
GIS TRAINING



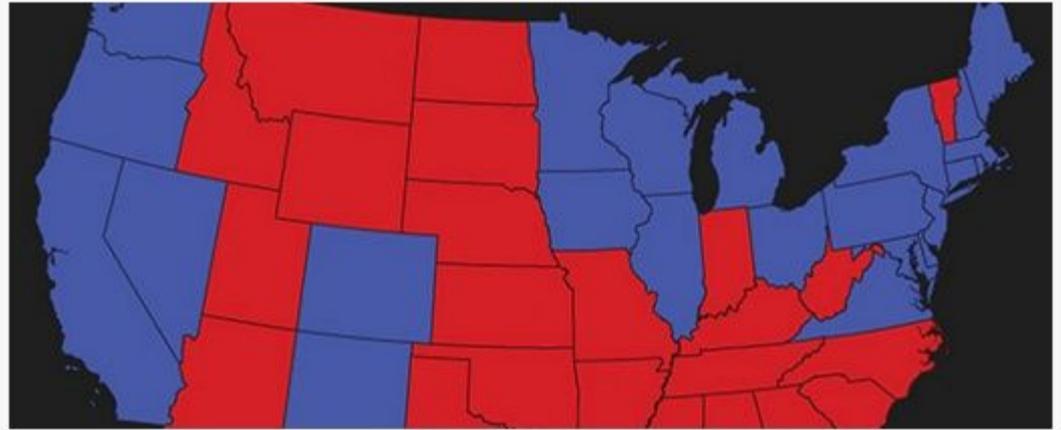
Presented by: Daniela Waltersdorfer & Nohely Alvarez

Introduction to GIS & Mapping

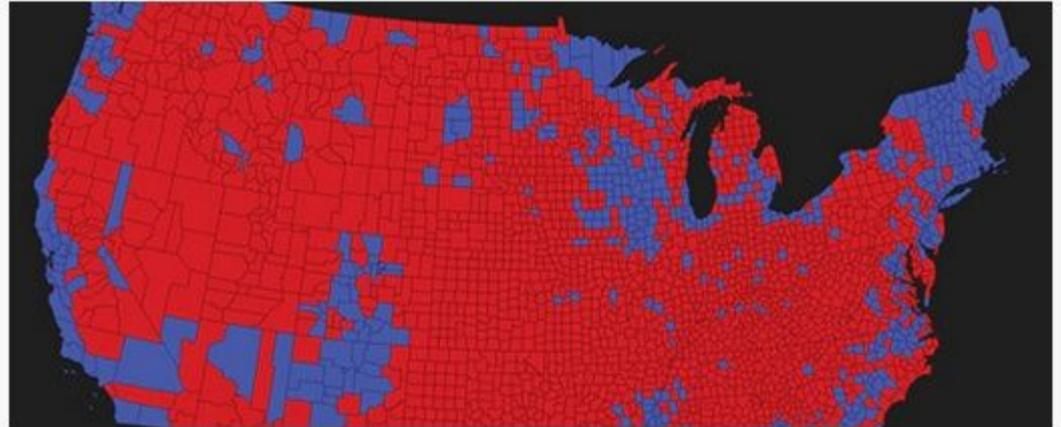
- What is Geographic Information Systems (GIS)?
 - ◆ System of computer software, hardware and data where one can analyze and present the information that is tied to a spatial location
- Why is it important?
 - ◆ Information, news, reports, natural disasters, localizing
 - ◆ Exploring data using GIS turns makes it visible
- What are the tools needed to proceed?
 - ◆ Data, software, a question*

What can a map show you?

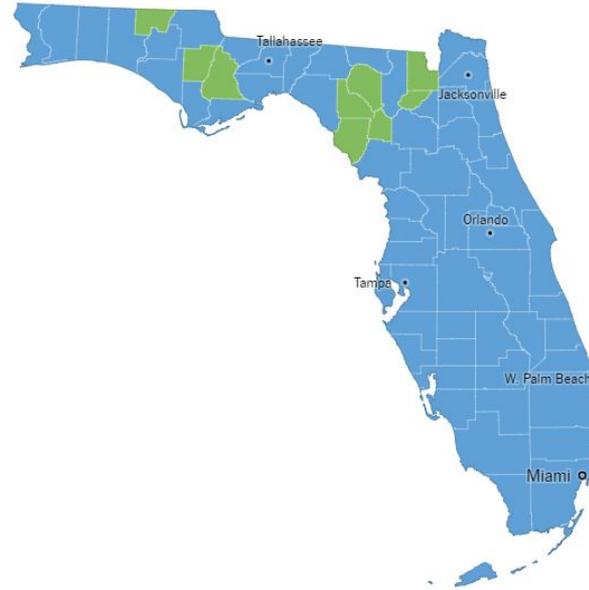
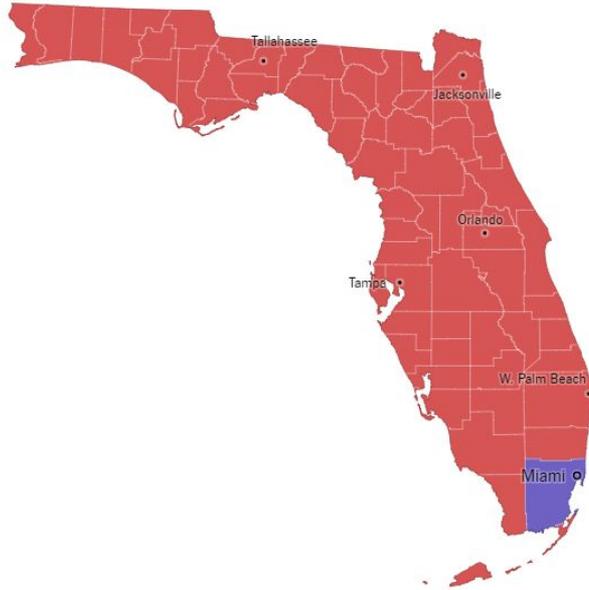
- Can help answer a question:
 - ◆ E.g. “Which communities in Miami-Dade are most distressed?”
- Scale of the map and the scale of the data affect what you show. E.g. town, county, state/ Census tracts, blocks groups
- The way you display features on the map helps clarify the information your map conveys



Map A



Map B

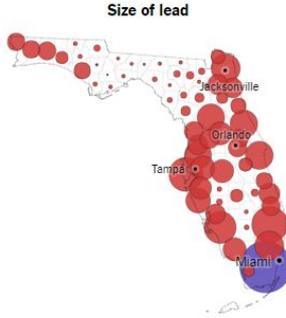


Look familiar?

Florida Primary Election

2016

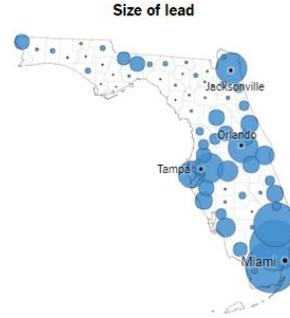
How Republicans Voted



LEADER ■ Trump ■ Rubio

Circle size is proportional to the size of a candidate's lead.

How Democrats Voted



LEADER ■ Clinton ■ Sanders

Circle size is proportional to the size of a candidate's lead.

Trump

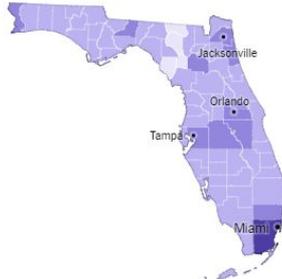


TRUMP'S VOTE SHARE

15 25 35 45%

More evangelicals

Rubio

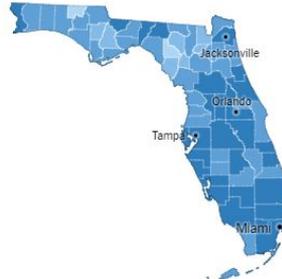


RUBIO'S VOTE SHARE

15 25 35 45%

Fewer evangelicals

Clinton

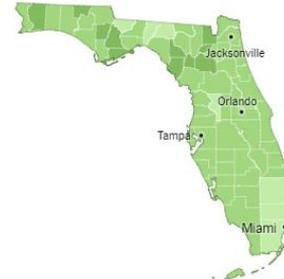


CLINTON'S VOTE SHARE

15 30 45 60%

More blacks

Sanders



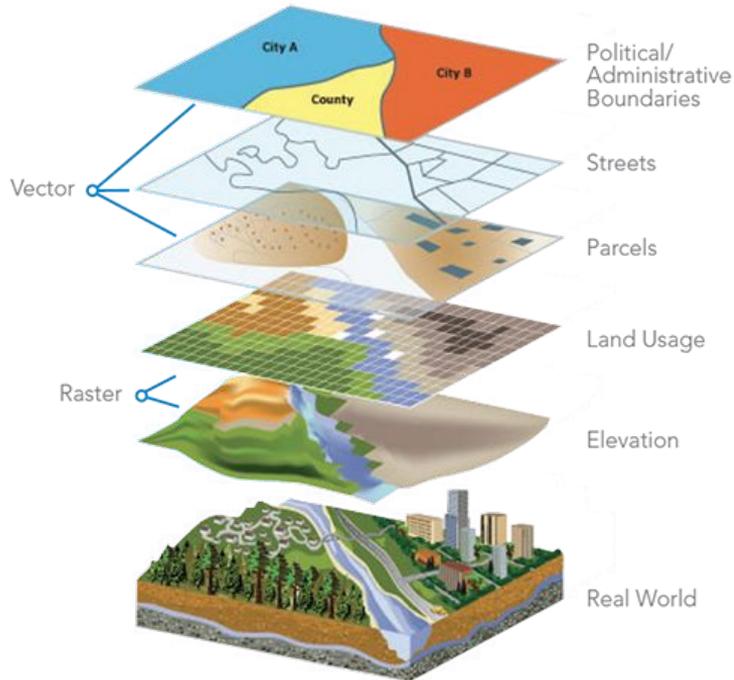
SANDERS'S VOTE SHARE

15 30 45 60%

Fewer blacks

Types of Data

Two types of data can be used in a GIS database



● Attribute Data

- Says *what* a feature is
- Examples:
 - Statistics
 - Text
 - Images

● Spatial Data

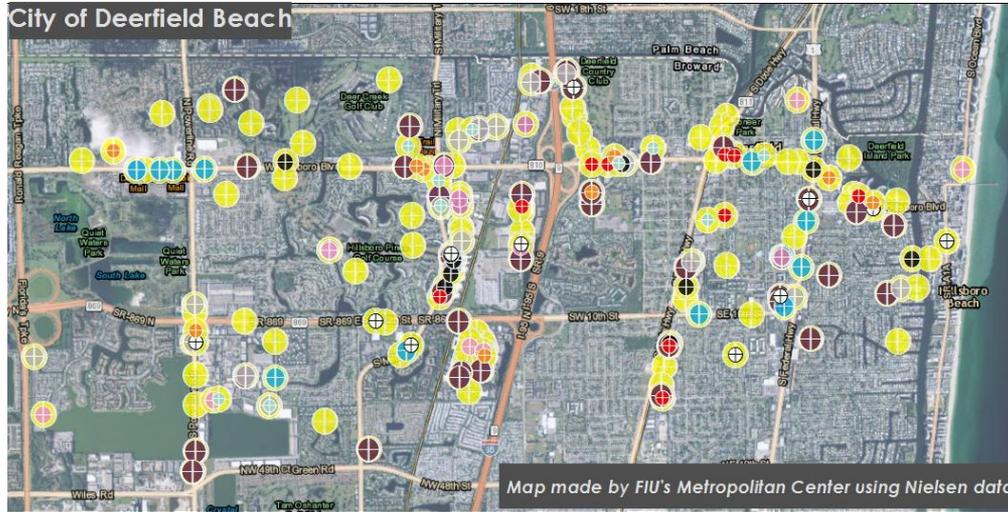
- Says *where* the feature is
- Coordinate based
- Vector Data
 - Points
 - Lines
 - Polygons (zones or areas)
- Raster Data:
 - A continuous surface

Examples of Local Maps

Polygon vs. Point Data

++ Basic Spatial Analysis Tool

Top Ten Advanced Industry Businesses by Location

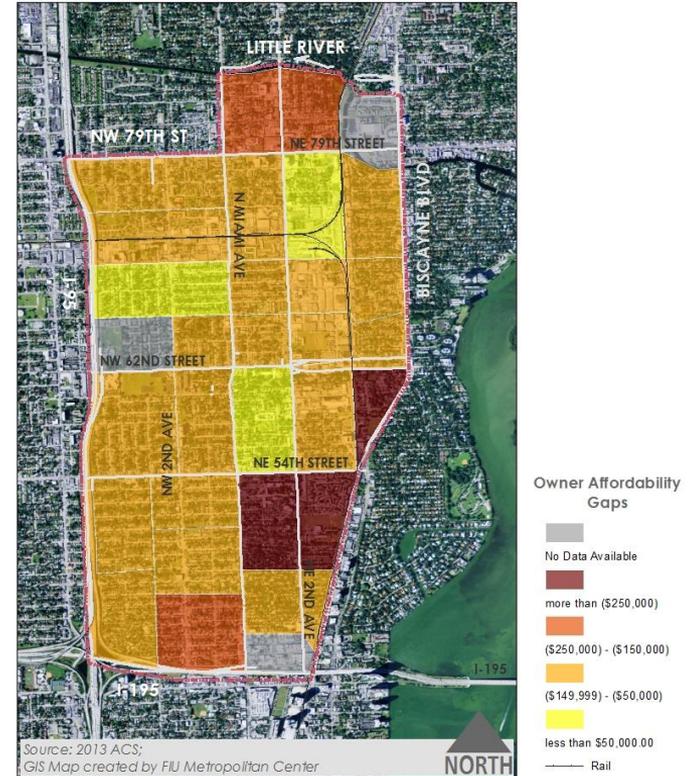


Legend

- Management, Scientific, and Technical Consulting
- Architecture and Engineering
- Other Miscellaneous Manufacturing
- Wireless Telecommunications Carriers
- Other Telecommunications
- Computer Systems Design
- ⊕ Data Processing and Hosting
- Medical Equipment and Supplies
- Medical and Diagnostic Laboratories
- Scientific Research and Development



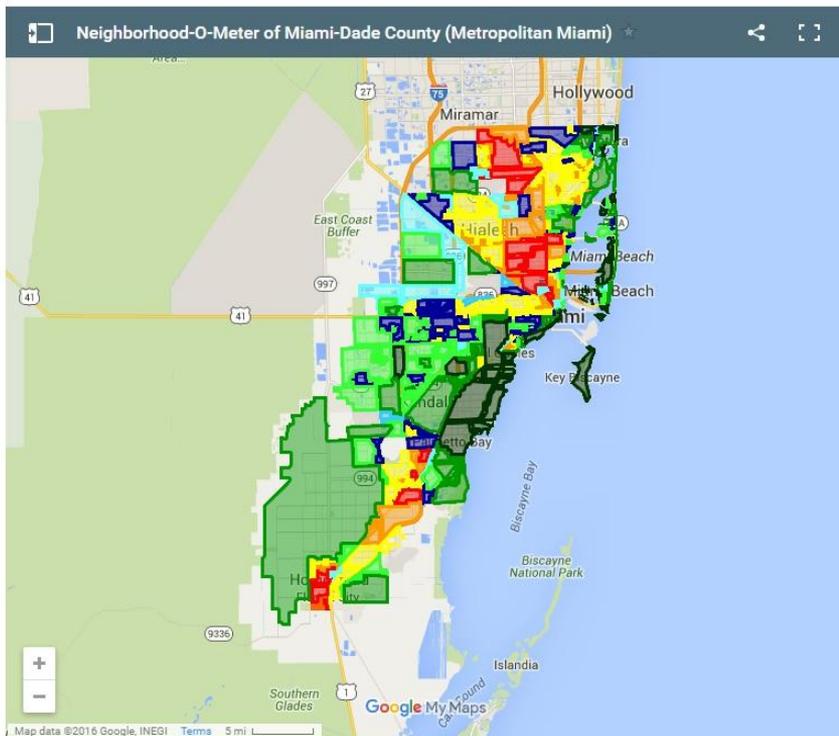
Owner Affordability Gaps in Little Haiti by Census Block Group



Effective Data Viz

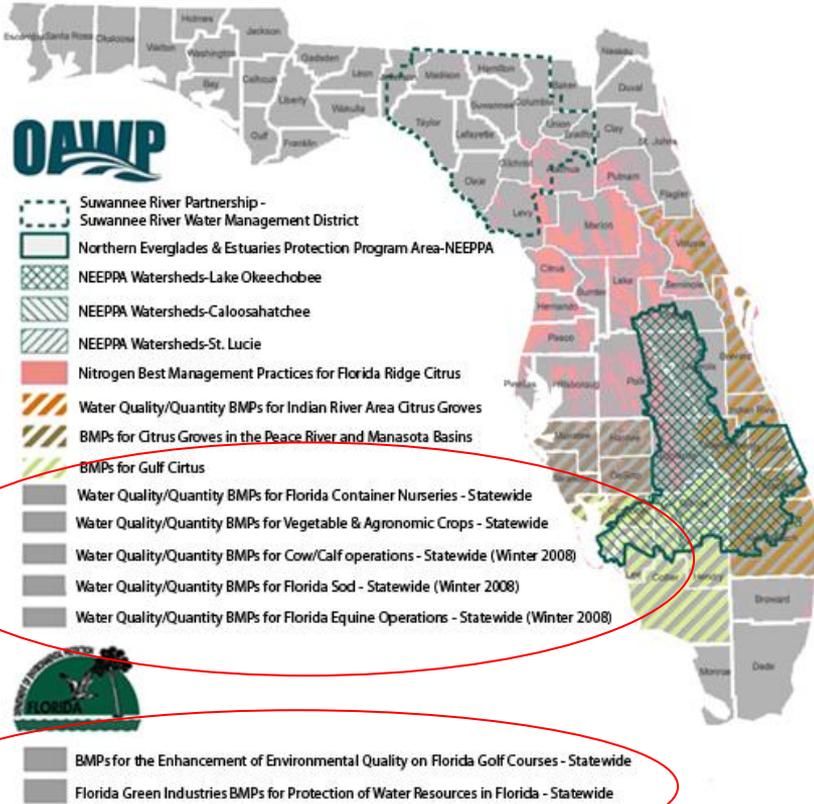
- Green is good, unless there are parks being mapped
- Purple and Orange is good since they don't have many connotations
 - ◆ Orange scale can be good for negative connotations
- Differentiate Hue and Saturation Values
 - ◆ Easier for the eyes

Identifying Bad Maps



AVOID: “BEST/ WORST” Scales
Definitions of best and worst differ among people and their preferences

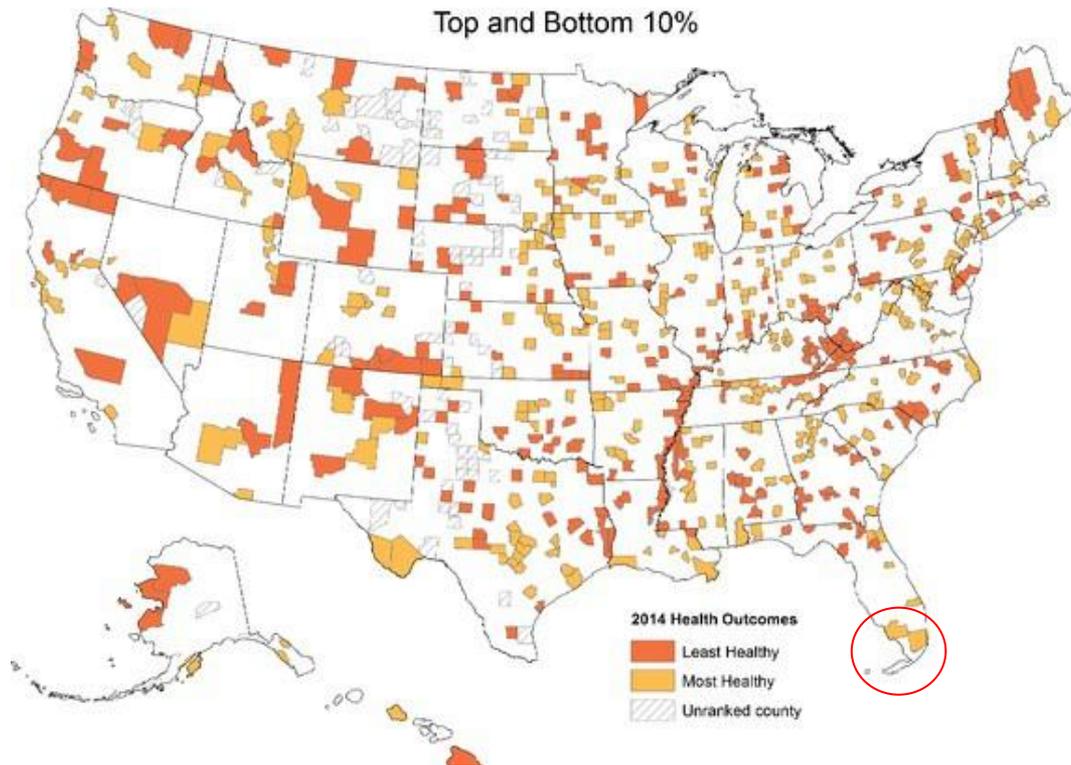
- “**Dark Green** – Very nice, perfectly maintained, very safe.
- Standard Green** – Quite nice, very maintained, quite safe.
- Light Green** – Above average areas, mostly maintained, mostly well-kept and safe.
- Blue** – Decent to reasonable areas, decently maintained, partially safe.
- Light Blue** – Mostly Non-Residential Areas – Neutral/Variable.
- Yellow** – Below average areas, below average maintained, partially/mostly unsafe.
- Orange** – Mostly bad areas, poorly maintained, unsafe.
- Red** – Bad areas, very unsafe.”



AVOID CONFUSING LEGENDS

There are 7 categories in the legend with the same color. How can you differentiate them?

It could be that some categories match geographically with some others, but do they all share the same geographic location?



The boundaries of Miami-Dade County do not match, and yet this map was reported in a newspaper stating, *“In Florida, Miami-Dade ranked the second highest for length of life behind only its ritzy neighbor to the west, Collier County. Dade ranked 20th overall for quality of life”*

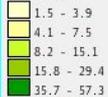
Source: Miami New Times/ University of Wisconsin

Map 1

Percent of Persons Who Are Hispanic or Latino (of any race), Florida by County
Source: Census 2000

Data Classes

Percent



Boundaries



Approx. 485 miles across.
Prepared with American FactFinder

Source: City Lab - Andrew Wiseman

WATCH YOUR CLASSES

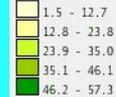
What are you trying to show? Different Ranges = Different Maps

Map 2

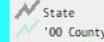
Percent of Persons Who Are Hispanic or Latino (of any race), Florida by County
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Percent



Boundaries



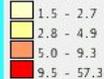
Approx. 485 miles across.
Prepared with American FactFinder

Map 3

Percent of Persons Who Are Hispanic or Latino (of any race), Florida by County
Source: Census 2000

Data Classes

Percent



Boundaries



Features



Items in gray text
are not visible
at this zoom level

Approx. 485 miles across.
Prepared with American FactFinder

How do we start mapping?

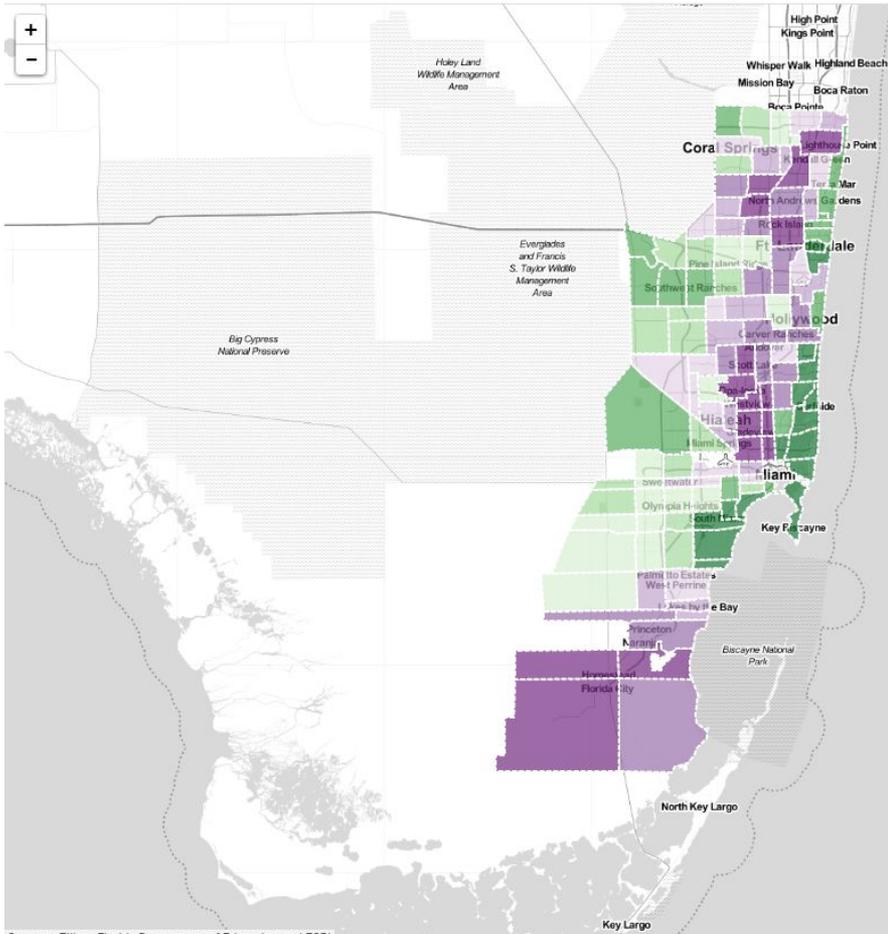
Applications:

- ArcGIS
- QGIS*
- [CartoDB](#)
- [Mapbox](#)
- Mapzen
- Leaflet
- OpenStreetMap*

Features needed:

- Shapefiles
- CSV
- KML
- [GeoJson](#)

Local Open Source Mapping:



Sources: Zillow, Florida Department of Education and ESRI

THE HOUSING MARKET

What will your money buy?

By CHRIS ALCANTARA and NICHOLAS NEHAMAS
Published: Sept. 18, 2015

Skyrocketing real estate prices make **finding an affordable home** difficult for many South Floridians. This tool shows where you can afford a home and how school quality, safety and annual value growth compare. Here's how to use it:

1. Select **single-family home** OR **condo/townhouse**
2. Select **annual household income** OR **price**

\$



Leaflet | Map tiles by Stamen Design, under CC BY 3.0. Data by OpenStreetMap, under ODbL.

Your turn to map!

1

—

Download Census Data: Median Household Income

2

Open Miami-Dade's Open County Portal

3

Create a CartoDB account

Additional Open Source Mapping:

- [OpenStreetMap](#)
- [QGIS](#)

Other forms of visualizing data:

[Little Havana Infographic](#)
[Population Changes](#)
[Stop n Frisk - NYC](#)

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