

NCCEH - HBE Forum - November 22nd, 2023

INTerventions, Equity, Research and Action in Cities Team (INTERACT)

Research and knowledge translation for scaling our
understanding of health and
the built environment

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INTERACT

SFU

Université 
de Montréal

 UNIVERSITY OF
SASKATCHEWAN


CIHR IRSC
Canadian Institutes of Health Research /
Instituts de recherche en santé du Canada

I acknowledge our shared connection to the land and recognize that Indigenous and Métis peoples on Treaty 6 Territory and all Indigenous peoples have been and continue to be stewards for social justice, equity, and land-based education. In the spirit of reconciliation may we all strive to learn and support the work of Indigenous communities as allies and return their land.



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Investments in sustainable transportation have the potential to boost urban health and equity.



The Canadian government is promising \$400 M for active transportation infrastructure and \$14.9 B for public transit. What impact will these investments have on **population health and **health equity**?**

INTERACT

In partnership with cities and communities, we harness big data to deliver timely public health intelligence on the influence of real-world built environment interventions on health, well-being, and equity—generating local evidence and action to advance the design of smart, sustainable, and healthier cities for all.

INTERACT is...

4 CITIES

3000+ PEOPLE JOINED COHORT

50+ LOCAL PARTNERS

34 TRAINEES

22 PUBLISHED PAPERS

5 OFFSHOOT RESEARCH PROJECTS

1 NATIONAL KNOWLEDGE HUB

FOUR STUDIES. FOUR CITIES.

1

All ages and abilities (AAA) Cycling Network
Victoria, BC

2

City Greenways
Vancouver, BC

3

Bus Rapid Transit
Saskatoon, SK

4

Réseau Express Vélo
Montreal, QC

- 1. Understand context of urban interventions.**
- 2. Measure change in urban form and in population health.**
- 3. Analyze impact of interventions on health, well-being, and related inequalities.**
- 4. Mobilize knowledge to guide future decision-making.**



1 | POLICY

How are **health** and **equity** considered in the policy documents guiding the implementation of sustainable transportation interventions?

2 | RECRUITMENT

What are the most effective ways to **recruit** and **retain** large cohorts for population health research?

3 | PHYSICAL ACTIVITY

How are **urban environments** influencing our physical activity?

1 | POLICY

How are **health** and **equity** considered in the policy documents guiding the implementation of sustainable transportation interventions?



The impact of built environment interventions depends on the policy context.

INTERACT Interventions

		PRIMARY	KEY INFORMANTS
1	AAA Cycling Network Victoria, BC	Go Victoria (2020)	Planning Delivery Comms & Engagement Advocacy Group
2	City Greenways Vancouver, BC	Greenways Plan (1995)	Planning Delivery
3	Bus Rapid Transit Saskatoon, SK	Corridor Transformation Plan (2020)	Planning Delivery Comms & Engagement Councillor
4	Réseau Express Vélo Montréal, QC	Montréal, ville cyclable (2017)	Planning Delivery Councillor

How is **health** considered?

Broadly, as part of the policy's vision and high-level goals

"People [goal]: We envision healthy citizens in **a safe, accessible, and vibrant city**. Our goals to support this social vision are to:

- Facilitate and encourage **active lifestyles** while improving air quality
- Support vibrant public spaces that encourage **a culture of walking, cycling, and social interaction**

Vancouver | Transportation 2040 | Section A. Setting the stage, Goals p.8

"Our job is to make **healthy, sustainable, and accessible transportation choices easy** – through simple, practical, and affordable solutions for Victoria."

Victoria | Go Victoria | Introduction p. 5

How is **health** considered?

Specifically, in terms of safety and personal security

Road safety in particular had specific targets

“Our goal is to **move toward zero traffic-related fatalities.**”

Vancouver | Transportation 2040 | Safety Goal, p.13

“Reach and maintain **zero annual traffic fatalities and injuries.**”

Victoria | Go Victoria | Key Initiatives, p. 51

TARGET

Reach and maintain zero annual traffic fatalities and injuries

GOALS

- 1 A culture of safety for all road users is embraced by the City and general public
- 2 The road network design and operations prioritize the protection of human life over all else
- 3 Emergency response planning and operations are prioritized on our road networks



How did staff consider **health**?

Planners viewed health through safety and accessibility, interventions impact health though health is not a mandate

“ [Health is] something that is more tangential to what our express mandate is [...] we all have a kind of a built-in, or learned through our planning education, **purpose to build healthy, vibrant, happy communities.**”

Saskatoon

“if we made it **safe and accessible**, then ... the physical and social benefits, **health benefits would flow** from that. But if we didn't make it accessible, and we didn't make it safe, then we couldn't fulfill those other objectives.”

Vancouver

How is **equity** considered?

Rarely. Among the 9 policy documents reviewed:

3

defined equity

4

had actions targeting
specific populations

0

plans referenced equity
principles in selecting the
location of interventions

How is **equity** considered?

3

defined equity

None used terms such as ‘recognitional, procedural, distributional, distributive, etc’ but some had wording that related to this.

“Equity is treating everyone fairly by acknowledging their unique situation and addressing systemic barriers. **The aim of equity is to ensure that everyone has access to equal benefits and outcomes – whether through participation in project and policy planning initiatives or the use of city investments in infrastructure and services.**”

How is **equity** considered?

4

had actions targeting specific populations

Most plans emphasized universal accessibility and benefits for everyone, rather than specific groups, e.g., “all ages and abilities, all ages and incomes, all ages and mobilities”.

Hard to have indicators when there are no specific groups.

Vancouver used “inclusiveness, encouraging **all those concerned and interested** to participate in the process of detailed route identification” as a guiding principle for the Greenways Plan

Vancouver | Greenways Plan | Building Greenways, p. 27

“Support universal accessibility. Everyone is a pedestrian during part or all of their journey. As such, the design of sidewalks, crossings and connections with private properties can create barriers for people with physical and/or cognitive disabilities. **Universal accessibility is essential to support not only people with mobility challenges, but will make public space comfortable for everyone.**”

Saskatoon | Corridor Transformation Plan | Complete Streets, p. 59

How is **equity** considered?

Policies varied in the stated approach to allocate resources.

“We should address disparities and increase access to opportunity for vulnerable, underserved populations by **focusing improvements in areas with the greatest need** and where people rely on walking, bicycling, and transit the most.”

Victoria | Go Victoria | Our Mobility Values, p. 31

“Providing higher quality service for **larger potential transit markets**, and managing the amount of service in lower demand areas is essential for transit to be successful. (...) This will result in **some areas of the city seeing more attractive service while other areas with limited ridership may see less service.**”

Saskatoon | Plan for Growth | Vision and Possibilities for Transit, p. 78

How did staff consider **equity**?

Equity was an area of increasing focus for staff.

“... I think traditionally, we've been trying to provide facilities to kind of manage growth and development patterns, but I think **increasingly, we're recognizing that more equitable provision elsewhere, is [just] as important.**”

- **Vancouver**

Different approaches in cities

In Victoria, spatial equity was a key consideration, whereas Saskatoon focused on features and did not consider equity in the planning of BRT locations.



Safety and accessibility are key for achieving health and equity

Equity policy is a fast moving area

City staff have questions around balancing needs from different groups and operationalizing equity into transportation planning

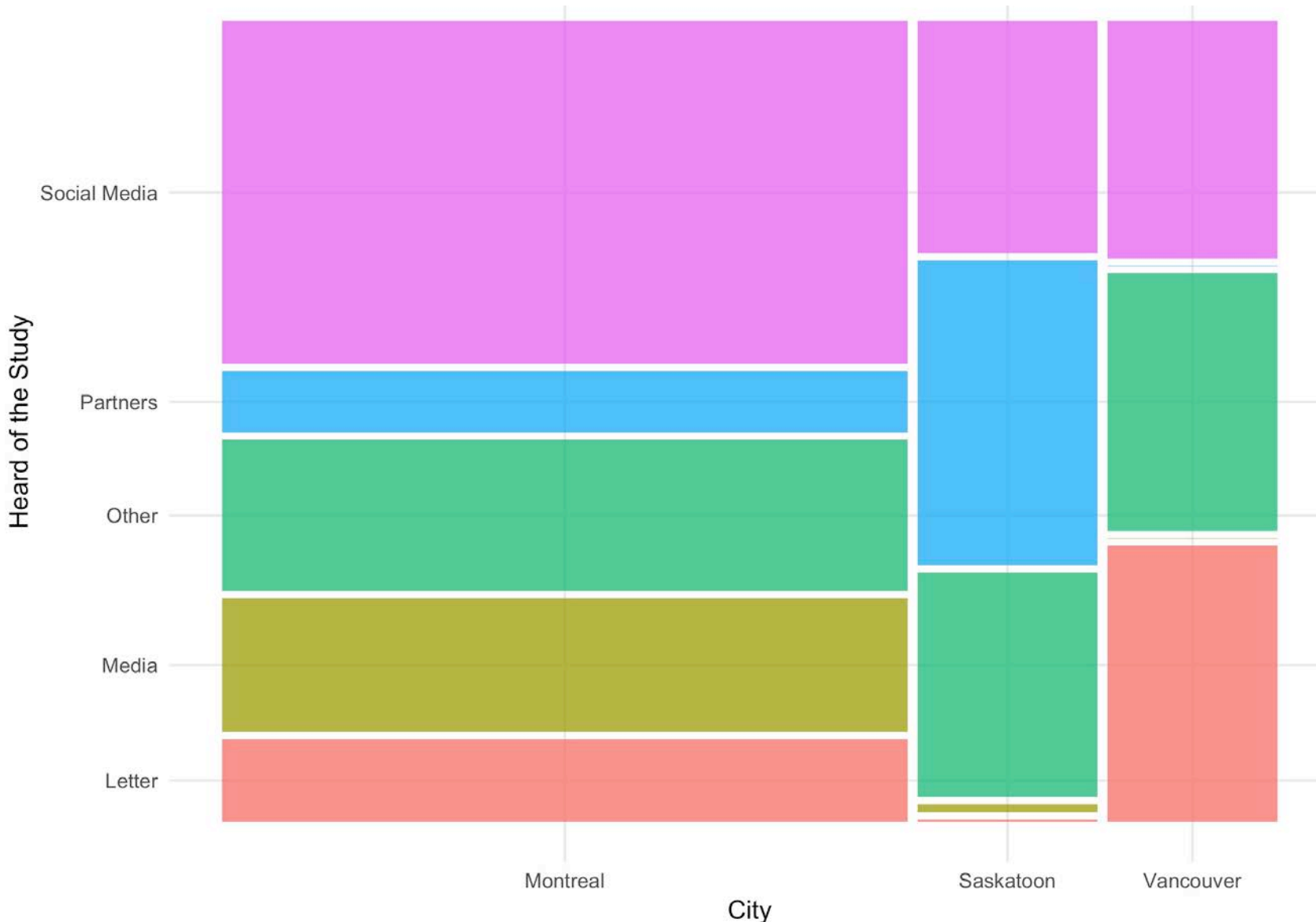
2 | RECRUITMENT

How to **recruit** and **retain** large cohorts for population health research?



Data on recruitment effectiveness, cost, and retention for cohort studies is lacking.

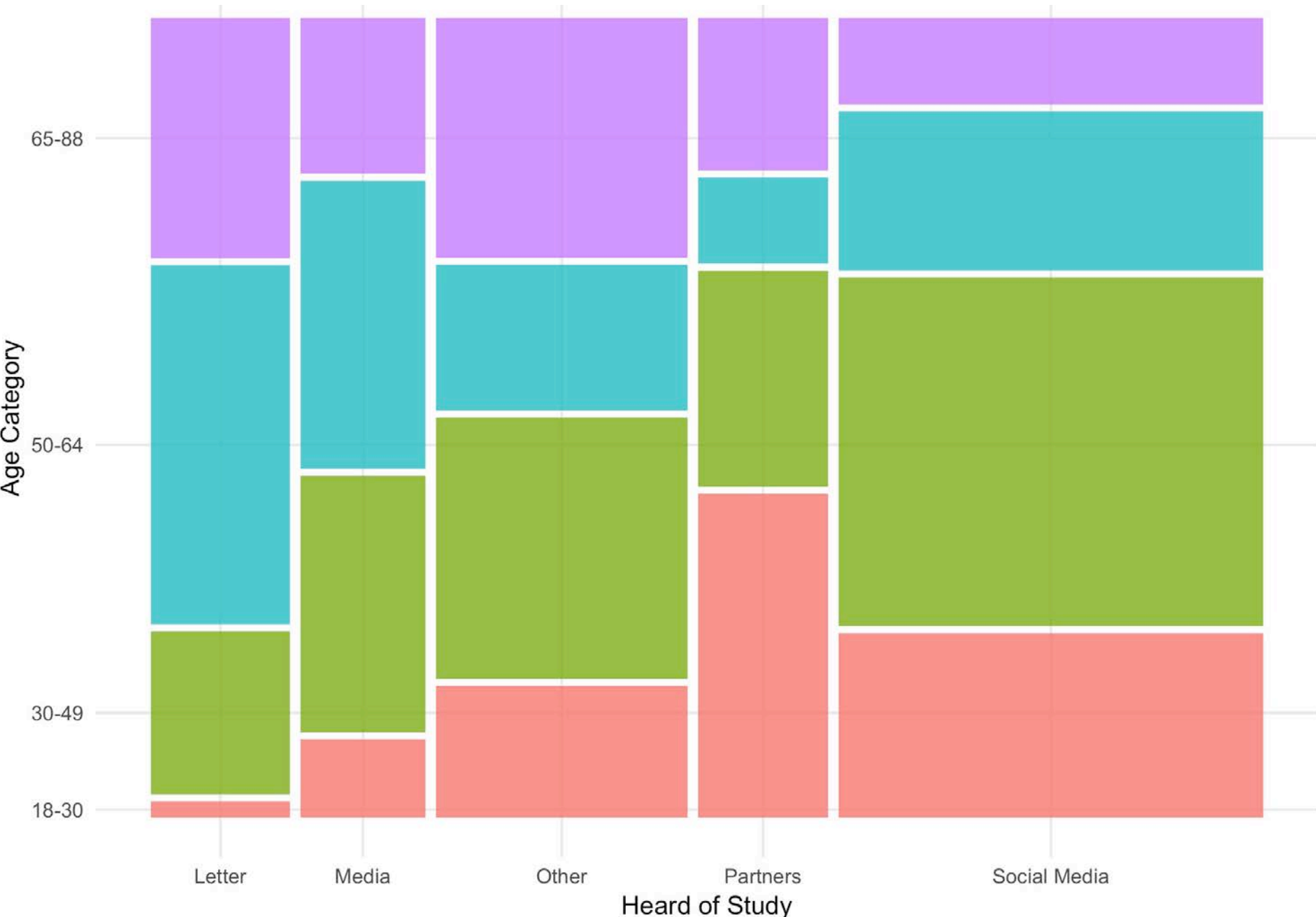
The most effective approaches?



Majority of participants recruited via social media, partnerships, other methods. Varies by city.

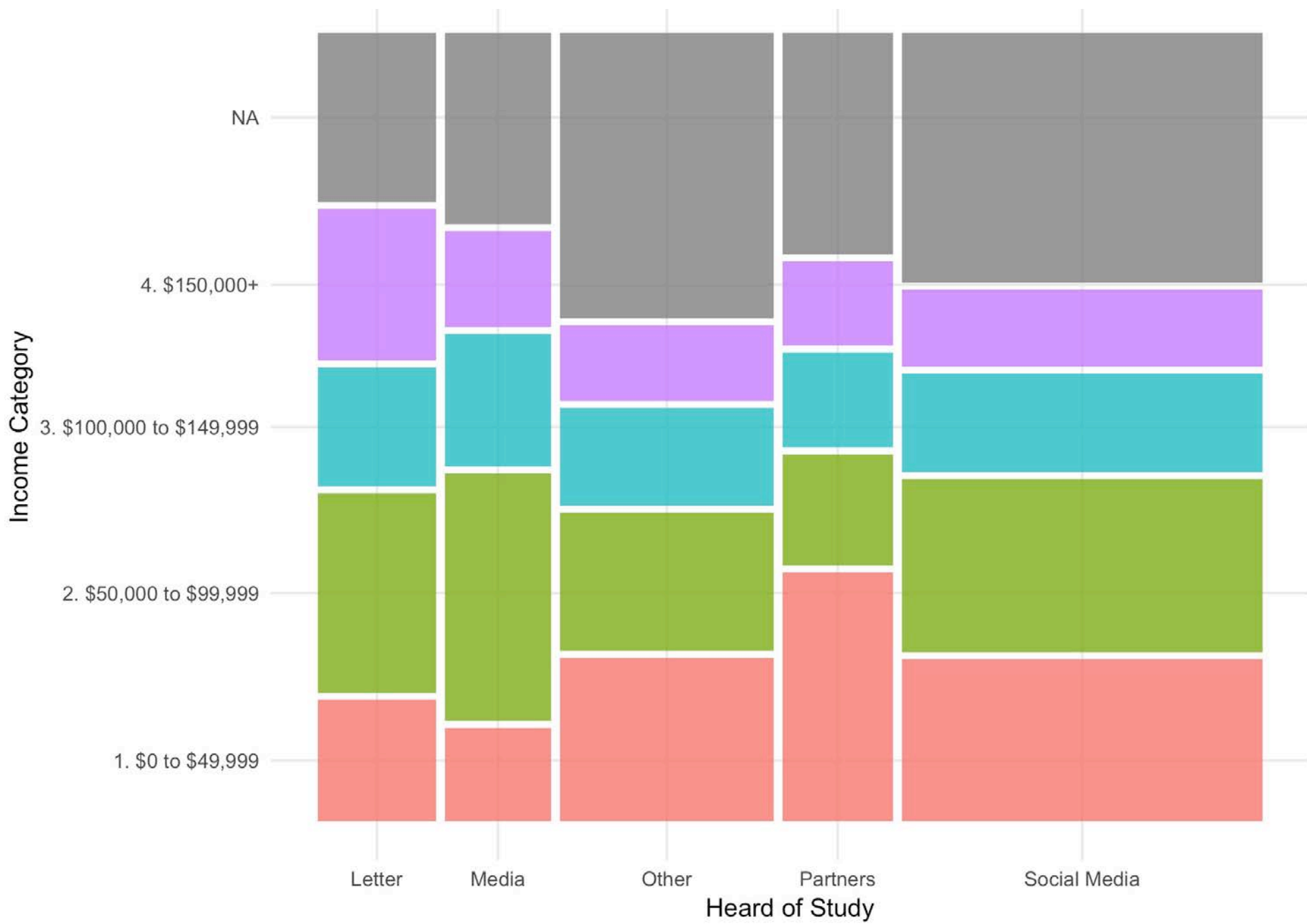
What does recruitment **cost**?

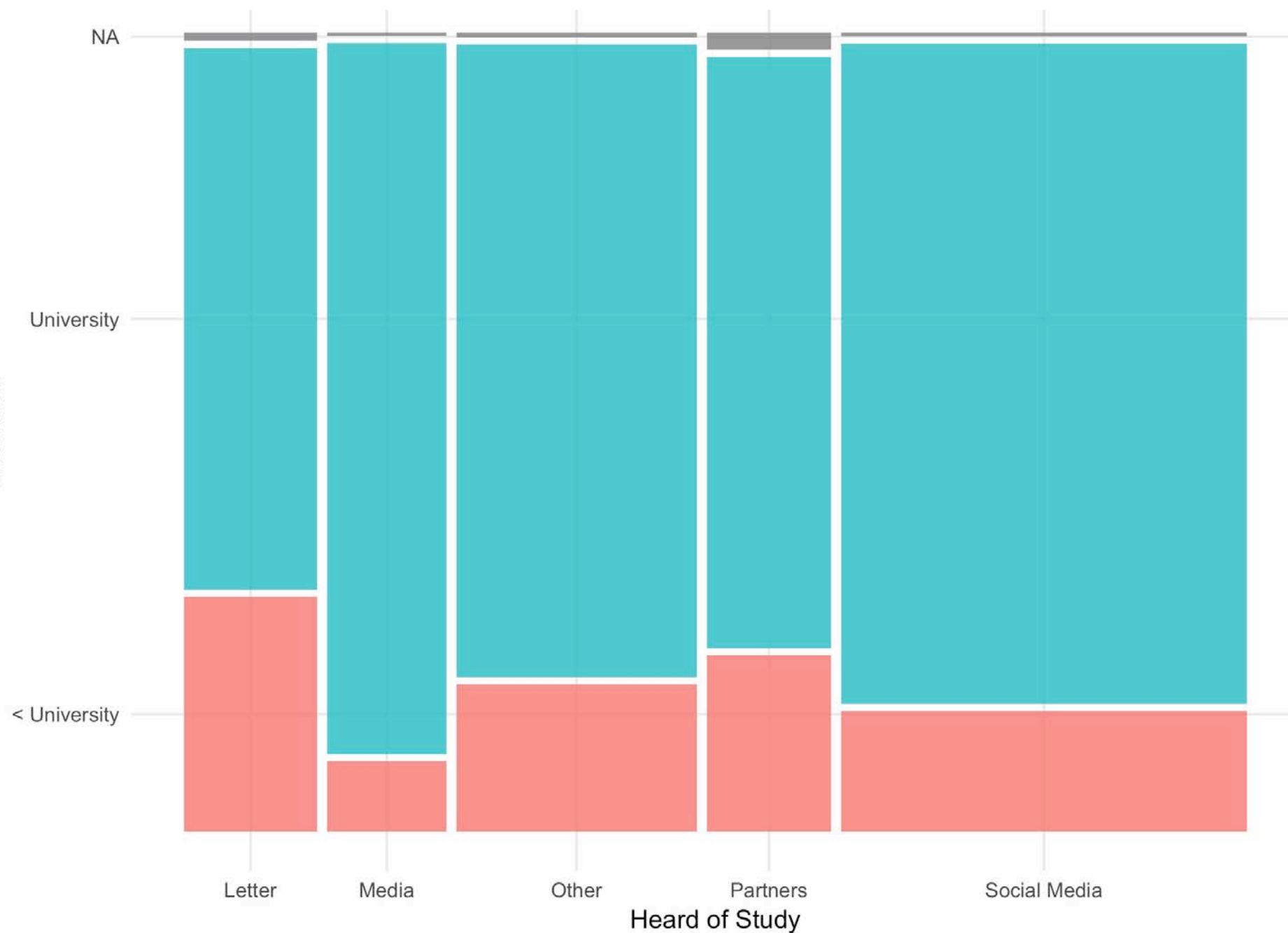
	Social Media	Letter	Partners	Other (In person)
Montréal	\$13.35 (503)	\$130.80 (148)	\$7.3 (91)	\$18.05 (109)
Saskatoon	\$16.13 (88)	N/A (0)	\$1 (126)	\$21.60 (79)
Vancouver	\$22.91 (96)	\$83.56 (134)	\$347 (1)	\$72.70 (65)



Partners and social media matter for recruiting younger ages. Letters and other methods work for older adults.

Partners matter
for recruiting
low income
individuals.





There was a higher proportion of people without a university degree that were recruited by letter than other means.

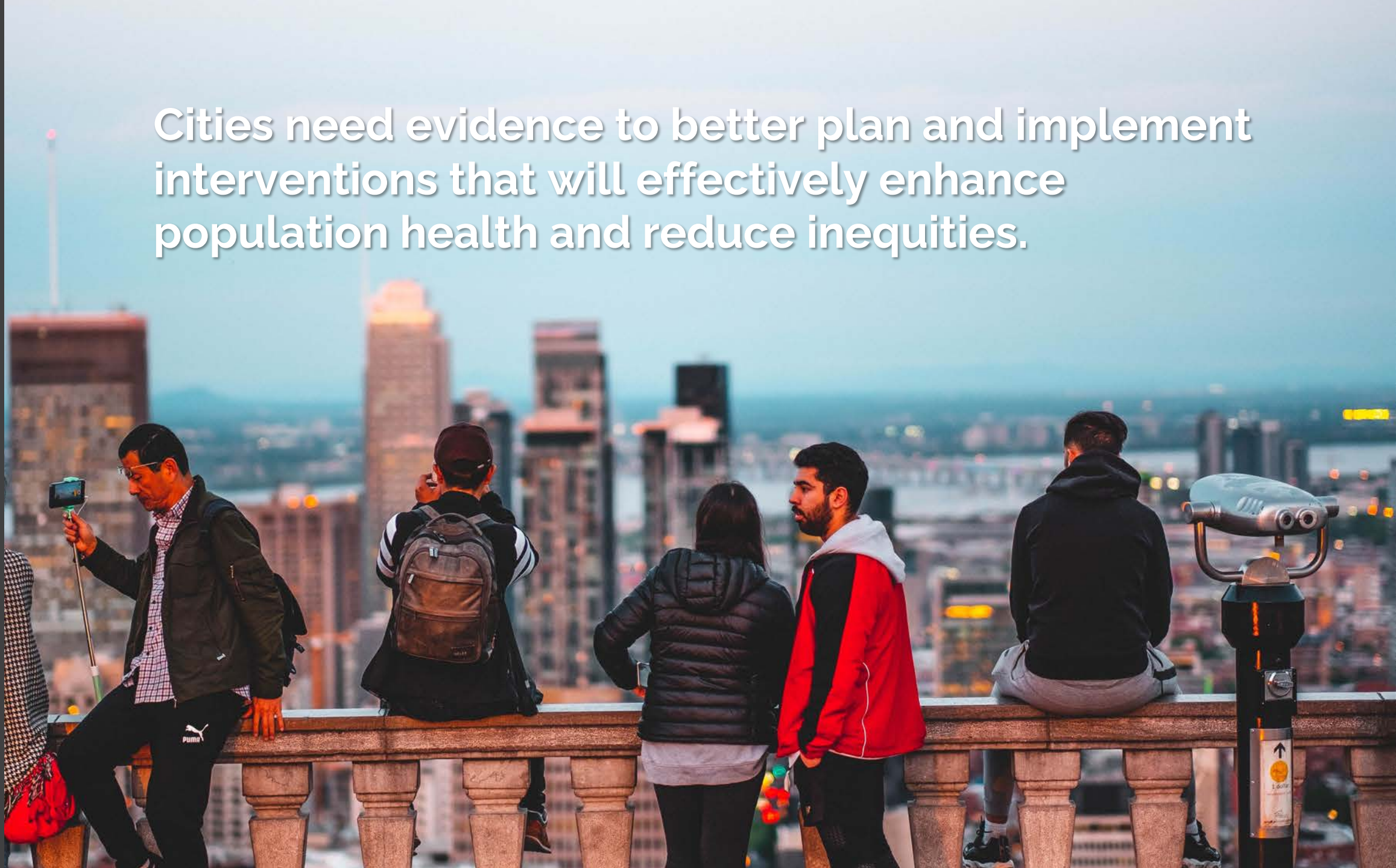


Social media is cost-effective. Use it and spend money.

Recruitment context matters. Strive to balance many recruitment strategies.

Partnerships matter for recruiting specific population groups.

Cities need evidence to better plan and implement interventions that will effectively enhance population health and reduce inequities.



3 | PHYSICAL ACTIVITY

How are **urban environments** influencing our physical activity?

A paved road with white dashed lines and circular markings, bordered by green foliage and purple flowers.

**Cities are looking for evidence
to inform decisions that will
have the greatest impact on
physical activity**

Built Environment and PA

Preaching to the choir **but...**

- Need to understand **correlated** environment data
- High frequency **location data** : Few studies combine GPS and accelerometry
- **Multiple cities...** generalizability



Our questions

- 1) Where are people spending time being active?
- 2) What are these environments like?
- 3) Are these different environments correlated?

Measures

Outcome measures

For each participant:

Daily sum of minutes

spent in either, sedentary, light, moderate, or vigorous physical activity in each dissemination area (DA)

Calculated based on data from INTERACT participants who wore the SenseDoc for 10 days

Neighborhood built environment and gentrification exposures

- Active living space exposure – Can-ALE
- Proximity to amenities measures – Statistics Canada
- Urban Sprawl
- Gentrification

Covariates

- Participant demographics (age, gender, race)
- Weather

Data

- **Participants**

- Montreal 157, Saskatoon 78, Vancouver 150, Victoria 152

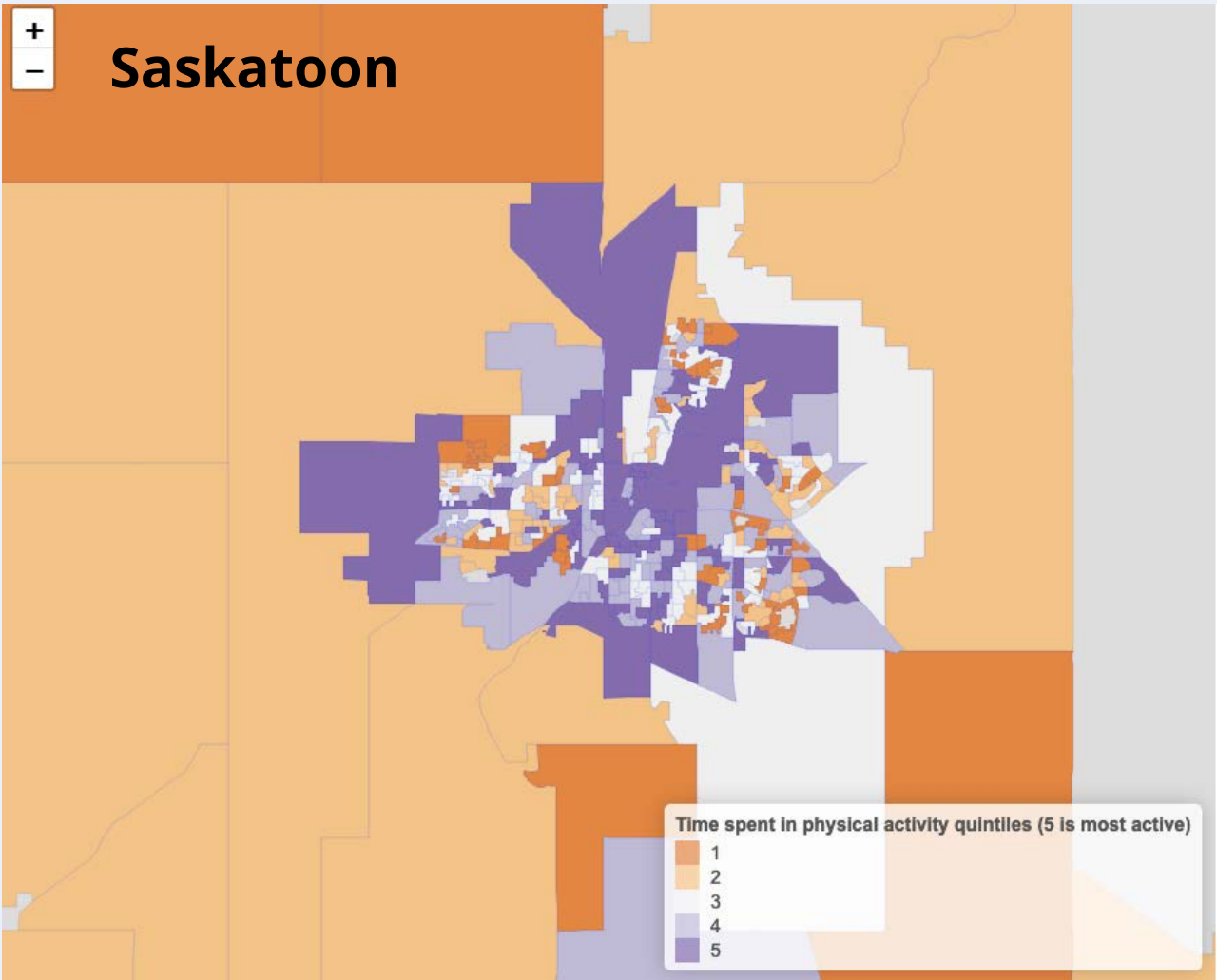
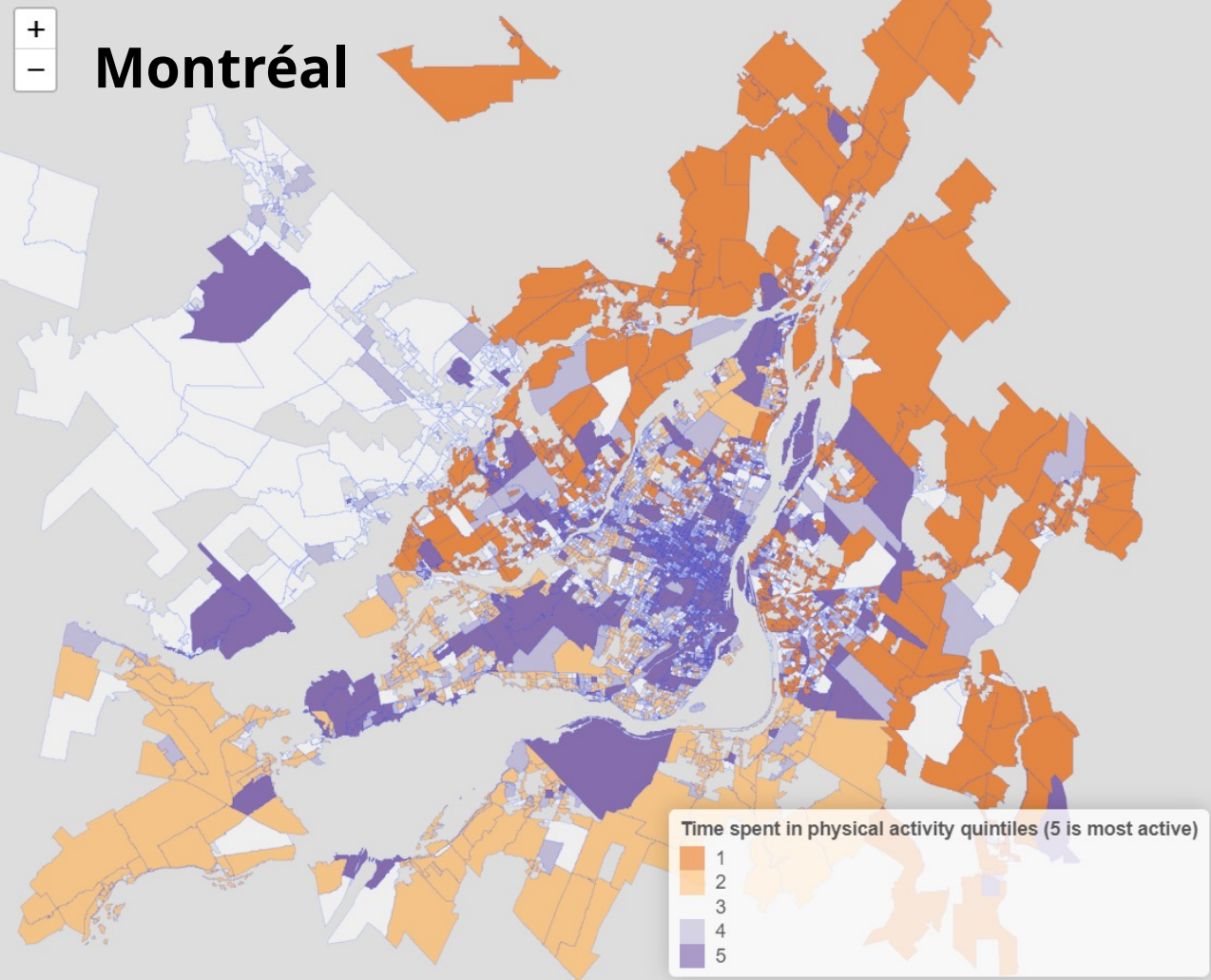
- **The initial dataset**

- 2,493,887 min of matched accelerometer and GPS data
- 177,104 observations aggregated at the person, day, and DA level

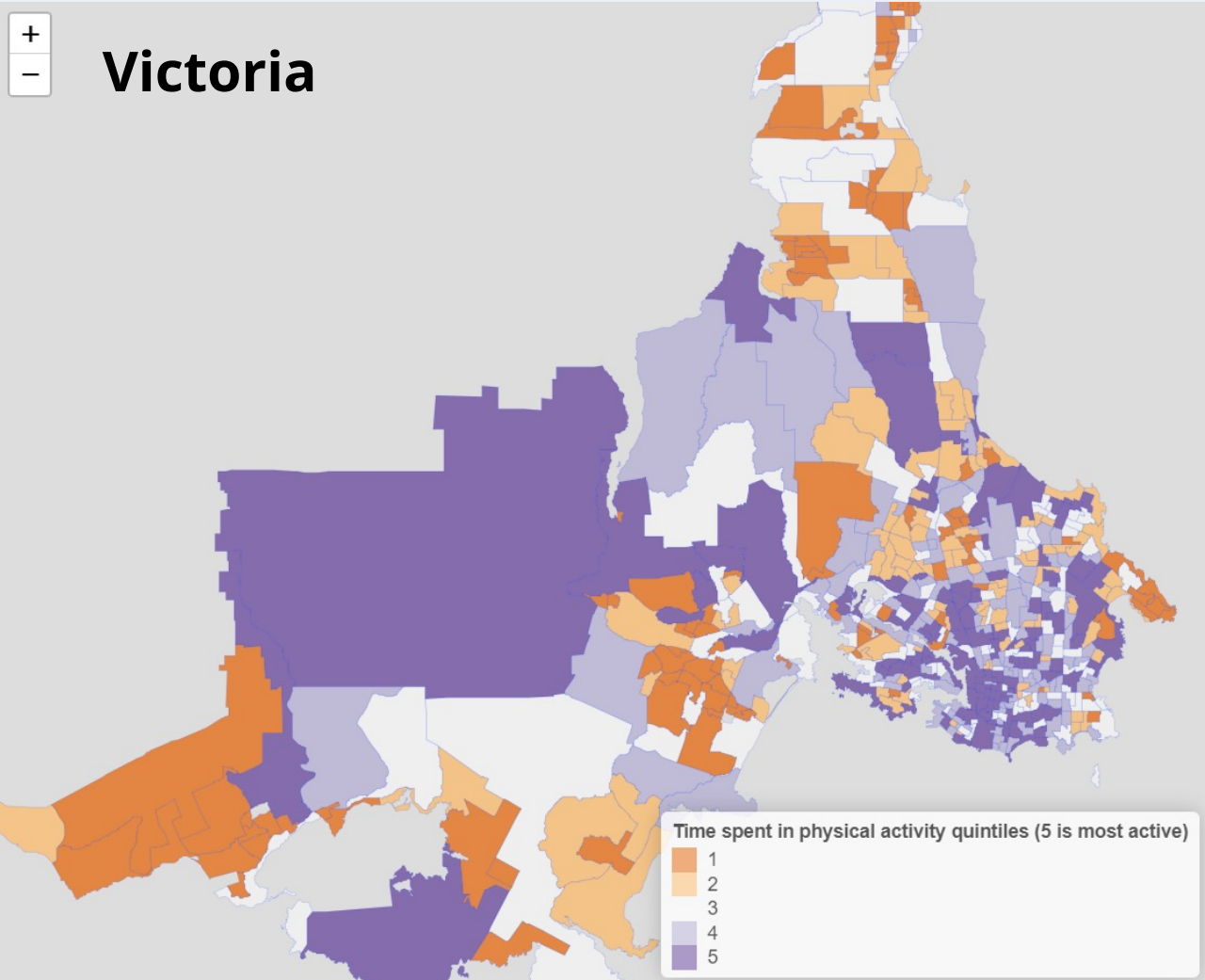
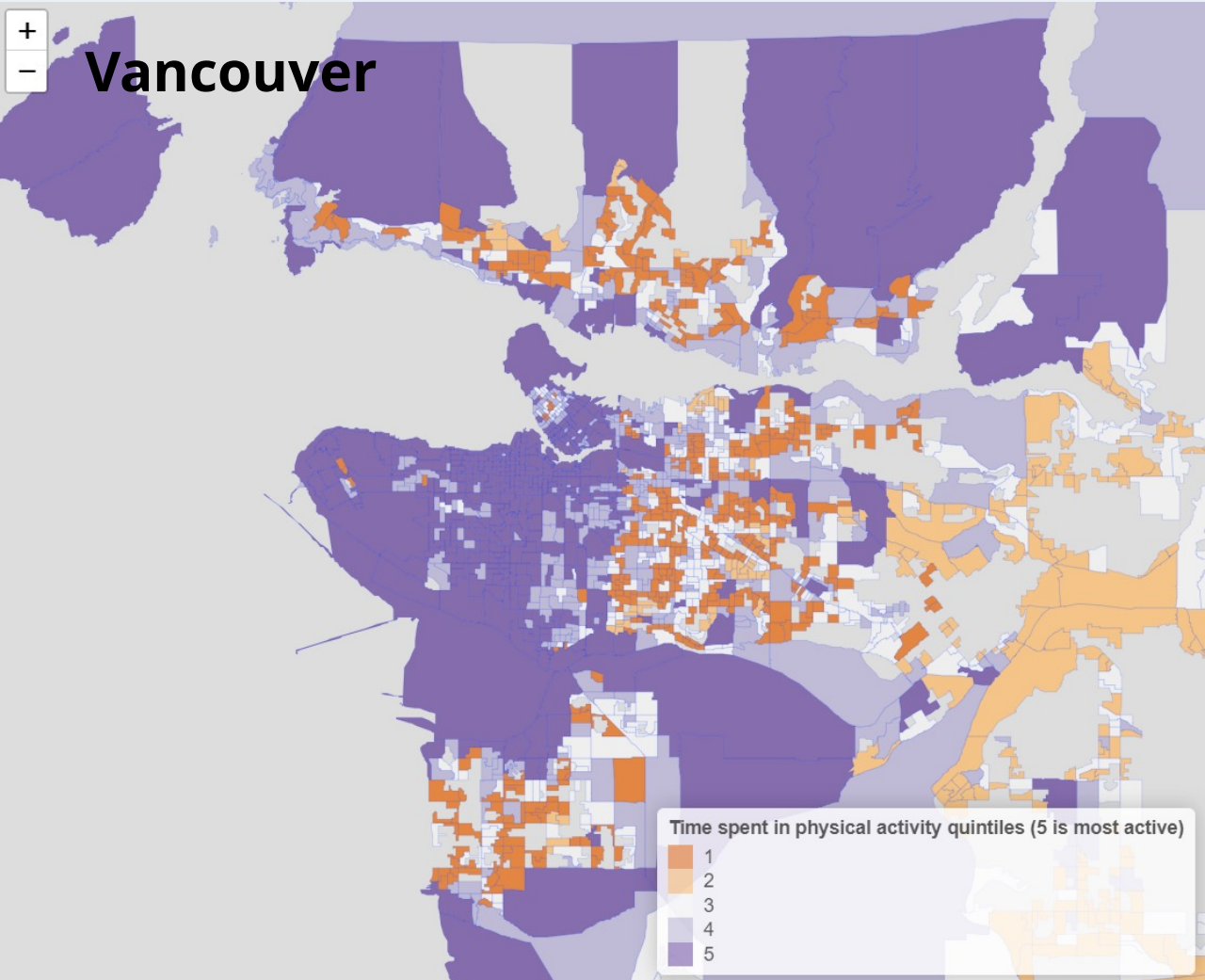
- The average minutes in a DA in each city was

- Victoria (19 min, range = 1min to 3h46min)
- Vancouver (8 min, range = 1min to 4h28min)
- Saskatoon (27 min, range = 1min to 5h23min)
- Montreal (10 min, range = 1min to 8h2min)

Where are people spending time being active?



Where are people spending time being active?



What are those environments like?

They are **close to home**

- Home DA had by far the strongest association with physical activity
- 45% of time spent being physically active happened in home DA

They are **walkable**

- High walkability associated with more physical activity
- Each quintile increase in the Can-ALE score, active minutes per DA per day increased by 15-35%

What are those environments like?

Less physical activity happened in areas that were **highly compact and close to transit**

Urban compactness was associated with less physical activity across all four cities

In Montreal, Vancouver, Victoria, proximity to public transit was negatively associated with time spent being physically active

What are those environments like?

Participants spent less time being physically active in **low socio-economic neighbourhoods** that had not gentrified

Patterns within gentrified neighbourhoods were mixed:

- In Montreal, adults spent less time being physically active in gentrified neighbourhoods
- In Vancouver, adults spent more time being physically active in gentrified neighbourhoods



Home location matters – a lot

Multi-city comparative studies are crucial

Local context is central

Large population cohorts are opportunities to test impacts of built environment

INTERACT has the largest cohort of GPS and Accelerometer in the world

Answering city needs, but opportunities for more multi-city studies

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What did you learn today?

Waiting for responses ...



LET'S REIMAGINE OUR CITIES TO BE
HEALTHIER PLACES FOR EVERYONE.

#LETSINTERACT



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