Proposal to the Alliance for a Healthier New Brunswick for an Urban Nature-Based Social Prescribing Program for the Greater New Brunswick Area

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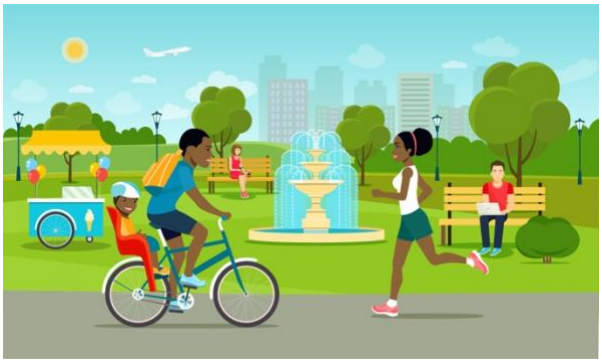
RUTGERS HEALTH
Robert Wood Johnson Medical School

Introduction

Exposure to Nature is Good for Physical and Mental Well-Being

Spending time in nature has many benefits for physical and mental health. Evidence has shown that spending time outdoors helps to reduce stress and improve overall physical and mental well-being (See Appendix 1 for a more complete review of recent literature).

- Growing scientific evidence indicates that physical activity contributes to good health through prevention of many chronic diseases and conditions (for example, heart diseases, cancers, osteoarthritis, poor bone density, and mental distress).
- Studies show that spending time in nature improves mental health, including reduced stress and improved self-reported well-being, social connectedness and cohesion, and cognitive ability.



New Brunswick NJ Has a Well-Developed Park System

The City of New Brunswick has abundant green space available in almost every neighborhood. This includes green space included in New Brunswick's Park system. The city consistently improves the City's parks, adding more user-recommended amenities for recreational activities, such as adding walking paths, open playing fields, and fitness courts and circuits. Table 1 provides a list of all city-maintained parks including address and size, if available. To learn more about New Brunswick's Parks and Gardens, see the City's New Brunswick Parks and Gardens website .

Table 1: New Brunswick Parks

Name of New Brunswick Park	**Address**	**Size** (if available)
Buccleuch Park	321 Easton Avenue	78 acres
Alice Jennings Archibald Park	23 Van Dyke Avenue (main entrance on Wright Place)	10.5 acres
Elmer B. Boyd Park	Route 18 N and Paul Robeson Boulevard (along the Raritan River)	20 acres
Memorial Stadium	801 Joyce Kilmer Avenue (in back of New Brunswick Middle School)	15 acres
Youth Sports Complex	419 Joyce Kilmer Avenue (between Juliet and Ellen Streets)	15 acres
Recreation Park	7 Pine Street (also accessible from Sandford Street)	
Feaster Park	175 Paul Robeson Boulevard (also accessible from Throop Avenue)	
Alec E. Baker Park	Remsen Avenue at Ellen Street	
Joyce Kilmer Park	143 Joyce Kilmer Avenue	

Name of New Brunswick Park	**Address**	**Size** (if available)
Kossuth Park (Harvey Street Park)	76 Harvey Street	
Monument Street Park	2 Livingston Avenue at George Street	
Murphy Park	131 Tunison Road	
Pittman Park	101 Handy Street, also accessible from Seaman Street	
Quentin Avenue Park	Quentin Avenue at Langley Place	
Simplex Avenue Park	1 Simplex Avenue at Hay Street	
War Memorial Park	1 Jersey Avenue at intersection of Handy Street	
Welton Street Park	137 Welton Street, at corner of Welton and Drift	

Other Parks and Natural Areas Available to New Brunswick Area Residents

In addition, there are other green spaces available to the public (for example, on the Rutgers University campuses, New Brunswick Landing maintained by Middlesex County, and the towpath that is part of D&R Canal State Park) in New Brunswick. Middlesex County maintains several parks in towns adjacent to New Brunswick including David B. Crabiel Park in North Brunswick, Donaldson Park in Highland Park, and Johnson Park in Piscataway. To find all Middlesex County maintained parks, conservation areas and recreation facilities, use Middlesex County's Find a Park.

The importance of nature to mental and physical well-being, coupled with the abundance of green spaces in New Brunswick, has led the Alliance for a Healthier New Brunswick (Alliance) to consider an urban nature-based social prescribing project.

What is Social Prescribing?

Social prescribing in its originally intended form is when a health care practitioner provides a non-clinical prescription or voucher to link patients to resources in the community. Some examples include linking people to food pantries, exercise facilities, social clubs, or educational and arts programs. Social prescribing provides people with more holistic, person-centered care and allows them to take control of their own health and well-being. The World Health Organization (WHO) indicates that social prescribing builds on evidence showing that addressing social determinants of health (such as socioeconomic status, social connectivity, housing, and education) is the key to improving health outcomes (WHO, 2022).

Increasingly social prescribing is being used by non-medical personnel (for example, staff at community-based service organizations) in the community to assist individuals with their mental and physical well-being. In the U.S., the most common large-scale social prescribing programs are Park Rx and Walk with a Doc. Social prescribing programs do not always reach more isolated populations such as older and retired adults, immigrants and refugees, and adolescents and youth, even though evidence shows that these populations often see the greatest improvements from these programs. Having a complete understanding of a community and its needs is important to successful social prescribing programs.

In 2022, the World Health Organization created *A Toolkit on How to Implement Social Prescribing (*referred to as "WHO toolkit" in this publication [WHO, 2022]), which lays out a blueprint for developing a social prescribing intervention designed to address the needs, context, and circumstances of a particular community. The WHO toolkit suggests that a community works through an implementation process with seven steps. The order of steps that a community uses will vary depending on the specific context and circumstances. In general, implementation is not a linear process and may involve several iterations to improve a particular community's model based on feedback.

WHO Toolkit: Suggested Implementation Steps

1. Conduct a situation analysis
2. Assemble a core implementation team
3. Develop an implementation plan
4. Map out community resources
5. Get everyone on board
6. Provide link worker training
7. Monitor implementation and evaluate program

Figure 1: Social Prescribing Implementation Steps (WHO, 2022)

A Situation Analysis for an Urban Nature-Based Social Prescribing Program for the Greater New Brunswick Area



To better understand the needs of our communities and the viability of a social prescribing program, the Alliance reviewed the *Healthier Middlesex Community Health Needs Assessment* (HM CHNA, 2022), referred to here as Healthier Middlesex CHNA. In addition, the Alliance for a Healthier New Brunswick conducted six interviews with key informants with eight stakeholder partners from six organizations during September and October 2022, which is referred to in this document as "Alliance interviews." To help interviewees understand what we might develop together we circulated a one page document titled "Developing a Program to Encourage More People to Spend Time in Nature" (attached as Appendix 2). We also sent the interviewees the questions (attached as Appendix 3) so they could prepare for the interviews.

In March 2023, the Alliance distributed to its members the *Draft Proposal to the Alliance for a Healthier New Brunswick for an Urban Nature-Based Social Prescribing Program for the Greater New Brunswick Area,* which is referred to in this document as "social prescribing draft proposal." In April 2023, the Alliance held three meetings with community partners (referred to as "April meetings"), where the partners provided examples of facilitators and barriers and brainstormed ideas for the first year.

This report uses both the Healthier Middlesex CHNA and the Alliance input for understanding the needs in our communities, which are described in this preliminary situation analysis.

The Needs in our Communities

Important Findings from *Healthier Middlesex Community Health Needs Assessment, 2022* and Alliance for a Healthier New Brunswick's Key Informant Interviews

This section reports on key findings from the Healthier Middlesex Community Health Needs Assessment (HM CHNA) and from interviews conducted with Alliance for a Healthier New Brunswick partners. We report this data here in two sections "Green Space, Physical Activity, and Safety" and "Mental Health."



Figure 2: Healthier Middlesex CHNA Focus Area (HM CHNA, 2022)

Data reported in the CHNA is from surveys, focus groups, and interviews with people living and working in the communities served by Robert Wood Johnson University Hospital (RWJUH) New Brunswick and Saint Peter's University Hospital (SPUH). See Figure 2 for the Healthier Middlesex CHNA Focus Area. The CHNA was developed by Health Resources in Action in partnership with the Healthier Middlesex consortium. The Healthier Middlesex CHNA contains findings from a survey that was fielded to residents who are served by the two hospitals (referred to as CHNA survey), key informant interviews with institutional and organizational representatives and front-line staff across sectors (referred to as CHNA key informant interviews) and focus group findings of community residents (referred to as CHNA focus group).

In the following two sections, we report on how the findings from the Alliance interviews agree with or add to information from the Healthier Middlesex CHNA.

Green Space, Physical Activity, and Safety

Healthier Middlesex CHNA focus group participants and CHNA interviewees indicated that the abundant green spaces, community walkability, and access to physical activity spaces (for example, gyms and fitness centers) were major assets found in communities. These findings were echoed and amplified during the Alliance interviews. Alliance interviewees noted that New Brunswick has several large, important green spaces that New Brunswick residents can freely access. These include large green spaces found on the Rutgers Campus particularly those found on the Cook / Douglass Campus and at Rutgers Gardens, but Voorhees Mall and pockets of green space on the College Avenue campus were also mentioned.

A survey conducted for the CHNA found that 70.3% of respondents indicated that they were physically active but only 57.4% of Latino indicated that they were as compared to White respondents (72.5%) and Black and Asian respondents (72.1%). When asked if their community had safe outdoor places to walk and play, 82.2% of respondents indicated yes with Blacks (86.3%) and whites (84.8%) feeling safer than Latinos (76.5%) and Asian (73.8%) respondents.

CHNA focus groups indicated that drug use observed in a local park led to a parent feeling uncomfortable having their children play there. Alliance key informants similarly described both legal and illegal drug use but also stated that other activities including smoking / vaping tobacco, gambling and assaults contributed to parents' and caregivers' hesitation about New Brunswick Park safety. Alliance key informants suggested solutions for some of these barriers including posting signs about not smoking / vaping any substances, providing community enforcement in the parks, partner organizations hosting events in the parks, and helping people understand why spending time in the parks is important for both physical and mental health.

Mental Health

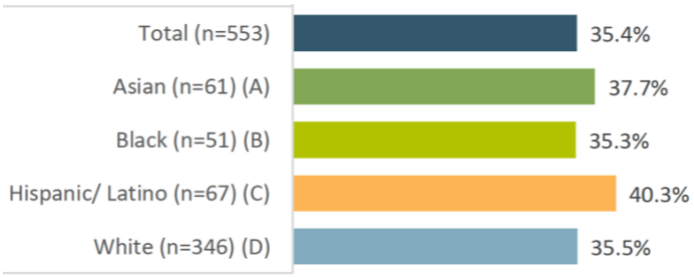


Figure 3 Percent of HM CHNA Respondents Reporting that They or Someone in Their Immediate Family Has Personally Experienced Difficulty with Mental Health Issues Since COVID-19 (HM CHNA, 2022)

The majority of information in this section about mental health of adults and youth comes for the Healthier Middlesex Community Health Needs Assessment (HM CHNA, 2022). The Healthier Middlesex CHNA data reported here comes from surveys, interviews and focus groups. Almost 44 percent (43.8%) of survey respondents indicated that they, or someone in their immediate family, personally experienced difficulty with mental health issues since COVID-19 started. These responses varied by race and ethnicity (see Figure 3). In addition, over 35% of survey respondents reported feeling lonely or isolated since COVID-19 started, with responses varying by race and ethnicity (see Figure 4).

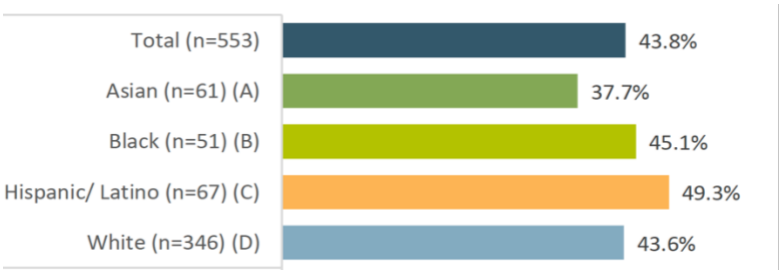


Figure 4 Percent of HM CHNA Respondents Reporting Feeling Lonely or Isolated Since COVID-19 (HM CHNA, 2022)

Healthier Middlesex CHNA focus group participants and interviewees indicated that the COVID-19 pandemic contributed to increased stress in residents, citing job loss, financial insecurity, remote learning, social isolation, loss of friends and family members, disruptions in access to care, and general uncertainty associated with COVID-19 as contributing to increased stress, depression, anxiety, and trauma among County residents. Of those diagnosed by a healthcare professional that they or a family member had depression and/or anxiety, 59.5% reported that they or a family member are currently under care for depression or anxiety, with higher rates reported by Blacks (72.2%) and Latinos (70.0%) as compared to Whites (57.9%) and Asians (59.5%).

Healthier Middlesex CHNA Focus group participants and interviewees were particularly concerned about the mental health of youth and adolescents particularly because of remote schooling and perceived social isolation, greater stress levels due to uncertainty at a time when young adults are heading to college or into the workforce, as well as older siblings needing to care for younger siblings so parents could continue working. Although the Alliance key informant interviews did not directly ask about mental health it came up during several interviews. Several interviewees noted that the social prescribing project might help the Alliance engage more people in discussions around mental health stigma. One interviewee reported that there were multiple "traumas" that created social isolation of adolescents, and another described how little was being done to address social isolation of older adults caused by COVID-19.

Viability of a Greater New Brunswick Area Urban Nature-Based Social Prescribing Project



To better understand the viability of an urban nature-based social prescribing program, we asked questions (see Appendix 2) of the Alliance key informant interviewees that allowed us to understand their initial impressions, facilitators that might advance and barriers that might inhibit this type of program, strengths that they could provide to the program, suggested partnerships, and knowledge about existing programs. These findings provided us important information that has become part of the Logic Model that we developed (see "Logic Model" section below).

Existing Conditions

Initial Impressions

In general, the eight interviewed partners were enthusiastic about the program. Several people indicated that this type of programming would help engage more people in discussions around mental health stigma and the importance of getting outside to improve physical and mental well-being. Most of the interviewees thought it was important to have community partners engaged and promoting the program. For example, it was suggested that we host regular events in the parks with multiple community partners tabling and exhibiting the different ways people can achieve good physical and mental well-being and prevent poor coping strategies, such as tobacco, alcohol, or drug use.

Facilitators

Facilitator discussions was started with the understanding that the City of New Brunswick and the local area have abundant green space and parks available, and that the city regularly improves the parks with newer and better amenities for recreational activities (for example,

walking paths, open playing fields, fitness courts and circuits; and skateboard spaces). During the interviews and April 2023 meetings the participants indicated additional facilitators including:

- Many community partners are engaged in our local communities.
- There are mental health service providers in some of the local community- and faith-based organizations providing services for free to residents in need.
- In New Brunswick, some district schools are next to parks making it easier for children and adolescents to spend time outdoors (for example, McKinley School is next to Alice Jennings Archibald Park and the Roosevelt school is next to the Welton Street Park).
- Several organizations have experience creating programs that successfully draw people into the parks (for example, prior programming held at the Alec Baker Park).
- There are already activities in the summer held outdoors that partners could help promote (for example, Bobadilla Summer Soccer Academy).
- Several parks include community gardens which draw people to the parks (for example, Recreation / Pine Street Park).
- Specialized facilities in the parks (for example, fitness court at Buccleuch Park and futsal court at Harvey Park) help draw people to the park. And…
- Some community partners have knowledge of improvements in other communities that are known to have helped overcome barriers – (for example, *signage, and a more consistent adult presence in the parks).*

Barriers

The Alliance interviews and April 2023 meetings with key informants from local agencies gave us a better understanding about barriers to a social prescribing program that links spending time in nature with improved physical and mental health. It was understood going into the interviews that safety in the parks and families having time to go to parks or green spaces were barriers to a program. The following list provides more detail about these two barriers and information about others that were noted during the interviews and meetings.

- Park safety concerns include legal (for example, tobacco, alcohol, and recreational marijuana) and illegal (for example, used dime bags or needles on the grounds) substance use and undesirable activities (for example, gambling, people sleeping in the parks, or other activities indicated by used condoms). "Recently, there was a shooting in New Brunswick where two schools were locked down."
- COVID-19 has exacerbated time pressures on families. Often parents are working more hours or multiple jobs and they don't have the time to spend outdoors.
- Partners described that going outside might not be part of some resident's cultural norms or they are afraid for other reasons (for example, deportation).
- Worn, outdated, broken facilities and equipment, and inadequate spaces (for example, softball fields but no space for soccer) make parks less desirable.
- Availability of open, clean, and safe restrooms.
- Lack of visibility into the park from the street is an issue for some families. Parents are less comfortable with a park that cannot be seen from the street.

- Participating in a social prescribing program might be impacted by the stigma some families feel about having poor mental health.
- Many families don't have the resources to buy equipment (bicycles, skateboards, scooters, soccer balls, etc.) for their children to use at the parks.
- While many were supportive of such a program, interviewees expressed concerns that organizations might not have the staffing available or time to participate in the program. And…
- Concerns were voiced about youth and adolescents who were socially isolating because of various traumas (loss of a loved one, bullying, etc.).
- Language barriers around signage and communicating with people staffing the parks and the programs.
- Healthcare professionals' and general public's knowledge about social prescribing.

Strengths of Partnering Organizations

Many of the organizations were enthusiastic about working on a social prescribing program, including involvement in its design and implementation. During the Alliance interviews we asked partners about the strengths they could contribute to the program. The organizations indicted that they could contribute staff time, their expertise around specific issues (substance use, bicycle and scooter safety for kids, etc.), prior experiences with programming in the parks, materials and equipment, and other partners who could help with the program. Some indicated that they might consider using the parks for their meetings in good weather so that they could be a presence in the park and encourage other organizations to do the same.

Suggested Partnerships

As part of the Alliance interviews, we asked about groups of people and organizations who were not already partners in the Alliance for a Healthier New Brunswick. They suggested the involvement of family workers in the schools that are located next to / near park, local businesses (arts, yoga, etc.), the police department, neighborhood watch groups, housing shelters, seniors particularly those living in the senior housing, faith organizations, and other service providers. Specific organizations named included City of New Brunswick, Elijah's Promise, Girls on the Run, Keep Middlesex Moving, Meals on Wheels, Middlesex County's Center for Empowerment, Middlesex County's Stop Stigma Campaign, NAMI-NJ, and Rutgers Gardens,

Park Ranger Program Coming to New Brunswick Parks – An Important New Development

There has been one very important development in New Brunswick parks since we conducted the Alliance interviews. In February 2023, the City of New Brunswick announced that it is launching a park ranger program in the summer (City of New Brunswick, 2023). The city will hire full- and part-time park rangers. These park rangers will be trained professionals who will patrol all New Brunswick parks and recreational facilities. They will serve as civilians within the New Brunswick Police Department with the Civil Service designation of Security Guard.

In a recent edition of *Hub City News* Mayor Cahill noted: "As we continue to invest in our parks, and beautify them at every opportunity, now is the time to have park rangers devoted full-time to

their care. Our park rangers will serve as a friendly face in our parks, welcoming visitors and doing all they can to ensure a fun experience for everyone" (City of New Brunswick, 2023). It is expected that the park rangers will eventually handle the opening and closing of parks and recreational facilities, provide information and assistance to park patrons, and serve as a trusty presence every day.

Existing Programs Similar to Social Prescribing

The two well-known existing national programs that encourage people to use the parks for better health are Walk with a Doc and Park Rx. The final question we asked during the Alliance interviews was knowledge of existing programming being either in other NJ parks or nationally. The programs mentioned were ones that had been adapted by organizations for their specific population. For example, people mentioned a program based on forest bathing sponsored by the Middlesex County Center for Empowerment, a program similar to Walk with a Doc at Rutgers Gardens, New Brunswick Soccer Academy, and Lunch and Learn sessions.

Creation of a Logic Model

To help facilitate discussion, the Alliance for a Healthier New Brunswick has drafted a logic model for a Social Prescribing Program in the Greater New Brunswick Area. This model was based on all the material reported here from the Healthier Middlesex Community Health Needs Assessment and the Alliance for a Healthier New Brunswick key-informant interviews. This model will be altered as the discussions around this project proceeds.

Ideas for Programming in the First Year and Beyond

During the April 2023 meetings, Alliance community partners spent time brainstorming ideas about what we could do to encourage more people to use the parks and open spaces in the greater New Brunswick area. Specific program ideas, suggestions for materials development, and structural improvements were discussed during each of the meetings (see Appendix 4 for Notes from the April 2023 meetings). For the June 2023 quarterly meeting of the Alliance for a Healthier New Brunswick, we classified these ideas temporally into categories – already doing, first year, second & third year, and longer term.

Already Doing

- Table at scheduled events in the parks,
- Bring healthcare to the parks during scheduled events, and
- Promote existing programs at the park.

First Year

- Conduct guided tours of individual parks,
- Develop an awareness campaign about the New Brunswick Park Rangers,
- Conduct educational sessions on social prescribing, and
- Use LiveWell for communicating social prescribing work.

Second & Third Year

- Create single events for specific populations,
- Host arts programs in the parks,
- Develop a web space to help people understand social prescribing,
- Create a survey for community partner social prescribers, and
- Conduct conversations with residents to understand barriers and facilitators for using parks.

Longer-Term

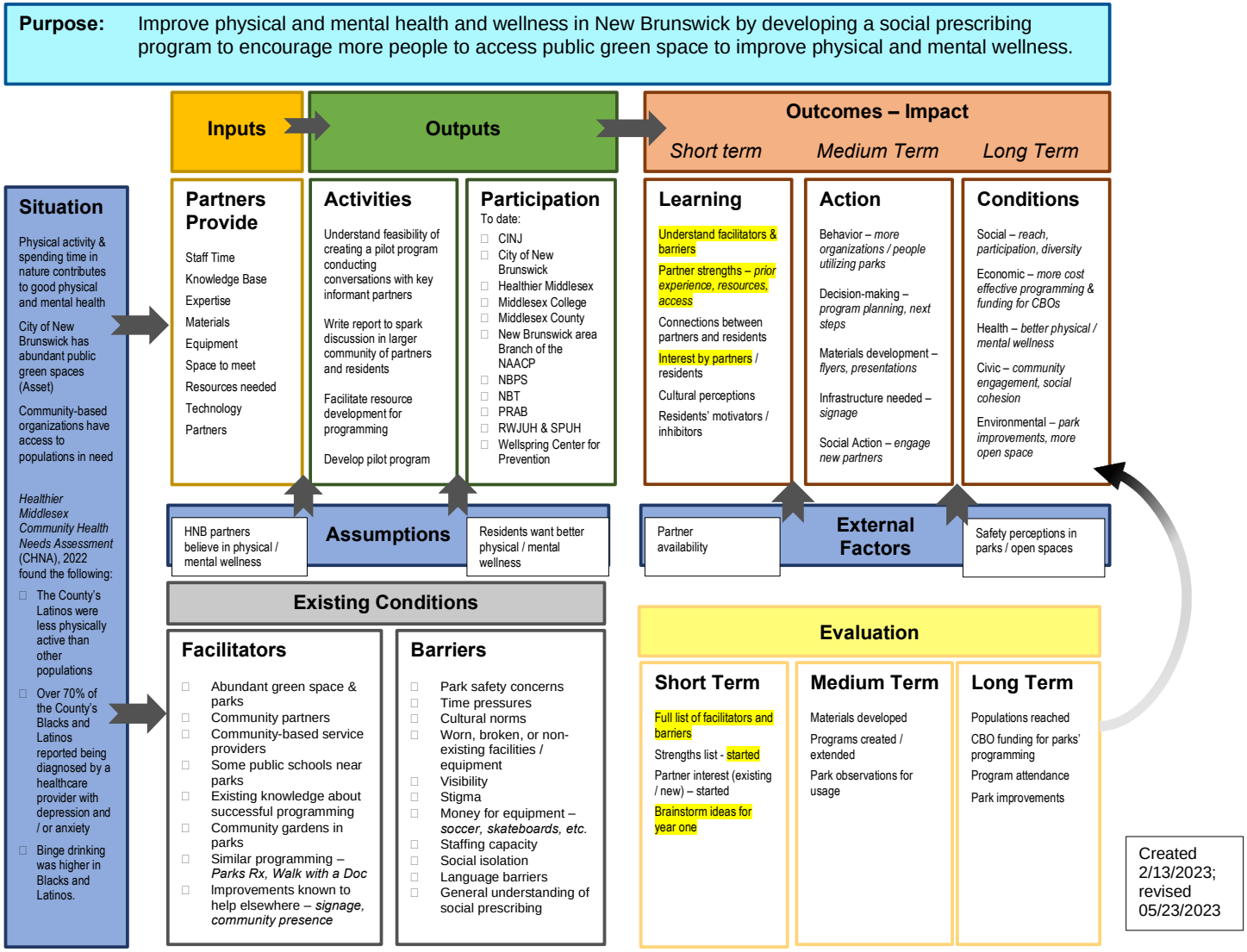
- Develop 30 minutes of sunlight and 30 minutes of movement per day campaign,
- Update existing LiveWell videos, and
- Create a park champion program.

Participating Organizations

The Alliance for a Healthier New Brunswick would like to thank our community partners for participating in the Alliance Interviews and April 2023 Meetings. We appreciate their enthusiasm and use feedback about this proposal.

- Cancer Institute of New Jersey
- Eric B. Chandler Health Center
- City of New Brunswick
- Healthier Middlesex
- Middlesex College, New Brunswick Center
- Middlesex County, Office of Aging and Disabled Services
- New Brunswick Area Branch of the NAACP
- New Brunswick Public School District
- New Brunswick Tomorrow
- PRAB
- Rutgers Robert Wood Johnson Medical School
- Rutgers University Behavioral Healthcare
- Saint Peter's University Hospital
- Wellspring Center for Prevention

Logic Model


Purpose: Improve physical and mental health and wellness in New Brunswick by developing a social prescribing program to encourage more people to access public green space to improve physical and mental wellness.
Inputs
Outputs
Outcomes – Impact
Short term
Medium Term
Long Term
Situation
Physical activity & spending time in nature contributes to good physical and mental health
City of New Brunswick has abundant public green spaces (Asset)
Community-based organizations have access to populations in need
Healthier Middlesex Community Health Needs Assessment (CHNA), 2022 found the following:
The County's Latinos were less physically active than other populations
Over 70% of the County's Blacks and Latinos reported being diagnosed by a healthcare provider with depression and / or anxiety
Binge drinking was higher in Blacks and Latinos.
Partners Provide
Staff Time
Knowledge Base
Expertise
Materials
Equipment
Space to meet
Resources needed
Technology
Partners
Activities
Understand feasibility of creating a pilot program conducting conversations with key informant partners
Write report to spark discussion in larger community of partners and residents
Facilitate resource development for programming
Develop pilot program
Participation
To date:
CINJ
City of New Brunswick
Healthier Middlesex
Middlesex College
Middlesex County
New Brunswick area Branch of the NAACP
NBPS
NBT
PRAB
RWJUH & SPUH
Wellspring Center for Prevention
Learning
Understand facilitators & barriers
Partner strengths – prior experience, resources, access
Connections between partners and residents
Interest by partners / residents
Cultural perceptions
Residents' motivators / inhibitors
Action
Behavior – more organizations / people utilizing parks
Decision-making – program planning, next steps
Materials development – flyers, presentations
Infrastructure needed – signage
Social Action – engage new partners
Conditions
Social – reach, participation, diversity
Economic – more cost effective programming & funding for CBOs
Health – better physical / mental wellness
Civic – community engagement, social cohesion
Environmental – park improvements, more open space
Assumptions
HNB partners believe in physical / mental wellness
Residents want better physical / mental wellness
External Factors
Partner availability
Safety perceptions in parks / open spaces
Existing Conditions
Facilitators
Abundant green space & parks
Community partners
Community-based service providers
Some public schools near parks
Existing knowledge about successful programming
Community gardens in parks
Similar programming – Parks Rx, Walk with a Doc
Improvements known to help elsewhere – signage, community presence
Barriers
Park safety concerns
Time pressures
Cultural norms
Worn, broken, or non-existing facilities / equipment
Visibility
Stigma
Money for equipment – soccer, skateboards, etc.
Staffing capacity
Social isolation
Language barriers
General understanding of social prescribing
Evaluation
Short Term
Full list of facilitators and barriers
Strengths list - started
Partner interest (existing / new) – started
Brainstorm ideas for year one
Medium Term
Materials developed
Programs created / extended
Park observations for usage
Long Term
Populations reached
CBO funding for parks' programming
Program attendance
Park improvements
Created 2/13/2023; revised 05/23/2023

References Cited

City of New Brunswick. "New Brunswick Launching Park Ranger Program for Summer." *Hub City News,* February 24, 2023. Available at: Hub City News.

City of New Brunswick. "Parks and Gardens." City of New Brunswick Website. 2019. Available at: City of New Brunswick.

Health Resources in Action and Healthier Middlesex. *Healthier Middlesex Community Health Needs Assessment,* November 2022.

World Health Organization, Western Pacific Region (WHO) *A Toolkit on How to Implement Social Prescribing.* Manila, Philippines: World Health Organization Regional Office for the Western Pacific, 2022. Available at: WHO Social Prescribing Toolkit.

Appendix 1: Review of The Literature on Physical and Mental Health Benefits from Spending Time in Nature and Social Prescribing Interventions / Schemes

These two reviews are not exhaustive. They are just providing a review of some of the materials available in support of each subject.

Review of Green Space and Health (both physical and mental/behavioral)

Astell-Burt T, Feng X. Association of Urban Green Space with Mental Health and General Health Among Adults in Australia. JAMA Network Open. 2019 Jul 3; volume 2, number 7: e98209 (22 pages).
DOI: 10.1001/jamanetworkopen.2019.8209. PMID: 31348510; PMCID: PMC6661720.

> This study assessed whether total green space or specific types of green space are associated with better mental health. Researchers included 46,786 residentially stable, city-dwelling residents from three Australian cities, Sydney, Wollongong, and Newcastle and assessed (1) risk of psychological distress, (2) self-reported physician-diagnosed depression or anxiety, and (3) fair to poor self-rated general health and calculated percentages of grass, other low lying vegetation, and tree canopy around each participant's residence. Researchers found that those living with 30% or more tree canopy compared to those with 0 to 9% had lower odds of psychological distress and of fair to poor general health. Researchers also found the odds of depression or anxiety were lower, but the difference was not significant. This study concluded that protection and restoration of urban tree canopy specifically, rather than generalized urban greening, may be a good option for promotion of community mental health.

Barton J, Pretty J. What is the best dose of nature and green exercise for improving mental health? A multi-study analysis. Environmental Science & Technology, 2010 May 15; volume 44, number 10: pages 3947-55.
DOI: 10.1021/es903183r. PMID: 20337470.

> Green exercise is activity in the presence of nature. Evidence shows it leads to positive short- and long-term health outcomes. This multi study analysis assessed the best dose of exercise intensity and exposure duration of green exercise required to improve self-esteem and mood (indicators of mental health) of 1,252 study participants. Dose responses for both intensity and duration showed large benefits from short engagements in green exercise, and then diminishing but still positive returns. Every green environment improved both self-esteem and mood; the presence of water generated greater effects. The mentally ill had one of the greatest self-esteem improvements. This study confirms that the environment provides an important health service.

Cohen-Cline H, Turkheimer E, Duncan GE. Access to green space, physical activity and mental health: a twin study. Journal of Epidemiology and Community Health. 2015 Jun; volume 69, number 6: pages 523-9.
DOI: 10.1136/jech-2014-204667. Epub 2015 Jan 28. PMID: 25631858; PMCID: PMC4430417.

> The aim of this study was to examine the association between access to green space and mental health among adult twin pairs. The researchers studied same-sex twin pairs (4338 individuals) from the community-based University of Washington Twin Registry. They analyzed the association between access to green space, as measured by the Normalized Difference Vegetation Index and self-reported depression, stress, and anxiety. The researchers found that greater access to green space is associated with less depression, but they found less evidence for effects on stress or anxiety. Understanding the mechanisms linking neighborhood characteristics to mental health has important public health implications.

Grigsby-Toussaint DS, Turi KN, Krupa M, Williams NJ, Pandi-Perumal SR, Jean-Louis G. Sleep insufficiency and the natural environment: Results from the US Behavioral Risk Factor Surveillance System survey. Preventive Medicine, 2015 Sep; volume 78: pages 78-84.
DOI: 10.1016/j.ypmed.2015.07.011. Epub 2015 Jul 17. PMID: 26193624; PMCID: PMC4818157.

> To determine whether exposure to attributes of the natural environment (e.g., greenspace) lessens the likelihood of reporting insufficient sleep among US adults. The researchers explored the association between self-reported days of insufficient sleep (in the past 30 days) and access to the natural environment in a multi-ethnic, nationally representative sample (n=255,171) of US adults ≥18years of age enrolled in the 2010 Behavioral Risk Factor Surveillance System. In this representative sample of US adults, access to the natural environment lessened the likelihood of reporting insufficient sleep, particularly among men. Additional studies are needed to examine the impact of natural environment exposure on sleep insufficiency across various socio-demographic groups.

Jennings V, Bamkole O. The Relationship between Social Cohesion and Urban Green Space: An Avenue for Health Promotion. International Journal of Environmental Research and Public Health. 2019 Feb 4; volume 16, number 3: 452 (14 pages).
DOI: 10.3390/ijerph16030452. PMID: 30720732; PMCID: PMC6388234.

> Social cohesion involves the interpersonal dynamics and sense of connection among people. Increased social cohesion can be associated with various physical and psychological health benefits. The presence of urban green spaces can encourage positive social interactions that cultivate social cohesion in ways that enhance health and well-being. Urban green spaces have also been linked to positive health behaviors and outcomes including increased physical activity and social engagement. In this article, the researchers discuss how positive interactions in urban green space can catalyze social cohesion, social capital and critical health-promoting behaviors that may enhance psychological health and well-being. The researchers also summarize the strengths and limitations of previous studies and suggest directions for future research.

McEwan K, Richardson M, Sheffield D, Ferguson FJ, Brindley P. A Smartphone App for Improving Mental Health through Connecting with Urban Nature. International Journal of Environmental Research and Public Health. 2019 Sep 12; volume16, number 18: 3373 (15 pages).
Doi: 10.3390/ijerph16183373. PMID: 31547286; PMCID: PMC6765898.

This study aimed to provide an evaluation of a smartphone app-based wellbeing intervention. Researchers enrolled a total of 582 adults, which included 148 participants with a common mental health problem. In this intervention, the app prompted the participants to notice the good things about urban nature (intervention condition) or built spaces (active control), depending on their assignment. Those noticing the urban nature condition, had more quality-of-life improvements than those assigned to the built space control. This difference reached statistical significance for all adults and clinical significance for those classified as having a mental health difficulty. This improvement in wellbeing was partly explained by significant increases in nature connectedness and positive affect. This study provides the first controlled experimental evidence that noticing the good things about urban nature has strong clinical potential as a wellbeing intervention and social prescription.

Shanahan DF, Lin BB, Bush R, Gaston KJ, Dean JH, Barber E, Fuller RA. Toward improved public health outcomes from urban nature. American Journal of Public Health. 2015 Mar; volume 105, number 3: pages 470-7.
DOI: 10.2105/AJPH.2014.302324. Epub 2015 Jan 20. PMID: 25602866; PMCID: PMC4330853.

There is mounting concern for the health of urban populations as cities expand at unprecedented rates. Urban green spaces provide settings for a remarkable range of physical and mental health benefits, and pioneering health policy is recognizing nature as a cost-effective tool for planning healthy cities. Despite this, limited information on how specific elements of nature deliver health outcomes restricts its use for enhancing population health. We articulate a framework for identifying direct and indirect causal pathways through which nature delivers health benefits, and highlight current evidence. We see a need for a bold new research agenda founded on testing causality that transcends disciplinary boundaries between ecology and health. This will lead to cost-effective and tailored solutions that could enhance population health and reduce health inequalities.

Review of Social Prescribing Interventions / Schemes

Chatterjee, HJ, Camic, PM, Lockyer, B, Thomson, LJM. Non-clinical community interventions: a systematised review of social prescribing schemes, Arts & Health, 2018; volume 10, number 2: pages 97-123.
DOI: 10.1080/17533015.2017.1334002

> This study evaluated the literature on United Kingdom social prescribing schemes published in peer-reviewed journals and reports. The researchers included social prescribing schemes for arts, books, education, and exercise that referred patients to community sources for non-clinical interventions. The researchers found outcomes that included an increase in self-esteem and confidence; improvement in mental well-being and positive mood; and reduction in anxiety, depression and negative mood.

Fixsen A, Polley M. Social prescribing for stress related disorders and brain health. International Review of Neurobiology 2020; volume 152: pages 237-257.
DOI: 10.1016/bs.irn.2019.11.005. Epub 2019 Dec 5. PMID: 32450999.

> Social prescribing is a key part of NHS (National Health Service) England health care policy, and interventions based on the social prescribing model have been developed in countries including Canada, New Zealand, the Netherlands and Singapore. The researchers sought to understand the role that social prescribing plays in reducing stress related problems and supporting and encouraging self-care and self-management of conditions for which conventional medicine may not be the best option. The researchers found that link worker meetings can motivate people to pursue activities with mental, physical and social benefits such as exercise, artistic pursuits and gardening. Problems within social prescribing models included health provider engagement, recruiting patients who felt they had no control, and communication between providers and patients about social prescribing. Bason on their findings, the researchers proposed recommendations for enhancing social prescribing schemes.

Golden, TL, Lokuta, AM, Mohanty, A, Tiedemann, A, Ng, TWC, Mendu, M, Morgan, N, Kuge, MN, Brinza, T. Social prescription in the US: A pilot evaluation of Mass Cultural Council's "Culture Rx." Frontiers in Public Health 2023;10:1016136 (17 pages).
DOI: 10.3389/fpuh.2022.1016136.

> This article provides an evaluation of "CultureRx" in Massachusetts (MA): the first US model of arts on prescription. The program is a partnership between 20 healthcare providers and 12 cultural organizations, in which providers can offer "prescriptions" to cultural experiences to support patients' health. The timing of the program was impacted by COVID-19 so only 8 organization were able to participant in the evaluation. Both intervention participants and providers found the program to be beneficial to their wellbeing. The CultureRx pilot suggests that integrating arts/culture assets into health and social care approaches can enrich and improve traditional US models of community referral. By including arts/culture resources when addressing social determinants of health, communities will be better positioned to equitably and holistically advance health.

Leavell MA, Leiferman JA, Gascon M, Braddick F, Gonzalez JC, Litt JS. Nature-Based Social Prescribing in Urban Settings to Improve Social Connectedness and Mental Well-being: a Review. Current Environmental Health Reports, 2019 Dec; volume 6, number 4: pages 297-308. DOI: 10.1007/s40572-019-00251-7. PMID: 31713144.

A "loneliness epidemic" in the USA is growing along with an evidence base suggesting that loneliness and social isolation can compromise physical and psychological health. Screening for social isolation among at-risk populations and referring them to nature-based community services, resources, and activities through a social prescribing program may provide a way to connect vulnerable populations with the broader community, increasing their sense of connectedness and belonging. The authors explored opportunities for social prescribing to be used as a tool to address connectedness through nature-based interventions. Social prescribing can include a variety of activities linked with voluntary and community sector organizations (e.g., walking and park prescriptions, community gardening, farmers' market vouchers). These activities can promote nature contact, strengthen social structures, and improve longer term mental and physical health. Social prescribing is appropriate for reaching high-risk populations including teenage moms, recent immigrants, older adults, economically and linguistically isolated populations, but more research is needed to understand the impact of SPs on these higher-risk populations and the supports needed to allow them to feel at ease in the outdoors.

Appendix 2: Developing a Program to Encourage More People to Spend Time in Nature

Local facilitators that encourage people to spend time in urban nature (green space):

- The City of New Brunswick has abundant green space available in almost every neighborhood. This includes green space included in New Brunswick's Park system and other green spaces available to the public (for example, on the Rutgers University campuses).
- The city consistently improves the City's parks adding more user-recommended amenities for recreational activities, such as adding walking paths, open playing fields, and fitness courts and circuits.

Barriers to spending more time in urban nature:

- Concern about safety of parks (e.g., substance use, homeless, etc.)
- Time available for families to go to parks together

Why people should spend time outdoors in urban nature:

- Growing scientific evidence indicates that physical activity contributes to good health through prevention of many chronic diseases and conditions (for example, heart diseases, cancers, osteoarthritis, poor bone density, and mental distress).
- Studies show that spending time in nature improves mental health, including reduced stress and improved self-reported well-being, social cohesion, and cognitive ability.

Exposure to Nature is Good for Physical and Mental Well-Being

Spending time in nature has many benefits to physical and mental health. The Alliance for a Healthier New Brunswick would like to co-develop a program with community partners that encourages people to spend more time outdoors to help reduce stress and improve overall physical and mental well-being. To develop a robust program addressing the needs of our most-affected populations (for example, immigrants, seniors, and youth), we want to work with Alliance partners in the behavioral health and active living workgroups to understand the feasibility of developing such a program.

Initial Ask

Initially, we want are interviewing 5-8 community partners to better understand how to best develop and implement a program that encourages people to spend more time in nature. Our goal is to create a program that would provide another tool for partner organizations to help the people they serve with physical and mental well-being.

During the interview, exploratory questions might cover:

- Overall program concept and design
- Facilitators and barriers
- Existing programs – similarities / differences and opportunities to work with these programs
- Messaging to partners and community people including messaging for vulnerable populations
- What partnering organizations might need in advance before starting a program

Appendix 3: List of Interview Questions

- Can you tell me your first impressions of the program?
- Are there any facilitators not included on this one pager that might advance developing a social prescribing program?
- Are there any barriers not included on this one pager that might inhibit developing a social prescribing program?
- We are looking for partners to work with us on this program. We anticipate that organizations would only work on the pieces that align with their organization's strengths. What strengths do you think your organization can bring to this program?
- Do you think that this program is something that your organization would be interested in participating in?
- Are there any partners that you think we should talk to?
- We are already aware of programs such as Walk with a Doc and Parks Rx but are interested in knowing about any other similar programs in our area?

Appendix 4: Notes from the April 2023 Meetings

Specific Program Ideas

- Conduct guided tours of each park for local community organizations and residents.
- Consider doing single events targeted to a specific population. For example, Middlesex County's Office of Aging and Disabled Services hosted a caregiver retreat at RU Gardens with activities such as chair yoga. (More info. about County's program – Laila Caune, Director, Office of Aging and Disabled Services, Middlesex County).
- Invite Saint Peter's University Hospital (SPUH) to existing events because they have a grant from the State of NJ that allows them to conduct Covid-19 and other health screenings / vaccines.
- Host more arts programs in the parks to draw those who are not as interested or unable to participate in exercise. It was suggested to look at other programming that has been done by Middlesex County and UBHC. (More info. about County's Arts programs - Tracey O'Reggio Clark at Arts Institute of Middlesex County and Division Head of Arts and Community Development, in the Department of Economic Development, Arts and History Division, Middlesex County; UBHC is also a good contact for Arts in the Parks programming.).
- Develop an awareness (marketing campaign) about the New Brunswick Park rangers.
- Table at already scheduled events (for example, Juneteenth program at Recreation Park on June 17th).
- Bring healthcare to the parks (for example, MORE vehicle funded by the County and operated by UBHC; the Lifesaver Van operated by CINJ; SPUH mobile unit)
- Develop programs like Walk with a Doc. For example, Piscataway hosts Walk with a Commissioner (Chanelle Scott McCullum). We could do this with other health professions or social service providers (for example, someone from Wellspring Center for Prevention could do a program on substance use prevention).
- Encourage people in the greater New Brunswick area to join existing outdoor activities such as Girl Trek that hosts an early morning walk in Johnson Park.
- Create a QR code that helps people understand social prescribing and provides resources about different ways that people can use the parks to improve their health and wellbeing.
- Start promoting existing program in the parks (for example PlaySafe, Bobadilla Soccer Academy)
- Develop and promote a campaign around the idea of getting 30 minutes of sunlight / day and 30 minutes of movement /day.
    - Can have flyers that provide 30 ideas for each sunlight / movement.
    - Set up a calendar that starts with a minute or two and gradually helps people get up to 30 minutes of each separately or in combination.
- Create an optional questionnaire / survey (maybe available on a phone) for community partner prescribers so that they can better customize recommendations to an individual.
- Conduct educational sessions on social prescribing for healthcare professionals (talk to Paul Weber at RWJMS) and partner organization staff.
- Update existing LiveWell park videos to reflect the renovated parks and new equipment.
- Longer-term create a champion program where we would pay organizations / individuals to adopt and promote a specific park.

Suggestions for Materials Development

- All materials need to be customized for different audiences (gender, age, ethnicity, etc.)
- To address cultural stigma consider using terms such as wellness instead of behavioral / mental health.
- Prior to developing materials, learn from residents about the barriers / facilitators for participation (for example, LiveWell is now asking questions of the community using social media).
- Use LiveWell as the communication platform for the Alliance's social prescribing work.

Structural Improvement Suggestions

- Advocate for a city employed Park Service coordinator who helps create social connections between the city and the community organizations.
- Develop a signage program in the parks that encourages people to take a mindful moment and provides some general wellness education. This includes adding signage to the existing labyrinths at Buccleuch and Boyd Parks that explain what labyrinths are and how they help with wellness.
- Address legal and illegal drug use in the parks because it deters parents from sending their kids to the parks.
- Install information kiosks or a posting space with park and programming information on one side and health and wellness information on the other. For example, CINJ is working on putting up a kiosk like this in a Jessie Allen Park in Newark that will have information about health screening on it.
- Update City's website to show the parks on a map and provide more information about accessing and using each of the parks.