STREETSCAPE DESIGN AT A CROSSROADS: EVALUATING RECENT INNOVATION IN THE DISTRICT OF COLUMBIA IN A GLOBAL BEST PRACTICE CONTEXT
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A capstone thesis paper submitted to the Executive Director of the Urban & Regional Planning Program at Georgetown University’s School of Continuing Studies in partial fulfillment of the requirements for Masters of Professional Studies in Urban & Regional Planning.

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This project is dedicated to my family,

Felipe, Lucia and Enzo:
Your support and patience in the last three years was the most wonderful demonstration of love.

To Felipe, our endless and insightful conversations, bike rides and exciting travels inspire me every day and are all part of this project.
ABSTRACT

This research contributes to the study of streets as a fundamental element of public space in Washington DC and offers policy recommendations to reimagine the way streets connect residents to opportunities, while providing benefits for health equity, social interaction, local economic development, the environment, and sustainable forms of mobility. The research gathered primary and secondary sources of information to analyses how the city’s Vision Zero has been effective in informing the planning and design outcomes of three selected street transformation projects and compares them to three case studies of global best practices. The analysis provides a comparison of factors related to a multifunctional street paradigm shift. The policy recommendations of this research identify potential areas of improvement to inform the ongoing planning and design processes for upcoming Washington DC’s street interventions. In this paper, I argue that Washington DC’s Vision Zero and public health initiatives have a potential to influence a faster and bolder multifunctional street paradigm shift if they are properly accounted for and eventually mainstreamed in a citywide transformational strategy.

KEYWORDS

Multifunctional Streets, Public Space, Environment, Active Mobility, Physical Activity, Obesity, Public Health, Vision Zero, Walkable Urbanism, Multi-modal Transportation, Complete Streets, Placemaking, Washington DC
RESEARCH QUESTIONS

1. What policy goals and design criteria have been influencing the planning and decision-making process outcomes for selected street transformation projects in Washington DC?

2. Is the reallocation of the streetscape in Washington DC’s selected street transformation projects serving all users and multiple street functions?

3. What new conceptual design elements, evaluation criteria, and assessment tools can be used to inform planning and design processes of future Washington DC street transformation projects to advance an urban health and social inclusion agenda?
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Introduction

'A street defines how space, time and risk are exchanged between humans. This means that its design is profoundly political (and change is possible)!~Peter Frank Peters (2006)

From early 2000’s until 2010, Washington DC was experiencing an overall decrease trend in traffic-related fatalities. Since then, the direction of the trend has shifted upwards despite the recent implementation of DC’s Vision Zero initiative in 2015. During 2018, the city suffered 36 traffic-related fatalities, including 15 pedestrians and three cyclists.\(^1\) This trend reveals a 133 percent increase in pedestrian deaths from 2016 to 2017,\(^2\) as well as a jump from the recent average of one cyclist fatality per year (with no cyclist fatalities recorded in 2017). During the first four months of 2019, six pedestrians and one cyclist have died from the same cause in the DC area.

The road safety problem is not unique to DC. A recent report shows that traffic-related pedestrian fatalities have increased 35 percent during the past decade in the United States.\(^3\) The same report shows that 2017 and 2018 were the deadliest on record for people killed by motor vehicle drivers while walking. Traffic-related injuries and fatalities affect disproportionally the most vulnerable street users, including children and elderly, as well as pedestrians and cyclists. Globally, 1.25 million people die each year in traffic related events, making it the primary cause of death.

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among children and young adults.⁴

The road safety risk factors are being affected by the influx of new mobility options, which are competing for the use of street space. DC is experiencing a new paradigm of urban mobility with the increased use of bicycles, public bike share systems, and the new shared electric scooters, e-bikes, and other forms of micro-mobility. These micro-mobility options present a challenge for city officials in the ongoing debate over street space. Current regulations and practice for streetscape design will not rapidly accommodate or allow space for segregation of different mobility alternatives. In the last decade, the expansion of the city’s bicycle network, and the installation of protected bike lanes, has not responded to the increase in bicycle trips.

It will ultimately take a bold policy decision, with a strong political will supported by civil society coalitions, to reallocate the street space for all users and make the necessary safety provisions for the most vulnerable users. This multimodal reallocation of street space is an important element of a multifunctional street paradigm. This multifunctional street concept encompasses streets’ mobility function for various modes, but also the street’s role as a public space and as a tool for environmental mitigation. Global best practice in transformational street projects offers opportunities for innovation toward a faster and bolder multifunctional street paradigm shift in the Washington DC context. These best practice references also show an opportunity to bring the multifunctional street paradigm in the streetscape design debate, going beyond the mobility function and the road safety challenge.

Public space is a scarce resource in urban areas and a key determinant for prosperity, urban health, and social inclusion, as recognized by the New Urban Agenda 2030 and the Sustainable Development Goals (SDG). Streets are the most basic form of public space available in a city, accounting for three quarters of the total public space on average in global cities. Starting at the planning process, transport networks, including streets, should be granted the intrinsic qualities of public space or places: openness, accessibility, diversity and freedom. Nonetheless, this criteria, taken for granted in the history of city design, has been rarely accounted for in the post-industrial and automobile era of streetscape planning and design. Therefore, it is from a transportation and mobility function perspective that the debate of rebalancing the street space should come from.

The performance and “completeness” of a street can be measured by how well it accomplishes three basic functional criteria: (i) mobility and movement; (ii) public space or place; and (iii) environmental. Public policies and regulations define how the street right-of-way is distributed and allocated to each of these functions. Planning and design of street space in Washington DC has traditionally, and mainly, served a movement function for cars, neglecting the importance and risk-related factors for pedestrians and bicycle users. Although DC has implemented high-quality connected bike lanes and sidewalks, it is still questionable how the recent street transformation projects fulfill place or environmental functions, or take into account broader urban health, social inclusion, local economic development, and equity goals.

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5 SDG 11.7 Public space: By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities. Indicator 11.7.1: Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities.
6 UN-Habitat, “Streets as public Spaces and Drivers of Urban Prosperity,” 2013, accessed February, 2019
This research analyzes the potential to rebalance the function of streets in a more inclusive way, and how a healthier and more inclusive street may become a determinant for better sustainable and prosperity outcomes. In particular, the research analyses how Washington DC’s Vision Zero and public health initiatives were reflected in the planning and design outcomes of selected street transformation projects. The methodological framework analyses these DC projects in the context of global best practice and discusses current trends on how to reallocate street space to accommodate place and environmental functions, as well as a multi-user mobility function.

The results will contribute to a policy framework that public officials and practitioners can use to reimagine the way streets connect residents to opportunities, while providing benefits for health equity, social inclusion, local economic development, the environment, and sustainable forms of mobility.

Previous research shows that any city, at any stage of its history can be transformed by altering transportation priorities. I argue that despite a half century of auto-oriented planning practices prioritizing motor vehicular flow, innovative experiences are framing streetscape design conversations around people, health, equity, and social inclusion rather than car traffic flow and congestion reduction. Furthermore, I argue that Washington DC’s Vision Zero and public health initiatives have a potential to influence a faster and bolder multifunctional street paradigm shift if they are properly accounted for in the planning and design processes of street transformation projects. This research offers policy recommendations in the form of global best practice streetscape design elements, to inform the ongoing planning and design processes for

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upcoming street interventions in Washington DC. These policy recommendations will also be valid for cities that are at different stages of embracing a multifunctional street paradigm.

This research has been motivated by my professional experience working with international cities on transportation and urban development projects. I have also nurtured this research idea for Washington DC street inventions during my daily commute on bike with my husband and our two- and four-year old children. I was also able to harness this research work with a summer course and field work conducted in Amsterdam, Barcelona, and New York to bring a first-hand perspective of global best practice experience. The significance of this research goes beyond a capstone project, as I want to contribute with these findings and professional work to Washington DC’s streetscape transformation initiatives and projects.

Finally, I wish to thank various people for their contribution to this project; Mr. Matthew Ridgway for their valuable guidance and support on this project. Shubhada Ajay for her help in handling data to conduct GIS analysis. Special thanks should be given to Dr. Uwe S. Brandes, my faculty/academic advisor for his professional guidance and valuable support. Also, I would like to thank Felipe Targa for his constructive feedback on this project.
I. Literature Review

One important characteristic of the available research and literature on the multifunctional street paradigm shift is the limited empirical or scientific evidence of street space rebalancing impacts on broader urban health, social inclusion, local economic development, and equity performance indicators.

Recent evidence from best practice case studies and the elaboration or update of street design guidelines based on these practices offer an opportunity to reevaluate a conceptual approach for analyzing and implementing multifunctional streets. This conceptual approach recognizes the opportunities of streets as drivers of prosperity, social inclusion, and urban health.

The performance and “completeness” of a street may be measured by how well it accomplishes three basic functional criteria: (i) mobility and movement; (ii) public space or place; and (iii) environmental. Ultimately, it is through public policies and regulations that a society defines how the street right-of-way is distributed and allocated to each of these functions. Planning and design of street space in most of the cities around the globe has traditionally, and mainly, served a movement function for cars, neglecting the importance and risk-related factors for active mobility modes. In spite of the new movement of complete streets, it is not clear how this recent practice is fulfilling the place or environmental functions of the street, and if they are being informed by broader urban health, social inclusion, local economic development, and equity goals.
This research focuses on the possibility of rebalancing the use of streets in a more equitable way and analyzes how a healthier, more inclusive street may become a determinant for better and broader policy outcomes.

Based on this premise, the literature review conducted for this research analyzes three concepts that are integral and relevant to the debate of the multifunctional street paradigm: public space, streets as public spaces, and the role of streets to improve urban/public health. This section also includes a review of the professional guidelines most frequently used by cities, and the DDOT, to design street transformation projects.

1.1 Public space

The United Nations describe public spaces as “an area or place that is open and accessible to all peoples, regardless of gender, race, ethnicity, age or socio-economic level. These include public gathering spaces such as plazas, squares and parks. Connecting spaces, such as sidewalks and streets, are also public spaces.”

Also, the Sustainable Development Goals (SDGs) define a specific target (11.7) to “provide universal access to safe, inclusive and accessible, green and public spaces, particularly for women and children, older persons and persons with disabilities.”

Others define public spaces as shared spaces owned by the public which are publicly accessible. In addition, a place is considered public if it does not restrict access to anyone and fosters engagement and interaction. By that definition, public spaces include streets and

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sidewalks as well as plazas, parks, markets, and community centers; nevertheless, the debate about what constitutes public space is recent and evolving.

Researchers have found that public spaces play a critical role in social life and create local attachment among communities. Moreover, the success of a public space relies on how people adopt, use, and manage the space and not only on the architectural or physical design.\textsuperscript{14}

Public spaces help cities attain their sustainability, health, and recreation targets, but they also serve as economic development catalysts.\textsuperscript{15} Moreover, Jan Gehl in his studies of the human scale of cities and “life between buildings,\textsuperscript{16}” has reiterated that is between a city’s buildings where all the human activities that are conducted in public spaces happen: the necessary, the optional, and the social. He developed a tool to assess public spaces by recording public life in them to inform recommendations for improvement and unlock the full potential for this city asset.

Since the World Health Organization (WHO) recommended a minimum of 10 square meters of green public space per capita for urban areas, no additional research or scientific follow up work has been conducted. Although some cities comply with this standard, the debate goes further into considering the quality of that space, the connectivity and level of access, and other conditions not easily measured by one single indicator. However, there is consensus that

streets constitute most of a city’s public space and they should be the focus of broader policy goals in terms of sustainability, prosperity, and inclusion.  

1.2 Streets as public spaces

Throughout history, streets have served different roles in cities, from the center of economic development, enablers of social interaction to important mobility connectors. Walking cities have existed since the beginning of human settlements. For around 8,000 years streets were narrow trips of land dedicated to allowing the movement of people and goods, and cities were dense and mixed-use areas. The urban fabric was designed so people could move by foot in a roughly a one or two kilometer radius.

That urban form radically changed with the advent of innovations in transportation technologies in the 1850s, especially in North America. Carriages, trams, street cars, buses, and eventually the massification of the automobile needed wider streets. At the same time, these new technologies allowed people to live farther away from the urban center and enjoy healthier living conditions (the city core was crowded and polluted in the industrial era), allowing the proliferation of car-dependent suburbs in the last 70 years.

Although the role of streets has changed over time, the mobility function, in particular motor vehicular traffic flow efficiency and vehicular storage in the form of parking- has been the main driver for the modern streetscape design. Despite this radical change in the last 70 years, streets are still the backbone of urban public life. The current urbanization trends will add 2.5

17 UN-Habitat, “Streets as public Spaces and Drivers of Urban Prosperity.”
18 Ibid.
19 Peter Newman, Leo Kosonen, and Jeff Kenworthy, “Theory of urban fabrics.”
21 Peter Newman, Leo Kosonen, and Jeff Kenworthy, “Theory of urban fabrics.”
billion people to the urban population by 2050, 90 percent of that increase is expected to be in developing countries.\textsuperscript{22} The pace of this population growth in urban areas exceeds the capacity of local governments to provide basic public services, including equal access to high-quality public spaces and green urban areas.\textsuperscript{23} The possibility to increase the quantity of new public space area will depend on the patterns of new urban development for these cities. However, for the already built up areas in cities, it will require a different strategy to achieve the SDG on equal access to high-quality public spaces.

To attain the SDGs’ targets regarding the provision of urban public spaces,\textsuperscript{24} cities will need to enable innovative mechanisms to transform streets—the primary existing form of public spaces—into a more multifunctional asset. This change in paradigm will require a change in the conversation with developers and allowing the communities impacted by projects to be part of the planning processes to make them more inclusive and sustainable.

Streets comprise three-quarters of a city’s total public space globally.\textsuperscript{25} Urban planners and engineers are finding ways to reclaim the use of excess street capacity space for people, social interactions, and economic development, as a way to provide much-needed high-quality public space and improve health conditions in urban centers. Recent literature\textsuperscript{26} and movements like placemaking coined by Project for Public Spaces, recognize the role of healthy, lively streets and denser areas as catalysts for stronger engaged communities and economic development. This

\textsuperscript{24} SDG 11.1: “By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities”
\textsuperscript{26} Jan Gehl, Cities for People.
recent body of literature is proposing that by pedestrianizing streets, implementing traffic calming measures, and conducting placemaking initiatives, there is a way to foster the multifunctional paradigm shift of streets from solely or primarily movement to streets for people.

This body of literature summarizes how historically practitioners have divided streets in five broad categories according to their use: traffic, pedestrian, quiet, play and shared streets. The last three categories were developed after 1970 in Europe in order to implement different integrated traffic solutions, mostly through street calming measures. Jan Gehl in his most recent book proposes four principles to design urban streets. These principles include: (i) design streets to invite not repel; (ii) quality criteria to design for the eye level; (iii) pay attention to the ground floors; and (iv) reordering priorities.

Figure 1. Traffic Streets and Pedestrian Streets

Source, Jan Gehl, Life Between Buildings 1971

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27 Gehl, Jan, Cities for People.
28 Ibid.
1.3 Streets as drivers of public/urban health

Various studies correlate the availability of public spaces to a better and healthier environment in cities. In particular, these proposals suggest that public spaces improve equity, health, economic development, and livability. Recent estimates show that physical inactivity, linked to poor walkability and lack of access to recreational areas, accounts for 3.3 percent of global deaths. Moreover, the growing global obesity epidemic unveils the need to promote a healthier and less sedentary lifestyle for all ages. Equity in access to high-quality public spaces for recreation and other physical activities are expected to promote a healthier lifestyle and tackle one of the causes of the obesity problem. Transportation, particularly active mobility, is one of the other strategies with high potential to enhance physical and mental health and reduce emissions in urban settings.

Studies have also found that better and more connected cycling infrastructure increases the share of bicycle trips in cities. A study in 43 U.S. cities found that for every 1 mile of on-street bike lanes, there was a 1 percent increase in bike commuters. Also, cyclists are at three to four times higher risk of being involved in an accident on roads without bicycle lanes than on roads that have them, and women tend to use the bicycle more on protected infrastructure and safer streets.

30 Rebecca Steinbach, Judith Green, Jessica Datta, Phil Edwards “Cycling and the city: A case study of how gendered, ethnic and class identities can shape healthy transport choices,” Social sciences and Medicine 72 (February 2011): 1123.
31 Active mobility/Active transport, includes for the purposes of this paper, transportation modes like walking and cycling were the traveler uses its energy rather than another type of fuel.
One of the main drivers for cities to change the paradigm related to street design is the recent evidence on the costs of externalities from promoting a car-centered urban fabric. Such street design increases injuries and fatalities, promotes a sedentary lifestyle, decreases air quality and doesn’t allow for urban greenery or even social encounters. As one report summarizes “Reclaiming the streets’ public space function can be an effective way of addressing the issues of supply and access to public spaces, while providing benefits for health equity, social inclusion, the environment, and sustainable forms of mobility.”

Cities around the globe have tried to address the issue through a health perspective. In San Francisco, during the process to transform Market Street, the city included the participation of the Public Health Department to support the development of the design scenarios for the project. The transformation of Market Street, the most important street connector in San Francisco, consisted of a 2.2-mile corridor. It is a multi-dimensional and interagency collaboration that aims at improving security and mobility for pedestrians and cyclists, providing good quality public space, accommodating motor vehicle traffic, and moreover, enhancing the overall public realm and improving economic development.

The project also looked at management of public and private transportation and the evaluation of the possible environmental effects through and Environmental Impact Report (EIR) to comply with California Environmental Quality Act (CEQA).

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35 Urban 20, “Urban Mobility, Health and Public Spaces: Reshaping Urban Landscapes.”
36 Ibid.
1.4 Street design guidelines

The professional practice in planning, designing, and building sustainable streets has been compiled through guidelines that help replicate and adapt design standards in different contexts. From conversations with officials from the District Department of Transportation (DDOT), the most commonly used manuals for the planning and design process of DC’s streets are the CROW Manual, the Public Realm Design Manual (DC), and the National Association of City Transportation Officials (NACTO) Global Street Design guideline.39

DC’s Public Realm Design Manual, updated in March 2019, divides roadways into different categories, with implications for their design, such as the type of material used in curbs, tree boxes, sidewalks, bike parking, and landscaping. The manual states that roadways are part of the transportation network of the city, and its management and design should take into account

39 William Handsfield, District Department of Transportation, interview to author, March 2019.
the needs of multi-modal users. This Manual is used to determine how the public space between the curb of the street and the property line of private buildings can and should be managed.

Additionally, the CROW manuals developed in the Netherlands are among the most recognized design manuals in the world. The CROW’s Road Safety and Bicycle Traffic Manuals offer thorough guidelines for building bike infrastructure by designing safe streets and provide design strategies to attain a healthy transportation network. The CROW Manual for Bicycle Traffic, recently published in English, is a compendium of Dutch best practices on cycling infrastructure. This manual comprises policy-related aspects of cyclists by providing empirical data, arguments, and tips on how to improve the street space to make it appropriate for all users, especially the most vulnerable ones.

Furthermore, in the U.S. context, NACTO’s Urban Street Design and the Bikeway Design guidelines are probably the most well recognized by practitioners. It has been used in over 10 cities in the U.S., and the DDOT applies its standards to almost all bike lane projects.

The Urban Bikeway Design guide includes different types of street and bike lane standards ranking them according to safety, comfort, space, and cost. In order to determine what kind of improvement a specific street needs, the guide proposes temporary pilot projects to try improvements. The guide includes technical descriptions of elevated crosswalks, sidewalks, bike

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43 National Association of City Transportation Officials (NACTO), “Case Studies Navigator,” accessed April, 2019
https://nacto.org/case-studies/.
lanes, and shared streets. As an example, the NACTO guidelines suggest that cities that build protected bike lanes, increase the share of cyclists while reducing the risk of injury-related accidents, hence, they provide a wide range of possible street calming measures to attain that objective. Additionally, the Urban Street Stormwater Guide, provides valuable guidance of how to design streets to contribute to resiliency and climate change local goals.

Figure 3. Geometry of Bike Lanes.

In recent years, cities and organization have also developed various manuals and frameworks to mainstream a consistent and sustainable management of public spaces. The Gehl Institute and the Robert Wood Johnson Foundation (RWJF) developed the Inclusive Healthy Place Framework to advance public health benefits and treat inclusion in public spaces as a multi-approach concept. This framework refers to: (i) inclusion as an outcome; (ii) inclusion as a process; and (iii) as a tool. Other documents include the Streets as Public Spaces and Drivers of

Urban Prosperity from UN-Habitat,47 Dangerous by Design of Smart Growth America,48 and ¡A todo Pedal!, a bicycle planning guide tailored for the Latin-American context.49

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47 UN-Habitat, “Streets as Public Spaces and Drivers of Urban Prosperity.”
48 Smart Growth America, “Dangerous by Design.”
II. Research Methodology

The methodology for this research comprised three phases:

1. **Review of primary and secondary sources of information.** The process of gathering information covered theory and evidence from peer reviewed scientific journals, practitioners’ planning guidelines for streetscape interventions, and Washington DC’s georeferenced land use, density, and crash-related data with pedestrian and cyclist’s fatalities and injuries.

   Qualitative research methods were also used to engage local practitioners, advocacy planners, and local stakeholders through unstructured interviews. Field visits to the selected Washington DC’s street transformation project sites, as well as for the global best practice cases were conducted to take on-site measurements and observations.

2. **Review of global best practice on multifunctional street paradigm shift.** The review focused on identifying specific catalytic interventions that were successful, with a global recognition, at informing a citywide strategy, initiative or plan to advance a multifunctional street paradigm shift with healthier and more inclusive streets.

3. **Selection of implemented street interventions in Washington DC.** Information gathered in interviews with local practitioners was used to select the project sites (i.e., street segments or intersections) to conduct the research. The methodology required a focus on projects that were implemented in the last five years and provided different contexts related to their planning processes, stakeholders, and outcomes. To characterize these project sites, the research methodology used Census and DDOT data. Likewise, to analyze the planning and decision-
making process of the selected street transformation interventions, other city documents and archives for consultation and final decision-making outcomes were accessed.

4. **Comparison of global best practice case studies and selected local street transformation projects.** For each of the global best practice cases and DC selected street transformation sites I developed a matrix with four categories to enable a comparison of the design, scope, and projected outcomes of each case. I also took onsite measurements and observations of the public space characteristics, public life, and used available spatial (georeferenced) data of pedestrian and bicycle fatalities and injuries from traffic-related crashes.

5. **Identification of policy recommendations and future street transformation sites and streetscape conceptual design principles proposals.** I reviewed the research findings and comparison among cases to identify principles and policy recommendations for ongoing planning and design process and future street transformation projects.

The main research findings are used to propose key policy recommendations for public officials and practitioners in DC and global cities. These policy recommendations are aimed at influencing a faster and bolder multifunctional street paradigm shift in the planning and design process of street transformation projects.
III. Global Best Practice Case Studies

Most US cities are devoted to cars, in 2016 only 8.7 percent of households didn’t have a vehicle, and city streets and their urban fabric are designed accordingly, marginalizing pedestrians, cyclists, social and economic activity and removing the possibility of all sorts of spontaneous encounters that could otherwise occur in the street. In an effort to modernize cities with the misleading objective of seamless mobility, planners and engineers have taken away the important place function of streets. The success measures revolve around how efficient they are in terms of how many cars per hour they can move, how much parking they provide, and so on.

The following section documents experiences from three cities that have assessed the costs associated with the externalities of car-centered cities and have addressed them by developing bold plans and projects that have changed or are radically changing their urban fabric. This chapter describes the cases of Barcelona, New York and Amsterdam.

3.1. Barcelona’s Superblocks: a street transformation to tackle a public health issue.

Context and concept. Barcelona was experiencing first-hand the externalities of a car-centered street grid: bad air quality within the city boundaries, high noise pollution, high rate of fatalities and injuries due to traffic, poor mobility, and lack of accessible public spaces. During the last decade, the city invested in a plan to reuse the existing grid and create a network of lively and safe public spaces. The first phase of the project was implemented in the L’Eixample, the 1860 grid that was designed by Idelfons Cerdà, as the planned extension of the city after the Roman

50 2015 and 2016 one-year Census American Community Survey estimates available at https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
walls were torn down. The main driver of this transformation: improve the overall health of its residents.

The Agency for Urban Ecology of Barcelona in coordination with the transportation, planning and public health agencies, came up with a plan to return to the basic design principles of Cerdà. The Super Manzanas or Superblocks virtually group the existing city blocks into 3 x 3 superblocks. The main traffic circulates around the Super Manzana, freeing the inner streets of heavy traffic, allowing the street space to be shared and repurposed for outdoor activities like children’s play, extra space for local businesses, pedestrians and cyclists. Superblocks free space the size of seven soccer fields and significantly contributes to improved air quality.

Figure 4. Grid at L’Eixample and Super Manzanas

Results. Two of the Super Manzanas that have been implemented have created 65 to 70 percent of public space without the need of tearing down existing buildings and have successfully allowed an increase of 10 percent of pedestrian trips and 15 percent bicycle trips while increasing economic activity. More importantly, in the implemented Super Manzanas, traffic injuries have
decreased by 50 percent, and air quality has improved by 20 percent lowering the emission of particulate matter to finally meet European standards.

The outcomes of the first catalytic projects have led the current mayor to push forward an urban agenda that includes the implementation of 500 superblocks throughout the city. The city is aiming to prevent 3,500 premature deaths in the metropolitan area as a result of the decreased traffic fatalities and air pollution, reduce noise pollution and decrease the use of private cars by 21 percent while reclaiming 60 percent of the space occupied by cars for public use.

The Super Manzanas are still debated within the public administration and the community, and had faced public opposition primarily due to local residents being incredulous about the impacts of the interventions in their lifestyles, and also due to a polarized political environment in the city. However, four Superblocks are to be completed by the end of 2019.

Figure 5. The urban fabric of Barcelona: L’Eixample

Source, Laboratory of Urban Environmental Justice – Barcelona

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52 Rueda, “Los ensanches sostenibles: el legado del plan Cerda.”
Findings. Superblocks are large scale interventions that repurpose the entire urban fabric; therefore, inter-agency coordination is key to its success. Permanent interventions were triggered by temporary tactical urbanism. The urban transformation has had a profound impact in public health, social cohesion, mobility, land uses and economic development. Political support and the incorporation of the strategy in long term plans continue to be crucial to complete the transformation. Also, far-reaching reforms needed to be implemented to secure funding and inter-sectorial coordination.

3.2. New York’s Plaza Program: a place function for streets.

Context and concept. New York is a leading U.S. example on how to transform urban streets into public spaces that welcome all users, while decreasing traffic fatalities and injuries and fostering economic development at the same time. It is also an example of the role of strong leadership in how and when to reclaim street space as public space.

In 2010, NY officials envisioned a plan to enable all New Yorkers to live within a 10-minute walk from an open space. The Plaza Program created 61 plazas in seven years, repurposing 400,000 square feet (37,100 square meters) of street space into good quality public spaces. The plan delivered was bold and ambitious. It had a multi-perspective approach that includes street improvements, the provision of reliable data for decision making, challenging regulatory and legislative modifications, and a strategy for communication and outreach.

Results. The monitoring and evaluation of this program has found that people are increasingly using the plazas, spending more time outside and increased social connections,

contributing to a social inclusion policy goal. Moreover, these results are showing equity impacts as well. People that reported earnings less than $50,000 were more likely to make new connections in their local plaza, and the majority of users feel a sense of ownership and stewardship.\textsuperscript{57}

In the two decades between 1990 and 2009, the city had one of the fastest rates of traffic-related fatality reduction of any U.S. city. The city had an overall reduction of traffic-related fatalities by 34 percent in the over 50 transformed streets/sites. Improvements included: better crosswalks, speed bumps, designated bike lanes, better lighting, less unsafe turns, and education campaigns with non-traditional stakeholders, including schools and senior centers. During the same period, the city increased its transit ridership and added 15 percent more residents.\textsuperscript{58}

Figure 6. Improvements in Jackson Avenue, 11th Street and Pulaski Bridge, Long Island City

The iconic re-design of Times Square and its placemaking strategy alone resulted in a 35 percent decrease of pedestrian injuries, and a 63 percent decrease in injuries of motorists and car

\textsuperscript{57} Gehl Institute, "Public Life in NYC's plazas."
drivers. It also brought improvement of travel times for car drivers by 15 percent in adjacent streets, proving evidence that such measures are beneficial for all street users.

Researchers have found that New York’s success are based on a systemic approach to road safety and multi-modal view of road users and street uses.60

Figure 7. Safety countermeasures to prevent crashes in New York

Source, Chen et al, “Safety countermeasures and crash reduction in New York City”

Perhaps, one of the main lessons from the street transformation process in New York has been the economic vitality information that is collected to measure the impact of each project. The NY DOT and the Department of Finance (DOF) designed a metric and developed a guide that allows for measuring the economic benefit and retail sales for street level restaurants and retail. The report found that in NY, streets with more space to allow place and environment functions, have a positive impact on local economies, both in lower and higher-income neighborhoods, and all type of businesses.61

60 Ibid
The city continues to lead urban innovations. Recently, New York introduced a proposal for congestion charging, becoming the first U.S. city to do so. The city expects to generate between $810 million and $1.1 billion annually and use it to improve the subway system.\(^{62}\)

**Findings.** Street transformation processes like those conducted in New York have proven to lower car related injuries and fatalities, enhance the protection for vulnerable users while increasing pedestrian and cycling activity. New York has measured and adapted its approach to fit different urban fabrics and provide benefits for business, residents and tourists. A strong political leadership, multi-dimensional plans and a data-centered approach is critical for this type of interventions.

### 3.3. Amsterdam’s *Woonerf*—The living yards

**Context and concept.** The concept of *Woonerf* was originally developed in the 1960s by the Dutch architect Niek De Boer in the city of Delf and then replicated in the rest of the country. By that time, the city of Delf had two major issues that it wanted to tackle: decaying streets and traffic flows that were inconvenient.\(^{63}\) The Dutch designers and engineers came up with a re-design of the street space for residential areas where pedestrians, cyclists, motor vehicles and children at play could share the space; a seamless integration of uses to support a livable neighborhood.

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\(^{63}\) Elvis Paja, “Evolvements of the Woonerf concept and design in urban planning,” (Master diss., IUAV University of Venice, 2015).
Inside a *Woonerf*, pedestrians may use the full width of the street, they are free of traffic lights, it is allowed to play in all the public space, and cars should not travel faster that cycling speed (15 km/h).\(^\text{64}\) In addition, the *Wonnerven* have space for playgrounds and resident parking (parallel or diagonal). The design does not include a clear separation between the space for pedestrians (sidewalk) and motor vehicles, forcing the car drivers to proceed slowly.

Figure 8. Woonerf in Commelinstraat Street, Amsterdam and its signage

Sources, Google Street view, www.humankind.city and the author

**Results.** Studies have found a considerable decrease in traffic accidents, an increase in social interactions and better community satisfaction within these neighborhoods.\(^\text{65}\) In the Dutch context, reallocating more street space to create a sense of place, have had good results in public health outcomes and social cohesion. Further, in Germany, an impact evaluation on a similarly improved street showed an increase of 20 percent of play time for children.\(^\text{66}\)

Even though this type of street configuration was first designed for residential zones, the *Woonerf* concept and its design principles have evolved and are used around the world in

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different contexts in both residential and mixed-use areas. Indeed, in London, the city implemented Home Zones and transformed Kensington High Street, a retail corridor, adapting the principles of the Woonerf. The city has increased pedestrian traffic and reduced the amount of vehicle collisions after the street transformation by half. Seattle, WA in the U.S. also implemented a type of Woonerf in 2014 by transforming four blocks into a 56,000 square-foot pedestrian area.⁶⁷ The re-design of the aforementioned streets all comprise elements of the original Woonerf design.⁶⁸

Amsterdam has gone further, the city has an ambitious plan to deepen the street transformation processes and reclaim that public space for the use of people. In 2018, the city opened up the streets in the historic center for social uses; motor vehicles are virtually banned as through traffic. In a like manner, the city plans to eliminate 11,000 urban parking spots by 2025, the space will be used for urban greenery, wider sidewalks, and the like.⁶⁹

**Findings.** Woonerfs have the potential to repurpose the use of street space creating places, pockets of urban greenery and significantly reducing motor-vehicle related injuries and fatalities. The principles that led to the creation of this type of streets have evolved and are now widely adapted and used through street calming and shared streets standards in both mixed-use and residential urban areas. The process requires freeing space dedicated to motor vehicle parking and traffic, therefore, the transformation process under this design is complex and requires strong political commitment and community engagement.

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⁶⁸ Eran Ben-Joseph, “Changing the residential street scene.”

IV. Street Intervention Projects in Washington DC

Until 2010, Washington DC was experiencing an overall decrease trend in traffic-related fatalities. Since then, the direction of the trend has moved upwards despite DC’s recently implemented Vision Zero initiative in 2015. During 2018, the city suffered 36 traffic-related fatalities, including 15 pedestrians and three cyclists.\(^70\) This trend reveals a 133 percent increase in pedestrian deaths from 2016 to 2017,\(^71\) as well as a jump from the recent average of one cyclist fatality per year (with no cyclist fatalities recorded in 2017). During the first four months of 2019, six pedestrians and one cyclist have died from the same cause in the DC area.

A handful of plans and initiatives have been formulated or updated for DC (i.e., the Sustainable DC Plan, the update of the Comprehensive Plan, the Vision Zero Plan, and other planning documents)\(^72\) to promote the use of active mobility modes, to both improve mobility options and meet sustainability targets. New bicycle infrastructure has been added to the city’s bike network and the Capital Bike share system. Additionally, during 2018, the city conducted a pilot demonstration project for micro-mobility service providers. By implementing this pilot, the city allowed six different companies to deploy dockless bike share systems and electric scooters.\(^73\) As a result, the city experienced an increase in cyclists and users of these new electric scooters,\(^74\) also increasing the exposure of these users, and arguably increasing the risk factor associated with traffic incidents.

\(^70\) District of Columbia. Department of Transportation, “The Vision Zero initiative”.
\(^71\) District of Columbia. Metropolitan police Department, “Traffic Fatalities as of May 2019.”
\(^72\) Ibid.
\(^74\) Ibid.
The road safety problem is not unique to DC. A recent report shows that traffic-related pedestrian fatalities have increased 35 percent during the past decade in the United States. The same report shows that 2017 and 2018 were the deadliest for people killed by motor vehicle drivers while walking. The Smart Growth America’s “Dangerous by Design” report calculates the Pedestrian Death Index (PDI) for the 36 States plus DC. The compared PDI scores from 2004 to 2015 shows that DC is one of the ten states that experienced the biggest increase in PDI. The increase for DC was 11.4 percent, meaning that in a ten-year period, the District has become more dangerous for pedestrians considering risk exposure factors.

U.S Census data from 2015 shows that cycling to work has increased in DC from 2.2 percent to four percent in the five-year period from 2010 (and probably more since 2015). For the total DC Region, this figure is just one percent of the total trips. Moreover, Washington DC has been one of the few cities in the United States that have been able to both reduce the share of trips done by cars and increased the share of transit, walking and cycling. The city has been able to lead the change on the east coast by setting tough targets on fatalities and traffic accident reduction through the Vision Zero plan, and by promoting the use of sustainable modes of transport in its transportation plan.

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75 Smart Growth America, “Dangerous by Design.” This index measures how deadly it is for people to walk based on the number of people struck and killed by drivers while walking, controlling for the number of people that live in that state or metro area and the share of people who walk to work.

76 Ibid.

The increased use of bicycles, shared bicycle systems, shared electric scooters, and e-bikes, coupled with a new generation of young professionals that is using the car less often and are delaying driver licensing, present both an opportunity and a challenge for policy makers in the city. The opportunity is unique to guide the planning of the transportation system towards a more sustainable path. But it also presents a challenge related to the increased exposure of vulnerable road users in a network that does not offer the adequate design and safety standards to protect their lives. Current regulations and practice for streetscape design will not rapidly accommodate or allow space for segregation of different mobility alternatives. In the last decade, the expansion of the city’s bicycle network, and the installation of segregated bike lanes, has not responded to the increased in bicycle trips.

A new street planning and design model needs to have a multifunctional view of the street, coupled with a multi-sectorial policy and implementation approach. Transportation, Public Space, Environment, and Public Health agencies should work hand in hand in assessing scenarios and selecting the best street improvement solutions. DC’s Vision Zero initiative is
coordinated with 20 district offices to adopt a road safety plan under the principle that “no loss of life is acceptable.”78 The plan focuses on interventions around four pillars: (i) safer streets; (ii) protect vulnerable users; (iii) prevent dangerous driving; and (iv) be transparent and responsive.

It will ultimately take a bold policy decision, with a strong political will supported by civil society coalitions, to reallocate the street space for all users and make the necessary safety provisions for the most vulnerable users.

With this motivation, this chapter includes a review of three street transformation projects in Washington DC that were implemented in the last five years. The methodology for the selection of these sites was also informed by key insights and information gathered through the engagement with local practitioners, advocacy planners, and local stakeholders. The methodology included field visits to the selected street transformation project sites, as well as analysis of Census and DDOT data. The analysis reviews the context in which the projects were designed and the drivers for change in the streetscape. Finally, the research methodology analyzes the planning and design outcomes of these projects on the urban built environment.

4.1 K/Water Street: Private sector engagement in the public realm

Context. In 2013, the Georgetown Business Improvement District (BID) started a planning process to develop a framework that will guide Georgetown’s growth for the next 15 years. The plan prioritizes improvements in public space, transportation, and economic development. One of the prioritized projects involved the transformation of K/Water Street with the aim to close the cycle track gap between the Capital Crescent Trail and Rock Creek loop, providing a safer street for pedestrians and cyclists. The project was also designed to improve the function of the street for trucks, tourists’ buses and other vehicles.

K/Water Street was originally a 50ft street used as a railroad for the city’s port, moving coal to the concrete and heating plants in the area. As the railroad and Georgetown became a valuable place for tourists and engaged residents, Water Street was mostly used for resident and tourist parking, and sporadic night time car races. Along the street, many restaurants, cafes, and local businesses have flourished in recent years.
The Georgetown BID is a non-profit organization that represent the interests of local residents and business, and strives for economic development and an overall lively neighborhood. With this mandate, the Georgetown BID applied for a grant to the Council of Governments (COG) to develop the concept plan for the street transformation project. The plan was then endorsed by the DDOT and public funds were secured for its implementation. The street transformation project was completed in 2018, two years after the initial concept plan and need identified by the BID.

Process and approach. The BID hired a consultant in 2016 to deliver a project concept (30 percent design) for two different scenarios. The scenario selected was then advanced to 90 percent design, socialized and debated with residents and stakeholders in Advisory Neighborhood Commissions (ANC) meetings. The BID organization led the conversation and shaped the project design standards to match the community demands and proposals.

The most contested part of the street transformation project was in the public meetings phase when it was announced that the transformation comprised changing parking configuration from diagonal to parallel, therefore removing 65 parking spots in Water Street. The Georgetown BID engaged in a dialogue with local business and stakeholders and communicated other experiences where similar transformations had occurred and explained the positive outcomes for residents and business that would come from having a safer street. As a result, the community agreed with to move forward with the design.
Results. The 0.5 miles of Water Street from 34th to 30th street was transformed into a two-lane (11 feet per lane) street with parallel parking in both sides (8 feet), a two-way protected bike-lane (6 feet per lane), a bike share station, and seven improved high-visibility crosswalks. The street transformation process resulted in an improved street space that provides a healthier public space for vulnerable users: pedestrians walking to and from Georgetown to the harbor and waterfront, and cyclists accessing the area or connecting to the trails.

The BID is aiming higher; they developed a concept plan to improve the street even further and rebalance the use by adding more space for place functions. As seen in the rendering below, the idea is to add a turnaround at 34th Street and Water Street to allow for a safe turn, and for Water Street west of 34th to become a shared street to host events and to function as a public space. The plan also envisions extending the cycle track west to the Capital Crescent Trail start and adding new sidewalks and streetlights.
**Findings.** The private sector is a valuable stakeholder that can trigger street transformation initiatives. Since the project K-Water Street project was implemented, no traffic-related fatalities or serious injuries have occurred. In terms of design, the transformation of the street space is positive, but it lacks a place connection with the commercial core of M Street and the character of Georgetown.

Placemaking and events programming around the street could bring more economic activity to the area and make people stay in the public space rather than just cross it or pass by. An analysis of the land uses in the project intervention area confirms the diversity and mix-used characteristics of the area.
Figure 13. Land uses of K/Water Street project improvement area

Source, the author with Open Data DC information

4.2 Florida Ave. and 15th Street NW

Figure 14. Before and after photos of 15th Street and Florida Ave. NW intersection

Source, Google Maps and the author

Context. In 2009 a female pedestrian was killed as a result of a collision with a service truck in the intersection of 15th Street and W Street NW. The city was sued and obliged to improve the intersection for pedestrians. In the meantime, DDOT installed temporary barriers, bollards, and demarcations to widen sidewalks and make the crossings safer.
Florida Ave is a two-way street categorized as major arterial and is also part of the “expanded national highway system” under the federal MAP-21 transportation bill. Therefore, changes to the configuration of the street had to pass a thorough process that involved submitting the project to the Transportation Planning Board’s (TPB) Constrained Long-Range Plan (CLRP) for approval.

The iconic protected cycle track on 15th Street NW opened in 2010, but it was not until 2017 when the 2.3-million-dollar intersection with Florida Ave, improving pedestrian connections, was finalized. It took more time to continue the cycle track further north.

Process. The design and review process for the intersection improvement was set in an 18-month timeframe. In late 2013, the DDOT started a study to “assess short-term low-cost design improvements” to be installed in 2014,79 while a more robust study was analyzing permanent changes.

The first blueprints developed in 2010 show the transformation of 15th Street; a 56-foot street with three lanes (10 feet each) a parallel parking lane and a bi-directional protected bike lane on the western side. No change in the street layout was projected in the northern section between V Street and Florida Ave.

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Later on, in 2012, the DDOT started to plan for the safety improvements in the intersection and three different options were drafted. One option included a roundabout and the other two different sized medians, all included wider sidewalks, space for greenery, reduction of the width of the street, and a 400-foot protected bike lane following the specifications of the segment south of the intersection. Nevertheless, none of them included the continuation of the protected bike lane on the northern side of 15th Street. That part of the transformation was planned and completed the following year.
Results. The process triggered by a motor vehicle crash fatality with a pedestrian resulted in a seven-year effort by the city to transform the intersection. During the research interviews, city officials said it was one of the costliest street transformation projects that the city has done. Also, due to the lawsuit, the project was focused only on pedestrian safety, and it took time and effort to include changes to the bicycle network.

Nevertheless, seven years after the fatal crash, street users enjoy a safer transformed environment in what once used to be a car-oriented intersection in NW DC. The improvements make the street feel like a shared street; with the removal of a high-speed slip lane, reduction in vehicle speeds as a result of a narrower intersection, and more space for pedestrians and cyclists, as well as improved green areas. I have been able to experience the before and after street transformation as this is part of my daily commute, which I usually do on bike with my family.
Pedestrians have safer and shorter crossings, wider sidewalks, and appealing landscaping. Cyclists ride more intuitively through the protected bike lane with specific signals and boxes to cross. Also, car drivers benefit from a more predictable interaction with other street users.\(^{80}\)

**Findings.** The transformation of this intersection completed the iconic 15\(^{th}\) Street segregated bike lane and improved consistency to the street design.

The process was triggered by the death of a pedestrian and in the first stage the design only involved pedestrian safety. It took the District time and inter-agency coordination to realize the project should transform the street from a more inclusive perspective to accommodate all users.

The District invested unprecedented public resources for this project, stating that protecting vulnerable road users was a priority. The land uses around the intersection are predominantly residential and the project was mainly focused on improving mobility conditions, therefore, no place or economic development strategies were considered.

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4.3. Virginia Avenue SE

Figures 18. Before and after photos of Virginia Ave. SE


Context. In 2015, CSX, the major rail-based freight transportation company in the U.S. had to rebuild the Virginia Avenue Tunnel SE in DC, adjacent to the I-695. Therefore, the street had to be torn up and redone at the cost of the company. This intervention provided an exceptional opportunity to redesign to street configuration and make the area livelier.

In addition, the urban development transformation of the area put more pressure to transform the three-lane street that was too wide, with narrow sidewalks, and some diagonal parking spaces. CSX designed the concept that was approved by the DDOT and the Public Space Committee in 2015. Within three years, the street transformation project was completed.

The land uses around the project are mainly low and medium residential density with small pockets of commercial uses.
Figure 19. Rendering of the first section of Virginia Ave.

Source, DDOT.

Results. The improved street layout provided a narrower street that induces lower speeds, better pedestrian crossings, parallel parking on both sides of the street, a high-quality elevated bike lane, and improved pockets of urban greenery along the street.

The new design follows the NACTO guidelines and provided a high-quality standard for cyclists. However, the street design is not consistent with the adjacent streets and after 2nd Street SE, the design abruptly changes. In addition, the buildings facades are not open to the street and do not foster social encounters or connections.

There are plans to connect the new bike lane to 11th Street in order to provide a connection to the National Mall and extent the Anacostia Riverwalk Trail.

Findings. The transformation of Virginia Avenue SE was a process triggered by the unique opportunity of the redevelopment of the train corridor. The District was involved in the design, but not in the funding of the project.

The new street design could be further improved in its consistency by connecting the area to adjacent trails and the projected 11th Street Bridge park. The design of this project is outstanding in terms of safety for cyclist and pedestrians. However, there was not a mandate to include the creation of places or economic development strategies, even though the area is going through major urban redevelopment initiatives. Also, old mature trees were removed and replaces by younger trees as part of the redesign.82

Figure 20. Land uses of Virginia Ave. SE street transformation site.

Source, the author with Open Data DC.

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V. Research Findings

For the purpose of comparing the selected three street transformation projects in Washington DC and the global best practice case studies, four comparison categories emerged: (i) predominant land uses; (ii) predominant street function focus of the intervention; (iii) expected street improvement outcomes; and (iv) implementation process characteristics. Each project/case study was included in the matrix (see table 1) and based on the research analysis an evaluation rating was assigned to each category.

Table 1. Selected projects/case studies comparison matrix

<table>
<thead>
<tr>
<th>Categories</th>
<th>Amsterdam’s Woonerf</th>
<th>New York’s Plazas Program</th>
<th>Barcelona’s Superblocks</th>
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<tbody>
<tr>
<td>Predominant land uses</td>
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<tr>
<td>Residential</td>
<td>Most likely</td>
<td>Likely</td>
<td>Very unlikely</td>
</tr>
<tr>
<td>Commercial</td>
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<tr>
<td>Mixed-Use</td>
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<tr>
<td>Predominant street function focus of the intervention</td>
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<tr>
<td>Mobility (motor vehicles)</td>
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<td>Mobility (vulnerable users)</td>
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<td>Place</td>
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<td>Environment</td>
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<td>Expected street improvement outcomes</td>
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<tr>
<td>Traffic incidents</td>
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<td>Noise and pollution</td>
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<td>Economic vibrancy</td>
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<td>Implementatio n process characteristics</td>
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<td>Stakeholder engagement</td>
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<td>Political commitment</td>
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<td>High-quality design</td>
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<td>Budget allocation</td>
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<table>
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<tr>
<th>Categories</th>
<th>K/Water Street NW</th>
<th>15th Street and Florida Ave. NW intersection</th>
<th>Virginia Ave. SE</th>
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</thead>
<tbody>
<tr>
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The key findings from the comparison matrix are summarized as follow:

1. The technical design of the analyzed DC street improvement projects comply with well recognized and widely used street design guides, such as the NACTO Urban Street Design Guide. The DDOT has set a technical team to design bike lane interventions and test innovative curb design and other street elements. However, technical design is only one of many factors or dimensions involved in delivering safe, inclusive, and healthy streets that have the potential to support and catalyze urban revitalization and the reintroduction of nature in the streetscape. From the mobility function perspective, and despite of the focus on improving road safety outcomes, the street transformation projects analyzed are still missing some opportunities to accommodate the increased use of emerging sustainable mobility options such as shared electric scooters.

2. Despite of the recent global recognition of streets in the New Urban Agenda 2030 and the SDG as drivers of prosperity and sustainable development, the analyzed DC street improvement projects, the planning and design outcomes in particular, did not explicitly use a
public/urban health and social inclusion policy goal argument. These policy goals did not
guide or help to push toward more transformational and catalytic interventions in the context of a
multifunctional street paradigm shift. The lack of these elements, presumably in the public
debate and decision-making process, could probably limit the potential to allocate additional
budget, gain more citizen and stakeholder support, and support a political commitment for bolder
interventions and faster implementation. The city has set ambitious goals in terms of outcomes
for urban sustainability, and the plans (including Vision Zero), will fall short in delivering
immediate results if they are not fully articulated in every street intervention opportunity. Based
on the information analyzed, there was no evidence of an inter-agency coordination with public
health and local economic development officials to take advantage of these street transformation
opportunities to advance a broader policy agenda on urban health, social inclusion, and economic
development. Only the K/Water Street project is likely to project a second phase intervention
following a more holistic place function rebalancing for the street, similar to the global best
practice case adopted in the New York’s Plaza Program.

3. The planning and design outcomes of analyzed DC street transformation projects
are still heavily focused on a mobility function—to reduce the risk factors from the interaction of
motor vehicles and vulnerable street users. This represents a missed opportunity to catalyze
broader and bolder urban transformation through the creation of inclusive and healthy places,
and by fostering local economic development in the project areas. The street space is still not
understood or used in its full -public space- potential. If the city is aiming at managing the street
space in a sustainable and prosperous way, the policy and decision-making debate will need to
rebalance and reallocate motor vehicle parking and lane space to other street functions and to
more sustainable ways of mobility.
4. In contrast to the global best practice case studies of Barcelona, New York, and Amsterdam, Washington DC selected projects do not really embrace the street as a public space asset with potential to advance a social inclusion and local economic development agenda. Maybe there is not enough political leadership committed to do so. The case of the K/Water Street project shows that civil society organizations, such as a BID, representing the interests of local businesses and residents, are more likely to bring a bolder multifunction street paradigm shift, and a faster implementation outcome. The city is carrying out street-by-street interventions that do not properly value the public space used. The complex trade-offs of freeing motor vehicle dedicated space are usually centered around parking spots and driving speeds, and not enough on how to better use street space for sustainability and prosperity outcomes.
VI. Policy Recommendations

Public space is a scarce resource in urban areas and a key determinant for prosperity, urban health, and social inclusion. Streets are the most basic form of public space available in a city. The way we see streetscape of our cities changed dramatically over the past half century with the mainstreaming of auto-oriented planning practices prioritizing motor vehicular flows. Nonetheless, innovative experiences and global best practice are framing streetscape design conversations around people, health, equity, and social inclusion rather than around car traffic flows and congestion reduction.

These policy conversations have already been framed and incorporated in the New Urban Agenda 2030 and the SDG, recognizing the importance of public spaces, including streets, as a driver of prosperity and sustainable development. Despite this global recognition of the street as a key asset to solve global challenges and as a driver to enable broader policy goals, the debate of the multifunctional street paradigm shift in Washington DC and several other global cities conducting streets transformation interventions is still a very local issue.

How to then move forward the narrow view of the street as a space for movement of vehicles, or people in a more progressive way, to a more holistic multifunctional street paradigm? How to influence the planning and design decision-making process more effectively and efficiently in achieving broader policy goals? How can the global best practices inform Washington DC and other global cities in terms of successful and catalytic project implementation to scale up a citywide transformational change? The research findings provide some insights and associated policy recommendations for these questions:
1. Most of the successful global best practice framed the multifunctional street paradigm shift as a public/urban health issue, either by traffic-related fatalities or by environmental pollution levels. Washington DC’s Vision Zero and public health initiatives offer a great opportunity for this strategy. Nonetheless, these policy goals need to be better and more systematically reflected in the planning and design outcomes of future street transformation or intervention projects. The research conducted for this project focused only on the outcomes of these deliberation and decision-making processes. Understanding the process will probably shed some light on where to introduce this debate to be more effective, and how to more efficiently coordinate inter-institutional functions and roles. This understanding will also make a difference in starting to change what is still a narrow view of the full potential of streets to drive sustainability, inclusion, and prosperity outcomes.

2. Follow a data-driven and a test-measure-refine approach for pilot demonstration projects to then scale up a citywide multifunctional street paradigm transformation. The best example for this policy recommendation is the New York’s iconic Times Square and Broadway Ave. pilot intervention project. This was the basis for a communication and outreach campaign that then supported a citywide intervention; the Plaza Program. Monitoring and measurement included traffic performance, economic activity, social inclusion, and equity impact indicators. This type of hard empirical evidence reduces speculation and builds a stronger local community and stakeholder coalition for a multifunctional street paradigm transformation. This is particularly relevant for the debate of street transformation interventions where the real challenge and barrier happens to be a very local civil society organization or individual on the project site. A new framework for data standards on healthy and inclusive streets is also a great start for cities
that want to build their own baseline and conduct benchmark comparisons for a citywide multifunctional street paradigm shift.

3. Use temporary work zone sites to test potential conceptual design elements to inform the ongoing planning and design processes for upcoming Washington DC’s street interventions. For the purpose of this research, I conducted a data analysis of recent (2014-2017) traffic-related data on pedestrian and cyclist severe injuries and fatalities on a temporary work zone site in front of my home. The work zone on the intersection of 14th Street and Florida Ave. NW was part of a larger street intervention project underway on the 14th Street corridor. By the time of this research project, the street reconfiguration decision (i.e., signage, demarcation, and segregation) has not yet been decided as per conversation with the DDOT. An unintended experiment was conducted when the construction workers were doing structural work repair on the street and three to four lanes were closed for traffic. This temporary experiment showed the excess vehicular traffic capacity for this street and intersection. By direct observation, the lane closures did not generate any significant traffic congestion even at peak hours.
Conclusion

The New Urban Agenda and 2030 Agenda for SDG are shaping the conversation about public spaces at a global scale. This conversation is bringing back a policy debate about how street space should be allocated and what functions should serve. This debate recognizes the street as a valuable public space asset with potential to promote prosperity, urban health, and inclusive economic growth. In Washington DC, like in many other global cities, the conversation and debate about street space transformation is still a very local-focus issue. Even though the city has adopted ambitious goals to improve road safety, there is still some room for improvement and opportunities to reflect these goals into individual street transformation projects. And eventually, use these individual interventions as catalytic demonstration projects for a more holistic citywide transformation of DC’s streetscape.

The projects reviewed in Washington DC for the purpose of this research have a high-quality street design standard, which have improved the safe mobility function of the intervened street or intersection. Likewise, the research found a growing number of professionals pushing towards a more equitable street design within the DDOT, and with a strong commitment to improve the way streetscape is currently functioning in the city. Nevertheless, design is just one of the many factors to deliver safe, inclusive, and healthy streets that have the potential to catalyze a citywide urban transformation. The research conducted found, based on the street transformation projects reviewed in DC, that these planning and design outcomes were not explicitly informed by a public/urban health, economic development, or social inclusion policy goal. This finding suggests that the projects’ design and implementation processes, hence, may had a limited potential to allocate additional budget, gain more citizen and stakeholder support, and overall political commitment for bolder interventions and faster implementation.
The global best practice experience of cities such as Amsterdam, New York, and Barcelona, set a precedent on how a citywide street transformation plan can be mainstreamed and add political and stakeholder support if triggered by a public/urban health goal or issue. This is already an opportunity that DC and other cities have with the adoption of a Vision Zero plan and other public policies for environment and health. In addition, a data-driven and test-measure-refine approach for pilot demonstration projects is suggested in this work, based on the research conducted, in order to reduce speculation, strengthen coalitions among stakeholders, and increase the opportunities for boldness and scaling-up. Ongoing construction work zones/sites may offer an opportunity to test new conceptual design elements on shared street principles.

The planning and design outcomes of the analyzed DC street transformation projects are still heavily focused on a mobility function, revealing that the street space is still not understood or used in its full-public space-potential. The city should embrace the global multifunctional street paradigm and start a conversation and policy debate about the inclusion of environmental and place functions into the conceptualization of street transformation projects.

These bold streetscape transformations require a strong political will and a shared vision among city agencies with a particular attention to a coordinated strategy for the public realm. From the policy documents already in place, Washington DC has already a vision for the imperious need to improve road safety. Bringing into the debate a multifunctional street paradigm shift may help by refreshing the conversation around broader policy goals, and ultimately, spark a citywide transformation of the city’s main public space asset: it’s streets.
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