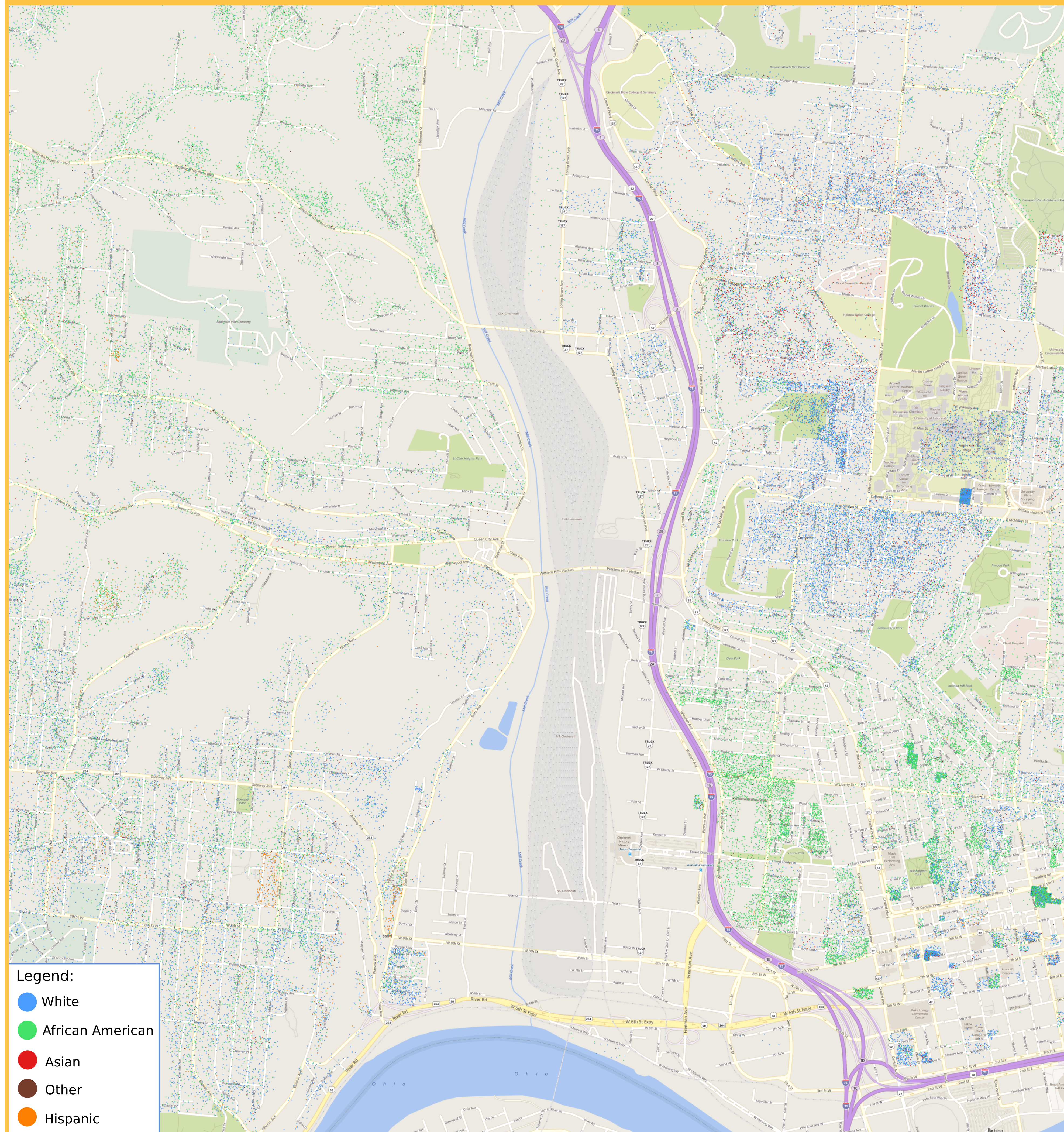# MAPPING RACIAL DIVERSITY
USING GRID-BASED RACIAL DOT MAPS AND RACIAL DIVERSITY MAPS

Anna Dmowska, Tomasz Stepinski
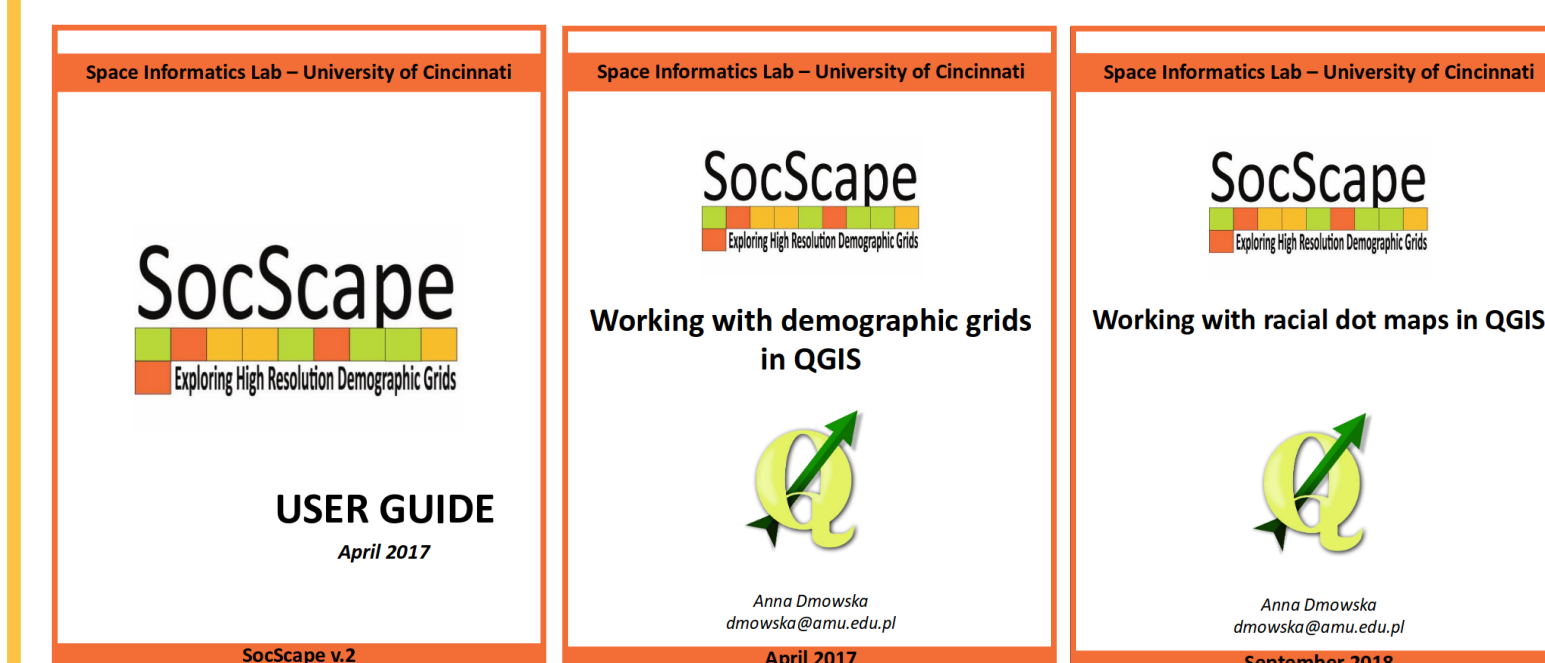
ONE DOT PER PERSON
POPULATION MAP OF CINCINNATI

Legend:
- White
- African American
- Asian
- Other
- Hispanic

HIGH RESOLUTION GRIDS

SocScape - GeoWeb application for exploring and detecting change of population density and racial diversity over the entire U.S.

(http://sil.uc.edu/webapps/socscape_usa/)

Data avalability: total population, racial diversity grids for 1990, 2000, 2010.

SocScape data – downloading data for counties and metropolitan areas

(http://sil.uc.edu/cms/index.php?id=socscape-data)

County level data

For download county level data select the state name and next county name from the dropdown menus below and click "Downolad".
Data are available for all counties in the conterminous United States.

Metropolitan area data

For download data for metropolitan areas select metropolitan areas (penultimate position on the list) from the left menu and name of MSA from the right menu and click "Download"
Data are available for 363 metropolitan areas.

DATASET	COUNTY LEVEL				METROPOLITAN AREAS			
	1990 myc	2000 myc	2010 myc	2010	1990 myc	2000 myc	2010 myc	2010
Total population grid								
White population grid								
Black population grid								
Asian population grid								
Native American population grid								
Other race population grid								
Pacific Islander population grid								
Hispanic population grid								
Racial diversity grid								
Racial diversity change map								
Racial dot map								

Not available / Available

SocScape data website provides data as a zip archive.
Each zip archive contain data saved as GeoTiff (population, subpopulation, racial diversity grids) and shapefiles (change map, dot map). Datasets can be opened in GIS software (ArcGIS, QGIS).

Datasets called "myc" are multiyear compatible and can be used for change analysis. For 2010 we also made available additional datasets, that used more detailed ancillary information, but cannot be used for change anylisis

DASYMETRIC MODELING

High resolution grids are the result of dasymetric modeling - a technique of disaggregating aggregation unit-based population data into grid cells of a higher spatial resolution using ancillary data that correlates with population density but which has a higher resolution. High resolution grids (30m) are the result of dissagregating U.S Census block level data using National Land Cover Dataset (or NLCD) reclassified into 3 classes: residential areas, non-urban areas and uninhabited areas.

- Residential areas
- Non-Urban areas
- Uninhabited areas

people/km²
- 0
- 10-50
- 1000-5000

Aggregated block data / Ancillary data / Population grid

POPULATION AND SUBPOPULATION GRIDS

Results of dissagregation of block-level data into grid cells using dasymetric modeling. Subpopulation grids are available for 7 race/ethnicity groups (Non-Hispanic: White, Black, Asians, Native Americans, Pacific Islanders, other races and Hispanics)

RACIAL DIVERSITY GRIDS

Shows spatial character of the racial diversity as a three dimensional classification based on:
(1) **racial diversity**: determined on the basis of standardized informational entropy (E): (a) low diversity class (E<0.37 and dominant race more than 80%); (b) high diversity class (E >0.73 and a dominant race less than 50% population); (c) medium diversity otherwise.
(2) **dominant race**: non-Hispanic categories (White, Black, Asians, Native Americans, Pacific Islanders, other races) and Hispanic.
(3) **population density**: (a) low density (less than 3 people/km²), (b) medium density (3-30 people/km²), (c) high density (equal or greater than 30 people/km²)

RACIAL DOT MAP

Shows spatial distribution, population density and racial composition in a single maps.
Racial dot map was calculated using 2010 high resolution grids. Dots are randomly redistributed within each 30x30 m resolution cell. Each dot has assigned one of 6 racial category: whites, blacks, Asians and Pacific Islanders, Native Americans, other races and Hispanics.

RACIAL DIVERSITY CHANGE MAP

Map shows temporal changes in racial diversity in a single map. Unchanged areas are shown in orginal colors assigning to one of 14 diversity/dominant race categories (no distinction between population density). Changed area are shown in stripes with the color of broader strips indicating the color in the later year of comparison (i.e 2000) and the color of narrower stripe indicating the color in the earlier year (i.e 1990). There are 182 possible categories of change.)

MORE INFORMATION

SocScape v.1
USER GUIDE
April 2017

Working with demographic grids in QGIS
Anna Dmowska
April 2017

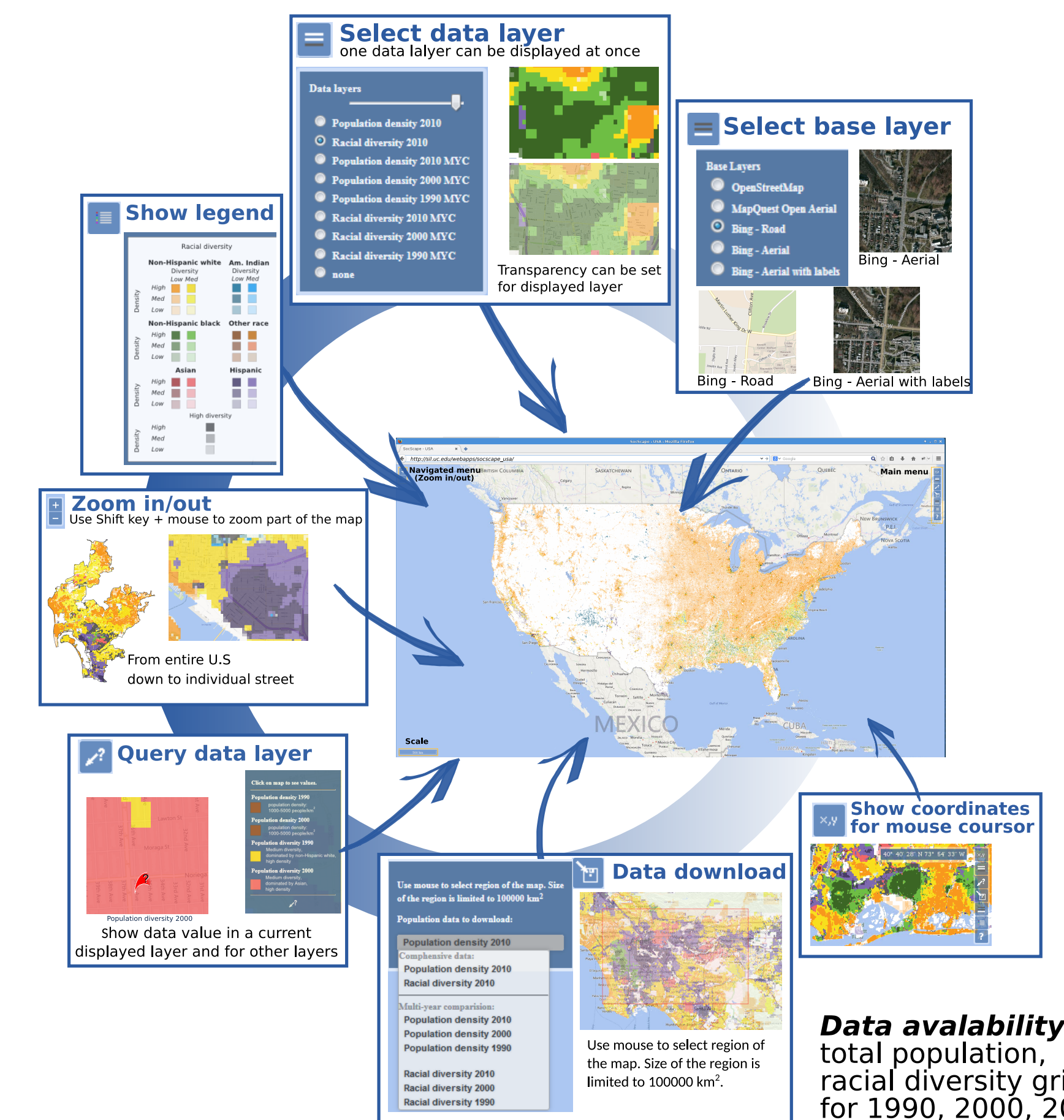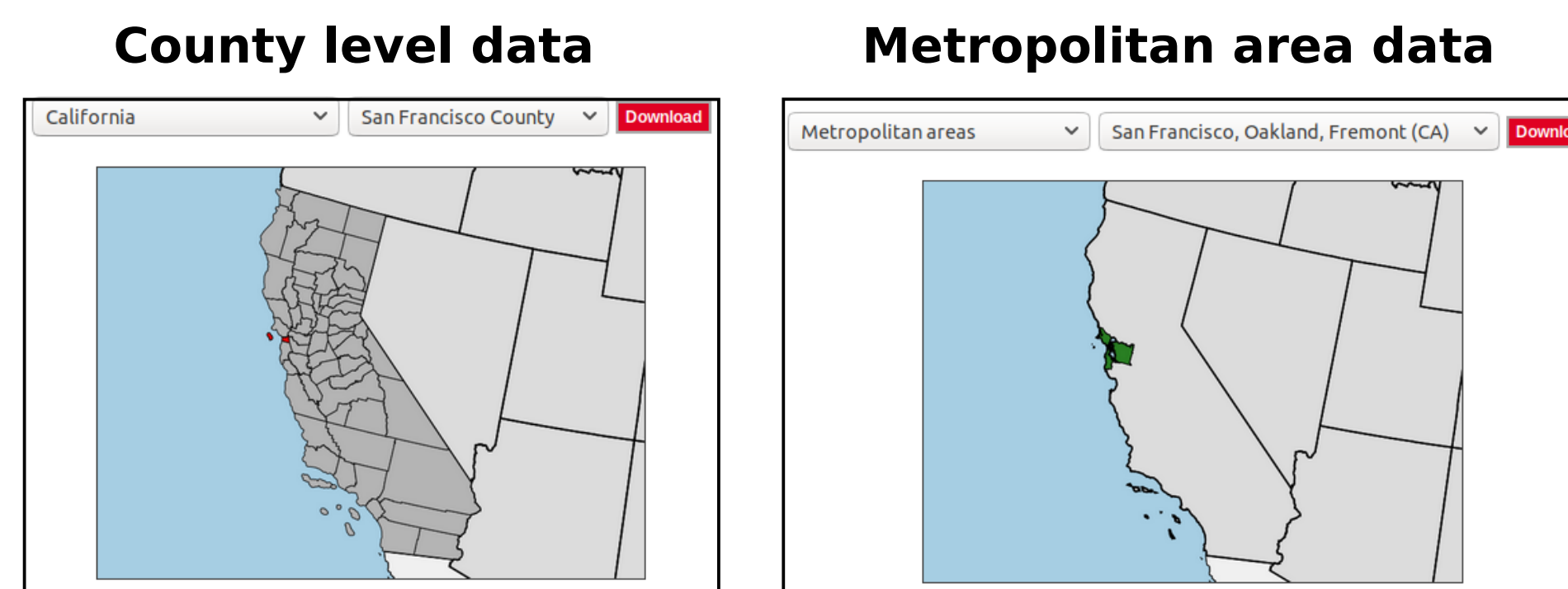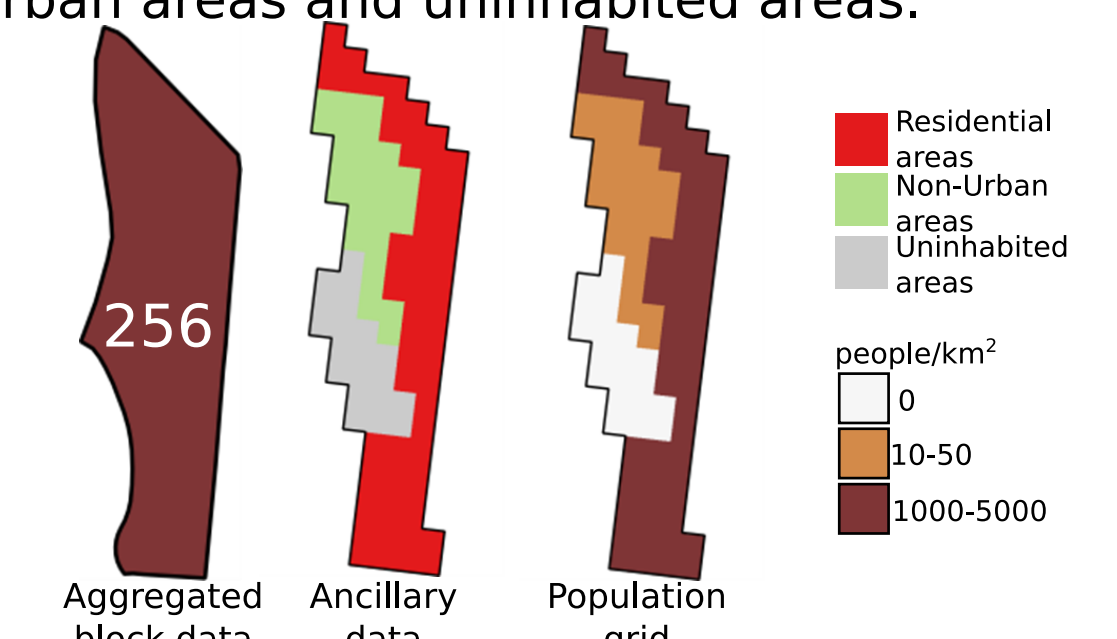Working with racial dot maps in QGIS
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September 2018

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