

Equity in Drinking Water

Understanding customer socioeconomic status, measuring performance inequities, and the influence of technical, managerial and financial capacity

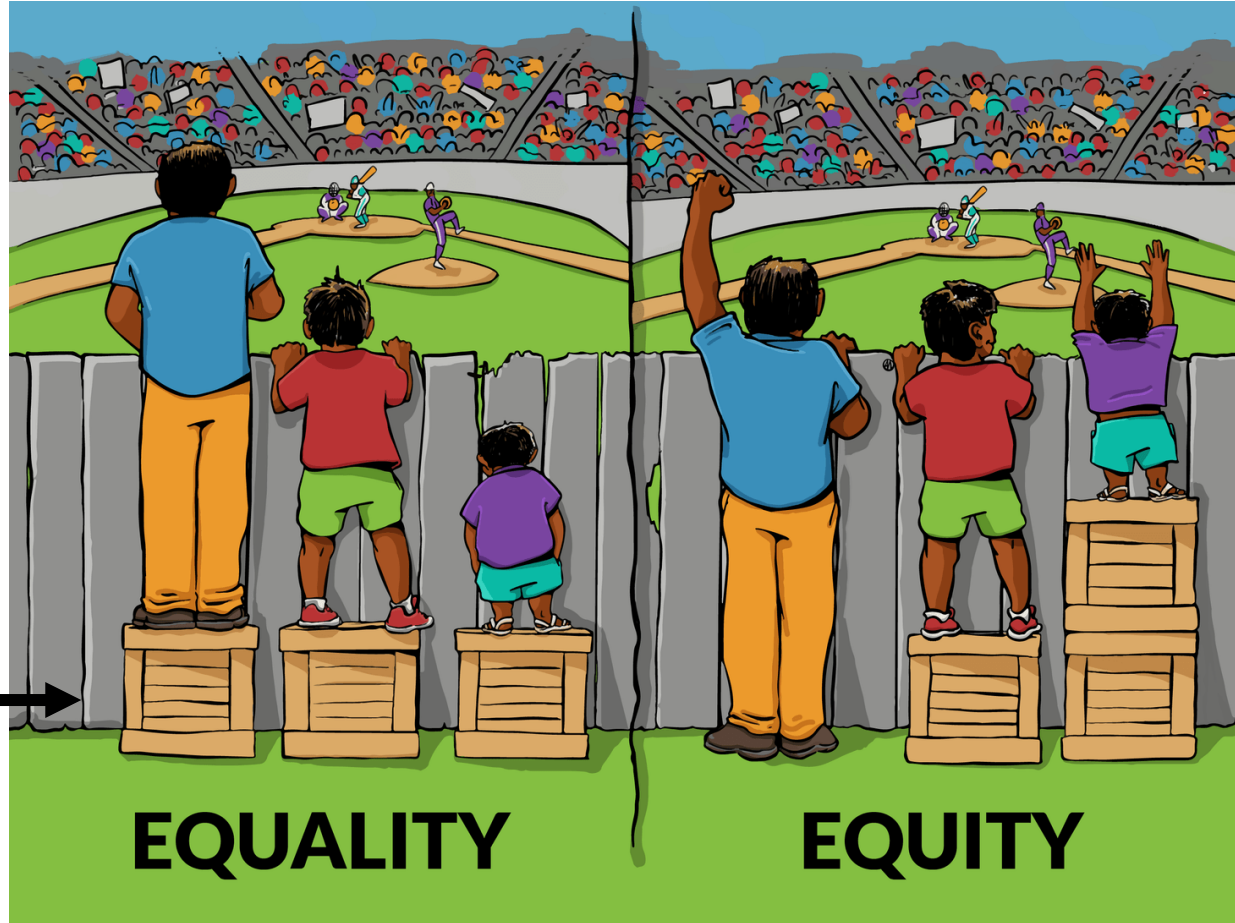
Mike Benson, MScE, P.Eng.

November 13, 2023

What drives decision-making?



What is Equity?

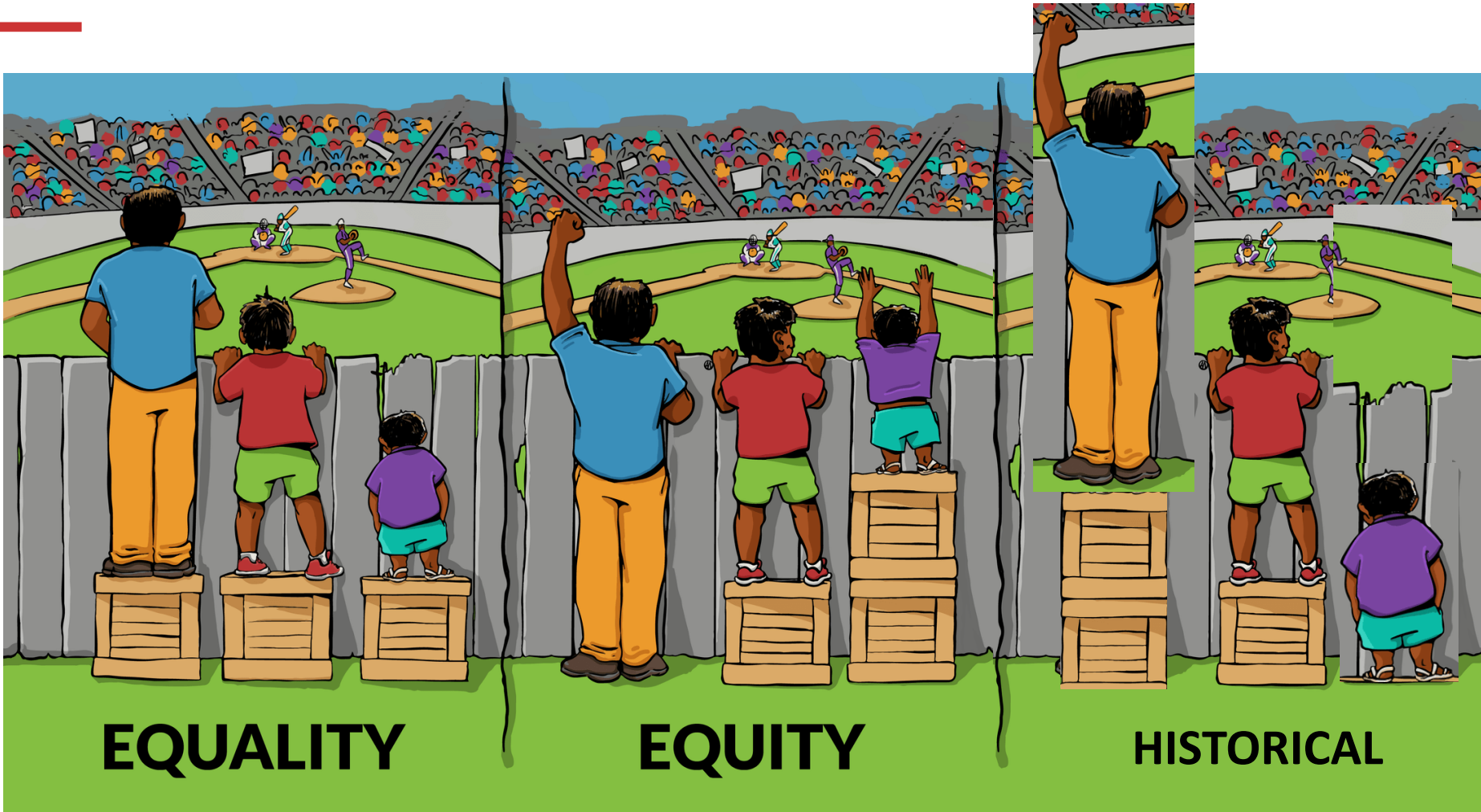


Equal treatment
(performance)

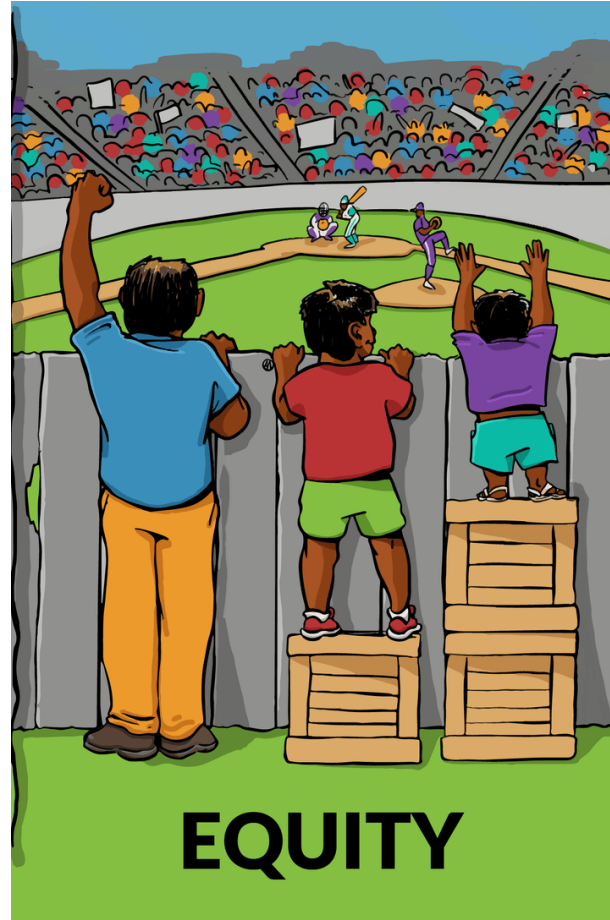


Equal
outcomes

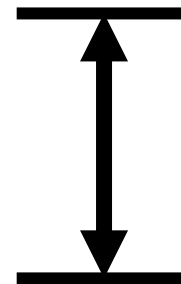
What is Equity?



What is Equity?



Socioeconomic status is a reasonable proxy for deprivation



Deprivation: Degree of disadvantage

Socioeconomic Status

- Position of an individual or group on the socioeconomic scale.
- Combination of social and economic factors.
- Often reveal inequities in access to resources, as well as issues related to privilege, power, and control.

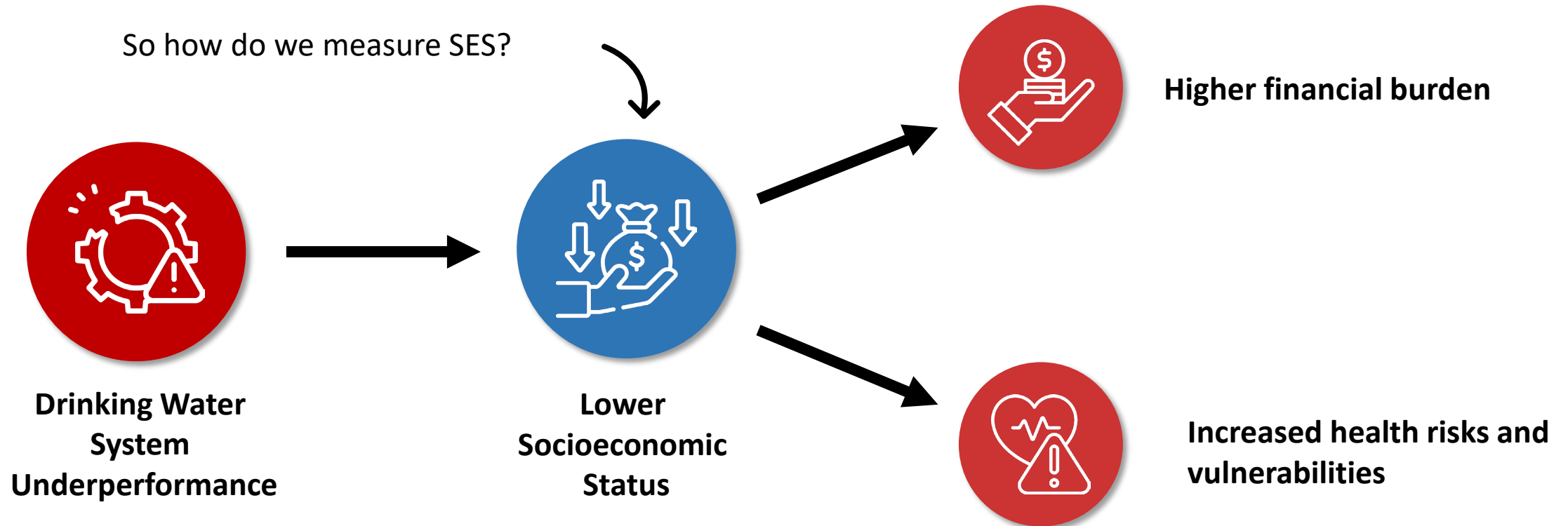


AMERICAN
PSYCHOLOGICAL
ASSOCIATION



Socioeconomic Status

So how do we measure SES?

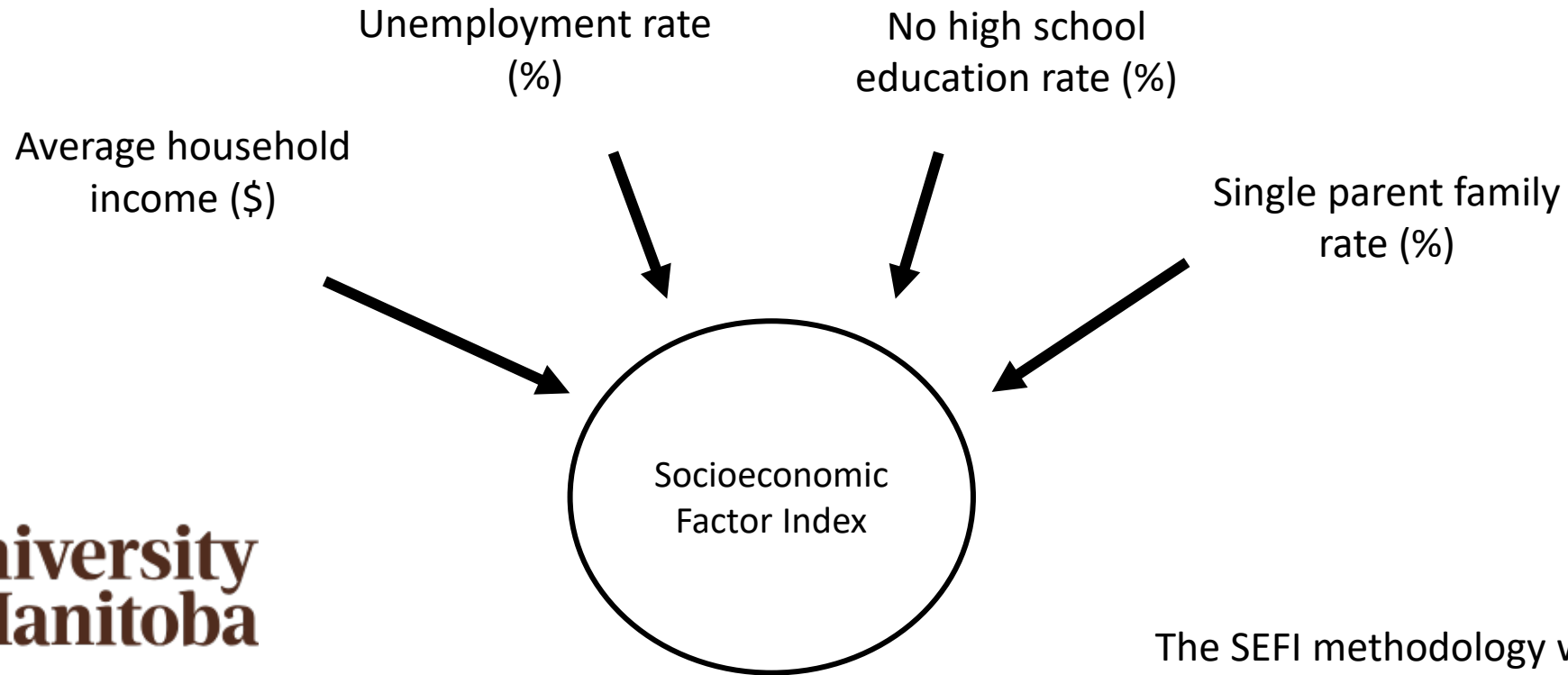


How do you measure SES?

There is no universally accepted way to measure SES... but here are 3 common approaches used in Canadian Public Health Sciences:

1. Pampalon Index
2. Canadian Marginalization Index
3. Socioeconomic Factor Index

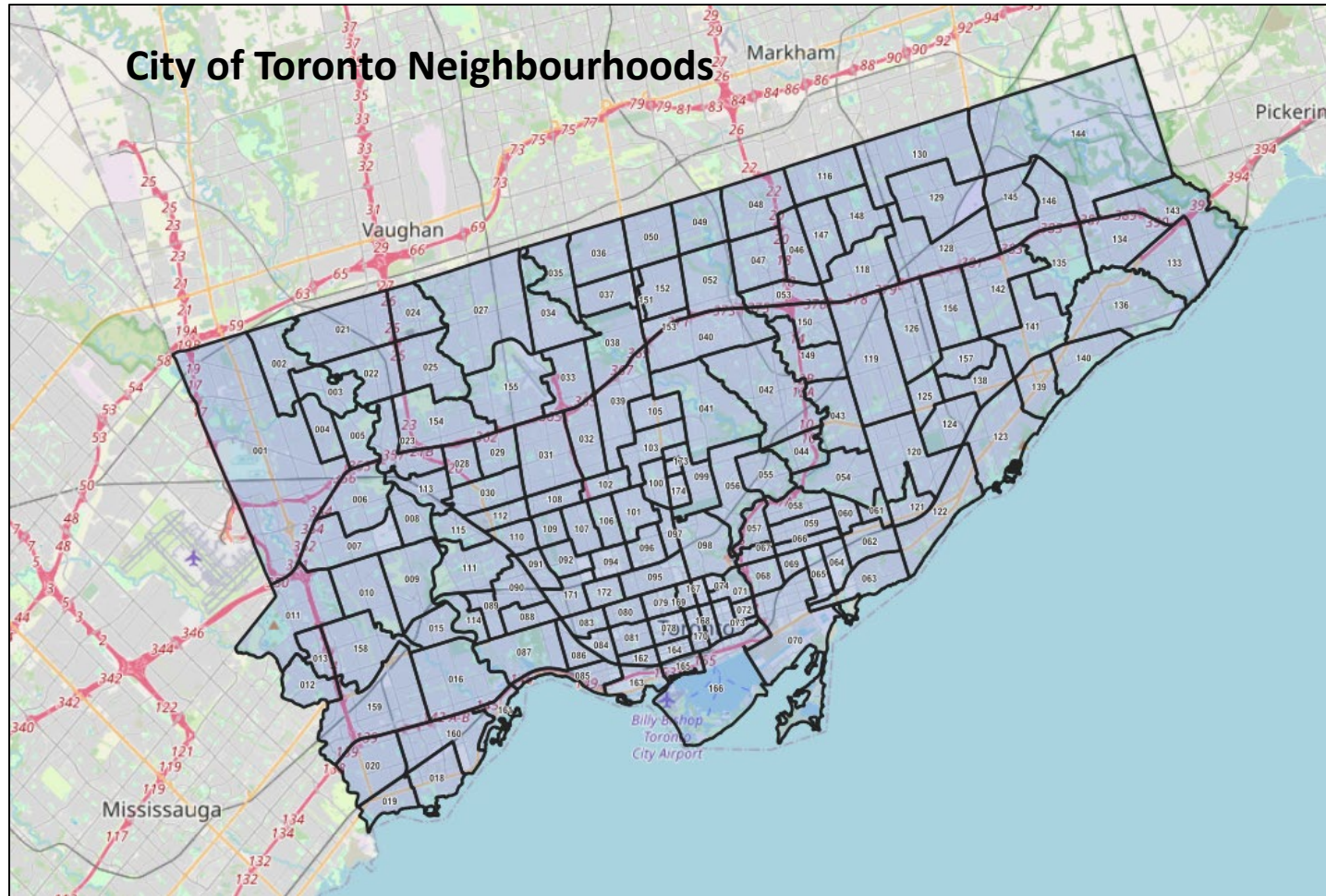
Socioeconomic Factor Index (SEFI)



**University
of Manitoba**

The SEFI methodology was first introduced in Metge et al. (2009).

Measuring Equity

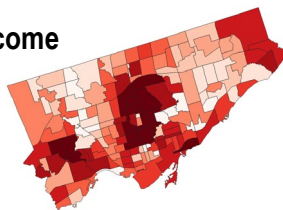


Watermain break frequency

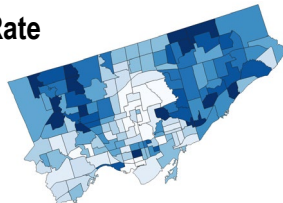
- Service disruption
- Water contamination
- Property damage

Toronto SEFI

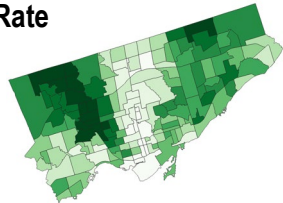
Average Household Income



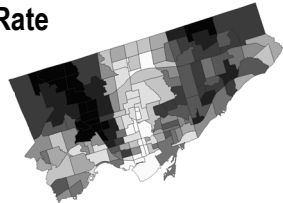
Unemployment Rate



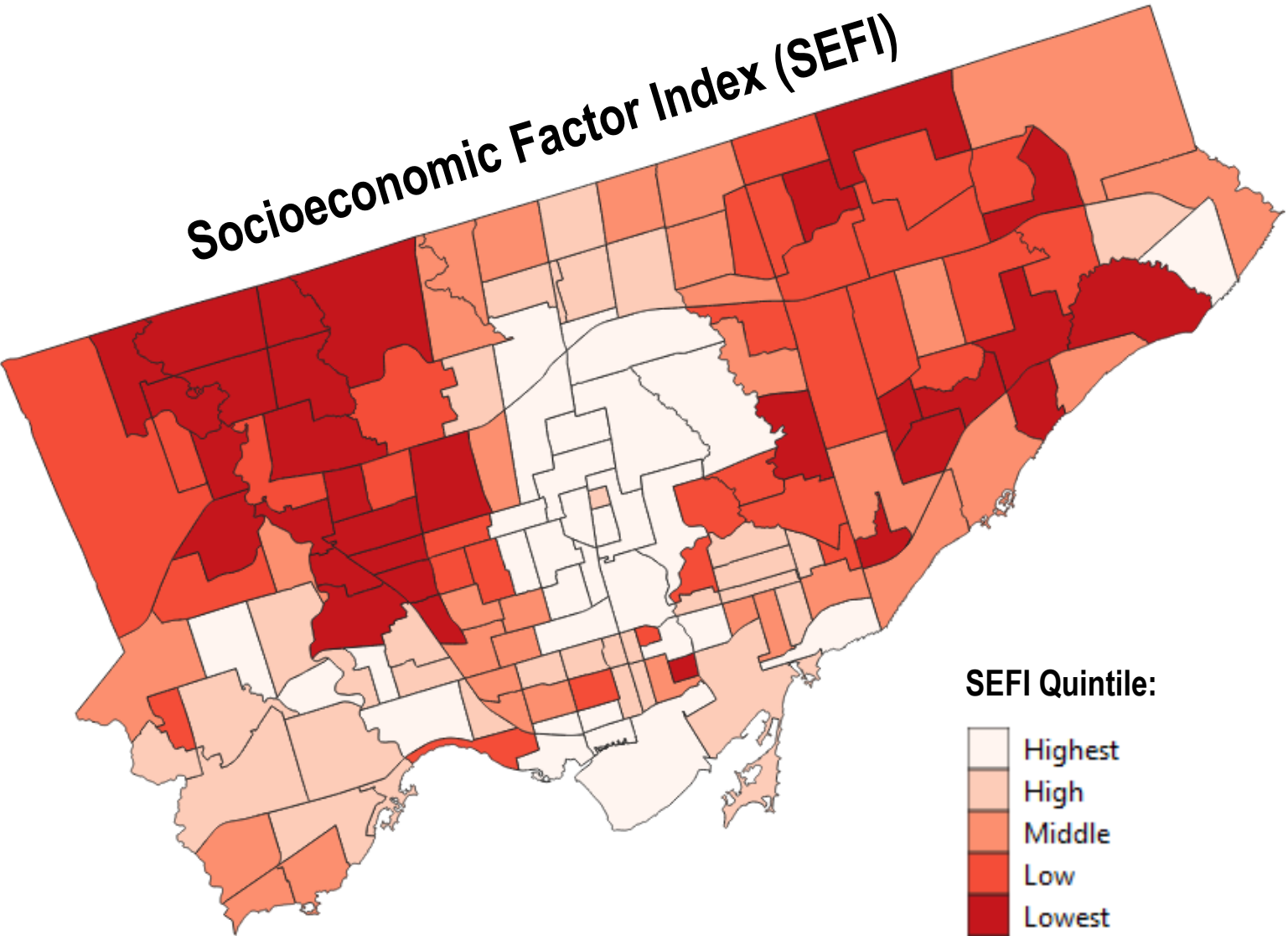
No High School Rate



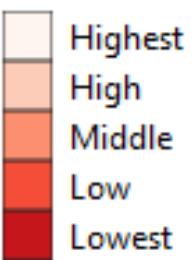
Single Parent Family Rate



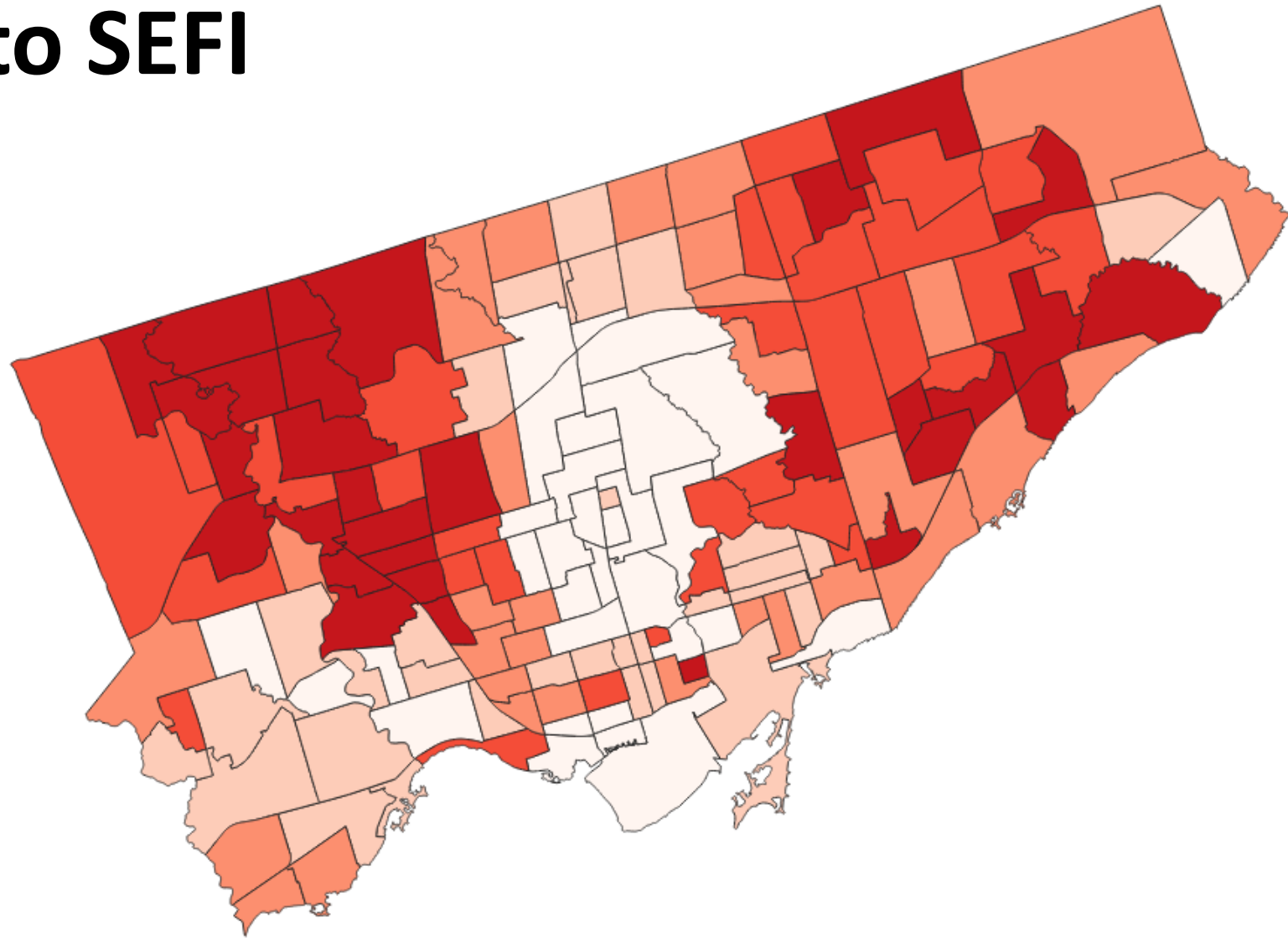
Socioeconomic Factor Index (SEFI)



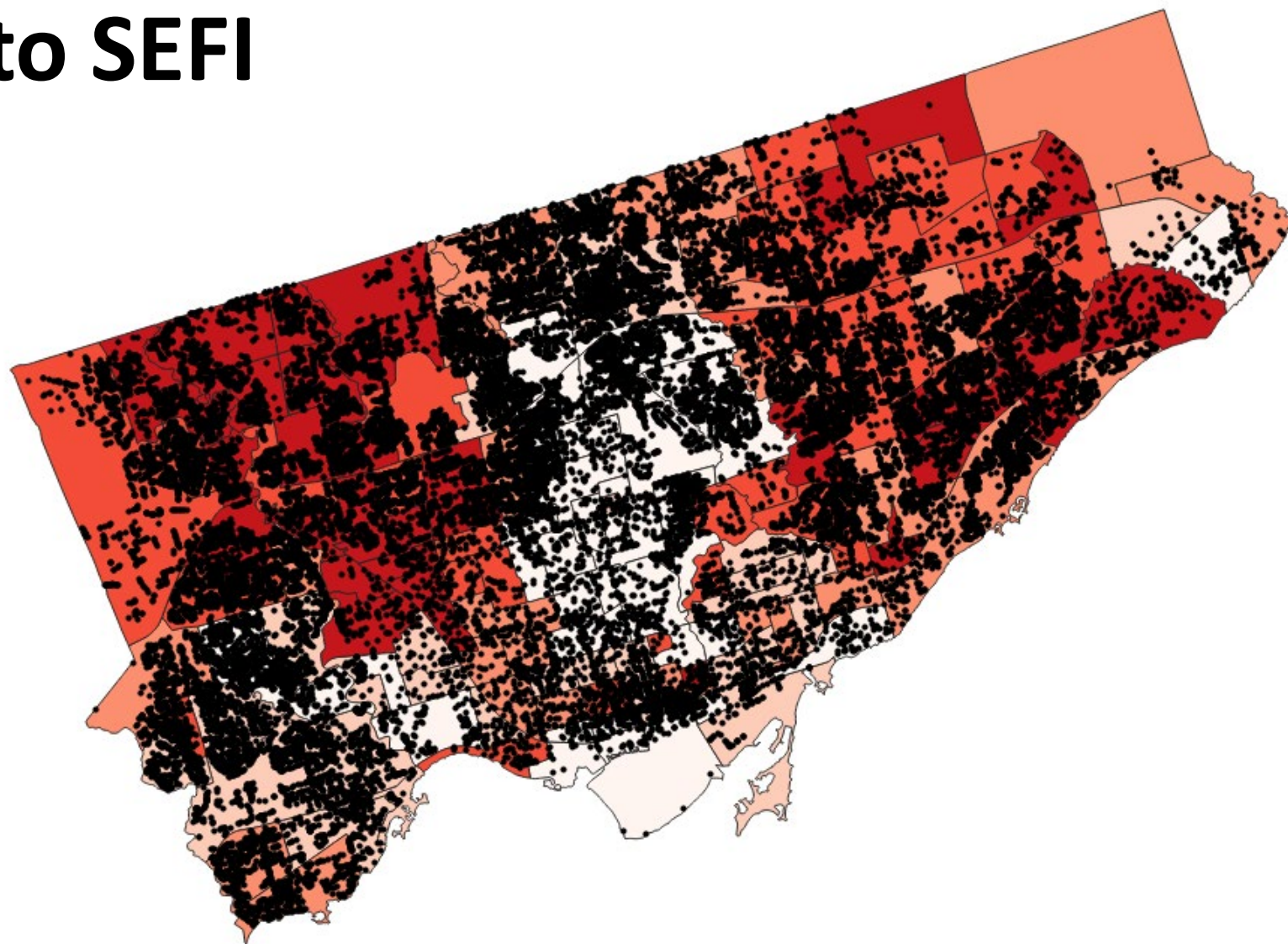
SEFI Quintile:



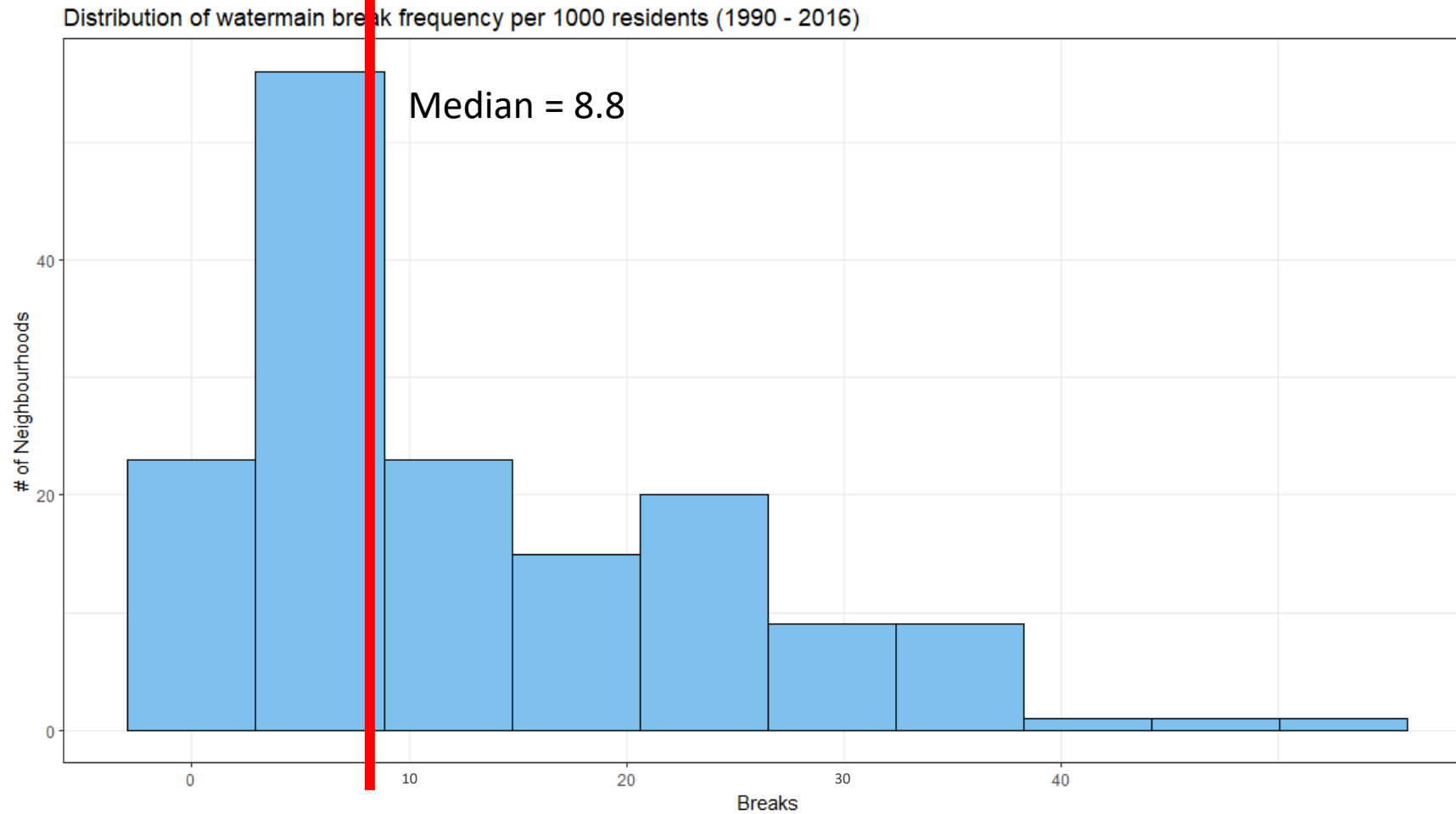
Toronto SEFI



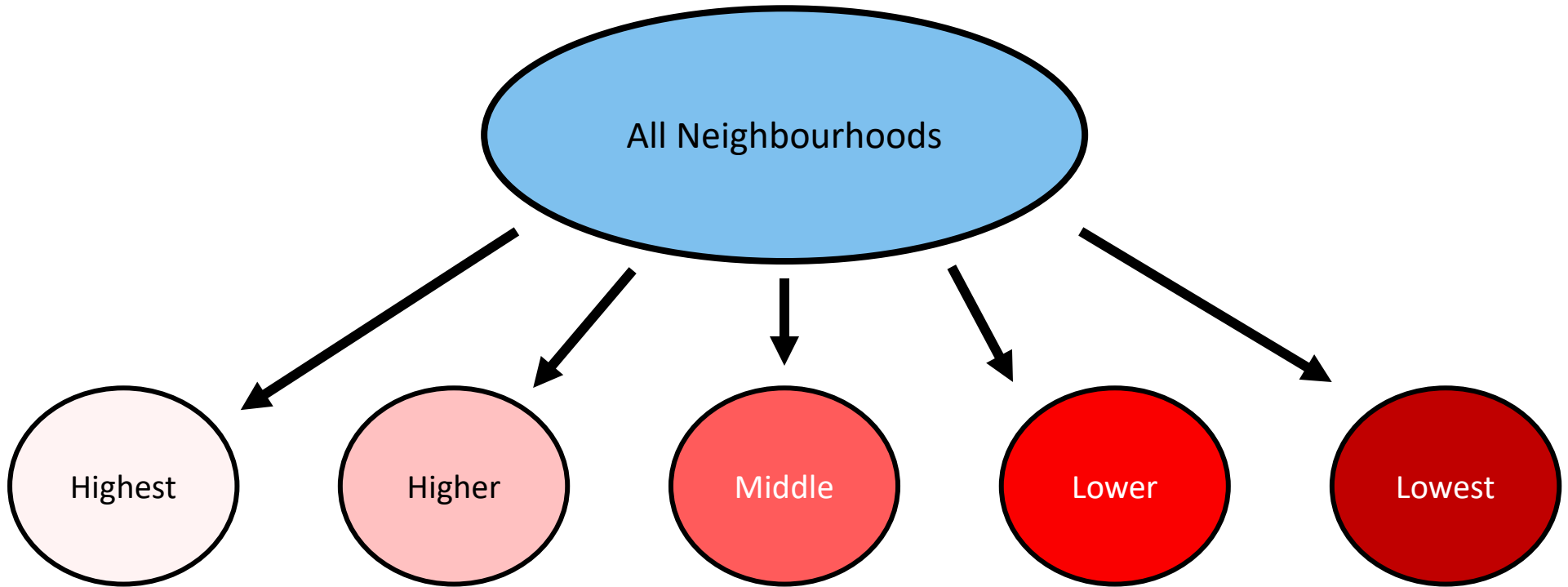
Toronto SEFI



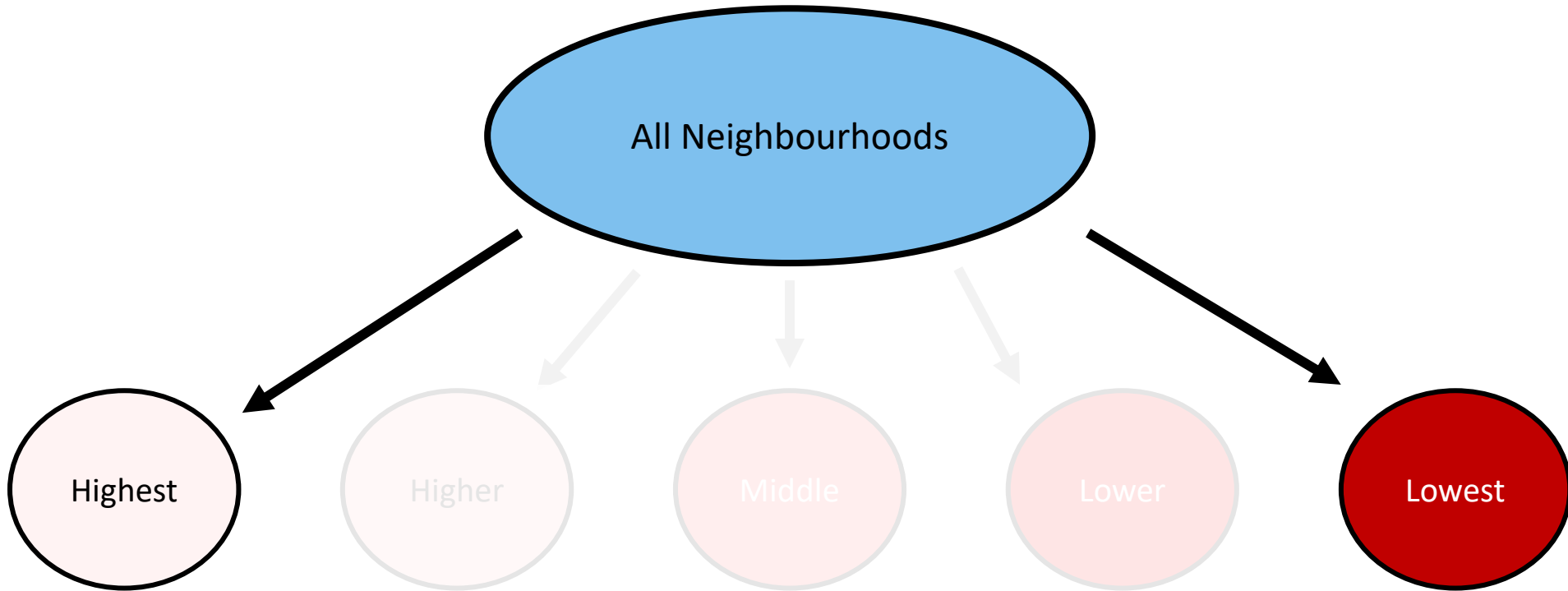
Distribution of breaks



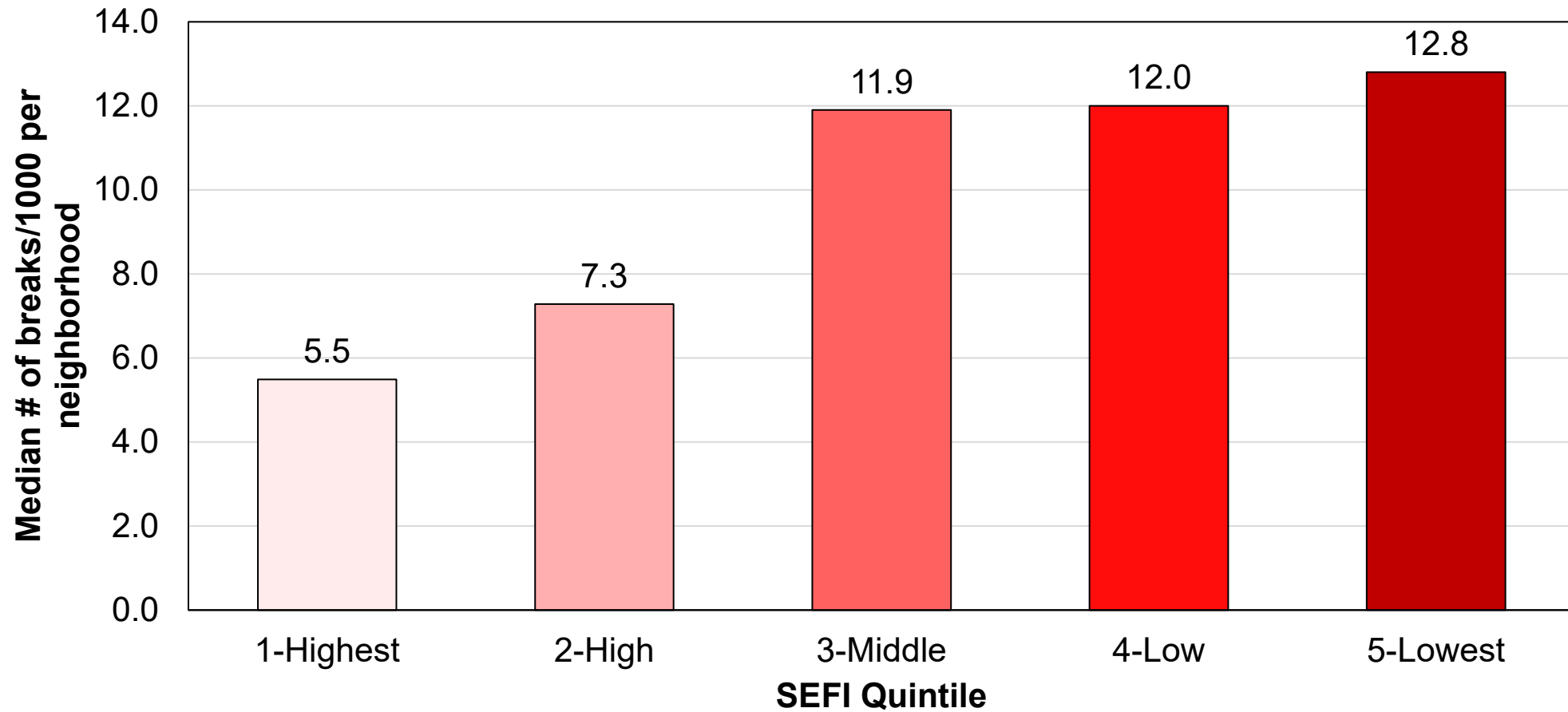
Distribution of breaks



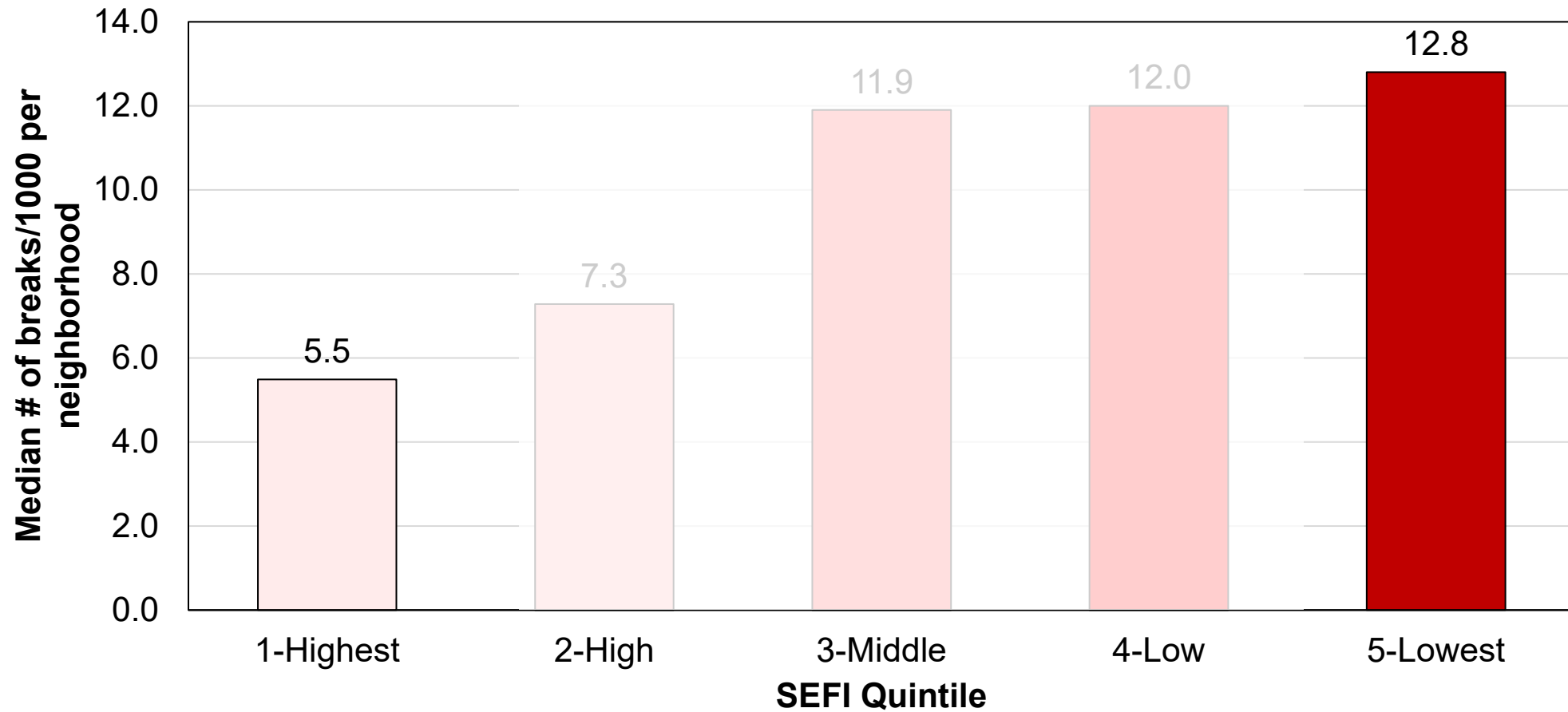
Distribution of breaks



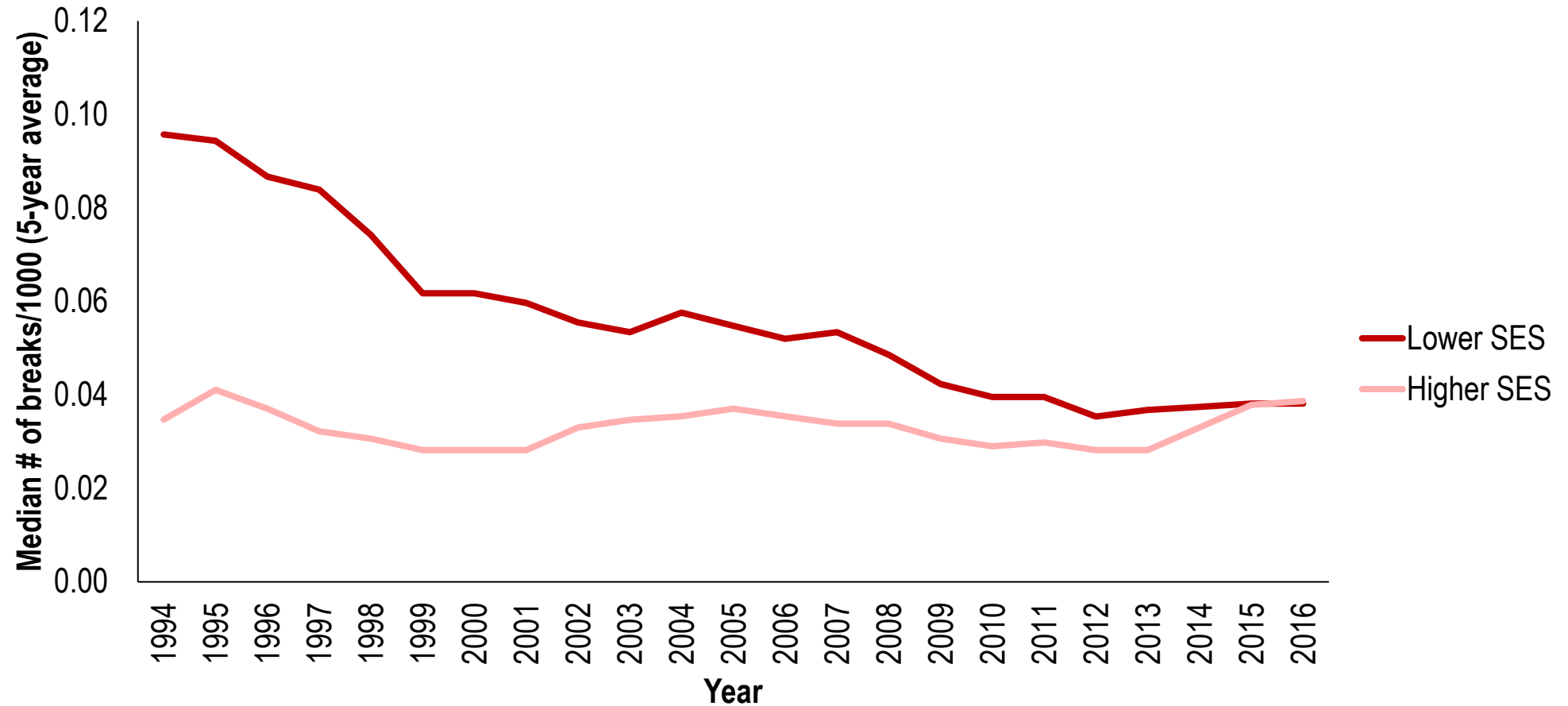
Median # of breaks



Median # of breaks

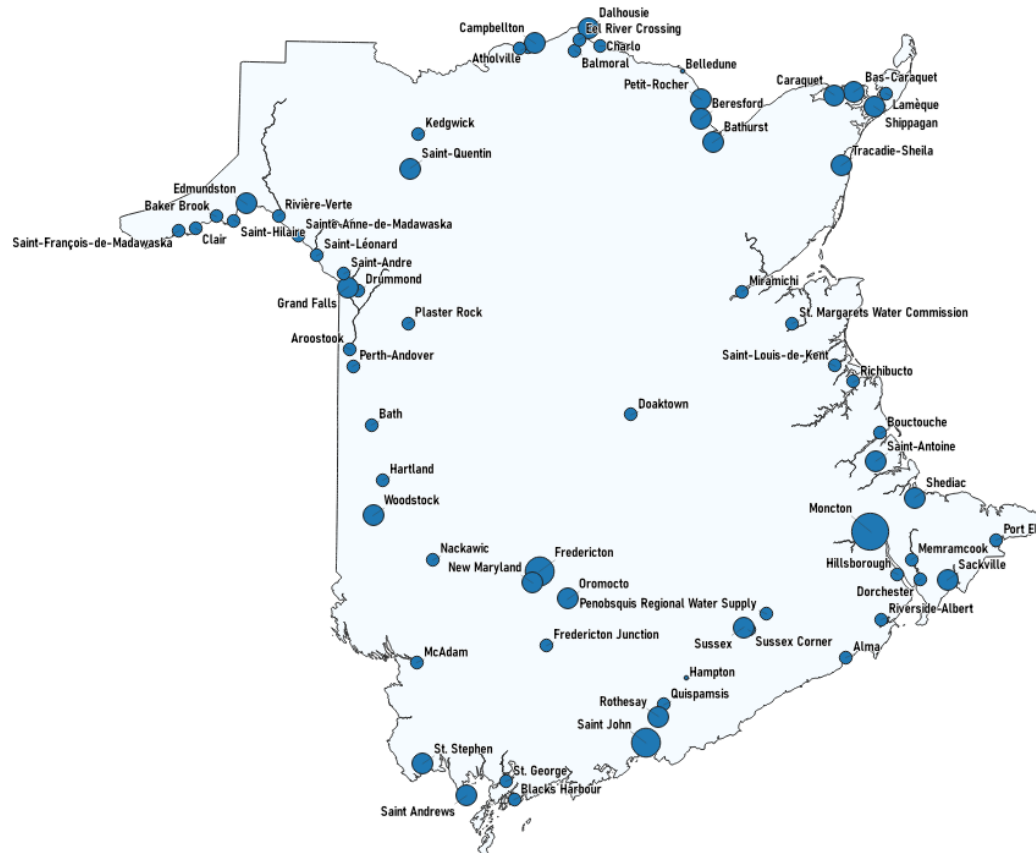


Things have improved...



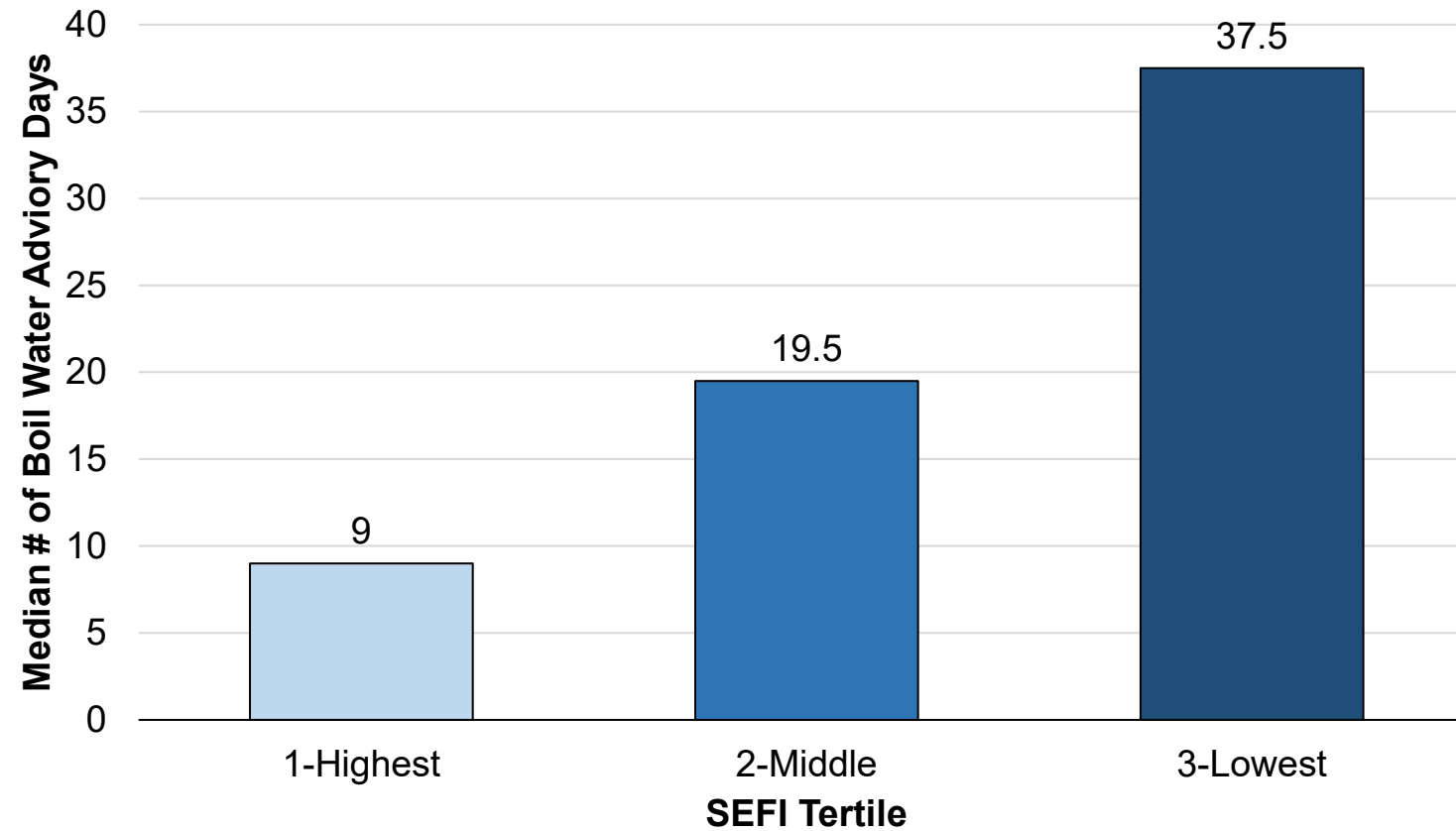
Another Quick Example

Province of New Brunswick

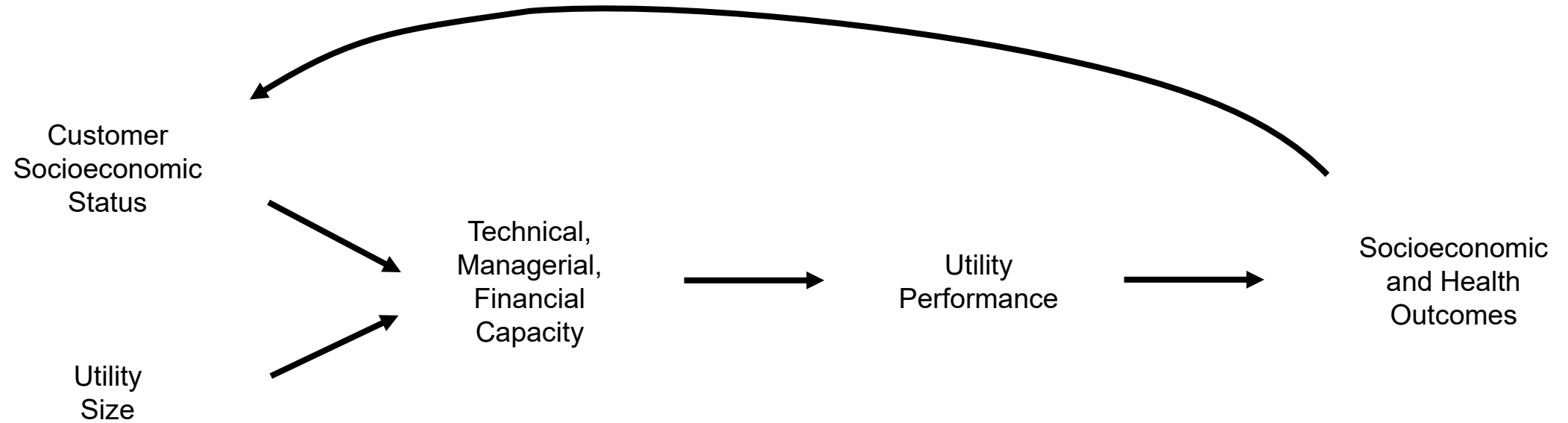


Are there inequities in the days under a boil water advisory among New Brunswick's drinking water utilities based on customer socioeconomic status?

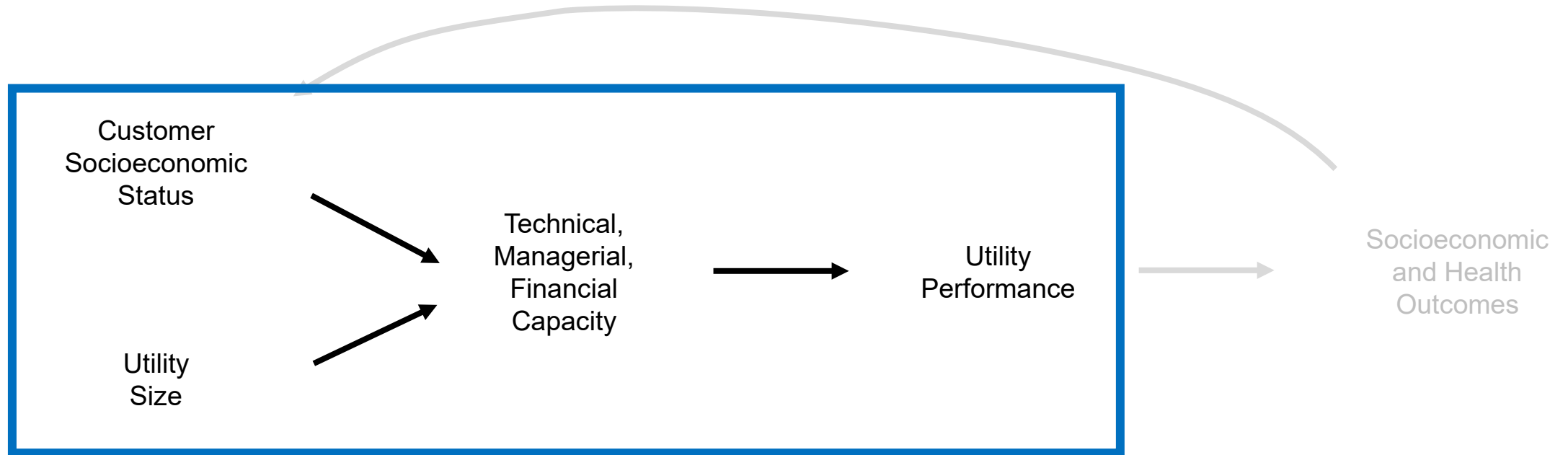
New Brunswick Boil Water Advisories



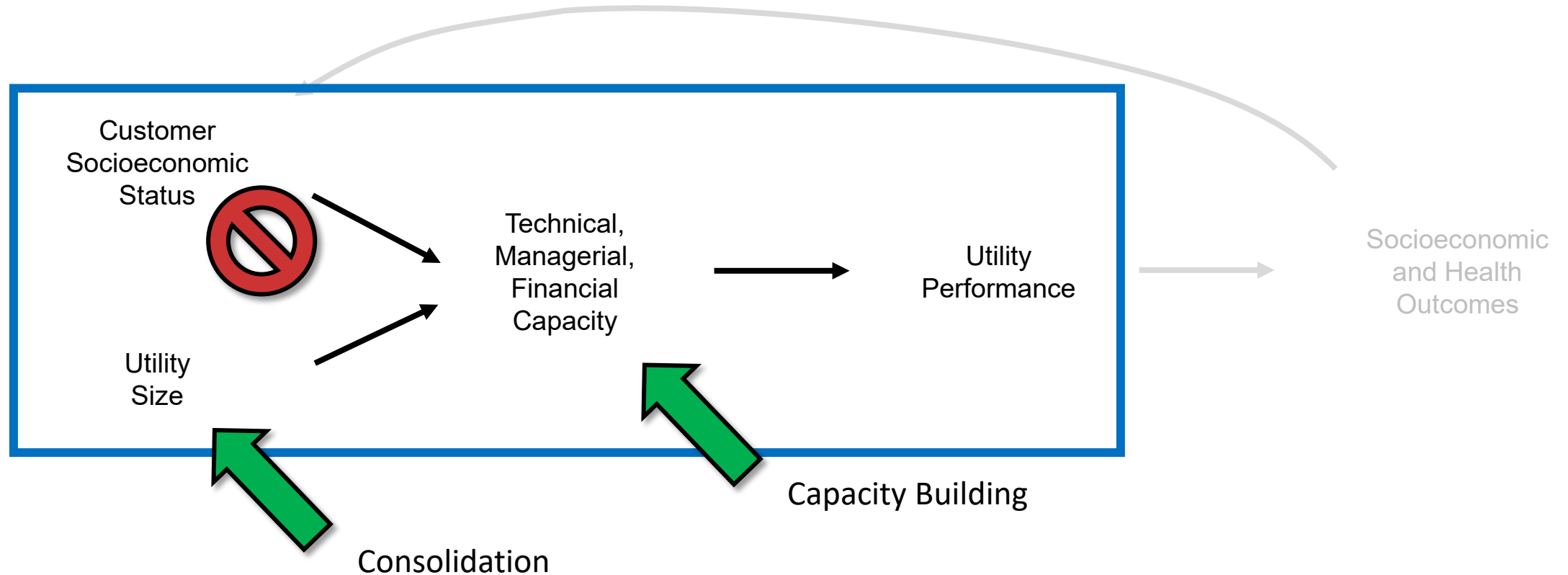
Future work – understanding the WHY



Future work – understanding the WHY



Future work – understanding the WHY



Call to Action

- Measuring Socioeconomic Status of your customers is possible and relatively easy!
- Tons of data available for free from Statistics Canada.
- Start small, it doesn't need to be complicated.

“What gets measured gets managed”

Questions?

Contact:

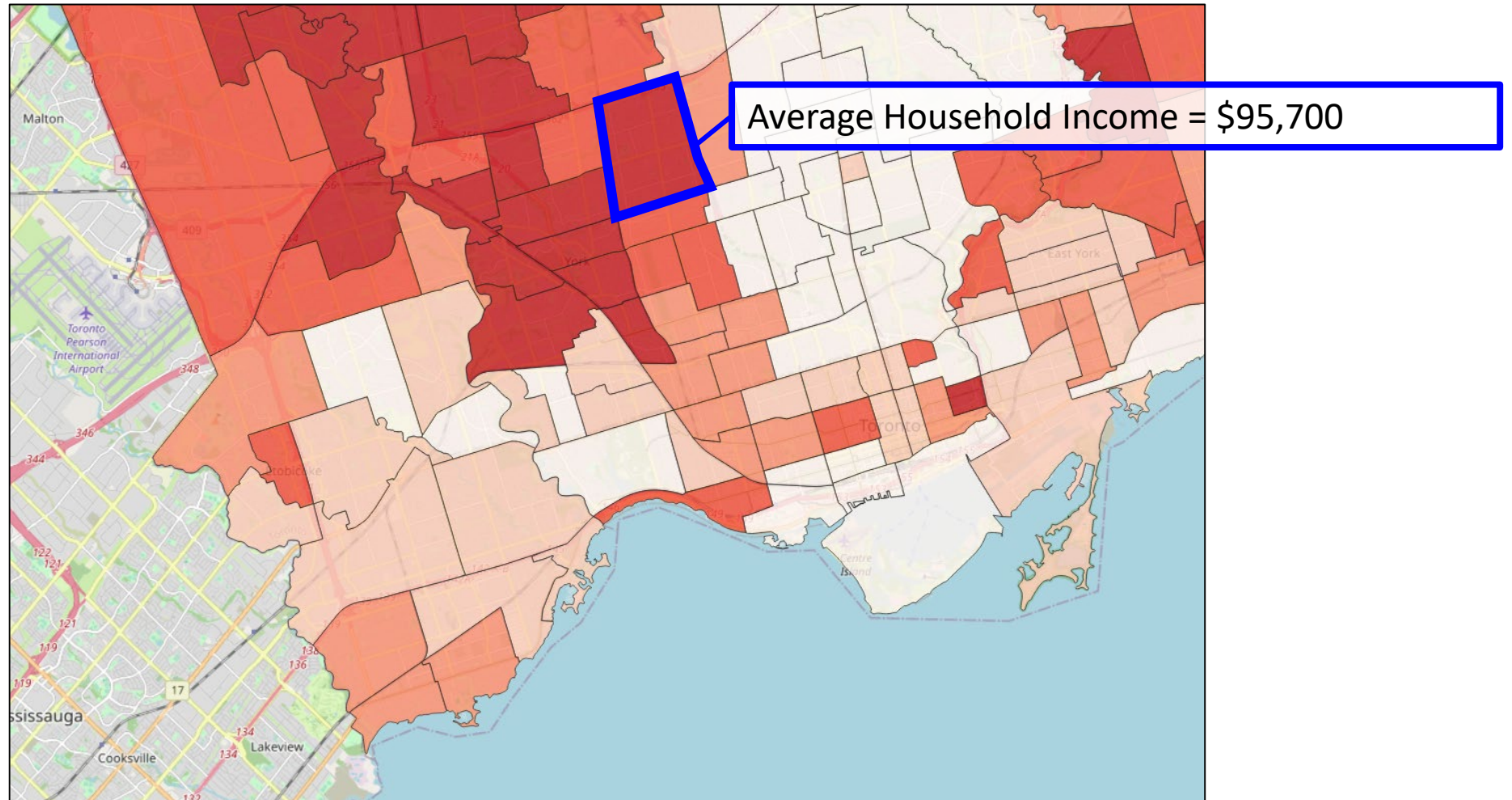
Mike Benson, MScE, P.Eng.,

PhD Student

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EXTRA SLIDES

Area-based indicators



Factor analysis

indicators

income

unemploy

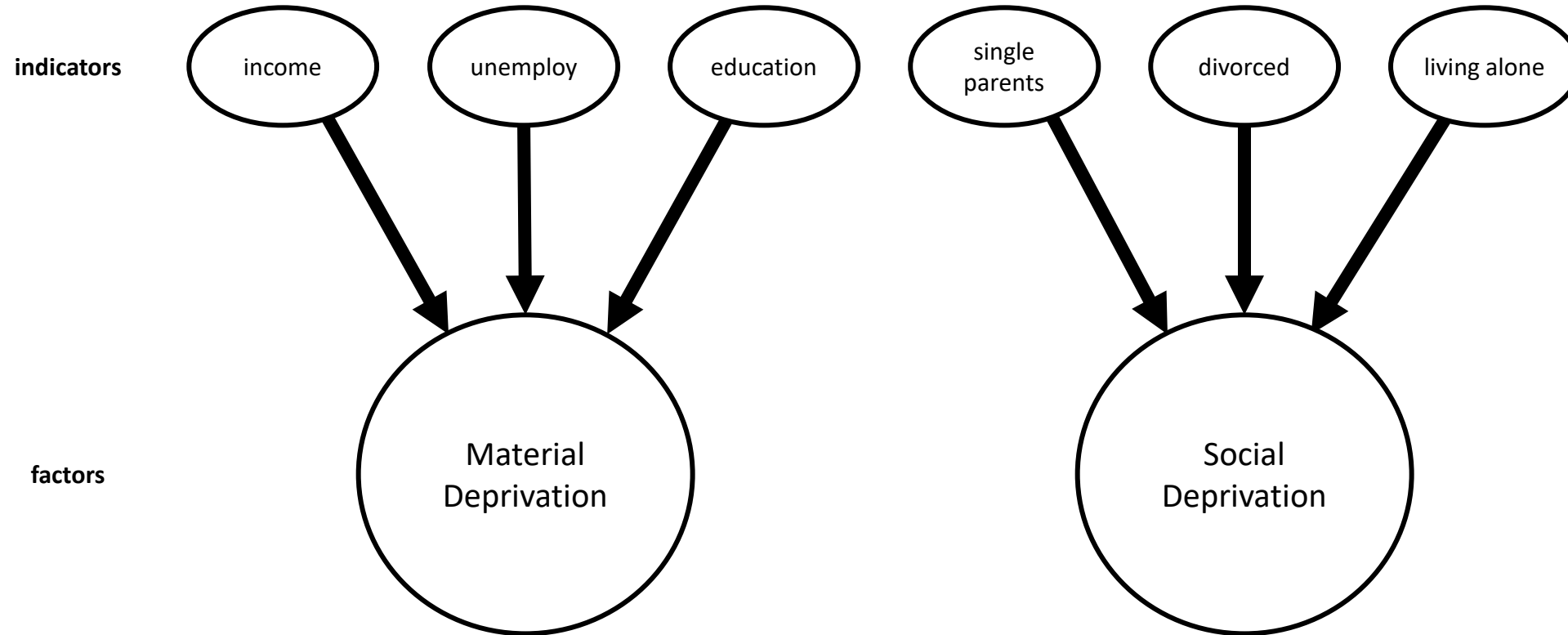
education

single
parents

divorced

living alone

Factor analysis



How do you measure SES?

- | | | |
|-----------------------------------|--------|--------------------------|
| 1. Pampalon Index | —————→ | 2 factors, 6 indicators |
| 2. Canadian Marginalization Index | ————→ | 4 factors, 18 indicators |
| 3. Socioeconomic Factor Index | ————→ | 1 factor, 4 indicators |

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- | | | |
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New Brunswick Boil Water Advisories

