MARJA ESTRADA MACHADO
3/19/22

POLICY MEMO
Investing in Artificial Intelligence to Reinforce Florida's Public Transportation: *The Social & Economic Benefits*

Executive Summary

The transportation industry is being transformed by Artificial Intelligence, which has already been used in a wide range of transportation applications, from assisting driverless vehicles to improving traffic lights and signs. In addition to making our lives simpler, A.I. has the potential to improve the safety, competence, and efficiency of all modes of transport. According to the U.S. Federal Highway Administration (2021), in December 2021, we had a bit over 18 million automobiles in Florida, and this number is expected to rise as the population increases. If we don't act, our infrastructure may not be able to keep up with the demand. Amplifying our city's public transportation fleet supported by A.I. will help to reduce traffic jams while simultaneously being a source of new jobs. This could be a smart solution in the short term.

Background Analysis

In 1955, retired Stanford Professor John McCarthy invented the concept of "Artificial Intelligence," which he described as "the science and engineering of creating intelligent machines" (Manning, 2020). From its beginning, A.I. targeted the telecommunication, logistics, and urban infrastructure industries by developing autonomous cars (driverless), analytic data networks, and operating systems to improve transportation services. A.I. is also being used to predict consumer behavior, locate problems, minimize pollution, and assess human patterns (Niestadt, Debyser, Scordamaglia, & Pape, 2019). More recently, A.I. has been used to fight crime through facial recognition software (Galston, 2018).

Recently, Miami has just been crowned the U.S.'s newest I.T. center (BrainStation, 2021), where multiple innovative projects are being developed, reshaping communities into high-tech districts. Big data technology is effectively linking people with the city’s infrastructure, analyzing climate change, and improving public transit by providing drivers with options for shorter travel times. Connected Bikes is an initiative just being implemented in Miami-Dade County, born from the cooperation between Siemens' Yunex Traffic vertical and a mobile application. It prioritizes bikers at traffic signals around the city (BrainStation, 2021). Miami-Dade Country also granted in 2020 a $150 million contract to Siemens Mobility to modernize 2,900 road junctions and transport routes with an intelligent system that updates traffic flow continuously at traffic signals, utilizing data from sources around the city. Its goal is to alleviate traffic jams and enhance the city's traffic flow (Tomas, 2020).

While A.I. improves road transport, it also presents significant barriers. Although A.I. decreases fuel usage through electric vehicles (E.V.), cutting transportation costs may increase traffic as more people choose to drive instead of using public transportation. There are also challenges concerning unforeseen repercussions, like cyberattacks. For example, AI-powered automated cars need access to private or restricted data. The safe operation of the vehicle, its passengers,

and other motorists could be jeopardized if third parties have unrestricted access to data without being detected. Likewise, there are additional implications concerning the responsibility of judgments made by artificial intelligence instead of people. According to the research from EPRS (2019), automatic vehicles that are not fully autonomous may create distracted drivers. If a risky situation arises, a distracted driver will be slow to intervene.

Recommendations for Policy Alternatives

- Invest in A.I. for our city's public transportation.

The city of Miami, in particular, needs to build a strong and environmentally friendly public transportation system. The current number of buses and the limited reach of the Metro Rail are not enough to reduce private vehicles' traffic flow. Even with an increase in personal electric vehicles, our infrastructure will still be compact, affecting commute times and requiring expensive maintenance. The Florida government spends over $30,000 per mile of road built, and the national average cost of road maintenance is $18,668 (mHelpDeskNews, 2018).
Implementing A.I. in the public sector goes further than providing a means to fight crimes through face recognition software. It entails maximizing fuel use and minimizing traffic congestion by implementing smart devices that adjust routes according to the traffic conditions.

Implementation

Funding for public transportation comes from sales taxes, general revenues, development fees, and the federal government. Aside from gas taxes, road construction and repair expenditures cost each household approximately $597 annually. These expenditures will remain constant if we continue utilizing our road networks, and they will continue to rise as other roads are built to satisfy demand. However, our government spends more non-user tax funds on building roadways than developing pedestrian, cycling, and metro train connections (mHelpDeskNews, 2018).
On the other hand, public transportation operations are a major source of employment. According to a report prepared by Weisbrod and Reno (2009) for the American Public Transportation Association, data shows that for every $1 billion spent annually on public transportation, an average of 36,000 jobs are sustained. A $3.6 billion increase in retail sales generates $1.8 billion for our national GDP- $1.6 billion in worker income and $0.2 billion in corporate revenue. Nearly $500 million in federal, state, and local tax revenues results from enhancing the public transportation sector (Weisbrod & Reno, 2009).
Given the economic impact our current road management presents, we must act in favor of enhancing innovative and efficient public transportation. As our government has agreed to provide financial incentives to those citizens who purchase E.V.s or solar panels, why not offer our public transportation department similar financial support in the form of investment? The amount of money required to enlarge our public transport fleet reinforced with A.I. will be smaller than what our government and citizens spend on building new highways or maintaining old roads. Furthermore, this recommendation will create more jobs, protect our environment and transportation infrastructure, while positively impacting our national GDP.

References

BrainStation. (2021, July 21). *4 Smart City Innovations Bringing Miami-Dade Into the Future*. Retrieved from BrainStation Magazine: https://brainstation.io/magazine/4-smart-city-innovations-miami

FHWA. (2021, December). *State Motor-Vehicle Registrations - 2020*. Retrieved from U.S. Department of Transportation Federal Highway Administration: https://www.fhwa.dot.gov/policyinformation/statistics/2020/mv1.cfm

Galston, W. A. (2018, September 13). Why the government must help shape the future of A.I. *Brookings.edu*.

Manning, C. (2020, September). *Artificial Intelligence Definition.* Retrieved from Standford University Human-Centered Artificial Intelligence: https://hai.stanford.edu/sites/default/files/2020-09/AI-Definitions-HAI.pdf

mHelpDeskNews. (2018, April 2). *Road Maintenance Costs in Each State*. Retrieved from mHelpDeskNews: https://news.mhelpdesk.com/mhelpdesk-community/road-maintenance-costs-in-each-state/

Niestadt, M., Debyser, A., Scordamaglia, D., & Pape, M. (2019, March). *Artificial intelligence in transport: Current and future developments, opportunities and challenges.* Retrieved from European Parliamentary Research Service.

Tomas, J. P. (2020, June 12). *Siemens Mobility strikes smart traffic deal with Miami-Dade*. Retrieved from Enterprise IOT Insights: https://enterpriseiotinsights.com/20200612/channels/news/siemens-mobility-inks-smart-traffic-deal-miami-dade

Weisbrod, G., & Reno, A. (2009). *ECONOMIC IMPACT OF PUBLIC TRANSPORTATION INVESTMENT.* American Public Transportation Association.