.5 illustrates the increasing portion of cost alleviated by subsidy.

Figure 3.5



Source: Jones, David. Urban Transit Policy: An Economic and Political History. Englewoods Cliffs, New Jersey (1985). p. 85

Key Transformations in American Mass Transit Systems

Urban Public Transportation has been in America since the 1850s. During the 150 years since its inception, mass

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[13] Yago, Glenn. The Decline of Cambridge University Press, New York (1984). p. 11.

transit metamorphosed from a mule-drawn rail trolley to intricate transportation systems that often include varied types of vehicles such as articulated buses, ferries, commuter or light-rail systems. During this sesquicentennial time period, the regulation pertaining to mass transit changed from regulation to prevent monopolistic abuse to subsidies to insure existence. These subsidies illustrate the desire for a public transit option, not because of its revenue raising capabilities, but because of its other positive impacts created by providing the service. Not only has the essence of public transportation changed, but also the typical rider has changed as well.

Originally, riders were from all walks of life. As personal transportation became available, accepted and supported, individuals with the appropriate means began to choose private transportation. Now, riders are more likely to be disabled, or poorer, younger, or much older than a typical citizen.[14] Because of these continued declines in per capita ridership and increasing cost, public transportation providers require subsidies to maintain traditional levels of service to their communities

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[14] Ornati, Oscar, A. Transportation Needs of the Poor. (1969) p. 42.

Fare as a User Fee

Farebox revenues on mass transit are a type of user fee. Customary user fees are charges on governmental goods or services that traditionally have been free or provided at minimal cost. Fees charged for camping in public parks, general administrative searches or library use, are typical examples of user fees.

With public transportation, fare box revenue originally covered the cost of operation. As illustrated earlier in this chapter, the revenue to cost ratio was referred to as the operating ratio. Now in most transit systems, the revenues cover a percentage of the total operating revenue.[15] The proportion of revenue generated by the fare has decreased over time and in some agencies, the revenue generated by the fare barely covers the full cost of collecting it.

User fees are criticized because they fail to take into account the norm of equity. Fees may exclude people with low incomes from the good or service. "The final condition, 'few unacceptable inequalities,' is the major stumbling

[15] Transit Profiles Agencies in Urbanized Areas Exceeding 200,000 Population for the 1994 National Transit Database Report Year. Federal Transit Administration December 1995. p. 2-282.

block for general application of fees...what is the proper (efficient) price to charge the poor?"[16] Governments often search for a balance between what a public good truly costs to produce and what would be a fair price.

Arguments in Favor of Subsidization

Many diverse reasons exist for investing in public transport. The reasons range from individual costs and rights to societal costs and obligations

Without subsidized public transportation, many individuals would not be able to move effectively through their city. The inability to be mobile denies an individual the opportunity to many venues. Some argue that there is a fundamental **right to mobility**, which is not limited exclusively to transportation to work or shopping. The inability to afford a car does not make an individual inferior

> To avoid traffic, the cost of gasoline, and depreciation on their automobiles, car owners may choose to take the bus. For them, the fee for public transportation is optional. (On the other hand, the fee for public transportation can be considered mandatory for users who do not own cars.)[17]

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[16] Shields, Patricia. "Freud, Efficiency and Pragmatism." *Society.* p.70.
[17] User Fees: Current Practice. Management Information Service. p.3.

A mass transportation user fee is compulsory to individuals without other options. Without subsidization, this fee would need to be increased and would become prohibitive.

Providing access to the disenfranchised is an impact that most individuals would see as positive. Access does not merely refer to the ability to go from point A to point B. Francisco Martinez defines access "as the economic benefit derived from the interaction between two activities."[18] Having transportation available to the elderly, poor, and disabled, creates access for these groups to goods, services, or jobs that might not have been readily available. This benefit gives credence to the ADAPT's (American with Disabilities for Attendant Programs Today) slogan, "To boldly go where everyone has gone before."

A result of the urban changes discussed in Chapter Two is the transformation of the typical transit rider. The proliferation of the personal automobile changed the face of the average rider of public transportation. People unable to drive cars (old, poor, handicapped, young) as well as women became the chief users of public transportation.

> ...Even by 1965, the mileage traveled as a car driver, or as a local bus passenger, showed a very

[18] Martinez, Francisco. "Access: The Transport-Land Use Economic Link." *Transportation Research* B: *Methodology. V29 1995.*

> substantial age and sex imbalance...83% of total car mileage was driven by men of working age, whereas 73% of passenger miles made by bus were women, the young and the old.[19]

During the early years of public transportation, transit riders were representative of most facets of society. As the preceding quote illustrated a disparity between working-age men and the rest of the community utilizing public transportation grew.

As stated earlier in this chapter, public transportation riders tend to be either poorer, younger, much older, or more likely disabled than a typical citizen. The subsidization of public transportation redistributes income from richer to poorer. Since the money is earmarked for transportation, the public can be relatively assured that it is used properly

The private automobile is deceptively subsidized and has hidden costs to society

> Cheap as they are to drive, cars are enormously costly to society. When the bills are added up--for pollution, road construction, accidents, and warships in the Persian gulf--the total is between $300 billion and $700 billion a year. Were these costs paid at the pump, gas would be $6 to $11 a gallon.[20]

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[19] Pickup, Laurie; Stokes, Gordon; Meadowcroft, Shirley; Goodwin, Phil; Tyson, Bill; Kenny, Francesca. Bus Deregulation in the Metropolitan Areas. (1991) p. 15.

[20] Rauber, Paul. "Key to Gridlock? The free rider goes the way of the free lunch." *Sierra*. March-April 1994, v79 p. 45.

Subsidization of the personal automobile is more covert than subsidization of pubic transportation. Difficulties abound for any government that would try to tackle the hidden subsidies of personal transportation.

Mass urban transportation can reduce traffic congestion resulting in many positive externalities. "...Every 50 persons diverted to public transit represent a reduction of approximately 30 automobiles in the traffic stream, with a consequent easing of downtown traffic and parking congestion."[21] The reduction in congestion on the roads during peak travel times produces many positive benefits. The driving time saved, created by having fewer vehicles on the road, the reduction of air and noise pollution, as well as fewer accidents made possible by those absent vehicles are examples of positive externalities.

Arguments Against Subsidization

Numerous reasons exist for not subsidizing public transport. The numbers of individuals who are dissatisfied with taxes and expenditures are growing. A majority of

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[21] Sheldon, Nancy; Brandwein, Robert. The Economic and Social Impact of Investments in Public Transit. (1973) p. 3.

states have limitations on taxes and expenditures by local governments.[22] "There is nothing wrong with the United States that a dose of smaller and less intrusive government would not cure."[23] This conservative viewpoint may have some validity. Public systems are less efficient. Also it may be contended that it is not fair for individuals to be taxed for a good that they do not use. Also, subsidizing public transportation chokes off potential private competition. Furthermore, it may be argued that patrons do not really need public transportation.

Public systems are less efficient and have weak methods of reducing spending.

> ...Public enterprises in general offer minimal incentives for profitable operation, while those bearing the ultimate cost of inefficiencies (mainly local taxpayers) generally lack the incentives to monitor operations effectively.[24]

Private companies search for inefficiencies to eliminate them and become more competitive in the market environment. Some examples of governmental failures in the public transit are:

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[22] Mullins, D.; Joyce, P. "Tax and Expenditure Limitations and State and Local Fiscal Structure: An Empirical Assessment." *Public Budgeting & Finance.* Spring 1996. p.77.
[23] Milton Friedman as found in Brown, Peter G. Restoring the Public Trust (1991) p.vii.
[24] Seligman, Daniel. "Notes from Underground.(Privatizing the local transit system in New York City)". *Fortune.* April 8, 1991 p. 128.

> *Miami's 21-mile rail system has operation costs three times the amount forecast, with only 15 percent of the ridership forecast.
>
> *Los Angeles' $900 million trolley system carries barely more than the ridership of the bus lines that parallel the route.
>
> *Portland's system--built for $215 million--is drawing less than half the passengers forecast.
>
> *In Atlanta, public transit accounted for 20 percent of commuting in 1990, down from 25 percent in 1980, and rail ridership "has stagnated."[25]

To have projects approved, it is often necessary to have high forecasted numbers of riders. Because of subsidization the general public pays for these inaccurate projections.

People who benefit should pay. With subsidization, persons who do not ride urban transportation are inequitably forced to pay for the service.

Traneportation riders really do not need it. Although many disenfranchised groups have direct input into the transportation agency's planning process, it may be argued that the individuals are not solely reliant on public transportation

> Few 'transit dependents' are truly carless in the sense that they are unable to share in the auto-mobility of friends, neighbors, or relatives. While many are ride-reliant, few are solely

[25] Beardsley, Charles. "Slow Ride on the Fast Mail". *Mechanical Engineering.* October *1993.* p. 4.

> dependent on public transportation for personal mobility.[26]

More people may become transit dependent, as their pool of friends runs out.

Subsidizing public transportation chokes off potential competition. Subsidizing public transportation places private transportation providers at a disadvantage.

> On the expenditure side, it is sometimes contended that the current expenditure share is so high that the private sector of the economy has been squeezed in to a position where it has to operate far below its productive potential. *This viewpoint finds fault with the use of the government to solve social problems*.[27]

No doubt, if government subsidization of public transportation ended, private taxi companies would be immediate benefactors.

The scale of government has grown too large. This argument specifically points to the inability of government to yield to market pressures as the reason for inefficiency. This argument suggest that there might be an optimal size of group receiving service for each unit of government 'production'

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[26] Jones, David. Urban Transit Policy: An Economic and Political History. Englewoods Cliffs, New Jersey (1985). p. 98.

[27] Organization for Economic Co-operation and Development. Social Policy Studies Social Expenditure 1960-1990 (1985). p. 14

> Government service is likely to be inefficient because the production unit must, by definition, be the same size as the consumer unit without regard to the optimal size. Therefore, if the most efficient size for a school system is one that services 50,000 people, then cities with populations of 1,000, 10,000, 100,000 or 1 million would all be inefficient if the each had their own school system.[28]

Likewise, if the most efficient size for a public transportation system is one that services 250,000 people, then any city with a different population would be inefficient if it had its own system.

Potential Determinants of the Farebox Ratio

The result of subsidization is the farebox ratio. This ratio is the percentage of operating expenses that are covered by fare revenue. Any expense that is not covered by fare revenue is typically some form of government subsidy. This research examines the relationship between transit authority size and the farebox ratio. The model to be researched has the farebox ratio as a function of calculated city density, service area, service area population, operating expense, fleet size and average fleet age.

[28] Savas, E. S. Privatizing the Public Sector. Chatham House Publishers, Inc. Chatham, New Jersey. p. 82.

The Service Area Population is hypothesized to have a positive relationship with the farebox ratio. Typically, as the population increases so does the number of riders and the resulting fare revenue. "...For rapid transit is usually argued to be appropriate only for populations densities in excess of 10,000 (persons) per square mile."[29] To get these degrees of densities, there must be vast numbers of people in the service area.

A negative relationship is expected with the service area. "The pattern of home and job locations and other activities disperse - much more difficult for a public transport systems to serve."[30] Ordinarily, as the service area is increased, new areas are added with densities not as compact as the original service area. This expansion should increase operating cost without adding the same proportion to the farebox revenue.

The greater a city's density, the less likely that its population may rely on personal transportation. While every metropolitan area has shown growth from 1950 to 1990, almost

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[29] Hilton, George. Federal Transit Subsidies. American Enterprise Institute for Public Policy Research. Washington DC (1974) **P.82.**
[30] Pickup, Laurie; Stokes, Gordon; Meadowcroft, Shirley; Goodwin, Phil; Tyson, Bill; Kenny, Francesca. Bus Dereeulation in the Metropolitan Areas. (I 991) p. 16.

every city has lost population.[31] Transit system designs have not followed this trend.

> Most Transit routes are radials focusing on the CBD. Because the dispersion of suburban trip ends, most circumferential bus routes carry few passengers at a high cost per passenger.[32]

Historically as urban density has declined, revenues for public transit have decreased.

Being a component of the farebox ratio, the variable operating expense is expected to point to some sort of scale (Savas). The results are expected to indicate that a point exists where diminishing return outweighs the economies of scale.

The service fleet has a direct impact on the operating cost. Operating more buses requires more mechanics to handle roadcalls.[33] Conversely, having more buses allows an agency to provide more service and thus collect more fare revenue. Similar to the operating expense variable, the results are expected to indicate in large transit authorities that diminishing returns outweigh the economies of scale.

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[31] Matoon, Richard. "Can Alternative Forms of Governance Help Metropolitan Areas?"
[32] Black, Alan. Urban Mass Transportation Planning.McGraw-Hill, Inc. St. Louis, Mo. (1995)P.88.
[33] Roadcall or Road Call- Unscheduled maintenance requiring either the emergency repair or service of a piece of equipment in the field or the towing of the unit to the garage or shop. Transportation Expressions. US Department of Transportation, Bureau of Transportation Statistics. Washington DC (1996)

Average fleet age is expected be negatively related to the farebox ratio. Older vehicles tend to need more maintenance than newer ones thus increasing operating cost without adding operating revenue.

The following function describes the model. The direction of the hypothesed relationship found in parentheses.

Farebox Ratio= f(Service area population) - (Service area square miles) + (Calculated city density) - (Operating Expense) - (Total Fleet) - (age of fleet)

This chapter presented an abridged version of the history of urban mass transportation providers as well as some reasons for subsidization of the current operators. Finally, a model is presented for potentially determining the farebox ratio. The following chapter will present the methodology for testing this model.

Chapter Four

Methodology

Introduction

This chapter presents the methodology used to investigate the hypotheses. The farebox model supplied from chapter three is tested using regression. This will not be the first time regression analysis has been done on data from the Transit Profiles provided by the FTA. Brian Cromwell used data from the Transit Profiles in his article "Public Sector Maintenance: the Case of Local Mass-Transit."

Research Design

Published by the Federal Transit Administration (FTA), the 1994 Transit Profiles Agencies in Urbanized Areas Exceeding 200.000 Population furnishes the data used in this analysis. These data provide a list of all transit authorities in the United States. Correlation and multiple regression are used to analyze the data with respect to the model.

Upon inspection of the raw data listed in appendix one, it may be noticed that some transit agencies are not represented. The following transit agencies were given exemption for **1994**: Dallas-Grand Prairie, Dallas-Plano, Shopper Bus Service, Newburgh-Beacon Bus, New Orleans-St. Bernard, NW IN-GNS, and NJ-International Bus.[1]

Since this data is only for **1994**, it provides a cross section of the public transit industry rather than a longitudinal study. For this type of analysis, there are many benefits to using cross sectional data. The analysis of the cross section data allows comparisons to be made between a variety of transit authorities. Since the data is from municipalities all over the United States, the data avoids problems found with regional bias. The cross sectional study also looks for evidence of the assumed hypotheses.

This research is subject to all the constraints of a cross sectional study. With a cross sectional study the data may be subject to socioeconomical 'spikes,' such as increased funds available to transit authorities by the Intermodal Surface Transportation Act of **1991**. It also does not take into account individual transit agencies local

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[1] **Transit Profiles. P. B-2.**

decisions, nor does it encompass regional mandates imposed by state or local governments.

To convert the data to a usable format, certain transit authorities were eliminated from study. Some agencies do not collect fares and thus did not generate a farebox ratio. This was most evident in some sub-contractors and in cities such as Las Vegas, operated by ATC. After eliminating these agencies, 165 cases remained.

Model

Multiple regression analysis makes it possible to test a model. (The following equation represents the model as operationalized by the variables.) The sign in front of the independent variables represents the expected direction of the relationship.

Farebox Ratio=
f(SAPOP, SASQMI, OPEREXPS, AVGAGE, CALCDENS, TTFLEET)
(+) (-) (-) (-) (+) (-)

The results of the multiple regression analysis are used to examine the influence of each independent variable on the farebox ratio.

Dependent Variable(Farebox Ratio)

The ratio of total fares collected to operating expenses is the ***farebox ratio.*** Any farebox ratio less than one indicates that some form of subsidy must exist to make up the remainder of the operating expenses. Subtracting the farebox ratio from one hundred percent produces the percentage subsidy of operating expenses that a transit authority receives to operate.

Independent Variables

Most of the independent variables in the model relate to some form of transit agency size. The size could be geographical, fiscal, capital, or population. This analysis intends to use all of these forms of size. Nearest city density and average age of vehicles have been added because of the availability of the data, curiosity, and literature.

The Service Area Population (**SAPOP**) is the total number of individuals within the transit agency's jurisdiction. The service area (**SASQMI**) is the total number of square miles within the transit agency's jurisdiction. The operating expense is the total dollars expended by each agency to function on a yearly basis. Being a component of the farebox ratio, operating expense (**OPEREXPS**) is predicted to indicate a point of efficient scale of operation. Average city density (**CALCDENS**) is a calculated variable. It gives the aggregate number of people per square mile in the operating city. Total fleet **(TTFLEET)** is a capital size variable. It represents the total number of vehicles operated by a transit authority. Average fleet age **(AVGAGE)** is the average age of the bus fleet.

Multicollinearity

One of the main concerns when executing multiple regression analysis is multicollinearity. Multicollinearity exists when two independent variables are highly correlated with each other. If one variable is not excluded, then its actual effect on the dependent variable is miscalculated. To avoid this problem a correlation matrix is created to determine the correlation coefficients.

Conclusion

This chapter presented the methodology used to investigate the hypotheses. Almost all variables can be

used 'as is' for the analysis. Regression analysis is employed to determine the effect of the independent variables on the farebox **ratio. The findings of the research are be presented in Chapter Five.**

Chapter Five

Analysis of Findings

Introduction

This chapter presents the findings of the research. The validity, the significance of the model, and the results of the accuracy of hypotheses representing the farebox ratio will be presented.

Correlation Matrix

The test to avoid the influence of independent variables being overstated is the use of the correlation matrix. If the correlation between two independent variables is high, then multicollenearity probably exist.

In the correlation matrix developed for this project, a high correlation existed between two variables. Operating expense (OPEREXPS) and total fleet (TTFLEET) had a correlation of .9434, a correlation of one is the highest correlation possible. This problem could be foreseen because much of a transit authorities operating expense deal with the size of the fleet (i.e., numbers of drivers and mechanics to be hired). The correlation matrix follows in table 5.1.

Table 5.1

Correlation Matrix

	Average	St Dev	1	2	3	4	5	6
Fare Box Ratio	27%	16%						
Service Area Population	583	890	0.44					
Service Area Square Miles	1,178,989	1,978,244	0.33	0.60				
Calculated Density	426	959	0.36	0.50	0.27			
Operating Expense	83 million	287 million	0.02	0.65	0.20	0.25		
Total Fleet	426	959	0.19	0.66	0.29	0.23	**0.94**	
Average Age	9	3	0.22	0.00	-0.06	-0.06	0.00	-0.01

Regression

Because of the multicollenearity problem, total fleet was excluded from the regression analysis. The relevance of regression analysis is indicated by the adjusted R square. In this form, this model accounted for only 26.5% of the dependent variable.

Table 5.2

Regression Analysis of Farebox Ratio Model

RELATIONSHIPS

Variables	Expected Relationship	Observed Relationship	Beta	Sig T
Service Area Population	Positive	Positive	0.327	0.0098
Service Area Square Miles	Negative	Positive	0.108	0.2223
Calculated Density	Positive	Positive	0.205	0.3702
Operating Expense	Negative	Negative	-0.084	0.0005
Average Age	Negative	Positive	0.235	0.0089

Unfortunately, since this model accounted for such a low portion of the variance, the absolute effect of the variables was not determined. In this model the most significant variables were average age, calculated density, and service area population. Surprisingly, the average age of the bus fleet was the most significant variable.

The first hypothesis, the percentage subsidy per transit agency (1-FBR), will be less for Regional Transit Authorities (RTAs) with a greater calculated density of the cities in which they operate, was supported. The variable, calculated density, was the second most significant variable. The beta coefficient was positive .205.

The second hypothesis, the greater a transit agency's operating expenses, the more likely that the percentage subsidy per transit agency is greater was not strongly supported. Although the beta coefficient was slightly negative (-.084), the value of the coefficient was not significant ($p = .3702$).

The third hypothesis, The larger the service area the greater the percentage subsidy per transit agency was not supported. The sign of the beta coefficient (+.108) was opposite of the expected value and the significance of this variable was marginal.

The fourth hypothesis, the greater the service population the less the percentage subsidy per transit agency, was weakly supported. This variable had the largest beta coefficient (.327); the significance was relatively strong ($p = .0098$).

Unexpectedly, the variable with the greatest significance(.0005) was average age. The beta coefficient was positive (.235), which was the opposite of the hypothesized relationship between the variables.

An explanation for this finding might be the regulations regarding ADA compliance, or a transit authority's excursions into global positioning satellite technology. Newer buses must be able to accommodate wheelchair-bound patrons. The complexities of wheelchair lifts increase the cost through training and retention of maintenance staff, thus increasing cost. Also simply having the intricate apparatus increases the likelihood of a service-stopping breakdown, thus creating more roadcalls as well as requiring more buses to complete the service.

Conclusion

The results from this model proved to be weaker than expected. The model only accounted for 26.5% of the variation in the dependent variable. Surprisingly, the variable with the greatest influence was shown to have an opposite relationship than what was hypothesized. In the final chapter, conclusions are drawn and suggestions for future research are presented.

Chapter Six

Conclusion

Introduction

In social sciences, correlations tend to be much more difficult to find due to the myriad of factors that affect an observation. In this chapter, conclusions are drawn and suggestions for future research are presented. The model accounted for 26.4% of the variation in the dependent variable. This is a relatively insubstantial model. Surprisingly, the variable with the most influence was shown to have an opposite relationship than what was hypothesized.

Summary

The first hypothesis, the percentage subsidy per transit agency (1-FBR), would be less for Regional Transit Authorities (RTAs) with a greater calculated density of the cities in which they operate, was supported. Due to the beta coefficient and the significance of this variable, it probably should be kept in the model.

The second hypothesis, the greater a transit agency operating expenses, the more likely that the percentage subsidy per transit agency is greater was not supported. Due to the beta coefficient and the lack of significance of operating expenses, this variable probably could be dropped from the model.

The third hypothesis, the larger the service area, the greater the percentage subsidy per transit agency, was not supported; and it probably could be dropped from the model or combined with the service area population to create another variable. However, in the latter case, it is likely to have multicollinearity problems with the calculated city density variable.

The fourth hypothesis, the greater the service population the less the percentage subsidy per transit agency, was weakly supported. Since this is one of the three variables with noticeable significance, this variable should be kept.

Unexpectedly, the variable with the greatest significance(.0005) was average age of the bus fleet. The beta coefficient was positive (.235), which was the opposite of the hypothesized relationship between the variables.

A possible reason for the average age of the vehicles, having a slightly positive correlation with the farebox ratio, might be due to the length of existence of some transit agencies. Although the Urban Mass Transit Administration started granting moneys to local governments in 1964, many transit authorities were not created until the late 1980s or 1990s. There might be a comparative advantage of operating for a longer period of time. Also newer vehicles are more likely to be alternative fuel vehicles, have electronic fareboxes, and/or be wheelchair lift equipped. If any of these feature malfunctions while the vehicle is in service, the vehicle will have to be pulled out of service for repair.

Strengths and Weakneeeee of the Project

The major strength of this research is that it illustrates the feasibility of creating a model for studying transit authority operations and expected performance indicators.

The low significance indicates a problem with either the variables chosen or the way the data were processed. If the method of data processing was flawed, the research might have yielded better results if the data were separated by region. Different regions of the country may have different factors influencing ridership and fare revenue. If this was the case, then the data should be separated, and individual multiple regression analyses should be run for each area. The extremely large transit authorities could be removed so as not to skew the information base.

It is also possible that the variables were not the best choices. Better variables might exist for prediction; these potential variables are discussed in the following section.

Suggestions for Future Research

Transit authorities are ideal agencies for statistical analysis. Data for the authorities is collected by the FTA on an annual basis. Records are methodically kept and presented in published form, with more data soon to be available via the internet.

A longitudinal study would be ideal, with only the time required for data entry being preclusive. This might avoid potential regional factor problems. Using the farebox ratio as a gauge of efficiency, research involving the total number of administrative employees or general level of employee education (Savas) would be interesting as well as potentially significant.

A number of factors not contained in the FTA report might also be considered. Both internal (operating) and external (environmental) factors could be used. One important factor that may be important to research is the true city density. The calculated city density (CCD) was derived from the data from the transit profiles. By using this data, an average was derived for the entire city. Since transit agencies' jurisdictions regularly gerrymander a municipality's territory, this variable may not have been as significant as possible.

Also, median income of cities should probably be included in some form. The US Census Department provides this data.

> ...Travel tends to increase with income, these low income households accounted for only 19 percent of trips made in urban areas. On a modal basis, they accounted for 5 percent of commuter rail trips...Although travel increases with income, households will low incomes account for a larger percentage of transit ridership that households with higher incomes.[1]

So operating a transit authority in an area with a lower income per capita might gain more ridership. To include this data, a new model is suggested. The proposed model

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[1] Althshuler, **Alan.** Current Issues in Transportation Policy. **Lexington Books. Lexinton, Massachusetts. 1979. P. 139.**

includes a portion of the model tested in this applied research project as well as a couple other variables.

Farebox Ratio= f(Service area density) - (Total Fleet) + (age of fleet) - (median household income) + (Base Fare) - (Vehicles Operated Maximum Service/Vehicles Operated Base Service)

This research project explored some of the difficulties in creating a function that will predict economic efficiency in public transportation operators. Controversy regarding equity issues and economic efficiency of these operations will probably continue. Quite possibly this controversy will be augmented by future work choices such as telecommuting and varied work hours. The thinning densities of urban centers will continue to provide challenges to transportation planners and public administrators.

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	1. Sub																					
								(Printed Report)		Table 10			Table 10		Table 21	Table 21	Table 21	Table 21	Table 21	Table 21	Table 21
	State	Agency Name	Farebox	CCD	City Sq Mi	City Pop	SA sq mi	Service Area Population	Total Fleet	VOMS	avg ag	salary & wages	Operating Expenses	UZA	VAMS	Annual Vehicle Miles (000)	Annual Actual Revenue Miles (000)	Annual Vehicle Hours(000)	Annual Revenue Hours (000)	Annual Passenger Trips (000)	Annual Passenger Miles
1	AK	Municipality of Anchorag	0.17	1378	161	221883	1910	230185	72	51	11.2	$ 7,219,102	$ 10,520,083	0	59	2022.836	1775.059	113.439	104.527	3029.483	14559.07
2	AL	Birmingham-Max	0.27	1559	399	622074	1074	651525	150	112	9.9	$ 9,164,975	$ 12,629,129	0	104	2824.618	2523.774	213.015	194.969	5282.509	23189.52
3	AL	Mobile-MTA	0.27	1314	229	300912	83	237900	45	38	8.7	$ 2,968,270	$ 4,339,385	0	39	1782.155	1627	116.052	113.504	1540.548	8479.288
4	AL	Montgomery-MAT	0.33	1346	156	210007	33	103538	47	33	17.8	$ 2,161,258	$ 3,164,134	0	41	975.548	975.458	74.406	74.406	1649.005	4342.263
5	AR	Little Rock-CAT	0.23	1534	199	305353	118	185728	68	59	14.1	$ 4,179,980	$ 5,498,971	0	58	2071.958	1955.698	154.937	147.872	2521.632	9730.208
6	AZ	Phoenix PTD	0.31	2707	741	2006239	416	996166	452	387	11.2	$ 32,146,223	$ 51,608,425	1	374	12708.3	10910.259	900.345	774.554	32150.467	126931.2
7	AZ	Tucson-Sun Tran	0.2	2345	247	579235	242	503991	251	211	9.4	$ 16,499,845	$ 24,985,848	1	193	7694.505	6582.016	525.915	478.946	17289.305	59418.48
8	CA	Bakersfield-GET	0.21	3088	98	302605	152	346951	73	60	8.2	$ 4,933,713	$ 8,456,198	0	64	2568.798	2360.529	178.597	171.189	5824.439	17837.34
9	CA	Contra Costa-Connectio	0.17	4153	874	3629516	200	450000	139	114	8.8	$ 11,201,569	$ 16,572,420	0	116	4305.94	3535.708	298.629	266.449	4569.573	18963.73
10	CA	Fresno-FAX	0.27	3409	133	453388	168	452000	109	92	6.4	$ 10,254,828	$ 15,296,951	0	87	3229.23	3017.917	241.007	216.459	7950.97	24063.66
11	CA	LA-Culver City	0.29	5800	1966	11402946	26	191053	30	24	10.4	$ 3,980,686	$ 5,161,747	0	30	990.994	970.505	88.828	88.995	3772.578	11362.38
12	CA	LA-Gardena Bus Line	0.17	5800	1966	11402946	40	287486	55	45	11.2	$ 4,009,991	$ 7,394,127	0	45	1476.105	1454.747	101.735	100.02	4422.395	18097.43
13	CA	LA-Laguna Beach	0.16	5800	1966	11402946	42	26228	22	9	5	$ 560,421	$ 848,655	0	11	122.2	121.893	9.347	9.347	103.504	293.152
14	CA	LA-Long Beach Transit	0.27	5800	1966	11402946	96	573734	213	174	6.6	$ 24,895,069	$ 32,786,125	0	193	7152.933	6598.801	627.239	596.432	23201.349	59736.41
15	CA	LA-Norwalk	0.32	5800	1966	11402946	33	187901	20	17	11.6	$ 1,667,156	$ 3,559,170	0	18	606.612	595.126	40.496	39.527	1031.848	3881.082
16	CA	LA-OCTA	0.22	5800	1966	11402946	797	2566275	629	519	9.3	$ 73,467,176	$ 103,568,759	0	482	19994.775	16425.566	1412.462	1274.362	38153.84	156722.8
17	CA	LA-Santa Monica	0.42	5800	1966	11402946	51	458506	135	106	8.4	$ 11,328,090	$ 14,944,801	0	135	3870.529	3542.286	304.424	285.317	17602.352	61145.51
18	CA	LA-Torrance	0.17	5800	1966	11402946	103	606847	122	80	4.7	$ 5,205,373	$ 10,510,824	0	66	2421.59	2143.621	179.239	160.921	3582.258	20391.02
19	CA	Los Angeles-LACMTA	0.29	5800	1966	11402946	4070	9087715	2640	2199	8.2	$ 540,227,193	$ 708,108,850	0	2357	97749.998	82954.432	7433.155	6844.14	379738.25	1419097
20	CA	Oakland-AC Transit	0.25	4153	874	3629516	241	1086254	713	588	7.7	$ 101,937,268	$ 135,330,638	0	713	25421.809	23052.576	1979.398	1835.621	62754.904	217024.5
21	CA	Oxnard-SCAT	0.23	3060	157	480482	74	308461	37	27	13.4	$ 4,282,944	$ 5,903,609	0	37	1521.357	1322.103	128.493	111.669	2798.438	11678.91
22	CA	Riverside-RTA	0.15	2544	460	1170196	1739	915007	109	84	4.3	$ 8,489,968	$ 14,630,415	0	81	4080.303	3733.377	242.189	228.369	5174.242	32213.16
23	CA	SF-Golden Gate	0.28	4153	874	3629516	256	6189000	301	242	9.7	$ 39,953,446	$ 51,949,818	0	298	10065.628	8535.191	482.778	432.514	9171.409	143010.3
24	CA	SF-SamTrans	0.12	4153	874	3629516	97	540194	365	296	4.6	$ 24,998,215	$ 50,096,804	0	319	8830.344	7930.652	719.184	625.249	19564.573	111518.1
25	CA	Sacramento-RT	0.29	3284	334	1097005	295	931146	311	258	4.7	$ 338,955,873	$ 57,472,187	1	205	8050.27	6759.817	536.413	495.656	15974.827	61517.57
26	CA	San Bernardino-OMNIT	0.22	2544	460	1170196	489	1155931	208	163	4.4	$ 10,084,282	$ 21,653,266	0	120	6093.498	5232.485	369.141	355.485	7215.679	48963.27
27	CA	San Diego Transit	0.44	3404	690	2348417	170	1010764	359	290	8.7	$ 44,876,487	$ 57,924,900	0	339	14390.866	12680.036	1119.023	1054.41	35382.499	143712
28	CA	San Diego-NCTD	0.22	3404	690	2348417	202	651604	179	147	7.2	$ 18,341,996	$ 261,930,657	0	149	9110.399	8700.67	497.819	476.636	10546.256	64011
29	CA	San Francisco-BART	0.47	4153	874	3629516	234	1267766	636	444	6.3	$ 180,099,307	$ 217,425,724	0	47	3178.928	2648.847	141.09	128.193	2339.62	24424.65
30	CA	San Francisco-Muni	0.34	4153	874	3629516	49	723959	1038	855	7.8	$ 207,385,727	$ 279,317,731	0	455	14668.603	12646.266	1483.752	1369.182	93993.513	198677
31	CA	San Jose-SCCTD	0.12	4246	338	1435019	300	1136614	771	550	6.3	$ 111,420,780	$ 152,599,726	1	477	20554.546	17350.99	1367.574	1244.078	38876.939	159079.4
32	CO	Colorado Springs Transi	0.22	1994	177	352989	844	390000	97	84	7.4	$ 3,679,776	$ 6,138,999	0	45	2064.492	1913.752	127.508	119.82	3727.948	13825.67
33	CO	Denver-RTD	0.19	3307	459	1517977	2406	2000000	919	771	5.7	$ 79,341,920	$ 136,306,831	0	828	32907.273	28168.363	2108.817	1606.575	61476.822	231046
34	CT	Greater Bridgeport TD	0.28	2571	161	413863	90	282710	70	55	4.5	$ 6,136,936	$ 9,318,542	0	52	1811.28	1721.9	151.948	143.611	5126.996	10664.15
35	CT	Hartford-CT Transit	0.38	2266	241	546198	936	1075000	237	185	3	$ 22,828,796	$ 29,645,631	0	237	6611.535	5769.867	496.471	446.984	17891.98	60920.29
36	CT	Hartford-Conn DOT	0.02	2266	241	546198	171	375000	39	27	9.9	$ 426,835	$ 7,190,371	0	12	335.58	192.525	14.726	6.655	195.775	2905.315
37	CT	New Haven-CT Transit	0.32	2402	188	451486	477	648524	116	87	6.3	$ 12,874,194	$ 16,853,965	0	116	3146.159	2943.251	276.481	261.948	11616.77	29345.81
38	DC	Washington-WMATA	0.46	3559	945	3363031	1486	3005757	2245	1894	12.7	$ 490,481,453	$ 624,942,155	0	1454	46031.265	36654.873	3733.094	3288.134	144386.42	450913.1
39	DE	Wilmington-DART	0.26	2392	188	449616	186	399800	124	102	7.9	$ 10,390,239	$ 14,754,223	0	124	3422.262	3279.69	261.459	250.739	5328.215	21067.06
40	FL	Bradenton-MCT	0.11	2303	193	444385	747	228283	37	27	5.2	$ 1,697,422	$ 2,755,950	0	14	546.224	527.013	32.148	31.312	657.588	2433.076
41	FL	Daytona Beach-STS	0.07	1729	128	221341	19	17481	2	2	5	$ 126,980	$ 174,811	0	2	73.292	64.02	4.518	4.057	26.727	74.838
42	FL	Daytona Beach-VOTRA	0.18	1729	128	221341	1207	390066	74	61	9.9	$ 2,897,736	$ 5,440,667	0	37	1687.402	1564.634	118.654	110.1	3173.096	10217.34
43	FL	Ft. Lauderdale-Bct	0.23	3786	327	1238134	410	1337000	872	618	7.4	$ 29,718,306	$ 48,333,977	0	224	10538.267	9662.692	759.36	720.487	22789.308	103822.1
44	FL	Ft. Myers-LeeTran	0.17	1779	124	220552	189	350809	59	45	8.4	$ 2,338,684	$ 4,052,284	0	39	1830.147	1707.039	100.434	94.589	1788.894	9938.348
45	FL	Jacksonville-JTA	0.2	1454	508	738413	242	710592	366	234	7.5	$ 16,419,832	$ 23,392,396	1	162	6897.794	6584.477	485.94	473.153	9356.736	49839.03
46	FL	Miami-MDTA	0.31	5424	353	1914660	285	1735000	846	644	7.8	$ 132,321,571	$ 181,525,666	0	635	26398.234	23193.775	2030.3	1866.298	63765.755	258038.8
47	FL	Orlando-LYNX	0.39	2246	395	887126	2700	1187833	336	304	6.7	$ 16,867,664	$ 27,787,639	1	163	7660.136	7110.16	587.32	550.055	11936.821	63794.17
48	FL	Pensacola-ECTS	0.21	1636	155	253558	42	200000	43	31	12.6	$ 2,247,975	$ 3,463,861	0	29	1038.61	999.7	74.515	71.7	1323.39	6427.62
49	FL	Sarasota-SCTA	0.17	2303	193	444385	96	234434	71	41	10.5	$ 2,259,750	$ 3,386,319	0	42	1120.267	1057.978	77.565	73.776	1302.06	5687.776
50	FL	St. Petersburg-PSTA	0.17	2629	650	1708710	143	792306	272	174	7	$ 18,915,437	$ 26,395,618	0	183	6732.455	6205.969	455.317	432.437	8083.59	40648.05
51	FL	Tampa-Hartline	0.22	2629	650	1708710	1058	834054	308	258	9.7	$ 16,348,012	$ 23,628,890	1	167	6343.198	5550.745	446.961	412.033	9896.649	43998.6
52	FL	West Palm-CoTran	0.15	2589	307	794848	623	869633	91	73	7.3	$ 7,650,330	$ 11,236,596	0	71	3322.479	2896.665	212.58	197.496	2714.615	17380.37
53	GA	Atlanta-MARTA	0.37	1898	1137	2157806	804	1241000	950	814	7.1	$ 156,415,686	$ 193,886,382	0	668	29128.347	25366.564	2176.331	1990.453	72837	212843
54	GA	Augusta-APT	0.31	1516	189	286538	26	118829	25	21	5.2	$ 2,132,402	$ 2,938,160	0	30	1011.356	989.362	88.856	83.68	1587.28	5212.392
55	GA	Columbus-METRA	0.28	1672	132	220698	160	170218	37	27	10.3	$ 2,039,964	$ 2,740,258	0	32	1195.18	1157.46	79.49	76.596	1080.852	4647.459
56	HI	Honolulu-DTS	0.23	4551	139	632603	596	841600	584	439	9	$ 65,179,573	$ 106,165,080	1	584	18609.729	15671.371	1251.252	1138.359	77671.403	375957.2
57	IA	Davenport-Bettendorf	0.08	1808	146	264018	21	28132	22	7	2	$ 270,014	$ 463,192	0	8	244.175	238.629	13.163	12.864	135.844	526.364

58	IA	Davenport-CitiBus	0.12	1808	146	264018	26	95160	23	18	2.5	$ 1,540,498	$ 2,486,261	0	20	646.606	608.614	51.293	48.965	773.638	2738.98
59	IA	Des Moines-Metro	0.28	1835	160	293666	159	317179	113	93	7.3	$ 5,806,651	$ 8,120,650	0	89	1995.155	1530.155	150.187	116.955	3667.944	17696.09
60	IL	Chicago-RTA-CTA	0.48	4285	1585	6792087	356	3708773	4233	3444	8.6	$ 615,508,487	$ 828,535,877	0	2079	73943.145	72686.213	7122.944	6980.709	331520.75	786065
61	IL	Chicago-RTA-Pace	0.29	4285	1585	6792087	1914	7463937	1072	925	5.4	$ 51,285,041	$ 87,626,867	0	608	21509.748	18435.531	1390.877	1067.975	35071.501	177843.6
62	IL	Peoria-GP Transit	0.16	1879	129	242353	35	147126	63	45	11.7	$ 4,421,347	$ 6,782,819	0	56	1717.144	1535.538	120.078	111.13	2099.516	7836.5
63	IL	Peoria-Pekin Municipal	0.05	1879	129	242353	129	242353	4	2	7.5	$ 201,187	$ 246,701	0	4	91.875	89.54	6.21	5.905	27.51	69.875
64	IL	Rockford-Loves Park	0.1	2284	91	207826	23	35620	8	5	7.3	$ 345,300	$ 522,217	0	6	120.768	118.641	7.482	7.482	164.168	850.023
65	IL	Rockford-RMTD	0.18	2284	91	207826	83	180699	51	42	11.8	$ 3,021,398	$ 4,832,026	0	37	946.723	927.242	76.41	76.292	1988.23	7328.502
66	IN	Fort Wayne-PTC	0.12	2389	104	248424	61	186588	48	26	11.5	$ 4,038,517	$ 5,355,114	0	41	918.036	873.324	73.972	71.152	1312.421	3937.172
67	IN	Indianapolis-Metro	0.29	1950	469	914761	417	823424	187	156	9.2	$ 16,946,824	$ 23,876,070	1	157	6112.822	5397.773	420.228	337.708	11326.46	50076.12
68	IN	NW IN-Gary-GPTC	0.21	4285	1585	6792087	38	116646	44	32	8.5	$ 4,248,645	$ 6,642,449	0	42	1356.901	1311.05	105.779	101.553	2862.471	4911.303
69	IN	NW IN-HYC	0.7	4285	1585	6792087	648	560600	8	8	10.7	$ 541,801	$ 799,484	0	7	71.4	71.4	10.61	10.61	0	0
70	IN	South Bend-Transpo	0.21	1983	120	237932	51	148144	62	50	8.4	$ 4,179,918	$ 5,585,277	0	57	1776.176	1607.794	111.63	106.183	2476.601	12075.91
71	KS	Wichita-MTA	0.22	2336	145	338789	120	304011	84	68	10.6	$ 3,332,031	$ 5,246,663	0	53	2154.559	1871.573	132.924	123.475	2276.01	10291.99
72	KY	Cincinnati-TANK	0.25	5640	215	1212675	84	207503	103	89	5.8	$ 7,133,288	$ 8,965,338	0	97	2994.968	2346.123	194.906	167.038	4044.986	19245.65
73	KY	Lexington-Fayette-LexTr	0.21	2252	98	220701	74	214098	64	47	11.4	$ 2,445,573	$ 4,177,565	0	44	906.591	852.722	85.373	80.402	1589.201	4859.036
74	KY	Louisville-TARC	0.15	2668	283	754956	261	761002	458	354	9.2	$ 27,901,947	$ 38,400,923	1	335	8843.841	8020.447	657.879	615.774	24911.939	77989.54
75	LA	Baton Rouge-CTC	0.42	1967	186	365943	568	404657	56	40	15	$ 2,911,215	$ 4,443,610	0	52	1649.82	1580.988	105.577	102.054	4213.155	10222.89
76	LA	New Orleans-LA Transit	0.59	3853	270	1040226	50	260709	29	24	10.6	$ 2,739,338	$ 3,781,139	0	29	1268.555	1129.905	80.162	74.2	2699.227	12769.8
77	LA	New Orleans-RTA	0.43	3853	270	1040226	72	496938	535	431	9.8	$ 56,180,717	$ 80,571,681	1	451	12608.139	11606.487	1079.253	900.432	61322.329	173193.3
78	LA	New Orleans-Westside	0.4	3853	270	1040226	44	124219	23	23	10.9	$ 2,386,792	$ 3,981,366	0	23	1038.824	892.727	66.174	62.539	1635.057	14009.6
79	LA	Shreveport-SparTran	0.32	1757	146	256489	53	251246	56	46	6.6	$ 3,935,938	$ 5,678,714	0	46	1948.914	1942.911	135.516	129.988	4276.417	18189.03
80	MA	Boston-MBTA	0.26	3115	891	2775370	1038	2602487	2396	1956	11.1	$ 485,733,886	$ 626,953,680	0	148	28924.428	25191.961	2293.854	2098.433	102946.5	278693.2
81	MA	Worcester-WRTA	0.19	2271	139	315666	136	282698	202	152	12.4	$ 8,413,284	$ 12,808,612	0	66	2050.425	1974.657	166.911	161.075	4116.044	10318.83
82	MD	Baltimore-ColumBus	0.17	3187	593	1889873	22	70444	8	6	8	$ 453,957	$ 1,006,859	0	8	307.4	294.2	19.1	17.4	218.458	1407.926
83	MD	Baltimore-Maryland-MT	0.41	3187	593	1889873	1795	2077667	1218	950	7.5	$ 139,255,326	$ 218,556,612	0	892	24251.508	20032.37	1949.133	1721.304	85134.019	280738.6
84	MI	Detroit-D-DOT	0.3	3301	1120	3697529	144	1065567	500	406	8.5	$ 75,305,120	$ 97,223,248	0	500	19576.293	17153.241	1526.209	1449.498	61478.828	218022.8
85	MI	Detroit-SMART	0.22	3301	1120	3697529	891	4246712	448	354	6.8	$ 30,397,220	$ 50,282,864	0	281	12307.046	9597.908	845.752	492.43	9173.568	72511.54
86	MI	Flint-MTA	0.36	1988	164	326023	258	339886	218	183	9.5	$ 7,784,407	$ 11,695,305	1	164	3049.516	2996.19	226.345	222.53	6224.452	23652.92
87	MI	Grand Rapids-GRATA	0.19	1957	223	436336	185	398680	163	120	13.8	$ 5,238,588	$ 9,394,342	0	76	2132.307	2045.978	150.873	144.765	3338.307	14992.98
88	MI	Lansing-CATA	0.17	2678	99	265095	117	241751	121	97	7.8	$ 8,361,498	$ 13,382,897	0	61	2099.408	1910.482	148.014	119.097	3984.248	13739.51
89	MN	Minneapolis-St. Paul-M	0.36	1956	1063	2079676	1105	2143522	999	860	5.8	$ 104,892,192	$ 130,852,596	0	999	31351.477	24544.005	2224.13	1740.26	65562.037	262923.8
90	MO	Kansas City-KCATA	0.22	1674	762	1275315	173	509356	284	244	7.5	$ 28,282,677	$ 38,930,621	1	241	7886.276	7097.004	577.812	576.603	14876.742	49283.88
91	MO	St. Louis-Bi-State	0.24	2674	728	1946526	3580	2307900	731	633	9.2	$ 75,705,440	$ 105,093,546	0	644	24425.321	19240.71	1704.682	1290.093	39912.552	167105.2
92	MS	Jackson-Jatran	0.17	1333	217	289285	114	196637	44	37	15.8	$ 2,241,195	$ 3,494,836	0	37	1013.118	976.271	74.267	67.05	716.272	2695.15
93	NC	Charlotte-CTS	0.26	1883	242	455597	221	493000	231	180	8	$ 12,632,500	$ 18,313,705	0	158	4990.37	4530.1	356.431	327.395	11870.727	47364.27
94	NC	Durham-Chapel Hill	0.28	1937	106	205355	20	49829	63	47	9.3	$ 3,734	$ 4,979,954	0	56	1329.447	1209.944	96.411	87.7	2784.993	6244.887
95	NC	Durham-DATA	0.29	1937	106	205355	74	136611	58	42	2	$ 2,478,863	$ 3,864,216	0	34	1154.508	1112.76	86.176	82.494	2893.436	9243.838
96	NC	Fayetteville-Fast	0.25	1765	137	241763	43	75695	18	12	16	$ 1,282,416	$ 1,922,565	0	18	544.965	537.409	45.133	45.084	1447.319	4529.112
97	NC	Raleigh-CAT	0.22	1738	176	305925	61	160000	61	48	7.2	$ 3,719,077	$ 6,254,950	0	53	1626.761	1585.584	114.616	111.845	3590.451	16888.89
98	NE	Omaha-TA	0.28	2820	193	544292	175	484875	194	141	8.1	$ 11,138,037	$ 13,978,635	1	175	4235.17	3843.449	312.719	290.317	5146	20155.55
99	NJ	NJ Transit (Contract)	0.91	5407	2967	16044012	2898	5443000	633	459	10.7	$ 43,101,361	$ 70,790,900	0	633	19470.989	17450.803	1389.35	1299.015	41202.147	258331.1
100	NJ	NJ-NJTC/Academy	0.82	5407	2967	16044012	2898	5443000	188	174	9.7	$ 9,893,133	$ 18,438,826	0	188	7285.824	6419.244	231.431	210.392	3395.287	167680.8
101	NJ	NJ-NJTC/Hudson Transi	0.82	5407	2967	16044012	2898	5443000	125	107	7.2	$ 10,246,577	$ 20,371,472	0	125	6565.323	6376.544	286.868	281.09	2300.086	126504.7
102	NJ	NJ-NJTC/Suburban	0.9	5407	2967	16044012	2898	5443000	171	157	9.4	$ 12,729,439	$ 20,275,845	0	171	8746.706	8576.108	292.588	266.976	3816.306	142367.4
103	NJ	NJ/NY-Rockland	0.69	5407	2967	16044012	2898	5443000	143	105	9.2	$ 12,142,112	$ 17,703,793	0	143	6113.11	4285.286	218.719	164.165	5222.306	94808.32
104	NJ	New Jersey Transit	0.47	5407	2967	16044012	6559	7495000	2925	2468	10.1	$ 498,407,755	$ 741,532,872	0	2043	82784.301	69474.525	5602.411	4584.977	131085.19	754100.4
105	NM	Albuquerque-Sun Tran	0.17	2200	226	497120	124	398000	152	126	10	$ 10,301,774	$ 15,866,419	0	125	4326.119	3927.351	275.699	211.525	6419.422	20686.09
106	NV	Reno-Citifare	0.33	2298	93	213747	69	213747	96	81	9.9	$ 8,788,885	$ 14,195,019	0	63	3598.559	3463.293	264.575	258.849	8141.185	24127.22
107	NY	Albany-CDTA	0.32	2436	209	509106	150	779718	249	205	9.4	$ 20,182,625	$ 23,895,425	1	226	6092.621	5449.334	498.433	460.141	12069.782	54984.78
108	NY	Albany-Upstate Transit	0.2	2436	209	509106	1780	678394	17	17	4.2	$ 1,073,281	$ 2,122,057	0	17	589.246	589.246	21.75	21.75	196.031	7488.936
109	NY	Buffalo-NFTA	0.32	3337	286	954332	1575	1182165	385	325	7.7	$ 48,587,066	$ 63,849,843	1	354	9531.954	8286.032	816.131	721.933	22369.435	69781.99
110	NY	NY-Clarkstown Mini-Tra	0.09	5407	2967	16044012	179	265475	10	5	6.5	$ 718,254	$ 905,700	0	10	378.422	353.97	18.792	17.877	198.729	1291.612
111	NY	NY-Hart	0.1	5407	2967	16044012	100	196000	16	13	6.8	$ 2,068,016	$ 2,400,050	0	12	382.831	360.041	27.988	25.408	375.05	1729.116
112	NY	NY-Long Beach	0.37	5407	2967	16044012	5	38000	12	9	8.2	$ 1,138,188	$ 1,287,140	0	12	281.008	274.612	34.944	34.476	685.152	981.032
113	NY	NY-MTA-Metro North R	0.53	5407	2967	16044012	527	4484000	797	700	3	$ 355,538,666	$ 489,129,733	0	5	112.255	68.713	15.24	12.7	235.648	92.645
114	NY	NY-MTA-NYCTA	0.51	5407	2967	16044012	618	14648000	9684	8253	9	$ 3,038,702,723	$ 3,303,993,288	0	3717	99864.304	89672.386	12626.028	11389.675	605751.53	1158934
115	NY	NY-Metro Apple Expres	0.5775	5407	2967	16044012	322	7071639	14	12	20.7	$ 316,490	$ 424,278	0	14	106.08	90.922	6.602	3.638	65.92	857.18
116	NY	NY-Monsey New Squar	0.44	5407	2967	16044012	176	271852	17	17	15.8	$ 679,394	$ 1,962,812	0	17	886.866	886.666	24.83	24.83	462.609	14823.76
117	NY	NY-Spring Valley	0.06	5407	2967	16044012	3	25000	3	2	6.5	$ 277,732	$ 309,572	0	3	69.468	68.925	6.312	6.312	71.153	348.96
118	NY	NY-Westchester-Liberty	0.62	5407	2967	16044012	444	864800	309	248	8.8	$ 37,655,946	$ 48,020,650	0	309	10196.895	7827.162	750.437	649.715	28866.006	142933.9
119	NY	New York City DOT	0.4	5407	2967	16044012	322	7071639	122	95	7.6	$ 28,029,286	$ 49,540,610	0	115	3022.819	2376.078	245.582	203.479	3135.343	34758.41
120	NY	Rochester-RTS	0.3	2817	220	619653	673	702238	246	195	8	$ 24,866,394	$ 32,047,471	1	225	6062.038	5217.949	487.414	420.312	13657.726	42143.77
121	OH	Akron-Kent State	0.09	2054	257	527863	943	670000	25	21	15.5	$ 1,105,496	$ 1,588,898	0	25	515.855	461.787	46.746	44.795	1416.965	2882.377
122	OH	Akron-Metro	0.18	2054	257	527863	420	516033	267	208	9	$ 13,046,913	$ 18,175,941	1	152	4192.629	3419.833	313.329	279.239	5035.693	15660.93
123	OH	Canton-RTA Proline	0.09	2244	109	244576	50	88000	44	34	8.7	$ 3,626,325	$ 4,822,224	0	38	1080.81	1018.816	98.772	96.373	1166.7	4098.721
124	OH	Cincinnati-SORTA	0.32	2369	512	1212675	232	707964	411	354	7.4	$ 38,250,702	$ 51,753,384	1	378	12129.283	10405.281	880.683	758.185	24989.892	111324.3

125	OH	Cleveland-LAKETRAN	0.08	2638	636	1677492	295	235865	71	51	6.5	$ 2,871,461	$ 4,266,167	0	13		430.126	344.818	26.597	23.43	227.269	1229.525
126	OH	Columbus-COTA	0.22	2740	345	945237	543	961437	346	286	7.1	$ 32,997,346	$ 43,255,864	1	322		9493.744	7782.654	681.421	611.447	18023.895	84557.76
127	OH	Dayton-RTA	0.15	2239	274	613467	458	573809	384	307	6.9	$ 31,512,724	$ 41,441,576	1	242		8648.802	8168.684	635.222	599.171	12086.521	41774.12
128	OH	Toledo-TARTA	0.24	2534	193	489155	149	417624	210	161	7.6	$ 13,219,736	$ 17,198,874	1	195		5113.96	4358.039	356.503	266.901	4973.609	23411.89
129	OH	Youngstown-WRTA	0.11	2165	167	361627	149	361627	48	32	7	$ 11,327,704	$ 4,398,035	0	43		996.754	984.146	94.138	89.358	1337.652	3348.61
130	OK	Oklahoma City-COTPA	0.15	1212	647	784425	1265	803078	156	101	9.2	$ 5,355,160	$ 9,089,107	0	98		2630.378	2487.61	173.005	164.697	3981.721	17025.43
131	OK	Tulsa-MTA	0.17	1561	304	474668	184	367302	277	110	7.7	$ 5,011,830	$ 9,163,688	0	78		2862.697	2690.683	180.22	169.776	2902.816	15984.23
132	OR	Portland-Tri-Met	0.23	3021	388	1172158	592	988284	741	620	7.6	$ 89,295,514	$ 122,166,306	1	596		23908.754	20761.779	1730.125	1584.347	54792.664	208089.7
133	PA	Allentown-Lanta	0.46	2890	142	410436	106	389000	135	109	10.8	$ 5,163,781	$ 9,807,034	0	73		1923.246	1734.602	148.768	138.084	3850.45	14168.16
134	PA	Harrisburg-Cat	0.33	1953	150	292904	66	217977	69	56	11.3	$ 4,935,317	$ 6,022,349	0	63		1381.83	1229.939	111.682	99.736	2966.643	9833.605
135	PA	Philadelphia-SEPTA	0.39	3627	1164	4222211	1164	4222211	2652	2079	9.9	$ 507,404,708	$ 635,134,297	0	1441		40145.579	34812.433	3916.983	3406.821	163190.44	471189.3
136	PA	Pittsburgh-GG&C Bus	0.5	2158	778	1678745	33	61634	35	24	6.6	$ 592,119	$ 1,084,174	0	11		289.16	252.82	16.64	16.336	151.572	1408.275
137	PA	Pittsburgh-PAT	0.29	2158	778	1678745	775	1523198	925	781	6.4	$ 140,998,460	$ 169,831,098	0	850		30077.753	23853.53	2142.017	1843.145	64811.124	268764.6
138	PR	San Juan-MBA	0.12	6167	198	1221086	218	1149490	249	166	7.3	$ 23,947,059	$ 32,119,218	1	232		5552.248	5084.82	594.724	587.944	18187.832	85386.1
139	RI	Providence-RIPTA	0.2	2830	299	846293	784	750000	234	189	5.7	$ 23,544,248	$ 31,144,278	0	234		7665.875	6485.806	522.505	455.735	14432.662	59403.51
140	SC	Charleston-SCE&G	0.4	1570	251	393956	127	191408	55	34	16.4	$ 5,164,186	$ 5,142,390	0	55		1760.539	1616.319	138.689	132.286	3724.127	17946.18
141	SC	Columbia-SCE&G	0.3	1650	199	328349	115	183500	73	46	18.9	$ 5,194,082	$ 6,048,324	0	55		1729.833	1693.107	130.753	126.307	3196.487	11489.95
142	SC	Greenville-GTA	0.32	1677	148	248173	797	320167	62	46	4.8	$ 2,258,884	$ 3,015,707	0	25		961.68	936.779	61.784	60.863	1072.079	5111.875
143	TN	Knoxville-K-Trans	0.24	1390	219	304456	80	162161	71	51	10.4	$ 3,889,918	$ 6,061,588	0	60		1869.624	1403.089	164.187	123.078	2574.095	6953.016
144	TN	Memphis-MATA	0.37	2420	341	825193	347	702512	231	178	9.6	$ 17,952,386	$ 23,625,272	1	192		7155.52	6080.448	510.266	421.749	12115.265	55323.32
145	TN	Nashville-MTA	0.37	1184	484	573294	529	528103	181	142	6.9	$ 10,807,256	$ 14,651,630	0	125		4049.171	3525.622	282.524	260.031	6938.847	25153.32
146	TX	Austin-Capital Metro	0.1	2059	273	562008	572	604621	482	395	6.2	$ 31,498,607	$ 53,614,083		311		11162.703	9761.579	787.494	724.871	25860.862	81467.56
147	TX	Corpus Christi-The B	0.07	1731	156	270006	838	325000	98	80	4.8	$ 6,190,557	$ 12,671,300	0	69		2965.567	2596.624	189.26	176.962	4599.907	21880.89
148	TX	Dallas-DART	0.12	2216	1443	3198259	695	1812650	994	836	9.5	$ 80,485,635	$ 126,346,567	0	625		22188.051	18426.784	1477.926	1293.45	44911.551	162763
149	TX	El Paso-Sun Metro	0.28	2596	220	571017	248	540203	215	171	6.1	$ 16,327,917	$ 23,626,391	0	151		6323.327	5812.011	486.819	446.544	16080.605	81489.31
150	TX	Fort Worth-The T	0.16	2216	1443	3198259	294	484600	236	174	6.5	$ 13,833,643	$ 21,854,107	0	162		5531.956	4992.711	370.629	359.499	5574.966	34797.56
151	TX	Houston-Metro	0.22	2463	1178	2901851	1279	3398800	3217	1202	6.7	$ 159,097,974	$ 186,409,367	0	1291		45148.619	36035.055	2806.949	2394.799	82971.993	471663.2
152	TX	San Antonio-VIA	0.19	2578	438	1129154	1233	1212023	743	688	10.9	$ 52,369,648	$ 71,234,087	0	531		20412.293	18883.68	1410.945	1356.129	46345.082	168417.1
153	UT	Salt Lake City-UTA	0.14	3108	254	789447	1642	1072227	584	487	6.5	$ 36,449,019	$ 49,417,789	1	465		17884.518	15563.326	1049.458	828.89	24343.063	111499.3
154	VA	Newport News-Pentran	0.38	1993	664	1323098	116	300588	180	127	8.2	$ 7,445,261	$ 9,746,363	0	118		3575.55	3248.035	244.15	224.33	5468.27	28214.03
155	VA	Norfolk-TRT	0.35	1993	664	1323098	253	910000	285	219	8.6	$ 15,133,885	$ 20,921,219	1	167		5811.17	5036.246	438.524	404.615	7942.054	34614.57
156	VA	Richmond-GRTC	0.43	1947	303	589980	374	308505	219	152	10.5	$ 14,005,361	$ 20,840,654	1	191		4774.907	4351.928	414.676	378.036	15856.699	35404.95
157	WA	Seattle-Everett	0.06	2966	588	1744086	30	78240	56	39	7.9	$ 4,719,430	$ 7,146,031	0	43		1246.127	1124.21	95.028	90.313	2009.267	5545.577
158	WA	Seattle-Metro	0.23	2966	588	1744086	2128	1599498	2455	1690	10.7	$ 169,474,799	$ 233,060,871	0	1185		39609.897	30431.953	2804.582	1966.7	79417.076	425626.6
159	WA	Seattle-Snohomish-Com	0.17	2966	588	1744086	1400	302200	281	216	10.4	$ 16,100,337	$ 29,444,148	1	186		7041.449	4868.133	328.816	220.923	5143.782	71289.87
160	WA	Spokane-STA	0.15	2448	114	279038	373	349690	275	223	6.6	$ 19,308,313	$ 26,843,857	0	141		5416.542	5045.803	378.21	355.89	7485.275	31968.46
161	WA	Tacoma-Pierce Transit	0.14	2134	233	497210	275	575000	484	362	5.6	$ 27,891,154	$ 41,903,356	1	218		7637.482	6522.257	507.535	443.346	12077.931	65361.68
162	WA	Vancouver-C-Tran	0.14	3021	388	1172158	565	238053	108	86	10.9	$ 7,927,457	$ 11,939,207	0	83		3651.352	2711.498	182.402	144.808	4806.285	23237.29
163	WI	Madison-MMT	0.24	2493	98	244336	54	219185	367	298	6.4	$ 17,700,534	$ 23,402,084	0	170		4526.731	3876.814	344.302	311.884	9655.615	34600.82
164	WI	Milwaukee-County	0.37	2395	512	1226293	243	990700	541	431	12.1	$ 72,396,178	$ 87,373,127	1	541		19560.024	17570.421	1564.323	1468.817	56019.249	168740.9
165	WI	Milwaukee-Waukesha M	0.17	2395	512	1226293	21	59800	23	21	9.4	$ 1,163,359	$ 1,665,777	0	17		602.332	563.541	42.599	42.009	628.134	1978.622
		AVERAGES:	0.27423	3032			582.62	1178988.8	426		8.6		$ 82,632,054									
		Standard Deviation	0.15613	1362			889.86	1978244.2	959		3.0		$ 287,447,139									
		MEDIAN:	0.24	2544			234	493000	156		8.2		$ 14,944,801									
		MODE:	0.17	5407			2898	5443000	37		9.9		#N/A									
		26																				