

AN INTRODUCTION TO MAPPING SOFTWARE OPTIONS FOR GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

COREY SMITH

WESTERN MICHIGAN UNIVERSITY/IEVAL

ACTIVITY

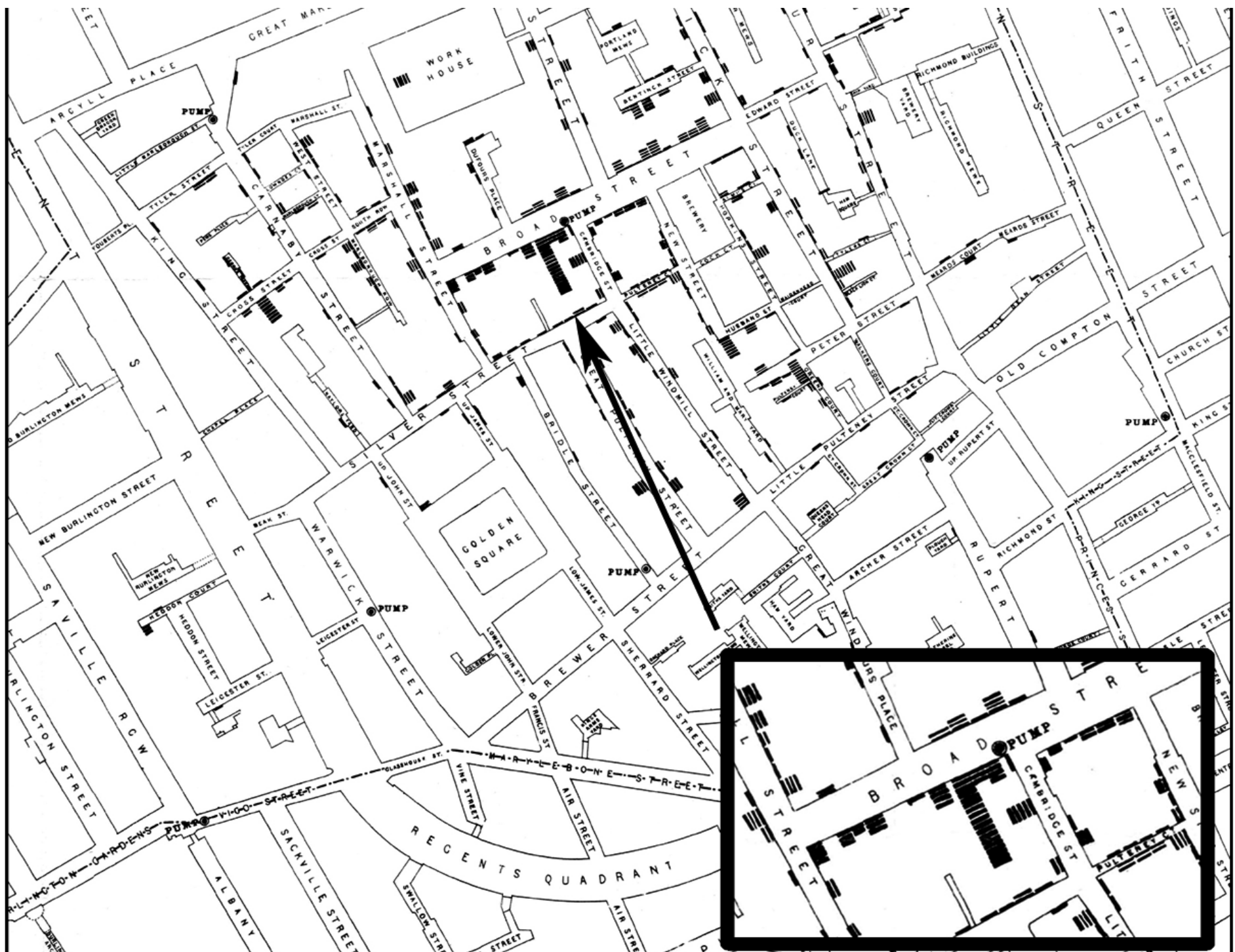


AGENDA

- 1. Why Maps**
- 2. Brief introduction to GIS**
- 3. Discuss GIS in evaluation, applications and examples**
- 4. Provide an overview of free and commercial GIS tools available**

MAPS

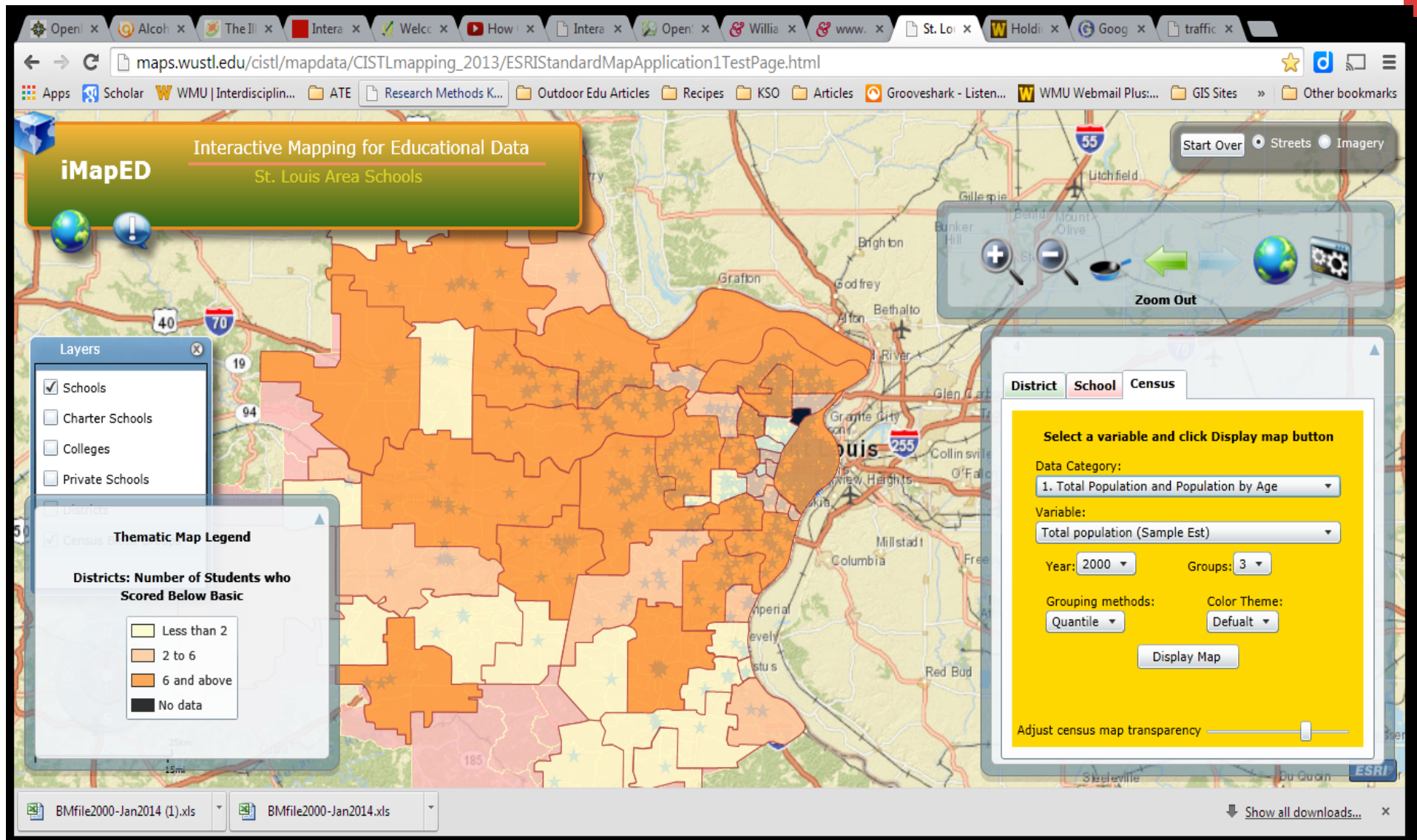


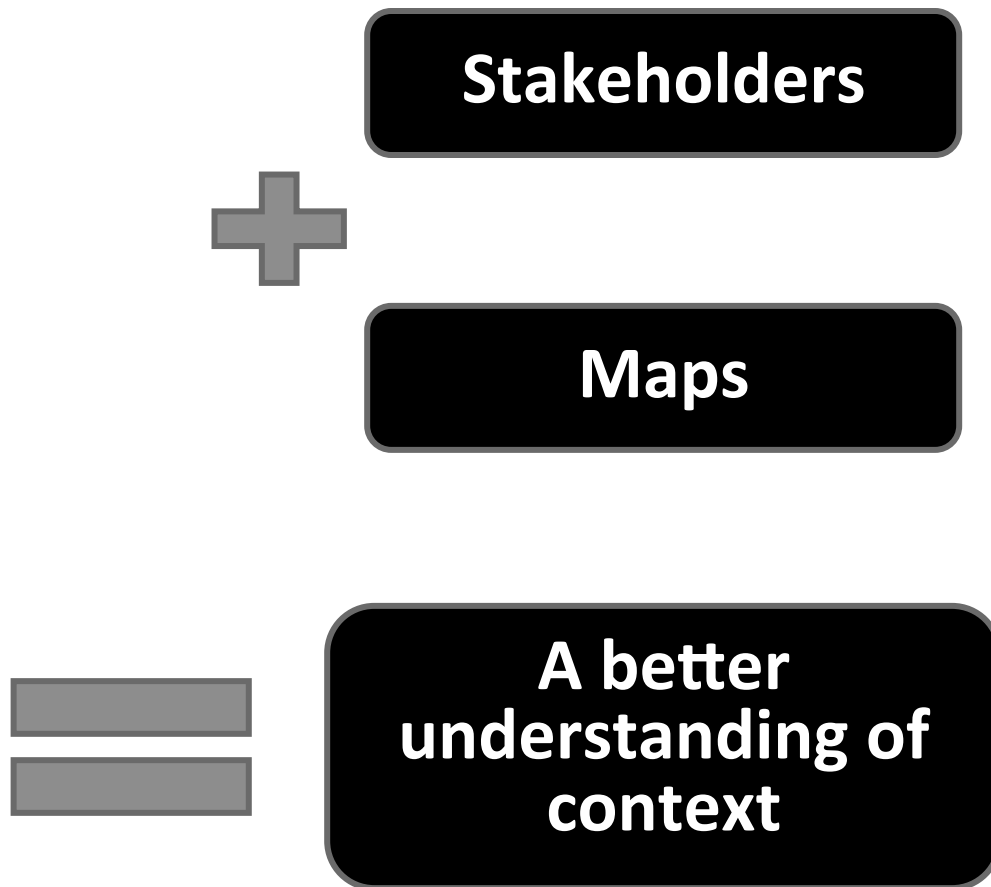


Visual

Contextual

Participatory





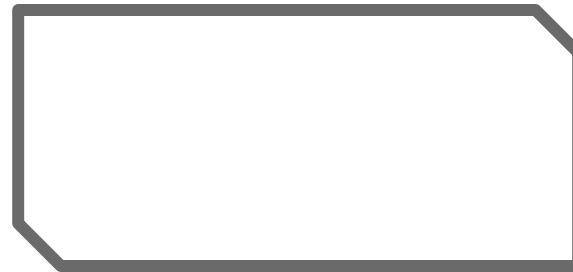
DEFINITIONS

GEOCODING

The process of finding associated geographic coordinates, most commonly the latitude and longitude, from other geographic data

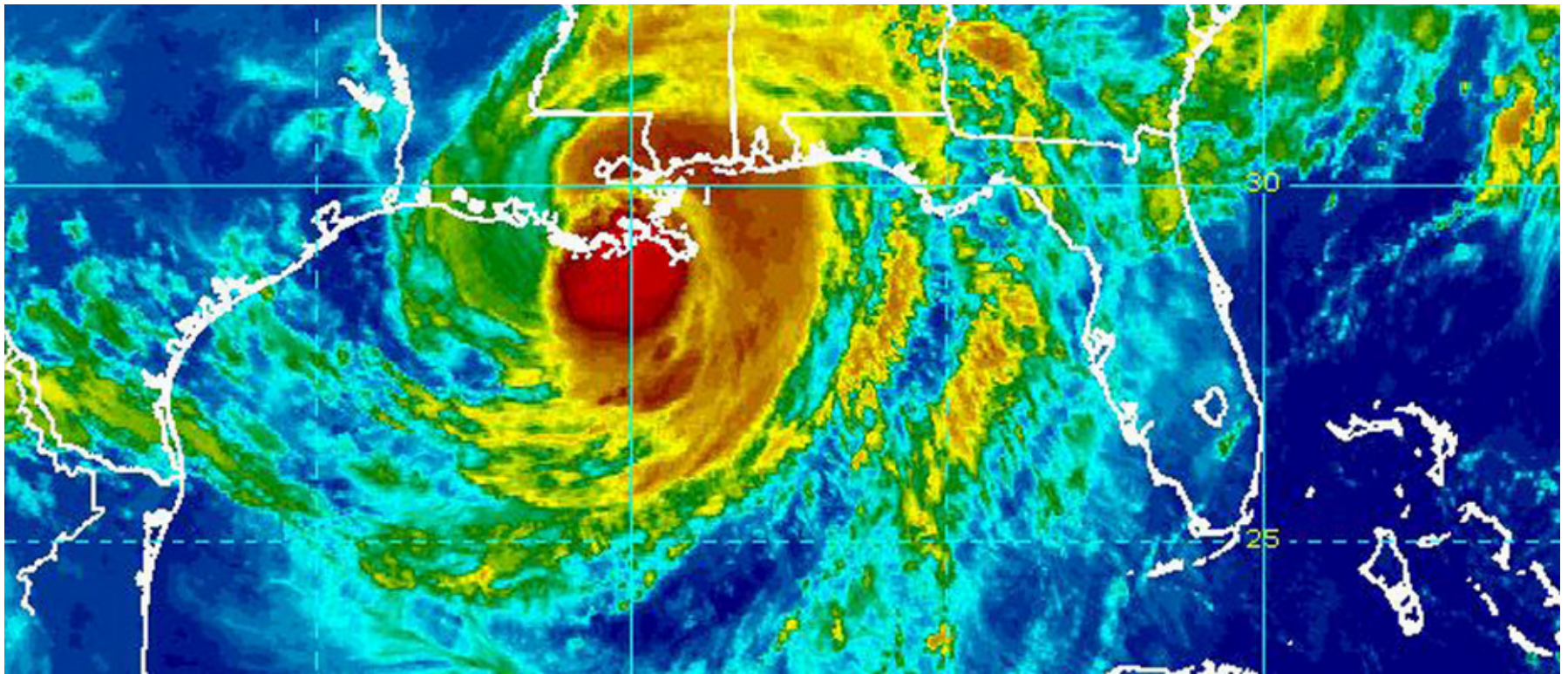
VECTOR DATA

Points, lines and polygons



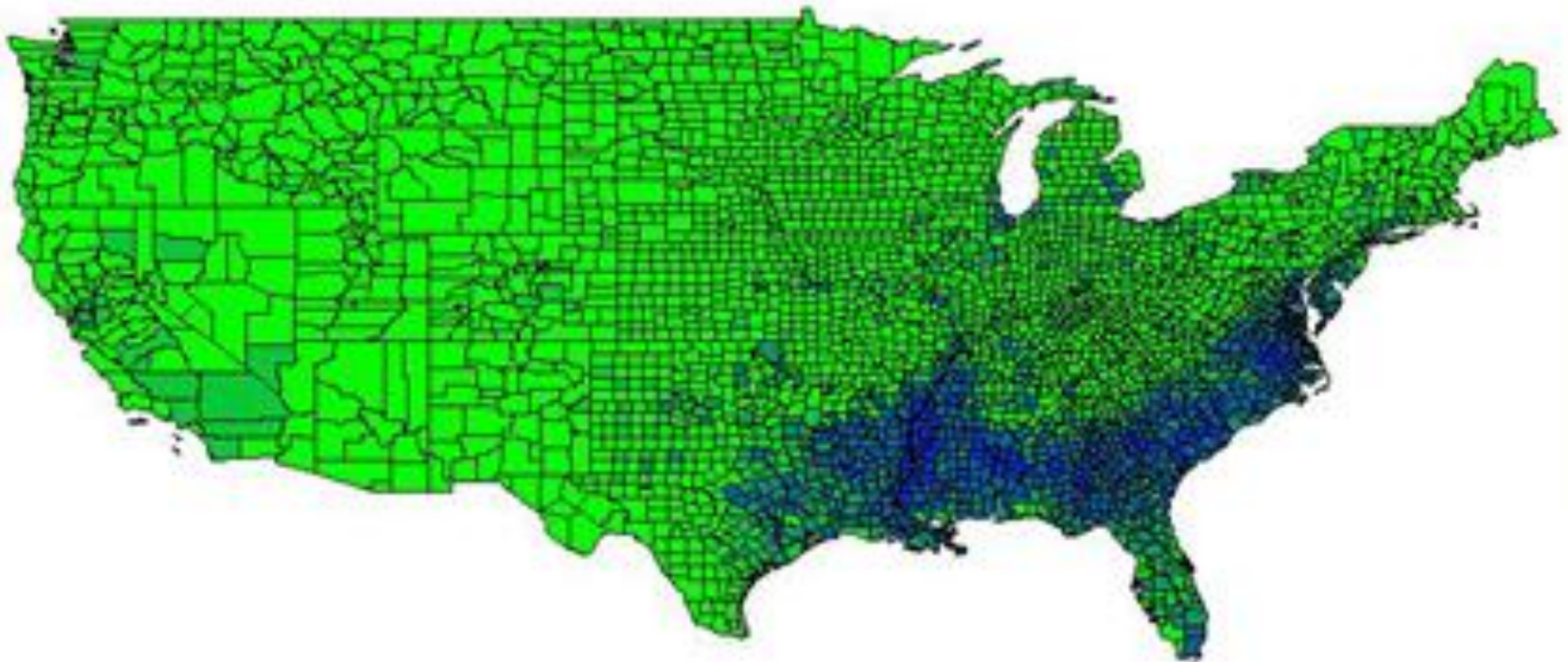
RASTER DATA

Map made up of many tiny squares, each one representing a particular value



HEAT MAPS (CHLOROPLETH MAPS)

Different colors represent quantitative attributes



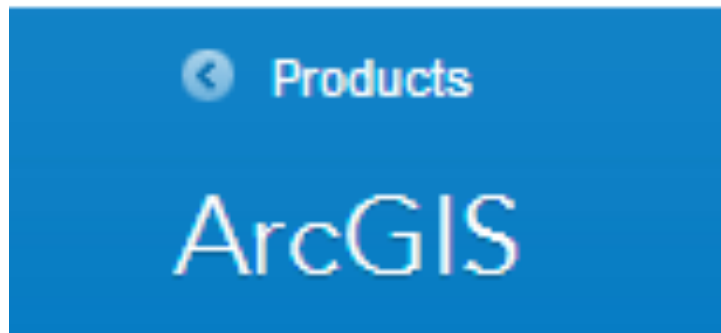
GEOSPATIAL (OR SPATIAL)

Reference to space or place; including location, distance, position of things relative to one another



ARCMAP

The most widely used GIS platform made by Esri.



WHAT IS GIS

WHAT IS GIS?

“Geographic information system (GIS) lets us visualize, question, analyze, interpret, and understand data to reveal relationships, patterns, and trends”

-Esri

WHAT IS GIS?

Elements of GIS

- **Computer program**
- **Data**
- **Spatial references**

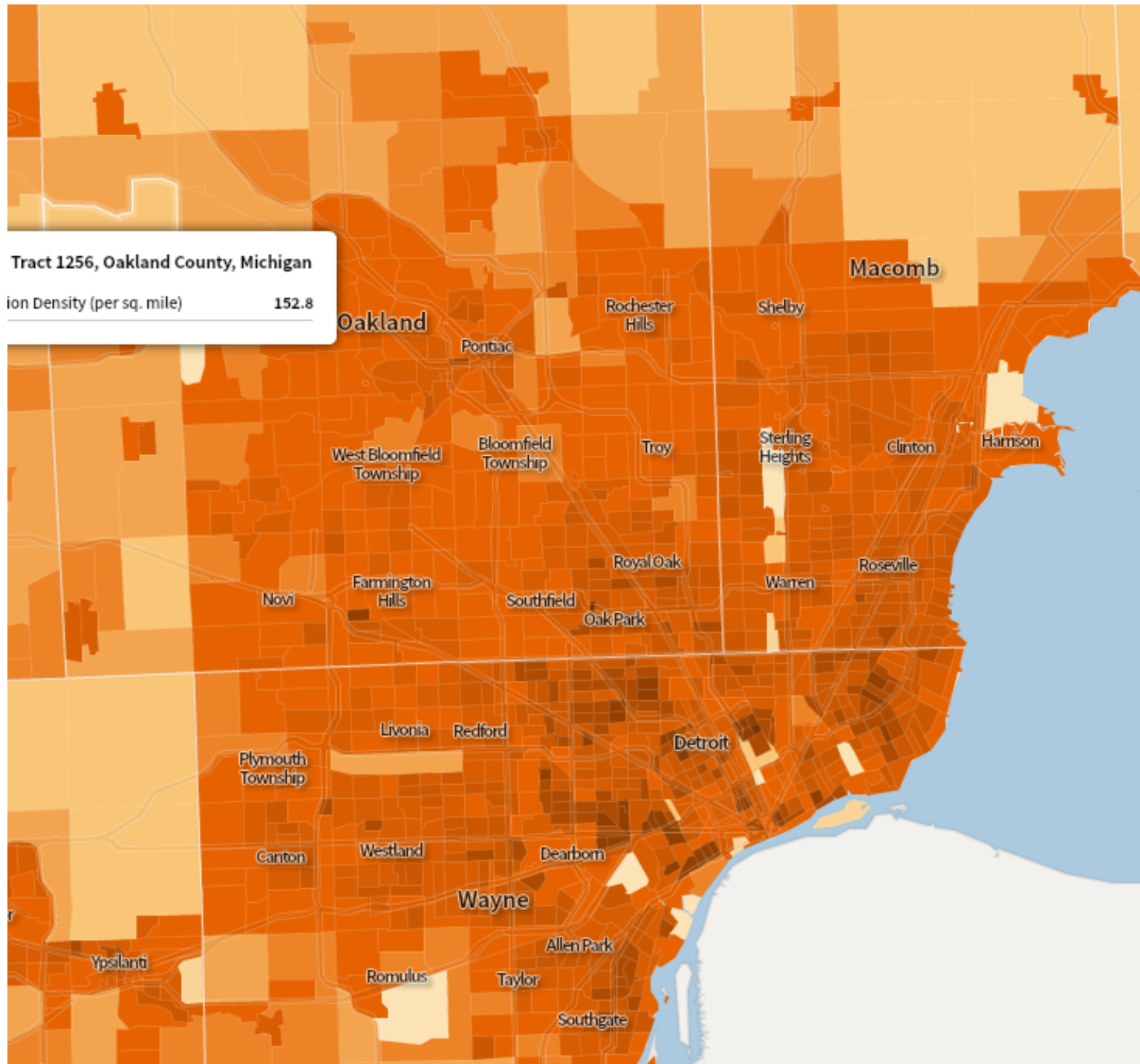
WHAT IS GIS?

Types of GIS

- **Desktop applications**
- **Web based applications**
- **Wide range in capability, customization, analytic features, cost**

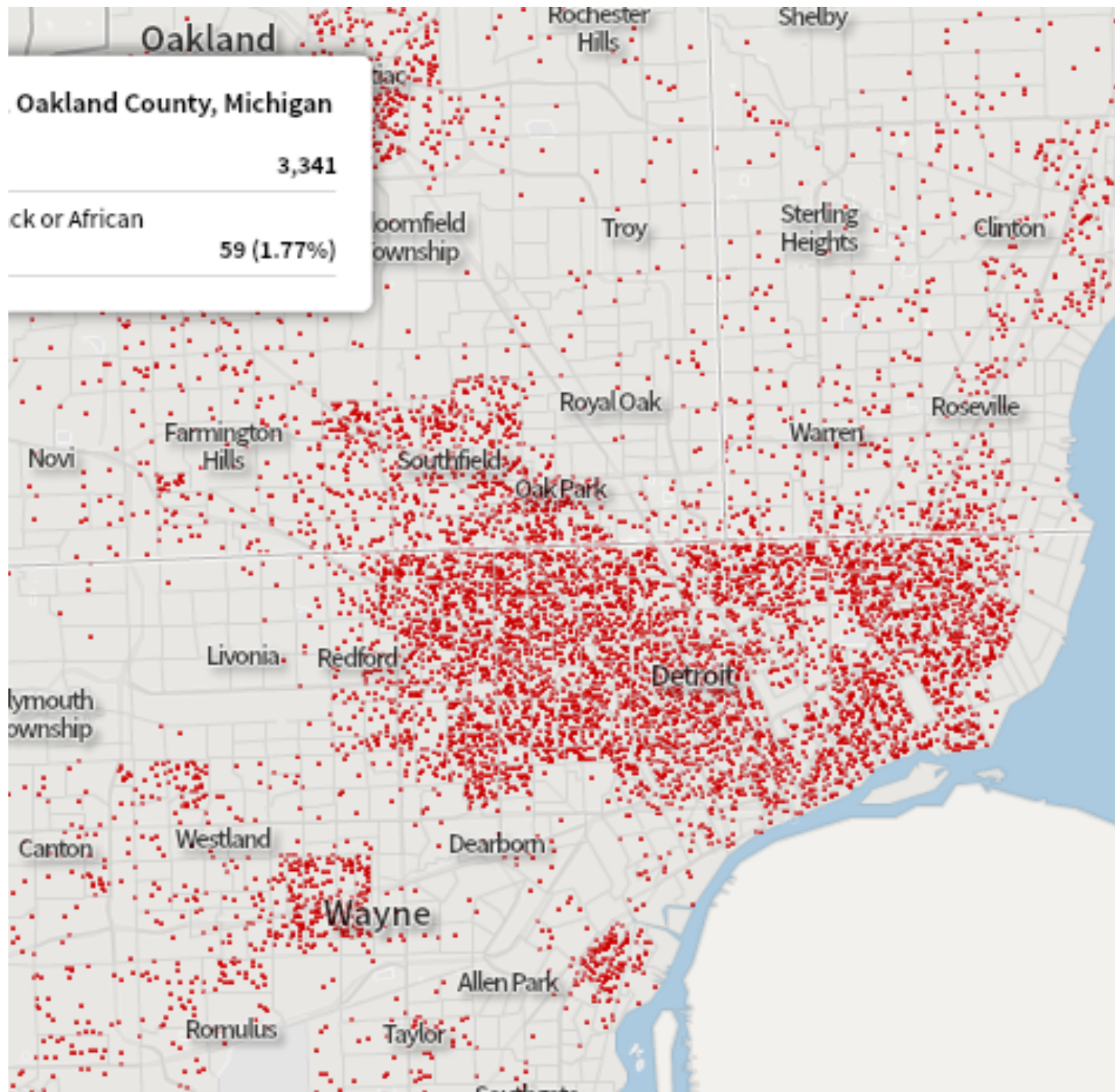
WHAT TO DO WITH IT?

Look at data in the context of place



WHAT TO DO WITH IT?

Understand if place matters

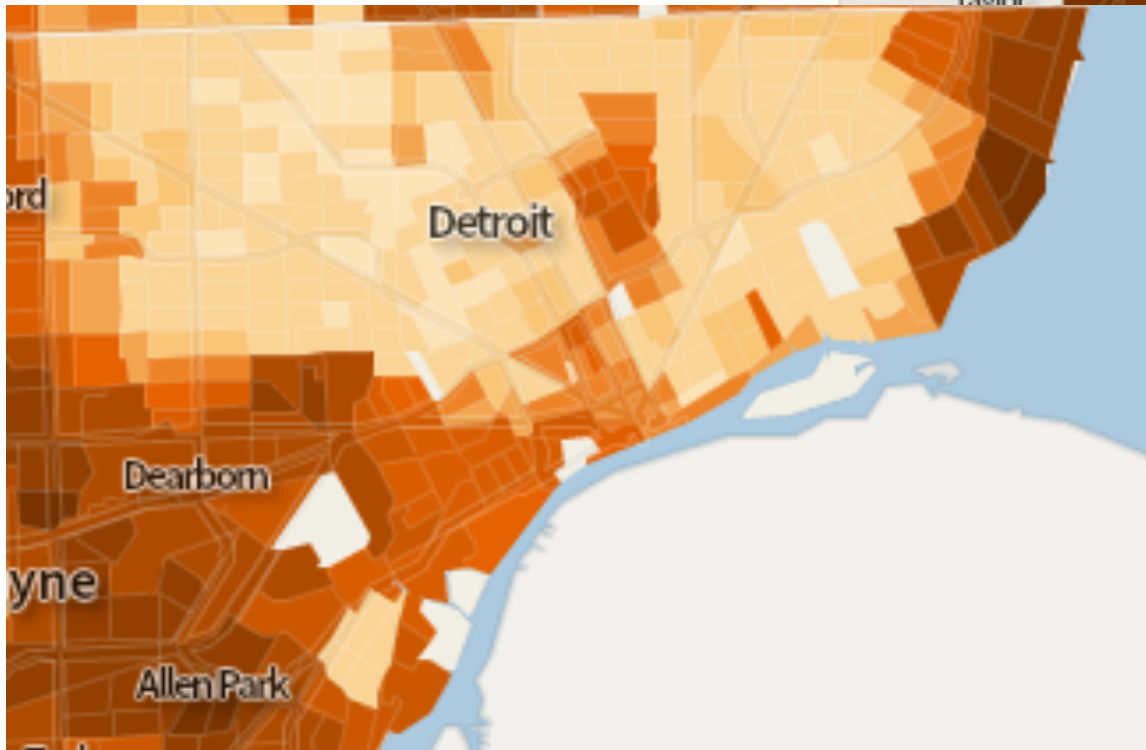
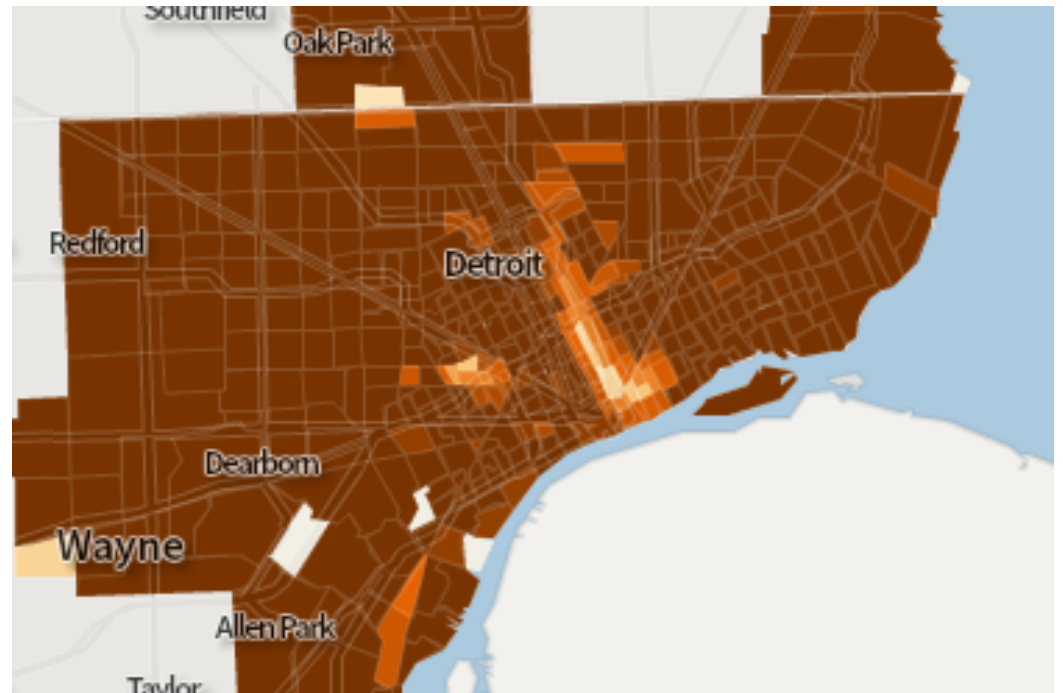


WHAT TO DO WITH IT?

Look at trends



1940 WHITE POPULATION



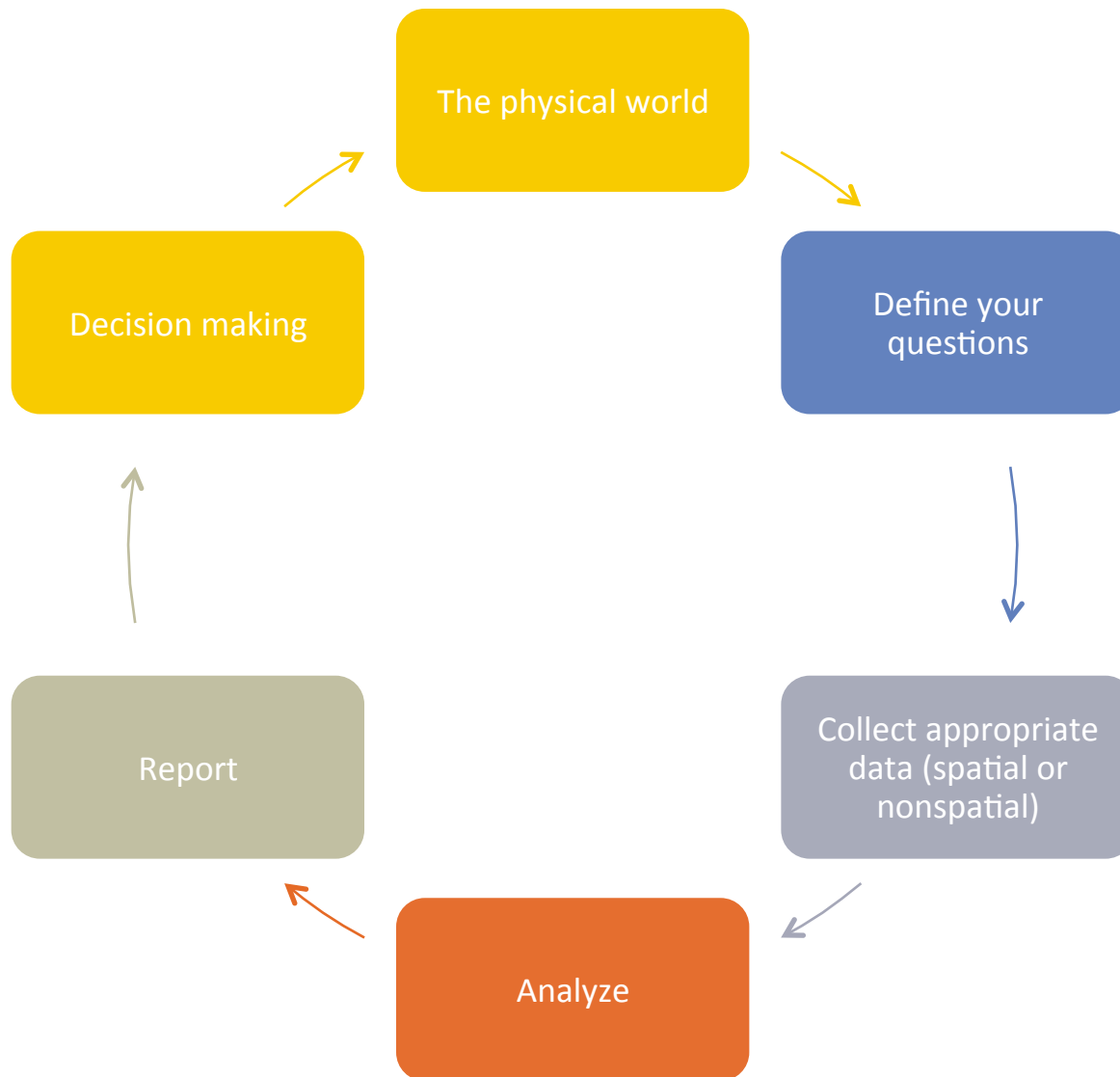
2010 WHITE POPULATION

WHAT TO DO WITH IT?

Inform decision making

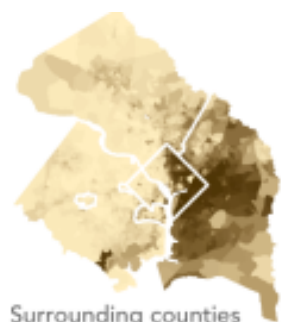
- **Resource allocation**
- **Areas of need**
- **Impact of intervention**
- **Recruitment**
- **Changes over time**

HOW TO DO THAT WITH IT?



(Bolstad, 2012)

EXAMPLES



Surrounding counties

percent black:
Prince George's: 63%
Montgomery: 15%
Arling / Alex: 15%
Fairfax: 9%

**in 2000,
60% of DC
identified
as Black or
African-American.**

percent, by block:

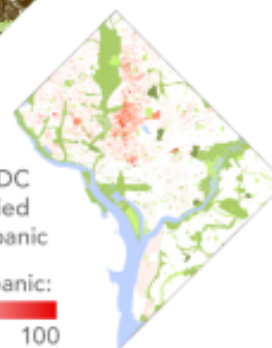


0 100

overall,
60% identified as black or african-american
31% as white
3% as asian
4% as "other" – of which 92% hispanic
2% as more than one race – of which 71% hispanic

OPEN SPACE:
park
recreation
cemetery

NO INHABITANTS:
commercial or industrial
public or institutional



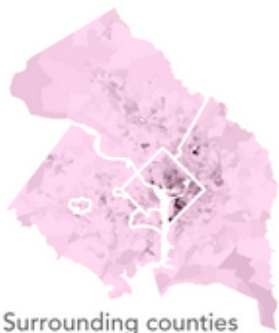
8% of DC
identified
as Hispanic

% Hispanic:

0 100

Those who identify as Hispanic may be of any race.

By: Bill Rankin
Radicalcartography.net



Surrounding counties

percent in poverty:
Prince George's: 8%
Montgomery: 5%
Arling / Alex: 8%
Fairfax: 5%

**in 2000,
20% of DC
residents
lived below
the poverty line.**

percent, by block group:



DC children have double the poverty rate of adults:

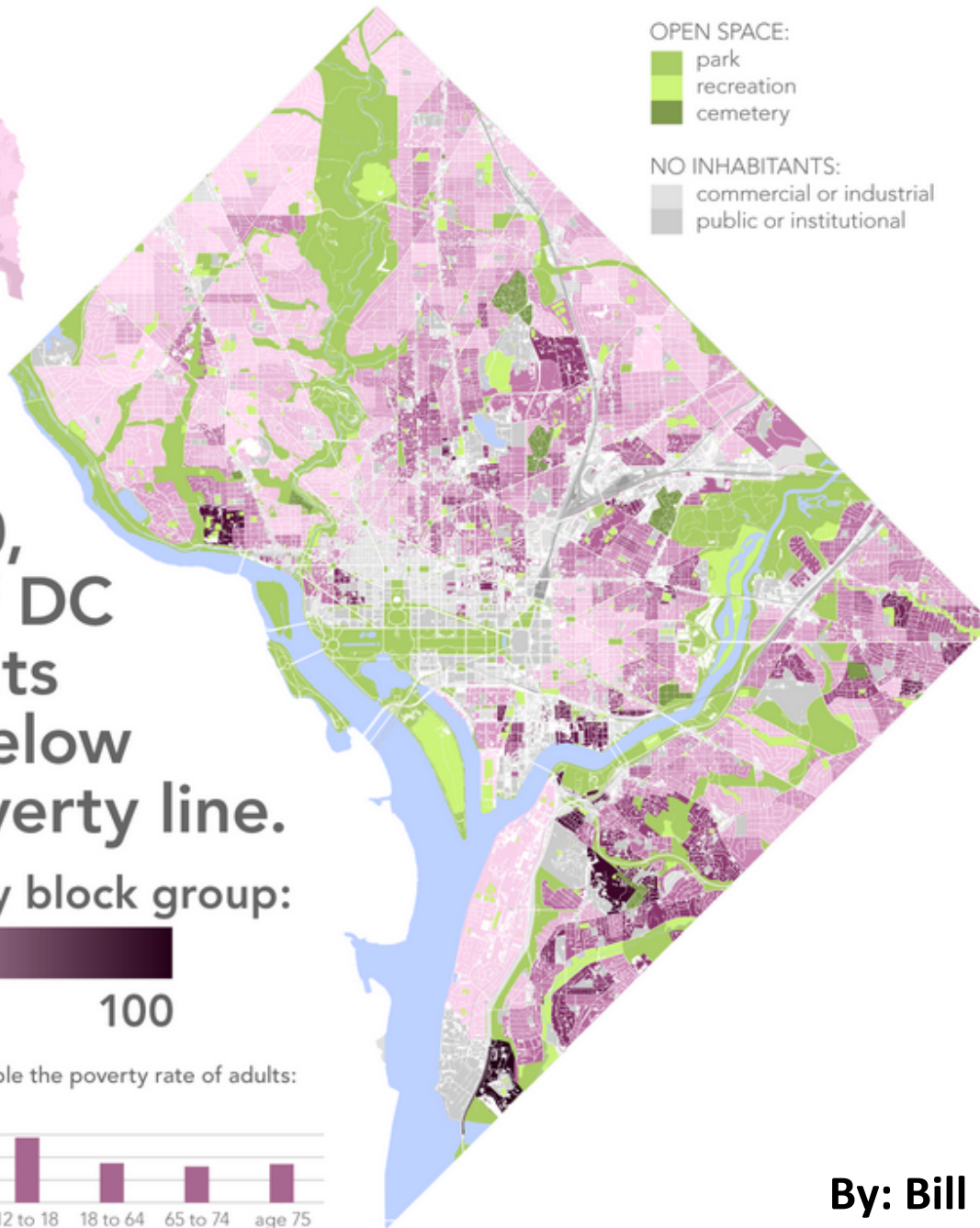


OPEN SPACE:

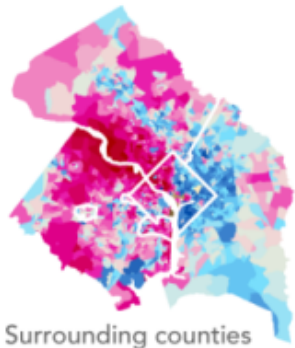
- park
- recreation
- cemetery

NO INHABITANTS:

- commercial or industrial
- public or institutional



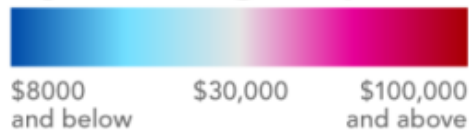
By: Bill Rankin
Radicalcartography.net



Surrounding counties
per capita income:
Prince George's: \$24,100
Montgomery: \$36,200
Arling / Alex: \$38,900
Fairfax: \$37,400

in 1999,
income
per capita
in DC was
\$31,300.

by block group:

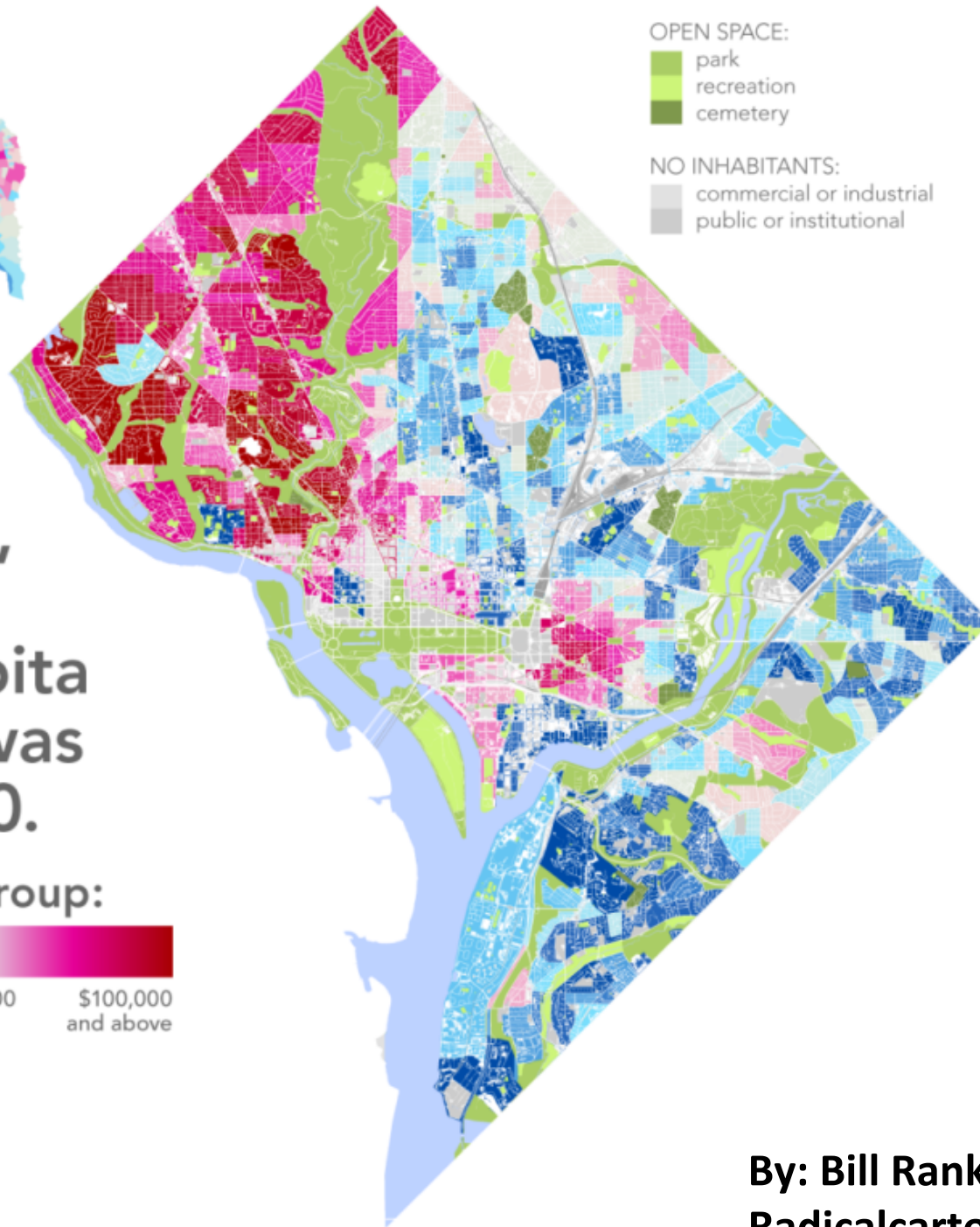


OPEN SPACE:

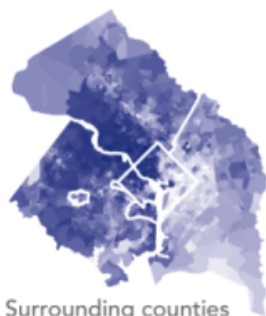
park
recreation
cemetery

NO INHABITANTS:

commercial or industrial
public or institutional



By: Bill Rankin
Radicalcartography.net

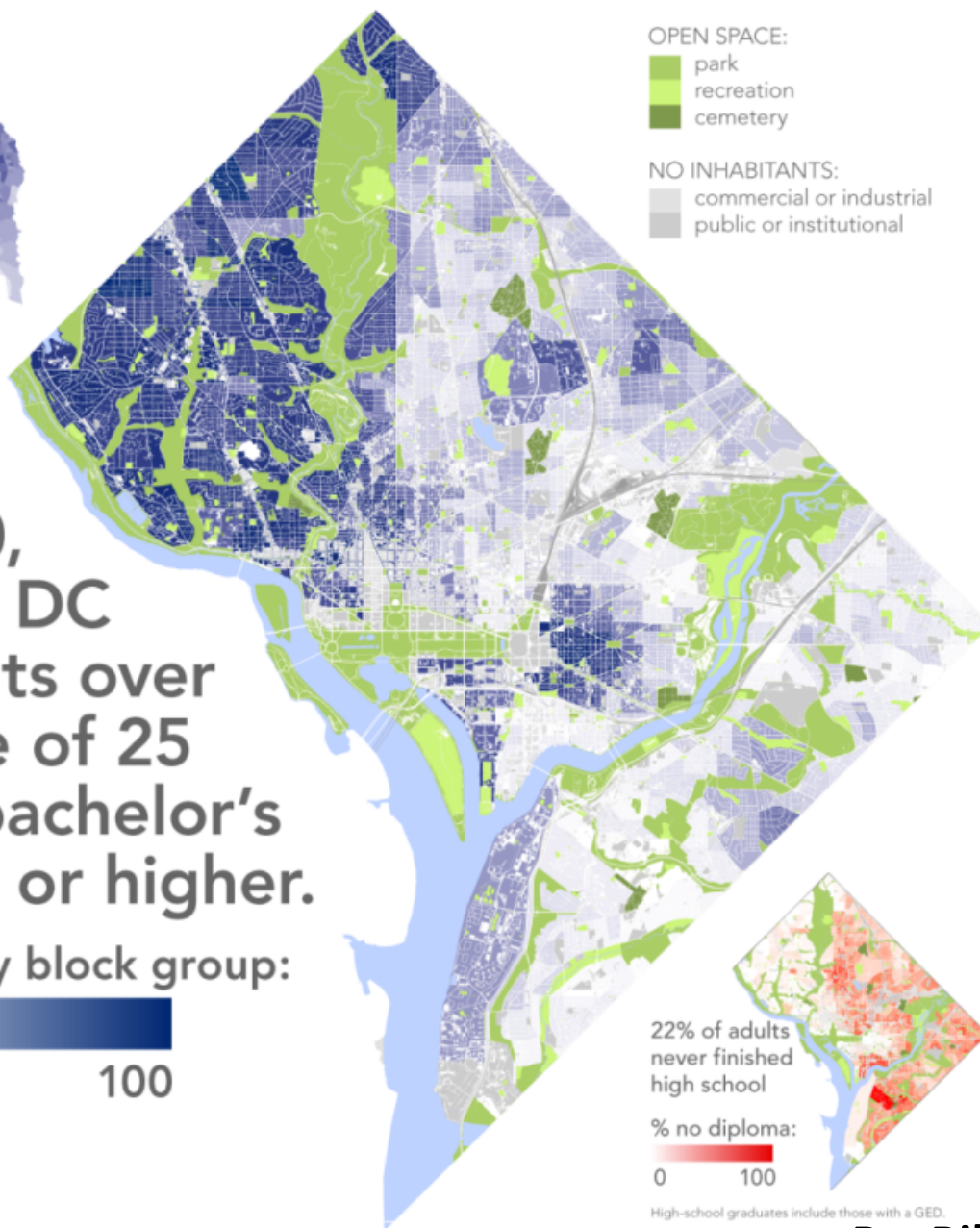


Surrounding counties

percent with degree:
Prince George's: 27%
Montgomery: 55%
Arling / Alex: 58%
Fairfax: 55%

**in 2000,
39% of DC
residents over
the age of 25
had a bachelor's
degree or higher.**

percent, by block group:



OPEN SPACE:

park
recreation
cemetery

NO INHABITANTS:

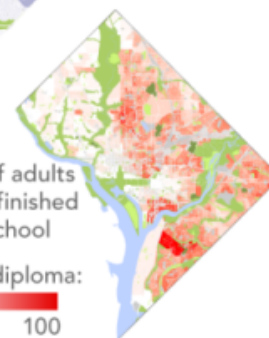
commercial or industrial
public or institutional

**22% of adults
never finished
high school**

% no diploma:

0 100

High-school graduates include those with a GED.



By: Bill Rankin
Radicalcartography.net

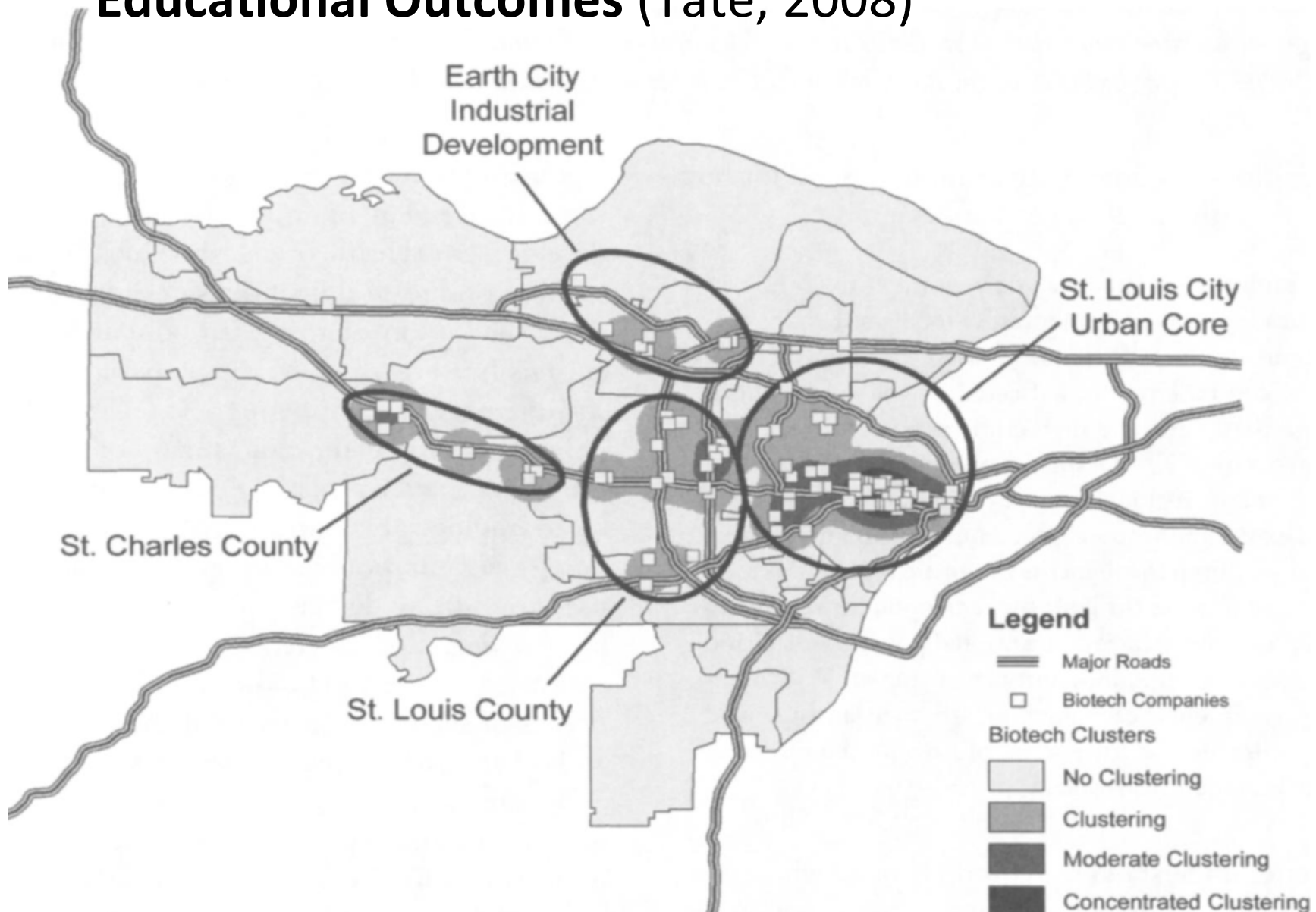
APPLICATIONS IN SOCIAL SCIENCE

GIS in Evaluation : Utilizing the Power of Geographic Information Systems to Represent Evaluation Data

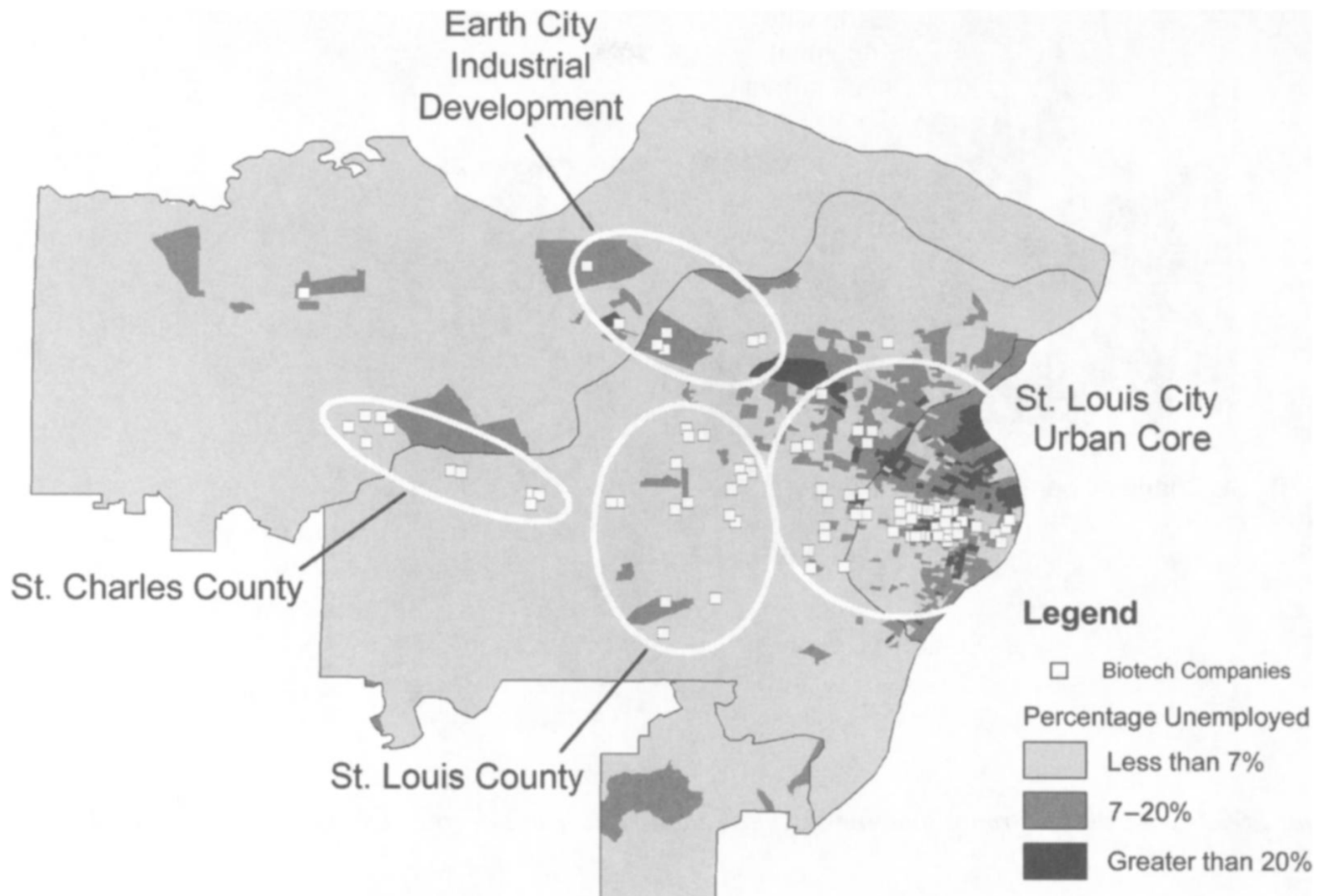
(Azzam & Robinson, 2013)

- One of the few peer reviewed articles discussing evaluation and GIS
- GIS offers a visual way of detecting patterns in data that may have remained unnoticed through other traditional methods of analysis
- Put forth a hypothetical evaluation situation and walk through the application of GIS at various moments in the evaluation

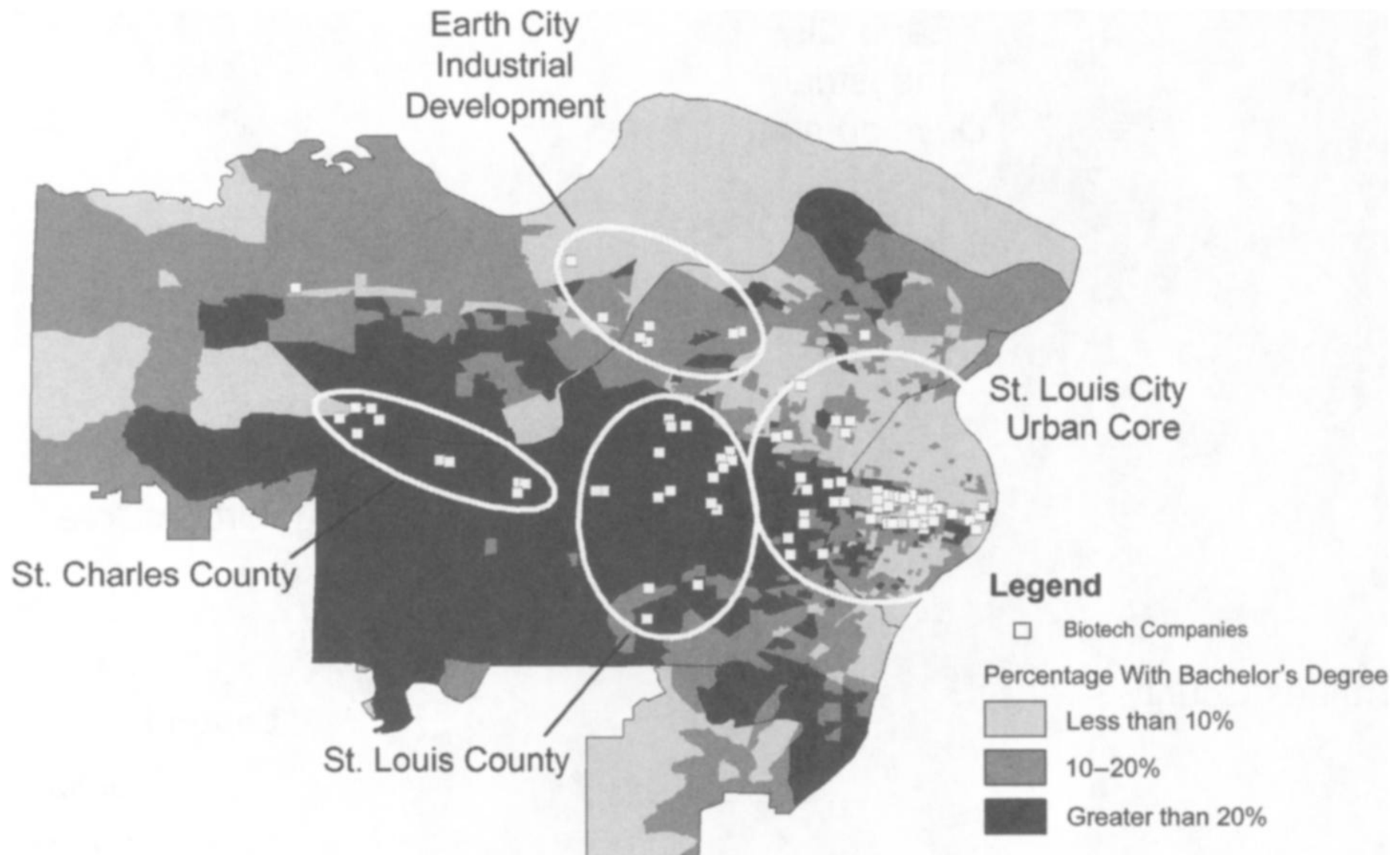
"Geography of Opportunity": Poverty, Place, and Educational Outcomes (Tate, 2008)



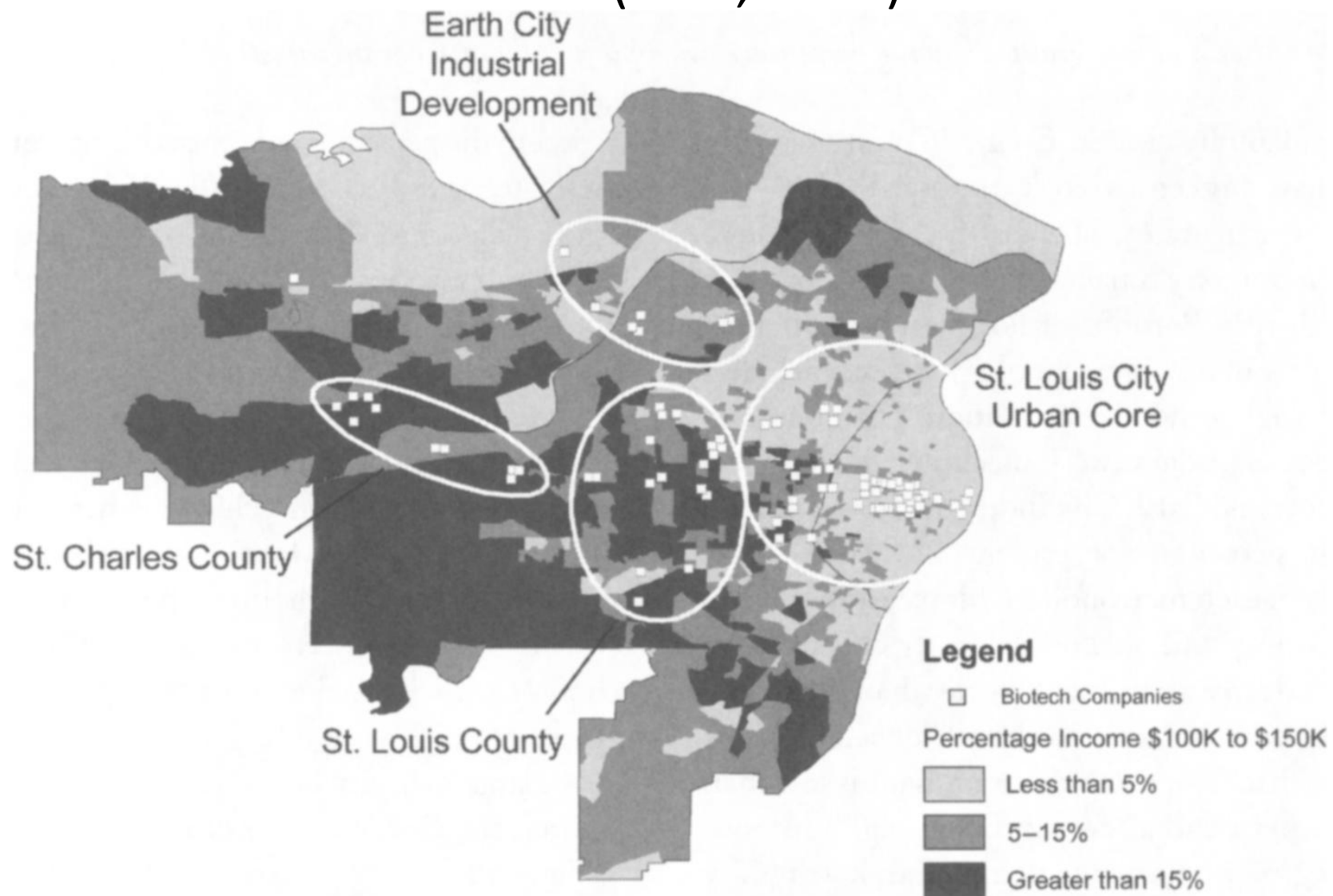
"Geography of Opportunity": Poverty, Place, and Educational Outcomes (Tate, 2008)



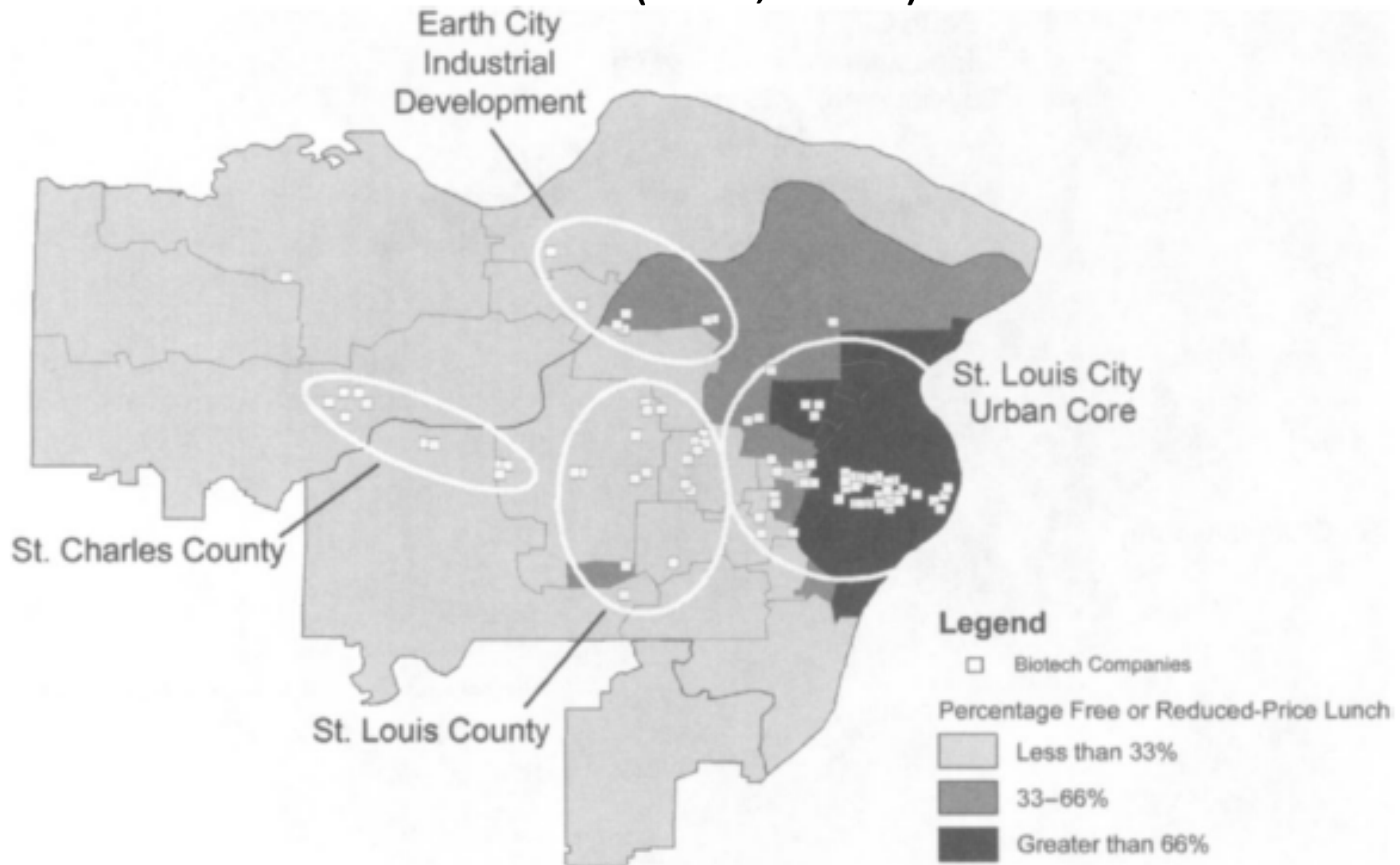
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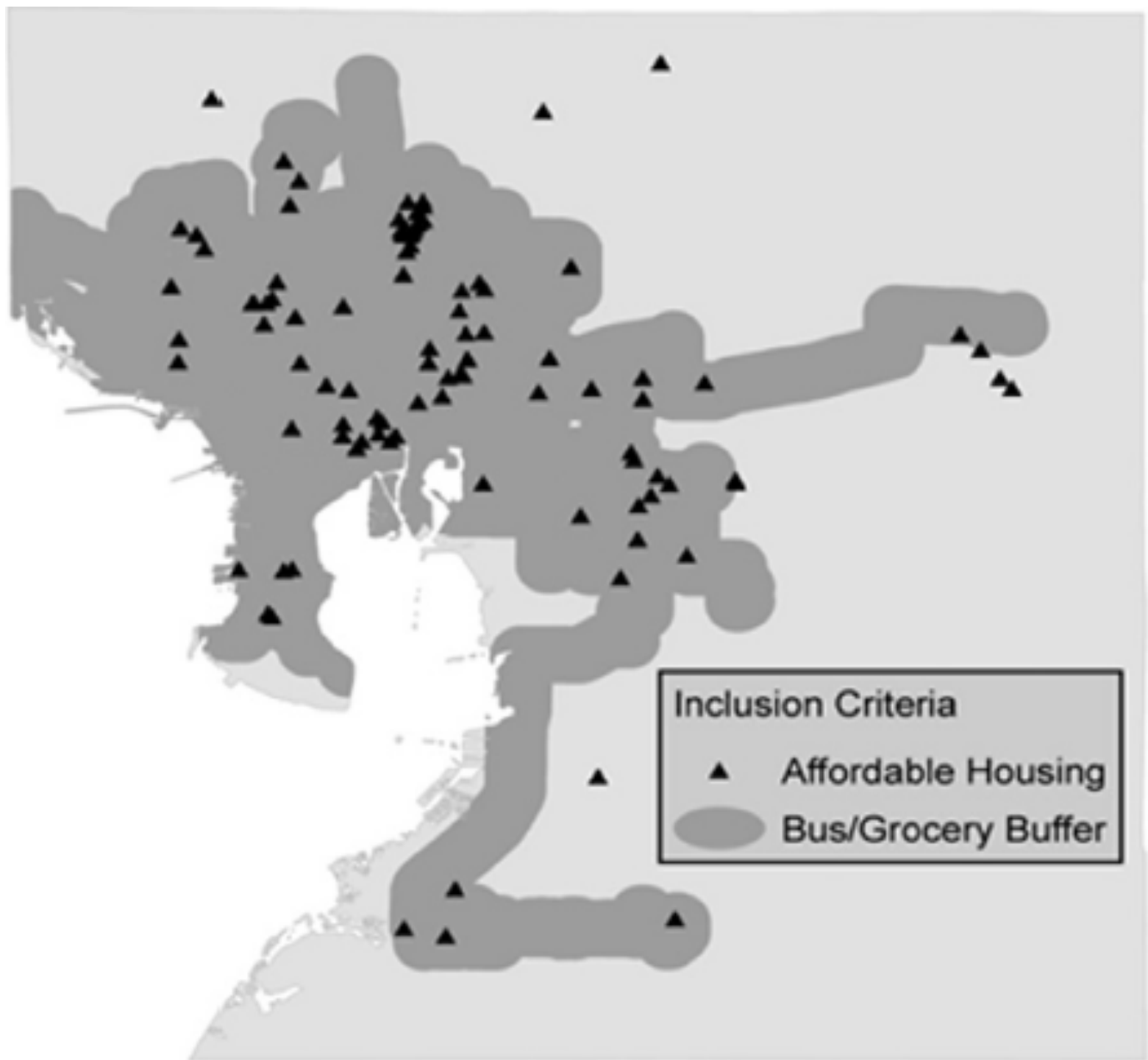


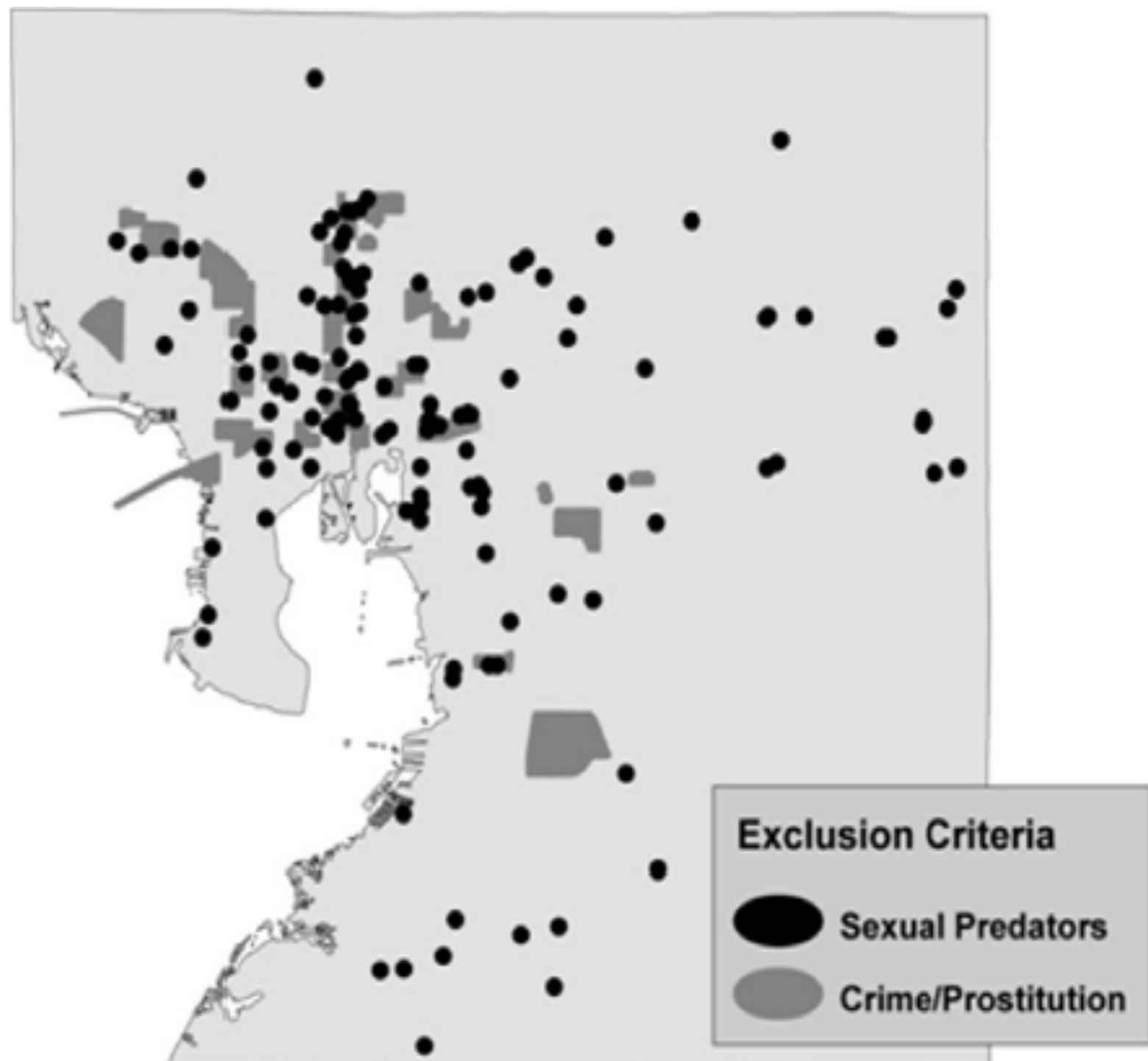
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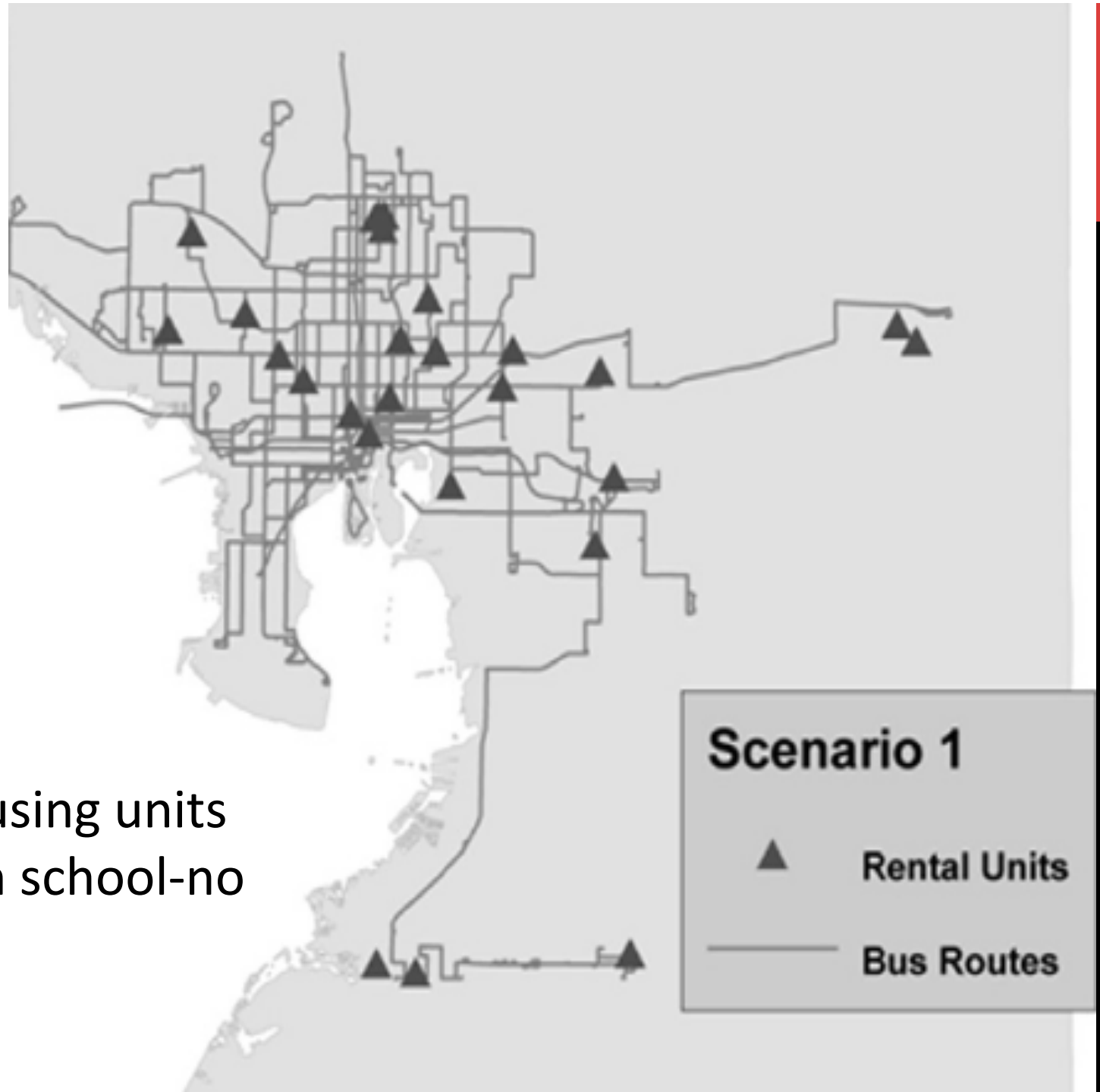
**Using GIS to enhance programs
serving emancipated youth
leaving foster care (Batsche &
Reader, 2011)**



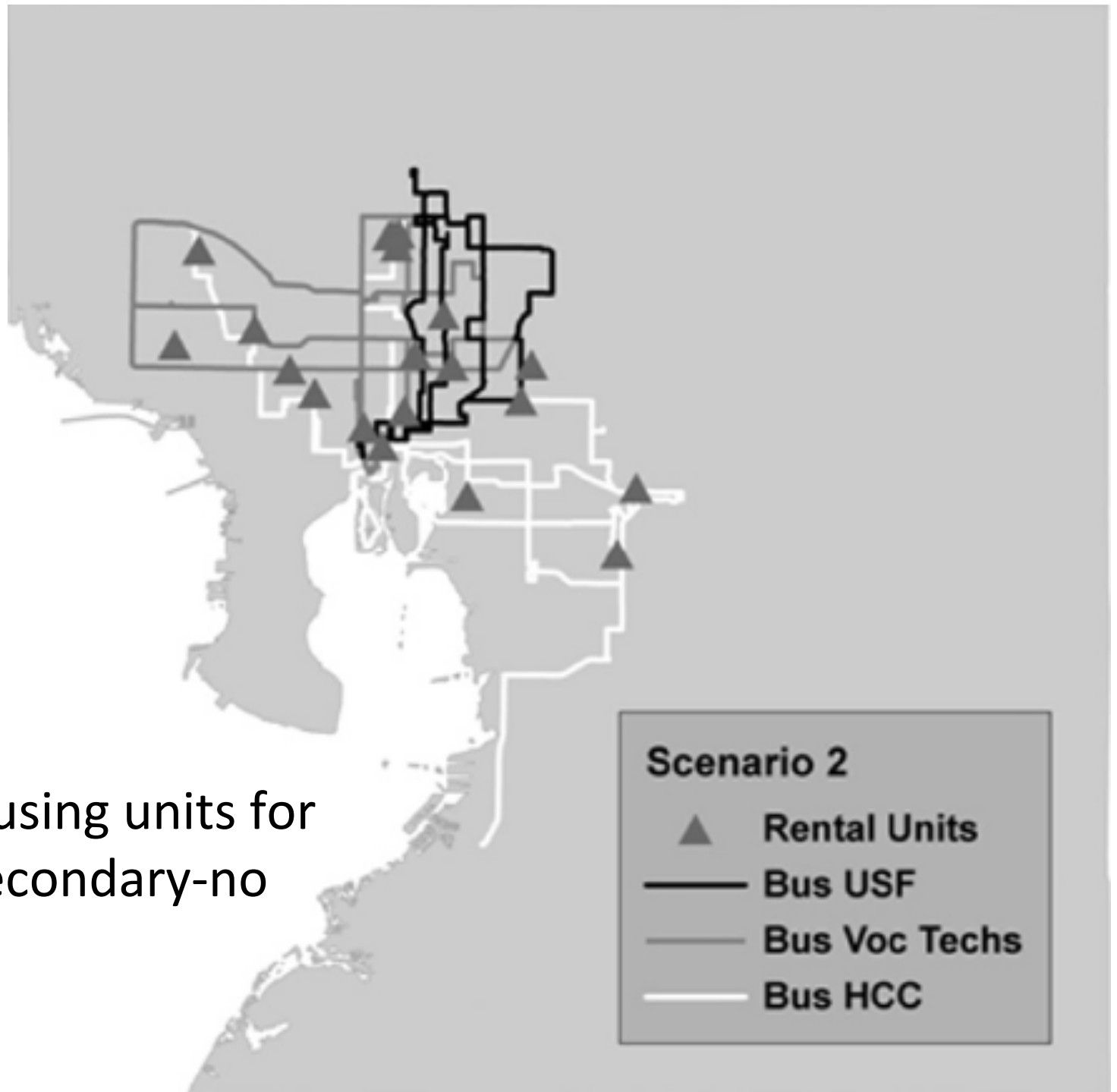




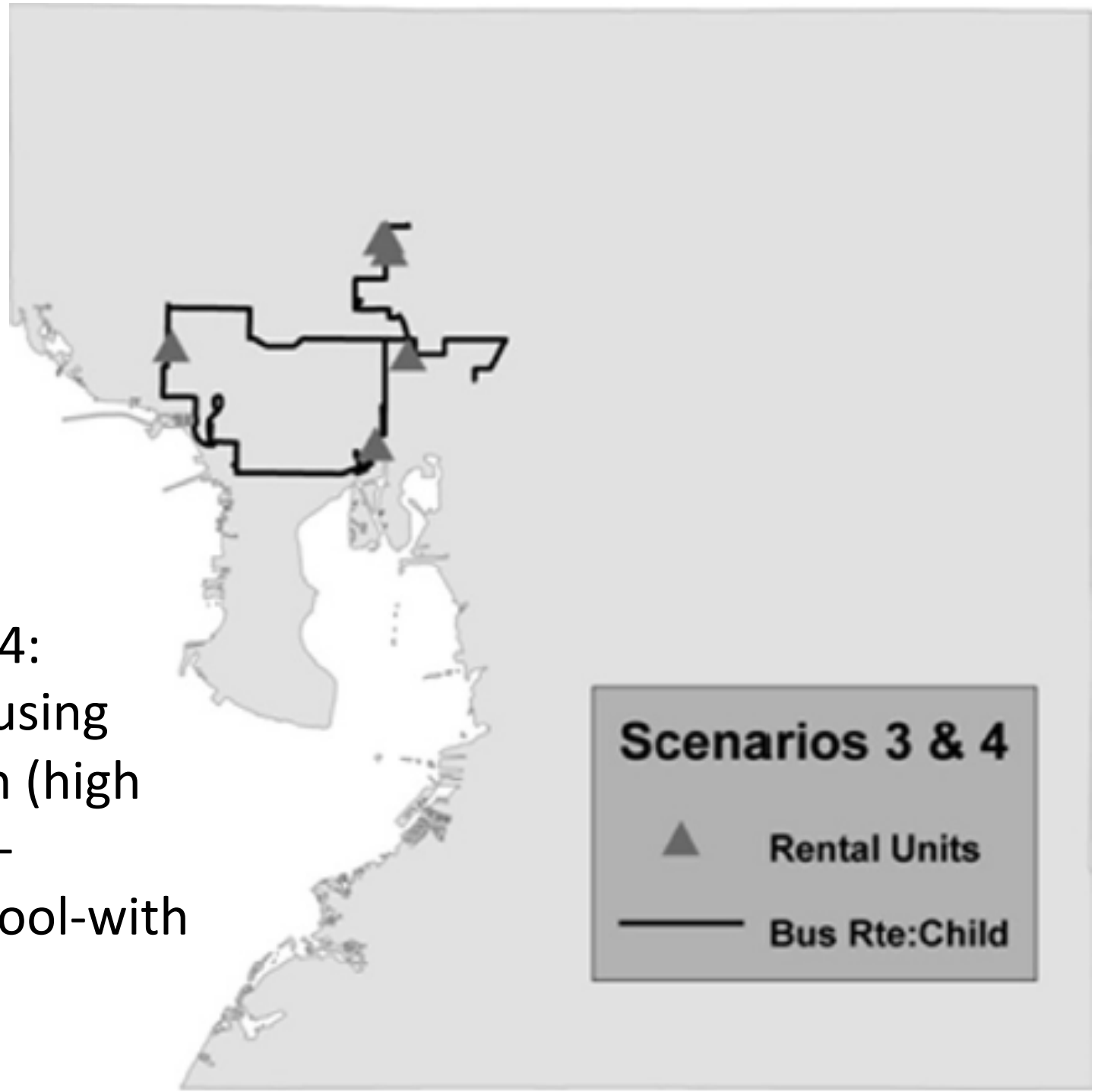
Scenario 1:
Affordable housing units
for youth (high school-no
children)



Scenario 2:
Affordable housing units for
youth (post-secondary-no
children).



Scenarios 3 & 4:
Affordable housing
units for youth (high
school or post-
secondary school-with
children).

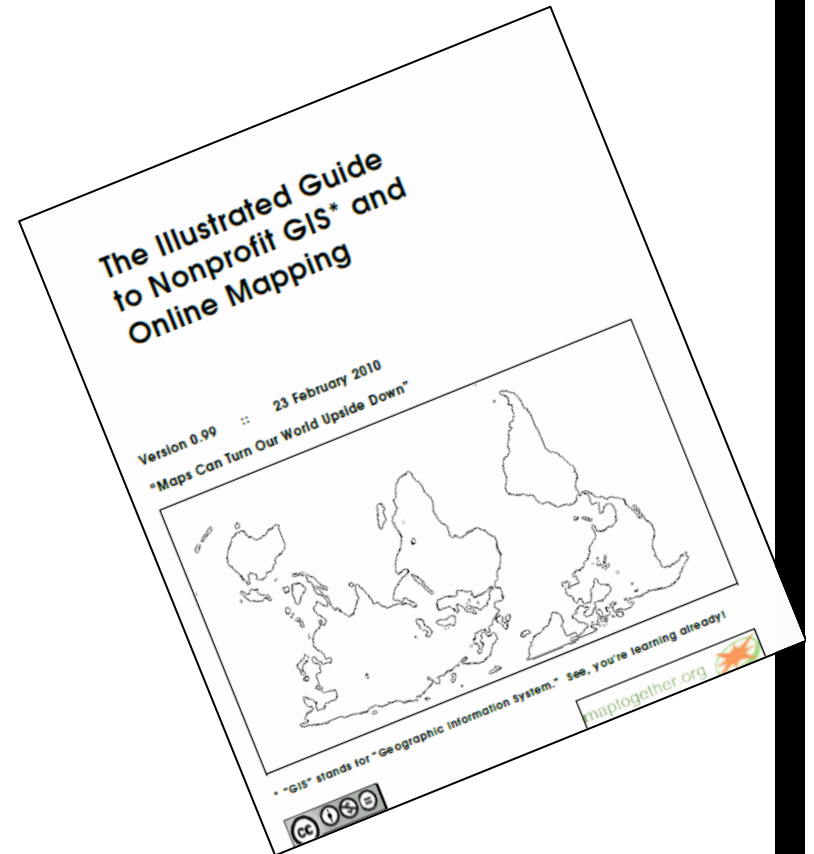


FREE GIS RESOURCES

MAPTOGETHER

<http://maptogether.org/nonprofit-mapping>

- Source of GIS and map related information for non-profits
- Includes a GIS in non-profits primer

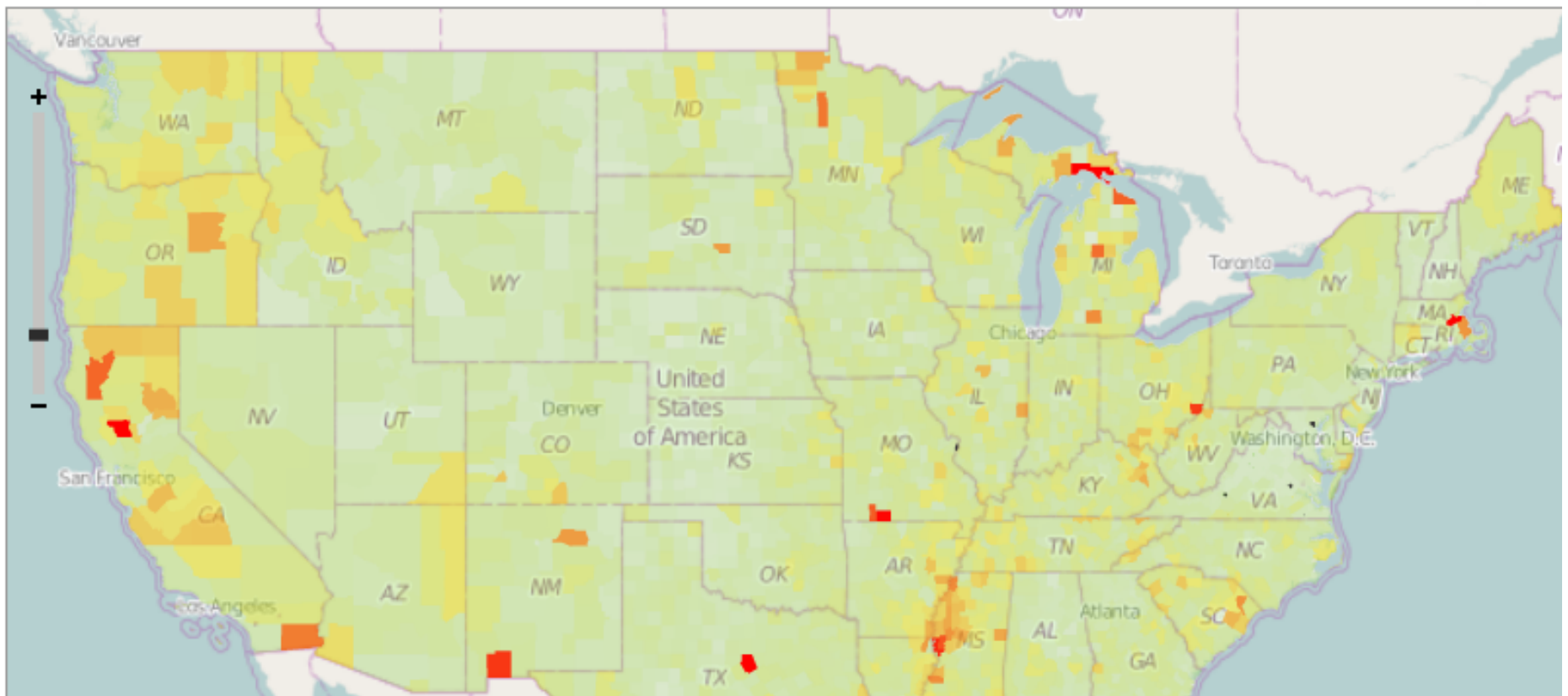


OPENHEATMAP

	Website	Openheatmap.com
Features	Census data installed	
	Able to upload data	✓
	Geocoding options	
	Customizes reports	
	Keeps data private	
	Allows user to save work	✓

OPENHEATMAP

Unemployment in the United States





OpenStreetMap

	Website	Openstreetmap.org
Features	Census data installed	
	Able to upload data	✓
	Geocoding options	✓
	Customizes reports	
	Keeps data private	
	Allows user to save work	✓

Pushpin



	Website	Thearda.com
Features	Census data installed	✓
	Able to upload data	
	Geocoding options	
	Customizes reports	✓
	Keeps data private	
	Allows user to save work	



the ARDA

Association of Religion Data Archives

PROVIDING FREE ACCESS SINCE 1998

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(Advanced Search)

Data Archive

International

US Congregational Membership

Religious Groups

QuickStats

QuickLists

GIS Maps

THE LEARNING CENTER

RELIGION RESEARCH HUB

THE PRESS ROOM
featuring AHEAD OF THE TREND

CONGREGATIONAL RESOURCE CENTER

THE LEARNING CENTER

Learning activities, syllabi, and other resources for teachers and students of all levels.

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A PROJECT SUPPORTED BY:

LILLY ENDOWMENT INC

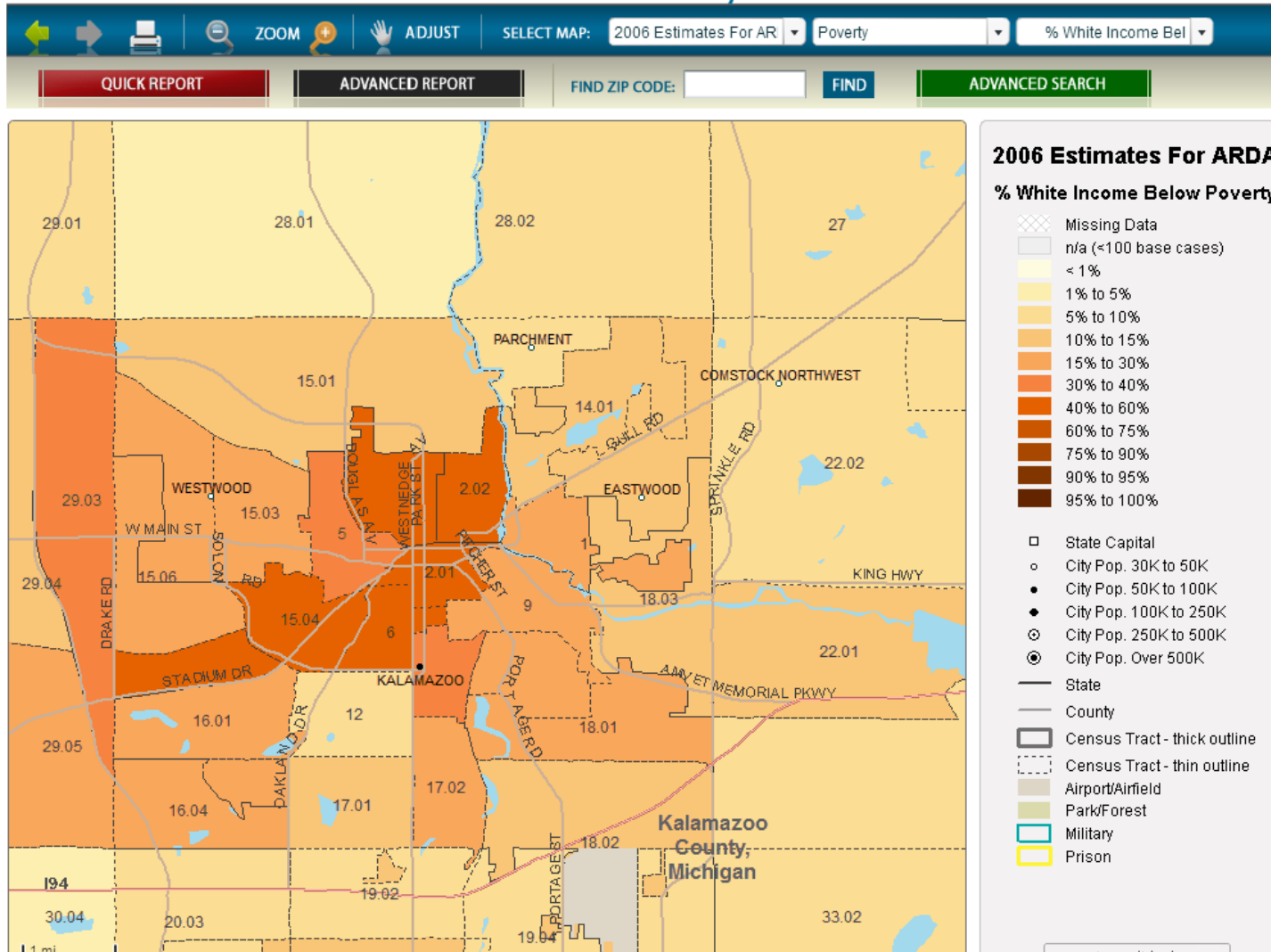
JOHN TEMPLETON FOUNDATION

PENN STATE

CHAPMAN UNIVERSITY



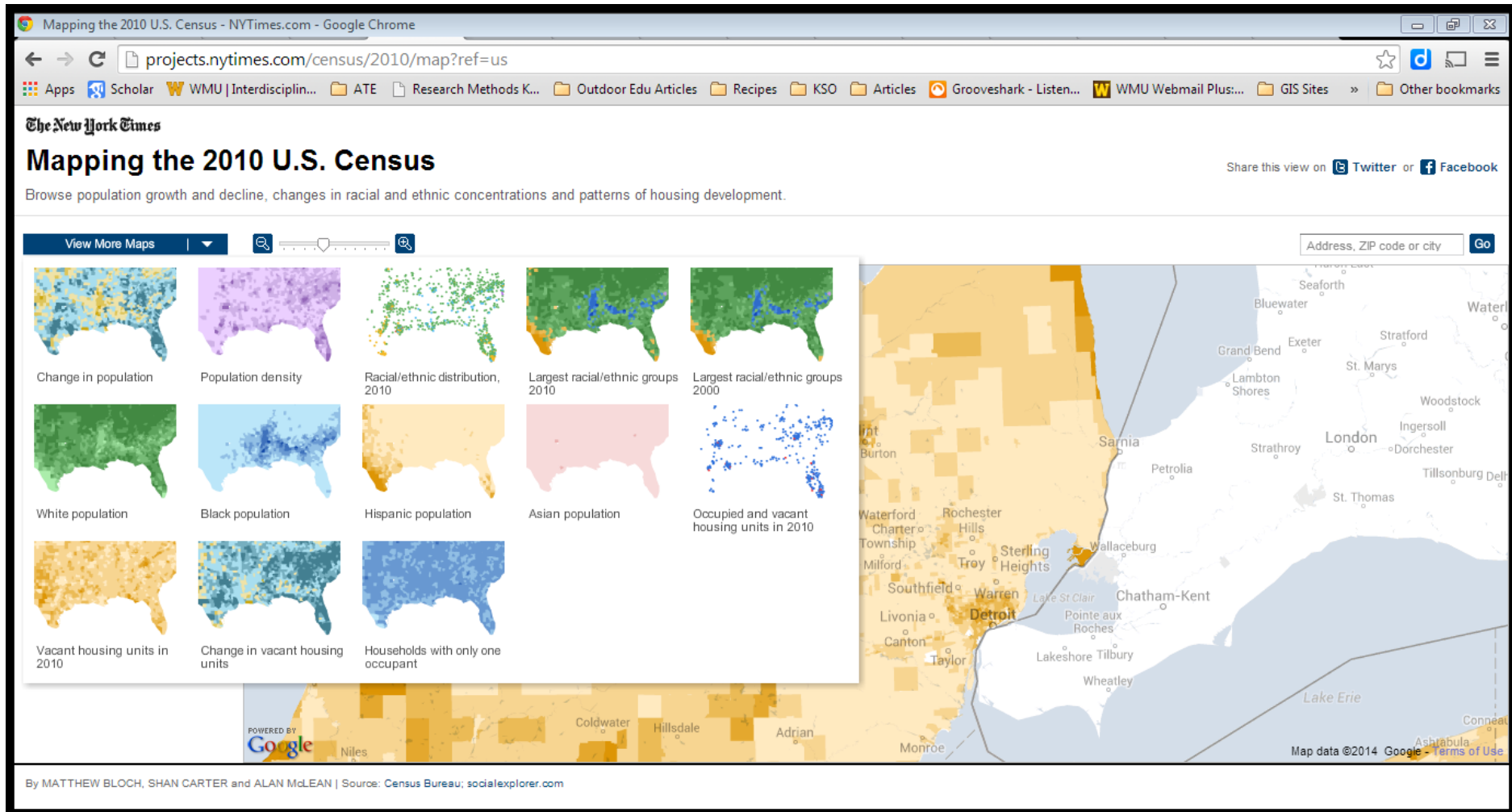
2006 Estimates For ARDA - % White Income Below Poverty Level



Mapping America: Every City, Every Block

	Website	Projects.nytimes.com/ census
Features	Census data installed	✓
	Able to upload data	
	Geocoding options	
	Customizes reports	
	Keeps data private	
	Allows user to save work	

Mapping America: Every City, Every Block





	Website	Datadrivendetroit.com
Features	Census data installed	✓
	Able to upload data	
	Geocoding options	
	Customizes reports	✓
	Keeps data private	
	Allows user to save work	

MAPAS^{2.0}

a project of the Community Research Institute



About MAPAS

Do you want to know more about this online mapping project? Here are an introduction, FAQs, and a user guide.



MAPAS 2.0

NEW! Easily map data to get access to relevant local, state and federal information through our interactive mapping tool. Now featuring new data and functionality.

[View Demo](#)



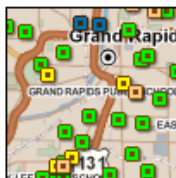
Tutorials

Do you want to learn how to get started or an explanation of how a tool works? Screencasts provide step-by-step instructions for using MAPAS. Available in English and Spanish.



News and Updates

Do you want to know what new datasets have been added or what tools have been upgraded? We post our updates here.



MAPAS bambino

This area is used to test new tools and functionality. Please visit to see our progress

MAPAS^{2.0}

a project of the Community Research Institute

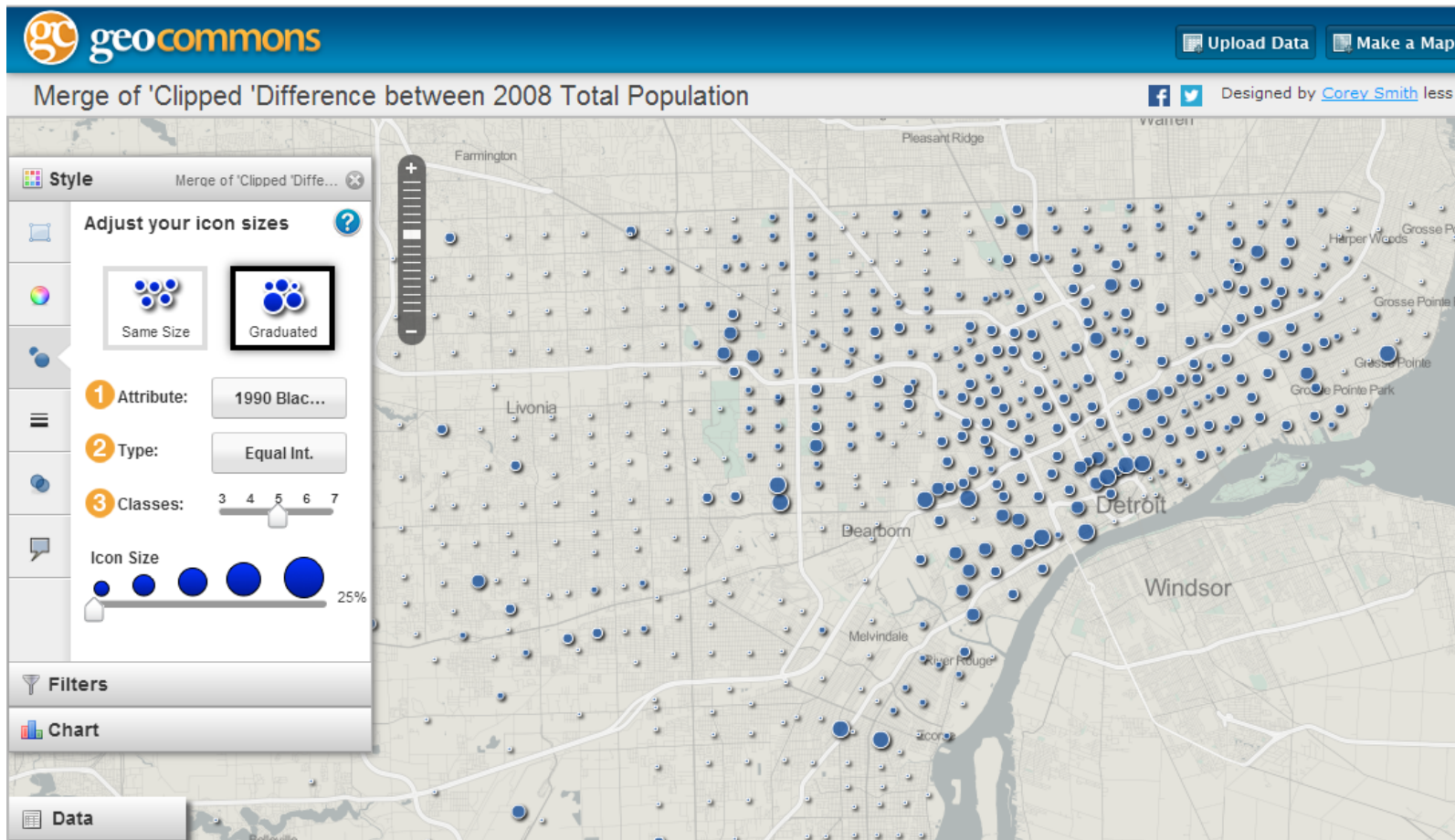
	Website	Gis.cridata.org/maps/ mapas/
Features	Census data installed	✓
	Able to upload data	
	Geocoding options	
	Customizes reports	✓
	Keeps data private	
	Allows user to save work	

UDS Mapper

	Website	Udsmapper.org
Features	Census data installed	✓
	Able to upload data	✓
	Geocoding options	✓
	Customizes reports	✓
	Keeps data private	
	Allows user to save work	✓



	Website	Geocommons.com
Features	Census data installed	
	Able to upload data	✓
	Geocoding options	✓
	Customizes reports	
	Keeps data private	✓
	Allows user to save work	✓



FREE AND





	Website	batchgeo.com
Features	Census data installed	
	Able to upload data	✓
	Geocoding options	✓
	Customizes reports	
	Keeps data private	✓
	Allows user to save work	



pro sign-in ▾

make maps

features

pro pricing

mobile

support

blog

Copy and then paste your location data below:

Example Address	City	State	Zip	Name	Phone Number	Group	URL
1 Crossgates Mall Road	Albany	NY	12203	Apple Store Cross Gates	(518) 869-3192	Example Group 1	http://www.apple.com/retail/...
Duke Rd & Walden Ave	Buffalo	NY	14225	Apple Store Walden Galleria	(716) 685-2762	Example Group 2	http://www.apple.com/retail/...
630 Old Country Rd.	Garden City	NY	11530	Apple Store Roosevelt Field	(516) 248-3347	Example Group 3	http://www.apple.com/retail/...
160 Walt Whitman Rd.	Huntington Station	NY	11746	Apple Store Walt Whitman	(631) 425-1563	Example Group 3	http://www.apple.com/retail/...

(Don't forget to include some header columns - You can also try our [Spreadsheet Template](#), or hit "Map Now" and try it out with our example data.)

Validate & Set Options

or

Map Now



Mapping should be this easy.

Mobile Maps

We have native and cross platform apps for many GPS enabled mobile phones and tablets including:

- iPhone and iPad
- Android
- Blackberry
- Windows Phone



[Mobile Maps »](#)

	Website	Cartodb.com
Features	Census data installed	
	Able to upload data	✓
	Geocoding options	✓
	Customizes reports	
	Keeps data private	✓
	Allows user to save work	✓



CARTO^{DB}

VISUALIZE

ANALYZE

DEVELOP

FREE

Academy plan

Up to 6 tables

Up to 25 MB

✓ **Community support**

✓ Sync tables

✓ Removable brand

✓ Private tables

✓ Private maps

50 k map views*

100 geocodings*

\$23/mo
Magellan plan

Up to 10 tables

Up to 50 MB

✓ **Online support**

✓ Sync tables

✓ Removable brand

✓ **Private tables**

✓ Private maps

50 k map views*

250 geocodings*

\$39/mo
John Snow plan

Up to 20 tables

Up to 100 MB

✓ **Online support**

✓ **Sync tables**

✓ Removable brand

✓ **Private tables**

✓ Private maps

100 k map views*

500 geocodings*

\$119/mo
Coronelli plan

Unlimited tables

Up to 500 MB

✓ **Online support**

✓ **Sync tables**

✓ **Removable brand**

✓ **Private tables**

✓ **Private maps**

500 k map views*

1,000 geocodings*



	Website	tableausoftware.com/public/
Features	Census data installed	
	Able to upload data	✓
	Geocoding options	✓
	Customizes reports	
	Keeps data private	✓
	Allows user to save work	✓



	Website	Socialexplorer.com
Features	Census data installed	✓
	Able to upload data	
	Geocoding options	
	Customizes reports	✓
	Keeps data private	
	Allows user to save work	



Choose your Social Explorer license

Free License

This is your current license.

\$
0⁰⁰

Free of charge

Sign Up

Pro License *

Paid for by a member institution.

\$
0⁰⁰

Paid for by
a member institution

Sign Up

Pro License

Buy yourself a license

\$
41²⁵

Charged annually \$495
or \$150 for 3 months

Sign Up



	Website	Esri.com
Features	Census data installed	
	Able to upload data	✓
	Geocoding options	✓
	Customizes reports	
	Keeps data private	✓
	Allows user to save work	✓

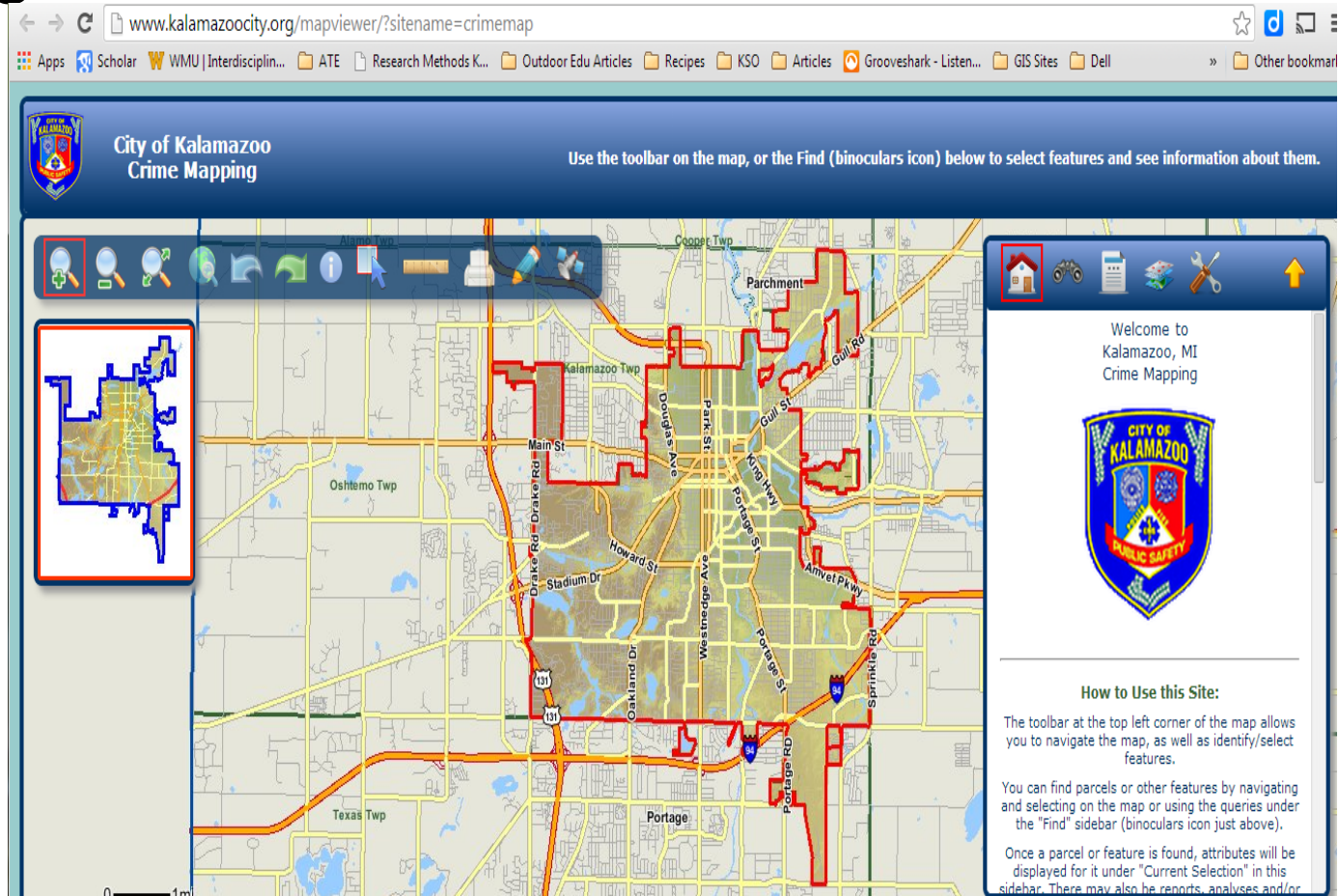


Nonprofits can get reduced pricing through:

- **Techsoup.org (\$185)**
- **Esri.com/nonprofit (\$100)**

ALTERNATIVE ACCESS TO EXPENSIVE SOFTWARE

Local governments often have access to GIS



LOCAL UNIVERSITIES

Local universities

Geography departments

Geography students



SOURCES OF GEOGRAPHIC DATA

Census-offers general information about spaces

- TIGER
- American Fact Finder 2

Center for Disease Control

Michigan Shapefile Library

Google!

SOURCES OF GEOGRAPHIC DATA

Data you collect

- i.e., participants-collect addresses and can geocode them
- Locations of service delivery points
- Location of schools in proximity to afterschool programs

An Introduction to Mapping Software Options for Geographical Information Systems (GIS)

You may download a PDF of this presentation at:

www.ieval.net



THANK YOU AND
HAPPY MAPPING!!!