

Overview of Mapping using QGIS

Week 11

November 7, 2022

URBST 200 | Erin Lilli

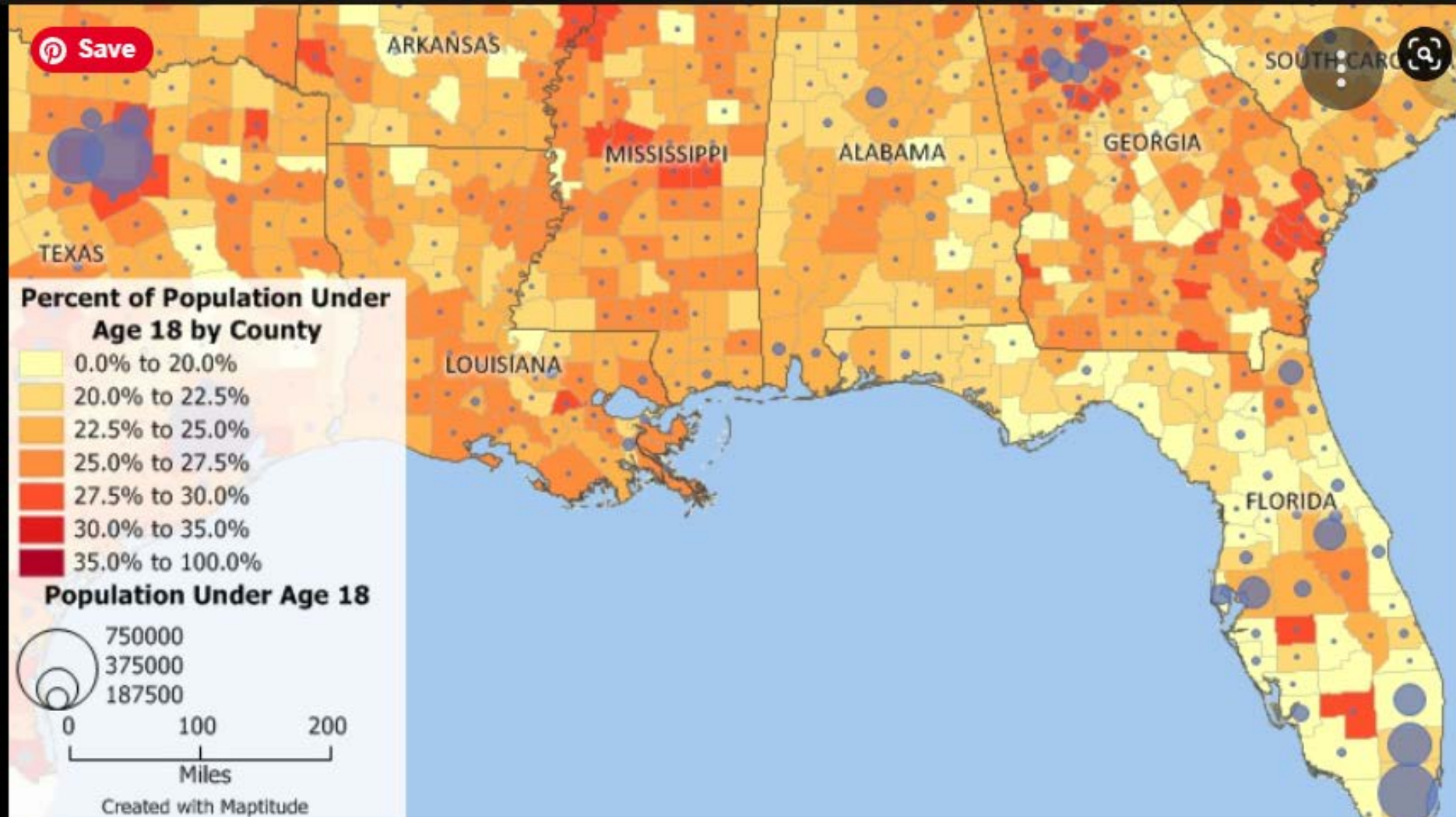
Overview of Mapping using QGIS

1. Discuss Videos – What and Why QGIS
2. Making sense of spatial data, examples of mapped data
 - Patterns
 - Ranges (regions coded to show data within a range of results_
 - Points (specific location of datapoints, e.g., buildings, schools, shops etc.)
3. What we need before we dive into QGIS
 - Geography: shapefiles
 - GEOID datasets

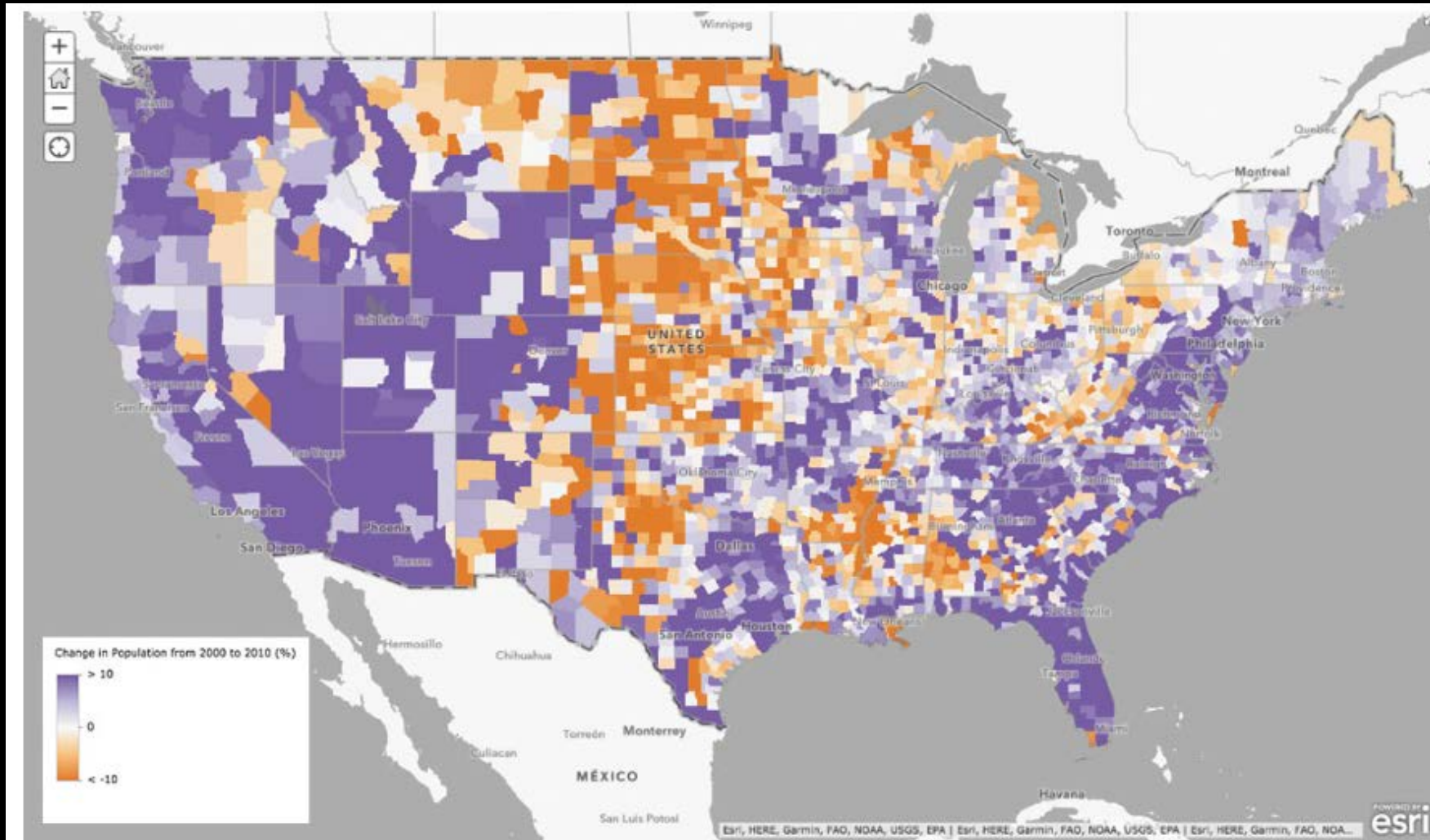
What and Why QGIS

- Discuss Videos – What is and Why QGIS?
 -

Making sense of spatial data...how to read it

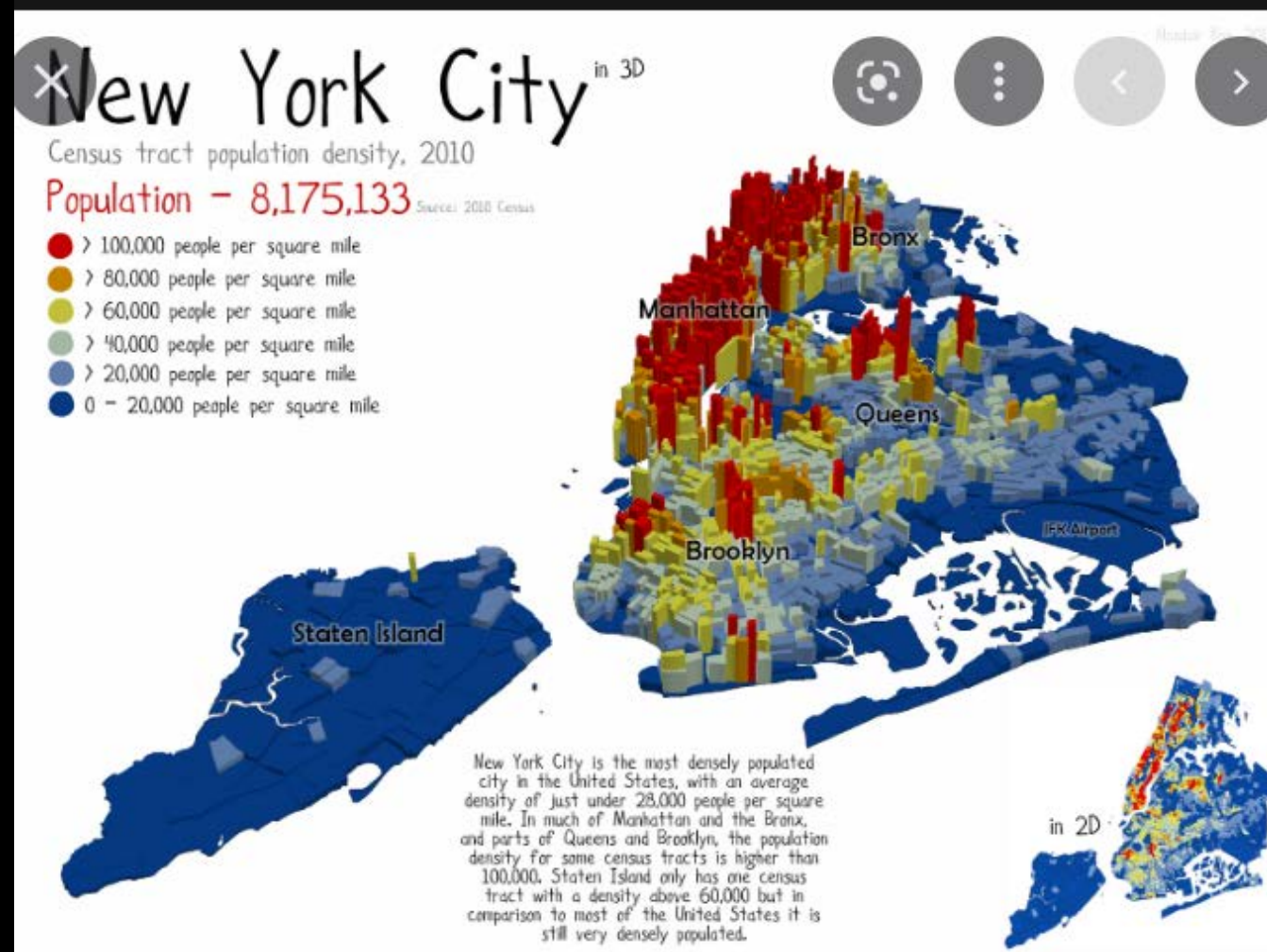


Making sense of spatial data...how to read it

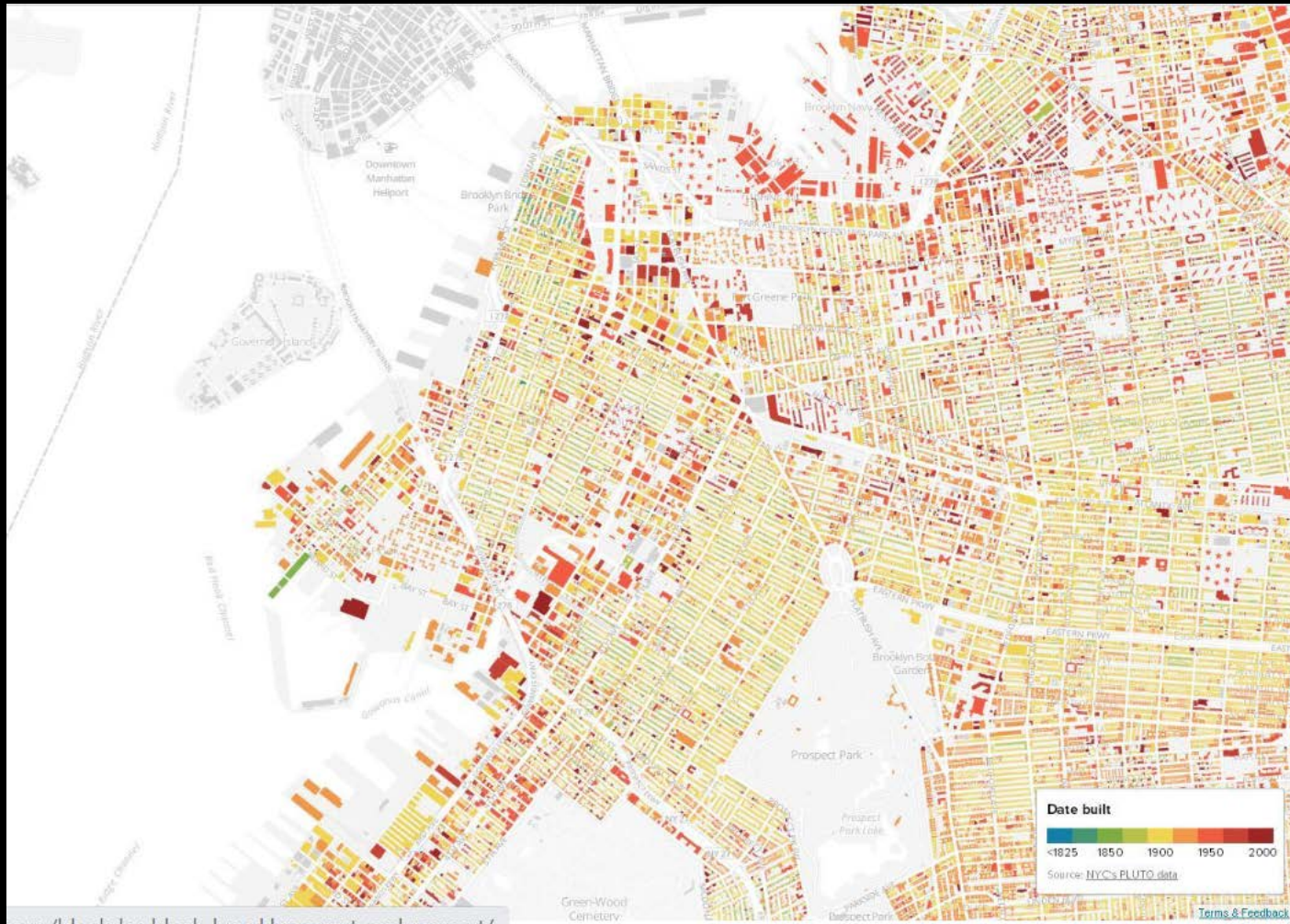


2000-2010 Population Change.

Making sense of spatial data...how to read it



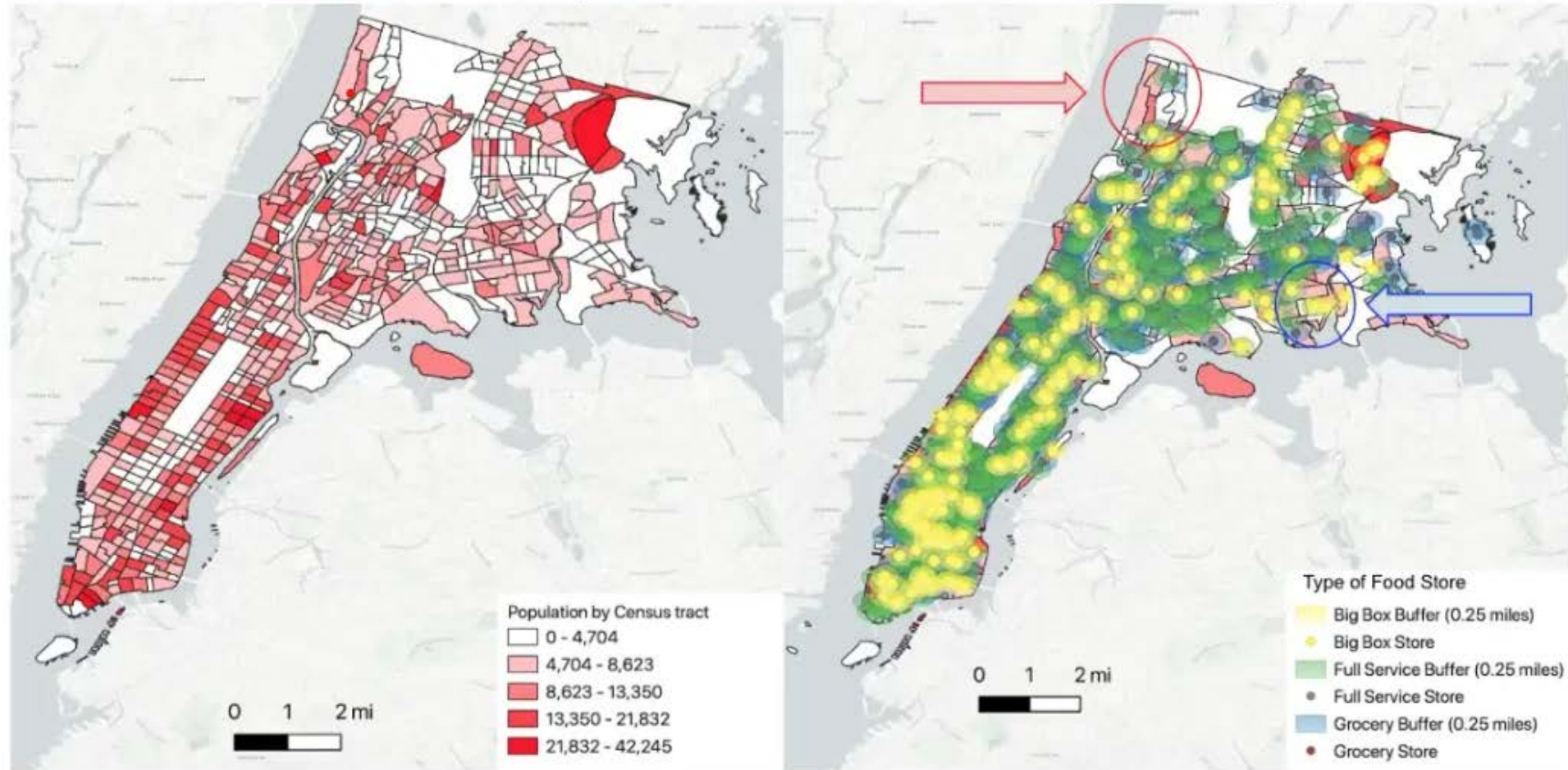
Making sense of spatial data...how to read it



<https://nycopendata.tumblr.com/post/57154947174/check-out-this-incredible-geodata-visualization-of>

Making sense of spatial data...how to read it

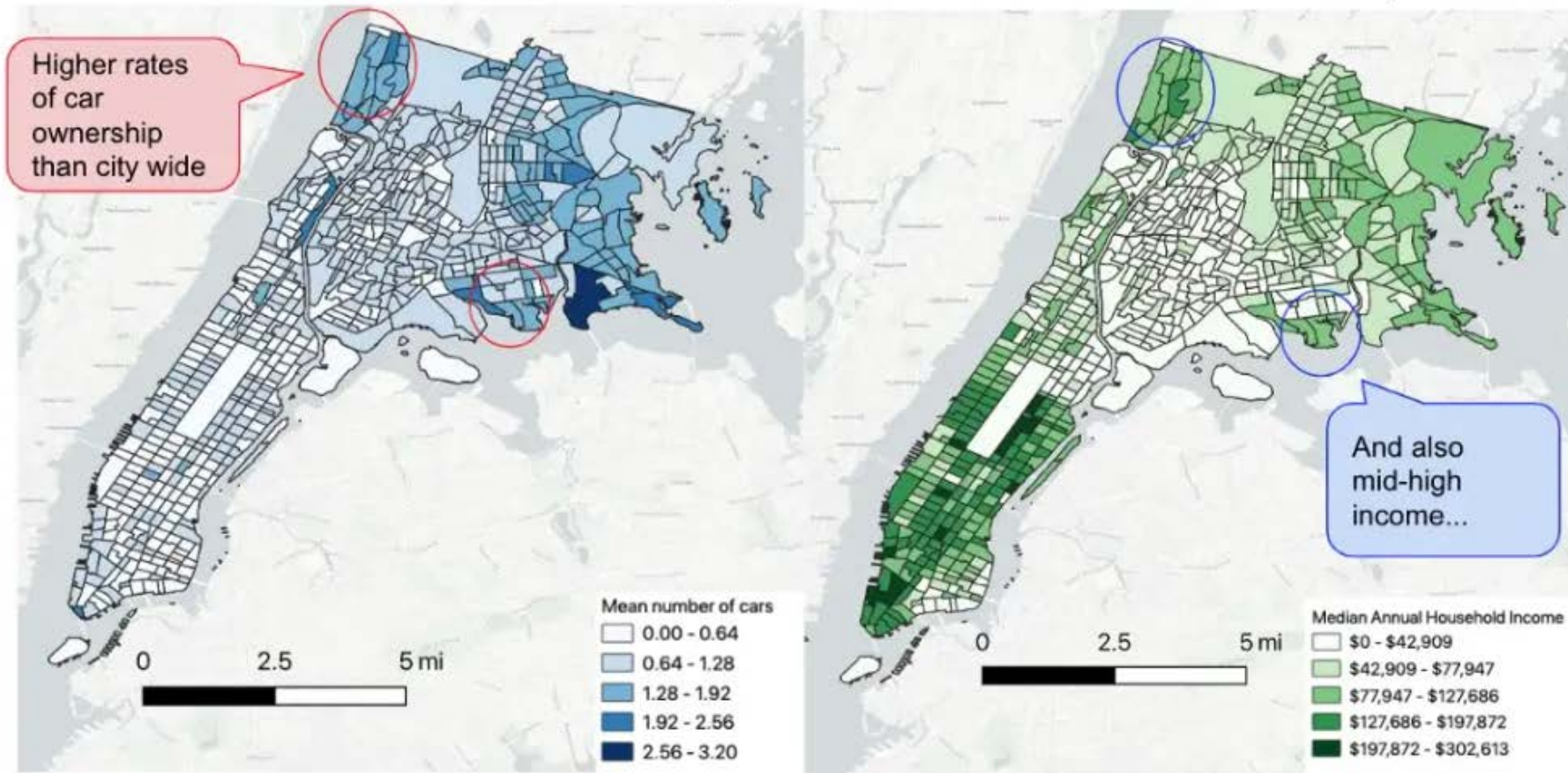
Manhattan and Bronx Supermarket Location and Population by Census Tract



Map 1 Sources: 2010 NYC Census Tracts ([Open Data](#)), NYS Retail Food Data ([NYS Open Data](#)), 2018 U.S. Census Data (American Community Survey) on Population ([Simply Analytics](#)) [[Link to QGIS Directions](#)]

Making sense of spatial data...how to read it

Manhattan and Bronx Car Ownership and Median Household Income by Census Tract



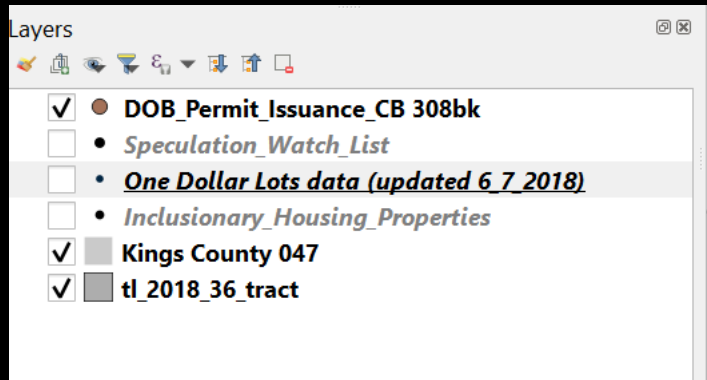
Map 2 Sources: 2010 NYC Census Tracts ([Open Data](#)), 2018 U.S. Census Data (American Community Survey) on Median Car Ownership and Median Household Income ([Simply Analytics](#)) [[Link to QGIS Directions](#)]

Making sense of spatial data...in QGIS

The screenshot displays the QGIS interface with the following elements:

- Browser:** Shows the file system structure, including Favorites, Spatial Bookmarks, Project Home, Home, C:\ (Windows-SSD), GeoPackage, SpatialLite, PostGIS, and SAP HANA.
- Layers:** Lists the loaded data layers:
 - DOB_Permit_Issuance_CB 308bk**
 - Speculation_Watch_List**
 - One Dollar Lots data (updated 6 7 2018)**
 - Inclusionary_Housing_Properties**
 - Kings County 047** (indicated by a red arrow and labeled "shapefile")
 - tl_2018_36_tract**
- Map View:** Displays a map of Kings County, NY, with a red rectangular box highlighting a specific urban area.
- Status Bar:** Shows the current coordinate as -74.1805,40.7971, a scale of 1:139114, a magnifier of 100%, a rotation of 0.0°, and the EPSG:4269 projection.

Making sense of spatial data...in QGIS



- This is a plot of points (latitude and longitude), of specific locations of buildings that filed some kind of building permit with the NYC Dept. of Building (data available on NYC Open Data).
- How helpful is this data in this view?
- What if we zoomed in?



- Any better?
- Is there another way to filter the data so it is telling us something more interesting?

Identify Results

Feature	Value
DOB Permit Issuance CB 308bk [2]	
Street Name	DEAN STREET
(Derived)	
(Actions)	
BOROUGH	BROOKLYN
Bin #	3337833
Permit Ad...	836 DEAN STREET
field_4	2
House #	836
Street Name	DEAN STREET
Job #	300211492
Job doc. #	1
Job Type	A1
Self_Cert	NULL
Block	1140
Lot	31
Communit...	308
Zip Code	11238
Bldg Type	2
Residential	NULL
Special Dis...	NULL
Special Dis...	NULL
Work Type	PL
Permit Stat...	ISSUED
Filing Status	INITIAL
Permit Type	PL

Mode: Current Layer
View: Tree

Identify Results

Feature	Value
Filing Status	INITIAL
Permit Type	PL
Permit Sequence #	1
Permit Subtype	NULL
Oil Gas	NULL
Site Fill	NONE
Filing Date	6/5/2001 0:00
Issuance Date	6/5/2001 0:00
Expiration Date	6/5/2002 0:00
Job Start Date	6/5/2001 0:00
Permittee's First Name	MARIO
Permittee's Last Name	MORAMARCO
Permittee's Business Name	COOPER MECHANICA
Permittee's Phone #	7183817796
Permittee's License Type	MP
Permittee's License #	106
Act as Superintendent	Y
Permittee's Other Title	NULL
HIC License	NULL
Site Safety Mgr's First Name	NULL
Site Safety Mgr's Last Name	NULL
Site Safety Mgr Business Name	NULL
Superintendent First & Last N...	MARIO MORAMARCO
Superintendent Business Name	COOPER MECHANICA...
Owner's Business Type	INDIVIDUAL
Non-Profit	N

Mode: Current Layer

Owner's Business Name	N/A
Owner's First Name	JOSE
Owner's Last Name	PEREIRA
Owner's Address	22-15 80 ST
Assume Owner-Occupied	FALSE
Owner's House #	22-15
Owner's House Street Name	80 ST
Owner's House City	JACKSON HEIGHTS
Owner's House State	NY
Owner's House Zip Code	11370
Owner's Phone #	7182749290
DOBRunDate	11/3/2017 0:00
PERMIT_SI_NO	1108592
LATITUDE	40.679037
LONGITUDE	-73.962479
COUNCIL_DISTRICT	35
CENSUS_TRACT	203
NTA_NAME	Prospect Heights
Street Name	DEAN STREET

Mode: Current Layer

52194,40.674885 Scale 1:2702 Magnifier 100% Rotation 0.0° Render EPSG:4269

- The data listed here is all the identifier information for that one building (red dot)
- This information is one row of data in the excel file that was mapped here.

What might yield a more interesting mapping of data so we can see if there is a pattern?

BOROUGH	Bin #	Permit Address	House #	Street Name	Job #	Job doc. #	Job Type	Self_Cert	Block	Lot	Communi	Zip Code	Bldg Type	Residential	Special Dis	Special D
BROOKLYN	3037291	1234 LINC	13	1234 LINCOLN PLACE	3E+08	1	A3		1389	20	308	11213	2			
BROOKLYN	3029643	201 EASTE	8	201 EASTERN PARKWAY	3E+08	1	A2		1180	1	308	11238	2	YES		
BROOKLYN	3029314	34 PLAZA S	27	34 PLAZA STREET	3E+08	1	A2		1170	9	308	11238	2			
BROOKLYN	3855823	1781 PACI	2	1781 PACIFIC STREET	3E+08	1	DM		1336	59	308	11213				
BROOKLYN	3855823	1781 PACI	2	1781 PACIFIC STREET	3E+08	1	DM		1336	59	308	11213				
BROOKLYN	3399180	1779 PACI	14	1779 PACIFIC STREET	3E+08	1	DM		1336	61	308	11213				
BROOKLYN	3378324	1786 BERG	11	1786 BERGEN STREET	3E+08	1	DM		1357	42	308	11233				
BROOKLYN	3346135	117A UND	3	117A UNDERHILL AVENUE	3E+08	1	DM		1153	2	308	11238				

	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN		
	Owner's H	Owner's H	Owner's H	Owner's H	Owner's P	DOBRUnD	PERMIT_S	LATITUDE	LONGITUDE	COUNCIL	CENSUS_T	NTA_NAME				
BROOKLYN	3399180	1779 PACI	14	1779 PACIFIC STREET	4	LINCOLN P	BROOKLYN NY	11207	7.18E+09	#####	75915	40.66998	-73.9355	35	353	Crown Heights North
BROOKLYN	3029314	34 PLAZA S	27	34 PLAZA STREET	1	EASTERN P	BROOKLYN NY	11238	7.18E+09	#####	76323	40.67155	-73.962	35	215	Prospect Heights
BROOKLYN	3347548	583 GRAN	1	583 GRAND STREET	4	PLAZA ST	BROOKLYN NY	11238	2.13E+09	#####	79956	40.67529	-73.9696	35	207	Prospect Heights
BROOKLYN	3031206	780 PROSP	2	780 PROSPECT STREET	0	WILLIAM S	NY NY	10038	2.12E+09	#####	79953	40.67665	-73.9312	36	309	Crown Heights North
BROOKLYN	3028030	261 FLATB	7	261 FLATBUSH AVENUE	0	WILLIAM S	NY NY	10038	2.12E+09	#####	79938	40.67665	-73.9312	36	309	Crown Heights North
BROOKLYN	3399209	116 UTICA	12	116 UTICA STREET	0	WILLIAMS	NY NY	10038	2.12E+09	#####	80673	40.67665	-73.9313	36	309	Crown Heights North
BROOKLYN	3036091	1222 ST M	11	1222 ST MARTIN STREET	0	WILLIAM S	NY NY	10038	2.12E+09	#####	80738	40.67461	-73.9229	41	307	Crown Heights North
BROOKLYN	3399209	116 UTICA	12	116 UTICA STREET	0	WILLIAM S	NY NY	10038	2.12E+09	#####	80661	40.67724	-73.9659	35	205	Prospect Heights
BROOKLYN	3036091	1222 ST M	11	1222 ST MARTIN STREET	0	WILLIAM S	NY NY	10038	2.12E+09	#####	80736	40.67461	-73.9229	41	307	Crown Heights North
BROOKLYN	3030355	611 NOSTR	5	611 NOSTRANG STREET	0	WILLIAMS	NY NY	10038	2.12E+09	#####	80665	40.67665	-73.9313	36	309	Crown Heights North
BROOKLYN	3037200	273 BUFFA	7	273 BUFFUM STREET	0	WILLIAM S	NY NY	10038	2.12E+09	#####	80636	40.67724	-73.9659	35	205	Prospect Heights
BROOKLYN	3397468	339 EASTE	2	339 EASTERN PARKWAY	5	MADISON	NEW YORK NY	10022		#####	81432	40.67529	-73.9696	35	207	Prospect Heights
BROOKLYN	3054053	1515 ATLANTIC	1	1515 ATLANTIC AVENUE	0	ROCKEFEL	NEW YORK NY	10112	2.13E+09	#####	81769	40.67781	-73.9623	35	305	Crown Heights North
					5	MAIDEN L	NY NY	10038	2.13E+09	#####	85346	40.67435	-73.951	36	31701	Crown Heights North
					4	FLATBUSH	BROOKLYN NY	11217	7.19E+09	#####	85832	40.67998	-73.9745	35	161	Prospect Heights
					0	WILLIAM S	NY NY	10032		#####	86262	40.67485	-73.9306	36	309	Crown Heights North
					0	WILLIAMS	NEW YORK NY	10038	2.12E+09	#####	86186	40.67406	-73.9292	36	347	Crown Heights North
					0	WILLIAM S	NY NY	10032		#####	86237	40.67485	-73.9306	36	309	Crown Heights North
					0	WILLIAMS	NEW YORK NY	10038	2.12E+09	#####	86187	40.67406	-73.9292	36	347	Crown Heights North
					1	NOSTRAN	BROOKLYN NY	11418	7.19E+09	#####	91500	40.67627	-73.9499	36	315	Crown Heights North
					3	13TH AVE	BROOKLYN NY	11219	7.19E+09	#####	92190	40.66967	-73.9255	41	359	Crown Heights North
					2	KINGS HIG	BROOKLYN NY	11234	7.18E+09	#####	91979	40.67053	-73.9573	35	219	Crown Heights North
					5	ATLANTIC	BROOKLYN NY	11213	7.18E+09	#####	92916	40.67389	-73.9289	36	271	Crown Heights North

Original Excel Data from NYC Open Data, DOB

- Rates of Black Homeownership by census tract for Crown Heights, BK
- Showing number of homeowners
- ACS 5-year 2018
 - B25003B
- Do we see any patterns?
- What other map(s) might help us make more sense of what is going on with homeownership in Crown Heights?



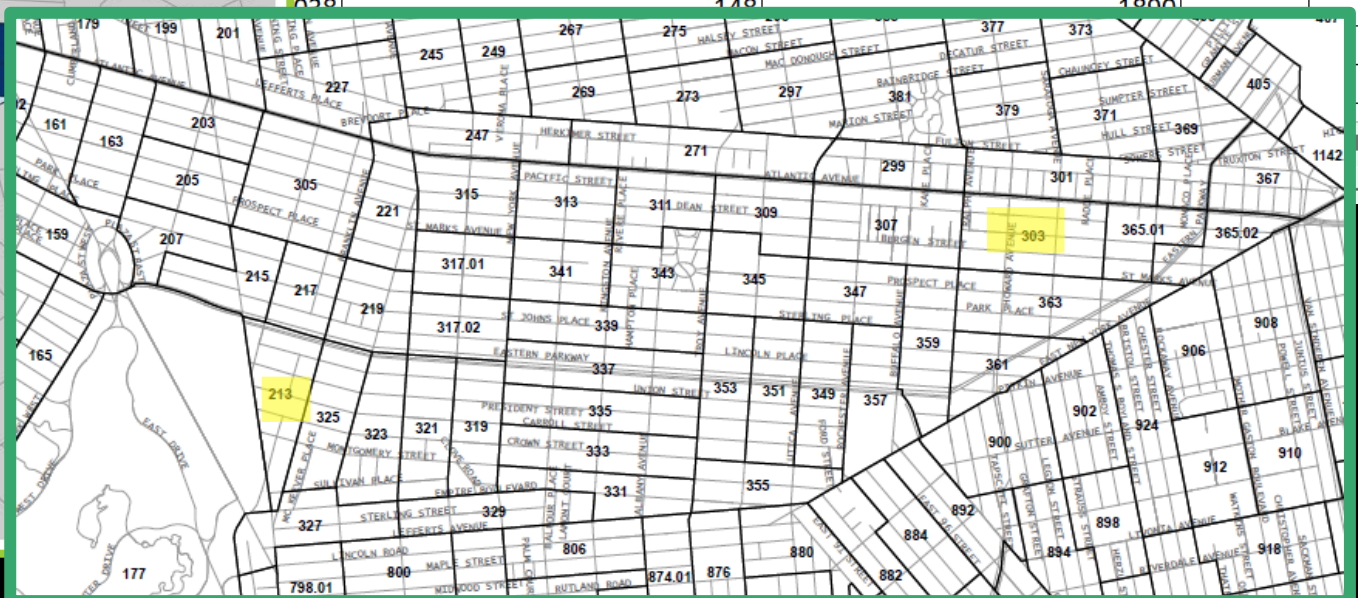
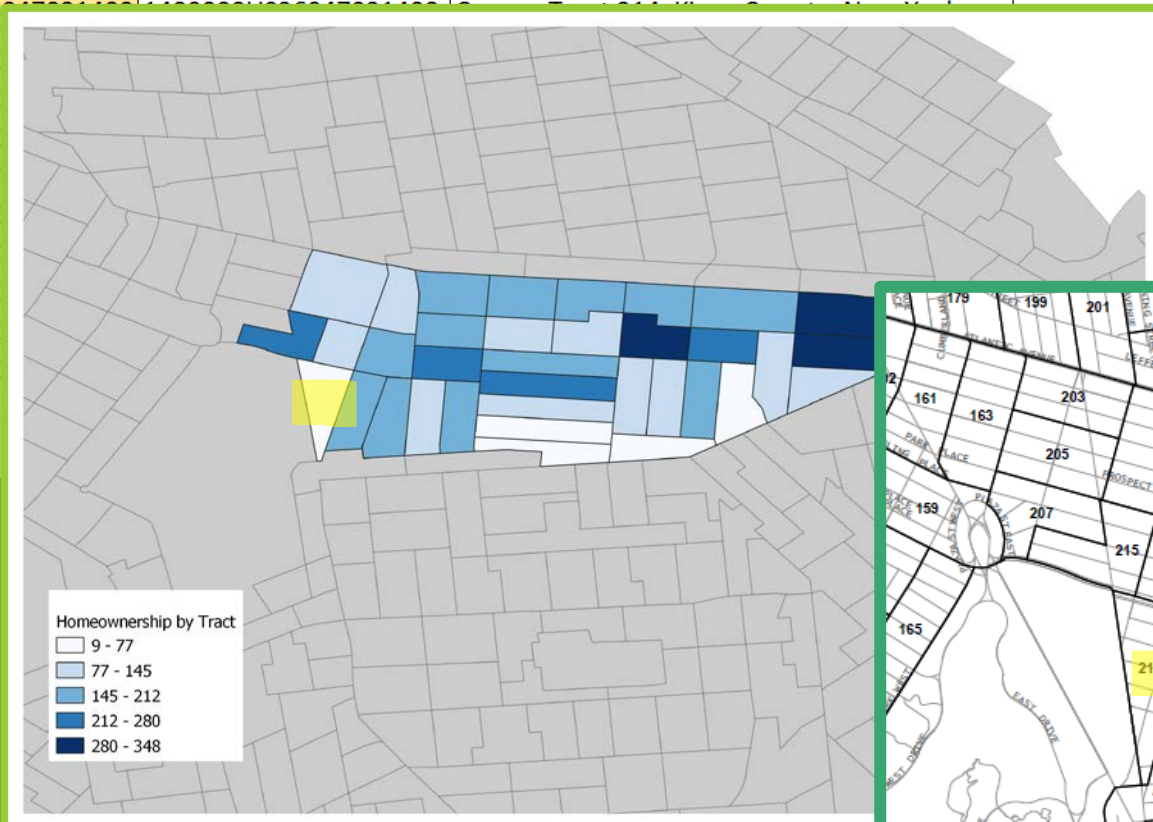
- Rates of White Homeownership by census tract
- ACS 5-year 2018
 - B25003A



What we need before we dive into QGIS

- Geography: [shapefiles](#) - WILL BE PROVIDED ON COURSE RESOURCE PAGE
 - Why shapefiles? Your data need a foundation of geography to “join” with.
 - Shapefiles are in a variety of geographic scales, we’ll work at the county and/or census tract level.
 - Data that include by latitude/longitude can be mapped as specific points in space that align with the coordinate system embedded in the shapefile you use (e.g. a building location)
 - Data that has a [GEOID](#) will “join” to a specific region of geography, like a census tract
 - GEOIDs contain a series of numbers that help identify that specific piece of geography
 - These often use [FIPS](#) (Federal Information Processing Series) codes
 - Example NYS = 36; Queens county = 081; Kings county = 047
- GEOID datasets
 - Search the Census or NYC OpenData for datasets
 - Note: when downloading data from the Census – [download the ZIP FILE](#) for excel files that include the GIS data
 - To “prepare” your data, you may need to isolate the specific numbers from the full GEOID in order to “join” your data. Here is a helpful [link](#) to show you how to select specific digits out of an excel cell.

	A	B	C	D	E	F	G	H	I
1	GEO_ID join	GEO_ID	NAME	B25003B_001E	B25003B_002E	B25003B_003E			
2	Join ID	id	Geographic Area Name	Estimate!!Total	Estimate!!Total!!Owner occupied	Estimate!!Total!!Renter occupied			
3	36047021300	1400000US36047021300	Census Tract 213, Kings County, New York	1346	25	1321			
4	36047021500	1400000US36047021500	Census Tract 215, Kings County, New York	1008	216	792			
5	36047021700	1400000US36047021700	Census Tract 217, Kings County, New York	877	106	771			
6	36047021900	1400000US36047021900	Census Tract 219, Kings County, New York	855	192	663			
7	36047022100	1400000US36047022100	Census Tract 221, Kings County, New York	903	122	781			
8	36047030300	1400000US36047030300	Census Tract 303, Kings County, New York	1455	348	1107			
9	36047030500	1400000US36047030500	Census Tract 305, Kings County, New York	1085	80	1005			
10	36047030700	1400000US36047030700	Census Tract 307, Kings County, New York	1952	205	1747			
11	36047030900	1400000US36047030900	Census Tract 309, Kings County, New York	615	167	448			
12	36047031100	1400000US36047031100	Census Tract 311, Kings County, New York	948	185	763			
13	36047031300	1400000US36047031300	Census Tract 313, Kings County, New York	1753	169	1584			
14	36047031500	1400000US36047031500	Census Tract 315, Kings County, New York	0	0	0			
15	36047031700	1400000US36047031700	Census Tract 317, Kings County, New York	160	172	988			
16	36047031900	1400000US36047031900	Census Tract 319, Kings County, New York	827	178	649			
17	36047032100	1400000US36047032100	Census Tract 321, Kings County, New York	748	213	535			
18	36047032300	1400000US36047032300	Census Tract 323, Kings County, New York	843	150	693			
19	36047032500	1400000US36047032500	Census Tract 325, Kings County, New York	261	77	1184			
20	36047032700	1400000US36047032700	Census Tract 327, Kings County, New York	047	172	875			
21	36047032900	1400000US36047032900	Census Tract 329, Kings County, New York	028	148	1800			



WEDNESDAY 11/9

- Class meets in Rosenthal Library Room 227 (RO227)
- I will post tutorial handout and video to Course Resource page by 11/9
 - We are just scratching the surface with QGIS – there is a lot you can learn on your own through other online tutorials!