

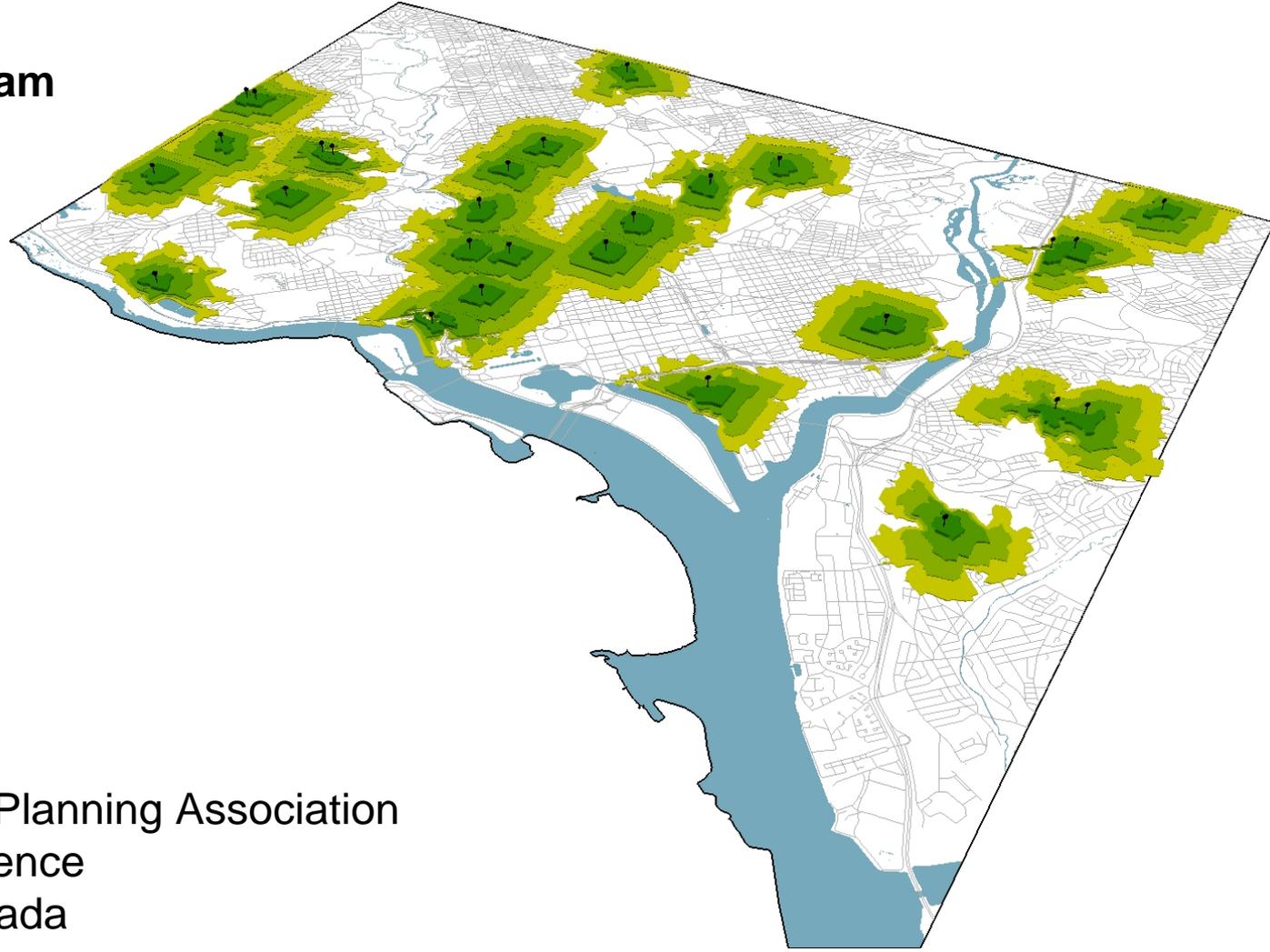


The District of Columbia | Office of Planning

Outside the Buffer:

Using GIS to Better Our Understanding of Grocery Store Accessibility.

James K. Graham
GIS Specialist



April 30, 2008

2008 American Planning Association

National Conference

Las Vegas, Nevada



- **Healthy by Design**
 - **Goal: A more livable, walkable city**
 - Increase access to:
 - *Recreation and Fitness*
 - *Schools*
 - ***Healthy Food***
- **Large/Chain Grocery Store Access**
 - **Goal: Create model to visualize grocery store accessibility**
 - Analyze both spatial and temporal accessibility in DC



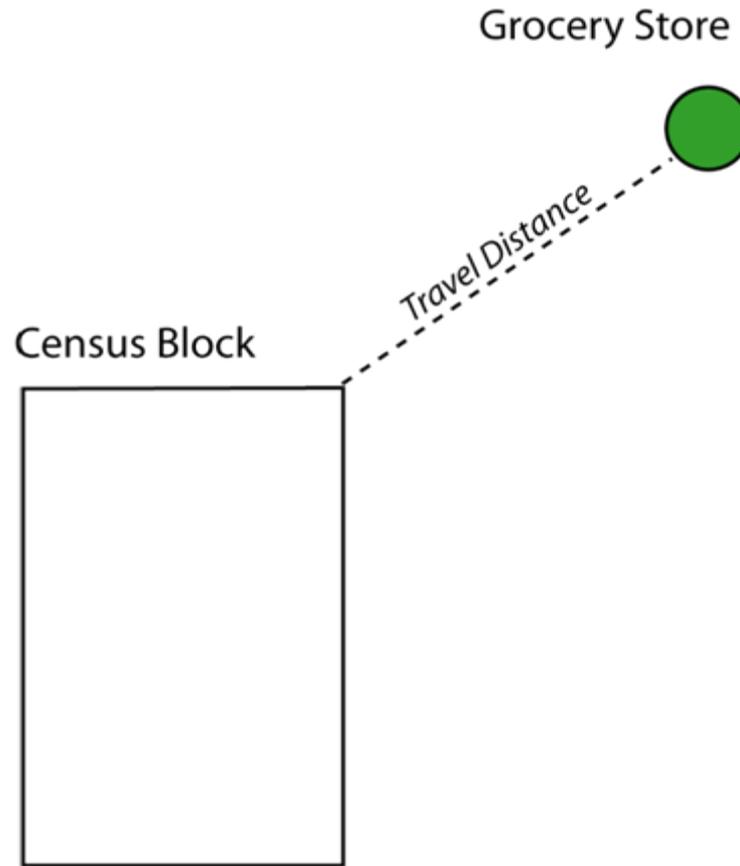
- **Healthy by Design**
 - **Goal: A more livable, walkable city**
 - Increase access to:
 - *Recreation and Fitness*
 - *Schools*
 - *Healthy Food*
- **Large/Chain Grocery Store Access**
 - **Goal: Create model to visualize grocery store accessibility**
 - Examine Accessibility Definitions & Methodologies
 - Discuss network-based accessibility
 - Examine results of a DC network accessibility model
 - Results



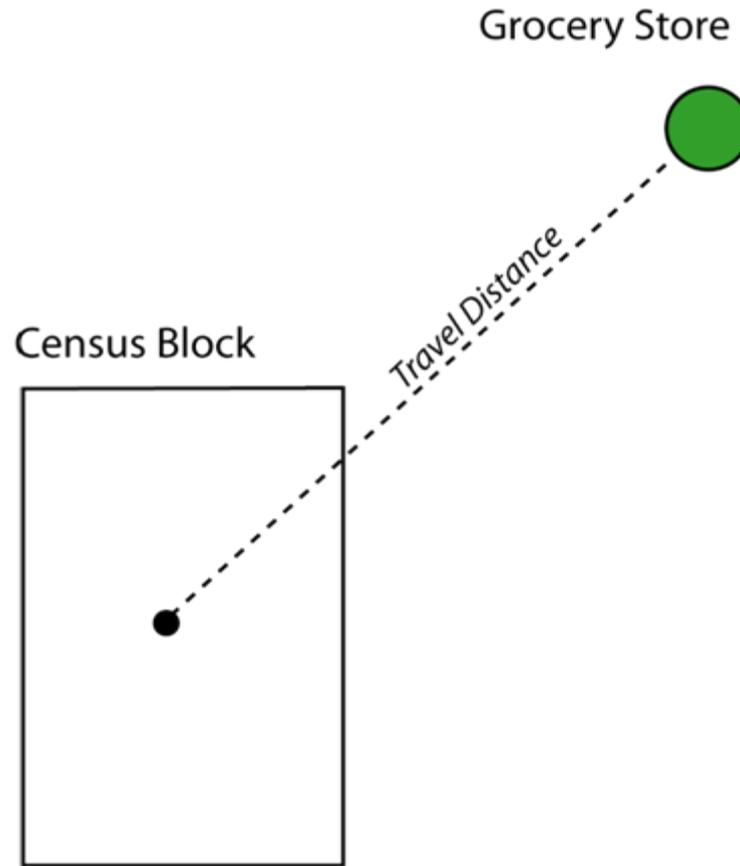
What does access mean?

“Accessibility... is a slippery notion... one of those common terms that everyone uses until faced with the problem of defining and measuring it”

-- *Peter R. Gould*



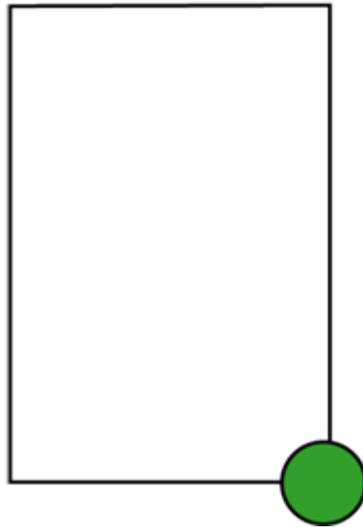
Accessibility = X Distance from the Edge of a Block



Accessibility = Center of Block is *X* distance to a Grocery Store

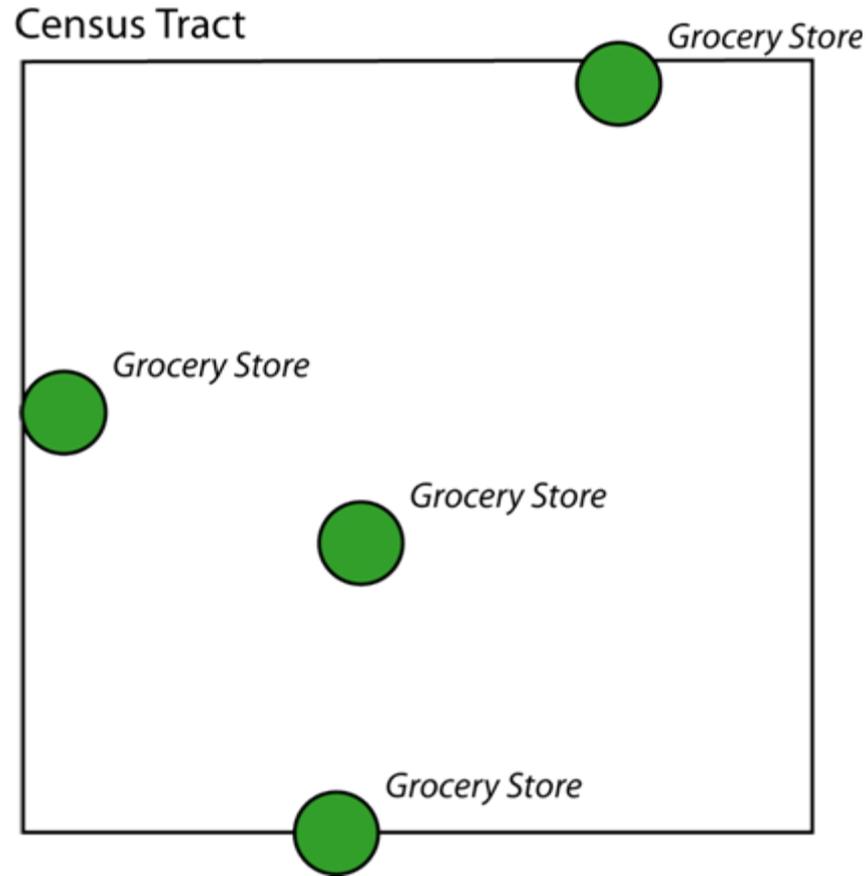


Census Block

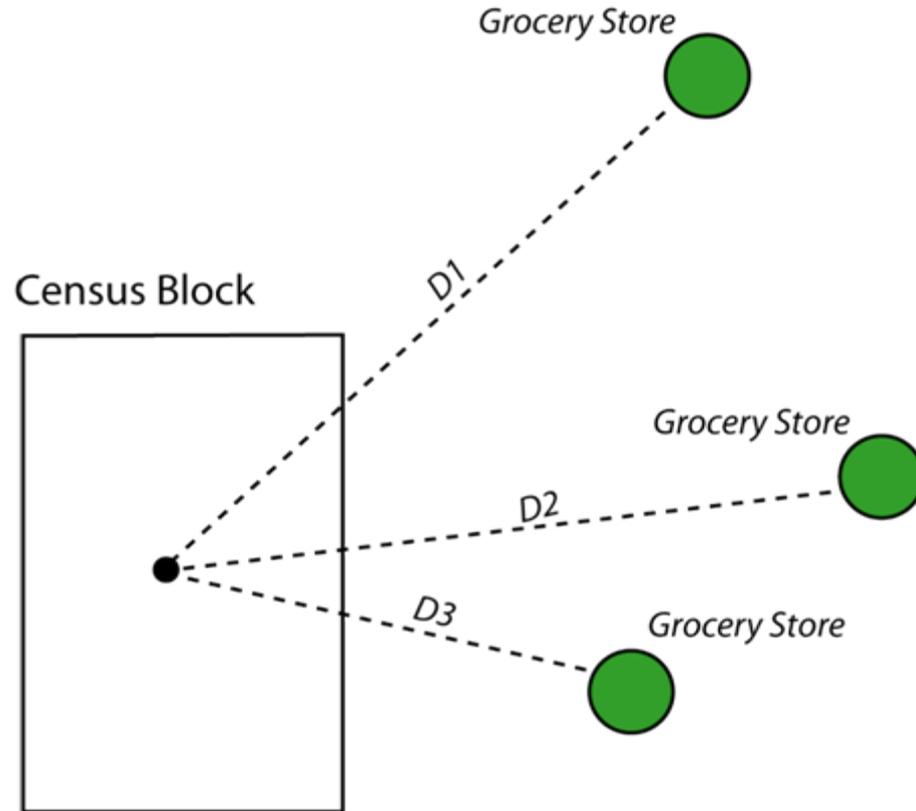


Grocery Store

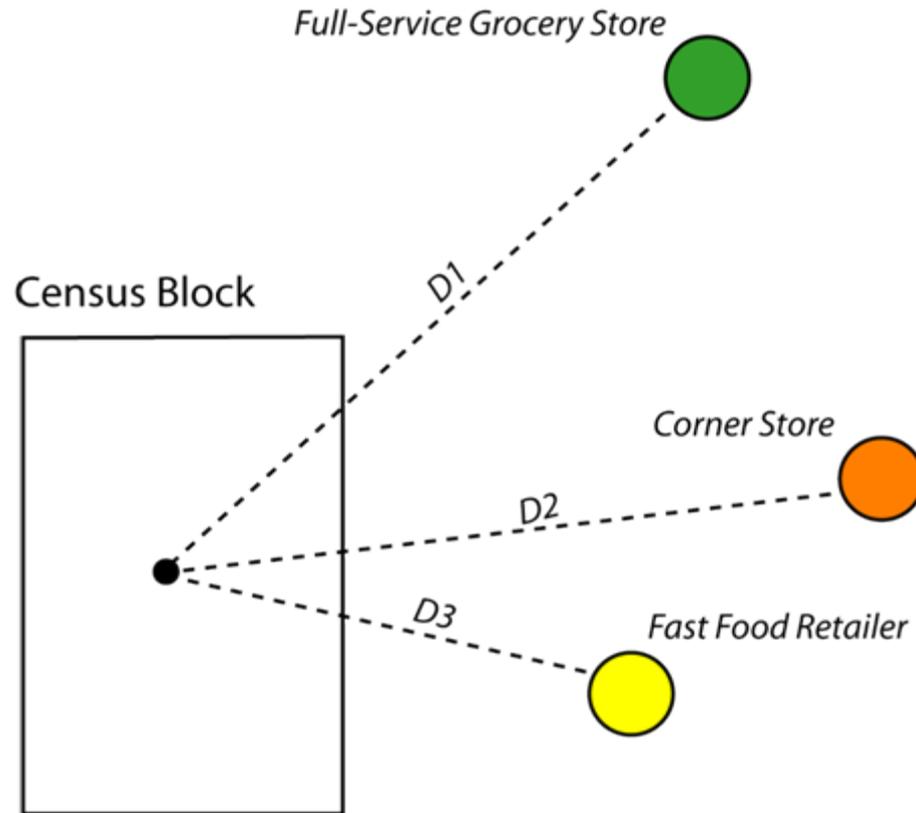
Accessibility = On or Within a Block



Accessibility = X Number of Stores Within a Tract



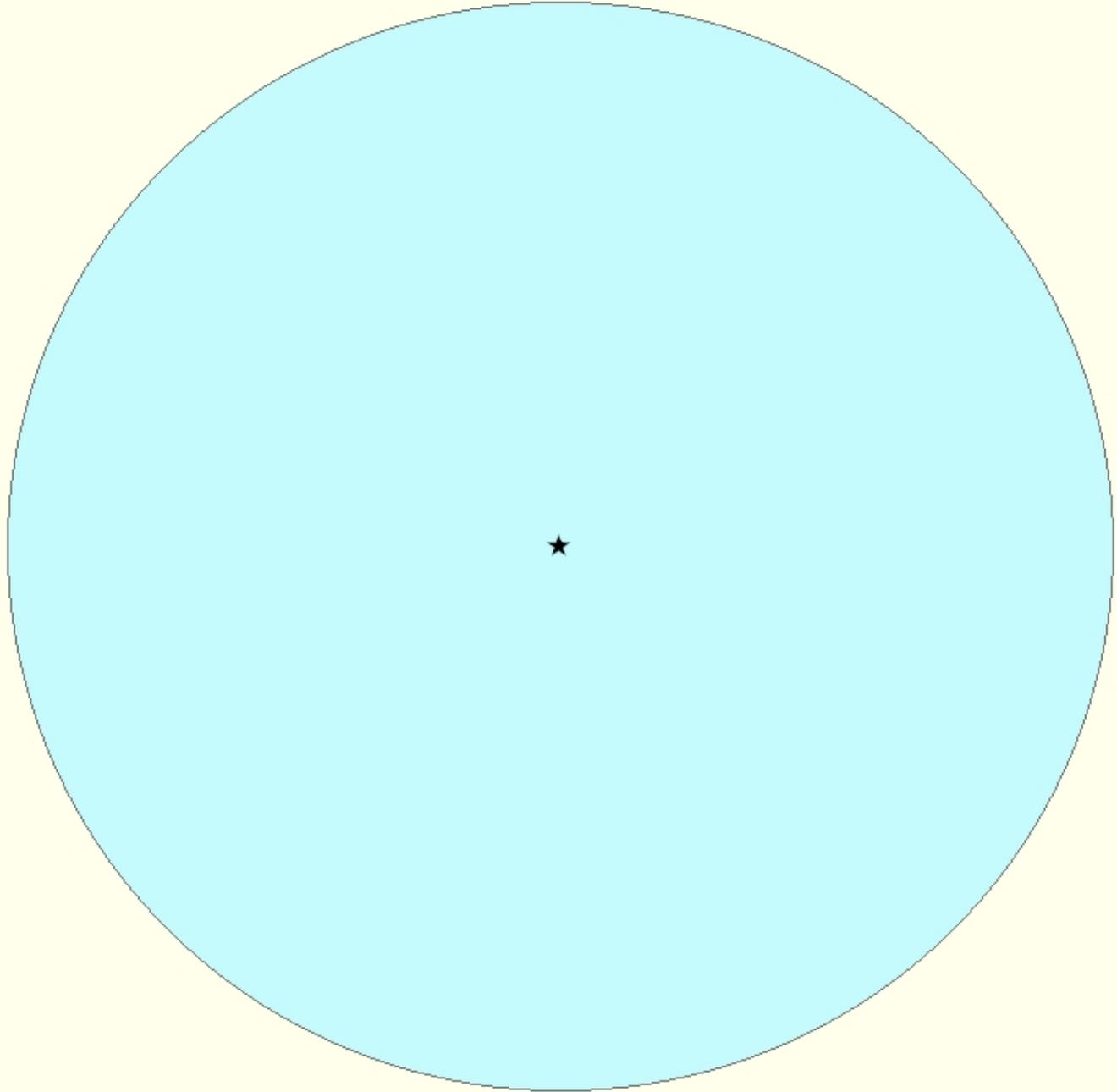
Accessibility = Average Distance for a Number of Stores

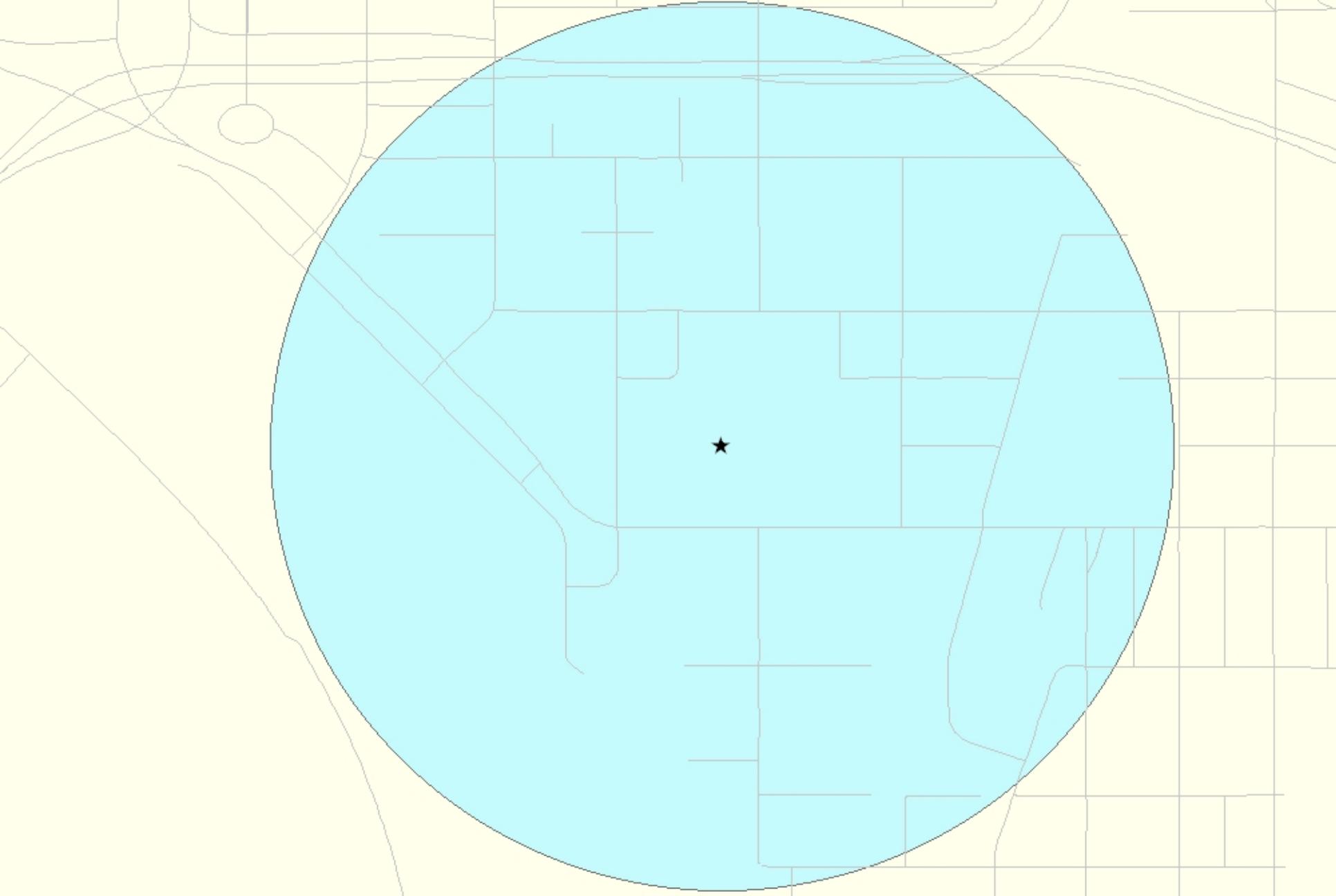


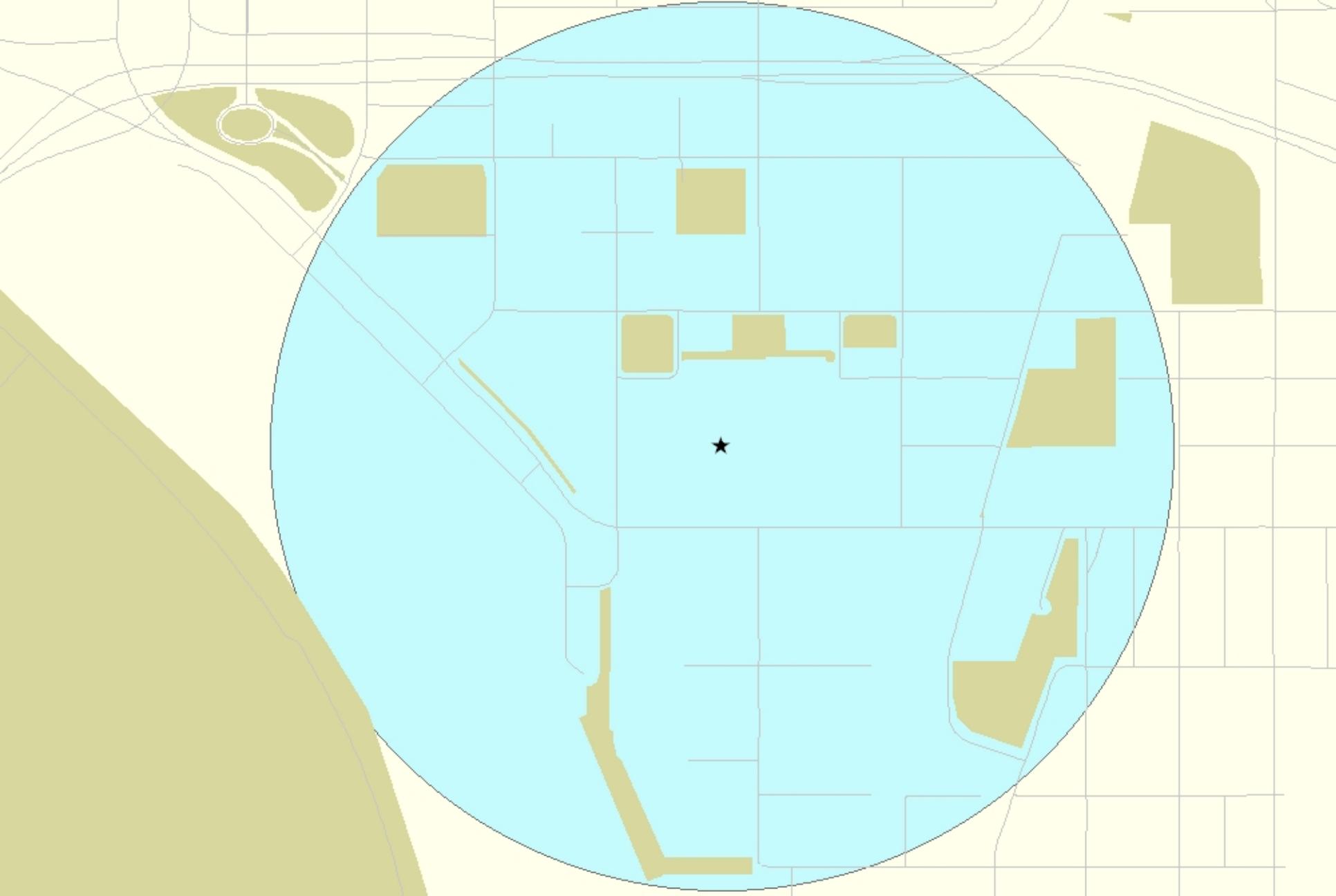
Accessibility = Average Distance AND Quality of Stores

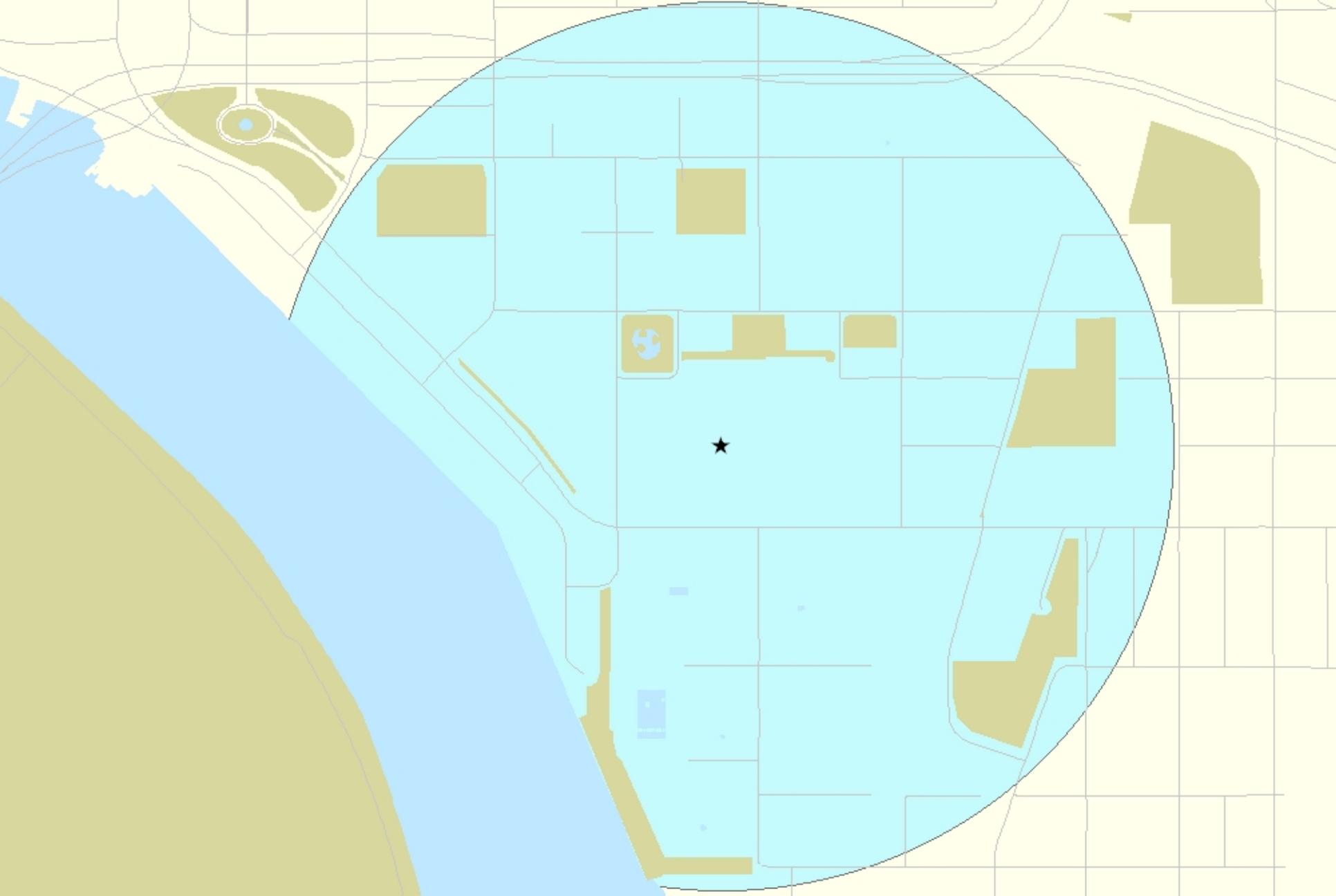


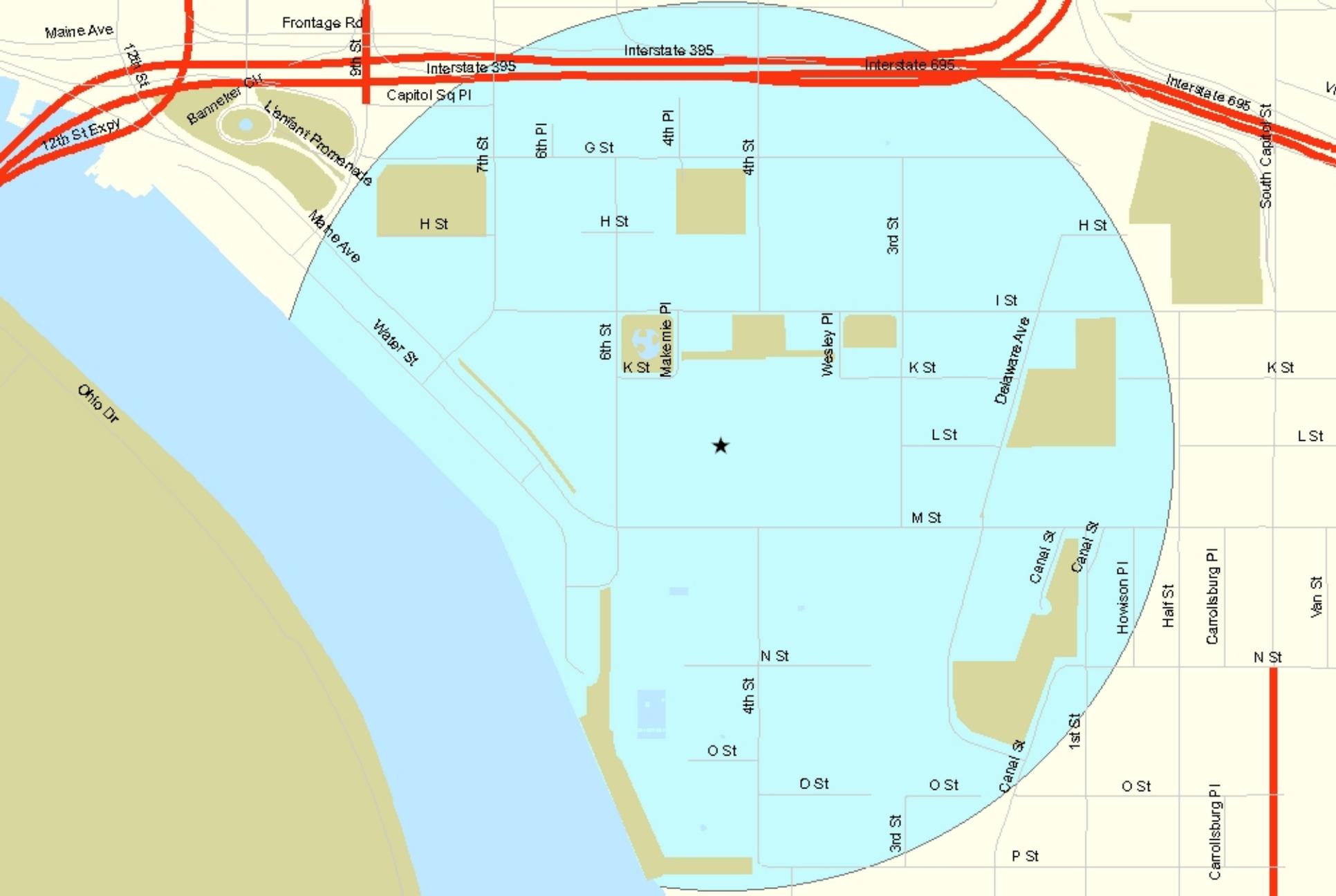
- The problem: Access doesn't resemble reality.













DC's Focus: **Access = Walkability**

- **Walkability** = 15 minute walk
- **Grocery Store** = Large Chain & Large Local
- **Will Eventually Incorporate Smaller Stores**



- District of Columbia Walkable Accessibility
 - Created a **network walkability model**.
 - Allows greater flexibility
 - Eventually incorporate multiple modes of travel
 - More accurate representation of walkable access.



- GIS Tools
 - Using ESRI's ArcGIS
 - Used Network Analyst extension
 - Derived from Centerlines
 - Calculated walk time based upon average walking speed of 2.5 mph.



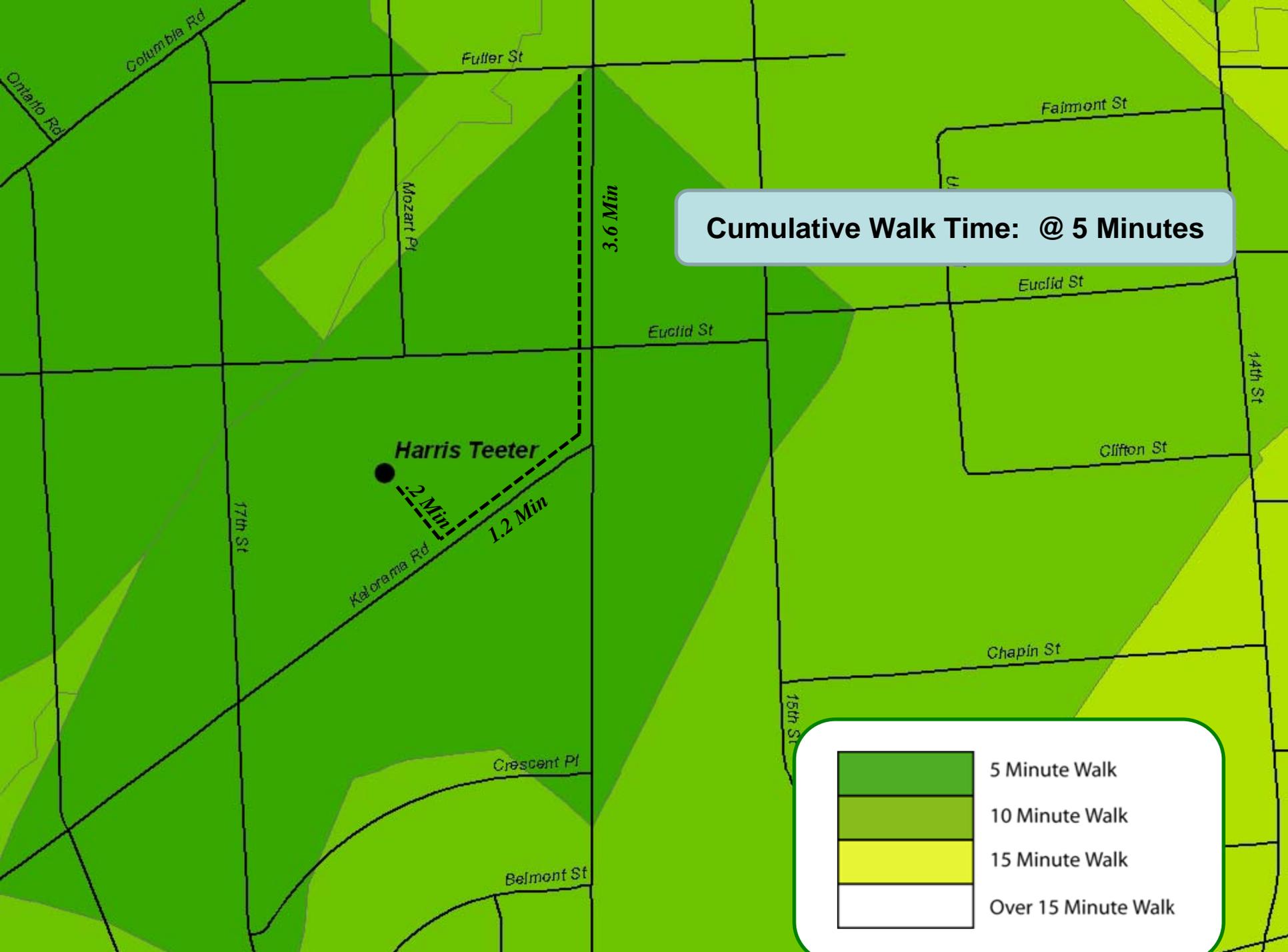
Cumulative Walk Time: @ 5 Minutes

Harris Teeter

2 Min

1.2 Min

3.6 Min



Cumulative Walk Time: @ 5 Minutes



Harris Teeter

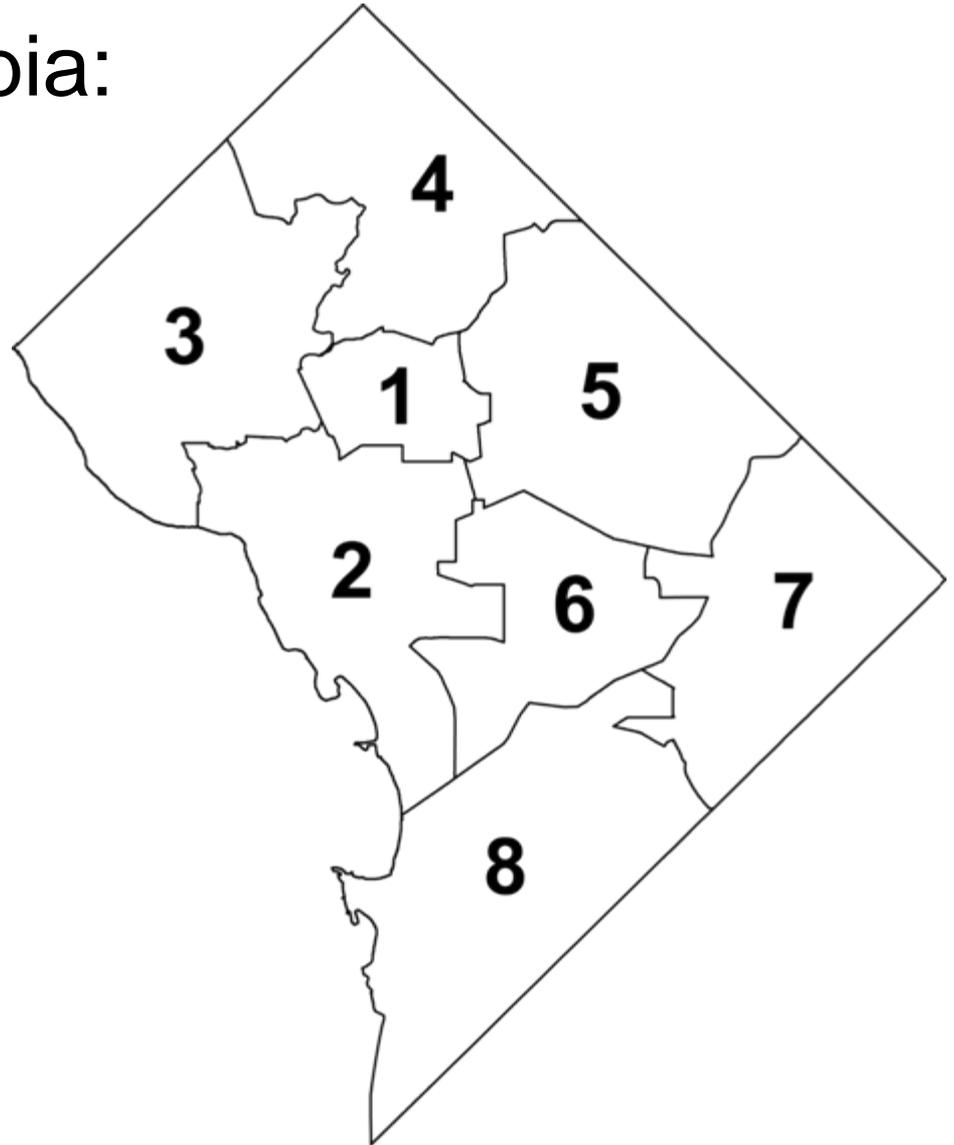
2 Min

1.2 Min

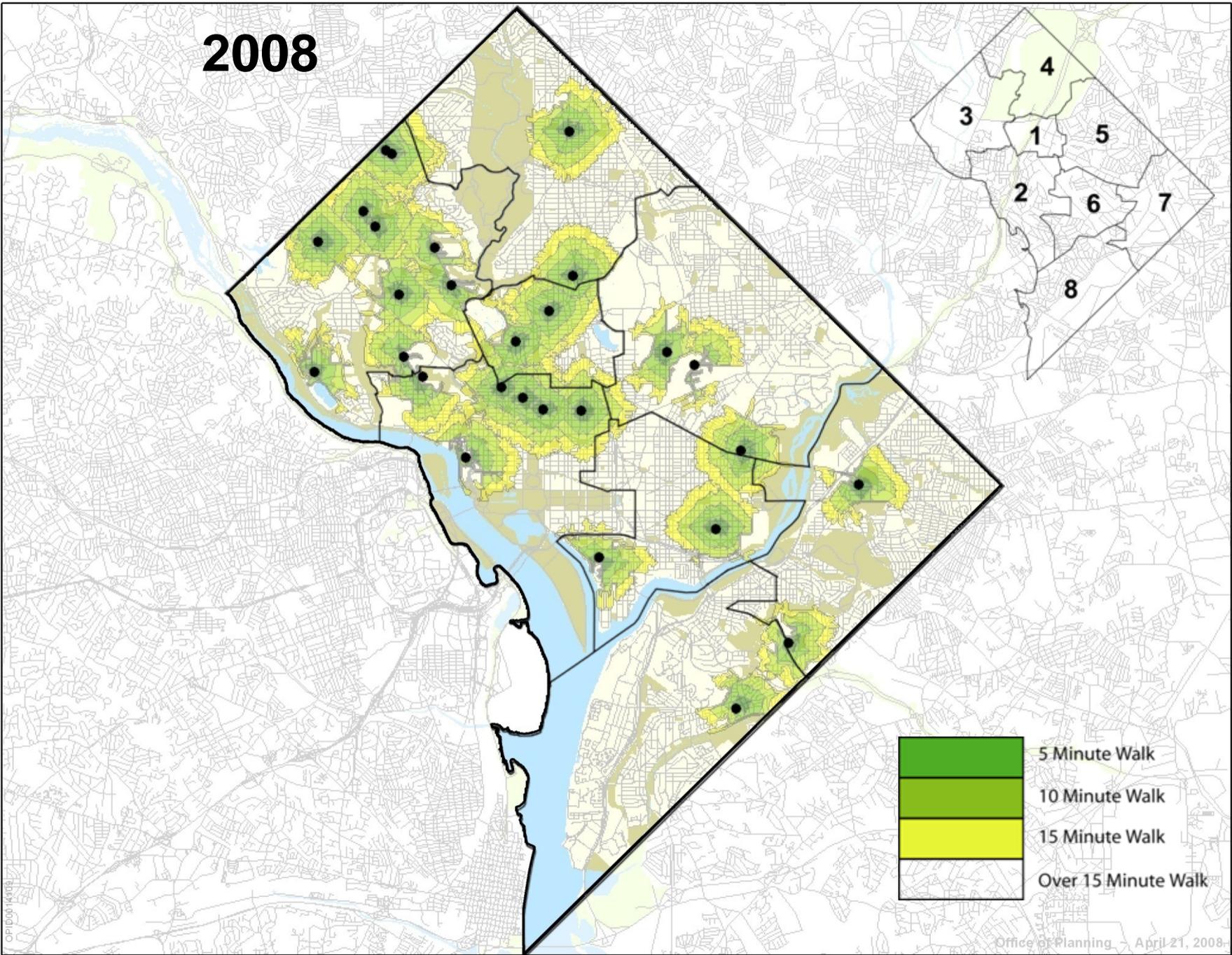
3.6 Min



- District of Columbia:
Wards



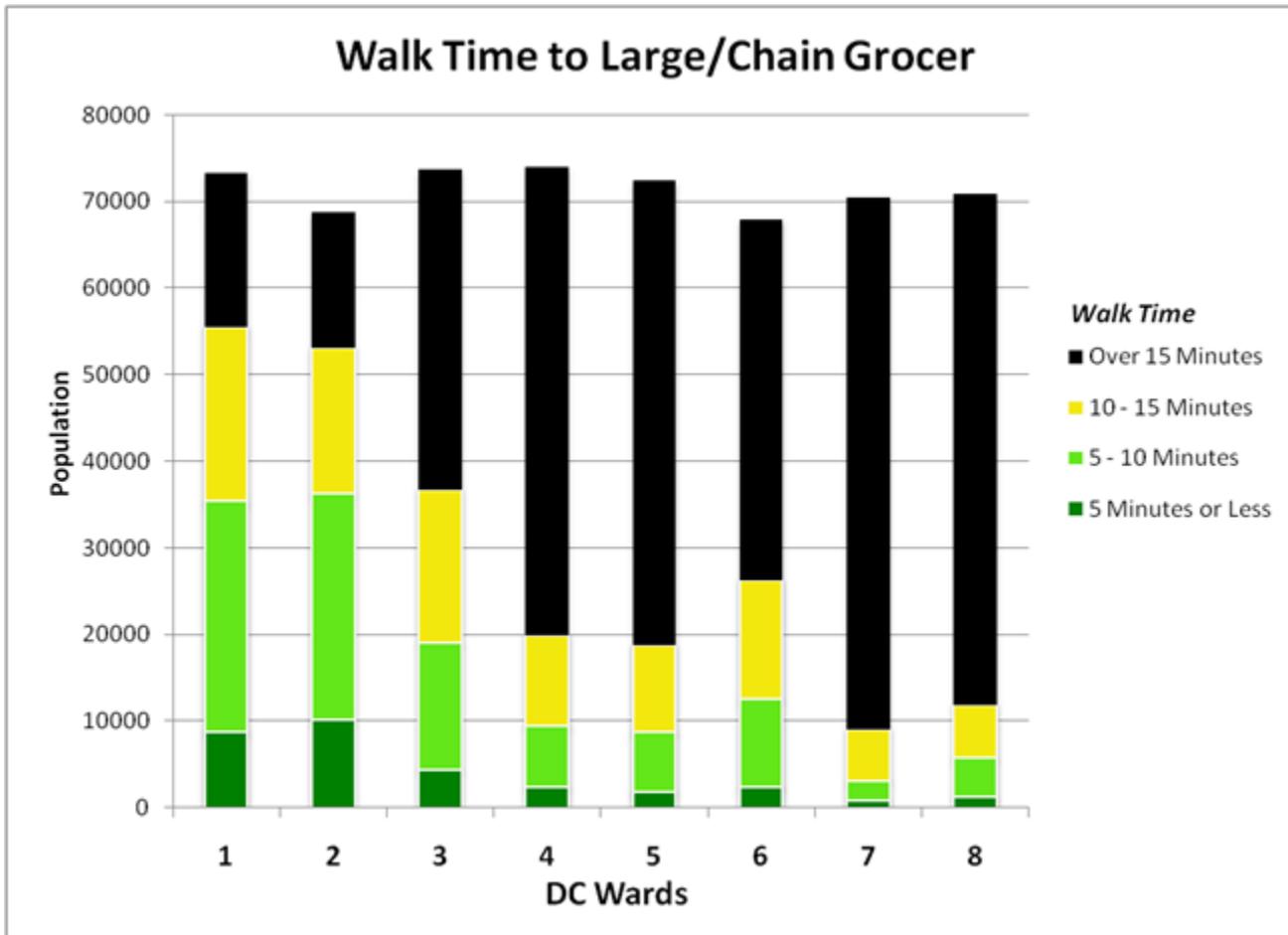
2008



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2008

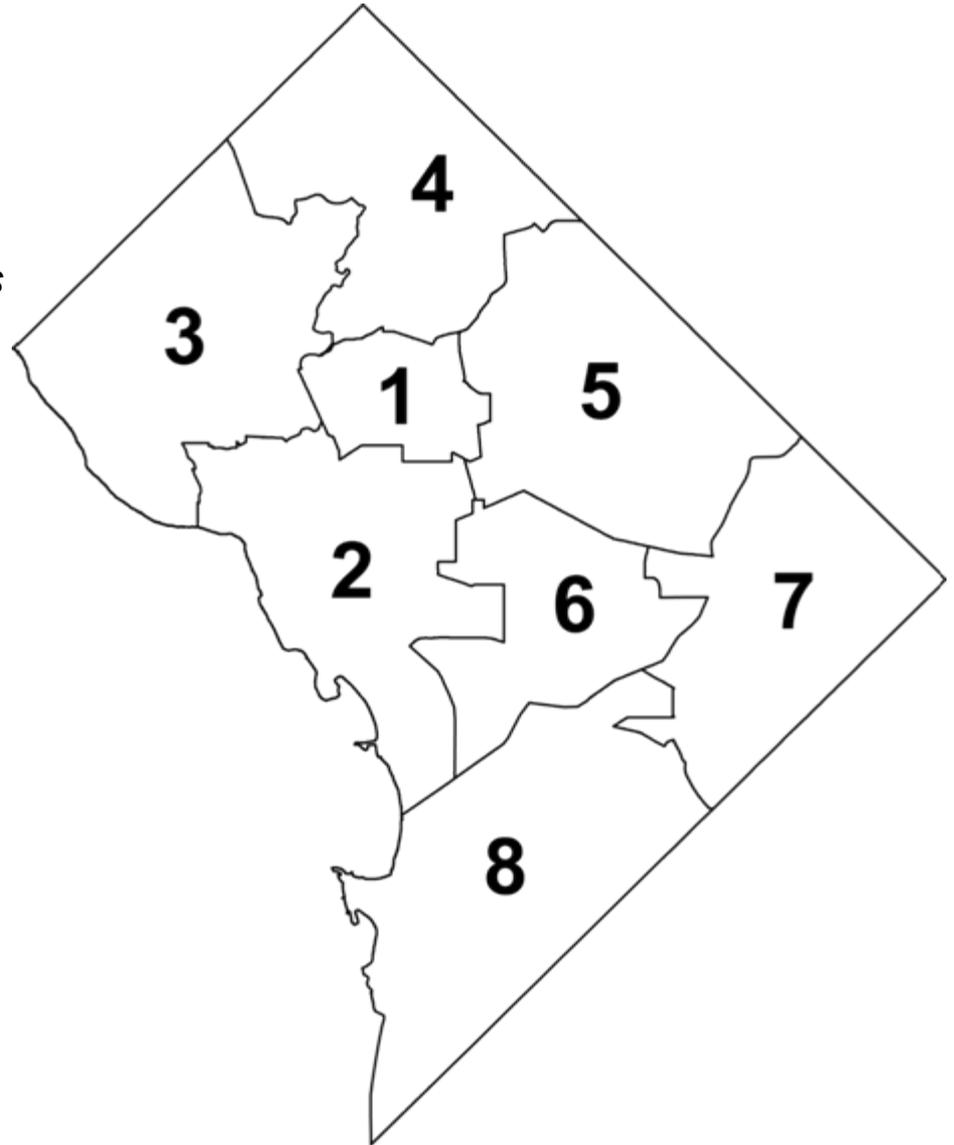




- **Results**

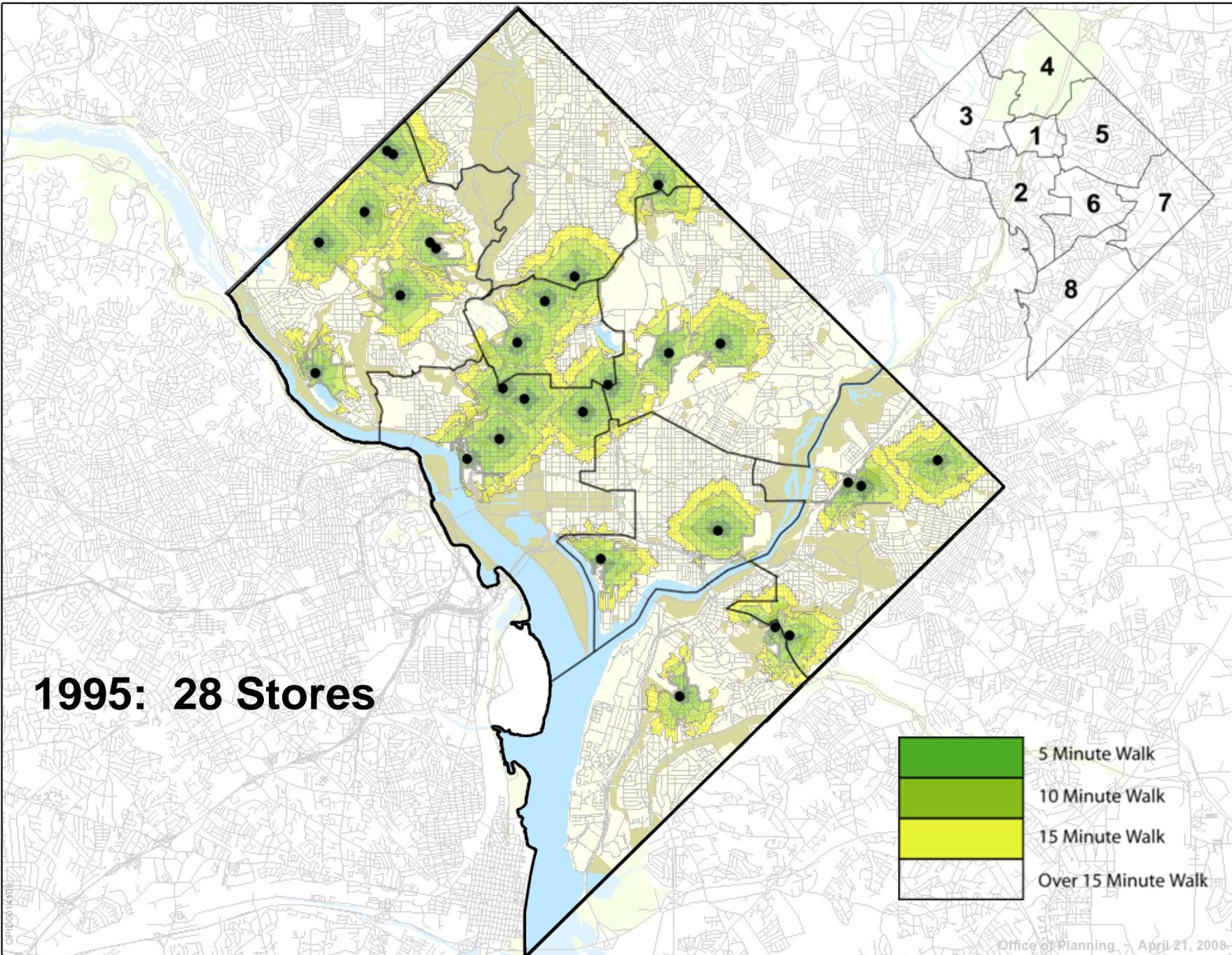
- Historical Accessibility

- *Based on: 1990, 1995, 2000, 2005 Yellow Pages*



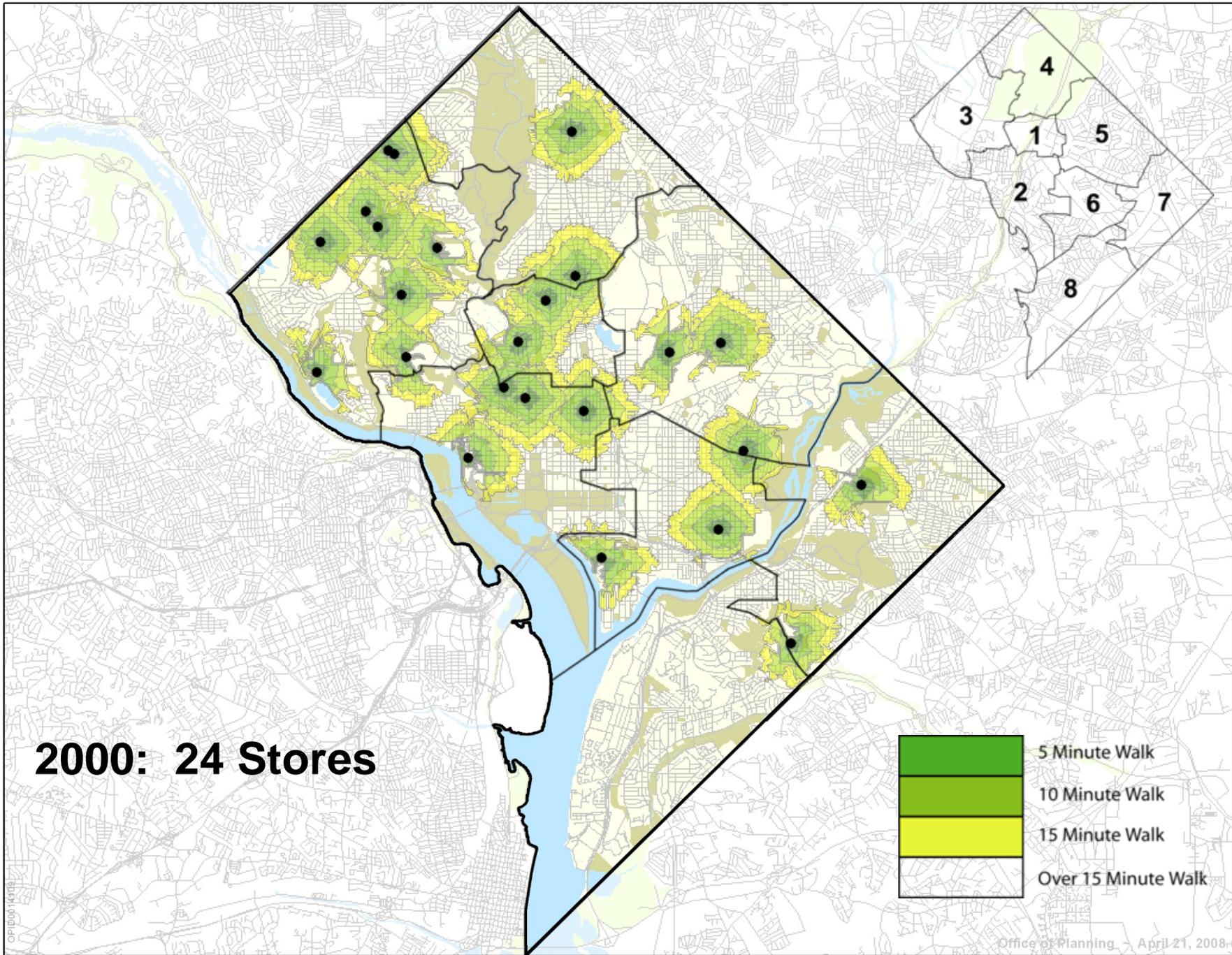
1990: 20 Stores





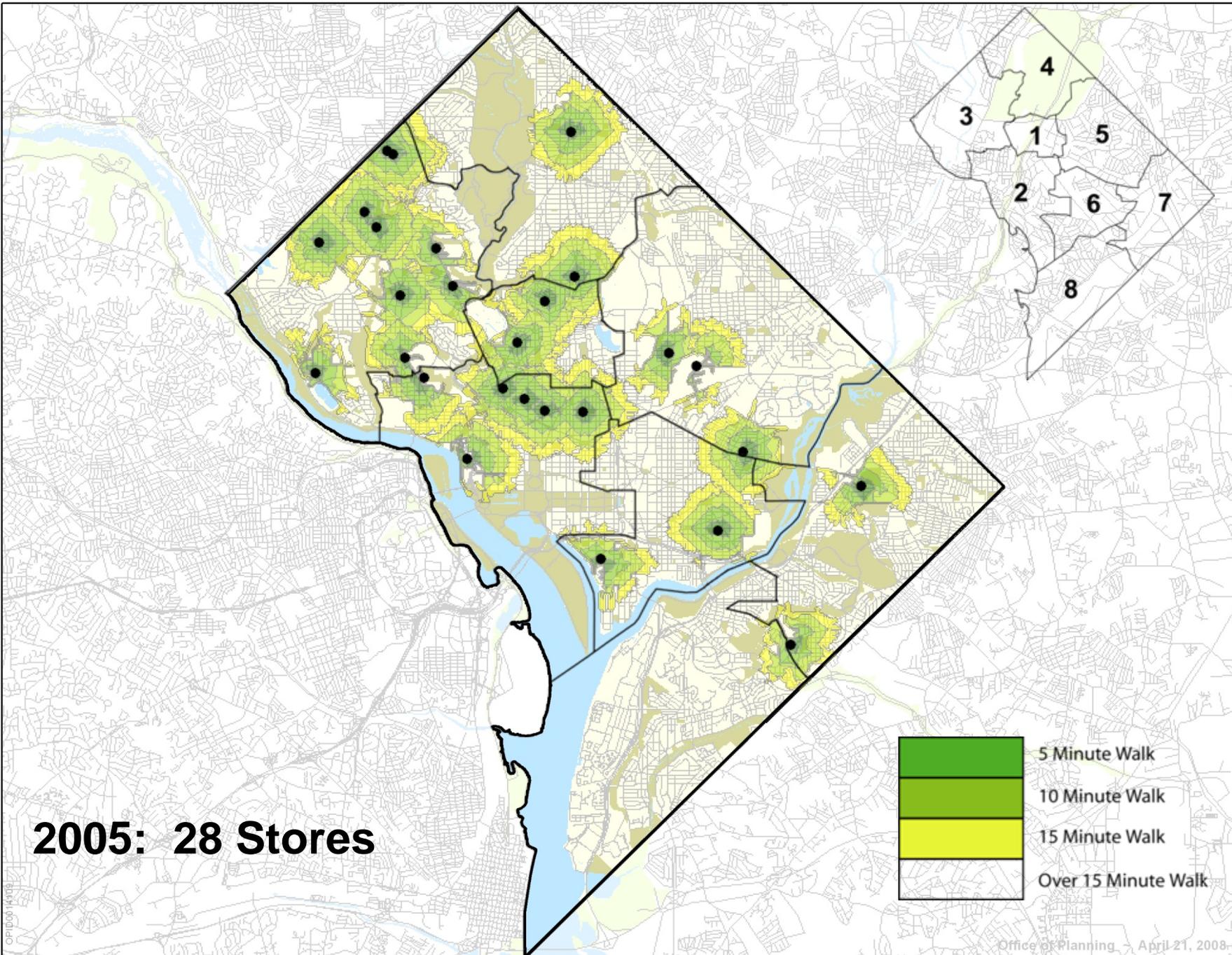
1995: 28 Stores





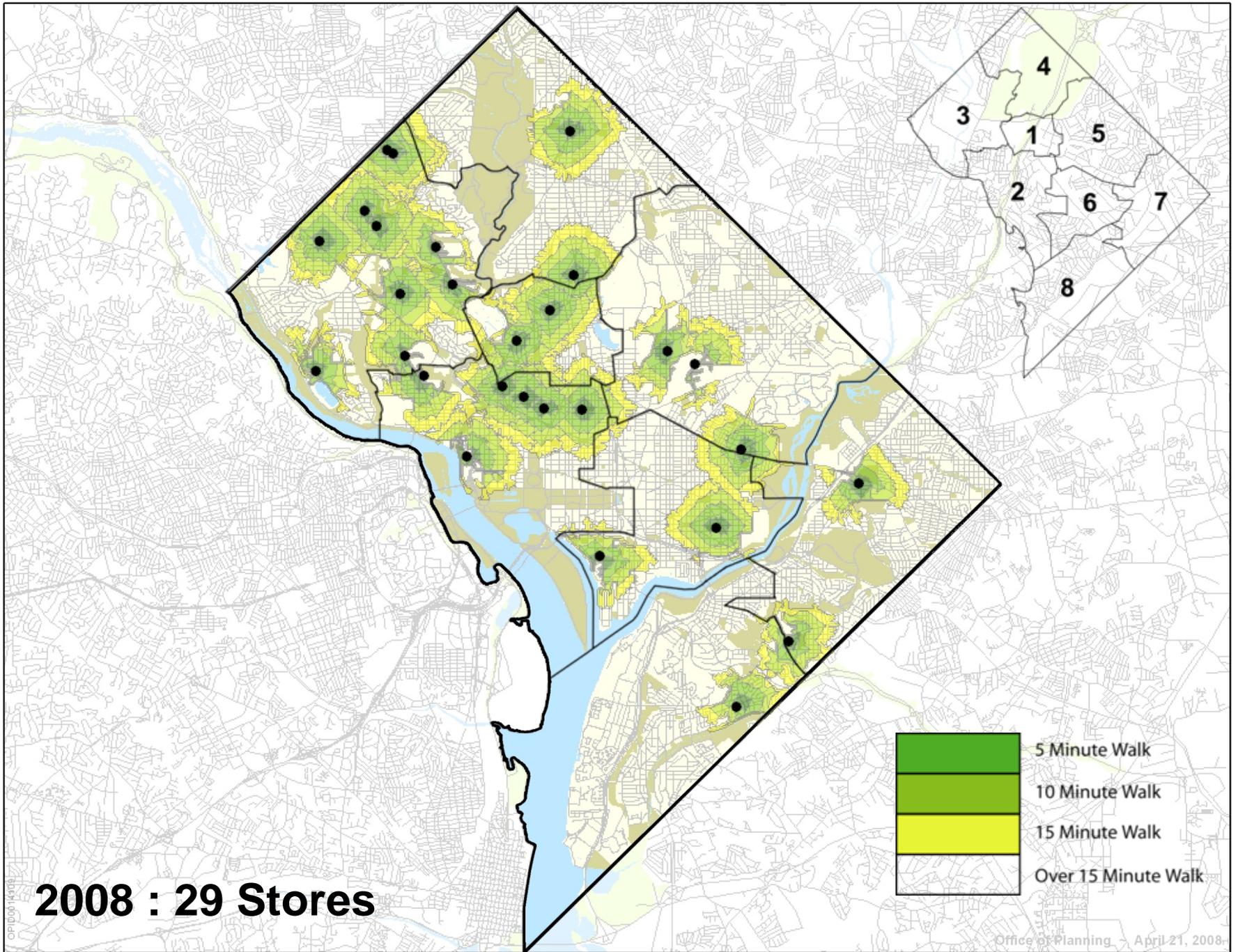
2000: 24 Stores



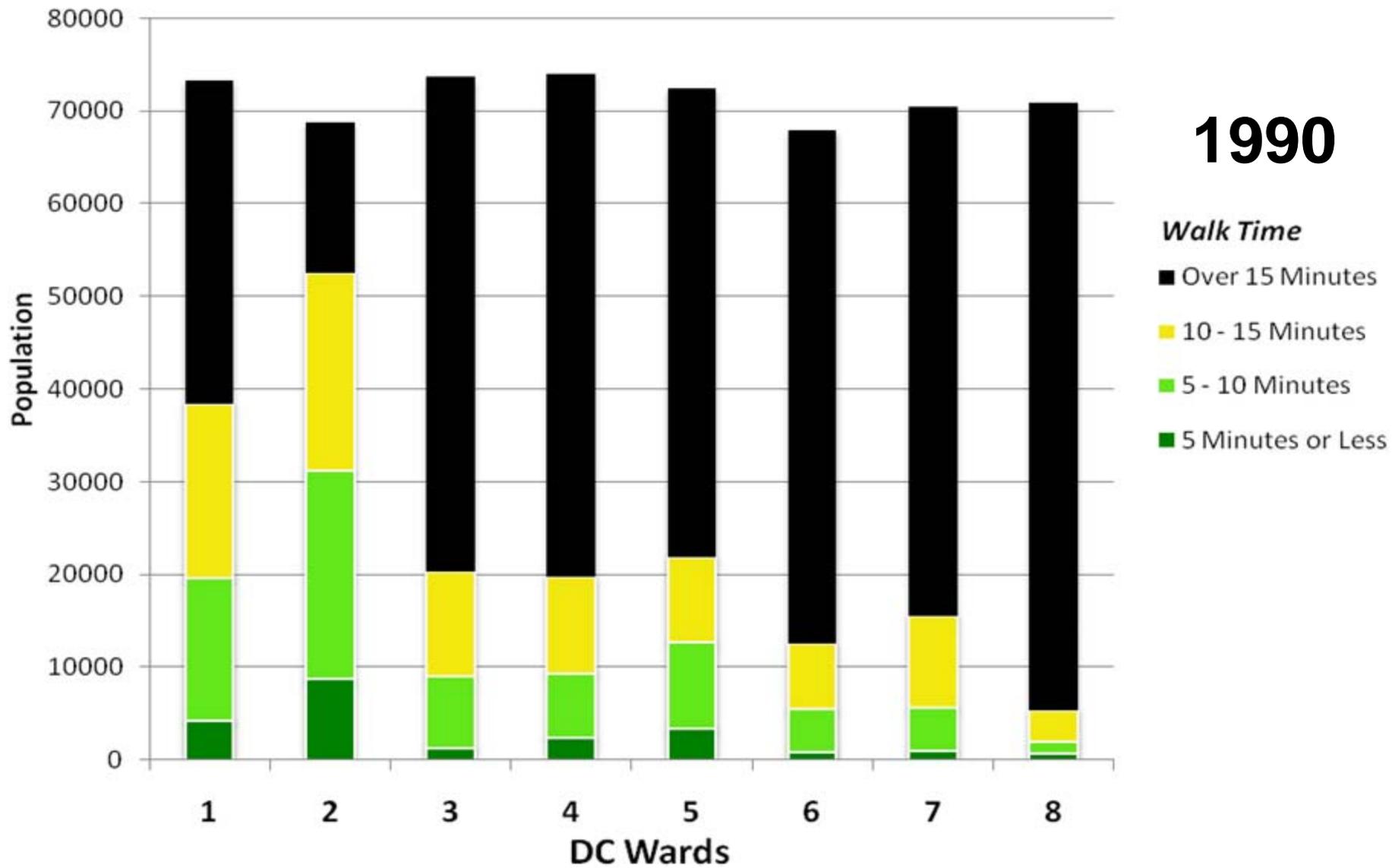


2005: 28 Stores

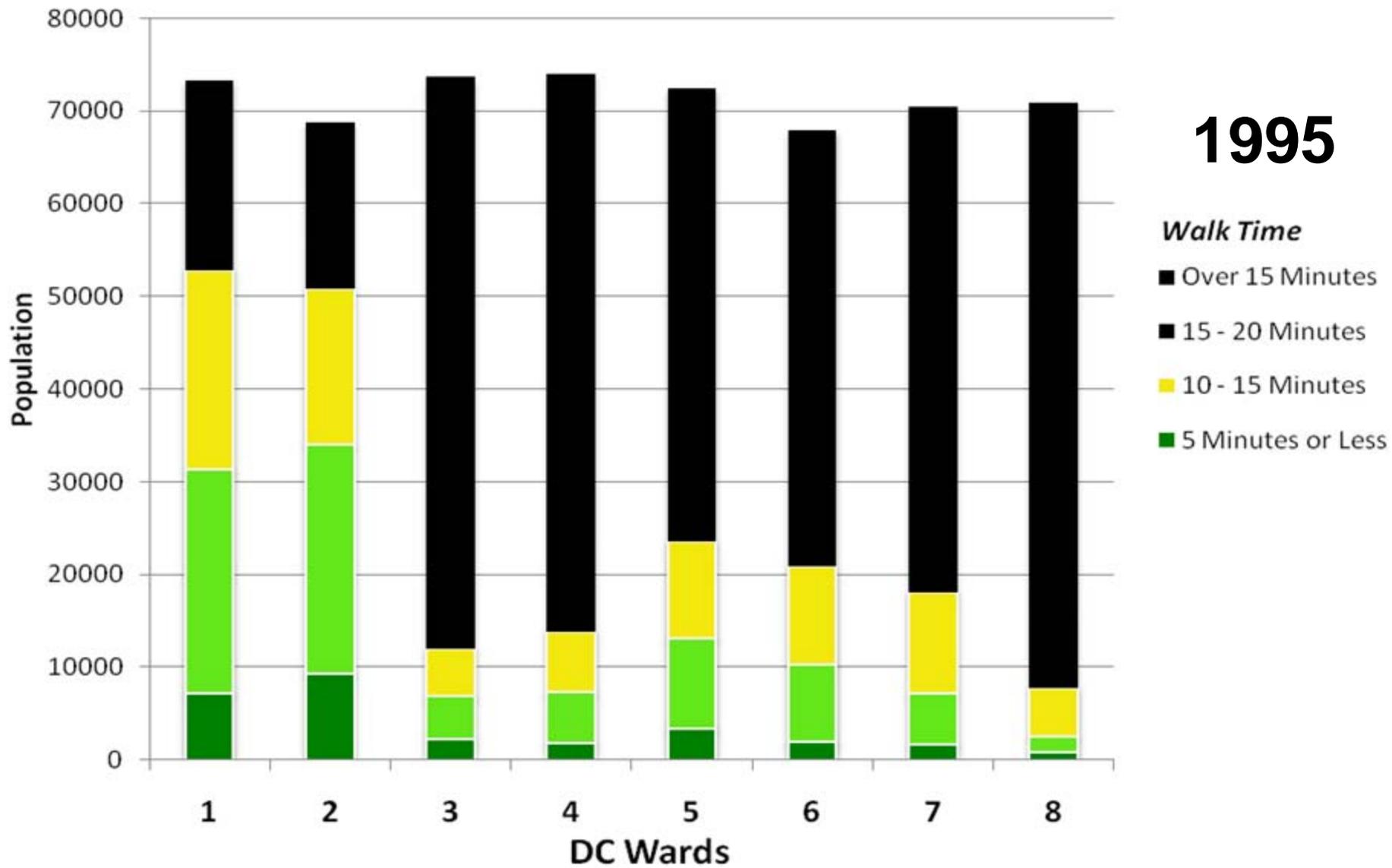




Walk Time to Large/Chain Grocer

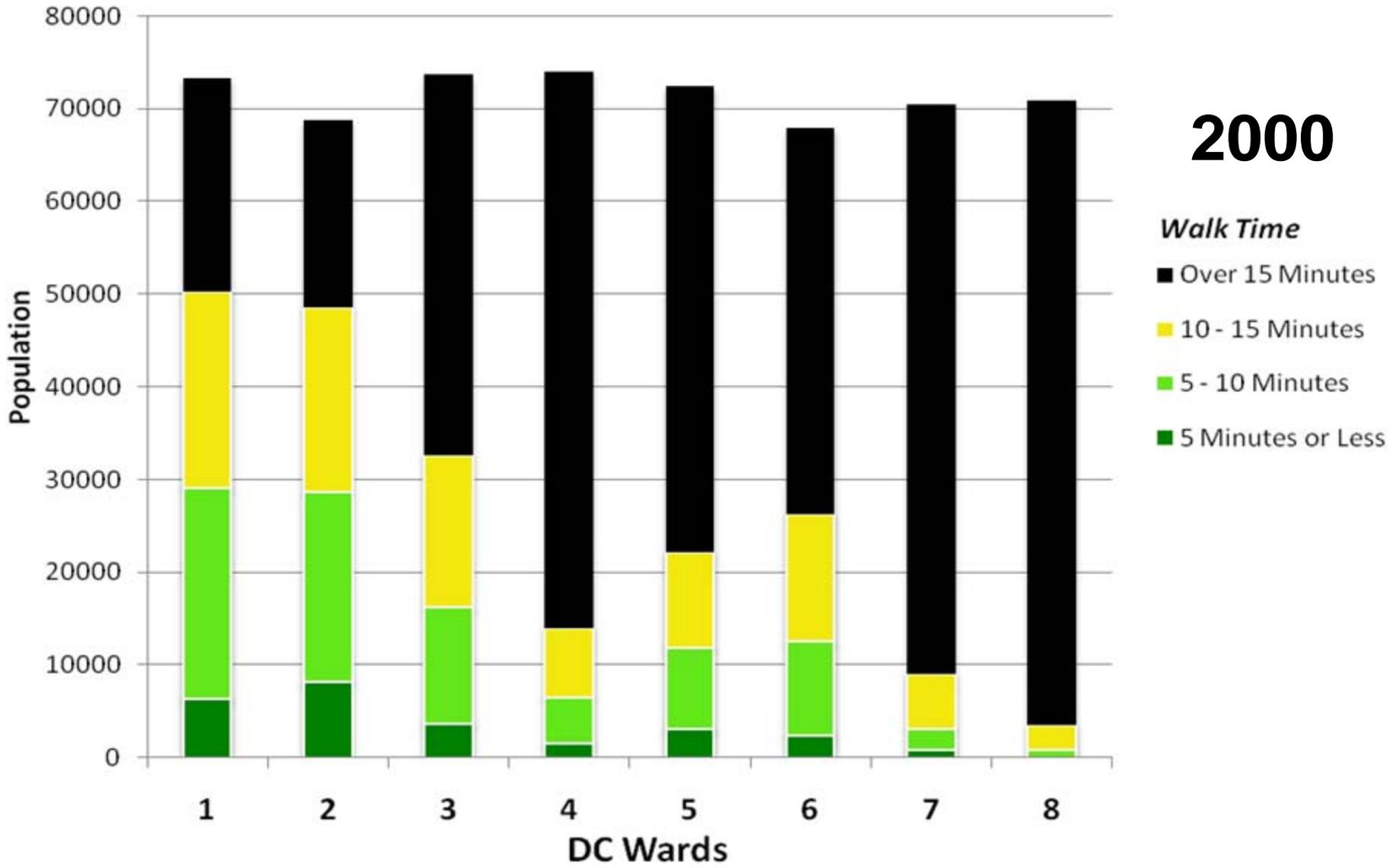


Walk Time to Large/Chain Grocer

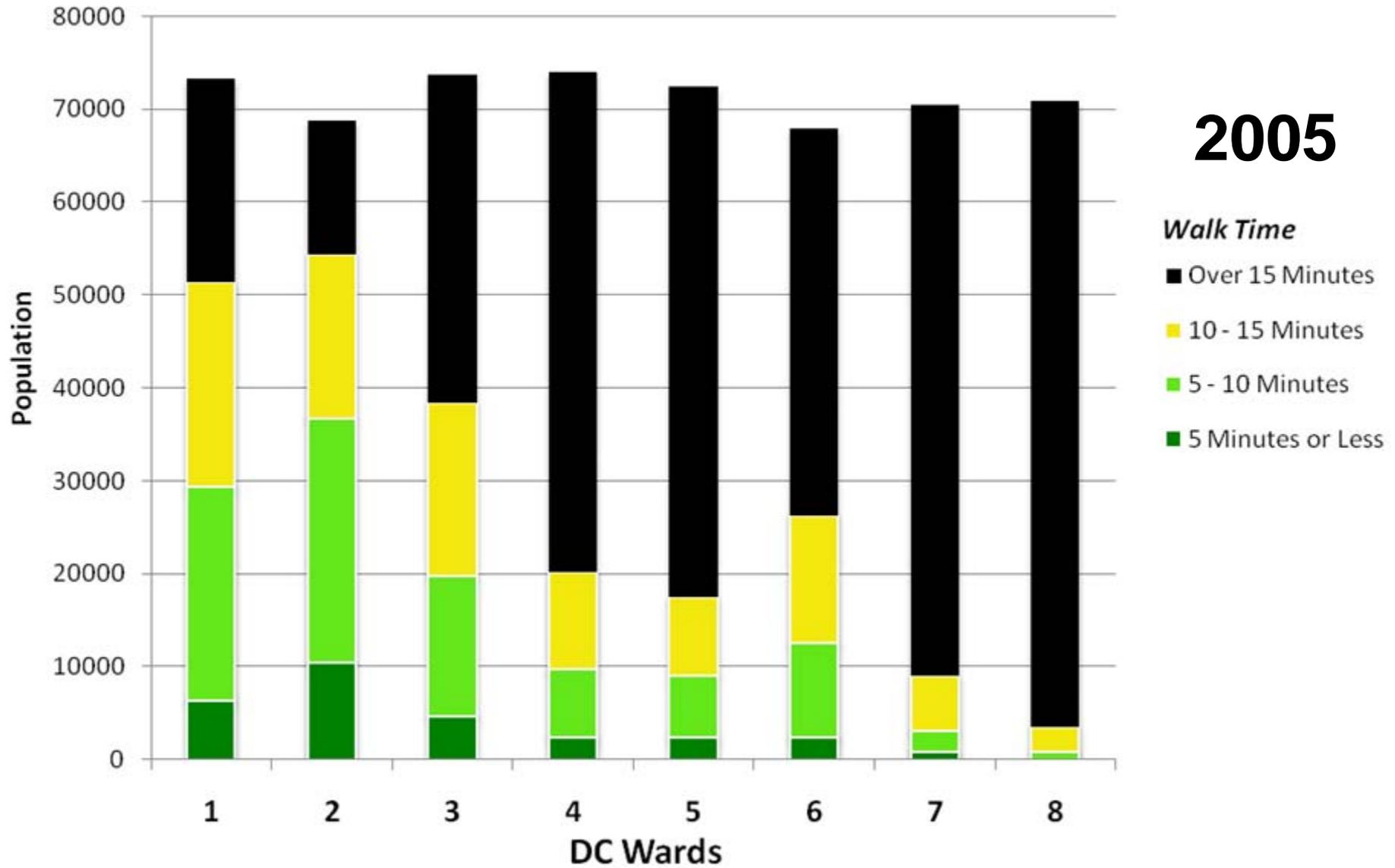


Walk Time to Large/Chain Grocer

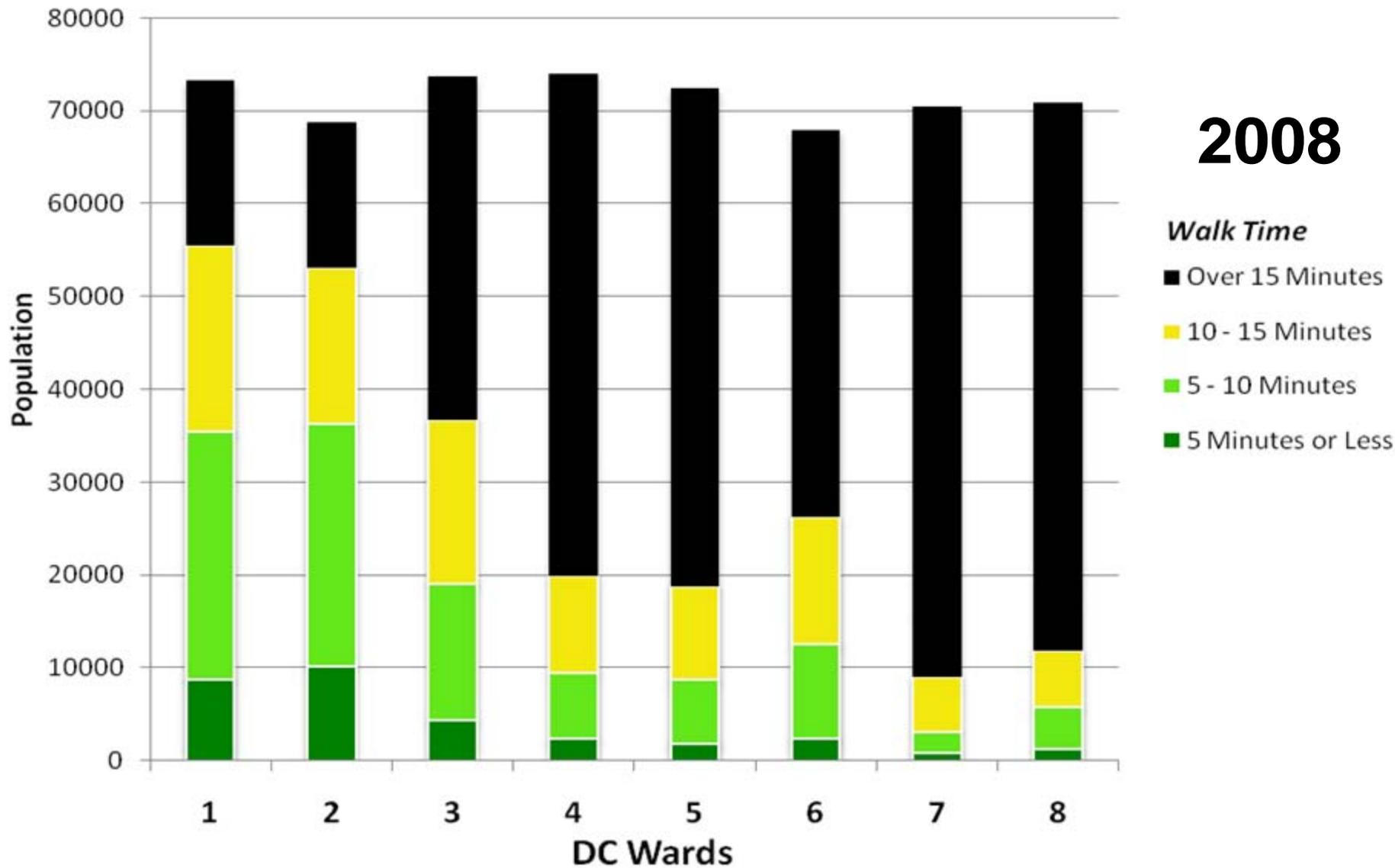
2000



Walk Time to Large/Chain Grocer



Walk Time to Large/Chain Grocer





- Results

- Southeast DC: lacked access...for over 20 years.
 - Closing Stores Slow to Return



Next Steps...

- How can we incorporate these analyses into the planning process?
 - *TIF*
 - *Retail Action Strategy*
- Future work
 - Incorporate all feasible modes (bike, drive, METRO train & bus)
 - Full Demographic Analysis
 - Food-Related Health Outcomes
 - Greater incidence of Diabetes, Obesity in areas with Low or No Access?
 - Make these tools more accessible to planners.



Thank you!