The Struggle for Safe and Convenient Micromobility in Washington, DC.

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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STS Research Paper

Introduction to Micromobility Advocacy

How does a minority transportation group achieve their goals in the face of backlash? In the Washington D.C. metropolitan area, cars have dominated the transportation sector; sixty percent of commuters drive alone as their primary method of transport (Berkon, 2020). Recently, new micromobility advancements threaten to change this dominance. The share of people in Washington, D.C., biking to work almost doubled from 2010 to 2015 (Moore, 2017) and 20 new miles of protected bike lanes were added during 2019 to 2022 (NACTO, 2023). The increase in micromobility use has resulted in conflicts regarding infrastructure plans. To many drivers, the streets are for motor vehicles, treating micromobility as a nuisance. Actor Network Theory (ANT) is used to characterize the interaction between the major stakeholders and their relationship and influence on micromobility. The relevant major actors involved are the micromobility rideshare companies, micromobility users, motorists, real estate owners, and the state departments of transportation. The main objective of this research is to examine how micromobility proponents advocate for improvements in infrastructure as a minority in the D.C. area transportation sector.

Micromobility Discourse and Transportation System Network Analysis

To adequately organize all the individual actors and relationships in the transportation system, two main methods of research are required: discourse analysis and network analysis. The discourse analysis uncovers how actors influence the infrastructure planning process, providing the information necessary for the actor-network graph. The analysis also provides insight into the various group's agendas and opinions on one another, informing the relationships in the actor network. The main sources for the discourse analysis included news articles, videos, and

advocacy group websites found using keywords such as “micromobility”, “transportation”, and “infrastructure”. Lastly, the network analysis compiles all these sources of information together to display the actors and interactions in the complex transportation system. The results and discussion section organizes this information split into micromobility advocate’s current methods of influence and ends on an overview of what needs to be improved upon to maximize their goals.

Transportation System Social Components

Micromobility users, mostly bicyclists, want safer bike lanes coexisting with cars (Woolsey, 2023). The Washington Area Bicyclist Association (WABA, 2022) is an advocacy group built upon the idea that streets are for people, and they push for “a just and sustainable transportation system where walking, biking, and transit are the best ways to get around”. The rideshare companies, namely Lime, Lyft, Veo, and Spin, compete against one another for profit while pushing towards a world less dependent on cars (NACTO, 2019). Lime (2023), which has the largest presence in the D.C. area, aims to build a future where transportation is shared, affordable and carbon-free. The rideshare companies and micromobility users have a close relationship as they depend on one another. Sharing similar ideas about streets serving micromobility users, the WABA (2022) is partnered with both Lime and Lyft and all value sustainable transportation.

In contrast, motorists want to reduce car traffic congestion and push to remove micromobility infrastructure when they feel it interferes with their daily commutes (Wagner, 2022). Motorists’ reject micromobility infrastructure that interferes with car traffic based on the idea that streets are for cars, therefore they should be prioritized. A distinct group that exists alongside the motorists are car manufacturers. The trade association, Autos Drive America

(ADA), represents this participant group by combining twelve international automakers with large presences in America (Andrews, 2023). Operating as for-profit car manufacturing companies, their material interests are at the core of their goals. On ADA's (2022) website, they promote their agenda through values such as American workforce development and positive community impact. Their interests lead to opposition in micromobility projects that remove current car infrastructure which includes most projects in the D.C. area.

Another group that has opposed micromobility infrastructure are the business owners, residents, and real estate developers located on streets with proposed projects. In downtown D.C. on K street, a new project was set up to add physically protected bike lanes while removing two car lanes (Banister, 2023). More than 120 business owners and 2,700 residents in the corridor signed petitions organized by the group Save Connecticut Avenue, which protested the installation of the bike lanes. Save Connecticut Avenue is an organization founded directly on preventing the proposed bike lanes due to fear of lost business from the lack of parking and greatly increased car traffic (Dougherty, 2023). As they state on their website, their core idea is that "if you cannot park, you will not shop" (Dougherty, 2023). As business owners, their material interests are their priority and combined with their ideas that parking is required for good business, they highly value the current car infrastructure of lanes and large quantities of street parking spaces.

The final major actor, and arguably the most important, is the state departments of transportation including Maryland, Virginia, and D.C. These departments plan infrastructure projects and pursue transport policies that have political support. When the D.C. Department of Transportation (DDOT) organized their project to overhaul K Street, they included plans to construct bike lanes and reduce the number of car lanes. Upon heavy opposition from the

aforementioned groups with interests in cars, they settled to remove the bike lanes late in the development process (Banister, 2023). Along with political support, financial impacts are also considered. For D.C., the decision to change plans was partly based on the idea that less parking results in less business and less office space used, both of which equate to less tax revenue for the city (Banister, 2023).

Applying Actor Network Theory

Actor-network theory (ANT) is a science, technology, and society (STS) framework developed by Bruno Latour in the 1980s that defines actors uniquely and bridges the gap between previous frameworks and the evolution of technology (Crawford, 2020). Instead of defining actors as willful or intentional agents, they are defined as entities – human or nonhuman – that influence the activity of a sociotechnical system (Crawford, 2020). Actors are characterized as their relationship between each other and form an interconnected network defining the entire techno-social system.

A primary characteristic of ANT is its descriptive nature, telling stories about how relationships assemble or do not (Law, 2007). Using ANT to describe the complex relationships within micromobility transportation in a modern technological era is essential to capture all relevant actors. Improvements in micromobility technologies have had drastic impacts on the overall D.C. transportation system. ANT also places a heavy emphasis on the dynamic nature of these networks. Actors and relationships are not fixed, and translations can occur where actors shift or relationships are altered (Law, 2007). Examining the current state of transportation requires this type of thought process as new technologies are continuously built and have the potential to change the dynamics within the entire system.

Critizisms of ANT argue that it gives agency to non-human entities, usually in the form of technology. Many argue that agency is what separates humans from technology and they fundamentally cannot be described in this manner. Furthermore, critics point out that research based on ANT is entirely descriptive in nature and is subject to the biases of the researcher. Researchers have to make decisions on what to include in the network, which may lead to inaccuracies in the analysis.

Examining Micromobility Advocacy Strategies and Challenges

To effectively influence both public opinion and government agencies, micromobility advocates organize into groups such as the Washington Area Bicyclist Association (WABA). Despite being focused on bicyclists, WABA acts as a representation of all micromobility groups as they have shared interests and have published policies supporting shared scooter programs (WABA, 2019). These advocacy groups hold events to promote micromobility usage to the public and lobby for improvements in current transportation infrastructure. Other actors in the network that have contradicting goals with these micromobility groups create conflict, specifically residents and motorists on the roads under development. These actors push to remove infrastructure plans that they feel harm their business or method of transportation. Micromobility groups require a combination of direct lobbying, positive public opinion, and opposing group alliances to accomplish their goals.

Using the information in the background section, ANT is applied to the transportation infrastructure system and all applicable actors. Informed by these relationships and influences on one another, the actor network graph showcases the most important aspects of each actor. The results of such are shown below in Figure 1.

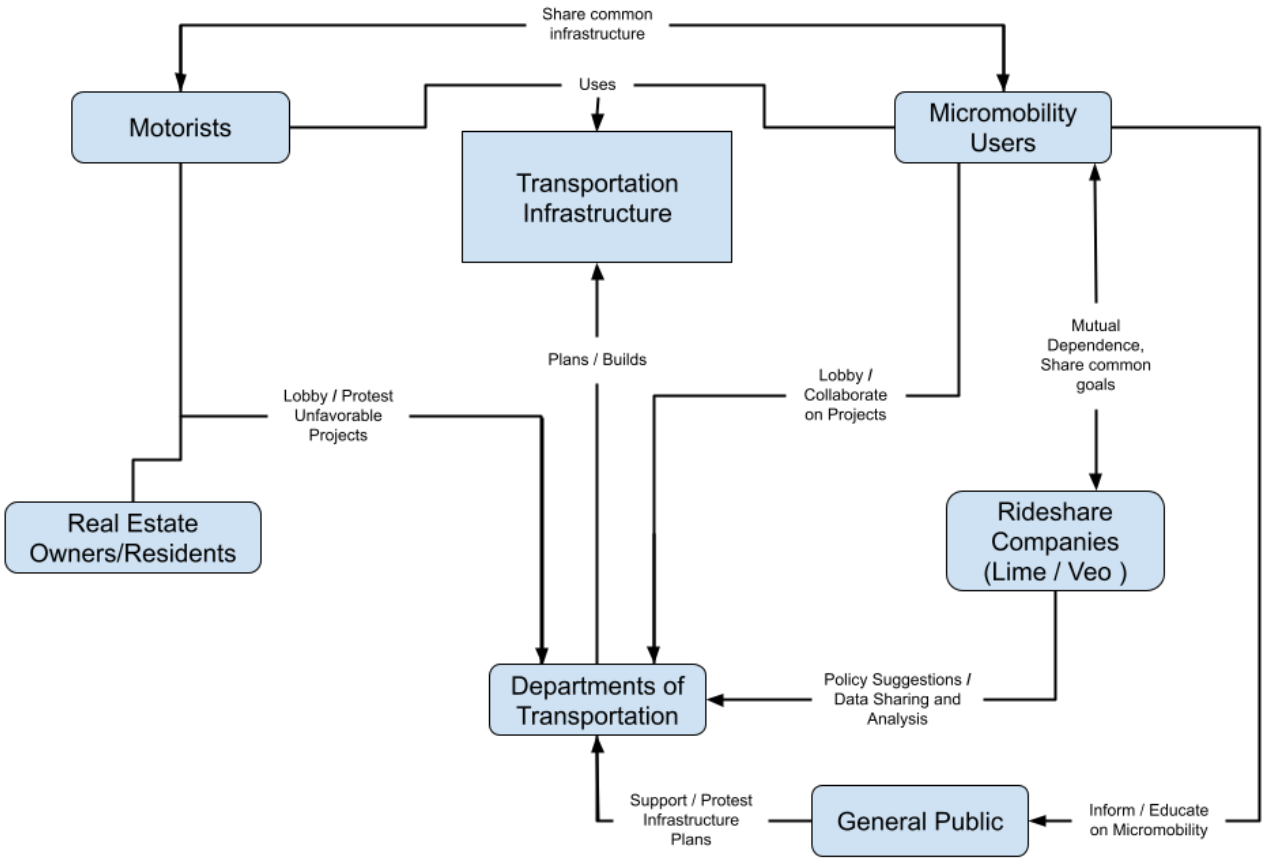

Figure 1. Actor Network Theory Diagram of relevant actors in the transportation sector around the D.C. and Northern Virginia area. (Dutt, 2024).

Micromobility Advocacy Strategies

Micromobility proponents attempt to directly influence infrastructure planning through their lobbyist groups. This relationship is conveyed in Figure 1 through the interaction between micromobility users and the local governments. Figure 1 also displays the only direct connection to infrastructure is through the government agencies, highlighting their importance in the infrastructure creation process. Effective lobbying has proven to result in favorable outcomes. The largest group, the Washington Area Bicycle Association, has created a relationship with the

departments of transportation in Virginia, DC, and Maryland, working together in a mutually beneficial arrangement (WABA, 2023). Bicyclists can voice their opinions and concerns on any new projects, while city planners can account for these concerns early in the development process. Furthermore, the DDOT is partnered with WABA to educate the public about safe bicycling and helps fund some of their programs (DDOT, 2022). In this agreement, the DDOT benefits from WABA's expertise on traveling via bike which helps new riders learn and reduce crashes. Through this relationship. WABA leverages their knowledge to inform DDOT of the safest intersection, lane, and bike route designs, helping shape new projects with safe micromobility options. Overall, the relationship between the department of transportations and micromobility users is multifaceted, consisting of lobbying influence for better micromobility projects and collaboration for public safety. The network analysis displays this relationship in Figure 1 as a connection between the two groups.

City planners are not just listening to bicyclists, as they select projects based on their political and public support. The general public actor in the network either acts neutrally towards micromoblility development, while the motorist group usually contents these projects. As a minority transportation group, micromobility users are at an inherent disadvantage in terms of political power against motorists. Therefore, advocates need to influence the general public's opinion on the importance of safe micromobility to increase their overall support. Given that the public may have no direct interest in biking or shared scooters, it is up to these organizations to educate and provide positive viewpoints on their adoption. One specific example of such is the creation of the Friendly City Trail in Harrisonburg, Virginia with the support of the Shenandoah Valley Bicycle Coalition (SVBC). Opened in 2023, the city trail connects neighborhoods with three major schools and two parks (Hartman, 2023). The path opens up micromobility

transportation options to residents living nearby, including the option to bike or walk to school, the park, or a golf course. By providing these alternative safe routes of transportation, the SVBC positively influenced resident's opinions on micromobility. When members of the general public, such as residents, start to use these bike trails, they translate into micromobility users shown in the network in Figure 1 and can help push for further infrastructure improvements. The difficulty with this approach is that it requires infrastructure improvements to come first, which is complicated when the projects require public support prior to their implementation.

To garner public support prior to infrastructure advancements, micromobility advocates have multiple methods. One of the main strategies is through hosting public events focusing on micromobility along with fun festivities and partnering with adjacent organizations. The Maryland Coast Bike Festival (MCBF) is a prime example, bringing together the community to enjoy bicycle rides along with local food and family activities to kick off the summer (MCBF, 2023). The food and activities attract families and residents to attend while introducing them to the possibility of biking recreationally, emphasizing the environmental and health benefits of micromobility. Another event, BellRinger, unites bicycling with cancer research. The event consists of a bicycle race, live music, and food with 100% of the funds raised supporting Georgetown University's cancer research center (Bellringer, 2024). Through the association with furthering cancer research, public perception of bicycling, or micromobility, increases greatly.

The last major public educational method that organizations use is informational meetings which can focus on a wide range of micromobility aspects. By providing educational resources and classes, micromobility groups reduce barriers for potential members. For example, WABA provides adult learn to ride classes for those looking to get into biking or scootering either for free or at a low cost (WABA, 2023). Helmets and bikes are provided, allowing

attendees to try riding before fully committing to buying a bike and the additional gear required. Removing these costly hurdles allows members of the public to try bicycling that previously could not, increasing the number of members shifting to micromobility users in the network shown in Figure 1. Members of the general public that translate into micromobility users enable more support for infrastructure projects, allowing the micromobility actors to reach their goals. More political support for infrastructure projects by the general public positively influences the government agencies decisions concerning these projects.

Hindrances to Micromobility Infrastructure

For some transportation projects, micromobility takes a backseat to the demands of others. Most recently, in D.C., the plan to build protected bike lanes on K Street was scrapped by the city when hundreds of residents and business owners protested (Banister, 2023). In this case, residents, business owners, and motorists held more political influence over the project than micromobility users. To get safe micromobility infrastructure built, advocates need to either compromise with these opposing groups or convince them that their concerns are unfounded. In terms of compromises, WABA helps the DDOT draft road plans while considering car street parking and car lanes when determining what type of bike lane to use. Many different types of bike lanes exist with varying levels of security, including shared lanes, buffered lanes, protected lanes, and paths (Velotric, 2023). Bike paths are entirely separate from car lanes and provide the highest safety while shared lanes place the rider directly next to cars with no physical separation. The organization's goal is to maximize safety within the physical boundaries of the street while attempting to keep motorists' content with their lanes. Since physical space requirements increase as the safety level of bike lanes increase, organizations must make compromises with which bike lane they select to ensure the plan has enough support to pass.

WABA recognizes businesses as valuable stakeholders of infrastructure projects as the city's financial success is directly proportional to theirs. Recently, businesses owners have opposed the proposals of less street parking to make room for bike lanes, citing claims like "if you cannot park, you will not shop" (Dougherty, 2023). To combat these claims, organizations such as the Urban Land Institute have published research detailing how shoppers transporting on micromobility spend more monthly as compared to car shoppers (ULI, 2016). These findings are contrary to the business owners' beliefs and even show that improved micromobility transportation options improve business. Advocate groups that successfully convince business owners that micromobility will help them gain more support as those business can help lobby infrastructure projects as shown in the actor network theory diagram in Figure 1. More actors supporting micromobility directly through the department of transportations will result in more approved projects with safe transportation options.

Shortcomings

While micromobility advocates push for their safety in the many avenues discussed above, there exist many facets where they fall short. At its core, micromobility in the United States is only important to the select few who enjoy it as a commute or recreationally. Micromobility is not already a main mode of transportation and is not regularly taught in the education system. Moreover, the proven health benefits of active exercise through micromobility are not emphasized in schools, leaving it up to communities to host events or educate the public on them. Some of the health benefits include decreased stress levels, increased muscle strength, improved joint mobility, and overall happiness (Ruiz et al, 2015). Kids may grow up learning to bike or ride scooters, but never take them seriously as a form of transportation. Advocacies need to step up and work with government educational groups to teach these benefits to young

students. Improving education will result in more micromobility users added to the network, shifting the power away from motorists and providing micromobility advocates greater ability to influence the department of transportation actors in building infrastructure.

Another major area where advocacies fail to address to opponents is the environmental impact of switching to micromobility as transport instead of using motor vehicles. These active modes of transport reduce fossil fuel usage and keep communities cleaner and healthier to live in. In a case study on New York's bike share program, Vincent Thorne estimated that from 2010 to 2019, a reduction of 3% and 18% of back carbon and nitric oxide concentrations could be attributed to the program in routes (Thorne, 2022). Both pollutants are emitted by motor vehicles and reduce air quality for humans. Thorne calculated that the sizable decrease in pollutants prevented up to $327 million dollars of social damages including mainly health impacts of the surrounding community (Thorne, 2022). Micromobility advocates again need to focus on educating the public about these potential benefits, showing that improvements in infrastructure benefit everyone – not just micromobility users. Micromobility projects continue to fall short in terms of public support as seen in the K Street project, and this avenue for improving public relations needs to be explored to prevent further failures.

Limitations

This research project is limited to its small research scope, neglecting to examine efforts in more successful micromobility countries including Denmark, Amsterdam, Japan, and Belgium. Furthermore, the data collection was performed through analyzing organization websites, which may not completely characterize their strategies and goals, possibly missing out on important details. It is also difficult to convey the complex social relationships through a

simple actor network diagram, as there are many layers and interactions within the actors that cannot be characterized.

Future Research

Future research should focus on cultural differences that exist between these countries and the United States, resulting in more car ownership within the states. Research into how to overcome these differences to increase micromobility use would be valuable to promote healthier living within the U.S. while lessening negative environmental impacts. Furthermore, the various bike lane designs can be studied to examine the most safe options for specific streets and how they can be implemented with the existing infrastructure.

Conclusion

Micromobility advocates in Washington, D.C. face a difficult battle as a small minority of the transportation system. To accomplish their goals, they first need to effectively collaborate with departments of transportation, directly influencing the source of the infrastructure. The general public opinion needs to be positive towards their movement if they want projects to come to fruition, so they host events to benefit and attract non-micromobility users. Competing groups, such as motorists, residents, or business owners, have large influences over city policies. Advocates need to either compromise in their plans or convince their opposers that their concerns are invalid. Currently, this is where micromobility proponents lack most. There is a disconnect between the information supporting infrastructure projects and studies supporting the financial decisions behind them. Furthermore, the United States falls short regarding active transportation education and awareness, indicating a need for systematic change within school

systems to promote these activities. Education on the health benefits on an individual level as well as on an environmental level are paramount to our society's continued growth.

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