BYPASSING THE BIKELASH:

Strategies for addressing opposition to bicycle infrastructure projects in Washington, D.C.

Julia Malmo-Laycock, MUP Candidate
Supervisor: Dr. David Wachsmuth

Submitted in partial fulfillment of the requirements for the degree of Master's in Urban Planning

McGill University
School of Urban Planning
April 2017

ABSTRACT

The bicycle is an increasingly popular mode of transportation in large North American cities, and there has been a demonstrated shift in the planning paradigm to incorporate the transportation and safety needs of this growing number of urban cyclists. There are good reasons for the encouragement of cycling as a mode of transportation: it is healthy, sustainable and it may promote increased mobility and access. Nevertheless, bicycle planners face significant barriers in the context of automobile-dominated urban areas; prioritizing road space or curbside use for alternative modes of transportation often generates criticism and opposition.

In this light, this research asks: what strategies can planners use to address opposition to bicycle infrastructure projects? Through interviews carried out with bicycle planning and project stakeholders in Washington, D.C., a city recently rated as one of the best cycling cities in the United States, this research analyses existing strategies planners use to address opposition to bicycle infrastructure projects and explores additional such strategies. Washington, D.C.'s controversial Eastern Downtown Protected Bike Lane Project is used as a case study.

Three categories of strategies emerge from the research: planning-stage strategies, communications strategies and meeting facilitation strategies. During the planning stage, it is crucial that planners engage with and educate communities early regarding long-range transportation issues. Comprehensive planning exercises also appear to be useful at this stage. In terms of communication strategies, explaining the purpose and need for bicycle facilities in a thorough manner, as well as tailoring project messaging to the audience in question, can be helpful. Finally, meeting facilitation could be strengthened by selecting a more suitable format and space depending on the audience and context, as well as by coordinating the attendance of officials from a variety of municipal departments and agencies that may respond to questions about related projects.

This research focuses on the Eastern Downtown Protected Bike Lane Project but the recommendations are meant to be applicable to other projects in D.C., as well as a range of other planning projects in cities across North America given the cross-cutting nature of the findings. Planners are encouraged to use these strategies as a helpful tool in the context of the iterative learning processes that must take place as planning practices and public opinion continue to evolve.

RÉSUMÉ

Le vélo devient un moyen de transport de plus en plus populaire dans les métropoles nord-américaines, entraînant un changement marqué de paradigme de planification, qui vise dorénavant à intégrer les besoins de déplacement et de sécurité de ce nombre croissant de cyclistes urbains. Il existe des bonnes raisons pour encourager le cyclisme en tant que mode de transport: outre ses bienfaits pour la santé et pour l'environnement, il peut augmenter la mobilité et l'accessibilité au sein des zones urbaines. Néanmoins, les urbanistes chargés de la planification pour le transport à vélo font face à des obstacles importants dans le contexte de zones urbaines dominées par l'automobile; la priorisation de l'espace routier pour d'autres modes de transport génère souvent des critiques et de l'opposition.

Cette recherche pose la question suivante: quelles stratégies les urbanistes chargés de la planification pour le transport à vélo peuvent-ils utiliser pour calmer l'opposition aux projets d'infrastructure cycliste? Par le biais d'entrevues réalisées avec plusieurs planificateurs et représentants de groupes cyclistes à Washington, D.C., une ville récemment nommée l'une des meilleures villes cyclables aux États-Unis, cette recherche analyse les stratégies existantes que les planificateurs utilisent pour s'occuper de l'opposition aux projets d'infrastructure cycliste, et explore d'autres stratégies semblables. Un projet récent de piste cyclable protégé situé à l'est du centre-ville à Washington, D.C. « Eastern Downtown Protected Bike Lane Project » est utilisé comme étude de cas.

Les stratégies sont catégorisées en trois groupes : stratégies de planification, stratégies de communication et stratégies de facilitation de réunions. Au cours de la phase de planification, il est essentiel que les planificateurs discutent d'abord avec les communautés afin de préciser les objectifs de transport à longue terme. En ce qui concerne les stratégies de communication, il est utile d'expliquer de manière approfondie le but et le besoin d'installations cyclistes, ainsi que d'adapter le message véhiculé par la publicité du projet au public visé. La facilitation de réunions publiques pourrait être renforcée en choisissant un format et un espace plus adaptés au public et au contexte, ainsi qu'en coordonnant la présence de fonctionnaires de différents ministères et organismes municipaux qui pourraient répondre aux questions sur les projets connexes.

La recherche se concentre sur le projet de piste de vélo protégé susnommé à Washington, D.C., mais les recommandations sont applicables à d'autres projets à Washington, D.C., ainsi qu'à une gamme d'autres projets de planification dans d'autres métropoles en Amérique du Nord, les stratégies étant de nature transversales. Les planificateurs sont encouragés à employer ces stratégies comme un outil dans le contexte de processus d'apprentissage itératifs qui doivent avoir lieu pendant que les pratiques de planification et l'opinion publique continuent d'évoluer.

ACKNOWLEDGEMENTS

I would like to thank Professor David Wachsmuth for the exceptional supervision and guidance he provided throughout the research process. I am also extremely appreciative of Professor Raphaël Fischler's thoughtful revisions and feedback as a second reader.

A big thank you to my wonderful family for their love and encouragement during my Master's. I'll repay you in hugs and bagels.

Finally, I will be forever grateful for the support of my classmates in the Master of Urban Planning program at McGill, with whom I shared many long days and nights filled with both commiseration and celebration.

This research project was partially funded by the Social Sciences and Humanities Research Council of Canada's Joseph-Armand Bombardier Graduate Scholarship.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION AND OVERVIEW

When asked about opposition to bicycle infrastructure in Washington, D.C., a municipal planner answered, "there's resistance in general, resistance because of necessary tradeoffs and resistance because we're trying to do something implementable that's […] not going to turn a neighborhood into Copenhagen" (Planner A, personal communication). That there are individuals and groups who would like to see Copenhagen-style bicycle infrastructure in U.S. cities (that is, robust and plentiful bicycle infrastructure) is novel. And the number of 'Copenhagenizers' taking to the streets on two wheels is growing. The bicycle is an increasingly popular mode of transportation for commuting or other utilitarian trips in large North American cities (Pucher, Buehler, & Seinen, 2011). Bicycle infrastructure is progressively being built in urban settings to accommodate this growing number of cyclists and its presence also tends to encourage new cyclists (Dill & Carr, 2003). Of the fifty most populous cities in the United States, for example, forty-seven had published goals to increase cycling in 2016, up from just twenty-four in 2007 (Alliance for Biking and Walking, 2016, p. xvi). In short, there has been a demonstrated shift in the planning paradigm to incorporate the transportation and safety needs of this growing number of urban cyclists.

There are good reasons for promoting cycling as a mode of transportation: it is healthy, sustainable and it may promote increased mobility and access. Nevertheless, bicycle planners and advocates face significant barriers in the context of automobile-dominated urban areas; prioritizing road space or curbside use for alternative modes of transportation often engenders criticism and opposition. Crucially, bicycle lane infrastructure often necessitates the unpopular removal of a lane dedicated to automobile traffic or on-street parking. A bicycle planning consultant's frustrated account of the state of affairs provides a succinct summary of the tensions inherent to bicycle planning:

> I continue to be stunned that people oppose this stuff. There are so many good reasons [for it], we've studied this thing from every which way, from job creation, safety, environment, health. We're just not making it up. And yet there's still a significant percentage of people [who oppose bicycle infrastructure] and I continue to be astounded that that's such an Achilles heel to the work that we do. And I feel somewhat guilty that after 30 years of working on this stuff we still haven't figured it out (Planner E, personal communication).

This anecdote puts on the table the following problem, which is the task of this research: what strategies can planners use to address opposition to bicycle infrastructure projects? As the anecdote above illustrates, bicycle infrastructure projects continue to generate opposition despite a plethora of evidence-based arguments proving that bicycle facilities are worth building and that urban utilitarian cycling is worth promoting.

Washington, D.C. is a useful case study for an examination of this question. Recently rated as one of the best cycling cities in the United States, (Alliance for Biking and Walking, 2016) the District is representative of the shift towards bicycle friendly policies and planning. Over the last twenty years,

cycling commuters have increased by 400% in the District of Columbia (Buehler & Stowe, 2016, p. 184). The District has seen an enormous expansion of its on-street and off-street bicycle facilities and has been cited as a leading city in terms of the implementation of bicycle infrastructure innovations such as the first North American bikeshare system, bike boxes, contraflow lanes and bicycle-activated traffic lights (ibid). Nevertheless, bicycle planning projects can be divisive and controversial in D.C. The most recent example of such a project is the Eastern Downtown Protected Bike Lane Project, in which the feasibility of and proposed preliminary alternatives for a protected north-south facility on the eastern end of downtown Washington, D.C. is studied. More specifically, the bike lane project has been criticized by some historic African-American churches and parishioners as a planning exercise akin to the post-war urban renewal projects designed to displace long-time residents.

Through interviews carried out with bicycle planning and project stakeholders in Washington, D.C., this research thus analyses the strengths and weaknesses of existing strategies planners may employ to address or even forestall opposition to bicycle infrastructure projects and explores additional such strategies. The research focuses on the Eastern Downtown Protected Bike Lane project but the recommendations are meant to be applicable to other projects in D.C., as well as projects in cities across North America.

Literature Review

Chapter 2 examines the literature on best practices in cycling infrastructure, the arguments that support and oppose investments in cycling infrastructure, and the public consultation processes in which cycling infrastructure projects are debated.

A great number of advocates, urban planners and elected officials point out that cycling is good for our health and for the environment and may increase access and mobility in certain contexts. Bicycle planning and infrastructure projects, however, are often opposed on economic or cultural grounds. Devoting road space to bicycle lanes often requires the removal of a traffic or parking lane, much to the consternation of many motorists, especially those who rely on their vehicles for transportation. In some low-income neighborhoods, cycling infrastructure is also symbolic of broader issues including gentrification and planning for affluent newcomers. Indeed, as a physical infrastructure investment, bicycle facilities may have a causal relationship with gentrification, despite the scarcity of studies clearly establishing such a relationship. Finally, public consultation in the context of transportation projects is often dysfunctional. Courses of action for refining public engagement for bicycle facilities include diversifying stakeholder participation and carrying out planning at an early stage in a collaborative, consensus-building manner.

Methodology

Chapter 3 describes the methodology followed for this research. Findings are based on interviews carried out with key bicycle infrastructure planning stakeholders in Washington, D.C., while scholarship, media sources, policy documents and public reports are relied upon for details on bicycle planning in D.C.

Discussion of the Case: Bicycle Planning in Washington, D.C.

Chapter 4 contextualizes bicycle planning in Washington, D.C. Defining characteristics of D.C.'s post-war growth and redevelopment, including the city's status as the seat of political power as well as its lack of autonomy, are examined. It is suggested that these factors have contributed to the District's post-war growth and redevelopment and an historical disregard for the city's African-American residents, who until recently made up the majority of D.C.'s population. The city's status as a center of politics and power helped advance the downtown development strategies pursued by officials that were designed to attract capital and new residents to the District following decades of population decline and disinvestment. Central city development, however, often occurred at the expense of longtime residents, often leading to displacement and a disregard for the needs of existing communities. A brief history of bicycle planning and approaches employed in the District is also offered. It is argued that D.C.'s bicycle planning efforts starting in the 1990's functioned as an element of the aforementioned growth strategy. It was in this context that longtime residents first began to associate bicycle planning with neighborhood change and gentrification. The Eastern Downtown Protected Bike Lane Project is then introduced as a case study.

Findings: Strategies for Addressing Bicycle Opposition in Washington, D.C.

Chapter 5 identifies a host of strategies that may be used to address opposition to bicycle infrastructure projects. Throughout the advancement of these strategies, existing strategies and projects are also evaluated, with a focus on those that pertain to the Eastern Downtown Protected Bike Lane project. Three categories of strategies emerge: planning-stage strategies, communications strategies and meeting facilitation strategies.

During the planning stage, it is crucial that planners engage with and educate communities early regarding long-range transportation issues. Comprehensive planning exercises also appear to be useful at this stage. In terms of communication strategies, explaining the purpose and need for bicycle facilities in a thorough manner, as well as tailoring project messaging to the audience in question, can be helpful. Finally, meeting facilitation could be strengthened by selecting a more suitable format and space depending on context, as well as by coordinating the attendance of officials from a variety of municipal departments and agencies should attendees have questions about related projects or initiatives.

Conclusion and Recommendations

In Chapter 6 some final thoughts regarding what planners and other actors in D.C. can do to implement the aforementioned strategies, as well as how the strategies can contribute to the District Department of Transportation's (DDOT) iterative, evolving approach to bicycle planning are offered. Furthermore, the applicability of the findings of this research outside of D.C. and beyond bicycle planning is discussed. It is suggested that the planning-stage, communication and meeting facilitation strategies may be employed in other North American cities, given the convergence across North American cities of transportation planning goals and objectives as well as arguments opposing bicycle infrastructure. Furthermore, the strategies are likely applicable to a broad range of planning projects given their cross-cutting nature.

LITERATURE REVIEW

In his 2009 book *Pedaling Revolution*, Jeff Mapes asserts that traffic jams are "the iconic emblems of American life" (p. 7). Automobility and its attendant gridlock are defining elements of the lives of people and landscapes not just in America but across the globe. Cities new and old have been designed and redesigned to accommodate the massive influx of cars, simultaneously encouraging their use and ensuring their primacy on the road. However, Mapes adds some characters to his portrait of the modern, auto-dominated American city, "bobbling lightly in the exhaust-filled urban streams": cyclists (p. 7). While Mapes characterizes bicyclists as new additions to the roads, in fact cyclists have long been a part of the urban landscape of cities. Abermarle et al. describe the growing number of cyclists in England's cities in their 1891 encyclopedic publication detailing the then relatively novel sport of cycling:

> In the streets of our great cities and in highways and byways throughout the land, carriages, swift and serviceable, propelled by the power of human muscles alone, have become common. The sight of a traveler of either sex, seated on a light machine, and proceeding with considerable rapidity and apparently but little exertion, is so usual that the wayfarer hardly turns his head to look at the accustomed sight (Abermarle, 1891).

In 19th century England cyclists competed for road space with horse-drawn carriages, whereas now they compete with automobiles. The advent of the car, particularly in North American cities, has encumbered the cyclist's ability to use the road for many reasons, not least of which has to do with safety. Early roads essentially resembled what urbanists would today refer to as 'shared streets'. Sidewalks didn't exist, and roads hosted a range of modes of transportation at once, giving priority to no particular mode. Since the western world's wholesale adoption of the automobile, however, we have engineered roads in ways specific to the use of the car. For instance, a series of wide lanes moving in a single direction facilitates speeding and renders walking or cycling on the same roadway a daunting and dangerous endeavor. As large swaths of many cities were designed uniquely for vehicles[1], urban cycling began to lose its popularity (Stein, 2015b). Furthermore, suburbanization has made cycling infeasible for many commuters since commute distances became so much longer.

There is a parallel that can be drawn between Abermarle's description of cyclists in English cities at the turn of the 19th century and the current cycling landscape in many North American cities. In the last several decades, urban cycling has seen a resurgence, or as Mapes refers to it, a "revolution" (Mapes, 2009). Certainly, there is no shortage of arguments in favor of cycling as a form of transportation. Cycling provides health benefits, it is an environmentally and wallet friendly form of transportation and it can afford access and choice to individuals as a mode of transportation. But

[1] Studies indicate that up to 30% of American cities' surface area is devoted to streets. Parking lots and spaces in cities' Central Business Districts, if they were to be spread out over surface lots, would cover 18-81% of CBD land (Manville & Shoup, 2005 p. 236, 242-3).

those reasons alone may not account for the current urban cycling resurgence, as they have held true for generations. Instead, recent surges in the popularity and encouragement of urban cycling may be in part thanks to broader forces such as reurbanisation and gentrification. For example, Gibson (2013) places the promotion of cycling by elected officials and policy-makers in the context of urban revitalization strategies used to attract young professionals. Stehlin (2015) concurs, contending that the bicycle has come to symbolize the greening and revitalization of American cities (p. 121). For the growing number of middle-class urbanites in the United States, cycling represents a cosmopolitan, politically progressive and environmentally conscious lifestyle (ibid). Fittingly, bicycle infrastructure in cities such as San Francisco and Washington, D.C. has tended to be built in central neighborhoods undergoing gentrification or revitalization (Buehler & Stowe, 2016; Stehlin, 2015).

Whether for explicit reasons such as improving public health and reducing energy consumption, or for the more implicit goal of attracting the 'creative class', it now appears intuitive for city builders to plan for the bicycle as a legitimate form of transportation in cities, investing in infrastructure and programs that facilitate the mobility of existing cyclists and attempt to encourage future cyclists. All but three of the fifty most populous cities in the United States had published goals to increase the modal share of cycling in 2016, an almost 96% increase from the same statistic in 2007 (Alliance for Biking and Walking, 2016, p. xvi). Nevertheless, investments in cycling for transportation projects have invited a "bikelash" of opposition, which often takes center stage in the context of public consultation processes (Goodyear, 2014).

This chapter reviews the literature on best practices in cycling infrastructure, arguments for and against investments in cycling infrastructure, and finally, public consultation processes where these themes are often found to be at odds with one another. A broad coalition of advocates, planners and policymakers agree that cycling is good for our health, good for the environment and may increase access and mobility in certain contexts. Planners in many American cities have adopted ambitious bicycle plans and built well-used bicycle networks but not without consternation from some motorists and residents. Cycling for transportation presents problems along economic and cultural lines for many groups and is not accessible to all. The redistribution of road space required for the addition of bike lanes may appear to many motorists as undemocratic given the relatively low modal share of cycling in many cities and the strong culture of automobility in the United States reinforces this belief. In low-income neighborhoods, cycling infrastructure has also come to symbolize neighborhood change, gentrification and planning for a privileged few. As physical proof of municipal investment, bike infrastructure may indeed be a causal factor for gentrification, despite a relative lack of studies that provide evidence to this end. Finally, public consultation surrounding transportation projects is often dysfunctional. Courses of action for refining public engagement for bicycle facilities include diversifying stakeholder participation and carrying out planning at an early stage in a collaborative, consensus-building manner. However, achieving consensus may prove to be difficult should communities believe real tradeoffs must be made. In this context, education regarding the benefits and tradeoffs associated with bicycle facilities is likely to be important.

BEST PRACTICES IN CYCLING INFRASTRUCTURE

Literature on the topic of bicycle infrastructure tends to argue that the existence of a robust bicycle infrastructure system or network encourages more cycling while simultaneously lowering the rate of serious injuries or fatalities. In addition, studies show that protected bicycle infrastructure, that is, infrastructure that is separated from vehicle traffic by a physical barrier, likely has the most potential to attract increased numbers of people to biking for transportation.

Pucher et al. state that given the general agreement regarding the benefits of cycling, researchers and policymakers should concern themselves with methods for increasing cycling (2010, p. S107). Moreover, the authors note that countries and cities with a high modal share of cycling and low incidences of reported cyclist injuries and deaths generally boast extensive infrastructure (ibid). They make this case by examining a number of studies that demonstrate that investments in cycling infrastructure can increase modal share.

For the purposes of this research we will be examining on-street bikeways, as opposed to recreational bike trails. Trails may be connected to on-street facilities but are not themselves on-street and thus do not represent contested urban spaces in the same way their on-street counterparts do. Under the umbrella of on-street bikeways exist several types of facilities: protected bike lanes (also called cycle tracks or bike paths), 'conventional' bike lanes, and bicycle boulevards. Protected bike lanes or cycle tracks are characterized by physical barriers between the cycling lane and motor traffic, whereas bike lanes are defined as "a portion of the roadway that has been designated by striping, signage and pavement markings for the preferential or exclusive use of bicyclists" (NACTO, 2014, p. 1). Bicycle boulevards are streets that feature traffic-calming features such as speed bumps and traffic diverters that encourage a low volume of traffic in addition to signage and wayfinding for cyclists (Pucher et al., 2010, p. S109). Shared streets, or cycle streets, aren't considered to be a true bicycle facility but rather feature shared-use markings to increase the visibility and legitimacy of cyclists on the road (NACTO, 2014, p. 133).

Protected bike lanes, generally understood as the gold standard of bike lanes, are perceived by the public to be safer than their non-protected counterparts because they separate cyclists from vehicles using a barrier (Dill & McNeil, 2012). This perceived safety, or comfort, may be crucial in terms of attracting more cyclists to the streets. A study led by Dill and McNeil examined the different types of cyclists proposed by the City of Portland and frequently referenced by scholars and policy makers alike: "the strong and the fearless," "the enthused and confident," "the interested but concerned," and "no way, no how" (Geller in Dill & McNeil, 2012, p. 129). The authors' survey of 903 individuals in the Portland, OR region revealed that the majority fit in the 'interested but concerned' category, which is understood as the group that should be targeted should planners wish to increase cycling for transportation (ibid). Given that the types are based on level of comfort using different types of roads, Dill and McNeil conclude that increasing comfort levels through infrastructure that separates bicycles and vehicles (protected lanes or cycle tracks) is key in efforts to encourage more urban cycling (Dill & McNeil, 2012).

There is a plethora of complementary bicycle infrastructure such as bicycle parking, bicycle signaling and signage that is crucial for the facilitation of cycling, though it will not be discussed in detail here. It is important to note, however, Pucher et al.'s statement that "a complete system of bicycling infrastructure (e.g., a network of lanes, paths, cycletracks, bike boxes, traffic signals, parking, etc.) may have far more impact than the sum of its individual parts" (2010: S122). A 2014 study of 74 American cities discovered a significant correlation between cities' network structure measures such as density, connectivity and directness and their bicycle commuting rates, illustrating the importance of building a network that links routes (Schoner & Levinson, 2014). It has also been found that infrastructure systems are enhanced by complementary cycling programs and policies (Pucher et al., 2010), particularly those that deal with marrying land use and transportation. Cycling simply becomes a more viable means of transportation when it functions in a dense city where it is easy for people to stop off for groceries on their way home from work.

In sum, there is widespread agreement that robust bicycle infrastructure networks are likely to increase cycling for transportation in cities. In addition, protected facilities, complementary infrastructure and programs and intentional network design that takes land uses and destinations into account are all important considerations for the encouragement of urban cycling.

THE ARGUMENT FOR CYCLING

Three principal arguments in favor of cycling for transportation and corresponding investments in infrastructure have been identified in the literature: cycling is healthy, it is good for the environment and it promotes increased mobility and access.

Health

It is undeniable that cycling is good for our health, whether it is carried out for recreation or transportation purposes. The literature overwhelmingly points to not just the physical health benefits related to bicycling but also the mental health benefits.

Given our increasingly sedentary lifestyles, our addiction to fast food and the subsequent obesity epidemic faced by countries across the globe, initiatives that increase the activity levels of individuals through active transportation have been increasingly popular with policy makers, including the United Nations, the World Health Organization and a plethora of country-level scientific groups and public health agencies (Dill, 2009; Gase, Barragan, Simon, Jackson, & Kuo, 2015; Sallis et al., 2015). As Sallis et. al indicate, through decades of urban planning that favored the automobile and allowed for sprawling development, "physical activity has been engineered out of people's lives" (2015: 1). Much of the literature that examines cycling and walking suggests that daily recommended activity can be achieved by active transportation. Dill's study on cycling for transportation and health in Portland, Oregon found that adults cycling for utilitarian (as opposed to recreational) purposes can meet the 150 minutes of weekly activity recommended by most public health agencies (2009: 104). Dozens of studies gathered in published literature reviews demonstrate the physical health benefits of cycling for transportation, including reductions in all-cause mortality, diabetes, weight gain and cardiovascular diseases (Mueller et al., 2015; Shephard,

2008). Shephard (2008) cautions that we should be careful about assuming causality in such studies, as the individuals who choose active transportation may already be physically active. But some studies point to the independent health benefits of active transportation after adjusting for other forms of activity (Mueller et al., 2015, p. 110). Forty percent of trips in the United States are two miles or less in length and cars are used for two thirds of these trips (Mapes, 2009, p. 14). While not everyone is physically able to cycle for short trips, whether it is their own mobility or the built-environment surrounding them that hinders them, Dill suggests that an emphasis on achieving daily and weekly activity levels through cycling rather than walking is warranted given that it is most likely a better substitute for car trips because of the ability to cover greater distances in a shorter time-period when cycling (2009: 95).

There is also evidence that cycling for transportation provides mental health benefits. Anecdotally, a cycling advocate interviewed in Mapes' book remarked that cycling is "like being able to golf to work" (2009: 24). Anyone who has gotten in a bike accident or been honked at on a busy street will tell you that commuting by bicycle isn't always pleasant, but studies from Canada and Sweden do show that people who cycle to work are more satisfied with their commutes than those who walk, drive, or take public transit (Friman, Fujii, Ettema, Gärling, & Olsson, 2013; Páez & Whalen, 2010; St-Louis, Manaugh, Van Lierop, & El-Geneidy, 2014; Turcotte, 2011). As Loong et. al discovered analyzing the data of a McGill University Transit survey, cyclists also tend to feel more energized when they arrive to work or school and cycling was reported as negatively affecting punctuality the least among modes of transportation (Loong, van Lierop, & El-Geneidy, 2014). Additionally, a 2014 study in which the authors examine adult commuters in Britain revealed that there was a significant association between overall psychological wellbeing and active transportation (Martin et. al, 2014).

Environment

Cycling is also better for the environment than other modes of transportation by nature of its use of human-propelled energy. The environmentalist narrative on cycling as a means of transportation appears in the minutes from the public hearing for Washington, D.C.'s first comprehensive bike plan in 1975. As a case in point, a U.S. Environmental Protection Agency (EPA) employee testified before the municipal planners in support of the plan, stating that cycling can "reduce air pollution… traffic congestion, advance energy conservation and promote environmental quality," a sentiment that was repeated by several others who spoke at the hearing (Government of the District of Columbia, 1975, p. 21). Of course, it doesn't come as a surprise that the environmental argument was leveraged in the 1970's, given the oil crisis and the environmental movement that resulted in the creation of the EPA and the introduction of federal legislation protecting endangered species, clean air and water.

Today, reducing greenhouse-gas emissions is more important than ever: for the third year in a row, the earth has reached record-high temperatures. Importantly, transportation is one of the leading sources of greenhouse-gas emissions worldwide. Transportation accounted for over one quarter of total emissions in the U.S. in 2014 and over half of the emissions from this sector were produced by passenger cars and light-duty trucks (Environmental Protection Agency, 2016). What's more, the

EPA reports that transportation emissions have increased by almost twenty percent since 1990 and that vehicle miles traveled increased almost forty percent (ibid). In this light, cycling advocates and transportation scholars have pointed out that cycling can act as a strategy for reducing greenhouse gas emissions by reducing vehicle miles travelled (in the event that cycling replaces vehicle trips). A variety of studies have modeled shifting a small percentage of mode share or vehicle miles travelled to bicycle miles travelled and estimate significant savings in energy but also in public health costs (Lindsay, Macmillan, & Woodward, 2011; Stanley, Hensher, & Loader, 2009). Similarly, scientist Paul Higgins has estimated that if every adult cycled an hour each day and reduced their driving by the distance they covered on their bike, the United States could reduce its gasoline consumption by almost forty percent and emissions by approximately twelve percent (Mapes, 2009, p. 13-14). Nobody is suggesting that increasing the number of cyclists while reducing vehicle miles travelled will address climate change single-handedly, partly because cycling isn't for everyone and isn't appropriate for carrying more than a small number of goods, and because automobility and the sprawled, auto-centric design of our cities isn't disappearing anytime soon. Quite the opposite: driverless cars may ensure the continued dominance of the car. Furthermore, while transportation emissions from personal vehicles make up a significant part of total emissions in the U.S., a large portion of emissions come from other sectors. Still, replacing some vehicle miles traveled with bicycle miles traveled would help reduce emissions.

The promotion of cycling and other modes of active transportation is taking place in the context of a broader movement to reduce the dominance of the automobile in the built-environment. Mapes invites us to "imagine fewer parking lots and more public plazas" (2009: 10). This desire to renegotiate the dominance of automobility, if acted upon, may mean cyclists could have easier commutes to work, but it is also centered upon a consensus in the planning community that we must redesign cities to be more sustainable and resilient (Walks et. al, 2015). In other words, one could conceive of the promotion of cycling as a mode of transportation as concomitant of the smart growth and liveability strategies being pursued by many cities. Goals and actions related to the promotion of cycling often feature in cities' sustainability plans alongside goals that promote densification, walkability, mixed use development and energy reductions.

Actions undertaken by cities to reduce the role of the automobile are often motivated by sustainability concerns but they also feature heavily in liveability initiatives. The liveability concept, whether city-wide or street-specific, has become ubiquitous in a host of planning documents, visioning exercises and company mission statements. On a general level, liveability equates to quality of life. While there is no standard, agreed-upon definition of liveability, and its definition should arguably be suited to different contexts, liveable or complete communities can be understood as "places where people can live, work, move and thrive in a healthier, more equitable, and more economically competitive way" (Brooks, 2012). The AARP, an interest group representing aging people, offers a more detailed definition, designating a liveable community as "safe and secure, has affordable and appropriate housing, diverse transportation options, and supportive community features and services" (AARP, 2016). Environmental sustainability and forward-looking resilience-based strategies are also often included in conceptualizations of liveable or complete communities.

Liveable and complete streets campaigns operate under the assumption that, as our most extensive public spaces, streets are also our greatest public assets, and that improving streets is a simple and effective way to improve quality of life (NYC Streets Renaissance, n.d.). The concept of livable streets originated from the work of Donald Appleyard, who studied the effects of high levels of traffic on urban streets on the lives of residents (Appleyard, 1980). Appleyard and his colleagues called for the redefinition of streets "as sanctuaries; as livable places; as communities" (1981: 106). Similarly, current liveable and complete streets campaigns and strategies propose improving or redesigning streets to change the priority of street use among different modes. This is accomplished through actions that facilitate and encourage walking, congregation and cycling, such as sidewalk widening and the construction of public plazas and protected bicycle facilities. Proponents argue that street improvements such as these can contribute to a community's physical and social wellbeing, as well as strengthen local economies (NYC Streets Renaissance). In other words, liveable or complete streets strategies are a component of a community's overall liveability. This concept is manifested in city plans and rhetoric. Indeed, statistics about bikeability, as well as more general claims on liveability, are used by cities to compete for the "creative class" (Mapes, 2009, p. 8-9). This idea is borrowed from Richard Florida's much-cited creative class or creative city argument, which contends that cities are successful insofar as they can market a specific lifestyle that can attract the likes of young, creative types employed in innovation sectors (Florida, 2004, in McCann, 2007, pp. 189-90). Florida has recently added a caveat to his argument, conceding that the creative class and creative city narratives adopted by cities across North America may have led to displacement and income divides (O'Connell, 2017).

Norton theorizes that the idea that streets are for vehicles is a social construction propelled by the automotive industry, that is, streets have been reimagined from places where cars "were uninvited guests [… to] places where motorists unquestionably belong" (2008: 1). In the same vein, then, liveability and liveable streets campaigns are attempts to revise this 20th century social construction so that it responds to the realities of the 21st century. This movement does not efface the car from our streets and cities but instead attempts to provide a range of opportunities for individuals to move about their communities through changes in the built-environment.

Mobility and access

How people move about their city depends on a variety of factors, including cost, estimated travel time, vehicle ownership, household income and composition, and what scholars agree to be three key built-environment characteristics – density, diversity and design (Cervero, 2002). Access to quality public transit is arguably an additional factor and it is related to built-environment characteristics (ibid). Accessibility is defined by the Brookings Institution as "the ease of reaching destinations" (Duranton, G. and Guerra, 2017). Cycling can act as a cheap, efficient transportation alternative to driving or public transit for those for whom cost or access to a vehicle or quality public transit restricts their mobility. The bicycle can also link individuals without cars to high quality transit, since it allows people to cover distances that might be too far to walk, for example from their home to a metro stop. Cycling infrastructure may improve the mobility of city dwellers that cannot afford vehicles, too. A report on equity and protected bike lanes indicates that protected

bike lanes "are tools that can make cities more equitable" (Alliance for Biking and Walking & PeopleforBikes, 2015, p. 16).

However, cycling can ameliorate mobility or accessibility only in the event that riding a bicycle to one's destination is in fact a viable option thanks to bicycle infrastructure, or at the very least cycling friendly roads. Unfortunately, research and reports that examine the location of existing cycling infrastructure reveal that there is a lack of cycling infrastructure (and indeed access to good public transportation) in low-income communities and neighborhoods (Alliance for Biking and Walking & PeopleforBikes, 2015; Stehlin, 2015), which is precisely where a low-cost transportation alternative such as cycling could increase residents' opportunities for transportation. Instead, investments in cycling infrastructure occur primarily in the gentrified areas in densely populated urban cores, neighborhoods located within a bikeable distance to jobs in the CBD where the modal share of cycling is often already high (Buehler & Pucher, 2012; Dill & Voros, 2007; Stehlin, 2015).

Added to the general lack of cycling infrastructure in many low-income communities is the issue of distance. Until a few decades ago, American 'inner cities' were inhabited by low-income populations who couldn't afford to live in suburbs. Today, cities are increasingly being populated by wealthier individuals while their lower-income counterparts are being priced out to the suburbs and periphery neighborhoods (Allard & Roth, 2010). So while low-income communities tend to lack cycling infrastructure, they are also disproportionately situated beyond what many would consider a 'bikeable' distance to downtowns and other employment centers. If we look at one measure of accessibility, access to jobs, cycling may not be a real solution for residents of neighborhoods situated on the periphery of cities if the jobs they are traveling to are in the downtown core. Stehlin argues that "the possibility of replacing car trips by bicycle or mass transit is supremely uneven in distribution" (2015: 124). In this light, while cities often set the laudable goal of increasing a range of transportation opportunities for all, and cycling is cited as one of these opportunities, there are some serious barriers to its ability to increase access and mobility for all.

It is generally understood in the planning and policymaking communities that cycling responds to public health, environment and mobility issues in cities. In the context of our increasingly sedentary lives, cycling for transportation can be an important source of daily physical activity. It may also contribute to mental health and trip satisfaction for those who choose to commute by bike instead of other modes. Furthermore, cycling has the potential to significantly reduce carbon emissions in the event that bicycle miles travelled replace vehicle miles travelled. In the context of the complete streets framework, cycling may also prompt a rethinking and subsequent restructuring of roadways to accommodate active modes of transportation and public life. These changes in the built-environment, it is argued, contribute to communities' prosperity and wellbeing. Finally, the bicycle has the capacity to increase mobility and access to jobs and other destinations by providing a cheap form of transportation that allows users to cover longer distances than would be possible on foot. The caveat here is that in many lower-income communities where improving access and mobility is so crucial, cycling infrastructure is either non-existent or unfeasible due to distance or barriers.

THE "BIKELASH": THE DIVISIVE NATURE OF CYCLING AND ARGUMENTS AGAINST BIKE LANES

Cycling enthusiasts, along with a significant number of planners, environmentalists, public health advocates and policymakers, are in favor of investing in bicycle infrastructure to encourage higher rates of cycling for transportation. But bicycle infrastructure projects also attract some fierce critics; the Brooklyn Paper once referred to a proposed bike lane in Brooklyn as "the most controversial slab of cement outside the Gaza strip" (The Brooklyn Paper in Sadik-Khan, 2016). Walks et al. claim "the bicycle is […] a political symbol of opposition to automobility" (Walks et al., 2015, p. 237). This section examines the arguments put forth by opponents to investments in bicycle infrastructure. These arguments have been divided into two themes: economic and cultural. The validity of the arguments is also considered, relying on evidence from scholarship and studies.

Economic arguments

Chief among economic arguments against bike infrastructure are those that have to do with the allocation of public funds, the disappearance of road space and parking and the purported links between bike lanes and property values. First, investments in cycling infrastructure are a waste of taxpayer money. Second, the reduction of road space and parking threatens motorists, residents and businesses. And finally, as a middle-class amenity, bike lanes may increase property values and cause gentrification in low-income neighborhoods or may drive property values down in affluent neighborhoods.

It has been argued that investments in cycling infrastructure are a waste of taxpayer dollars, considering the relatively trivial number of cyclists who commute to work, and unfair, given that cyclists don't pay the gas taxes that fund road maintenance (Mapes, 2009). In other words, if we consider streets as public resources, they should remain as resources for automobiles, rather than for a small number of urban cyclists. However, populous American cities rarely devote more than five percent of their total transportation budget to biking and walking projects, a percentage that is usually surpassed by the modal share of these two transportation modes (Alliance for Biking and Walking, 2016). Walks suggests, that "it is not the economic but the political costs that have limited [bike infrastructure] implementation" (2015: 237). The taxpayer dollar argument points to a larger concern about citizen participation in policy and budgetary decisions and the extent to which planning serves the communities it sets out to serve. At a recent panel discussion regarding equity in D.C., an audience member conveyed her frustration about her community's difficulties obtaining basic services in the predominantly African American communities in Wards 7 and 8, "while a small group of primarily white privileged advocates can push for bike lanes and they happen" (Lendsey, 2016). In this sense, the discussion is less about bike lanes and more about policy, power and voice (ibid).

A related argument involves the fact that bike facilities frequently necessitate the removal of either a lane of traffic or on-street parking, which opponents say will negatively affect the mobility of vehicles, causing hardship via increased congestion and travel time. In fact, as a transportation engineer hired to develop a downtown Calgary, Alberta bike lane project explains, roads often have the capacity for more traffic, and backups are caused by poor signaling or a lack of accommodations

for vehicles turning left at intersections (Babin, 2015). In addition, drivers tend to look for alternate routes when traffic starts to build up (ibid). That is, the removal or narrowing of a lane of traffic does not necessarily have to increase congestion, as motorists will divert elsewhere. Similarly, some scholars might respond to complaints about reductions in parking spaces by saying that there is a general surplus of parking in American cities thanks to parking minimums featured in zoning ordinances (Shoup, 1997; Weinberger, Kaehny, & Rufo, 2010). Of course, these theories regarding the extra capacity of roadways for moving and parked vehicles do not apply in every context, which is why thorough traffic studies are carried out by transportation departments to identify the impacts of bicycling infrastructure on different streets and determine where bike lanes will affect vehicular congestion the least (Johnson & Johnson, 2014).

Not just motorists, but business owners, too, often voice concern regarding prospective bike lanes when they remove parking spaces (Jaffe, 2015). Their worry is that a reduction in parking spaces would hurt their business because fewer people would have access to their stores. There is in fact a range of studies that prove that bike lanes that replace parking have "little to no impact" on businesses and can in fact increase business; a Citylab article from 2015 gathers twelve studies from around the world that make the business case for converting street parking into bike lanes, in general because when compared with motorists, cyclists have a tendency to buy less on each shopping trip but make more shopping trips than motorists, therefore spending more (Jaffe, 2015a).

Finally, claims that bike lanes have the capacity to negatively affect property values have been made. In in affluent neighborhoods, opponents voice that bike lanes reduce property values while in historically low-income or marginalized neighborhoods, opponents perceive that bike lanes increase property values. In low-income neighborhoods this property value argument often appears under the umbrella of a larger discourse surrounding gentrification and displacement. For instance, commenting on a plan to introduce a bike lane on King Street in affluent Alexandria, Virginia that would remove on-street parking, one individual asserted that eliminating on-street parking will decrease the property values of homes (Anonymous, 2013). Similarly, San Diego residents have likened bike lanes to street graffiti that would hurt property values (Jaffe, 2015b). Conversely, bike lanes, and more generally cycling culture, is often associated with neighborhood change and gentrification and thus increased property values (Gibson, 2013; Stehlin, 2015). There isn't a great deal of quantitative evidence showing that bike lanes themselves increase property values and gentrify neighborhoods[2], but qualitative studies charting the perceptions of residents do reveal a connection between cycling infrastructure and gentrification (Buehler and Stowe, 2016, pp. 191-3, 202).

Of course, gentrification is not just economic but also cultural in nature in that it often implies demographic and cultural change in neighborhoods. As the title of a Washington Post article about a proposed protected bike lane in the Shaw neighborhood of D.C.-- *Why are bike lanes such heated symbols of gentrification?*-- suggests, bike lanes are perhaps more accurately conceived of as

[2] For an examination of the positive relationship between Montreal, Canada's bicycle sharing system and home prices, see El-Geneidy, van Lierop, & Wasfi (2016).

symbols rather than causes of gentrification (Stein, 2015b). However, symbols of gentrification could become causes of gentrification. Adonia Lugo, an anthropologist who carries out research on cycling advocacy, maintains that cycling infrastructure and gentrification concerns are valid because bike lanes are often presented as good for business and used by cities to attract the "creative class" and economic investment (Lugo in Stein, 2015). Bike lanes as infrastructure investments may thus invite economic investment and accelerate neighborhood change. When cycling infrastructure is understood as part of broader conceptualizations of liveability, it "operates as a mode of exclusionary development" (Stehlin, 2015, p. 124). So while there are several economic arguments against bike lanes, evidence to bolster them is scant, with the exception of their symbolic value as a gentrifying force.

Cultural arguments

Given that the evidence suggests that economic arguments are mostly specious, cultural arguments may explain much of the opposition to cycling and corresponding bicycle infrastructure projects. Indeed, an observable cultural antagonism towards cycling for transportation exists in much of North America. This can be attributed in part to the entrenched culture of automobility and the politicized nature of the cycling 'renaissance' in cities.

Automobile dominance in the United States has been alluded to as reaching a state of 'hyperautomobility,' or "the excessive use of autos supported by transport systems built on auto use" (G. Martin, 2015, p. 33). The hyperautomobility that characterizes the United States (ibid) appears to buttressed by a 'culture of freedom and independence' (Banister, Pucher, & Lee-gosselin, 2007, p. 14). The car is also a source of pride and status for many individuals and households, particularly when those facing financial hardships must work very hard to own a vehicle (Lugo in Stein, 2015). In this context, projects that are perceived to reduce access to driving or parking may be threatening to some (ibid). This threat is exacerbated for those who lack access to quality public transportation and are captive uses of motor vehicles. Furthermore, given that until the last few decades automobiles have had "free reign" over American streets and access to an abundance of free parking (Buehler and Stowe, 2016, p. 212), actions that encroach on vehicles' road space can be poorly received. That is, the dominance of motorists in the urban landscape has led to a sense of entitlement to the road among some (not all) motorists.

The culture of automobility is problematized by the urban cycling advocacy culture, or what it has traditionally been reduced to: a political symbol of opposition to the car (Walks et al, 2015). 'Velo-mobility' has played a key role in the opposition to automobility for some time (ibid). In the 1960's and 70's, the bicycle arose as a feature of environmentalist movements and today it remains as a characteristic of a "green morally exemplary identity […] creating tensions with non-cyclists" (Horton, 2006, in Walks et al., 2015, p. 242). In addition, as was discussed earlier, the bicycle is a symbol of gentrification and the 'gentrifying subjects', or 'creative class' and related liveability agendas, which sometimes stigmatize the car.

Adding to the cultural divide regarding cycling for transportation, the cycling advocacy agenda is often described in belligerent or combative terms; the fight will inevitably result in winners and

losers. Former Transportation Director of New York City Janette Sadik-Khan's article about bike infrastructure planning and implementation in New York City alludes to "the Bike Wars," (Sadik-Khan, 2016) and a recent bulletin sent by the Washington Area Bicyclist Association (WABA) to its email list-serve, was titled "Hey, we're winning" (Billing, 2017).

It appears that most of the economic arguments that are set forth in opposition to bicycle facilities have been challenged by evidence proving the contrary. The exception may be gentrification. While bike lanes may not directly cause gentrification, they often materialize in central gentrifying neighborhoods. It is thus difficult to separate their emergence from other gentrification effects such as rising property values and new developments. This is buttressed by cultural perceptions that bike lanes are "white lanes" (Hoffmann, 2016) or welcome mats intended not for longtime residents but for the gentrifying class (Gibson, 2013). In the same vein, bicycle planning and infrastructure can come to represent larger issues concerning voice, policy and power. In this light, economic arguments may often be used as a red herring for what is in fact a cultural opposition to bike lanes and what they represent. These cultural concerns are indeed valid but they are difficult for bicycle planners alone to address.

PUBLIC CONSULTATION ON CYCLING INFRASTRUCTURE

As was suggested at the beginning of this chapter, the idea that bicycles have a legitimate place on urban streets has been embraced not only by activists but also city planners, who see cycling as a healthy, environmentally friendly and affordable mode of transportation (Walks et al., 2015, p. 253). Notably, last year 47 out of the 50 most populous cities in the U.S. had a published goal to increase cycling (Alliance for Biking and Walking, 2016, p. xiv). Given that bicycle infrastructure tends to invite contention and opposition that planners must address, it is worthwhile to briefly discuss public consultation processes in the realm of transportation planning.

Public engagement is required for all metropolitan transportation planning processes in the United States as mandated by the 1998 Transportation Equity Act for the 21st Century (TEA-21) (Bailey & Grossardt, 2006, p. 337). According to the Federal Highway Administration (FHWA), "public participation is an integral part of the transportation process that helps to ensure that decisions are made in consideration of and to benefit public needs and preferences" (FHWA, 2015). Through public involvement, agencies can make more informed decisions and the public can have a say in projects (ibid). But public participation in practice is often flawed or dysfunctional due to a lack of trust between the public and planners, or the fact that it can represent a formalization of disagreements between different groups of citizens (Bailey & Grossardt, 2006; Innes & Booher, 2004). Indeed, both of these complications arise in bicycle planning, for the cultural and economic reasons discussed earlier. Scholarship isn't the only source of criticism of public engagement processes; surveys of citizens and planners at public meetings conducted by Bailey and Grossardt in two states revealed that both groups desired more robust levels of public involvement (2006).

Diversifying public engagement

A study of stakeholder participation in three different European settings suggests that increasing the diversity of stakeholders leads to a more nuanced problem definition and innovations in

transport planning (Ward, 2012). Scholars and advocates tend to agree that reaching out to marginalized groups in an effort to diversify participation is a step in the right direction (Stehlin, 2015; Walks et al., 2015; Alliance for Biking and Walking, 2016), while others advocate for increased cultural sensitivity and understanding (Umemoto, 2001). However, entrenched power structures and policy goals can minimize or obstruct the inclusion of stakeholders (Ward, 2012; Stehlin, 2015). Indeed, elected officials often approve or reject cycling projects in order to please their political base and secure votes for the next election (Siemiatycki, Smith, & Walks, 2016).

Innes and Booher propose that in order to address the dilemmas that define the current public participation paradigm (collective vs. individual interests, the polarization of issues due to public input and the risk that bad decisions could be made, among others), participation must be carried out in a collaborative manner, incorporating citizens, interest groups, businesses, NGOs, planners and administrators "in a common framework where all are interacting and influencing one another" (2004: 422). The collaborative method calls for bringing stakeholders together as equals in formal and informal conversations in which future needs and actions are anticipated and defined (ibid). This method is an alternative to stakeholders reacting to previously-defined projects and goals. Innes' collaborative method builds on an earlier article by the author in which she introduces the process of consensus-building. Consensus-building is defined by Innes as "a method of group deliberation that brings together for face-to-face a significant range of individuals" who represent multiple, sometimes competing interests in the context of very public, controversial planning issues (1996: 461). Of course, consensus-building can be rendered difficult when there are real tradeoffs to be made and bicycle infrastructure projects are often conceived of in this way. However, if the economic arguments against cycling are mostly specious, as was suggested above, perhaps tradeoffs can be minimized and interests reconciled through public education regarding the benefits of bicycle facilities.

Scale and the politicization of decision-making

One question that Innes poses in her discussion of the dilemmas of participation in planning is particularly relevant to public participation in the context of bicycle planning: should planners seek to respond to the collective interest or to vocal special interests (2004: 421)? Bicycle infrastructure projects are implemented at the local level, inviting very local opposition to changes in the roadway. Nevertheless, individual cycling infrastructure projects do not exist in a vacuum but instead figure in neighborhood- or city-wide bicycle networks, sustainability and traffic safety plans. As discussed earlier, in terms of facilitating bicycle mobility, individual infrastructure components are successful insofar as they are part of a larger network that allows for safe movement throughout a city on a bicycle. Individual transportation projects should serve the needs of the community in question. However, defining the scope of that community may prove difficult because bike lanes serve not just people who live in neighborhoods where bike lanes exist, but also those who happen to use the lane as part of their crosstown route. Bike lanes may also span several neighborhoods and communities. While community concerns must be, and are, addressed in bicycle infrastructure projects, perhaps neighbors needn't have the final say on a project that deals with an inherently public space meant to serve an entire city. In this context, advocacy groups can be vital in terms of rallying support across the cycling community for individual, neighborhood-level projects.

CONCLUSION

A review of the literature on cycling for transportation in cities has revealed that while a coalition of advocates, planners and policymakers agree that encouraging cycling is good for our health, good for the environment and may increase access and mobility for certain groups, cycling for transportation presents problems along economic and cultural lines for many groups. Cycling infrastructure is problematic in that it can act as a symbol of exclusionary development, gentrification, and planning for the privileged. For many, particularly those for whom the automobile is either the only viable transportation option or an important source of pride or status, cycling infrastructure is a threat. These issues must be addressed by planners given the importance, and legal requirement, of public consultation processes for transportation planning.

Having reviewed the principal themes related to public opinion and bicycle infrastructure in cities, the following chapters will examine public opposition to cycling infrastructure investments in Washington, D.C. and attempt to understand how urban and transportation planners might address the concerns voiced by those opposed to them.

METHODOLOGY

PURPOSE

The purpose of this research is to gain a better understanding of the strategies planners can employ to address public opposition to bicycle infrastructure projects in Washington, D.C. There is good evidence that active transportation, and more specifically cycling, should be supported; a broad coalition of advocates, planners and policymakers agree that cycling is good for our health, good for the environment and may increase access and mobility in certain contexts. Nevertheless, cycling infrastructure projects are often divisive, inciting controversy and fierce opposition. In Washington, D.C. specifically, bicycle infrastructure projects have been linked by some residents to gentrification, displacement and negative neighborhood change. Through a review of relevant literature and analysis of stakeholder interviews, this research thus contributes to knowledge about how urban planners can approach opposition to bicycle infrastructure projects in D.C. and elsewhere in North America.

METHODS

The research began with a review of the literature surrounding the arguments for investments in cycling infrastructure, best practices in cycling infrastructure, opposition to cycling infrastructure and public consultation processes. Scholarship on the topic of the District's post-war growth, development and historical bicycle planning approaches was reviewed in order to contextualize current day bicycle planning in D.C. Reports and policy documents related to bicycle infrastructure planning were also consulted (see Table 1: Reports and policy documents related to bicycle infrastructure planning and projects in Washington, D.C.). In addition, media reports and public meeting documents were analyzed to establish important themes in public discourse on bicycle infrastructure projects in Washington, D.C., with a focus on negative aspects related to bicycle planning and infrastructure.

After obtaining ethics approval from the McGill Research Ethics Board (see Appendix I: REB Ethics Approval), twelve in-person and telephone interviews were conducted with seventeen individuals in February 2017 in Washington, D.C. Two of the interviews were conducted with groups of individuals from the same agency or organization. Interviews addressed strategies employed by planners meant to mitigate or address opposition to bicycle infrastructure projects (see Appendix II: Sample Interview Guide). Interview subjects included planners, government officials, transportation consultants, elected officials, NGO representatives and civic leaders involved in bicycle infrastructure projects in Washington, D.C. Almost two thirds of the interviewees were either planners or planning consultants or government officials tasked with planning policy and remaining interviewees were scattered among the other categories. Subjects were identified via preliminary research and media review, as well as via referrals through snowball sampling. Themes identified in interviews function as the basis for the findings of the research and provide context for the discussion of the case.

Table 1: Reports and policy documents related to bicycle infrastructure planning and projects in Washington, D.C.

Document	Date	Contents
Move DC Plan	2014	The District of Columbia's Multimodal Long-Range Transportation Plan.
Vision Zero Action Plan	2015	Plan outlining the objectives and actions related to achieving zero fatalities and serious injuries in its transportation system.
Bicycle Master Plan	2005	Master plan for the D.C.'s bicycle network. Updates of this document are found in MoveDC.
Sustainable DC Plan	2012	Plan outlining the objectives and actions related to D.C.'s goal to become the healthiest, greenest and most liveable city in the United States.
Eastern Downtown Protected Bike Lane Feasibility Study	2017	Detailed study regarding the preliminary alternatives studied for a protected bike lane on the eastern end of Downtown D.C.

BICYCLE PLANNING IN WASHINGTON, D.C.

At the opening of D.C.'s first protected bike lane in 2009, then director of the District Department of Transportation Gabe Klein informed reporters, "it's really important to provide a liveable, walkable, bikeable city, and that's another way we're going to bring residents back to Washington D.C." (Klein quoted in Gibson, 2013). Today, D.C. is recognized as one of the top cities for commuting by bicycle in the United States (Alliance for Biking and Walking, 2016) and the city has enjoyed significant population growth, bouncing back from decades of sustained population decline. Klein's comment illustrates how the District government has envisioned building a more liveable city so as to attract new residents. Not surprisingly, this narrative is precisely what longtime D.C. residents point to when they criticize bicycle facilities: that the projects serve only the interests of new and future affluent residents of D.C.

In order to better understand opposition to bicycle infrastructure projects in the District, this chapter contextualizes bicycle planning in D.C. First, elements of D.C.'s post-war growth and redevelopment are identified and discussed. It is suggested that D.C.'s status as the nation's capital and its related lack of self-governance have contributed to rapid growth and redevelopment coupled with an historical disregard for the city's longtime residents, a sentiment still felt today by many. After decades of population decline and disinvestment, the District pursued aggressive downtown development strategies designed to attract capital and new residents to the city, which was buttressed by the city's status as a center of politics and power. This strategy of downtown development often occurred at the expense of longtime residents, causing displacement and disregarding the unmet needs of the communities. Subsequently, a brief history of bicycle planning and approaches in the District is provided. It is argued that when bicycle planning began in earnest in the 1990's, the promotion of cycling featured as an element of the aforementioned growth strategy, and in this context became associated with development and gentrification by longtime residents. Finally, the Eastern Downtown Protected Bike Lane Project is offered as a case study. The project is described in detail, and tensions associated with its planning and consultation are raised for further discussion in Chapter 5.

WASHINGTON, D.C.: GROWTH AND REDEVELOPMENT

Washington, D.C. was established by the United States Congress as a federal district in 1790. A plan for the capital city's development, which included wide diagonal avenues intersecting a grid system interspersed with parks and public spaces, was produced by French architect Pierre L'Enfant and further refined by a team of architects and planners commissioned by the Senate a century later (Fletcher, 2008). The District didn't experience much real growth until the Civil War, which grew the army and government operations (Destination DC, 2017). The emancipation of slaves, which occurred in Washington, D.C. almost a year before the Emancipation Proclamation, also contributed to the beginnings of a significant African-American population (ibid). "City beautiful" efforts to modernize and beautify the capital city were carried out after the Civil War as the District continued to grow in population, and public works programs were ushered in during Roosevelt's

administration to attempt to address slums and serve the needs of D.C.'s political establishment (Gillette, 1995).

In many respects, Washington, D.C. has exhibited post-war growth patterns that mirror those of other American cities, including post-war suburbanization and center city decline, followed by late 20th century downtown reurbanisation and revitalization (McGovern, 2015). While D.C.'s revitalization was driven to a certain extent by nation-wide post-industrial economic trends that favored agglomerations in cities, the District's redevelopment as well as local reactions to this redevelopment have also been affected by two of the city's defining and unique characteristics: its status as the nation's capital and its relative lack of authority for self-governance (McGovern, 2015). Until D.C. gained home rule in 1973, the federal government was in charge of city and transportation planning and largely ignored the needs of local D.C. residents, who were largely African-American. Even once the District obtained the ability to self-govern, revitalization strategies often overlooked existing community needs, instead prioritizing downtown growth and the attraction of new, affluent residents.

Revitalizing the nation's capital

In the 1950's and 1960's, urban revitalization of the nation's capital meant to deal with progressive population decline and subsequent disinvestment came in the form of federal highway building and urban renewal projects. These projects, which were intentionally concentrated in central, majority African-American neighborhoods dismissed as 'blighted' by the federal government, had harmful effects on established and sometimes thriving communities and incited racially-charged social conflict (Gillette, 1995, p. 151-2). One particular project cleared an entire African American neighborhood in Southwest D.C. to make way for new development (Gillette, 1995).

D.C. continued to suffer population decline until the trend was reversed in the 2000's (Frey, 2012). Much like other northeast cities such as Philadelphia and Baltimore, in the 1970's D.C. officials responded to population decline and disinvestment by pursuing downtown revitalization strategies. (Levine, 1987; McGovern, 1997, 2015). These strategies emphasized ameliorating the investment climate for businesses (ibid). Commercial real estate investments were key in terms of providing a source of income to the impoverished city, an illustration of what Logan and Molotch argue is a defining growth machine strategy: "the tendency to use land and government activity to make money" (Logan & Molotch, 1987, p. 55). Office rents were rising across the United States during the 1980's and 90's when the post-industrial, service-based economy began to flourish in cities (McGovern, 2015, p. 198). Mayor Marion Barry's "unflinching support for aggressive downtown growth" during his terms in the eighties and nineties contributed significantly to D.C.'s downtown revitalization (McGovern, 2015, p. 210). McGovern notes, however, that rents during that era were particularly high in "cities with unique amenities," D.C.'s unique amenity being its attractiveness as a center of political power and decision-making (ibid). In fact, D.C.'s downtown real estate market was the fourth hottest in the nation by the mid 1980's (p. 199).

The downtown revitalization boom, thanks in part to D.C.'s status as the seat of political power in the U.S., combined with a nation-wide shift in popular sentiment regarding city-living, meant that

D.C. neighborhoods surrounding the downtown area underwent marked demographic changes due to an influx of young, white-collar workers (McGovern, 2015 p. 201). An examination of block-group census data from 1970 and 1980 found that in D.C.'s central neighborhoods, African American residents were being displaced in three out of every five blocks (Lee, Spain, & Umberson, 1985). Despite this measurable influx of young workers, much like nearby Baltimore and Philadelphia, D.C.'s population declined between five and six percent between both 1980 and 1990 and 1990 and 2000 (Frey, 2012, p. 24). The District's population decline during this time period contrasts rather starkly with the metropolitan region's demographic change during the same two decades. The D.C. metro region in fact grew in population by 21.3 % during the 1980-1990 period and by 16.3% the following decade (ibid). In short, despite declining center city population, the metropolitan region was growing, and at an even faster rate than D.C.'s population was declining.

"City living, D.C. style"

It wasn't until the 2000-2010 period that the city's population began growing again (Frey, 2012). If Mayor Barry can be said to have championed businesses and downtown redevelopment, his successor Anthony Williams (1999-2007) is known for his crusade to attract 100,000 new residents to D.C. (Gibson, 2013, p. 237). Indeed, Marion Barry's efforts may have laid the foundation for Williams' goals. But Gibson points out that this was no easy task given D.C.'s tendency to lose population. Though downtown D.C. had been experiencing commercial growth, many white-collar employees lived in suburbs outside of the city, commuting in by train or automobile only for the work day. The center city essentially emptied when employees stamped their time cards at the end of the day. As a case in point, an official who worked at D.C.'s Downtown Business Improvement District in its infancy in the 1990's recounted that it was virtually impossible to get even a sandwich downtown after the lunch hour. Gibson contends that instead of pursuing policies that would attract families to the District, Mayor Williams rolled out a "city living, D.C. style" marketing campaign geared at luring the affluent creative class to the city's central neighborhoods (Gibson, 2013, pp. 237–8). To Williams and his staff's credit, however, efforts were made to engage existing residents: the Mayor held six "citizen summits" during a six year period in which citizens were consulted on strategic planning and budget prioritization (Moynihan, 2003). Nevertheless, this public engagement does not invalidate the fact that much redevelopment and gentrification occurred under the Williams administration.

D.C.'s pro-growth and redevelopment policies were adopted shortly after the city obtained home rule in 1973. Such policies have not benefitted all residents, especially longtime African American residents. For many African American D.C. residents, the policies unfortunately mirror a history of unpopular, federally-mandated planning projects such as urban highway construction and "slum clearances," touted by officials as urban development and transportation improvements (Gillette, 1995; McGovern, 2015). Although by the 1980's D.C. had been granted some authority to set its own policy agenda, the new agenda did not necessarily benefit local D.C. residents but instead catered to businesses and future, affluent residents. Remnants of the historic distrust of government thus remain among those who have felt they have never had a voice in or benefitted from government planning efforts. The priority and benefits awarded to private sector interests

during the infancy of DC's revitalization were not matched by benefits to communities (Gillette, 1995). This sentiment was felt by longtime, African-American residents during the post-war era of top-down, federal planning and endures in the District as it continues to grow.

THE EVOLUTION OF TRANSPORTATION IN WASHINGTON, D.C.

Washington, D.C.'s transportation history and current approaches are similar to those in other cities across the United States: after decades of automobile dominance, priorities have shifted slightly to include the encouragement of and planning for public and active transportation modes. In short, transportation is an evolutionary field and its evolution in D.C. has followed national trends. Echoing McGovern's statement regarding the federal government's role in the growth and redevelopment of D.C., Schrag asserts that D.C. metropolitan region is the "area in which the federal government exercised the most influence in transportation" (2004: 649). With the federal and regional agencies historically focusing on moving commuters in and out of D.C., the District Department of Transportation has adapted its transportation planning functions to connect neighborhoods *within* D.C.

Prior to the advent of automobility, the District's first foray into public transportation involved an extensive streetcar network whose construction was mandated by Congress (Sheir, 2015). As the automobile rose to prominence in the 1950's, however, Congress ordered the replacement of D.C.'s streetcars with bus service (Schrag, 2008, p. 30). At the same time, circumferential highway infrastructure plans were unveiled and implemented in order to deal with the city's congestion and provide links to the growing suburbs in Maryland and Virginia (Gillette, 1995; Schrag, 2008). By the 1960's, it became clear that highways alone wouldn't be able to support the daily influx of commuters to D.C., and a coalition of local politicians and federal Democrats called for rapid transportation in the D.C Metropolitan region (Schrag, 2008). D.C. was lagging behind Boston, New York, Chicago and Philadelphia, cities that had built rapid transit systems before motorization took hold, and as a result the Kennedy administration vowed to bring rapid transit to the nation's capital (ibid). The primary goal of the regional rapid transit system was to offer a new, car-free way for commuters to get to jobs downtown; connecting D.C. neighborhoods and connecting suburbs was a secondary goal (Schrag, 2008, p. 50-51).

While the Metropolitan D.C. metro system has expanded and many stations have been added, thus improving connectivity between D.C. neighborhoods, the design of the system still reveals a preference for moving commuters between suburbs and the central business district. In contrast, the District Department of Transportation now focuses on moving people within D.C. and encouraging multi-modalism and active modes of transportation. Pointing to congestion issues and future population growth, DDOT and other District agencies have committed to reducing the commuter modal share of drivers and taxi goers to just 25% (District of Columbia, 2012, p. 9). Municipal efforts to this end include the introduction of the DC Circulator bus – a $1 fare bus introduced in 2008 that runs six different routes on 10 minute headways – as well as the reintroduction of the streetcar in D.C. and investments in bicycle infrastructure.

Today, the Washington Metropolitan Transportation Authority (WMATA), is under fire for approving fare increases and service cuts to deal with budget constraints and maintenance work on the system's outdated, unsafe infrastructure. While vehicular modal share is actually quite low in the District (about 35% of commuters drive to work), it remains high throughout the entire Metropolitan Washington Region (69%) (District Department of Transportation, 2014. p. 29) and the modal share of drivers risks increasing should WMATA be unable to provide reliable, cost-effective service to DC Metro area commuters.

As a demonstration of how transportation has evolved in D.C., cycling has recently been marketed in the Washington Metropolitan Region by government agencies as a transportation alternative as the region's metro undergoes track maintenance and line closures. Capital Bikeshare, the city's bikeshare system, has offered a new $2 single trip fare and advocates have promoted bike routes that replace metro lines. D.C.'s transportation planning thus appears to have evolved from a federal, auto-dominated planning approach to a more local, people-focused planning approach.

BICYCLE PLANNING IN WASHINGTON, D.C.

A brief history

D.C.'s first comprehensive bike plan was published in 1975, signaling the start of a concerted bicycle planning effort in the District. As is discussed in Chapter 2, this plan arose in the context of the oil crisis and in the aftermath of the environmentalist movement. A public hearing on the plan indicated support from government functionaries heralding from the EPA and other federal agencies. D.C.'s 1975 bicycle plan was produced during what has been referred to as "the first golden era of bicycle planning," 1970-1980 (Epperson, 2012). This golden era of bike planning, along with the federal funding to implement its fruits, came to a close in the 1980's with the Reagan administration (ibid). So, too, did bike planning in D.C.; plans from the previous decade were slow to be implemented and limited to off-street trails (Buehler & Stowe, 2016). A D.C. official involved in bicycle planning and advocacy in the 1980's and 1990's related that transportation *in general*, never mind bicycle transportation, received a marginal amount of policy attention given the city's fiscal woes (Downtown DC. Business Improvement District Official, personal communication). For instance, if one were to have visited the District Department of Transportation building during that period, two thirds of the offices would have been empty. Transportation officials "were just trying to keep the lights on"(ibid). D.C.'s biggest bicycle advocacy organization, the Washington Area Bicyclist Association (WABA), survived in those days thanks to membership concentrated in Maryland and Virginia suburbs (ibid).

Bicycle planning resumed in earnest when Mayor Anthony Williams (1997-2007) introduced his 2003 campaign to attract 100,000 more residents to the District. According to Gibson, cycling was given a prominent role in the Mayor's "city living, dc style" marketing campaign, which targeted young, affluent individuals (2013: 238): the 'creative class'. D.C.'s first full-time bicycle planner was hired in 2001, and DDOT released a new and improved bicycle master plan in 2005 that proposed a network comprising 50 miles of bike lanes as well as other complementary bicycle infrastructure elements such as bike parking and a bikeshare system (Buehler & Stowe, 2016, p. 187). Of course, some of the motivation behind this new hire came from increased federal funding for bicycle

planning and a federal mandate that states designate bicycle planning coordinators (ibid), but the hire was consistent with local officials' objective to promote D.C. as a cycling-friendly city.

Bicycle planning and the promotion of cycling in D.C. continued under the administration of Williams' successor, Adrian Fenty (2011-2015), himself a cyclist and triathlete (Gibson, 2013). Fenty's administration enthusiastically pursued a bicycle planning agenda, including the implementation of the nation's first bikeshare system (ibid). D.C. was not necessarily leading the charge in terms of bicycle planning; many miles of bicycle lanes were built previously during the tenure of New York City Transportation Director Jannette Sadik-Khan during the 2007-2013 period (Sadik-Khan & Solomonow, 2016), and Portland had been progressively building bicycle infrastructure through the 1980's and 1990's (Initiative for Bicycle & Pedestrian Innovation, n.d.). Gibson argues that Mayor Fenty and his Transportation and Planning Directors "placed bicycles at the center of the city's transportation and urban development agenda," with the goal of promoting a more liveable Washington to attract the creative class (Gibson, 2013, p. 238). This strategy was not unique to D.C. but employed by 'progressive' mayors throughout the United States (ibid). Cycling appears to remain a cornerstone of the city's marketing strategy: DDOT's current Bicycle Program webpage states that "bicycling… makes DC one of the most liveable cities in the country" (District Department of Transportation, n.d.).

D.C.'s approaches to bicycle planning

The District Department of Transportation's initial approach to bicycle planning emphasized increasing the total mileage of bike lanes in the city, and corresponding indicators were set. This approach was frequently accomplished by installing bike lanes on roads or parking lanes with extra width during road repaving or resurfacing, making them less contentious than projects that involve tradeoffs such as removing parking or vehicular lanes. Consequently, D.C.'s bike lane mileage increased from 3.2 miles in 2001 to more than 70 miles today (Buehler & Stowe, 2016; Di Caro, 2016). The District's latest long range transportation plan, MoveDC, now calls for the implementation of "136 miles of bike lanes, 72 miles of protected bike lanes, and 135 miles of trails" over the next 25 years (District Department of Transportation, 2014, p. 10). While increasing the number of miles of bike lanes remains one of DDOT's indicators, providing protected infrastructure and closing gaps in the cycling network are new priorities. More specifically, safety is now an agency-wide priority for DDOT as per current Mayor Muriel Bowser's adoption of the Vision Zero Action Plan, which calls for the elimination of traffic-related fatalities. Protected bicycle infrastructure is crucial in terms of reducing traffic fatalities, but it's also been recognized by planners and scholars as a critical tool for encouraging city cycling, especially among women, by increasing perceived safety (Dill & McNeil, 2012; Pucher et al., 2010).

This adjustment in priorities means that the types of projects DDOT takes on today are markedly different from those it implemented at the outset of bicycle planning. Protected bike lanes may require more road space, a heftier budget and often a more comprehensive planning process. The space issue is what can make the projects so polemical, as DDOT Bike Planner Jim Sebastian points out: "now we are looking at more projects where we may have to eliminate a travel lane or a parking lane, or rearrange the street in such a way to fit the bike lane." (Sebastian quoted in Di Caro,

2016). Sebastian contends that these types of projects create concerns that must be addressed by DDOT (ibid). "Controversial" projects such as the Eastern Downtown Protected Bike Lane, which will be discussed further below, can take years to develop and build, causing frustration within the advocacy community. WABA's President, for instance, has pointed out that "[D.C. is] getting left behind by Chicago, New York City, [and] Portland" in terms of building a protected cycling network (Billing quoted in Di Caro, 2016). To illustrate his point, the WABA representative compared D.C.'s progress in 2016 (a single protected facility) to that of other cities in the U.S.: "New York City's planning to build 16 miles of protected bike lanes this year. Chicago has a goal of building 20 miles of protected bike lanes a year" (ibid). This may be partly due to differences in political will in D.C. and other cities; New York City Mayor Bill DeBlasio, for instance, has appeared to champion the implementation of Vision Zero policies and projects such as protected bike lanes over the last few years (New York City Department of Transportation, 2016), whereas planners have indicated that in D.C. the Mayor's Office has not fully committed to a Vision Zero action plan when it hasn't been the politically expedient thing to do.

Similarly, a shift has occurred within DDOT in terms of the conceptualization of bicycle infrastructure projects, from treating them primarily as design projects to treating them more as comprehensive planning projects, given that they represent investments in a community's permanent or semi-permanent infrastructure. It appears that this shift has occurred not only because of the agency's changing priorities and planning style but also because of the nature and complexity of the types of projects DDOT is embarking upon. Given the curbside use tradeoffs associated with protected bike lanes, such projects may require a more formalized planning study to provide legitimacy and justification. In the framework of this comprehensive planning approach, DDOT has also been conducting liveability studies, transportation planning studies that take a community-based approach to deciphering planning needs. Bike infrastructure projects are often a component of liveability studies, or are developed as a result of the information garnered in the studies. This more in-depth planning approach differs from that employed under the Fenty administration, which featured rapid installation of bicycle infrastructure "without much notice to or input from the people nearby," a practice that contributed significantly to the perception of bike lanes as welcome mats for affluent new residents (Baca, 2012). Long-range planning documents like MoveDC as well as liveability studies attempt to address the issue of notice and outreach and provide district officials with a useful tool for the justification of bike infrastructure projects.

Who is cycling in D.C.?

After Portland, OR, Washington, D.C. has the second largest modal share of bicycle commuters in the United States. In D.C., cyclists represent 4% of daily commuters, a four hundred percent increase from 1990 levels (Buehler & Stowe, 2016, p. 183). Survey data from various sources indicates that Washington, D.C. cyclists are disproportionately wealthy, white males (ibid). As a case in point, though African Americans make up almost fifty percent of D.C.'s population (United States Census Bureau (USCB), 2015), Metropolitan Washington Council of Governments survey data indicates that African Americans account for between 3 and 9% of bike trips (Buehler & Stowe, 2016, p. 184). Not surprisingly, cycling counts are higher in central neighborhoods where cycling

infrastructure exists, which also happen to be communities that underwent rapid population growth and demographic change (Buehler & Stowe, 2016 p. 180).

Survey data on who cycles where in D.C. doesn't tell the whole story. There are many non-commuter or multi-modal cyclists who are not accounted for in the U.S. Census or other local surveys. Sidewalk cyclists may not be counted by bike counting apparatuses. However, available data confirms some of the assumptions and suspicions held by some D.C. residents regarding the profile of cyclists, and, consequently, who the Department of Transportation is planning for: young, white and affluent individuals (Baca, 2012; District Department of Transportation, 2017; Giambrone, 2016). Municipal documents proudly state that cycling is part of what makes it such a liveable city. Some might ask, liveable for whom? For many longtime D.C. residents, bike lanes are synonymous with the gentrification that has been occurring over the last few decades, which has arguably been helped along, and even encouraged, by District government policies. For example, the United House of Prayer, a historic African American church in D.C., has likened a proposed bike lane on its street to urban renewal projects of the 1950's and 60's, and to state-led gentrification and displacement. This story is not unique to D.C.: bike lanes have been called into question on the grounds of their linkages to gentrification in cities such as Portland, San Francisco, and Minneapolis (Hoffmann, 2016; Stehlin, 2015; Stein, 2015b). But as neighborhoods evolve, so too does popular sentiment regarding bicycle infrastructure. D.C.'s 2014 long-range transportation plan, for which public engagement was in-depth and cross-cutting, indicates that 54% of those consulted support the prioritization of investment in bicycle infrastructure (District Department of Transportation, 2014).

THE EASTERN DOWNTOWN PROTECTED BIKE LANE

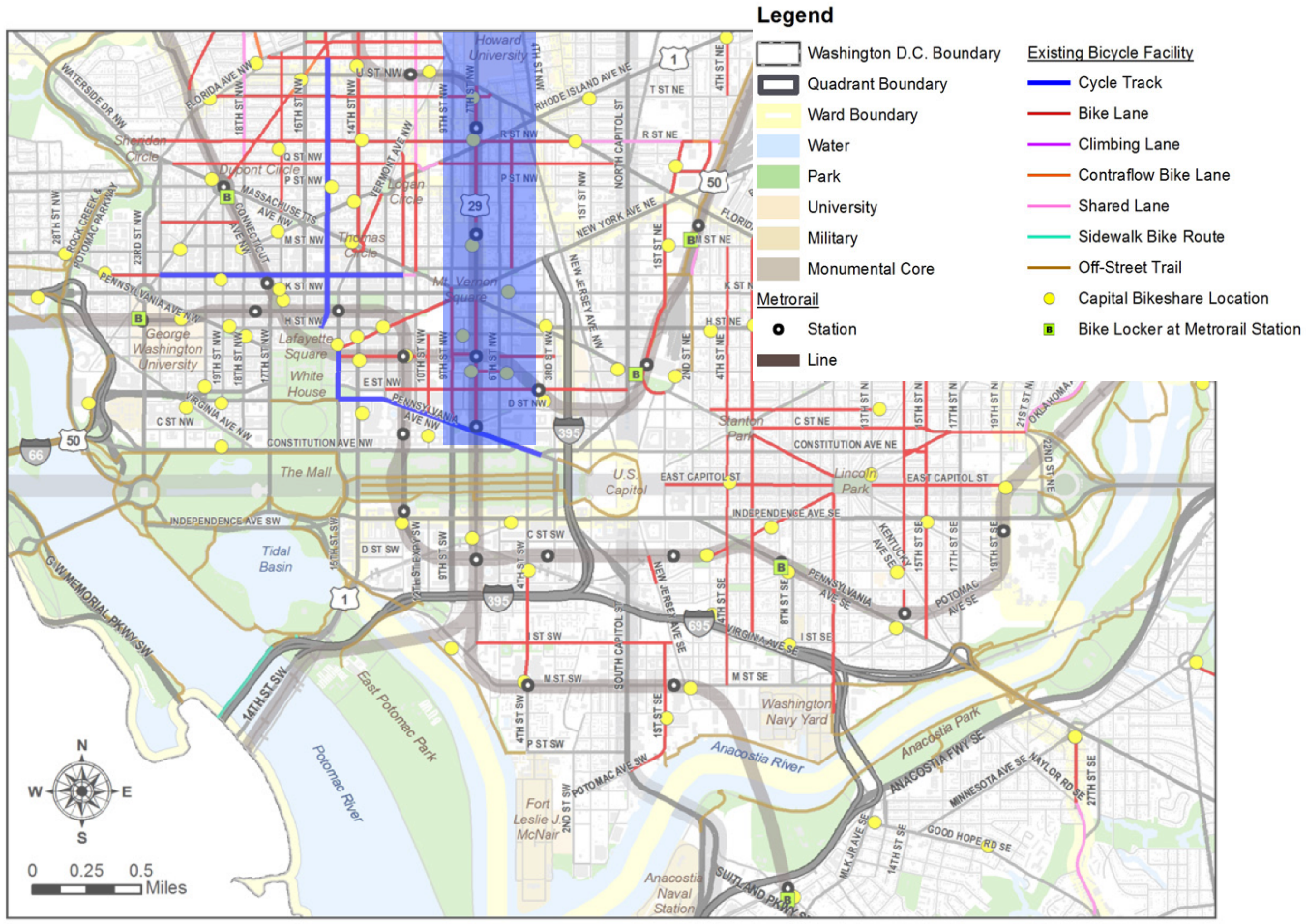
This final section provides details on D.C.'s Eastern Downtown Protected Bike Lane Project, which has received a lot of media attention of late due to the vocal opposition of a handful of community stakeholders, who have linked the bike lane project to gentrification, displacement and urban renewal style, top-down planning. While the project is by no means representative of all bike lane projects in D.C., it does appear to capture some of the socio-cultural opposition to bike lanes occurring in D.C. and elsewhere and is thus worth discussing. The Eastern Downtown Protected Bike Lane is intended to fill an important gap in the network by providing a protected north-south connection on the east side of downtown D.C., linking several central neighborhoods and destinations to the downtown core. To date, the project's major milestone is the feasibility study released in February of 2017 that identifies preliminary alternatives for the location of the protected bike lane. The results of this feasibility study are meant to contribute to municipal officials' decision to pursue one of the preliminary alternatives or not. Once this decision has been made, planners are to move on to a 30% design stage for further study and public engagement on the chosen alternative.

Project details and timeline

The Eastern Downtown Protected Bike Lane Project is intended to fill a gap in D.C.'s protected cycle track network as well as complement east-west bike routes (District Department of Transportation, 2017, p. 2). The absence of a north-south protected cycling route on the eastern side of Downtown

D.C. was identified in MoveDC, D.C.'s long-range transportation plan (see Figure 1 below – the blue shaded area is added by the author to indicate the Eastern Downtown Project study area). MoveDC recommended action be taken to address this absence and provide a safe cycling connection between residential neighborhoods and Howard University to D.C.'s CBD (ibid).

Figure 1: MoveDC Existing Bicycle Infrastructure Network



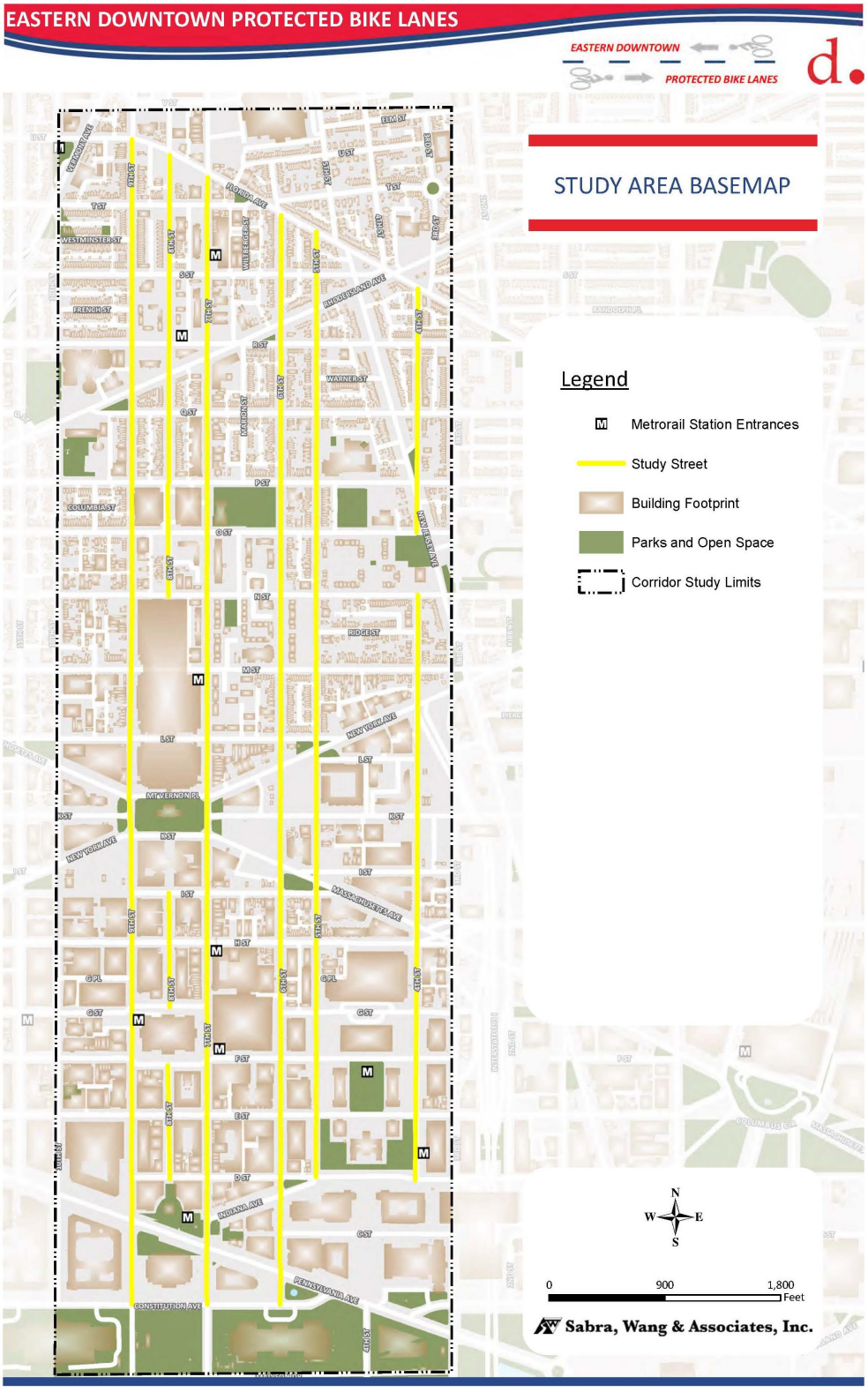
Source: District Department of Transportation. (2014). *Move DC: The District of Columbia's Multimodal Long-Range Transportation Plan. B: Bicycle Element*. Washington, D.C.

The study area on the eastern end of Downtown D.C. is bound by 4th Street NW to the east, 9th street NW to the west, Florida Avenue to the north and Constitution Avenue to the south. From the six north-south study streets, from 4th Street NW to 9th Street NW, three were eliminated due to fatal flaws including street discontinuity and heavy curbside bus loading, leaving 5th Street, 6th Street and 9th Street as available for the incorporation of curbside bike lanes (see Figure 2: Eastern Downtown Protected Bike Lane Study Area and Study Streets). Four preliminary alternatives were evaluated and compared with the existing no-build option, with a focus on the effects the design alternatives would have on transportation metrics such as cyclist safety, parking, traffic and bus operations as

well as non-transportation metrics such as the effects on the community, local economy, streetscape aesthetics and project costs (ibid). Of the four alternatives, DDOT has recommended two for further study: alternatives 3 and 4, which involve bi-directional cycle tracks on 6th Street and 9th Street, respectively. DDOT is to decide at the end of this year whether to advance one of the preliminary alternatives to the implementation stage, meaning that if a bike lane design is pursued, it could be built as early as winter 2018 and as late as spring 2019.

Here an important caveat regarding the 9th Street NW alternative should be noted: plans to extend D.C. streetcar service from Union Station to Georgetown involve putting streetcar tracks down on a block of 9th Street. Bike lanes and streetcar tracks simply aren't compatible, and one wonders how the roadway could accommodate both while maintaining space for vehicular traffic. While this roadway conflict would only affect one block, it represents a potential fatal flaw for the 9th Street NW alternative that isn't raised in the feasibility study.

Figure 2: Eastern Downtown Protected Bike Lane Study Area and Study Streets



Source: District Department of Transportation. (2017). Eastern Downtown Protected Bike Lane Feasibility Study. Washington, D.C.

Neighborhood characteristics

The northern portion of the study area lies mostly within the Shaw neighborhood of D.C. Shaw is a primarily residential, historically African-American neighborhood in central D.C. The neighborhood has experienced some of the highest growth and demographic change in D.C.: U.S. Census data from the census tract that includes Shaw indicates a 15% increase in population and a 33% increase in housing units (often in the form of higher-density, mixed-use units) between 2000 and 2010 (District Department of Transportation, 2017, p. 88). For the sake of comparison, the District as a whole saw a 5% population increase and an 8% increase in housing units over the same period (ibid). As DDOT points out in the project feasibility study, racial demographics have seen even more dramatic changes in the neighborhoods comprising the census tract in question. The African American population decreased by 28%, compared with 11% overall in the District, while the white population grew by almost four hundred percent, compared with a 31% citywide increase (ibid). Furthermore, median household incomes in Shaw and surrounding neighborhoods more than tripled (ibid). The feasibility study acknowledges that this rapid growth and demographic change produces challenges related to the maintenance and provision of affordable housing, social networks and cultural institutions. It also notes the association that longtime residents have made between gentrification and bicycle lanes: "[longtime residents] see the increase in bicycle facilities as occurring because of the neighborhood change rather than a response to increasing bicycle mode split and resulting crashes and serious injuries" (District Department of Transportation, 2017, p. 89).

The southern portion of the study area falls in the Chinatown and Penn Quarter neighborhoods, which are primarily commercially zoned though do feature upscale mixed-use residential developments (District Department of Transportation, 2017, p. 3). Chinatown and Penn Quarter support a plethora of restaurants, retail, offices and other attractions such as the Verizon Center, a sports and entertainment arena, as well as the National Portrait Gallery and a handful of other museums (ibid).

Public consultation: "The tale of two meetings"

Public consultation for the Eastern Downtown Bike Lane Project's conceptual stage was carried out through preliminary stakeholder meetings, email blasts and website comment forms, as well as two public meetings, held in October 2015 and February 2016. Stakeholder meetings indicated varying levels of support for the bike lane project, and meetings with African American churches appeared to be made difficult by project framing and socio-cultural issues. For instance, strong connections between the bicycle lane project and D.C.'s long-range transportation and Vision Zero plans were not made. Additionally, officials and church representatives appear to have had conflicting meeting styles. The second public meeting was more successful that the first, thanks in part to a more appropriate and improved meeting facilitation. Finally, a summary of the public comments received by DDOT through several means revealed that 52% of those who participated support the bike lane and the remaining 48% oppose it (District Department of Transportation, 2017).

Advocates explain that the substantial stakeholder engagement carried out for this project was an attempt to improve upon previous projects' troubled public consultation processes (Advocate A,

personal communication). In this sense, stakeholder outreach effectively functions as a way to engage with communities before a public meeting so that the public doesn't feel surprised or blindsided by project proposals. Stakeholders consulted for the Eastern Downtown Project included elected Advisory Neighborhood Commissions, Howard University, the D.C. Convention Center, WABA and five historical African American churches located in the study area (three are located on 6th Street NW and the other two are on 8th Street NW and 9th Street, NW respectively). Support from these stakeholders varied. WABA and Howard University, for instance, were generally supportive of a protected bike lane, as was the Hemingway Temple African Methodist Episcopal Church, whose Pastor sent a letter of support to Mayor Bowser concerning the project. The three other churches were less supportive, citing concerns regarding parking for churchgoers on Sundays and for special events and processions. Of the five churches, the United House of Prayer has been the most vocal in opposing the protected bike lane project on 6th Street NW and has played a big role in terms of framing the project as inherently linked to urban renewal and gentrification, a belief that the church's congregation has rallied around.

A source suggested that stakeholder outreach with the churches was less successful than it could have been due to DDOT's trouble articulating the story behind the bike lane and responding to cultural sensitivities (Planner D, personal communication). While the project originated from MoveDC and responds to the Vision Zero action plan, these facts weren't emphasized during stakeholder meetings. Opportunities to recount the massive public engagement process and goals associated with MoveDC, as well as the Mayor's commitment to the Vision Zero action plan, were missed. Similarly, the project was pitched first and foremost as a bike lane project instead of a bike lane and pedestrian improvements or traffic calming project. Here, opportunities to highlight pedestrian safety for churchgoers were perhaps not capitalized upon as well as they could have been. Stakeholder outreach with the churches was seemingly also complicated by the fact that DDOT officials didn't read cultural cues by "put[ting] on their church hats" (ibid). At one stakeholder outreach meeting for instance, the same source explained that officials commenced almost immediately with the project presentation only to be stopped by the Pastor, who wished to engage in formal introductions as well as say a prayer (ibid). This contributed to church representatives' feeling that DDOT had already made up its mind about the details of the project, which appeared set in stone to some stakeholders, and wouldn't truly listen to churches' concerns.

The two public meetings yielded quite different results, prompting a source to refer to them as "the tale of two meetings"(Planner C, personal communication). The variation in the success of the meetings may have been in part thanks to the distinct structure of each meeting. The first was held in a smaller space and was intended to be a sort of open-house style meeting, where the public could review and comment on boards to city officials. Instead, "due to attendee actions," the meeting format changed into an ad-hoc question and answer session (District Department of Transportation, 2017, p. 84). According to Washington City Paper coverage of the meeting, the conversation "often became less about [bike infrastructure] and more about the city's changing racial and economic demographics" (Sommer, 2015). When the room filled beyond capacity, library police shut down the meeting an hour early (ibid). Additionally, the no-build option wasn't included

as a prominent alternative in the first meeting, which advocates say may have frustrated attendees opposed to the project (Advocate A, personal communication).

With the unfolding of the first meeting in mind, the second meeting was held in a much larger space and involved a short presentation followed by a public comment period managed by a facilitator. The facilitator set ground rules regarding commentary so that time would be used effectively and everyone would be able to participate. Crucially, a panel of city officials including the directors of DDOT and the Office of Planning sat in the front row, facing those who were commenting on the project and taking notes. The second meeting is said to have gone a lot more smoothly because individuals were given the chance to speak in front of an audience and thus felt heard (Planner D, personal communication). This meeting format was better both for seniors, who could sit down, and church parishioners bussed in to attend the meeting, who "expect someone to be up there talking to them"(ibid).

A summary of public comments from the meetings as well as online forms and emails indicate that 52% of those who submitted comments are in favor of a protected bike lane while 48% prefer the no-build alternative (District Department of Transportation, 2017, p. 89). Opposition to the protected bike lane revolves around the potential restriction of church parking and congestion due to reduced roadway space. Some say, however, that this opposition is a red herring. Instead of bike lanes, what people are opposed is to the drastic demographic and neighborhood change that has occurred in the Shaw neighborhood over the past few decades (Planner D, personal communication). DDOT is aware of this layer of complexity: the feasibility study describes how some longtime residents and former residents (often church parishioners) perceive bike infrastructure as a negative symbol of neighborhood change (District Department of Transportation, 2017). Indeed, the United House of Prayer (UHOP), the church leading the opposition charge, has claimed that the proposed bike lane is "a threat to [the church's] existence," and another church likened the bike lane to a cancer for the neighborhood (Sommer, 2015). What's more, in a 2014 letter to DDOT, UHOP claimed that DDOT's proposed bicycle lane and subsequent reduction of parking spaces represent an infringement on the church congregation's right to religious freedom by posing an undue burden on people who want to worship (Stein, 2015a). The church, which is located on 6th Street, recommends that the bike lane, if it is even truly necessary, be built on 9th street NW, and effectively threatens to file a lawsuit should their concerns not be resolved (ibid). Placing the bike lane on 9th street, however, would restrict parking for parishioners of the New Bethel Baptist Church located there as well as create a road space conflict should the streetcar project be carried out.

The Eastern Downtown Protected Bike Lane as a case study

The Eastern Downtown Protected Bike Lane Project highlights some important tensions associated with many bicycle planning projects in D.C. and elsewhere in the United States. As the Director of DDOT conceded, "this project is getting a lot of attention [and] it's a lot bigger than a bike lane" (Dormsjo quoted in Giambrone, 2016). One of the principal tensions revolves around the perception by many longtime D.C. residents that bicycle infrastructure projects do not cater to their needs and are linked to the negative aspects of neighborhood change in their communities. D.C.'s

history of federal, top-down planning and, more recently, aggressive downtown revitalization at the expense of longtime residents certainly provide a foundation for this sentiment. Relatedly, a tension exists in the act of weighing public comments and concerns against other measures such as safety (and, more broadly, Vision Zero goals) or accessibility for cyclists. Advocates argue that bowing down to opponents and pursuing a no-build alternative would set a dangerous precedent for future protected infrastructure projects, reducing safety for all road users and contradicting D.C.'s Vision Zero action plan. Planners in D.C. and elsewhere must address these tensions, and the next chapter is devoted to exploring the strategies available to them to do so.

This chapter has contextualized bicycle planning in D.C. by providing an overview and discussion of relevant characteristics pertaining to D.C.'s post-war growth and redevelopment. The city's status as the nation's capital and its related lack of self-governance have contributed to rapid growth and redevelopment as well as an historical disregard for the city's longtime residents, a sentiment which to some extent endures today. Business friendly downtown development strategies were pursued to attract capital and residents to the city following decades of population decline and disinvestment. These strategies were aided by the city's distinction as a center of politics and power. Downtown development, however, often prioritized the needs and desires of the private sector rather than residents, leading to displacement and discontent. A review of the history of bicycle planning and the evolution of bicycle planning approaches in D.C. reveals that when bicycle planning began in earnest in the 1990's, the promotion of cycling was featured as an element of the aforementioned growth strategy. It was in this context that bicycle planning and projects became associated with development and gentrification by longtime residents. This narrative continues to shape public conversations on bicycle infrastructure projects today.

STRATEGIES FOR ADDRESSING OPPOSITION TO BICYCLE INFRASTRUCTURE PROJECTS

Planners must be willing to compromise with hardline opponents when the latter raise valid concerns about bicycle infrastructure projects. Maintaining a portion of the existing on-street parking for church parishioners in the framework of the Eastern Downtown Protected Bike Lane Project, for instance, will be an important feature of concept plans should the project move forward. However, planners and policymakers interviewed in the framework of this research suggested that in fact, the opposition to the project by several church leaders and their congregants wasn't truly about the loss of a handful of parking spaces. Rather, "so much of it is about feeling and perception and not about objective [...] tradeoffs" (Planner A, personal communication). A willingness on the part of planners to compromise and to address real tradeoffs is necessary for any planning project, but it appears that there are other strategies planners might employ so as to preclude or tackle broader opposition to bike facilities. This chapter identifies a host of strategies gathered from interviews conducted with bicycle planning stakeholders in D.C. that may be used to address opposition to bicycle infrastructure projects. In the course of the development of strategy recommendations, an evaluation of existing strategies and projects is provided, with a focus on those used in the context of the Eastern Downtown Protected Bike Lane project.

The collection of strategies has been organized into three categories, planning-stage strategies, communications strategies and meeting facilitation strategies. At the planning stage, interviewees suggested that engaging with and educating communities early regarding long-range transportation issues as well as carrying out comprehensive planning exercises was crucial. Communication strategies included thoroughly explaining the purpose and need for bicycle facilities, in part by building off of education surrounding long-range transportation challenges facing the city, as well as tailoring project messaging to different audiences, e.g. motorists versus pedestrians. Finally, meeting facilitation could be ameliorated by selecting an appropriate format and space depending on the audience, as well as by coordinating the attendance of inter and intra-agency officials to answer questions that might be related to but outside the scope of a given bicycle infrastructure project. While the strategies have been identified in the context of bicycle planning in D.C., they are arguably applicable in other North American cities.

PLANNING-STAGE STRATEGIES

Let us begin by examining strategies that planners can employ at the planning stage of the bicycle infrastructure development process that may help to mitigate concerns raised by those who oppose bicycle infrastructure projects. Here, three principal strategies emerged out of conversations with bicycle planning stakeholders: building trust and engaging early on with communities, educating the public as well as key stakeholders on transportation challenges and objectives in D.C. as identified in the long-range transportation plan and other policies, and carrying out comprehensive studies on corridors where projects are taking place. Engaging early builds trust between planners and communities and may even contribute to project buy-in or support. It also avoids feelings of frustration from being blind-sided by a project that already appears to be developed without

community input. This strategy is already being employed to a certain extent by DDOT through comprehensive planning exercises such as neighborhood or corridor liveability studies. Education of the public on the city's transportation challenges and objectives helps to justify individual bike projects, placing them in the context of a larger, city-wide vision for transportation, health and safety. Collecting and relying on data helps to further justify projects.

Engage early

Many planners insisted that building trust in the communities where projects are proposed is crucial. Building trust takes time and requires a serious commitment on the part of the project planning team. One way to build trust suggested by several planners was to engage with communities as early in the process as possible. Consultants hired by transportation agencies highlighted that it wasn't enough for agencies to ask their consultants to carry out public meetings:

> If public agencies want to make this process smoother for themselves and actually make change happen they need to do exactly that, they need to get out in front of a project and do the due diligence, make those connections, and let their consultant go in and do sort of the technical work and then they need to be on the back end of it and do the follow up (Planner G, personal communication).

Another planning consultant claimed that there was "no place in the planning process too early to engage [communities]" (Planner F, personal communication). Speaking about a trail project in Ward 8, an African-American majority area of D.C. where biking is somewhat taboo, this person related that it took years of building trust and listening to the needs of the community before a decision to implement the project was made. The same planner explained that it is crucial when conducting this early engagement in communities for officials to understand at the outset who they're talking to and what is important to them.

Identifying community concerns will help planners to adopt an appropriate communication strategy, a topic that is considered in the next section. In fact, this is precisely what DDOT intends to do with more comprehensive planning studies such as liveability studies, which identify community transportation needs and test out multi-modal planning ideas. In other words, they treat the project as a planning project first and delve into design later (Policy Official B, personal communication). This is an improvement, say officials, over how bike projects were planned historically, which was to design the facility without having carried out broader planning exercises (ibid). However, planners report that the public tends to support bike infrastructure at this conceptual, comprehensive planning stage. It is when actual designs implying real tradeoffs such as reduced road width, number of lanes, or parking spaces are put forward that the controversies arise (Planner B, personal communication). This point has been raised before by planning theorists. Altschuler, for example, noted that citizen involvement is more important at the beginning of the planning processes, when problems are being defined and goals are being set, but that it is much more likely to occur at the end, when the tangible impacts of plans and projects can be identified (Altschuler, 1965)

Several planners pointed to the need to address community concerns and needs that are perhaps unrelated to bike projects (Planner B; Planner D, personal communications). Addressing such concerns would contribute to the legitimacy of the transportation agency. In Ward 8, for instance, one of D.C.'s majority African-American Wards, an Advisory Neighborhood Commissioner's (ANC) response to a proposed bike lane was that the community wasn't necessarily against bike lanes, but they had been asking for crosswalks for years without a response from DDOT. The community would support bike lanes after DDOT gave them the crosswalks. The bike lane team may not have the capacity or budget to offer tree boxes, proper sidewalks or American Disabilities Association (ADA) approved crossings, suggesting that a comprehensive plan or some sort of inter-departmental coordination for the corridor is needed.

Educate

A second planning-stage strategy is that of educating the public on the transportation challenges faced by the city such as population growth and congestion, as well as objectives laid out in MoveDC, the District's long-range transportation plan, including accommodating travel for all modes, improving neighborhood connectivity and achieving zero fatalities and serious injuries on the D.C. transportation network. While the public consultation process for MoveDC was extensive, many D.C. residents still aren't aware of its existence or how transportation projects in their neighborhood factor into it.

Education appears to be especially important when one considers the role of D.C. ANCs, since Commissioners have the ability to act as champions for projects and rally community support, or to "turn" public opinion on projects (Planner A, personal communication). A negative assessment of a project by an Advisory Neighborhood Commissioner makes planners' jobs harder and it means that projects will require a significant amount of political will to move forward. In other words, upper management is often reluctant to approve projects without ANC support so as to avoid "poisoning the well," and damaging relationships with community representatives (ibid). Keenly aware of the power of education as a strategy to facilitate public consultation, DDOT has funded a forthcoming WABA initiative that addresses this. The project will form a network of Advisory Neighborhood Commissioners and ANC transportation committee members and seek to provide them with a better understanding of the city's transportation priorities and how these priorities get translated into a specific project. It is expected that the ANC officials involved in this initiative can then be a voice in their neighborhoods and help to educate their constituents on what the city is trying to achieve with MoveDC. The project also features an experiential and participatory component whereby ANC officials will take to the streets to identify problematic intersections and come up with strategies to address them.

An important aspect of education on bicycle facilities has to do with explaining tradeoffs. As one official commented, "one of the roles that I think planners need to play as professionals engaging with the public is helping to identify and evaluate tradeoffs… both in terms of budgetary priorities and how do we allocate roadways" (Policy Official C, personal communication). Indeed, one of MoveDC's principles is that each street shall prioritize a certain mode, while attempting to accommodate other modes. A consultant involved in bicycle planning projects claimed that "no one

ever has the cojones to say 'Look, our city is growing, traffic is bad. We cannot widen the roads, we cannot move the cars any faster because it'll be unsafe. So now what do we do?'" (Planner D, personal communication). Asking these questions of the public in the framework of bicycle projects allows planners to frame them as the solution to the city's challenges but first planners must educate the public on these challenges.

Rely on data

Finally, planners tended to agree that data was a critical tool in terms of justifying decisions regarding bicycle infrastructure projects (e.g. where they're located in a neighborhood and whether they should be uni or bi-directional), reinforcing the importance of carrying out more formal planning studies discussed above. Data may be used to provide powerful background information for a project, for instance using crash reports to demonstrate how a current street design is unsafe or bicycle counts to demonstrate the volume of cyclists using a certain corridor. Data showing the impacts a project might have on traffic, congestion, or parking is also useful in anticipation of concerns that will likely be raised by the public. Here, a hands-on strategy might involve pointing to other similar projects as data points so that communities can see that "the sky doesn't fall when you build this stuff" (Planner E, personal communication). Hopefully these projects will have been studied before and after implementation, and data can be used to tell the story behind the purpose of the facility as well as its potential outcomes. As a consultant who has worked in the bicycle planning field for three decades recounted,

> I still think one of the best ways to convince people is to show them a very tangible example that is either close by or very similar, to how this bike lane on a very similar street in a very similar neighborhood affected the lives of the folks around there and being able to show that in a very real way (Planner G, personal communication).

Planners cautioned, however, that relying too heavily on data can be problematic, given that not all datasets tell the story you want them to (Policy Official B, personal communication). For example, crash maps published by DDOT on a monthly basis in the context of the city's Vision Zero action plan often show a high number of crashes on or near existing bicycle facilities. While this might simply be because cyclists tend to be concentrated around bike lanes, and so that's where crashes will occur, it still isn't great optics for the safety narrative used to promote bicycle facilities. In addition, data collection and analysis is time-consuming and expensive. Transportation agencies may not always have the capacity or budget to carry out such a rigorous process for each project. Nevertheless, data can function as an integral part of narratives and communication strategies employed by planners to justify bicycle infrastructure projects.

COMMUNICATION STRATEGIES

Bicycle project stakeholders related that there was room for improvement in terms of communications and framing, or articulating the story behind bicycle infrastructure projects, and that improvements in this area might be successful in terms of addressing opposition. More specifically, interviewees agreed that the purpose and need for bicycle infrastructure projects must be better explained to the public. One consultant explained that "we have to sell biking as a solution,

not the project" (Planner D, personal communication). In addition, interviewees suggested that meetings with the public and with stakeholders might be ameliorated if planners adapted their messaging to the audience in question.

A transportation policy official attributed the current state of communications related to bicycle infrastructure to the small size of the communications department at DDOT, whose involvement in bike projects is largely limited to cursory actions such as releasing notices regarding public meetings:

> We're never setting the narrative, is our problem as an agency, we only play defense. We have a really small communications staff […] so they're doing all these perfunctory things like notices we have to send out saying there will be a public meeting. It's not setting the stage for it, it's saying we are required by law to do it […] So we kind of shoot ourselves in the foot that way (Policy Official A, personal communication).

It may fall on project planners, then, to take on the role of better explaining the purpose and need for bicycle infrastructure projects, as well as tailoring communications to different communities, keeping their concerns and priorities in mind.

Explain purpose and need

As with stakeholder engagement, several planners expressed that communicating the purpose and need of a particular project must be done as early as possible if the story is to be convincing and meaningful. For instance, the same policy official quoted above claimed that for the Eastern Downtown Protected Bike Lane Project there was an effort to tell the story behind the purpose and need for the project but it occurred too late in the consultation process. He cautioned against waiting until the public meeting to do so:

> I think we tried to tell that story but too late. You can't begin to tell it at the meeting when a group has organized people to yell at you. It's not going to change anyone's minds at that point (Policy Official A, personal communication).

Others agreed, saying that during stakeholder meetings DDOT didn't fully articulate the story behind the protected bike lane, that is, framing it using MoveDC and Vision Zero objectives, as well as they could have. As one planner put it, "everything is about a story, how did we get to this project?" (Planner D, personal communication). Failing to tell this story in a way that audiences can identify with invites opportunities for misunderstanding, frustration and criticism.

Evidently, a major element of communicating the purpose and need for a bicycle infrastructure project beyond citing project-specific data is tying the project into a larger narrative regarding city-wide challenges, goals and objectives as laid out in policy documents and action plans such as MoveDC and Vision Zero. It is critical that the public understands that these projects aren't just inventions of bicycle advocates but that they respond to public health, safety and the increasing multimodality of D.C. residents. The Eastern Downtown Project, for instance, responds to growing

bicycle ridership in the city and the need for safe north-south bike routes following a series of serious crashes and injuries. Of course, there may be individuals or groups who don't agree with the principles and objectives of MoveDC. Indeed, dozens of individuals testified against the inclusion of a bike lane on 6th street NW at council hearings on the MoveDC plan, which showed only a conceptual line on a map. Commenting on the Eastern Downtown Protected Bike Lane Project, one interviewee said they had indicated early on that if the project was marketed first and foremost as a bike lane project, it would fail (Planner D, personal communication). In other words, it needed to be sold as a bike *and* pedestrian safety project given early opposition to its inclusion in MoveDC.

Finally, many planners and consultants suggested that another way to improve communications on bicycle infrastructure projects is to ensure that messaging is simple and succinct. One consultant specializing in public engagement highlighted that all too often the community doesn't understand what the agency or consulting team is trying to say. It is crucial that in conversations with stakeholders, messaging found on boards and presentations delivered at public meetings and reports released to the public is succinct and avoids transportation jargon. One policy official suggested that disseminating long studies, such as the 100-page feasibility study for the Eastern Downtown Protected Bike Lane, might not be the best way to communicate findings to the public, recounting that even the bike advocates were poking fun at the length of the document: "we put out these long studies but nobody's going to read that" (Policy Official A, personal communication). He acknowledges, however, that effective communication is a difficult task, explaining that "you have to be very skilled at breaking it [the issue] down to something people are going to understand, and really focusing on the problem" (ibid). While detailed feasibility studies are important because the data they present lays a foundation for the purpose and potential impacts of the project, perhaps this data can act as a separate appendix to a shorter, more succinct report.

DDOT is aware of their shortcomings when it comes to communications and is trying to improve in this area, particularly when it comes to communicating the benefits of projects as they relate to safety, the community and the larger cycling network. The agency acknowledges how useful MoveDC can be as a starting point, because it shows how a given project fits into a larger scheme or plan. For the more complicated projects involving consultant work, they are asking consultants to focus on the communications aspect of the public engagement process (Planner B, personal communication).

Know your audience

Finally, planners emphasized that tailoring bike project messaging and communications to the audience in question could contribute to the success of public engagement processes. As a transportation consultant put it, "one of the beauties of a bike project is it's the ultimate chameleon, it's adaptable, it can do whatever you want it to"(Planner E, personal communication). Other interviewees concurred that it isn't usually the cyclists or smart growth advocates you need to convince about bike lane projects, so it's important to identify what the benefits of the project might be to pedestrians or motorists and frame the project accordingly. In other words, planners need to gain an intimate understanding of what is important to the community (by engaging early on with stakeholders) and use that information to inform the narrative about a bike project. Framing bike

projects as projects that address safety, traffic calming or street improvements was a method cited by planners that appeared to be directed towards pedestrians, while the separation of modes on the roadway was a narrative tailored to motorists. While bicycle infrastructure projects are adaptable, and can be framed in a variety of ways to highlight benefits to different road users or communities, planners conceded that there are forces and actions such as those that lead to gentrification and neighborhood change that bike lanes cannot address.

Framing bicycle infrastructure projects in larger narratives on safety, specifically pedestrian safety, was a key tool referenced by interviewees in efforts to obtain greater community buy-in for projects. This is particularly relevant because bicycle facilities are often designed as part of larger street improvements projects that include pedestrian infrastructure such as new crosswalks or wider sidewalks. Several planners thought that the Eastern Downtown project should have been marketed as a bicycle and pedestrian safety project (Planner C; Planner D, personal communications). While bike lanes are somewhat exclusive given that not everyone can see themselves hopping on a bike, virtually everyone is a pedestrian. As one planner asked, "who doesn't want to walk across the street safely?" (Planner D, personal communication). For elderly churchgoers, this message may have resonated better; 6th Street NW, for example, currently has very few mid-block crossings and pedestrians parked across the street from the church must cross four traffic lanes and two parking lanes in order to reach it.

Similarly, pedestrians as well as nearby residents might appreciate the traffic-calming effects of protected bike lanes. Research has shown that motorists tend to speed when extra road width or lanes are available and that road infrastructure such as protected bike lanes tends to slow motorists down. Municipal planners pointed out that the traffic-calming effects of a bike lane in Southwest D.C., for example, were well-loved by residents (Planner B, personal communication). They were thrilled to learn that the bike lane could reduce the speed of traffic as well as pedestrian crossing times. Interestingly, the officials attributed some of this support to a knowledgeable Advisory Neighborhood Commissioner (presumably this Commissioner's knowledge touched on transportation matters) who enjoyed significant community support (ibid). This anecdote buttresses the claim made earlier about the importance of stakeholder and community education.

Traffic calming arguments may be used for motorists, too, because reduced pedestrian crossing times mean shorter waits at lights. Reducing the number of lanes and incorporating center turn lanes may also make driving safer as vehicles won't be tempted to jockey between lanes. A key message that must be conveyed to motorists, however, is that road diets and traffic calming measures don't have to equate to longer driving times. One planner cautioned that assertions regarding both the safety and traffic calming effects of bike lanes should be made carefully and often require data that agencies might not have. But a policy official suggested that D.C. agencies do have examples to prove, for instance, that traffic calming projects don't in fact result in congestion and longer commutes (Policy Official A, personal communication). In addition, planners indicated that some motorists might respond to the argument that protected bike lanes separate rule-breaking, weaving cyclists from motorists. As one planner explains, "honestly we've had good luck with a project where we said a protected bike lane would get cyclists out of the street and out of the

way of drivers" (Planner B, personal communication). Nevertheless, the planner qualified that "it doesn't make you feel good at the end of the day to say you've sold this project by getting those darned bikers off of a mixed-use roadway" (ibid).

Of course, bike lanes can't do everything, as the planner who referred to bike projects, as chameleons admitted. For instance, gentrification and neighborhood change are some of the underlying concerns communicated by church representatives and congregants regarding the Eastern Downtown Protected Bike Lane. While gentrification and neighborhood change must be acknowledged as concerns, and they are addressed in the project's feasibility study, bicycle planning alone cannot address those issues. In fact, it might even exacerbate them. Given the symbolism of the bike lane in D.C. and elsewhere, referring to a project solely as a bicycle lane project doesn't create the greatest optics. Alternatively, projects could be referred to as safety projects for all users, or bicycle *and* pedestrian improvement projects.

Finally, it is important to note that communications aren't easy. On the contrary, crafting messaging that is simple, succinct and tailored to a variety of public concerns and desires requires a skilled team trained in the craft of communications. As one advocate who *is* a communications expert pointed out, not everyone is a communications major (Advocate A, personal communication). And unfortunately, the communications department at DDOT appears to be stretched too thin to be able to contribute in a meaningful way to each individual bicycle infrastructure project. Additionally, even the best communication methods may not convince those who are wholeheartedly opposed to the principle of allocating road space to cyclists, or who feel so disenfranchised and left out of the planning process that they don't believe in the work that DDOT does or that it could possibly serve or benefit them. This sentiment is echoed in a statement made by an interviewee concerning the Eastern Downtown project: "we tried to make the case for why it was necessary and we were fairly convinced of the value of this facility and we knew ahead of time that there was going to be community resistance" (Planner A, personal communication). Nevertheless, conversations with planners, policy officials and consultants revealed that projects might be less contentious if planners delved a little deeper in terms of explaining the purpose and need for them and tailoring project messaging to the audiences in question.

MEETING FACILITATION STRATEGIES

A third set of strategies identified by planners has to do with the facilitation of public meetings concerning bicycle infrastructure projects. This final section is not meant to act as an exhaustive checklist of tools and actions related to public meeting organization and facilitation but instead captures some of the key points brought up by interviewees in terms of ameliorating public meetings on bike infrastructure. Commenting on both success stories and meetings where there was room for improvement, planners recognized that choosing an appropriate space and meeting format, gaining an understanding of cultural sensitivities prior to meetings, and coordinating inter and intra-agency attendance at meetings all contributed to more positive public meeting outcomes. While a well-facilitated public meeting may not necessarily contribute to greater support for a bicycle infrastructure project, it might at least reduce tension, frustration and inflammatory media coverage.

Choose an appropriate meeting space and format

Interviewees agreed that when it came to public meeting facilitation, choosing an appropriate space and format for the meeting was critical to meetings' success. The Eastern Downtown project and the aforementioned "tale of two meetings" was referenced as a case in point of how meeting space and format can affect the outcome of a public meeting (Planner C, personal communication). As discussed in Chapter 4, the first public meeting was held in a smaller space and was intended to follow an open-house style format, whereas the second was held in a much larger space and involved a short presentation followed by a public comment period managed by a facilitator. Crucially, the facilitator set ground rules regarding this public comment period, restricting everyone's interventions to three minutes so that everyone had a chance to speak. So not only was there space enough for everyone to sit down, a much-appreciated feature of a long meeting, but there was time enough for everyone to comment on the proposal. A structured meeting format such as this also ensured that the meeting didn't get hijacked the way that the first one did. This second meeting yielded a much more positive outcome than the first for these reasons.

Alternatively, a group of transportation consultants explained that the standard three public meetings held at a local school, church or library meant to fulfill legal public consultation requirements may not always be the most effective way to reach out to communities or relay how the proposed project would function in the corridor in question (Planner E; Planner F; Planner G, personal communications). For instance, the consulting firm in question often recommends that agencies instead set up a booth at the community barbeque or another such event to chat about the project rather than deliver a traditional presentation. This type of interaction might be more positive given that the tone of the gathering is friendlier. Bike project public meetings could also be more effective if they're held at the actual site where the facility is being proposed. That way, planners can give tours and explain in a more tangible way what the roadway currently looks like and how it will change with the inclusion of bike facilities and complementary pedestrian or safety improvements. Another related option is for a meeting to be held at a similar bicycle facility nearby that is already built to demonstrate how the proposed facility will function and how it has affected the roadway and different road users. This was cited as an underutilized tool for "convincing" people that bicycle infrastructure doesn't have to signify traffic congestion or the elimination of on-street parking. As one consultant with experience facilitating such meetings related, "you can't put [this] in a presentation, you have to show people… but it's worth it" (Planner G, personal communication).

However, planners emphasized that understanding and addressing cultural sensitivities is crucial. As a case in point, holding a meeting at the site of a proposed facility as suggested above may not be the ideal setting for a meeting that church congregations are expected to attend en masse (i.e. the Eastern Downtown project), given that churchgoers, who are also often senior citizens, are used to gathering listening to a presentation while seated. Furthermore, as DDOT learned, an open-house style meeting may not make sense in a community where residents have traditionally felt disenfranchised or unheard; the ability to deliver comments in front of an audience contributes a sense of testimony and voice to one's statements. In a related sense, one planner stressed that

giving people a decision-making role at public meetings, however small it might be, might reduce the sense of powerlessness people often feel when confronted with project designs: "for a meeting that's tonight we said 'look can't we as a team just pick 5 trees that we know will work on this corridor and let them decide on the trees?'" (Planner D, personal communication). Allowing communities to make design-related decisions could contribute to project buy-in, as well as foster trust between planners and community members. What is interesting about this example, however, is that it seems to counter the principles of Arnstein's ladder of participation. The planner essentially advocates offering trivial participation opportunities, not in order to climb the ladder to fuller participation or citizen control but rather to foster trust in the experts.

Coordinate intra and inter-agency attendance

Finally, interviewees hailing from several firms and agencies in D.C. expressed that in some cases it was useful to have planners in attendance who would could respond to concerns not under the purview of bicycle planners, such as requests to fix potholes and street lights or add crosswalks on adjacent streets. Nearby Arlington, Virginia's municipal officials' manner of conducting public outreach was provided as an example of this type of community outreach, in which representatives from several agencies as well as representatives from different teams within agencies respond to questions that might not relate to the project being featured at the meeting. By contrast, at DDOT planners "go and represent a project and someone asks about a signal study that was done 2 years ago and there's no signal" (Planner B, personal communication). Project managers may not be able to respond to such questions and instead spend half of the following day tracking down other projects' outcomes in order to do so (ibid).

In addition, the presence of representatives at meetings, especially if they are senior officials with decision-making powers, not just from the transportation but also the planning agency signals to the community that their comments matter and are being noted. This was exemplified at the second Eastern Downtown Protected Bike Lane public meeting, in which the directors of DDOT and DCOP were sitting front and center, taking note of the comments being delivered by the public. While it might be impractical and unfeasible to expect that high-level representatives from several municipal agencies attend all public meetings, their presence at meetings that planners expect to be difficult or contentious may have a positive effect on the consultation process.

In this section meeting facilitation strategies that can contribute to more positive outcomes during public consultation processes have been reviewed. Public consultation strategies include choosing an appropriate meeting space and style and coordinating the attendance of senior representatives from different municipal agencies in order to respond to community concerns that might fall outside of the scope of the bicycle infrastructure project being discussed. More specifically, planners pointed out that large meetings in which members of the public can comment on projects might suit some communities, and more informal meetings at the site of the project may be used to better explain in a tangible way the current state of the roadway and how it might be affected by the introduction of a bicycle facility. Of course, these strategies do not represent an exhaustive list of action items that lead to successful meetings—or support for a project, for that matter. Public meeting facilitation is difficult, particularly when it comes to leading conversations about reducing

road or parking space for vehicles. Some planners explained public consultation was the most difficult part of their jobs.

Public consultation is also costly. In this light, consultants hired to carry out public consultation are sometimes prevented from holding the types of meetings they think will yield positive results. Take one example, where a consultant was hired to engage a neighborhood on a multimodal corridor improvements project on a neighborhood street in D.C.:

> Our original scope was 'Ok we're going to do a public meeting, we'll go to the ANCs to remind them and we'll have porch meetings'. We're literally creating parcels and parks and stuff and there's people's houses right there. They're like 'Nope, we want to cut all that out we just want a public meeting'. Because every time they go into the public they get yelled at, it's disastrous (Planner D, personal communication).

This planner's evaluation of the reduction in scope of the public consultation process was that the initial ideas were too costly but also that planners were hesitant to reach out to the community because of negative public meeting precedents. Luckily, many planners were also optimistic about public engagement, and as this section has demonstrated, are continuously updating and upgrading the way they conceive of and plan public engagement activities.

FINAL THOUGHTS ON STRATEGIES

This chapter has outlined the strategies and tools as suggested by D.C. planners, policy officials and consultants that could address or mitigate opposition to bicycle infrastructure projects. Strategies were organized under three broad categories, planning-stage strategies, communication strategies and meeting facilitation strategies. While the strategies have the potential to contribute to successful bicycle planning in D.C., they are also likely to be applicable in other North American cities, and to all kinds of public projects, for that matter.

Three principal planning-stage strategies emerged out of conversations with planners and consultants: engaging early with communities to build trust and support, educating the public as well as key stakeholders on transportation challenges and objectives in D.C. to better frame bicycle projects and carrying out comprehensive studies on corridors where projects are taking place so as to provide background data. In terms of communication strategies, interviewees agreed that the purpose and need behind bicycle infrastructure projects must be better explained to the public with the help of data and policy goals such as safety and transportation objectives, and that planners must adapt their messaging to the audience in question. For instance, bike projects could be framed in a way that communicates the benefits generated for pedestrians or motorists. Finally, meeting facilitation strategies raised by interviewees included selecting an appropriate space and meeting format, gaining an understanding of cultural sensitivities prior to meetings, and coordinating inter and intra-agency attendance at meetings, strategies which in their experience had all contributed to more positive public meeting outcomes.

While the strategies are categorized here for the sake of clarity, they are fluid and will inevitably overlap with one another in practice. For example, educating the public will arguably occur not just at the planning or pre-planning stage, but during public meetings. It is, however, crucial that it happens early on. Likewise, crafting adequate communication strategies is a necessary component of any education initiative.

These strategies are necessarily the result of iterative learning processes on the part of planners, an illustrative example being the second, adapted Eastern Downtown Protected Bike Lane public meeting. What's more, the District Department of Transportation is aware of its limitations due to a small communications team, budget constraints and data collection deficiencies. The agency has come a long way, however, since its early days of employing the simplistic "design, outreach, install" method. Liveability studies offer an example of how DDOT's planning style has evolved from this earlier method to one where comprehensive planning comes before individual project design. It is unclear whether the strategies outlined here have the ability to suddenly turn the tide of opposition. Certainly, other variables must be considered. It may be that the symbolism attached to bicycle infrastructure surrounding gentrification, displacement and negative neighborhood change is too entrenched in certain communities in D.C. However, that the churches consulted regarding the Eastern Downtown Protected Bike Lane Project are not a monolith in their opposition to the bike lanes suggests otherwise. Indeed, as one planner explained,

> It's a heavy lift, because really it's culture change. It's changing the behavior of large groups of people to understand a value that they currently don't understand. And that's not going to be one project, that's many projects (Planner E, personal communication).

CONCLUSION AND RECOMMENDATIONS

PREPARING FOR THE NEXT DEBATE IN WASHINGTON, D.C.

Negotiation experts claim that negotiations are won not at the negotiation table but during the preparation undertaken beforehand (Fisher, Ury, & Patton, 2011). In other words, parties are more likely to obtain favorable results in a negotiation if they take the time to identify and understand both their own interests and those of others before attempting to find common ground and potential solutions. Some advocates and planners have suggested that achieving Vision Zero, for instance, requires a hardline stance: "all this work, protected lanes, traffic calming, et cetera [...] at some point it needs to be non-negotiable because there's a considerable amount of evidence-based research that shows that this stuff works" (Advocate A, personal communication) However, people are supportive of safety measures and bicycle infrastructure generally and instead oppose facilities when it comes down to actual tradeoffs on individual streets. In cases such as these, how might planners deal with opposition?

After making the case that bicycle planning and project implementation is warranted and worthwhile in cities, this research has explored strategies planners might employ to address or preclude opposition to bicycle infrastructure projects. Recommendations flow from an evaluation of existing and potential strategies identified in interviews carried out with bicycle planning stakeholders in Washington, D.C. Strategies are organized under three broad categories, planning-stage strategies, communication strategies and meeting facilitation strategies.

Three main planning-stage strategies emerged out of stakeholder interviews: engaging early with communities to build trust and support, educating the public as well as key stakeholders on transportation challenges and objectives in D.C. to better frame bicycle projects and carrying out comprehensive studies on corridors where projects are taking place to provide background data. Communication strategies include better explaining the purpose and need behind bicycle infrastructure projects with the help of data and policy goals such as safety and transportation objectives, and adapting project messaging on benefits and impacts to the audience in question. Meeting facilitation strategies raised by interviewees include selecting an appropriate space and meeting format, gaining an understanding of cultural sensitivities prior to meetings, and coordinating inter and intra-agency attendance at meetings, strategies which in their experience have all contributed to more positive public meeting outcomes.

Most of these strategies are directed towards transportation officials at the District Department of Transportation. For instance, it is up to DDOT to devote more resources to things like data collection and communication. That is not to say, however, that advocates or consultants who support DDOT's work cannot play a role. Consultants could be more assertive regarding the need for DDOT to undertake stakeholder engagement long before a project is introduced, or the need for a certain meeting format or style. One consultant insisted that this point be included in this research, leaving one to wonder why they wouldn't just be forthright with the transit agency about it. It may be that despite the best efforts and advice on the part of consultants, their message isn't

getting through to municipal officials. Unfortunately, consultants are often constrained by limited budgets, as was demonstrated in the example of a firm having to abandon its idea of conducting porch meetings in a neighborhood and instead conducting a standard format public meeting. Advocates, too, have an important role to play in the implementation of the strategies recommended above, particularly when it comes to education and consensus-building. A good example of the critical function that advocates can carry out is the forthcoming DDOT funded project in which Advisory Neighborhood Commissioners and transportation committee members are provided with a deeper understanding of the city's transportation priorities and how these priorities are translated into specific bicycle or other transportation projects.

Perhaps what is most important is that bicycle project planning is characterized by an iterative learning process. How can planners learn from what goes wrong and what goes right in order to continuously set the bar higher? Luckily, DDOT has demonstrated the capacity to do this by adapting their approach from the simplistic "design, outreach, install" method to more comprehensive planning exercises such as liveability studies, which attempt to take a community-based and needs-based approach to planning. In this sense, it is hoped that the strategies outlined in this research aren't a reinvention of the status quo but instead a helpful set of tools to contribute to this learning process.

APPLICABILITY OF THE STRATEGIES OUTSIDE OF WASHINGTON, D.C.

While the findings of this research resulted from conversations with bicycle planning stakeholders in D.C., they are arguably pertinent to bicycle planners in other North American cities due to similarities in city planning tendencies and arguments raised by those who oppose bicycle infrastructure planning and development. The goals and objectives of city planning departments with regards to long-range transportation, and, more specifically, urban cycling, are converging. The aforementioned fact that forty-seven of the fifty most populous cities in the United States committing to increase cycling in 2016 (Alliance for Biking and Walking, 2016, p. xvi), illustrates this point. Like D.C., other large cities in North America tend to boast sustainability plans that feature cycling as a measure to decrease carbon emissions and improve public health. Furthermore, Vision Zero action plans, which inevitably involve the construction of bicycle facilities to reduce cycling accidents and fatalities, have been introduced in three Canadian cities and thirteen American cities. Opposition to bike lanes, too, tends to be manifested in similar economic and cultural arguments across cases.

The strategies identified in this research could prove useful not just to bicycle advocates and planners but to planners in a great diversity of fields given their cross-cutting nature. Engaging stakeholders early on, presenting projects as logical elements of long-range master plans and policies and developing appropriate meeting facilitation strategies are principles of good urban planning. So, too, is the concept of planners learning iteratively through practice, an idea emphasized by planning theorist Donald Schön (1984). While urban planning schools teach these principles, they are often taught in disparate settings or through a theory-heavy lens. Perhaps planning students would benefit from courses that rely on more practical public engagement examples and simulations.

Certainly, context matters when it comes to bicycle infrastructure projects. The importance of understanding the context in which a bicycle facility is planned is reflected in all three types of strategies recommended above. Just as the ease of bicycle planning differs between communities within cities, it differs between cities. Building a bicycle facility in Portland, Oregon, a city broadly understood as the cycling mecca of the United States, will likely be easier than doing so in San Antonio, Texas, a city where auto-dominance is more entrenched because of cultural and built-environment characteristics. No matter how much preparation, education and analysis is carried out before a project is introduced, barriers may exist that planners cannot surmount overnight. In some cases it may be that the political will required to approve projects that are unpopular with small but vocal groups does not exist. Alternatively, cities lacking strong advocacy organizations may not be able to generate sufficient public support for a project. As one planner elucidated, "the creation of bicycle infrastructure is as much tied to political leadership and transportation evolution as it is to popular sentiment, and all of these things have to come together" (Downtown DC Business Improvement District Official, personal communication). Perhaps through the utilization of the strategies outlined in this research, planners can contribute to the evolution of popular sentiment, political will and transportation priorities.

At the same time, there are simply things that bicycle planners and cycling stakeholders alone may not be able to address through any amount of education, early engagement, or carefully crafted communications. Issues such as gentrification, demographic change and the suburbanization of poverty are the product of much larger forces, and must be addressed by comprehensive city-planning efforts. It is difficult to tell whether it will be possible for planners and other stakeholders to sever the emotional linkages that long-time or former residents have made between cycling and bicycle infrastructure projects and these negative aspects of neighborhood change. Commenting on the Eastern Downtown Protected Bike Lane Project opposition, a bicycle planning consultant suggested the same:

> There are some issues like suburbanization that are bigger than the bike alone. We're part of the solution, part of the answer for sure. And as we retrofit suburbia, we'd better be a part of it, but the rise of suburban development is beyond our singular control. So the issue around the church, is not around the church and parking, it's around the dispersion of population and changing demographics, all of which we're unable to control or influence much (Planner E, personal communication).

Issues such as gentrification and demographic change are valid and worth addressing, especially in a city like Washington, D.C. that continues to gentrify at a rapid rate. Addressing these issues must involve inclusive planning not just at the level of individual bicycle facilities, for instance, but at an inter-agency city or region-wide level. Former New York City Transportation Director Janette Sadik-Khan claims that "there is a new vocabulary for street designs that serve the needs of the people who live in cities" (Sadik-Khan & Solomonow, 2016, p. 294). So, too, is there a new vocabulary for city-planning focused on density and liveability. Moving forward, it is important that

as planners we not assume that this lexicon is the last word, or indeed that it is inclusive of the needs of all city-dwellers.

WORKS CITED

AARP. (2016). AARP Livable Communities: Our Work. Retrieved January 1, 2017, from http://www.aarp.org/livable-communities/about/info-2014/what-we-do.html

Abermarle, W. C. K. (1891). *The Badminton Library of Sports and Pastimes: Cycling* (3rd ed.). London: Longmns, Green, and Co.

Advocate A. (n.d.). Interviewed on February 9, 2017. Washington, D.C.

Allard, S. W., & Roth, B. (2010). Strained Suburbs : The Social Service Challenges of Rising Suburban Poverty. *Brookings Metropolitan Policy Program*, 1–36.

Alliance for Biking and Walking. (2016). *2016 Benchmarking Report*. Washington, D.C. Retrieved from http://www.bikewalkalliance.org/resources/benchmarking

Alliance for Biking and Walking & PeopleforBikes. (2015). *Protected Lanes for Equity : the Global Movement*. Boulder, CO. Retrieved from http://nacto.org/wp-content/uploads/2015/07/2015_PeopleForBikes-and-Alliance-for-Walking-Biking_Building-Equity.pdf

Altschuler, A. (1965). *The city planning process: A political analysis*. Ithaca, NY: Cornell University Press.

Anonymous. (2013, September 3). King Street Bicycle Lanes. Retrieved from http://www.actionalexandria.org/blog/king-street-bicycle-lanes

Appleyard, D. (1980). Livable Streets: Protected Neighborhoods? *The Annals of the American Academy of Political and Social Science*, *451*, 106–117. Retrieved from http://www.jstor.org/stable/1043165

Babin, T. (2015, March 7). Remove a lane to improve traffic? Expert explains his Calgary cycle track proposal. *Calgary Herald*. Calgary. Retrieved from http://calgaryherald.com/news/local-news/remove-a-lane-to-improve-traffic-expert-explains-his-calgarys-cycle-track-proposal

Baca, A. (2012, August 19). Sometimes a Bike is Just a Bike On the symbolism--and politics--of bicycling in D.C. *Washington City Paper*. Washington, D.C. Retrieved from http://www.washingtoncitypaper.com/news/article/13041294/the-symbolism-and-politics-of-bicycling-in-dc

Bailey, K., & Grossardt, T. (2006). Addressing the Arnstein Gap: Improving public confidence in transportation planning and design through structured public involvement (SPI). *Kentucky Transportation Center Faculty and Researcher Publications*, 337–341. Retrieved from http://uknowledge.uky.edu/ktc_facpub%5Cnhttp://uknowledge.uky.edu/ktc_facpub/3

Banister, D., Pucher, J., & Lee-gosselin, M. (2007). Making Sustainable Transport Politically and Publicly Acceptable : Lessons From the EU, USA and Canada. *Regulation*, 1–28.

Billing, G. (2017). Hey we're winning. Washington, D.C.: Washington Area Bicyclist Association.

Brooks, A. (2012). *Are We There Yet?: Creating Complete Communities for 21st Century America*. Retrieved from http://reconnectingamerica.org/assets/PDFs/20121001AreWeThereYet-web.pdf

Buehler, R., & Pucher, J. (2012). Cycling to work in 90 large American cities: new evidence on the role of bike paths and lanes. *Transportation*, *39*(2), 409–432. https://doi.org/10.1007/s11116-011-9355-8

Buehler, R., & Stowe, J. (2016). Bicycling in the Washington, DC Region. In S. Hyra, Derek and Prince

(Ed.), *Capital Dilemma, Growth and Inequality in Washington, D.C.* (pp. 180–206). Washington, D.C.: Routledge.

Cervero, R. (2002). Built environments and mode choice: toward a normative framework. *Transportation Research Part D: Transport and Environment*, *7*(4), 265–284.

Destination DC. (2017). The History of Washington, D.C. Retrieved from https://washington.org/DC-information/washington-dc-history

Di Caro, M. (2016, March 21). Is D.C. Moving Fast Enough On Bike Lanes? Six Miles To Be Added In 2016. *WAMU*. Washington, D.C. Retrieved from http://wamu.org/story/16/03/21/is_dc_moving_fast_enough_to_build_bike_lanes_six_miles_to_be_added_in_2016/

Dill, J. (2009). Bicycling for Transportation and Health : The Role of Infrastructure. *Journal of Public Health Policy*, *30*(Supplement 1 : Connecting Active Living).

Dill, J., & Carr, T. (2003). Bicycle Commuting and Facilities in Major U.S. Cities: If You Build Them, Commuters Will Use Them. *Transportation Research Record*, *1828*(1), 116–123. https://doi.org/10.3141/1828-14

Dill, J., & McNeil, N. (2012). Four Types of Cyclists? *Transportation Research Record*, *2387*(2387), 129–138. https://doi.org/10.3141/2387-15

Dill, J., & Voros, K. (2007). Factors Affecting Bicycling Demand: Initial Survey Findings from the Portland, Oregon, Region. *Transportation Research Record*, *2031*, 9–17. https://doi.org/10.3141/2031-02

District Department of Transportation. (n.d.). Bicycle Program. Retrieved from https://ddot.dc.gov/node/474622

District Department of Transportation. (2014). *Move DC: The District of Columbia's Multimodal Long-Range Transportation Plan. B: Bicycle Element*. Washington, D.C.

District Department of Transportation. (2017). *Eastern Downtown Protected Bike Lane Feasibility Study*. Washington, D.C.

District of Columbia. (2012). *Sustainable DC Plan*. Washington, D.C. Retrieved from http://www.sustainabledc.org/about/

Downtown DC Business Improvement District Official. (n.d.). Interviewed on January 30, 2017.

Duranton, G. and Guerra, E. (2017). Developing a common narrative on urban accessibility: An urban planning perspective. Retrieved from https://www.brookings.edu/research/developing-common-narrative-urban-accessibility-planning/

El-Geneidy, A., van Lierop, D., & Wasfi, R. (2016). Do people value bicycle sharing? A multilevel longitudinal analysis capturing the impact of bicycle sharing on residential sales in Montreal, Canada. *Transport Policy*, *51*, 174–181. https://doi.org/http://doi.org/10.1016/j.tranpol.2016.01.009

Environmental Protection Agency. (2016). Sources of Greenhouse Gas Emissions. Retrieved from https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#transportation%0D

Epperson, B. D. (2012). Bicycle Planning , American-Style: A History of Vehicular Cycling, 1968-1982.

FHWA. (2015). Public Involvement/Public Participation. Retrieved from https://www.fhwa.dot.gov/planning/public_involvement/index.cfm

Fisher, R., Ury, W. L., & Patton, B. (2011). *Getting to yes: Negotiating agreement without giving in*. Penguin.

Fletcher, K. R. (2008, April). A Brief History of Pierre L'Enfant and Washington, D.C. *Smithsonian Mag*. Retrieved from http://www.smithsonianmag.com/arts-culture/a-brief-history-of-pierre-lenfant-and-washington-dc-39487784/

Frey, W. H. (2012). *Population Growth in Metro America since 1980. Putting the Volatile 2000s in Perspective. Brookings Institution Metropolitan Policy Program*. Washington, D.C. Retrieved from https://www.brookings.edu/wp-content/uploads/2016/06/0320_population_frey.pdf

Friman, M., Fujii, S., Ettema, D., Gärling, T., & Olsson, L. E. (2013). Psychometric analysis of the satisfaction with travel scale. *Transportation Research Part A: Policy and Practice*, *48*, 132–145. https://doi.org/10.1016/j.tra.2012.10.012

Gase, L. N., Barragan, N. C., Simon, P. A., Jackson, R. J., & Kuo, T. (2015). Public awareness of and support for infrastructure changes designed to increase walking and biking in Los Angeles County. *Preventive Medicine*, *72*(2015), 70–75. https://doi.org/10.1016/j.ypmed.2014.12.033

Giambrone, A. (2016, February 6). Preferred Alternative for Controversial Downtown Bike Lane Still Unclear. *CITYPAPER*. Washington, D.C. Retrieved from http://www.washingtoncitypaper.com/news/city-desk/blog/13070444/preferred-alternative-for-controversial-downtown-bike-lane-still-unclear

Gibson, T. A. (2013). The rise and fall of Adrian Fenty, Mayor-Triathlete: cycling, gentrification and class politics in Washington DC. *Leisure Studies*, *4367*(July 2014), 1–21. https://doi.org/10.1080/02614367.2013.855940

Gillette, H. (1995). *Between justice and beauty: Race, planning, and the failure of urban policy in Washington, D.C.* Baltimore: Johns Hopkins University Press.

Goodyear, S. (2014, September 14). Why Bike Lovers Should Be Happy About "Bikelash." *Citylab*. Retrieved from https://www.citylab.com/transportation/2014/09/why-bike-lovers-should-be-happy-about-bikelash/380219/

Government of the District of Columbia. (1975). Transcript of Proceedings, Public Hearing: District of Columbia Bicycle Transportation Plan and Program. Washington, D.C.: Acme Reporting Company.

Hoffmann, M. L. (2016). *Bike Lanes are White Lanes: Bicycle Advocacy and Urban Planning*. U of Nebraska Press.

Initiative for Bicycle & Pedestrian Innovation. (n.d.). *The Portland Bicycle Story*. Portland. Retrieved from https://www.pdx.edu/ibpi/sites/www.pdx.edu.ibpi/files/portlandbikestory_1.pdf

Innes, J. E. (1996). Planning through consensus building. A new view of the comprehensive Planning Ideal. *Journal of American Planning Association*, *62*(4), 460–472. https://doi.org/10.1080/01944369608975712

Innes, J. E., & Booher, D. E. (2004). Reframing public participation : strategies for the 21st century Reframing Public Participation : Strategies for the 21st Century, *9357*(January). https://doi.org/10.1080/1464935042000293170

Jaffe, E. (2015a, March 13). The Complete Business Case for Converting Street Parking Into Bike Lanes. *Citylab*. Retrieved from http://www.citylab.com/cityfixer/2015/03/the-complete-business-case-for-converting-street-parking-into-bike-lanes/387595/

Jaffe, E. (2015b, September 25). Objecting to Bike Lanes as "Paint Stripe Pollution." *Citylab*.

Retrieved from http://www.citylab.com/commute/2015/09/objecting-to-bike-lanes-as-paint-stripe-pollution/407356/

Johnson, G., & Johnson, A. (2014, April 11). Bike Lanes Don't Cause Traffic Jams if You're Smart About Where You Build Them. *FiveThirtyEight*. Retrieved from https://fivethirtyeight.com/features/bike-lanes-dont-cause-traffic-jams-if-youre-smart-about-where-you-build-them/

Lee, B. A. ., Spain, D., & Umberson, D. J. . (1985). Neighborhood Revitalization and Racial Change : The Case of Washington , D.C. *Population Association of Americ*, *22*(4), 581–602.

Lendsey, J. (2016, December 7). Why a Racial Equity Approach is Better for DC. *Consumer Health Foundation*. Retrieved from http://www.consumerhealthfdn.org/2016/12/07/racial-equity-approach-better-dc/

Levine, M. V. (1987). Downtown Redevelopment as an Urban Growth Strategy: A Critical Appraisal of the Baltimore Renaissance. *Journal of Urban Affairs*, *9*(2), 103–123. https://doi.org/10.1111/j.1467-9906.1987.tb00468.x

Lindsay, G., Macmillan, A., & Woodward, A. (2011). Moving urban trips from cars to bicycles: impact on health and emissions. *Australian and New Zealand Journal of Public Health*, *35*(1), 54–60. https://doi.org/10.1111/j.1753-6405.2010.00621.x

Logan, J. R., & Molotch, H. L. (1987). The City as a Growth Machine. In *Urban Fortunes: The Political Economy of Place* (pp. 50–98). Berkeley: The University of California Press.

Loong, C., van Lierop, D., & El-Geneidy, A. (2014). On time and ready to go: An analysis of commuters' punctuality and energy levels at work or school. *Transportation Research Part F: Traffic Psychology and Behaviour*, *45*, 1–13. https://doi.org/10.1016/j.trf.2016.11.014

Manville, M., & Shoup, D. (2005). Parking, People, and Cities. *Journal of Urban Planning and Development*, *131*(4), 233–245. https://doi.org/10.1061/(ASCE)0733-9488(2005)131:4(233)

Mapes, J. (2009). *Pedaling Revolution*. Corvallis: Oregon State University Press.

Martin, A., Goryakin, Y., & Suhrcke, M. (2014). Does active commuting improve psychological wellbeing? Longitudinal evidence from eighteen waves of the British Household Panel Survey. *Preventive Medicine*, *69*, 296–303. https://doi.org/10.1016/j.ypmed.2014.08.023

Martin, G. (2015). Automobility and social ecological sustainability. In A. Walks (Ed.), *The Urban Political Economy and Ecology of Automobility: Driving Cities, Driving Inequality, Driving Politics.* (pp. 23–37). Abingdon, UK: Routledge.

McCann, E. J. (2007). Inequality and Politics in the Creative City-Region: Questions of Liveability and State Strategy. *International Journal of Urban and Regional Research*, *31*(1), 188–196.

McGovern, S. J. (1997). Mayoral leadership and economic development policy: The case of Ed Rendell's Philadelphia. *Policy and Politics*, *25*(2), 153–172.

McGovern, S. J. (2015). *The Politics of Downtown Development: Dynamic Political Cultures in San Francisco and Washington, D.C.* Lexington: The University Press of Kentucky.

Moynihan, D. P. (2003). Normative and Instrumental Perspectives on Public Participation: Citizen Summits in Washington, D.C. *The American Review of Public Administration*, *33*(2), 164–188. https://doi.org/10.1177/0275074003251379

Mueller, N., Rojas-Rueda, D., Cole-Hunter, T., de Nazelle, A., Dons, E., Gerike, R., … Nieuwenhuijsen, M. (2015). Health impact assessment of active transportation: A systematic review. *Preventive Medicine*, *76*(2015), 103–114. https://doi.org/10.1016/j.ypmed.2015.04.010

NACTO. (2014). *Urban Bikeway Design Guide* (2nd ed.). Washington: Island Press.
New York City Department of Transportation. (2016, March 10). New York City Will Break Record for Most New Miles of Protected Bicycle Lanes in 2016. New York City. Retrieved from http://www.nyc.gov/html/dot/html/pr2016/pr16-025.shtml
NYC Streets Renaissance. (n.d.). Livable streets. *Project for Public Spaces*. https://doi.org/10.1016/0304-4009(83)90007-4
O'Connell, J. (2017, April 17). This guy convinced cities to cater to tech-savvy millennials. Now he's reconsidering. *Washington Post*. Washington, D.C. Retrieved from https://www.washingtonpost.com/news/digger/wp/2017/04/17/as-the-creative-class-divides-america-its-inventor-richard-florida-reconsiders/?utm_term=.b5bbfd6d5a7b
Páez, A., & Whalen, K. (2010). Enjoyment of commute: A comparison of different transportation modes. *Transportation Research Part A: Policy and Practice*, *44*(7), 537–549. https://doi.org/10.1016/j.tra.2010.04.003
Planner A. (n.d.). Interviewed on February 6, 2017. Washington, D.C.
Planner B. (n.d.). Interviewed on February 6, 2017. Washington, D.C.
Planner C. (n.d.). Interviewed on February 7, 2017. Washington, D.C.
Planner D. (n.d.). Interviewed on February 7, 2017. Washington, D.C.
Planner E. (n.d.). Interviewed on February 7, 2017. Washington, D.C.
Planner F. (n.d.). Interviewed on February 7, 2017. Washington, D.C.
Planner G. (n.d.). Interviewed on February 7, 2017. Washington, D.C.
Policy Official A. (n.d.). Interviewed on February 10, 2017. Washington, D.C.
Policy Official B. (n.d.). Interviewed on February 6, 2017. Washington, D.C.
Policy Official C. (n.d.). Interviewed on February 8, 2017.
Pucher, J., Buehler, R., & Seinen, M. (2011). Bicycling renaissance in North America? An update and re-appraisal of cycling trends and policies. *Transportation Research Part A: Policy and Practice*, *45*(6), 451–475. https://doi.org/10.1016/j.tra.2011.03.001
Pucher, J., Dill, J., & Handy, S. (2010). Infrastructure, programs, and policies to increase bicycling: An international review. *Preventive Medicine*, *50*, S106–S125. https://doi.org/10.1016/j.ypmed.2009.07.028
Sadik-Khan, J. (2016, March 8). The Bike Wars are Over, and The Bikes Won. *NY Mag*. New York City. Retrieved from http://nymag.com/daily/intelligencer/2016/03/bike-wars-are-over-and-the-bikes-won.html
Sadik-Khan, J., & Solomonow, S. (2016). *Streetfight*. New York, NY: Viking.
Sallis, J. F., Spoon, C., Cavill, N., Engelberg, J. K., Gebel, K., Parker, M., … Ding, D. (2015). Co-benefits of designing communities for active living: an exploration of literature. *The International Journal of Behavioral Nutrition and Physical Activity*, *12*, 30. https://doi.org/10.1186/s12966-015-0188-2
Schon, D. A. (1984). *The reflective practitioner: How professionals think in action* (Vol. 5126). Basic books.
Schoner, J. E., & Levinson, D. M. (2014). The missing link: bicycle infrastructure networks and ridership in 74 US cities. *Transportation*, *41*(6), 1187–1204. https://doi.org/10.1007/s11116-014-9538-1
Schrag, Z. M. (2004). The Freeway Fight in Washington, D.C.: The Three Sisters Bridge in Three

Administrations. *Journal of Urban History*, *30*(5), 648–673. https://doi.org/10.1177/0096144204265171

Schrag, Z. M. (2008). *The Great Society Subway : A History of the Washington Metro*. Baltimore: Johns Hopkins University Press.

Sheir, R. (2015, September 11). Capital Streetcars: A Joyride Through D.C.'s Transit History. *WAMU*. Washington, D.C. Retrieved from http://wamu.org/story/15/09/11/capital_streetcars_a_joyride_through_dcs_transit_history/

Shephard, R. J. (2008). Is active commuting the answer to population health? *Sports Medicine*, *38*(9), 751–758. https://doi.org/10.2165/00007256-200838090-00004

Shoup, D. (1997). The High Cost of Free Parking. *Journal of Planning Education and Research*, *17*, 3–20.

Siemiatycki, M., Smith, M., & Walks, A. (2016). The politics of bicycle lane implementation: The case of Vancouver's Burrard Street Bridge. *International Journal of Sustainable Transportation*, *10*(3), 225–235.

Sommer, W. (2015, October 22). Pastors: 6th Street Bike Lanes A "Cancer" That Will Destroy Church. *Washington City Paper*. Washington, D.C. Retrieved from http://www.washingtoncitypaper.com/news/loose-lips/blog/13135610/pastors-6th-street-bike-lanes-a-cancer-that-will-destroy-church

St-Louis, E., Manaugh, K., Van Lierop, D., & El-Geneidy, A. (2014). The happy commuter: A comparison of commuter satisfaction across modes. *Transportation Research Part F: Traffic Psychology and Behaviour*, *26*(PART A), 160–170. https://doi.org/10.1016/j.trf.2014.07.004

Stanley, J. K., Hensher, D. A., & Loader, C. (2009). Road transport and climate change: Stepping off the greenhouse gas. *Transportation Research Part A: Policy and Practice*, *45*(10), 1020–1030. https://doi.org/10.1016/j.tra.2009.04.005

Stehlin, J. (2015). Cycles of investment : bicycle infrastructure , gentrification , and the restructuring of the San Francisco Bay Area, *47*, 121–137. https://doi.org/10.1068/a130098p

Stein, P. (2015a, October 14). D.C. church says a bike lane would infringe upon its constitutional "rights of religious freedom." *The Washington Post*. Washington, D.C.

Stein, P. (2015b, November 12). Why are bike lanes such heated symbols of gentrification? *The Washington Post*. Washington, D.C. Retrieved from https://www.washingtonpost.com/news/local/wp/2015/11/12/why-are-bike-lanes-such-heated-symbols-of-gentrification/?utm_term=.ea82fb354ad3

Turcotte, M. (2011). Commuting to work : Results of the 2010 General Social Survey. *Statistics*, *11*(11), 23–36. https://doi.org/11-008

Umemoto, K. (2001). Walking in another's shoes: epistemological challenges in participatory planning. *Journal of Planning Education and Research*, *21*, 17–31.

United States Census Bureau (USCB). (2015). Quick Facts: District of Columbia. Retrieved from http://www.census.gov/quickfacts/table/PST045215/11

Walks, A., Siemiatycki, M., & Smith, M. (2015). Political Cycles: promoting velo-mobility in the auto-mobile city. In A. Walks (Ed.), *The Urban Political Economy and Ecology of Automobility: Driving Cities, Driving Inequality, Driving Politics.* (pp. 237–254). Abingdon, UK: Routledge.

Ward, D. (2012). Stakeholder involvement in transport planning: participation and power. *Impact Assessment and Project Appraisal*, *19*(2), 119–130.

https://doi.org/10.3152/147154601781767131
Weinberger, R., Kaehny, J., & Rufo, M. (2010). *U.S. Parking Policies: an overview of Management Strategies*. New York, NY.

APPENDIX I: MCGILL REB ETHICS APPROVAL

McGill

Research Ethics Board Office
James Administration Bldg.
845 Sherbrooke Street West. Rm 325
Montreal, QC H3A 0G4

Tel: (514) 398-6831
Fax: (514) 398-4644
Website: www.mcgill.ca/research/researchers/compliance/human/

Research Ethics Board I
Certificate of Ethical Acceptability of Research Involving Humans

REB File #: 289-1216

Project Title: Gathering public support for bicycle transportation infrastructure projects in Washington, D.C.

Principal Investigator: Julia Malmo-Laycock

Department: Urban Planning

Status: Master's Student

Supervisor: Prof. David Wachsmuth

Approval Period: December 19, 2016 to December 18, 2017

The REB-I reviewed and approved this project by delegated review in accordance with the requirements of the McGill University Policy on the Ethical Conduct of Research Involving Human Participants and the Tri-Council Policy Statement: Ethical Conduct For Research Involving Humans.

Deanna Collin
Ethics Review Administrator, REB I & II

---

* All research involving human participants requires review on at least an annual basis. A Request for Renewal form should be submitted 2-3 weeks before the above expiry date. Research cannot be conducted without a current ethics approval.
* When a project has been completed or terminated, a Study Closure form must be submitted.
* Unanticipated issues that may increase the risk level to participants or that may have other ethical implications must be promptly reported to the REB. Serious adverse events experienced by a participant in conjunction with the research must be reported to the REB without delay.
* Modifications must be reviewed and approved by the REB before they can be implemented.
* The REB must be promptly notified of any new information that may affect the welfare or consent of participants.
* The REB must be notified of any suspension or cancellation imposed by a funding agency or regulatory body that is related to this project.
* The REB must be notified of any findings that may have ethical implications or may affect the decision of the REB.

APPENDIX II: SAMPLE INTERVIEW GUIDE (SEMI-STRUCTURED INTERVIEWS)

Specific role:

1. What is your specific involvement or role in bicycle infrastructure projects and corresponding public consultations in D.C.?
2. Who are the main people and organizations you work with as part of your efforts?

Public consultation processes:

1. How and when do you involve residents and community groups in your development of bicycle infrastructure projects? At what point in the design stage does it occur (30, 60, 90%)? Are there any organizational standards or strategies you follow?
    a. Can you tell me about the Eastern Downtown Protected Bike Lane public meetings?
2. Is stakeholder/advocacy engagement carried out prior to public meetings, and there are efforts to bring specific stakeholders to public meetings?
3. Thinking of the last bicycle infrastructure project you worked on, do you think public opinion changed between the different design stages?
4. What weight is public input given as a metric for measuring the feasibility of the implementation of a bicycle infrastructure project (as opposed to safety, liveability, increasing cycling's mode share etc.)?
5. How do you and your organization balance collective interests with vocal special interests?
6. Thinking about the last public meeting you attended, do you think the public felt heard/ listened to at that public meeting?
7. Do you think there are any issues with the public consultation process as it currently stands? How could it be improved?
8. Can you speak a little bit to the ANC's involvement in bicycle infrastructure projects? Is their role an important one in terms of involving the community and gathering their input?

Opposition to bike lanes:

9. Keeping in mind of course that this varies with each project because of context, what do you think are the principal concerns raised by those opposing the implementation of bicycle infrastructure? Is there validity to them?
10. What are the options or strategies for addressing these concerns? How does addressing them contribute to increased public support and project approval? Does it take away from the project's goals?
11. To what extent do initiatives like Vision Zero operate as a political strategy to deliver bicycle infrastructure projects such as protected bike lanes?