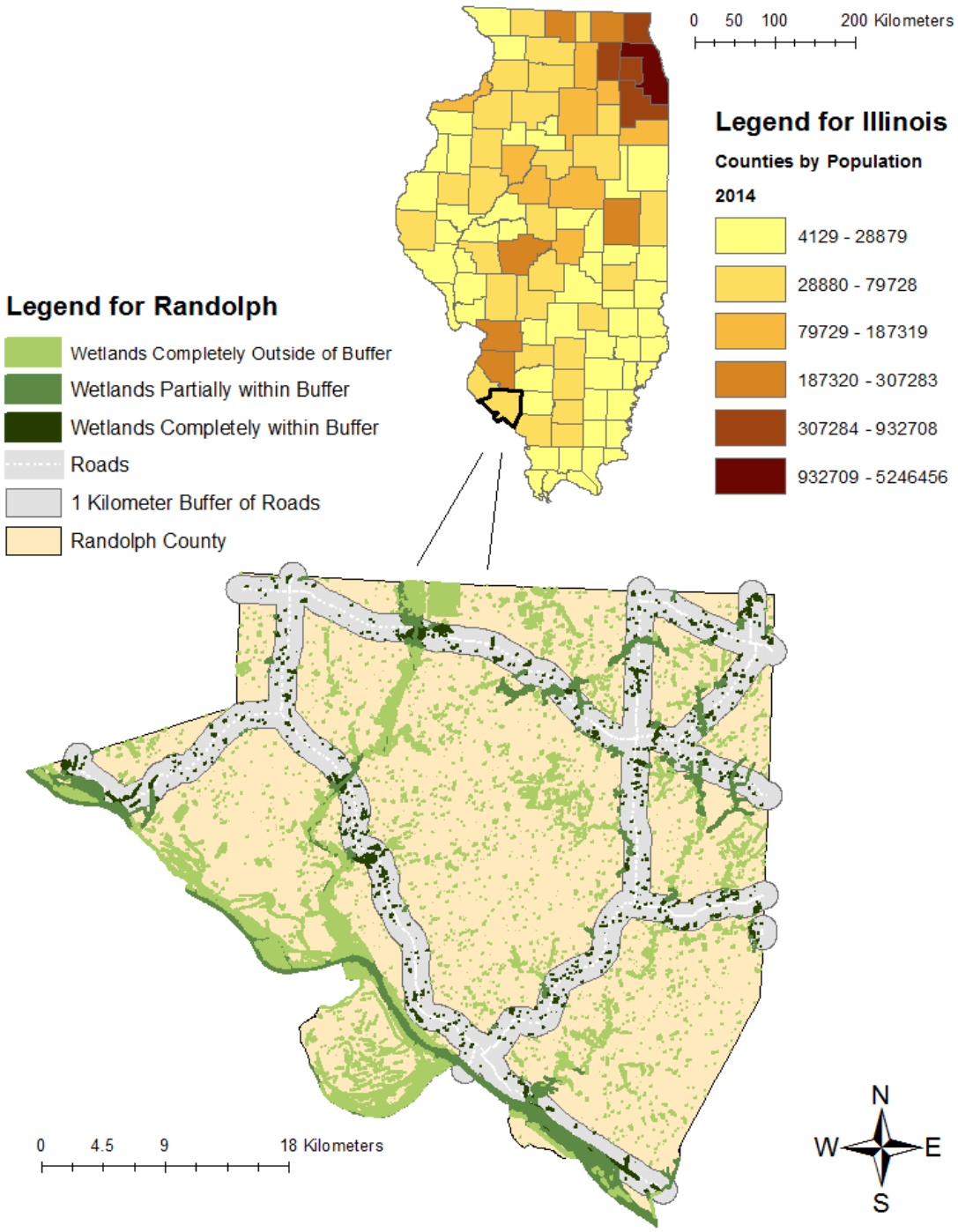
Map of Wetlands and Roads in Randolph, Illinois



a. Synopsis

County boundary metadata

- This shapefile describes Illinois county boundaries with lines and polygons
- Bounding coordinates are -91.4244 (W), -87.3840 (E), 42.4951 (N), 36.9540 (S)
- Data was collected between 1921 and 1979 by the Illinois State Geological Survey
- Data is represented with vector digital data (e.g. county names, number (FIPS) designations, state boundary information) and the NAD 1983 coordinate system
- Purpose of dataset is for local and regional thematic analysis regarding research
- Reliability is hindered by potential errors in the accuracy of original maps and digitizing, it should not be used as a legal substitute for surveyed location and practical applications

Road metadata

- This shapefile describes roads in Illinois with lines
- Bounding coordinates are -91.51308 (W), -87.4952 (E), 42.5083 (N), 36.9703 (S)
- Data was collected in 2010 by the U.S. Census Bureau (Geo. Division) and Dep. of Commerce
- Data is represented with vector digital data (e.g. feature names, number (FIPS) designations) and the NAD 1983 coordinate system
- Purpose of the dataset is to provide a network of main roads and highways in Illinois for geographic reference
- Reliability is hindered by time of data collection, as new roads may have emerged since 2010

Wetland metadata

- This shapefile describes wetland habitats in Illinois with lines and polygons
- Federal bounding coordinates are -127.982503 (W), -65.272195 (E), 51.611788 (N), 22.72718 (S)
- Data was collected between 1977 and the present by Cowardin et al. and the U.S. Department of Interior (Fish and Wildlife Service)
- Data is represented with vector digital data (e.g. area, location, type) and the NAD 1983 Albers coordinate system
- Purpose is to provide citizens with information on wetlands to support conservation of them
- Reliability is hindered because certain wetlands could not be captured by aerial photography

b. Population data

Population metadata

- This CSV file describes annual estimates of the resident populations in counties of Illinois
- Data was collected between 2010 to 2014 by the U.S. Census Bureau (Pop. division)
- Attributes include geographic IDs of counties (GEO.id, GEO.id2), county names (GEO.display-label), census and estimate base for 2010 (rescen42010, resbase42010), and population estimates for five years (respop72010, respop72011, respop72012, respop72013, respop72014)

c. Summary statistics

Wetlands located completely within 1 kilometer buffers of roads

- 910 (Total count), 11,191.261 km^2 (Average area), 10,184,047.663 km^2 (Total area)

Wetlands located partially within 1 kilometer buffers of roads

- 148 (Total count), 362,815.469 km^2 (Average area), 53,696,689.399 km^2 (Total area)

Wetlands located completely outside 1 kilometer buffers of roads

- 3,656 (Total count), 21,450.759 km^2 (Average area), 78,423,974.636 km^2 (Total area)

Proposed Location for Paradigm Store in the Plateau, Montreal

Legend

- Plateau
- Location
- Competitors
- Location buffer
- Competition buffers

Census Tract

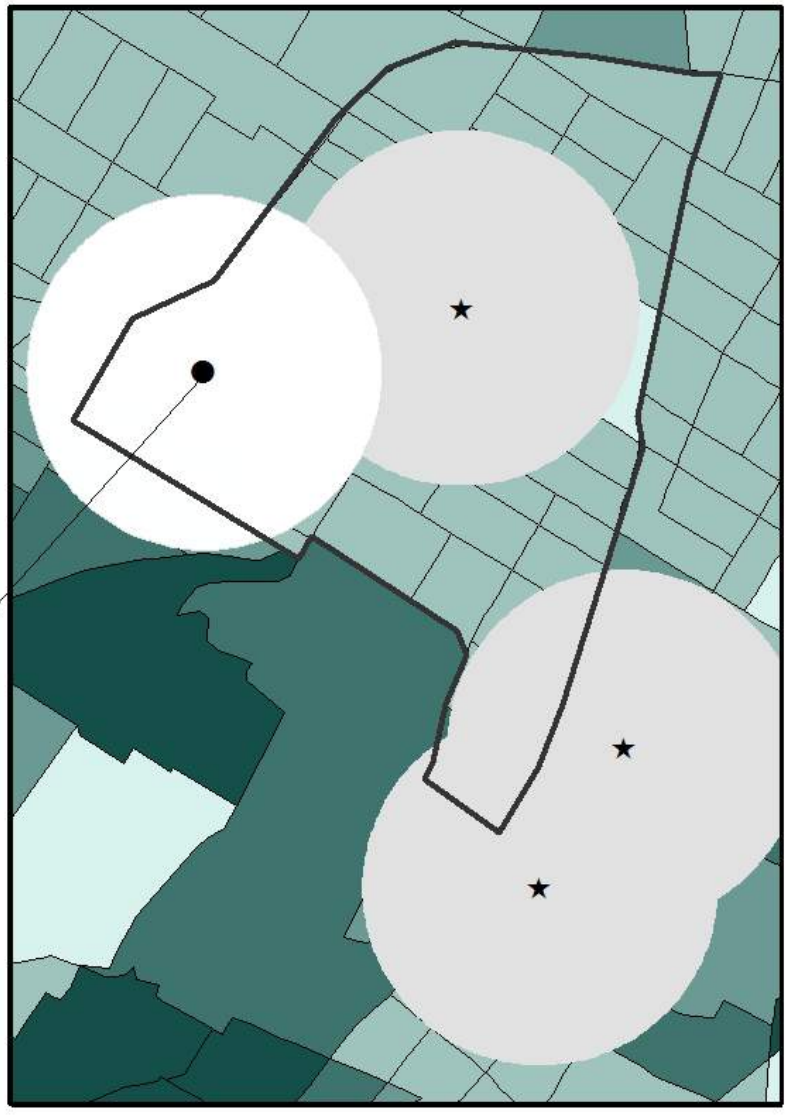
AHI

- 0 - 18435
- 18436 - 49540
- 49541 - 82136
- 82137 - 155397
- 155398 - 349609

Geodemographic Estimates for Location Buffer

Total male population 30-44 years old: 5,506
Average household income (AHI): $42,961

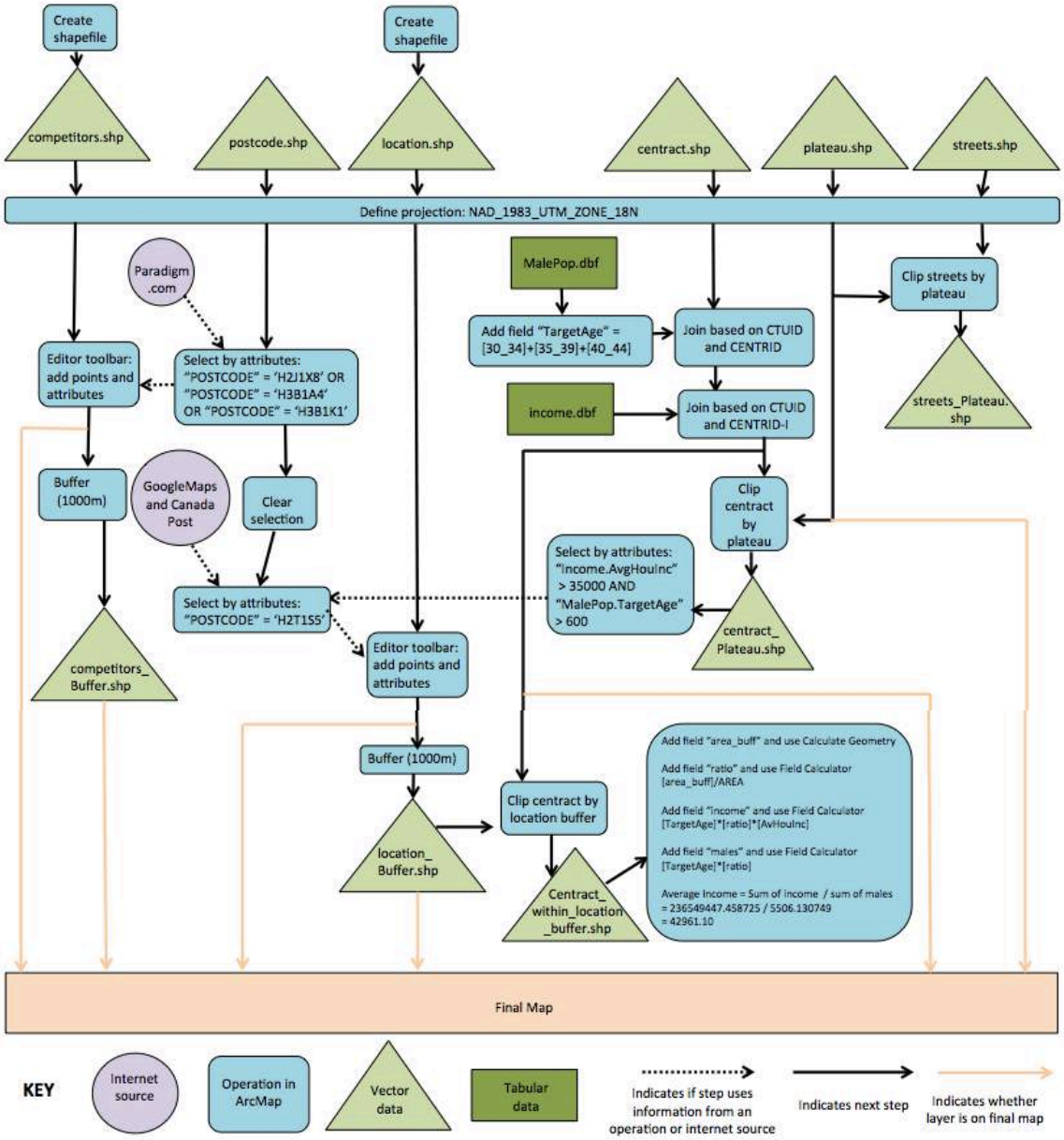
0 0.250.5 1 Kilometers



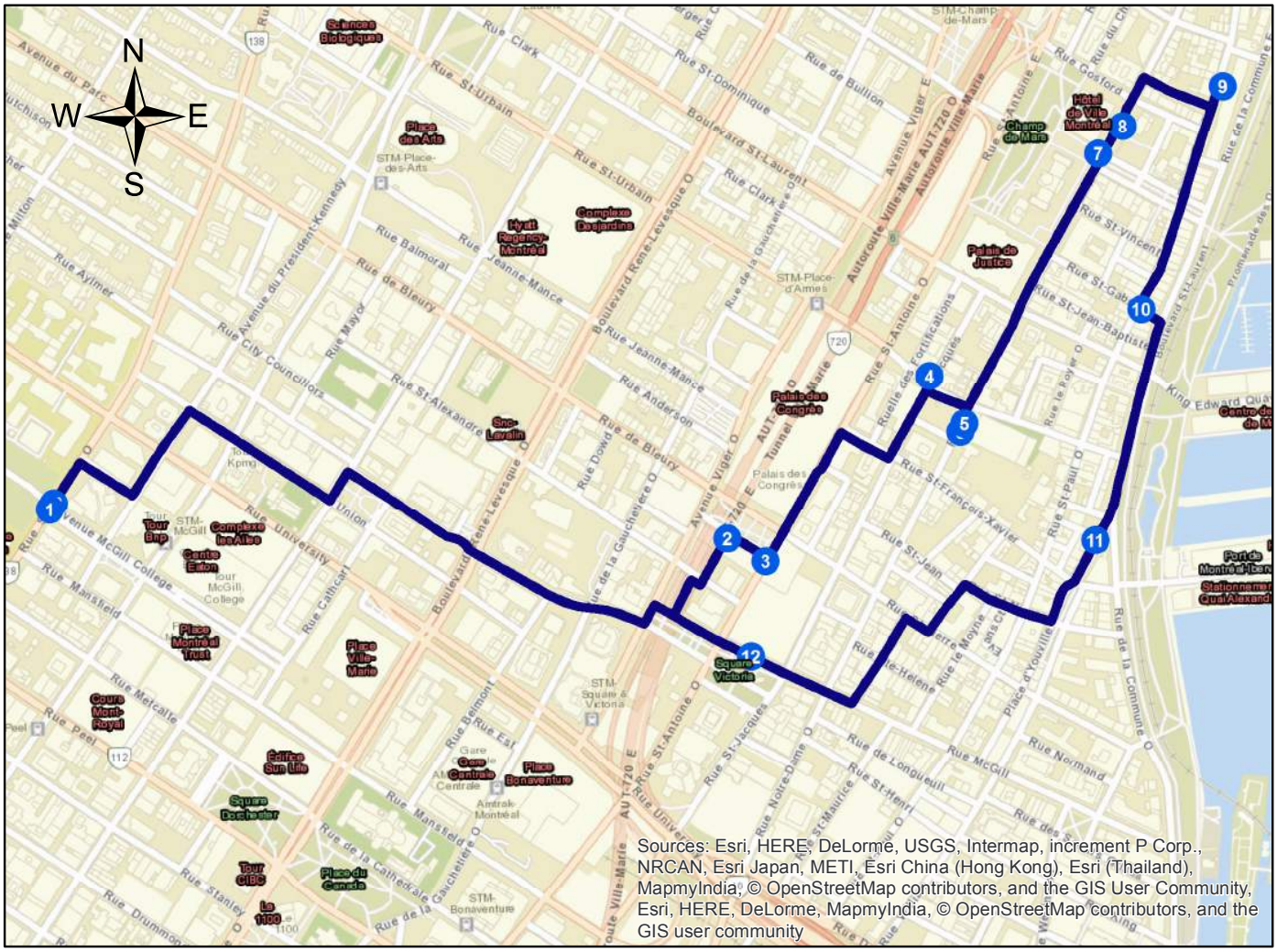
Location Details

Name: Paradigm
Address:
5301 Saint Laurent
Postcode: H2T1S5
Province: Quebec

N
W E
S


Create shapefile
Create shapefile
competitors.shp
postcode.shp
location.shp
centract.shp
plateau.shp
streets.shp
Define projection: NAD_1983_UTM_ZONE_18N
Paradigm .com
MalePop.dbf
Clip streets by plateau
Add field "TargetAge" = [30_34]+[35_39]+[40_44]
Join based on CTUID and CENTRID
Editor toolbar: add points and attributes
Select by attributes: "POSTCODE" = 'H2J1X8' OR "POSTCODE" = 'H3B1A4' OR "POSTCODE" = 'H3B1K1'
income.dbf
Join based on CTUID and CENTRID-I
streets_Plateau.shp
Buffer (1000m)
GoogleMaps and Canada Post
Clear selection
Clip centract by plateau
Select by attributes: "income.AvgHouInc" > 35000 AND "MalePop.TargetAge" > 600
Select by attributes: "POSTCODE" = 'H2T1S5'
centract_ Plateau.shp
competitors_ Buffer.shp
Editor toolbar: add points and attributes
Buffer (1000m)
Clip centract by location buffer
Add field "area_buff" and use Calculate Geometry
Add field "ratio" and use Field Calculator [area_buff]/AREA
Add field "income" and use Field Calculator [TargetAge]*[ratio]*[AvHouInc]
Add field "males" and use Field Calculator [TargetAge]*[ratio]
Average Income = Sum of income / sum of males = 236549447.458725 / 5506.130749 = 42961.10
location_ Buffer.shp
Centract_ within_location _buffer.shp
Final Map
KEY
Internet source
Operation in ArcMap
Vector data
Tabular data
Indicates if step uses information from an operation or internet source
Indicates next step
Indicates whether layer is on final map

Walking Tour of Old Montreal (ArcGIS)



0 0.125 0.25 0.5 Kilometers

Stops and estimated walking times

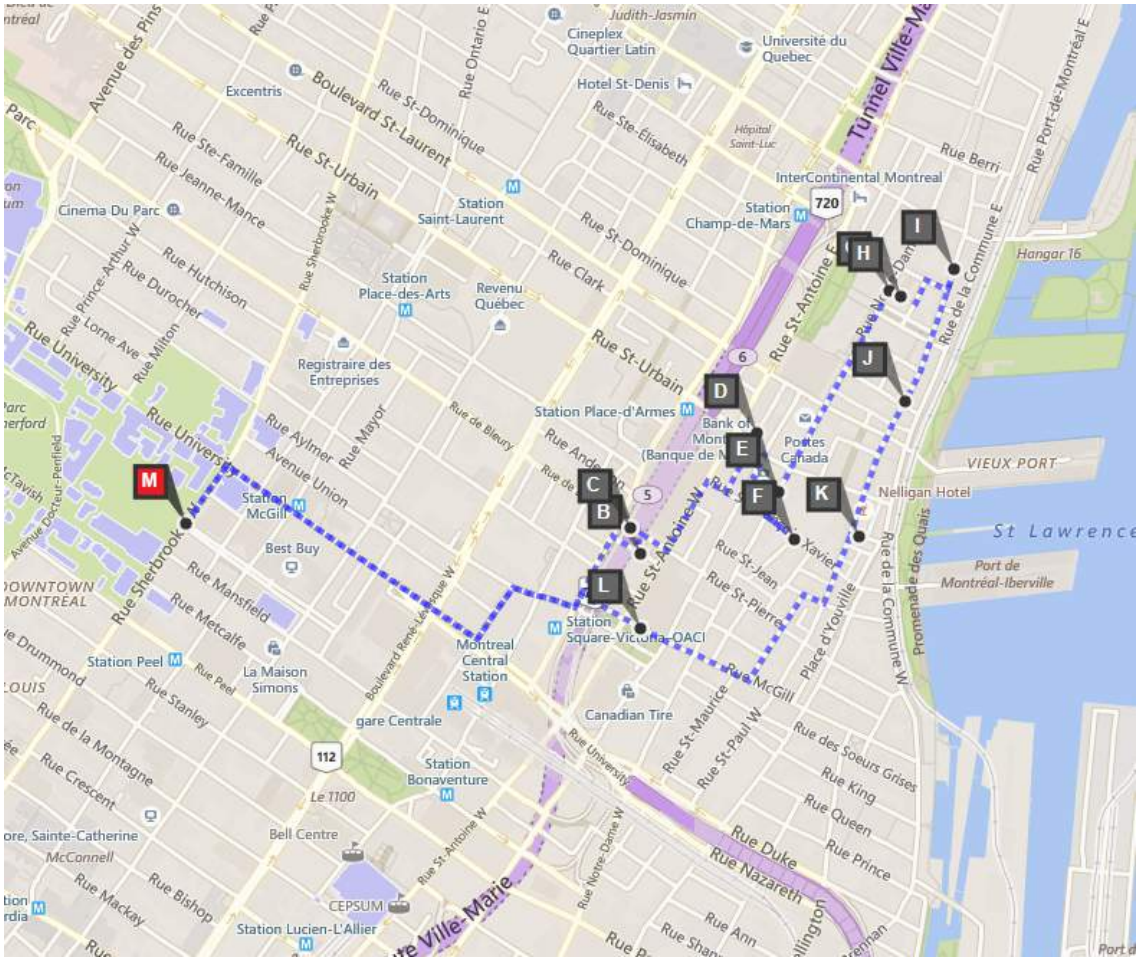
1. **Roddick Gates (Start)**
   - ↓ 1383.65 m (17 minutes)
2. **Restaurant Toque**
   - ↓ 84.44 m (1 minute)
3. **Palais des Congres**
   - ↓ 452.15 m (5.5 minutes)
4. **Place d'Armes Hotel & Suites**
   - ↓ 111.95 m (1.5 minutes)
5. **Notre-Dame Basilica**
   - ↓ 13.65 m (0.5 minutes)
6. **Seminaire St.-Sulpice**
   - ↓ 475.78 m (6 minutes)
7. **Hotel de Ville**
   - ↓ 54.92 m (1 minute)
8. **Chateau Ramezay**
   - ↓ 230.94 m (3 minutes)
9. **Marche Bonsecours**
   - ↓ 371.58 m (4.5 minutes)
10. **Les Delices de L'Erable**
    - ↓ 385.25 m (5 minutes)
11. **Pointe-a-Caillere Museum**
    - ↓ 745.85 m (9 minutes)
12. **Centre de Commerce Mondial de Montreal**
    - ↓ 1348.24 m (17 minutes)
13. **Roddick Gates (End)**

Total length of tour: 5.66 km

Total estimated walking time: ~70 minutes

Walking Tour of Old Montreal (Bing Maps)

Total length of tour: 6.2 km **Total estimated walking time:** 74 minutes



A to B: 1.5 km, 17 min walking

A Roddick Gates

B to C: 90 m, 1 min walking

B 900 Place Jean Paul Riopelle, Montreal, QC H2ZB2

C to D: 0.5 km, 6 min walking

C 1001 Place Jean-Paul-Riopelle, Montreal, QC H2Z, Canada

D to E: 0.2 km, 2 min walking

D 55 Saint-Jacques W, Montreal, QC H2Y 3X2

E to F: 0.2 km, 2 min walking

E 110 Rue Notre-Dame O, Montreal, QC H2Y 1T1, Canada

F to G: 0.7 km, 8 min walking

F 116 Rue Notre-Dame O, Montreal, QC H2Y 1T2, Canada

G to H: 36 m, < 1 min walking

G 275 Rue Notre-Dame E, Montreal, QC H2Y 1C6, Canada

H to I: 0.2 km, 2 min walking

H 280 Rue Notre-Dame E, Montreal, QC H2Y 1C5, Canada

I to J: 0.3 km, 4 min walking

I 350 Rue St-Paul E, Montreal, QC H2Y 1H2, Canada

J to K: 0.4 km, 4 min walking

J 84 Rue St Paul Est, Montréal, QC H2Y 1G6

K to L: 0.8 km, 9 min walking

K 350 Place Royale, Montreal, QC H2Y 3Y5, Canada

L to M: 1.4 km, 17 min walking

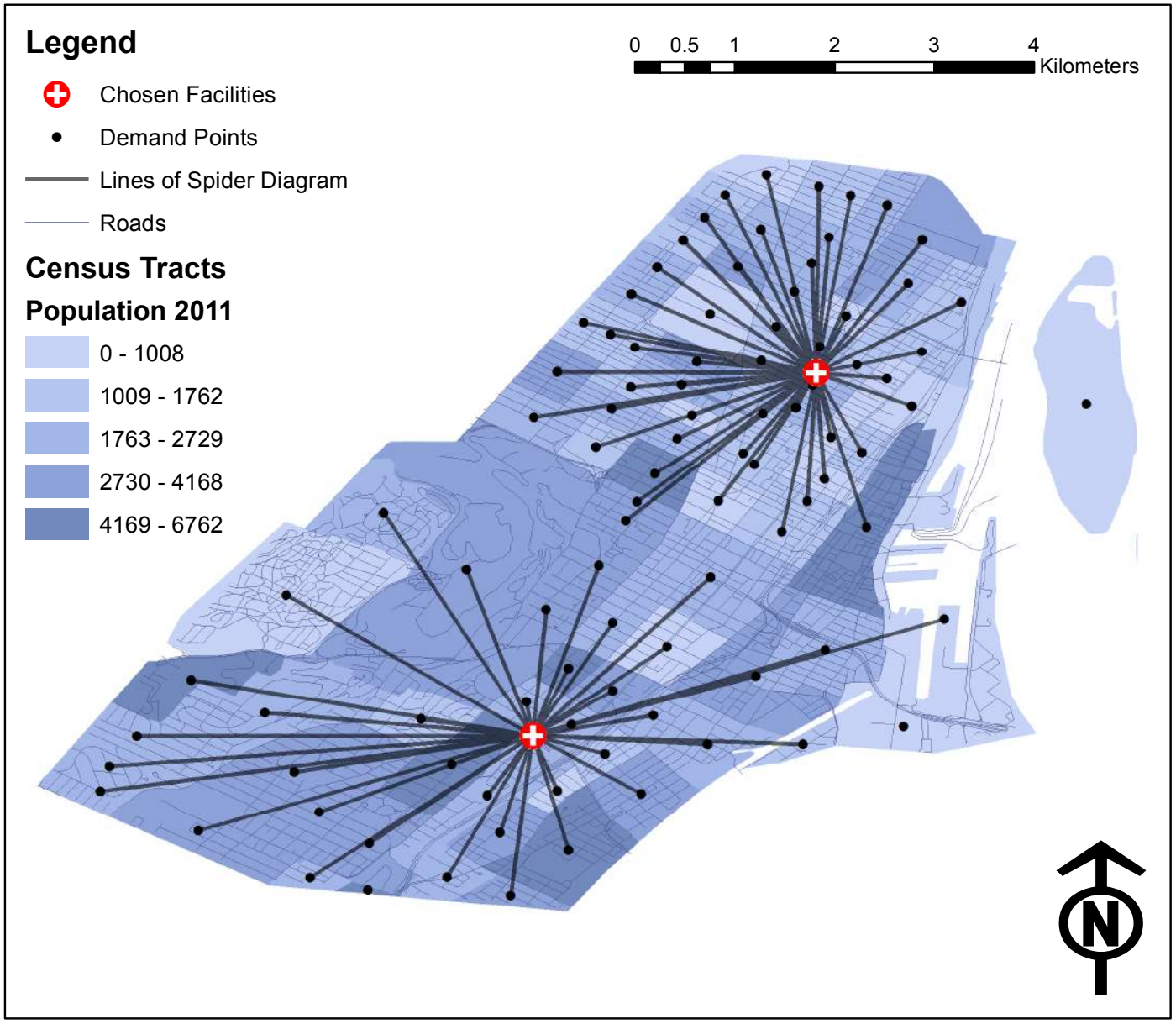
L 747 Rue du Square Victoria, Montreal, QC H2Y 3Y9, Canada

M Roddick Gates

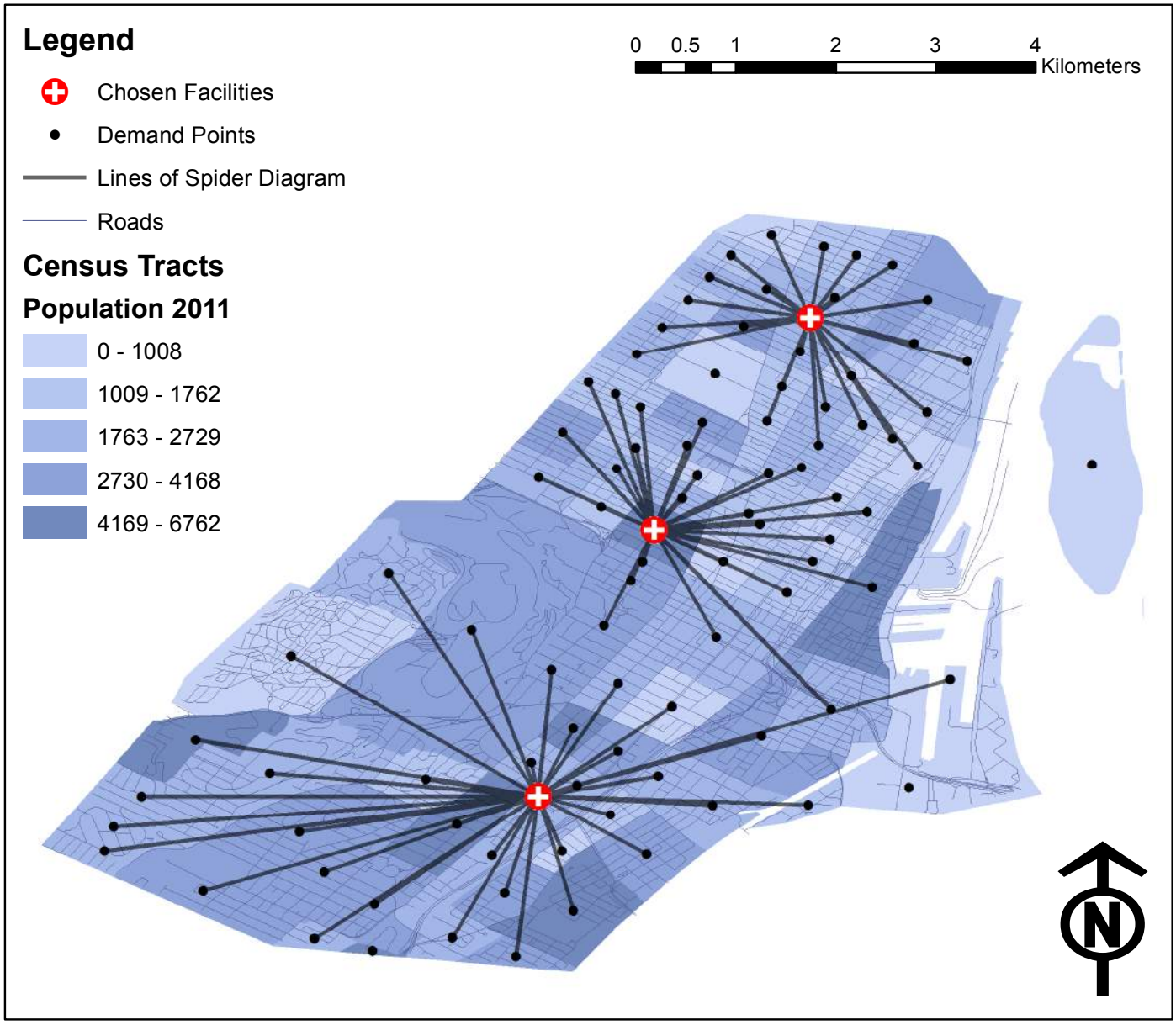
Comparison between Maps

The two maps are not extremely different. The total length of the tour is 5.66 km for the ArcGIS Map and 6.2 km for the Bing Map. The total estimated time is 70 minutes for the ArcGIS Map and 74 minutes for the Bing Map. The maps produce the same estimated walking times for the first two segments (i.e. 17 minutes, 1 minute) and the last two segments of the tour (i.e. 9 minutes, 17 minutes). These are the segments between Roddick Gates and Restaurant Toque, Restaurant Toque and Palais des Congres, Pointe-a-Caillere Museum and Centre de Commerce Mondial, and Centre de Commerce Mondial and Roddick Gates. The individual distances for these segments are slightly bigger in Google Maps because they are usually rounded up to the nearest decimeter. The estimated walking times for the other segments differ by at most two minutes, which is not a lot. It is interesting to note that in the Google Map, the paths in between stops 3 and 6 (Palais des Congres, Place d'Armes, Notre-Dame Basilica, Seminaire St.-Sulpice) are slightly shorter while the paths in between stops 7 and 10 (Hotel de Ville, Chateau Ramezay, Marche Bonsecours, Les Delices de L'Erable) are slightly longer. One advantage of the ArcGIS example is that it allows the user to include more complex layers of data that Bing may not (e.g. property boundaries, demographic data, water infrastructure). One advantage of the Bing example is that it is very tourist-friendly. It enables the user to zoom in, read visitor reviews, and examine photos of each location. Both techniques employ Dijkstra's shortest-path algorithm to provide the quickest route travelling to all 13 stops.

Distribution of Two CLSCs in and around Downtown Montreal



Distribution of Three CLSCs with Addition of One New Center



Lab 4: Location-Allocation of CLSCs

Report for Health Minister of Quebec

My objective was to check the evenness of CLSC facilities in downtown Montreal and figure out which facilities should be closed to cut costs. Using location allocation, I determined the demand count and demand weight of seven facilities:

Location	Name	Street	Demand Count	Demand Weight
1	CLSC DE COTE-DES-NEIGES	Tupper	14	39,460
2	CLSC METRO	Maisonneuve O	11	31,376
3	CLSC DES FAUBOURGS	Parthenais	13	25,724
4	CLSC DES FAUBOURGS	Lariviere	4	7,491
5	CLSC DES FAUBOURGS	Sainte-Catherine E	22	44,270
6	CLSC DES FAUBOURGS	Visitation	16	27,441
7	CLSC DE SAINT-HENRI	Notre-Dame O	10	25,970

I then ran another analysis which was limited to two facilities and discovered that the best two CLSC locations are on Tupper and Visitation. The first map displays Location 1 (Tupper) at the bottom and Location 6 (Visitation) at the top, as well as the demand points that they serve. The shifts in service as a result of closing five of the CLSCs are:

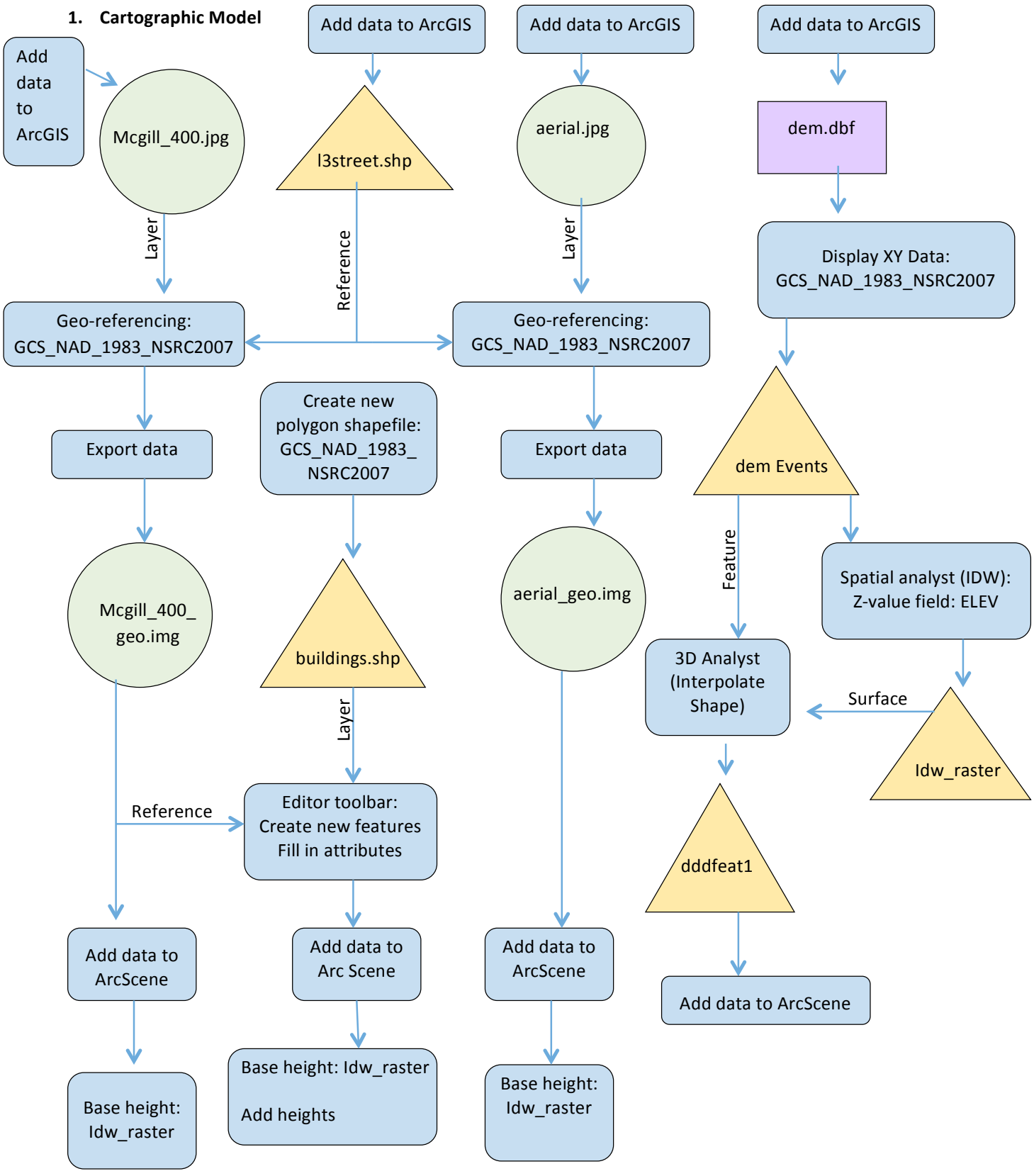
Location	Name	Street	Demand Count	Demand Weight
1	CLSC DE COTE-DES-NEIGES	Tupper	38	102,152
6	CLSC DES FAUBOURGS	Visitation	52	99,580

My next step was to locate one more CLSC at a new location. To do this, I sorted the census tract populations in descending order to see which areas had the most people. The first four most populated census tracts were located on the edges of the map or next to a chosen center. I therefore chose the fifth census tract, which had a population of 4903 and was located in the center of the map, equidistant from the other centers. I placed the facility on a street near the centroid and performed another location allocation analysis with the three facilities option. This led me to conclude that the best three CLSC locations are on Tupper, Parthenais, and the street of the new location. The second map displays the spider diagrams of Location 1 (Tupper) at the bottom, Location 3 (Parthenais) at the top, and Location 8 in the middle. The shifts in service as a result of closing five facilities and opening a new one are:

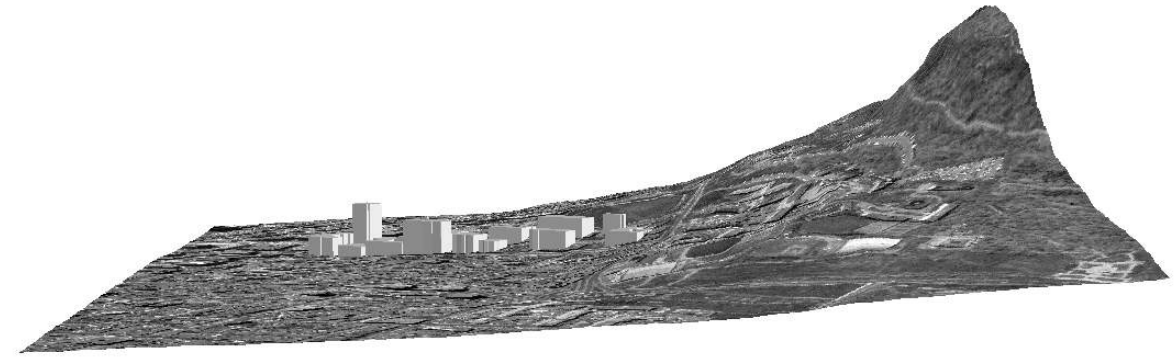
Location	Name	Street	Demand Count	Demand Weight
1	CLSC DE COTE-DES-NEIGES	Tupper	35	93,871
3	CLSC DES FAUBOURGS	Parthenais	26	47,238
8	NEW CLSC CENTER	N/A	29	60,623

GEOGRAPHY 307 Lab Assignment #5: 3-D Model of McGill Campus

1. Cartographic Model

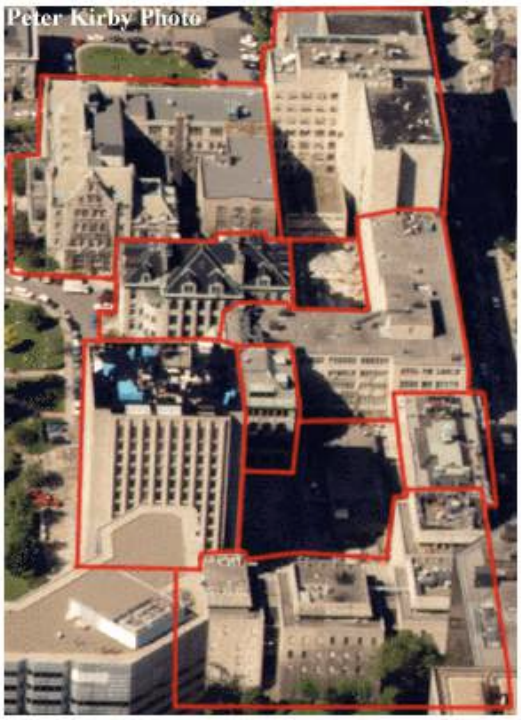


2. Two 3D Scenes in perspective view



I included fourteen buildings from McGill campus in the polygon shapefile. This shapefile stored information about the ID, name, height, and base shape of each building. The buildings I selected were in the Engineering & Science area and Northeast Corner of campus. They were located along University street, in between Sherbrooke and Avenue des Pins.

Engineering & Science

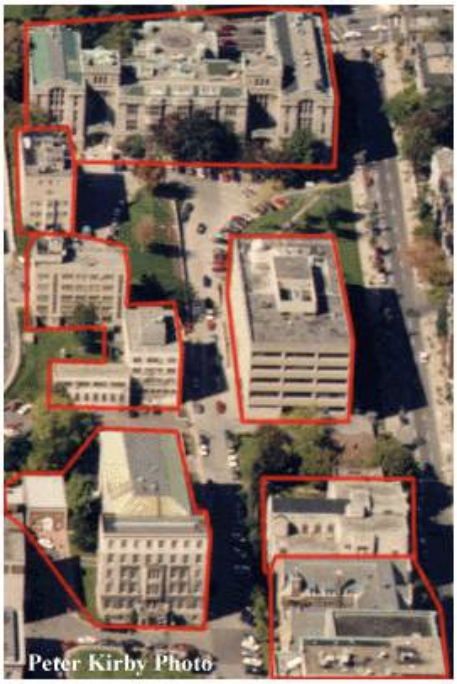


http://cac.mcgill.ca/campus/areas/engineering_science.html

Buildings

- Burnside Hall
- Frank Dawson Adams Building
- Macdonald Engineering Building
- Macdonald-Harrington Building
- Macdonald-Stewart Library Building
- McConnell Engineering Building
- Otto Maass Chemistry Building
- Pulp and Paper Research Institute

Northeast Corner



http://cac.mcgill.ca/campus/areas/northeast.html

Buildings

- Donner Building
- Foster Radiation Laboratory and Cyclotron
- Ernest Rutherford Physics Building
- F. Cyril James Administration Building & Admissions Annex
- Strathcona Anatomy and Dentristry Building
- William and Henry Birks Building
- Wilson Hall