Encouraging bus use on a college campus: perception and usage of fixed route service

by

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Abstract

At Kansas State University, there is not an issue of opposition to public bus services. Instead, there is a perception that taking the bus is too complicated to figure out or cannot appropriately serve the community's needs. This, combined with dependence and attachment to the automobile, caused local buses to become unpopular mode choices. Since the service is still relatively new, it has not been engrained into campus culture and ridership is very low. This study looked at the local bus system, ATA bus, used to access the Manhattan, KS campus of Kansas State University (KSU). According to the ATA Annual Report from 2014, 75% of off-campus students at KSU and 35% of employees live within five minutes of ATA city-wide routes (FHATA 2014). Ideally, all those students and employees would take the bus to class or work, but in reality, most walk or drive. A very small minority of students use the fixed route service, and many are unfamiliar with how the system works. A campus access survey distributed in March 2017 to the KSU community aimed to ascertain familiarity with the system, current level of use, as well as attitudes towards the existing public transportation system. The data recovered from the survey contradicts the hypothesis that the disuse of the bus system was due to an active opposition to public buses. Conversely, it pointed to the conclusion that disuse resulted from a lack of information about the bus service and a deep-set attachment to private automobiles. This research aimed to increase ridership by identifying attitudes towards transit among the KSU community and suggesting strategies for improving service.

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Chapter 1 - Introduction

Public transportation systems began with privately owned, horse-pulled cabs in Post-Enlightenment Paris. These gave way to the omnibus in the 1800s which were the first coaches intended to transport sizable groups of unrelated people - at this time a maximum of eight persons (Papayanis, 1996). The technology soon migrated to the U.S. with stagecoaches appearing in larger cities such as New York City and Chicago (Thompson, 2008). This was a relatively inexpensive mode of travel for middle-class and professional clientele (See Figure 1).

Figure 1 Omnibus, Source: State Library of Victoria
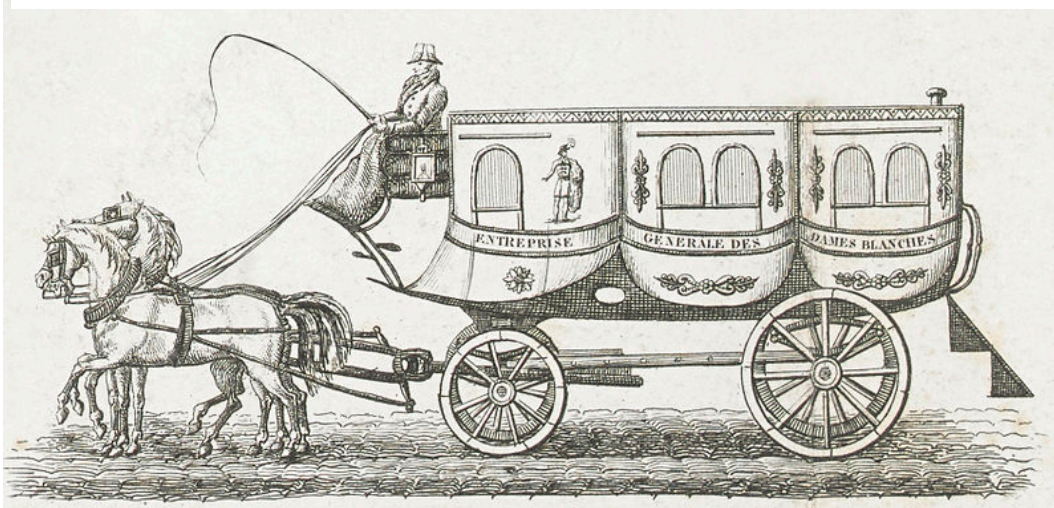
Trams and streetcars eventually replaced the omnibus and stagecoaches in the late 19th century. Motor buses were first implemented during World War I, and completely replaced streetcars ten years later (Young, 1998). What caused this mode of mass transportation to lose favor in the U.S.? In the 1960s, the Montgomery Bus Boycott called attention to the inequities in service for African American riders compared to their white counterparts. As the automobile became more affordable, transportation investment shifted heavily towards the highway system. This facilitated the movement of upwardly mobile, typically white, commuters to the suburbs. Since then, transportation solutions implemented by the U.S. government have historically and disproportionately favored wealthier, white travelers (Hess, 2012). This bias was exemplified by the increased investment in rail transit that accessed suburbs instead of city bus services that more people truly depended on. Decreased investment in intercity transportation, along with generations of negative perceptions toward public buses resulted in a homogenous population of bus users: low-income and minority riders. The former Prime Minister of Great Britain, Margaret

Thatcher, had the same perception, stating "a man who, beyond the age of 26, finds himself on a bus can count himself as a failure," reinforcing the idea that only students and those with little means should ride the bus (Garfield, 2015). Those who use a system because they have no alternative are referred to as captive riders, while those who ride by choice are just that, choice riders. Municipalities of all sizes strive to provide transportation systems that adequately service their captive riders, while also appealing to choice riders. Attracting choice riders is important because increased ridership results in more funding, which enables the agency to provide better service. This study looked at ridership of the local bus system in Manhattan, a college town in northeastern Kansas with a population of roughly 50,000 (U.S. Census, 2010). The research focused on the students, faculty, and staff of Kansas State University and their chosen mode of transportation to and from KSU. The goal was to discover why the local bus is not a popular mode for choice riders within this community and how to combat any negative perceptions that may exist towards buses in order to encourage increased use of the ATA bus. Since college students are at a unique stage in life where travel habits can be altered, this study aims to shift students from more unsustainable modes (single occupancy automobile) to the fixed route service, the ATA bus. Changing these behaviors when students are in school can encourage the continued use of public transit throughout their adult lives and careers (Thøgersen, 2012).

Area of Study

The Flint Hills Area Transportation Agency (ATA) was founded in 1976 by residents concerned about the lack of public transportation options in Riley County. ATA is a private, non-profit corporation, with a Board of Directors consisting of 15 volunteers and provides public

Figure 2 Riley, Pottawatomie, and Geary Counties, Source: Author

transportation service for the City of Manhattan, Riley County, and areas of Pottawatomie and Geary Counties (See Figure 2).

Two major institutions within this area are Kansas State University (KSU) in Manhattan, KS, and Fort Riley Military Base, just west of Manhattan. ATA began operating four city-wide fixed routes in 2013 (Figure 3), two of which only operate when KSU is in session, due to the significant loss in ridership from KSU students leaving for summer break. ATA also provides shuttles to the KSU-owned Jardine Apartments, located just east of campus, as well as University Crossing, an apartment complex near the Bill Snyder Family Stadium. Additionally, there are three fixed SafeRide routes, a service that runs Thursday thru Saturday 11pm-3am, designed to decrease drunk driving (Flint Hills Area Transportation Agency, Inc., 2014).

Figure 3 ATA Bus Fixed Routes. Source: ATA 2014

KSU is the largest user group of the ATA bus system within Manhattan, as the routes go through, to, or near the campus to accommodate KSU riders, and use the student union as the transfer station. Moreover, various departments within KSU provide approximately 14% of the overall funding of ATA as per the 2014 ATA Annual Report. Despite this, ATA has not done

extensive marketing to draw students to use the service. The ATA report also states 75% of off-campus students and 35% of employees live within five minutes of the ATA bus city-wide routes. The four fixed routes provided 49,956 trips in the 2014 fiscal year, which was an 8% decrease from the previous year (Kansas State University, 2015). Service on these routes is hourly, with some routes overlapping, resulting in headway every half-hour (FHMPO, 2016). The routes and stops are still relatively new, so stops are very low in passenger amenities such as street furniture, shelter, and signage. Crosswalks and sidewalks also may not be adequately in place, thus decreasing safety and accessibility for transit riders (FHMPO, 2016). This is partially a result of the current right-of-way agreement ATA bus has with the City of Manhattan, which only allows a simple bus stop sign that displays a symbol and the route as of now.

Research Question

What is the general attitude towards ATA bus in the KSU community? Answering this question will reveal rider needs and possible areas for improvement within the bus system. I expect many students never try ATA bus because they are either unfamiliar, and thus uncomfortable with using public buses, when they arrive at KSU, or they arrive on campus with a negative perception of bus use in general.

Course of Action

While the ATA bus covers a large part of the Manhattan Urban Area, this research is focused on the fixed routes that go through and around the KSU campus. Questions pertaining to the ATA bus and transit experience were given as part of a larger campus access survey headed by Dr. Gregory Newmark from the Department of Landscape Architecture and Regional & Community Planning. Recommendations were drawn from the results of the survey and subsequent analysis. This research intends to increase bus commuting to the KSU campus. Shifting drive-alone trips to transit among students can affect their future travel habits and mode choice (Schneider & Hu, 2015). Reducing auto use also has environmental benefits and creates a more walkable, human-scaled campus.

Chapter 2 - Background

The city of Manhattan, Kansas and the urban area surrounding it reached the population threshold of 50,000 for the 2010 Census, after which the Flint Hills MPO (FHMPO) was created. The FHMPO is only the sixth MPO in the state of Kansas, and is the first one designated in over thirty years ("KDOT," n.d.). Before the MPO, transit agencies had to comply with statewide transportation plans and transportation improvement plans from the Kansas Department of Transportation for approval and funding. Now, the project and initiatives proposed by MPOs must be in a formal plan in order to receive funding from the Kansas Department of Transportation (KDOT). This allows for decisions about public transportation to be made on a local level. The focus of this research was specifically on one mode of transportation, the public bus. The Area Transportation Agency (ATA) bus serves the citizens of the City of Manhattan, Riley County, Fort Riley, and Junction City (Flint Hills Area Transportation Agency, Inc., 2014). This research asked why the ATA bus is underutilized, primarily by those going to and from KSU, and secondarily, how to increase the use of the bus as a means of getting to campus. Data collected from the campus access survey revealed the general make-up of those not using the bus system and what obstacles kept them from utilizing it.

Factors Affecting Ridership

For a transit system to be effective, it needs to have a critical level of ridership. Ridership data is used to allocate funds and determine current and future needs. In order to increase transit ridership, the motivation for using private vehicles must be determined and translated into attributes of transit services (Redman, Friman, Gärling, & Hartig, 2013). Exhaustive research led to the determination that these factors affect ridership to a large degree. Furthermore, these factors can be categorized as: service, awareness, and amenities.

Service

When service is not what customers desire in terms of convenience, fewer riders utilize the service. This results in less funding and reduced service, which in turn draws fewer users as the cycle continues (See Figure 4). This happens because bus transportation is a commodity whose production involves increasing returns to scale. The riders are both consumers using the system and producers as their numbers determine levels of service. When more people are using the system, the agency compensates with more vehicles. This means more vehicles are arriving

per hour, decreasing waiting time as a result. This phenomena is known as the Mohring Effect (Mohring, 1972).

Figure 4, Comic about Transit Funding, Source: Crain's Cleveland Business 2016

While captive riders use a bus system no matter what, choice riders base their travel decisions on levels and factors of service. Frequency is the most vital of these, as many studies show that the more frequently a bus comes to a particular stop, the more the preference for that bus stop increases (Ben-Akiva & Morikawa, 2002). Efficiency, whether real or perceived, also affects ridership. One journalist requested submissions of convoluted and overlapping bus routes from different cities, and how popular these routes were. The submissions showed that the straighter the bus route, the higher the ridership (Poon, 2016). Other service factors such as customer service and fares also increase or decrease ridership based on their perceived quality.

There are also non-monetary costs associated with transit, such as the time spent planning the trip, the time spent waiting for the bus, and the lower levels of service during non-peak periods (Kim & Ulfarsson, 2008). In fact, travel time, which includes travel to the bus stop, wait time, transfer time, and in-vehicle travel time is a prominent barrier to bus commuting (Schneider & Hu, 2015).

To retain current users and attract new users, transit agencies need to know the public's priorities. These desired characteristics can also facilitate better promotion of alternative means of transport to the automobile. A survey of a metropolitan area in the Netherlands focused on seven characteristics the public considers: travel speed, comfort, reliability, safety at the bus stop, safety on the bus, clearness of information, and travel costs (van der Warden, Bérénos, &

Timmermans, 2009). The survey had 1,090 respondents who rated these seven characteristics on a scale from 1 (negative effect) to 7 (positive effect). They also rated finer aspects within each of the characteristics on a scale from one to five. The study concluded these seven aspects have mostly a neutral or positive effect on the evaluation scores, and that increased evaluation scores resulted in increased probability of public transit use (van der Warden et al., 2009). The KSU campus access survey asked users to rate related characteristics of the ATA bus system, including frequency, reliability, cost, information availability, safety at bus stops, safety on buses, bus stop locations, and ease of boarding. This elucidated how users feel about the existing level of service and where there is room for improvement.

   Awareness

   Transit systems are underutilized if the general public is not adequately aware of their services, ranging from knowledge of a transit systems existence, to specific awareness of routes and times. Advertising these services for the transit system, however, requires planning, design, and funding. Users require adequate information availability in order to even consider the bus as a travel mode. Multiple studies found information availability is a vital factor affecting ridership, alongside safety and reliability (Syed, 1998). A qualitative study from Portugal conducted in 2007 aimed to understand the perception of public transport as well as public cars (Beirão & Sarsfield Cabral, 2007). Conducted through in-depth interviews, the study found a common complaint about bus systems was an overall lack of information. Not having enough information about the system, or not being able to access the information, makes the service difficult to use. Likewise, changes in routes and schedules without sufficient notice turns users away from the bus. Some respondents reported not being able to easily understand timetables and route maps, thereby adding an additional barrier to use (Beirão & Sarsfield Cabral, 2007).

   After the 1991 Intermodal Surface Transportation Efficiency Act, state and local governments were given more flexibility in determining their own transportation solutions, including the use of transit (Federal Highway Administration, 1991). One goal of the act was to promote public transportation, including increasing accessibility, which would reduce energy use per trip and per passenger mile. A 2009 study compared the differences in public transport ridership in the United States and Germany. The resulting statistics showed that Germans are much more aware of public transport as a viable option for travel, whereas Americans prefer the more familiar automobile. One of the first trends recognized by the study is the change in public

transport trips per capita in each nation. While Germany's trips increased 15% from 1970-2005, the United States dropped 9.5% per capita (Buehler, 2009). During the same period, auto usage increased in both nations. In 2005, Germans took 6 times as many trips and traveled 4 times the distance on public transport as Americans. The research determined that Germans in low-density areas used public transportation as much as Americans in high-density neighborhoods. A possible reason for Americans' lower use is that transit is more prevalent in high-density areas. The study also noted that German transportation agencies historically had better coordination with non-motorized users, meaning many public transit riders arrive to the transit stop on foot or by bike. Transit companies respond to this by offering these users amenities such as bike parking (Buehler, 2009). Additionally, the study noted that German agencies have actively tried to make car travel seem less attractive in general. They achieved this through implementing extensive traffic calming measures, expensive costs associated with car parking in city centers and neighborhoods, and higher gasoline taxes. In the U.S. the gas tax accounts for 15% of the price at the pump, whereas in Germany it is roughly 60% (Buehler, 2009). Furthermore, in contrast to American freeways, the Autobahn rarely penetrates urban areas. Combined this with speed limits 25% lower than those in the U.S., German agencies make car travel in cities slower and less convenient, encouraging motorists to choose other means of transportation.

While marketing is important to retain current users and attract new users, one study conducted in 2005 found out that marketing can have unintended consequences, as deeply entrenched negative opinions are very hard to change. The researchers investigated the effects of persuasive messages on real-life behavior as an attempt to shift overly negative public perceptions of buses (Beale & Bonsall, 2007). The goal was to understand if persuasive messages could change attitudes and increase use of the bus services. A survey was used to ascertain levels of bus use and perceptions of the available services. The results were that users had more positive perception than non-users, and perceived fewer barriers to ridership, while non-users were deeply set in their opinions (Beale & Bonsall, 2007). They concluded that a certain degree of willingness to use the bus is needed among non-bus users to shift their travel behavior.

Amenities

Not all buses and bus stops are identical - some have more conveniences and services within or around them, and some are merely marked with a sign. This creates an issue as

amenities make bus stops pleasant places to be. Moreover, successful amenities can, in turn, increase both ridership and community engagement (Overcash, 2015). One researcher studied the location and distribution of bus stops and whether the associated amenities were equitable, or if there were areas with more transportation disadvantaged populations. His definition of disadvantaged populations included lower income and minority groups, as well as those requiring ADA accessible amenities. He also divided amenities into two types. The first were those features in the waiting area, such as shelter, trashcans, and proximity to retail and civic activities. The second type was the vehicle environment, which includes the arrangement of doors and seating, climate control, and multi-modal features such as bike racks (Talbott, 2011). Other amenities are relevant in both environments, such as information systems, lighting, and security features (cameras).

While cities are typically responsible for the physical amenities associated with public transit, the benefits provided by employers to their employees can affect mode choice as well. Only 5% of automobile commuters pay for parking (Hamre & Buehler, 2014). Many companies provide one or more of the following benefits for their employees: free parking, public transportation benefits (pass/fees paid), as well as walking and cycling benefits (showers and lockers). A recent study looked at reducing auto commuting in the Washington D.C. area through increased public transport, walk, and cycle benefits, since free car parking at workplaces results in more driving. The research found that when employees were only offered public transportation benefits, they were eleven times more likely to take public transport than drive, and more likely to walk than drive. When offered free parking alone, there was a 96.6% probability of driving to work alone, which is 20% higher than when offered no benefits at all. Even when free parking was combined with all other benefits, commuters were still 86.8% most likely to drive alone, 10% more than when offered no benefits (Hamre & Buehler, 2014). Employers and public agencies alike have the opportunity to endorse transit as an option for their employees for clients via incentives.

Conclusion

For transit systems to attract riders, they must be well perceived by the general public. Attributes of transit that affect perception include comfort, safety, convenience, and aesthetics (Redman et al., 2013). The body of literature surrounding public bus ridership has defined many strategies for success. Increasing awareness and amenities are two key ways to attract ridership

without altering service. The reasons why fixed route service remains underutilized is largely unknown. This research aimed to discover the reasons and develop strategies to improve service and increase ridership.

Chapter 3 - Methodology

The Area Transportation Agency (ATA) provides four fixed routes in Manhattan, Kansas. The fixed routes cost $1 for a single adult fare. This research aims to discover the current perception of and attitudes of KSU students, faculty, and staff towards ATA bus.

Philosophy

The historic attitude towards public buses is that they are for the poor, students, and the international community; or those who have no other choice of transportation. The perception that buses are a last resort has helped solidify the overwhelming choice of single-occupancy vehicles as the everyday mode of transportation. When buses are not the most popular form of transportation and less people utilize it, they are afforded less funds. In turn, this can decrease the level of service, making the system more unpopular, and so on. Another common perception is that buses are inefficient because they may not take the most direct route to destinations or overlap in an effort to have a larger coverage area. If the bus does not appear to be the most convenient choice, then it will not be the most chosen. According to the ATA Annual Report from 2014, 75% of off-campus students at KSU and 35% of employees live within five minutes of ATA city-wide routes (FHATA 2014). Ideally, all of those students and employees would take the bus to class or work, but in reality most walk or drive.

Methods

Data for this research was largely collected from an online campus access survey. The goal was to discover what modes of travel KSU students, faculty, and staff use to get to and around campus, as well as their attitudes toward transit and ATA fixed route services specifically. The survey was distributed to the Kansas State University students, faculty, and staff affiliated with its main Manhattan campus over a week in March 2017. The approximate undergraduate student population at KSU is 24,000 students, and it employs roughly 1,300 faculty members (Kansas State University, 2016). Major Professor Dr. Greg Newmark conducted the overall survey, with the questions for this study included in a section about transit.

Process

After a review of pertinent literature, it was determined that an overall campus access survey was required at Kansas State University's Manhattan campus. The survey was written and

edited as a collaborative effort between the major professor, the researcher, and another graduate student. This research focused on a section of transit questions, including current perceptions and previous experience. To ensure the survey procured relevant data, a phone interview was conducted in mid-October with Ann Smith, the Director of the Area Transportation Agency. As a result of the interview, the team added questions to determine the maximum distance to a bus stop and the maximum time spent on the bus to reach a destination each respondent felt amenable to. The agency also wanted to know if bus shelters would draw more people to use the bus. ATA and the researcher were both interested in the previous transit experience of the participants, as well as the proposition of a fee paid by students each semester for unlimited bus service.

Figure 5, Methodology Diagram, Source: Author
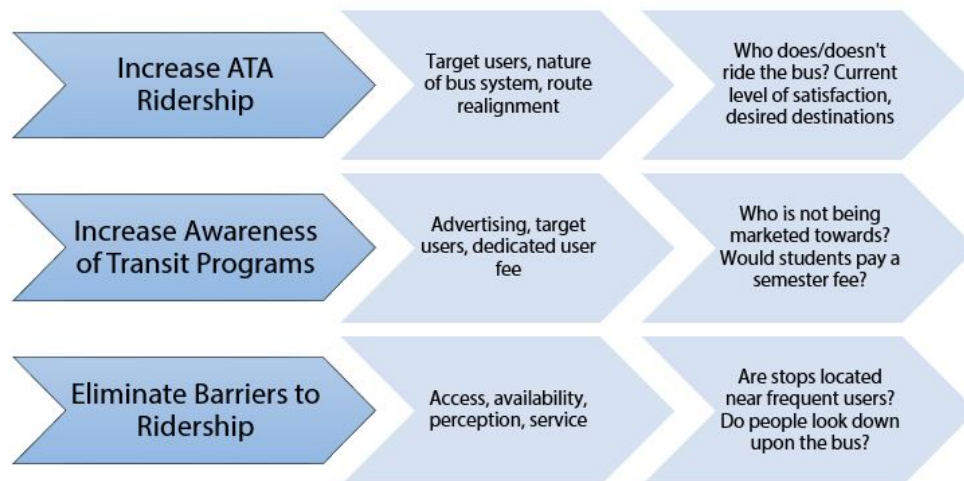
Survey

The survey was distributed to roughly 19,000 students studying at the Manhattan campus at the time. For faculty and staff, a link to the survey was included in their daily newsletter, as their email addresses could not be directly obtained. The survey asked about travel habits and mode choice, as well as questions about bicycle and transit usage, supplemented with general demographic data. The survey identified both available and preferred mode choice among students, faculty, and staff, as well as the reasoning behind the choice. Additionally, the survey revealed the number of students, faculty, and staff that arrive to campus via automobile.

While the survey consisted of almost 250 questions, 146 of these were the two days' worth of travel diary. This section of the survey asked respondents to indicate on a map where

they travelled throughout the day, as well as when they left/arrived, what mode they used, trip purpose, and number of trip companions. Asking for two days' worth of this information afforded the researchers a more complete picture of the respondents' travel habits. Moreover, the survey applied logic that only allowed certain questions to be seen when earlier questions were answered a certain way, reducing the total number of questions a subject may answer. For instance, different factors affect different groups within campus, i.e. undergraduate students, graduate students, faculty and staff. Only participants that have answered positively that they have previous experience with a transportation program were asked to rate their satisfaction with the program. During a pilot test conducted in PLAN667, Transportation Planning, most students took 15-20 minutes to complete the survey, which was acceptable for this study.

The survey resulted in descriptive statistics about who rides the bus, who could ride the bus, and who doesn't ride the bus. By analyzing the results by personal characteristics such as gender, age, and tenure at KSU, the research revealed the overall satisfaction levels each cohort felt for the ATA bus service. The survey also revealed subjects' rough distance from campus by inquiring for their approximate address. This, combined with the locations that subjects would like to see future ATA fixed routes include, could show gaps in coverage and areas of interest within the KSU community.

Chapter 4 - Findings

The overarching goal of the campus access survey was to capture the average travel habits of Kansas State University students, faculty, and staff as they travel to the Manhattan campus. Examining the mode and timing of the trips to campus allows researchers to extrapolate which trips would be just as easily made using ATA bus. The survey ran from Tuesday, March 14 to Sunday, March 19, and resulted in 2,892 responses, roughly a 15% response rate. The respondents were 74% undergraduate students, followed by 16% graduate students, and 10% faculty and staff members. This was an acceptable distribution since students were the participants whose travel habits the research aimed to alter. Of the 2,780 respondents who revealed their gender, 60% were female and 38% male. The vast majority were born in the United States, with 9% of participants born in other countries. The survey inquired about how many semesters the respondents spent at KSU at the time of the survey (See Figure 6). Responses decreased as tenure increased, from 1-12 semesters, with 244 respondents reporting more than 12 semesters at KSU. Those newest to the Manhattan campus are likely more willing to change their travel habits, as they are not yet firmly set in their transportation mode choice.

Figure 6, Tenure at KSU, Source: Author
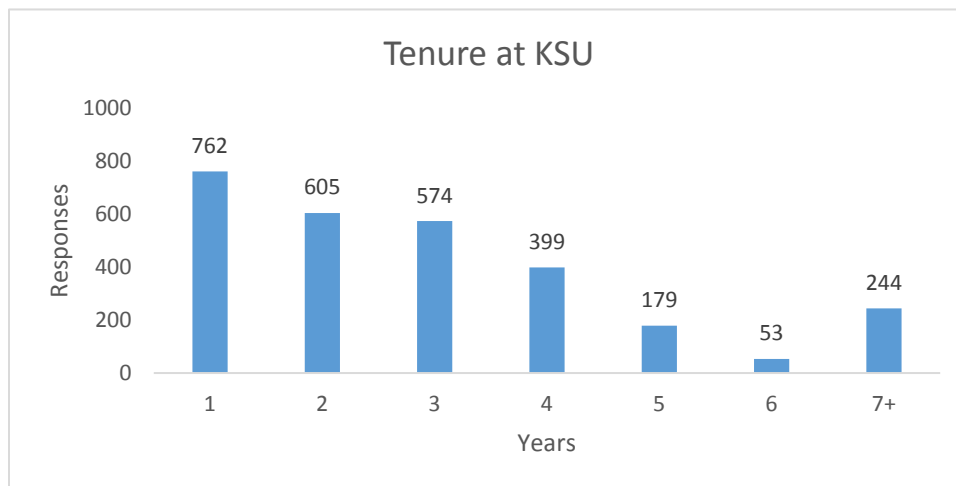
Travel habits

As expected, a very small minority of KSU students, faculty, and staff reported using the ATA bus, regularly or occasionally. The stated percentage of trips to campus completed via bus or shuttle was 1.6% when respondents were asked to estimate how their modes varied. When asked about familiarity with ATA fixed route services, 1.8% of respondents said they were regular users (See Table 1). Both of these percentages are low, but not entirely surprising. Since many
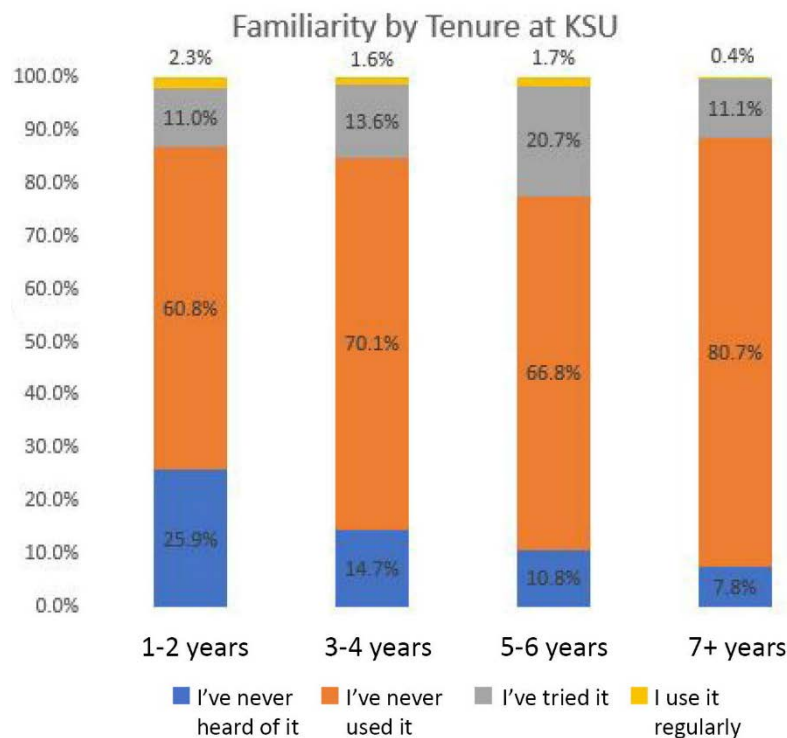
student live very close to campus or in residence halls on campus, walking is a very popular mode choice (45%).

Table 1, Familiarity with ATA Services. Source: Author

Service	I've never heard of it	I've heard of it, but never used it	I've tried it	I use it regularly
Fixed Route	19.2%	66.2%	13.0%	1.8%
Park n Ride	1.8%	66.7%	4.5%	1.2%
Jardine Shuttle	21.8%	66.3%	10.1%	1.8%
UC Shuttle	35.0%	61.4%	2.9%	0.7%
Safe Ride	14.5%	77.5%	7.1%	0.9%

When asked about familiarity with fixed route service, broken down by length of time, or tenure, at KSU, 2.3% of those who had been there for two years or less reported they were regular users, compared to only 0.4% of those with seven or more years at KSU (See Figure 7). This set up a relationship in which the longer respondents tenure at KSU, the less likely they were to be regular transit riders. Furthermore, the 7+ years at KSU cohort also had the highest percentage of those who had heard of the service, but never tried it (80.7%). This is a population that perhaps was never exposed to the service as a viable transportation option for them when they first relocated to Manhattan, KS. Instead, they merely saw the buses around town.

Figure 7, Familiarity by Tenure, Source: Author

Familiarity by Tenure at KSU

	1-2 years	3-4 years	5-6 years	7+ years
I use it regularly	2.3%	1.6%	1.7%	0.4%
I've tried it	11.0%	13.6%	20.7%	11.1%
I've never used it	60.8%	70.1%	66.8%	80.7%
I've never heard of it	25.9%	14.7%	10.8%	7.8%

Legend: I've never heard of it, I've never used it, I've tried it, I use it regularly

Preferably, those with the longest tenure would regularly use the service, as they have had the most time to try the service and become familiar. As expected, the 1-2 year cohort reported the highest percentage of those who had never heard of ATA fixed route service. This population would benefit the most from directed marketing, since they are more likely to change their travel habits than those who have been at KSU for years. Overall, two-thirds of KSU students, faculty, and staff have at least heard of ATA services, with only one-fifth having never heard of the services, indicating potential for shifting campus-related trips to the bus system. If KSU community members are introduced to the service when they first relocate, they can create a more ideal culture of bus use where students learn about ATA fixed route services from each other rather than hunting for the information around town. The hurdle is transforming awareness into action in order to increase ridership.

The most popular campus access mode for survey respondents was by car or truck at 46%, just higher than walking at 45%. Since 75% of respondents indicated they always had a car or truck available, and 13% usually had one available, KSU students, faculty, and staff find it very easy and convenient to drive to campus, whether they live within walking distance or close to an existing bus stop. Of those who said they make trips to campus in a car or truck, almost 80% said they were the driver. As KSU expands, on-campus parking will become less available. It is important to encourage alternative modes to access the campus, such as the ATA bus. This can be difficult, however, if students do not realize the bus is a viable option, as discussed below.

The survey included an open-ended text entry question inquiring after the main reason the respondent does not currently use ATA fixed route services. This question appeared to all but the 2% that were reportedly regular users. Almost all respondents answered this question, which allowed for important insight into what obstacles keep students, faculty, and staff from utilizing ATA fixed route services (See Table 2). A small fraction of respondents (0.76%) answered they were regular users of other ATA services (Park 'n' Ride, Jardine Shuttle, University Crossing Shuttle, or Safe Ride). The most prevalent reasons for not using transit were due to the availability of alternative modes of transportation: bike, car/truck, walking, etc. Almost 13% simply said they had "no need" for the service, which most likely meant they used an alternate mode. Altogether, alternate modes accounted for 60% of responses, but this figure decreased 10% for respondents born outside of the U.S. and those who have been at KSU for more than 6 years. Alternative modes of transportation are not necessarily an obstacle in and of themselves,

but their relative prevalence implies that the ATA bus is a less attractive option to this population. The next most common reasons were lack of information or understanding of routes, maps, and schedules. More women than men cited lack of information as the reason for not using the service, while more men were dissatisfied with existing service. This may be due to men's higher experience with transit as discussed later. Increased comprehension of how to use the bus amongst students would increase ridership. Non-users were also dissatisfied with the current bus stop and route locations, as they feel underserved. A very small percentage (0.8%) indicated they were opposed to public transit as a mode of transportation, suggesting that most of the KSU community's trips to campus could be shifted to fixed route service.

Table 2, Reasons for not using ATA, Source: Author

Reason	ALL	1-2 years	3-4 years	5-6 years	More than 6 years	Male	Female	Born in U.S.	Born outside U.S.
Bikes to Campus	2.14%	2.4%	1.8%	1.4%	0.0%	3.6%	1.2%	1.9%	4.1%
Drives to Campus	23.13%	19.4%	24.1%	32.4%	33.9%	21.5%	25.4%	23.9%	21.6%
Inconvenient Service	4.33%	3.3%	1.5%	7.2%	6.1%	5.0%	4.2%	4.3%	6.3%
Not enough Info	12.87%	13.2%	12.5%	4.8%	6.1%	9.2%	14.6%	13.0%	6.8%
"No Need"	12.95%	12.9%	13.0%	9.2%	11.3%	13.1%	12.1%	13.5%	8.1%
Incompatible with Schedule	3.49%	3.0%	2.8%	5.8%	10.4%	2.5%	4.3%	3.6%	3.6%
Stops are not near destination	9.80%	7.3%	10.6%	16.4%	7.0%	9.9%	9.2%	8.9%	16.2%
Walks to Campus	22.25%	24.2%	20.8%	11.6%	4.3%	25.1%	19.9%	22.5%	16.7%
Dissatisfied with Service	3.49%	2.6%	3.8%	2.9%	4.3%	4.0%	2.8%	2.8%	7.7%
Doesn't want to take child on bus	0.42%	0.4%	0.3%	1.0%	0.0%	0.2%	0.5%	0.3%	1.4%
Opposed to riding bus	0.80%	0.6%	0.9%	0.5%	0.9%	1.3%	0.3%	0.8%	0.5%
Dissatisfied with Cost of Fare	1.05%	0.5%	1.5%	2.9%	0.0%	1.0%	1.1%	1.1%	0.9%
Current User of Shuttle Services	0.76%	0.8%	0.7%	0.5%	0.0%	0.6%	0.8%	0.4%	4.1%
Fear of riding bus	0.25%	0.3%	0.0%	0.5%	0.0%	0.1%	0.3%	0.2%	0.0%
Lives outside of ATA coverage	0.0%	1.6%	2.2%	2.9%	15.7%	1.9%	3.1%	2.7%	2.3%
Total	1438	1322	895	207	115	957	1454	2216	222
	ALL	1-2 years	3-4 years	5-6 years	More than 6 years	Male	Female	Born in U.S.	Born outside U.S.
Alternate mode*	60.5%	58.9%	59.7%	54.6%	49.6%	63.2%	58.7%	61.8%	50.5%

*combination of italicized reasons, those that had the availability of another mode as their reason for not riding ATA

Experience with Transit

The KSU community has very low experience with public transit. This was interesting as almost fifty percent of respondents said they felt Manhattan was a smaller place than where they came from, presumably where there are more transit options. When asked if one ever paid to use fixed route service outside of Manhattan in the past, only 17% responded affirmatively. The response was even lower for undergraduate students and females, only 11% of the former had

ridden a public bus, and only ten percent of the latter. This is not entirely surprising, as females are more likely to be wary of riding public transit due to the low perceived safety of the waiting and vehicle environments. As for undergraduate students, they would benefit from being exposed to transit throughout their school years and beyond graduation. Men, who are less concerned with personal safety on public transit, reported higher use than the overall, with 28% reported previously riding a bus. Faculty had the next higher experience (30%), then graduate students (35%). A possible explanation for this difference is these populations may have travelled more than undergraduates and perhaps used public transit on these journeys. KSU staff are the most transit experienced, with 41% reporting previous bus use. There is no obvious explanation for this in the context of KSU, but perhaps staff have fewer resources and more likely to be captive transit riders. Only 1.3% of respondents reported having a physical disability that limits their use of transit as a mode. The majority of K-Staters' inexperience most likely stems from their previous town's having little to no transit options, or their complacency with daily car use for travel.

Virtually two-thirds of Kansas State University students, faculty, and staff reported they were neither satisfied nor dissatisfied with aspects of the ATA bus service, likely because many of them have never ridden it. Thus, the relevant satisfaction levels recorded were from those who are regular riders of fixed route service, or have at least tried it (See Table 3). Out of these 410 responses, many still reported being neither satisfied nor dissatisfied, but at much lower level, 30% on average. Users were most satisfied with safety both at bus stops and on the vehicles themselves, as well as the ease of boarding. They were more or less satisfied with the cost of a single fare ($1), as well as the reliability of the service to be on time. The three aspects of service users were least satisfied with were the frequency, availability of information, and the location of

Table 3, Satisfaction among Users, Source: Author

Transit Aspect	Extremely dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Extremely satisfied	Difference*
Frequency	12.1%	15.9%	36.0%	22.9%	10.8%	**5.7%**
Reliability	6.2%	15.5%	29.9%	28.8%	15.4%	**22.5%**
Cost	2.0%	6.6%	42.4%	17.9%	31.1%	**40.5%**
Information Availability	7.5%	19.9%	27.9%	25.1%	16.0%	**13.8%**
Safety at Stops	1.3%	3.9%	26.9%	31.7%	38.0%	**64.4%**
Safety on Bus	0.7%	1.7%	24.0%	27.3%	53.1%	**77.9%**
Stop Locations	10.2%	20.7%	27.5%	21.4%	18.0%	**8.5%**
Ease of Boarding	0.3%	3.1%	24.2%	30.8%	46.2%	**73.6%**

* (extremely satisfied + somewhat satisfied) - (extremely dissatisfied + somewhat disasstisfied)
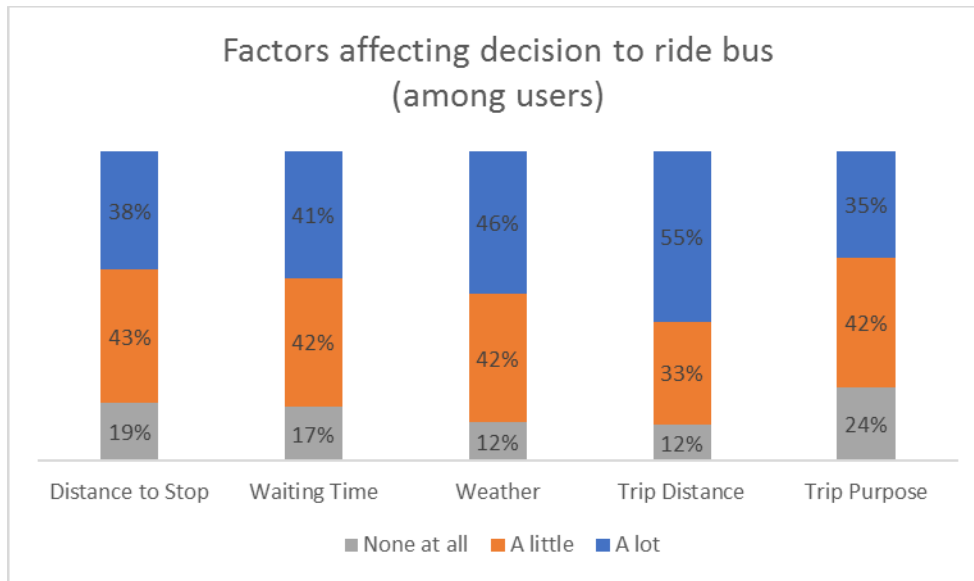
bus stops where users want to go. See Appendix B for satisfaction by tenure and gender.

When looking at satisfaction by time spent at KSU, a few trends appear. As tenure increases, satisfaction with frequency and bus stop locations all decrease (Appendix B). The level of dissatisfaction with information availability started low for those who have been at KSU less than two years, decreased by 6% for the 3-4 year cohort, but then stayed the same for longer tenured respondents. Those who have been at KSU for more than seven years had lower overall satisfaction with safety (10% lower than the average for safety on buses and at stops) and ease of boarding (8% lower than average). There were far fewer respondents in this cohort, many of whom could be older professors. All respondents, regardless of tenure, had low satisfaction with the frequency of vehicles, information availability, and stop location.

Men were slightly more dissatisfied with frequency (2% less), while women were more dissatisfied with information availability (6% less) and stop locations (4% less). Interestingly, this data suggested men and women are equally satisfied with safety both at bus stops and on the vehicles, themselves, as opposed to the expectation that women would be less satisfied with this aspect. Conversely, ATA fixed route services do not run at night, which is when perceived safety is at its lowest. Both genders were also moderately dissatisfied with the cost of a single fare. Overall, the aspects of transit that need to be improved the most according to survey respondents are information availability, frequency of vehicles, and stop locations. To combat the dissatisfaction with fare, bus service could be included in student fees so there would be no cost at the bus door and the service would appear to be free, but actually subsidized by these fees.

Since there are many different factors that affect the decision to ride the bus, the survey asked how much of an impact different factors had on the decision (See Figure 8). Among respondents as a whole, the ranking from most to least important was as follows: trip distance, weather conditions, time waiting for the bus, walking distance to the bus stop, and trip purpose. Over half of regular users indicated trip distance had a large effect on their decision to ride the bus, while just over a third indicated the same for trip purpose. A quarter of regular users said trip purpose had no effect on their decision to ride the bus. This seems opposite to the self-reported obstacles to transit, which indicate the distance to the bus stop is very important to respondents, as well as trip purpose. The survey asked how weather affecting respondents decision to ride the bus, but not as clearly as intended. The question does not clarify how it changes travel behavior, whether the weather draws respondents to or away from using the bus.

Figure 8, Decision Factors, Source: Author

Figure: Factors affecting decision to ride bus (among users)

	Distance to Stop	Waiting Time	Weather	Trip Distance	Trip Purpose
A lot	38%	41%	46%	55%	35%
A little	43%	42%	42%	33%	42%
None at all	19%	17%	12%	12%	24%

Legend: None at all, A little, A lot

Regardless of time at KSU or previous transit use, the average distance respondents were willing to walk to ride the bus was roughly seven minutes, which is less than half a mile in distance. Less than a quarter of respondents answered this question, perhaps because they were unwilling to shift their mode to ATA bus. Comparatively, respondents were willing to walk almost twelve minutes if it meant they could park their car or truck for free. This showed that respondents were more inclined to drive to campus than ride the bus. Almost two-thirds of all respondents reported they would be more willing to ride the bus if shelters were provided. Additionally, graduate students had a greater willingness at 69%, and staff reported less willingness at 53%. Adding shelters could have a great effect on ridership, as they make the service more visible and seem more official than simple signs with no bench or other amenities.

Respondents were also asked to choose three places in Manhattan that would be ideal bus stops to serve their schedule and needs (See Figure 9). In theory, most respondents probably placed a stop very close to their residence and then where they spend most of their day, such as work or school. Large numbers of responses were on or close to existing stops. Roughly 400 respondents were asked if they lived within a quarter mile of existing bus stop, with 54% responding affirmatively (See Figure 10). This indicates that over half of the respondents would have to walk more than 20 minutes to a bus stop, much farther than most users are willing to walk. Groupings of desired stops occurred mostly on the KSU campus and Aggieville Business District. Among the intersections where many respondents desired stops were Denison Ave/Claflin Rd and Bluemont Ave/11th St., as well as more stops along the northern side of

campus, or Denison Ave, and much of Bluemont Ave, the southern border of campus. Respondents placed additional desired stops, to a lesser extent, in the neighborhoods to the east and west of campus, as well as to the southwest, towards Sunset Zoo. There is also a desire for more stops along 4th St and the commercial area along Tuttle Creek Blvd. If ATA were to expand route coverages to these areas, many more users would be within walking distance of stops, making the service appear much more convenient and not as time-consuming.

Figure 9, Desired Bus Stops, Source: Author
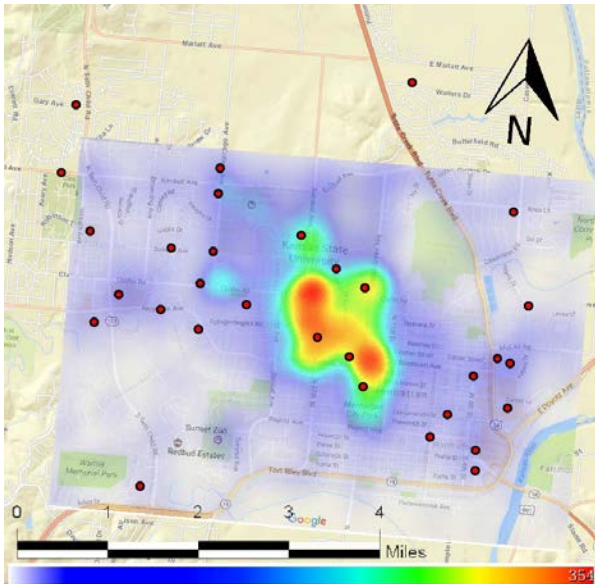
The red dots indicate existing fixed route bus stops. Purple areas are where the least clicks occurred, and red where there were many clicks on the same spot.

**Figure 10, ¼ mi Bus Stop Buffers, Source: Author**
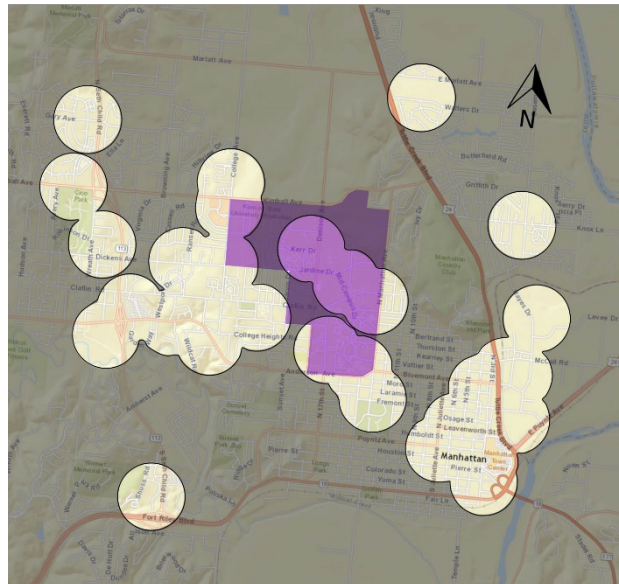
The purple area is Kansas State University. Each circle represents a quarter-mile buffer around an existing ATA fixed route bus stop.

Chapter 5 - Discussion

The research indicates that instead of an aversion to bus transit as hypothesized, the KSU community suffer from a lack of information about the service, exacerbated by attachment to private automobiles. If students, faculty, and staff are not properly introduced to the ATA fixed route service, they may never realize that it can serve their needs and reduce car use on campus. Of course, many at KSU are not concerned with the bigger picture of reducing auto use, but the multitudes of benefits from transit use may convince them otherwise. These benefits include reduced stress from driving in traffic and having to find a parking spot. Likewise, some may also be swayed by increased awareness of the environmental impacts of single occupancy vehicle trips, i.e. CO_2 emissions and pollution.

ATA has conducted a study with the Flint Hill MPO to realign their fixed routes. The proposed realignment included an additional fixed route, but a decrease in total route miles, from 64 to 47 miles (FHMPO, 2016). Additionally, all five routes will run year-round, as opposed to the two that currently run while KSU is out of session. The number of residences within a quarter-mile of a bus stop will increase from 45% to almost 80% of residences. There will also be an increase in businesses, employees, social services, and grocery stores within the quarter-mile buffers as well. The goals of the realignment are to improve efficiencies and provide more access. ATA also plans to implement an app that will provide real-time transit information: where the buses are, what time they will arrive at the next stop, and any delays. Additional signage will be added to current stops to display schedules and transfer information. The app and new signage are planned for spring/summer 2017. The adjusted routes and additional stops will respond to the desires indicated in this survey (See Figure 11). The area south of Poyntz as well as the western part of Manhattan will now be served by the ATA bus system as well. This will greatly increase the number of potential users, as more residences will be within a quarter-mile of a bus stop. The improved routes should increase satisfaction with frequency of vehicles and stop/route location.

Figure 11, Proposed Stops with Desire Overlay, Source: Author
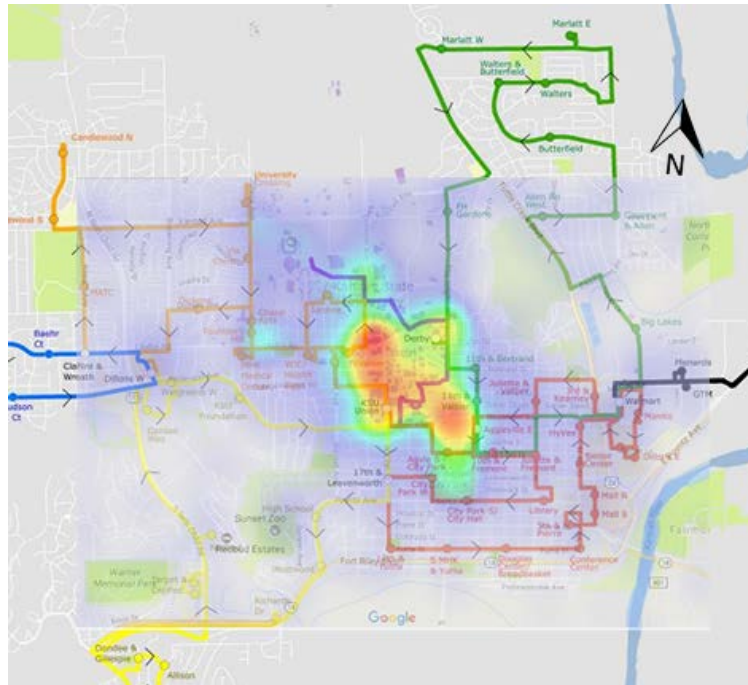
Recommendations

If the ATA bus wants to become a viable transportation option for those travelling to the KSU campus, they need to market more directly to that population. This is especially important at the beginning of the school year, when students are returning to Manhattan and may be more open to altering their travel habits. Events such as KSU's Week of Welcome and Freshman Orientation would be good opportunities to set up booths to hand out information and answer questions. If the service becomes more visible, ridership will increase. Although it ultimately rests in the hands of Manhattan city officials, ATA should push to amend the right-of-way agreement in order to build bus stops with more amenities – even simply paved areas with schedules posted on the bus stop signs. Once a more appropriate right-of-way agreement is reached, benches and shelters would draw riders as well. Furthermore, this research captured attitudes towards the existing system, pre-realignment, which will enable ATA to make comparisons and track improvements when the new routes are implemented.

Travel Training

One major impediment to using transit is a lack of knowledge about how to actually use the system. Travel training is a form of education focusing on how to use public transportation, whether that be bus, rail, taxi, or a combination of modes. Existing programs focus on transit

orientation and familiarization as part of training. Transit orientation explains the transportation system itself, including services, maps and schedules, and fare systems. Familiarization is training that occurs on the transit vehicle itself (Association of Travel Instruction, n.d.). Recently, organizations utilized travel training mostly to increase the autonomy of persons with physical or developmental disabilities, as well as senior citizens. Travel training aims to move participants in costly demand-response services to less expensive fixed route transit. This research recommends applying travel training to a university setting, where the trainees consist of KSU students, faculty, and staff who are new transit riders entirely. Moreover, information about current opinions can help with future decision-making for ATA materials and advertising.

The UK Department of Transport published a best practices manual for travel training. Many of the benefits explained in the manual were geared towards riders with disabilities, but they can also increase mobility and access for able-bodied riders as well. The benefits include increased independence, confidence and self-esteem (UK Dept. of Transport, 2011). Attempting something completely new, such as riding a public bus for the first time can be intimidating; travel training acclimates riders to the procedures and environments included in transit use. Conquering this original hurdle increases opportunities to participate in social and leisure activities, as well as employment opportunities and healthcare services. Additionally, travel training promotes the use of sustainable travel modes, adding environmental benefit.

Similar programs with the specific objective of reducing car dependence are applicable to KSU as many survey respondents indicated they were satisfied with their car/truck as their mode to campus. One program in Italy used soft policy to counter the habit of daily car use through Voluntary Travel Behavior Change programs (Meloni, Teulada, & Spissu, 2016). The program aimed to persuade motorists to use the local light rail system by raising awareness of the trip attributes and the negative impacts of car use. Participants were given an activity locator (AL) that tracked time spent driving, money spent, CO_2 emitted, and calories burned. After a week, they were given personally tailored travel-related information based on their daily needs, including how to use the light rail to serve these needs. For another week, they used the AL so researchers could see if car use decreased. As in Manhattan, there were participants who did not use the information reportedly being loyal to using their automobile. However, this personalized travel planning was successful overall due to the face-to-face meeting with travel tutors, and the participant-specific pamphlets that were created. Ultimately the Voluntary Travel Behavior

Change programs persuaded one-third of participants to change their travel behavior (Meloni et al., 2016).

Travel training programs can be easily created for the university context, and updated routes change or new technology is introduced. Due to the involvement of ATA throughout the process, training can be repeated at the beginning of the fall semester, so that new students, faculty, and staff can utilize the ATA bus to its fullest potential. The period of time during which Manhattan is still fresh to new residents is the optimal time to acclimate them to the transit system, before they become set in their mode choice. People use conscious decision-making during first-time experiences, so changing travel modes right after moving to a new city is easier than for someone who has lived there for years (Thøgersen, 2012).

Chapter 6 - Conclusion

As per the 2017 Campus Access Survey conducted at Kansas State University, there is not an issue of opposition to public bus services. Instead, there is a perception that taking the bus is too complicated to figure out or cannot appropriately serve the community's needs. This results in many students driving to campus and then suffering through finding adequate parking. Students, faculty, and staff are attached to car use, a habit that can be altered through increased awareness of alternative modes, such as the ATA bus. Students find that they do not know enough about the service to utilize it. Part of this is due to the overwhelming lack of experience with public transit systems before coming to KSU. By catering more directly to the KSU population and providing effective interventions such as travel training, ATA could greatly increase ridership on fixed routes. Once a bus culture is established, those that are experienced with the service will impart this knowledge on new students, and the cycle will continue. Since ATA is currently undergoing a route realignment, there is a good chance ridership will increase due to the increased route coverage. Almost 35% more Manhattan residents will be within a quarter-mile of an ATA bus stop. Frequency of vehicles will increase, a factor that even current riders were dissatisfied with. The altered routes will connect them to KSU, as well as the rest of the city. Moreover, the additional signage at bus stops will decrease confusion about scheduling, and the new app will increase reliability, as riders will be able to track ATA bus in real time.

The survey inquired whether the current level of information availability was satisfactory, and what aspects of service needed to be improved. There are no ATA programs aimed specifically at KSU students, faculty, and staff, except for a handful of shuttles where valid KSU ID holders ride free. Since many college students are on their own for the first time in their lives, transit should be encouraged as a viable mode of transportation, which can alter travel behavior long term. At this time there are no dedicated student fees to subsidize transit service, as is common at many other universities (Kansas State University, 2015). These are strategies available to ATA for increasing bus ridership amongst the KSU community.

The sheer number of participants indicated an interest in how the KSU community gets to campus. The 2,892 responses showed there is room for improvement if ridership is to increase. More than that, there is room for improvement in the eyes of current fixed route riders as well. A clear majority of respondents had at least heard of the ATA bus, but what remains to be seen is how to shift these students, faculty, and staff towards this campus access mode. Almost one-fifth

of KSU students reported they had never used fixed route bus services, showing large potential for bus ridership to increase. Respondents had low satisfaction with information availability for fixed route services, decreasing the longer they have been at KSU. Increasing the KSU community's understanding of available services, particularly as the school year begins and people are more willing to try a new mode of transportation, will help close the information gap and connect people to routes they can use.

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Appendix A – Campus Access Survey

Q338 This section asks about your experiences with public transit, in order to determine the general transit experience of the K-State community.

Q345 How likely are you to use ATA bus fixed-route service for your commute to campus?

❍ Extremely likely
❍ Somewhat likely
❍ Neither likely nor unlikely
❍ Somewhat unlikely
❍ I would never ride ATA bus.

Q346 What is the main reason you do not currently use ATA bus fixed-route service regularly?

Q31 Have you used public bus services outside of the K-State campus?

❍ Yes
❍ No

Q339 What is the population of the city you were in before coming to K-State?

❍ less than 5,000 residents
❍ 5,000 - 25,000 residents
❍ 25.000 - 100,000 residents
❍ more than 100,000 residents

Q23 How satisfied are you with the following aspects of ATA bus, fixed-route service in Manhattan?

	Extremely dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Extremely satisfied
Frequency - vehicles per hour	❍	❍	❍	❍	❍
Reliability - bus is on time	❍	❍	❍	❍	❍
Cost - $1 single fare	❍	❍	❍	❍	❍
Information Availability - route maps, schedules, ticketing	❍	❍	❍	❍	❍
Safety at Bus Stops	❍	❍	❍	❍	❍
Safety on Bus	❍	❍	❍	❍	❍
Bus stops near where I want to go	❍	❍	❍	❍	❍
Ease of boarding	❍	❍	❍	❍	❍

Q28 In order to gauge the level of interaction riders desire in a bus setting, please select which of these scenarios you most prefer.

- ○ No interaction with bus driver or other passengers
- ○ Interaction with bus driver, no interaction with other passengers
- ○ Interaction with bus driver and other passengers

Q337 In order to understand mode choice, please gauge how greatly the following concepts affect your decision of whether or not to ride the bus.

	None at all	A little	A moderate amount	A lot	A great deal
How long it will take to get to the bus stop	○	○	○	○	○
Amount of time waiting for the bus	○	○	○	○	○
Weather conditions	○	○	○	○	○
Distance of journey	○	○	○	○	○
Objective of journey	○	○	○	○	○
Other	○	○	○	○	○

Q73 How far would you be willing to walk, in minutes, to ride the bus?

_____ Minutes walked to bus stop

Q76 Where would you like to see ATA fixed-route bus stops? (Choose 3)

Q78 Would you be more likely to ride the bus if the stops you use had shelters?

○ Yes
○ No

Q347 Is your residence located within any of the ¼ mi buffer areas?

○ Yes
○ No

Appendix B – Satisfaction with Service

Table 1, Satisfaction by Gender, Tenure

1-2 years	Extremely dissatisfied	Somewhat dissatisfied	Neither	Somewhat satisfied	Extremely satisfied	Difference
Frequency	3.8%	8.8%	73.0%	10.6%	3.9%	1.8%
Reliability	2.0%	6.1%	75.6%	11.2%	11.2%	14.4%
Price	1.0%	3.1%	80.5%	7.8%	7.6%	11.3%
Information Availability	5.9%	14.5%	62.4%	11.9%	5.2%	**-3.4%**
Safety at Stops	0.8%	2.8%	71.6%	14.4%	10.4%	21.2%
Safety on Bus	0.9%	0.6%	73.2%	13.0%	10.4%	21.8%
Stop Locations	4.8%	10.2%	66.6%	13.6%	4.8%	3.5%
Ease of Boarding	0.7%	2.3%	72.4%	13.9%	10.7%	21.6%

3-4 years	Extremely dissatisfied	Somewhat dissatisfied	Neither	Somewhat satisfied	Extremely satisfied	Difference
Frequency	3.6%	10.6%	71.6%	11.1%	3.1%	0.0%
Reliability	2.9%	8.6%	74.0%	10.6%	3.9%	3.0%
Price	1.5%	4.4%	79.4%	7.9%	6.9%	8.9%
Information Availability	8.0%	19.0%	57.9%	11.1%	4.0%	**-11.9%**
Safety at Stops	0.5%	4.0%	69.3%	16.8%	9.4%	21.7%
Safety on Bus	0.7%	2.1%	70.8%	12.6%	13.7%	23.5%
Stop Locations	6.9%	15.6%	62.8%	10.3%	4.4%	**-7.7%**
Ease of Boarding	0.5%	1.4%	72.3%	14.9%	11.0%	24.0%

5-6 years	Extremely dissatisfied	Somewhat dissatisfied	Neither	Somewhat satisfied	Extremely satisfied	Difference
Frequency	3.0%	14.7%	70.1%	10.2%	2.0%	**-5.6%**
Reliability	2.1%	9.7%	70.8%	14.4%	3.1%	5.6%
Price	2.0%	3.6%	76.0%	7.1%	11.2%	12.8%
Information Availability	4.1%	24.6%	51.8%	15.9%	3.6%	**-9.2%**
Safety at Stops	1.0%	4.1%	68.2%	17.4%	9.2%	21.5%
Safety on Bus	1.0%	3.1%	65.3%	15.3%	15.3%	26.5%
Stop Locations	9.7%	21.9%	54.1%	9.2%	5.1%	**-17.3%**
Ease of Boarding	0.5%	2.0%	68.4%	16.3%	12.8%	26.5%

More than 6 years	Extremely dissatisfied	Somewhat dissatisfied	Neither	Somewhat satisfied	Extremely satisfied	Difference
Frequency	4.9%	13.3%	73.9%	6.4%	1.5%	**-10.3%**
Reliability	1.0%	9.0%	82.0%	6.5%	1.5%	**-2.0%**
Price	0.5%	4.0%	80.2%	12.4%	3.0%	10.9%
Information Availability	5.4%	16.8%	64.9%	9.9%	3.0%	**-9.4%**
Safety at Stops	2.5%	5.0%	79.4%	7.0%	6.0%	5.5%
Safety on Bus	1.0%	2.5%	81.4%	9.0%	6.0%	11.6%
Stop Locations	13.6%	19.1%	59.8%	5.0%	2.5%	**-25.1%**
Ease of Boarding	0.5%	2.0%	79.0%	10.5%	8.0%	16.0%

Table 1 continued, Satisfaction by Gender, Tenure, Source: Author

Female	Extremely Dissastified	Somewhat Dissatisfied	Neither	Somewhat Satisfied	Extremely Satisfied	Difference
Frequency	6%	10%	68%	11%	5%	**1%**
Reliability	3%	8%	72%	10%	7%	6%
Cost	2%	4%	75%	7%	11%	12%
Information Availability	10%	18%	54%	11%	7%	**-11%**
Safety at Stops	2%	4%	66%	14%	14%	22%
Safety on Bus	1%	1%	67%	11%	18%	27%
Stop Locations	10%	14%	59%	10%	6%	**-7%**
Ease of Boarding	1%	2%	68%	13%	16%	26%

Male	Extremely Dissastified	Somewhat Dissatisfied	Neither	Somewhat Satisfied	Extremely Satisfied	Difference
Frequency	5%	10%	72%	9%	3%	**-3%**
Reliability	3%	7%	75%	11%	5%	6%
Cost	1%	3%	78%	9%	9%	14%
Information Availability	8%	14%	61%	12%	6%	-5%
Safety at Stops	0%	3%	70%	14%	13%	24%
Safety on Bus	1%	1%	68%	13%	16%	27%
Stop Locations	8%	12%	62%	11%	6%	**-3%**
Ease of Boarding	0%	2%	70%	14%	14%	26%