

Park-Use Behaviors and a Pilot Park-Use Promotion Program in Minneapolis: Implications for Addressing Health Inequities

by Yingling Fan, Simone A. French, and Kirti V. Das

Abstract: Partnering with the Minneapolis Parks and Recreation Board, the authors implemented a pilot park-use promotion program in summer 2011 in three low-income, culturally diverse neighborhoods in Minneapolis. The program was designed to encourage park use through active information sharing and incentive mechanisms. Along with the program, the authors conducted baseline and follow-up resident surveys in the neighborhoods to examine demographic differences in park-use patterns and effectiveness of the program. They found significantly lower levels of park use, especially in cold weather, among Blacks, foreign-born residents, low-income residents, and working parents in single-parent families. They also found positive evidence that the pilot park-use promotion program effectively changed residents' perceived information barriers of park use and their park-use behavior. The research upon which this article is based was supported by a grant from CURA's Faculty Interactive Research Program.

The Minneapolis of 40 years ago was 94% White, 4% Black, 1% Hispanic, and 0.5% Asian.¹ Today, however, the picture is dramatically different. As a recent immigration gateway, arrivals from areas as varied as Laos, Mexico, Ecuador, and Somalia have made Minneapolis one of the most diverse cities in the United States. According to the 2010 U.S. Census, the city is now 64% White, 19% Black, 11% Hispanic, and 6% Asian.² The city is also home to one of the country's largest American Indian urban communities.

¹ C. Gibson and K. Jung, "Historical Census Statistics on Population Totals by Race, 1790 to 1990, and by Hispanic Origin, 1970 to 1990, for Large Cities and Other Urban Places in the United States," U.S. Census Bureau, 2005, www.census.gov/population/www/documentation/twps0076/twps0076.html.

² Racial percentages do not necessarily add to 100% as people may select multiple racial and ethnic categories.



Two children enjoy a day at the Peace Games, the Minneapolis Park & Recreation Board's family-friendly annual event, at Washburn Fair Oaks Park in Minneapolis.

The city's pride in its cultural diversity is overshadowed by health inequities between different racial, ethnic, and socioeconomic status groups in the area. A recent report, commissioned by the Blue Cross Blue Shield of Minnesota Foundation in 2010 revealed that age-adjusted mortality rates are three times higher for Blacks than Whites in the Twin Cities metropolitan region (including Minneapolis, St. Paul, and surrounding suburbs). The connection between wealth and health in the region is also strong. For every \$10,000 increase in median income in a neighborhood, the mean life expectancy of residents increased by one year.³

In an effort to address the region's health inequities, we began a partnership in spring 2010 with the Minneapolis Park and Recreation Board. The partnership, partly funded by CURA, led to a baseline resident survey in fall 2010, a pilot park-use promotion program implemented in early summer 2011, and a follow-up resident survey in fall 2011 in three culturally diverse neighborhoods in Minneapolis. The pilot program was designed to encourage park use through active information sharing and incentive mechanisms. The survey, titled Survey of Parks, Leisure-Time Activities and Self-Reported Health (SPLASH), was designed for dual purposes: to assess the effectiveness of the pilot promotion program; and to understand the distinct park-use patterns of residents in different demographic subgroups.

Our central purpose in examining park-related behavior was to inform the design of strategies for ameliorating health inequities. This concept is based on a significant body of evidence. First, park users are healthier than nonpark users on a number of measures. The health benefits of parks are multifaceted. Parks provide infrastructure for a wide range of physical activity, including formal sports, walking, running, cycling, and walking a pet. Parks offer restorative natural settings that reduce stress and promote a general sense of well-being. Parks also provide an opportunity for more frequent social interaction, which has direct health benefits through biological stress-reduction mechanisms and indirect health benefits through

the enhancement of social-support systems.⁴

It has been suggested that parks are underused in lower income minority-dominant communities.⁵ Nonetheless, local parks and recreation services, which provide free or low-cost recreational facilities and programs at the community level, could be an important environmental factor that can reduce health disadvantages among lower income population groups. Given the persistent residential segregation in Minneapolis, local parks may be especially useful for addressing health inequities: Segregation is part of the problem that has led to unevenly distributed resources and health outcomes, but it points to the particular importance of spatially targeted health-promoting strategies for eliminating disparities. Parks, often being considered a community's "living room," may be a promising place to effect community-wide behavior changes in poor, underresourced communities.

In this article, we present two analyses using SPLASH data that have implications for addressing health inequalities in Minneapolis neighborhoods. The first analysis uses data from the 2010 baseline SPLASH only. It describes differences in residents' park-use frequency based upon demographic attributes, including race/ethnicity, being foreign born, income, and family structure. We expect findings from this analysis to offer useful insights on whether population groups at higher health risks (minorities and low-income residents) are underutilizing park facilities. The second analysis uses data from both the 2010 and 2011 SPLASH. It assesses the influence of the pilot park-use promotion program in shaping residents' perceptions about local parks and trails and residents' park-use behavior. We expect findings from this analysis to illustrate the potential of park-related strategies to improve health outcomes in low-income minority communities.

Study Design and Methods

Jennifer Ringold, manager of public engagement and citywide planning for the Minneapolis Park and Recreation

⁴ Y. Fan, K.V. Das, and Q. Chen, "Neighborhood Green, Social Support, Physical Activity, and Stress: Assessing the Cumulative Impact," *Health Place* 17 (2011): 1202–1211; C.H. Ho, L. Payne, E. Orsega-Smith, and G. Godbey, "Parks, Recreation and Public Health," *Parks Recreation* 38 (2003): 18.

⁵ B. Giles-Corti and R.J. Donovan, "Socioeconomic Status Differences in Recreational Physical Activity Levels and Real and Perceived Access to a Supportive Physical Environment," *Preventive Medicine* 35,6 (2002): 601–611.

Board (MPRB), and Ginger Cannon, community outreach and research planner at the MPRB, led a team of MPRB planners and local program managers who were involved in all stages of the study, including the initial study design, development of the park-use promotion program, design of the survey, survey data collection, and postsurvey analysis. Our collaboration with the MPRB staff was critical to this study's success.

Study Neighborhoods. The Minneapolis neighborhoods used in this study were Harrison, Phillips, and Powderhorn Park. All three neighborhoods are racially and culturally diverse, and contain a substantially higher proportion of families below the poverty level, single-parent families, and minority families, as compared with the Minneapolis city average. In addition, the study neighborhoods had the following demographic attributes:

- ▶ All three neighborhoods have sizable African immigrant communities that are largely composed of Somali refugees who migrated directly from Kenyan refugee camps since Somalia's civil war erupted in 1991.
- ▶ Harrison has the largest Asian community among the neighborhoods. The Asian population is largely Hmong immigrants who were Lao Hmong war refugees in the late 1970s and their second generation.
- ▶ Phillips has one of the highest urban concentrations of American Indians not only in Minneapolis, but also in the nation. The neighborhood was the heart of the American Indian Movement—which began in Minneapolis and became a national force in the 1960s and 1970s.
- ▶ Powderhorn Park and Phillips both have large Hispanic communities composed predominantly of first-generation Mexican immigrants.

Sample Design and Survey Procedure. For the 2010 baseline SPLASH, we selected 50 census blocks per neighborhood based upon the number of low-income minority families with children in the block. Blocks with a higher number of these families had a higher chance of selection. In the second stage, we recruited as many households as possible from each block identified in the first stage. For recruitment, we dropped off postcards (Figure 1) at all residences in each identified block with information about the survey in four different languages (English, Spanish, Somali, and

³ M. Ferris and P. Mattessich, "Neighborhood Solutions to Addressing Health Inequities," *Active Living Research*, 2012, www.activelivingresearch.org/node/12592.

Figure 1. SPLASH Recruitment Postcard



Survey of Parks, Leisure-time Activity and Self-reported Health

What are the recreational needs of your community? How well does the existing park system meet these needs? How can the park system be improved to better serve your family?

Researchers from the **University of Minnesota** and the **Minneapolis Park and Recreation Board** hope to answer these questions by conducting a door to door survey in your community. Your block has been randomly selected to participate in the survey. In order to collect accurate information, it is important that we interview someone from each household on your block. Participation is voluntary, and all answers are completely confidential. Our researchers will be visiting over the next few weeks to conduct interviews with an adult in your household. Interviews should take twenty to thirty minutes. Please feel free to contact us if you have any questions—we look forward to speaking with you!

Los investigadores de la **Universidad de Minnesota** (University of Minnesota) y la **Junta de Parques y Recreación de Minneapolis** (Minneapolis Park and Recreation Board), estarán haciendo visitas en las próximas semanas para llevar a cabo entrevistas con una persona adulta de su hogar en relación al uso de los parques y las necesidades recreativas de su familia. Las entrevistas tendrán una duración de veinte a treinta minutos. La participación es voluntaria y todas las respuestas se mantendrán en confidencialidad. Si tiene preguntas, sírvase comunicar con nosotros—¡quedamos a la espera de hablar con usted!

Cilmí baarayaa! ka socda **Jaamacadda Minnesota** (University of Minnesota) iyo **Guddiga Minneapolis ee Beeraha Nasashada iyo Raaxada** (Minneapolis Park and Recreation Board) ayaa asbuucyada soo socda ku soo booqan doonaa si ay waraysiyo ula yeeshaan qof weyn ee qoyskaaga ka tirsan taaso ku saabsan baahida uu reerkaaga u qabo isticmaalka beeraraha nasashada iyo raaxada. Waraysiyadu waxay qaadanayaa labaatan ilaa iyo soddon daqiiqo. Ka qayb galkuna xor baad u tahay jawaabahana oo dhan waa qarsoodi gabi ahaanba. Fadlan haddii wax su'aala ah aad qabtid xor baad u tahay inaad na la soo xiriirtid, waxaan raja fiican ka qabnaa (ama si weyn us oo dhowaynaynaa) inaan kula hadalno!

Cov neeg tshawb fawb ntawm **Lub Tsev Kawm Ntawv Qib Siab Minnesota** (University of Minnesota) thiab **Cov Lub Rooj Tswjhwmm Saib Xyuas Chaw Ua Si Hauv Minneapolis** (Minneapolis Park and Recreation Board) yuav tuaj ntsib nej ntawm li ob peb asthiv tom ntej no tuaj nug tej nqe lus nrog ib tug neeg laus hauv nej tsev neeg uas yog them txog nej tsev neeg txoj kev siv chaw ua si thiab saib nej xav tau dabtsi hais txog kev tawm rooj mus ua si. Cov kev nug nqe lus yuav siv li peb caug feeb. Kev koom tes yog nyob ntawm koj yeem saib xwb, thiab cov lus teb yuav tsis pub lwm tus paub hlo li. Thov tso saib hu tuaj rau peb yog tias koj muaj lus nug dabtsi—peb tos ntsoov yuav nrog koj tham!

Make your opinion count!!

Hmong). In the third stage, we randomly selected an individual over the age of 18 from each household by asking the adult with the most recent birthday to complete the survey. For each residence, up to three repeated visits were made to recruit the participant.

The 2011 follow-up SPLASH revisited addresses where we had conducted 2010 baseline surveys. As with the baseline survey, we asked individuals 18 years of age or older to participate. We made an effort at each address to recruit the same respondent who had participated in the baseline survey.

We conducted all baseline and follow-up surveys in-person in English during home visits. Although efforts were made to conduct home visits on different days of the week and at varied times during the day, the majority of the surveys were conducted on weekday evenings and on weekends. In addition to 10 University of Minnesota student researchers, MPRB provided additional interviewers by hiring four part-time staff members from Youthline, their local youth program that works closely with teens to develop leadership skills and

provide mentoring relationships through programs and activities at parks.

We assessed park-use behaviors using the following questions:

- ▶ “Last year, how often did you visit parks or trails in Minneapolis during warm weather? Never, less than once a month, 1–4 times a month, 2–4 times a week, or more than 4 times a week?”
- ▶ “Last year, how often did you visit parks or trails in Minneapolis during cold weather? Never, less than once a month, 1–4 times a month, 2–4 times a week, or more than 4 times a week?”
- ▶ “In the past three days, did you visit any park or trail in the city of Minneapolis? Yes or No?”

If the respondent answered “Yes” to the last question, then the interviewer either handed the respondent a three-day recall diary⁶ (shown in Figure 2) to complete or asked the questions on the

⁶ We developed the recall diary based upon existing, validated recall questionnaires on travel behavior and physical-activity behavior, because no recall questionnaire on park-use behavior was available.

diary verbally, as directed by the respondent. The recall diary helped to derive additional data on park-use patterns, including the total number of park visits made in the past three days.

We also asked questions on perceived roles of parks, perceived barriers to park use, and perceived importance of various park facilities and recreation programs. For example, the following question was used to ask about perceived barriers to park use: “To what extent has each of the following limited your use of parks and trails? Not at all, somewhat, a great deal, or completely?” For this question, the interviewer went through a list of 21 types of barriers, including personal health constraints, language barriers, lack of leisure time, lack of transportation, lack of interest in parks and trails, concerns about personal safety, and lack of information about programs and facilities, to name a few.

The Pilot Park-Use Promotion Program. This program consisted of randomly selecting half of the respondents who participated in the baseline survey, providing them better

Figure 2. The Past-three-days Park-Use Recall Diary: Day 2 Sheet

Day 2: Park Use

For questions marked with a ●, check all categories that apply.

On this day my use of parks and trails was same as DAY _____

Day 2

3-Day Park Use Recall

Trip No.	Park or trail name	How did you get there? ●	What time did you get there?	How long did you stay?	What were the purposes of the visit? ●	Who was with you during this visit? ●	What were your reasons for choosing this park or trail? ●	How satisfying was this visit?
1	_____	<input type="checkbox"/> Car <input type="checkbox"/> Bus/Rail <input type="checkbox"/> Walk <input type="checkbox"/> Run <input type="checkbox"/> Bicycle <input type="checkbox"/> Wheel-chair <input type="checkbox"/> Other _____	_____ AM _____ PM	_____ : _____ Hrs: Mins	<input type="checkbox"/> Take children <input type="checkbox"/> Exercise pet <input type="checkbox"/> Relax and enjoy nature <input type="checkbox"/> Be outside <input type="checkbox"/> Take a walk <input type="checkbox"/> Exercise (e.g., run, sports) <input type="checkbox"/> Meet people <input type="checkbox"/> Attend programs/events <input type="checkbox"/> Get somewhere (e.g., use as shortcut, commute to work & other places) <input type="checkbox"/> Other _____	<input type="checkbox"/> No one <input type="checkbox"/> Spouse/ Partner <input type="checkbox"/> Kids under 3 <input type="checkbox"/> Kids aged 3-12 <input type="checkbox"/> Kids aged 13-18 <input type="checkbox"/> Other family members <input type="checkbox"/> Neighbors <input type="checkbox"/> Friends <input type="checkbox"/> Organized group <input type="checkbox"/> Other _____	<input type="checkbox"/> Convenient location <input type="checkbox"/> Kids' play area <input type="checkbox"/> Social gathering area <input type="checkbox"/> Fields and courts <input type="checkbox"/> Water recreation <input type="checkbox"/> Walking & bicycling trails <input type="checkbox"/> Indoor recreation center <input type="checkbox"/> Programs/events <input type="checkbox"/> Landscaping/greenery <input type="checkbox"/> Other reasons _____	1 (Not at all) 2 (Slightly) 3 (Moderately) 4 (Very)
2	_____	<input type="checkbox"/> Car <input type="checkbox"/> Bus/Rail <input type="checkbox"/> Walk <input type="checkbox"/> Run <input type="checkbox"/> Bicycle <input type="checkbox"/> Wheel-chair <input type="checkbox"/> Other _____	_____ AM _____ PM	_____ : _____ Hrs: Mins	<input type="checkbox"/> Take children <input type="checkbox"/> Exercise pet <input type="checkbox"/> Relax and enjoy nature <input type="checkbox"/> Be outside <input type="checkbox"/> Take a walk <input type="checkbox"/> Exercise (e.g., run, sports) <input type="checkbox"/> Meet people <input type="checkbox"/> Attend programs/events <input type="checkbox"/> Get somewhere (e.g., use as shortcut, commute to work & other places) <input type="checkbox"/> Other _____	<input type="checkbox"/> No one <input type="checkbox"/> Spouse/ Partner <input type="checkbox"/> Kids under 3 <input type="checkbox"/> Kids aged 3-12 <input type="checkbox"/> Kids aged 13-18 <input type="checkbox"/> Other family members <input type="checkbox"/> Neighbors <input type="checkbox"/> Friends <input type="checkbox"/> Organized group <input type="checkbox"/> Other _____	<input type="checkbox"/> Convenient location <input type="checkbox"/> Kids' play area <input type="checkbox"/> Social gathering area <input type="checkbox"/> Fields and courts <input type="checkbox"/> Water recreation <input type="checkbox"/> Walking & bicycling trails <input type="checkbox"/> Indoor recreation center <input type="checkbox"/> Programs/events <input type="checkbox"/> Landscaping/greenery <input type="checkbox"/> Other reasons _____	1 (Not at all) 2 (Slightly) 3 (Moderately) 4 (Very)

information about outdoor-recreation opportunities in their neighborhoods through newsletters, and employing incentive programs to encourage them to visit parks between the baseline and the follow-up surveys. The program lasted for four months, between May and August 2011, and was implemented through hand delivery of monthly information packets to the selected homes. For the delivery of the first information packet, a University of Minnesota student researcher was required to have a face-to-face conversation (which in many cases required multiple visits to the selected homes) with the respondents to be able to explain the contents of the packets in detail and inform them about the three packets that would follow. The remaining three packets were either delivered to the respondent in person or left at his or her home depending on the respondent's availability at the time

of delivery. Each information packet had a number of components, including a newsletter, coupons for two different incentive programs, and additional information materials.

All four monthly newsletters were available in three versions that were tailored to each of the three study neighborhoods. Contents of newsletters included locations of parks and trails in each neighborhood, lists of amenities available, programs offered at parks, special events, links to helpful pages on the MPRB website, and fun facts about the Minneapolis park system (Figure 3).

Each information packet contained a prepaid return "Add to Your Health and Wealth" postcard with questions related to the participant's use of parks and trails. To participate in the \$100 drawing, the participant needed to answer all questions on the postcard, fill out his or her contact information (to contact the participant if he or she won), and

drop the postcard in a mailbox. Questions on the postcards asked about how often participants visited parks and trails, which parks they visited, and which park programs they participated in during the past month. Information on the returned postcards was not collected or used in any analysis. Participants were also offered an opportunity to win an additional \$50 for each of the four packets they received. To be eligible to win, participants had to make two separate trips to a recreation center in their neighborhood and place coupons provided in the packets into a drop-off box.

In addition to the newsletters and incentive-program materials, the May 2011 information packet included a detailed map of parks and trails in Minneapolis. The June and July 2011 information packets included the MPRB system-wide summer program/event guide and neighborhood-specific summer program/event guide, respectively.

Figure 3. Sample of SPLASH Newsletter, June 2011

**Issue 2
June 2011**

Survey of Parks, Leisure-time Activity, and Self-reported Health (SPLASH)

Lets work together to create more active and healthier communities!

Add to your health and wealth
2 easy ways to make money while having fun

\$100 postcard drawing program

Directions:
- Fill out the postcard included in the packet
- Answer all questions*
- Fill out your address, phone number and email so we can contact you if you win
- Drop into a mailbox

*Incomplete postcards will not be eligible to win \$100

Drop n Win \$50 drawing Program

Directions:
- Make two separate visits to the Stewart or East Phillips recreation center in the next three weeks
- Find the SPLASH drop-off box at the front desk
- Fill out a Drop n Win coupon included in the packet
- Drop the filled coupon into the drop-off box*

*To be eligible for the drawing both coupons need to be dropped into the drop-off box

IT'S that simple!
Makes sure to complete the programs before the follow dates

Drawing 1: Friday, 17th June 2
Drawing 2: Friday, 24th June 2
Drawing 3: Friday, 22nd July 20
Drawing 4: Friday, 19th Aug 20

For more information contact us at splash@umn.edu ph:612-626-9861

Don't forget to get out and have fun at parks and trails in your neighborhood

- Play baseball, football, basketball, soccer or softball
- Take a walk, run or bike on trails
- Take children to the playgrounds and wading pools
- Attend programs at Recreation Centers
- Have a picnic and relax in natural areas

Places to access the Greenway in your neighborhood

- ⇒ Nicollet Avenue
- ⇒ 5th Avenue
- ⇒ Park Avenue
- ⇒ Midtown Exchange
- ⇒ 13th Avenue
- ⇒ Bloomington Avenue
- ⇒ 18th Avenue
- ⇒ 28th Street
- ⇒ Hiawatha Avenue

Midtown Greenway

The 5.6-mile Midtown Greenway connects the Mississippi River to the Chain of the Lakes giving you a chance to bike, run or walk 24 hours a day, 7 days a week, 365 days a year.

HELPFUL MPRB LINKS

MPRB Program Guide
http://www.minneapolisparke.org/documents/parks/2011_Summer_Guide.pdf

Minneapolis Park System Map
http://www.minneapolisparke.org/documents/parks/system_map.pdf

Grand Rounds Scenic Byway Districts Map
<http://www.minneapolisparke.org/grandrounds/home.htm>

Where can you have fun in your community?

East Phillips Park Cultural/Comm. Cen 2507 17th Ave. S Ph: 612-370-4888 Summer Hours (Memorial-Labor Day) Mon-Thur 12-9 pm Fri 12-6 pm Sat 11 am-6 pm Sun 12-4 pm	Stewart Recreation Center 2700 12th Ave. S Ph: 612-370-4932 Summer Hours (Memorial-Labor Day) Mon-Thur 12-9 pm Fri 12-6 pm
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DID YOU KNOW?
The Minneapolis Park and Recreation Board has:
• 22 Seasonal programming sites
• 8,000+ programs annually
• 1.8 million annual program participants
• 32,000 Adult Sports League participants
• 10,000 Citywide Youth Sports League participants

Programs you can enjoy at the East Phillips Cultural and Community Center

For Adults (Over 18)
• Adult Yoga: Each Tuesday from 6:30 to 7:30pm
June 28 to August 16
Activity Fee - Resident: \$35, Non-Resident: \$52.50

Youth (Under 18)
• Fundamental Baseball: Each Thursday and Saturday from 6 to 7:30pm
June 23 to August 20
Activity Fee - \$5

Youth 9 - 17
• Track and Field: Each Tuesday, Thursday and Saturday from 5:30 to 8pm
May 19 to July 14
Activity Fee - \$10

Children 8 - 12
• Kids Game Day: Each Tuesday and Thursday from 3 to 5pm
June 21 to August 18
Activity Fee - Free

Free community events at Stewart Park this month

Outdoor Movie Night
6/15 Stewart Park (At sundown)
Despicable Me

Hubert H. Humphrey School of Public Affairs
UNIVERSITY OF MINNESOTA

Minneapolis Park & Recreation Board

For more information contact us at splash@umn.edu ph:612-626-9861

Data and Analysis. The response rate for the 2010 baseline SPLASH, calculated based upon nonavailability

after three repeated visits and refusals, was 43% (609 completed interviews). White (non-Hispanic) respondents made

up 51% of the sample; minority groups in the sample included 18% Black, 15% Hispanic, 4% Asian, 5% American Indian, and 7% other race. Among our respondents, 22% reported being foreign born. Of the respondents who provided their household income in 2009, 34% reported incomes lower than \$25,000, 49% reported incomes between \$25,000 and \$74,999, and 17% reported incomes above \$75,000. In terms of family structure, 308 of the 609 households (51%) were families with children, including 88 single-parent families and 220 two-parent families.

The follow-up SPLASH collected 450 surveys and had a response rate of 74%. Among the 450 surveys, 371 were from the same household that participated in the baseline SPLASH (79 were new residents who had recently moved into the neighborhoods). Among the 371 participants, 222 were the same person who had participated in the baseline SPLASH (149 were a different person from the same household). The 222 participants who participated in both the baseline and follow-up surveys comprised the final sample for the before-after comparison analyses we report in this article. Among these participants, 120 (54%) were enrolled in the park-use promotion program and 102 (46%) received no intervention. The 222 participants included 63% White (non-Hispanic), 14% Black, 13% Hispanic, 2% Asian, 3% American Indian, and 5% other race.

We first used data from the 2010 baseline SPLASH (number of respondents = 609) to analyze differences in residents' park-use frequency based upon four demographic attributes: race/ethnicity, being foreign born, income level, and family structure. The variables we used to measure park-use frequency in this analysis were: recalled past-year park use in warm weather, recalled past-year park use in cold weather, and recalled past-three-days park-use frequency. We compared park-use variables across different demographic groups and estimated regression models of park-use variables and demographic attributes while controlling for confounding factors, such as distance from home to the nearest park and individual interest levels in parks.⁷

⁷ We used additional controls, including weekend days, temperature, and precipitation, when estimating past-three-days park-use frequency. In addition, all regression models were adjusted for clustering and spatial autocorrelation within neighborhoods by adding neighborhood dummy variables to each model.

We used the baseline and follow-up data (number of respondents = 222) to compare before–after changes in park-use frequency and park perceptions between those who enrolled in the promotion program and those who did not. The perception variable we used in this analysis was perceived lack of information about park programs and facilities. The park-use frequency variable used in this analysis was recalled past-three-days park-use frequency. We did not use recalled past-year park-use variables in this analysis because the recalled values in the follow-up survey represent patterns in year 2010, which was prior to the promotion program.

Results

This section summarizes our findings from the survey data.

Influence of Race/Ethnicity. Based upon survey responses, all minority groups (i.e., Black, Asian, American Indian) reported using parks less often in warm and cold weather compared with non-Hispanic Whites (Figure 4).

After adjusting for neighborhood-clustering effects and other demographic and neighborhood factors, Blacks were the only minority group that had statistically significantly lower levels of warm- and cold-weather park use in the past year ($p < 0.01^8$). The model of past-three-days park-use frequency showed consistent results: Blacks were the only minority group that reported statistically significantly fewer trips than non-Hispanic Whites (51% fewer, $p < 0.01$).

Influence of Being Foreign Born. Foreign-born respondents reported using parks less frequently in both the past year’s warm and cold weather compared with U.S.-born respondents (Figure 5). The difference was more profound in the cold weather, with only 12% of foreign-born respondents reporting park use of at least two times a week compared with 37% of U.S.-born respondents. This difference in cold-weather park use between U.S.-born and foreign-born residents remained statistically significant after adjusting for neighborhood-clustering effects and other demographic and neighborhood factors ($p < 0.01$). However, the difference in warm-weather park use was not statistically significant after controlling for other factors. The model

Figure 4. Differences in Warm- and Cold-weather Park Use by Race/Ethnicity of Respondents

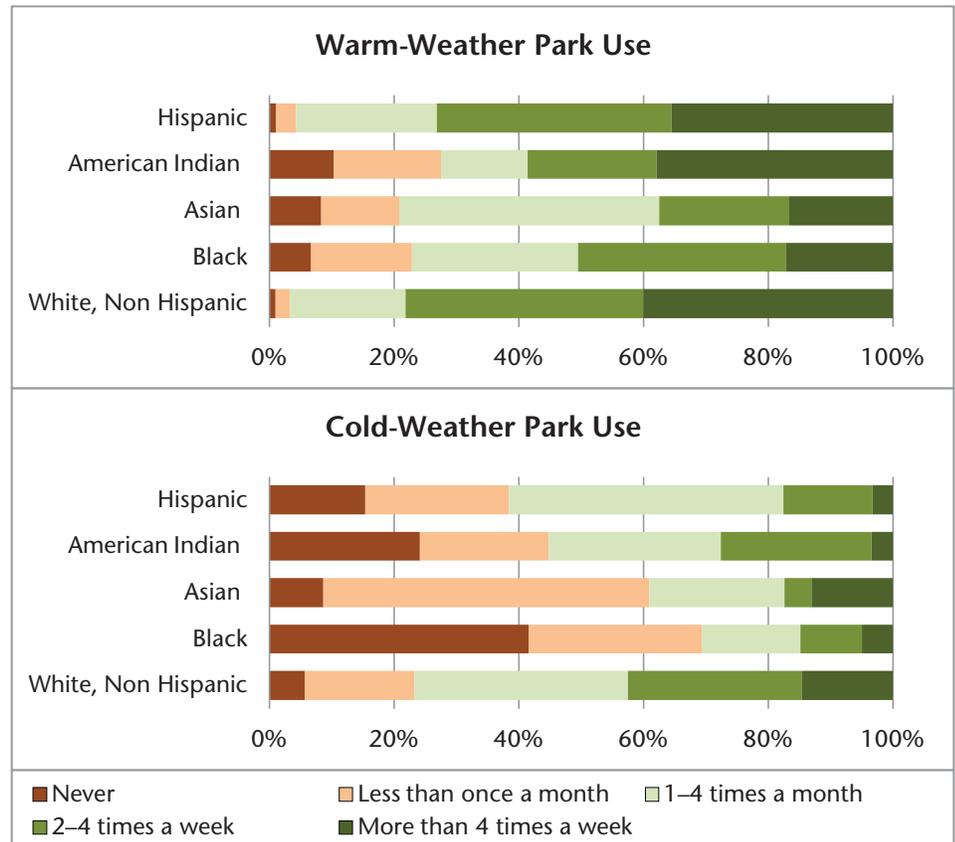
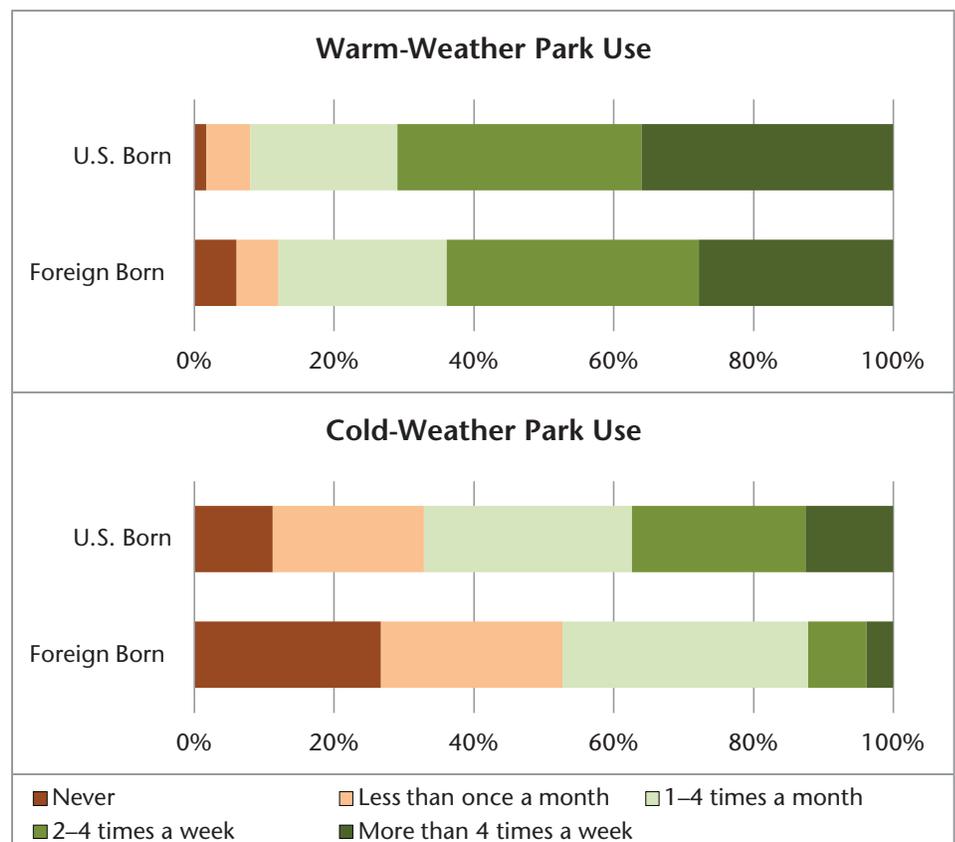


Figure 5. Differences in Warm- and Cold-weather Park Use between U.S.-Born and Foreign-Born Respondents



⁸ Statistically significant at the $p < 0.01$ level, which means there is a less than 1% probability that the difference is a result of chance.

of past-three-days park-use frequency suggested that foreign-born respondents made statistically significantly fewer trips in the past three days than U.S.-born respondents (32% fewer, $p < 0.05$).

Influence of Household Income.

Recalled park-use frequency in both the past year's warm and cold weather among low-income households is lower than that of high-income households (Figure 6). Figure 6 also shows a larger gap in park-use frequency between low-income and high-income households in cold weather than in warm weather. After adjusting for neighborhood-clustering effects and other demographic and neighborhood factors, the positive relationship between income and park use remained statistically significant ($p < 0.05$). In addition, the model of past-three-days park-use frequency showed that low-income respondents reported statistically significantly fewer trips (31% fewer, $p < 0.05$) in the past three days compared with high-income respondents.

Influence of Family Structure.

Survey responses showed that respondents in "two-parent, one working" and "two-parent, both working" families both reported using parks more frequently than respondents from "single-parent, working" families in the past year's warm and cold weather (Figure 7). Single-parent (16 respondents) and two-parent (31 respondents) nonworking households were excluded from the analysis because of the small numbers. After adjusting for neighborhood-clustering effects and other demographic and neighborhood factors, the differences in recalled past year warm- and cold-weather park use appeared to be statistically insignificant. However, the model of recalled past-three-days park use showed that working single parents on average reported statistically significantly fewer trips than two-parent, single-worker families (33% fewer, $p < 0.10$).

Influence of Pilot Park-Use Promotion Program. Our before-after analysis showed that the pilot park-use promotion program (featuring both information sharing and incentive mechanisms) was effective in shaping participants' perceptions about local parks and trails, as well as their park-use behavior. As shown in Table 1, participants in the intervention group (people enrolled in the park-use promotion program) reported greater reduction in perceived lack of information about park facilities and programs than the control

Figure 6. Differences in Warm- and Cold-Weather Park Use by Annual Household Income Level of Respondents

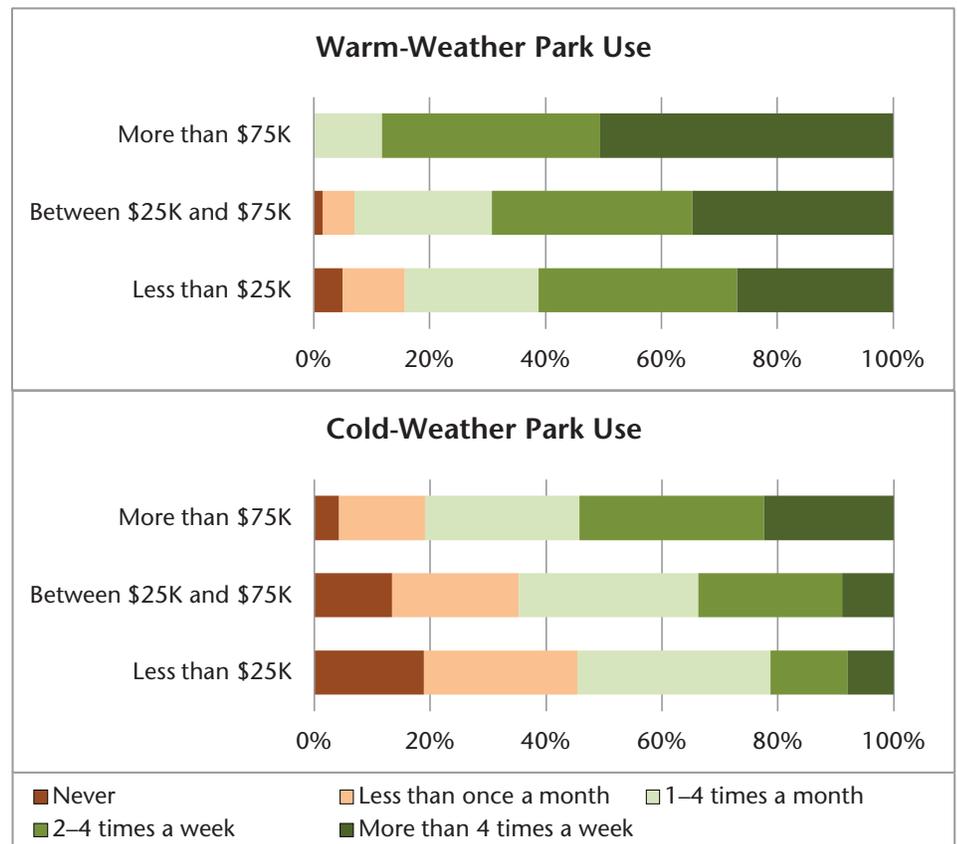
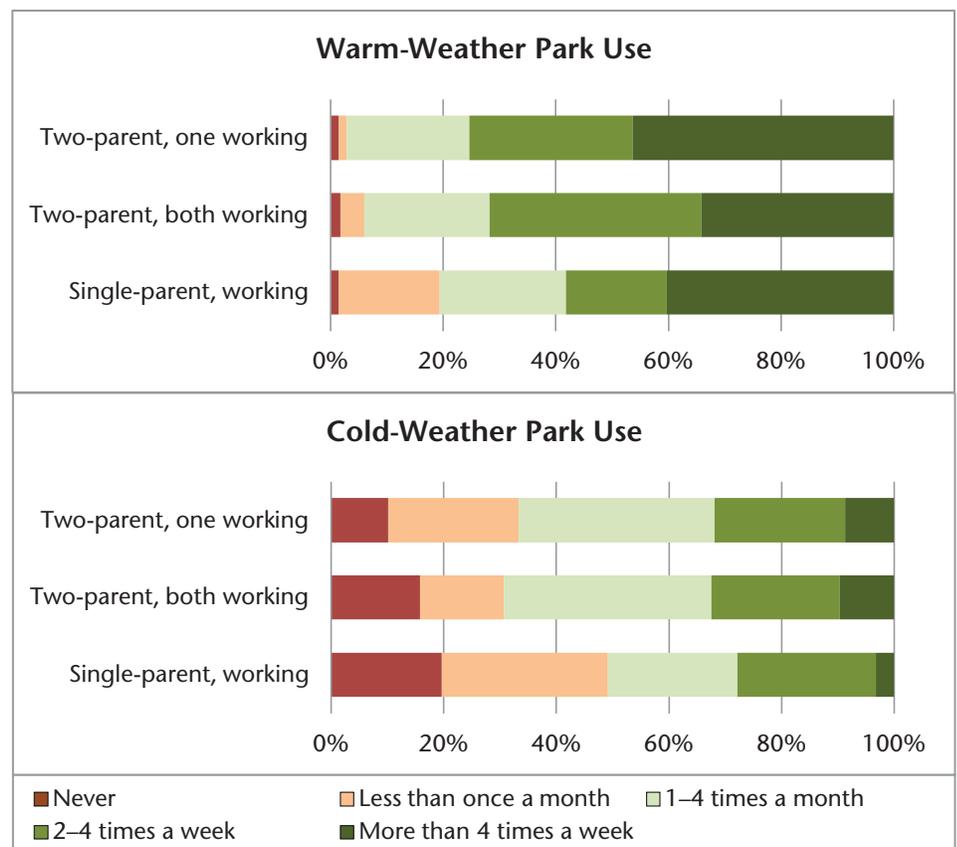


Figure 7. Differences in Warm- and Cold-Weather Park Use by Family Structure of Respondents



group. Participants in the intervention group also reported higher three-day park-use frequency in 2011 than 2010, whereas those in the control group reported lower three-day park-use frequency in 2011 than 2010. As shown in Table 1, the differences in the before–after changes between the intervention and control groups are statistically significant ($p < 0.10$ for the difference in perceived information barriers and $p < 0.01$ for the difference in three-day park-use frequency).

Conclusion

Using a local sample of Minneapolis residents, this study investigated demographic differences in park use and the influence of a pilot park-use promotion program in shaping perceptions about local parks and trails and park-use behavior. Our evidence shows that Blacks, foreign-born residents, low-income residents, and working single parents are underutilizing parks. Our evidence also suggests that the intervention program was successful in shaping participants' perceptions of local parks and trails, and their park-use behavior. These initial findings have important implications for using park-related strategies to mitigate health inequities in Minneapolis.

First, by identifying who underutilizes parks, this research points to population groups that likely receive fewer health benefits from public park resources. It is worth noting that those who underutilize parks are primarily members of population groups with existing health disadvantages. This indicates that promoting park use among these population groups could play a significant role in mitigating health inequalities. We recommend more targeted research to investigate why these particular groups have lower levels of park use. Knowing the unique factors underlying these groups' park-use behavior is critical to the development of effective policies and strategies for promoting their park use and improving their health. SPLASH included questions on perceived roles of parks, perceived barriers to park use, and perceived importance of various park facilities and recreation programs. In a future analysis, we plan to analyze the demographic differences in these park-related attitudes and perceptions. We expect this new analysis will help to develop tailored, culturally sensitive strategies for promoting park use among population groups that underutilize parks and are at greater health risk.

Second, it is worth noting that, for Blacks, foreign-born residents, and

Table 1. Before–After Mean Changes in Perceived Lack of Information and Park-Use Frequency among Control and Intervention Groups for the Pilot Park-Use Promotion Program

	Control group (102 respondents)	Intervention group (120 respondents)	Statistical significance
Mean (average) changes in perceived lack of information about park facilities and programs (ordinal scale, 1–4)	–0.020	–0.227	$p = 0.084$
Mean (average) changes in three-day park-use frequency (unit of measure: # of trips)	–0.343	0.283	$p = 0.008$

low-income residents, underutilization of parks is much more pronounced in cold weather. Winter recreation often requires expensive equipment and some level of skill training, either of which could pose barriers for low-income minority groups. For foreign-born respondents, additional comfort and familiarity issues may be involved, as many of them moved to Minneapolis from countries with warmer weather (e.g., Somalia, Mexico, and Vietnam). In a place like Minneapolis with four to five months of winter each year, the greater underutilization of parks in the cold weather among low-income minority groups deserves careful investigation. Park planners and policy makers might focus more attention on strategies that make winter activities more accessible to Blacks, foreign-born residents, and low-income residents—for example, expanding indoor activity options in parks, and establishing training and mentoring programs for outdoor winter sports.

Third, this research found family structure–based differences in levels of park use. American society has become increasingly diversified in family structure. In 2010, of the 34.7 million families with children in the United States, approximately 30% were single-parent families and approximately 42% were dual-worker families, both replacing the traditional two-parent, male-worker model.⁹ This significant transformation in the American family structure is poised to impact public demand for parks and recreation services, and underscores the importance of research in the

area of park-use behavior and family structure. New facilities and programs in parks should reflect the needs of nontraditional families. For example, dual-worker families may appreciate more evening-hour programs in parks. Single-parent families may prefer activities that allow group participation and offer socializing opportunities.

Finally, this research provides empirical evidence that information sharing and incentive mechanisms can change people's perceptions about parks and increase park-use frequency. Isolating the impact of information sharing from the impact of financial incentives in this study is difficult. Future research may involve separate park-use promotion programs—each focusing on a specific intervention mechanism—to identify the most effective strategies for park-use promotion among high-risk populations in racially diverse communities. Nonetheless, the success of the pilot park-use promotion program in the selected low-income, minority communities demonstrates the strong potential of park-related interventions to address the issue of health inequalities.

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⁹ M. King, S. Ruggles, T. Alexander, D. Leicach, and M. Sobek, Integrated Public Use Microdata Series, Current Population Survey: Version 2.0 [Machine-readable database] (Minneapolis, MN: University of Minnesota–Minnesota Population Center, 2011).

Health at the University of Minnesota. Her research focuses on the development and evaluation of community-based obesity prevention interventions with parents and children, especially parents and children in low-income and minority families. **Kirti V. Das** is a research fellow in the State and Local Policy Center at the Humphrey School of Public Affairs. He has worked on a wide range of health-related research projects, including the SPLASH project described in this article, and projects

examining the health impact of neighborhood greenness and the health disparities between urban and suburban residents.

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Faculty Interactive Research Program Awards

CURA is pleased to announce the recipients of faculty research awards for 2013–2014 provided through the Faculty Interactive Research Program (FIRP). FIRP was created to encourage University faculty members to carry out research projects that involve significant issues of public policy for the state and that include interaction with groups, agencies, or organizations in Minnesota. Grants are available to regular faculty members at the University of Minnesota and are awarded annually on a competitive basis.

■ **Structural and Individualistic Determinants of Access to Healthcare Services: A Case Study of Somali and Sudanese Immigrants and Refugees in Duluth, Minnesota.** According to the 2010 U.S. Census, Somali and Sudanese immigrants and refugees who initially settle in the Twin Cities continue to engage in secondary migration by moving their families to northern Minnesota. The region experienced a 27% increase in new settlements of immigrant refugee families from the Twin Cities between 2000 and 2010. In this study, **John A. Arthur** (Department of Sociology and Anthropology, University of Minnesota at Duluth) will analyze the healthcare sector in the Duluth area to: investigate the normative, cultural, religious, and economic factors that impede access to healthcare services among Somalis and Sudanese; identify the organizational and institutional/structural context within which these impediments are found; and develop social policies and conduct reviews in conjunction with Duluth-area hospitals, clinics, and stakeholders about how to ameliorate these impediments. The project will develop policy

outcomes and protocols to streamline access to healthcare services for Somali and Sudanese residents.

■ **Identifying and Mitigating Impacts from Expanding Urbanization to Duluth-Area Streams.** Urbanization has steadily replaced native vegetation with impervious surfaces, affecting watershed-scale hydrology. In coordination with the City of Duluth, **Karen Gran** (Department of Geological Sciences, University of Minnesota at Duluth) will develop a model relating urbanization to hydrograph behavior (the rate of flow past a specific point in a channel over a period of time) for basins within Duluth. Her research team will hydrologically condition light detection and ranging (LiDAR) topographic data and generate up-to-date land-cover data for Duluth. These data will be used to generate synthetic hydrographs that combine topographic and land-cover effects on runoff. Stream gauging on subbasins with different land-use assemblages will help calibrate the model. Study basins will be chosen in consultation with the City of Duluth to include areas where urban expansion is likely, so future scenarios may be run to test the effect such growth may have on peak flows. As city managers rebuild from the June 2012 flood and plan for future growth, these data will help them proactively manage growth in local watersheds.

■ **Fringe Banking and Low-Income Communities in the Twin Cities.** Fringe banking—using financial services such as check-cashing outlets, pawnshops, and payday lenders instead of conventional banks—has grown rapidly in recent years. These services are costly, with fees and higher interest

rates costing customers several hundred to more than a thousand dollars a year in excess of conventional banking. Despite the higher fees and interest, the industry tends to thrive in poorer urban and ethnic-minority communities. However, very little is known about the industry and why residents use it. **David Karjanen** (Department of American Studies, University of Minnesota at Twin Cities) will estimate the extent and location of fringe banking in the Twin Cities, interview consumers of these services to gather data, conduct analyses on why they choose fringe banking over conventional banking, and distribute the results to community-based organizations to inform future policy development.

■ **Minnesota Boomers at Work/in Transition.** Demographic and economic forces are upending conventional career paths, constraining the employment and retirement options of Twin Cities metropolitan-area baby boomers (born between 1946 and 1964). Because of age discrimination and the absence of flexible, part-time, project-based, and meaningful jobs for this age group, many more baby boomers want to work than actually do so. Joining forces with SHiFT, a grassroots nonprofit that supports people at midlife who are reframing and transitioning their work and life, **Phyllis Moen** (McKnight Presidential Endowed Chair, Department of Sociology, University of Minnesota at Twin Cities) will investigate local innovations that offer new ways of working for Twin Cities baby boomers as they move from (or lose) career jobs. The goal of the project is to identify policies and practices that better fit the demographics and preferences of the 21st-century Twin Cities workforce.