Title

Lessons for Upgrading Los Angeles' Slow Streets: A Feasibility Study for Making the L.A. Slow Streets Program Permanent in a Post-COVID City

Author

Garces, Madeleine

Publication Date

2021-06-01

CAPSTONE PROJECT REPORT

UCLA Institute of Transportation Studies

Lessons for Upgrading Los Angeles' Slow Streets:

A Feasibility Study for Making the L.A. Slow Streets Program Permanent in a Post-COVID City

Project Lead: Madeleine Garces
Faculty Advisor: Juan Matute
Client: Los Angeles Mayor's Office of Transportation

June 2021

Technical Report Documentation Page

1. Report No. N/A	**2. Government Accession No.** N/A	**3. Recipient's Catalog No.** N/A
4. Title and Subtitle Lessons for Upgrading Los Angeles' Slow Streets: A Feasibility Study for Making the L.A. Slow Streets Program Permanent in a Post-COVID City		**5. Report Date** 2021 **6. Performing Organization Code** UCLA-ITS
7. Author(s) Madeleine Garces		**8. Performing Organization Report No.** LAS2031
9. Performing Organization Name and Address Institute of Transportation Studies, UCLA 3320 Public Affairs Building Los Angeles, CA 90095-1656		**10. Work Unit No.** N/A **11. Contract or Grant No.**
12. Sponsoring Agency Name and Address UCLA Institute of Transportation Studies www.its.ucla.edu		**13. Type of Report and Period Covered** Final **14. Sponsoring Agency Code** UC ITS

15. Supplementary Notes
DOI: 10.17610/T64C7R

16. Abstract

As a response to the COVID-19 pandemic, cities around the world reallocated street space not being used by commuters to people for outdoor recreation. Los Angeles Slow Streets began in May 2020, implemented by LADOT with support from StreetsLA and guidance from the Mayor's Office. The aim was to slow vehicles and discourage non-local traffic on neighborhood Slow Streets. In June 2020, Councilman Ryu introduced a motion to make Slow Streets permanent. This report is a response to a call for an analysis of the feasibility of implementing permanent Slow Streets. The analysis section of this report includes three main foci: case studies, alignment with other mobility programs, and policy implications.

Based on the findings in this report, L.A. has the potential to implement a program that serves each of its diverse communities using context-based decisions for implementing traffic calming infrastructure and regulations. The feasibility for a permanent Slow Streets program is improved by current state-level political support for legislation that will allow the city to formally designate Slow Street corridors. Additionally, permanent Slow Street development is aided by the momentum from other projects in the city that aim to improve safety and public health across the City's transportation network. Slow Streets began as an opportunistic experiment for improving safety and health for Angelenos. Now, the City can work with communities to develop a permanent program that will change the way Angelenos use the streets for years to come.

17. Key Words Transportation planning, program evaluation, bicycle planning, Vision Zero	**18. Distribution Statement** No restrictions.

19. Security Classif. (of this report) Unclassified	**20. Security Classif. (of this page)** Unclassified	**21. No. of Pages** 54	**22. Price** N/A

Acknowledgements

I would like to offer my sincere gratitude to the incredible staff at the L.A. Mayor's Office of Transportation for providing the information resources and inspiration for this report. Special thanks to Julia Salinas for her time, feedback, and advice while this project took shape. I would also like to think staff at the Los Angeles and Oakland Departments of Transportation for being resources to help me deepen my understanding of each agency's respective Slow Streets programs. I would also like to thank Juan Matute and Taner Osman for their thoughtful feedback, advice, and expertise. Finally, I am grateful to my friends and family for their endless support and encouragement. This project and my accomplishments over the past two years were made possible because of you.

Thank you.

Disclaimer

This report was prepared in partial fulfillment of the requirements for the Master in Urban and Regional Planning degree in the Department of Urban Planning at the University of California, Los Angeles. It was prepared at the direction of the Department and of the Los Angeles Mayor's Office of Transportation as a planning client. The views expressed herein are those of the authors and not necessarily those of the Department, the UCLA Luskin School of Public Affairs, UCLA as a whole, or the client.

Table of Contents

Executive Summary

The city of Los Angeles dedicates only 13 percent of its public land to park space, (The Trust for Public Land, 2020). Despite this small dedication and lack of park space in many neighborhoods, L.A. is home to the largest municipal park in the country, Griffith Park. While the park is a great resource for many city residents, the past year has demonstrated a need for more space in more parts of the city. As more Angelenos spent time in the limited outdoor space due to the COVID-19 related shutdowns, L.A.'s outdoor spaces experienced overcrowding. To help residents to spend time outdoors while maintaining safe social distances, Los Angeles Mayor Eric Garcetti announced the launch of the Slow Streets Program on May 15, 2020, which allowed the Los Angeles Department of Transportation to work with communities to temporarily re-allocate street space for outdoor recreation.

On June 24, 2020, Councilman Ryu introduced a motion to make Slow Streets permanent. This report is situated in the context of a wide range of research being conducted by LADOT to study the effectiveness, infrastructure, and public perception of Slow Streets. My report fits into The City's research on Slow Streets by seeking to answer the following questions: What are the optimal legal path(s) and strategies for permanent implementation? And how can the city of L.A. leverage other mobility programs and initiatives in the L.A. area in the planning process?

A review of recent literature sets the stage by compiling recent documents and data on Slow Streets programs that have emerged as a reaction to the COVID-19 pandemic. The first observation on Slow Streets programs is that they can improve safety and health for urban communities during pandemic-caused closures and after other public spaces are reopened. The literature also tells us that the efficacy of Slow Streets programs depends on how and where they're developed and how much public engagement is involved in their planning process. Further research is needed to determine geographic strategies and public engagement strategies. My report touches on the need for community engagement when I review policies and lessons learned from other cities and programs. The review of literature in this report, findings from other current research, and my findings can inform The City's vision for continuing to develop a successful Slow Streets program.

In this report I explore the feasibility for the city of L.A. to make its Slow Streets program permanent. To find information that will guide my answer to the question of feasibility, I gather data in three research areas: case studies, alignment with other programs, and policy implications. In this section I describe the data sources and methods for analyzing the data for each respective feasibility aspect. My findings from these

analyses highlight what a permanent program may look like. The case studies provide important lessons for how to prioritize the needs of the transportation network and individual neighborhoods that L.A. should keep in mind as the city officials craft permanent slow streets policy. Studying how Slow Streets aligns with other programs that promote active mobility revealed specific locations in the city that would be ideal to prioritize because the other city departments, agencies, and organizations are working to calm traffic on shared or nearby corridors. Finally, the policy analysis reveals the changes to state and local policy that are necessary to treat Slow Street corridors with specific traffic calming infrastructure and regulations. The policy analysis incorporates changes that Assembly Bills 43 and 73 would make to state law, allowing the city to legally designate certain corridors as Slow Streets and treat them with infrastructure and signage to increase safety. Since both of these bills, if passed, would become law in January 2022, I provide timelines for that the city could follow for implementing four different infrastructure treatments

.

This report is one part of the puzzle for crafting a strategic plan for implementing permanent Slow Streets in L.A. The goal of my research was to find out if and how the city could implement a permanent program by studying policies, similar programs in other cities, and determining how permanent Slow Streets can align with the goals of other programs in L.A. that promote active mobility. Based on my findings, the city will have the capability to implement a permanent program in the near future, and there are useful guidelines on how they should implement the program from other cities and similar programs within L.A. The follow-up to this research is to look more at how and if the city should make Slow Streets permanent. and I recommend that The City use the findings from the analyses in this report to begin crafting a targeted and strategic plan for implementing Slow Street infrastructure. I also recommend that the city conduct or commission further research on the effectiveness of Slow Streets at calming traffic and on public perception of Slow Streets in neighborhoods where treatments will be added.

Introduction

In March 2020, the COVID-19 pandemic introduced a myriad of new challenges for city residents and planners around the world. In highly populated cities and regions like Los Angeles, residents had challenges traveling and performing recreational activities outside at a safe distance. (Freeman & Eykelbosh, 2020). Before the pandemic, the city of Los Angeles dedicated only 13% of its public land to park space, (The Trust for Public Land, 2020). As more Angelenos spent time in the limited outdoor space, there was overcrowding. To help residents find a way to spend time outdoors while maintaining safe social distances, The City brought safe recreational space to their neighborhoods.

L.A's Slow Streets Program temporarily re-allocated street space not being used by commuters to people for outdoor recreation. Public health and safety were the main goals of the program at its inception. L.A.'s Slow Streets can be used for "active use" only and prohibit activities like gathering or barbecuing, (Mayor Garcetti: Slow Streets L.A. to Launch in Two Neighborhoods, 2020). The maintenance of Slow Street signage and enforcement of distancing regulations is shared by leading organizations in participating communities, LADOT, and Streets L.A., (Mayor Garcetti: Slow Streets L.A. to Launch in Two Neighborhoods, 2020).

On June 24, 2020, Councilman Ryu introduced a motion to make Slow Streets permanent. The passage of the motion led to a series of adjustments to the nature of the program and necessitated further action from public and private partners. For example, Google Maps added Slow Streets to its maps **(figure 1)** in the Fall of 2020 and directed drivers to avoid them, (Fonseca, 2020). While Google's addition did not change the temporary nature of Slow Streets, it helped increase the program's visibility for users. Councilman Ryu's motion

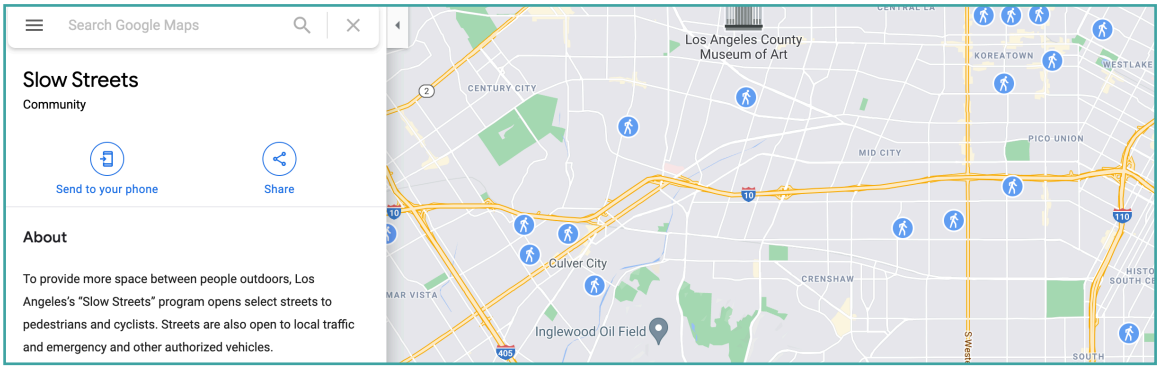


Figure 1. Slow Street Markers (Google Maps, 2021)

led to an opportunity for city staff to explore options for making the program permanent. The result of this opportunity has been a demand more research into the effects of Slow Streets, public perception, and the feasibility for implementing a permanent program which is the focus of this report.

This report will examine the feasibility for transitioning to permanent Slow Streets by answering the following research questions: What are the optimal legal path(s) and strategies for permanent implementation? And how can city staff leverage other mobility programs and initiatives in the L.A. area in the planning process? This report will address those questions through a multi-faceted policy analysis with three foci: best practices from four other U.S. and international cities that have instituted similar programs, alignment with other local and regional initiatives to promote safer streets and outdoor recreation in the city, and an analysis of the interaction between policies and infrastructure that would be used for Slow Streets with local and state laws that could be potential barriers for a permanent program, and alignment with other local and regional initiatives to promote safer streets and outdoor recreation in L.A.

L.A.'s Slow Streets Program follows the examples of other slow and limited-access street programs in international cities including Delft in the Netherlands and Bogotá, Columbia. However, Los Angeles was also not the first in the U.S. to do so. Early adopter cities in the U.S. include Minneapolis, Denver, and Oakland where Slow Street-like programs started in mid-April. L.A.'s Slow Streets began in May 2020, implemented by Los Angeles Department of Transportation (LADOT) with support from StreetsLA and guidance from the Mayor's Office. The aim is to slow vehicles and discourage non-local traffic on neighborhood Slow Streets to allow recreation while maintaining social distancing. Neighborhood organizations could apply for Slow Streets to be added to residential blocks. The program relies on community partners for on-the-ground maintenance and feedback from local residents.

The Slow Streets initiative began as a temporary solution to provide outdoor space for Angelenos to use close to home during the COVID-19 pandemic. Now, city officials and community members are interested in making the traffic calming interventions from the program permanent, which requires further action from The City. This project will complete part of that investigation by reporting on the feasisility of making the Slow Streets program permanent by identifying legal barriers, including a study of other cities' programs, and providing analysis that will highlight current Slow Streets locations most well suited for implementation with the L.A.'s future mobility plans. Based on the findings of my research, I recommend that The City:

1. **Take the entire city's needs into account.** Make sure that the permanent Slow Streets program fits not just the safe recreational space needs across the city, but also the specific needs of each neighborhood.

2. **Create a strategic plan that considers other mobility projects.** As L.A. focuses on turning the pilot program into a permanent program for

opportunities to coordinate with other organizations and city programs to achieve a smooth and efficient rollout.

3. Seek Political Advocates and Interest. The idea for permanent Slow Streets in L.A. originated in City Council action and advocating for the passage of Assembly Bills (ABs) *43* and *773* will be crucial for the program's future.

4. Conduct further analysis on public perception of Slow Streets and similar programs. Once L.A. can legally designate Slow Street corridors, city officials should be able to treat the corridors as desired to calm traffic. The City should conduct further analysis on effective infrastructure and public perception.

5. Use the time while legislation is pending to plan strategically. Slow Streets programs in California will be legally recognized and permissible if ABs *43* and *773* become law in 2022. That means the 2021 will be an opportunity for L.A. to plan a timeline and strategy for implementation that includes engaging with the public on how they envision their neighborhoods looking after the city opens back up

In this report I will first provide a review of relevant literature on the subject of Slow Street program best practices and effectiveness in other locations and current L.A. mobility plans. I will then explain and justify my methods for analyzing the feasibility for a permanent Slow Street program in L.A. Next, I provide a thorough analysis of my findings from which I will draw lessons to base my recommendations for the city of L.A. Those recommendations will outline the legal procedures The City should take to make Slow Streets permanent as well as advise how they may best coordinate with other departments and agencies with projects that align with Slow Streets.

Review of Literature and Context

As a response to the COVID-19 pandemic, many cities have re-allocated street space not being used by commuters to people for outdoor recreation, (Descant, 2020). Their aim is to slow vehicles and discourage non-local traffic on neighborhood Slow Streets. However, traffic calming methods to increase pedestrian safety is not a new concept. Though my research will be geared toward a specific client's needs, I anticipate that it will contribute to a broad context of literature on the subject.

This literature review will discuss literature related to Slow Streets in four categories: "shared street" history, importance of open street-like programs during the COVID-19 pandemic, best practices for having an impact on safety, and equity in Slow Street planning. For each section I will discuss a few pieces of literature, (academic and online news articles) which will set up the context for my research.

The History and Definition of Slow Streets

Slow, or "shared", streets programs have a long history as mechanisms to improve safety in cities and take on different forms depending on the needs and capabilities of The City they occupy. Eran Ben-Joseph (1995) offers a concise description of the purpose behind these urban planning tools and their European origins in a 1995 article. Ben-Joseph takes the reader back to mid-20th Century England when the idea of "integrated" streets was floated as a concept. Integrated streets would be suitable for pedestrian, bicycle, and vehicle traffic by design. This design idea did not take hold in England but instead made its way to the Netherlands where the designs were successfully implemented. Thus, the first "slow streets" were created, and the rest of the world has followed the model at different paces, with many cities just taking the opportunity now, during COVID to implement them, (Ben-Joesph, 1995). In the article, Ben-Joseph provides a list of characteristics for "shared streets". Some of the key characteristics include: 1) they be in a public, residential space; 2) through-traffic is discouraged; 3) the area has plenty of landscaping and street furnishings (such as benches); and 4) walking and playing are allowed everywhere, (Ben-Joseph, 1995). The history and definition provided by Ben-Joseph set the stage for modern Slow Streets programs, including L.A.'s.

Slow Streets are just one of many tools that planners can use to make streets safer for active transporters and to make them available for recreation. Paul Barter explores the innovative tools that have been used to expand the way we imagine public right of way

can be allocated and shared. Barter spends the first half of the report explaining the importance of making more space within public rights of way available to non-vehicle traffic and recreation. He says that this can be achieved by reducing vehicle speed. However, this one task is not simple and can involve making changes to rigid institutions that control the roads, (Barter, 2009). In the second part of the report, Barter offers options for slowing vehicle speeds. These methods range from simple traffic calming measures (speed humps and chicanes) and posting lower speed limit advisories to the implementation of road diets which can create space for non-vehicles without diminishing capacity, (Barter, 2009).

Slow Street Infrastructure and Policies that Have an Impact on Safety

Thanks to past research and studies in the field, we know that slowing and diverting traffic improves conditions for pedestrians and bicyclists. In the 2007 reprint of The Local Government Commission's guide on traffic calming, author Dan Burden provides an explanation of the purpose of traffic calming and a guide on different traffic calming methods that everyday people can pursue in their neighborhoods. Burden states that traffic calming measures are often used to correct poor past street designs which create unsafe conditions. He also recognizes that the best measures for traffic calming may vary neighborhood to neighborhood. He suggests that planners follow a four-step process to determine the best choices for their area, (Burden, 2007).

1. **Identify what needs fixing.**
2. **Determine the type or types of locations you are dealing with.**
3. **Select the tools that might work in these cases.**
4. **Review the tools in more detail to understand how they work**

Burden's guidance and the concept of choosing the right traffic calming methods demonstrate how thoughtful and deliberate the process of planning and developing permanent slow streets must be. Which is why the initial policy analysis that will be conducted in this study is so important.

In 2011, researchers at the University of Canterbury published a paper analyzing the effectiveness of different traffic calming methods at slowing vehicle speeds. The researchers looked at the effectiveness of seven different traffic calming methods at slowing vehicle speeds. Their on-the-ground data collection provided some key findings on the effectiveness of each of the calming methods. For example, they found that speed humps were the most effective at slowing traffic and that angled slow points (extending parts of the curb onto the street) would cause drivers to slow down for the longest distances, (Daniel, Nicholson, & Koorey, 2011). he findings in their study demonstrated that the traffic calming methods that could be implemented in L.A.'s Slow Streets are not equally

effective. It will be important to keep this study in mind as I explore what kinds of permanent infrastructure could feasibly be incorporated.

Figure 2. Temporary mini roundabout in Denver CO, (Sachs, 2018)

To enforce temporary slow street programs that rolled out in reaction to the COVID-19 pandemic, cities have used a variety of temporary and semi-permanent infrastructure. For example, **figure 2** shows an island erected in the middle of an intersection in Denver meant to calm traffic on a Safe Speeds corridor. The structure in the image is made up of temporary speed bumps in a circle along with tall, very visible signs to let drivers know how to travel through the intersection. Roundabouts are an effective way to slow traffic speeds and increase safety, (Hallmark, Hawkins, and Knickerbocker, 2012). However, they can be expensive to add to a street. A lower-cost alternative that could be added to L.A.'s expansive Slow Streets corridors like the one in Denver or using tall, flexible bollards (Hallmark, Hawkins, and Knickerbocker, 2012) to create a circle in the middle of intersections that drivers could either treat as a roundabout or as a barrier to avoid as they travel through the intersection. Either of these treatments has the desired effect of traffic calming and increased safety.

Effects of Slow Streets

Traffic Behavior

The San Francisco Municipal Transportation Agency (SFMTA) and the city of Oakland both documented the observable effects of their Slow Streets programs in Fall 2020. Both cities reported decreases in traffic on all of their Slow Street corridors. SFMTA reported a 50 or more percent decrease in vehicle volumes on Slow Street corridors, (SFMTA, 2020) and Oakland's decreases ranged from 19 to 52 percent, (Oakland DOT, 2020). However, both reports note that a significant amount of the other observed decreases were due to local Stay at Home ordinances. These ordinances were enacted by local and state executive orders to combat the spread of the highly infectious novel coronavirus, SARS-CoV-2. In March 2020, Governor Newsom signed the State's Stay at Home Order which required all CA residents to stay "at home or in their place of residence except as needed", (Executive Order N-33-20, 2020). In the same month, Mayor Garcetti signed L.A.'s Safer at Home order which prohibited gatherings of 10 or more people and ordered the closure of all non-essential businesses and areas, (Mayor Garcetti Issues Temporary Restrictions to Help Slow Spread of Novel Coronavirus,

Protect Public, 2020). They did not have the ability to identify exactly how much of the decrease was due to the slow street corridor infrastructure. As traffic levels return to pre-pandemic levels, there may be more opportunity to see what effect slow street programs have on traffic volumes, including in Los Angeles.

Public Health

Slow Street corridors provide space for recreation by making roads safer for pedestrians and bicyclists to share with cars. Even when the need for social distancing is no longer needed, Slow Streets can provide more space for community members to be active in their own neighborhoods without being confined to sidewalks. A 2015 study, (Cairns et al, 2015) on 20 mile per hour zones with speed hump and speed limit infrastructure looked at the health benefits of those zones for pedestrians. The authors found that the zones were effective for improving public health and safety by reducing crashes and injuries. They also found that targeting those zones in socio-economically disadvantaged communities could have even greater benefits for public health and safety (Cairns et al, 2015). While L.A.'s Slow Streets program may have different infrastructure, the intention is to slow down through traffic to similar speeds, which could turn out similar benefits.

In addition to changes in traffic volume, SFMTA also reported on changes in pedestrian and bicycle traffic on Slow Street corridors. They found that pedestrian traffic volume increased by 17 percent during the week but decreased by 31 percent on the weekend. It's unclear what the exact cause for this change was. Like vehicle volume, SFMTA considered that it could be due to Shelter in Place orders which may have led to more people being forced to recreate close to home while they work or attend school from home during the week. The story was much different for bicycle volumes. SFMTA reported 65 and 80 percent increases in bicycle traffic on weekdays and weekends respectively. Though it's still unclear what parts of these changes are just a result of Shelter in Place orders, increased numbers of people using streets where they previously didn't due to heavy vehicle traffic is a positive outcome for public health.

The Importance of Safe Public Space During the COVID-19 Pandemic

Many Los Angeles streets have been a dangerous place for children to play in or for pedestrians and cyclists to use since before the pandemic, (Podemski & Berker, 2016). city officials and residents were aware that changes had to be made to increase safety. (Los Angeles Walks, 2015). This awareness was heightened during the COVID-19 pandemic. Los Angeles' Slow Streets Program was implemented initially during The City's strictest lockdown period in Spring 2020. This period of limited traffic and limited access to public recreation space was an ideal time to test the program. The sidewalk space normally allocated to non-drivers was not sufficient for social distancing. In April of 2020 the Canadian National Collaborating Centre for Environmental Health (NC

CEH) published a report on the uses of outdoor space for recreation. The report was published in April, before we were able to learn all that we know now about how the virus is transmitted. However, enough was known that the researchers could articulate the potential dangers that closed parks and other recreational space could cause. Without ample recreational and travel space outdoors, it was very difficult for people wishing to go outside to distance themselves the recommended 6ft from each other, (Freeman & Eykelbosh, 2020). This challenge, as were many others, was greater for disadvantaged and urban communities where outdoor space on individual residential properties is especially limited, (Freeman & Eykelbosh, 2020). The findings reported in this article contributed to cities initiating temporary Slow Streets programs to create more space to keep people safe outdoors.

As the Summer months passed in 2020, cities that adopted Slow Streets-like programs discovered how they could best serve the community during the pandemic and beyond. Researchers Ayyoob Sharifi and Amir Reza Khavarian-Garmsir discuss the lessons learned from the impacts COVID had on urban environments in a study published in September 2020. The researchers searched relevant literature on the impacts of COVID-19 on urban life for prevalent themes. Their analysis turned up four main areas of urban life that COVID had the largest impact on: 1) environmental quality; 2) socio-economic impacts; 3) management and governance; and 4) transportation and urban design, (Sharifi & Khavarian-Garmsir, 2020). Notably, in their analysis of literature on transportation and urban design, they found that studies recommended that cities should consider redesigning streets to accommodate pedestrians and green space. Making these changes will make dense urban neighborhoods safer and more resilient against pandemics. and The findings from their research further emphasize the need for a lasting Slow Streets program.

Criticisms of Slow Street Planning

Equity

While the scope of my research does not involve public engagement strategies for city officials to pursue in the process of implementing permanent Slow Streets, it would be irresponsible to leave the subject of equity out of my review of relevant literature. Emiko Atherton discusses the potential of Slow Streets to serve important needs in the city's underserved neighborhoods (Atherton, 2020). Atherton's article considers the problems with historic transportation planning processes, particularly when it comes to engaging with and serving disadvantaged communities. She states that now, more than ever, it is important to actively engage with communities since mediums for engagement are limited to virtual or safely distanced meetings. COVID-19 has disproportionately infected historically disadvantaged communities, Atherton considers it transportation planners' responsibility to not exacerbate that inequity during this delicate time and focus on creating improving conditions and safety in communities that can benefit the most.

Slow Streets and other mobility improvement programs including L.A.'s are constantly adjusting to serve communities as effectively and equitably as possible. The Atherton article's focus on equity in investment is balanced by a recent article published in the May 2021 edition of the Institute of Transportation Engineers Journal (Marcus et al, 2021). The authors address the unintentional negative impacts that planning complete streets and other Slow Streets-like programs can have on equity while trying to improve safety and mobility. The article highlights changes that cities are making to address these past oversights. For example, the authors discuss the city of Oakland's approach for incorporating an equity lens in its Slow Streets program. Like L.A.'s Slow Streets program, Oakland's emerged to meet the need to connect communities with safe outdoor space to use during the COVID-19 pandemic. After initial tests of the program, Oakland city officials paused Slow Street installment to reevaluate the program with an equity lens, (City of Oakland, 2021). That adaptation helped make the planning process behind Oakland's Slow Streets more equitable.

Access

Changing the built environment of a neighborhood by adding new infrastructure or signage changes the way all residents and travelers interact with the street. Those changes have the potential to cause unintended consequences for physically or visually disabled residents and travelers who use the street. In 2017, United States Department of Transportation, (USDOT) released the Safety for All Users report that cities and transportation agencies could use as reference to create equitable and accessible shared streets, (USDOT. The recommendations in the report are valuable for Slow Street implementation, especially if the desired outcome is for increased pedestrian access for all. Unfortunately, many Slow Street programs that popped up quickly in reaction to the pandemic lacked some of the thoughtful planning that must go into creating streets that can be safely shared by all. Additionally, in many cities, the temporary signage was destroyed or thrown into pedestrian paths on sidewalks, decreasing safety and accessibility, (Ham

Figure 3. San Francisco Slow Street sign knocked (SFMTA 311, n.d)

Figure 4. Baltimore Slow Street sign knocked over (Solomon, 2020)

Figure 5. L.A. Slow Street sign knocked over (Wells, n.d.)

merl, 2020; Bowen, 2021) Examples of Slow Street signs that have been knocked over into sidewalks can be seen in **figures 3, 4, and 5** . The USDOT report recommends that shared streets receive constant maintenance to avoid this problem (USDOT, 2017). For example, they recommend that cities and agencies regular maintenance to ensure ADA

Literature Summary

The literature included in this review is not the full extent of literature on the topics discussed. The effects of the pandemic on urban design and travel patterns are happening in real time. In summary, the literature above does tell us that effective Slow Streets programs can improve safety and health for urban communities during pandemic-caused closures and after other public spaces are reopened. The literature tells us that the efficacy of Slow Streets programs depends on how and where they're developed and how much public engagement is involved in their planning process. The literature does not dictate how best the city of L.A. should go about legally implementing their permanent Slow Streets Program. My research will explore the above findings used as context. My research primarily focuses on legal strategy for implementing a permanent program. Further research will be needed to determine geographic strategies and public engagement strategies. Combined, all these areas of research should provide The City with a comprehensive vision for pursuing a successful permanent Slow Streets program.

Research and Methods

Overview

In this report I explore the feasibility for the city of L.A. to make its Slow Streets program permanent. To find information that will guide my answer to the question of feasibility, I gather data in three research areas: case studies, allignment with other programs, and policy analysis. In this section I describe the data sources and methods for analyzing the data for each respective feasibility aspect.

Case Studies

To assess the feasibility of implementing a permanent slow streets program, I determined that case study analyses of other cities that implemented similar or exemplary programs would be beneficial. Case studies allow me to look at what other cities are doing to work with their local and regional policies to implement their programs. I look at four different cities in the U.S. and abroad that have implemented or are in the process of implementing Slow Streets-like programs. The cities and my reasons for choosing them are below.

- **Oakland, California** Oakland was an early Slow Street adopter in reaction to the pandemic. The city is also in California, so it has to comply with the same statewide legal framework as Los Angeles.

- **Minneapolis, Minnesota** Minneapolis was also an early adopter of slow streets last year; however, they are implementing aspects of their program differently from the Californian examples, which makes them an interesting study. They are also an exemplary city for park/recreation space, and it is beneficial to study what infrastructure measures they are pursuing as they work on making their program permanent.

- **Bogotá, Colombia** Bogotá implemented a successful Slow Streets-like program in 2020 to improve mobility. They are also the largest city on this list, with a larger population than Los Angeles. Its size and success make it another case worth including.

- **Delft, Netherlands** oThe Dutch Woonerf (Slow/shared street that literally translates to "residential yard") was the first example of a slow street-like program to be permanently implemented. Because

of the relative longevity of this Woonerfs, it is worth exploring the choices made for infrastructure and challenges experienced in implementation. This final program in the case study analysis was not implemented in reaction to COVID-19. Woonerfs have been a part of Dutch urban infrastructure for over 40 years. They serve as an example for successful safe streets for L.A. and the other cities discussed

Before I began my research into each city, I decided on four questions I would attempt to answer for each case: 1) When were slow streets first tested? 2) When they decided to make them permanent? 3) When/ if they were made permanent? and 4) What physical changes were made to street design or infrastructure? By framing my initial research around these four same questions, I was able to maintain consistency for four cities with slightly different types of programs and varying availability for records to examine.

The information in my case studies was sourced from various locations which varied based on record accessibility. For Oakland, I collected information from the program's Interim Findings Report which was conducted in September to document the status of the program. I also found information in press releases and editorials. Since Oakland is also in the process of determining how to implement permanent Slow Streets measures, I also reached out to staff to find more information to help answer my questions. For Delft, I relied mainly on scholarly articles, news reports, and editorials for information on my four questions. Since they were the first city to pursue this type of program, its history is better documented than the pandemic response programs. My search for answers about Bogotá's program began by examining editorials on the city's program. I also analyzed government records for the program to see what specific changes they made to infrastructure. Finally, for Minneapolis, I started my research by getting information from news articles. It was difficult to get specific details on the ordinances beyond the program, so I reached out to city planning staff from Minneapolis' Public Works Department to get answers to my questions.

Alignment

My third area of analysis focuses on how L.A.'s Slow Streets program aligns geographically and with the goals of other mobility initiatives in the city and region. This final component of my research targets the question of feasibility for a more permanent program because coordinating with public or private partners working on similar mobility projects may make a permanent slow streets program easier and more economical to implement.

Before splitting into the two parts of my alignment analysis, I began by identifying a manageable list of programs and initiatives in L.A. that I would use in my analysis. I searched for programs and initiatives that were wholly or partially within the boundaries of the city and that have the purpose of creating space for active mobility and/or

outdoor recreation. I settled on three different programs: The Trust for Public Land's Fitness Zone® Program, and LADOT's Livable Street's Vision Zero and Safe Routes programs.

The other component of my alignment analysis is looking at the geospatial alignment of L.A.'s Slow Streets and other programs' target locations. To conduct this analysis I used Slow Streets sign location data provided by LADOT to map out where Slow Street corridors were located in the city as of January 2021. I then downloaded mapping data from LADOT's, Metro's, and The Trust for Public Land's online data sources. My analysis consisted of creating overlays of L.A.'s Slow Streets with the locations of the other programs to see which ones target similar areas or specific streets within the city. The identification of overlapping areas can help the city make decisions about what Slow Street corridors should be given priority for permanent infrastructure treatments.

Policy Analysis

City staff are still working to determine what methods they will pursue to implement the permanent Slow Streets program. A slow street is created by the infrastructure and signage installed on it. For this reason, I start the data collection process for my policy analysis by identifying a few potential infrastructure options. My policy analysis looks at three examples of potential traffic calming infrastructure which are proven to be relatively effective, especially when it comes to pedestrian safety and vehicle speed (Chrysler, 2017; and USDOT, 2001) and under consideration by city staff for the program. The elements are:

1. **Thin bollard "roundabout" islands for stop sign controlled intersctions.**
2. **No thru traffic signage at ends of Slow Street corridors.**
3. **Sidewalk bulb-outs at intersections along the corridors.**
4. **bAdding advisory speed limit signage**

Once I gathered thorough information on the elements listed above, I used the advice of my client and LADOT to select policies at the state and city level that would affect The City's ability to treat Slow Streets with them. The policies in my analysis include: CEQA, (California Environmental Quality Act)Class 1 categorical exemptions, relevant sections Division 4 of California's State Vehicle Code, Article 4.4 of the city of L.A.'s Planning and Zoning Code, and the emergency order enacted last Spring that enabled Slow Streets. My analysis identifies the legal steps that would need to be taken to overcome the barriers presented by the codes that relate to Slow Street infrastructure and/or the steps that would need to be taken for different codes or exemptions to apply to the project.

Findings and Analysis

Overview

This report examines the feasibility for the city of Los Angeles to transition its temporary Slow Streets program into a permanent program by answering the following research questions: What are the optimal legal path(s) and strategies for permanent implementation? And how can The City leverage other mobility programs and initiatives in the L.A. area in the planning process? I conducted research in three different areas: case study analysis, analysis of alignment with other mobility programs, and an infrastructure-focused policy analysis. First, I present and discuss the case study analyses and the best practices and pitfalls they provide for permanent Slow Street-like programs. Second, I discuss the findings and importance of my analysis of Slow Streets' physical and policy alignments with other mobility and recreation focused programs in L.A. Lastly, I build upon those findings by adding the results of my policy research on feasibility of implementing possible infrastructure treatments. I discuss how the findings on best practices and possible coordination opportunities in the first two areas influenced the choice I made in the policy analysis.

Case Studies

For the first area of my research on Slow Street feasibility in L.A., I looked at a variety of cities that installed Slow Streets-like programs. Most of them were installed in 2020, and some were more successful than others. My analysis includes looking at why some programs were more effective and long-lasting. From this research, the city of L.A. can be well-informed on what potential pitfalls to avoid and what best practices they should follow.

Oakland, California

About the Program

Of the four cities in this analysis, Oakland's Slow Streets program has the most in common with L.A.'s. In addition to being subject to the same state laws, Oakland's program also rolled out in Spring 2020 in response to the COVID-19 pandemic. In fact, they were among the first cities in the U.S. to roll out a Slow Streets-like program in April 2020. The city of Oakland's Department of Transportation (OakDOT) was given permission to close certain corridors to through traffic in an emergency action by Oakland City Council. The program was launched to support public health during the COVID-19 pandemic and to increase traffic safety. The program has had mixed results for achieving

these goals in each neighborhood (Fermoso, 2020). It remains to be seen if the enabling emergency orders will be extended or adjusted as the pandemic subsides. In 2020, INRIX, a private data and technology company, published a report on Slow Streets in the U.S., including Oakland's program. INRIX reported that, between March and August 2020, Oakland's Slow Streets had more user activity (pedestrian and bicycle) than other corridors. OakDOT published an interim findings report on the effects of the program. The City intends to use the findings from the interim report to create permanent capital improvements as COVID-19-related restrictions are lifted to make Slow Streets a permanent part of Oakland's infrastructure, (Oakland DOT, 2020).

Past, Present, and Future Infrastructure Treatments and Challanges

At the beginning, Oakland applied many of the same infrastructure treatments as L.A. did: Type II barriers and traffic cones with "Road Closed to Through Traffic" signage attached as seen in **figure 6**. For more details on the current and planned infrastructure treatments, I contacted, (Personal Communication, 2021). As Oakland pivots to an enhanced, more permanent network, some corridors are being upgraded to flex posts and Type III barricades bolted into the pavement (Personal Communication, 2021). Additionally, OakDOT is installing Slow Street-specific signage that will accompany the "Road Closed to Through Traffic" signage. (Personal Communication, 2021).

Figure 6. Slow Streets signage in Oakland, CA. (City of Oakland, 2021)

While Oakland applies upgraded treatments to their Slow Street corridors, they are also met with the challenges about how to create the best Slow Street network when optimal Slow Street design is different from corridor to corridor. One of the key takeaways in the aforementioned 2020 INRIX report regarding Oakland's program was that there were higher levels of activity, (pedestrian and bicycle) on corridors that were in neighborhoods with a greater portion of the population low-income, and less activity on corridors in higher-income neighborhoods, (Pishue, 2021). This finding demonstrates that Oakland's Slow Streets were used more on low-income corridors from April-September 2020. Despite this, OakDOT's interim report revealed that, while Slow Streets had overall positive public reception, most of the support was from higher income residents. Though residents of lower-income communities used Slow Streets more, essential

workers and lower income residents reported that the "program was not meeting their needs" and that the program lacked sufficient public health messaging in their communities, (Oakland DOT, 2020). These findings represent a big challenge for Oakland moving forward. OakDOT will have to make a concerted effort to improve the Slow Streets program on its busiest corridors. The OakDOT report mentions that moving forward, they plan to make "context-based" changes to corridors based on neighborhood feedback and corridor-specific analysis. For example, on corridors where there is high usage and less car traffic, OakDOT wants to install more durable infrastructure and engage with the community more to identify if they can incorporate more culturally relevant artwork and messaging.

Lessons

- **Match infrastructure upgrades with neighborhood needs.** It can be tempting and simple to apply the same treatments to every corridor. But while city-wide consistent signage may be helpful, some neighborhoods need different treatments than others based on their location, existing traffic safety data, and neighborhood perception of the Slow Streets program.

- **Success is contingent upon legislative action.** Regardless of public feedback and performance, Oakland's Slow Streets program can only become a permanent program if there is support from the City Council and the State Legislature.

Minneapolis, MN

In Spring 2020, the Minneapolis officials and residents also faced a need to expand safe space for active travelers and recreation in their city. In April, The city announced that they were closing 11 miles of city streets to car traffic to create Stay Healthy Streets that would provide residents an opportunity to stay active outdoors while city parks and beaches were closed or had limited access, and indoor gyms and studios were closed. In late April, due to the popularity of the existing route, city officials added a third loop of closed corridors. Minneapolis is a very active city. 98 percent of its residents live within a 10-minute walk to a park, (Trust for Public Land, 2021) the city also has 83

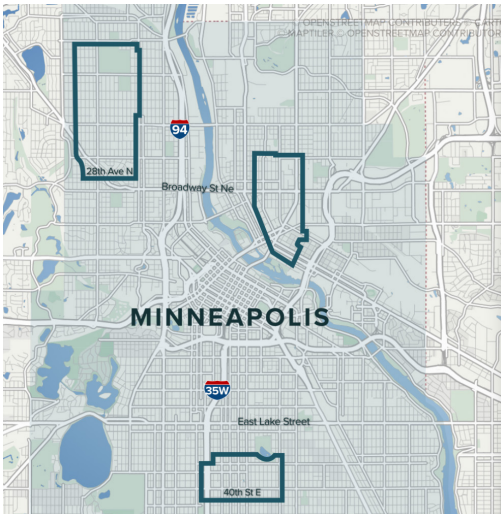


Figure 7. Map of all three Stay Healthy Street Corridor Loops in Minneapolis (KARE 11, 2020)

miles of off-street bike trails and 44 existing bike lanes (Metro Bike Trails, n.d.). The City's Stay Healthy Streets routes were all linked to parks within the city (See **figure 7)**. By the end of the summer, as businesses and outdoor recreation spaces opened back up, (and temperatures lowered) this reduced the need for designating entire corridors for bicycles and pedestrians for social distancing purposes (City of Minneapolis, n.d.). The streets opened back up for vehicle traffic in October 2020.

Past, Present, and Future Infrastructure Treatments and Challanges

Stay Healthy Streets were primarily geared toward recreation. While the program is no longer active, Minneapolis plans to use the lessons learned from the program's traffic calming methods for other corridors that prioritize multimodal transportation (City of Minneapolis, n.d.). The streets were closed to all through-traffic except for residents on the Safe Streets, (Bornhoft, 2020). Unlike Oakland, Minneapolis posted "Road Closed" signage at intersections with non-treated streets, **(figure 8)** even though the streets were still open to residents. They also posted signage that directed users on how to share the corridors. The strategy for Stay Healthy Streets was to keep cars off of the roads - there was no effort from The City to post lower speed limits.

Lessons

- **Do what makes sense culturally and geographically.** Like L.A.'s Slow Streets, Stay Healthy Streets were geared toward creating space for outdoor recreation, But Minneapolis already has a lot of space for that. While pedestrian and active transporter safety is needed, there are other Smart Street-type programs they should pursue for that.

Figure 8. Street Closed sign on Minneapolis Stay Healthy Streets (Schaffer, 2020)

- **This is an experiment.** For Minneapolis, adding Stay Healthy Streets was an opportunity to collect public feedback on the traffic control measures that accompany shared streets. Minneapolis found out that these measures did increase activity on the closed streets, (Pishue, 2021) and will help The City as it pursues more long-term changes to its streets.

- **Clear and consistent signage matters.** Posting signs that clearly stated that roads were closed to vehicle traffic at Stay Healthy Corridor intersections indicated to drivers and users if the street was accessible for them.

Bogotá, Colombia

When the COVID-19 pandemic hit, the city of Bogotá was also faced with the need to create more space for the public outdoors. The open streets program they developed evolved naturally from policies and programs the city already had in place to promote public safety and multimodal transportation. After the introduction of cars to Bogotá's streets in the mid 20th Century, traffic safety quickly became an issue for the city's active transporters, (Margolis, 2015). In the 1970's Bogotá launched Ciclovia, an event every Sunday from 7am to 2pm where cars are banned from the streets and millions of city residents take to the streets to cycle, jog and roller blade. (Bogota: Bike Friendly City, 2021). In the years since, city officials have rolled out a number of other initiatives including creating super wide sidewalks, and painting crosswalks with vibrant colors. Despite these efforts, Bogotá's streets are still dominated by car traffic six day of the week, (Pritchard, 2020). In the interest of making travel easier for the many who travel by private car, there was an effort to ban Ciclovia in 2007 early 2000's. The effort was unsuccessful and efforts to make Bogotá's streets safer for cyclists and pedestrians persisted. In 2020, Claudia Lopez, a politician and avid cyclist, was elected mayor. Along with her administration came strong efforts to increase Bogotá's bicycle lane network. In February 2020, Mayor López proposed and successfully added an extensive 280 centerline km (174 miles) of bicycle lanes in the city. Shortly after in Spring 2020 the city went into lockdown and found that there was a need and opportunity to expand its programs to promote safety and recreation.

Past, Present, and Future Infrastructure Treatments and Challanges

In 2020 Bogotá's efforts to promote multimodal transportation and outdoor recreation were expanded to accommodate additional space for pedestrian social distancing. Bogotá officials recognized early on that there would be an extended need for increased space for people on streets during the pandemic. On March 17th, 22 centerline km (14 miles) of bike lanes were added to the city's network by repurposing car lanes. The changes made to the streets used infrastructure that could be easily installed and removed. City officials treated the temporary, emergency response as a pilot period to gather public feedback before making any permanent changes (Shared-Use Mobility Center, 2020). The lanes were set up using traffic cones, and as of Fall 2020, officials were working through public feedback on a campaign to install more permanent infrastructure on the emergency bike lane network (Johanson, 2020).

Figure 9. Cyclists using a temporary bike boulevard in Bogotá, Colombia (Bermudez, n.d.)

Lessons

- **Political Support Matters:** Having leadership at the top that was passionate about making streets safe for bicyclists and pedestrians was very important for the past and future success of Bogotá's street reconfiguration. It is also worth noting that Mayor Lopez had the power to implement the program without the approval of a city council, which is not the case for Mayor Garcetti in L.A.

- **A network of streets that support active transportation is helpful.** Before the pandemic, the city was already in the process of making its streets more friendly for pedestrians and cyclists. **Figure 9** above is an example of infrastructure that existed and was expanded upon in 2020.

- **Testing and Experimenting.** Because the bike lanes Bogotá added in March 2020 were meant to be temporary, city officials were able to gather public feedback on the program before implementing permanent changes. Now The City can determine which lanes should be upgraded to permanent fixtures on the city's streets based on the public's opinion.

Delft, Netherlands

The final city included in the case studies is Delft. Their Slow Streets-like program is different from the rest because it was developed in the 1970's and has shaped the city's design and culture for decades. Delft's "Woonerfs" were the pioneering blueprint for Slow Streets. In Delft, an overarching philosophy in street design is that cars are guests on the road. They were created to slow down traffic and increase safety for recreation and for active commuters. When they were introduced in the 1970s Woonerfs were meant to increase safety for children playing in the streets, (Tranter 2016). "Woonerf" literally translates to "residential yard", (Schepel, 2005). Like most of the western world, the Netherlands adopted a dominant car culture after World War II (citation). When increased vehicle traffic came to Delft, the city was faced with a crisis of children dying in vehicle crashes in the streets. The crisis led to a large activist movement led by mothers to address traffic deaths in the 1970's, (citation). Following the successful addition of Woonerfs to the city's infrastructure, Delft adjusted its traffic policies throughout the remainder of the 20th Century to better serve bicycle commuters.

Past, Present, and Future Infrastructure Treatments and Challanges

Over the past 50 years, Delft has been able to transform a large network of corridors into people-friendly spaces. A big reason for The program's success was the Dutch government's approval and adoption of Delft's plans in 1976, (Schepel, 2005). The national government published guidelines for building Woonerfs, which helped to legitimize their presence. (Guttenberg, 1982). For example, there is distinct signage for where Woonerfs start and end, (figures x and y). Dutch law also distinguishes between Woonerfs and other types of streets that allow for active transportation including bike lanes which are called Fietsstook, (Bijlage 1. Verkeersborden, Reglement verkeersregels en verkeerstekens 1990). The guidelines provided by the national government were a big advantage for implementation, since the city had to make major changes to the physical environment to address the challenges of making its streets safe. The major obstacles they met were "curbing speed, giving pedestrians the full width, planting trees, public lighting in accordance with the streetscape, giving inhabitants a small semi-private zone(s)" (Schepel, 2005). Thanks to a great deal of public and political will, the city's ambitious goals were achieved. In **figure 10,** you can see the modern Woonerf. This corridor and others have a series of treatments to calm traffic, which I've listed below, to make them safe for traveling by foot and bicycle and for recreation.

Treatments:

- Universal signs that clearly indicate a shared street.
- Speed humps to indicate changes in height.
- Chicanes and medians to indicate changes in direction.
- Privately added benches and trees outside households or on sidewalk areas.

Figure 10. Cyclist uses Woonerf in Delft, Netherlands (Wouters, 2013)

Figure 11. Woonerf corridor Start sign. (Netherlands Vehicle Code, n.d.)

Figure 12. Woonerf corridor end sign. (Netherlands Vehicle Code, n.d.)

Lessons

As a model for L.A.'s Slow Streets and other programs, Delft's Woonerfs provide three important lessons for designing effective slow streets.

- **Community leadership and political support matter.** First, the culture and politics of the region the program is in matter. Delft residents valued their outdoor space and street safety. The community wanted a city with streets that children could safely play in and they made it happen. Political approval from the region and guidance from the national government legitimized the program and gave it the momentum needed to truly reshape the city's streets. Strong political support led to the addition of clear signs to alert users when a street is a Woonerf, **(figures 11 and 12).**

- **Non-Slow Streets that support active transportation are important.** The city's changes to transportation policy and infrastructure supported more active transportation and less car travel. This meant fewer cars on the city's streets overall. Dutch cities also have streets and lanes that are dedicated to or that prioritize bicycles (Fietsstooken mentioned above), mopeds, and other active and motorized modes.

Takeaways

The Case Study analyses revealed some lessons that would serve to inform city officials in L.A. as they work to launch and operate a permanent program. I specifically take note of six key lessons that come from one or more of the studies:

1. Install and maintain consistent, official infrastructure. A-frame signs at intersections identifying Slow Streets have worked as a temporary tool for diverting traffic. However, installing signs throughout the city that are more resilient and built into the street infrastructure can help legitimize the programs and traffic regulations. Additionally, if it is possible to use the same or similar signage across the city, this can help eliminate driver and pedestrian confusion. Travelers will know exactly where they are allowed to drive and how fast. They will also be aware of increased pedestrian activity on the shared streets.

2. Prioritize needs of low-income corridors. The city of Oakland's program experienced more activity on corridors in low-income neighborhoods. Residents of those neighborhoods have less access to private vehicles so adding space for recreation and active transportation proved to be more useful for them. It would be worthwhile to prioritize similar corridors for programs in other cities like L.A. This prioritization could look like spending more time and resources working with community leaders to determine the best kinds of Slow Street infrastructure that works for their neighborhoods.

3. Evaluate needs of the city overall. Each of the cases I studied operate in cities with different built environments, different cultures, and different economies. For example, in Minneapolis, there is an expansive network of pedestrian and bicycle paths that already exists in the city. Therefore, their program served a different purpose and was ended later in 2020 when those spaces opened up again. In other cities like Oakland and L.A., Slow Streets are serving a need for outdoor space that was lacking before March 2020.

4. Community-led and -centered programs. In Oakland and Delft there was an emphasis on community involvement. Involving the community in planning for Slow Streets, strengthens The City's ability to prioritize Slow Street related infrastructure treatments. Comprehensive community input and engagement can make the program stronger and more popular with residents.

5. Support the program with active transportation policies. Each of the cities in these cases as well as L.A. have different built environments. They also have different transportation policies and priorities. A city should evaluate how it supports pedestrian and bicycle access to Slow Streets within neighborhoods and across its whole transportation network to help create a more effective program as Bogota has.

6. Seek political support. Strong support from politicians at the local and national level were important for the programs abroad. Bogota's program experienced greater success when the city elected a bike advocate mayor.

	Consistent signage and infrastructure	Prioritize needs of low-income corridors	Evaluate needs of the City overall	Community led and centered programs	Traffic laws that support active modes of transportation	Political Support
Oakland, California	⊗	⊗	⊗	⊗		
Delft, Netherlands	⊗		⊗	⊗	⊗	⊗
Minneapolis, Minnesota	⊗		⊗			
Bogotá, Colombia			⊗		⊗	⊗

Alignment with Other Policies and Target Locations

At the start of the program in May, Slow Streets were launched as a temporary way to provide local residents with additional recreation space while indoor recreation spaces and many outdoor spaces were closed (Office of L.A. City Mayor, 2020). The program is application-based. Residents apply to have a street designated, typically to make it safe for their own neighborhood. Slow Streets are not the only corridor-specific traffic calming program in L.A. There are a number of other programs run by the city, county, and partners that use many of the same treatments to increase safety on neighborhood streets. In this section, I look at three programs that aim to achieve similar goals to Slow

Streets and see how they align in their goals, policies, and locationally. The findings in this section show where the Slow Streets program aligns with other programs that promote active mobility and recreation physically and with policies and infrastructure. This analysis may help the city of L.A. as they make strategic decisions.

Slow Streets and Vision Zero

Los Angeles Vision Zero is a comprehensive plan developed to help the city meet a goal to eliminate traffic deaths citywide by 2025. The program, operated by the Los Angeles Department of Transportation, (LADOT), is part of a larger movement across the globe as cities all set similar goals for their own streets. Additionally, L.A. County has its own Vision Zero plan which emerged as a reaction to a 20 percent rise in traffic-related deaths from 2013 to 2017. In their plan, the County sets goals and determines unincorporated areas of the county that will be targeted for safety treatments, (LA County Board of Supervisors, 2019). They identify specific corridors with high levels of collisions and designate them as part of a "High Injury Network", ("HIN"). Because of their criteria, many of the streets in the "HIN" are major corridors, rather than smaller residential streets. While the Vision Zero Network looks different from Slow Streets, both programs target similar neighborhoods with traffic calming policies and infrastructure treatment plans.

Vision Zero Los Angeles Goals

L.A.'s Vision Zero plan is guided by the idea that it is important that everyone recognize and respect those who are utilizing the shared space of public roadways. LADOT recognizes that people will make mistakes on the road, but these mistakes should not lead to death or severe injury. The overarching goal for the program is to create safer streets by slowing the speed of traffic, (LADOT, 2019). In 2018, LADOT published a status update on Vision Zero which included four areas to address to make L.A.'s streets safer. They are detailed below:

1. Infrastructure Treatments for Safer Streets

The updated Vision Zero plan focuses on planning implementation for infrastructure improvements in targeted corridors with high safety risks. Specific improvements include:

- **Signal installment:** LADOT and the city's Bureau of Engineering were scheduled to install 25 new traffic signals and 75 signal upgrades with protected left-turn phasing.

- **Landscaped buffers:** For example, adding trees and other foliage between car traffic on the road and pedestrians on sidewalks.

- **Pedestrian refuge medians:** The concrete medians would protect pedestrians when they cross larger intersections and have the need to pause halfway across the street to allow other traffic to pass or rest.

2. Cultural Shifts

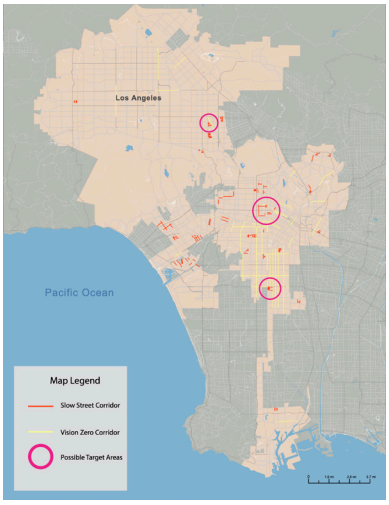
LADOT recognizes that the roads will not become safer just by making infrastructure changes to calm traffic. To achieve zero traffic deaths, LADOT is using community education and engagement strategies to create more comprehensive changes to road safety. For example, in the 2018 report, LADOT stated that they intended to continue working with the Southern California Association of Governments (SCAG) to educate communities in L.A. about the benefits of safety projects that change the way local roads look.

3. Policy Adaptations

The third component of LADOT's updated Vision Zero plan was to advocate changes to the California State Vehicle Code (CVC) at the state level that would allow The City to implement new methods for setting safer speed limits.

4. Use Recent and Relevant Data

Finally, the Vision Zero update called for a use of up-to-date, relevant data to inform Vision Zero priority corridors and strategies. Specifically, the report calls for the use of updated HIN corridors, upgraded LAPD records and LADOT data, and new predictive analytics. LADOT also commits to using improved data collection and evaluation methods, particularly improved transparency for the collection and evaluation processes.



Map 1. Slow Streets and Vision Zero Corridors

Physical Alignment

Map 1 shows the Vision Zero HIN corridors and Slow Street corridors in L.A. It is clear to see that there is very little direct overlap on specific streets. However, there are a few spots in the city where the programs cross paths or occupy the same neighborhoods. There are three areas like this that are circled on the map to show areas where it would be advantageous for city staff to coordinate their efforts for increasing safety and promoting public health through Slow Street and Vision Zero treatments.

Slow Streets and Safe Routes to School

Safe Routes to School (SRTS) is a program that is part of L.A.'s Livable Streets Initiative. The main mission of the program is to install and maintain safe pedestrian and bike infrastructure around schools and to calm traffic to protect students traveling to and from school. Traffic crashes are the leading cause of death for children ages 5 - 12 in L.A., (LADOT, 2019). The city's SRTS program follows national and international efforts to reduce vehicular speeds and increase awareness for youth walking and bicycling to save lives.

Safe Routes to Schools Goals

"LADOT is building, designing, and planning safety improvements at the Top 50 LAUSD schools with the highest need." (LADOT, 2019).

- Identify and regulate half-mile zones around schools
- Create school walking and bicycling route maps using a variety of assessment tools and exercises
- Calm traffic speeds of the street networks surrounding schools

Policy and Infrastructure Treatments

Easy-to implement and low-cost solutions are focused on first, while longer-term improvement needs are identified and the implementation process is begun. I describe a few examples of these treatments below. A comprehensive list of treatments being used for SRTS can be found in Appendix A.

- **ADA-compliant curb ramps** are smaller projects that SRTS would aim to install early on.

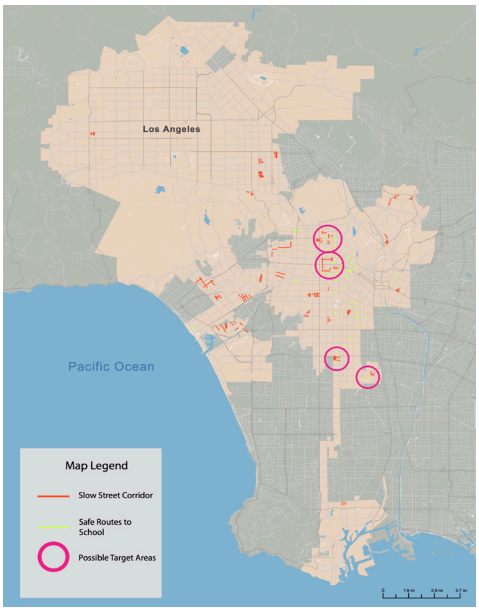
- **Sidewalks:** Some school zones do not have sidewalks, or they are too narrow to be effective in keeping students safe. Safe routes to schools would add sidewalks or improve existing ones by repaving and adding bulb outs at intersections.

- **On-street bicycle facilities:** Providing bike repair and locking facilities will help promote bicycling as a healthy mode for traveling to school and ensure that students will have a safe ride.

➤ **Accessible pedestrian signals (APS):** All students who choose to walk, bike, or roll to school with or without a guardian should be able to access and understand pedestrian signals and signage.

Physical Alignment

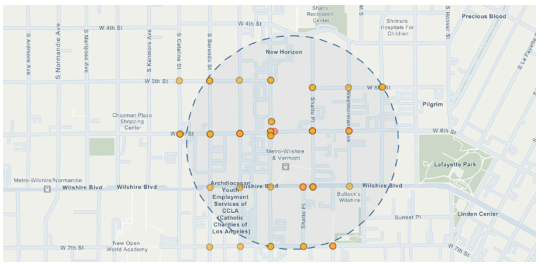
Map 2 shows the schools that have zones that SRTS is targeting as well as Slow Street corridors. As with the Vision Zero corridors, I have circled areas where there is overlap on specific corridors and within neighborhoods. Below map 2. I've highlighted two specific SRTS zones that fall within the targeted areas: Young Oak Kim Academy and 112th Stree Elementary. For each zone I highlight the specific infrastructure projects that the zone will have.



Map 2. Slow Streets and Safe Routes to Schools target areas

Examples:

Figure 13. (LADOT, 2021)



Young Oak Kim Academy SRTS Plan:

- 19 zebra stripe crosswalks
- 12 accessible pedestrian signals
- 5 curb extensions
- 5 leading pedestrian intervals
- 1 concrete Pedestrian Refuge Island
- 1 pedestrian activated yellow beacon
- 1 roundabout
- 2 sidewalk repairs
- 1 traffic signal
- 2 tree replacements
- 1 tree trimming

Figure 14. (LADOT, 2021)

112th Street Elementary SRTS Plan:

- 3 accessible pedestrian signals
- 1 bicycle box
- 24 zebra stripe crosswalks
- 2 curb extensions
- 4 curb ramps
- 4 flashing red stop signs
- 1 leading pedestrian interval
- 1 sidewalk repair
- 2 speed feedback signs
- 1 speed hump
- 1 stop sign
- 1 tree replacement
- 1 two-stage turn boxes
- 3 bicycle sharrows
- 4 pedestrian street lightings

Slow Streets and Fitness Zones®

The Trust For Public Land (TPL) is an organization dedicated to preserving land and creating parks for people to encourage outdoor experiences and interactions with nature. They contribute to research and development by evaluating recreational needs for different regions and cities including their annual ParkScore, which is a ranking of cities based on the accessibility of their parks. One way that TPL uses this data to engage with communities with high needs is their Fitness Zone® program. The program is designed to provide free outdoor fitness equipment and infrastructure in local parks—"often in neighborhoods where gym memberships are too pricey to be practical", (Trust for Public Land, 2019).

Fitness Zone® Goals

Fitness Zones® are designed and implemented in neighborhoods with recreation in mind. In a city like Los Angeles, there are many neighborhoods that lack accessible space to play, workout, or simply enjoy the outdoors in. Much like Slow Streets, Fitness Zones® aim to fix that problem.

- Create safe, accessible, high-quality park and open space the communities can take advantage of to improve their health
- Work with the communities that need Fitness Zones® to determine how to connect their specific public health needs with solutions and funding

Policy and Infrastructure Treatment:

Fitness Zones® are different from the other programs I have covered so far. Instead of adding treatments to roadway infrastructure for pedestrian and bicycle safety, they add and enhance public spaces for recreation off of the public right-of-way. Although the infrastructure treatments that they use are different, the treatments align with Slow Streets goals for connecting communities to green/open spaces.

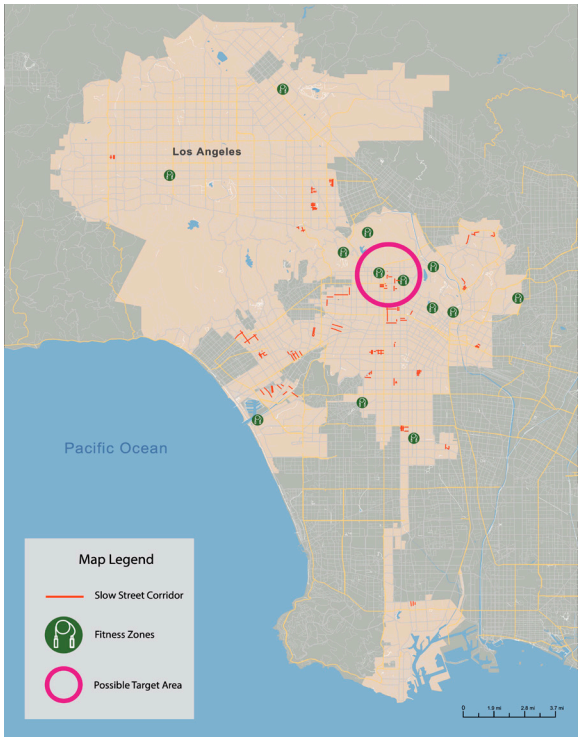
- **Green Landscaping** Adding trees to pocket parks, parks, and other community spaces makes them more enjoyable and easier to exercise in during L.A.'s hot summer months. The use of green landscaping is also consistent with infrastructure treatments for Slow Streets and other active mobility programs. An example of planned added greenspace can be seen in **figure 15.**

- **Fitness Equipment** The TPL works with communities to provide free-to-use fitness equipment at the Fitness Zone® parks and spaces.

- **Playground Equipment** L.A.'s kids need space to play outside. Between designated Slow Streets and parks enhanced by the TPL, kids can run, climb, and play in the streets and on equipment like the structures shown in **figure 16**.

- **Benches** TPL's Fitness Zone® treatments also target existing parks. The treatments aim to enhance community experience with them. Infrastructure like benches for resting and stretching are one example of what the TPL adds to existing outdoor public spaces.

Physical Alignment



Map 3. Slow Streets and TPL Fitness Zones®

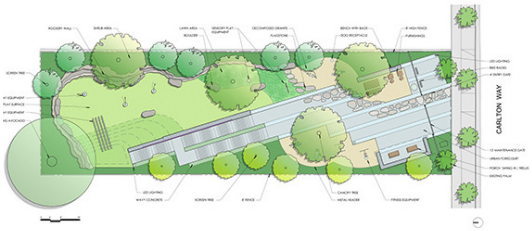


Figure 15. Carlton Way Pocket Park Schematic (TPL, 2020)

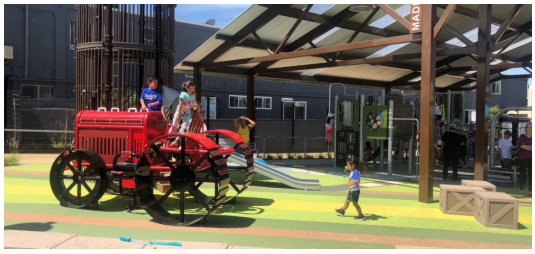


Figure 16. Madison Avenue Park and Community Garden (TPL, 2020)

Some Fitness Zones® are in parks that are far away from residential neighborhoods, but many are within walking distance of Fitness Zones® like Carlton Way Pocket Park and Madison Ave Park and Community Garden which were discussed above as well as photographed above in figures 6 and 7 and circled on **Map 3**.

Key Takeaways

The city, county, and other partners are all working to improve safety and accessibility on L.A.'s traffic network and its outdoor spaces. The goals of L.A. Vision Zero, Safe Routes to School, and TPL's Fitness Zones all have public safety and public health-oriented goals that align with the goals of Slow Streets. They also all have targeted corridors and neighborhoods throughout the city. This alignment provides many opportunities for city officials to coordinate infrastructure and route planning with other city programs and programs operated by other agencies and entities. Since it may be easier to construct and implement Slow Streets infrastructure, the city may find success with targeting corridors that align with or are in close proximity to streets and neighborhoods targeted by Vision Zero, Safe Routes to School, and Fitness Zones®.

Policy Analysis

To create a permanent Slow Street network in LA. City staff must determine what treatments to give designated permanent Slow Streets to set them apart from non-Slow Street corridors. These treatments should signal to drivers and users that space is shared differently on those corridors than others. As explained earlier, I determined that the best way to perform a policy analysis on the feasibility for permanent Slow Streets would be to look at the feasibility for installing various infrastructure treatments to the corridors that would be part of the permanent program. Table 2 at the end of this section provides an overview of the findings of my research on four possible treatments to determine their feasibility for installment by looking at what they require, The City's role in their implementation, the timeline for their implementation, and the benefits of each. Below, I provide a more in-depth analysis of my findings.

Treatment: Traffic Circles with Bollards

The first of four treatments which I researched is traffic circles, otherwise known as "mini roundabouts". Unlike full sized roundabouts, the mini versions can be installed fairly easily on residential streets to slow traffic (National Association of City Transportation Officials, 2019). They can be marked with simple infrastructure and street markings like the circle in **Figure 17** below located in Long Beach, but they are most

when they are raised and incorporate green landscaping in the center, (National Association of City Transportation Officials, 2019).

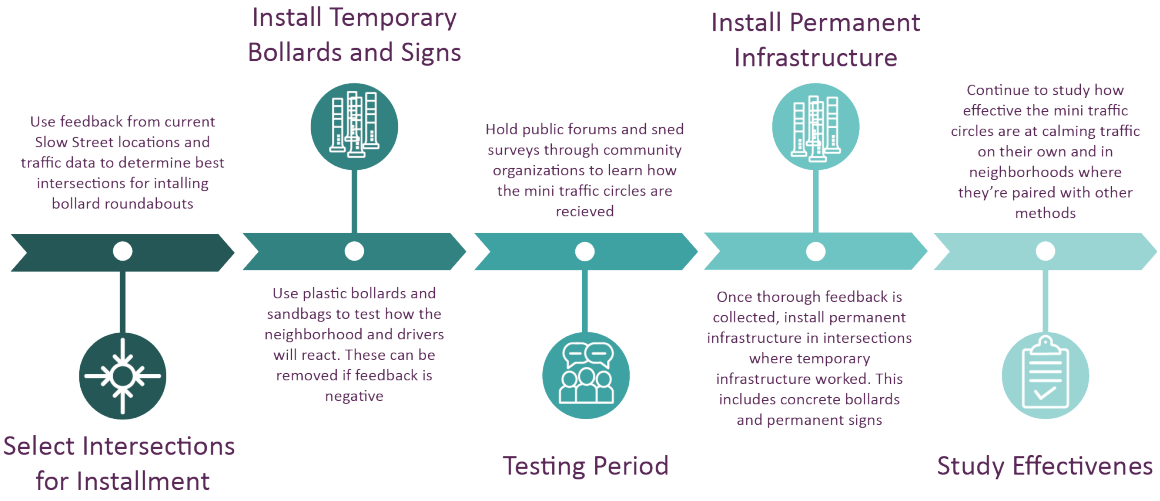
Figure 17. Example if mini traffic circle with bollards suitable for testing (Redondo Beach Public Works, 2016)

Section 80 in the Los Angeles Municipal Code is the primary source of authority for LADOT's powers to install temporary and permanent road markings, signs, and other traffic control devices. Traffic circles would require all three of those categories in their infrastructure. Section 80 stipulates that LADOT must make determinations for placing traffic regulating installations "on the basis of traffic engineering principles and traffic investigations" (Los Angeles, California Municipal Code § 80.00). Specifically, section 80.07 grants LADOT the ability to place unique installations that control traffic (bollards and A-Frame signs):

> *[DOT] is hereby authorized to install such additional traffic control devices, not expressly provided for in this chapter, as it determines are necessary to regulate, warn, or guide traffic, and to remove such devices when it determines that they are no longer necessary to regulate, warn, or guide traffic. (Los Angeles, California Municipal Code § 80.07.)*

Legally, LADOT has the authority to incorporate traffic circles in a permanent Slow Street program, though the city would likely have to consider what constitutes sufficient "traffic investigation". Additionally, while it's not required in the municipal code, the city's chance for successfully implementing residential traffic circles and for successfully rolling out permanent Slow Streets overall would benefit greatly from public engagement and feedback. Public participation in the planning process for Slow Street implementation, like any project, can help with its enforcement and success.

Timeline



Treatment: No Through Traffic Signage

The second policy in my analysis is "No Through Traffic" signage. My earlier findings from the Case Study analyses found that these are a popular treatment for Slow Streets. In fact, Los Angeles did use them as a temporary measure for the initial program. However, in order to install them permanently, city staff will need additional authority from the CVC. In addition to the legal clearance, the program and its public perception will fare best if the public participates in sign placement decisions within the limitations stipulated in Section 80 of the city code, (Sec. 80.10) regarding sign placement.

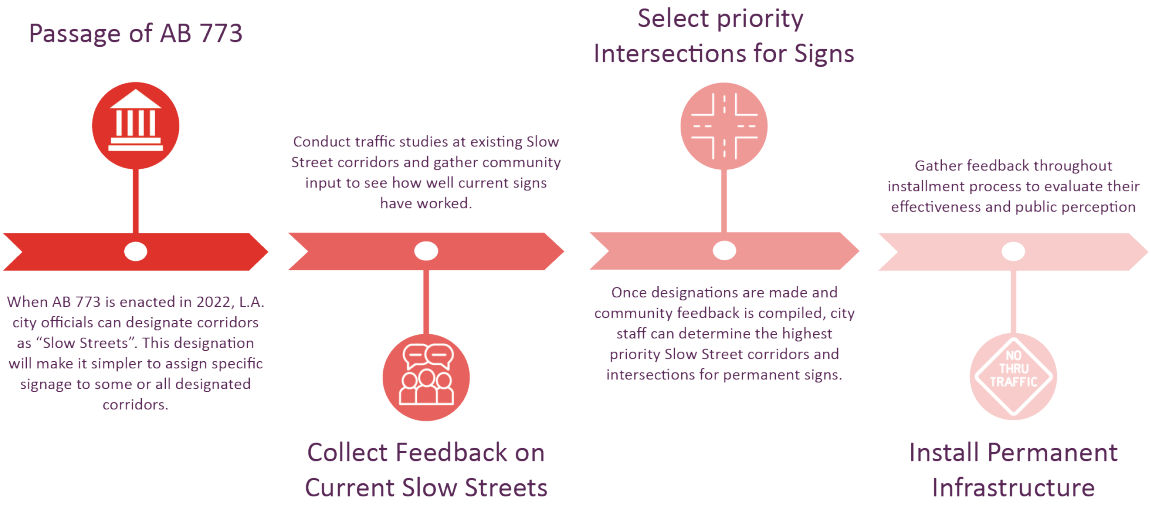
No through traffic signs are a very effective way to mitigate and calm traffic on city roadways. Currently, the city does not have the authority to place them for the purpose of designating a Slow Street. This may change soon. In February 2021, AB *773* was introduced by Assemblymember Nazarian in the CA State Assembly. The description of the bill reads as follows:

> *Authorize[s] a local authority to adopt a rule or regulation to close a portion of a street under its jurisdiction to through vehicular traffic if it determines closure is necessary for the safety and protection of persons who are to use that portion of the street during the closure. The bill would also authorize a local authority to adopt a rule or regulation to designate a local street within its jurisdiction as a slow street. (CA AB 773, 2021,*

In summary, AB *773* would allow the City of L.A. and any other jurisdiction in the state to close portions of a street to throughctraffic and designate Slow Streets. The passage of AB *773* this session would be an important step towards rolling out the permanent program. On May 13th, 2021, the bill had its third and final reading and was passed by

the State Assembly with a 72 - 0 vote in favor. The unanimous vote is a good sign for the bill's future as it moves to the State Senate where it is now pending committee assignment.

Timeline



Treatment: Sidewalk Bulb Out

Sidewalk bulbouts, as seen in the rendering in **figure 18**, are another effective tool that would calm traffic by catering the size of the streets and draw driver attention to pedestrians on the sidewalks, (National Association of City Transportation Officials, 2019). Additionally they provide more space for future installation of trees and other person-oriented infrastructure that could be incorporated into future plans for Slow Streets. Bulbouts would have a more extensive installation process and a higher price tag then the other treatments, but they are proven to be an effective measure and their presence would signal a noticeable change for drivers on Slow Streets.

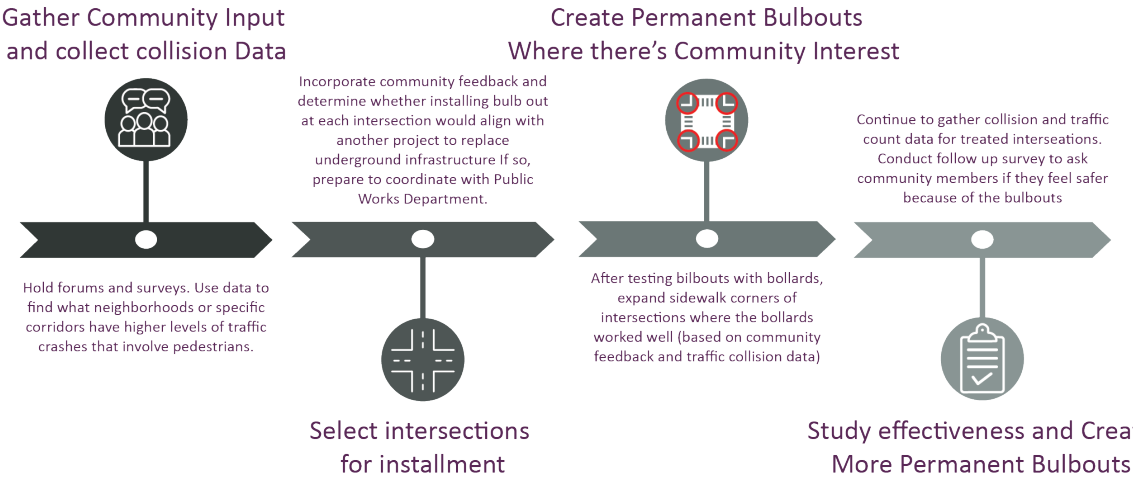
Figure 18. Rendering of sidealk intersection bulb outs. (NACTO, 2016)

So far, all of the treatments discussed in this report would be exempt from review required for projects in the California Environmental Quality Act (CEQA) The exemption for the treatments so far, which may also apply to bulb outs is a class 1 exemption, which exempts the following projects from review:

All work on sidewalks, curbs and gutters without changes in curb lines, including lowering of curbs for driveways, and additions of sidewalk bulbs when not in conjunction with a program for extensive replacement or installation.

It is likely that bulbouts would fit the classification above. City staff would need to confirm that, at each location, the treatment is not considered part of a "program for extensive replacement or installation".

Timeline



Treatment: Speed Limit Reduction

The final treatment in this analysis is adding regulatory or advisory 15 mile per hour speed limit signs to Slow Street corridors. Regulatory speed limits are speed limits that drivers must not exceed and are posted on signs with black print and white backgrounds in the U.S. Advisory speed limits are posted to advise drivers on the safe speed for a certain section of a roadway, exceeding them does not constitute a legal violation. They are posted on signs with black print and a yellow background in the U.S. This would be a very important treatment for a permanent program. A speed limit, whether regulatory or advisory, is the most explicit direction a driver can get when deciding how fast to drive. Currently, many residential streets use the prima facie speed limit for residential corridors of 25 mph. The city of L.A. has set advisory 15 mph speed limits on Slow Streets, but has not had the authority to post enforceable, regulatory speed limits. The prima facie speed limit is set by the State and applies on streets where there is no posted advisory speed limit. There is a bill being heard in the current state legislative session, AB 43, that would give local authorities greater flexibility for setting lower regulatory speed limits on streets, (California AB 43. 2021, Regular Session). Setting and posting regulatory 15 mph limit signage would signal to drivers that they should slow down, even without regular surveillance and enforcement.

AB 43 was introduced in The State Assembly on December 7th, 2020, by Assembly Members Friedman, Ting, Chiu, and Quirk. The bill makes several revisions to the CVC. The provisions in the bill that relate to changing limits for Slow Streets are in sections 627 and 21400. The change to Section 672 would:

> *Require local authorities to consider other factors, including pedestrian and bicycle safety, that are allowed but not required to be considered under existing law. The bill would also allow local authorities to consider additional factors, including the current or immediately prior speed limit, as specified, (AB 43).*

The change to section 21400 would:

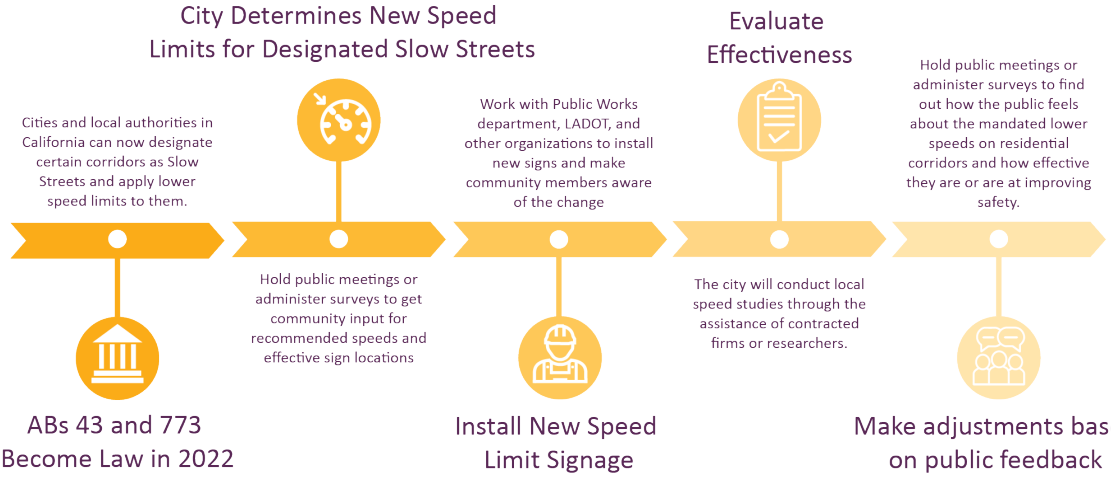
> *Authorize a local authority to further reduce the speed limit [from the 85th percentile of free flowing traffic], as specified, and require Caltrans to accordingly revise the California Manual on Uniform Traffic Control Devices, as specified, (AB 43).*

These two new provisions in the CVC would provide Los Angeles with the authority to lower speed limits based on factors like pedestrian safety and allow for lower speed limits than before because of the removal of the 85th percentile rule. AB 43 passed out of the State Assembly on a 72 - 0 vote in favor and is now awaiting Senate committee assignment just like AB 773. If both bills are passed, this would allow the city to designate Slow Streets and apply new, lower speed limits to them.

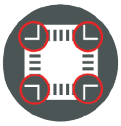
While Los Angeles waits for ABs 773 and 43 to become law so they can legally designate Slow Streets and set slower speeds for them, The City can determine how to move forward with legally changing the speed limit for designated Slow Streets in its own vehicle code. For this, I looked at precedence set by other reduced speed zone laws in the city's municipal code. I found two sections that could guide regulation for setting speeds on Slow Streets:

> **1. Sec. 80.13.1. Speed zoning on streets adjacent to a children's playground:** Slow Streets function as a space where children and adults can use the street for recreation and space. This would make them comparable to a playground since the risk of a vehicle approaching children in the road is just as likely. This section authorizes LADOT to set a specific prima facie speed limit for streets that are adjacent to playgrounds.
>
> **2. Sec. 86.02. Speed of vehicles in parks:** This second section prohibits vehicle speeds of over 25 mph through parks. The language from this section may be even more applicable as the streets are the actual recreation space on Slow Street corridors just as the park that vehicles drive through is typically the actual recreation space.

Timeline



Key Takeaways

	Requirements	City Role	Timeline	Benefits
	➤ L.A. Municipal Code: ◦ SEC. 80.08.2. Department to install traffic markings ◦ SEC. 80.16. Turning movements required	➤ Install bollards and traffic directing signs ➤ Collect public input on traffic circles ➤ Install more permanent infrastructure after testing	➤ Time to Collect public input on traffic circles ➤ Short time to set up bollards	➤ Calm traffic without changing traffic flow ➤ Relatively inexpensive to set up temporary and semi-permanent infrastructure
	➤ Change State law ➤ AB 773: local authority may close portions of a street to through traffic and designate slow streets	➤ Advocate legislation at State (AB 773 and AB 43) ➤ Install signs	➤ Depends if 773 and 43 are passed and becomes law ➤ Time to collect public input for Slow Street designations and signage	➤ Diverts or at least slows non-through traffic.
	➤ EIR or CEQA class 1 exemption ➤ SEC. 80.08.2. Department to install traffic markings	➤ City Public Works constructionproject(s) ➤ Complete potential EIR or other CEQA related documents	➤ Time to collect public input on altering sidewalks ➤ Time to install bulb outs ➤ Depends on rigor of environmental review	➤ Calm traffic without changing traffic flow ➤ Draws attention to curbs at intersection corners and crossing pedestrians
	➤ SEC. 80.13. Speed zoning on other than state hwys ➤ SEC. 80.13.1. Speed zoning on streets adjacent to a children's playground ➤ SEC. 86.02. Speed of vehicles in parks	➤ Apply 25 mph limit for parks to Slow Street Corridors ➤ Perform traffic study to determine if 25 mphs "more than reasonable or safe"	➤ Time to collect public input on changing speeds/setting advisory speeds ➤ Time to install sign. Fast to set up temporary infrastructure first	➤ Slows and potentially divertsvehicle traffic

Recommendations and Conclusion

Recommendations

1. Make strategic plan that considers others mobility projects

Slow Streets can be a tool to promote public health and safety. As L.A. focuses on turning the pilot program into a permanent program for the city, they should leverage opportunities to coordinate with other organizations and city programs to achieve a smooth and efficient rollout. It may be difficult to get such a widespread program started, but considering what infrastructure is already in place, the task becomes much more feasible. Planning in coordination with other programs can also help highlight what parts of the city have certain needs more than others. For example, if one neighborhood is targeted for Safe Routes to School and has several applications for Slow Street designation, vehicle speed and pedestrian safety may be a top concern. If another neighborhood hosts multiple Trust for Public Land Fitness Zones® and Slow Street corridors, more space for outdoor recreation may be the priority.

2. Take entire city's needs into account

My second recommendation further emphasizes the need for the city to evaluate the needs of the city as a whole and the dynamic needs of each neighborhood as it makes permanent changes to residential roadways. Once needs are determined, The city can begin to evaluate how Slow Streets will meet those needs moving forward post-pandemic. The city should consider how or if to calm traffic using Dan Burden's (2007) recommended steps:

1. Determine the type or types of locations you are dealing with;
2. Select the tools that might work in these cases;
3. Review the tools in more detail to understand how they work

As I mentioned in the last recommendation, evaluating the locations can help with the citywide analysis for mapping needs. My case study analyses revealed that the needs for Slow Streets were different for different cities. Making sure that the permanent Slow Streets program fits not just the safe recreational space needs across the city, but also the specific needs of each neighborhood will be important.

3. Use the time while legislation is pending to plan strategically

Slow Streets programs in California will be legally recognized and permissible if AB *773* becomes law in 2022. This means 2021 will be an opportunity for L.A. to plan a timeline and strategy for implementation that includes engaging with the public on how they envision their neighborhoods looking after the city opens back up. This time will help city officials determine what treatments are most appropriate and where and how the program can maintain consistency across the city while serving each street best.

4. Seek political advocates and interest

From my case study analysis, it also became apparent that political will and interest are important for implementing programs like Slow Streets. Bogota's mayor was instrumental in expanding the city's bicycle lane network and support from the Dutch national government was a very important part of the success of Woonerfs in Delft. The idea for permanent Slow Streets in L.A. originated in City Council action and advocating for the passage of AB *773* at the State level will be crucial for the feasibility of a permanent Slow Streets program in L.A. Additionally, the city should look for a local political champion or champions in the city or region who can spearhead awareness and evaluation of Slow Streets going forward.

5. Conduct further analysis on public perception of Slow Streets, and explore more programs that Slow Streets can coordinate with

Once necessary legislation is passed at the state and local levels, L.A. can legally designate Slow Street corridors, the city will be able to treat the corridors as desired to calm traffic and lower speed limits. The city should conduct further analysis on effective infrastructure and public perception. Recommendations for when the city might consider actively collecting data and community feedback are detailed in the timelines provided in the policy analysis section.

Conclusion

This report examined the feasibility for the city of Los Angeles to transition its temporary Slow Streets program into a permanent program by answering the following research questions: What are the optimal legal path(s) and strategies for permanent implementation? And how can city staff leverage other mobility programs and initiatives in the L.A. area in the planning process? I conducted research in three different areas: case study analysis, analysis of alignment with other mobility programs, and an infrastructure-focused policy analysis. First, I presented and discussed the case study analyses and

the best practices and pitfalls they provide for permanent Slow Street-like programs. Second, I discussed the findings and importance of my analysis of Slow Streets' physical and policy alignments with other mobility and recreation focused programs in L.A. Lastly, I built upon those findings by adding the results of my policy research on feasibility of implementing possible infrastructure treatments. I discussed how the findings on best practices and possible coordination opportunities in the first two areas influenced the choice I made in the policy analysis.

The COVID-19 pandemic has changed the way people interact with their environment for over a year (Sharifi & Khavarian-Garmsir, 2020). As residents coped with being confined to their homes, planners explored new opportunities for improving streets for non-vehicle use so that communities could enjoy outdoor space while maintaining safe social distances. In L.A., the Slow Streets program has connected communities with safe space to play and socialize which they had limited access to even before the pandemic, (The Trust for Public Land, 2020). Now, L.A. is presented with the opportunity to make Slow Streets permanent. Based on the findings in this report, The City has the potential to implement a program that serves each of its diverse communities using context-based decisions for implementing traffic calming infrastructure and regulations. The feasibility for a permanent Slow Streets program is improved by current state-level political support for legislation that will allow The City to formally designate Slow Street corridors. Additionally, permanent Slow Street development is aided by the momentum from other projects in the city that aim to improve safety and public health across the city's transportation network. Slow Streets began as an opportunistic experiment for improving safety and health for Angelenos. Now, The City can work with communities to develop a permanent program that will change the way Angelenos use the streets for years to come.

Sources

Bibliography

112th street elementary safe routes to school (SRTS) plan. (2019). LADOT. https://ladotlivablestreets.org/projects/112th-Street-Elementary

An act to amend Section 21101 of the Vehicle Code, relating to streets, A.B. 773, 2021-2022 Regular Session. (2021). https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB773

Atherton, E. (2020). Complete Streets, COVID-19, and Creating Resilient Communi ties. Institute of Transportation Engineers. ITE Journal, 90(7), 20–24. https://search.proquest.com/docview/2424468428?accountid=14512

Barter, P. (2009). Earning a public space dividend in the streets. Journeys, 1. http://plangate.no/trafikksikkerhet/IS02-p32%20Public%20Space%20Dividend.pdf

Ben-Joseph, E. (1995). Changing the Residential Street Scene: Adapting the shared street (Woonerf) Concept to the Suburban Environ ment. Journal of the American Planning Association, 61(4), 504–515. https://doi.org/10.1080/01944369508975661

Bijlage 1. Verkeersborden, Reglement verkeersregels en verkeerstekens 1990. https://wetten.overheid.nl/BWBR0004825/2020-01-01#Bijlage1

Bogota: Bike Friendly City. (2021, February 16). Colombia Country Brand. https://www.colombia.co/en/colombia-travel/tourism-by-regions/bogota-bike-friendly-city/

Bornhoft, W. (2020, April 27). Coronavirus: Minneapolis to add more 'Stay healthy streets' Southwest Minneapolis, MN Patch. https://patch.com/minnesota/southwestminneapolis/coronavirus-minneapolis-add-more-stay-healthy-streets

Bowen, A. (2021, March 25). Residents fight to preserve san diego's last remaining "slow street." KPBS Public Media. https://www.kpbs.org/news/2021/mar/25/residents-fight-preserve-san-diegos-slow-street/

Burden, D. (2007). Streets and sidewalks, people and cars: The citizen's guide to traf fic calming (D. Davis, J. Lamming, & P. Zykofski, Eds.; 2nd Printing ed., Vol. 2). Local Government Commission.

California Vehicle Code § 22358.4 (2017). https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=VEH&sectionNum=22358.4.&article=1.&highlight=true&keyword=speed%20limit

City of Los Angeles. (2018). Vision zero L.A. 2018 action plan + progress report.

City of Minneapolis. (n.d.). Stay healthy streets during COVID-19. Retrieved Feb ruary 9, 2021, from https://www2.minneapolismn.gov/government/departments public-works/tpp/healthy-streets-covid-19/

City of Oakland. (2021, March 24). Oakland slow streets. https://www.oaklandca.gov/projects/oakland-slow-streets

Daniel, B., Nicholson, A., & Koorey, G. (2011). Investigating speed patterns and estimating speed on Traffic-Calmed streets. University of Canterbury. Civil and Natural Resources Engineering. http://hdl.handle.net/10092/6294

Descant, S. (2021, April 20). Slow streets were a Success. Should cities keep them? GovTech. https://www.govtech.com/analytics/slow-streets-were-a-success-should-cities-keep-them.html

Exec. Order N-33-20, CA Government Code § 8665

Fermoso, J. (2020, November 27). What do we know about Slow Streets and safety? Here's what data and residents have to say. The Oaklandside. https://oaklandside.org/2020/11/25/what-do-we-know-about-slow-streets-and-safety-heres-what-data-and-residents-have-to-say/

Freeman, S., & Eykelbosh, A. (2020, April). COVID-19 and outdoor safety: Considerations for use of outdoor recreational spaces. National Collaborating Centre for Environmental Health. https://ncceh.ca/sites/default/files/COVID-19%20Outdoor%20Safety%20-%20April%2016%202020.pdf

Fonseca, R. (2020, June 25). LA's slow streets program is growing and could become permanent. LAist. https://laist.com/news/la-slow-streets-permanent-plan

Guttenberg, A. Z. (1982). How to crowd and still be kind-The dutch woonerf. Humboldt Journal of Social Relations, 9(2), 100–119. https://www.jstor.org/stable/23261950

Hallmark, Shauna L.; Hawkins, Neal R.; and Knickerbocker, Skylar (2012), "Speed management toolbox for rural communities" (2012). InTrans Project Reports. 95. https://lib.dr.iastate.edu/intrans_reports/95

Hammerl, T. (2020, October 24). City seeks new solutions for protecting slow streets, after drivers plow through signs. Hoodline. https://hoodline.com/2020/09/city-seeks-new-solutions-for-protecting-slow-streets-after-drivers-plow-through-signs/

Huang, H., & Cynecki, M. (2001, August). The effects of traffic calming measures on pedestrian and motorist behavior. USDOT. https://www.fhwa.dot.gov/publications/research/safety/pedbike/0104.pdf

Jaramillo, A. (2020, August 10). Bogotá is building its future around bikes. Bloomberg Citylab. https://www.bloomberg.com/news/articles/2020-08-10/to-tame-traffic-bogot-bets-big-on-bike-lanes

Johanson, M. (2020, November 19). How bike-friendly 'slow streets' are changing cities. BBC Worklife. https://www.bbc.com/worklife/article/20201112-how-bike-friendly-slow-streets-are-changing-cities

Kintner, C., Malmo, J., & Gardner, G. (2020, April 22). Oakland slow streets. Transport Oakland. https://transportoakland.org/category/news/

LA County Board of Supervisors. (2019, November). Vision zero LA county a plan for safer roadways 2020-2025. LA County. https://pw.lacounty.gov/visionzero/docs/SCAG-LACounty-VZ-Action-Plan-ver-D-hiRes-single-11-25-2019-rev.pdf

Legislative calendar & deadlines | california state senate. (2021, February 3). California Senate. https://www.senate.ca.gov/legdeadlines

Los Angeles Walks. (2015, July 16). Los angeles is talking about safe streets. https://www.losangeleswalks.org/los_angeles_is_talking_about_safe_streets

Los Angeles, California Municipal Code § 80.07. https://codelibrary.amlegal.com/codes/los_angeles/latest/lamc/0-0-0-168669

Los Angeles, California Municipal Code § 86.10. https://codelibrary.amlegal.com/codes/los_angeles/latest/lamc/0-0-0-168669

Los Angeles, California Municipal Code § 80.13.1. https://codelibrary.amlegal.com/codes/los_angeles/latest/lamc/0-0-0-168669

Los Angeles, California Municipal Code § 86.02. https://codelibrary.amlegal.com/codes/los_angeles/latest/lamc/0-0-0-168669

Los Angeles Department of Transportation (LADOT). (2019). Vision zero is los angeles's commitment to eliminate traffic deaths by 2025. Livable Streets. https://ladotlivablestreets.org/programs/vision-zero

Marcus, L. M., Flores, P. F., Roberts, J., & Johnson, A. (2021). Why attention to complete streets implementation is so important in serving historically disadvantaged communities. Institute of Transportation Engineers, 91(5). https://www.proquest.com/scholarly-journals/why-attention-complete-streets-implementation-is/docview/2524974903/se-2?accountid=14512.

Margolis, J. (2015, October 23). Is being safer than Atlanta good enough for Bogotá? The World from PRX. https://www.pri.org/stories/2015-10-23/being-safer-atlanta-good-enough-bogot

Mayor garcetti issues temporary restrictions to help slow spread of novel coronavirus, protect public. (2020). Office of Los Angeles Mayor Eric Garcetti. https://www.lamayor.org/mayor-garcetti-issues-temporary-restrictions-help-slow-spread-novel-coronavirus-protect-public

Mayor garcetti: Slow streets L.A. to launch in two neighborhoods. (2020). Office of Los Angeles Mayor Eric Garcetti. https://www.lamayor.org/mayor-garcetti-slow-streets-la-launch-two-neighborhoods

Mini roundabout. (2015, July 24). National Association of City Transportation Officials. https://nacto.org/publication/urban-street-design-guide/intersections/minor-intersections/mini-roundabout/

Metro Bike Trails. (n.d.). Hennepin county trails. Metro Bike Trails Guide. Retrieved February 9, 2021, from http://metrobiketrails.weebly.com/hennepin-county.html#:%7E:text=The%20honor%20of%20%22best%20bicycling,it's%20easy%20to%20see%20why.

Newton, D., & Linton, J. (2020, September 5). Already Driver-Permissive L.A. city 'Slow streets' being watered down further. Streetsblog Los Angeles. https://la.streetsblog.org/2020/08/28/already-driver-permissive-l-a-city-slow-streets-being-watered-down-further/

Oakland DOT. (2020, September). Oakland slow streets interim findings report. City of Oakland. https://www.oaklandca.gov/documents/oakland-slow-streets-interim-findings-report-september-2020-1#:~:text=Key%20findings%20from%20the%20report,without%20impeding%20essential%20street%20functions.&text=Essential%20workers%20and%20Deep%20East,con%EF%AC%82icted%20with%20public%20health%20messaging.

Office of Mayor Eric Garcetti. (2020, May 16). Mayor garcetti: Slow streets L.A. to launch in two neighborhoods [Press release]. https://www.lamayor.org/mayor-garcetti-slow-streets-la-launch-two-neighborhoods

Pishue, B. (2021). Utilization of COVID-19 street programs in 5 U.S. cities. Inrix Research. https://inrix.com/campaigns/utilization-of-covid-19-safe-streets-study/

Podemski, M., & Berker, M. (2016, September 12). Dangerous streets are the leading cause of death of our children. It's time to finally make L.A. walkable. Los Angeles Times. https://www.latimes.com/opinion/livable-city/la-oe-podemski-walkable-city-20160912-snap-story.html

Pritchard, O. (2020, October 29). Livability in colombia: Is this a city for cars or people? The Bogotá Post. https://thebogotapost.com/livability-in-colombia-is-this-a-city-for-cars-or-people/47992/

Reynolds, S. J. (2020, October 15). Slow Streets L.A. program update [Memorandum]. Los Angeles Department of Transportation. https://dodcio.defense.gov/Portals/0/Documents/2013-03-28%20Adoption%20of%20the%20NIEM%20within%20the%20DoD.pdf

San Francisco Planning. (2019, March 14). List CEQA exemption types | SF planning. https://sfplanning.org/list-ceqa-exemption-types

Schepel, S. (2005). Woonerf revisited delft as an example. ChildrenStreet. http://www.woonerfgoed.nl/int/Childstreet_files/StevenSchepel.pdf

Shared-Use Mobility Center. (2020, October 22). Pop-Up mobility paths & open streets due to COVID-19 crisis. MOD Learning Center. https://learn.sharedusemobilitycenter.org/casestudy/pop-up-mobility-paths-open-streets-due-to-covid-19-crisis/

Sharifi, A., & Khavarian-Garmsir, A. R. (2020). The COVID-19 pandemic: Impacts on cities and major lessons for urban planning, design, and management. Science of The Total Environment, *749*, 142391. https://doi.org/10.1016/j.scitotenv.2020.142391

Speed management. (2019, July 19). National Association of City Transportation Officials. https://nacto.org/publication/urban-bikeway-design-guide/bicycle-boulevards/speed-management/

The Trust for Public Land. (2019). The power of land for the people 2020—2025. https://www.tpl.org/sites/default/files/Strategic_Plan_12.23.pdf

The Trust for Public Land. (2021). Minneapolis 2020 parkscore. https://www.tpl.org/city/minneapolis-minnesota

Tranter P. (2016) Children's Play in Their Local Neighborhoods: Rediscovering the Value of Residential Streets. In: Evans B., Horton J., Skelton T. (eds) Play and Recreation, Health and Wellbeing. Geographies of Children and Young People, vol 9. Springer, Singapore. https://doi.org/10.1007/978-981-4585-51-4_37

U.S. Department of Transportation. (2017, December). Safety for all users report: A report developed by the U.S. department of transportation under section 1442 of the fixing america's surface transportation (FAST) act. United States Depart ment of Transportation.

Young oak kim academy safe routes to school (SRTS) plan. (2019). LADOT. https:// ladotlivablestreets.org/projects/Young-Oak-Kim-Academy

Images:

Bermudez, G. (2020). 80Th street avenue cyclists [Photo]. American Planning As sociation. https://www.planning.org/planning/2020/jun/intersections-trans portation/

City of Oakland. (2020). Oakland slow street [Photo]. Oakland CA. https://www. oaklandca.gov/projects/oakland-slow-streets

Google Maps. (2021). Google maps slow streets [Screenshot]. https://www.goo gle.com/maps/@34.0037424,-118.3731504,13z/data=!4m3!15m2!1m1!1s%2F g%2F11hr22hmsc

KARE 11. (2020). Minneapolis stay healthy streets [Illustration]. KARE 11. https:// www.kare11.com/article/news/health/coronavirus/mpls-opens-safe-streets/89-9128176f-6629-414d-9bd4-767f8acf6705

LADOT. (n.d.-a). 112Th street elementary SRTS area [Screenshot]. Livable Streets. https://ladotlivablestreets.org/projects/112th-Street-Elementary

LADOT. (n.d.-b). Young oak kim elementary SRTS area [Screenshot]. Livable Streets. https://ladotlivablestreets.org/projects/Young-Oak-Kim-Academy

NACTO. (n.d.). Bulb out rendering [Illustration]. Greater Greater Washington. https://ggwash.org/view/40519/bulb-outs-could-make-crossing-the-street-saf er-at-key-trouble-spots

Netherlands woonerf signs. (n.d.). [Images]. Overheid. https://wetten.overheid.nl/ BWBR0004825/2020-01-01#Bijlage1

Redondo Beach Public Works. (2017). Example of temporary traffic circle [Photo]. Daily Breeze. https://www.dailybreeze.com/2016/08/17/why-some-redondo-beach-neighborhoods-will-be-getting-mini-traffic-circles/

Sachs, D. (2018). Denver slow street [Photo]. Denver Streetsblog. https://denver. streetsblog.org/2018/08/21/eyes-on-the-street-denver-public-works-builds-3-traffic-circles-on-35th-after-years-of-planning/

Schaffer, S. (2020). Stay healthy streets road closed sign [Photo]. MinnPost. https:// www.minnpost.com/cityscape/2020/05/traffic-down-fatalities-up-speeding-is-everywhere-across-the-state-right-now/

SFMTA 311. (2020). Page street sign [Photo]. Hoodline. https://hoodline. com/2020/09/ city-seeks-new-solutions-for-protecting-slow-streets-after-driv ers-plow-through-signs/

Solomon, L. (2020). Baltimore sign [Photo]. Greater Greater Washington. https://ggwash.org/view/79802/why-do-people-keep-treating-slow-streets-signs-like-the-kool-aid-man

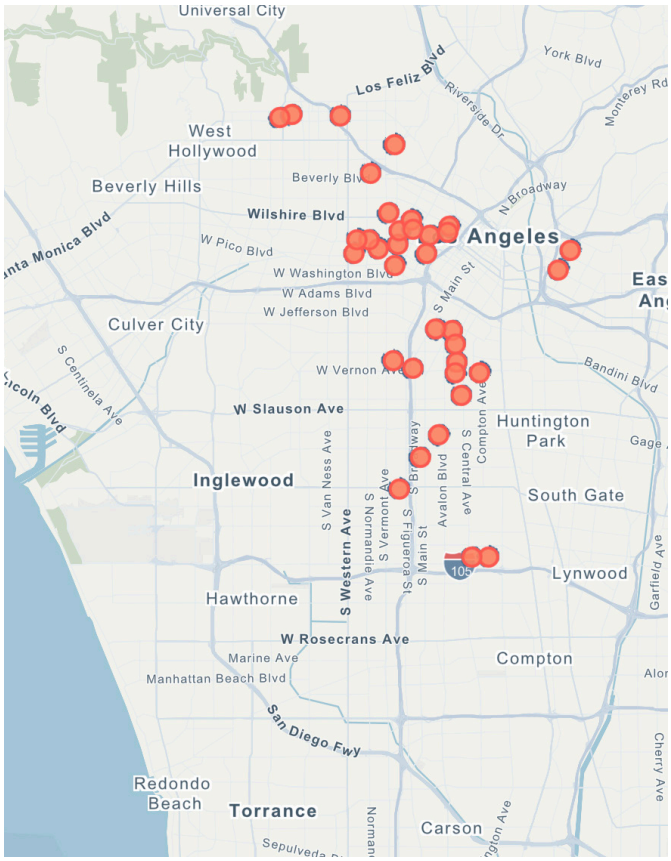
Trust for Public Land. (n.d.-a). Carlton way pocket park rendering [Illustration]. Tpl. https://www.tpl.org/our-work/carlton-way-pocket-park

Trust for Public Land. (n.d.-b). Madison ave park and community garden [Photo]. Tpl. https://www.tpl.org/our-work/madison-avenue-park-and-community-garden

Wells, J. (2020). A-Frame kicked to the curb [Photo]. LAist. https://laist.com/news/la-slow-streets-program-updates

Wouters, H. (2013). Delft woonerf [Photo]. New York Times. https://www.nytimes.com/2013/04/28/automobiles/where-share-the-road-is-taken-literally.html

Appendix A: L.A. Safe Routes to School System Map and Project List



Name	Description
John H. Liechty Middle Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Charles White Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Hoover Street Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Leo Politi Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
*112th Street Elementary Safe Routes to School (SRTS) Plan	This project improves the safety of routes to/from school using signal and crossing treatments to prevent deaths and severe injuries of children walking and bicycling to school.
Mariposa-Nabi Primary Center Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Hobart Boulevard Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Ascot Avenue Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Lockwood Avenue Elementary Safe Routes to School (SRTS) Plan	Lockwood Avenue Elementary Safe Routes to School (SRTS) Plan
Grant Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Berendo Middle Safe Routes to School (SRTS) Plan	This project improves the safety of routes to/from school using signal and crossing treatments to prevent deaths and severe injuries of children walking and bicycling to school.
Los Angeles Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
MacArthur Park Visual and Performing Arts Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.

75th Street Elementary SRTS Plan	This project improves the safety of routes to/from school using signal and crossing treatments to prevent deaths and severe injuries of children walking and bicycling to school.
Magnolia Avenue Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
***Young Oak Kim Academy Safe Routes to School (SRTS) Plan**	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Alexandria Avenue Elementary Safe Routes to School (SRTS) Plan	This project improves the safety of routes to/from school using signal and crossing treatments to prevent deaths and severe injuries of children walking and bicycling to school.
Lovelia P. Flournoy Safe Routes to School (SRTS) Plan	This project improves the safety of routes to/from school using signal and crossing treatments to prevent deaths and severe injuries of children walking and bicycling to school.
Esperanza Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Gratts Early Education Center Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Menlo Avenue Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Selma Avenue Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Hollywood High Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Gratts Learning Academy for Young Scholars Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
10th Street Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Avenue Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
George Washington Carver Middle Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.

Harmony Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
66th Street Elementary SRTS Plan	This project improves the safety of routes to/from school using signal and crossing treatments to prevent deaths and severe injuries of children walking and bicycling to school.
Aurora Elementary Safe Routes to School (SRTS) Plan	This project improves the safety of routes to/from school using signal and crossing treatments to prevent deaths and severe injuries of children walking and bicycling to school.
28th Street Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Dolores Huerta Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Quincy Jones Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Sheridan Street Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
Breed Street Safe Routes to School (SRTS) Plan	. Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.
West Vernon Avenue Elementary Safe Routes to School (SRTS) Plan	Infrastructure improvement projects to enhance the safety and comfort of routes to/from school with an emphasis on children walking and bicycling to school.