CITY OF WEST ST. PAUL

Pedestrian and Bike Plan

ESPM 4041W: Problem Solving for Environmental Change

Report Number 1/9

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Executive Summary

The goal of this report was to analyze West St. Paul's 2011 Pedestrian and Bike Plan to provide a progress report as well as recommendations for updates to the plan. Increasing population densities have led to higher levels of traffic congestion in urban areas, compelling cities to increase accessibility to alternative forms of transportation such as biking and walking. This idea of biking and walking friendly cities is supported internationally, specifically in the United Nations Sustainable Development Goals, for its contributions to public health, decreases in emissions, and equitable transportation. In developing this infrastructure, concerns with safety, equity, and accessibility are consistently acknowledged as reasons why members of the community do not feel comfortable using these alternative modes of transportation. An analysis of West St. Paul's Pedestrian and Bike Plan will identify the extent to which the city has completed the infrastructure changes established in the plan, while also providing recommendations to increase biking and walking while still placing an emphasis on stakeholder involvement and safety in the community.

To develop recommendations, we conducted an observational inventory, equity study, comparative city analysis, and document analysis. With the findings from these studies we have developed:

- A GIS map showing the progress of treatments to roads and sidewalks planned in the 2011 Pedestrian and Bike Master Plan

As well as the following recommendations:

- Increase signage to make pedestrians and bicyclists more confident about using pedestrian and bicycle geared transportation
- Re-evaluation of stakeholder involvement in the development of the updated Pedestrian and Bike plan to ensure for equitable involvement and accessibility
- Integration of the Complete Streets Policy into the updated Pedestrian and Bike Plan

These recommendations will help West St. Paul become a more bike and walk friendly city and provide reliable alternate forms of transportation for both. With these suggestions we hope to provide West St. Paul with a solid starting point for when they update their Pedestrian and Bike Master Plan this upcoming year.

Introduction

Overview

The world's population is growing, creating more urban areas and increased population densities. By 2050, 68% of the world population is projected to live in urban areas, a figure that closely resembles Minnesota's projected shift of 61% (University of Michigan, 2021). With increasing urban densities comes greater need for sustainable planning and development. One aspect of sustainable development that urban planners grapple with is transportation. Increased population densities lead to an elevated level of traffic congestion, putting more pressure on communities to support alternative methods of transportation such as walking and biking (Initiative for Bicycle and Pedestrian Innovation, 2012).

Transitioning towards cyclist/pedestrian friendly communities, urban planners and cities are engaging with multiple targets within the 17 United Nations Sustainable Development Goals. These targets and goals include but are not limited to; improving community health and safety, sustainable cities and communities that foster equitable and cohesive transportation needs, as well as climate action through reductions of carbon emissions and community reliance on non-renewable energy (United Nations, 2015).

Obesity and related health issues have become matters of a public health crisis, afflicting nearly 43% of American adults (National League of Cities, 2016). A recent Stanford examination on the national health survey indicates the cause of climbing obesity rates are due to lack of activity, as opposed to caloric intake (Bach, 2014). In addition to the serious health problems, there are economic consequences for increased obesity rates that affect taxpayers, cities, and states with annual healthcare costs over $190 billion dollars in the US alone (National League of Cities, 2016). Simply put Americans are exercising less and our scales aren't the only ones feeling the difference. While walking and biking are not silver bullets for eliminating obesity, they are two easy and enjoyable outlets that cities and states can encourage to address inactivity. This is not as easy as merely requesting people ride their bikes or go for more walks. Many roadblocks exist that prevent people from utilizing pedestrian and cyclist resources. These roadblocks overwhelmingly affect communities of low economic status and people of color, while they are exactly the communities that stand to gain the most from increased bicycle and pedestrian accessibility (Angus, 2016). Fortunately there is hope for city planners; a study published in the Journal of Transport and Health found incorporation of infrastructure which promotes a safer built transit

environment (e.g. off road bike paths and sidewalks) increases cyclist and pedestrian activity (Wesley E. Marshall, 2011). In other words, the growing presence of bike lanes and sidewalks correlates to growing rates of users for these infrastructures. Interestingly, the same study also correlates increased bicyclist/pedestrian presence to overall road safety for all users (Marshall, 2019). Beyond community health and safety, communities working towards a bike and pedestrian safe environment are also addressing other social inequalities through equitable transportation and city accessibility.

By race: African Americans are 30% more likely to be killed while cycling (Angus, 2016).

By income: Low income individuals are 10.4 times more likely to get killed walking (Angus, 2016).

As mentioned previously, low income communities and people of color stand to gain the most from safe improved bike/walking accessibility through "reducing health disparities, significantly lowering household transportation expenses, creating jobs and providing access to employment, noise pollution, reducing mental health problems, and reducing violence by improving social cohesion." (Angus, 2016). Walking and biking can also decrease fossil-fuel powered vehicle usage associated with carbon emissions, leading to a reduction in air pollutants and related health-issues (Chanam, 2008).

However, moving towards bikes and pedestrian friendly urban areas also presents certain challenges, particularly for safety, urban planning, and cohesion/accessibility. A study that examined factors influencing an individual's decision to walk/bike concluded that the leading disincentives that deter pedestrians and cyclists are traffic safety, lack of routes, and weather (U.S.D.T. Federal Highway Administration, 1992). In 2016 the Alliance for Biking and Walking reported that at a rate of every ten-thousand pedestrians in the U.S., 400 are likely to be involved in an incident resulting in injury or death (Alliance for Biking and Walking, 2016). Such incidents create challenges for urban planners responsible for addressing transportation. Consequently, cyclist and pedestrian infrastructure rarely use the same treatments, and therefore creates complexity in combined plans (e.g., bikes use bike lanes, while pedestrians use sidewalks). A further challenge of differing treatments for cyclist and pedestrian infrastructure are budget constraints, often preventing complete combined master plans that address the needs of both groups (Initiative for Bicycle and Pedestrian Innovation, 2012). It is crucial that cohesion is supported and maintained, specifically for low income neighborhoods and people of color who are less likely to have access to safe pedestrian/cyclist facilities. These same communities are also less likely to own motorized vehicles, so are more likely to walk/bike, further increasing their risk of injury. In response to the needs presented by alternative transit methods within expanding urban densities, cities and communities are beginning to adopt Bike and Pedestrian Plans to guide development.

Description of the Issue

In 2011, West Saint Paul's city council implemented the Pedestrian and Bicycle Master Plan. The plan was intended to be a guide for turning the city into a bike and pedestrian friendly haven. In the years since the plan was accepted, many of the planned improvements have taken place. In addition to these improvements, new residential developments have since been constructed in the city. In the last 10 years, the city has changed physically, and so have the goals surrounding the pedestrian and bicycle plan. The city's main concern is creating a safe and connected pedestrian network to increase the amount of community members who use walking and biking as an alternative form of transportation. Safety is of particular concern. In 2019, 17 pedestrians were struck on West St. Paul streets (Hendriks, 2019). West St. Paul will be updating their Pedestrian and Bicycle Master Plan in the spring of 2022, to better fit the city's visions and goals. Our group's goal was to assess the 2011 plan and recommend changes that could make the plan more relevant and equitable as a starting point for this revision process.

Visions

West St. Paul's Vision

West St. Paul has a vision of supplying the city residents with a safe and connected bike and pedestrian network for their residents. They want their residents to have safe and equal access to get to work, school and other transportation use, as well as recreational activities (Schletty, 2021).

Class Vision

Through collaboration with the City of West St. Paul and our independent research, the values of conservation, equity, and community engagement were integrated to develop solutions which are effective and innovative. With these integrated values as a guide, West St. Paul can promote safe and sustainable public growth to serve the community and its future generations.

Pedestrian and Bike Group Vision

To provide the city council and the residents of West St Paul with recommendations that may serve as a foundation for the update to their Pedestrian and Bike Plan that they will be doing this upcoming year. The report will not only evaluate their progress on the 2011 Master Plan, but also give suggestions for increasing the relevance of the plan by improving equity and pedestrian safety within the pedestrian and bicycle transportation network for an overall more walkable and bikeable city.

Goals and Objectives

Our goal for this report is to provide the City of West St. Paul with recommendations to update the current Pedestrian and Bike Master Plan and ensure that our recommendations are relevant to the current mission of West St. Paul, adapting to fit changes in the community over the last decade. We focus on providing a progress report of actions stated in the 2011 plan that have been implemented, while also discussing equity, safety, and factors that contribute to fostering a walkable and bikeable community.
To accomplish our goal, we have developed a set of objectives below:

- Assess progress made on the West St. Paul 2011 Pedestrian and Bicycle Master Plan
- Determine the effectiveness of stakeholder involvement in the 2011 plan and provide suggestions for a more equitable process of community involvement
- Determine how West. St Paul can encourage biking and walking in the community based on literature and a comparative study

Methods

Site Description

The City of West Saint Paul is a tight-knit community of 19,961 people (U.S Census Bureau, 2021). Population trends project increased urban density within its five square mile boundary. Record numbers of building permits in West St. Paul over the last two years support these projections. In addition to its existing 9,000 housing units, recent housing development projects have brought another 1,000+ rental units to the area. Within the city, West Saint Paul is home to over 600 businesses (Figure 1). West St. Paul's bustling retail corridor, South Roberts Street, sees an estimated 30,000 cars per day, serving as a central area for community activities (United States Census Bureau, 2021). City planners are working towards implementing policies and infrastructure that can support a larger community in a sustainable manner.

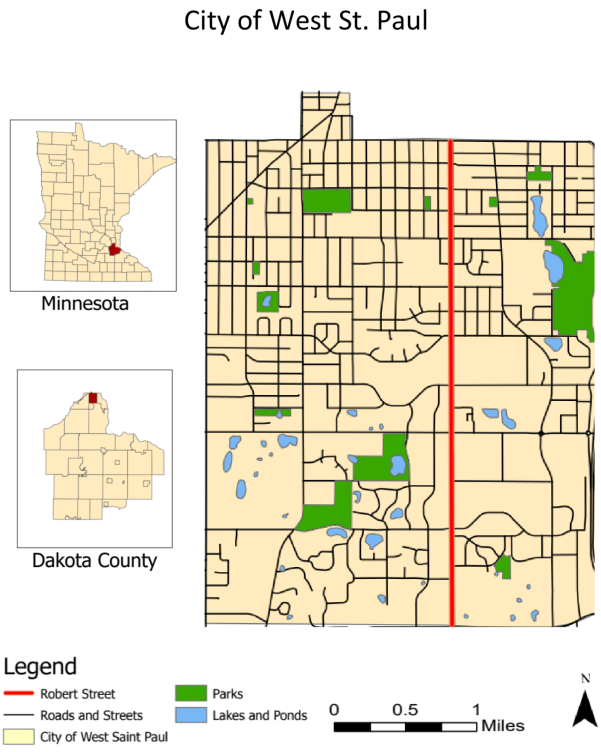

Figure 1. Map of West St. Paul

Observational Inventory

Using the Pedestrian and Bicycle Treatment Recommendations Table from the 2011 Pedestrian and Bike Plan, a list of streets was created. Multiple trips were taken to the city of West St. Paul to observe the status of preferred treatment implementation. Each street on the list was examined for the expected treatment such as 'off-road trail' or 'sidewalk on both sides', as indicated in the plan. For this study we defined complete segments as segments with all prescribed treatments present, partial-completion as segments with at least one prescribed treatment present and at least one prescribed treatment either absent

or discernable, and unaddressed as no discernible prescribed treatments present at a segment. This information was compiled into a chart displaying a status for each street that reads complete, incomplete, or in progress. Using the updated chart and status information, a GIS map was created to visually represent this data on a map of West St. Paul.

Equity Study

To make sure the new plan included equity components, the stakeholder involvement was reviewed. The section of the original 2011 Bike and Pedestrian plan about stakeholders was compared with peer-reviewed articles containing best practices for including stakeholders and the importance of stakeholders in city developments. These findings helped provide recommendations on how to include all parties involved in this project to make sure everyone is heard equally.

Comparative Analysis

Five cities similar to West St. Paul were chosen based on median income, population size, square miles, and existence of a bike and pedestrian plan (Appendix B).

Table 1. Comparison of income, size, and population of 5 cities and West St. Paul

City	Median Income	Population	Square miles	Bike and pedestrian plan
West St. Paul	**$56,097**	**19,961**	**4.91**	**Yes**
Fridley	$62,843	27,826	10.17	Yes
Golden Valley	$98.058	21,886	10.19	Yes
Northfield	$70,148	20,742	8.56	Yes
Columbia Heights	$57,882	20, 427	3.41	Yes
South St. Paul	$63,247	20,060	5.65	Yes

Utilizing city websites, bike and pedestrian plans, and other city publications, each was analyzed to determine the factors that contribute to a bikeable and walkable community. A list of factors was compiled based on a GreenStep Cities program recommendation for how to quantify walkability and bikeability as well as studies from the document analysis. From these resources, the factors listed below were chosen (Table 2). Information gathered from these factors was used to determine what other cities

are doing or not doing that affects their walk and bike friendliness, as well as changes that West St. Paul can implement to increase biking and walking in the city.

Table 2. Overview of chosen cities and the comparable factors in their bike and pedestrian plan

Cities	Comparable Factors
➢ West St. Paul ➢ Fridley ➢ Golden Valley ➢ Northfield ➢ Columbia Heights ➢ South St. Paul	➢ Walk Score ➢ Bike Score ➢ Participation in Safe Routes to School[1] ➢ Number of Safe Routes to School Plans ➢ Compliance with the Americans with Disabilities Act (ADA)[2] ➢ Percent of curb ramps compliant with ADA standards ➢ Percent of sidewalks compliant with ADA standards ➢ Mean travel time to work ➢ Tree Canopy Coverage in the City ➢ Regional Bicycle Network ➢ Adoption of a Complete Streets Policy[3]

Document analysis

A document analysis was conducted to research how to increase biking and walking while focusing on safety. Searches were conducted using the University of Minnesota Library System, Google Scholar, and Google. Search terms used include “bikeability”, ““walkability”, “bike friendly”, “walk friendly”, “urban walking”, “alternative transportation”, and “safety.” Sources were selected based on their relevance to the goal of increasing safety and contributions to bikeability and walkability.

Findings

Observational Inventory

While we were conducting the observational inventory there was a noted absence of signage for bicyclists and bicycle lanes. There are many examples of streets that have a larger than average shoulder that resembles a bicycle lane, except there was no signage or indication of whether bicycles were allowed to travel here. There were some paved trails through parks that also had no indication of whether bicyclists were allowed access to these trails.

Using the table from our observational study, the percentage of complete, partial-completion, and unaddressed treatments were calculated. About 32% are complete, 63% are incomplete, and 5% are currently in progress. A detailed table of the findings can be found in Appendix A. The resulting calculations were then imposed onto two maps of West Saint Paul using ArcGIS (Figures 2 & 3). This provided a cross-comparison of the initially prescribed treatments in the 2011 Pedestrian and Bike Master Plan and the current progress of those same prescribed treatments.

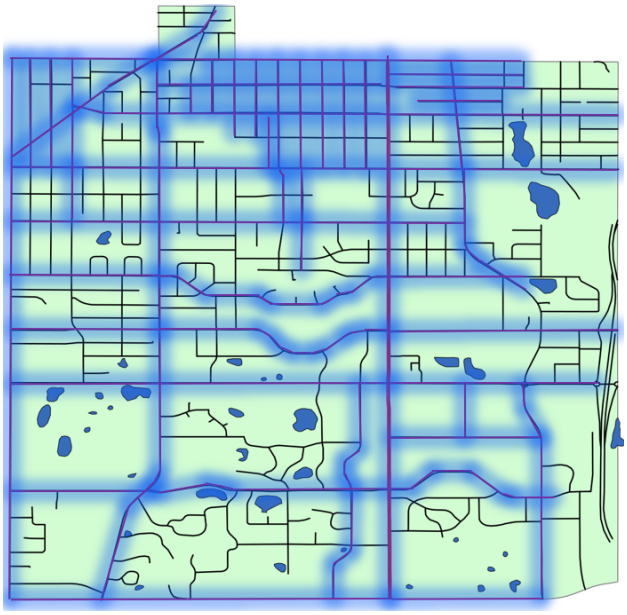

Figure 2. Map highlighting streets selected for treatment plans in West St. Paul's 2011 Pedestrian and Bike Master plan

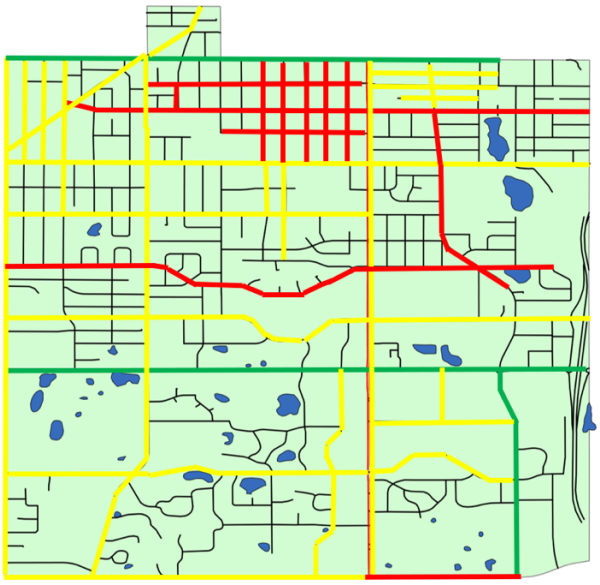

Figure 3. Map identifying the progress of treatment on previously selected streets

Equity Study

The West St. Paul Pedestrian and Bike Master Plan identifies their main stakeholders as the community of West St. Paul. To include the community in the planning, the board held three Community Open Houses and sent out a questionnaire. The first meeting for the community was held around one month after the planning process was started (May 18, 2011). Initial information was collected including, existing conditions of the bike and pedestrian infrastructure and the community's wants and needs. The second meeting was held on June 14, 2011, one month after the first meeting, the board encouraged the community to express their issues and any further wants and needs. Between the months of May and June, the board provided the residents with an online questionnaire, but it only had 127 respondents which is 0.6% of the population. The final meeting was held one month before the plan was finalized, September 13, 2011, and priority projects, listed in Appendix A, were discussed and the draft of the plan was reviewed.

Stakeholder engagement in city planning is extremely critical to make sure the needs and wants of the residents are heard. Involved stakeholders have been shown to build trust, develop learning and inspire confidence in public processes (Bierle and Konisky, 2000). The community of West St. Paul has shown some backlash to adding sidewalks in their neighborhoods but Bingham et al (2005) suggest that public administrators should engage stakeholders to fulfill their own self and strategic interests. The stakeholders can help the board and committees portray the benefits of adding this infrastructure to the city.

Comparative Analysis

The Walk Score ™ website evaluates factors that contribute to a city's walkability and bikeability to provide a score out of 100 for a specific location. The score metric is broken down into sections for both Walk Score and Bike Score, each with its own labeled description (Appendix B). The walk score is determined based on distance to amenities, population density, block length, and intersection density and the bike score is based on bike infrastructure, hills, destinations and road connectivity, and bike commuting mode share. Out of the cities chosen, excluding West St. Paul, the average Walk score is 36.8. (Walk Score, 2021). West St. Paul's score is above that average by almost 10 points at 45, but still below the highest score in the group, Columbia Heights' score of 53 (Walk Score, 2021). The average bike score of the five comparable cities is 48.6. West St. Paul is slightly below that with a score of 47 and the overall highest score in the group is Golden Valley with a score of 53 (Table 3).

Table 3. Comparative City Factor Analysis

	West St. Paul	Fridley	Golden Valley	Northfield	Columbia Heights	South St. Paul
Walk Score[1]	45	36	28	29	53	38
Bike Score[1]	47	48	53	51	51	40
Participation in Safe Routes to School	Participating[2]	Participating[3]	Looking into Funding[4]	Participating[5]	Participating[6]	Participating[7]
Number of Safe Routes to School Plans	2 of 2[2]	4 of 5[3]	0 of 1[4]	4 of 5[5]	5 of 5[6]	1 of 4[7]
ADA compliance is planned in future infrastructure	Has an ADA Transition Plan[8]	Has an ADA Transition Plan[9]	Plans to make ADA improvements[4]	Has an ADA transition plan[10]	Has an ADA	ADA compliance is planned in future infrastructure[7]

[1] Walk Score. (2021). *Get your walk score*. Walk Score. Retrieved November 19, 2021, from https://www.walkscore.com/.
[2] City of West Saint Paul. (2011). *Pedestrian and Bicycle Master Plan.* West St. Paul, MN. Retrieved from file:///Users/gabriellagutenkauf/Downloads/Pedestrian%20and%20Bicycle%20Master%20Plan%20(3).pdf
[3] City of Fridley. (2020). *Active Transportation Plan: 2nd Edition.* Retrieved from https://www.ci.fridley.mn.us/DocumentCenter/View/6247/Active-Transportation-Plan-final?bidId=
[4] City of Golden Valley. (2018). *Bicycle and Pedestrian Plan: Golden Valley Bicycle and Pedestrian Task Force.* Retrieved from https://www.goldenvalleymn.gov/streets/construction/pdf/Golden-Valley-Bicycle-and-Pedestrian-Plan.pdf
[5] City of Northfield. (2019). *City of Northfield Pedestrian, Bike, and Trail System: Final Report.* Northfield, MN. Retrieved from file:///Users/gabriellagutenkauf/Downloads/City%20of%20Northfield%20Pedestrian,%20Bike,%20and%20Trail%20System_Final%20Report%20(1).pdf
[6] City of Columbia Heights. (2019). *Columbia Heights 2040 Comprehensive Plan Chapter 6: Transportation.* Columbia Heights, MN. https://cms5.revize.com/revize/columbiaheights/document_center/2040%20Comp%20Plan/6_Transportation.pdf
[7] City of South St. Paul. (2014). *South St. Paul Bicycle and Pedestrian Plan.* South St. Paul, MN. https://www.southstpaul.org/DocumentCenter/View/1039/FINAL-SSP-bike-ped-plan-12-23-14?bidId=
[8] City of West St. Paul. (2018). *Americans with Disabilities Act: Transition Plan for Public Rights-of-Way.* West St. Paul, MN. Retrieved from https://wspmn.gov/DocumentCenter/View/2525/ADA-Transition-Plan?bidId=
[9] City of Fridley. (2019). *ADA Transition Plan.* Fridley City Council. Retrieved from https://springbrooknaturecenter.org/DocumentCenter/View/5355/City-of-Fridley-ADA-Transition-Plan?bidId=
[10] City of Northfield. (2018). *City of Northfield: American with Disabilities Act Pedestrian Facilities Transition Plan.* Northfield, MN. Retrieved from https://www.ci.northfield.mn.us/DocumentCenter/View/8352/ADA-Plan

					transition plan[11]	
Percent of curb ramps compliant with ADA standards	10.5%[8]	13.6%[9]	n/a	22.1%[10]	15%[11]	n/a
Percent of sidewalks compliant with ADA standards	15.8%[9]	n/a	n/a	42%[10]	10%[11]	n/a
Mean Travel Time to Work[12]	22.5 min	24 min	23.1 min	21.7 min	26.5 min	20.2 min
Tree Canopy coverage in the City	40.50%	31%%	40.50%	30.30%	35.50%	30.20%
Regional Bicycle Network	Yes, North Urban Regional Trail[2]	Yes, Mississippi River Trail and Rice Creek West Regional Trail[3]	Yes, Theodore Wirth Regional Trail and Three Rivers Park District Regional Trails[4]	Yes, Mill Towns State Trail[5]	Yes, Mississippi River Trail and Rice Creek West Regional Trail, Grand Rounds Scenic Byway[6]	Yes, Mississippi River Trail and River to River Greenway[7]
Adoption of a Complete Street Policy	Yes[2]	Yes[3]	Yes[4]	Yes[5]	No[6]	Yes[7]

[11] City of Columbia Heights. (2018). *ADA Transition Plan City Right-of-Way.* Columbia Heights, MN. https://cms5.revize.com/revize/columbiaheights/Public%20Works/Streets/ADA_Transition_Plan.pdf

[12] U.S. Census. (2019). *U.S. Census Bureau Quickfacts: United States*. QuickFacts. Retrieved from https://www.census.gov/quickfacts/fact/table/US/PST045219.

Participation in Safe Routes to School is a variable to help understand how cities have worked towards creating a safer environment for residents on their path to school. West St. Paul has developed Safe Routes to School Plans for both of the district's public schools in the city, Moreland Elementary and Garlough Elementary. Columbia Heights is the only other city to have Safe Routes to School Plans for 100% of the district's public schools in its city boundaries (Table 3).

Four out of the six cities, including West St. Paul, have publicly accessible ADA Transition Plans. The other two cities, Golden Valley and South St. Paul, either have statements on their website or in their bike and pedestrian plan saying that they will be working towards greater ADA compliance. For example, South St. Paul has a much less intensive ADA transition 'plan' which consists of a broad compliance goal of 80% in 20 years and for their Capital Improvement Plan to be ADA-compliant within 5 years (City of South St. Paul, 2021). Cities without official ADA Transition Plan documents have not pursued the essential self-evaluation to determine their current compliance level. The four cities with these plans all identified their current compliance, as indicated by the percentages in Table 1, and set more specific policy and improvement goals. In comparison to South St. Paul, Northfield's ADA Transition plan breaks down compliance steps into five, ten, and twenty years and includes a section regarding monitoring of progress and updating of the plan document every three to five years (City of Northfield, 2018). In terms of current compliance, the average percent of curb ramps complying with ADA standards for the cities with available data is 16.9%. West St. Paul falls below that with only a 10.5 % compliance rate. The average percent of sidewalks compliant with ADA is 26% with West St. Paul's sidewalk compliance at 15.8% (Table 3).

The average mean travel time to work for the five comparable cities is 23.1 minutes. West St. Paul's mean travel time falls slightly below that at 22.5 min. Average tree canopy coverage is 33.5%. West St. Paul's tree canopy coverage is quite a bit above that at 40.5% (Table 3).

Every city analyzed is connected to at least one regional bike network, with three cities being connected to two regional bike networks and one city connected to three regional bike networks. West St. Paul does not have as extensive of a regional bike network as some of the other cities with its only regional connection being the North Urban Regional Trail (Table 3).

Adoption of a Complete Streets Policy was also analyzed for each city. Columbia Heights was the only city without an official adoption of a Complete Streets Policy, though in their bike and pedestrian plan they mention the Minnesota Department of Transportation's adoption of the policy and how it can be used

as a resource for the city when completing new projects. This policy ties in with many of the components discussed earlier including ADA-compliance, Safe Routes to School, and overall bicyclist and pedestrian safety and accessibility (Table 3).

Document Analysis

Creating bicycle and pedestrian friendly cities uses three essential principles: distance, protection, and integration (Handy, 2020). Distance in terms of proximity and connectivity, protection in terms of safety from cars, and integration with transit and between bike and pedestrian systems themselves. Looking at this framework, the importance of a connected network was emphasized. Network connectivity has been defined in various ways, though each definition has similar conclusions. One definition is "the directness of the possible routes to destinations along the transportation network" (Handy, 2020). Another describes network connectivity as being "determined by the presence of sidewalks and other pedestrian paths and by the degree of path continuity and absence of significant barriers" (Southworth, 2005). Both discuss the ability of an individual to get from one place to another in a direct and unburdened way. Combined with proximity, individuals use distance as a metric when deciding whether to utilize walking or biking as a form of transportation. Decisions have shown that increased street connectivity have led to a decrease in driving, and instead an increase in walking, biking, and transit use (Marshall, 2010).

Florida, the state with the highest pedestrian fatality rate, implemented a statewide Complete Streets policy, and in the following decades pedestrian fatality rates fell at a rate higher than projected without the intervention (Porter et al, 2018.). Complete Streets, as well as other programs targeting road safety such as education, were responsible for this reduction in fatalities (Schneider, 2018).

Recommendations

Signage

Signs relay critical information to all users of the road. If everyone knows who and what to expect on the roads next to them, it allows everyone to prepare and react accordingly. Signs allow for increased safety and predictability. For example, a sign displaying, “Bicycles May Use Full Lane” was found to communicate the delegation of responsibility of all parties on the road most directly and clearly.

Figure 4. Examples of bicycle signage (Bicycle Alliance of Minnesota, 2021)

This has the benefit of increasing safety for bicyclists and encouraging new bicyclists to share the road (Hess, Peterson 2015). We recommend that streets with bicycle traffic be evaluated to determine if signs would increase safety. We also recommend clearly marked bicycle routes parallel to Roberts St. to provide and encourage a safer route to access the city's main business corridor.

Equity

The recommendation proposed for West St. Paul is to increase stakeholder engagement and participation when updating the master plan. Holding community open house meetings like the original plan conducted is a great way to allow the community to express their concerns and wants for the updated master plan. Increasing participation at these events will allow an environment for the residents to make sure their voices are heard and that the new plan follows what the greater community is asking for. The International Association for Public Participation states that advertising the meeting ahead of time, online surveys and events are the best practices to increase participation for city planning. Advertising the community open house ahead of time allows for residents to plan so they can collect their thoughts and concerns and have adequate time to mark the next meeting on their calendar. The local West St. Paul

newsletter or a city social media account would be ways to include multiple age groups and demographics. The questionnaires from the original master plan only included 0.6% of West St. Paul residents. To increase participation, the IAP (2010), suggests the survey should be advertised in public places like bus stops, bike trails and school meetings. These extra efforts should be made in areas that do not normally see a lot of participation to reach community members that have not been represented in the past. The survey should be conducted online through the city website rather than a mail-in option, which can get lost or not be received in a timely manner. At already occurring events, like local fairs, a booth should be set up that provides information about the importance of updating the bike and pedestrian plan and allowing the community to voice any concerns or comments they might have after attending the open houses or if they were unable to attend.

Pedestrian Safety and Walkability

The City of West St. Paul should fully integrate their previously adopted Complete Streets Policy into their updated Pedestrian and Bike Master Plan. West St. Paul adopted a Complete Streets Policy in March 2021. Complete Streets, according to this resolution, are "designed to enable safe continuous travel for all users." Currently the Complete Streets Policy defers to the Master plan for all bicycle and pedestrian infrastructure developments. Complete Streets was not something that was considered when the Master Plan was developed, so any pedestrian and bicycle facilities will be developed according to a plan that does not consider Complete Streets. The Complete Streets resolution also mentions implementing Complete Streets while considering disability through the city's ADA transition plan. The Master Plan does not discuss the ADA directly, and its discussion of disability is limited to a short section on safe routes for seniors. Given the nature of Complete Streets, it is vital to design for disabilities as disabled people are users of transportation and need safe and continuous travel routes. Complete Streets is for every user; the bike and pedestrian plan should acknowledge the city's ADA transition plan. West St. Paul currently has an ADA transition plan where they analyze their current compliance. West St Paul has a below average compliance for both percent of compliant curb ramps and sidewalks. Given this, it is recommended for West St Paul to implement ADA compliant pedestrian improvements into the Pedestrian and Bicycle Master Plan.

The West St. Paul Complete Streets Policy emphasizes a "safe, continuous travel network" (*Complete Streets Policy*, 2021). The document analysis showed that a connected network increases biking and walking as a form of transportation. Integrating complete streets would allow for better consideration of how connectivity is developed within bike and pedestrian infrastructure and help to address the gaps in

connectivity that were displayed in the Master Plan progress report. The Walk and Bike scores analyzed in the comparative cities study are based on factors such as intersection connectivity and overall connectedness. Therefore, using a complete streets perspective to increase connectivity would likely lead to an increase in the city Walk and Bike score.

Conclusion

As population increases, the need for sustainable planning and development is amplified. As traffic congestion increases along with the population, there is also a need for safe and equitable walking and biking paths to help alleviate traffic and reduce the harmful effects of passenger vehicles. Another benefit of increasing access to biking and walking is that it allows people an accessible way to stay active. Safe ways to get out and stay active are becoming increasingly important as obesity affects 43% of American adults. In 2011, West Saint Paul implemented the Pedestrian and Bicycle Master Plan, which our group has reviewed and provided recommendations on how to improve the community usage of biking and walking paths with a specific focus on safety and equity to help with the city council's revision of the plan scheduled for Spring 2022. After reviewing the 2011 plan and completing an observational inventory of the treatment recommendations in the plan, we have found that West Saint Paul's completion rates are as follows: 32% complete, 63% incomplete, and 5% in progress. We also analyzed the bike and pedestrian plans for 5 comparable cities and found that West Saint Paul's walk score was almost 10 points higher than the average, but the bike score was slightly below average. As West Saint Paul looks to update their bike and pedestrian plan, our group has come up with a few recommendations. We noticed a lot of ambiguity with the bicycle lane signage, and we suggest adding bike lane markings on the roads and signs to indicate where motorists should expect cyclists to ride. We also recommend promoting and engaging the community members in the process of updating the plan to better reflect the goals of the community. Finally, we recommend including the implementation of complete streets as it has been shown to increase safety for motorists, cyclists and pedestrians and allow for multiple forms of transportation to coexist peacefully (Porter et al, 2018). With these improvements, we hope that West St. Paul can become a city that sets an example for what other cities should aspire to be in pedestrian and bicycle infrastructure.

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Appendix A

Table showing road segments identified in the 2011 Pedestrian and Bike Master Plan and the status given to each segment based on observations

Segment	Preferred Treatment (2011)	Treatment Progress (Fall, 2021)	Status
North Urban Regional Trail (NURT)	Off-Road Trail	Off road trail	Complete
Butler Avenue (Delaware Ave. to 52)	Off-Road Trail Sidewalk one side	Off-road trail in progress Sidewalk both sides, only part way	Partial- Completion
Oakdale Avenue (Butler Ave. to Mendota Rd.)	Off-Road Trail Sidewalk one side	Off road trail sidewalk one-side	Complete
Wentworth Avenue (Delaware Ave. to Robert St.)	Off-Road Trail Sidewalk one side	Off road trail (no signage) Sidewalk one side	Complete
Marie Avenue (Delaware Ave. to Robert St.)	Off-Road Trail Sidewalk one side	Off road trail	Partial- Completion
Marie Avenue (Robert St. to Oakdale Ave.)	Off-Road Trail Sidewalk one side	No sidewalks	Partial- Completion
Mendota Road (Delaware Ave to Highway 52)	Off-Road Trail Both sides	Off road trail	Partial- Completion
Delaware Avenue (Mendota Ave. to Annapolis)	Bike Lane	Bike lane in progress? No shoulder	Partial- Completion

Annapolis Street Link (Delaware Ave. to Charlton St.)	Bike Lane Sidewalk both sides	Bike lane present (ends at Smith) Sidewalk both sides	Complete
Charlton Street (Mendota Rd. to Annapolis St.)	Bike Lane Sidewalk both sides Trail from Marie Ave. to Mendota Rd. if chosen as NURT route	Bike Lane Sidewalk one side and partial other	Partial- Completion
Oakdale Avenue (Butler Ave. to Annapolis St.)	Bike lane Sidewalk both sides	Off road trail Sidewalk one-side	Incomplete
Emerson Avenue (Charlton St. to NURT)	Bike lane Sidewalk both sides	No sidewalks or bike lanes NURT has no bike signs	Incomplete
Livingston Avenue (Mendota Ave. to Thompson Ave.)	Bike lane Sidewalk both sides	No bike lanes Sidewalk both sides	Partial-Completion
Thompson Avenue (Livingston Ave to Highway 52)	Bike lane Sidewalk both sides	No Bike lane Sidewalks on one side Switches sides on Allen Ave.	Partial-Completion
Bernard Street (Smith Ave. to Sperl St.)	Bike Blvd / Bike Route Sidewalk both sides	Sidewalk on Harmon park side No bike lanes	Incomplete
Sperl Street (Bernard St. to Haskell St.)	Sharrow / Bike Route Sidewalk both sides	No bike lanes No sidewalks	Incomplete
Haskell Street (Sperl St. to Ped. Bridge)	Sharrow / Bike Route Sidewalk both sides	No bike lanes No sidewalks	Incomplete

Smith Street Link (Bernard St. to Annapolis St.)	Sharrow / Bike Route Sidewalk both sides	No bike lanes Sidewalks both sides	Partial-Completion
Emerson Avenue (Delaware Ave to Charlton St.)	Sharrow / Bike Route Sidewalk both sides	No bike lanes No sidewalks	Incomplete

Appendix B

Walk and Bike Score Breakdown (Walk Score, 2021)

Walk Score®	Description
90–100	**Walker's Paradise** Daily errands do not require a car.
70–89	**Very Walkable** Most errands can be accomplished on foot.
50–69	**Somewhat Walkable** Some errands can be accomplished on foot.
25–49	**Car-Dependent** Most errands require a car.
0–24	**Car-Dependent** Almost all errands require a car.

Bike Score	Description
90–100	**Biker's Paradise** Daily errands can be accomplished on a bike.
70–89	**Very Bikeable** Biking is convenient for most trips.
50–69	**Bikeable** Some bike infrastructure.
0–49	**Somewhat Bikeable** Minimal bike infrastructure.