



AMERICAN
PUBLIC
TRANSPORTATION
ASSOCIATION

Mythbusting Ridership Decline Causation Theories



Leadership APTA Class of 2017

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Contents

Executive Summary	3
Low Riders Team	5
Contributors	6
Introduction	7
What does the data say?	8
What do the CEOs say?	11
What do the demographics show?	15
How do TNCs factor in?	19
What is the impact of safety and security?	22
Success Stories	24
Key Takeaways and Conclusion	26
References	29
Appendix A – Charts	30
Appendix B – Interview Questions	36

Executive Summary

The transit ridership declines currently being experienced nationwide have caught the attention of not only transit agencies, but also segments of the private sector, the news media, and the public at large. While there are numerous theories as to what is causing this trend, there is not currently a cumulative testing of which are or are not contributors. The purpose of this paper is to take the commonly held beliefs as to transit ridership decline causation and determine which of those notions should be paid heed.

Through research into data, prior studies, and articles, along with CEO interviews, we determined that none of the suspected causes of transit ridership decline are completely unfounded. Frequency of service, reliability, and ease of use, along with the state of gas prices, income level and unemployment rate definitely directly impact the current transit ridership decline. The contribution of TNCs and perception of safety and security are certainly factors to continue monitoring.

- Historic ridership trends show this same pattern of decline after an all-time high three times within the past 25 years, each time more than recovering from the starting point. When taking the long-term view, the current decline is a normal cycle, and recovery to a new record peak is certainly the most likely outcome again this time.
- Large transit systems experienced a -2.2% change in ridership in 2014, whereas small systems experienced a change of -22.8%. While rail ridership declined -0.3% in 2014, bus ridership declined by a full -5.0%; however, bus rapid transit (BRT) experienced a 22.8% increase in that same year.
- CEO interviews revealed that ridership loss is not their top concern, but it is within the top three concerns for 77% of the 35 CEOs interviewed. Large system CEOs cited ease of use and reliability as the biggest factor within their control effecting ridership, and they named fuel prices as the largest influencer outside of their control. Small system CEOs listed frequency of service as the most important factor within their control that impacts ridership, and the economy was called out as the main factor outside of their control.
- There is currently a perfect storm of low fuel prices and technological advances in fuel economy that are impacting transit ridership. Also, household incomes are increasing, which has a direct inverse proportionality to transit ridership. Unemployment is currently lower, and that usually would indicate that increased commuting ridership could be expected, but that is not the current case when considered together with the higher income levels that are allowing increased vehicle ownership.
- TNCs are a relatively new factor influencing transit ridership, but transit CEOs are referencing TNCs as an influence on but not root cause of ridership decline. The level of impact attributed to TNCs appears to be most visible in resort areas and at certain airports. Until more data is available, the precise effect of TNCs cannot be determined.
- CEOs do not cite safety and security as issues within their transit systems, and research supports assertions that riding transit is, in most cases, more secure than traveling alone in a private vehicle. However, rider surveys indicate that riders view safety and security as

an issue. This perception of safety and security concerns is something that can be addressed through things such as more positive signage.

Despite the national trend of lost transit ridership, there are places that are experiencing ridership increases. Seattle and Houston are examples of such places, and this was achieved in both cases through full system redesigns.

The key takeaway is that while there are many influences causing the current transit ridership decline, transit agencies should focus on the areas within their control. Recognizing that many improvements require additional funding that is not available, there are several other creative ways to impact ridership that cost little or no money. Transit agencies should not let the lack of funding be a barrier and should instead prepare and adapt by deliberately determining how to use limited resources for the maximum impact for riders

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Charles County Government	Port Authority of Allegheny County
Community Transit of Delaware County	Queen Anne County Ride
DuFAST Transit	Regional Transportation Authority
Eastern Contra Costa Transit Authority	Regional Transportation Commission of Southern Nevada
Fayette Area Coordinated Transportation	Regional Transportation District
Foothill Transit	Schuylkill County Transportation Authority
Garrett County Transit	Southeastern Pennsylvania Transportation Authority
Greater Lafayette Public Transportation	St. Mary's Transit System
Greene County Transportation Program	The Rapid
Indiana County Transit Authority	TransIT Services of Frederick County
Jacksonville Transportation Authority	Tri-County Council for the Lower Eastern Shore of Maryland
LA County Metro	TriMet
Maryland Transit Administration	Washington Metropolitan Area Transit Authority

Introduction

Transit ridership decline is the talk of the industry! Conversations abound, and speculation ensues. Even the newspaper headlines have been regularly including transit ridership declines.

Taking the approach of the popular Myth Busters television show, we examined each of the commonly held beliefs about what is causing transit ridership declines to assess its validity. Ultimately each myth is declared to be either Confirmed, Plausible, or Busted.

To achieve those determinations, we looked at data from the National Transit Database (NTD), interviewed CEOs from across the nation at transit agencies of all sizes, and researched demographic and economic statistics. We consulted existing studies and articles regarding Transportation Network Companies (TNCs), as well as for safety and security.

Combining all of these resources, we will present you with the determined validity of each speculated cause of transit ridership decline. We will then tell you about places where transit ridership is increasing and what those places are doing to make that happen. Finally, we will share with you which types of options you should focus on to produce the most effective change for your own transit ridership situation.



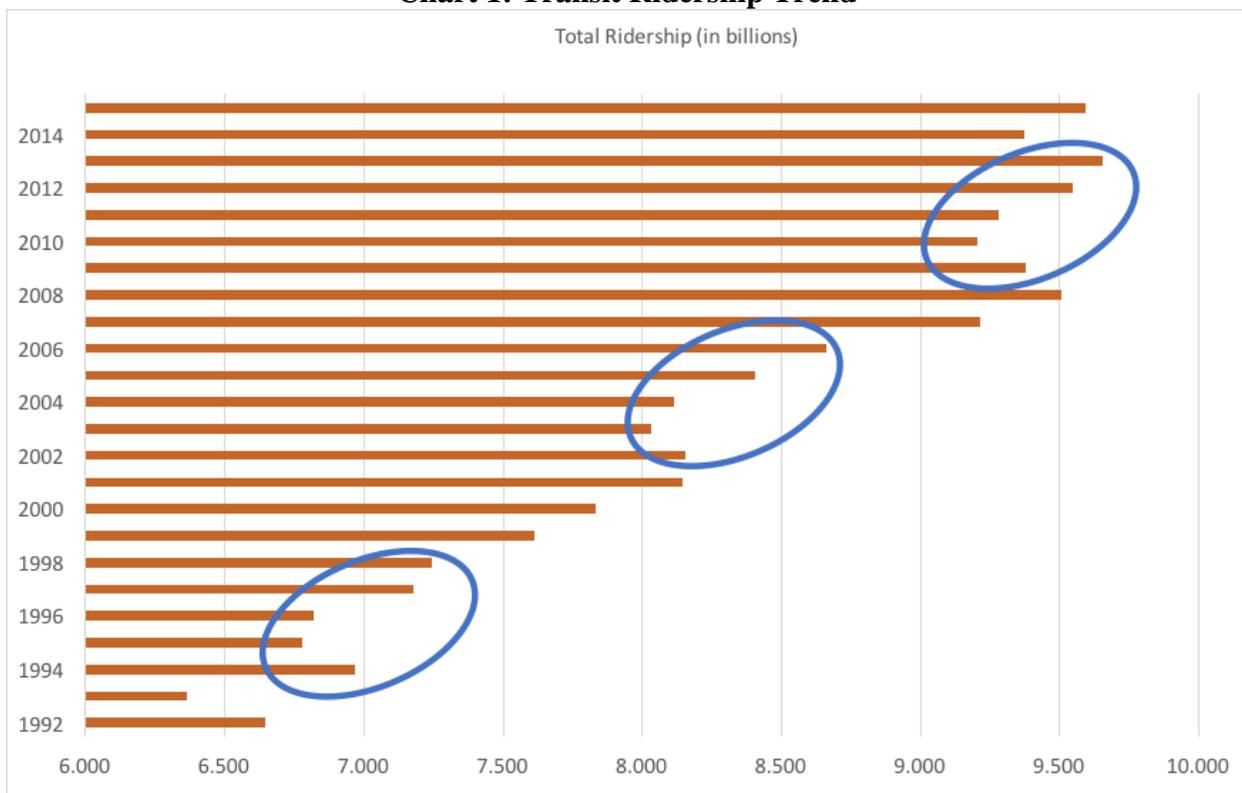
“We don’t just tell the myths...
we put them to the test!”

What does the data say?

Historic Ridership Trends

To gain perspective on what actually is happening with transit ridership trends over the long term, we looked to the National Transit Database (NTD). As is apparent in the below chart, transit ridership has declined multiple times over the past couple of decades. In fact, an identical pattern of a peak, then a drop in transit ridership, followed by three years of ridership growth that surpasses the prior peak and launches into a new record high. Thus, the transit ridership decline currently being experienced is a natural cycle that repeats itself just prior to growth in transit ridership.

Chart 1: Transit Ridership Trend



Source: (Federal Transit Administration, 1990-2015)

There is, however, one difference in the most recent transit ridership cycle. Rather than continuing to grow after recovery, transit ridership fell again in 2014, which is much sooner than historic trends show. Nonetheless, the transit ridership decline of 2014 can experience the same recovery. At -2.9% in 2014, the decline is not that different from the -2.7% in 1995, the -1.9% in 2003, and the -1.5% in 2010. Indeed, the upward swing has already begun with the transit ridership increase indicated for 2015.

Trends by System Size

To better understand where ridership losses are occurring, we first looked into transit system size. What we found is that the trend for large systems is opposite of that for small systems. Whereas the trend line for large systems (Chart 1 in Appendix A) shows repeated peaks above the norm, the trend line for small systems (Chart 2 in Appendix A) shows repeated dips below the norm.

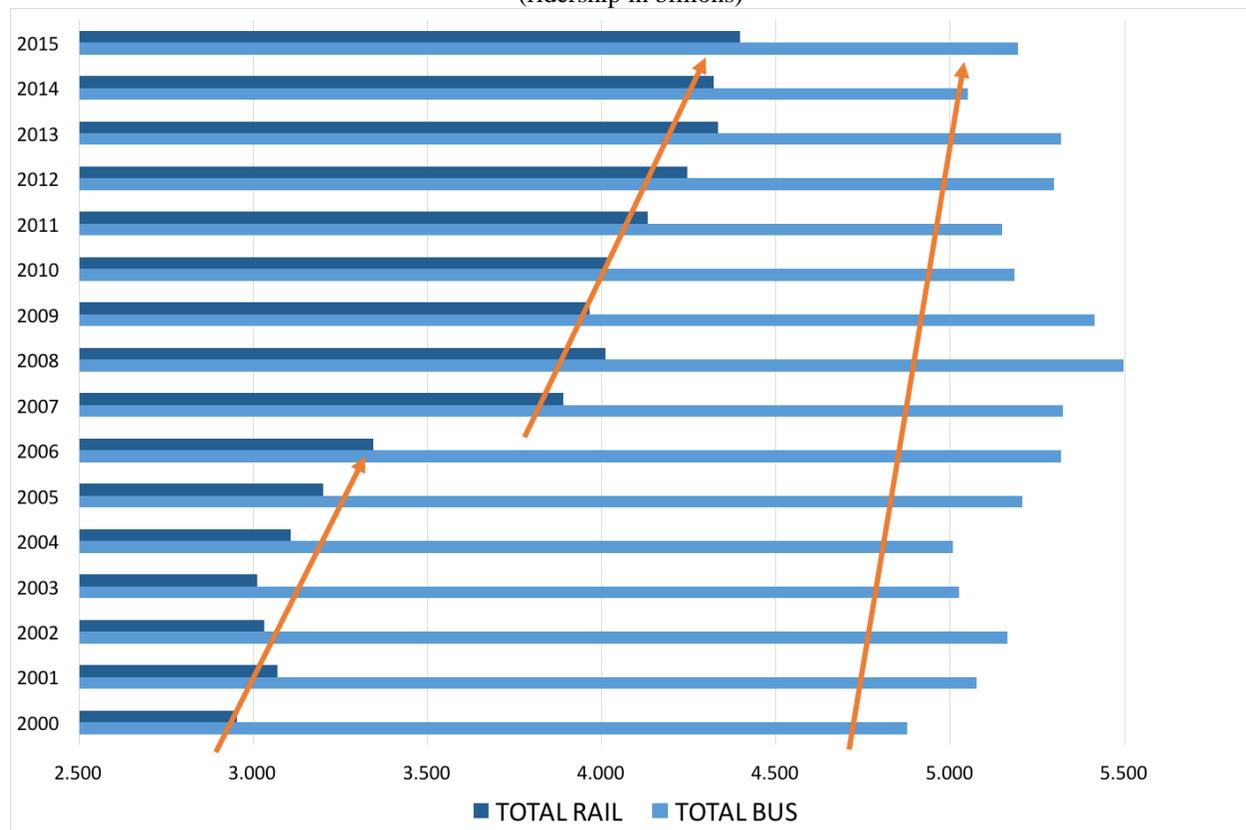
While total transit ridership decline during the 2014 drop for large systems is -2.2%, that same calculation for small systems is -22.8%.

Trends by Mode

Recognizing that one of the major differences between large and small systems is the inclusion of operating a rail mode, we next separated the data by dividing bus and rail modes. As you can see in Chart 2, rail ridership saw steady increases, a large jump in 2007, and steady increases again. However, during those same 15 years, bus ridership increased at a significantly reduced rate.

During the 2014 ridership decline, rail ridership declined -0.3%. At the same time, bus ridership declined by a full -5.0%. This correlates with the results by sytem size wherin small systems experienced drastically greater ridership declines. Small systems often operate bus only service, and that is where the greatest transit ridership declines are hitting.

Chart 2: Bus vs Rail Ridership
(ridership in billions)



Source: (Federal Transit Administration, 1990-2015)

Digging deeper into exactly which among the bus and rail modes have been hit the hardest, we first looked at the individual rail modes. As you can see in Appendix A Chart 3 and Chart 4, heavy rail declined in 2014, and hybrid rail (passenger rail running on freight tracks) remained nearly constant. However, as shown in Appendix A Chart 5, light rail ridership has continued to steadily increase, despite the rate of that increase dipping somewhat in 2014. Streetcar rail ridership (Chart 6 in Appendix A) also declined in 2014, but those numbers can be considered negligible within the total.

Switching to bus modes, it is clear, as seen in Appendix A Chart 7, that motor bus experienced a major ridership decline in 2014. Commuter bus and trolleybus (Chart 8 in Appendix A) were roughly stagnant during that same timeframe.

The one outlier from all of the rail and bus modes that had an increase in ridership was bus rapid transit (BRT). BRT experienced a whopping 22.8% increase in ridership! This makes sense given the recent infusion of funding into BRT projects, and it also explains some of the rail mode ridership declines as passengers were shifted from rail to BRT. The acceptance by riders of BRT as a suitable replacement for rail service can be attributed to its frequency of service and reliability that mimics the benefits of rail.

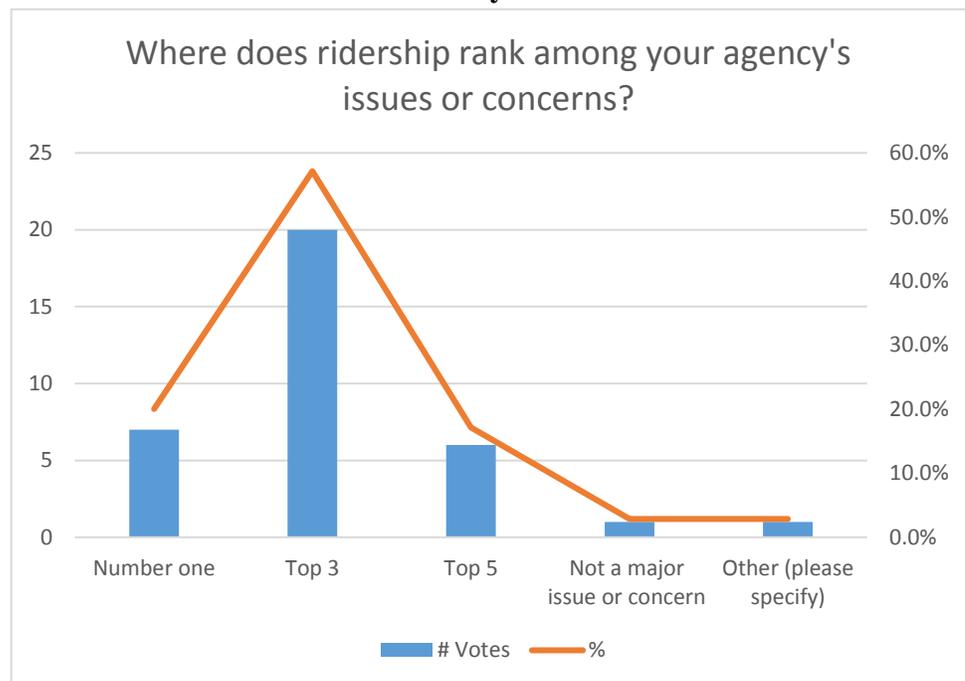
What do the CEOs say?

Data is key in understanding ridership trends, declines and relationships. Our group also felt it was important to understand the perspectives of the industry leaders holding the top seat at their respective agencies. Our team developed a list of standardized questions (Appendix B) and interviewed or surveyed 35 industry CEOs from across the United States. This included systems of all sizes and both rail and bus only operators. We found that most CEOs and GMs listed ridership as one of their top priorities, their focus was on what they could control, and that funding was often a limiting factor to addressing their concerns.

Chart 3: Survey Results

Ridership Priority Ranking

Our first question was aimed at understanding where ridership fell in the CEOs' list of priorities. 20% of agency CEO's interviewed, indicated ridership as their number one issue. So for most, it is not their top issue to address. However, Chart 3, 57% of the CEOs indicated



ridership was one of their agencies top three issues. So combined, over $\frac{3}{4}$'s of CEOs had ridership as a number one or top 3 issue.

Agency Controllable Factors

We also asked the CEOs to tell us what the number one factor, generally within their control, had the biggest effect on ridership. Answers varied based on the size of the system. Of the 35 CEO responses we received, eight were from larger properties that provided rail service, with the remainder from small to medium size bus only systems. Six out of the eight large system CEO's survey indicated that ease of use and reliability were their number one issues effecting ridership. For smaller systems, CEOs said frequency of service had the biggest impact on their ridership. Shortage of buses and drivers were also given under "other," which also relates to the frequency of service. In both cases, for large and small systems, the CEOs' responses focused on the core issue of providing a quality service, whether that is ease of use and reliability for the larger systems or providing a frequent service for the smaller systems.

We asked what was limiting their agency from addressing these issues. While funding was listed as a major limitation, many CEOs responded that their agency was looking at ways to be more efficient with the resources they do have and reorganizing their network to their most captive customer base. In addition, some CEOs said their agencies are working with local jurisdictions to improve run times of their existing routes through Transit Signal Priority (TSP) to reduce delays caused by traffic signals. In almost all cases, each agency was actively working to address their funding shortfalls or looking at ways to optimize their system to be more efficient and maximize their investment.

Chart 4: Small systems

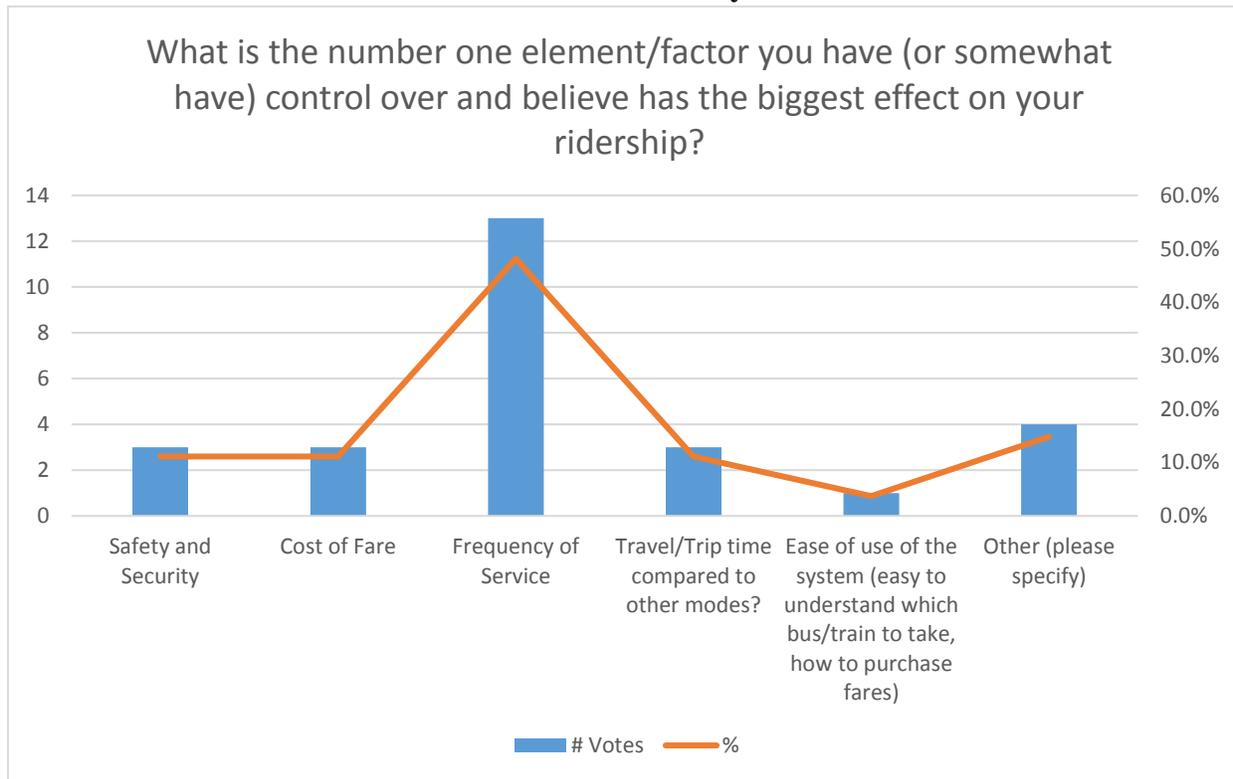
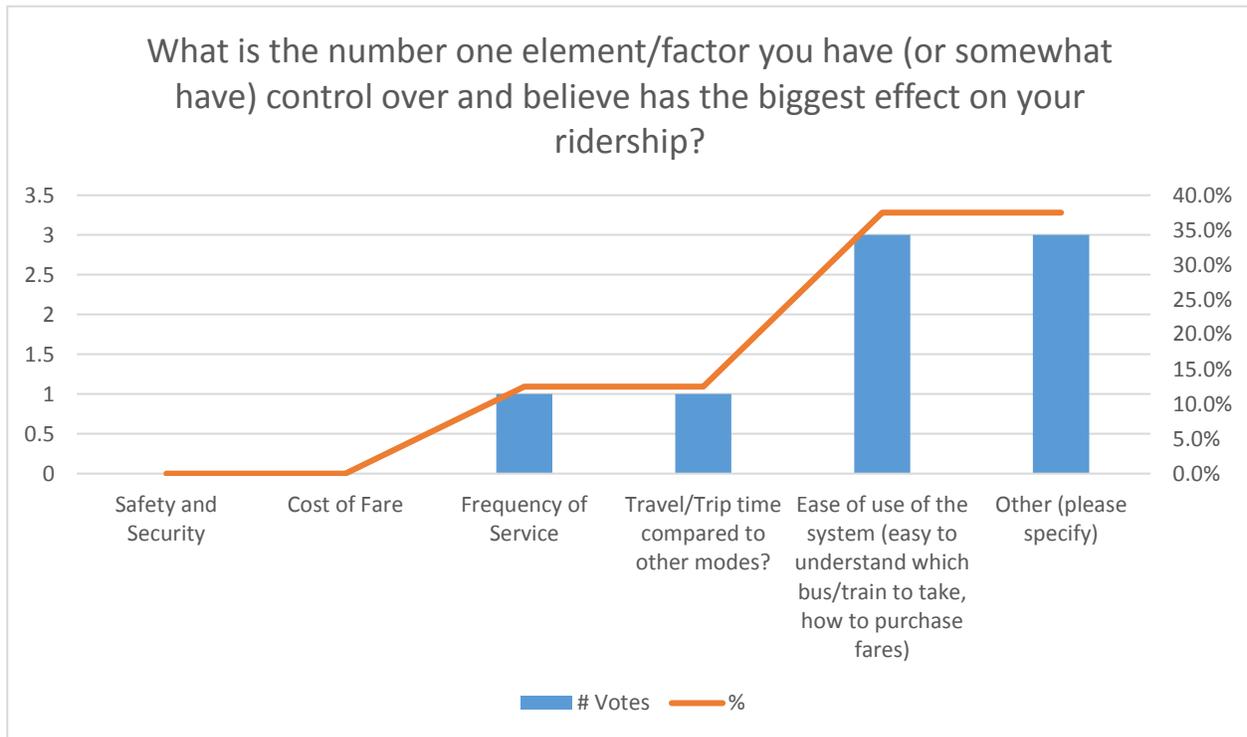


Chart 5: Large systems



Greatest Outside Influencer of Ridership

We also asked the CEOs about outside influencers and what factors they felt were effecting their ridership over which they did not have much control. Large/rail system CEOs indicated fuel prices as the main outside influencer effecting their ridership (Appendix A chart 9), whereas small/medium bus only system CEOs indicated the economy as the main outside factor (Appendix A chart 10). There were several “other” responses, which included the following:

- Online shopping – less transit dependent trips to malls or retail destinations
- Perception of buses being for people without cars and having an environment of “bad behavior”
- Teleworking – the increase in flexibility of workforce not having to be in an office
- Cost and availability of parking
- Ridesharing services such as Uber and Lyft

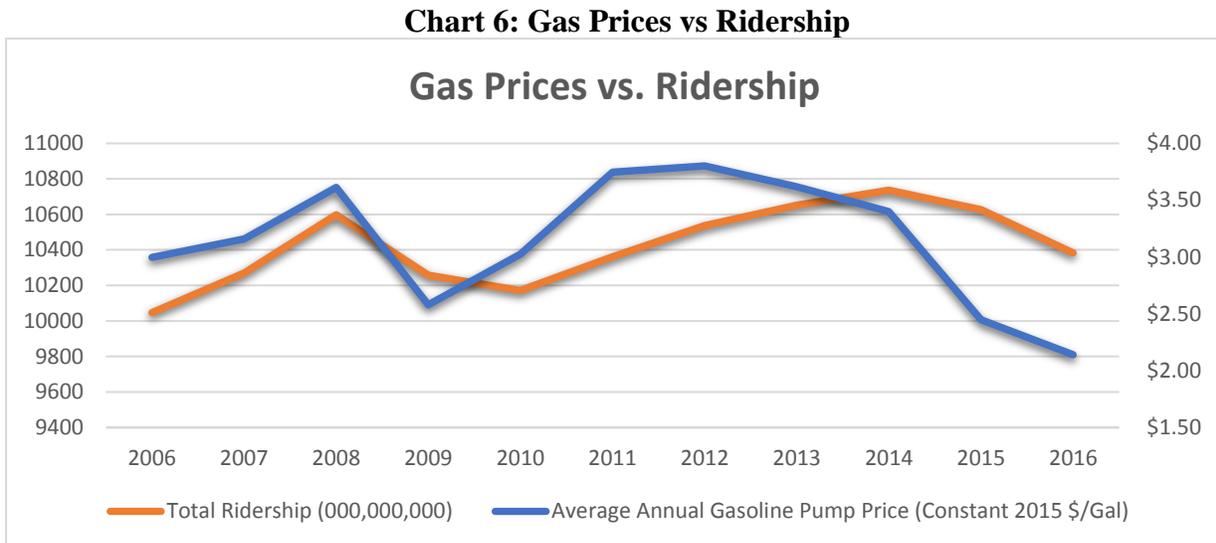
In summary, the CEOs from systems large and small confirmed many of the myths that are being described as the cause for ridership decline. They are also focused on working within their constraints (funding) and focused on areas over which they have control. Many have stated that they cannot change the perception of non-riders about transit or any of the outside influencers, but they recognize there are steps they can take to improve the quality of their service to make transit a more attractive alternative to seek out new or past riders.

Based on our CEO interviews, we were able to determine it as **Confirmed** that **frequency of service, reliability, and ease of use** have an impact on transit ridership.

What do the demographics show?

The Perfect Economic Storm

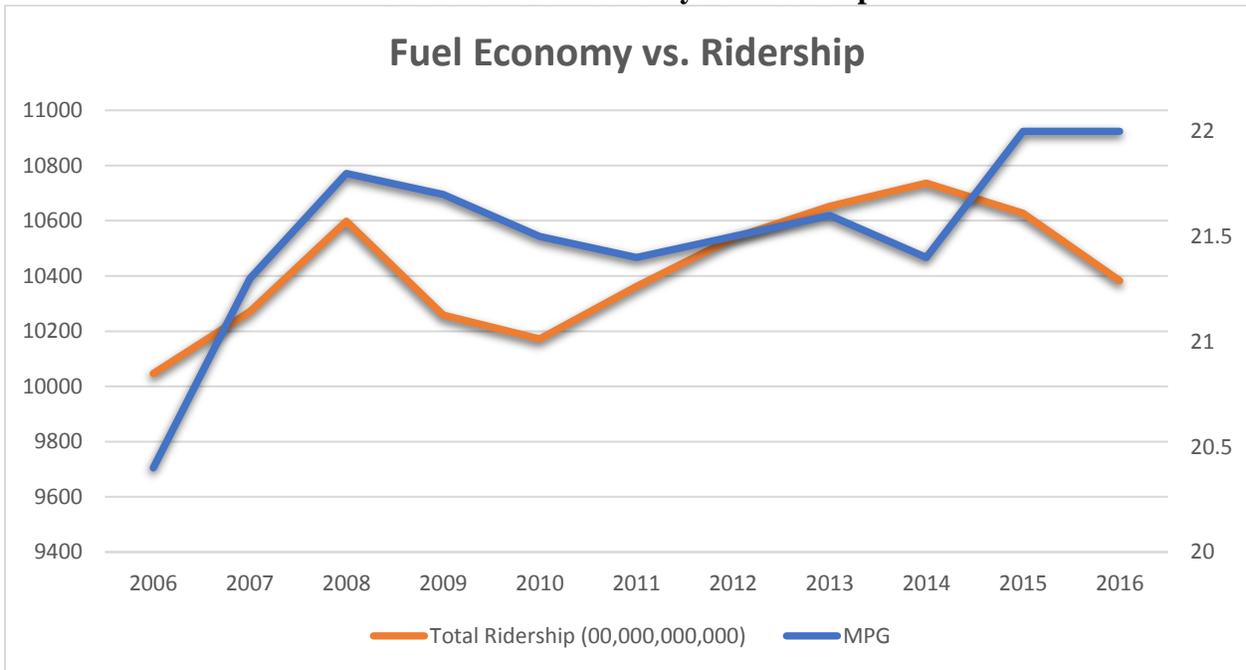
In our quest to better understand ridership declines, we looked at one of the most studied metrics: the effect of fuel prices on ridership. Chart 6 below shows an almost perfect correlation between both vectors, but the last three years' decline in ridership has coincided with the sharpest drop in gas prices in ten years.



Source: (Federal Reserve Economic Data, 2006-2016)

Meanwhile, as the US is seeing some of the lowest gas prices in the last 20 years, we are also witnessing the sharpest increase in fuel economy (Chart 7) with major technological strides in hybrid and internal combustion technology.

Chart 7: Fuel Economy vs Ridership



Source: (Federal Reserve Economic Data, 2006-2016)

Chart 8: Cost to travel 60 miles vs Ridership



Looking at the previous two graphs, we combined the effect of fuel economy and gas prices to come up with a new metric depicting the cost to consumers for traveling 60 miles. Looking at this new metric in Chart 8, we can see the combined effect of gas prices and fuel economy, where it is now costing half for a motorist to travel 60 miles when comparing 2013 and 2016.

The correlation between the cost of traveling 60 miles and ridership is evident, and we can see both metrics following the same pattern. What is interesting is to see the newfound impact of adding the fuel economy to gas prices, and its catalytic effect, depicted as a more dramatic trend than just observing the fuel prices.

Although the recession in ridership over the past three years is alarming, we can observe that a small variation in gas prices would, most likely, have the same effect as it has historically, hence positively affect ridership.

Variations in gas prices adversely affects ridership. We also wanted to look at any possible correlation between US median household income and ridership as it relates to public transit.

Appendix A Chart 11 indicates that while real median household income impacts trends in ridership, other forces are at play. Real median household income is inversely proportional to transit ridership: as real median household income was falling from 2009 to 2012, ridership rose significantly in the same time frame. Also, if we look at the period between 2014 and 2015, real median household income rose from \$53,718 to \$56,516, the sharpest increase in the last 10 years. During that same period, the inversely proportional trend on ridership is again evident. On the other spectrum, looking at the period from 2007 till 2009, there is a proportional trend between a decrease in real median household income and transit ridership.

While we often see inversely proportional trends between real median household income and transit ridership, we took a closer look at other economic and demographic trends that caused the variation in ridership. The main two we concentrated on, and where we saw cause and effect, were unemployment and car ownership.

Another Way You Lose

When comparing unemployment and ridership in Appendix A Chart 12 and Chart 13, we quickly notice that any sharp movement in unemployment rates adversely affects ridership. During the late 2000s' recession, unemployment sharply increased from 5% to 9.5% over the course of three years. As a result, we saw a massive decline in ridership, 3.6% in 2009 alone, caused by a lack of working commute.

One would then think that lower unemployment would equal a greater number of commuters. This is in part true, but with the increase in household income and seeing a sharp increase in car ownership in the last two years, after eight years of stagnation, we believe we are witnessing a mode change from transit to car.

In summary, the current demographic situation is the perfect economic storm for these reasons: gas prices are at the lowest we have seen in the last ten years, combined with the fact that the fuel economy of cars sold in the US is at an historical high. We factor in unemployment is at the lowest we have seen since the great recession of 2008. This is combined with the fact that car registrations are at their highest after flat lining for ten years. Any of those individual metrics is a deterrent to ridership by itself, but on top of all of this we are living in a prosperous period where real median household income is at the highest point in seven years. We are witnessing a combination of all

positive economic factors that individually cause an exodus from transit, but combined are creating this perfect storm against transit ridership.

Without wishing economic downturns, the beacon of hope for transit ridership is that all outside factors, aside from fuel economy, are cyclical. Looking at a more macro view, we have seen fluctuation in our industry's ridership mimicking economic cycles.

After each period of transit deflation, history has seen the industry's ridership bounce back and have great upwards strides.

Based on our review of the literature and the available data, we were able to determine it as **Confirmed** that **gas prices, income, and unemployment** have an impact on transit ridership.

How do TNCs factor in?



UBER

Transportation Network Companies (TNCs) connect passengers with drivers via mobile apps or websites. These drivers primarily drive their own, non-commercial vehicle. The most well-known TNCs include Uber, Lyft, Via, and GoCar, but there are dozens of other companies. TNCs started to be used in larger American cities in 2011 and have since been expanded to include most cities.

Countless ink has been spilled on the effect of TNCs, with many articles speculating that they would kill off the taxicab industry. More recently, there has been much speculation that TNCs are causing a decline in public transit ridership. (Fitzimmons, 2017) TNCs are noted to be more convenient than transit in that they offer door-to-door service and, for larger groups, TNC service can be more cost effective.



Our team interviewed 35 transit agency CEOs, and in those interviews only three of the 35 identified TNCs as a root cause of ridership decline. One CEO identified that, while they did not feel that TNCs were impacting ridership directly, they were having an indirect impact due to causing additional traffic congestion on mixed-traffic routes. MJ Maynard, Deputy General Manager of the Regional Transportation Commission of Southern Nevada, indicated that TNCs were a top concern for her system. Operating in Las Vegas, along a resort corridor, she noted that a top concern was the “ability to complete with TNCs in the resort corridor based on trip length and cost of service. Additionally, the ease of technology to hail a trip from where you are to where you want to go is easier than transit.” Other CEOs noted that they were watching the progress of TNCs and were considering partnerships. Many expressed concern about TNC funding from venture capital and wanting to wait to partner until it was determined to be a sustainable model.



We attempted to dig into data available on TNCs. Unfortunately, Uber and Lyft keep most of their data under wraps. There is some partial data available, but comprehensive origin and destination information on trips is not currently available in most cities. (Poon, 2017) It is difficult to tell, based on the available data, if TNCs are taking riders from transit or providing complementary service.

A 2016 online survey of U.S.-based smartphone users indicated that 38% of respondents had used ridesharing apps. Of those respondents who do not own a car, the figure jumped to 42%, indicating that those who may have previously only taken transit are now using ridesharing for some rides instead. (SharesPost, 2017)

The most comprehensive research available was found in “*Unsustainable? The Growth of App-Based Ride Services and Traffic, Travel and the Future of New York City*” a publication by Bruce Schaller of Schaller Consulting. This report looked into the use of TNCs in New York City and found that TNC ridership doubled annually each year from 2014-2016 and is now approaching

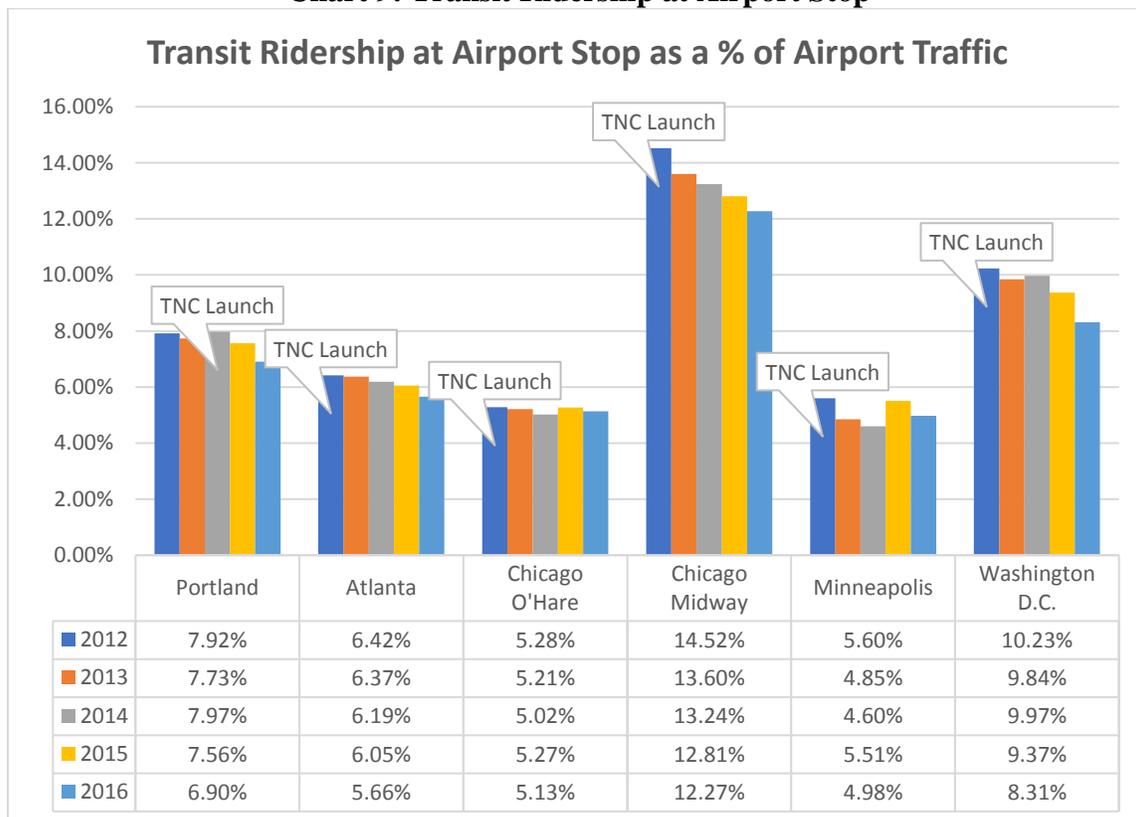
yellow cab ridership levels. Schaller also noted that New York subway ridership declined in 2016 for the first time in years, with bus ridership also declining for the third consecutive year. (Schaller, 2017) Digging deeper into that data, annual subway ridership fell by 0.3% in 2016. This was driven primarily by a 3% decline in weekend ridership. Weekday ridership continued at its highest level since 1948. This suggests that riders are using other options for non-commuting trips. This was confirmed for the *New York Times* by Fernando Ferrer, the Acting Chairman of the New York Metropolitan Transportation Authority. He indicated that several factors could be contributing to the decline, including subway delays, the popularity of TNCs, and weekend maintenance work that disrupts service. (Fitzimmons, 2017)



TNCs at Airports

Our team wanted to dig a bit deeper to see if there is any other data on TNCs. We hypothesized that TNCs have not only taken passengers from taxi services but also from transit services that serve the airport. If this theory has any merit, a noticeable and consistent dip in transit ridership on routes that serve the airport should be observed. We utilized data from 2012-2016 from Portland Tri-Met, Atlanta MARTA, Minneapolis Metro Transit, Washington Metro, and Chicago Transit Authority. This evaluation looked at rail boardings at the airport station as a percentage of the total airport stop. This allowed us to compare the percentage of airport ridership that was captured each year.

Chart 9: Transit Ridership at Airport Stop



As noted in Chart 9 above, TNCs may be having a minor impact on airport ridership. Agencies surveyed had dips ranging from 0.16% to 2.24%, with most at or under 1% difference. However, this is within the range of the overall ridership drop being experienced nationwide, so it cannot be solely tied to TNCs.

The biggest drop in transit ridership was at Chicago Midway. Comparing Midway to O'Hare, O'Hare generally kept the same percentage share of airport traffic, whereas Midway dropped 2%. Midway is located on the Southwest side of the City of Chicago in an industrial area. It is fairly easy to access via car and bus, and surrounding traffic isn't nearly as bad at O'Hare. Also, unlike O'Hare, Midway is served by multiple bus routes, including CTA and Pace. So, there is an alternative mode of transit to Midway that O'Hare doesn't have. Midway Airport also serves as a commuter hub, so individuals transfer from the bus to the train (or park and ride). O'Hare is only used by travelers and airport workers. O'Hare is located off a very congested highway to the Northwest of the City. The highway has highly variable travel times from downtown Chicago. The CTA's rail service is more attractive than car/TNC due to faster travel time. In fact, the current travel time on a Friday evening from O'Hare is 95 minutes via the highway and 45 minutes on the CTA – less than half!

Based on our review of the literature and the available data, we were able to determine that it is **Plausible** that **TNCs** might be having a minor impact on transit ridership. However, without more data from TNCs, it will be difficult to determine conclusively.

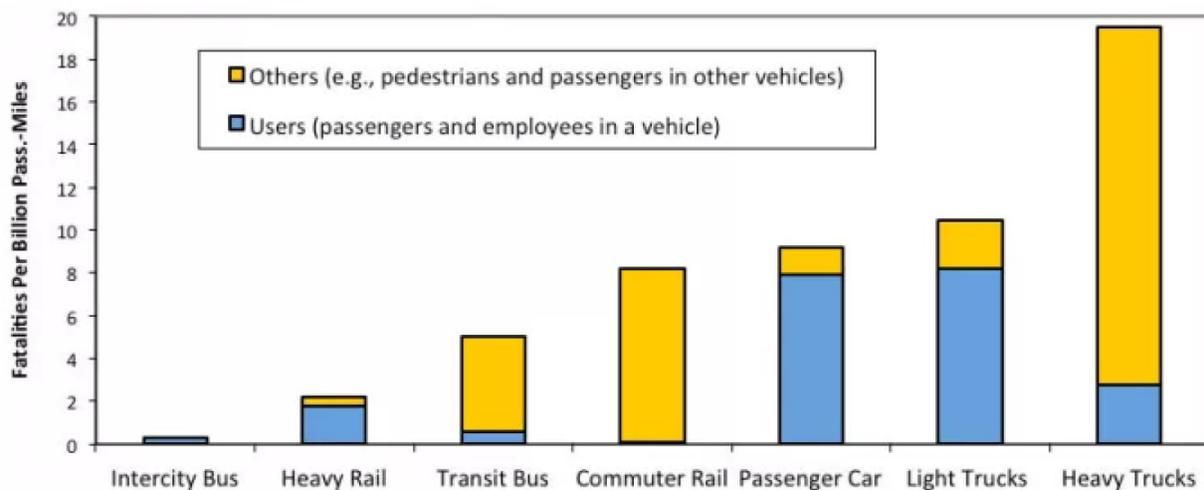
What is the impact of safety and security?

Our team evaluated safety and security (S&S) as an effect on ridership and found that it is very difficult to compare the differences in driving a personal car versus riding transit. In fact, a recent article by Todd Litman published in the Journal of Transportation, conducted extensive examination of numerous data sets available to attempt drawing clear conclusions. What he found was that there was a big gap in evaluating the S&S of the total trip including the walk to or from a car or a transit stop and also account for difference in magnitude of crimes. As an example, theft on transit is limited to what a person is carrying, which may be a phone or a wallet. But theft in a private car could be stealing the vehicle itself or items from inside the vehicle while parked.

The only clear quantitative evidence Litman was able to compare was fatalities. When normalized to passenger miles, a rider is 60, 30 and 20 times less likely to have a fatality when riding buses, light rail, and commuter rail, respectively, over riding in a private vehicle. See Chart 10 below from Litman's study. (Litman, 2016)

Chart 10: Transport Fatalities

FIGURE 1. Transport fatalities



Source: Litman and Fitzroy 2012, based on FHWA and APTA data

In addition to Litman's extensive study, our team was supplied with a recent survey conducted by LA Metro which included past riders. In the survey, 29% of the past riders indicated they did not ride the system anymore because they did not feel safe. While Litman's study suggests the opposite, the perception as indicated in the LA Metro survey of past riders is clear: many potential riders believe that transit is not as safe as driving or riding in a passenger vehicle. (LA Metro, 2016)





Litman addressed this in his study by indicating that the messages of transit agencies emphasizing S&S concerns in their signage help foster the perception that transit is not safe since they emphasize risks not safety. An example of such signage is the pervasive “If you see something, say something.” While the focus of our project was not to address this single issue, it is clear that it is a major issue, particularly related to the perception of S&S. If addressed in a meaningful way, this could have a positive effect on transit ridership.

Based on our review of the literature and the available data, we were able to determine it as **Plausible** that **perceptions of safety and security** have an impact on transit ridership.

Success Stories

Yes, transit ridership has declined in nearly all major cities from December 2015 to December 2016. But it is not all gloom and doom. There are places out there where transit ridership is on the rise.

UZA Name	Sum of 2015	Sum of 2016	Change
Seattle, WA	178,640,154	185,913,534	4.1%
Houston, TX	83,285,295	85,180,489	2.3%
Milwaukee, WI	40,610,851	41,476,982	2.1%
Detroit, MI	36,734,180	37,079,598	0.9%
New York-Newark, NY-NJ-CT	4,222,700,561	4,241,214,495	0.4%
San Francisco-Oakland, CA	454,952,418	454,996,256	0.0%
Boston, MA-NH-RI	403,464,723	402,554,159	-0.2%
Pittsburgh, PA	63,990,430	63,570,697	-0.7%
Denver-Aurora, CO	101,021,365	99,777,407	-1.2%
Portland, OR-WA	112,440,100	110,985,034	-1.3%
San Antonio, TX	37,983,886	37,290,201	-1.8%
Salt Lake City-West Valley City, UT	44,909,741	43,776,825	-2.5%
Minneapolis-St. Paul, MN-WI	96,636,368	93,716,857	-3.0%
Chicago, IL-IN	623,466,948	603,747,357	-3.2%
Urban Honolulu, HI	68,587,549	66,361,162	-3.2%
Las Vegas-Henderson, NV	72,044,767	69,420,973	-3.6%
Dallas-Fort Worth-Arlington, TX	75,998,371	72,137,725	-5.1%
Baltimore, MD	111,070,976	105,214,371	-5.3%
Atlanta, GA	141,154,134	132,925,293	-5.8%
Philadelphia, PA-NJ-DE-MD	369,644,085	346,276,496	-6.3%
Phoenix-Mesa, AZ	69,525,177	64,898,486	-6.7%
San Diego, CA	94,921,830	88,507,937	-6.8%
St. Louis, MO-IL	47,250,866	44,020,031	-6.8%
Cleveland, OH	46,844,074	43,507,057	-7.1%
Los Angeles-Long Beach-Anaheim, CA	619,459,557	572,589,716	-7.6%
San Jose, CA	44,718,244	40,763,554	-8.8%
Miami, FL	156,449,301	141,556,090	-9.5%
Washington, DC-VA-MD	441,222,366	396,260,838	-10.2%
Austin, TX	32,795,531	28,893,986	-11.9%
San Juan, PR	38,853,326	32,289,221	-16.9%

Source: (Balk, 2017)

Take Seattle, for instance. Top in the nation for population growth from 2015 to 2016 according to Gene Balk in *The Seattle Times*, transit ridership also increased by an incredible 4.1% between 2015 and 2016. (Balk, 2017) Population growth of course brings increased transit demand and increased federal investment in transit infrastructure. In Seattle's case, that federal investment came in the form of expanded light rail. But Seattle's transit systems also grabbed the reins themselves by launching a redesign of their bus network. We have already seen that the bus mode is taking the brunt of the ridership losses, so this is a logical place to tackle getting back in charge. Seattle is doing so by dividing the city into quadrants and tackling one at a time. (Schmitt, 2017)



Similarly, Houston fully redesigned their bus network in 2015 and experienced a ridership increase from 2015 to 2016. The redesign's success can be attributed to increased frequency and expanded evening and weekend service. In fact, while Houston's overall transit ridership increase clocks in at 2.3%, FTA data puts specifically the bus ridership increase at 3.3% for 2015 to 2016. And it is new weekend bus ridership that is now driving the trend, so to speak. Nearly immediately, METRO saw a 13% increase in Saturday ridership, and a 34% increase in Sunday ridership. Another focus of the bus network was providing better connections to rail service, and doing so realized an overall weekday ridership increase of 3%. (Schmitt, 2017)

Future Success Stories

While Seattle and Houston have had improvements, other agencies are working towards the future as well. Some agencies have found success through capital investments, such as real-time information including signs and apps so that riders can know reliably how long their wait will be. Shared bus and bike lanes that are actually enforced have been successful in many cities to help maintain frequency of service and reliability of the system. Transit Signal Priority or Preemption has also been successful in many cities. Other capital investments to help in these areas include fare collection improvements, such as off-board fare collection, rear-door or all-door boarding, and fare payment cards or open-fare payment systems.

Transit agencies do not always have capital funds available for these investments, so many agencies have recently completed or are planning bus network redesigns. These redesigns allow agencies to better serve their existing routes through changes in the network. Cities with completed bus network redesigns include:

- Houston Metro
- Omaha Metro
- Jacksonville JTA
- Orange County OCTA
- Columbus COTA
- Baltimore MTA
- Portland Tri-Met

There are additionally over 15 other agencies currently planning or studying a bus network redesign.

Transit agencies are also considering partnerships with TNCs to coordinate rather than compete. Many are undertaking pilot projects such as the following:

- Philadelphia SEPTA Rail to Uber last mile connection to the suburbs.
 - SEPTA partnered with Uber to provide a 40% discount on taking an Uber from a train station. This pilot lasted six months and was very successful. (Smith, 2016)
- Pinellas Suncoast Transit Authority-Uber partnership to subsidize rides on underserved areas and late-night service.

- Pinellas Suncoast Transit Authority ran a six-month trial that began in March 2016, during which the authority supplemented half the cost of an Uber rider's trip up to \$3 to or from a transit stop in a small, underserved part of its system. Media liaison Ashlie Handy said the deal with Uber wouldn't not allow her to release exact numbers, but the program was so successful that it was expanded throughout the authority's service area in October 2016. The program actually saved the authority money because it eliminated two little-used routes in the area that cost about \$140,000 a year. The Uber subsidy cost \$40,000. (Brustein, 2016)
- Innisfil, Ontario-Uber partnership to subsidize rides throughout the city.
 - Innisfil started a pilot program for a full ridesharing-transit partnership, providing subsidized transportation for the town of 36,000 people. The city will pay Uber the difference in the cost of a ride and a fixed rate paid by passengers. (Smith C.S., 2017)

Other transit agencies are providing information in their transit apps that shows that times and costs of TNC services along with their own transit information.

When we asked CEOs what their transit agency is actively doing or planning to do to address areas within their control, we heard a plethora of creative answers:

- Pursuing marketing and informational campaigns
- Implementing trip planning technology for operators
- Returning to regional routes and using the saved money to increase frequency of other service
- Prioritizing frequency in the planning and budgeting processes
- Exploring possibilities for public-private partnership (P3) opportunities, both large and small
- Being more efficient and cutting costs to keep routes
- Increasing fare revenue overall by eliminating zone fares and implementing peak fares
- Providing way finding signage
- Improving information availability and creating rider alerts
- Establishing a bulk transfer system and improving connectivity to decrease passenger ride time
- Pursuing increased supervision, safety and security to improve the riders' environment
- Restructuring routes
- Ensuring outstanding customer service
- Focusing on cleanliness
- Expanding ways to purchase fares
- Addressing deferred maintenance of the system and proactively focusing on problem areas
- Embarking on a fleet conversion to CNG for lower fuel costs
- Bettering average operating speed by establishing transit priority measures (TSP, dedicated lanes, bus on shoulder, etc.)

Key Takeaways and Conclusion

Busted

None

Confirmed

Gas Prices

Income

Unemployment

Frequency of Service

Reliability

Ease of Use

Plausible

TNCs

Perception of Safety and Security

Our research and interviews did not debunk any myths. We did, however, confirm that some common theories are true. We confirmed that the gas prices, income, and unemployment have a direct impact on transit ridership. Transit Agency CEOs confirmed that frequency of service, reliability, and ease of use have an impact on ridership. We also found it plausible that TNCs and the perception of safety and security might plausibly be having an impact on transit ridership.

The key takeaway from our research is that transit agencies should focus on what they can change, which includes frequency of service, reliability, and ease of use. Transit agencies should also consider partnering with TNCs to provide service.

Aside from network redesigns and opportunities involving TNCs, transit agencies should think outside the box for ways to improve their transit system without an infusion of funds. Monitor the things you cannot control, and take action on the things that you can control. Do not let the lack of money stop you! Make choices about how to use what you do have. Take the time to deliberately determine how you can take your limited resources and put them to the best uses that create the biggest impacts for your riders. Prepare and adapt!

Which of these could also work for your transit system?

What ideas did they spur that you can implement?

How will you take action on the things within your control that your transit system can improve?

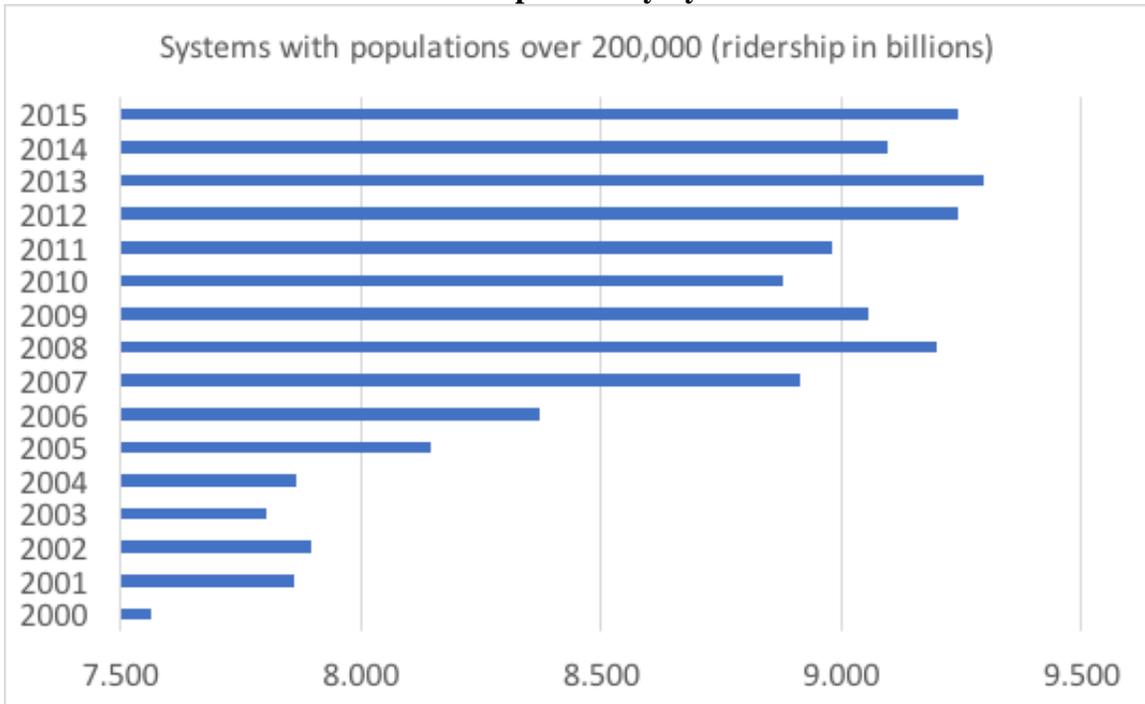
When will you enjoy the increased ridership that reallocating resources can create?

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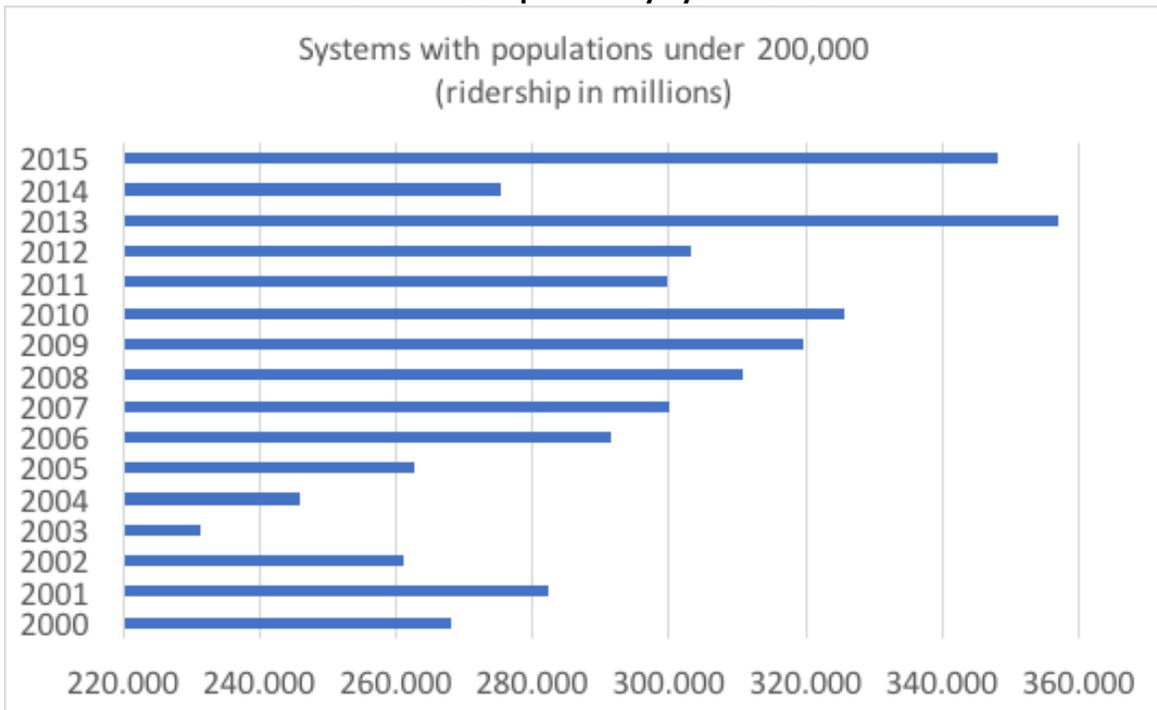
Appendix A – Charts

Chart 1: Comparison by System Size



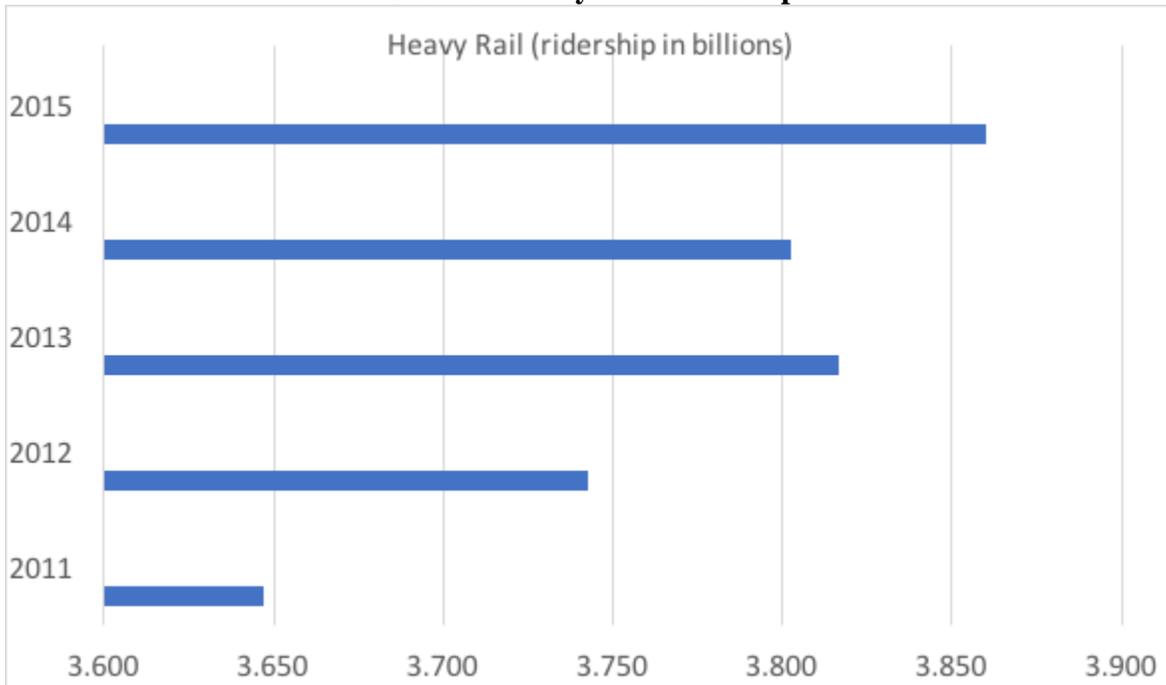
Source: (Federal Transit Administration, 1990-2015)

Chart 2: Comparison by System Size



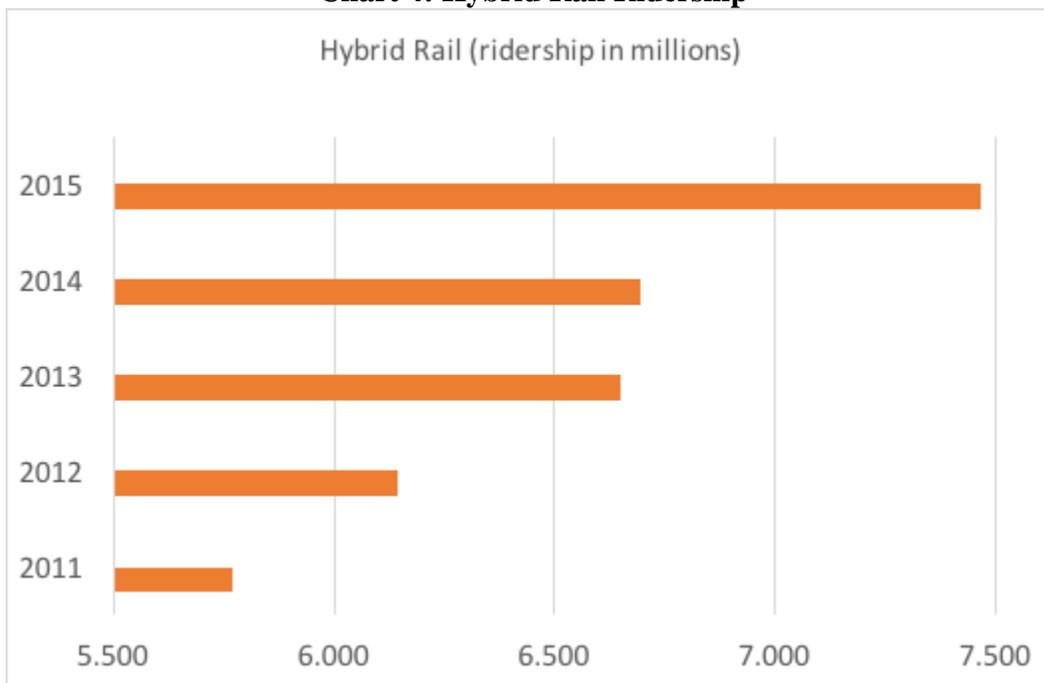
Source: (Federal Transit Administration, 1990-2015)

Chart 3: Heavy Rail Ridership



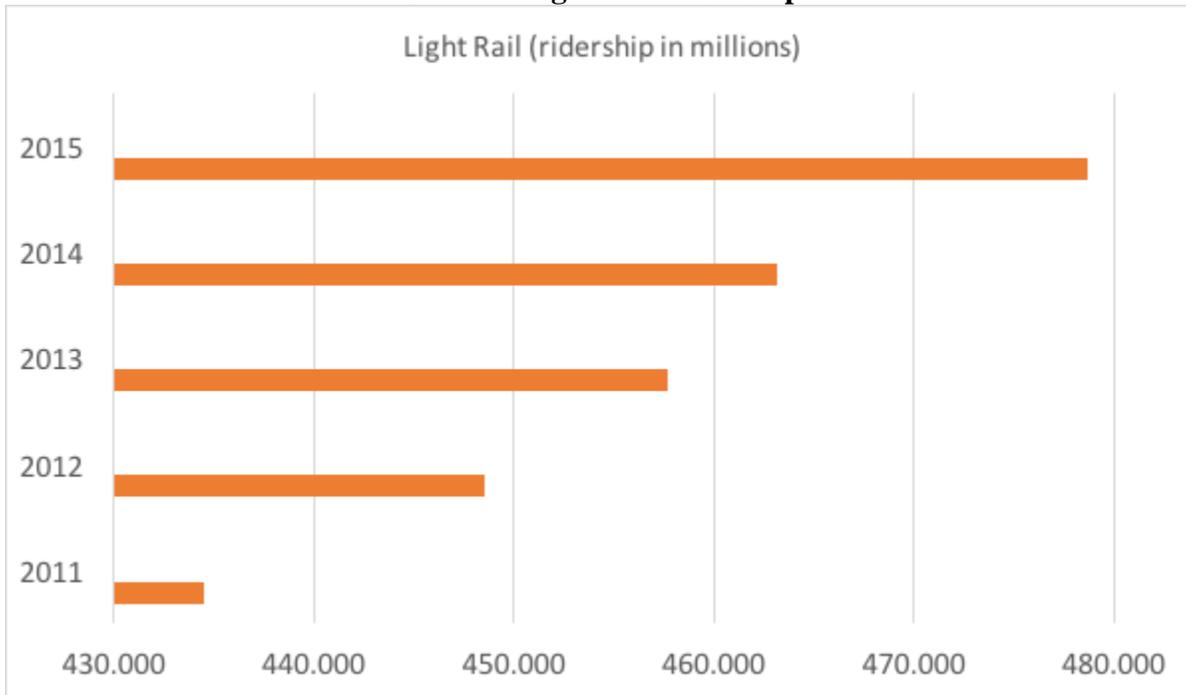
Source: (Federal Transit Administration, 1990-2015)

Chart 4: Hybrid Rail Ridership



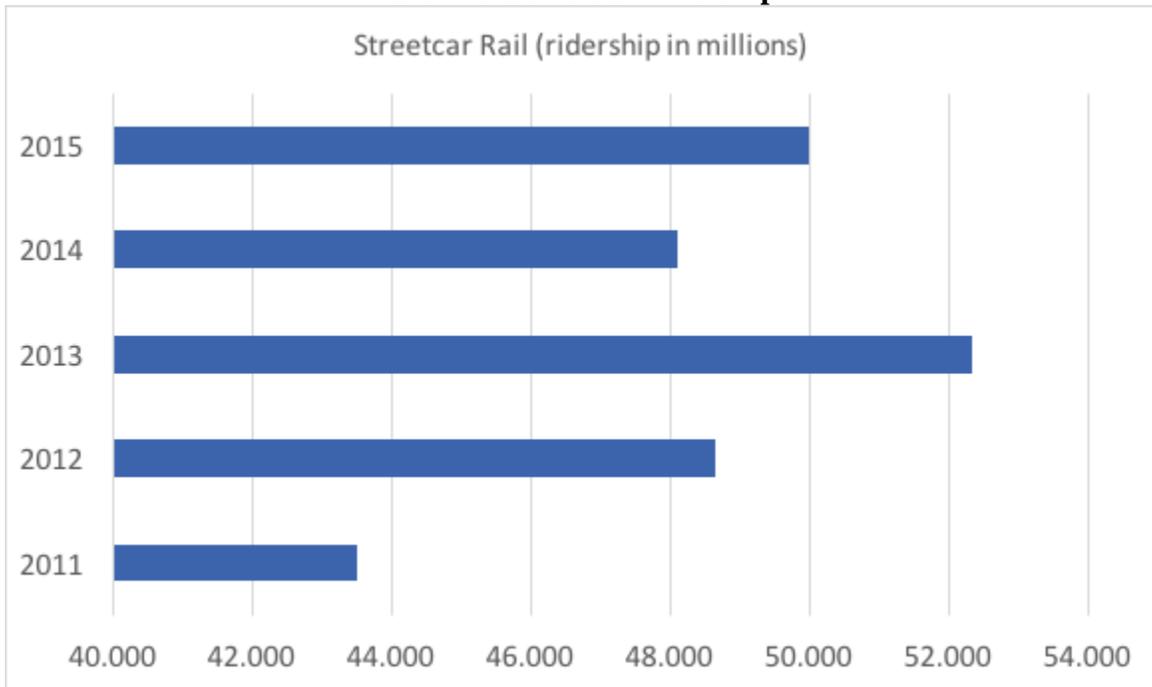
Source: (Federal Transit Administration, 1990-2015)

Chart 5: Light Rail Ridership



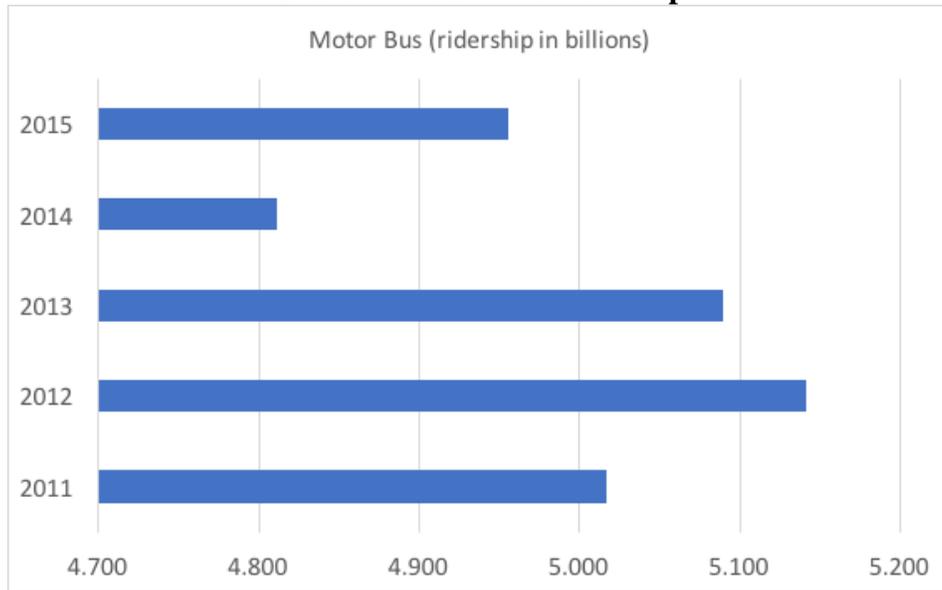
Source: (Federal Transit Administration, 1990-2015)

Chart 6: Streetcar Ridership



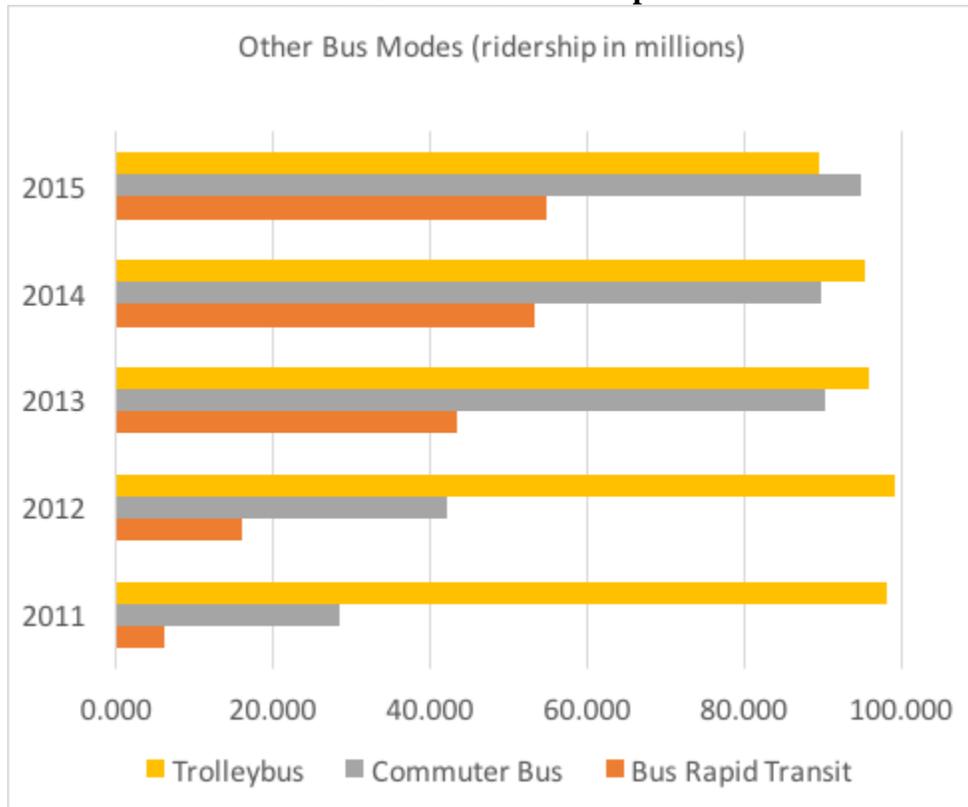
Source: (Federal Transit Administration, 1990-2015)

Chart 7: Motor Bus Ridership



Source: (Federal Transit Administration, 1990-2015)

Chart 8: Other Bus Ridership



Source: (Federal Transit Administration, 1990-2015)

Chart 9: Large Systems

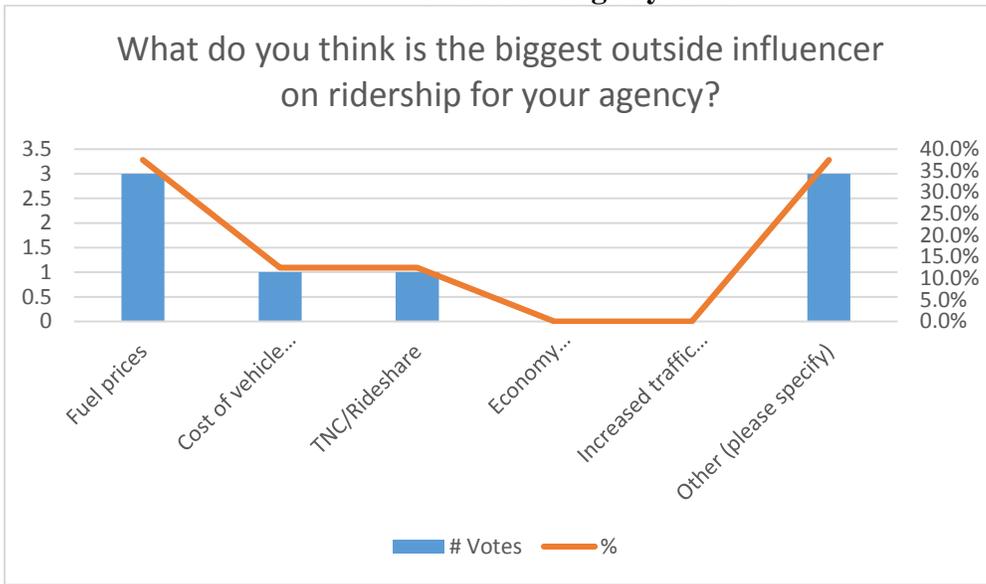


Chart 10: Small Systems

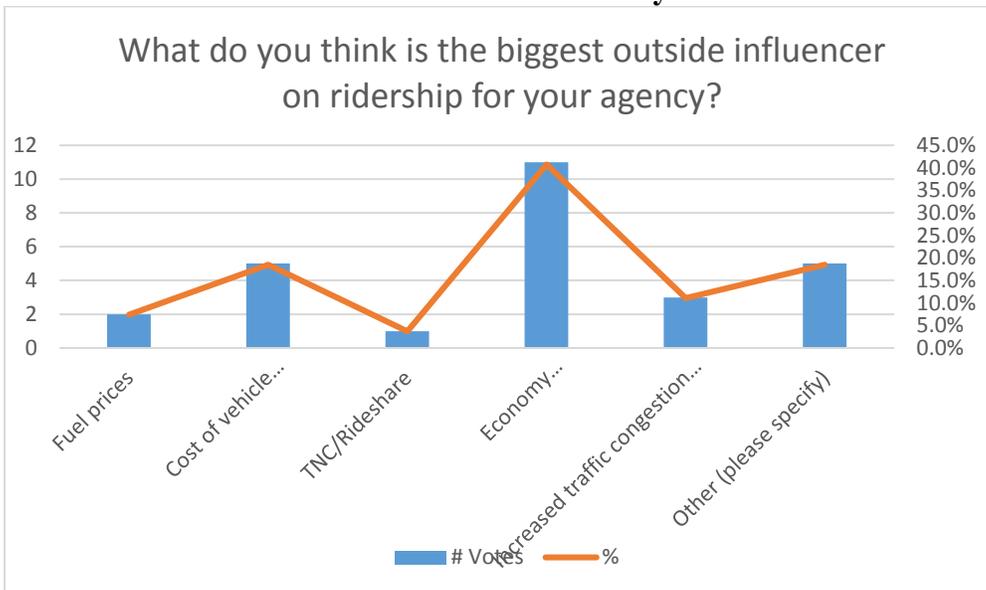
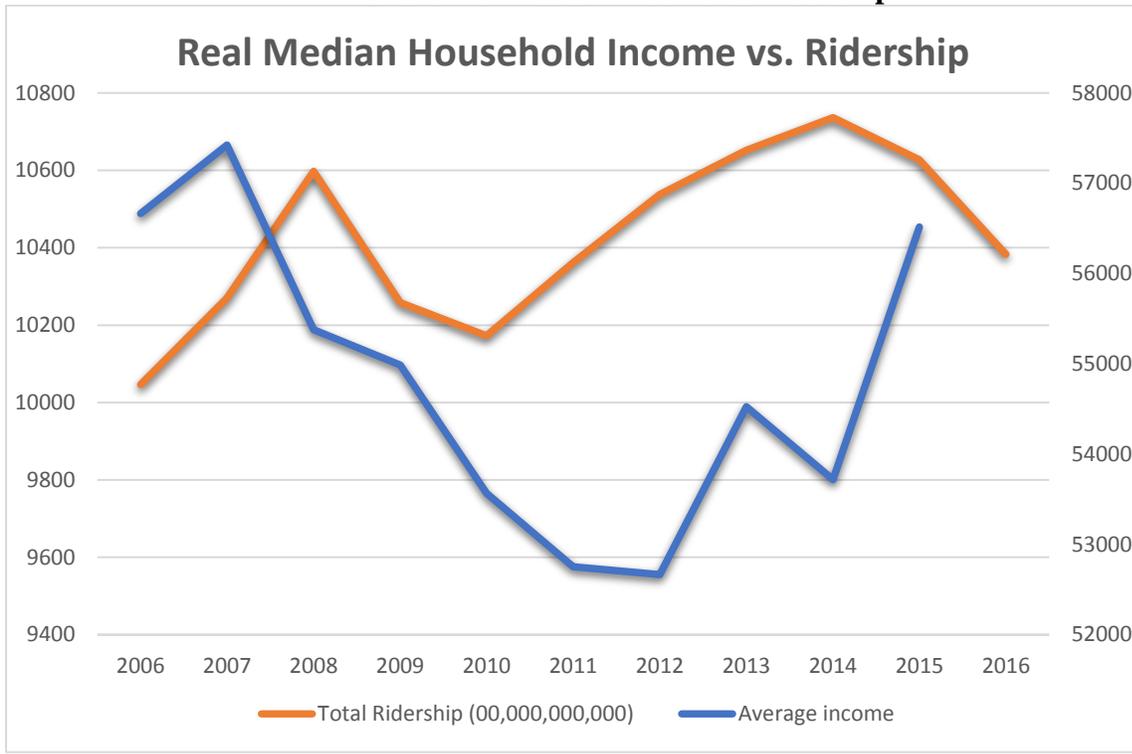
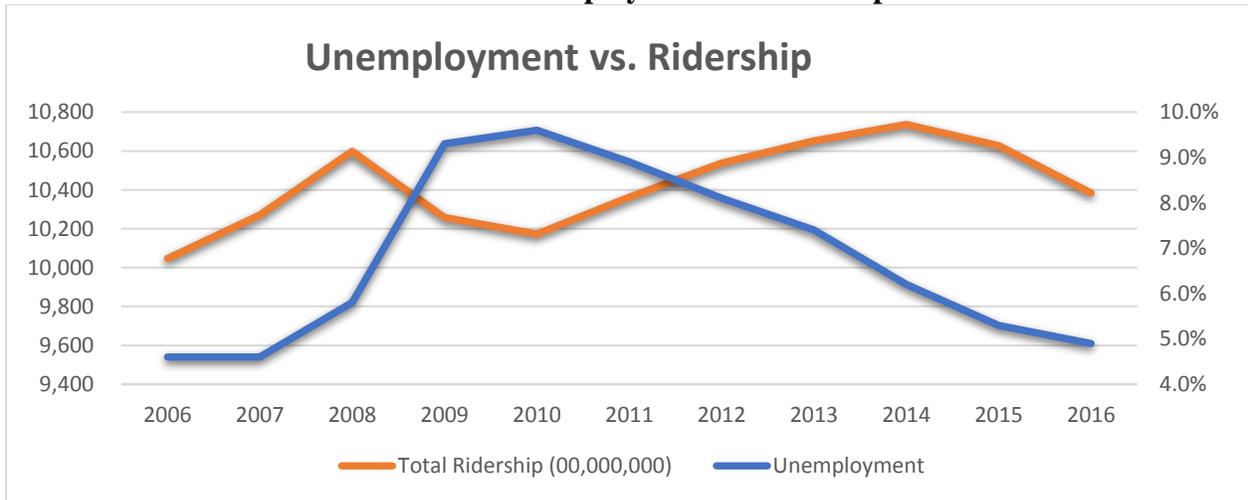


Chart 11: Median Income vs Ridership



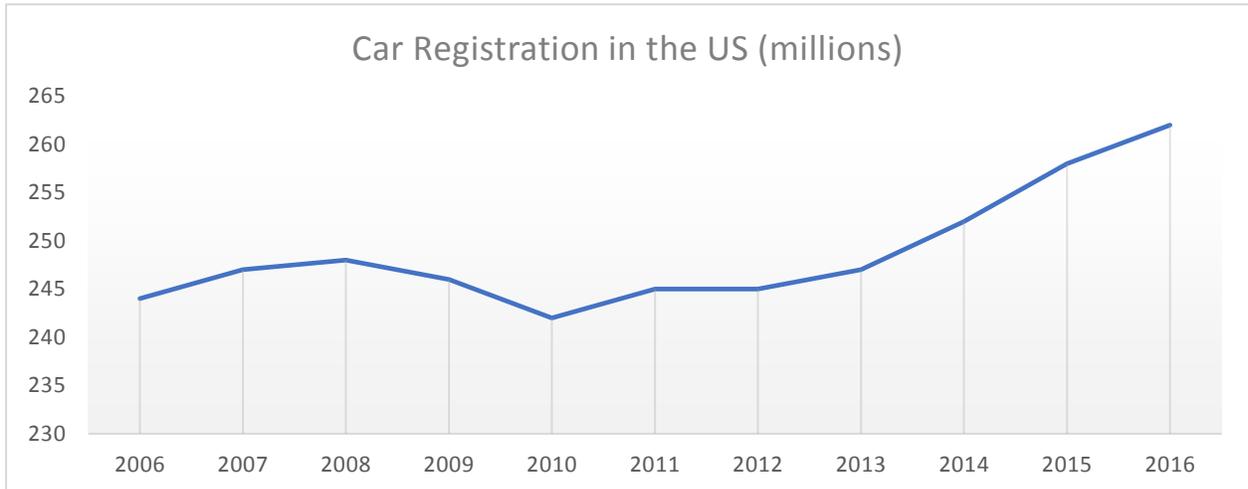
Source: (Federal Reserve Economic Data, 2006-2016)
 Real Median Household Income in the United States, 2015 CPI-U-RS Adjusted Dollars, Annual, Not Seasonally Adjusted

Chart 12: Unemployment vs Ridership



Source: (United States Department of Labor, 2006-2016)

Chart 13: United States Car Registration



Source: (USAFacts, 2006-2016)

Appendix B – Interview Questions

CEO - Leadership APTA

* 1. Enter your Name, Agency and title

* 2. Where does ridership rank among your agency's issues or concerns?

Number one

Top 3

Top 5

Not a major issue or concern

Other (please specify)

* 3. What is the number one element/factor you have (or somewhat have) control over and believe has the biggest effect on your ridership?

Safety and Security

Cost of Fare

Frequency of Service

Travel/Trip time compared to other modes?

Ease of use of the system (easy to understand which bus/train to take, how to purchase fares)

Other (please specify)

* 4. From the question above, what is the second biggest factor?

- Safety and Security
- Cost of Fare
- Frequency of Service
- Travel/Trip time compared to other modes?
- Ease of use of the system
- Other (please specify)

* 5. What is your agency actively doing or planning to do to address these two areas?

* 6. What, if anything, is limiting your agency's ability to address these issues? (I.e. lack of funding, politics, etc.)

7. What do you think is the biggest outside influencer on ridership for your agency?

- Fuel prices
- Cost of vehicle ownership/use - Fuel economy/hybrid or electric vehicles
- TNC/Rideshare
- Economy (income/unemployment)
- Increased traffic congestion on your non-exclusive guideway routes
- Other (please specify)

* 8. From the question above, what do you think is the second biggest outside influencer?

- Fuel prices
- Cost of vehicle ownership/use - Fuel economy/hybrid or electric vehicles
- TNC/Rideshare
- Economy (income/unemployment rate)
- Increased traffic congestion on your non-exclusive guideway routes
- Other (please specify)

9. Is there anything else you think has a major factor in ridership, or any recent changes you have made which resulted in a positive ridership impact?

10. May we quote you or reference your answers in our Leadership APTA presentations? We will share our quotes for your review prior to sharing at APTA annual, if we intend to call out you or your agency.

- No
- Yes (list any use limitations of survey information)

Done

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 SurveyMonkey
See how easy it is to [create a survey](#).