

Improving Transportation Through Technology

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In today's world, walking can no longer get you where you need to go. Our ancestors who used to walk, created one of the most practical and useful technological advancements, the wheel. With this new technology, they were able to improve transportation with horse drawn carriages, bicycles, trains, cars, etc. Cars and trains have evolved over time, but people today still have trouble getting where they need to be. Most of the time, wherever a person resides will not be within walking distance of his or her workplace or other places of need like the grocery store.

Transportation has been an issue for many Floridians, especially those in rural and low-to-moderate income (LMI) communities. According to the Florida Legislature Office of Economic and Demographic Research (EDR), a government arm responsible for predicting social and economic trends in Florida, 22 out of 67 counties in Florida are somewhat rural and 3 out of 67 counties are completely rural (The Florida Legislature Office of Economic and Demographic Research, 2019). Though Florida is mainly urban, a quarter of the state is still rural, making transportation difficult as the population of rural communities are spread throughout the county. "The Census Bureau defines rural as all population, housing, and territory not included within an urbanized area (50,000 or more people) or urban cluster (at least 2,500 and less than 50,000 people)" (The Florida Legislature Office of Economic and Demographic Research, 2019). These rural counties can be seen prominently in Northern Florida where the average per capita income (average income of person per year) is \$28,677-\$37,379 compared to Florida's per capita income of \$47,684 in 2017 (The Florida Legislature Office of Economic and Demographic Research, 2019).

Transportation can also become a barrier for some students in receiving a proper education. According to a report by the Florida Department of Transportation (FDOT), a government department responsible for establishing, maintaining, and regulating Florida

transportation, 55.5% of rural counties' populations received a high school diploma and 9.3% have obtained a four-year college degree (Office of Policy Planning Florida Department of Transportation, 2018). To solve these issues caused by poor transportation in rural and LMI communities, public transportation, private transportation, and roads need to be reevaluated and improved. Transportation and technology must merge to offer new ways for all Floridians to get where they need to go. This will in turn help to elevate their financial capability and benefit all Floridians.

Public transportation is an important type of transportation as it is available to the public across all income levels. This type of transportation is affordable, reliable, and greatly impacts low to moderate income (LMI) communities. According to Art Guzzetti, the vice president of the American Public Transportation Association's (APTA), "Transit systems across the country are making themselves a more mainstream option for the community as a whole" (Maciag, 2014). Having access to jobs, food, healthcare, and an education, all rely on the ability to get around on an affordable price. Throughout the years, public transportation has grown to be broader with their ridership base. Many of our citizens have decided to go carless and ride their city bus to save money. For this project, I reached out to my aunt Julie, who lives in San Francisco, California. Due to the high cost of living, she relies solely on public transportation. She takes the bus to get to work, run errands, and to see her friends.

This is an example of how public transportation can meet the needs of any small town. Locally, we have the Lynx bus and SunRail. The Lynx bus provides transportation throughout the entire city of Orlando. The bus goes through Orange, Seminole, Osceola, and parts of Polk and Volusia Counties. In addition to their regular bus routes, Lynx does offer five additional programs to reach people in rural communities, the disabled who wish to carpool, and roadside

assistance. To further help low to moderate income communities, Lynx could add more stops, offer free bus passes to persons who qualify, and run 24 hours a day to help those workers who may have a night shift. Another form of public transportation is SunRail.

The SunRail is a passenger rail system that runs through the city of Orlando, Volusia, Seminole, Orange, and Osceola County. It has 17 stations over 61.5 miles. From my experience, the SunRail has multiple benefits. The tickets are affordable, the trains are air conditioned and comfortable to ride in. However, they stop running by 10 P.M. and do not run on weekends. People who work on the weekends or late at night are impacted by losing their reliable transportation. They are forced to look for alternatives which may cost more money. Having SunRail available on weekends will decrease traffic on the highways and alleviate congested parking lots. In addition, SunRail would benefit more people if their rail went to more points of interest. For example, many Central Florida residents work at the theme parks. They are often paid minimum wage; using the SunRail could save them money. In the final analysis, adding more bus stops and adding extra days/hours to our bus/train schedule, will help the reliability in LMI communities get from place A to B easily. However, there is another form of transportation available for more of a cost, private transportation.

Private transportation in Florida is usually the most preferable option due to the amount of time it takes to get to location and lack of accuracy that public transportation has when taking people to their destination. Currently one of the options of private transportation involves ride hailing companies. One of the biggest companies in Florida is Uber Technologies Inc (Uber). Uber is a company with a multitude of options when it comes to transportation, users can choose to ride with other users, ride by oneself, or even have food delivered to them. Uber claims to have a positive economic impact on Florida's economy as well as saving Floridians money.

“Uber saves 8.3% of its riders costs associated with car ownership, as they report it enables them to eliminate the need for a second car and in some cases even a first car” (EDR Group). 11.8% of Uber riders in Florida own no vehicle compared to 7.1% of all Floridians who own no vehicle (EDR Group). This shows that private services offering ride services can be beneficial towards Floridians with no vehicle.

Though Uber claims to be affordable, saving riders in Florida \$1.5 billion annually however, it is more expensive than it claims. Statistics provided from Statistica, an analytics-based software, Uber and Lyft (another ridesharing company) both have increased their price in service over the years. As of 2019, Uber has an average cost of \$25.37 per ride and Lyft being \$25.5 per ride compared to 2017 which was \$22.56 for Uber and \$17.69 for Lyft (Mazareanu, 2020). Furthermore, the purpose of the trip for riders is not mainly for business or commuting to school. 39% of Uber riders in Florida ride for leisure, 26% is personal while 25% is for commute and 10% is for business (EDR Group). Mentioned previously, the average income of Floridians is \$47,684, making it costly for Floridians to pay about \$25 to get to and from work not including trips to the store and other family members. Furthermore, those living off social services such as food stamps, reduced school lunch, and incentives to take the public bus would not be able to afford a trip. Ridesharing companies are not ideal for transporting Floridians daily and should be used sparingly, mainly for trips related to tourism.

There are many Floridians driving their own or a company’s vehicle on the road. This is a main form of transportation in Florida. There are over 16,600,353 registered motor vehicles that are registered on Florida’s roads in 2016, with the majority coming from trucks and automobiles (Wagner, 2018). But due to the virus COVID-19, it has put restrictions on the amount of people coming out of their homes. This pandemic has strengthened research and reason for creating

autonomous vehicles. From Bloomberg, a data, software, and media company, “In early 2018, General Motors Co. pledged to have a fleet of self-driving taxis in San Francisco by 2020...Daimler backed away from its pledge to put 10,000 sentient taxis on the streets by 2021...[And] Tesla promised to have 1 million autonomous ‘robotaxis’ on the road by the end of last year” (The State of the Self-Driving Car Race 2020, 2020). With the implementation of driverless vehicles this can provide multiple benefits for Floridians.

With the access of driverless cars ridesharing companies can just privately own their own autonomous vehicles without the need of a driver. Furthermore, these vehicles can transport medical supplies to hospitals, provide food, or even a possibility of preventing less road crashes. However, people in LMI communities will most likely not be able to afford these types of cars, this is one of the biggest barriers to self-driving cars. According to Forbes, an American business magazine, “The average cost of a new car in the US is over \$30,000. For the past two decades, the price of the average car sold has increased at slightly less than the rate of inflation” (Ritchie, 2019). Though cost is taken into consideration with companies such as Tesla trying to reduce costs by designing smaller and compact cars and a system that does not depend on lidar (method of measuring a target with lasers and a sensor). But these cars will still be expensive compared to their modeled counterpart.

Floridians in LMI communities most likely cannot afford a car in one payment without saving money for a driverless car. To increase the amount of autonomous car owners there should be a loan system exactly like loaning out a regular car. However, interest rate is a factor that is not decided by the car manufacturer, dealership, nor consumer, but a lender company. A lender company can decide if it wants to loan you money with a percentage of interest depending on your financial history such as credit score. Overall, owning a self-driving car is still virtually

like owning a car with no interface or software to drive itself, because both require insurance and fuel, etc. Though cars may be used frequently in Florida privately, there is another form of transportation that can be faster than vehicles on the road.

Though commuter rail systems like SunRail are privately owned but funded by the government for public use, there can be solely private commuter train services. An established private, passenger railroad company already in Florida is Amtrak, it has routes throughout the United States, even one in Sanford, Florida directly to Washington DC (Amtrak Train Routes in the South, 2020). However, Amtrak faces multiple challenges as a for-profit company. From Curtis Tate, a transportation reporter for USA Today, an international American news site, says Amtrak "...plans to cut 20% of its workforce through voluntary buyouts, early retirements - and layoffs, if necessary - beginning Oct. 1", while asking for \$1.5 billion additional funding (Tate, 2020). This event is occurring not just with Amtrak but other transportation companies especially private due to the restrictions caused COVID-19. Also, Amtrak's train system is not mainly designed for travel within a state but interstate travel (travel between states), which it makes up for with contracted buses, vans, and taxis linked to Amtrak stations. Though Amtrak is not meant for daily commuting and business it can still be used as a model due to their service in transportation and chance to promote expansion in Florida with possible changes in prices due to communal use.

Soon there will be a new for-profit train system in Florida. From Flapol, a Floridian based political media platform, discusses the importance of the first new major private railroad in America. Scott Powers, a political journalist with over 30+ years of experience at Orlando Sentinel and Columbus Dispatch says, "After about seven years of planning, regulatory, litigation, legislative, and financing struggles...the first trains would roll into Orlando in mid-

2022” (Powers, 2019). Since the Orlando-Miami train system will be one of the first high-speed, privatized passenger train systems in Florida it faces challenges such as providing its own money for constructing and workers as well as going through the government for proper authorization. However, with Virgin Trains USA they will improve the quality of trains, rails, and area around them. “[The]...project involves double-tracking much of the corridor, upgrading existing tracks, improving street crossings and bridges, and adding in high-tech positive train control safety systems. Most of that will take place within a railroad bed that has been there for more than 100 years” (Powers, 2019). Skyscanner, a travel agency, prices a one-way ticket from Virgin Trains USA at \$10 and gives the current top-speed of train at 110 mph and future to be 125 mph (Schrader, 2019). Possibly in the future Virgin Trains USA or other companies will consider expanding their systems to provide an affordable and fast form of transportation for Florida including rural and LMI communities.

Promoting and incentivizing for-profit passenger train systems to some may feel threatening as they may try to corner other competing and government funded companies, if companies were to take advantage of the consumer the government can regulate companies by halting growth or increasing competition. With for-profit train companies, the federal government can promote these businesses in Florida by providing subsidies (money given to businesses by the government to keep service prices low or competitive), providing tax credit (reduces money owed from businesses by the federal government), or even a stimulus or economic relief package for major passenger train transportation. For example, a \$1 billion relief package was provided to Amtrak under the bipartisan CARES (Coronavirus Aid, Relief, and Economic Security) Act to keep transportation active and employees paid for their work (Tate, 2020). For these for-profit passenger train companies, they can lease, buy, or share railroads with

other passenger train or freight line companies for convenient transport. Or another option done by Virgin Trains USA, is to construct your own railroads. Stated by journalist Paul Scicchitano from Patch, a local news platform, “The new phase of the railroad includes 170 miles of new track...225 million pounds of American steel, 490,000 ties, and 2.35 million tons of granite and limestone that will be transported by 20,000 rail cars” (Scicchitano, 2019). Possibly when these businesses gain more riders, they can provide benefits such as memberships for companies as employee benefits for Floridians to get better deals on transportation and more riders for these businesses. Through privatizing Florida’s passenger train system, it can in the future provide affordable means of travel between cities and counties for a better commuting distance than the public train system. However, there are other roads besides railroads that can provide movement for vehicles other than trains.

Both public and private transportation can benefit from improving toll roads and highways. Florida is the state with the greatest number of toll road miles throughout, clocking in at 657 miles (Most Expensive Toll Roads, 2017). If Florida has so many miles of toll roads, which are supposed to help traffic flow smoothly, then why is there still an issue with congestion on the highways? The answer may lie in who controls the toll roads.

As of now, Florida’s toll roads are controlled by the public sector. The public sector uses “taxation as a main source of funding” (Hall, 2013). However, “there is no personal income tax in Florida” (Florida Tax Guide, 2020). This means that compared with other states that do have a personal income tax, Florida is limited in the amount of funding that it can put towards its toll roads. This becomes a greater problem when considering that Florida is the state with the most toll road miles.

About reducing traffic on highways and toll roads, road improvement projects are common. While these projects hypothetically solve their intended solution, many of them fall short due to lack of funding. For example, the I-4 Ultimate project near downtown Orlando is behind schedule and has surpassed its budget (Spear, 2019). The longer the construction is on the road, the more traffic there will be.

Perhaps the solution to all of this lies in the hands of the private sector. Unlike the public sector, the private sector does not rely on taxes for funding. Instead, the private sector has a profit incentive, which means that it is funded by the revenue that it makes (Pettinger, 2019). If toll roads and highways were given to the private sector, then it would be in the best interest of the private company to complete the road improvement project as soon as possible so that the company could earn back the money it has already invested into the roads. With the COVID-19 pandemic, person-to-person contact at toll booths may not be the best idea. When the private companies improve the highways, they could instead use a contactless model for the tolls. This would entail express lanes across all lanes on the highway, where a product such as SunPass (commonly used in central Florida) would collect tolls electronically. For the drivers who do not own a SunPass product, high speed cameras can be used to capture their license plates. With this technological improvement, the companies would cut expenses because of no employees at toll booths, it would reduce spread of COVID-19, and it will allow all drivers to reach their destination quicker instead of having to stop and pay at a toll booth.

Some people might say that giving a private company control over the toll roads is an unfavorable idea, for fear that a monopoly or oligarchy of toll road companies would drive up toll prices. However, if the state were to allow a single or a few companies to control the toll roads, then the state would also set regulations on the tolls so that the private companies could

not charge outrageous tolls. Public-private partnerships are also an option that would decrease the risk of private companies jacking up tolls, while also increasing the success of the road improvement projects. All in all, both privatizing toll roads/highways and public-private partnerships will help to reduce congestion on the highways and get people where they need to go faster.

In summary, Florida's current systems of transportation are not the most appealing to its citizens. But with time and effort, these solutions can be implemented to make transportation in Florida better than ever. Even though 45 out of 67 counties are urban the average per capita income in Florida from 2017 is \$47,684 with the lowest income counties being in Northern Florida at 30,645-33,340 (The Florida Legislature Office of Economic and Demographic Research 2019). For public transportation to work more effectively for its citizens, expansion is required for both Lynx and SunRail. It is necessary for both outlets to run more places, and more often. LMI workers often work late night shifts and/or work at the many tourist attractions in the Central Florida area. Another area of implementation is promoting the growth of private passenger train companies to provide a better quality of service at an affordable price such as with Virgin Trains USA providing major, high-speed transportation to Orlando to Miami later in 2022. The federal government can help promote such businesses by providing incentives as subsidies, relief packages, tax credit, and other incentives, in hopes of eventually expanding its services throughout not only Central Florida but Southern and Northern Florida.

However, innovations in transportation can prominently be seen in cars, specifically in cars being capable of driving themselves. This is becoming increasingly relevant as many Americans cannot come outside in large groups and must decrease interactions amongst each other due to COVID-19. For those who cannot afford a driverless car there can be a loan system

exactly like loaning a car that needs a driver. In hopes of more Floridians buying driverless vehicles this may potentially decrease actions amongst people, make commuting easier for those who are underage and do not have a license, and get medical supplies to hospitals that are in need of them. However, the roads that these vehicles drive on need improvement.

The privatization of toll roads and highways, or even public-private partnerships, will allow road improvement projects to be more successful and to be finished quicker. This will ultimately smooth over the congestion along Florida's highways, allowing people to reach their destinations faster and easier. The goal of these solutions is to get Floridians to where they need to go, whether it be work, school, the grocery store, etc. By enabling them with better transportation, this will increase their financial capability. They cannot earn an education if they cannot get to school and they cannot earn money if they cannot get to work. Hopefully if these solutions are taken into action they can provide Floridians including those in LMI and rural communities chances to increase their financial situation if they have quick and cheap transportation so a car would not be necessary or save time or money from being wasted in heavily congested traffic when that time could be better used working or going to school.

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