Minneapolis Bike Equity Report

A Tool for Reviewing the Minneapolis Master Bicycle Plan with a Health Equity Lens

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About the report

In 2015, the Center for Prevention at Blue Cross and Blue Shield of Minnesota (Blue Cross) commissioned Wilder Research to assess the current Minneapolis bicycle network and planned infrastructure changes from a health equity perspective. This project was funded through Blue Cross' Active Living for All (ALfA) initiative, which is working with nine local organizations to increase access and reduce barriers to physical activity by improving the active living environment in the funded communities.

Bicycle Access – Any person living within ¼ mile of a bikeway was considered to have access to the bikeway.

Bikeway – "A bicycle lane, bicycle path, or bicycle route, regardless of whether it is designed for the exclusive use of bicycles or is to be shared with other transportation modes." – Minnesota Department of Transportation (MnDOT) Bikeway Facility Design Manual

Expanding Minneapolis bikeways can improve opportunities for residents to engage in healthy activities and access employment, education, and other community resources. When implemented with a health equity lens that reflects community interests and priorities, changes to the bicycle infrastructure can strengthen efforts to reduce health inequities and improve well-being.[1] This is especially important for low-income communities and communities of color who often disproportionately experience poor health outcomes and a lack of access to community resources.[2,3]

This report provides Minneapolis residents, advocacy organizations, and City of Minneapolis staff with information describing who has access to existing bicycle infrastructure in Minneapolis, and consideration of how access and equity can be enhanced in the future. It also shows how the Minneapolis bikeways impact access to community resources that support health, including schools, grocery stores, and community recreation facilities. The report also offers suggestions for steps that can be taken to better understand specific local barriers that reduce access to bike infrastructure, and considerations that stakeholders can use to approach implementation of the plan with an equity lens.

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1 Wilder Research. (2012). Health inequities in the Twin Cities. Retrieved from https://www.bcbsmnfoundation.org/system/asset/resource/pdf_file/59/Health_Inequities_in_the_Twin_Cities_2012__Full_Report.pdf

2 Metropolitan Council (2013). Public transit and human services transportation coordination action plan Twin Cities Metropolitan Area. Retrieved from http://www.metrocouncil.org/Transportation/Publications-And-Resources/Public-Transit-and-Human-Services-Transportation-C.aspx

3 Day, K. (2006). Active living and social justice: Planning for physical activity in low-income, black, and Latino communities. *Journal of the American Planning Association,* 72(1), 88-99.

Methods

Using Minnesota Compass' geographic profiling features (available at www.mncompass.org), a review of Minneapolis' 13 wards was conducted to identify characteristics that are relevant to discussing bike equity, such as vehicle ownership, population diversity, and household income. Ward boundaries were entered into the neighborhood profile feature based on current City of Minneapolis ward maps. To assess equity of the Minneapolis bicycle system, Wilder Research produced a series of maps displaying current and proposed Minneapolis bicycle infrastructure and ward characteristics, including the number of residents of color and number of residents living at or below 200 percent of the Federal Poverty Level (FPL).[4]

Two different U.S. Census Bureau data sources were used to identify demographic characteristics of each ward within the City of Minneapolis. Ward-level demographic descriptions were based upon the 2009-2013 American Community Survey. Demographic information used for mapping race and ethnicity data at the block level is based upon the 2010 Census while socioeconomic status maps included data from the 2009-2013 American Community Survey. These data sources provide the most accurate estimates available at each geographic level. Differences in bikeway access by race based on 2010 Census data do show statistically significant differences; however, the margins of error for the estimates of socioeconomic status are too large to determine whether these differences in bikeway access are statistically significant.

Multiple sources of data were used to identify community resources that support health, defined in this report as community recreation centers, parks, Nice Ride locations, schools, libraries, and grocery stores. Business lists that included the types of community resources of interest in this report were compiled by MSG, an external vendor. In situations where the list included businesses or other entities that did not clearly fit into each category, internet searches or telephone follow-up calls were made to determine whether the business should be included or excluded. Information from the City of Minneapolis and Minneapolis Public Schools websites were also used to identify the location of parks, schools, and libraries. Blue Cross provided data with the location of each Nice Ride station.

Limitations

In this report, all residents who live within one-quarter mile of a bikeway were counted as having access to bike infrastructure.[5] However, this likely overestimates the number of residents who can readily access existing and planned bikeways for a few key reasons. First,

[4] 200% of the Federal Poverty Level (FPL) in 2015 is $48,500 a year for a family of four. (Centers for Medicare and Medicaid, 2015)

[5] This is the definition used by Partnership for Sustainable Communities, an interagency partnership between the U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation, (DOT), and the U.S. Environmental Protection Agency (EPA).

areas within the one-quarter mile zone may include high-traffic roads, busy intersections, steep hills, and other physical barriers that reduce safety and comfort for people on bikes, ultimately reducing access. Second, because some off-street bike paths have a limited number of access points, residents who seem to live within one-quarter mile may need to travel a much greater distance to access the bikeway. Third, while the maps note different types of bikeways, the measure of access treats all types of bikeways equally rather than also considering how well the type of bikeway aligns with the preferences of residents. Fourth, this report does not assess connectivity between bikeways and public transit, which is an important aspect of an equitable transportation system. Finally, residents who have access to a bikeway that lacks connections to other bike lanes and key community resources do not have the same level of access as people living in areas with more connected bike systems.

A number of other factors that influence residents' ability to actually use the bicycle system are not included in the maps presented in this report because there are not existing data sources available and it was beyond the scope of this project to collect this information. Neighborhood safety, as well as social norms, attitudes, and perceptions of bicycling all influence how likely residents are to use bikeways. Non-bikeway infrastructure that support bicycling such as bike lockers, showers at places of employment, and bike shop locations were also not taken into consideration for this report. In addition, data quantifying bikeway qualities, such as the road surface itself and proximity to green spaces, are not readily available, but can impact the experience of people who bike.

The race and ethnicity categories used in the report are the standard categories used by the U.S. Census and American Community Survey. Because of data limitations estimating the number of residents within specific race and ethnicity categories at a block level, the maps in this report describe residents "of color," which includes all race and ethnicity groups except for white, non-Hispanic. The use of these categories reflects the level of data available for this analysis, but does not adequately describe the many cultural communities included within each race and ethnicity category. Different research methods involving direct input from community residents would be needed to understand bicycle accessibility among different cultural communities or among residents who live in a specific geographic area (i.e., near key intersections or in areas with limited bikeway options).

Although multiple data sources were reviewed to identify the location of key community resources, businesses and other entities that were not included on these lists were inadvertently excluded from our analysis. In addition, the community resource list includes businesses and entities in place in 2015; places that opened or changed location since that point are not included in the maps and analysis of accessibility.

Using this report

Ideally, this report provides interested organizations with data and visuals that can help identify geographic areas with limited bicycle access and understand demographic characteristics of residents who live in these neighborhoods. However, this report is only an initial step in understanding the concerns and priorities of community residents regarding bicycling. To make meaningful changes in Minneapolis neighborhoods, organizations and entities must have a more comprehensive understanding of specific barriers to bicycling and the overall experience of people who bike.

The following strategies are just a few options organizations and agencies can use to draw on data provided in this report to explore specific local issues:

- Use discussion groups, surveys, and outreach activities with community residents to identify specific barriers to bicycling in key neighborhoods.
- Invite community residents and other stakeholder groups to draw on their own experiences to assist with further interpretation of data presented in the report and suggestions for next steps.
- Develop case studies, short summaries, or other brief communication tools that combine data, visuals (e.g., photographs or drawings), and quotes or stories from community residents to inform decision makers about barriers to bicycling in specific geographic areas.
- Conduct bicycling audits or other types of group rides to give residents and decision makers opportunities to experience barriers to bicycling, including breaks in connectivity, and discuss potential solutions together.
- Consider additional sources of data, such as street speed limits, public transportation routes, and sites of bicycle accidents, to better understand all transportation options in local neighborhoods and to improve safety.

Bikeway access with an equity lens

Using an equity lens to assess impact and accessibility

> *Health equity is realized when every person has the opportunity to realize their health potential – the highest level of health possible for that person – without limits imposed by structural inequities.*
>
> *–Minnesota Department of Health, Advancing Health Equity in Minnesota (2014)*

Health is influenced by the conditions where people live, work, and play. The conditions, called social determinants of health, refer to the social and economic factors that shape communities and impact health. They include community safety, access to resources and services, employment opportunities, social support, and racial discrimination. In Minneapolis and throughout Minnesota, social and economic conditions vary significantly by neighborhood, often as the result of long-standing policies and historical practices that divest resources away from some communities and contribute to growing advantage, wealth, and power in others. As a result, some neighborhoods are rich in community resources that support health while others pose barriers to healthy living.

These accumulated differences between neighborhoods contribute to health inequities, or unjust differences in health between groups of people. Health inequities are evident across many different types of health outcomes and at all ages. For example, the *Health Inequities in the Twin Cities* report demonstrated that in the 7-county Twin Cities region, average life expectancy is higher in more affluent neighborhoods, as measured by median household income and rates of poverty.[6] The same report showed that mortality rates are notably higher among American Indian and African American residents than for other cultural communities and that racial health inequities persist across all income levels.

While these pervasive health inequities will not be eliminated by the Minneapolis Bicycle Plan alone, it offers an important opportunity to establish a bicycle infrastructure that can be a health resource for all Minneapolis residents. Access to bikeways increases opportunities for people to participate in physical activity, and can be a primary mode of transportation, increasing access to a wide range of community resources. Using a health equity approach to implement the plan can lead to: all neighborhoods getting an adequate number of high quality facilities (geographic equity); all citizens having the same opportunity to access bikeways regardless of age, race, ethnicity, and gender (demographic equity); and all stakeholders treating biking as an equivalent form of transportation with personal vehicles,

[6] Wilder Research, 2012.

public transportation, and walking (modal equity).[7] While these long-term goals focus on ensuring bike access for all, the short-term decisions focusing on which sections of the plan to prioritize must consider the varied needs and interests of residents in different Minneapolis neighborhoods.

Equity and the Minneapolis Bicycle Plan

The City of Minneapolis comprehensively outlined its history of and plans for bikeways in the 2011 *Minneapolis Bicycle Master Plan*. This bicycle plan was developed through a community input process that included public meetings and written feedback provided during open comment periods between 2008 and 2010. Among the many objectives of the Bicycle Master Plan are to add 183 miles of bikeways over the next 30 years, identify funding opportunities and policies that support bikeways in Minneapolis, and expand opportunities for bicycle education, encouragement, and enforcement.

> *The purpose of the Minneapolis Bicycle Master Plan is to establish goals, objectives, and benchmarks that improve safety and mobility for bicyclists and increase the number of trips taken by bicycle. The Bicycle Master Plan includes bicycle policy, existing conditions, a needs analysis, a list of projects and initiatives, and funding strategies to be implemented to complete the plan. — Minneapolis Master Bicycle Plan (2011)*

The plan also highlights the importance of managing and expanding the city's bicycle system in ways that improve the connectivity of the system, address barriers to increasing ridership, and consider the impact on the environment. The plan also outlines the robust set of evaluation activities that are expected to accompany the implementation of the bicycle plan.

The plan identifies geographic, demographic, and modal equity needs as factors that must be considered for the Minneapolis Bicycle Program to "be fair and present opportunities for all." Construction of new bike facilities and enhancements to existing infrastructure, particularly in North Minneapolis, Northeast, and neighborhoods south of Minnehaha Creek (South Minneapolis), are identified as ways to ensure geographic equity, while the strategies to achieve demographic equity focus on addressing barriers to biking through education, skills training, and outreach.

In 2015, an update to the Minneapolis Bicycle Master Plan was adopted that focused specifically on recommendations for on-street protected bikeways, a type of facility that was not specifically addressed in the original plan. Protected bikeways separate people who bike from motorized traffic on busy streets, improving safety and increasing connectivity within the bike system. This update to the Master Plan will also guide

[7] City of Minneapolis. (2011). Minneapolis Bicycle Master Plan. Retrieved from http://www.ci.minneapolis.mn.us/www/groups/public/@publicworks/documents/webcontent/convert_275983.pdf

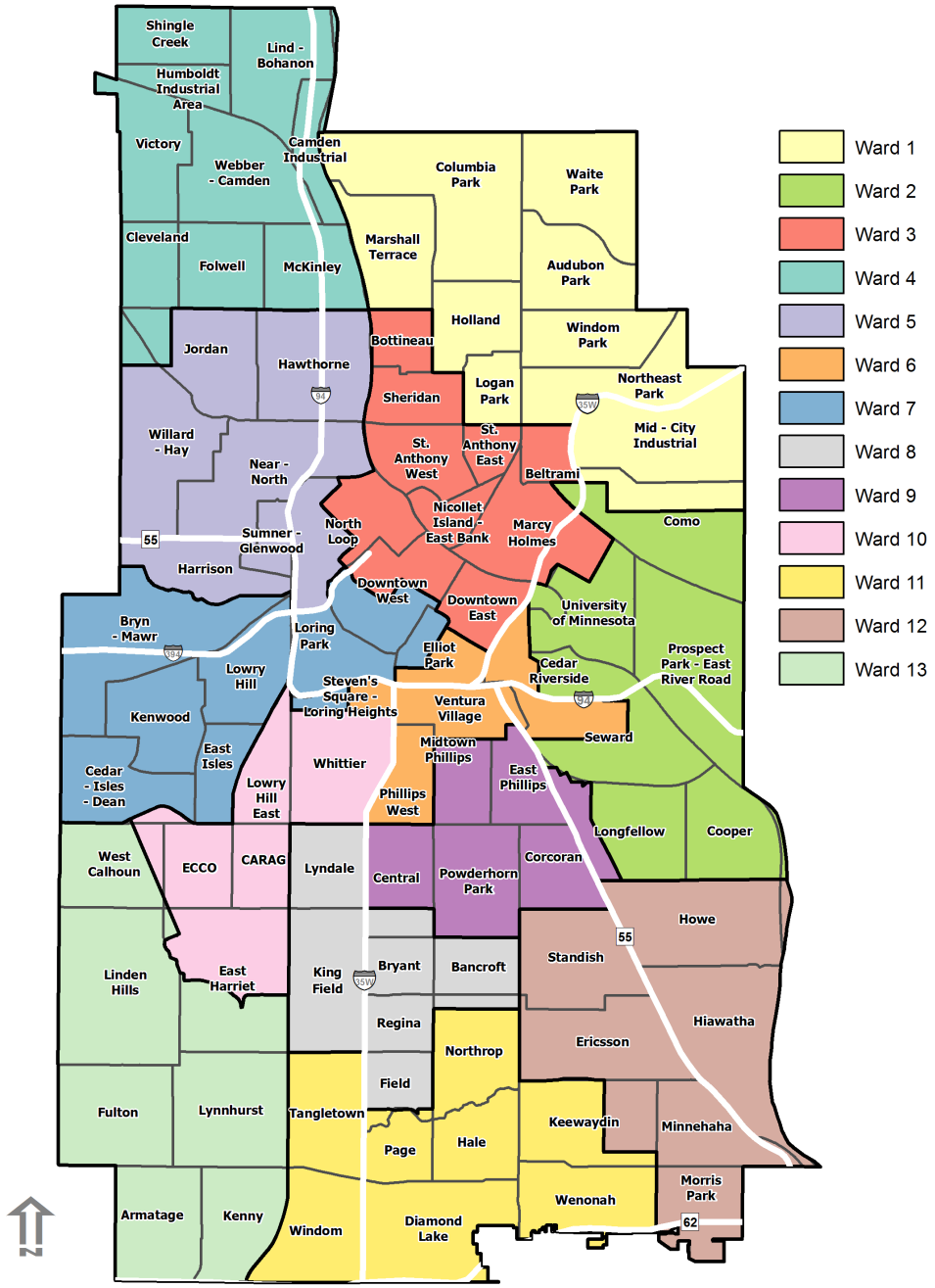
implementation priorities for the next 5 to 10 years. Projects prioritized under the Protected Bikeway Plan are located in areas where there is high bicycle demand in high traffic areas, where there are opportunities for network integration, and where it would promote demographic equity.

The Minneapolis Bicycle Master Plan and additional supporting materials can be found on the City of Minneapolis website: http://www.ci.minneapolis.mn.us/bicycles/WCMS1P-135610

Key characteristics of Minneapolis wards

Understanding the defining characteristics of each geographic area can help stakeholders use an equity lens when planning the implementation of the Minneapolis Bicycle Master Plan. The City of Minneapolis is made up of 13 wards and 81 neighborhoods. This report presents demographic and bicycle access data at the ward level, but the demographic characteristics of residents vary widely within wards and by neighborhoods. An effective bike system must meet the needs of community residents who have varied levels of comfort bicycling and who would use the bike system for different purposes. An effective strategy for implementing the plan should also be attentive to recognizing social, economic, and cultural factors that influence perceptions of bicycling and the degree to which it is a community priority. For example, in neighborhoods where many households do not have a vehicle, bicycling can be a key mode of transportation when bikeways connect to schools, stores, places of employment, and other community resources. Experience, perceptions, and social norms around using a bicycle as a primary mode of transportation can vary significantly among different communities. Resident perceptions of community safety can also have a significant influence on how likely residents are to ride a bicycle. Understanding the demographic characteristics of residents in each ward can help stakeholders identify the communities that should be involved in discussions and decisions about the plan's implementation and reached through ongoing education and advocacy efforts.

1. Minneapolis ward and neighborhood boundaries



Source: City of Minneapolis

There are considerable demographic differences among the residents of Minneapolis' 13 wards. At least half of the residents in Ward 2, 5, 6, 9 live in low-income households (Figure 2). A larger percentage of residents live at or below 200 percent of the Federal Poverty Level (FPL) in these wards compared to other areas of Minneapolis. The neighborhoods with the largest percentage of lower-income residents are within Wards 5 and 6: Hawthorne (89%), Cedar Riverside (77%), Near-North (74%), and Ventura Village (74%). In contrast, only 13 percent of Ward 13 residents live at or below 200 percent FPL. Examples of other key differences between Minneapolis wards are highlighted below:

- **Ward 13, located in southwest Minneapolis, is the least racially integrated area of the city.** It is one of four Minneapolis wards (Wards 7, 11, 12, and 13) where three-quarters or more of residents are white. There are only four wards where a majority of residents are people of color. African American residents comprise the largest share of population in Wards 5 and 6, while nearly one-third of residents in Ward 9 are Hispanic/Latino.

- **In Wards 6 and 9, approximately 1 in 3 residents is foreign born**. Biking experience and cultural norms about biking may vary considerably by cultural group. As a result, different types of education and outreach may be needed to address community concerns and increase residents' comfort using bicycles as a form of transportation.

- **In Wards 2, 5, 6, and 7 at least 20% of households do not have a vehicle**. These residents are more reliant on bicycling, public transportation, and other forms of transportation (e.g., car sharing) and can benefit most significantly from a well-planned and connected transportation system that is walkable, bikeable, and connected to public transportation routes. Ward 6 (Cedar Riverside, Elliot Park, Phillips West, Seward, Stevens Square, and Ventura Village) residents are least likely to have access to vehicles, with 44% of households not having a vehicle.

- **Approximately one-third of residents of Wards 4, 5, and 9 are age 17 or younger.** Different safety concerns and priorities may arise when parents are considering bikeway accessibility when bicycling with children. For example, parents may feel much more comfortable with children biking on designated bike paths or protected bike lanes than on streets where bicycles and vehicles share lanes.

2. Demographic characteristics, by ward

	Ward 1	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	Ward 8	Ward 9	Ward 10	Ward 11	Ward 12	Ward 13
Total residents	29,981	31,632	29,774	30,954	30,846	27,772	28,608	28,980	28,072	31,912	30,079	30,969	31,517
% children (0-17)	17%	12%	9%	30%	35%	19%	9%	24%	30%	12%	24%	19%	23%
Race, ethnicity, nativity													
White, not Hispanic/Latino	70%	68%	70%	42%	19%	37%	78%	59%	36%	71%	75%	79%	88%
African American	9%	12%	11%	32%	49%	42%	9%	16%	18%	10%	9%	6%	3%
American Indian	2%	**	**	2%	**	2%	**	1%	4%	**	**	3%	**
Asian	5%	10%	8%	12%	17%	4%	5%	2%	5%	3%	2%	2%	2%
Two or more races	4%	4%	4%	6%	6%	3%	3%	4%	5%	3%	4%	4%	3%
Hispanic/Latino	11%	5%	6%	6%	9%	10%	4%	17%	33%	11%	10%	8%	3%
Foreign-born	15%	19%	16%	11%	16%	31%	12%	17%	28%	15%	10%	7%	6%
Transportation													
No household vehicle	14%	20%	18%	16%	29%	44%	24%	15%	18%	19%	8%	10%	5%
Socioeconomic status													
Residents living at or below 200% FPL	39%	50%	44%	48%	70%	70%	29%	38%	57%	42%	20%	24%	12%
Bachelor's degree or higher	37%	52%	52%	24%	20%	28%	67%	45%	31%	51%	56%	46%	70%
Working age adults employed	76%	61%	77%	66%	57%	60%	78%	79%	72%	83%	79%	82%	84%

Note: Asterisks (**) are shown when reliable population estimates could not be calculated for smaller population groups.

[a] 200% of the *Federal* Poverty Level (FPL) in 2015 is $48,500 a year for a family of four. (Centers for Medicare and Medicaid, 2015)

Summary of key findings

To understand whether current and planned bicycle infrastructure will result in equitable bicycle access for Minneapolis residents, a series of maps and analyses were completed (see the "Detailed Findings" section of the report). The following key findings highlight important differences in bicycle access:

- **While bikeway access is generally high throughout Minneapolis, there are still disparities in access.** Ward 12 had the lowest rate of bicycle access for all residents (67%), while at least 90 percent of residents in Wards 3, 4, 6, 7, 9, and 10 had bicycle access.

- **Bike lanes[8] are currently the most common form of bikeway**. Some bikeway users or potential users may have varying levels of comfort using these lanes as they are on-street and within close proximity to other vehicles. Fewer bike lanes are currently planned for implementation, while more miles of shared lanes and bike boulevards are planned. Similar to bike lanes, shared lanes and bike boulevards are also on-street, however bike boulevards prioritize people who bike. The addition of protected bikeways would further enable bicyclists of all experience levels to feel comfortable.

- **When all planned bikeways are complete nearly all Minneapolis residents will live within ¼ mile of a bikeway**. Bike boulevards and shared lanes are the two types of bikeways that have the greatest planned increases, and the update to the plan expands the implementation of protected bike lanes throughout the city. The addition of bikeways that minimize how often bicycles and vehicles share lanes or prioritize bicycle traffic (i.e., off-street bikeways, protected bike lanes, and bike boulevards) can increase residents' sense of safety and increase bikeways use. It is not clear how long full implementation may take; the plan estimates the annual costs required to implement the full plan by 2040, but also note that a number of factors can influence how quickly the plan is fully adopted and implemented.

- **The connectivity of bikeways (i.e., ample number of intersections, bikeways running north-south and east-west, non-fragmented bikeways) varies**

[8] **Bike lanes** have pavement marking indicating bicycle-specific lanes with street corridors adjacent to traffic. **Off-street paths** are trails separated by car traffic, often by a curb or green area that can be bike-only or shared by pedestrians. **Bicycle boulevards** are roads designated by pavement markings or signs that prioritize bikes or motor vehicles on low-traffic streets, often including traffic calming measures to reduce speeds. **Shared lanes** have pavement markings or signs that show motor vehicles and cars and both use the street. These bikeways are located in-street without a separate area for bicycles. **Protected bikeways** are physically separated from motor vehicle traffic. Off-street trails are the most common, however bikeways located within streets, yet separated by traffic with parked cars, curbs, medians, or other physical features are also protected bikeways. (Adopted from the Minneapolis Protected Bikeway Update to the Minneapolis Bicycle Master Plan and Saint Paul Smart Trips' Saint Paul Bikeways Glossary.)

considerably by ward. Wards that make up downtown Minneapolis (3, 6, and 7) have a higher density of bikeways and many intersections where bikeways connect. Other wards have more fragmented bikeways (Wards 4 and 5) or a lack of bikeways that transverse residential neighborhoods (Wards 1, 11, 12, and 13). In these areas with limited bikeway connectivity, bikeways are often concentrated around major transportation arteries and recreational areas. This lack of residential bikeways inhibits residents' ability to access community resources and use bicycles as a preferred mode of transportation.

- **Differences in access to bikeways by race are relatively small within wards.** When access by white residents and residents of all other racial groups combined were compared, there weren't consistent patterns in access by race. People of color had higher rates of bikeway access in eight wards, while whites had higher access in two wards, and there was little difference in access in three wards. Overall, any differences were relatively small (up to an 8 percentage point difference in bicycle access by race in all but Ward 11, where there was a 16 percentage point difference). Because there are some highly segregated neighborhoods in Minneapolis, differences in bikeway access by race may be more apparent at a neighborhood level than by ward.

- **Differences in access to bikeways by socioeconomic status are small within wards, yet improvements in access are still needed.** For most wards, differences between higher-income residents (i.e., residents with household incomes at or above 200% FPL) and lower-income residents (i.e., those with household incomes at or below 200% FPL) were no more than 7 percentage points. However, in each of Wards 2, 11, and 12, over 2,000 lower-income residents lived more than one-quarter mile from a bikeway.

- **While Minneapolis has high overall rates of access for community resources that support health, disparities exist between wards.** Bikeways should connect residents to key community resources, such as places that support physical activity (community recreation centers, parks, bike sharing (Nice Ride) stations), healthy eating (grocery stores), and learning (schools and libraries). A lack of resources or limited bicycle access to resources can be found in many of the wards, however Wards 1, 11, and 12 consistently had fewer community resources accessible by bicycle than in other areas of the city.

Considerations for equitable implementation

Overall, the current Minneapolis bicycle system is accessible to many residents, with 87 percent of the entire population living within one-quarter mile of some type of bikeway. However, there are notable differences in access to bikeways among residents who live in

different wards. If geographic and demographic equity in bicycle access are not considered, it is possible that projects increasing the number of miles of bikeways may exacerbate current inequities, rather than improve bikeway access in neighborhoods that may most benefit.

The Bicycle Master Plan, when fully implemented, will expand what is currently available to create a safer, more connected bicycle network. However, local efforts are needed to address specific structural barriers to bike facilities, such as problem intersections, and to identify and address individual and neighborhood barriers to bicycling. The City of Minneapolis must also find ways to both improve connections between existing bicycle infrastructure and add new bikeways in areas where residents currently have limited bikeway access.

The following recommendations were developed to strengthen the implementation of the Minneapolis Bicycle Master Plan:

- **Explore and advocate for improved connectivity, particularly in areas where high-traffic streets pose significant barriers to people who ride bicycles.** The definition of bikeway access used in this report provides a high-level look at the overall bicycle system and disparities in access by ward. However, connectivity, which is critical to residents being able to comfortably use bicycles as a preferred mode of transportation, must be explored in greater detail and with a more localized geographic focus. Bike audits and case studies were beyond the scope of this report, but are two ways bicycle advocates and city departments can work with community residents to identify and draw attention to localized infrastructure needs and barriers.

- **Identify and address aspects of the physical environment that impact access to bikeways.** The maps presented in this report define access as residents living within one-quarter mile of a bikeway. However, bikeways within this distance can be largely inaccessible to residents when highways and high traffic roads, railroads, and busy intersections act as physical barriers and reduce safety for people who bike. Noise and air quality, particularly on bikeways along high-traffic roads, can also impact where residents feel comfortable bicycling. Accessible bikeways should have adequate access points and thorough, visible, and frequently located signage that is written in multiple languages, when applicable. Bikeway access is also maximized when there is proper lighting and good quality roads and paths that are free of major surface issues, such as potholes. There is not a source of data available to identify areas of Minneapolis where these access barriers are present that could be easily incorporated into the maps prepared in this report. Community organizations, advocacy groups, and residents play an important role in identifying these barriers and bringing them to the attention of key decision makers. City planners and other staff can play a key role

in both engaging community residents in planning efforts and being receptive to input gathered through other community engagement efforts.

- **Consider strategies to minimize challenges related to other social and environmental issues that influence bikeway use.** Perceptions of safety (e.g., neighborhood conditions, attitudes of drivers, relationship with law enforcement), comfort with bicycle maintenance, and personal lifestyle (e.g., caring for children, physical limitations, commuting long distances) are just a few of many factors that can influence residents' decisions about bicycling.[9] Some of these concerns can be addressed in classes or informal educational opportunities, while others are systemic issues that can only be solved through much larger, collaborative efforts. Construction of new bikeways is a critical step to support residents who want to use bicycles as a form of transportation, but it is only one of many changes needed to establish an equitable transportation system in Minneapolis.

- **Engage current bicycle advocacy groups and community residents in developing strategies that will identify and respond to barriers to bicycling and ultimately increase bikeway use.** Classes and educational events can provide information and skill training to residents with limited experience bicycling. However, there are a range of issues beyond bicycling skill and experience that influence where and how often residents ride bicycles. Two recent local reports[10] describe factors that influence residents' decisions about using bikeways, paying particularly attention to cultural differences and the priorities of diverse communities. Among the many issues highlighted in these reports are affordability as a significant barrier to bicycling and the need for additional work across multiple sectors to be more inclusive in their efforts to inform and engage all people who ride bicycles. Thoughtful engagement and advocacy efforts are needed to ensure that bikeway planning and construction happens in a timely and effective way that meets the needs of all residents.

- **Continue to support equitable bikeway access through community engagement and in partnership with community leaders.** Overall the city of Minneapolis has put a considerable amount of time and effort into implementing an extensive bikeway system. The city should continue its efforts as a leader and convener of bikeway planning and expertise, and look to community residents to understand what is necessary to meet the needs and align with the interests of neighborhood residents.

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[9] Pooley , C.G. (2011). Understanding walking and cycling: Summary of key findings and recommendations. Retrieved from http://www.its.leeds.ac.uk/fileadmin/user_upload/UWCReportSept2011.pdf

[10] See: Minnesota Healthy Kids Coalition Transportation Equity Research Project. (2015). Healthy Connections Active Transportation: From our own perspectives and voices (2015). Retrieved from: http://media.wix.com/ugd/783cdd_f7190a0f0bc44cd18e8b3f93024ef34d.pdf
Cycles for Change. (2015). Diverse Bicyclists Diverse Needs: Cycles for Change Community Conversations. Retrieved from: http://cyclesforchange.org/wp-content/uploads/2015/11/CommunityConversationsReport_withlinks.pdf

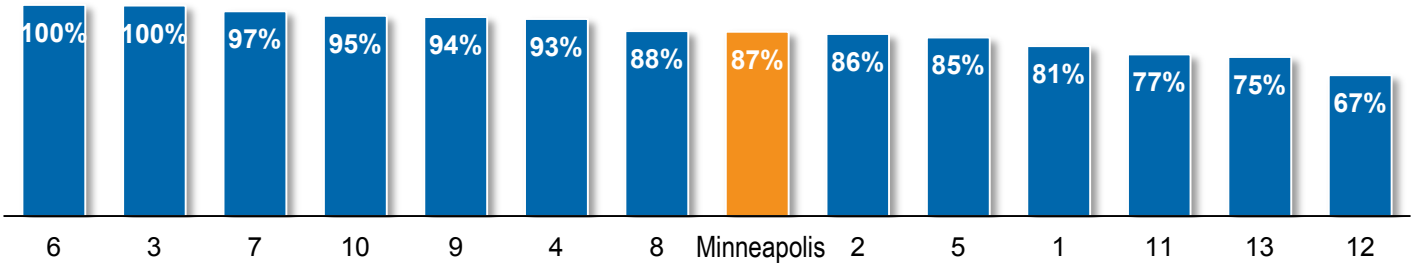
Detailed findings and Minneapolis maps

Accessing Minneapolis bikeways

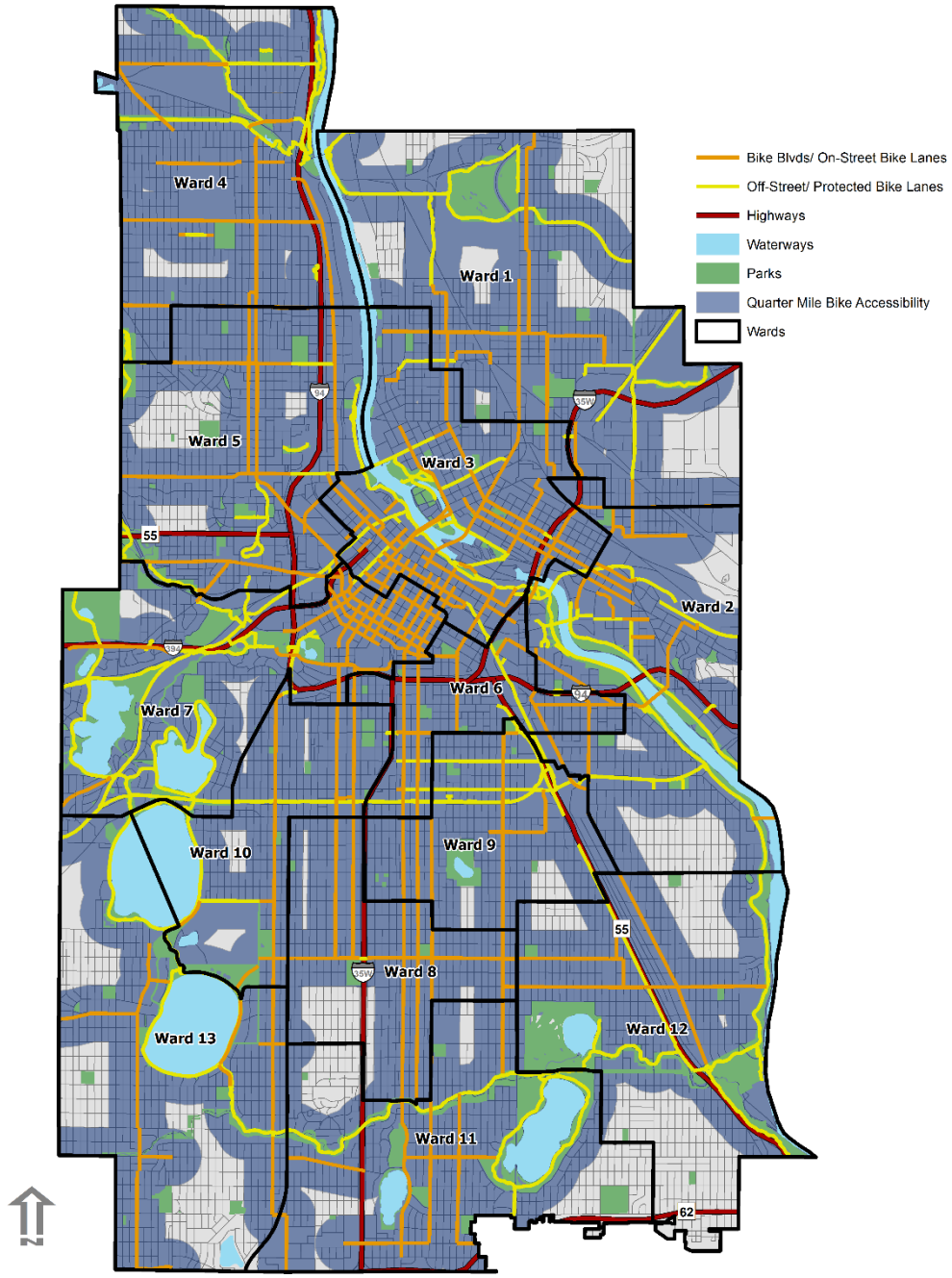
Most Minneapolis residents (87%) have access to a bikeway (i.e., they live within one-quarter mile of a bikeway). However, there are differences in connectivity of bikeways within and between wards, influencing the types of community resources residents can readily access by bicycle. Ward 12 has the lowest percentage of bicycle access (67%) while all residents in Wards 3 and 6 live within one-quarter mile of a bikeway (Figure 3). Other notable differences between wards are described below (Figure 4):

- **In Wards 1, 11, 12, and 13 bikeways follow main transit arteries and are concentrated around natural resources (lakes and creeks).** As a result of this, large sections of residential areas lack bikeway access.
- **In Wards 4 and 5 there are more fragmented bikeways**. These smaller sections of bikeway are likely less functional for accessing community resources such as stores and employment as they do not connect to longer bikeways.
- **Wards containing downtown Minneapolis neighborhoods (Wards 3, 6, and 7) have higher rates of bicycle access**. Downtown Minneapolis has a high concentration of bikeways, with many intersection points (Figure 3). However, there are few protected bikeways in the heavy-traffic downtown area, which may be a barrier to bicycing for some residents.
- **Bicycle lanes are the most common bikeway type in Wards 3, 5, 6, 7, and 8.** While these bicycle lanes are fairly extensive in Wards 3 and 7, bicycle lanes are located on streets with cars and can be seen as barriers to biking by those with less experience or who have young children with them.
- **There are a lack of bikeways running east-west in Wards 1, 11, 12, and 13**. The utility of bikeways may be limited when there are not enough intersections to access them, as is seen in these wards where the existing bikeways run predomoninanty north-south.

3. Percentage of ward residents who live within one-quarter mile of existing bicycle infrastructure, by ward and in Minneapolis overall



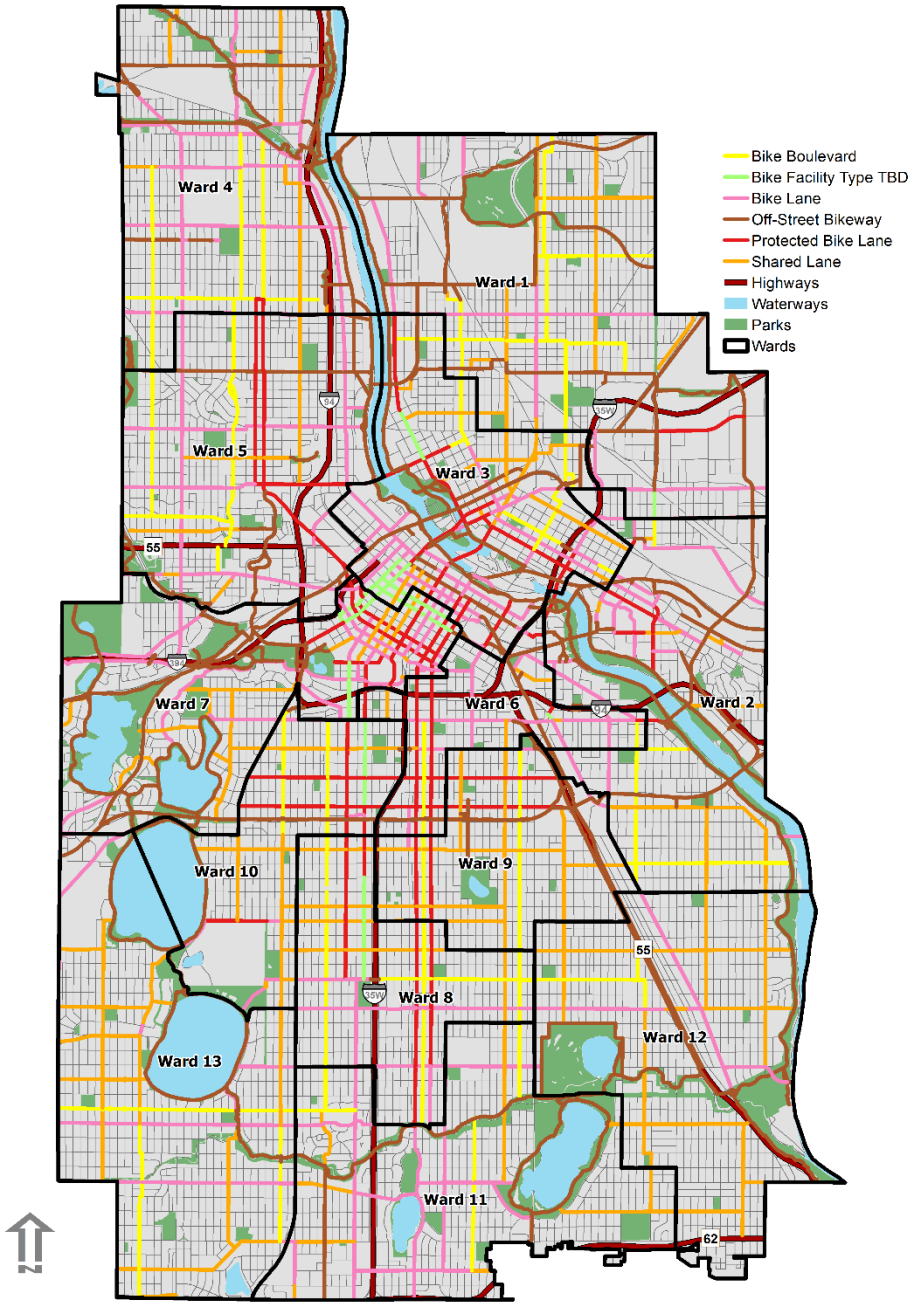
4. Access to existing bicycle infrastructure



Source: City of Minneapolis, 2010 US Decennial Census (block level)

When all currently planned bikeways are implemented nearly all residents in all wards will have bike access (i.e., live within ¼ mile of a bikeway). Improvements will be made in all 13 Minneapolis wards. Shared lanes and bike boulevards are the most common bikeways planned for implementation. While additions of these bikeways will increase access, bike boulevards are more likely to be user-friendly for all current and potential bicycle riders of all skill levels (Figure 5).

5. Access to bicycle infrastructure described in the Bicycle Master Plan

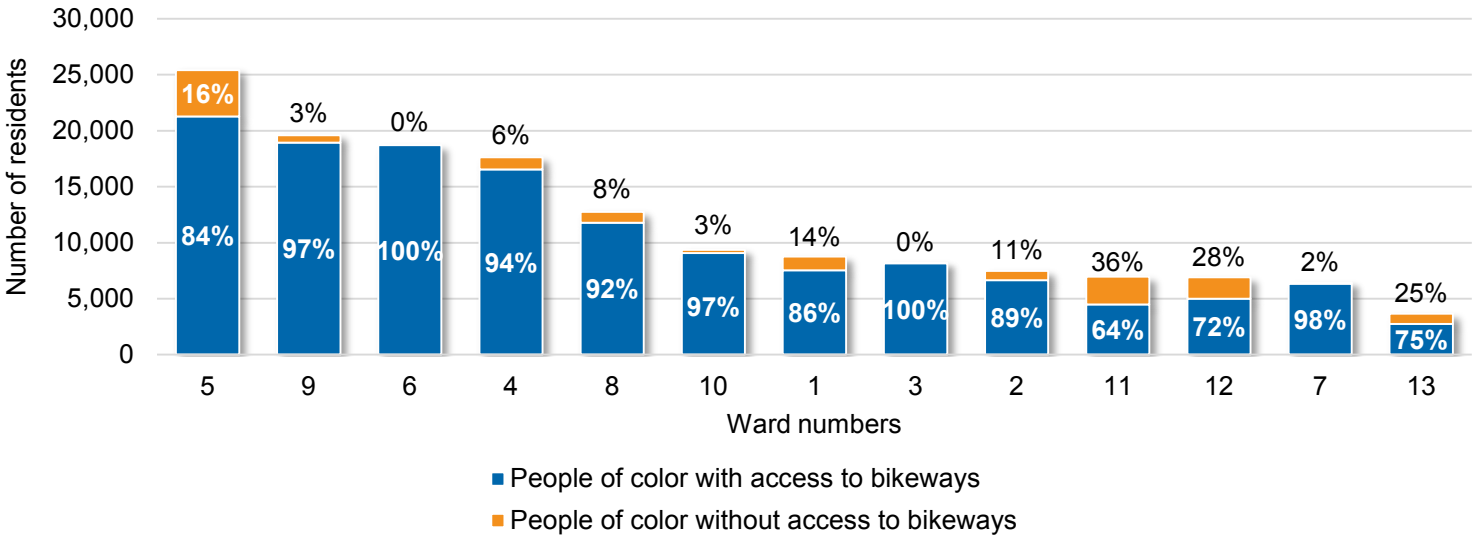


Source: City of Minneapolis, 2010 US Decennial Census (block level)

Access to bikeways by race/ethnicity

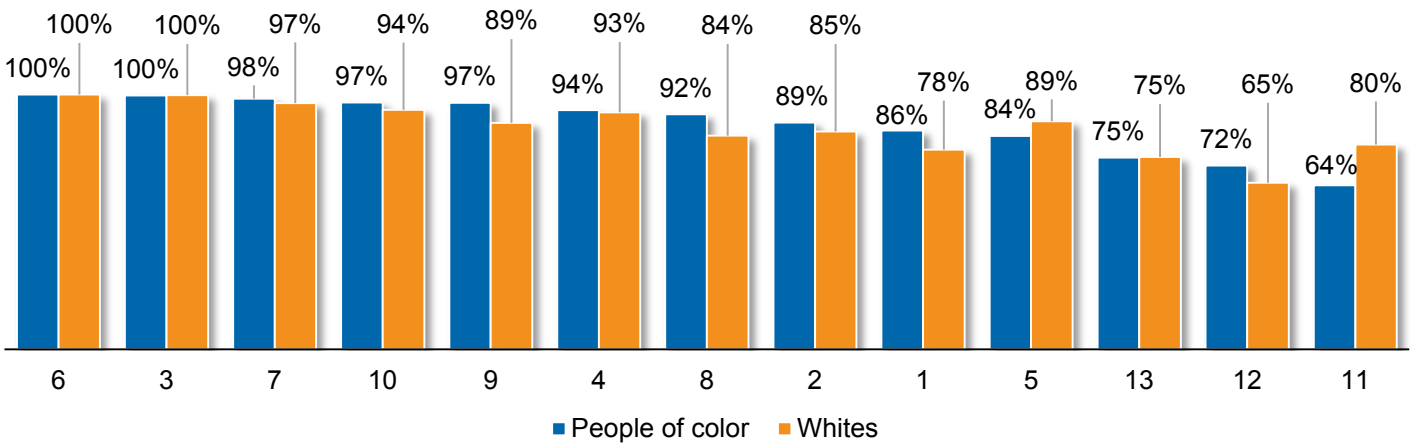
Bikeway access for people of color varies considerably by ward. The total population of each ward is approximately 30,000 residents, but the number of people of color in each ward varies from less than 4,000 in Ward 13 to nearly 25,000 in Ward 5. When comparing bicycle access among people of color, in Wards 11, 12, and 13, a smaller percentage of residents of color had access to existing bicycle infrastructure than in other wards (64-75%, compared to 84-100% in other wards; Figure 6).

6. Number and percentage of residents of color with access to existing bicycle infrastructure, by ward

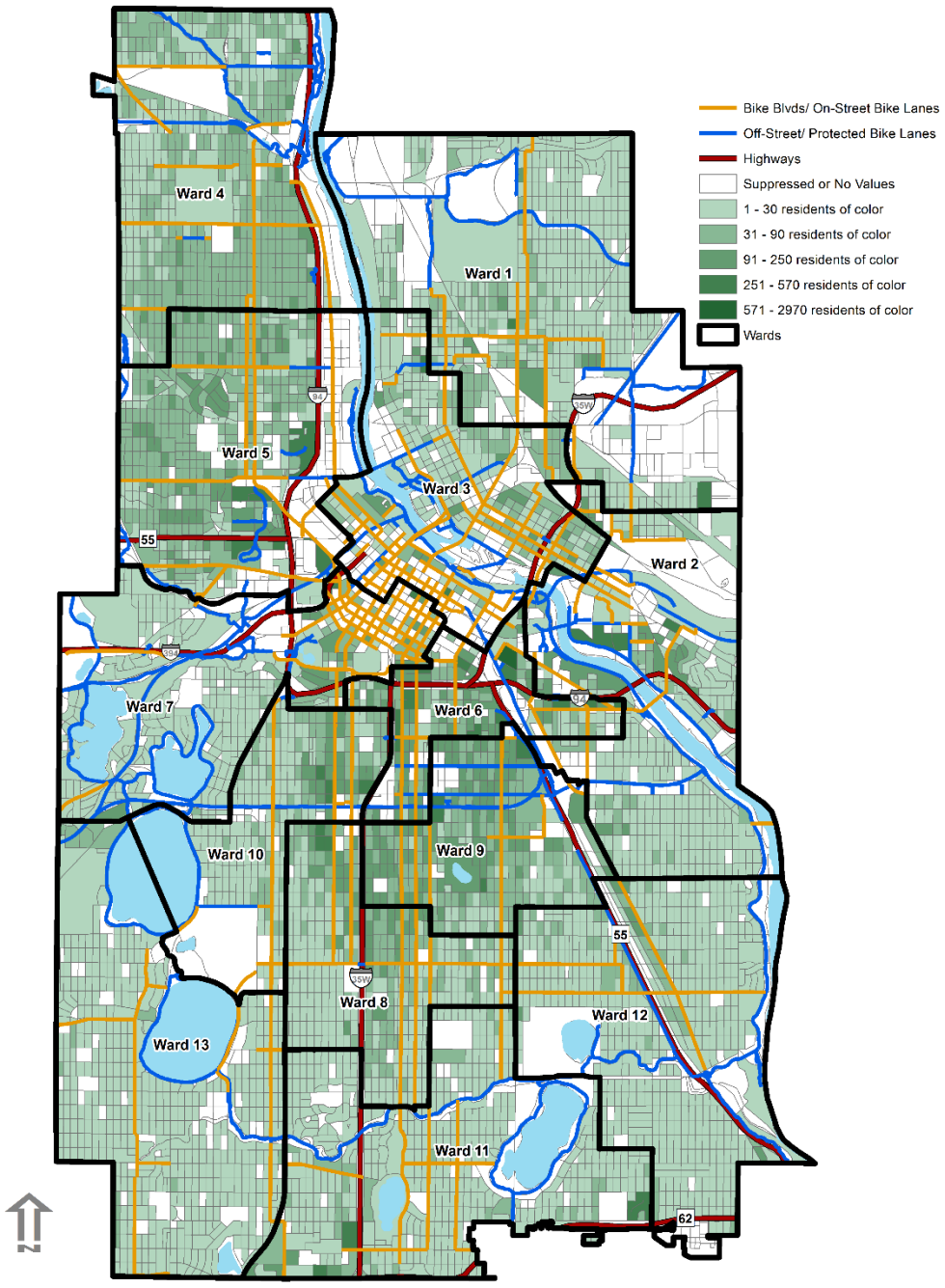


Small differences exist in bicycle access by race within wards. In 12 of the 13 wards, the percentage of white residents and residents of color with access to bikeways varied no more than 8 percentage points. In Ward 11, there was a 16 percentage point difference in bikeway access by race (Figure 7). While this ward-level analysis suggests that differences in bicycle access by race are small, it is important to note that there may be notable difference in access by race within neighborhoods. Community members and advocacy organizations that serve specific neighborhoods can use the maps available to strategically identify communities that may be disproportionately impacted by the lack of bicycle infrastructure (Figure 8).

7. Comparison of bicycle access between white residents and residents of color, by ward



8. Comparison of bicycle access between white residents and residents of color, by ward



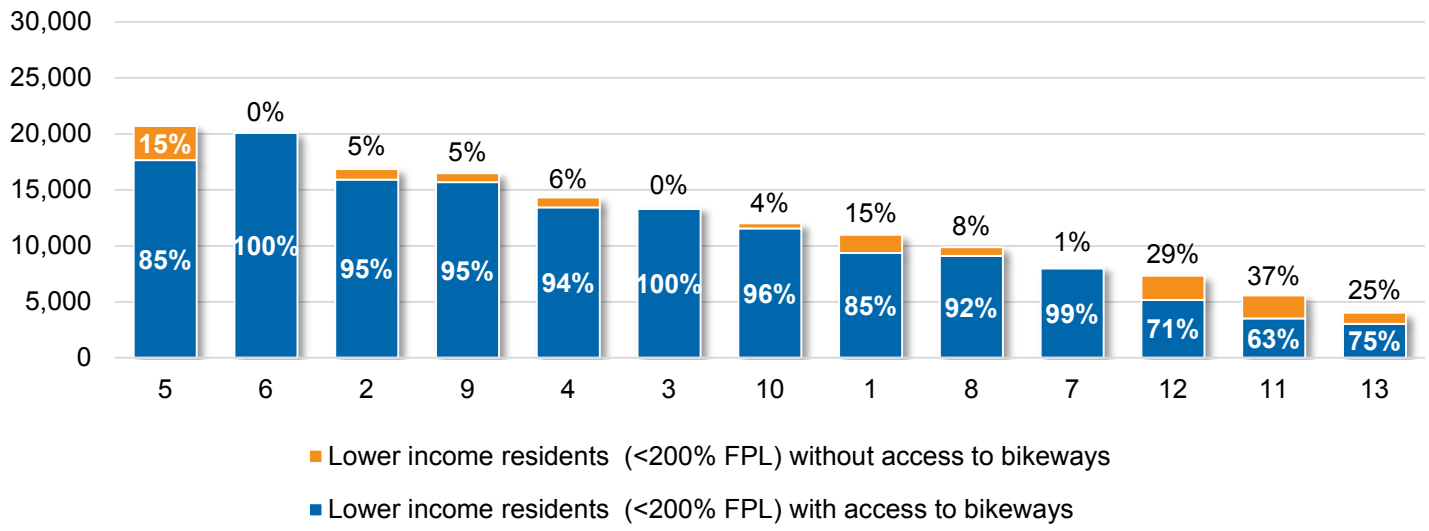
Source: City of Minneapolis, 2010 US Decennial Census (block level)

Access to bikeways for those at or below 200% FPL

In this report, lower-income residents are defined as persons who live in households with annual income of 200 percent or less of the Federal Poverty Level (200% FPL), or $48,500 for a family of four in 2015. This definition includes many working poor families who may rely on bicycles and public transit as primary sources of transportation. In Minneapolis, there are many similarities in the maps exploring socioeconomic and racial inequities in bikeway access. This reflects the racial socioeconomic inequities in the region and across the state. Data available through Minnesota Compass (www.mncompass.org) show that in the Twin Cities region, 6 percent of white residents live in poverty, a much lower poverty rate than among residents who are black (30%), American Indian (28%), Hispanic (25%), Asian (19%), or multi-racial (20%).

Bikeway access for lower-income people varies considerably by ward. The largest numbers of lower-income residents live in Wards 2, 5, 6, and 9. However, the proportion of lower-income residents without bikeway access is highest in more affluent areas of the city (63-75%, compared to 85-100% in other wards; Figure 9).

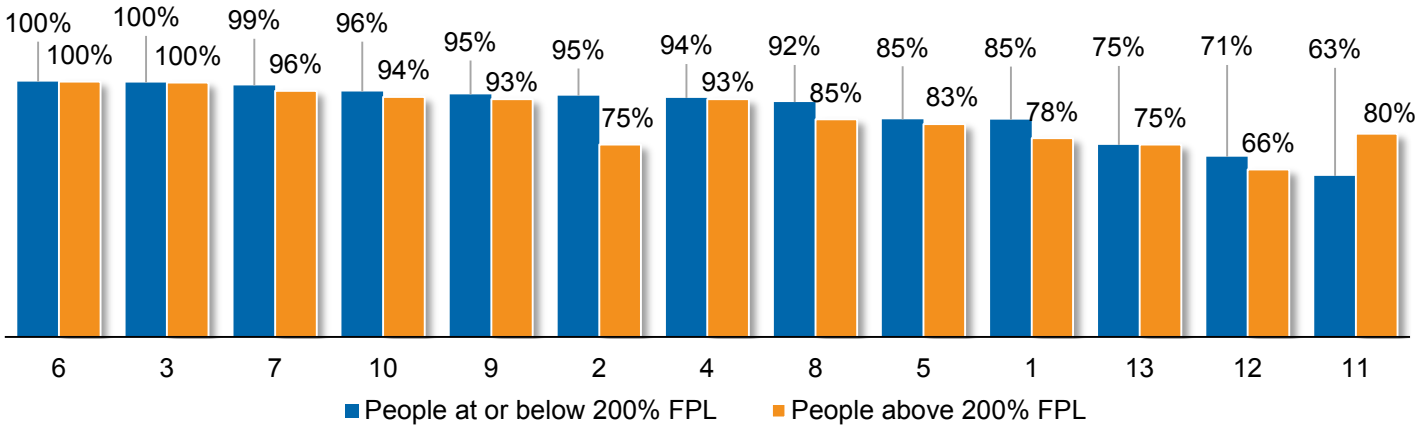
9. Number and percentage of lower-income residents with access to existing bicycle infrastructure, by ward



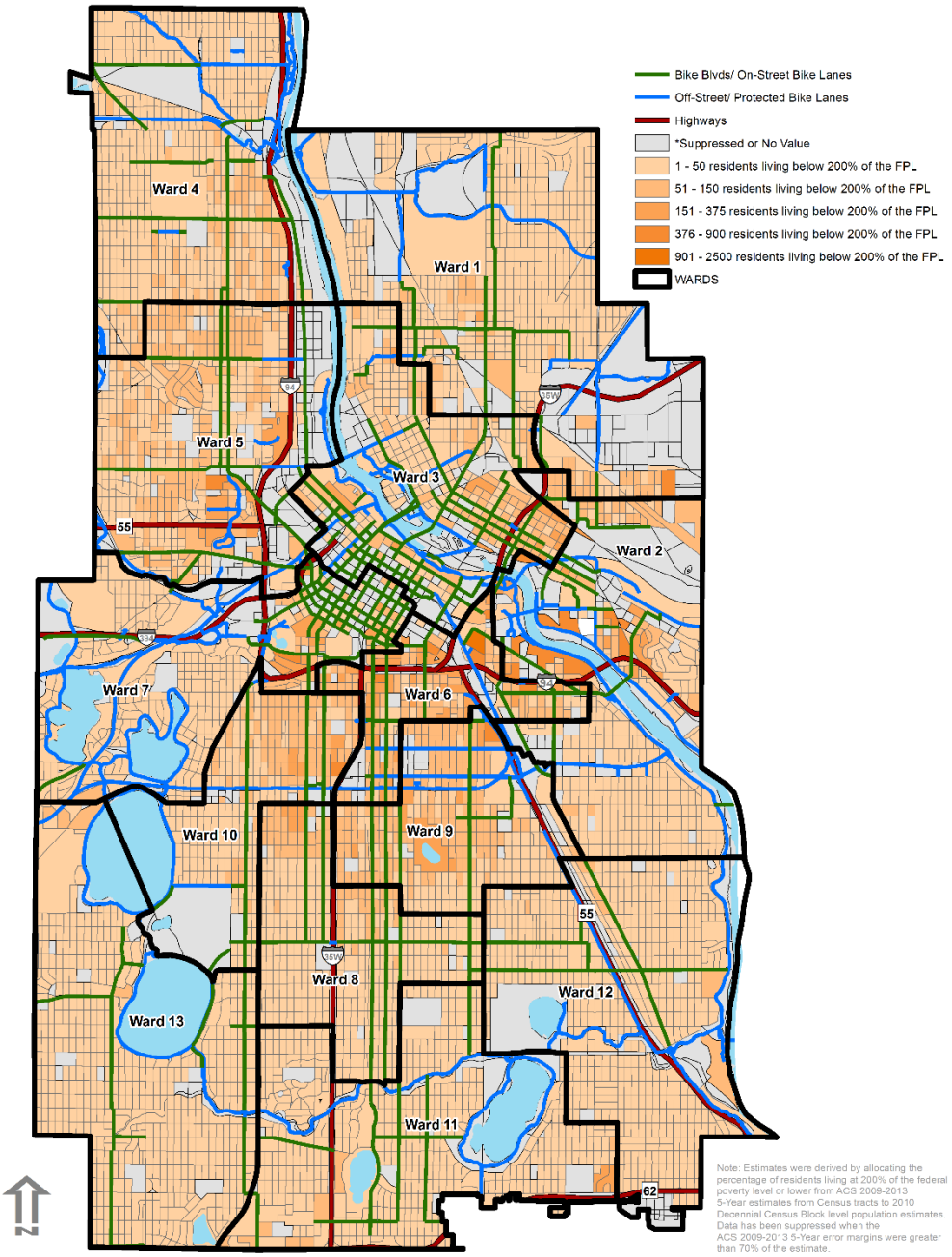
Differences in bikeway access by socioeconomic status were generally small, though there were a few notable exceptions. In most wards, differences between higher-income residents (i.e., residents with household incomes at or above 200% FPL) and lower-income residents (i.e., those with household incomes at or below 200% FPL) were no more than 7 percentage points. Larger differences were found in Wards 2 and 11, although they did not follow the same pattern. Lower-income residents in Ward 11 were less likely to live within one-quarter mile of bikeways (63%, compared to 80% of higher-

income residents; Figure 10). In contrast, lower-income residents were more likely to have access to existing bikeways in Ward 2 (95%, compared to 75% of higher-income residents. In Minneapolis, there are neighborhoods with high levels of poverty in more affluent wards, such as Ward 11 (Figure 11). Therefore, it is important to also assess bikeway access at a very local (i.e., neighborhood) level to help promote geographic and demographic equity in implementing the plan.

10. Comparison of bicycle access between residents above 200% FPL and those at or below 200% FPL, by ward



11. Access to existing bicycle infrastructure among lower-income residents, by census tract



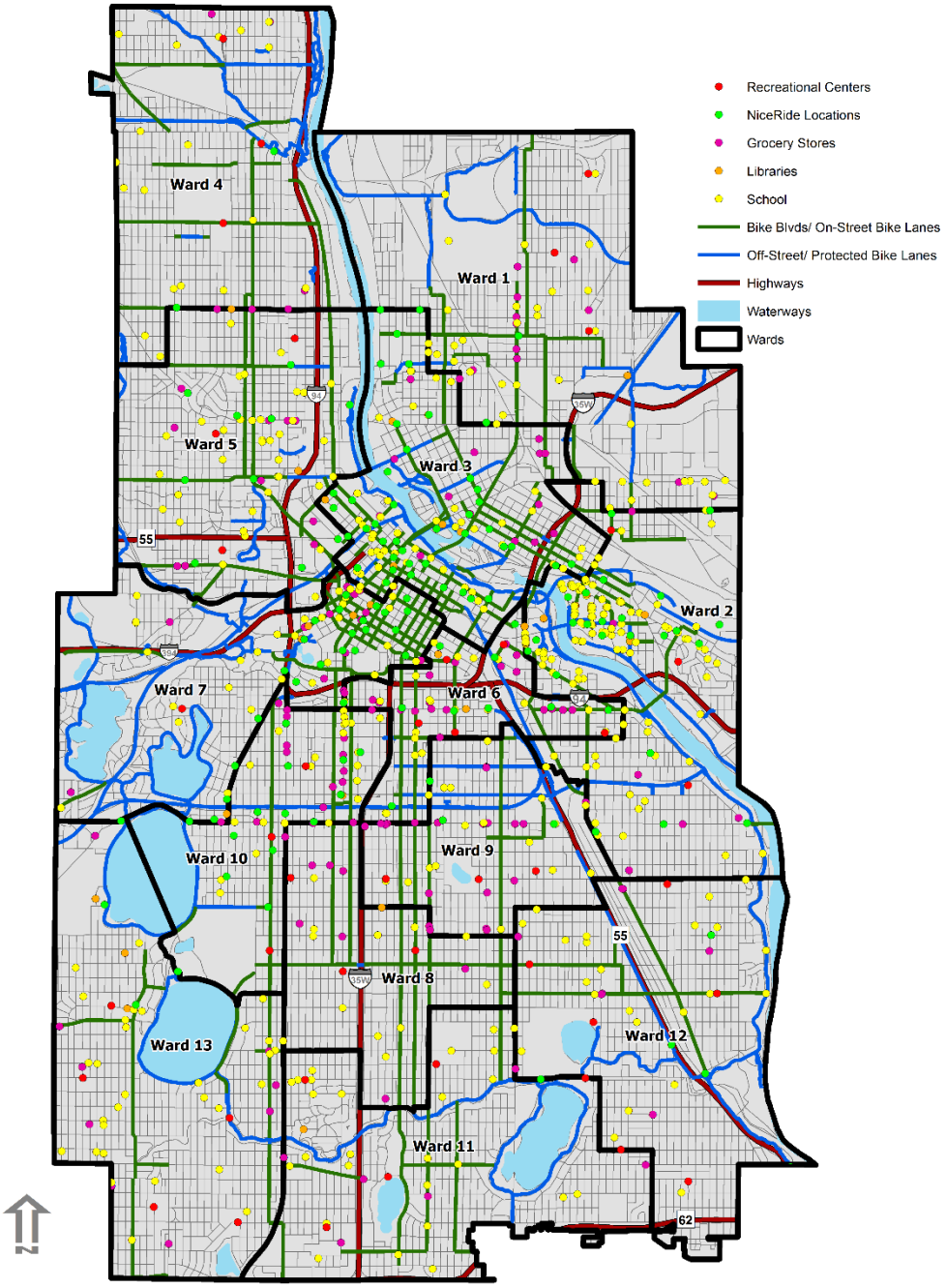
Source: City of Minneapolis ACS 2009-2013 5-Yr Estimates (Table: C17002, Ratio of Income to Poverty level in the past 12 months), 2010 US Decennial Census (block level)

Access to community resources

As the bicycle plan is implemented, it is important to not only consider resident access to bikeways, but also how well the bikeway infrastructure helps residents connect to key community resources. This allows residents to more easily choose bicycling as a preferred mode of transportation for recreation, commuting, shopping, and other types of activities. This report explores bicycle access to community resources that support healthy eating (grocery stores), physical activity (community recreation centers, parks, Nice Ride station locations) and education (schools and libraries).

Many community resources in Minneapolis are located within one-quarter mile of a bikeway. However, there are differences in the overall availability of resources across the 13 wards, with some wards lacking grocery stores, libraries, or community recreation centers. While many resources are located close to existing bikeways, in areas of the city with limited connectivity, people who bike and who want to use designated bikeways must take an indirect route to reach their destination (Figure 12).

12. Map of bicycle access to community physical activity resources



Source: City of Minneapolis, 2010 US Decennial Census (block level)

Some wards lack or have limited bicycle access to other community resources that support physical activity. Community recreation centers are available in all areas of the city except Ward 3. While the majority of community recreation centers are within one-quarter mile of a bikeway, none of the three centers in Ward 2 are located that close to existing bike infrastructure. All wards have parks and most wards' parks are within one-quarter mile of a bikeway, but less than 70 percent of parks in Wards 9, 12, and 13 are located within that distance (Figure 13). Ward 8 has no Nice Ride stations, while Wards 1 and 12 have access rates of 50 and 75 percent, respectively.

13. Bicycle access to community physical activity resources

	Nice Ride locations		Community recreation centers		Parks	
	Number	Number within ¼ of bikeway	Number	Number within ¼ of bikeway	Number (total acres)	Number within ¼ of bikeway
Minneapolis	144	139 (97%)	43	35 (81%)	178 (3430)	156 (89%)
Ward 1	2	1 (50%)	3	2 (67%)	15 (351)	11 (73%)
Ward 2	26	25 (96%)	3	0%	11 (376)	11 (100%)
Ward 3	41	41 (100%)	0	N/A	28 (108)	28 (100%)
Ward 4	2	2 (100%)	3	3 (100%)	23 (544)	23 (100%)
Ward 5	12	12 (100%)	3	2 (67%)	20 (163)	16 (80%)
Ward 6	9	9 (100%)	5	5 (100%)	6 (25)	6 (100%)
Ward 7	26	26 (100%)	1	1 (100%)	22 (423)	22 (100%)
Ward 8	0	N/A	3	3 (100%)	3 (29)	3 (100%)
Ward 9	3	3 (100%)	3	2 (67%)	6 (76)	4 (67%)
Ward 10	14	13 (93%)	3	3 (100%)	9 (64)	8 (89%)
Ward 11	1	0 (0%)	5	4 (80%)	11 (560)	8 (73%)
Ward 12	4	3 (75%)	6	4 (67%)	11 (398)	7 (64%)
Ward 13	4	4 (100%)	5	3 (60%)	13 (314)	9 (69%)

Most Minneapolis grocery stores are accessible by bicycle. The number of grocery stores in each ward varies considerably, from two stores (Wards 2, 4, and 12) to 14 stores (Ward 6). All grocery stores in Wards 3, 6, 7, 9, 10, and 13 are located within one-quarter mile of a bikeway, while slightly fewer grocery stores (50-88%) in all other wards are within one-quarter mile of a bikeway (Figure 14).

14. Bicycle access to grocery stores

	Grocery stores	
	Number	Number within ¼ of bikeway
Minneapolis	77	71 (92%)
Ward 1	6	5 (83%)
Ward 2	2	1 (50%)
Ward 3	5	5 (100%)
Ward 4	2	1 (50%)
Ward 5	8	7 (88%)
Ward 6	14	14 (100%)
Ward 7	6	6 (100%)
Ward 8	4	3 (75%)
Ward 9	13	13 (100%)
Ward 10	9	9 (100%)
Ward 11	3	3 (80%)
Ward 12	2	1 (50%)
Ward 13	3	3 (100%)

The majority of Minneapolis schools are located within one-quarter mile of a bikeway. All schools, including post-secondary schools, were included in this summary of available community resources. In most wards, at least 90 percent of schools are located within one-quarter mile of a bikeway. However, less than 80 percent of schools in Wards 11, 12, and 13 are located within one-quarter mile of a bikeway (Figure 15). Physical barriers and high-traffic roads can be barriers that keep many students from biking to school. Safe Routes to Schools and other school initiatives are critical in creating safe and preferred routes from designated bikeways to school grounds.

All but one public library are located within one-quarter mile of a bikeway. However, Wards 9, 10, 11 do not have any public libraries (Figure 15).

15. Bicycle access to schools, libraries

	Schools		Public libraries	
	Number	Number within ¼ of bikeway	Number	Number within ¼ of bikeway
Minneapolis	203	180 (89%)	31	30 (97%)
Ward 1	14	13 (93%)	1	1 (100%)
Ward 2	25	24 (96%)	10	10 (100%)
Ward 3	16	16 (100%)	5	5 (100%)
Ward 4	13	12 (92%)	1	1 (100%)
Ward 5	29	27 (93%)	2	2 (100%)
Ward 6	13	13 (100%)	3	3 (100%)
Ward 7	22	19 (86%)	3	3 (100%)
Ward 8	9	9 (100%)	1	1 (100%)
Ward 9	13	12 (92%)	0	N/A
Ward 10	8	8 (100%)	0	N/A
Ward 11	10	7 (70%)	0	N/A
Ward 12	17	10 (59%)	2	1 (50%)
Ward 13	14	10 (71%)	3	3 (100%)

Some wards have few community resources that support health. As described in this section and summarized in the following chart (Figure 16), in some wards, there is a need to not only improve bicycle access to community resources, but to consider ways to bring more resources that support health and vitality into neighborhoods.

16. Summary table – Number and percentage of community resources within one-quarter mile of a bikeway, by ward

	Ward 1	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	Ward 8	Ward 9	Ward 10	Ward 11	Ward 12	Ward 13
Parks	15 (73%)	11 (100%)	28 (100%)	23 (100%)	20 (80%)	6 (100%)	22 (100%)	3 (100%)	6 (67%)	9 (89%)	11 (73%)	11 (64%)	13 (69%)
Nice Ride locations	2 (50%)	26 (96%)	41 (100%)	2 (100%)	12 (100%)	9 (100%)	26 (100%)	0 (N/A)	3 (100%)	14 (93%)	1 (0%)	4 (75%)	4 (100%)
Community recreation centers	3 (67%)	3 (100%)	0 (N/A)	3 (100%)	3 (67%)	5 (100%)	1 (100%)	3 (100%)	3 (67%)	3 (100%)	5 (80%)	6 (67%)	5 (60%)
Schools	13 (93%)	24 (96%)	16 (100%)	12 (92%)	27 (93%)	13 (100%)	19 (86%)	9 (100%)	12 (92%)	8 (100%)	7 (70%)	10 (59%)	10 (71%)
Libraries	1 (100%)	10 (100%)	5 (100%)	1 (100%)	2 (100%)	3 (100%)	3 (100%)	1 (100%)	0 (N/A)	0 (N/A)	0 (N/A)	1 (50%)	3 (100%)
Grocery stores	5 (83%)	1 (50%)	5 (100%)	1 (50%)	7 (88%)	14 (100%)	7 (100%)	3 (75%)	13 (100%)	9 (100%)	3 (100%)	1 (50%)	3 (100%)

Note: The table shows the number of resources available and percentage of these resources accessible by bicycle. A color gradient is used to show differences in bicycle accessibility to existing community resources. Areas shaded in green have the highest percentage of community resources accessible by bicycle, while areas in red have the fewest bicycle accessible resources.

Appendix: Data sources and definitions

Data sources

Demographic data used to describe ward residents and create the maps came from the 2010 U.S. Decennial Census (block level), the 2009-2013 American Community Survey, and the 2013 2nd Quarter Longitudinal Employer-Household Dynamics. Bicycle infrastructure data used to map current and planned bikeways was provided to Wilder Research by the City of Minneapolis. Community resources that support health were compiled using vendor lists of the following resources: grocery stores (convenience stores, gas stations, and specialty food stores were excluded), public libraries, and schools (including primary and secondary schools, community/technical colleges, and colleges/universities). Community recreation centers included those listed on the Minneapolis Parks & Recreation website (https://www.minneapolisparks.org/parks__destinations/recreation_centers/).

Definitions

In this report, the following types of bikeways are identified:

Bicycle boulevards are roads designated by pavement markings or signs that prioritize bicycles over motor vehicles on low-traffic streets, often including traffic calming measures to reduce speeds.

Bike lanes have pavement markings indicating bicycle-specific lanes within street corridors adjacent to traffic.

Off-street paths are tails separated by car traffic, often by a curb or green area that can be bicycle-only or shared by pedestrians.

Protected bikeways are physically separated from motor vehicle traffic. Off-street trails are the most common, however bikeways located within streets yet separated by traffic with parked cars, curbs, medians, or other physical features are also protected bikeways.

Shared lanes have pavement markings or signage that show both vehicles and bicycles using streets. These bikeways are located in-street without a separate area for bicycles.

Source: Adapted from Minneapolis Protected Bikeway Update to the Minneapolis Bicycle Plan (http://www.minneapolismn.gov/www/groups/public/@publicworks/documents/webcontent/wcms1p-124718.pdf) and Saint Paul Smart Trips' Saint Paul Bikeways Glossary (www.smart-trips.org).