Introduction

Evidence at the individual and area level that deprivation is associated with poorer access to physical activity facilities and to healthy food stores.

Interventions:
* US Surgeon General's call to action to prevent chronic disease.
* Healthy food choices can occur only in supportive environments with accessible and affordable healthy food choices.

The concept of accessibility is broader than individual or area proximity to physical activity opportunities and healthy food stores.

Individual and Area-Level Disparities in Access to the Road Network, Subway System, and a Public Bicycle Share Program on the Island of Montreal, Canada

Access: Concept that represents people's ability to reach goods, services and activities, which is the primary objective of a majority of transportation activities.

Methods

Time0:
* 4 May – 30 June 2009
* n=2001
* Mean age: 40.4 years
* 56.7% female
* 35.3% response rate

Time1:
* 8 October – 12 December 2009
* n=2502
* Mean age: 47.2 years
* 59.5% female
* 54.8% response rate

Time2:
* 8 November – 12 December 2010
* n=2509
* Mean age: 48.0 years
* 59.0% female
* 35.7% response rate

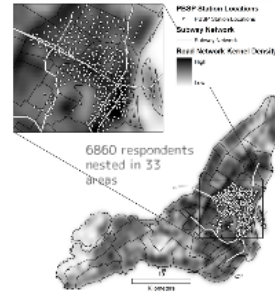Cross-sectional design. Three population-based samples of adults

Education, income, density of destinations, street connectivity

Age, sex, education, income, employment status, being born in Canada, and having a driver's license

Analysis

PBSP Station Locations
Subway Network
Road Network Kernel Density

Level 2: 80×100

Level 1: Individuals

6860 respondents nested in 33 areas

Results

	Road Network Access Coefficient (SE)	Public Transportation Access Coefficient (SE)	Bicycle Share Program Access Coefficient (SE)
Individual Level			
Age			
Having children			
Drivers License			
Employment			
Part-time			
Student			
Retired			
Leave			
Education			
High school diploma			
Trade school			
College			
Household income			
<$40,000			
$40,000-$69,999			
$80,000-$99,999			
Area Level			
No Diploma			
Low Income			
Street Connectivity			
Density of Destinations			

Discussion

Areas with a higher percentage of low income residents have greater access to the road network, the subway system, and the bicycle share program.

Health:
* Greater access to the subway system and cycling contributes positively to health by increasing physical activity, despite the risks of collisions with motor vehicles.
* Greater access to the road network contributes to increased access which has potential health benefits.

Unintended consequences:
* Greater exposure to the road network associated with greater exposure to air pollution, noise, and injuries due to collisions with motor vehicles.

Results are consistent with past research in Montreal

Limitations:
* The operationalization of access.
* Response bias.

* Extrapolation to other cities is premature.
* Variation limits the plausibility of generalizability assumptions.

Daniel Fuller
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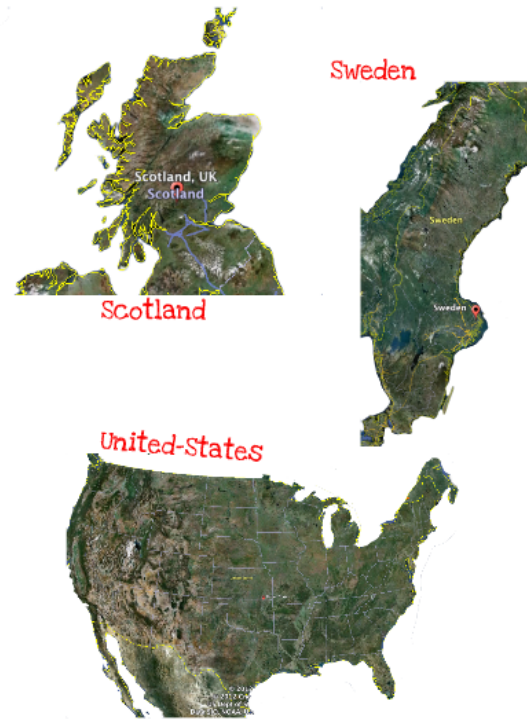www.walkability.net

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Scotland

United-States

The concept of accessibility is broader than individual or area proximity to physical activity opportunities and healthy food stores.

Pub

Montreal Public Health

Home Groceries

Office

Post-Doc Physical Activit

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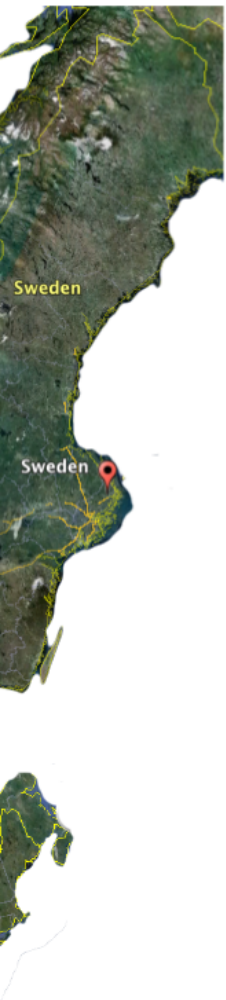
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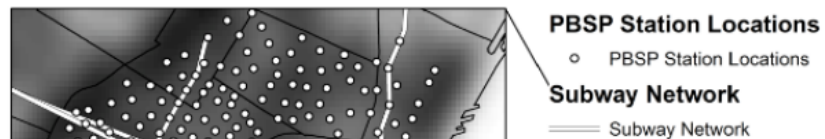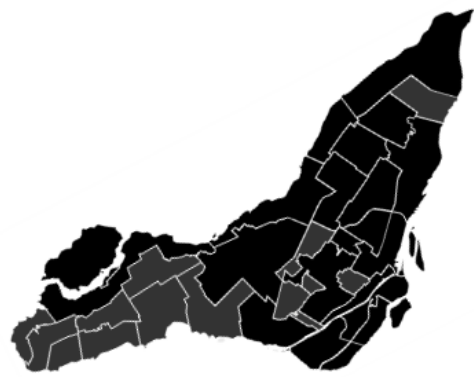 - 35.7% response rate

Education, income, density of destinations, street connectivity

Cross-sectional design. Three population-based samples of adults

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PBSP Station Locations
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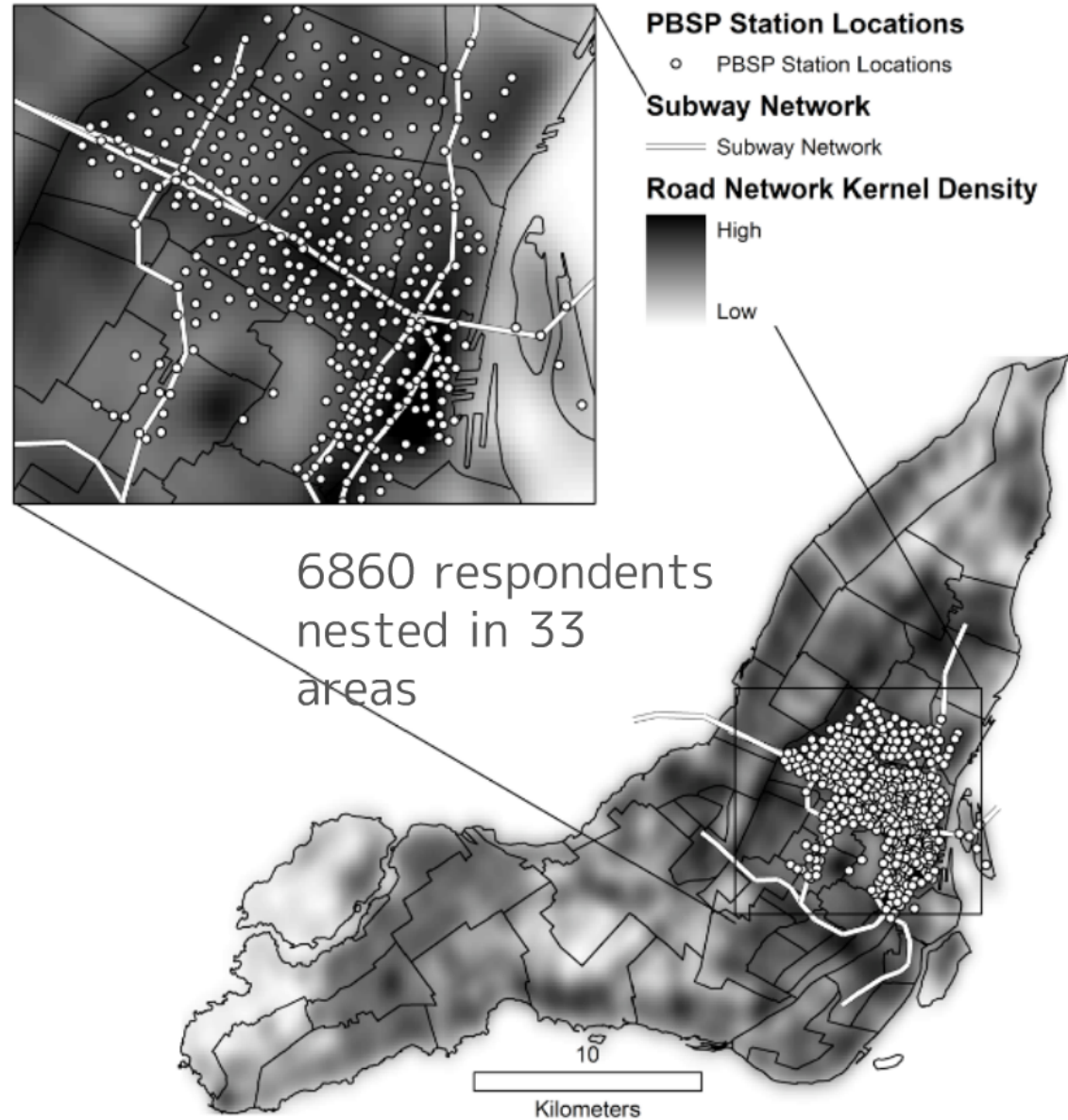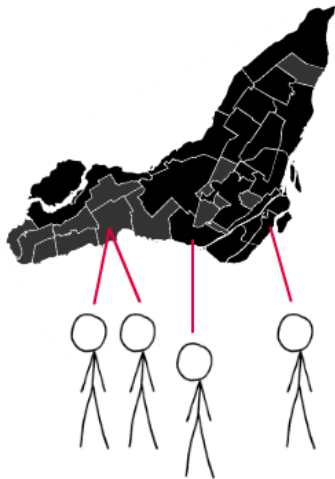Age, sex, education, income, employment status, being born in Canada, and having a driver's license

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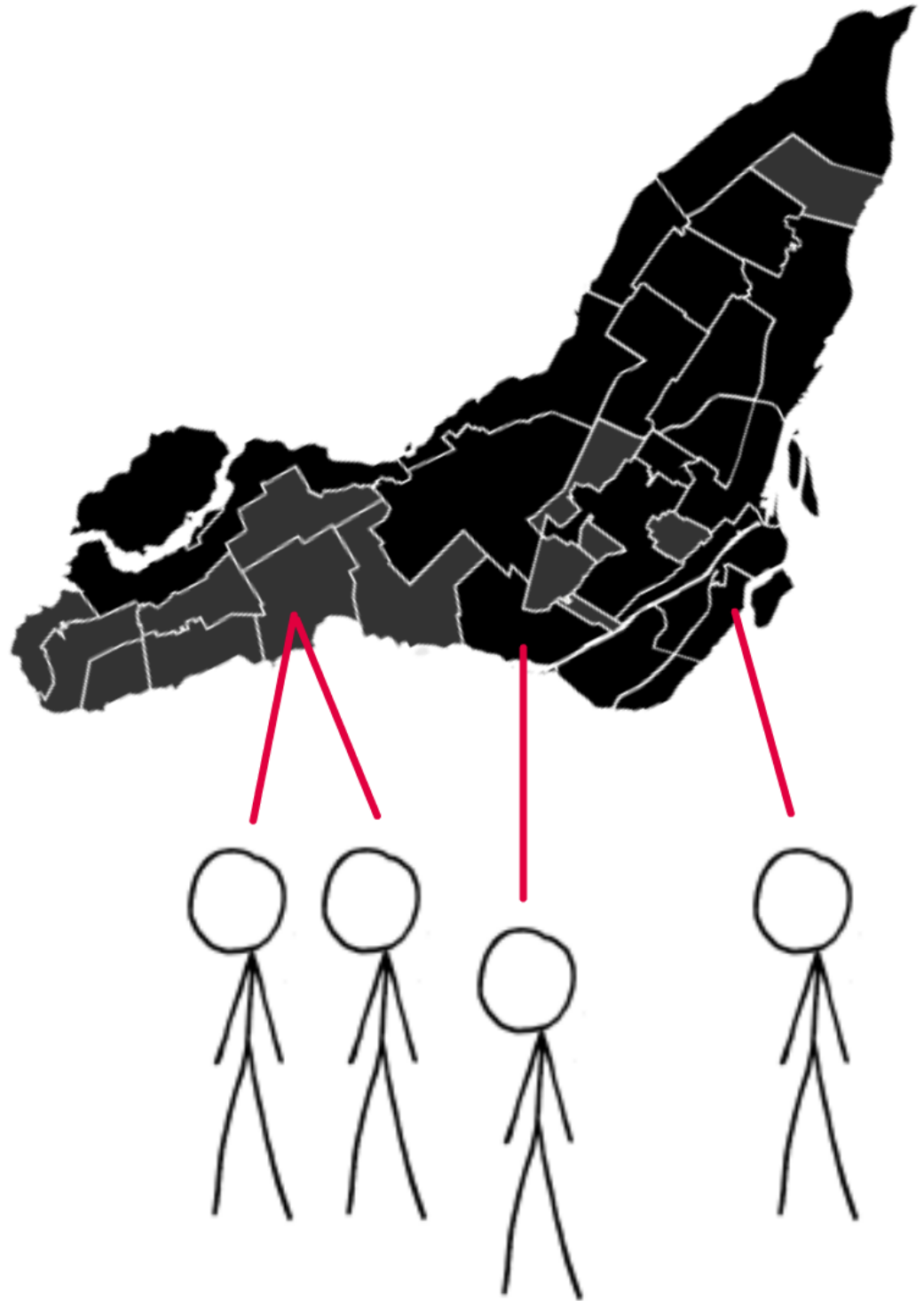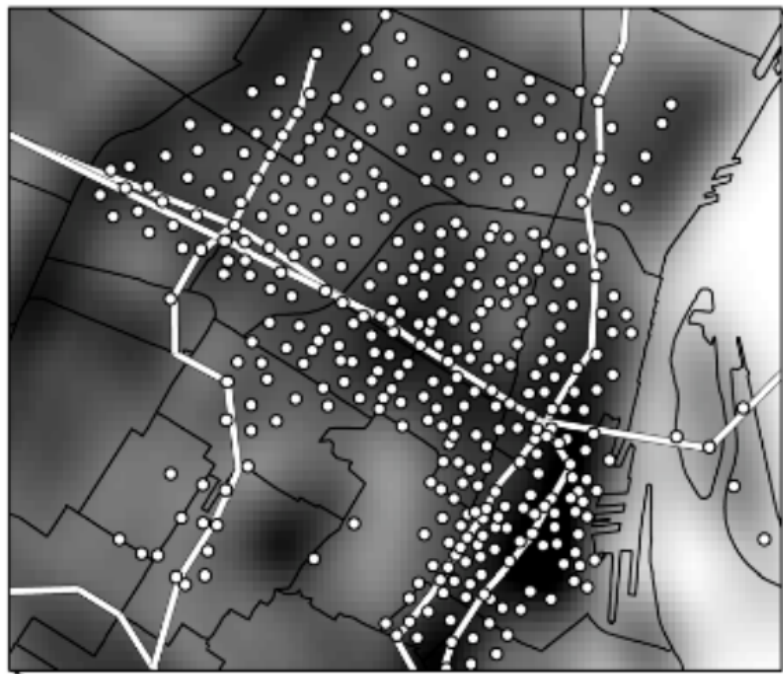
PBSP Station Locations

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Subway Network

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Road Network Kernel Density

High

Low

6860 respondents nested in 33 areas

10

Kilometers

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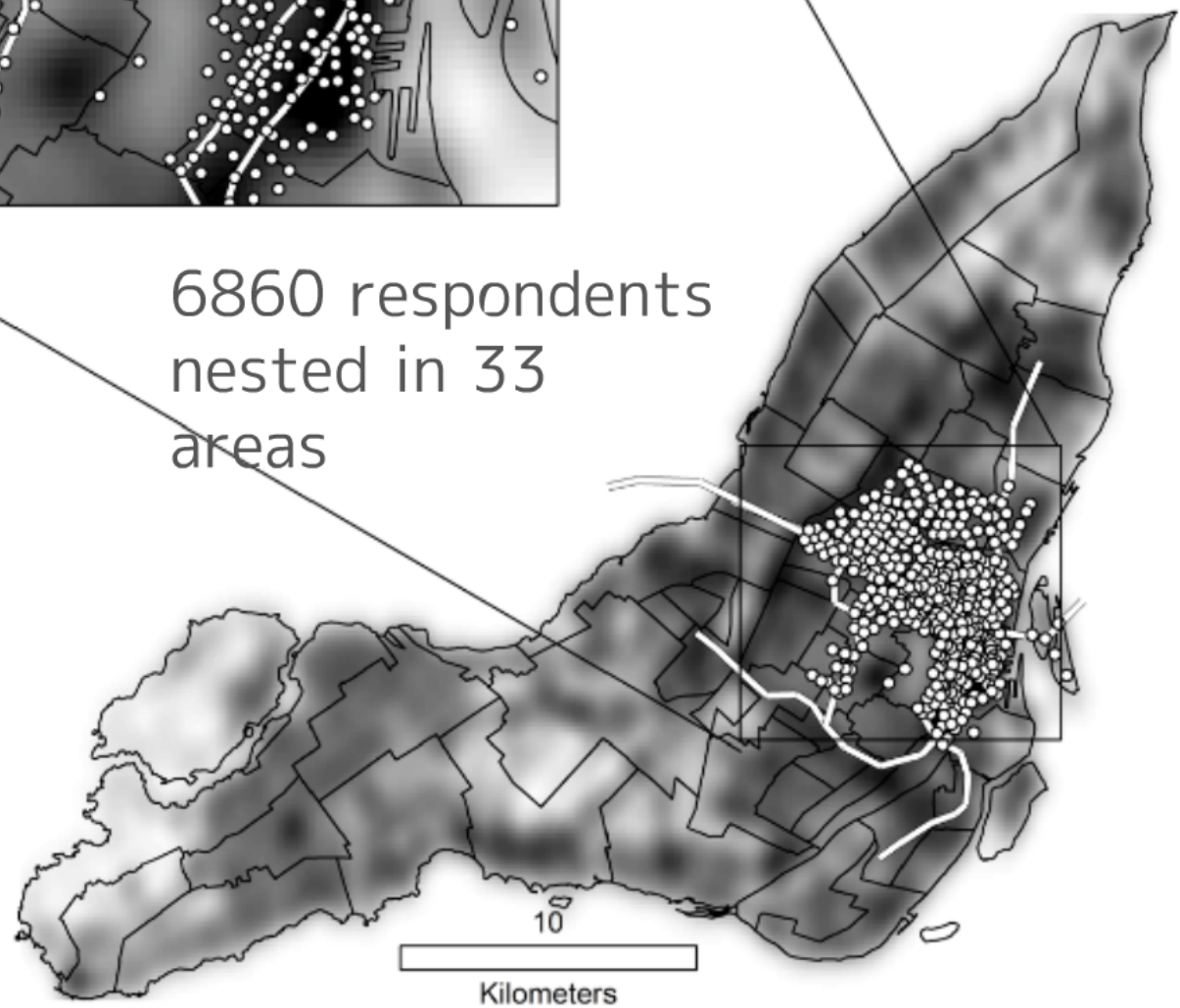
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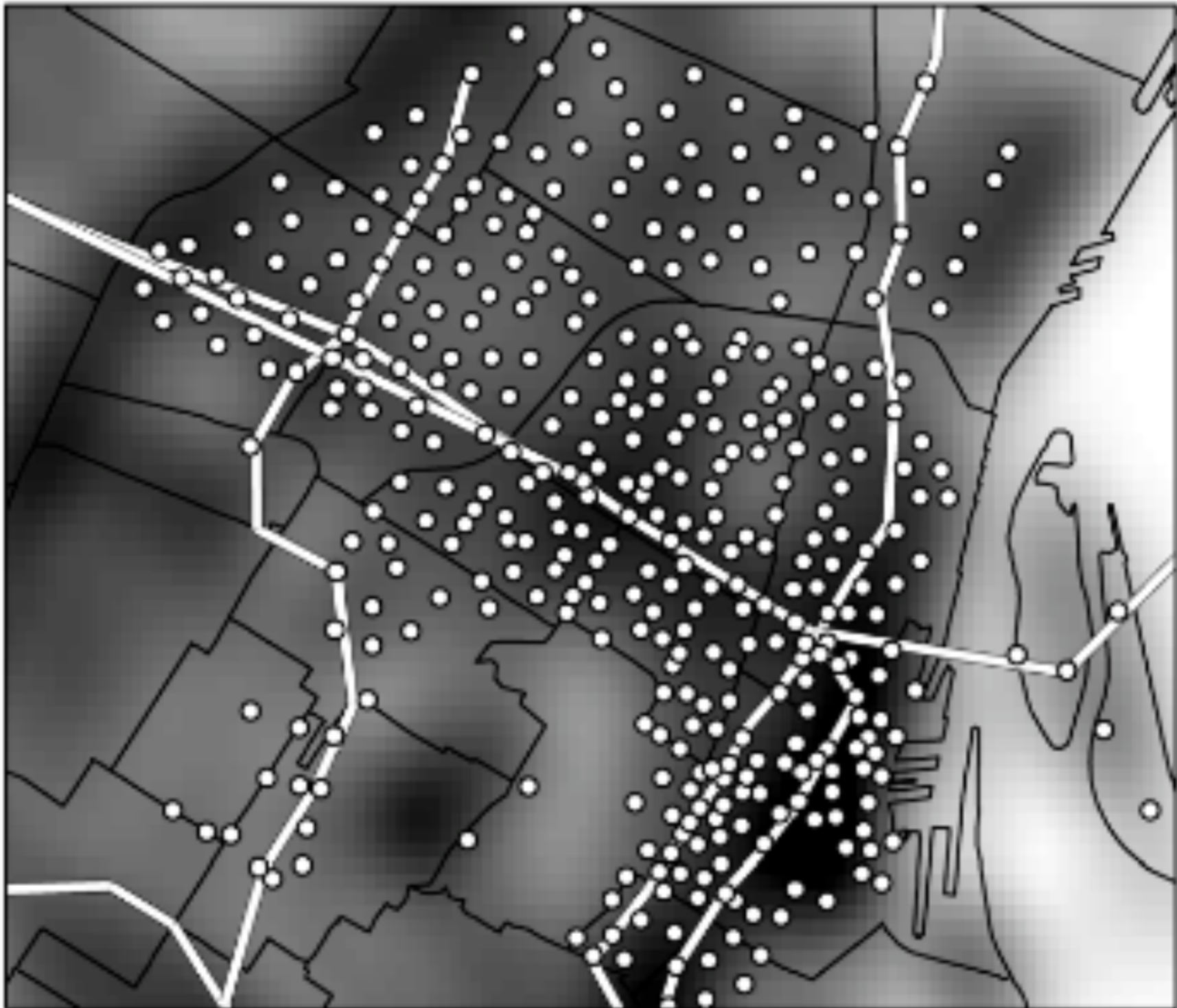○ PBSP Station Locations

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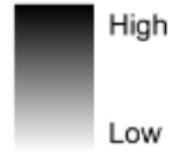
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Results

	Road Network Access Coefficient (SE)	Public Transportation Access Coefficient (SE)	Bicycle Share Program Access Coefficient (SE)
Intercept	5.78 (0.26)[†]	2065.06 (1259.21)	3673.88 (1718.63)[*]
Individual Level			
Age	-0.01 (0.1)	2.48 (1.60)	6.32 (3.38)
Foreign Born	-0.02 (0.03)	14.54 (65.77)	69.59 (67.92)
Drivers License	-0.03 (0.03)	57.81 (33.29)	110.92 (71.77)
Employment			
Part time	-0.12 (0.05)[†]	122.56 (45.51)[†]	100.36 (48.53)[*]
Student	-0.07 (0.03)[†]	22.37 (63.86)	-1.84 (118.43)
Retired	-0.04 (0.05)	-34.91 (63.69)	-25.94 (106.32)
Leave	-0.08 (0.03)[†]	46.81 (34.69)	73.84 (52.97)
Education			
High school or less	0.01 (0.04)	138.05 (49.31)[†]	192.69 (123.98)
Trade school	0.03 (0.04)	25.01 (48.45)	-47.66 (60.88)
College	0.02 (0.03)	43.55 (39.96)	82.58 (81.51)
Household Income			
< $20,000	0.03 (0.05)	-70.83 (67.89)	-372.65 (169.80)[*]
$20,000-$49,999	0.02 (0.05)	-67.37 (67.78)	-243.89 (131.92)
$50,000-$99,999	0.04 (0.05)	-36.24 (63.89)	-206.57 (107.82)
Sex	-0.01 (0.01)	54.97 (74.15)	38.41 (44.82)
Neighborhood Level			
No Diploma	-0.07 (0.23)	-668.23 (781.71)	-1356.32 (1131.28)
Low Income	0.51 (0.23)[*]	-2354.03 (1045.11)[**]	-3340.69 (1492.22)[**]
Street Connectivity	-0.01 (0.01)	16.06 (3.94)	20.82 (5.11)[**]
Density of Destinations	-0.01 (0.00)	-49.28 (21.88)	-76.37 (32.59)[*]

Note. Reference categories are: Foreign born=No, Drivers license=No, Sex=Male, Employment=Full time, Education=University education Household income= > $100,000, No diploma= < 25% no diploma, Low income cut off= < 25% low income. [*]$p<.05$, [**]$p<.01$.

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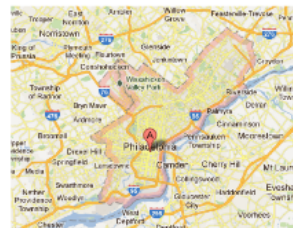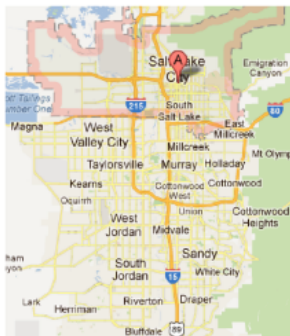

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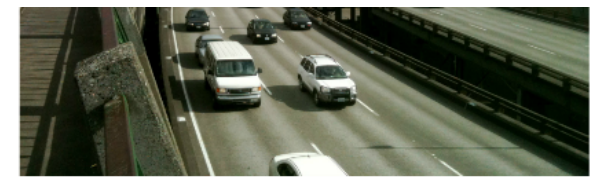- Greater access to the road network contributes to increased access which has potential health benefits.

Unintended consequences:
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Results are consitent with past research in Montreal

Discussion

Limitations:
- The operationalization of access.
- Response bias.

- Extrapolation to other cities is premature.
- Variation limits the plausibility of generalizability assumptions.

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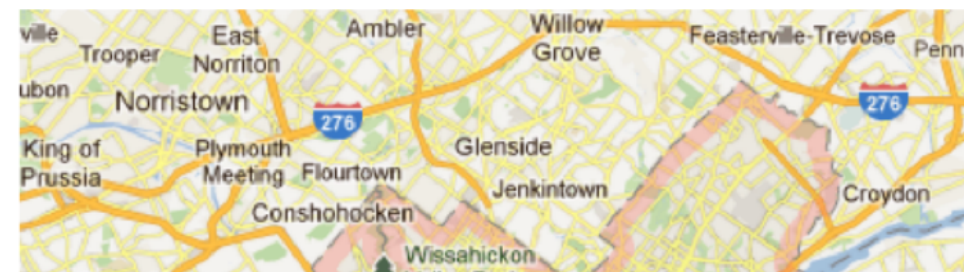potential health benefits.
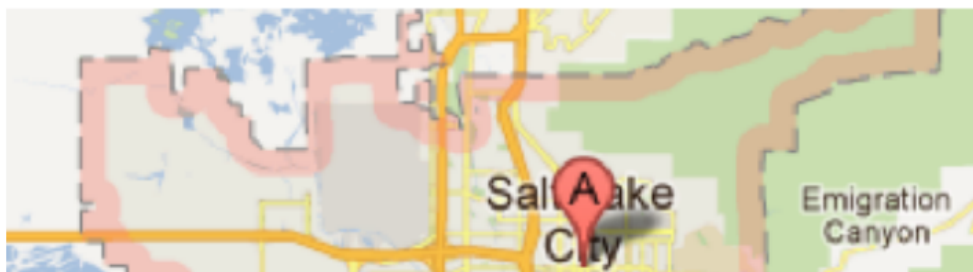
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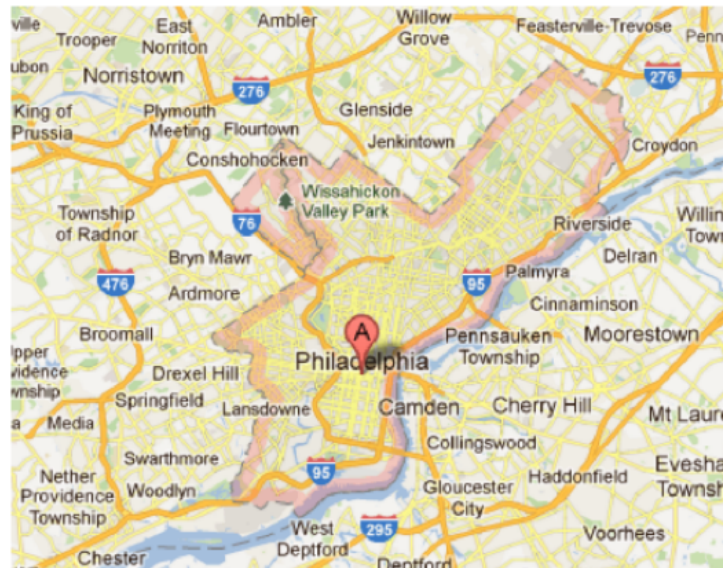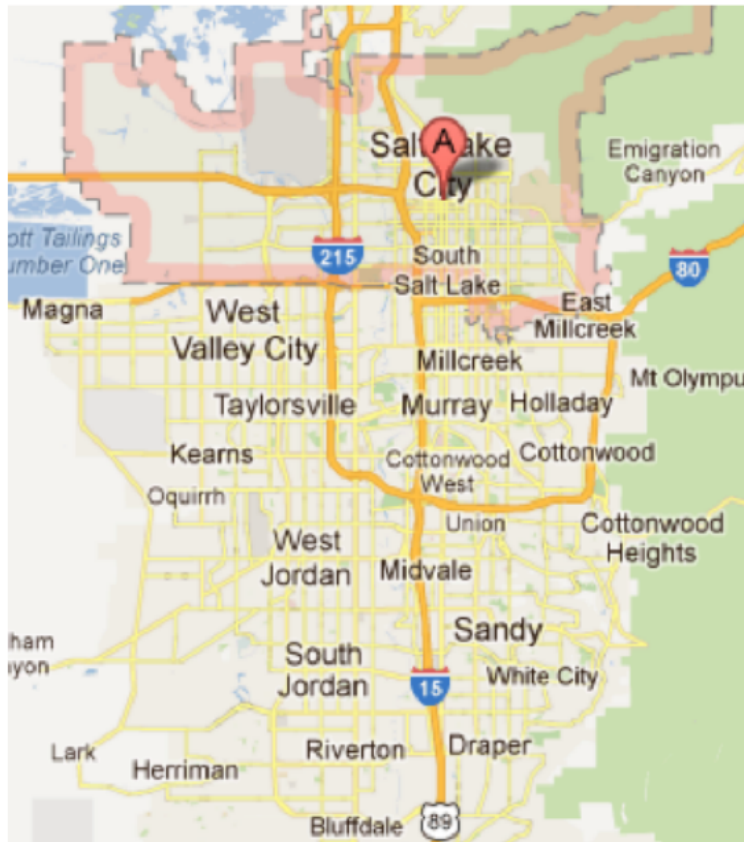
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