

WEB APPLICATION FOR SPATIAL EXPLORATION OF RACIAL DIVERSITY OVER THE ENTIRE UNITED STATES AT 90 M RESOLUTION

Space Informatics Lab
Departament of Geography
UNIVERSITY OF
Cincinnati

Anna Dmowska, Tomasz F. Stepinski and Paweł Netzel dmowskaa@ucmail.uc.edu, stepintz@ucmail.uc.edu, netzelpl@ucmail.uc.edu

http://sil.uc.edu/webapps/socscape_usa/ SocScape (Social Landscape) geodemograhic map online **Bing - Aerial with labels** Q ☆ 自 **↓** 命 ※ ∨ Zoom in/out Use Shift key + mouse to zoom part of the map From entire US Query data layers Show coordinates for mouse coursor 40° 40′ 28″ N 73° 54′ 33″ W **Data downolad** Show data value in a current Select region of the map displayed layer and for other layers Downoload GeoTiff file (to use in GIS software) or PNG file. Size of region is

SocScape is: SocScape can be useful for:

a computerized map application, which works

• a web-based tool, which works also on mobile deviceces

Currently, we have gridded population and race/ethnicity.

(age, income), making available additional maps and

on calculating grids for the 2010 Census variables.

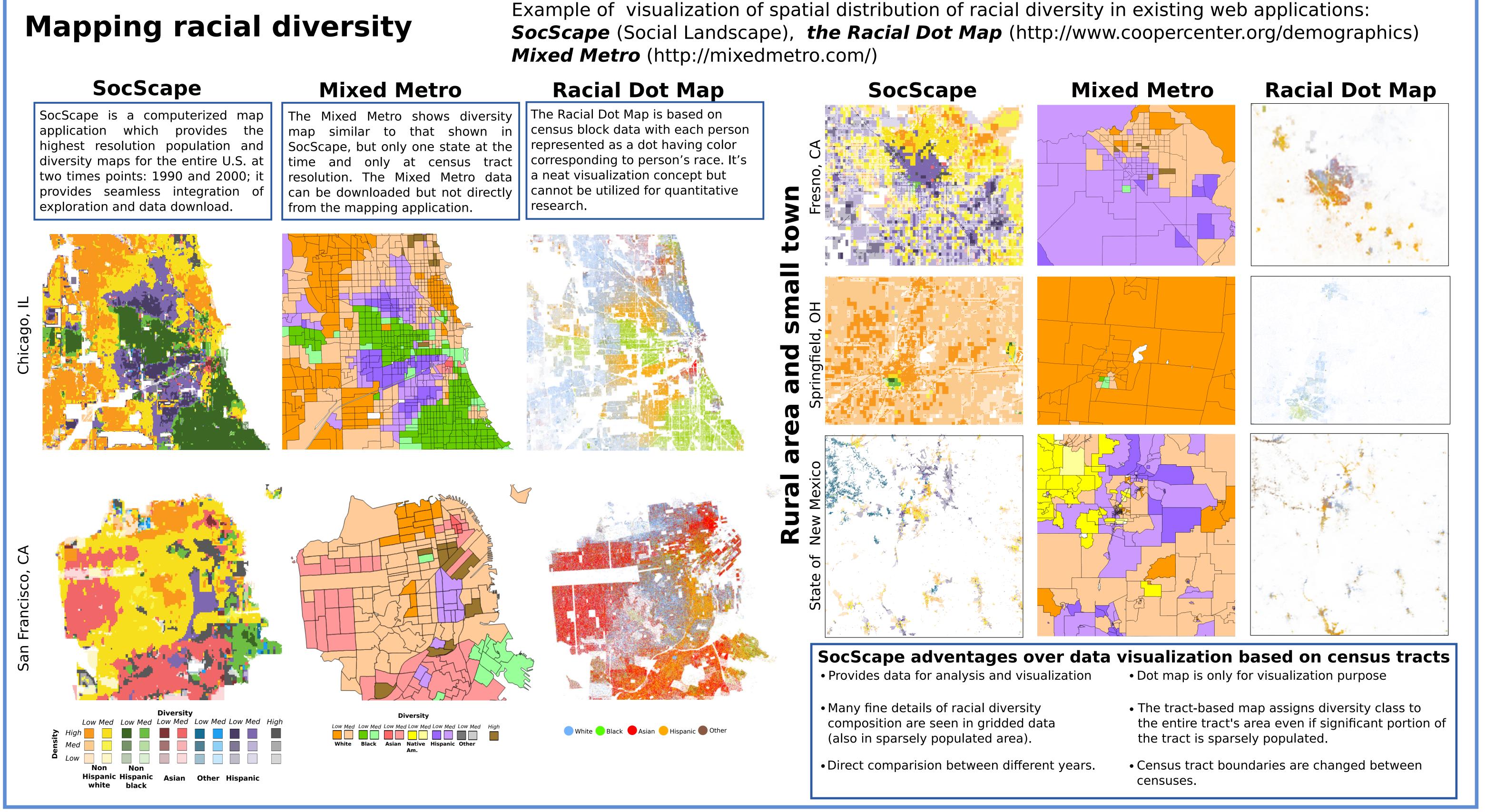
Future work will concentrate on gridding additional variable

much like a Google Maps.

(like smartphones, tablets).

limited to 10000 km²

- a GeoWeb application designed to explore racial diversity
 b Exploring racial diversity in 1990 and 2000 in metropolitan area.
 - Exploring racial diversity in 1990 and 2000 in rural and small town for entire U.S.
 - Detecting change in spatial dynamics of racial diversity.
 - Fast and intuitive exploration of racial diversity at different scales (from the entire U.S. down to individual street).
 - Downloading population and diversity data for future analysis in external GIS software.
 - Downloading map as an PNG image for use in publication.



Spatial dynamics of racial diversity Expansion of **medium** diversity zone dominated by Racial diversity has increased Asian into what used to be by about 8,3% in the period medium diversity zone of 1990-2000. dominated by whites. diversity zone dominated by blacks .ow diversity zone dominated into what used to be by blacks are stable. medium diversity zone nly in small areas this zone has B. Los Angeles, CA C. San Francisco, CA D. San Jose, CA E. Chicago, IL F. Detroit;MI dominated by whites. cpanded into previously diversity increased nedium diversity zone dominate diversity decreased by blacks. G. New Orleans, LA Expansion of **medium** Geographically, diversity diversity zone dominated Expansion of **medium** y Hispanic into what used largest population growth diversity zone to be medium diversity zone dominated by whites dominated by whites. into what used to be low diversity zone dominated Expansion of low diversity Expansion of high diversity by whites. one dominated by one into what used to be ispanic into what used t nedium diversity zone be medium diversity zone mostly dominated

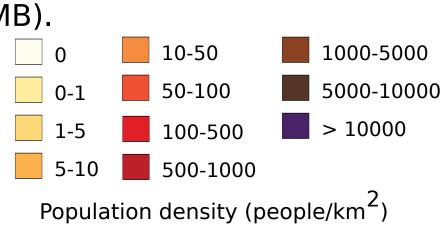
minated by Hispanic.

Demograpic data layers

Demographic layers include maps of population density and racial diversity calculated for two time points, 1990 and 2000. These demographic grids have been calculated from census blocks using dasymetric modelling technique. Dasymetric modelling disaggregates census blocks into grid cells using land cover as auxiliary variable. Specifically, SocScape uses 30 m resolution National Land Cover Datasets or NLCD (http://www.mrlc.gov/) to sharpen the distribution of U.S. population.

Population density

Population density layers are classified into 11 classes (see legend). The original, unclassified 90 m resolution population density grid for the entire U.S. can be downloaded from http://sil.uc.edu/ (390 MB).





Racial diversity

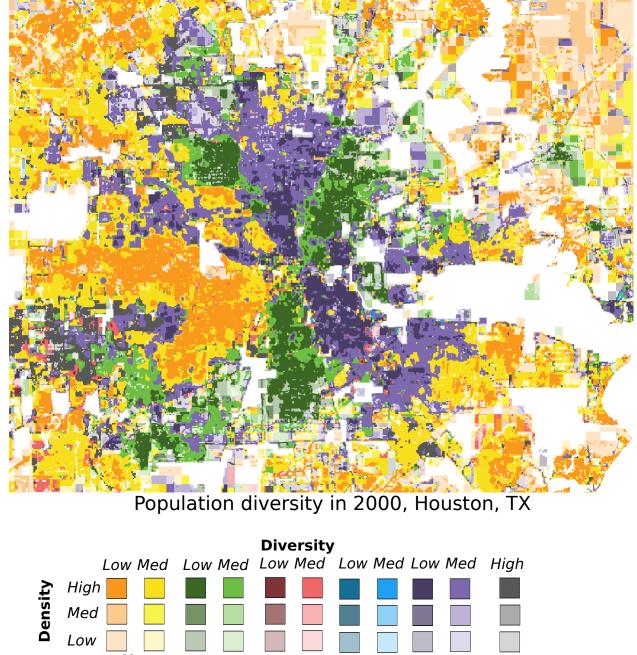
Racial diversity - map with 33 categories derived on the basis of:

racial diversity - determined on the basis of standarized informational entropy (E):

(a) *low diversity* class (E< 0.41 and dominant race more than 80% population); (b) *high diversity* class (E> 0.79 and dominant race less than 50% population); (c) *medium diversity* otherwise.

dominant race: Non Hispanic White, Non Hispanic Black, Asian, Hispanic, Other (Native American and Hawaiian)

population density: (a) *low density* (less than 3 people/km²), (b) *medium density* (3-30 people/km² (c) *high density* (equal to or greater than 30people km²)



Change map

Temporal change between spatial data is usually shown by side-by-side comparison of two maps corresponding to two different years (i.e. 1990 and 2000).

We show temporal change in racial diversity composition in a single map.

Unchanged area are shown in orginal

Unchanged area are shown in orginal colors assigned to each of 11 main diversity/dominant race classes (no distinction between population density).

Changed area are shown in stripes with the color of broader strips indicating a class in 2000 and the color of narrower stipe indicating a class in 1990. There are 144 possible categories of change.

