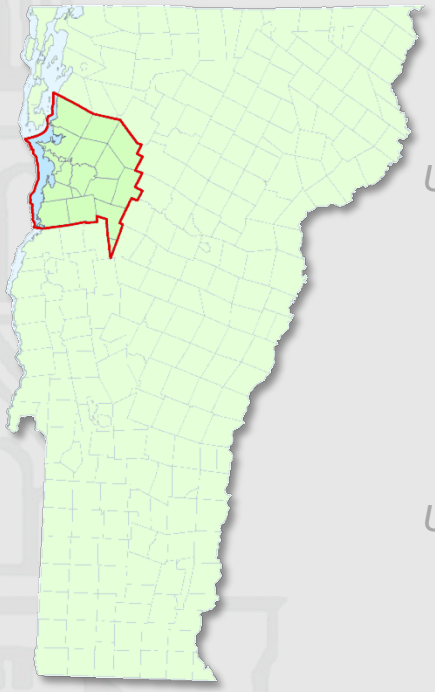
Measuring Livability in Small Urban and Rural Communities with Disaggregate Data

A Case Study of Chittenden County, Vermont



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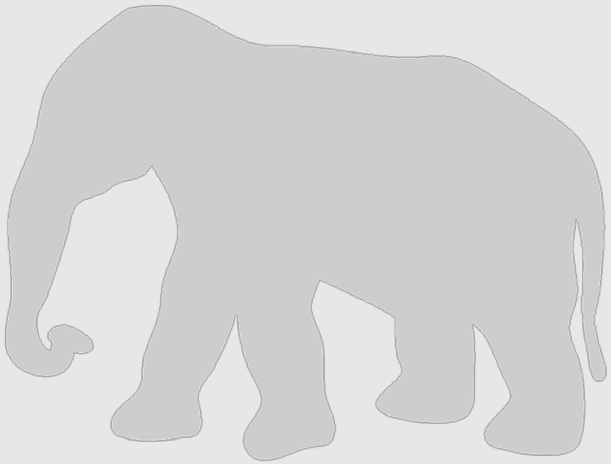
How do we deal with what to include versus what data are available and how to appropriately "combine" that data?

(Elephant in the room…)

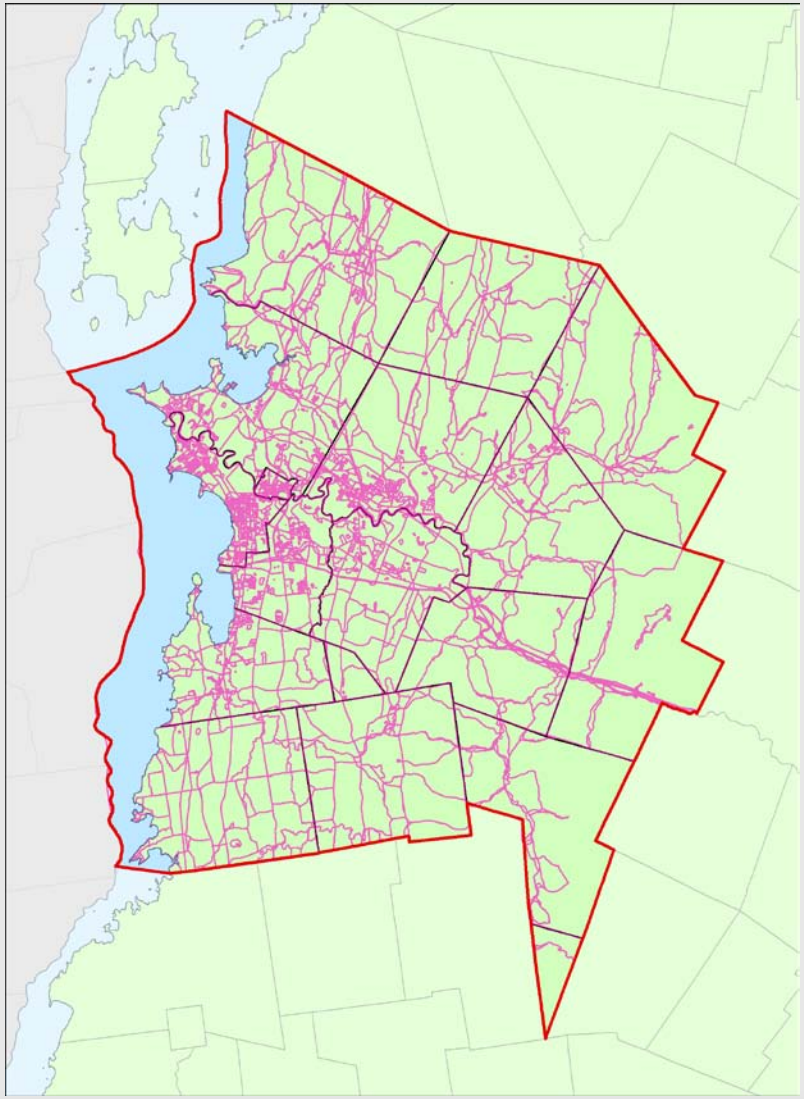


Importance of Geographic Scale

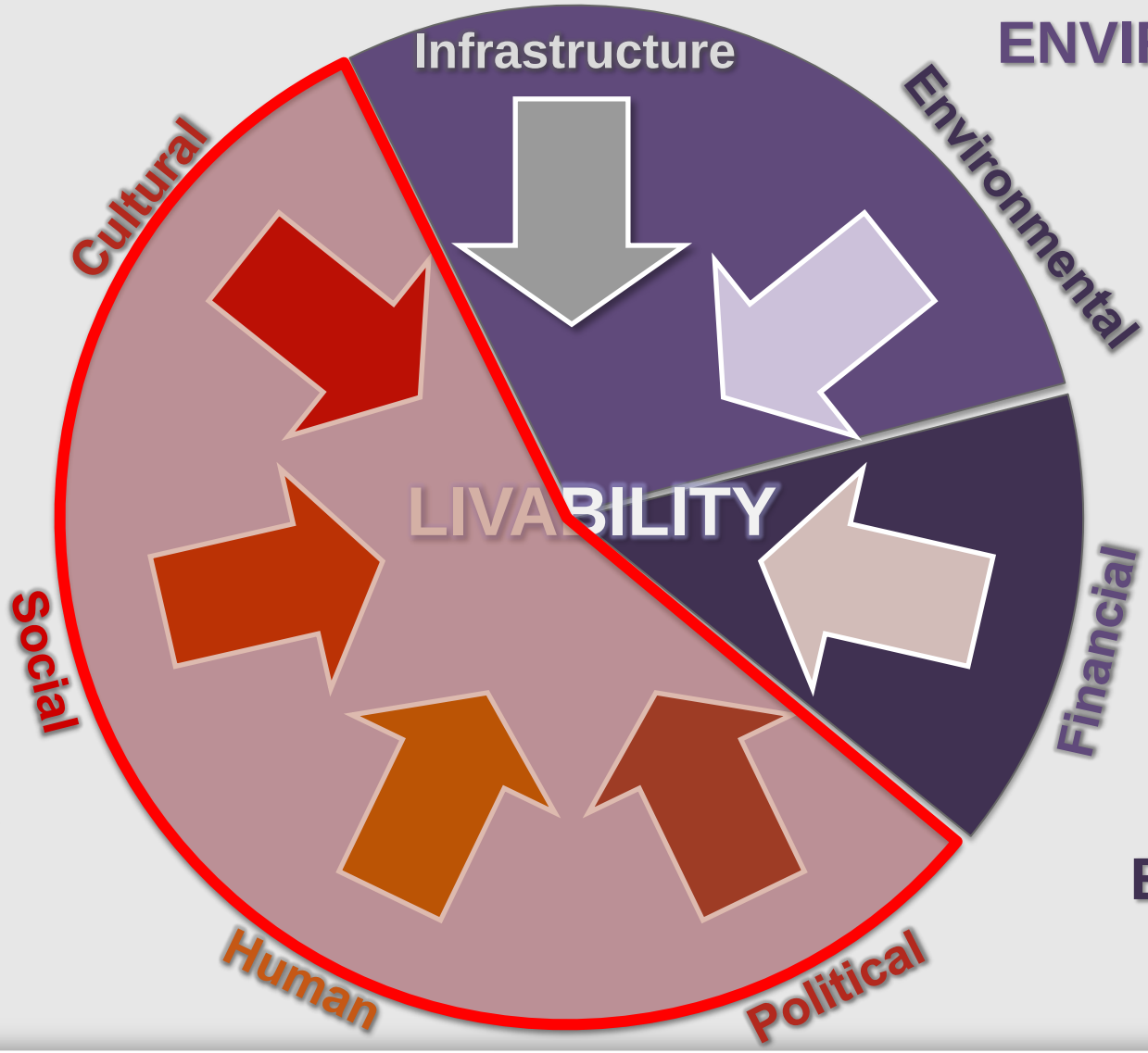
1. **Boundaries**
2. **Units**

Aggregate scale induces unequal representation

i.e. towns, block groups, blocks



Seven Capitals for Livable Communities



Seven Capitals for Livable Communities

1. **Infrastructure (built capital)**
    a. Sidewalks
    b. Roads
    c. Buildings
    d. Land use and land cover

2. **Environmental**
    a. Land cover
    b. Parks and recreation
    c. Green space
    d. Nature trails, bike trails, shared-use paths
    e. Conservation organizations
    f. Ecosystems (water quality, fragile habitats, etc.)

Seven Capitals for Livable Communities

3. **Political**
    a. Voting districts, voting turnout
    b. Satisfaction with elected officials
    c. Allocation and utilization of funds

4. **Financial**
    a. Tax revenue/budget
    b. Household income
    c. Property value
    d. Businesses, jobs, employment
    e. Amount of sales

Seven Capitals for Livable Communities

5. **Human**
    a. Schools and education
    b. Job training centers
    c. Mortality rates, median age, BMI, “health indicators”
    d. “Top Ten” lists

6. **Social**
    a. Connectedness, trust, “knowing your neighbor”
    b. Supplementation by “electronic social networks”
    c. Utilization of park and rides
    d. Community events

Seven Capitals for Livable Communities

5. **Cultural**
    a. Churches
    b. Race and ethnicity (diversity ≠ livability)
    c. Proximity of generations with a family
    d. Transfer of knowledge
    e. Events/fairs/parades
    f. Celebrating the history of a town (preservation, historical register, etc.)
    g. Designated “villages” and “downtowns”

"TEN BEST"

CNN Best Places to Live[1]
America's Best Small Towns

1 Louisville, CO
2 Milton, MA
3 Solon, OH
4 Leesburg, VA
5 Papillion, NE
6 Hanover, NH
7 Liberty, MO
8 Middleton, WI
9 Mukilteo, WA
10 Chanhassen, MN

RelocateAmerica.com[2]
Top Overall Places to Live

1 Austin, TX
2 Grand Rapids, MI
3 Boulder, CO
4 Raleigh, NC
5 Dallas, TX
6 Greenville, SC
7 Augusta, GA
8 Boise, ID
9 Omaha, NE
10 Oklahoma City, OK

[1](http://money.cnn.com/magazines/moneymag/bplive/2011/)

[2](http://www.relocateamerica.com/top-100-cities/)

"TEN BEST"

Parenting.com [3]
Best Cities for Families

1 Washington, DC
2 Austin, TX
3 Boston, MA
4 Minneapolis, MN
5 Des Moines, IA
6 Madison, WI
7 Honolulu, HI
8 Omaha, NE
9 Seattle, WA
10 Louisville, KY

Sperling's Best Places[4]
Best Cities to Relocate to

1 Charlottesville, VA
2 Santa Fe, NM
3 San Luis Obispo, CA
4 Santa Barbara, CA
5 Honolulu, HI
6 Ann Arbor, MI
7 Atlanta, GA
8 Asheville, NC
9 Reno, NV
10 Corvallis, OR

[3] (http://www.parenting.com/article/2011-best-cities-to-live)

[4] (http://www.bestplaces.net/docs/studies/bestplaces05.aspx)

"TEN BEST"

Men's Health[5]
Best Cities for Men

1 Madison, WI
2 Fargo, ND
3 Plano, TX
4 Burlington, VT
5 San Jose, CA
6 Lincoln, NE
7 Austin, TX
8 Aurora, CO
9 Virginia Beach, VA
10 Seattle, WA

EIU Liveability Ranking[6]
Liveability Report for the US

1 Pittsburgh, PA
2 Honolulu, HI
3 Washington, D.C.
4 Chicago, IL
5 Atlanta, GA
6 Miami, FL
7 Detroit, MI
8 Boston, MA
9 Seattle, WA
10 Minneapolis, MN

[5] (http://www.menshealth.com/health/best-cities-men-2011/page/2)

[6] (http://www.eiu.com/site_info.asp?info_name=The_Global_Liveability_Report&rf=0)

"TEN BEST"

Gallup-Healthways Well Being Index[7]

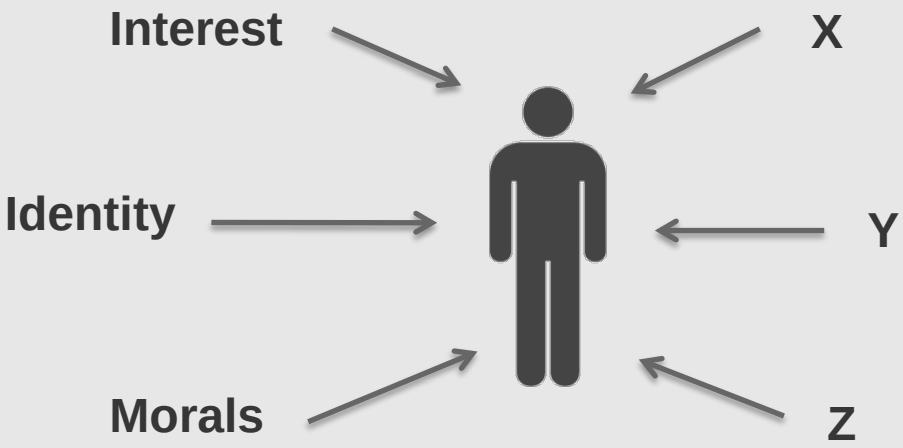
Large Cities	*Mid-Sized Cities*	*Small Cities*
1 Washington, DC	1 Boulder, CO	1 Burlington, VT
2 Austin, TX	2 Lincoln, NE	2 Olympia, WA
3 San Jose, CA	3 Fort Collins, CO	3 Bellingham, WA
4 Seattle, WA	4 Provo, UT	4 Bremerton, WA
5 San Francisco, CA	5 Honolulu, HI	5 Topeka, KS
6 Minneapolis, MN	6 Madison, WI	6 Barnstable Town, MA
7 Boston, MA	7 Cedar Rapids, IA	7 Charlottesville, VA
8 San Diego, CA	8 Gainesville, FL	8 Kennewick, WA
9 Raleigh, NC	9 Bridgeport, CT	9 Medford, OR
10 Hartford, CT	10 Peoria, IL	10 Amarillo, TX

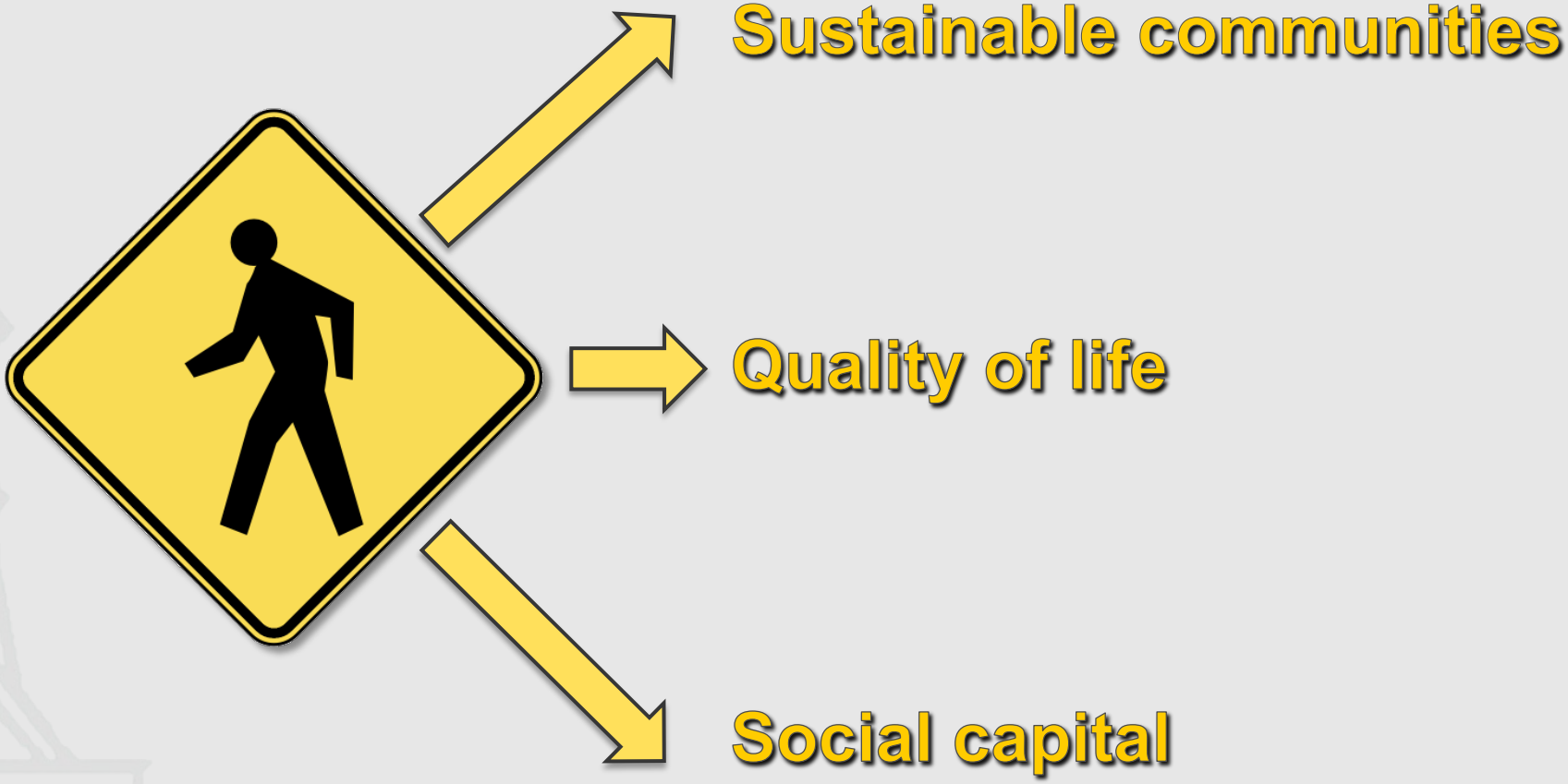
[7] (http://www.well-beingindex.com/default.asp)

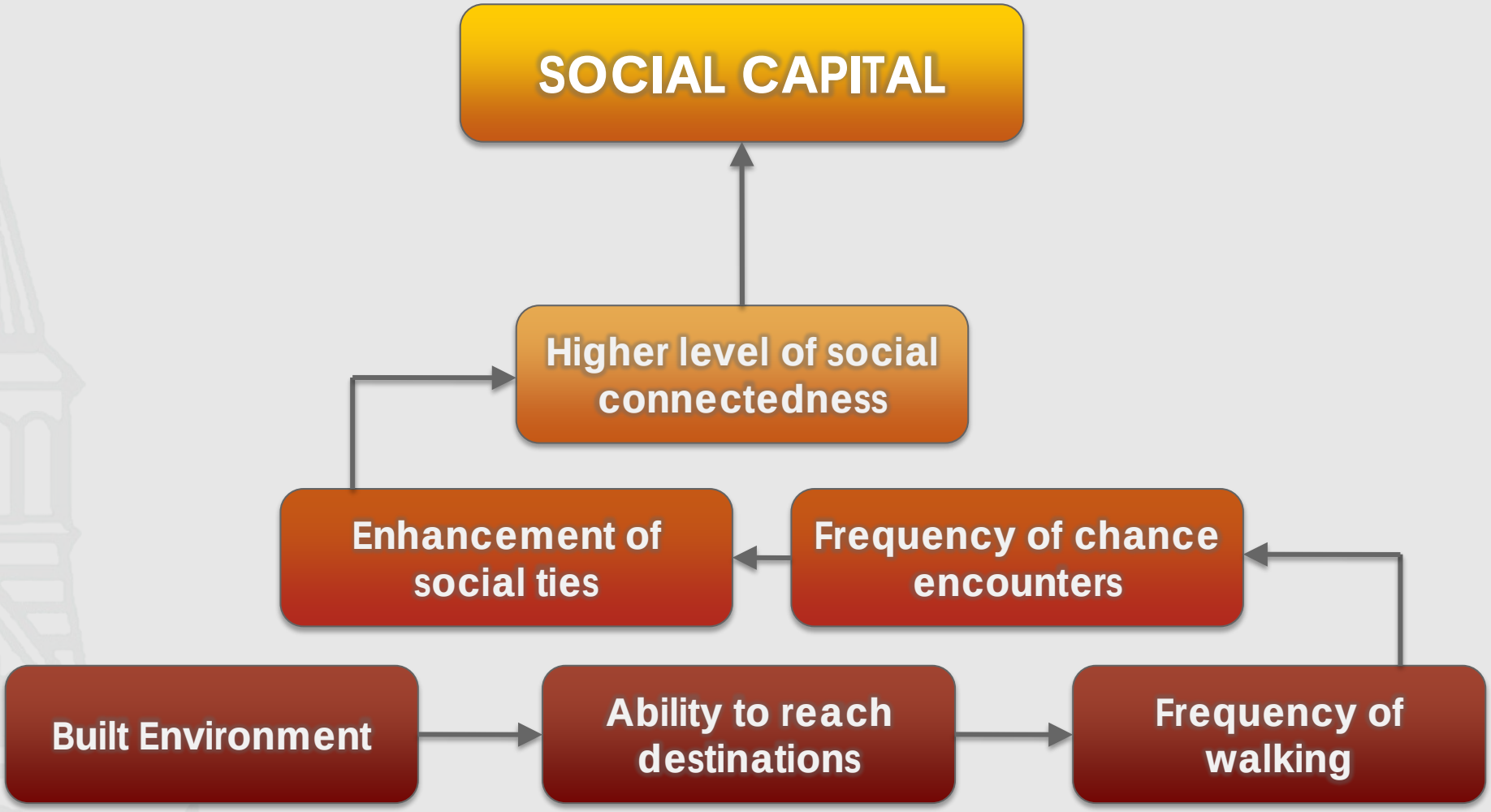
What is livable?

vs.

What do people think is livable?



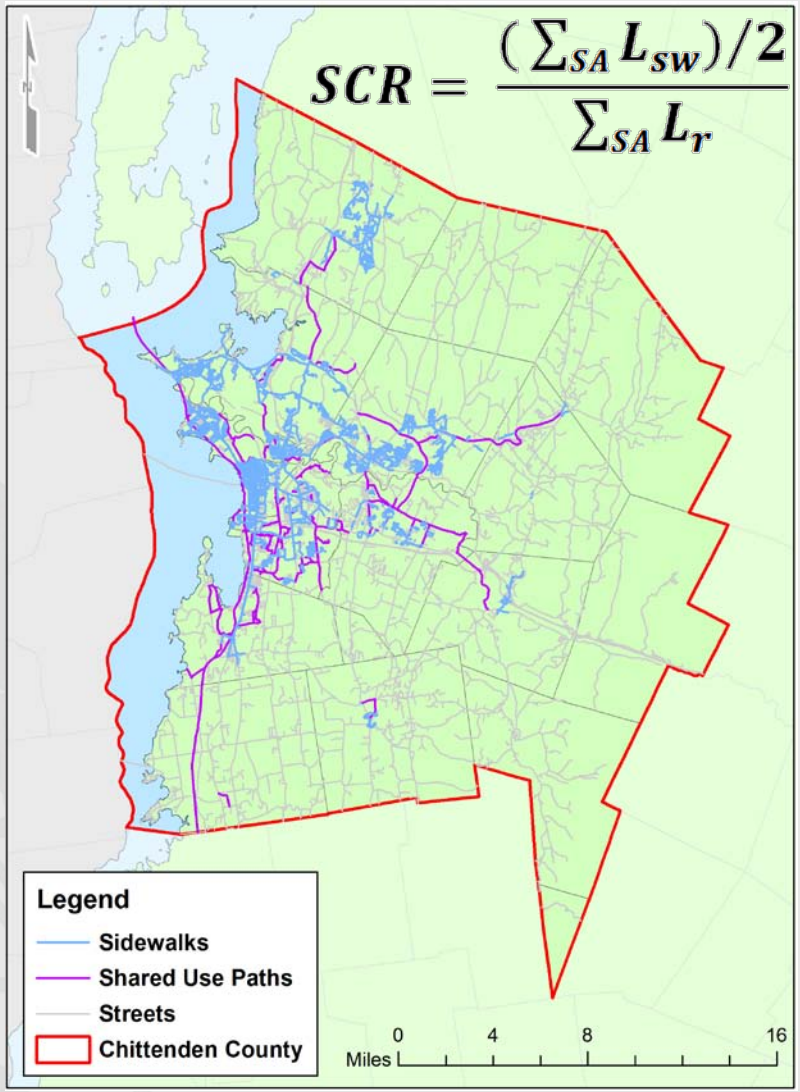

Sustainable communities
Quality of life
Social capital

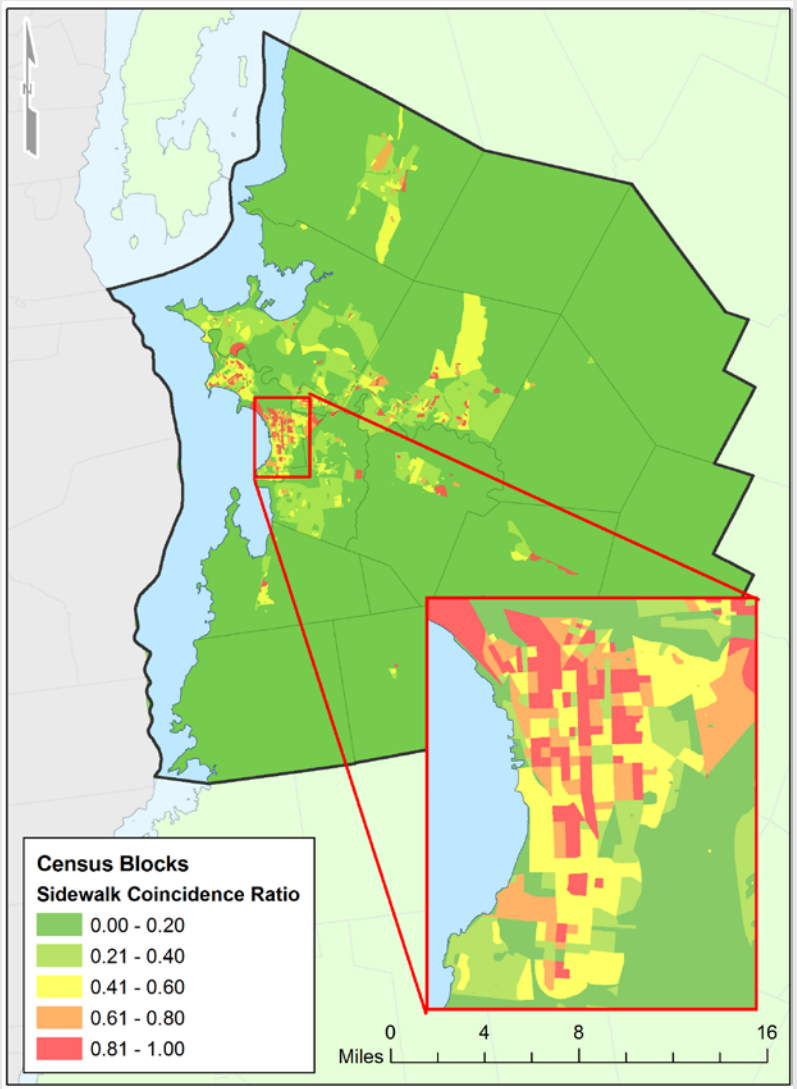

SOCIAL CAPITAL
Higher level of social connectedness
Enhancement of social ties
Frequency of chance encounters
Built Environment
Ability to reach destinations
Frequency of walking

USING DISAGGREGATE DATA

Sidewalks

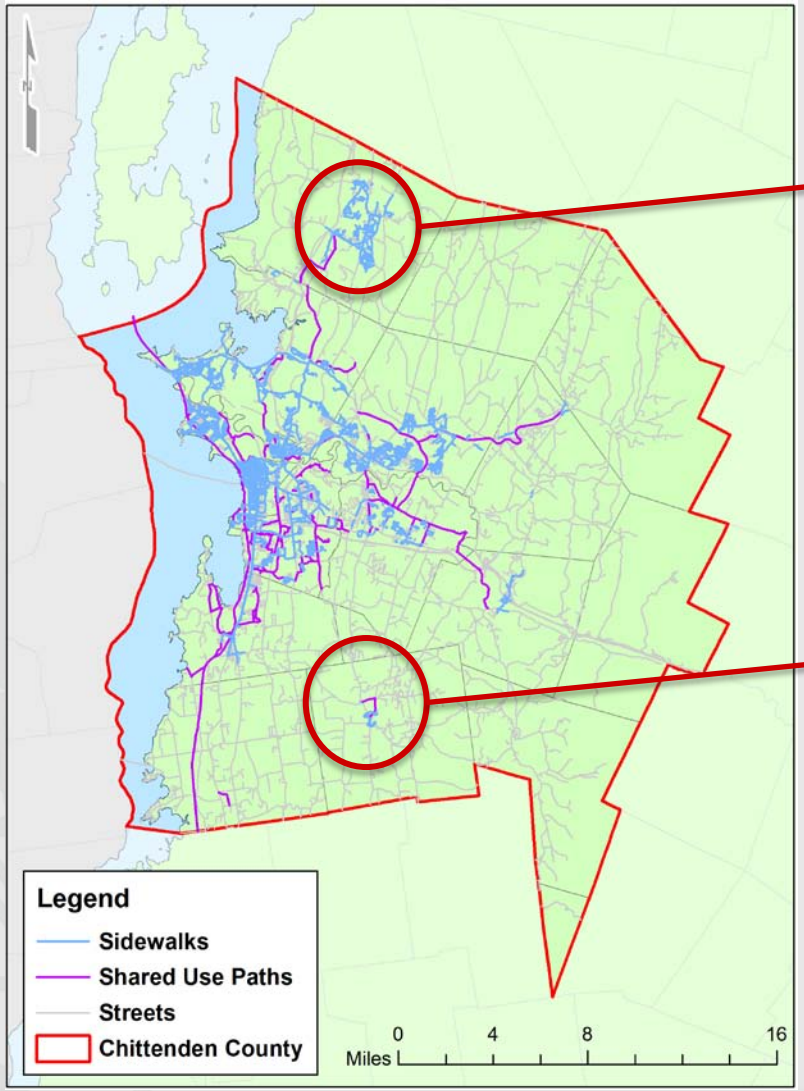
$$SCR = \frac{(\sum_{SA} L_{sw})/2}{\sum_{SA} L_r}$$

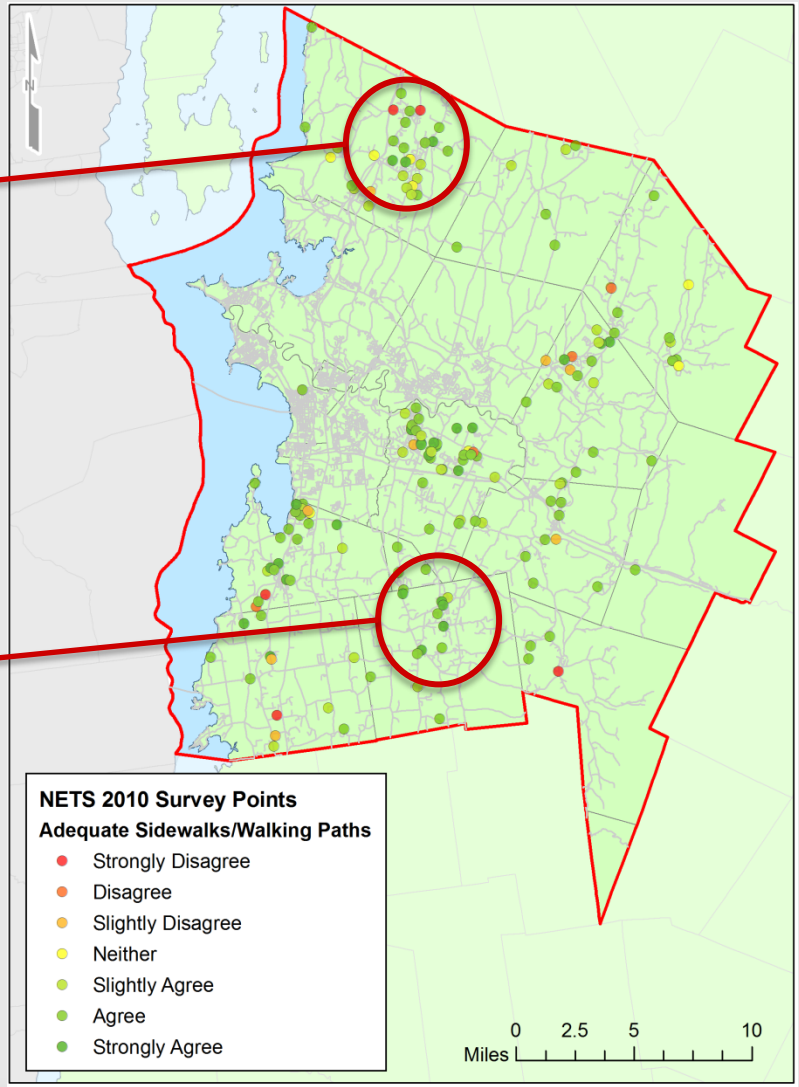




USING DISAGGREGATE DATA

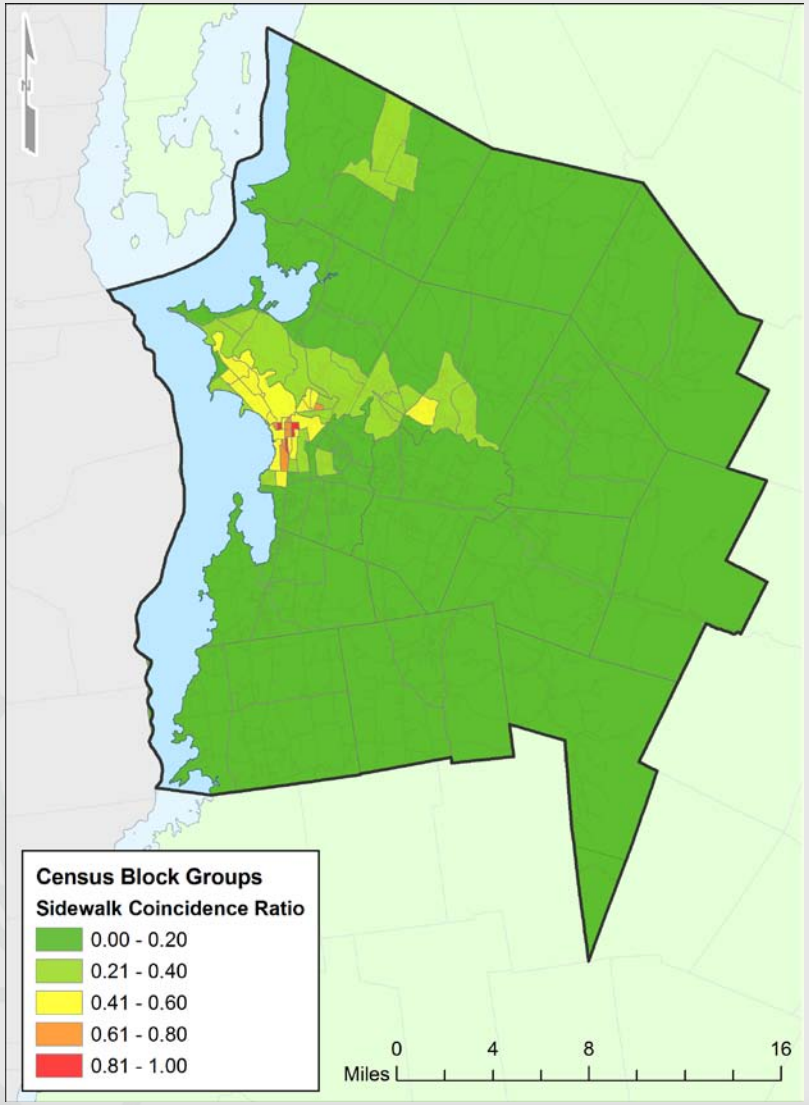
Sidewalks

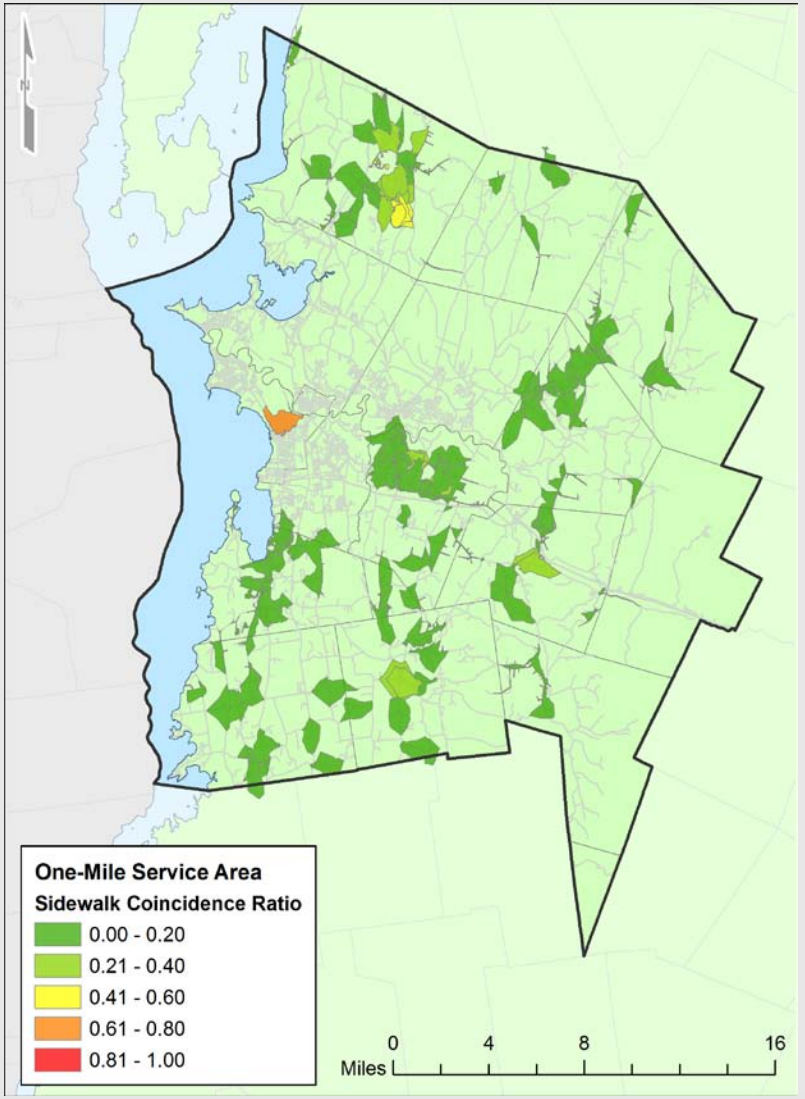




USING DISAGGREGATE DATA

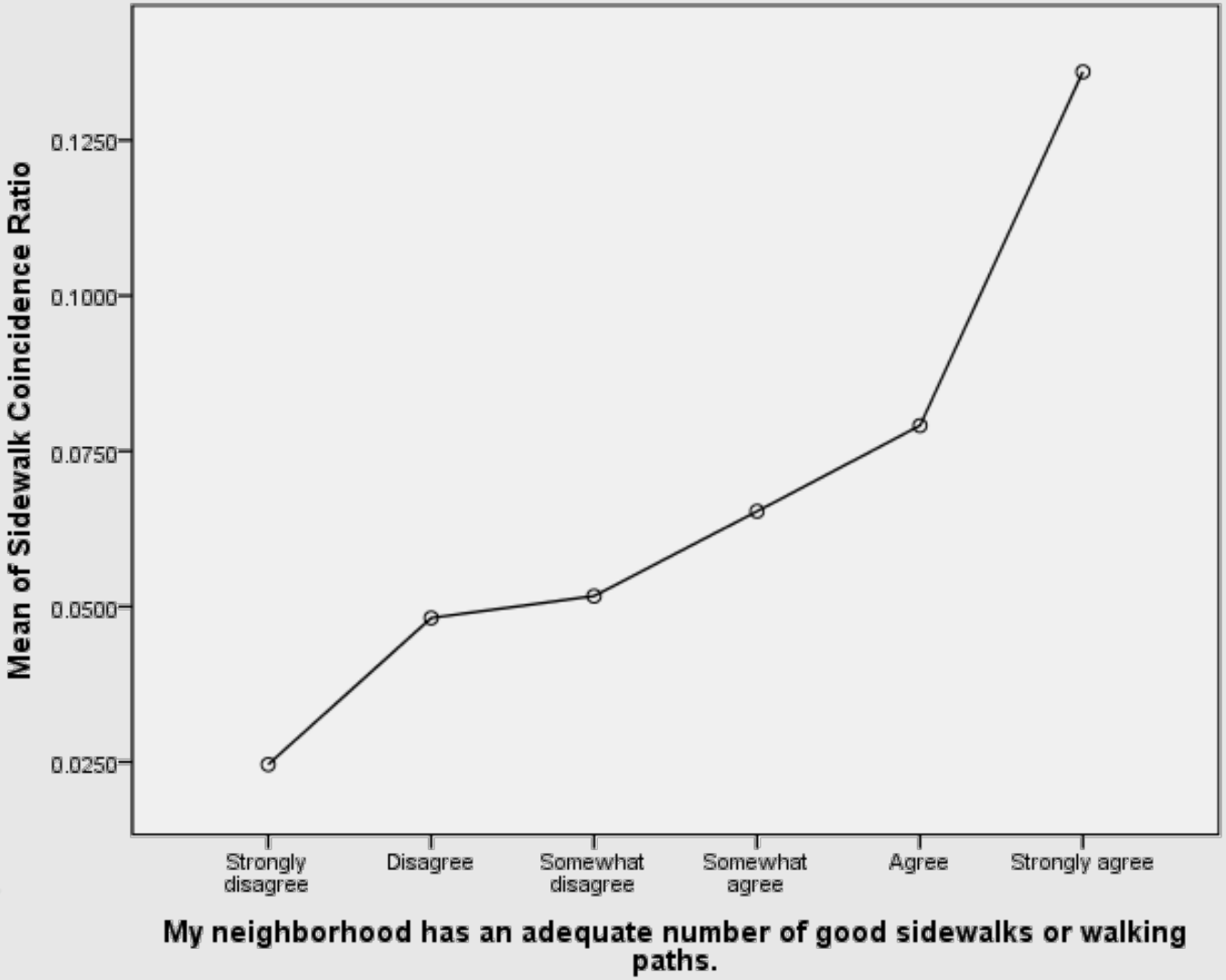
Sidewalks



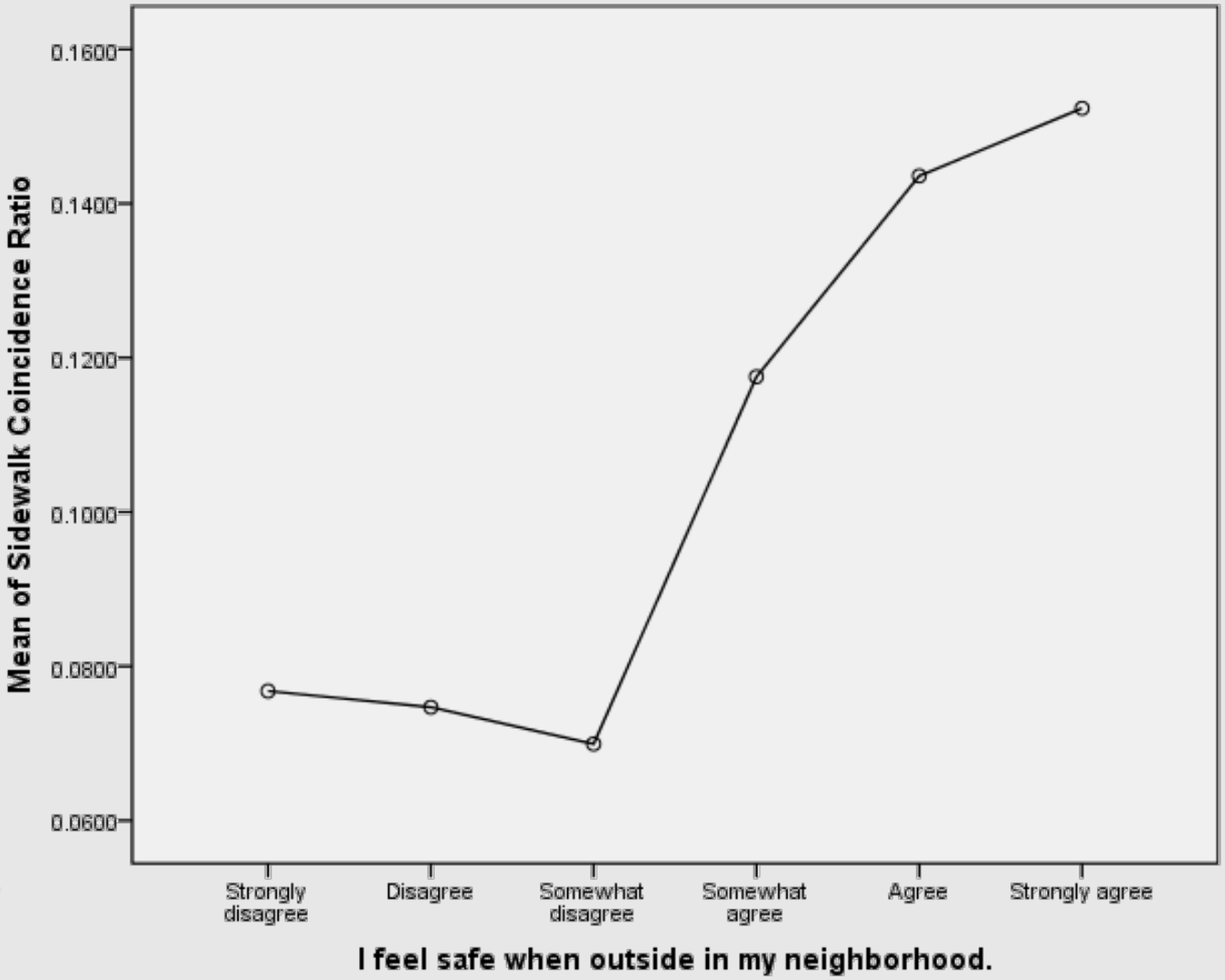


USING DISAGGREGATE DATA

More sidewalks = better perception of sidewalk infrastructure

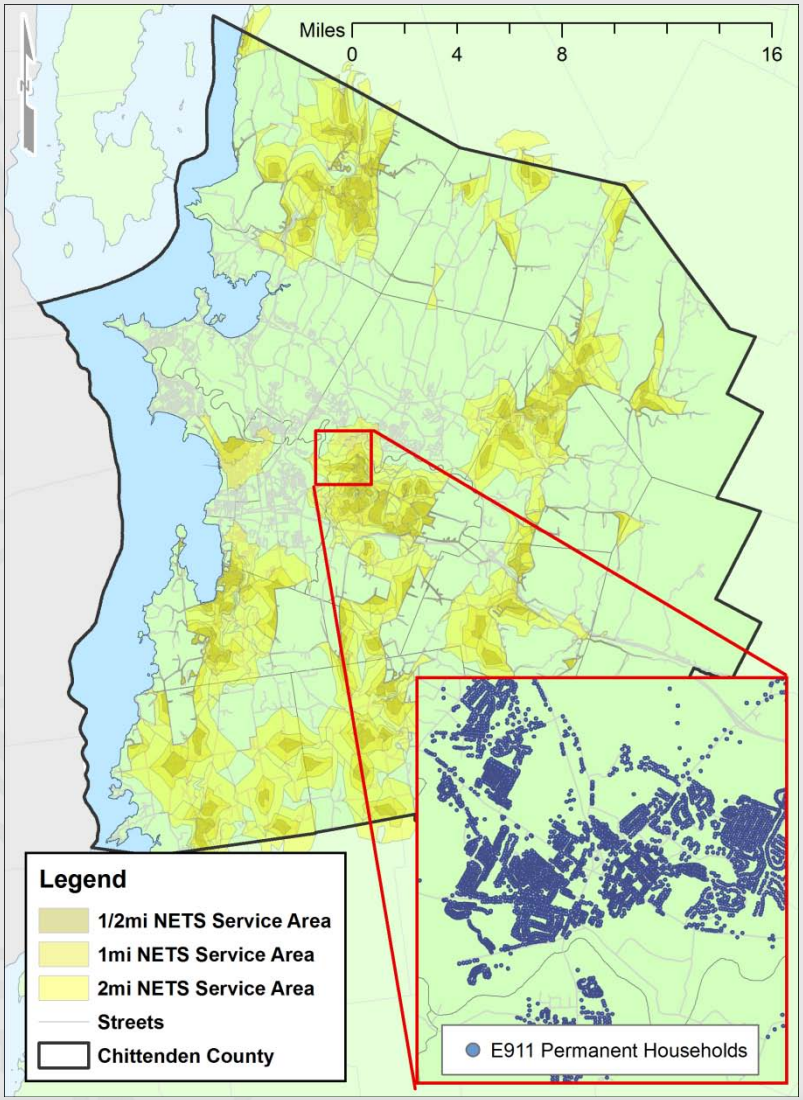


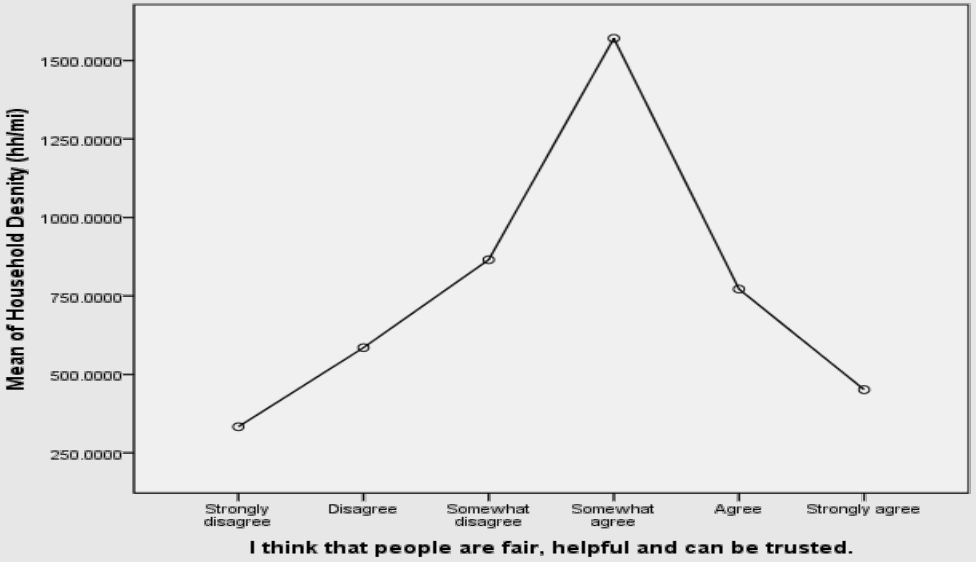
USING DISAGGREGATE DATA

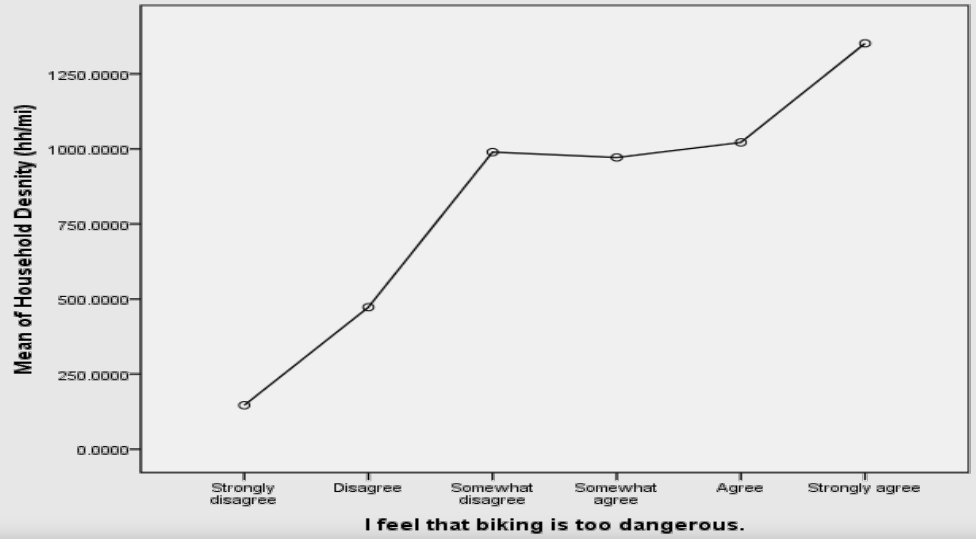


USING DISAGGREGATE DATA

Households







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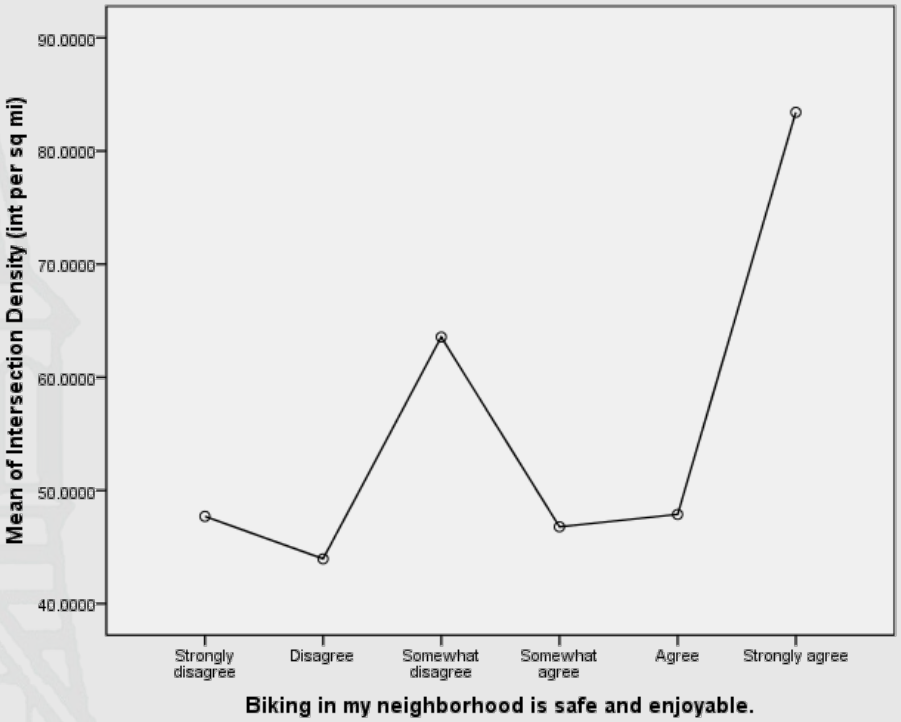
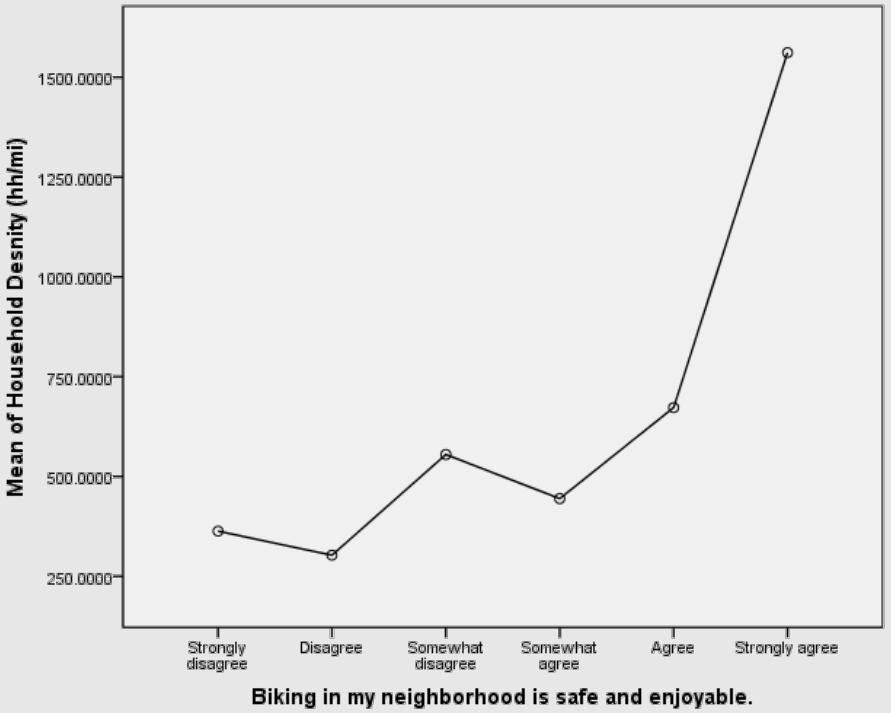
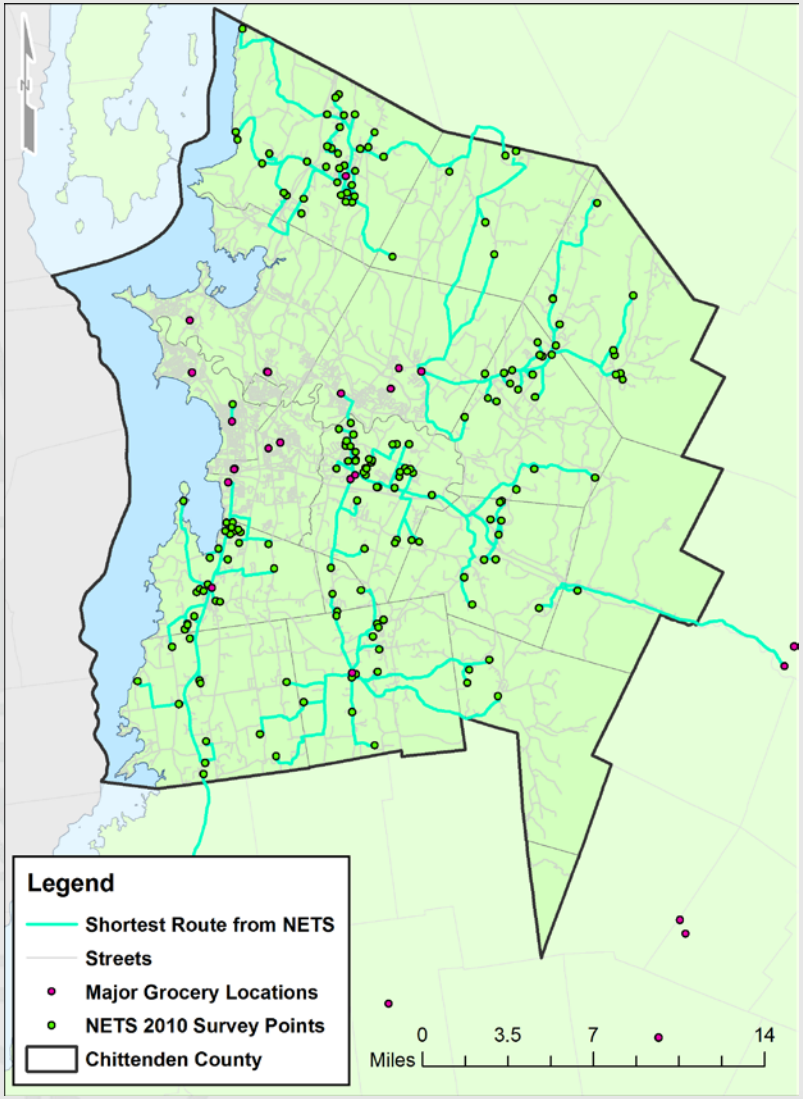
Households

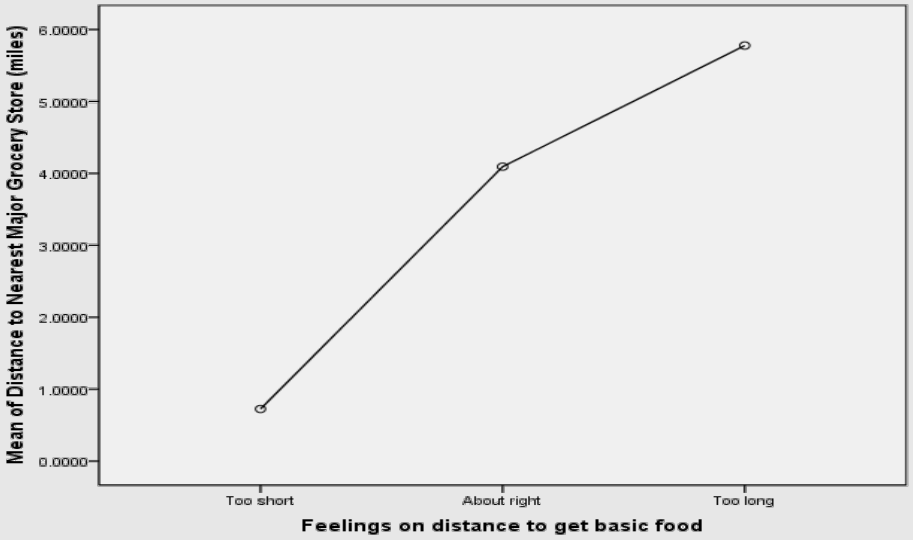


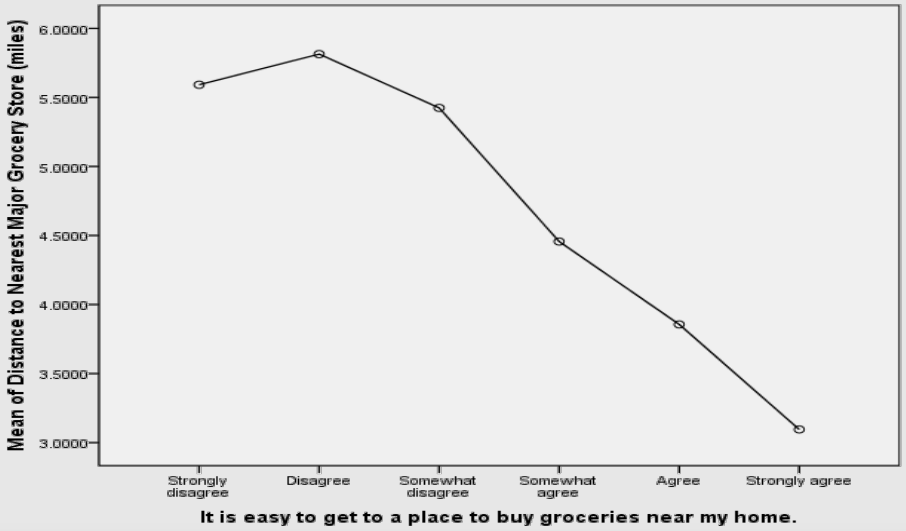


USING DISAGGREGATE DATA

Groceries

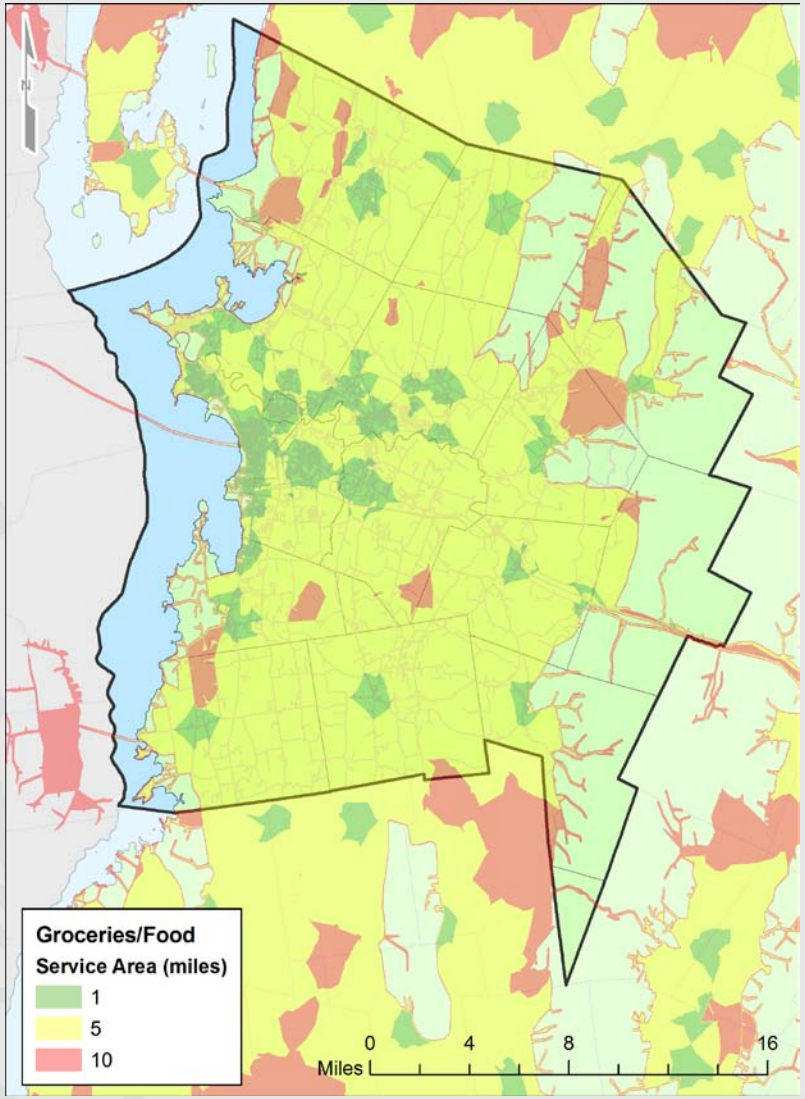


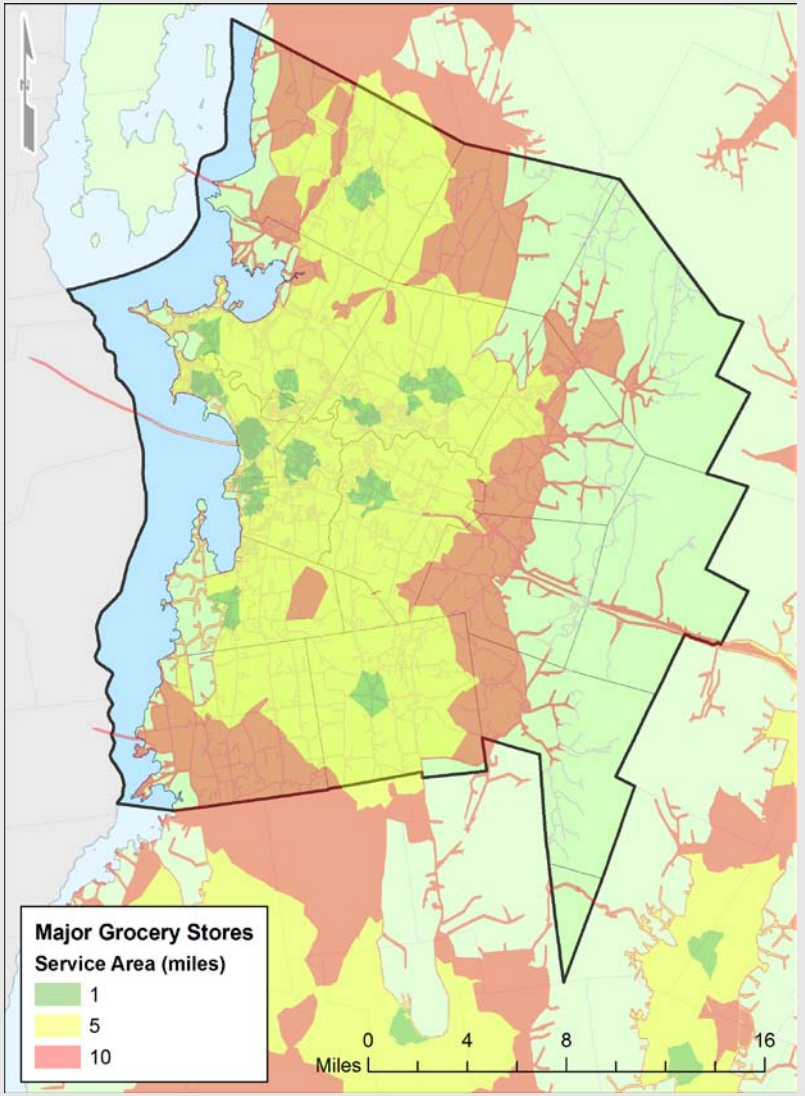




USING DISAGGREGATE DATA

Groceries





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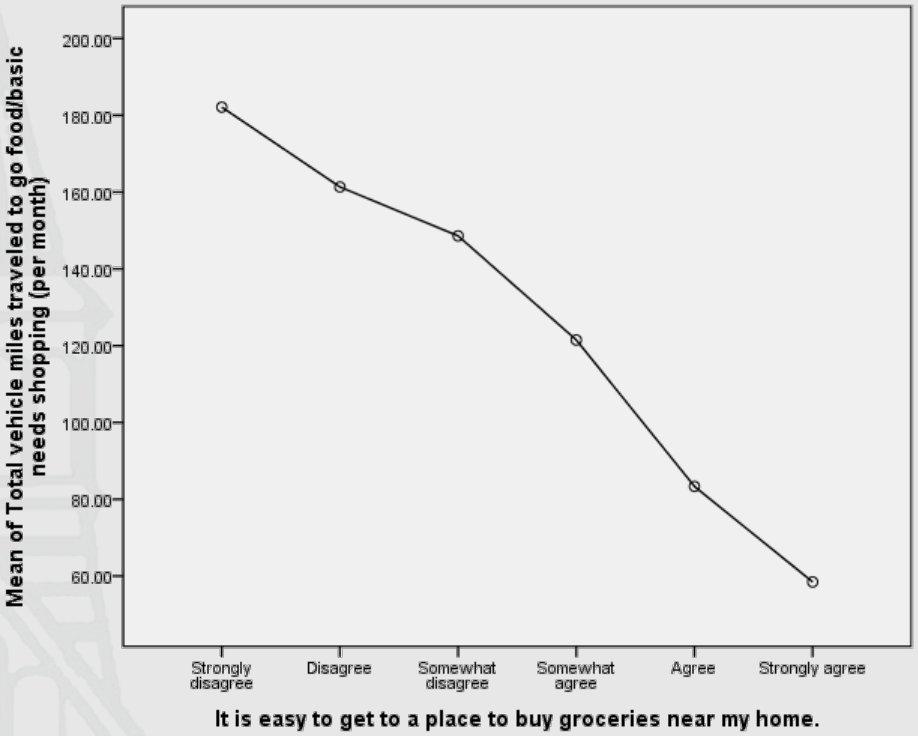
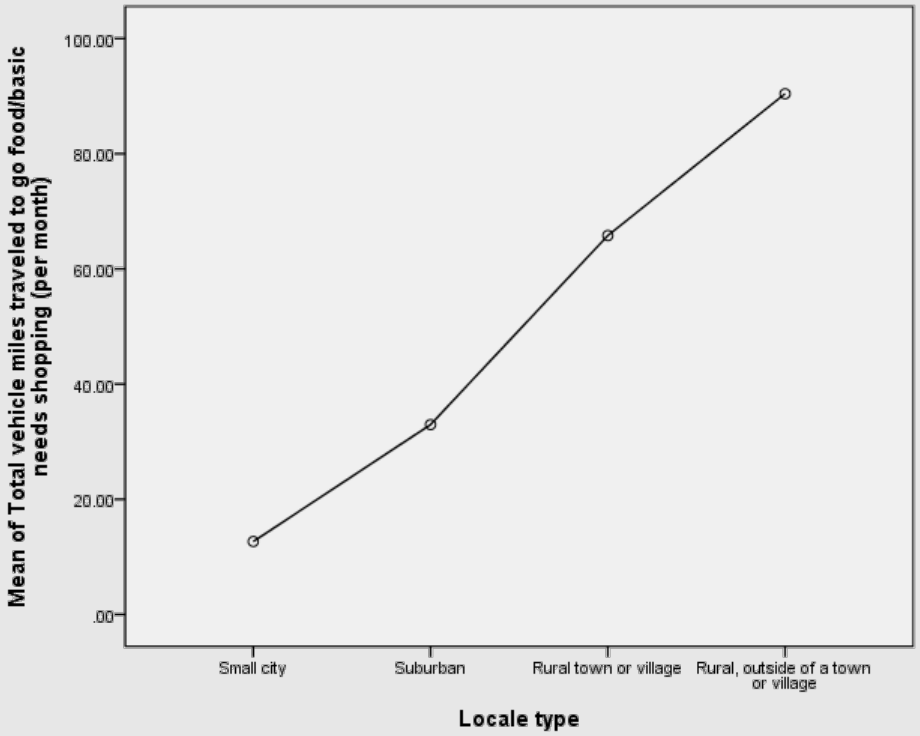
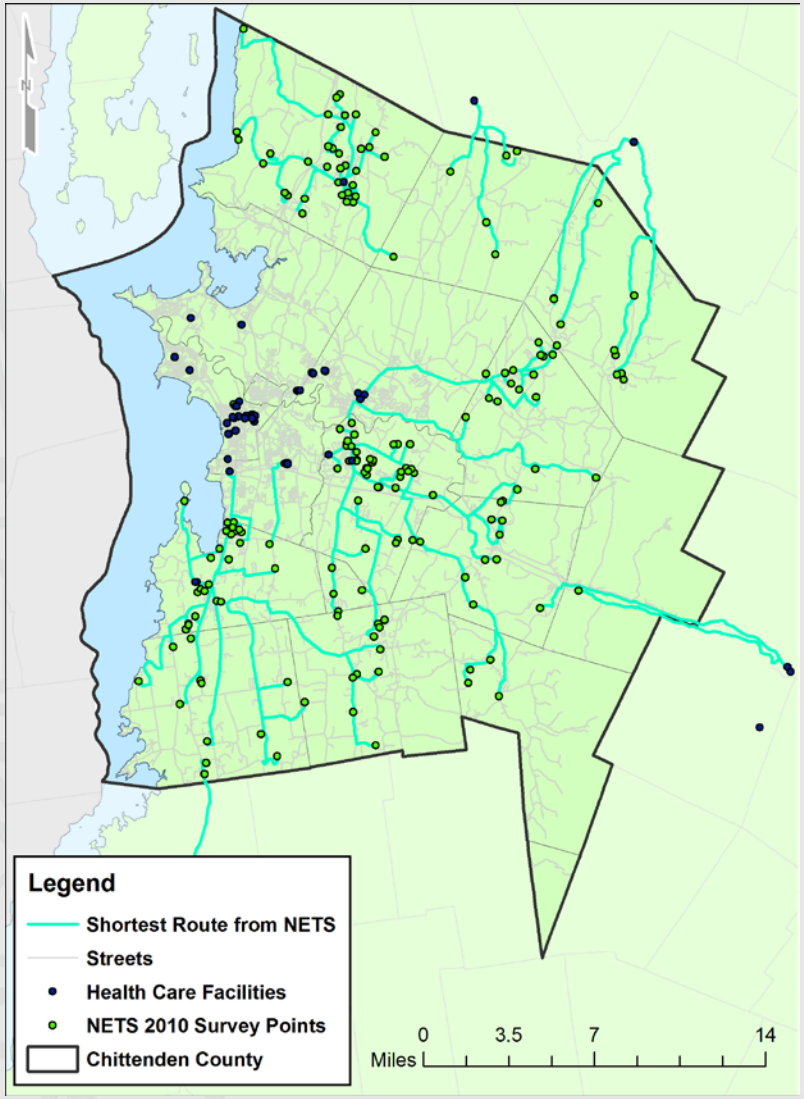
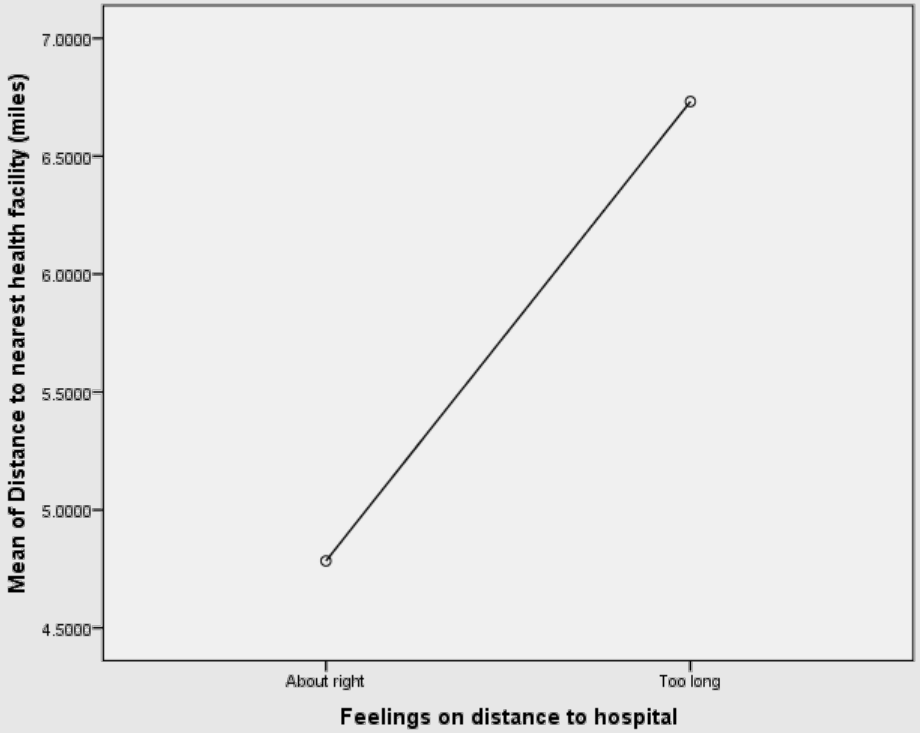




USING DISAGGREGATE DATA

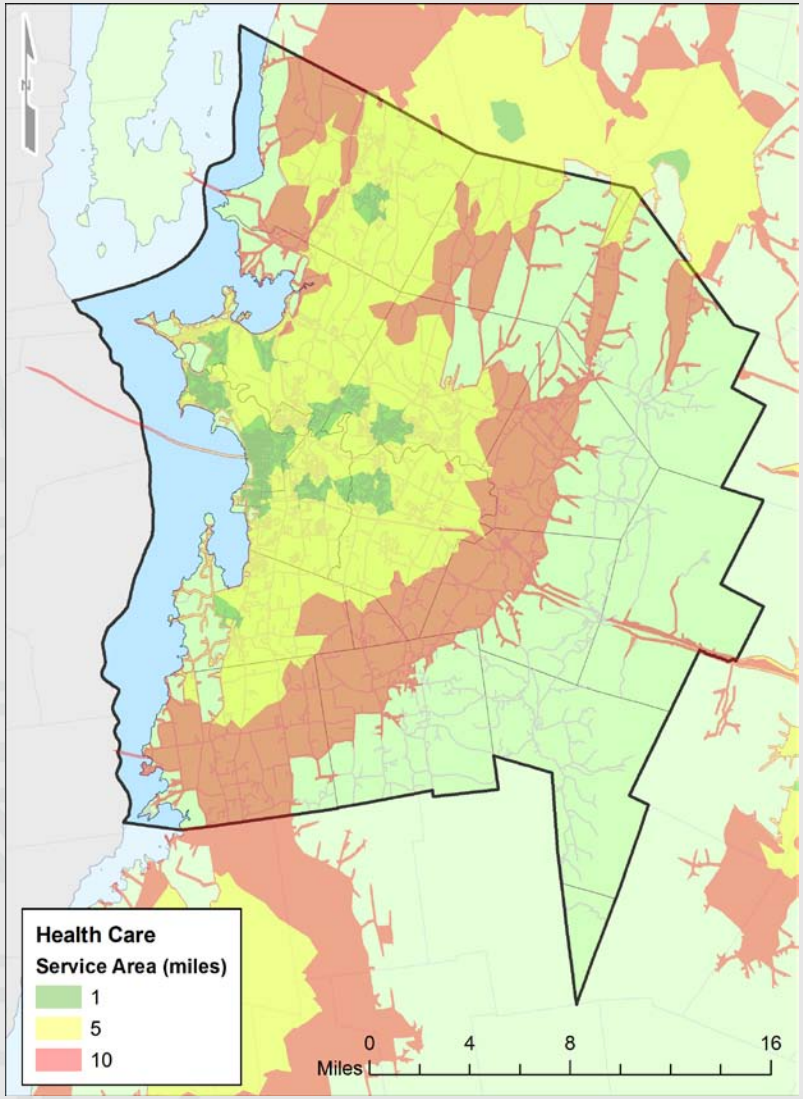
Health Care

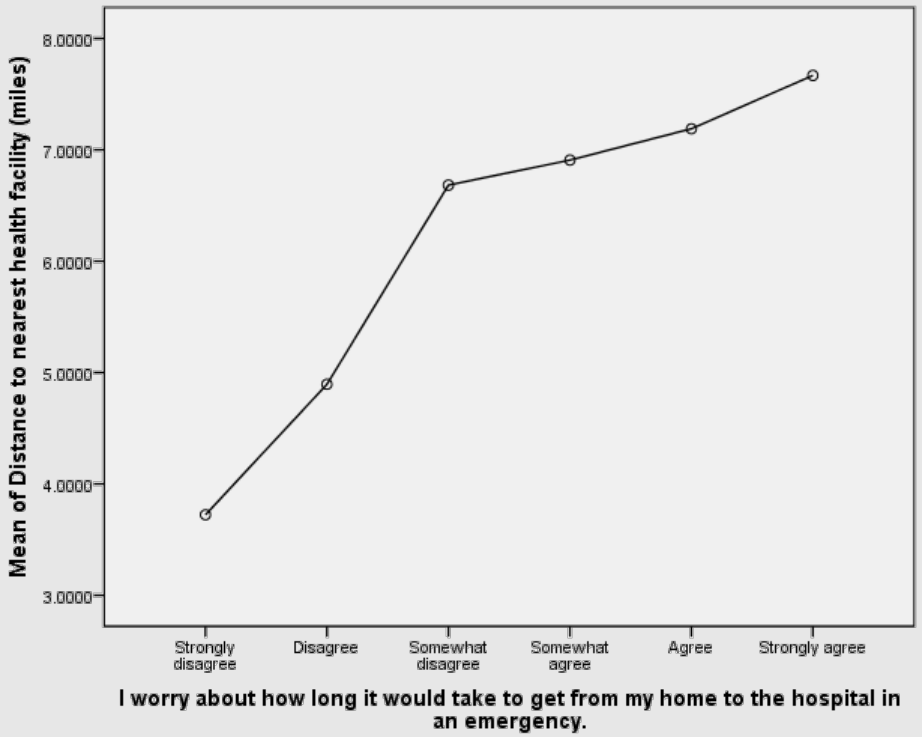




USING DISAGGREGATE DATA

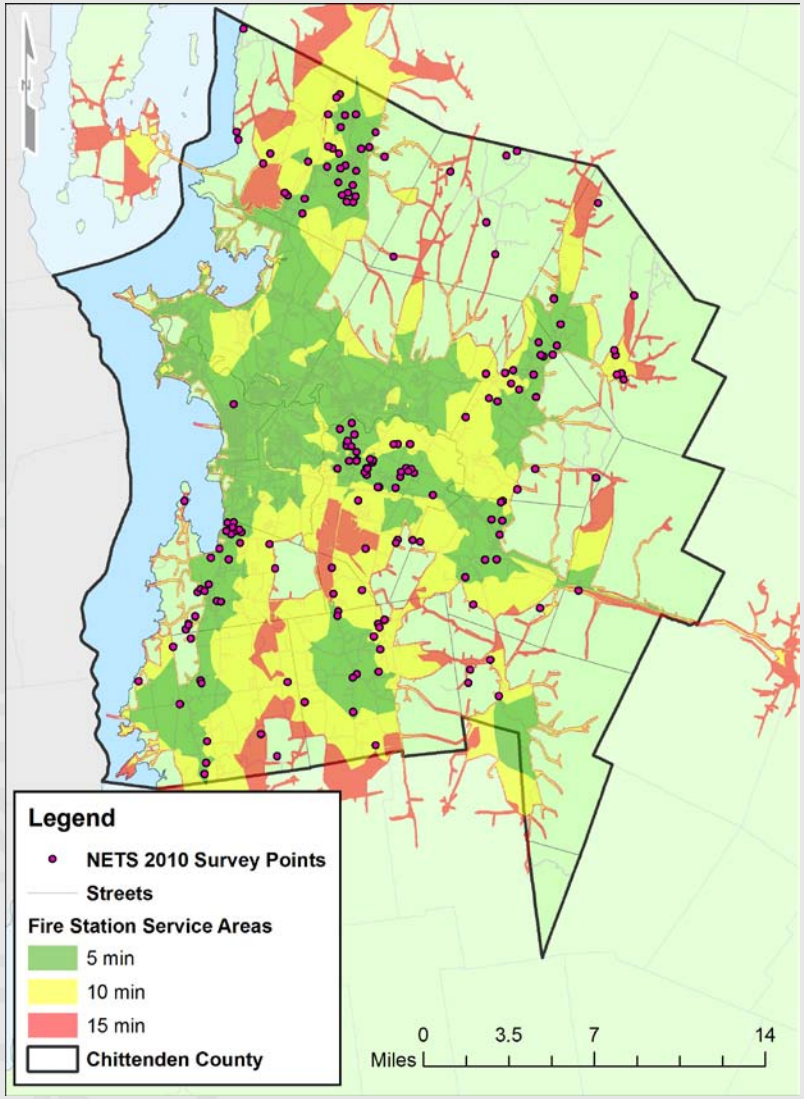
Health Care

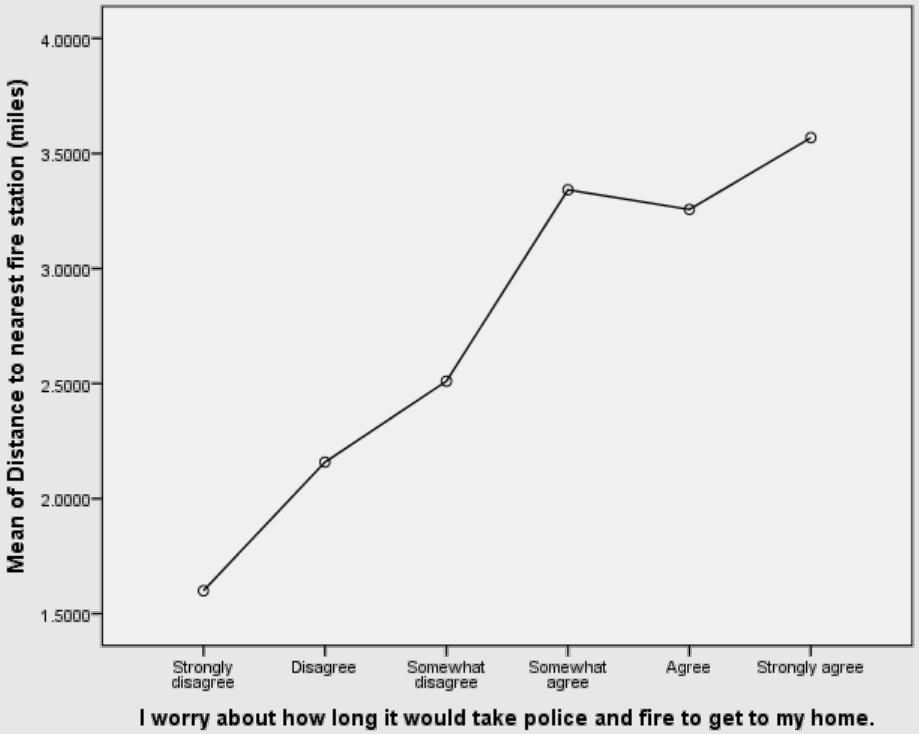




USING DISAGGREGATE DATA

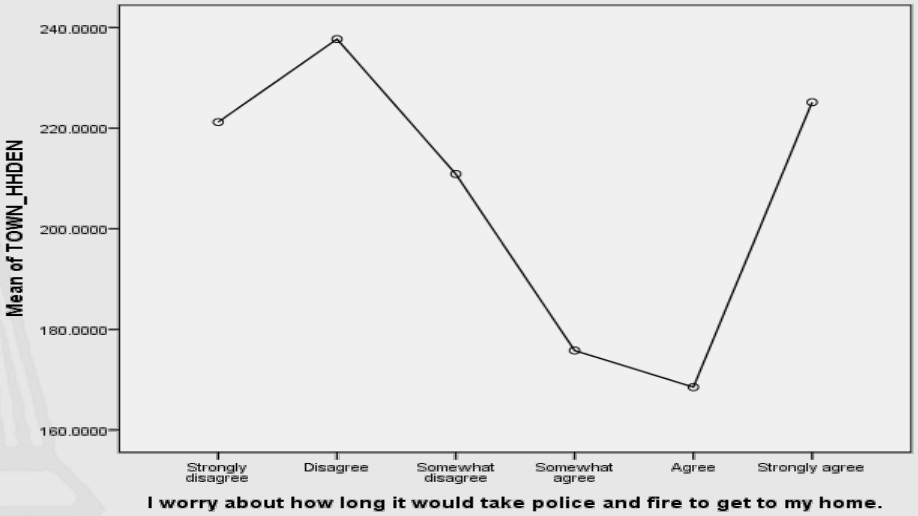
Emergency Response

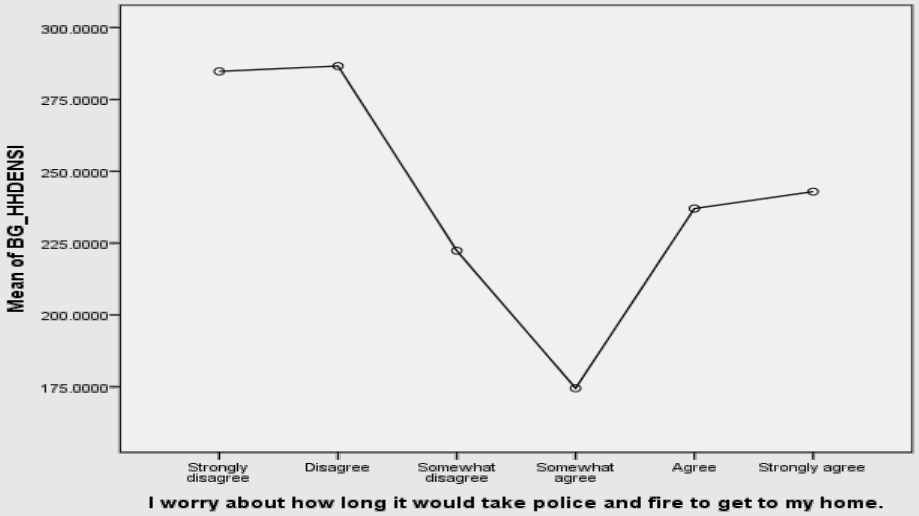


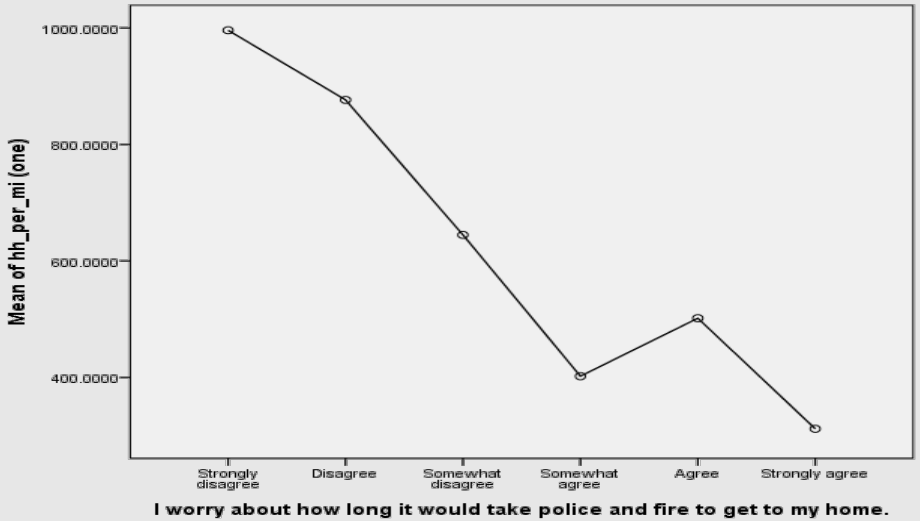


USING DISAGGREGATE DATA

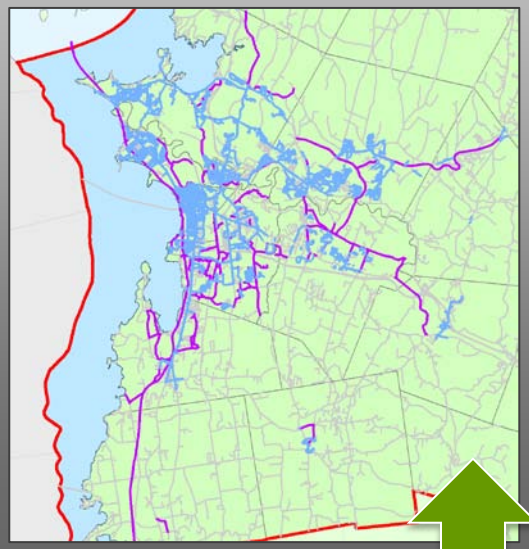
Emergency Response



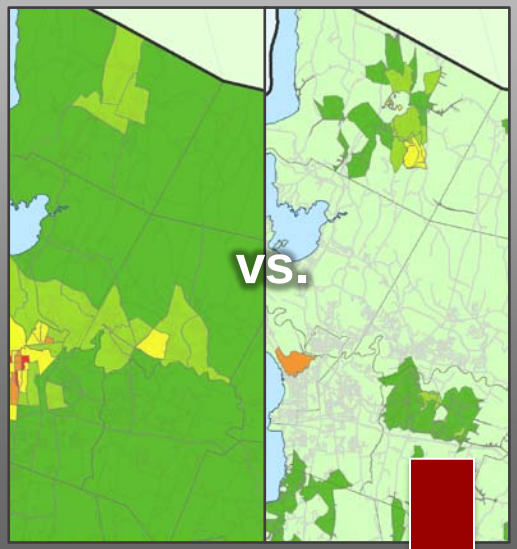




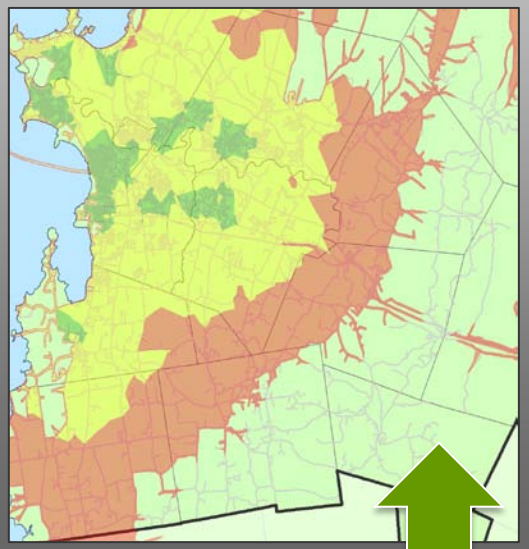
Higher presence of sidewalks
(walkability, safety, biking)



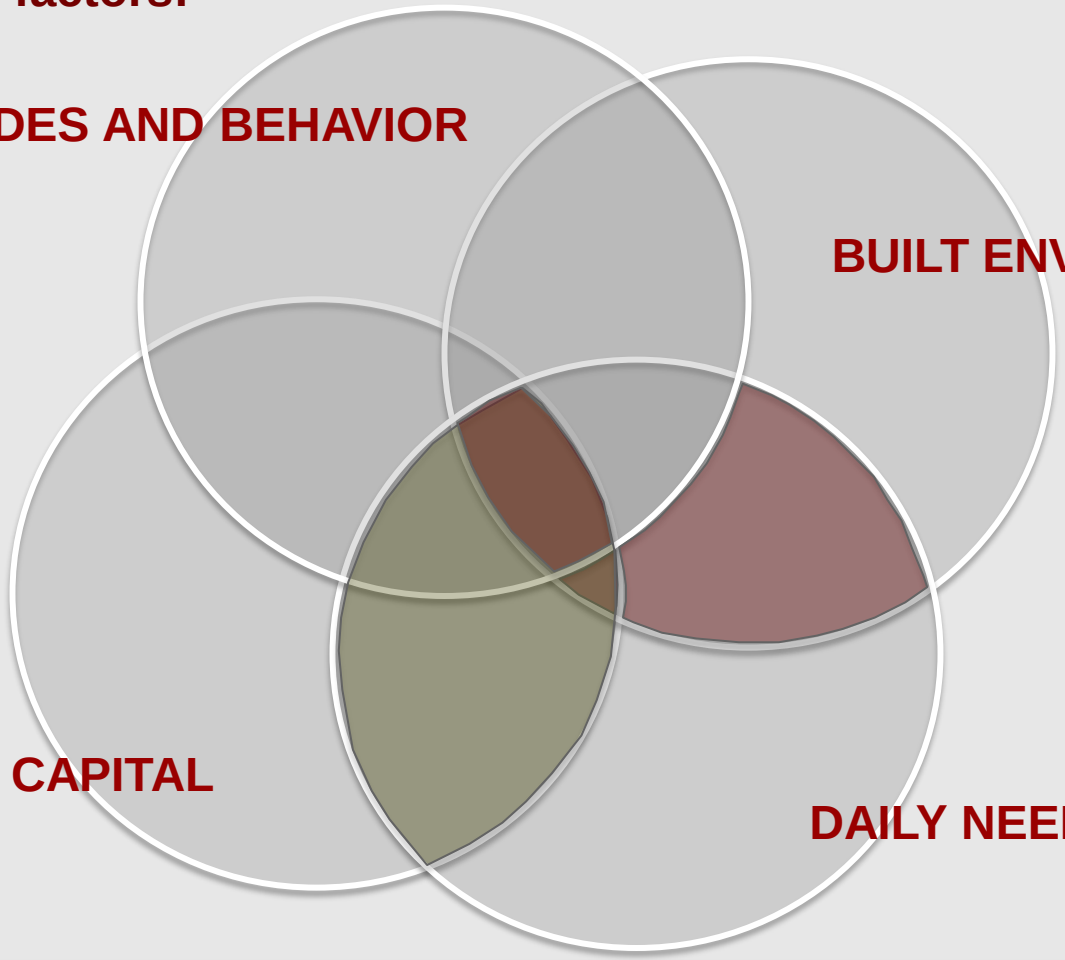
Representation on aggregate levels



Proximity to emergency response induces greater level of comfort



Explore spatial relationships between livability and the following factors:



FUTURE and CONTINUING WORK

Social Component

Geographic Scale based Normalization

"Big Picture" Policy Take-Away

1. Consideration of spatial AND temporal variations in livability
2. Importance of finer resolution data to identify isolation
3. Data needs and deficiencies in our knowledge of the social component
4. Importance of compatibility across data for spatial integration

Collaboration with:
James Sullivan, P.E.
Research Engineer, UVM TRC

Data and Information from:
Vermont Center for Geographic Information

New England Transportation Institute (NETS)

US Department of Transportation (NHTS)

Vermont Agency of Transportation, Chittenden County MPO, and UVM Transportation Research Center (NHTS Add-On)