STREETS FOR PEOPLE: BEST PRACTICES IN REPURPOSING ROADWAY SPACES

STREETS DESIGNED FOR PEOPLE: LEARNING FROM NEW YORK CITY

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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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Introduction

Streets around the United States are indistinguishable, geared exclusively towards motor vehicles. The United States has a huge dependence on motor vehicles, supported by transportation engineers and planners through their designs of streets. There is a need to change this social norm, by designing streets to incorporate alternative uses of transportation and improved pedestrian and bike infrastructure. Re-designing streets in the United States is a necessary step to provide sustainable streets and help mitigate the effects on climate change, positively impacting urban communities throughout the United States. During the Covid-19 Pandemic, cities began to convert streets to community spaces to support social distancing. Right-of-way space was reallocated to improved bicycle and pedestrian infrastructure, outside restaurant seating, and open spaces. The rise in re-designs have brought attention to the issue at hand, where the majority of current streets have an outdated and unsustainable design. However, there was insufficient public engagement to gather the community's input due to the conditions of the pandemic. To address this problem, my capstone team will be conducting research to survey and interview transportation planners and engineers who oversaw these projects, collect data using several research questions, and analyze the data to recommend new street design guidelines.

Today, our cities and societies are molded around cars, with highways cutting through cities. While there have been recent efforts to change this model, there are important economic and social factors that are preventing these changes from being widespread. These non-technical factors include government policy, social norms, and the auto industry (Badger, 2015). A failure to understand these factors will hinder the efforts to make more walkable communities and will instead increase global carbon emissions, promote a sedentary lifestyle, and weaken

communities (Virginia Department of Transportation, n.d.). By providing alternate modes of transportation and improving bicycle and pedestrian infrastructure, cities can help alleviate congestion and meet zero-carbon living (Aziz et al., 2018).

To understand the effects of the motor-vehicle on cities and the changes that are beginning to happen in streets, both technological and social factors must be considered. In the following section, I will outline the technical process for conducting an investigation with transportation planners and engineers that are designing streets, and analyzing how society is responding to these changes. Furthermore, I will apply Actor-Network theory to New York City's transportation network to identify human and non-human actors, and understand the success of its active transportation modes-walk and bicycle.

Technical Problem

In the past two decades, streets around the United States have changed the way excess urban space is used. While streets were originally designed with the focus on motor-vehicles, there has been a recent shift towards remarking streets to allow for community spaces, with improved bike and pedestrian infrastructure. Repurposing motor-vehicle space also includes examples of transforming curbside parking into outdoor seating, bike racks, and landscaping, and complete street conversions into community spaces like pedestrian plazas, bike boulevards, and dining streets. These changes have been seen to improve social interaction and increase satisfaction with people's communities (Semenza, 2003). The Covid-19 pandemic resulted in a dramatic decrease of vehicular traffic, which means streets were relatively empty and enabled speeding conditions. Cities around the world began to re-mark street right-of-way from motor-vehicle travel lanes and parking to create open space where people could participate in

recreational outdoor activities, and experience their communities using social distancing practices and in fresh air (Vance, 2020). A database created by Combs and Pardo (2021), compiled over 1,300 examples of public sector-led efforts to respond to the increasing demand for walking, cycling, and other non-motorized forms of travel in over 500 cities. However, with the pandemic causing closures and social-distancing, there was a lack of public engagement surrounding the repurposed streets. The normal procedures of city transportation agencies contacting residents to gather their input were not the priority during this time. This led to limited data on public and agency perceptions of these projects. Without data on the public's reaction to the changes made to street markings, it is not clear whether these projects were a success and if they were permanently adopted. The following is a description of an investigative study to better understand the recent repurposing of streets using several research questions. These research questions include the motivations behind the changes, whether they are permanent or temporary, what data was collected, and what were the costs and benefits of the street conversion projects. Utilizing the database created by Combs and Pardo, an extensive contact database will be gathered. The design team will then develop a survey and interview process to answer the research questions with US-based city transportation engineers and planners that were involved in overseeing the repurposing of street spaces. The survey will be sent to over 40 engineering and planning contacts, and full in-depth interviews will be conducted with 2-3 of the contacts to further explain their answers to the research questions.

Data compiled from both the survey and interview processes will be analyzed in a final report to understand what were the best practices and lessons learned from the repurposed streets. The next task will be to use this analysis to provide recommendations for changes and additions to the current National Association of City Transportation Officials (NACTO) urban

street design guidelines. These recommendations will be accompanied by renderings and diagrams. The research conducted in this project could help municipalities find the best strategies for repurposing street spaces, using parameters like location, scope, space allocation, and other factors.

STS Problem

In the 1950s, President Eisenhower signed the *Federal-Aid Highway Act of 1956*, to build the Interstate Highway System, thereby altering the way transportation would work in the United States (U.S. Department of Transportation, n.d.). The highways were designed to cut through urban areas, facilitating suburban sprawl (Buehler, 2014). Today, the United States is defined by its highway system, and is now heavily car focused. Transportation engineers and planners design streets and cities using cars as their users. Cars own and dominate street design (Thorpe, 2020).

With the rise of the automobile, pedestrians and cyclists began losing ownership of their streets. Automobile dependence has numerous drawbacks for both the environment and people. The transportation sector alone accounts for 23% of global emissions, with urban transport being the single greatest source and growing due to the increase in car use (Hawken, 2017). Since streets are primarily designed for cars, it has resulted in extremely difficult conditions for pedestrians to walk to their destinations without encountering disconnected and uneven sidewalks, dangerous conditions, and proximity to speeding cars. (“SRTS Guide: Sidewalks”, n.d.)

Designing streets for pedestrians and cyclists would result in less carbon emissions, and it would relieve traffic congestion in urban centers. Promoting walking and cycling provides more

livable communities, with more active lifestyles. In addition, it would also change the social norm in the United States. If more people walked or used their bicycle to get to their destinations, it would become socially acceptable and it would reduce the reliance on motor vehicles.

Although the United States is a car-centric country, there are notable examples of cities beginning to change the focus from cars to pedestrians on streets. The best example of this is New York City, New York, which has one of the largest subway systems in the world, allowing residents to be able to get to their destinations without ever using a car. In addition, the New York City Department of Transportation (NYC DOT) promotes sustainable modes of transportation, and recently has begun an Open Streets program which allows communities to embrace new public space. This program prioritizes actors, such as pedestrians and cyclists, by transforming streets into public space. The transformations are either temporary full closures, where streets are converted to no vehicle access and no parking, and partial street closures to give more right-of-way space to cyclists and pedestrians. NYC DOT also has numerous programs that are designed to improve pedestrian and bicycle infrastructure, with the largest bicycle network in North America. While the success of New York City's transportation plan is often attributed to the high-density area and large population, it fails to account for the importance of the role played by organizational actors such as the government, environmentalists, and residents. If we continue to base New York City's success on the geographic characteristics, we will fail to gain an understanding on how cities can convert their car-centric models to provide a more sustainable option.

Drawing on the science, technology, and society (STS) concept of Actor-Network Theory, I argue that government initiatives, environmentalists, population demand, transportation

capital, urbanization, and societal pressure worked to provide New York City's sustainable modes of transportation for citizens. This STS framework is centered around the idea that engineers exercise influence and power, by practicing heterogeneous engineering through building and maintaining successful actor-networks (Cressman, 2009). Actor-networks seek to identify and characterize a network builder, who uses human and non-human actors to accomplish a goal. The process of forming and maintaining an actor network is called translation. Applying this concept, I will show that New York City's network successfully incorporated multiple types of transportation, as opposed to other cities in the United States, which are still primarily focused on cars. To conduct this analysis, I will look at New York City's socio-economic data, investment in transportation, and past government decisions made regarding its transportation network. This analysis will lead me to understand how New York City was successful in having a grid of sustainable streets. Using this information, transportation planners and engineers can learn how to successfully shift car-centric cities to sustainably-focused streets.

Conclusion

The technical report will gather and analyze data from street redesign projects that occurred during the covid-19 pandemic. This study will be centered around surveying and interviewing transportation engineers and planners who were involved in overseeing the street conversion projects, with particular emphasis on whether these projects were temporary or permanent to see if the changes will be long-term. The results of this project will provide an understanding of whether the idea of "ownership" being given to pedestrians and cyclists had a

long-lasting effect. If people were used to claiming streets during the pandemic, they may now expect infrastructure and designs to hold them as the priority in streets.

The STS research paper will seek to provide more understanding on the success of New York City's pedestrian and cycling plan using Actor-Network Theory. The research involved in the STS portion will give insight on how New York City was successful in implementing sustainable approaches to street design. This study will help find tools that can be used to make pedestrian and cyclist centered street designs, replacing the street geared primarily for vehicles. Combining the research in both the technical and sts problems, transportation engineers and planners will be able to see the recent trends in giving priority to cyclists and pedestrians, and use the New York City case study to see how these trends can be made into permanent sustainable street grids.

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