HUNTER

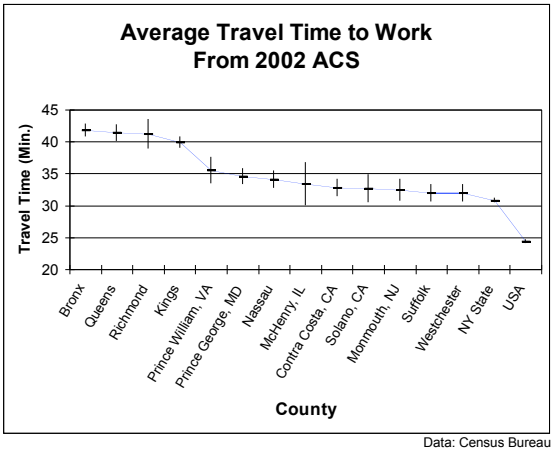
County Level Commute Time Mapping Using 2000 Census Data

Investigating long public transit commutes in New York, New Jersey and Pennsylvania

Chris Andrichak

Introduction

- New York City counties are four out of five top longest commutes in nation
- What is picture for region?
- Transit investment priorities?



Data: Census Bureau
Graph: Jonathan Peters

Preliminary Research

- GIS article search
- 30 GIS and transportation articles
- Five articles for in-depth review

The Connection between Public Transit and Employment: The Cases of Portland and Atlanta
Sanchez, 1999

A GIS-Based Advanced Traveler Information System
Mouskos and Greenfeld, 1999

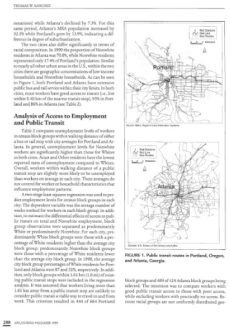
A GIS-Based Environmental Modeling System for Transportation Planners
Brown and Affum, 2002

Using GIS for Evaluation of Neighborhood Pedestrian Accessibility
Aultman-Hall, Roorda, Baetz, 1997

Using Desktop GIS for the Investigation of Accessibility by Public Transport: an Isochrone Approach
O'Sullivan, Morrison, Shearer, 2000

The Connection between Public Transit and Employment: The Cases of Portland and Atlanta

- Sanchez, Thomas W., Journal of the American Planning Association, 1999
  - Using census data to investigate a transportation related issue
  - Problems with spatially-approximate census data versus specific transit accessibility concerns



Research Connection

- In contact with Jonathan Peters, Assistant Professor of Finance, College of Staten Island, specializing in transportation
  - Larger question of where transit investments should be made
  - If Staten Island is fastest-growing borough, with longest commutes, why is there little transit investment?

Recent Census Findings

- 2003 American Community Survey transportation statistics
- New York State: longest average commute-to-work times

Recent Census Findings

- The highest percentages of workers commuting 90+ minutes to work ("extreme commutes") were found in:
  - New York State (4.3%)
  - New York City (5.6%)
  - Richmond County (11.8%)

Counties

	%
Richmond County, NY	11.8%
Orange County, NY	10.0%
Queens County, NY	7.1%
Bronx County, NY	6.9%
McHenry County, IL	6.7%
Nassau County, NY	6.6%
Kings County, NY	5.0%
Contra Costa County, CA	4.6%

Cities

	%
Baltimore city, MD	5.6%
New York city, NY	5.6%
Newark city, NJ	5.2%
Riverside city, CA	5.0%
Los Angeles city, CA	3.0%
Philadelphia city, PA	2.9%
Chicago city, IL	2.5%
Washington city, DC	2.2%

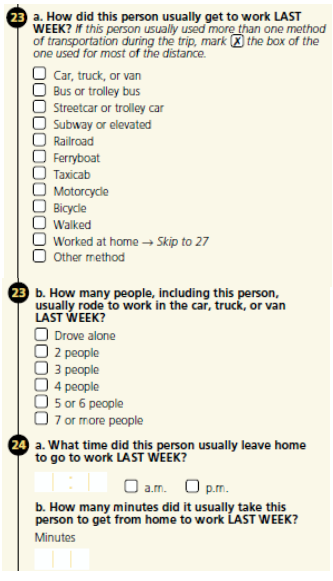
States

	%
New York	4.3%
New Jersey	4.0%
Maryland	3.2%
California	2.8%
Washington	2.7%
Virginia	2.3%
Georgia	2.3%
Illinois	2.2%

Census Bureau

Census Data

- Origin: Census 2000 long form, questions 23-24
- Data: Census 2000 Summary File P-3
- Tabulated by Jonathan Peters, Department of Business, The College of Staten Island



23 a. How did this person usually get to work LAST WEEK? *If this person usually used more than one method of transportation during the trip, mark (X) the box of the one used for most of the distance.*

- ☐ Car, truck, or van
- ☐ Bus or trolley bus
- ☐ Streetcar or trolley car
- ☐ Subway or elevated
- ☐ Railroad
- ☐ Ferryboat
- ☐ Taxicab
- ☐ Motorcycle
- ☐ Bicycle
- ☐ Walked
- ☐ Worked at home → *Skip to 27*
- ☐ Other method

23 b. How many people, including this person, usually rode to work in the car, truck, or van LAST WEEK?

- ☐ Drove alone
- ☐ 2 people
- ☐ 3 people
- ☐ 4 people
- ☐ 5 or 6 people
- ☐ 7 or more people

24 a. What time did this person usually leave home to go to work LAST WEEK?

: ☐ a.m. ☐ p.m.

b. How many minutes did it usually take this person to get from home to work LAST WEEK?

Minutes

Census Bureau

Mapping the Data

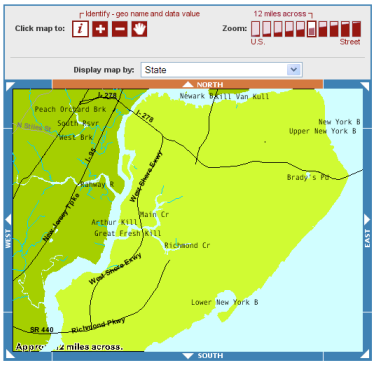
- Visual representation for easy spatial comparison
- Better understand regional commute patterns

- See differences between dispersed suburban and central metropolitan commuting
- Where are transit investments needed?

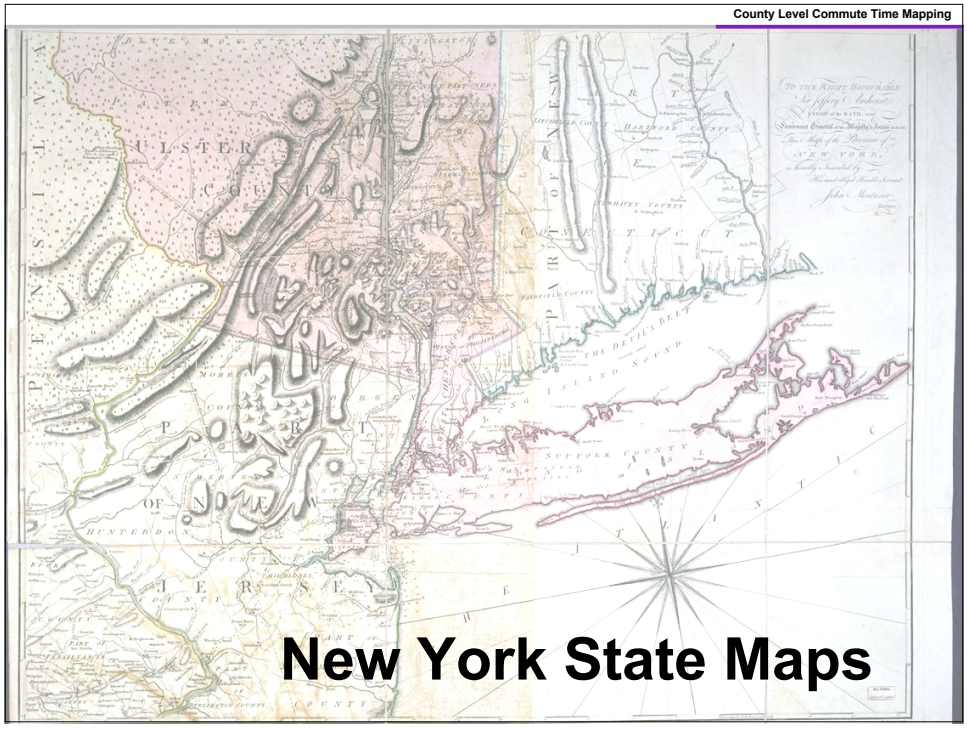
Issues

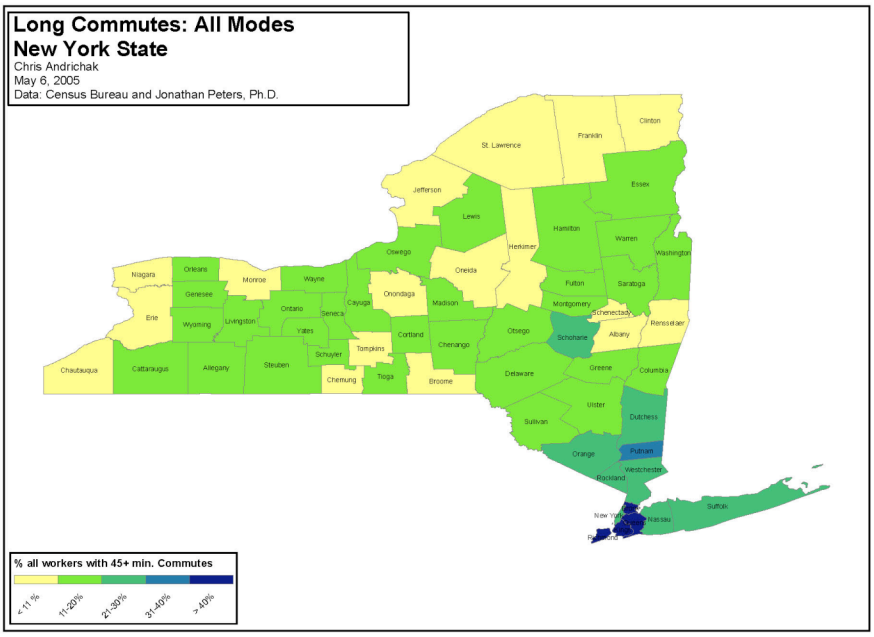
- Census Bureau method for finding averages
- Mapping class intervals
- Data transfer
- Drawing conclusions from two-dimensional data

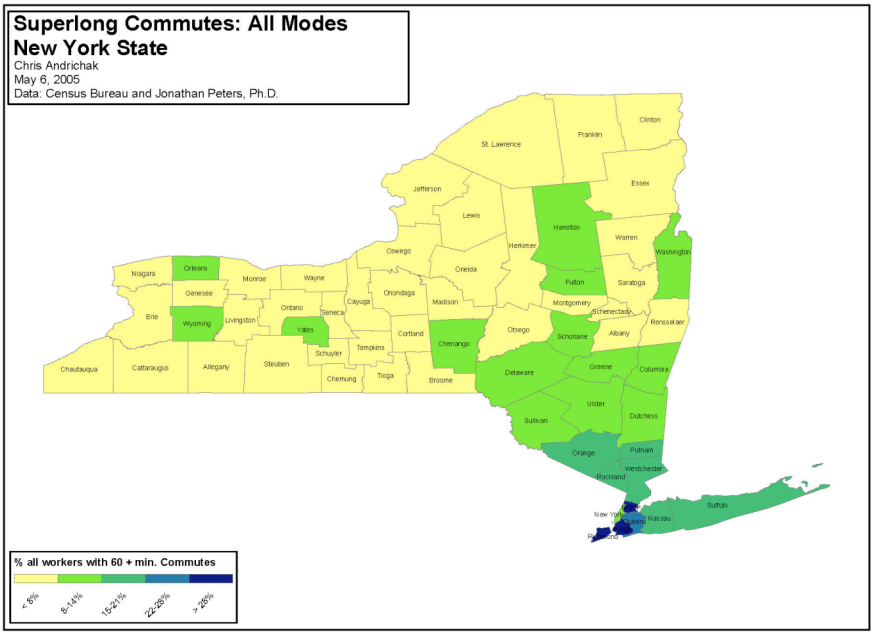
Mapping Components

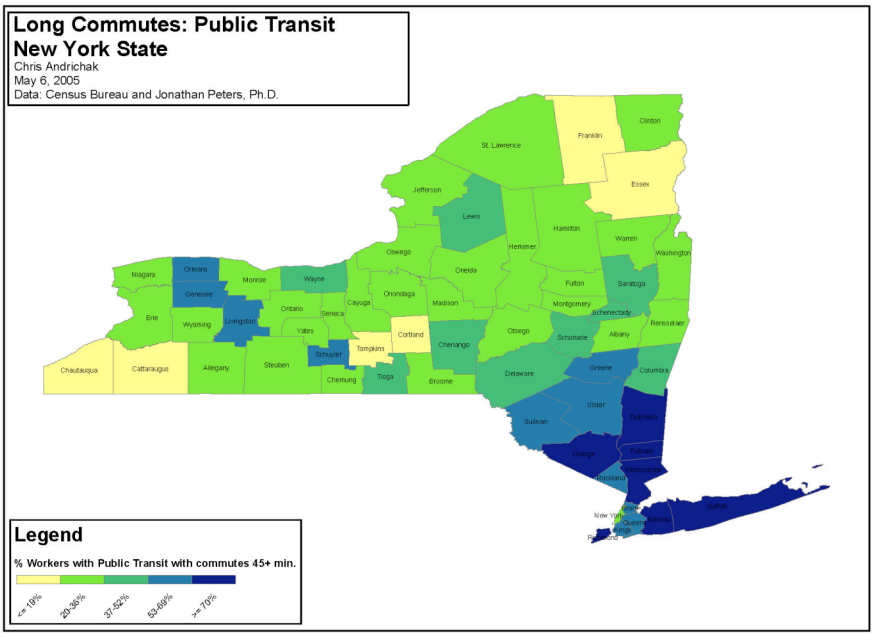


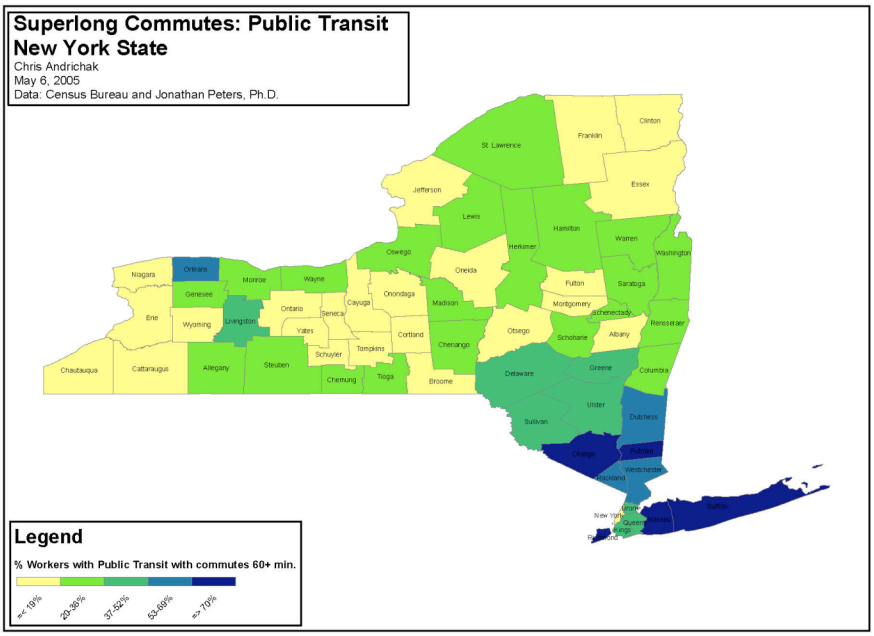
- ArcView 9
- Microsoft Excel
- Census data
- 2000 Census County/Equivalent Area ArcView shape files




Long Commutes: All Modes
New York State
Chris Andrichak
May 6, 2005
Data: Census Bureau and Jonathan Peters, Ph.D.
% all workers with 45+ min. Commutes
< 11 %
11-20%
21-30%
31-40%
> 40%


Superlong Commutes: All Modes
New York State
Chris Andrichak
May 6, 2005
Data: Census Bureau and Jonathan Peters, Ph.D.
% all workers with 60 + min. Commutes
< 6%
6-14%
15-21%
22-28%
> 28%


Long Commutes: Public Transit
New York State
Chris Andrichak
May 6, 2005
Data: Census Bureau and Jonathan Peters, Ph.D.
Legend
% Workers with Public Transit with commutes 45+ min.
<= 19%
20-36%
37-52%
53-69%
>= 70%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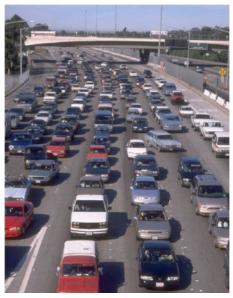
NYS Patterns – All Modes



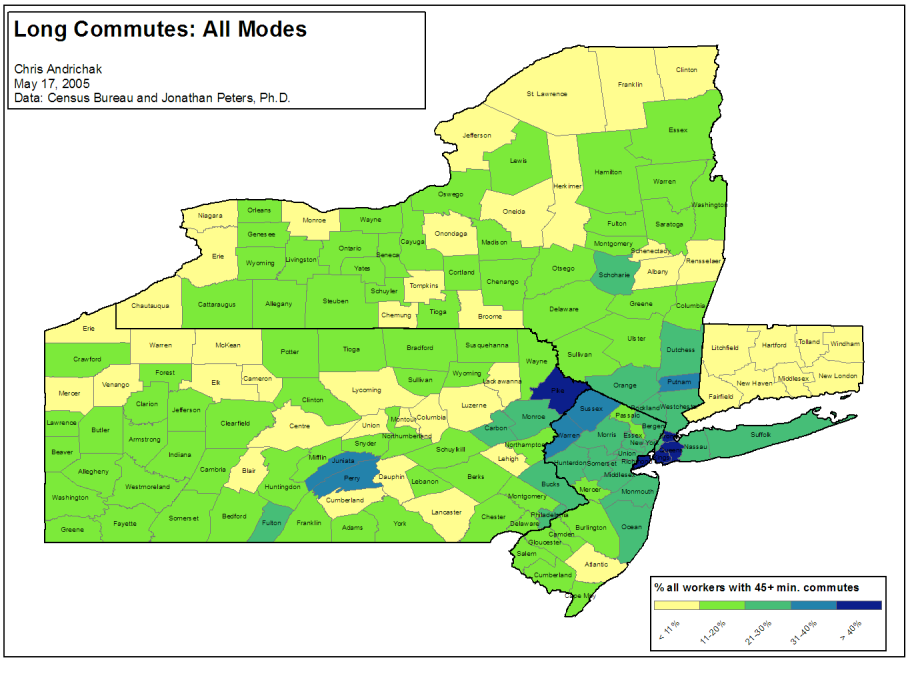
- 45+ minute commutes are common (11-20% of workers) throughout the state
- 60+ minute commutes are mostly downstate

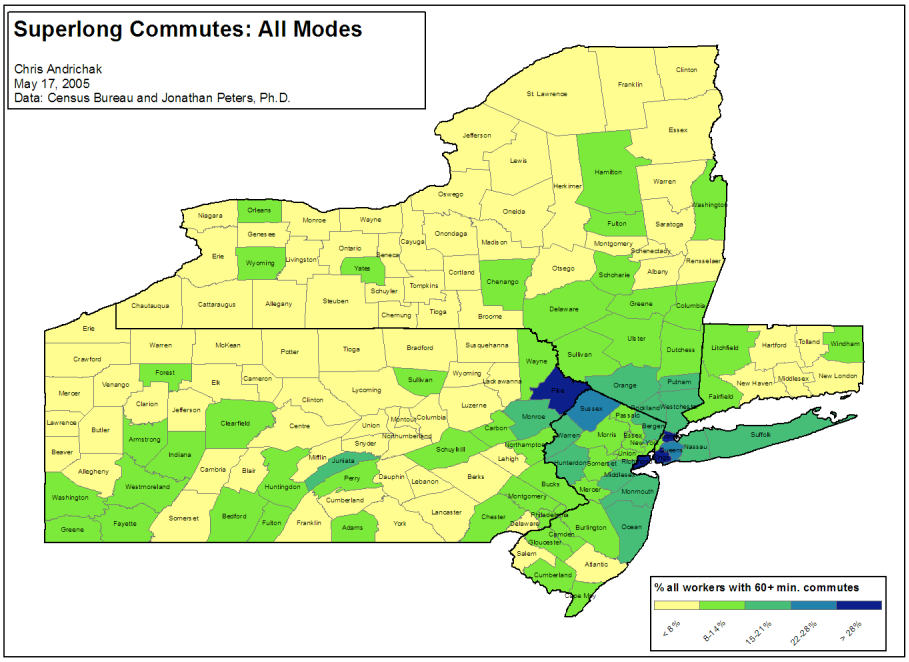
NYS Patterns – Public Transit

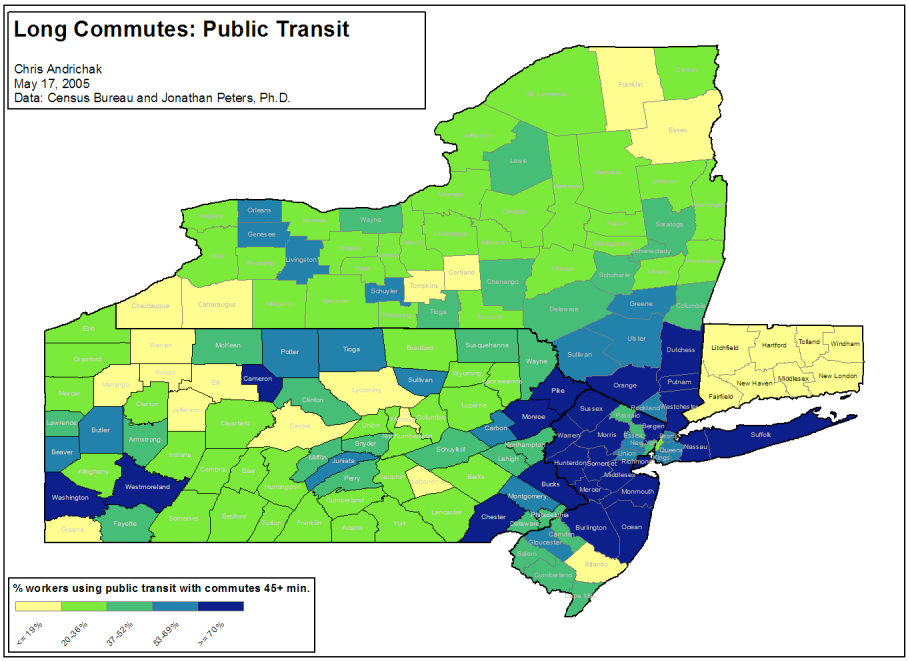
- Almost 50%+ of downstate workers have 45+ minute commutes
- At 60+ minutes, pattern of commuting to center (probably regional rail)

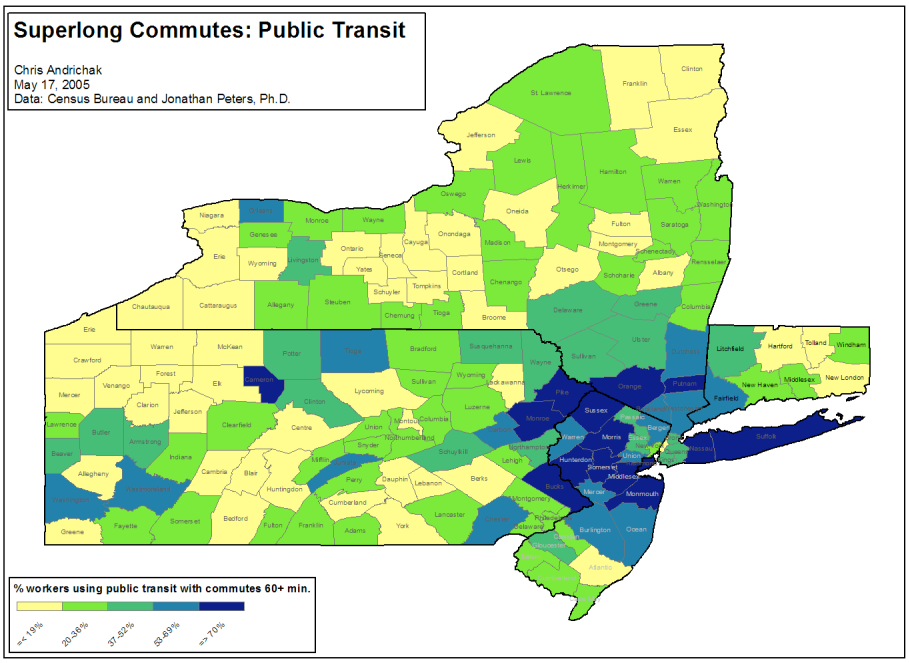
Multistate and Metropolitan Area Maps

County Level Commute Time Mapping




Superlong Commutes: All Modes
Chris Andrichak
May 17, 2005
Data: Census Bureau and Jonathan Peters, Ph.D.
% all workers with 60+ min. commutes
< 8%
8-14%
15-21%
22-28%
> 28%


Long Commutes: Public Transit
Chris Andrichak
May 17, 2005
Data: Census Bureau and Jonathan Peters, Ph.D.
% workers using public transit with commutes 45+ min.
<= 19%
20-36%
37-52%
53-69%
>= 70%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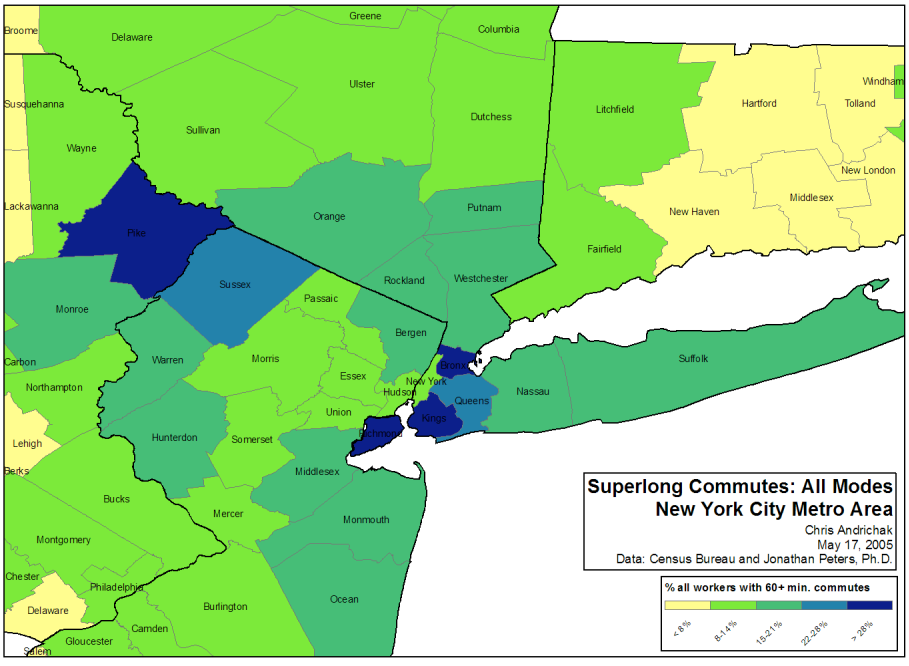
=> 70%


Broome
Delaware
Greene
Columbia
Ulster
Susquehanna
Sullivan
Dutchess
Litchfield
Hartford
Windham
Tolland
Wayne
New London
Lackawanna
Orange
Putnam
Middlesex
New Haven
Pike
Fairfield
Sussex
Rockland
Westchester
Monroe
Passaic
Bergen
Carbon
Warren
Morris
Bronx
Suffolk
Essex
New York
Hudson
Nassau
Northampton
Queens
Union
Kings
Lehigh
Hunterdon
Somerset
Richmond
Middlesex
Berks
Bucks
Mercer
Monmouth
Montgomery
Chester
Philadelphia
Burlington
Ocean
Delaware
Camden
Gloucester
Salem
Superlong Commutes: All Modes
New York City Metro Area
Chris Andrichak
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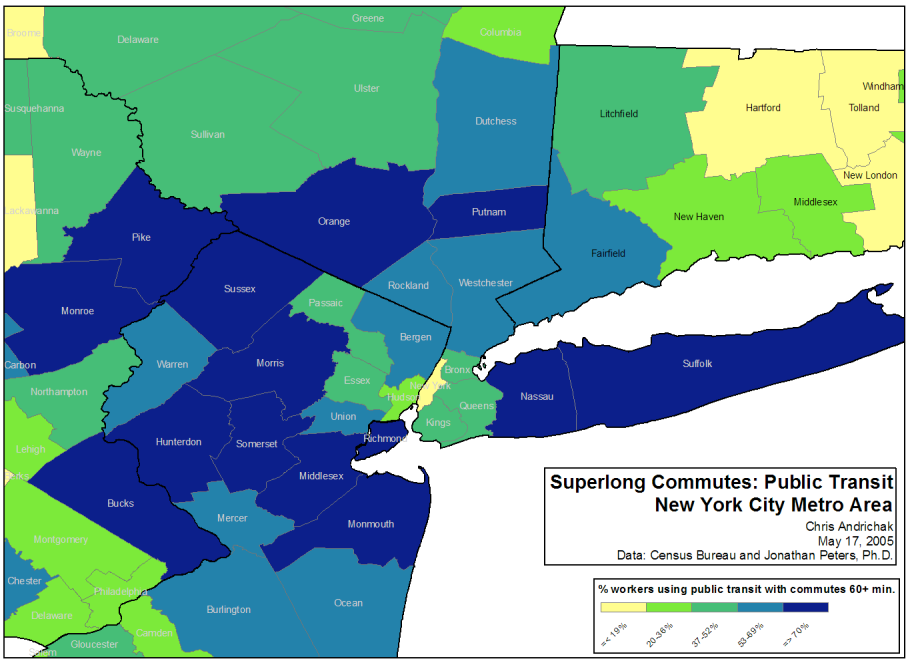
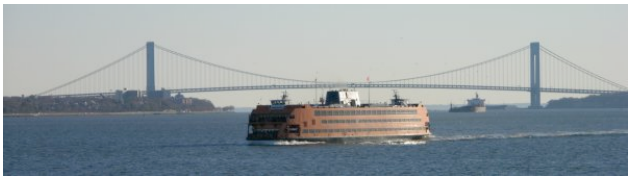
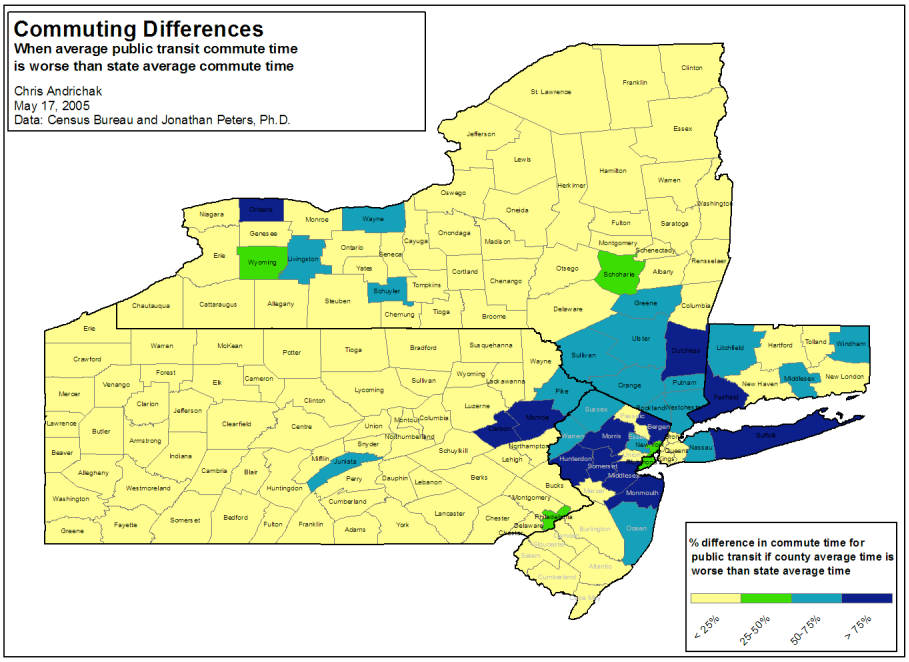
22-28%
> 28%

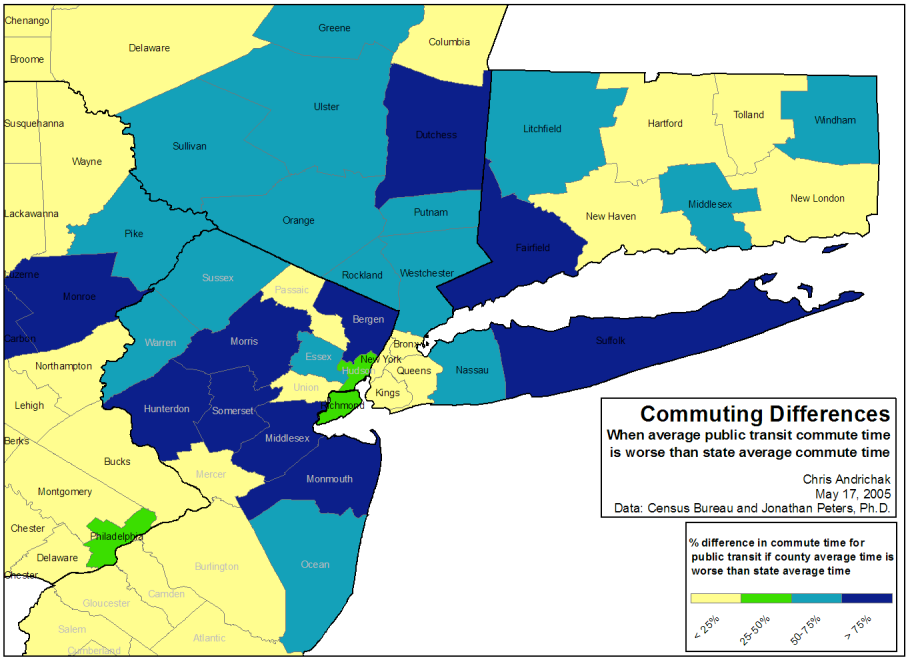


Regional Patterns

- Transit commute times – dominance of the core
  - Fixed travel patterns by the system
- Overall commute times – multiple centers? non-core commuting?




Commuting Differences
When average public transit commute time is worse than state average commute time
Chris Andrichak
May 17, 2005
Data: Census Bureau and Jonathan Peters, Ph.D.
% difference in commute time for public transit if county average time is worse than state average time
< 25%
25-50%
50-75%
> 75%


Chenango
Broome
Delaware
Greene
Columbia
Susquehanna
Wayne
Sullivan
Ulster
Dutchess
Litchfield
Hartford
Tolland
Windham
Lackawanna
Pike
Orange
Putnam
New Haven
Middlesex
New London
Fairfield
Luzerne
Monroe
Sussex
Rockland
Westchester
Passaic
Bergen
Carbon
Warren
Morris
Essex
Bronx
New York
Hudson
Queens
Nassau
Suffolk
Northampton
Union
Kings
Lehigh
Hunterdon
Somerset
Richmond
Berks
Middlesex
Bucks
Mercer
Monmouth
Montgomery
Chester
Philadelphia
Delaware
Burlington
Ocean
Camden
Gloucester
Salem
Atlantic
Cumberland
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May 17, 2005
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% difference in commute time for public transit if county average time is worse than state average time
< 25%
25-50%
50-75%
> 75%

Conclusion

- Long commute times are a “feature” of this metropolitan area – can anything be done?
- Transportation factors
  - Fixed transit network
  - System expansion?
- Non-transportation factors
  - Regional centers vs regional core
  - Housing preferences and prices
  - Jobs location and balance

Future Work

- Commute mapping for other states, metro areas
- Commute mapping at census tract levels