Determining the Boundaries of Canada's Downtown Residential Neighborhoods

François Sergerie, Dylan Saunders and Patrick Charbonneau; Statistics Canada

Delivering insight through data for a better Canada

Background (1/3)

- Downtowns are the focus of a renewed interest. Many cities have plans to revitalize these areas, often neglected to the profit of suburban development. More and more condo towers are rising, leading to a higher population density.

- There is no consensual definition of what a downtown is. There are no rigid boundaries determining the contour of downtown areas, as it depends on people's perceptions, administrative boundaries, cultural and historical considerations.

Background (2/3)

- The U.S. Census Bureau and state Labour Market Information (LMI) agencies developed an administrative database based on the concentration of workers, named the Local Employment Dynamics (LED).

- It was used in *Downtown Rebirth: Documenting the Live-Work Dynamic in 21st Century U.S. Cities* (2013) by Paul R. Levy and Lauren M. Gilchrist to identify the downtown areas of 150 U.S. cities.

- Geographic unit: Census tracts (between 1,200 and 8,000 people) (U.S. Census Bureau).

Background (3/3)

DOWNTOWN CHICAGO
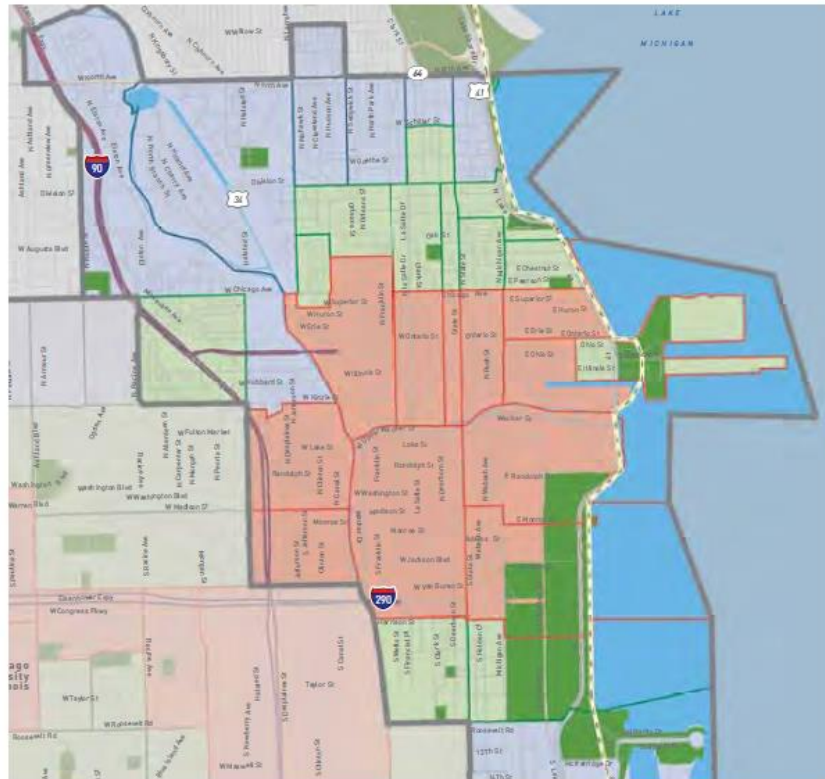
Legend:
- Commercial Downtown Tracts
- Half-Mile Adjacent Area Tracts
- One-Mile Adjacent Area Tracts
- One-Mile Adjacent Area Outline
- Parks and Green Space

DOWNTOWN HOUSTON

Legend:
- Commercial Downtown Tracts
- Half-Mile Adjacent Area Tracts
- One-Mile Adjacent Area Tracts
- One-Mile Adjacent Area Outline
- Parks and Green Space

Levy, P. R., & Gilchrist, L. M. (2014). *Downtown Rebirth: Documenting the Live-Work Dynamic in 21st Century U.S. Cities.* Philadelphia: International Downtown Association.
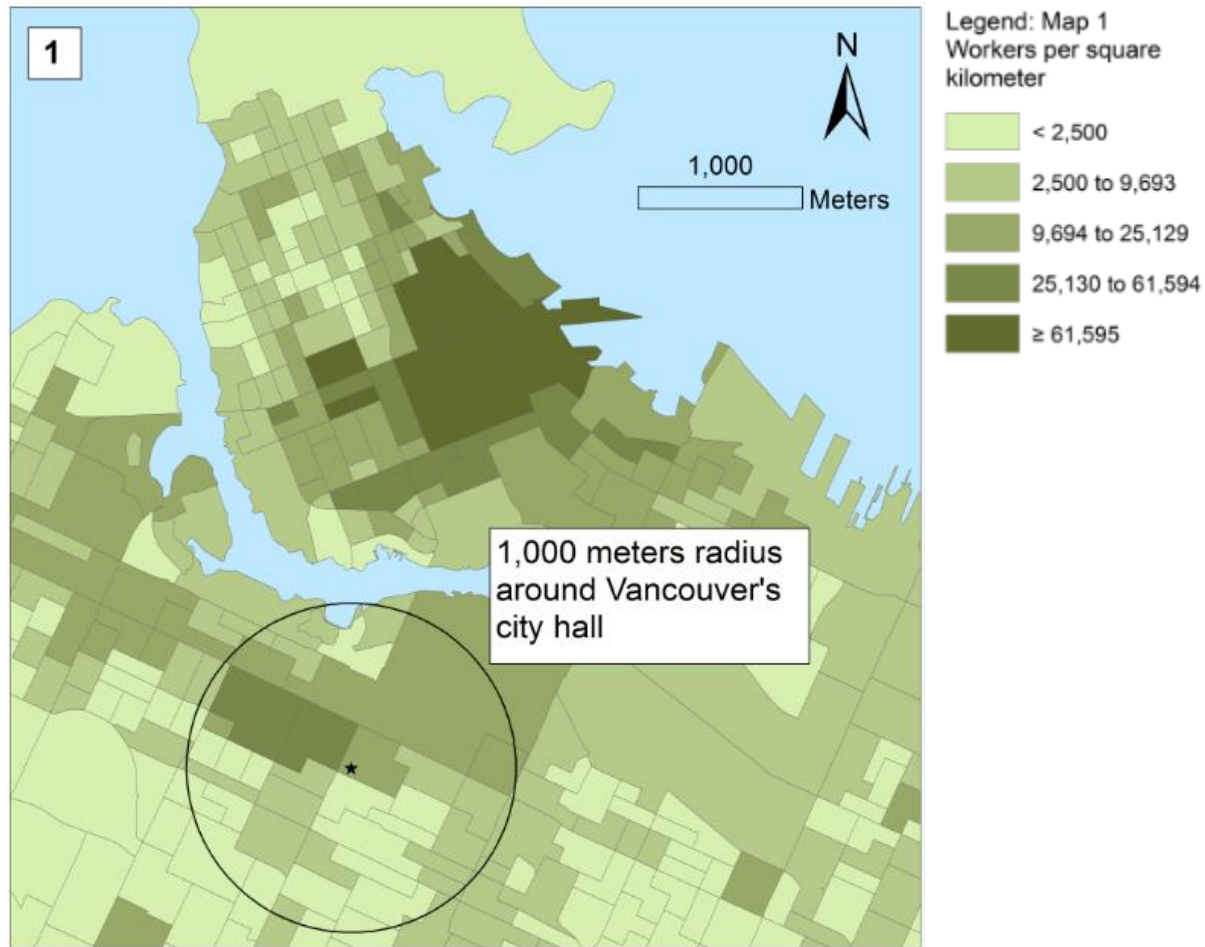
Objectives

- To determine the limits of downtown residential neighborhoods (DRNs) in the census metropolitan areas (CMAs) of Canada, on the basis of the concentration of workers.

- To measure the population change of these DRNs.

Data and concepts

- Sources: Census of Population 2006, 2011 and 2016
    - Variables: Place of work (2016) and Population (2006, 2011 and 2016)
    - Geographic unit: Dissemination areas (small area composed of one or more neighbouring dissemination blocks, with a population of 400 to 700 persons).

- Downtown Residential Neighborhood (DRN): an area composed of the downtown, and the encompassing half-kilometer and one-kilometer living areas surrounding the downtown.

Process in defining the downtown area using the place of work variable (1/5)

Legend: Map 1
Workers per square kilometer

- < 2,500
- 2,500 to 9,693
- 9,694 to 25,129
- 25,130 to 61,594
- ≥ 61,595

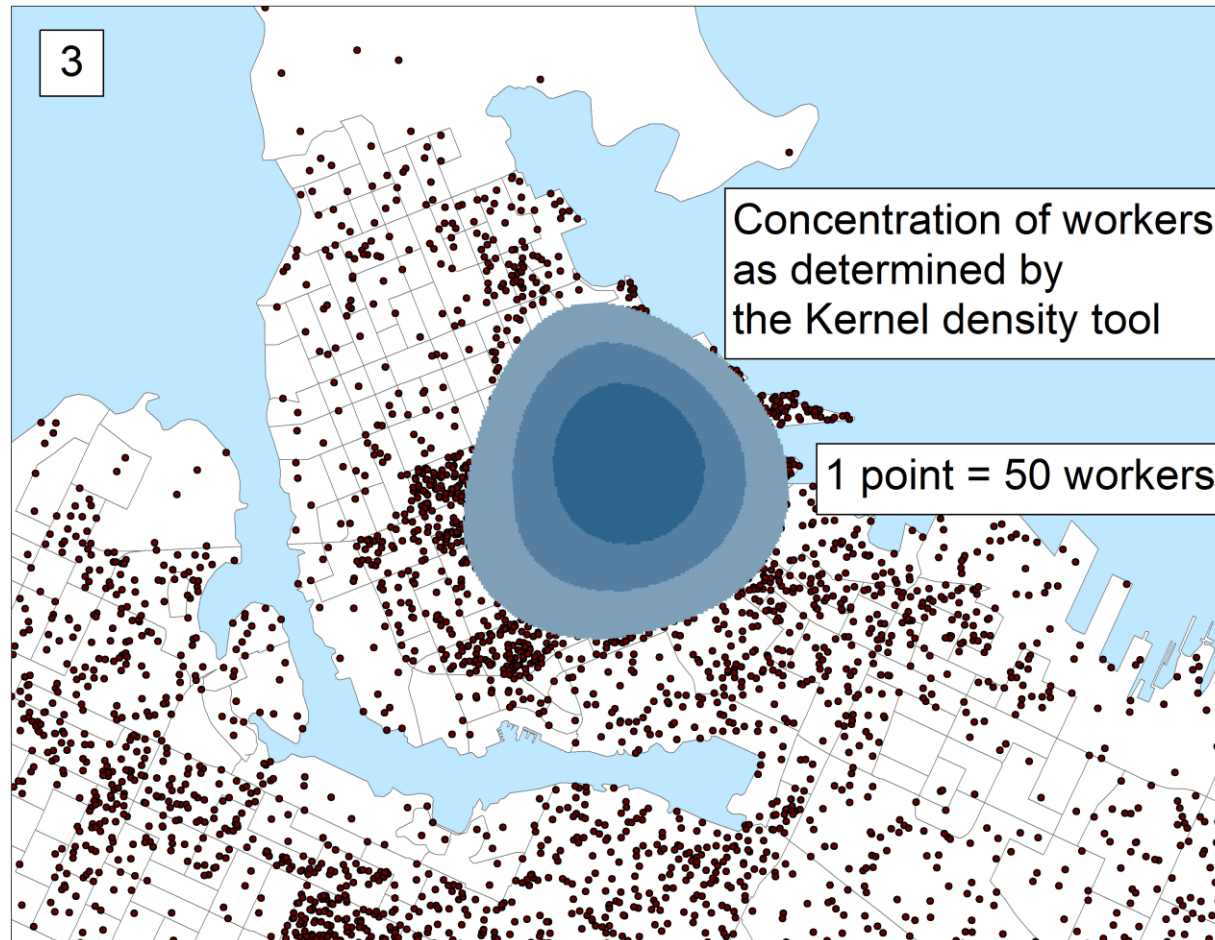1,000 meters radius around Vancouver's city hall

- Selecting the DAs with the highest density of workers would have implied including some non-contiguous DAs.

- Selecting only contiguous DAs would mean leaving some dense working areas out of the downtown.

- Using city halls to identify the downtowns is not adapted to every metropolitan area, since they are not necessarily situated in the main business areas.

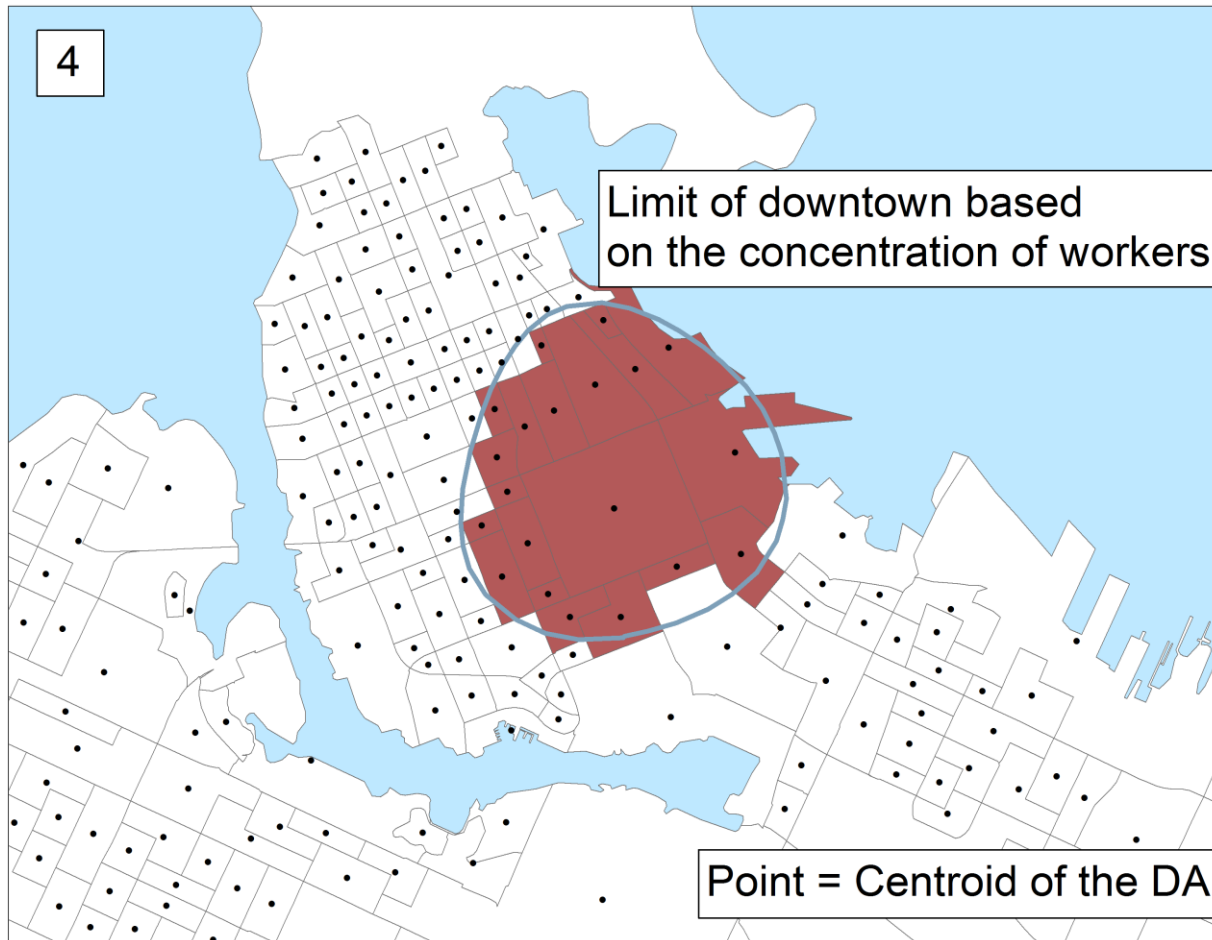# Process in defining the downtown area using the place of work variable (2/5)

2

1 point = 50 workers
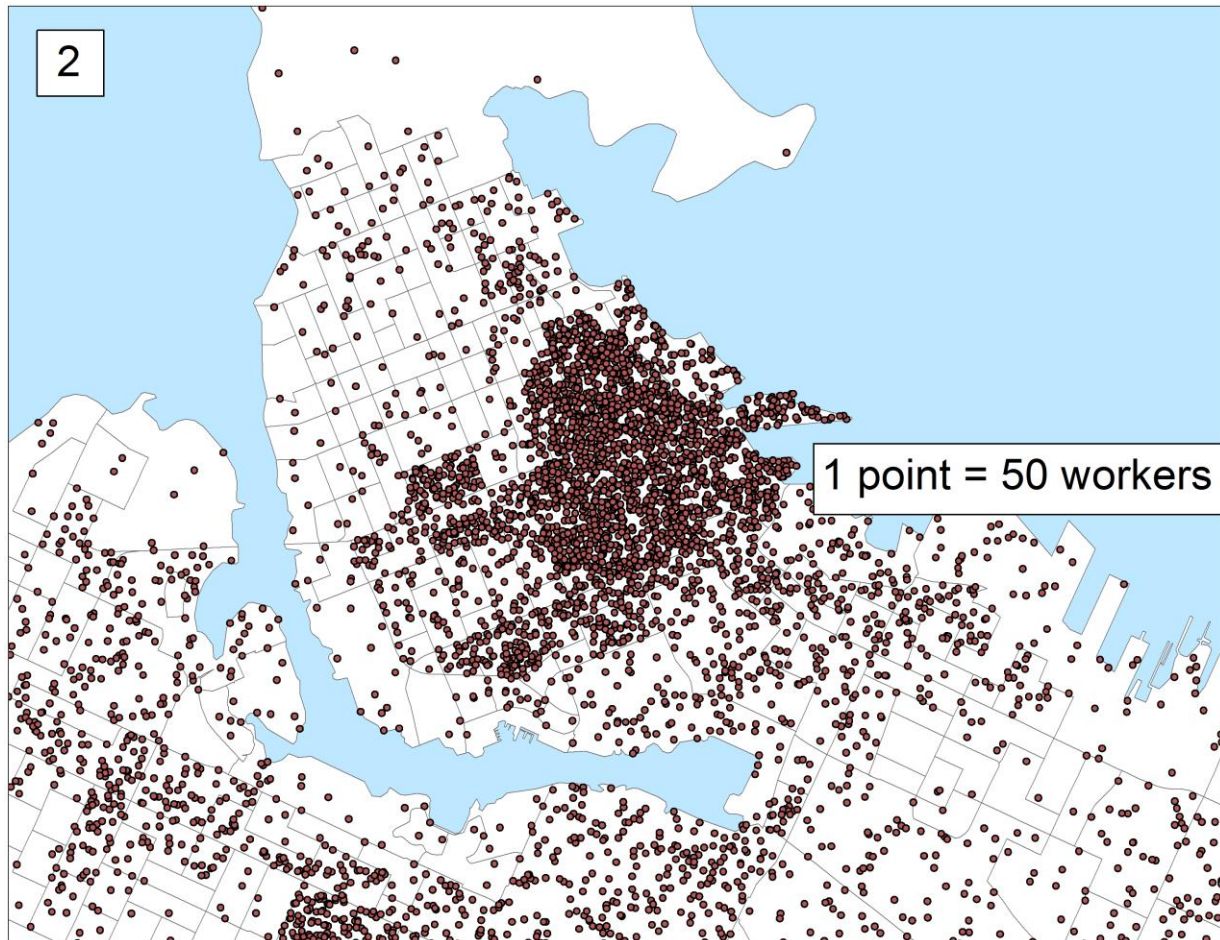
- The number of workers by DA was converted in random points.

3

Concentration of workers
as determined by
the Kernel density tool

1 point = 50 workers
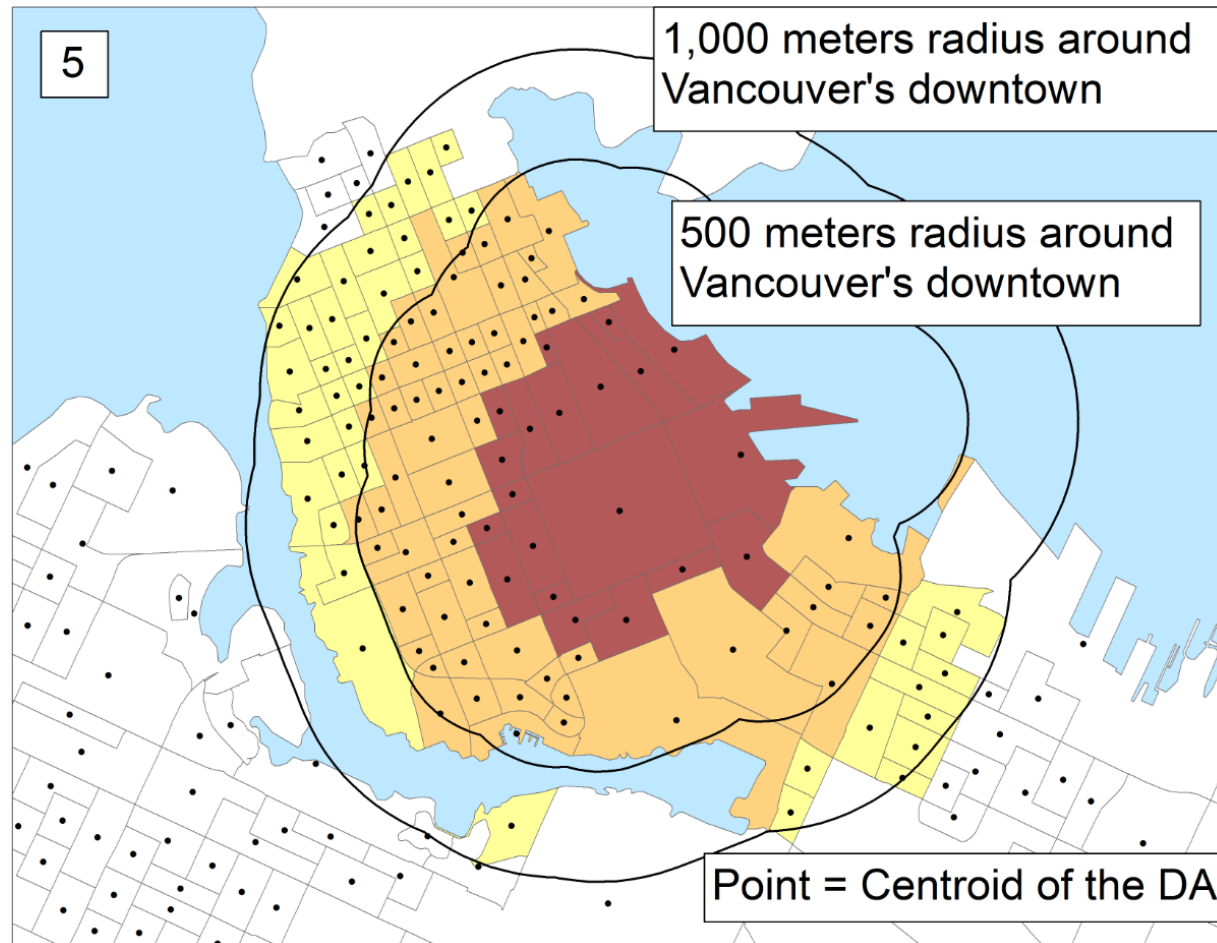
- A density surface, or heat map, was outputed using the kernel density tool to identify the areas with the highest concentration of workers.

- An empirical evaluation of the 12 CMAs showed that the three densest categories best represented the downtown.

Process in defining the downtown area using the place of work variable (4/5)
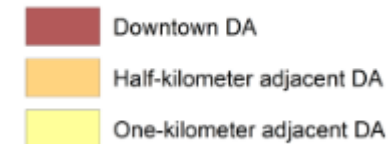

- Every DA whose centroid (indicated by the black dot) fell inside the surface was selected as the downtown area.

Process in defining the downtown area using the place of work variable (5/5)

1,000 meters radius around Vancouver's downtown

500 meters radius around Vancouver's downtown

Point = Centroid of the DA

Legend: Map 5
- Downtown DA
- Half-kilometer adjacent DA
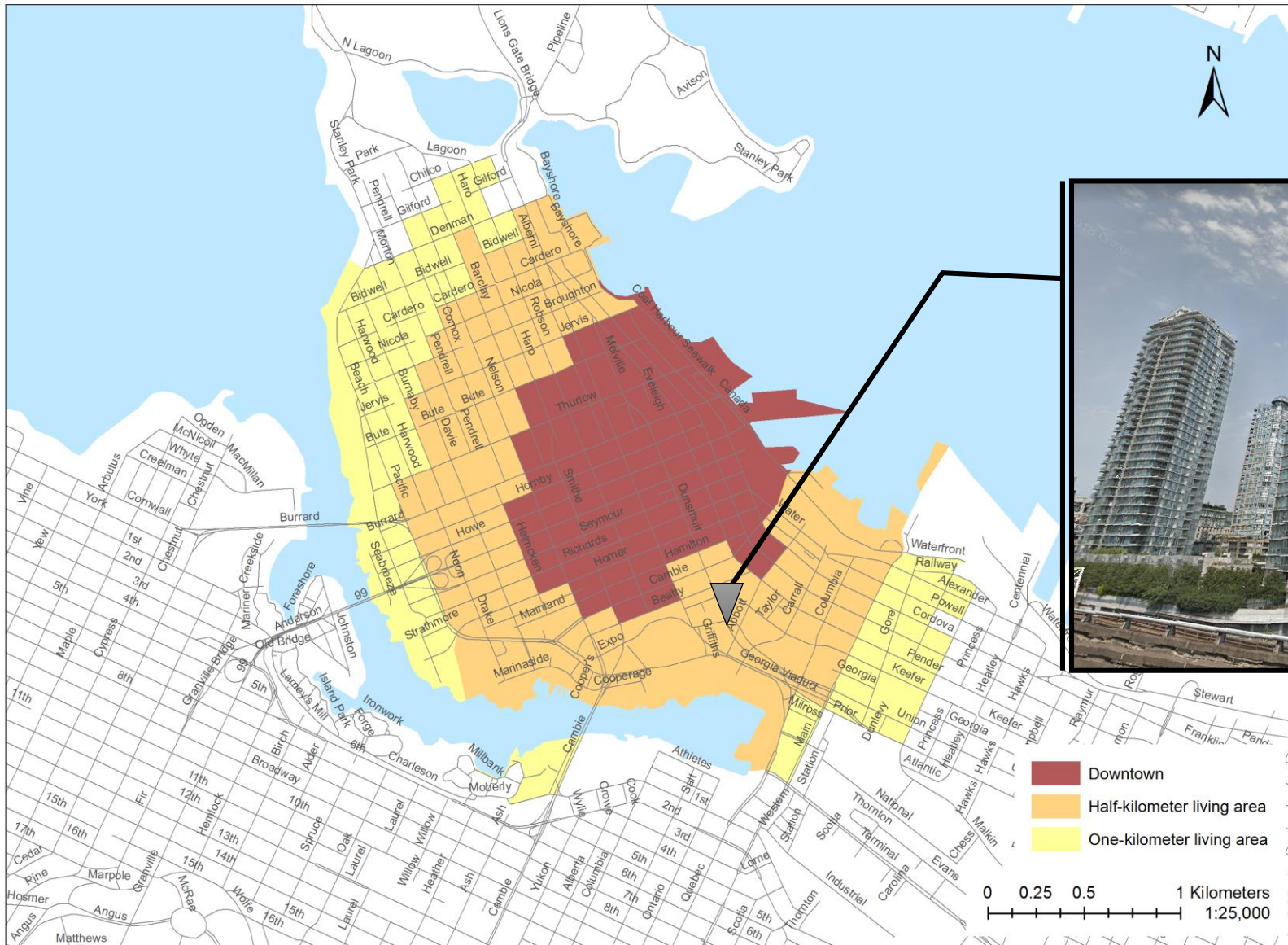- One-kilometer adjacent DA

- DAs whose centroid fell within a 500m distance from the downtown boundary formed the half-kilometer area, and those with a centroid between 500 m and 1,000 m from the downtown formed the one-kilometer area.

- The three areas together represent the downtown residential neighborhoods.

DOWNTOWN VANCOUVER

Legend:
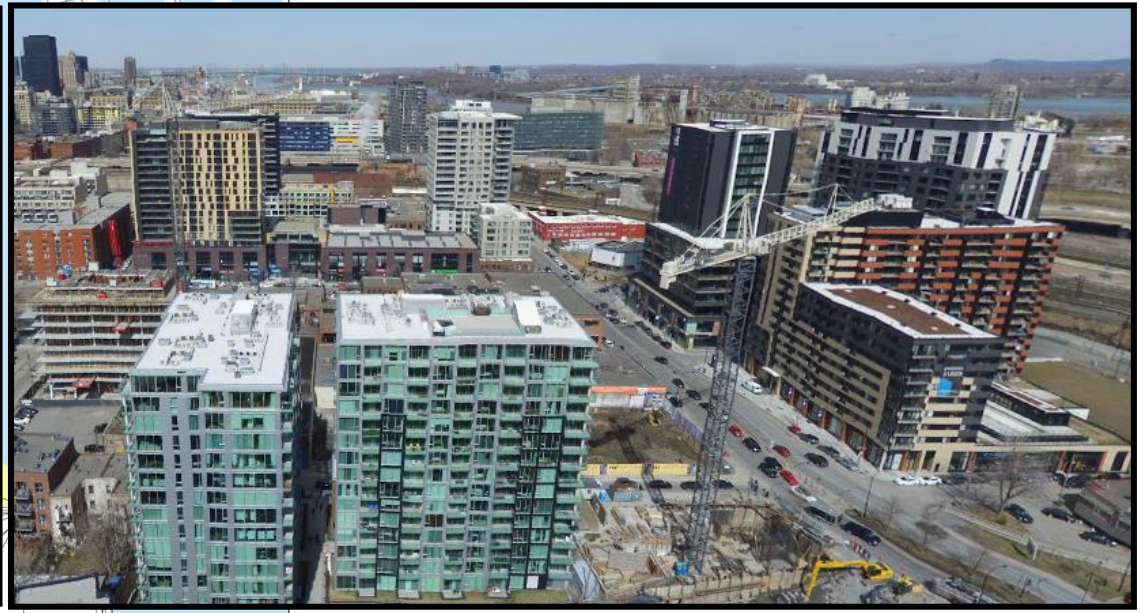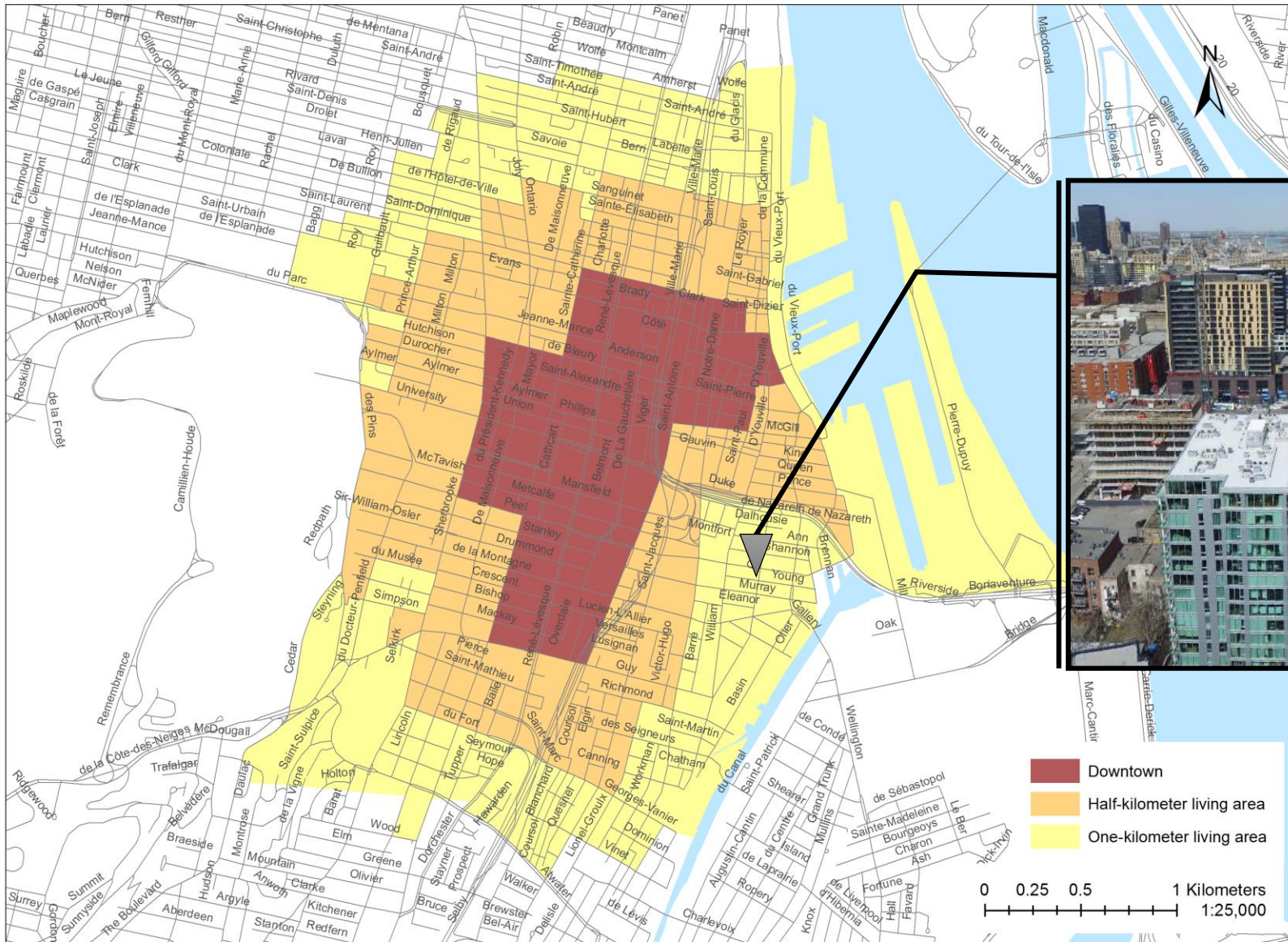- Downtown
- Half-kilometer living area
- One-kilometer living area

0   0.25   0.5   1 Kilometers
1:25,000

Source: Statistics Canada, Census of Population, 2016.

DOWNTOWN MONTRÉAL

Legend:
- Downtown (dark red)
- Half-kilometer living area (orange)
- One-kilometer living area (yellow)

0 0.25 0.5 1 Kilometers
1:25,000

N

DOWNTOWN TORONTO

Downtown
Half-kilometer living area
One-kilometer living area

0   0.25   0.5   1 Kilometers
1:25,000
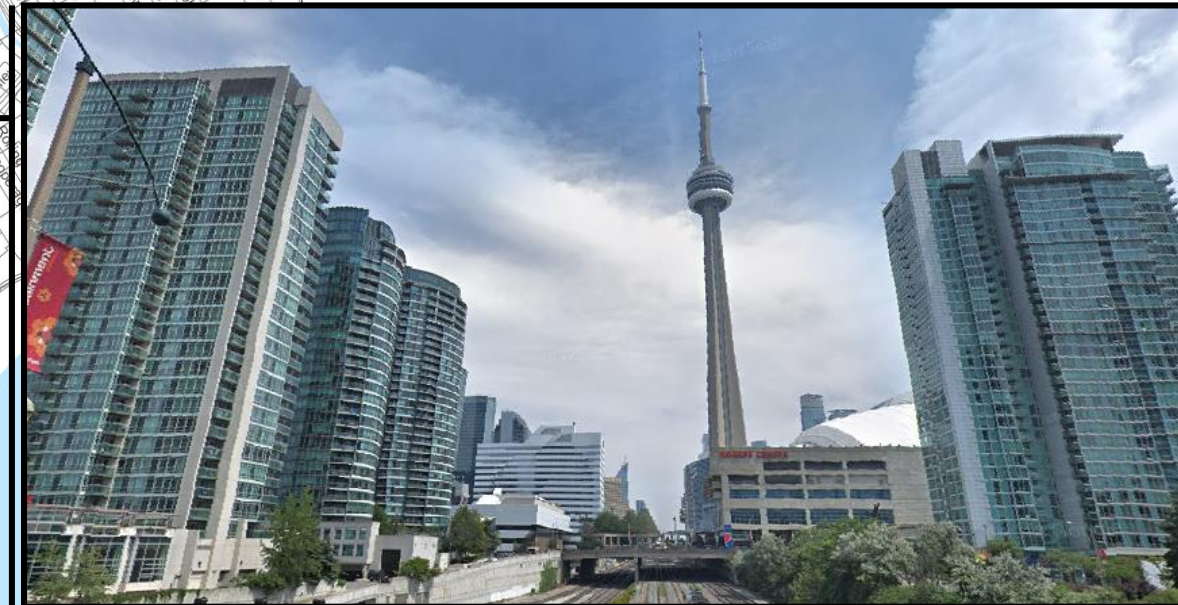
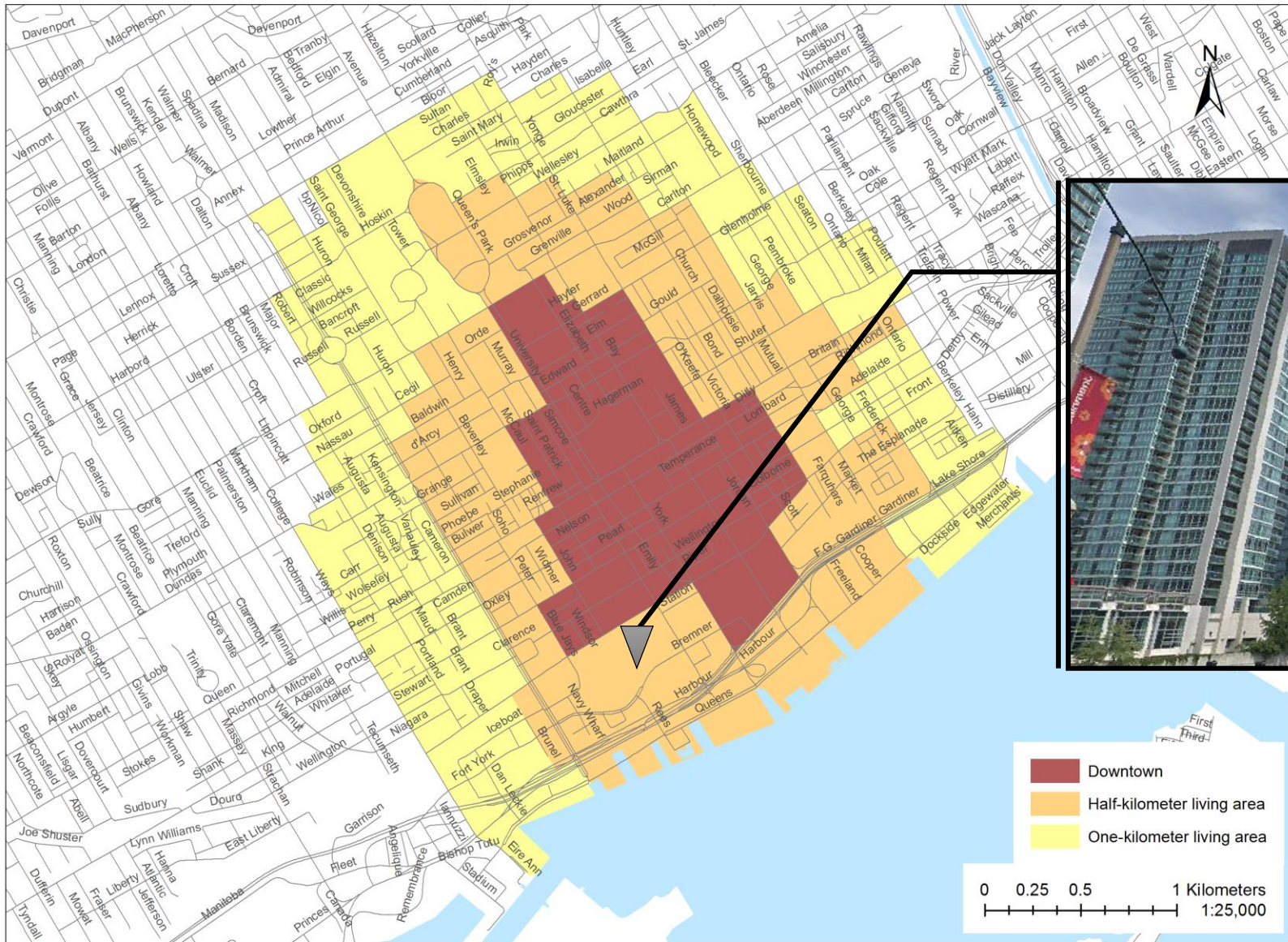Source: Statistics Canada, Census of Population, 2016.

DOWNTOWN OTTAWA

Legend:
- Downtown
- Half-kilometer living area
- One-kilometer living area

Scale: 0 — 0.25 — 0.5 — 1 Kilometers — 1:25,000

14
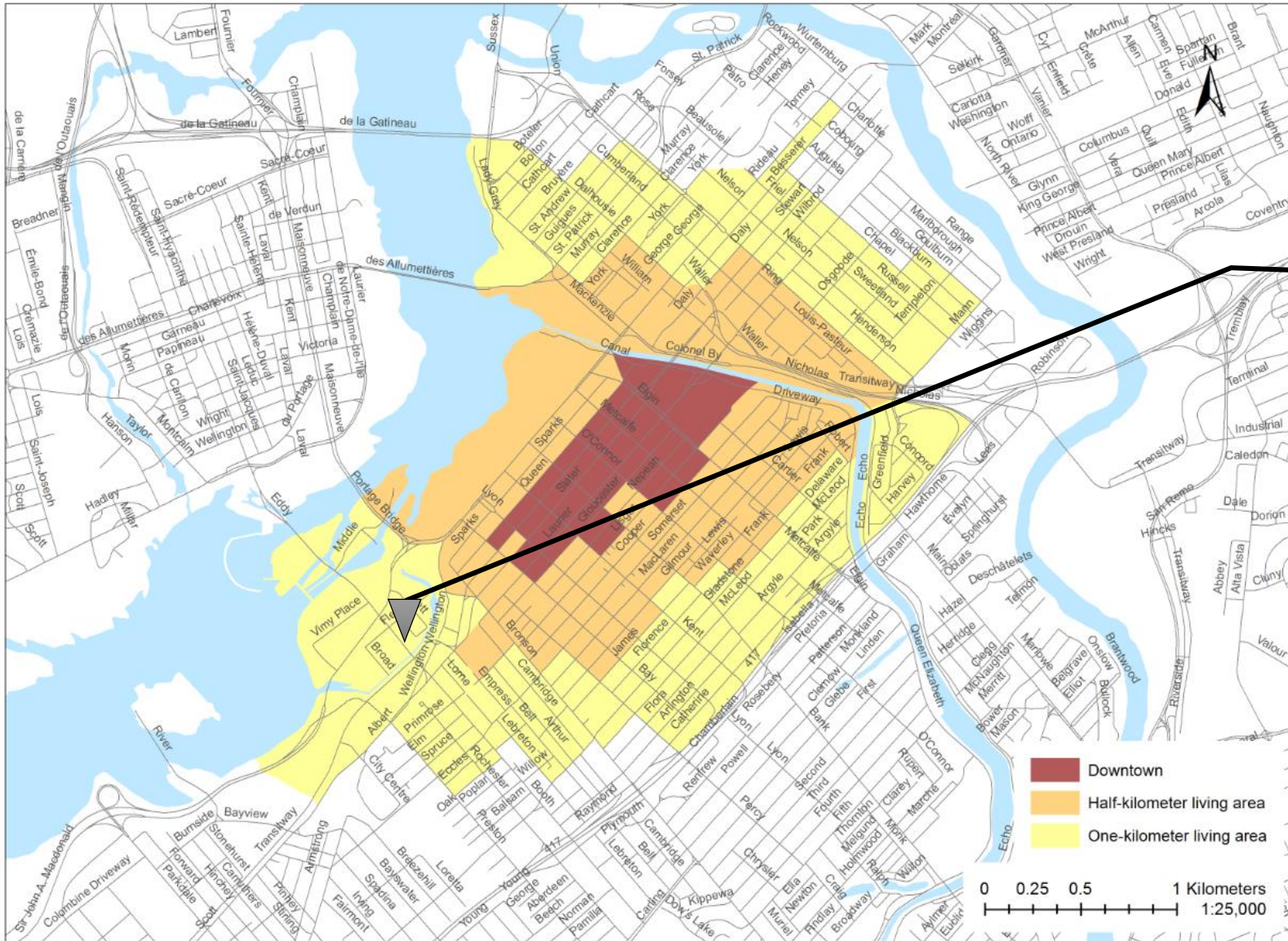
Statistics Canada / Statistique Canada

Conclusions

- Delineating the downtown boundaries using the concentration of workers makes the method applicable and comparable for every urban areas under study.

- The censuses of population are accessible data sources that are widely used in several fields of study. In addition, several other variables from censuses such as age, sex, marital status, or income can be easily added in future analysis.

- Methods inspired from spatial demography can help redefine and delimit different sectors of urban agglomerations, according to their actual characteristics and uses, without being constrained by administrative boundaries.

THANK YOU !

François Sergerie

Analyst, Demography Division, Statistics Canada

francois.sergerie@canada.ca

Dylan Saunders

Analyst, Labour Statistics Division, Statistics Canada

dylan.saunders@canada.ca

Patrick Charbonneau

Senior analyst, Demography Division, Statistics Canada

patrick.charbonneau@canada.ca