

Assessing Québec alcohol retail environments

Prepared for “Co-occurrence and implementation mechanisms in cannabis, alcohol, and tobacco policies” symposium held June 22, 2023

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Today's presentation

Context

Conceptual grounding

How datasets were developed

How we have used the measures

Possibilities for future work

Context

Why care about alcohol retail environment?

Higher alcohol outlet density associated with higher **harm**

Higher alcohol density in disadvantaged neighbourhoods

Need Canadian context

Harms include: violence, alcohol-impaired driving¹, hospital admissions²



Conceptual grounding

Alcohol environment

Recent Canadian studies

Ontario*

Friesen et al 2022 (2 papers)
Gohari et al 2021
Myran et al 2019 (2 papers)
Leung et al 2019
Larsen et al 2017

Quebec

Ngui et al 2015

Other

Slaunwhite et al 2017 (NB)*

*deregulated alcohol sales (in 2015 Ontario allowed alcohol sales in grocery stores; in 2015 New Brunswick piloted wine sales in grocery stores)

Conceptual grounding

Alcohol environment

Exposure vs access

Conceptual grounding

Quantifying access

Five dimensions of access¹

Availability

Accessibility

Affordability

Accommodation

Acceptability

Spatial

Conceptual grounding

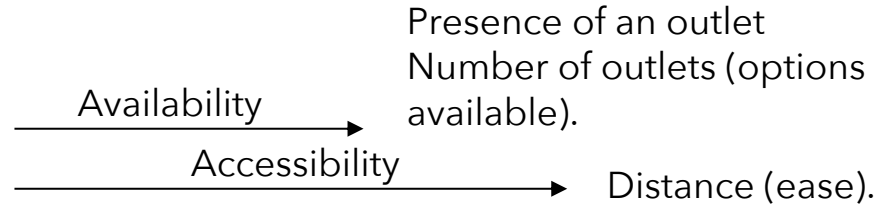
Quantifying access

Five dimensions of access¹

Availability
Accessibility

Affordability
Accommodation
Acceptability

Spatial



Conceptual grounding

Quantifying access

Five dimensions of access¹

Availability

Accessibility

Affordability

Accommodation

Acceptability

How datasets were developed

numero_de_dossier	nom_du_commerce_etablissement	adresse_du_commerce	ville	categorie_de_permis	categorie_fac4
PERMN7591	Body Girl	77 Rue D'Iberville	Berthierville	Bar	onsite
PERMN7799	Le Mount Stephen	1440 Rue Drummond	Montréal	Bar	onsite
PERMN7799	Le Mount Stephen	1440 Rue Drummond	Montréal	Accessoires	other
PERMN13037	Palais Des Sports De Mont-Laurier	801 Rue Alix	Mont-Laurier	Bar	onsite
PERMN17194	Hôtel Victoria	544 Rue Notre-Dame	Joliette	Bar	onsite
PERMN19216	Le Dôme	836 Rue Saint-Louis	Gatineau	Bar	onsite
PERMN20834	Brasserie Des Sportifs	554 Rue Saint-Pierre	Terrebonne	Bar	onsite
PERMN22723	Hotel Bonaventure	900 Rue De La Gauchetière Ouest	Montréal	Bar	onsite
PERMN22723	Hotel Bonaventure	900 Rue De La Gauchetière Ouest	Montréal	Restaurant vendre	restaurant
PERMN29652	Le Rhum Antic	592 Route 220	Bonsecours	Restaurant vendre	restaurant
PERMN30148	Bistro Bar Le District Moody	115 Rue Saint-Louis	Terrebonne	Bar	onsite
PERMN31849	Brasserie Jc	211 Rue Saint-André	Saint-Rémi	Bar	onsite
PERMN31849	Brasserie Jc	211 Rue Saint-André	Saint-Rémi	Restaurant vendre	restaurant
PERMN34447	Bar Le Drague	815 Rue Saint-Augustin	Québec	Bar	onsite
PERMN37416	Bar Bellagio	512 Rue Lindsay	Drummondville	Bar	onsite
PERMN40048	Quilles G Plus Rose Bowl	6510 Rue Saint-Jacques (Montréal)	Montréal	Bar	onsite
PERMN47951	Bistro Patrizio & Co.	575 Grande Allée Est	Québec	Bar	onsite
PERMN55343	Centre Sportif Gaetan Boucher	3850 Rue Edgar	Longueuil	Bar	onsite
PERMN55343	Centre Sportif Gaetan Boucher	3850 Rue Edgar	Longueuil	Accessoires	other
PERMN55459	Bar Place 37	8489 Boulevard Saint-Michel	Montréal	Bar	onsite
PERMN62562	Sushi Taiyo	1709 Rue Saint-Denis	Montréal	Restaurant vendre	restaurant
PERMN65409	Hotel Laurentien	562 Rue Principale	Lachute	Bar	onsite
PERMN75770	Bar Taboo	1950 Boulevard De Maisonneuve Est	Montréal	Bar	onsite
PERMN85845	Corporation De Gestion Du Parc Du Mont-St-Mathieu	121 Chemin du Lac Sud	Saint-Mathieu-de-Rioux	Bar	onsite
PERMN85845	Corporation De Gestion Du Parc Du Mont-St-Mathieu	121 Chemin du Lac Sud	Saint-Mathieu-de-Rioux	Accessoires	other
PERMN88427	Bar Yamaska	150 Rue Pine	Cowansville	Bar	onsite
PERMN88427	Bar Yamaska	150 Rue Pine	Cowansville	Restaurant vendre	restaurant
PERMN91702	La Cage - Brasserie Sportive (Mont-Tremblant)	340 Route 117	Mont-Tremblant	Bar	onsite
PERMN91702	La Cage - Brasserie Sportive (Mont-Tremblant)	340 Route 117	Mont-Tremblant	Restaurant vendre	restaurant
PERMN92569	Complexe Multi-Disciplinaire Les Estacades	245 Rue De Grandmont	Trois-Rivières	Bar	onsite
PERMN92569	Complexe Multi-Disciplinaire Les Estacades	245 Rue De Grandmont	Trois-Rivières	Accessoires	other
PERMN95638	Resto Pub Marco Polo	7985 Avenue Marco-Polo	Montréal	Bar	onsite
PERMN95638	Resto Pub Marco Polo	7985 Avenue Marco-Polo	Montréal	Restaurant vendre	restaurant
PERMN98574	Brasserie Du Parc	923 Rue Georges	Gatineau	Bar	onsite
PERMN98939	Zonix Resto-Bar	299 Le Carrefour	Fermont	Bar	onsite
PERMN98939	Zonix Resto-Bar	299 Le Carrefour	Fermont	Restaurant vendre	restaurant

Datasets

what we created

Alcohol outlets dataset

Geocoded addresses
Alcohol license and
government-owned
liquor stores
2015-2021

Spatial availability measures

Counts

Counts within 400,
800, 1600 meter
street network
distances

Spatial access index (SAI)

Closest 7 outlets

Datasets

what we created

Alcohol outlets dataset

Geocoded addresses
Alcohol license and
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liquor stores
2015-2021

Spatial availability measures

Counts

Dissemination areas in 19 CMAs, 2015-2021

Counts within 400, 800,
1600 meter street
network distances

Spatial access index (SAI)

Closest 7 outlets

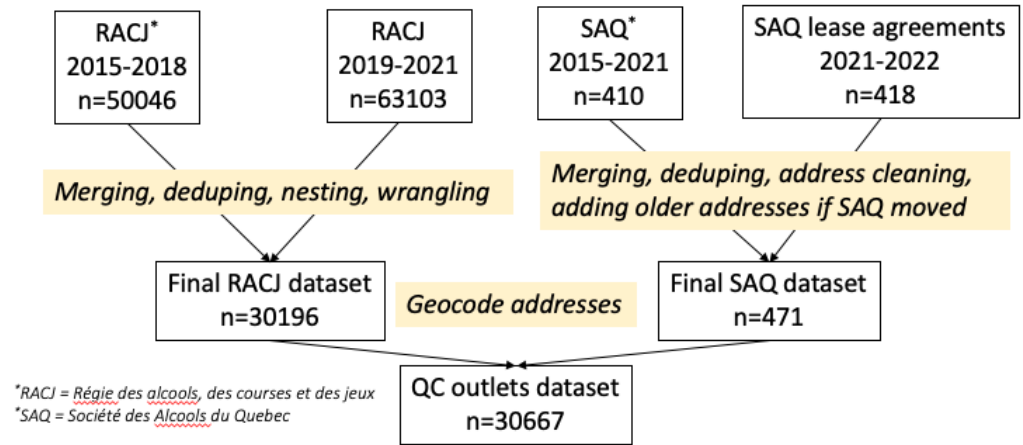
Datasets

what we did

Alcohol outlets dataset

Contains:

- Outlet name
- Permit number; permit type
- Year of activity
- Address
- Geographic coordinates
- Capacity (most recent)
- Number video lottery terminals
- Outlet type



Datasets

what we did

Alcohol outlets dataset

Contains:

Outlet name

Permit number; permit type

Year of activity

Address

Geographic coordinates

Capacity (most recent)

Number video lottery terminals

Outlet type

Permit types (select)

Outlet types

Accessories	Other
Bar, brasseries, club, tavern	Onsite
Grocery store	Offsite
Wholesaler	Other
Restaurant (server, vendre)	Restaurant
SAQ	Offsite

Datasets

what we did

Alcohol outlets dataset

Outlet name = Chez Méo

Permit number = PERMN4831376

Permit type = Bar

Year of activity = 2018-2021

Address = 1262 Rue King Ouest

Capacity = 98

Number video lottery terminals = 10

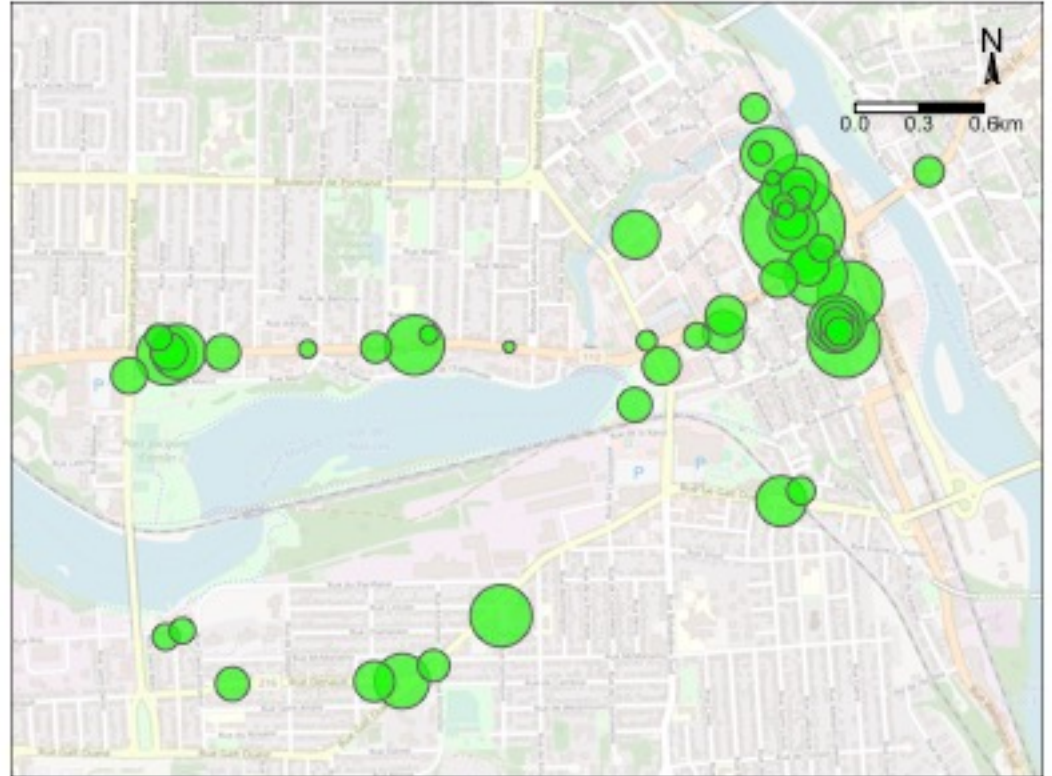


Datasets

what we did

Alcohol outlets dataset

Mapped location of bars in 2019,
by capacity (size)



Datasets

what we created

Alcohol outlets dataset

Geocoded addresses
Alcohol license and
government-owned
liquor stores
2015-2021

Spatial availability measures

Counts

Dissemination areas in 19 CMAs, 2015-2021

Offsite, onsite

Counts within 400,
800, 1600 meter
street network
distances

Spatial access index (SAI)

Closest 7 outlets

“

*Difference choices of availability measure may lead to very different characterizations of spatial availability, and therefore, potentially, very **different study results.***

Angus et al 2022: 16

Datasets

what we created

Alcohol outlets dataset

Geocoded addresses

Alcohol license and government-owned liquor stores

2015-2021

Spatial availability measures

Counts

Dissemination areas in 19 CMAs, 2015-2021

Offsite, onsite

Counts within 400, 800, 1600 meter street network distances

Also known as "cumulative opportunities"

Availability

Spatial access index (SAI)

Closest 7 outlets

Also known as "gravity-based accessibility measure"

Availability & accessibility

Datasets

what we did

Counts

Contains:

DA id

CMA

Distance

Offsite count

Onsite count

Year

DA = dissemination area

CMA = census metropolitan area

How we did it:

Used street network distances of 400, 800, and 1600 meters around population-weighted DA centroids

Counted outlets within these distances

19 CMAs



Gatineau, Montréal, Québec City, Saguenay, Sherbrooke, Trois-Rivières, Drummondville, Granby, Joliette, Rimouski, Sainte-Hyacinthe, Salaberry-de-Valleyfield, Shawinigan, Sorel-Tracy, Victoriaville

Datasets

what we did

Counts

Contains:

DA id

CMA

Distance

Offsite count

Onsite count

Year

How we did it:

Used **street network** distances of 400, 800, and 1600 meters around population-weighted **DA centroids**

Counted outlets within these **distances**
19 CMAs

Street network data from OpenStreetMaps

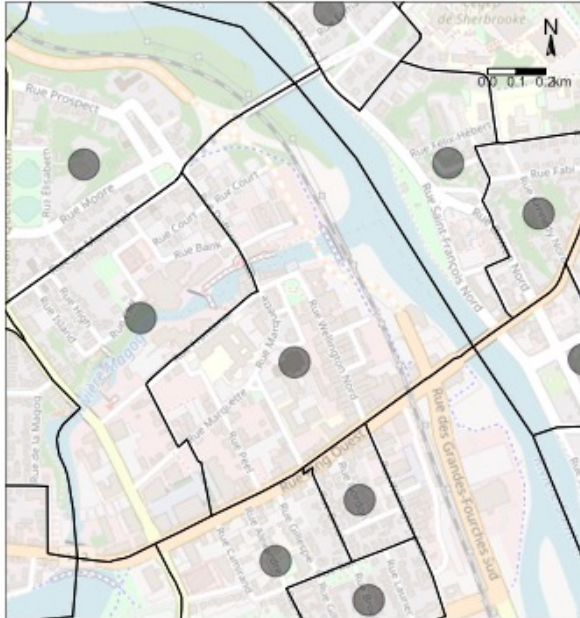
Population-weighted DA centroid data from Statistics Canada

Distances & counts calculated in R software with r5r package

Datasets

what we did

Counts



How we did it:

Used street network distances of 400, 800, and 1600 meters around population-weighted DA centroids

Population-weighted DA centroid data from Statistics Canada

Datasets

what we did

Counts



How we did it:

Used **street network** distances of 400, 800, and 1600 meters around population-weighted DA centroids

Street network data from OpenStreetMaps; used r5r to create network graph

Datasets

what we did

Counts



How we did it:

Used street network distances of 400, 800, and 1600 meters around population-weighted DA centroids

Counted outlets within these distances



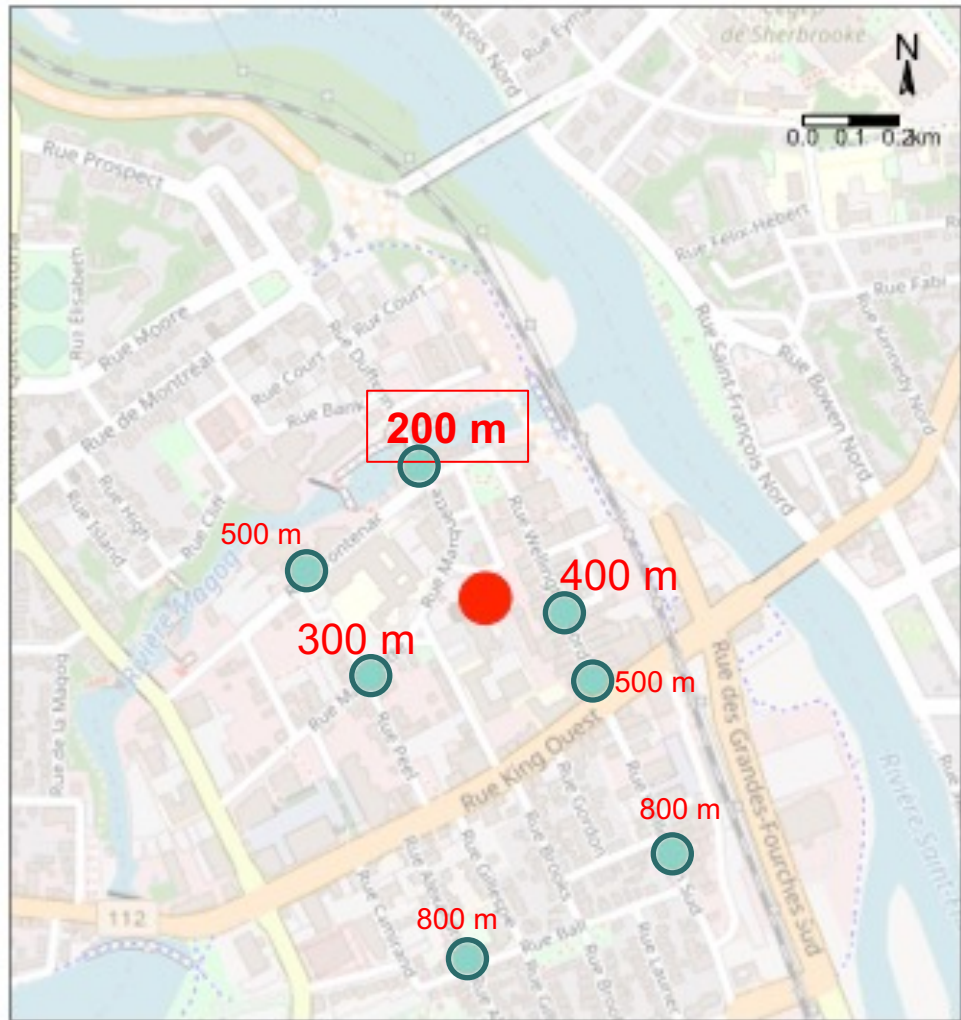
Distances & counts calculated in R software with r5r package

Datasets

what we did

Counts

	DAuid	numero_de_dossier	distance
	<int>	<chr>	<dbl>
1	24430042	PERMN4974481	200.
2	24430042	PERMN1145473	300.
3	24430042	PERMN4527859	400.
4	24430042	PERMN1790542	500.
5	24430042	PERMN4510079	500.
6	24430042	PERMN236711	800.
7	24430042	PERMN245878	800.



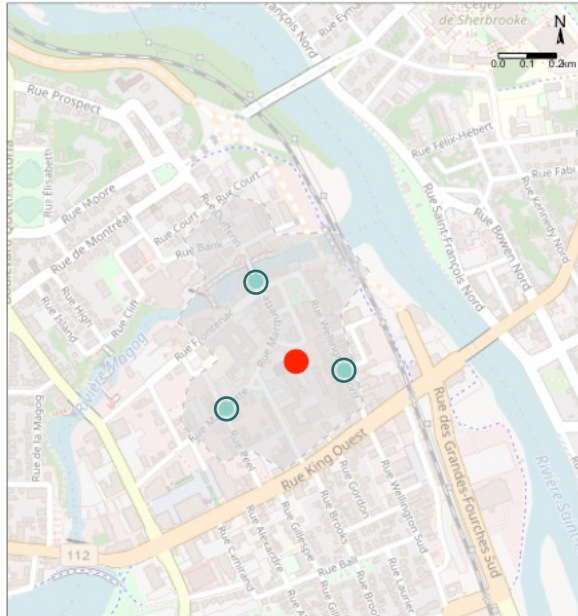
Datasets

what we did

Counts

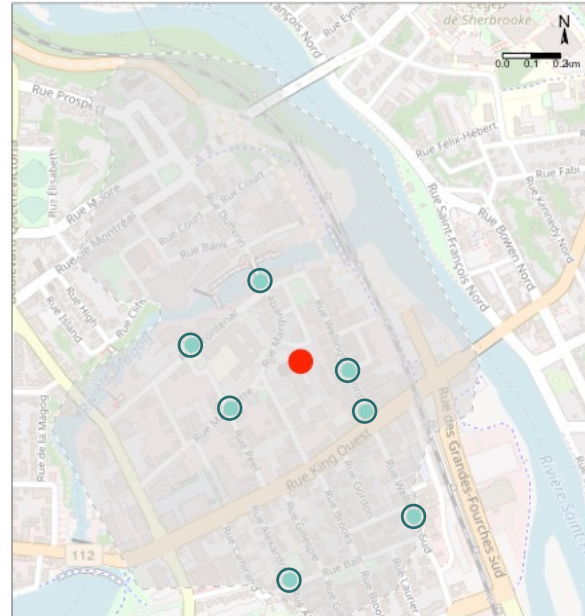
Distance = 400m

2019 Offsite count = 3



Distance = 800m

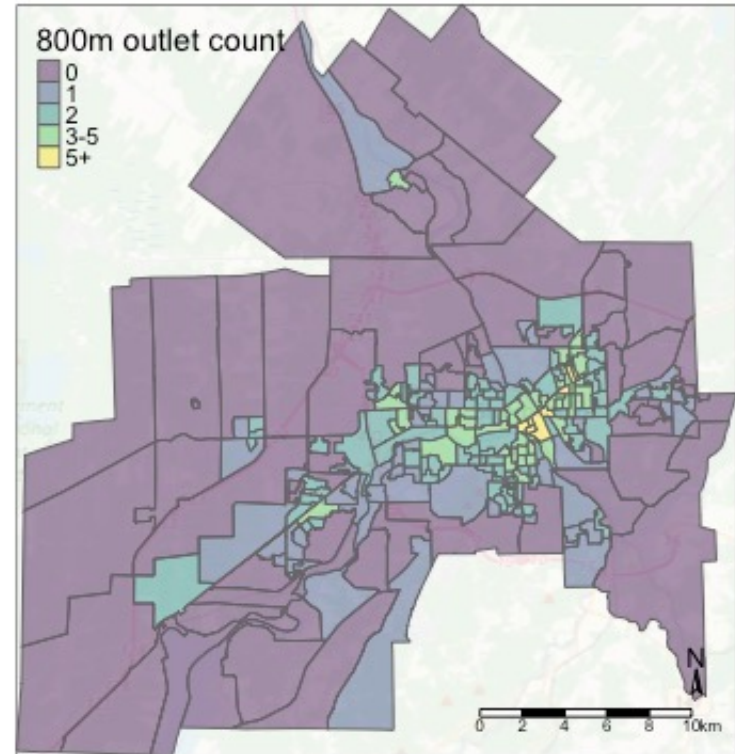
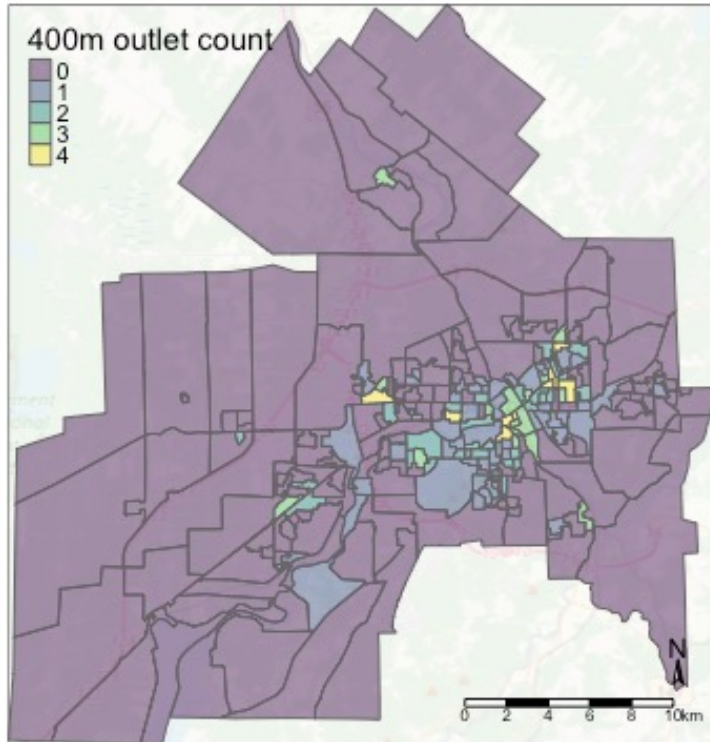
2019 Offsite count = 7



Datasets

what we did

Mapping the counts (offsite, 2019)



Datasets

what we created

Alcohol outlets dataset

Geocoded addresses

Alcohol license and government-owned liquor stores

2015-2021

Spatial availability measures

Counts

Dissemination areas in 19 CMAs, 2015-2021

Offsite, onsite

Counts within 400, 800, 1600 meter street network distances

Also known as "cumulative opportunities"

Availability

Spatial access index (SAI)

Closest 7 outlets

Also known as "gravity-based accessibility measure"

Availability & accessibility

Datasets

what we did

SAI

Contains:

DA id

CMA

Choice set → 3, 5, 7

Offsite SAI score

Onsite SAI score

How we did it:

Calculated distance from population-weighted DA centroids to nearest 7 outlets

Followed street network to calculate distances

Sum the inverse of the distances to get score

19 CMAs

Datasets

what we did

SAI

Contains:

DA id

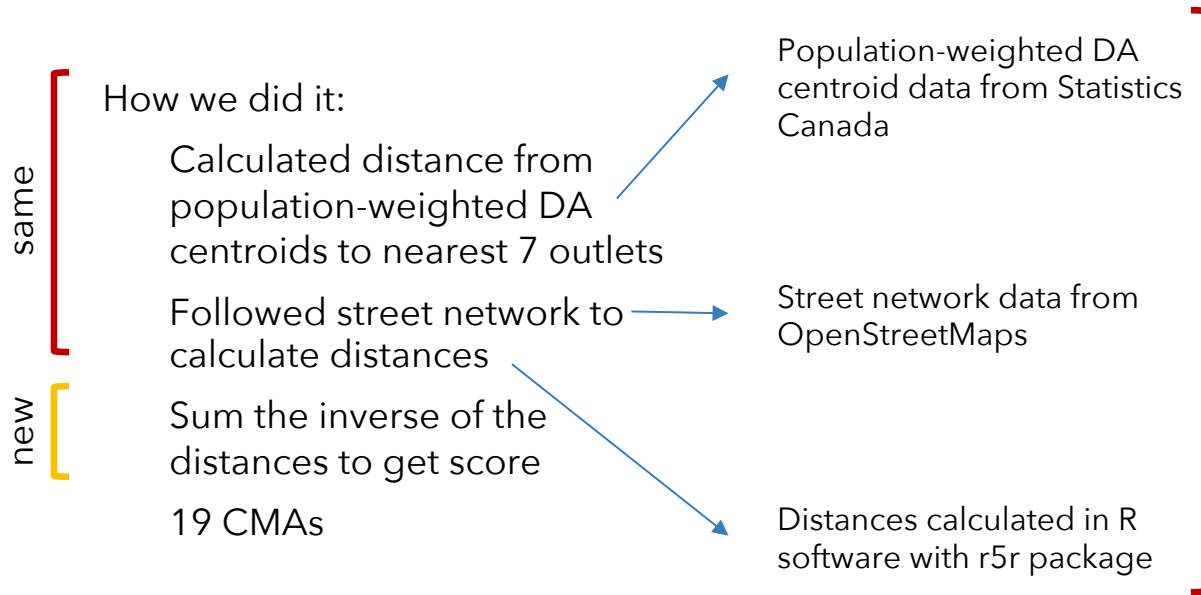
CMA

Choice set

Offsite SAI score

Onsite SAI score

Year



Datasets

what we did

SAI

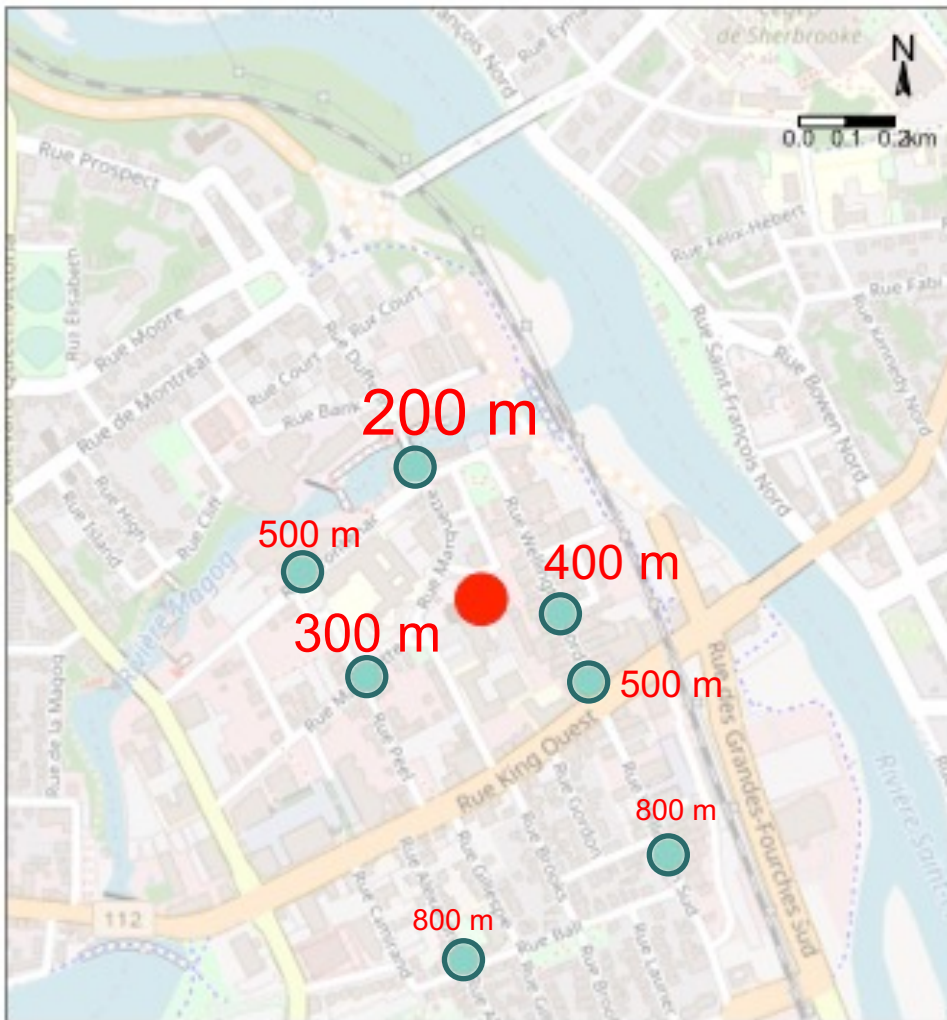
```
numero_de_dossier distance inv_distance  
<chr> <dbl> <dbl>
```

```
1 PERMN4974481 200. 0.00500  
2 PERMN1145473 300. 0.00333  
3 PERMN4527859 400. 0.00250  
4 PERMN1790542 500. 0.00200  
5 PERMN4510079 500. 0.00200  
6 PERMN236711 800. 0.00125  
7 PERMN245878 800. 0.00125
```

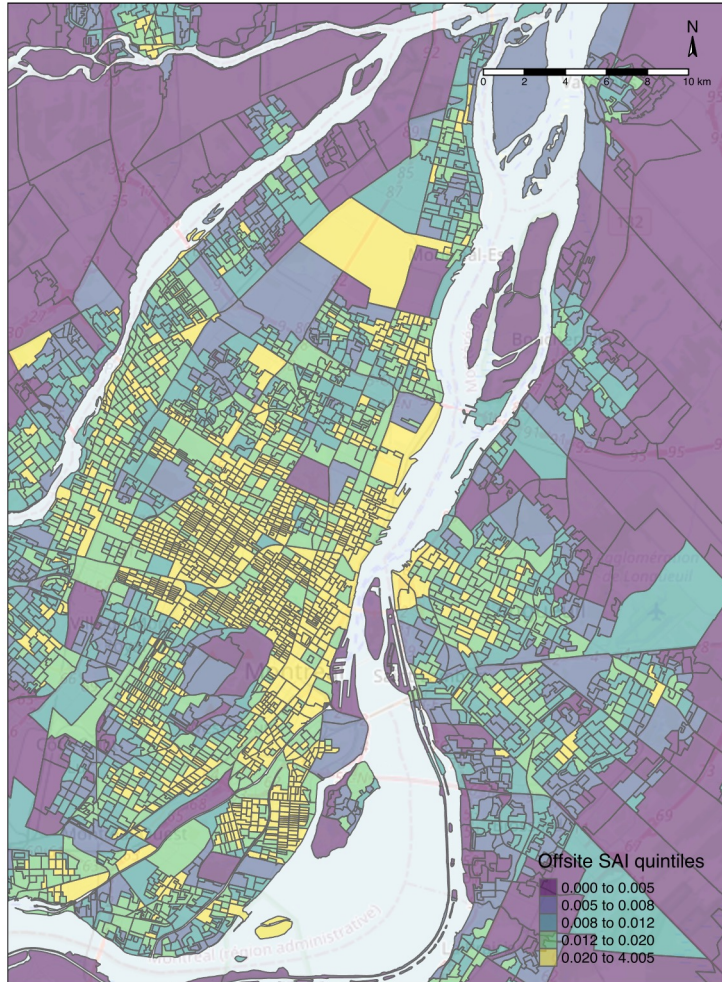
0.0173

DA SAI score is 0.0173

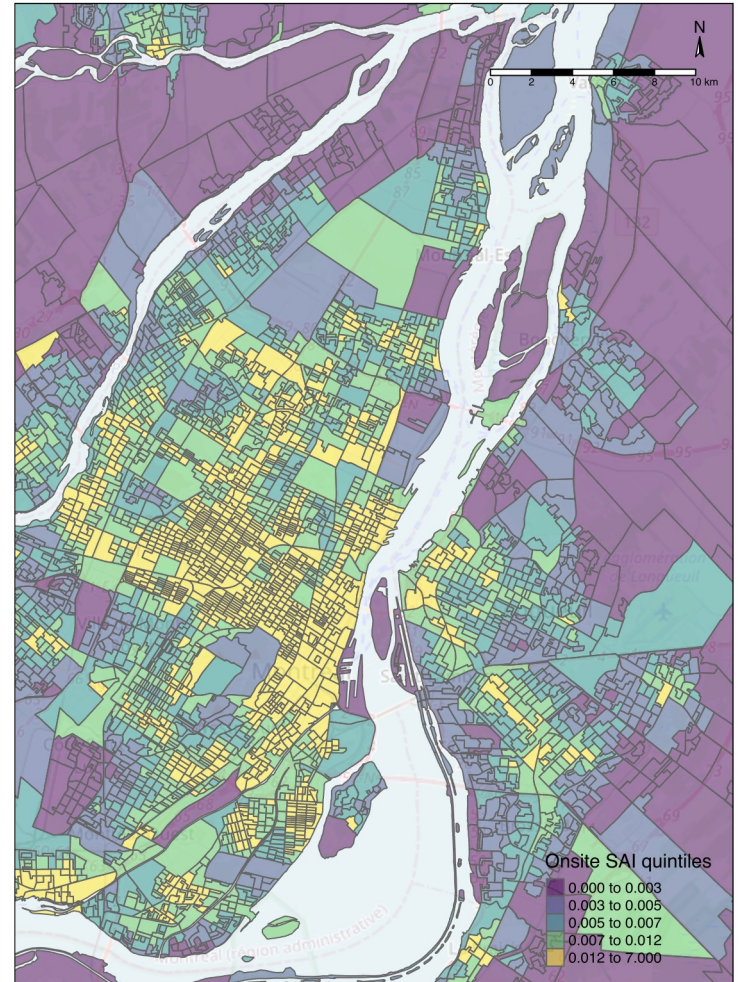
**Higher SAI scores =
more availability**



Offsite, 2019



Onsite, 2019



Mapping SAI

Higher SAI (yellow)
=
more availability

Datasets

what we created

Spatial availability measures

Counts

Used more widely
Easier to grasp
Constrained by boundaries

Spatial access index (SAI)

New standard?
Captures more dimensions of access
Not constrained by boundaries
Less intuitive; small values

How we are using spatial availability measures

1. Link the measures to individual-level drinking data (CCHS). Records are linked by DA to determine association between spatial availability and heavy episodic (binge) drinking among young adults.
2. Determine the association between alcohol spatial availability and neighbourhood characteristics (i.e., disadvantage) in 19 Quebec CMAs

Possibilities for future research

1. Link other outcomes with spatial availability
2. Your thoughts?

Get in touch!



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