EFFECTIVENESS IN IMPLEMENTATION OF URBAN CYCLING TRAILS

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HOW DID WE GET HERE?

Multi-use physical activity trails in an urban setting and cardiovascular disease: a difference-in-differences analysis of a natural experiment in Winnipeg, Manitoba, Canada

Jonathan McGavock, Erin Hobin, Heather J. Prior, Anders Swanson, Brendan T. Smith, Gillian L. Booth, Kelly Russell, Laura Rosella, Wanrudee Isaranuwatchai, Stephanie Whitehouse, Nicole Brunton & Charles Burchill

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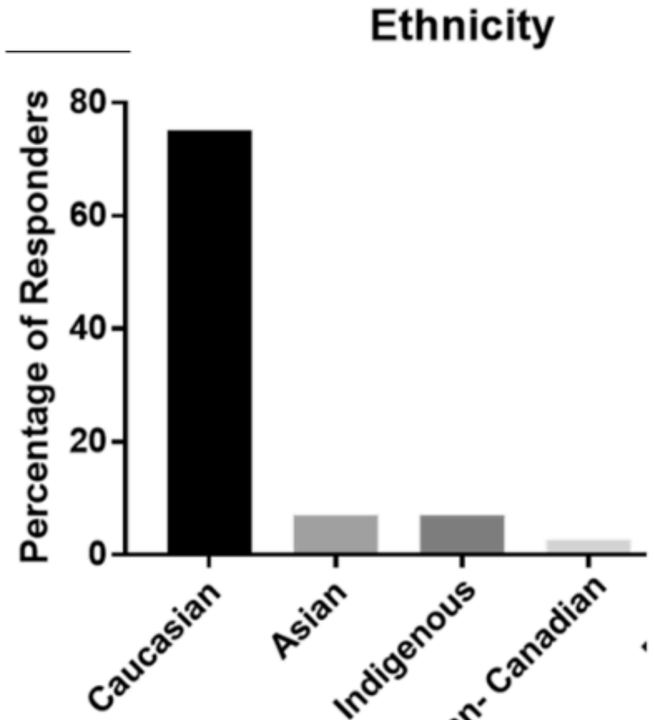
year follow-up period. However, in sensitivity analyses assessing effects for each of the four trails separately, we observed a 12–15% lower rate of CVD risk factors in areas within 400-1200 m of the multi-use trail with the highest frequency of trail use, compared to the areas outside this buffer. These data provide unique experimental evidence that an expansion of multi-use trails may be associated with a reduction in CVD risk factors in areas adjacent to a trail, however this effect may be sensitive to frequency of trail use, or trail characteristics.

STATISTICS

8%

Demographics of multi use paths users



Urban physical activity trails and mental health outcomes of children and adolescents, Appendix, Figure 5B, 2022

Distribution of trails in Winnipeg

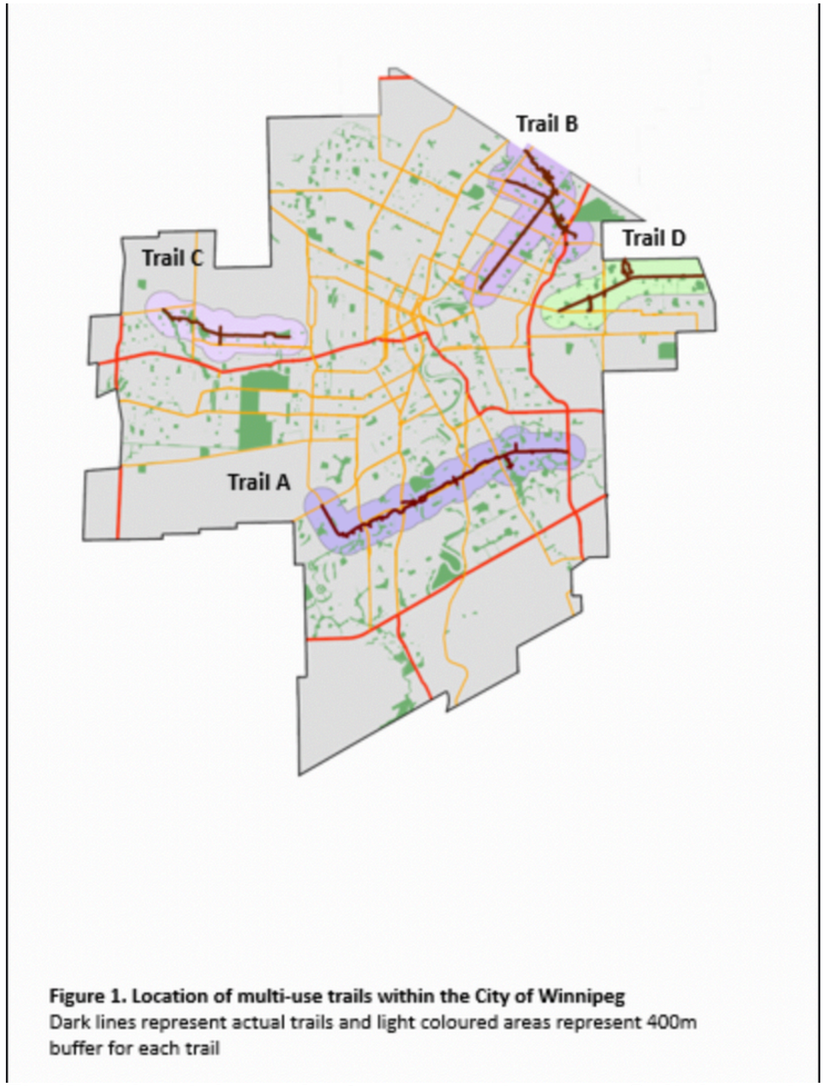


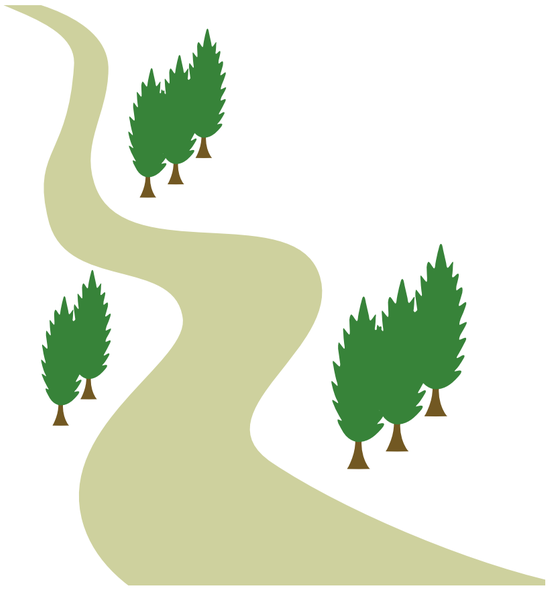
Figure 1. Location of multi-use trails within the City of Winnipeg
Dark lines represent actual trails and light coloured areas represent 400m buffer for each trail

Finding the right paths for preventing type 2 diabetes in urban environments: Guiding policy with implementation science, May 2023

Indigenous community member at community engagement event, 2022

WHAT ACTION IS BEING TAKEN?

$1 BILLION



Government of Canada. Active Transportation Fund. Government of Canada. https://www.infrastructure.gc.ca/trans/index- eng.html

WHAT'S BEING CONSIDERED?

WHAT'S BEING CONSIDERED?

Strategic Goals, Directions and Actions

HOW DO WE MAXIMIZE THE HEALTH BENEFITS OF THE TRAILS?

MY ROLE

Does new protected cycling infrastructure increase neighbourhood level physical activity compared to neighbourhoods that did not receive new infrastructure?

SYSTEMATIC REVIEW

Discussions with community members about their vies on urban on urban trails

FOCUS GROUPS

GOALS

Essential conditions checklist

Aid future plans for trail implementation through an equity informed lens

SYSTEMATIC REVIEW

Databases searched: CINAHL, EMBASE (Ovid), MEDLINE (Ovid), SPORTDiscus, TRD/Transportation Research InformationServices (TRIS), Web of Science will be searched for articles. Google Scholar will be searched for grey literature.

SYSTEMATIC REVIEW

Inclusion:

- 2010-2023
- All ages
- Intervention (multi use trail or protected bikeway)
- Measures PA/AT
- Secondary outcome - cycling and pedestrian traffic
- Natural Experiments with pre/post designs and follow-up measures

Exclusion:

- Non English articles
- No comparison group

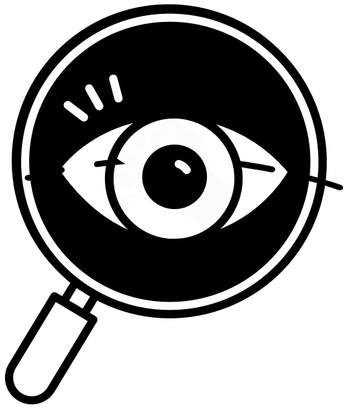
INITIAL SCREENING RESULTS

July 24, 2023

August 21, 2023

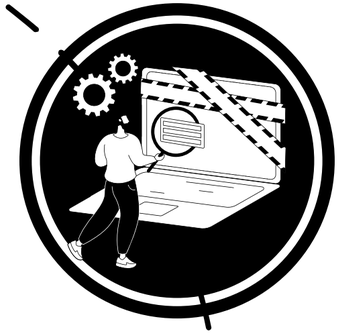
NEXT STEPS

Full text screening



Resolve discrepancies

Data extraction



BOLD NESS THE WINNIPEG BOLDNESS PROJECT

WINNIPEG TRAILS ASSOCIATION

Focus Groups

Families

1 Indigenous families discuss their trail use experience and barriers

Indigenous trail users

2 Understanding barriers to trail use from already existing users

Community leaders and activists

3 Gaining perspective from allies of Indigenous trail users

Scholars, elders, and city transport planners

4 Collaborative review of 2014 document through an equity lens

Educating for Equity Care Framework

Addressing social barriers of Indigenous patients with type 2 diabetes

Lynden (Lindsay) Crowshoe, Rita Henderson, Kristen Jacklin, Betty Calam, Leah Walker and Michael E. Green

Canadian Family Physician January 2019, 65 (1) 25-33;

Figure 2. Principles of the E4E Care Framework

Colonization is the predominant cause of health inequity for Indigenous people

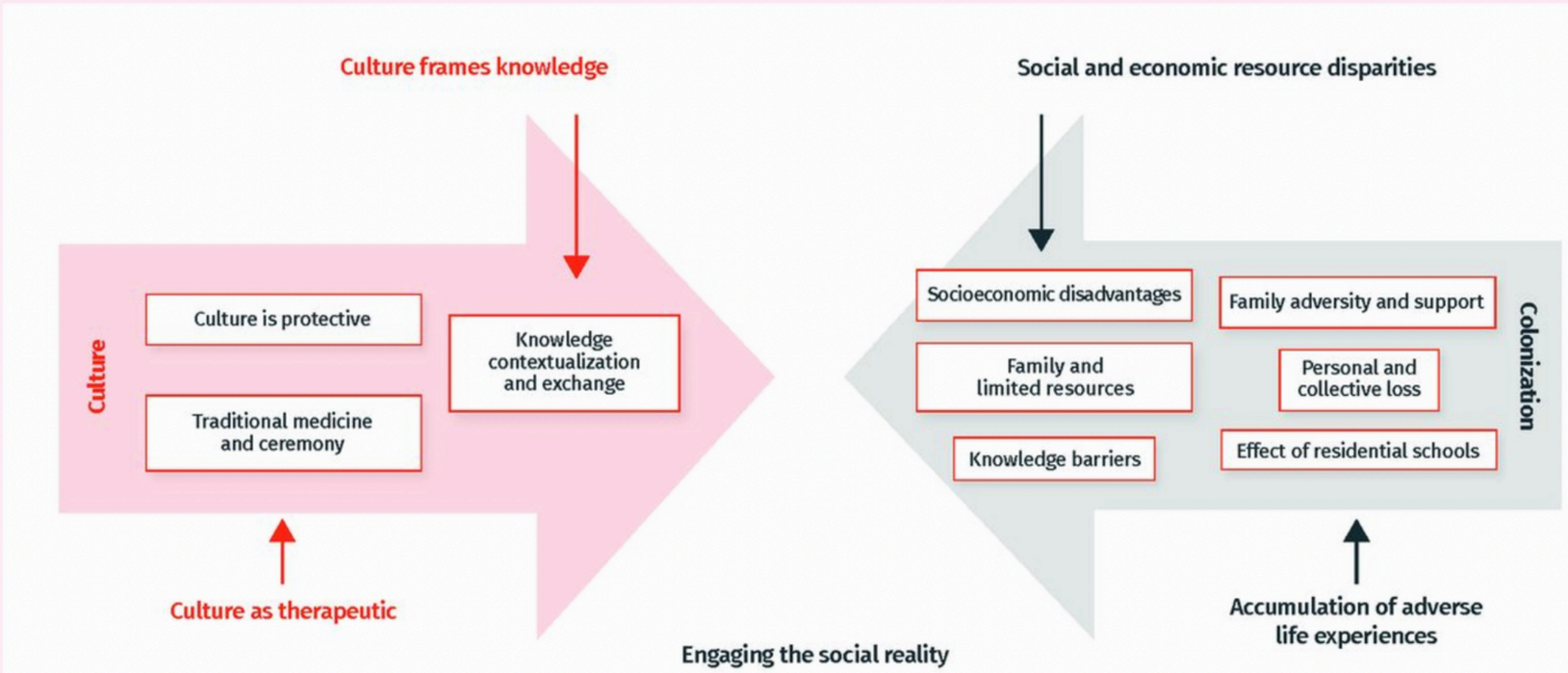
Health care equity is providing appropriate resources according to need and addressing differential treatment arising from system and individual factors

Empowerment is building capacity with patients to address social determinants influencing health outcomes

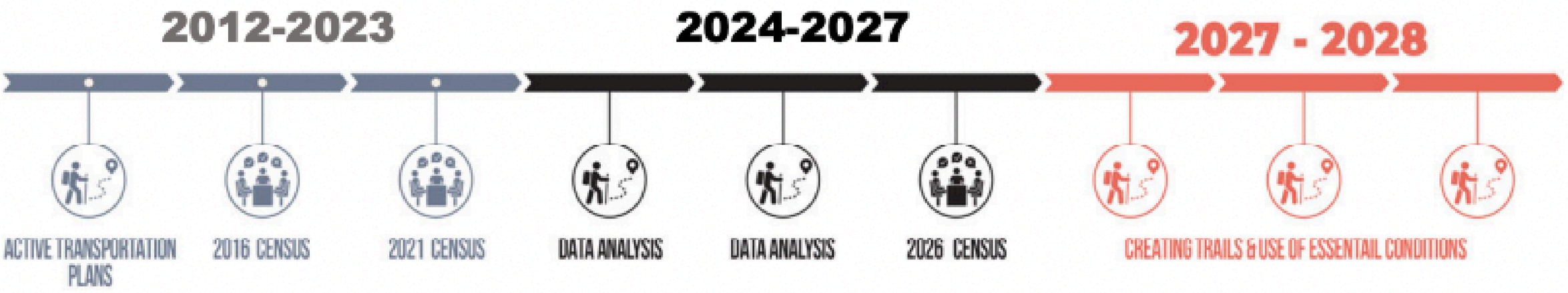
Culture, by respecting its diverse perspectives and experiences, is a facilitator of the clinical relationship and patient capacity

E4E—Educating for Equity.

Figure 5. Conceptual model of engaging the social reality



FUTURE DIRECTIONS



Aim #1 → Aim #2 → Aim #3

Aim 1 What can we learn from previous Implementation of urban trails?

Aim 2 Validating and Refining Essential Conditions

Aim 3 Fidelity: Study uptake and use of Essential Conditions

ACKNOWLEDGEMENTS

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Members of the urban trails research initiave

Winnipeg Boldness Project:

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- Mandolyn Jonasson

Winnipeg Trails Association

- Anders Swanson
- Daniel Reihl

Elders:

- Jack Robinson
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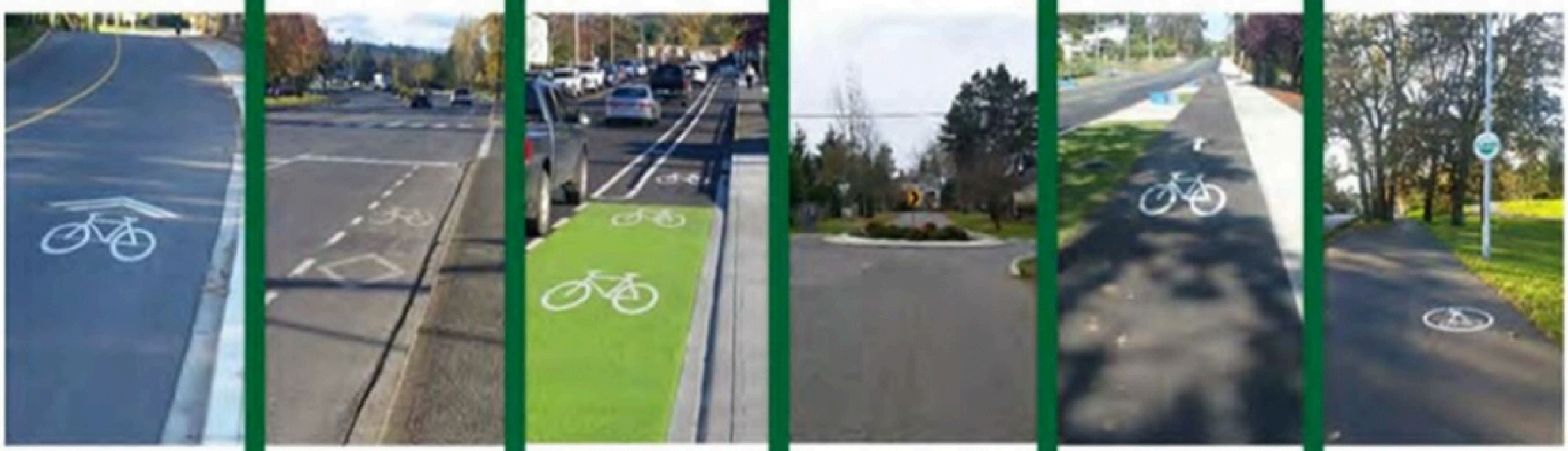
- Clarence Nepinak

Partner cities:

- City of Winnipeg
- City of Brandon
- City of Selkirk
- City of Edmonton
- Capital Regional District (Victoria BC)
- Ville de Québec
- Ville de Sherbrooke

CIHR IRSC

THANK YOU



Shared Use Lane | Bicycle Lane | Buffered Bike Lane | Local Street Bikeway | Separated Bike Lane | Off-Street Pathway

Four unprotected "trails" <u>NOT included</u> as interventions being studied by our research team

Two protected and safe "trail" interventions being studied by our research team

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Field data collection to survey trail users

To determine trail user demographics, we conducted two waves of intercept surveys among a convenience sample of 853 trail users, in 2018 and 2019. Users were surveyed while using one of the four trails and asked to complete a brief survey to provide self-reported trail usage and the perceived impact of usage on both their physical and mental health. Users also provided demographic data including self-identified gender and ethnicity, age group, newcomer status, annual household income and the first three digits of their postal code to geo-map the areas where they reside relative to the trail on which they were surveyed.

Intercept surveys of 852 users of the multi-use paths studied in our difference-in- differences analysis revealed that >75% of trail users self-identified as white. While 15% of people in Winnipeg report being Indigenous (2016 Canadian Census) - Urban physical activity trails and mental health outcomes of children and adolescents Appendix, Figure 5B

Essential conditions CIHR grant

4.2 Implementation Outcomes and data sources for capturing them

Outcome	Definition	Questions	Built Environment-Specific Metrics[a]
Reach	Percentage of the target population affected by a trail and the extent to which the individuals are representative of the population. Percentage of structurally marginalized groups reached.	Who lives within 400m and 800m of the trail? What is the representation Indigenous residents, newcomers and women within 400m and 800m of the trail?	**Geospatial analysis** will quantify the size and diversity of the population living within 400-800m of a new trail. **Intercept surveys** will determine whether people visiting are from the surrounding neighborhoods. **Trail counts** throughout the day will determine weekly trail use.
Effectiveness	Weekly trail use by cyclists and pedestrians. Daily active transportation profile vs daily recreational profile.	Did the trail attract residents to walk and cycle? Was the trail used for AT or leisure?	**Trail counts** will quantify hourly pedestrian and cycling traffic from devices embedded in each trail to quantify daily use and AT patterns of use.
Adoption	The number and characteristics of individuals that make decisions about where urban trails are implemented, and the extent to which these individuals are representative of the target population that will use the trails.	Because neighbourhoods do not "adopt" a new trail, who and how representative are the individuals that make decisions about implementing new trails (e.g., policy makers, city planners, AT planners)? Were local NGOs/ resident organizations consulted about trail implementation?	**Document analysis** will determine the representativeness of those making decisions regarding the selection of the setting and design of the change; the inclusion of people needed to approve the project (city council, local NGOs), implement the change. **Focus groups with city planners and policy makers** will determine the extent and time spent consulting with organizations that represent structurally marginalized groups (Indigenous, newcomers, women); **Focus groups with trail users to examine** if the local municipality implementing a trail and the trail itself is viewed positively by the community.
Implementation (installation)	Level of adherence to implementation principles or municipal values. The extent to which all or selected elements of these principles are implemented.	Do the trails align with principles outlined in city AT or Pedestrian and Cycling Plans? Do new trails meet the needs of the neighbourhood and attract the local community to use it?	**Focus groups with city planners and document analysis to determine if** the trails were built to meet the needs of the community. **Intercept surveys and focus groups** with trail users and NGOs to determine if there are barriers or deterrents to using the trail, particularly for structurally marginalized groups.
Maintenance (sustainability)	Individual level- individuals continue to exhibit the desired health behavior changes Setting level – trails are maintained and deterioration is prevented	Is weekly trail use maintained over time? Was the trail expanded to increase reach and/or connectivity? Are the trails maintained year round and over time?	**Trail Counts** will determine if trail use changes over time. **Geospatial mapping** will determine if the trail is extended following the initial construction. **Trail surveys of users** will explore user experience of snow clearing, surface maintenance and safety.
Dose	The distance and destination points for each trail.	Where can trail users go along the trail? How connected is the trail to the larger trail network?	**Geospatial mapping** will quantify trail length (CAN-Bics[91,92]), destination points (schools, shopping, residences, parks) and connection to other trails (CAN-ALE Points of Interest Measure[93,94])
Fidelity	The extent to which the urban trail was implemented as planned.	Did the cities implement trails that aligned with their original AT, pedestrian and cycling strategies?	**Document analysis and geospatial mapping will** quantify the number of trails, the total distance and access points, and the percentage of the population intended to have access to a trail and the percentage that actually did.

Note. These definitions and proposed methods were adapted from those proposed by King and Glasgow in 2010[18] to study the implementation of built environment interventions.

Examining the presence or absence of CFIR constructs can explain “why” implementation was or was not successful, while RE-AIM describes outcomes in terms of “who, what, where, how, and when”

King, Diane & Shoup, Jo & Raebel, Marsha & Anderson, Courtney & Wagner, Nicole & Ritzwoller, Debra & Bender, Bruce. (2020). Planning for Implementation Success Using RE-AIM and CFIR Frameworks: A Qualitative Study. Frontiers in Public Health. 8. 10.3389/fpubh.2020.00059.