



# Shopping for a change:

Using GIS to Measure the Food Security Impact of a New Downtown Grocery Store



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Winnipeg, Manitoba



# Goal

1. Demonstrate how to use GIS to study a complex question.
2. Is downtown Winnipeg a food desert? Does SkyCity's proposed grocery store improve food access downtown?



# Take home message

- Downtown has a mix of low and high income residents.
- Downtown residents are less likely to drive. This changes their shopping needs.
- For downtown to be a food oasis all areas need a combination of market based and community based solutions within walking distance.
- GIS is useful for answering this type of complex question.



# Presentation Outline

## **1. Context**

2. Data wants and needs

3. Data collection

4. Visualization

5. Analysis

6. Answer



# 1.0 What are Food Deserts?

Food deserts are:

- Low income areas.
- No large food retailers within walking distance.
- Poor access to affordable healthy food options.

# 1.1 Is Downtown a Food Desert?

“Access to healthy, affordable foods has plunged, forcing downtown residents to rely on stores with fewer healthy options, pay more for food, and travel long distances to access the food they need.”

(Food Matters Manitoba, 2013)



A background map showing a city grid with streets, a river, and a green park area. A yellow speech bubble icon is in the top left corner.

# 2 Data Wants and Needs

✓ Local context

**2. Data wants and needs**

3. Data collection

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A background map showing a city grid with streets, a river, and various colored lines representing different types of roads or boundaries. A small yellow speech bubble icon is in the top left corner.

# 2.1 Data Wants and Needs

## Need:

- Store Locations
  - Type of store
  - Open or Close Date
- Measures of poverty and income
  - Market basket measure
- Proximity to stores
  - Census geography



A background map showing a city grid with streets, a river, and various colored lines representing different types of roads or transit routes. A small yellow speech bubble icon is visible in the top left corner.

# 2.1 Data Wants and Needs

## Wants:

- Method of commute
- Price of healthy food at each location
- Interviews about shopping habits

A background map showing a city grid with streets, a river, and various colored lines representing different types of roads or transit routes. A small yellow speech bubble icon is in the top left corner.

## 2.1 Data Wants and Needs

### Wants:

- Method of commute
- ~~• Price of healthy food at each location~~
- ~~• Interviews about shopping habits~~



# 3.0 Data Collection

- ✓ Local context
- ✓ Data wants and needs

## **3. Data collection**

4. Visualization

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# 3.1 Data Collection and Sources

- Store Locations: Google, local knowledge, phone confirmation
- Type of store: phone calls, local visits, previous research



# 3.1 Data Challenges

- Checking with Google can be outdated



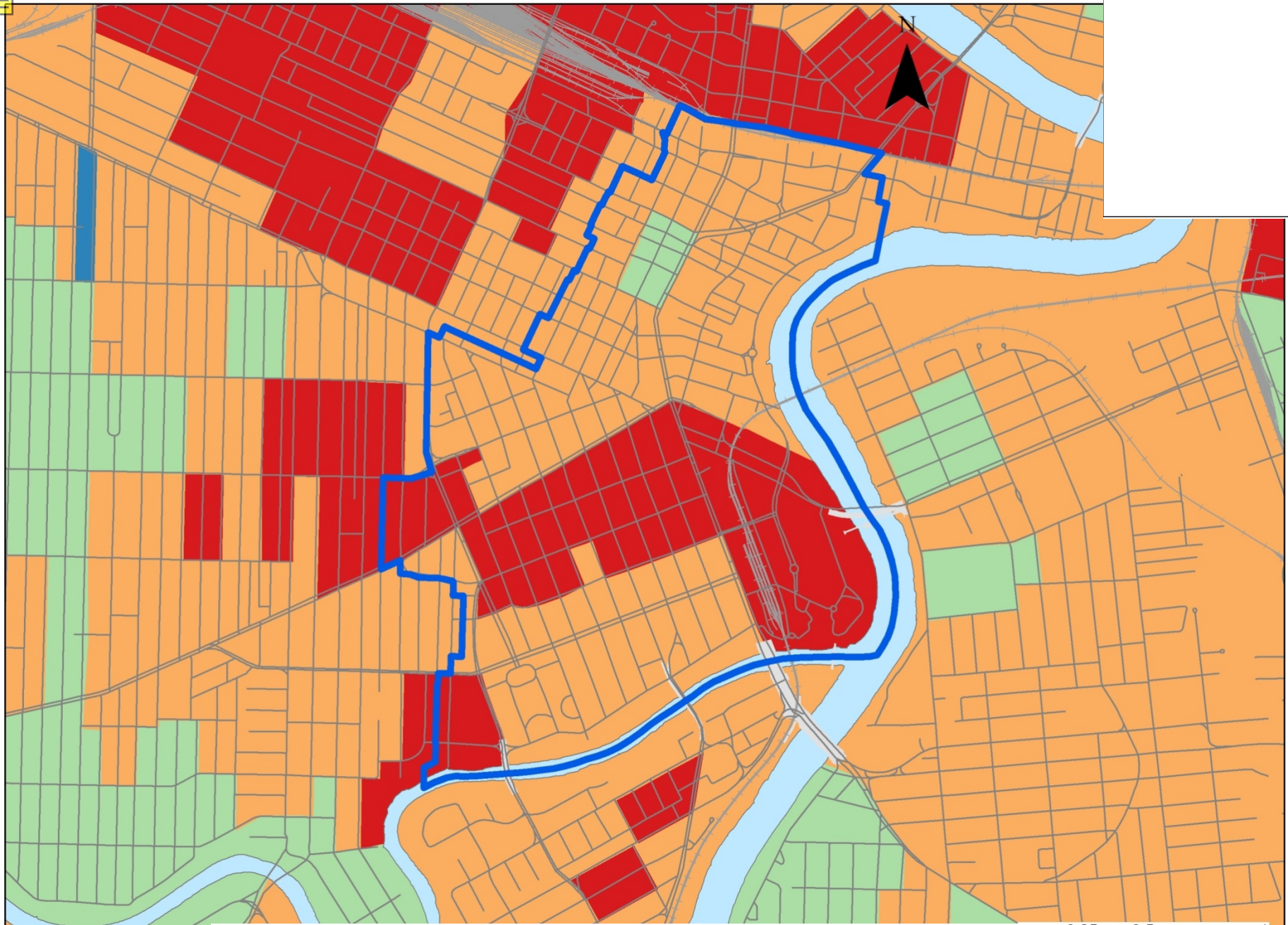
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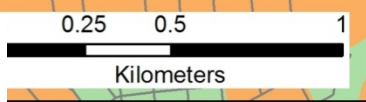


# 3.1 Data Collection and Sources

- Measures of Poverty and Income:
  - 2006 Canadian Census
  - 2011 National Household Survey
- Proximity to Grocery Stores:
  - 2011 Dissemination Blocks
- Method of Commute:
  - 2011 NHS



2011 DA General Non-response Rate





# 4.0 Visualization

- ✓ Local context
- ✓ Data wants and needs
- ✓ Data collection

## **4. Visualization**

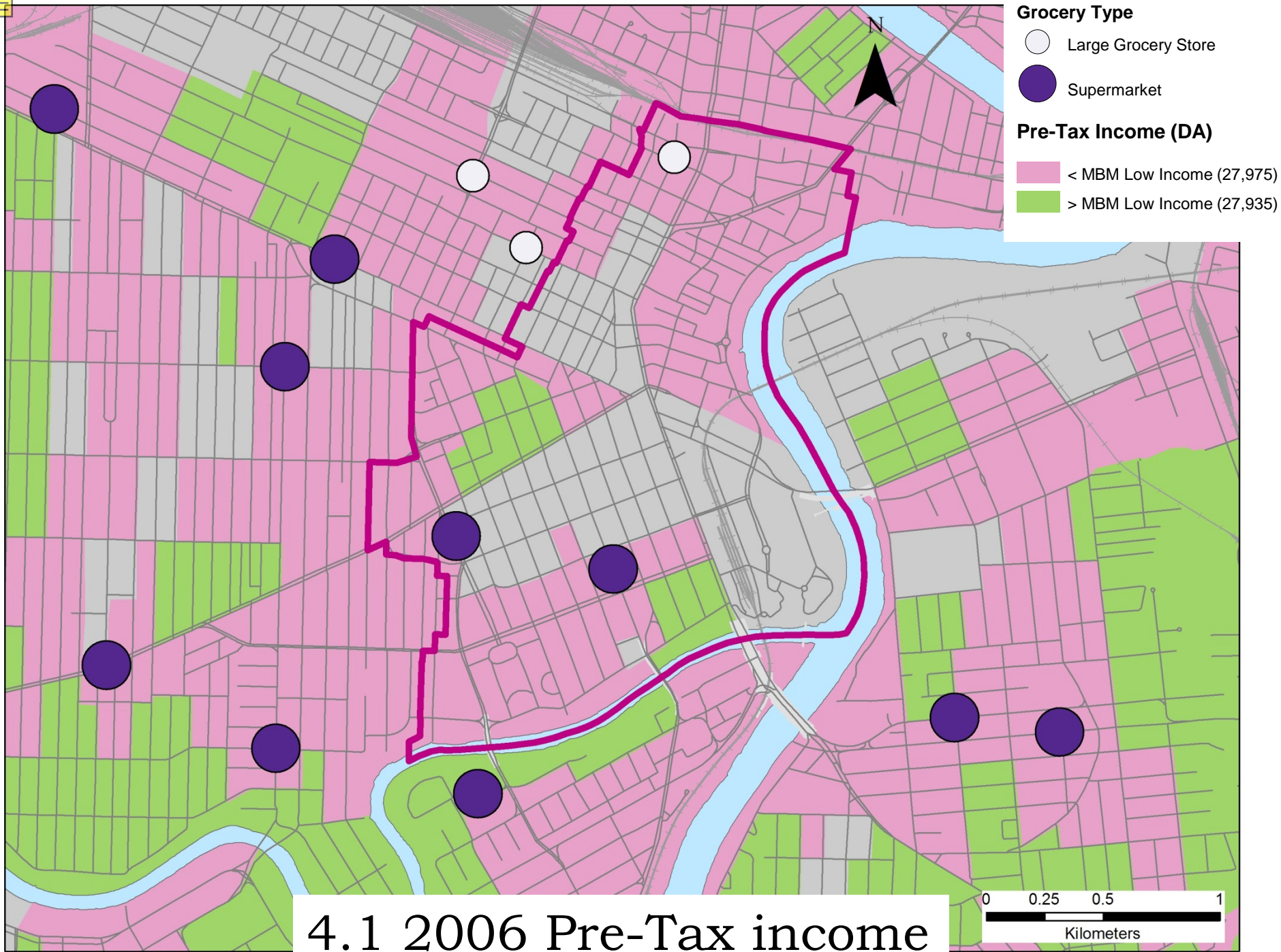
5. Analysis

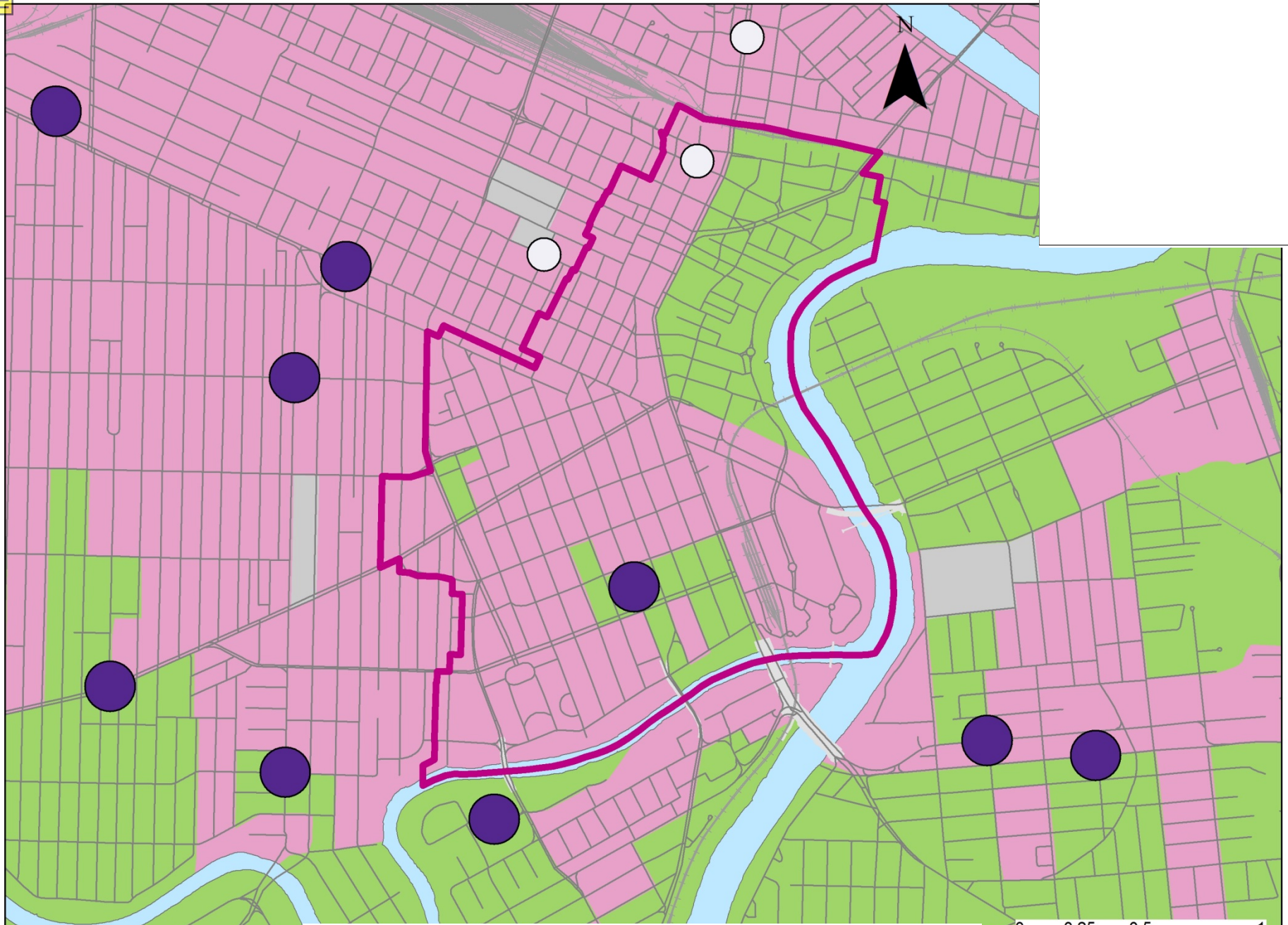
6. Answer



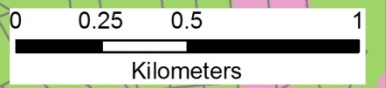


## 4.1 Income



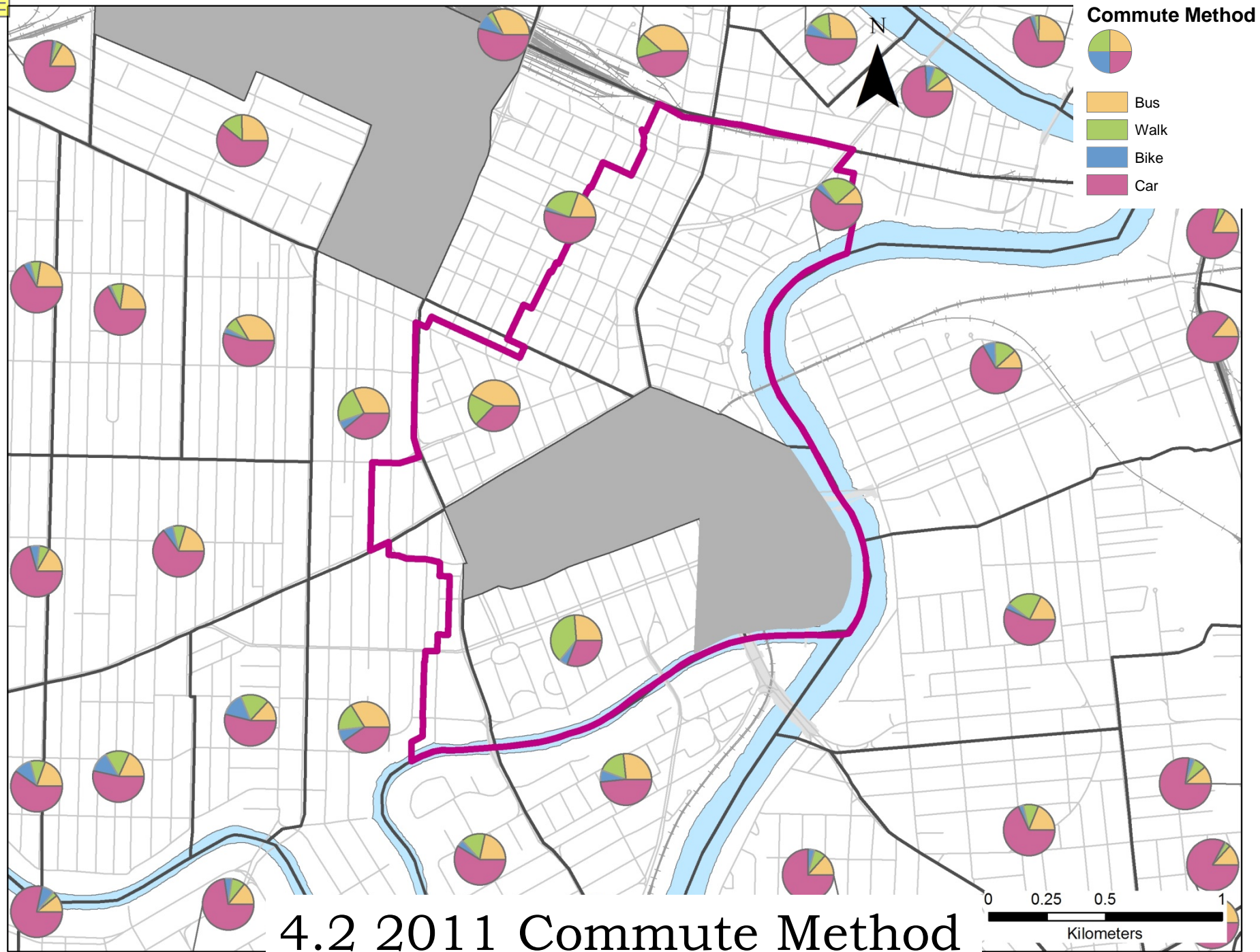


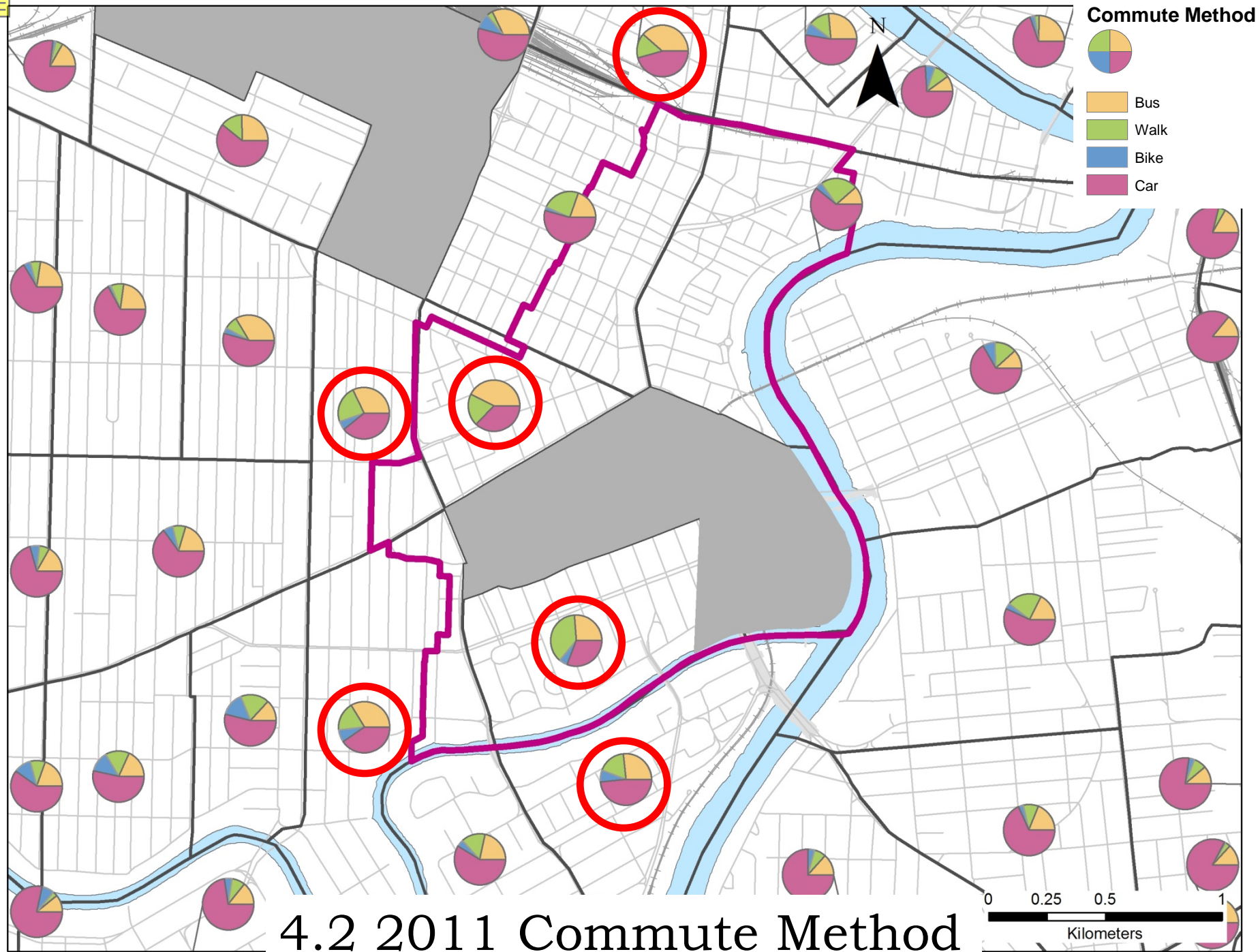
4.1 2011 Pre-Tax income

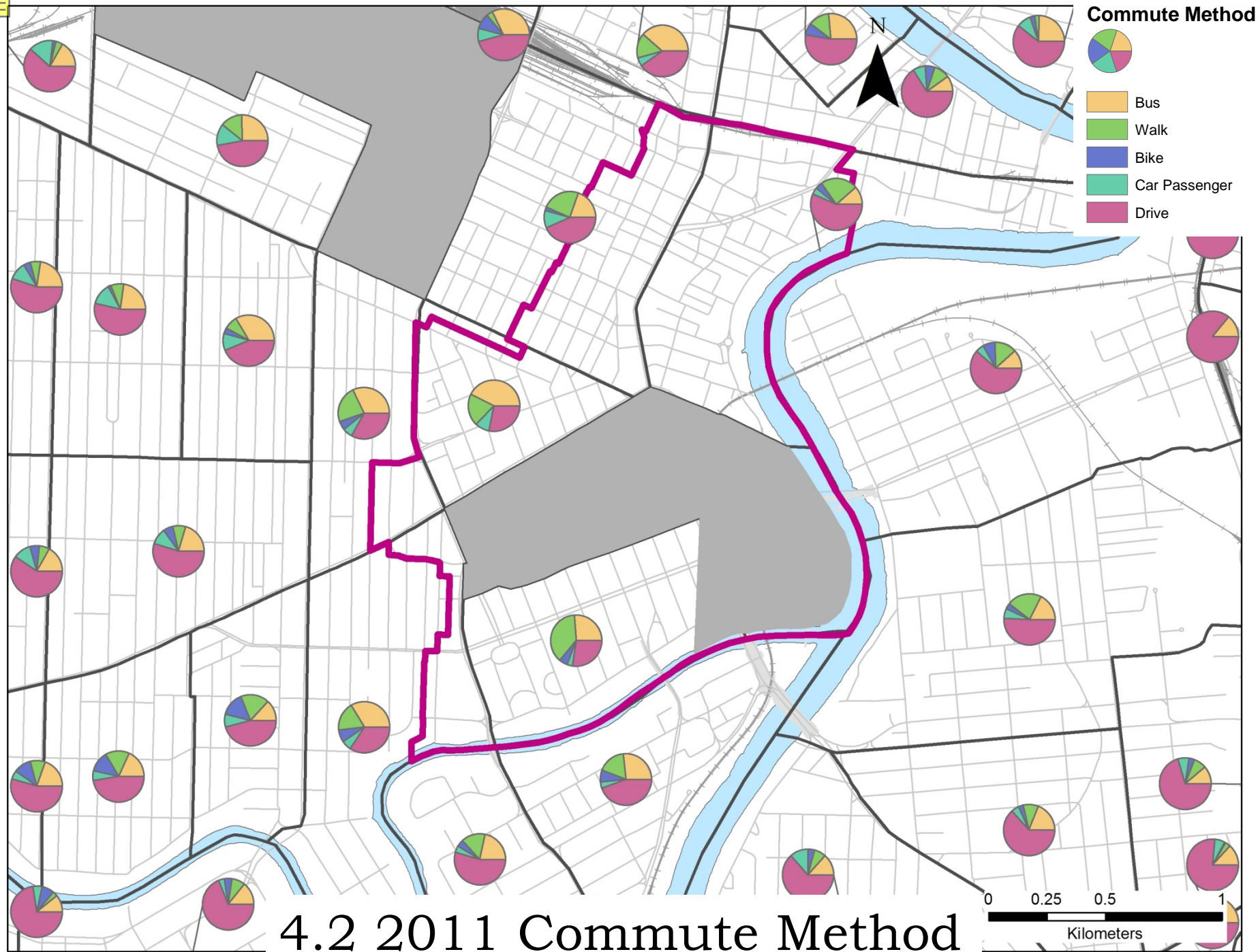


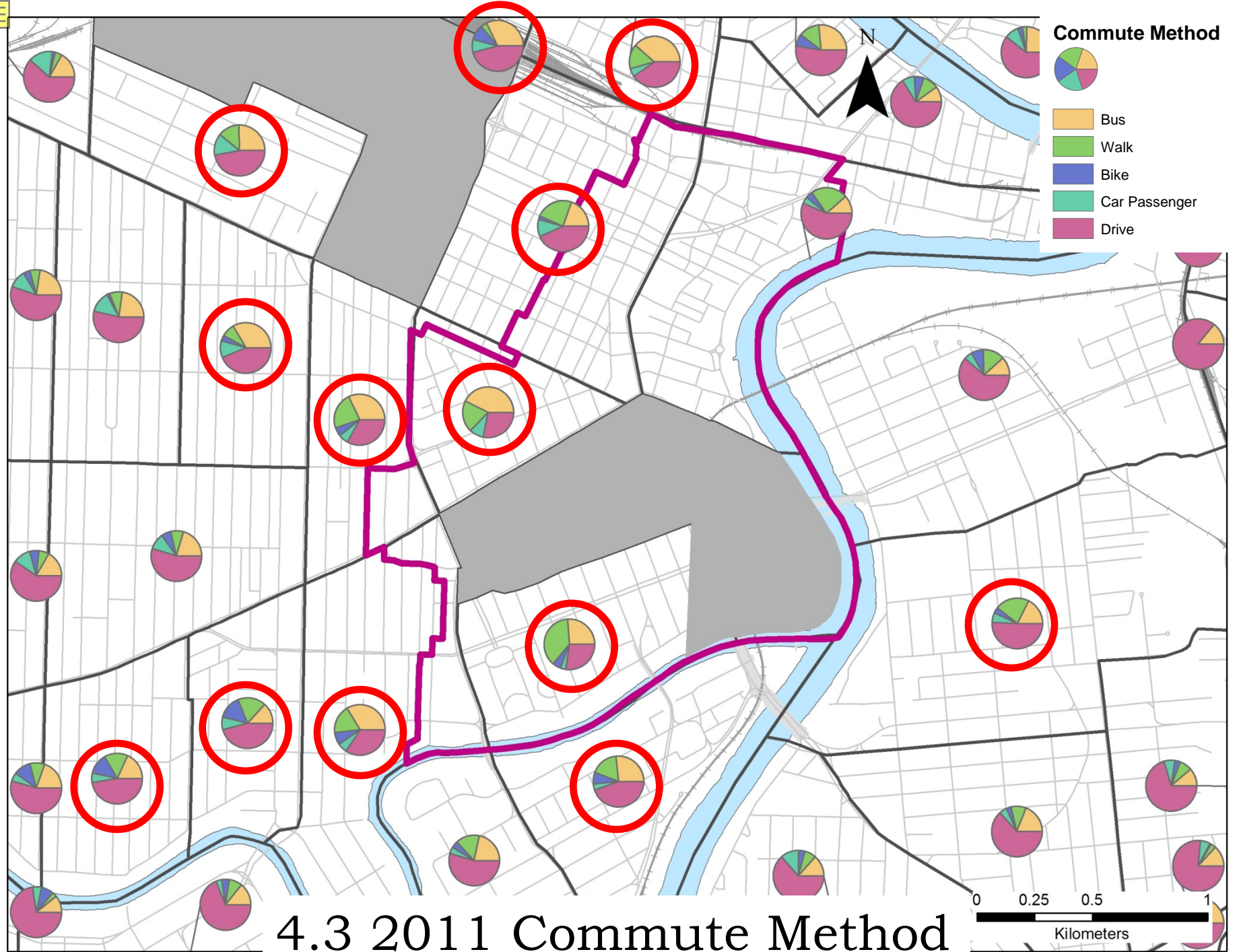


## 4.2 Method of Commute













# 5.0 Analysis

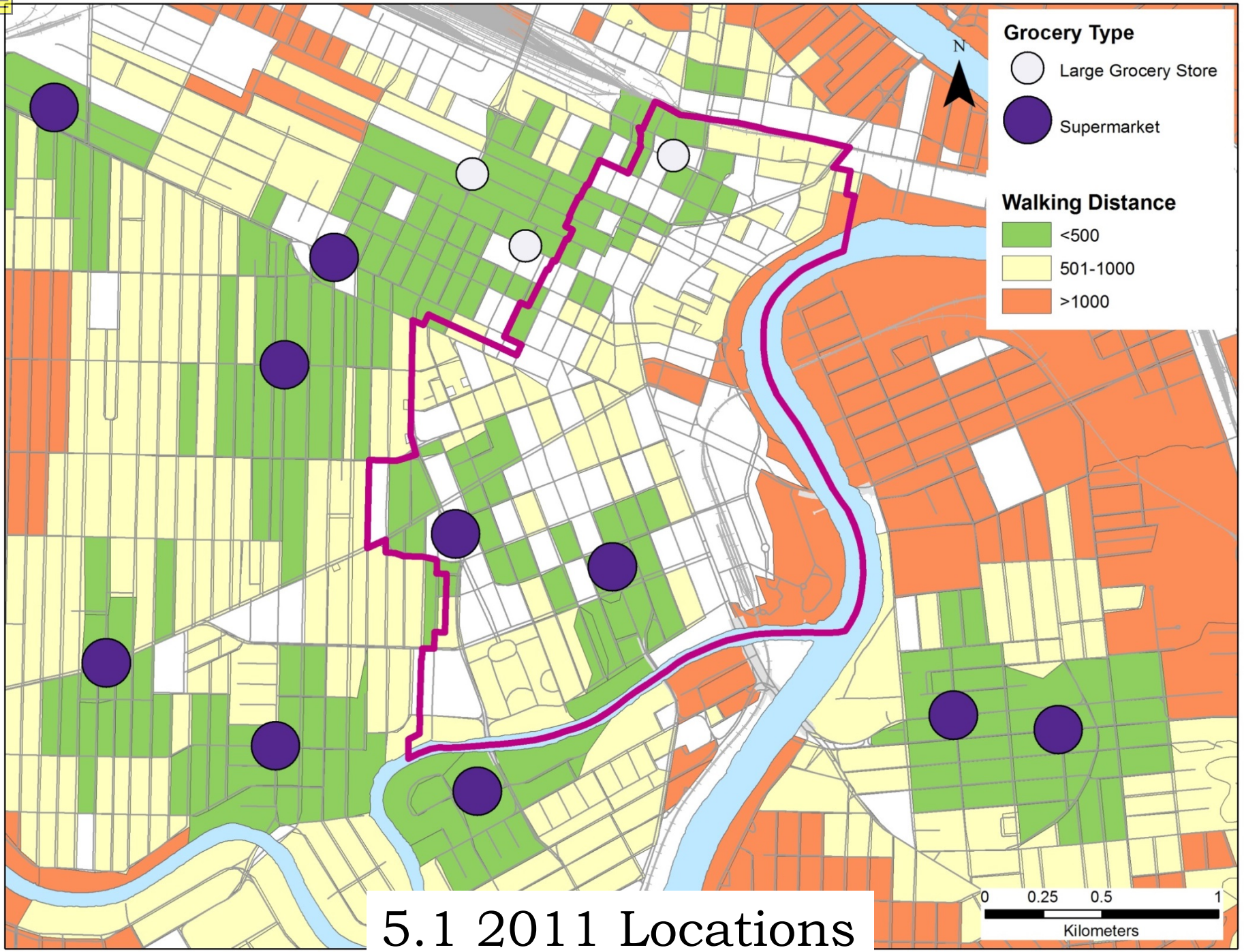
- ✓ Local context
- ✓ Data wants and needs
- ✓ Data collection
- ✓ Visualization

**5. Analysis**

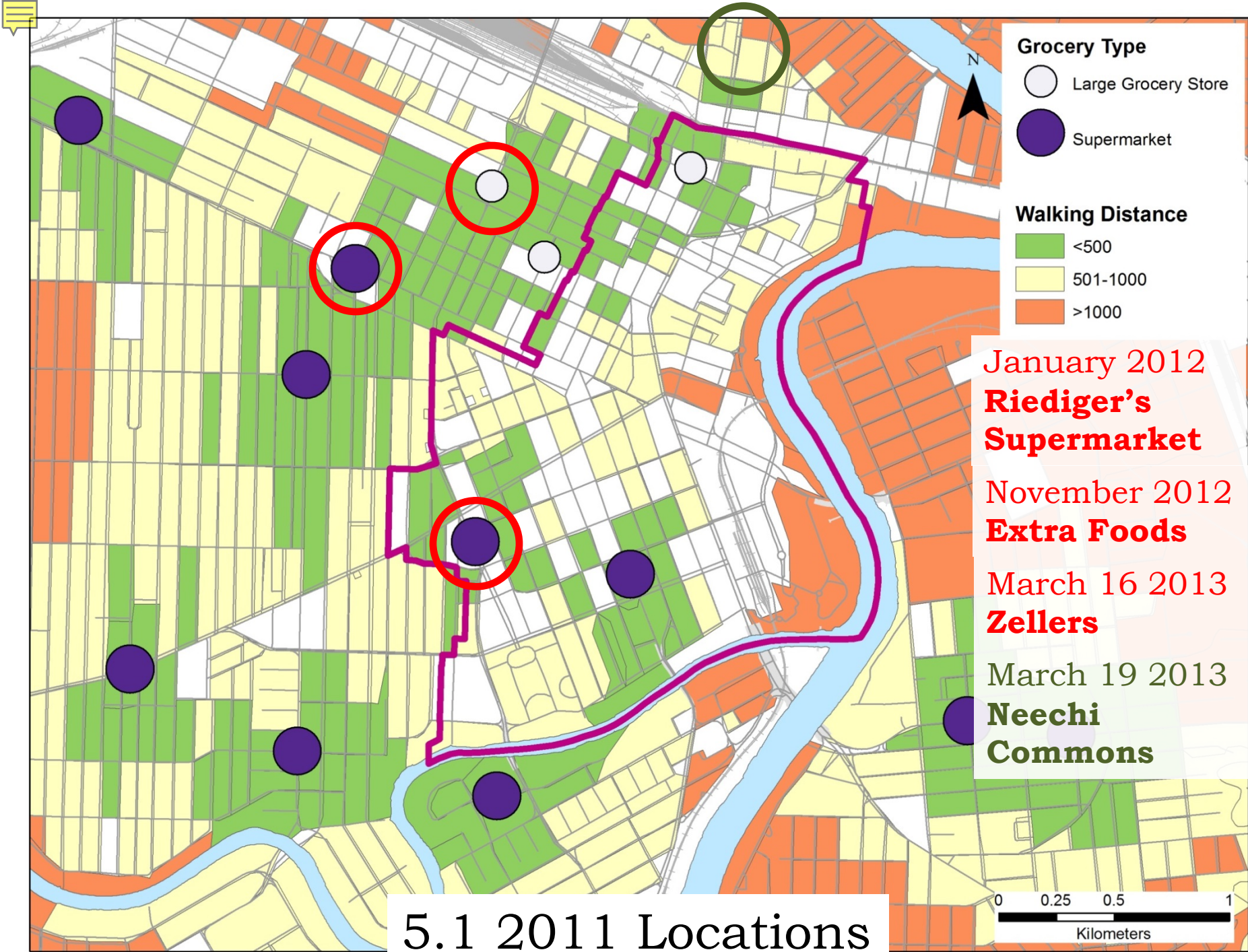
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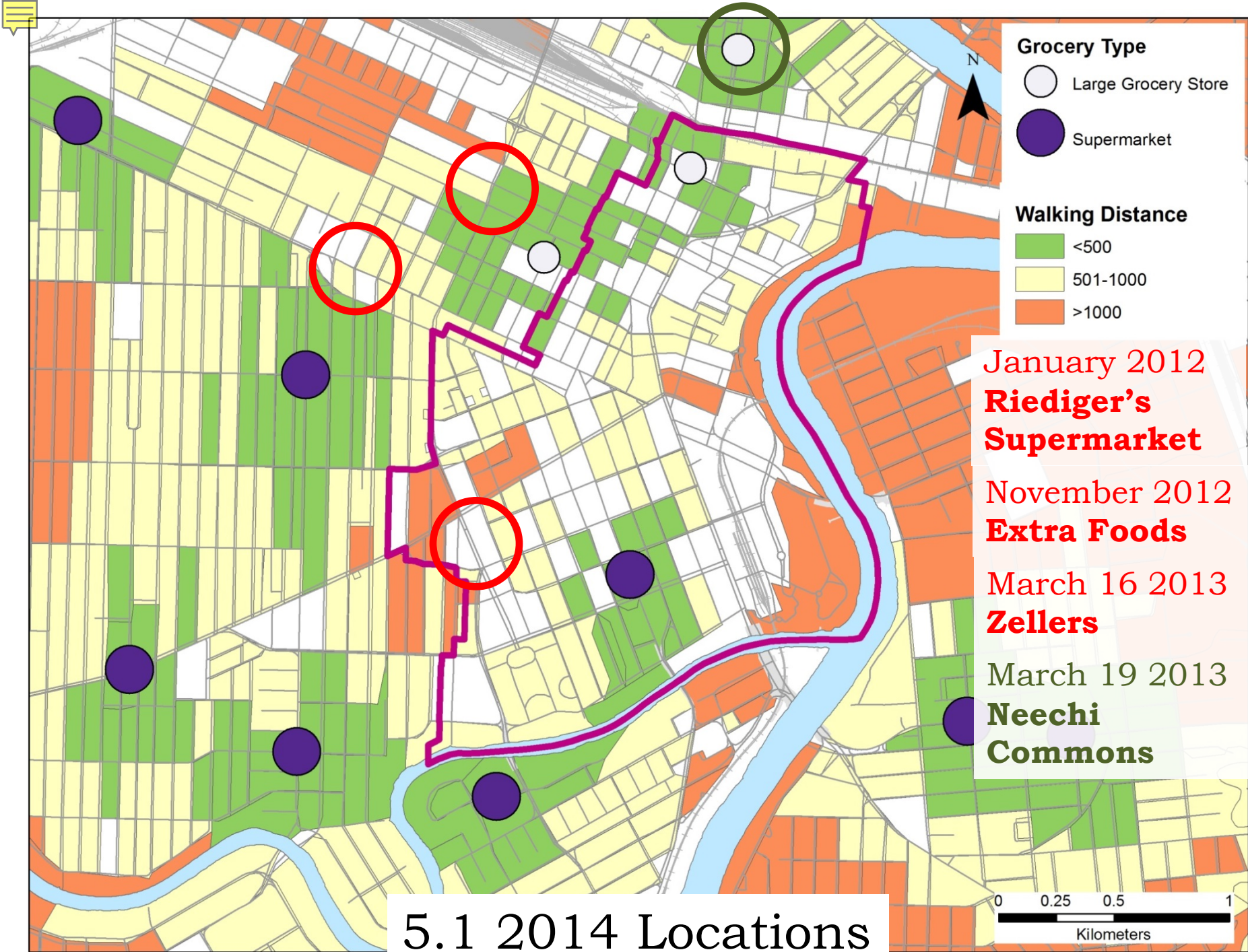
## 5.1 Grocery Store Access



5.1 2011 Locations



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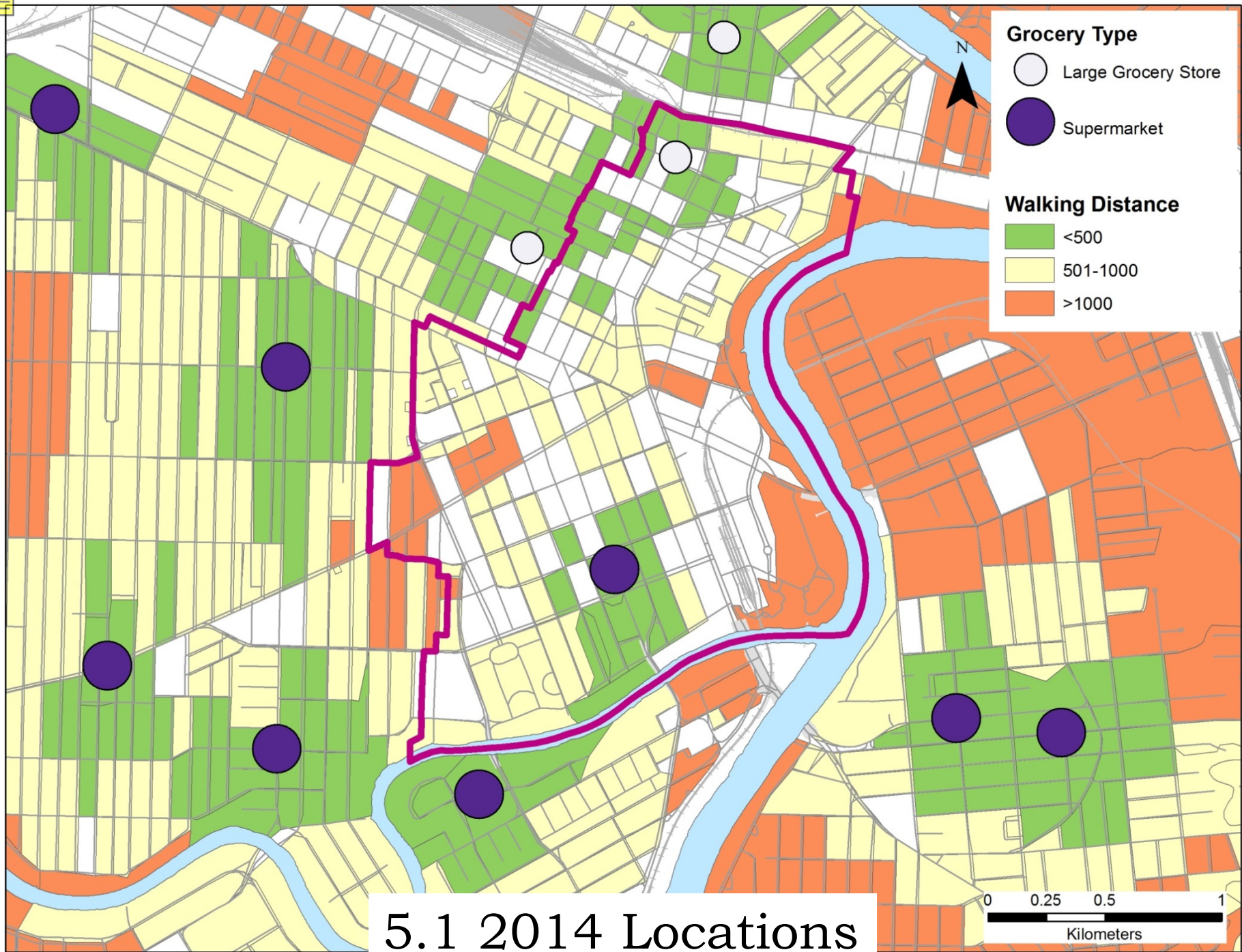
5.1 2014 Locations



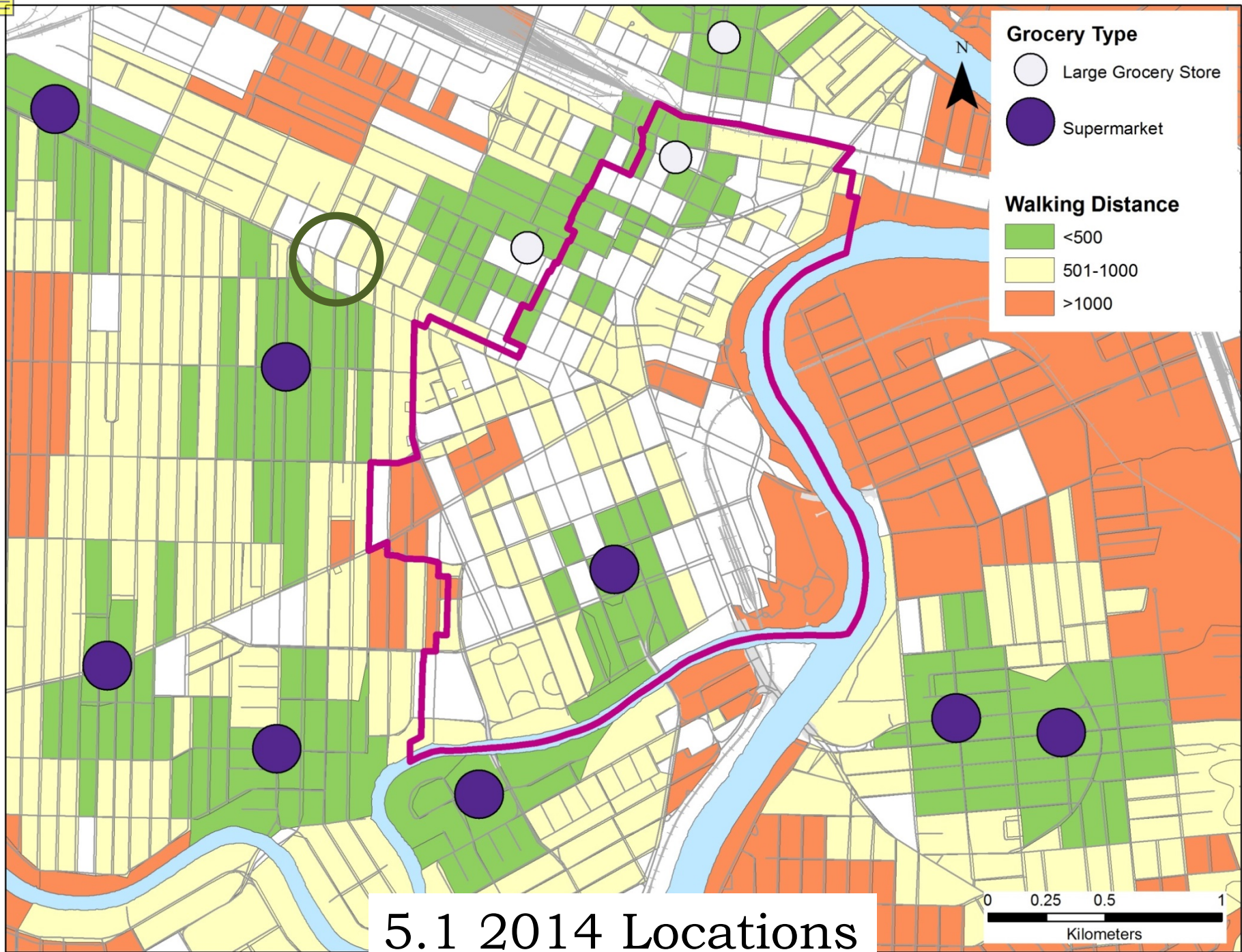
# 5.1 Grocery Store Access

## Findings (Kaufman 2013):

- Tax breaks, long-term lease needed for a conventional grocery store. Replacing Zellers could take years.
- More than one grocery store needed to serve all of downtown.

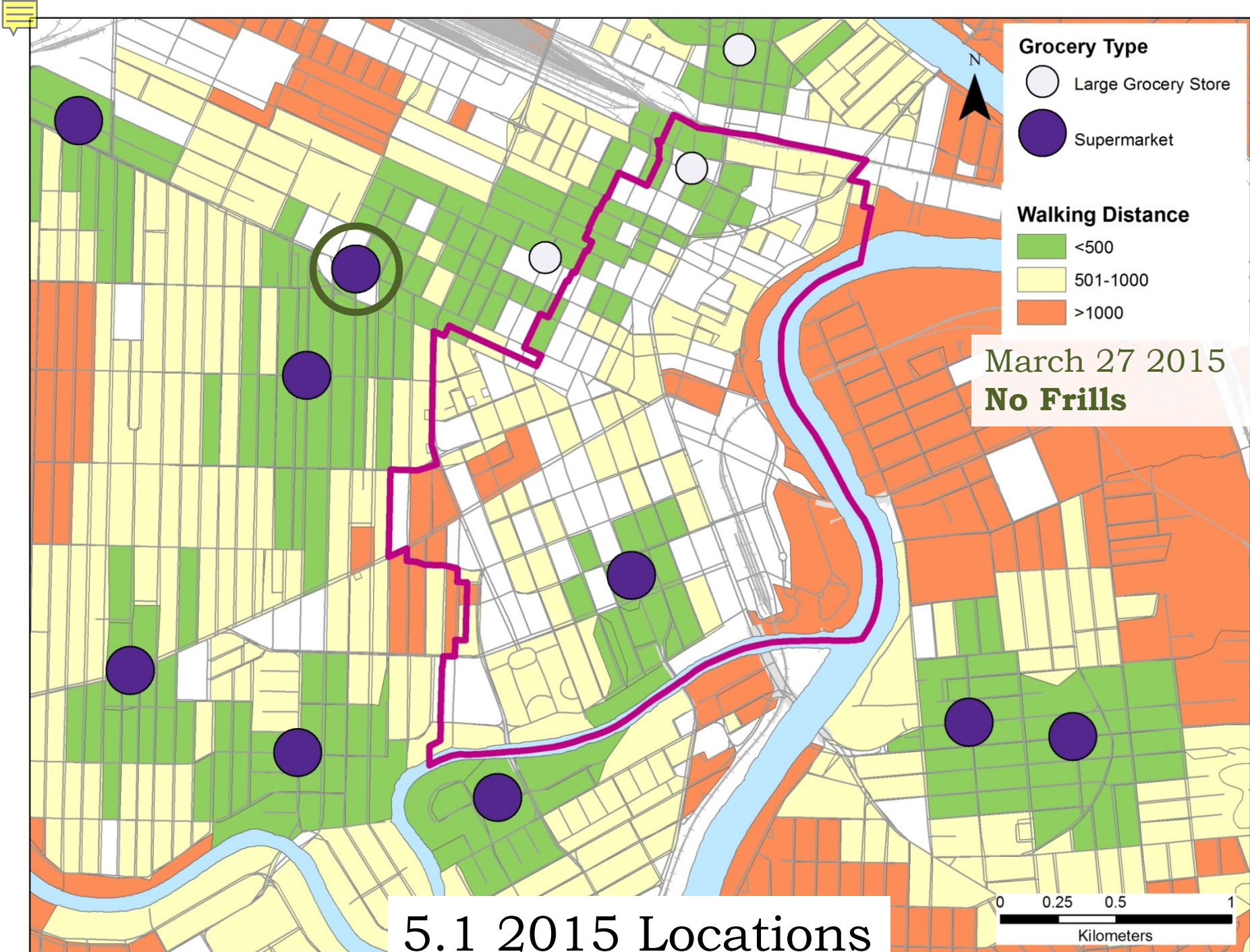


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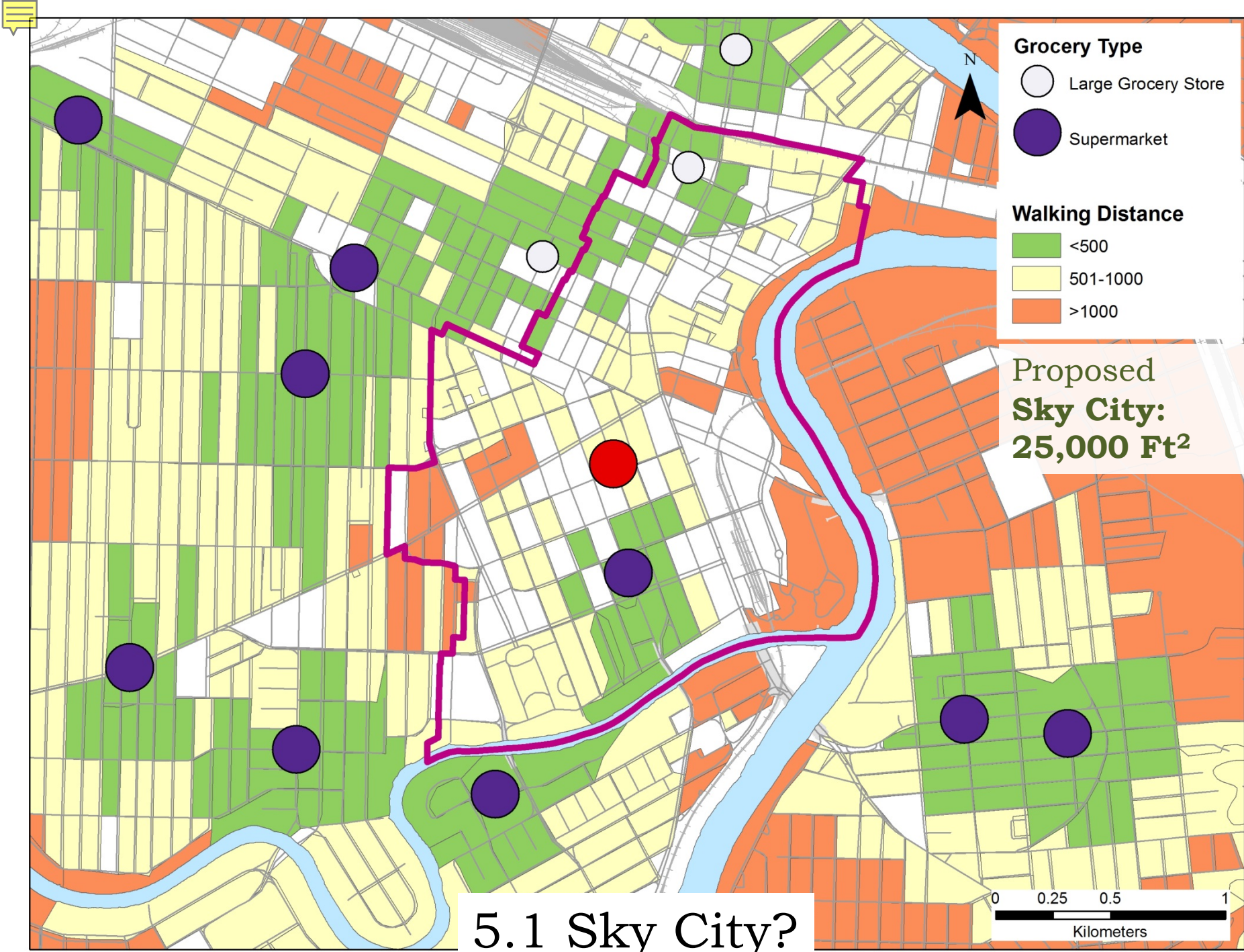


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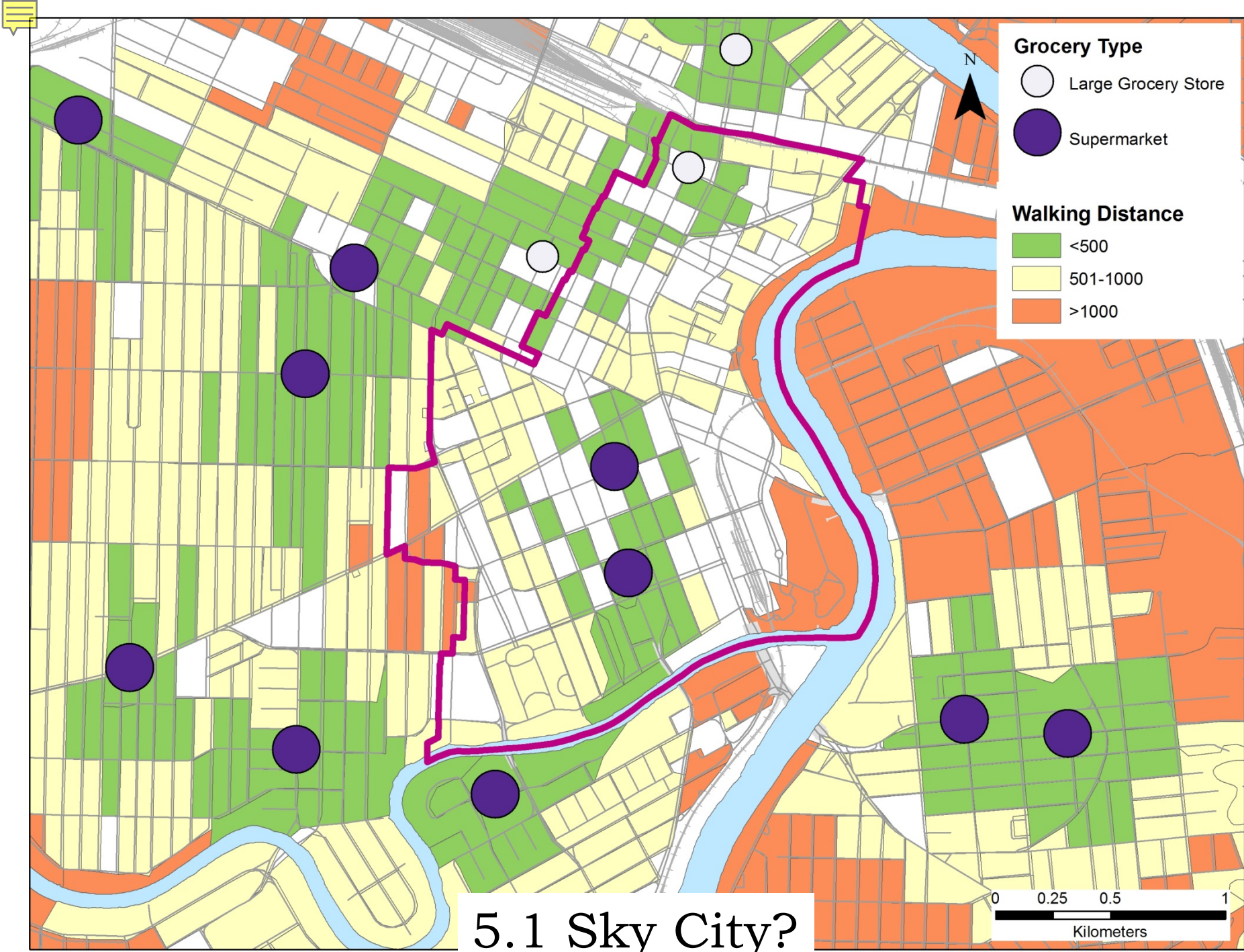




5.1 2015 Locations



# 5.1 Sky City?

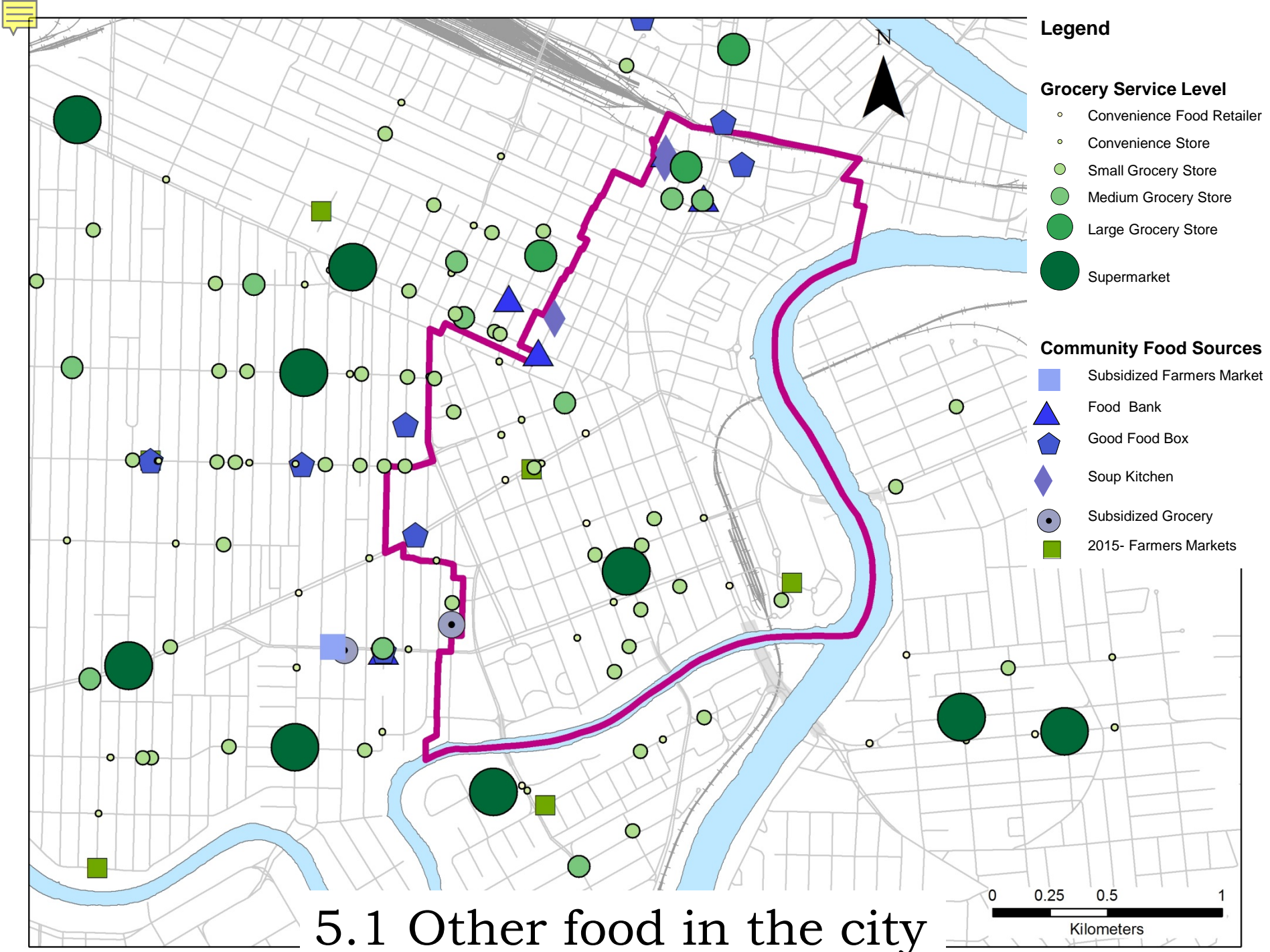


# 5.1 Sky City?

# 5.1 Smaller Retailers?

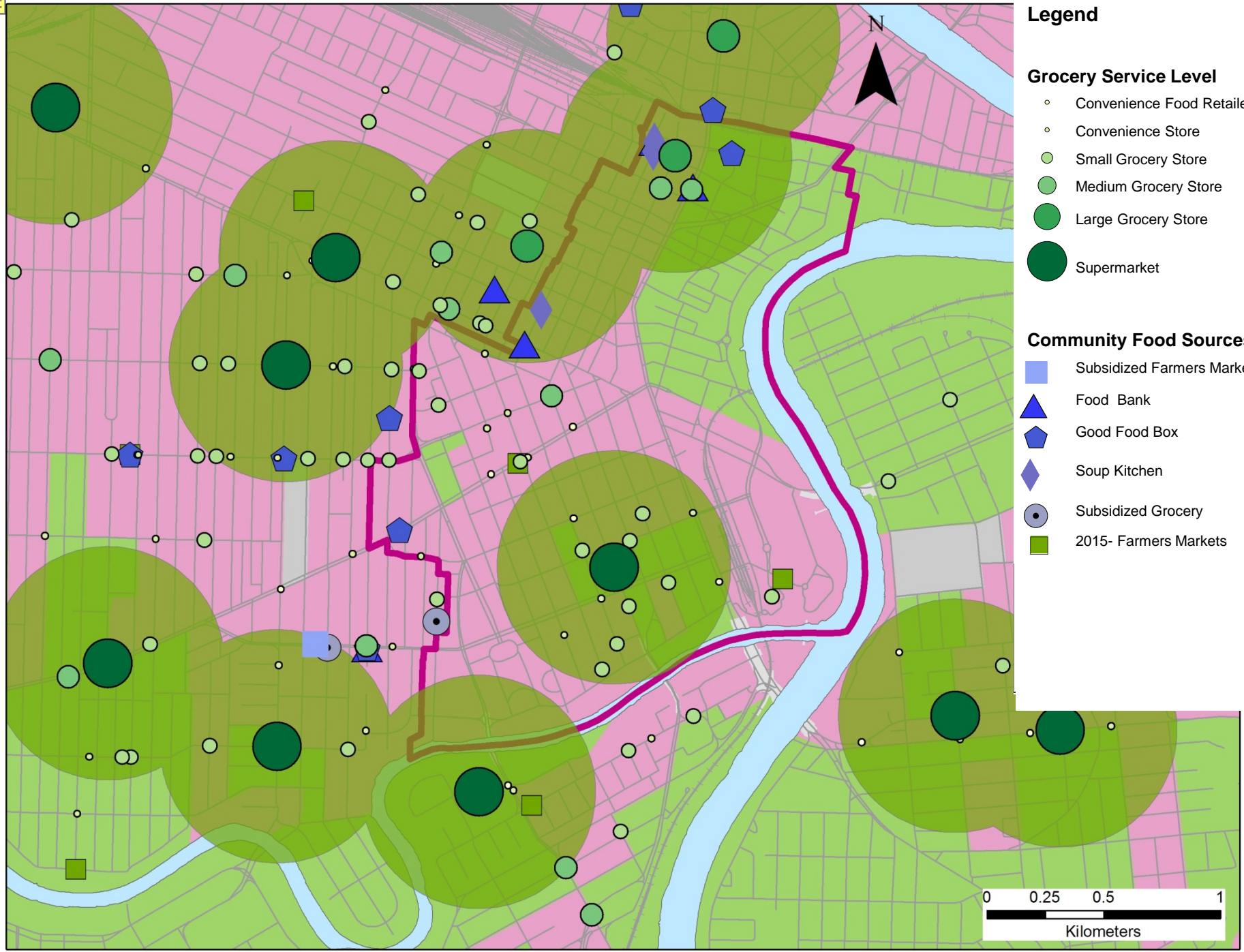
- All year indoor Farmers' market.
- Small specialty stores in the Exchange.
- Working with existing stores should be encouraged.







## 5.2 Service Areas



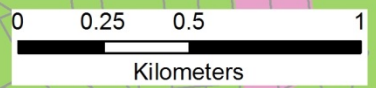
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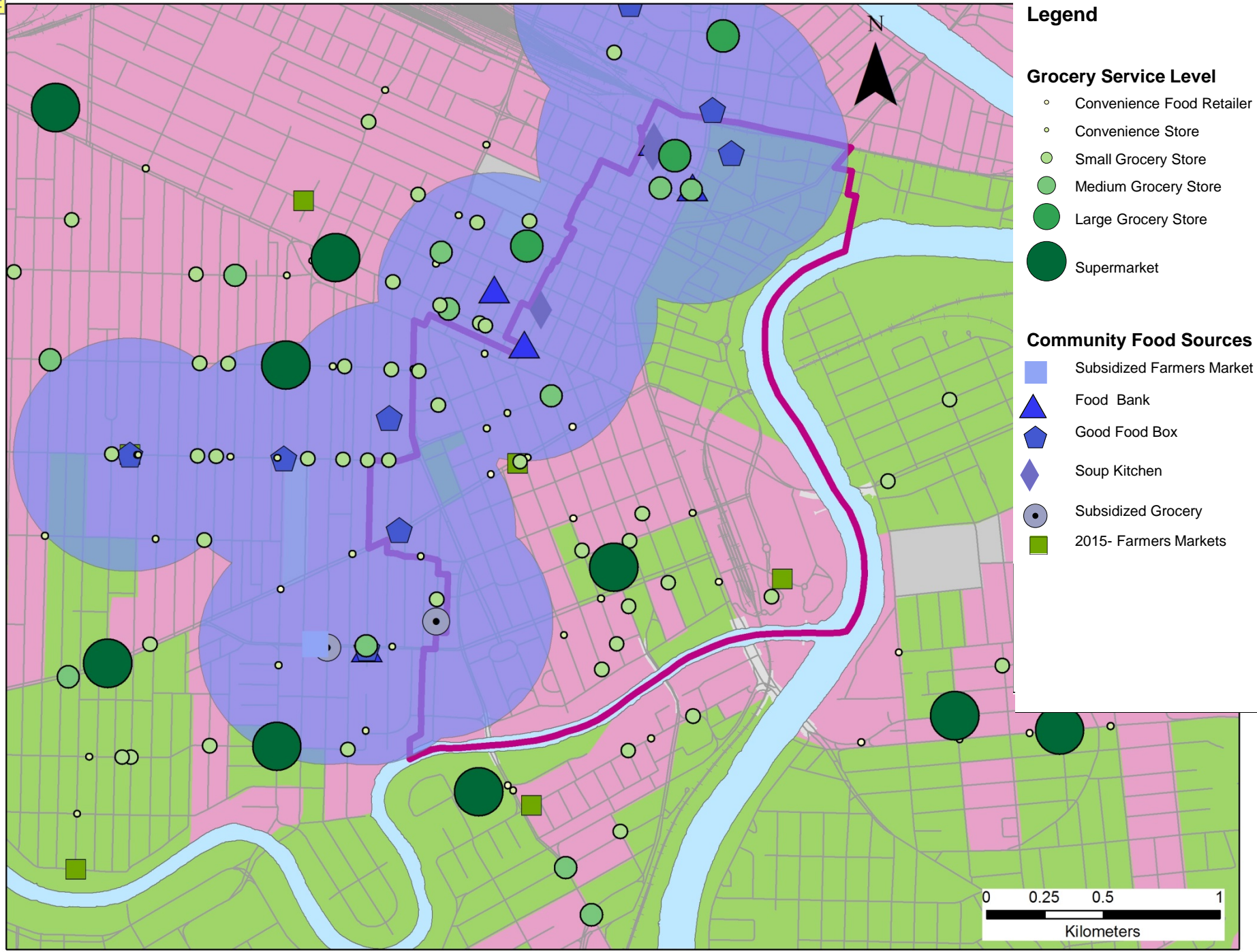
#### Grocery Service Level

- Convenience Food Retailer
- Convenience Store
- ◌ Small Grocery Store
- ◌ Medium Grocery Store
- ◌ Large Grocery Store
- Supermarket

#### Community Food Sources

- Subsidized Farmers Market
- ▲ Food Bank
- ⬠ Good Food Box
- ◆ Soup Kitchen
- Subsidized Grocery
- 2015- Farmers Markets





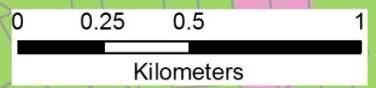
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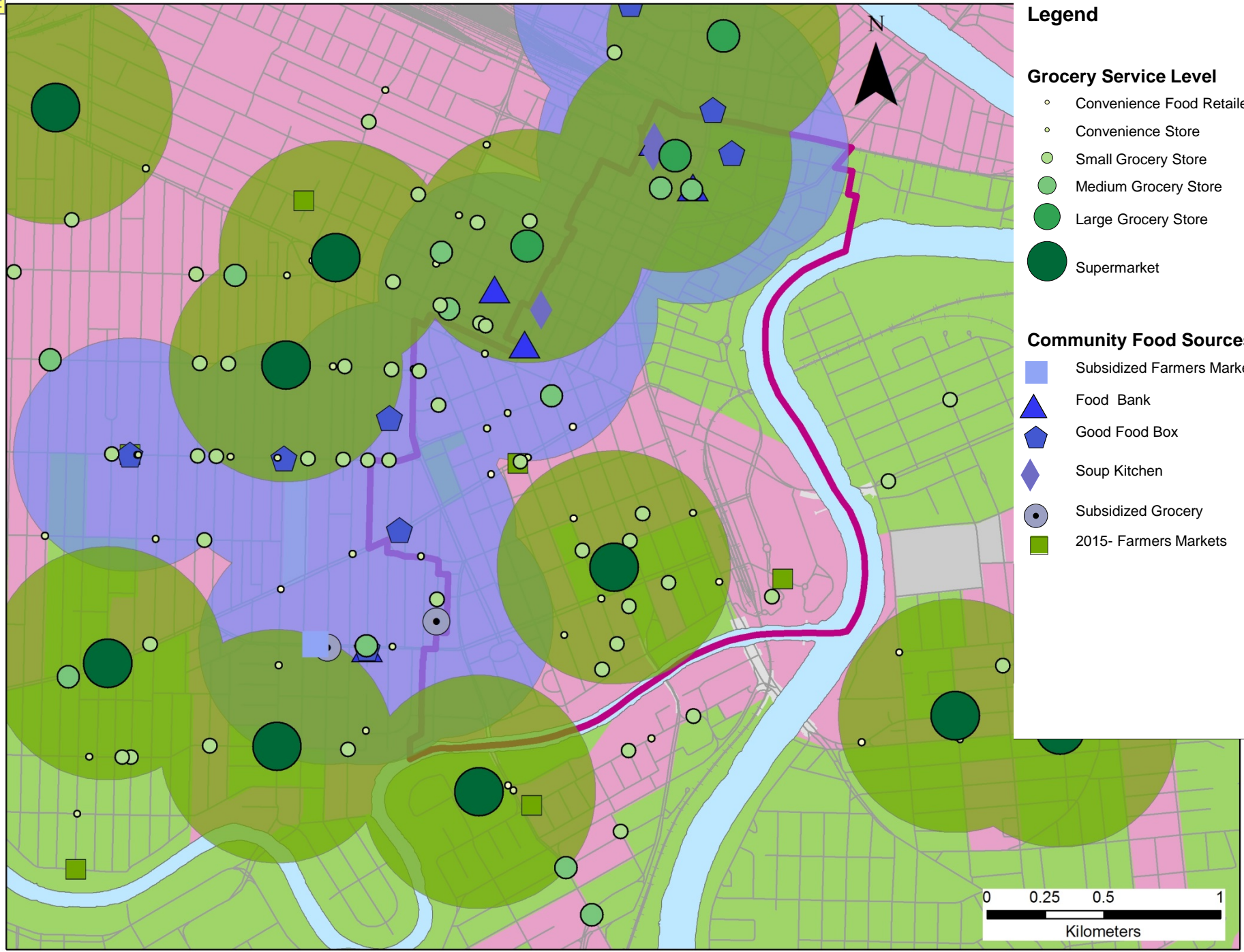
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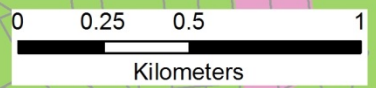
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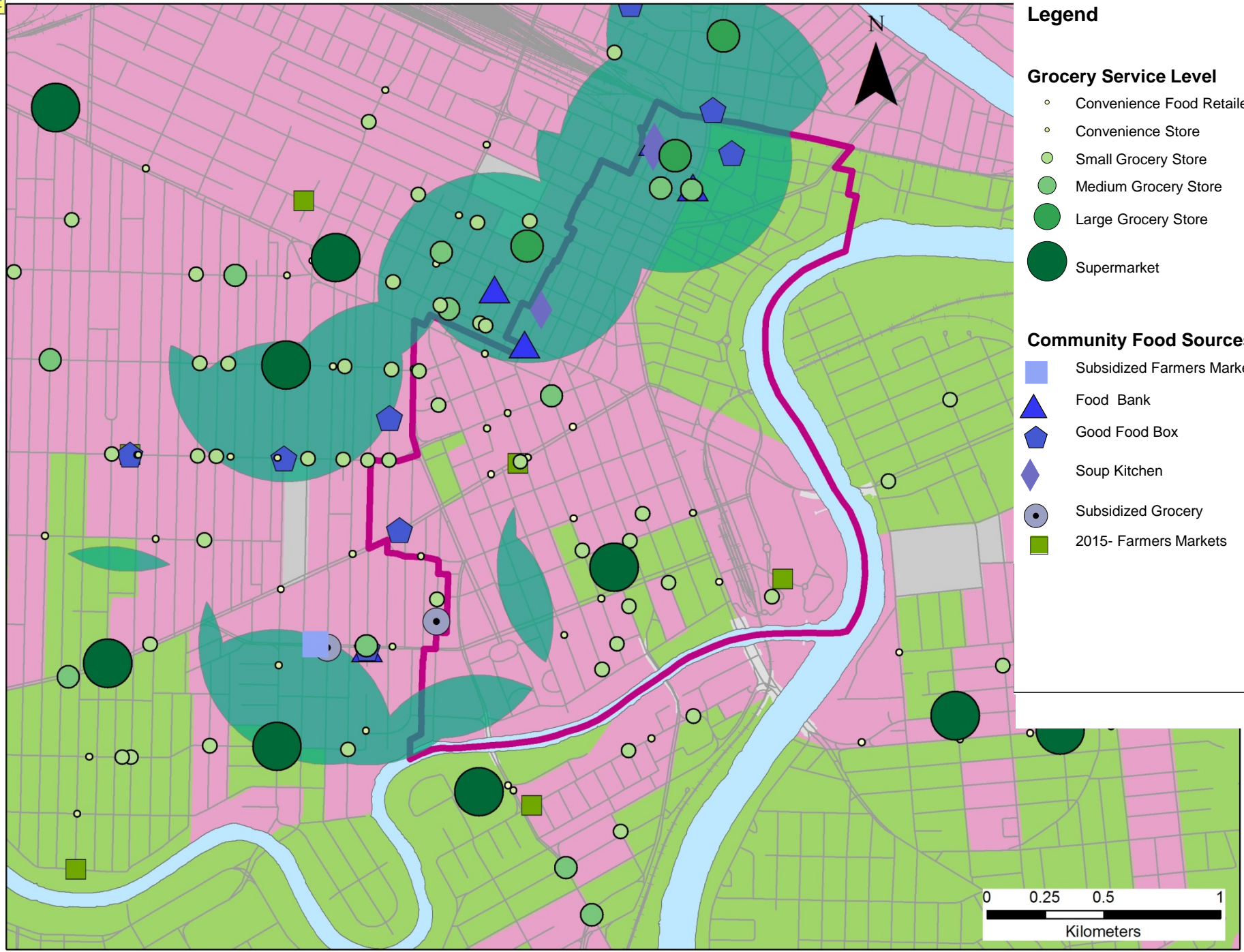
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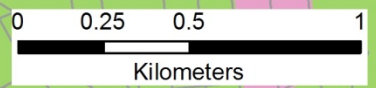
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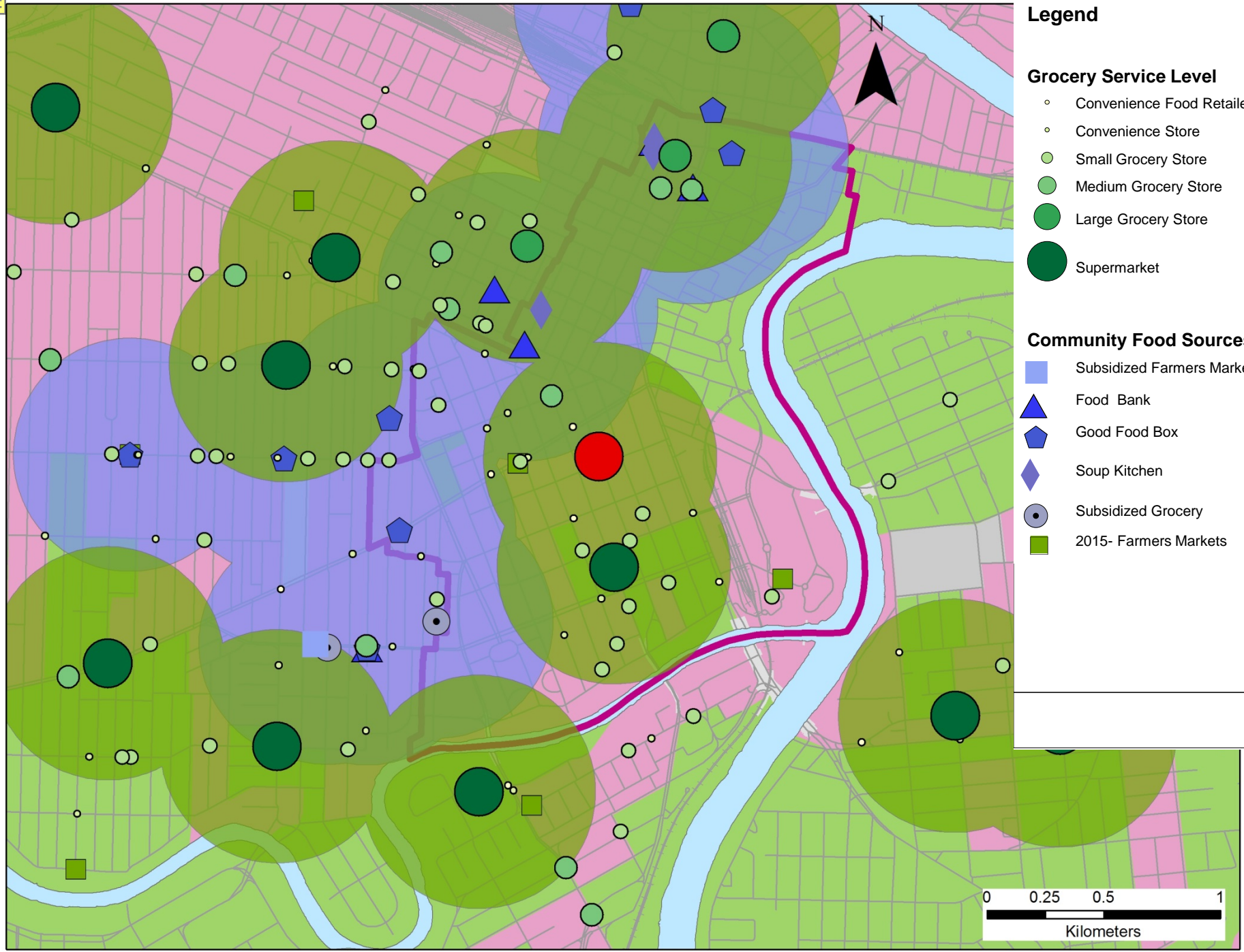
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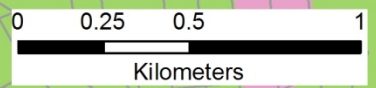
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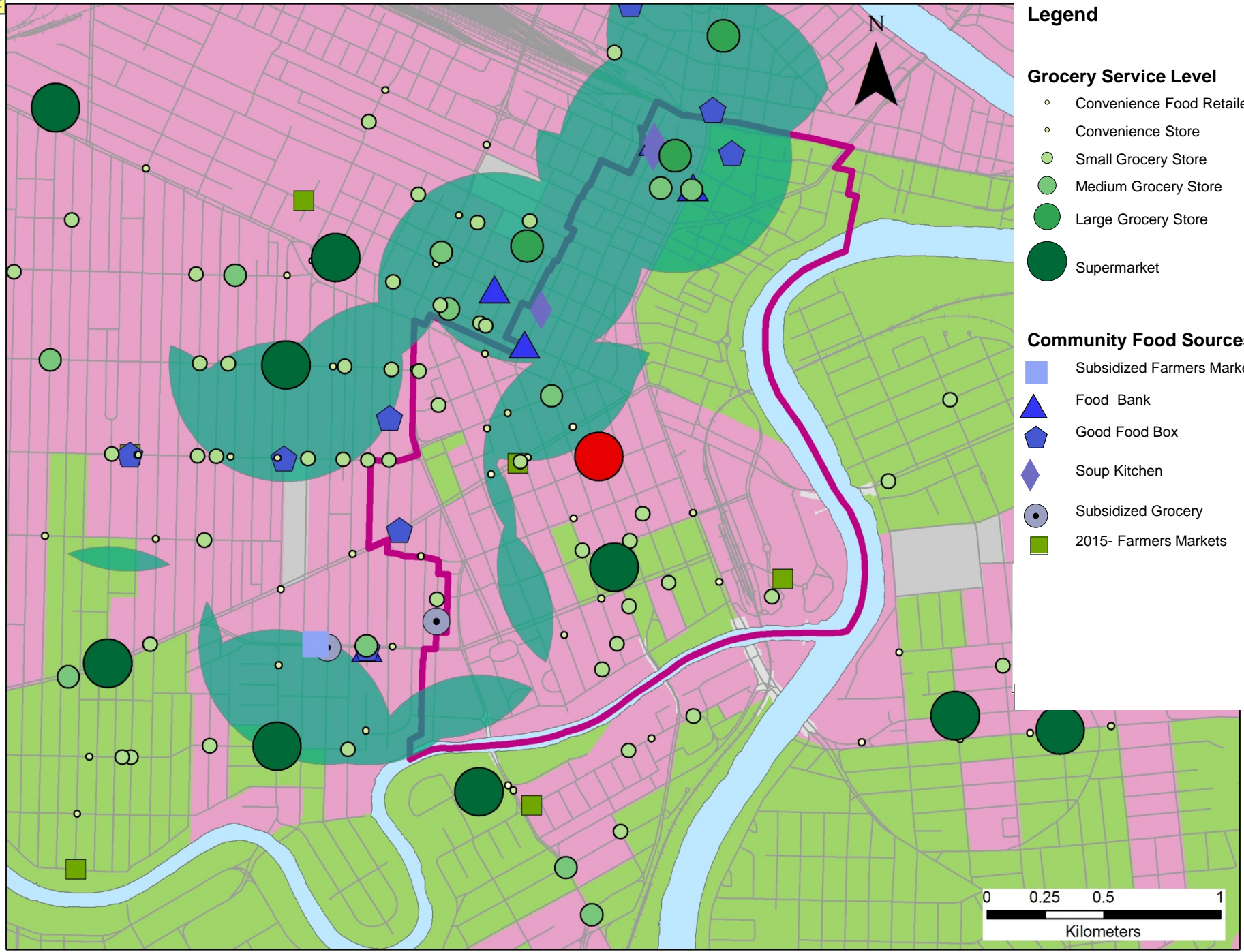
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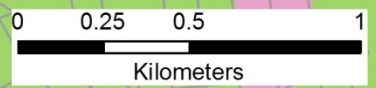
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# 6.0 Answer

- ✓ Local context
- ✓ Data wants and needs
- ✓ Data collection
- ✓ Visualization
- ✓ Analysis

## 6. Answer



## 6.0 Conclusion

- Food store closures have impacted food access in downtown making parts of it a food desert.
- Price may still an issue.
- Community food services play a vital part in filling in the gaps, but they are often missing from analyses.



## 6.0 Conclusion

- Downtown has a mix of low and high income residents.
- Downtown residents are less likely to drive. This changes shopping needs.
- For downtown to be a food oasis all areas need a combination of market based and community based solutions within walking distance.
- GIS useful for answering this type of complex question.

# 6.2 Acknowledgements



**MGUG**  
Meeting Place for the GIS Community



# Questions?

**EBEN CONVENIENCE**  
GROCERY KEYCUTTING PHONECARDS

**Karma**  
LOUNGE & NIGHTCLUB

**Hong Kong Harbor**  
RESTAURANT • LOUNGE •  
571 Portage Ave. Winnipeg



# 6.2 References

Apparicio, P., Cloutier, M.-S., & Shearmur, R. (2007). The case of Montreal's missing food deserts: evaluation of accessibility to food supermarkets. *International Journal of Health Geographics*, 6(1), 4.

Central Winnipeg Grocery Stores (Downtown, Exchange, West End). (n.d.). Google Maps, Winnipeg, Manitoba. Retrieved from <https://www.google.com/maps/d/viewer?mid=z46R7tcrFb9I.k3hPhPnDDL0c>

Daniel McIntyre St. Matthews community association. (2013). DMSM Foodmap 2013. Google Maps. Retrieved from <https://www.google.com/maps/d/viewer?mid=zM7GvYAH3RKM.kD6F0GM2rMkU>

Downtown Winnipeg BIZ. (n.d.). Conveniences. Retrieved May 19, 2015, from <http://downtownwinnipegbiz.com/downtown-living/conveniences/>

Food Matters Manitoba. (2013). *Downtown Winnipeg Community Food Assessment* (p. 56). Food Matters Manitoba. Retrieved from [http://www.foodmattersmanitoba.ca/wp-content/uploads/2014/06/CFA-Report\\_Downtown\\_Final.pdf](http://www.foodmattersmanitoba.ca/wp-content/uploads/2014/06/CFA-Report_Downtown_Final.pdf)

Furey, S., Strugnell, C., & McIlveen, M. H. (2001). An investigation of the potential existence of "food deserts" in rural and urban areas of Northern Ireland. *Agriculture and Human Values*, 18(4), 447–457. <http://doi.org/10.1023/A:1015218502547>

Grocery stores set to reopen. (n.d.). Retrieved May 11, 2015, from <http://www.winnipegfreepress.com/business/grocery-stores-set-to-reopen-284573851.html>

Hammond, C. (2012, October 31). Impending downtown grocery store closures leave "food desert" in their wake. *The Uniter*. Winnipeg, Manitoba. Retrieved from <http://uniter.ca/view/impending-downtown-grocery-store-closures-leave-food-desert-in-their-wake>

Harms, L. (2014). Making the food deserts bloom. *Wave*, (November/December). Retrieved from <http://www.wrha.mb.ca/wave/2014/11/making-food-deserts-bloom.php>

Hulchanski, D., Murdie, R., Walks, A., & Bourne, L. (2013, October 4). Canada's voluntary census is worthless. Here's why [Newspaper]. Retrieved February 27, 2015, from <http://www.theglobeandmail.com/globe-debate/canadas-voluntary-census-is-worthless-heres-why/article14674558/>

# 6.2 References

- Hulchanski, D., Murdie, R., Walks, A., & Bourne, L. (2013, October 4). Canada's voluntary census is worthless. Here's why [Newspaper]. Retrieved February 27, 2015, from <http://www.theglobeandmail.com/globe-debate/canadas-voluntary-census-is-worthless-heres-why/article14674558/>
- Kaufman, P. (2013). *Downtown Grocery Store: Feasibility Analysis* (p. 60). Winnipeg, Manitoba: CRBE Manitoba. Retrieved from <http://media.winnipegfreepress.com/documents/Downtown+Grocery+Store+Feasibility+Analysis+Report.pdf>
- Layne, J. (2012, October 29). Surviving in a food desert. *The Manitoban*. Winnipeg, Manitoba. Retrieved from <http://www.themanitoban.com/2012/10/surviving-in-a-food-desert/12408/>
- Lett, D. (2013, February 5). "Food deserts" complex, hard-to-solve problems. *Winnipeg Free Press*, p. B1. Winnipeg, Manitoba.
- Martin, M. (2012, January 28). End of an oasis: neighbourhood's food desert grows. *Winnipeg Free Press*, p. A6. Winnipeg, Manitoba.
- Peters, Z. (2013, December 23). Grocer delivering to downtown Winnipeg helps fill grocery store void. *Metro*. Winnipeg, Manitoba. Retrieved from <http://metronews.ca/news/winnipeg/891825/grocer-delivering-to-downtown-winnipeg-helps-fill-grocery-store-void/>
- Ripley, S. (2014, June 3). Downtown grocery store is a fruitless pursuit. *MyToba.ca*. Winnipeg, Manitoba. Retrieved from <http://mytoba.ca/news/downtown-grocery-store-is-a-fruitless-pursuit/>
- Santin, A. (2013, September 27). Subsidies suggested for potential downtown grocery store investors. *Winnipeg Free Press*. Winnipeg, Manitoba. Retrieved from <http://www.winnipegfreepress.com/local/Subsidies-suggested-for-potential-downtown-grocery-store-investors-225515762.html>
- Schram, M. (2014). *Supermarket Redlining and Food Deserts: Characterizing Food Insecurity and Urban Decline* (No. 26) (p. 18). Winnipeg, Manitoba: Institute of Urban Studies. Retrieved from <http://ejtest.uwinnipeg.ca/handle/10680/755>
- Shannon, J. (2014). Food deserts: Governing obesity in the neoliberal city. *Progress in Human Geography*, 38(2), 248–266. <http://doi.org/10.1177/0309132513484378>
- Skerritt, J. (2013, April 4). City turns its back on "food deserts": Policy Committee rejects incentives for downtown grocery stores. *Winnipeg Free Press*. Winnipeg, Manitoba. Retrieved from <https://www.google.com/maps/d/viewer?mid=z46R7tcrFb9I.k3hPhPnDDL0c>



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Social Planning Council of Winnipeg. (2014). *Measuring Poverty Primer - Statistical Tools* (p. 4). Winnipeg, Manitoba: Social Planning Council of Winnipeg. Retrieved from <http://www.spcw.mb.ca/files/8713/9085/1649/PovertyMeasurementsPrimer-2014.pdf>

Walker, R. E., Keane, C. R., & Burke, J. G. (2010). Disparities and access to healthy food in the United States: A review of food deserts literature. *Health & Place, 16*(5), 876–884. <http://doi.org/10.1016/j.healthplace.2010.04.013>

Werner, A., & McCullough, S. (2013). Downtown Winnipeg: Demographics, Population Density, and Grocery Store Locations. Institute of Urban Studies. Retrieved from <http://www.uwinnipeg.ca/ius/docs/reports/downtown-demographics-grocery.pdf>

Winnipeg group targets food deserts. (2012, October 10). Winnipeg, Manitoba. Retrieved from <http://www.cbc.ca/1.1189865>