

Introduction

Su's visualization work: Web-based visualizations containing linking and brushing of multiple maps and charts

Universal

Reusable

Data receives from you

Runs in CyberGISX

Customized

Built-in data

**CyberGIS applications
that serve particular
purposes**

MapLinksPlot



MapLinksPlot is an an open-source JavaScript-based mapping tool that enables linking multiple maps and various charts.

QuickStart

MapLinksPlot_JS

For Javascript users, example visualizations are available in the two folders below:

- JS_Quantitative_Data_VIZ
- JS_Categorical_Data_VIZ

MapLinksPlot_PYTHON

For python users, example visualizations are available in the two folders below:

- PYTHON_Quantitative_Data_VIZ/Adaptive_Choropleth_Mapper.ipynb
- PYTHON_Categorical_Data_VIZ/Qualitative_Analysis_Mapper.ipynb
- PYTHON_Categorical_Data_VIZ/Neighborhood_Analysis_Mapper.ipynb

CyberGISX

You can run LinksPlot_PYTHON in your Jupyter Notebook installed in your PC as well as in CyberGISX.

To use it in CyberGISX, follow steps below:

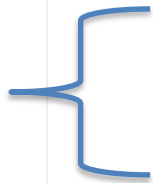
1. If you do not have a CyerGISX account, create a CyberGISX an account with your GitHub id at <https://cybergisxhub.cigi.illinois.edu>
2. Open up the CyberGIX, click the "new" button on the top right corner, and select python3 and enter the command line below to download MapLinksPlot.

```
!git clone https://github.com/suhanmappingideas/MapLinksPlot
```

3. Follow insturctions in Install_geosnap.ipynb.
4. Uncomment out the code below:

URL:
<https://github.com/suhanmappingideas/MapLinksPlot>

Please look at these three jupyternotebook examples

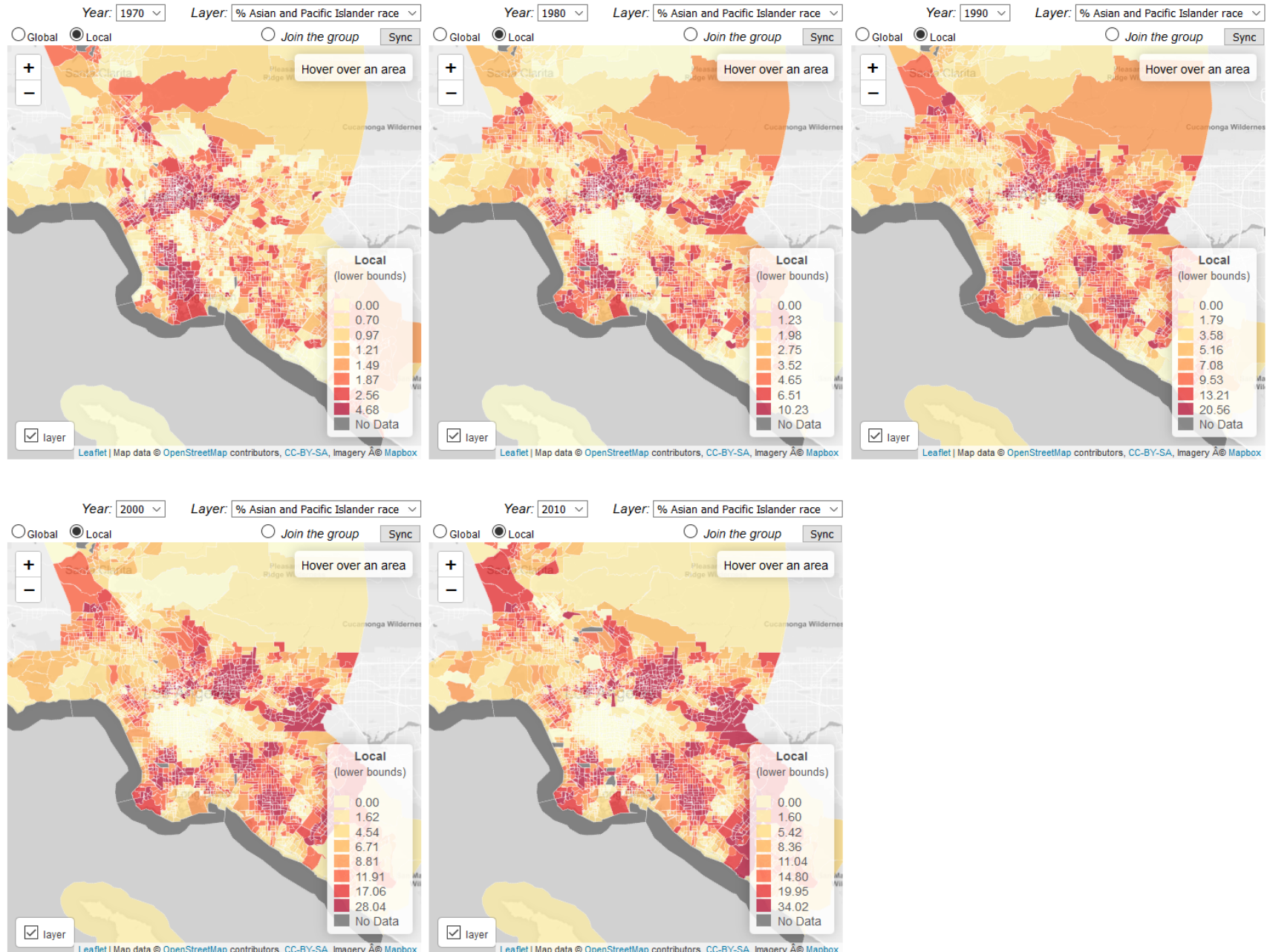


The selections above are valid only after you click "Set Globally" button. To enable "Set Globally", make all maps have the same extents by clicking one of "Sync" buttons below.

Adaptive Choropleth Mapper (ACM)

An example visualization of Asian and PI in Los Angeles in 1970, 1980, 1990, 2000 and 2010

Data Source: Longitudinal Tract Data Base



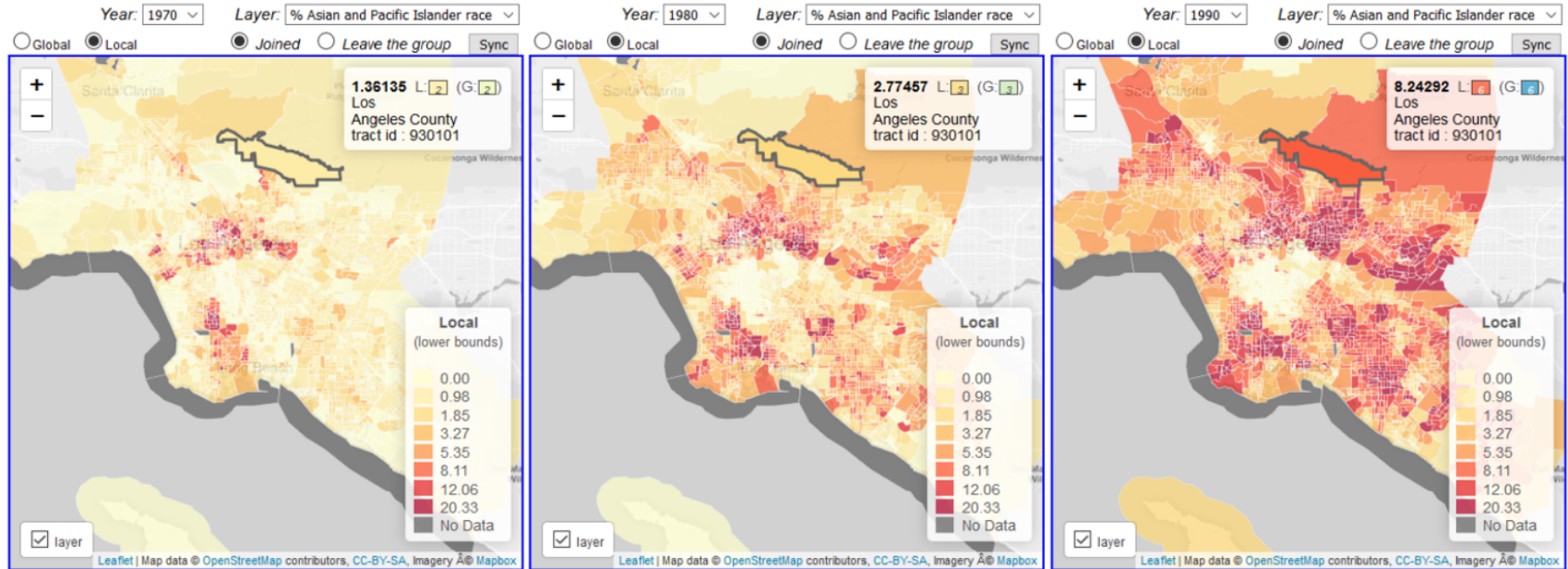
Han, S. Y., Rey, S., Knaap, E., Kang, W., & Wolf, L. (2019). Adaptive Choropleth Mapper: An Open-Source Web-Based Tool for Synchronous Exploration of Multiple Variables at Multiple Spatial Extents. *ISPRS International Journal of Geo-Information*, 8(11), 509.

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Adaptive Choropleth Mapper (ACM)

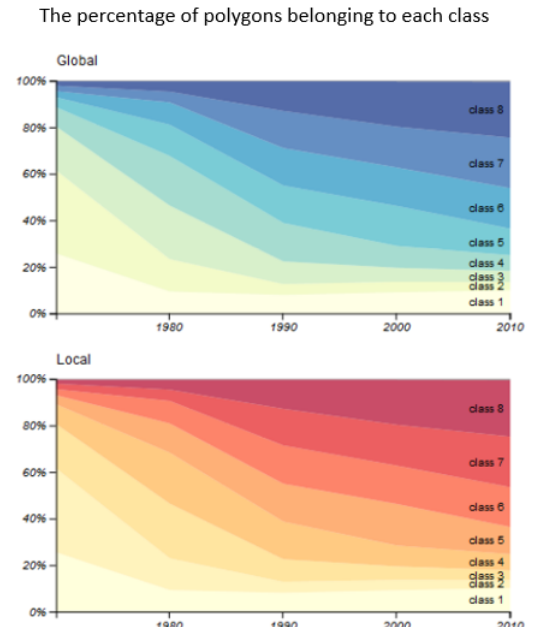
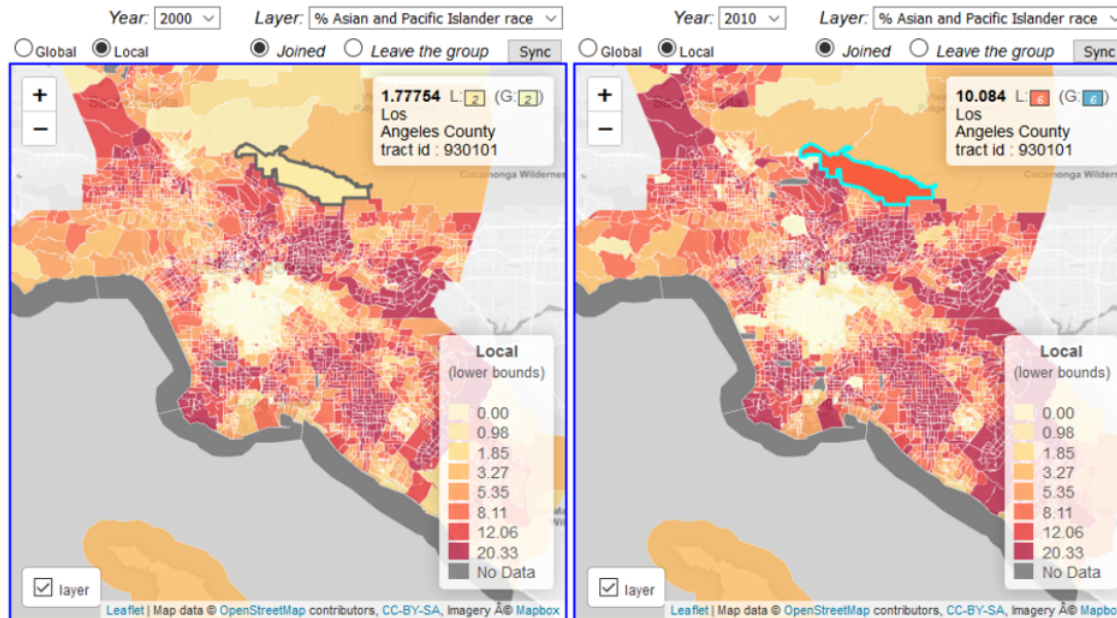
An example visualization of spatiotemporal patterns of Asian and PI in Los Angeles 19870, 1980, 1990, 2000 and 2010

Data Source: Longitudinal Tract Data Base



The Adaptive Choropleth Mapper (ACM) provides an automatic way to compute and set the same class intervals across different choropleth maps.

Han, S. Y., Rey, S., Knaap, E., Kang, W., & Wolf, L. (2019). Adaptive Choropleth Mapper: An Open-Source Web-Based Tool for Synchronous Exploration of Multiple Variables at Multiple Spatial Extents. *ISPRS International Journal of Geo-Information*, 8(11), 509.



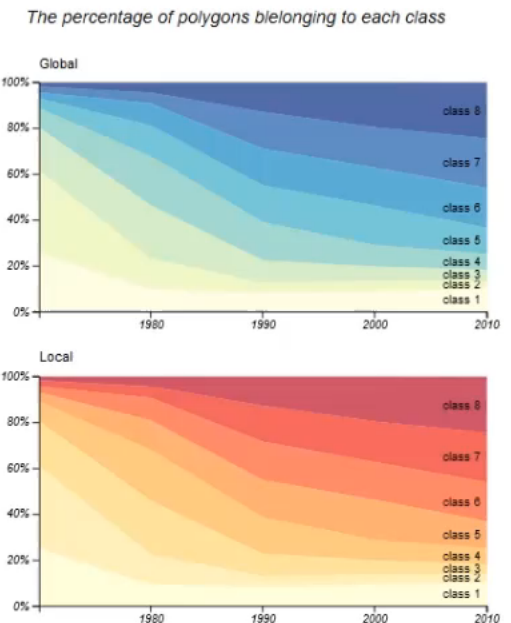
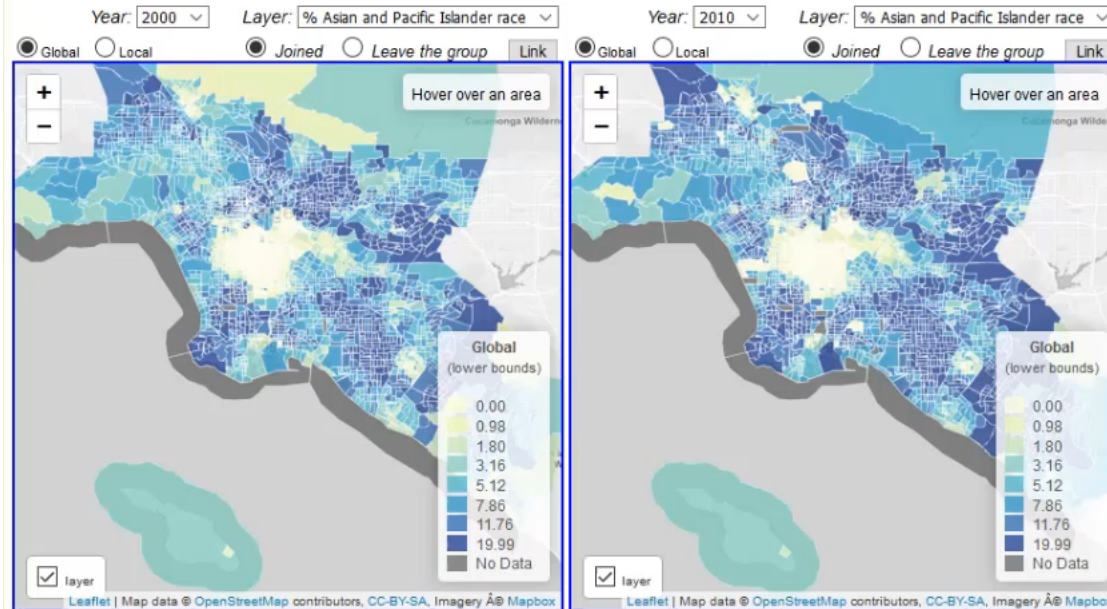
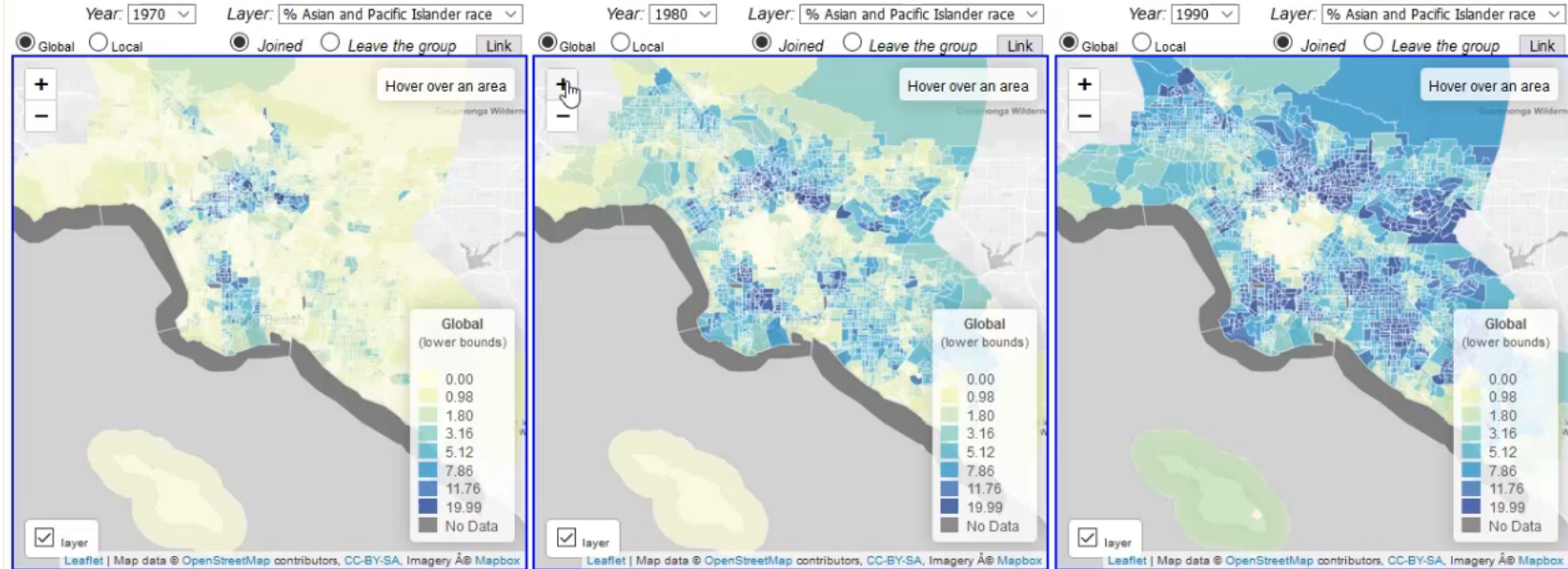
The selections above are valid only after you click "Set Globally" button. To enable "Set Globally", make all maps have the same extents by clicking one of "Link" buttons below.

Class Intervals Adaptive to Map Extent

ACM provides users with an option to see maps with either a global classification or a local classification in any spatial extent.

Global classification refers to the traditional choropleth mapping approach

Local classification adaptively recomputes the class intervals by using values only within the current extent of the map. Whenever the user changes the map extent by panning and zooming, the classification intervals also change.



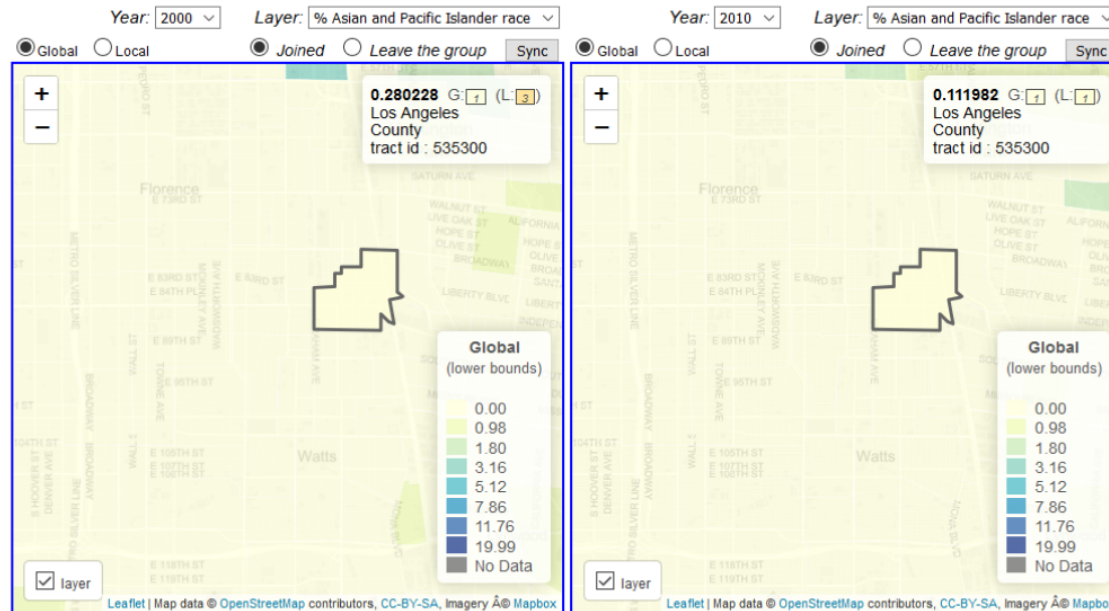
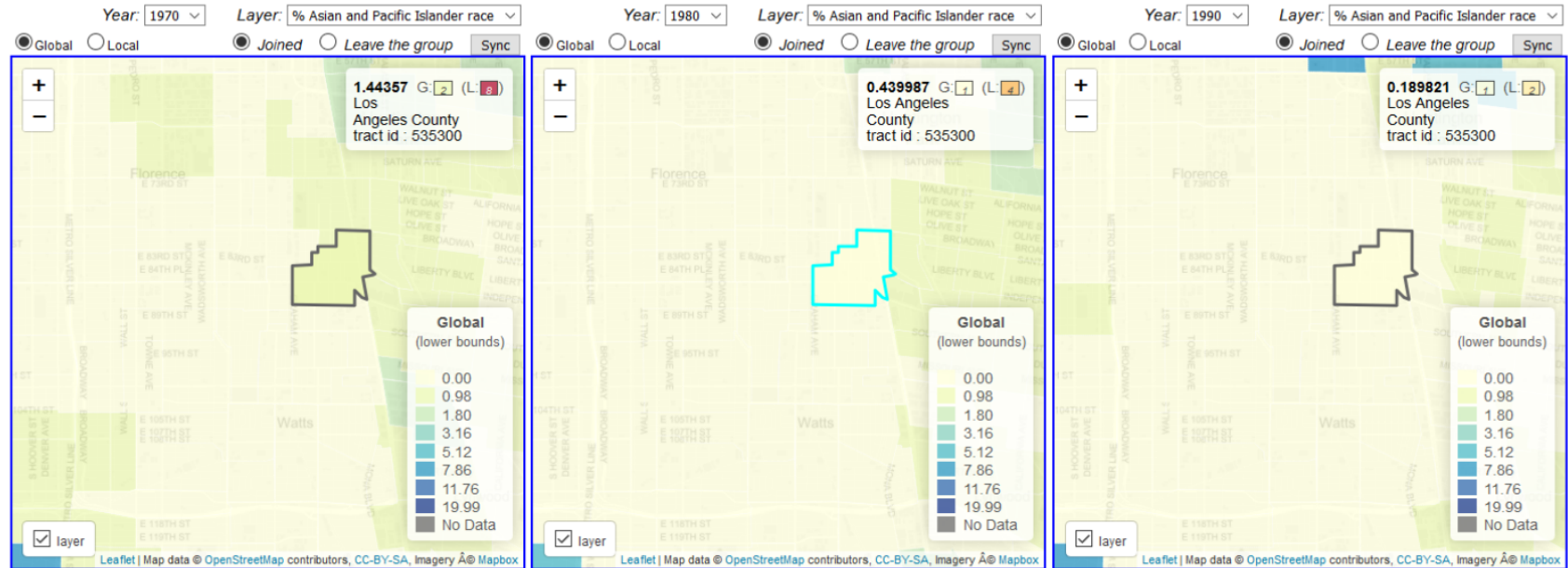
The selections above are valid only after you click "Set Globally" button. To enable "Set Globally", make all maps have the same extents by clicking one of "Sync" buttons below.

Class Intervals Adaptive to Map Extent

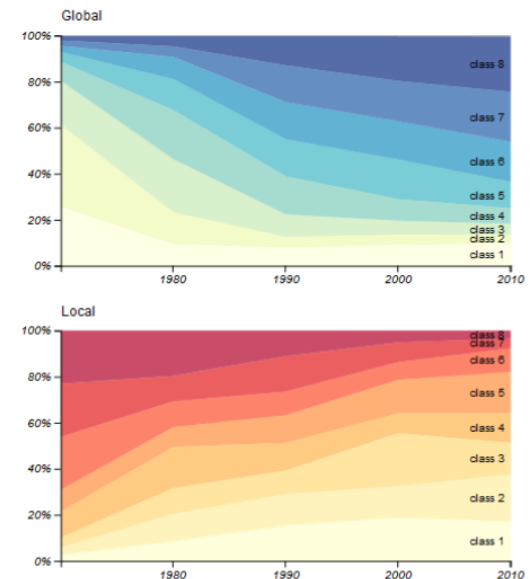
ACM provides users with an option to see maps with either a global classification or a local classification in any spatial extent.

Global classification refers to the traditional choropleth mapping approach

Local classification adaptively recomputes the class intervals by using values only within the current extent of the map. Whenever the user changes the map extent by panning and zooming, the classification intervals also change.



The percentage of polygons belonging to each class



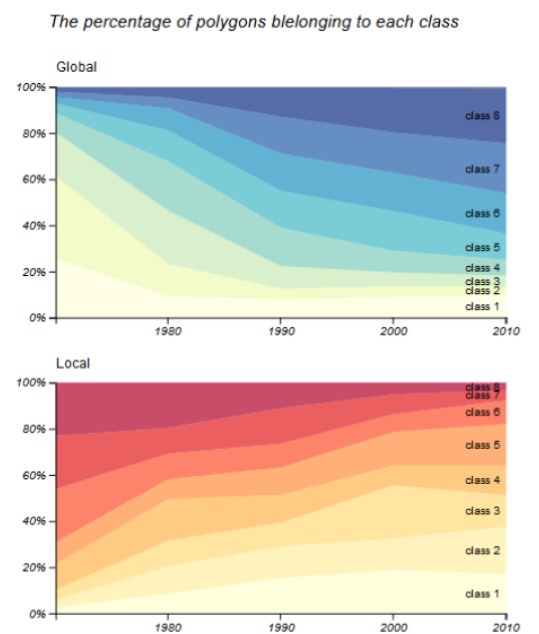
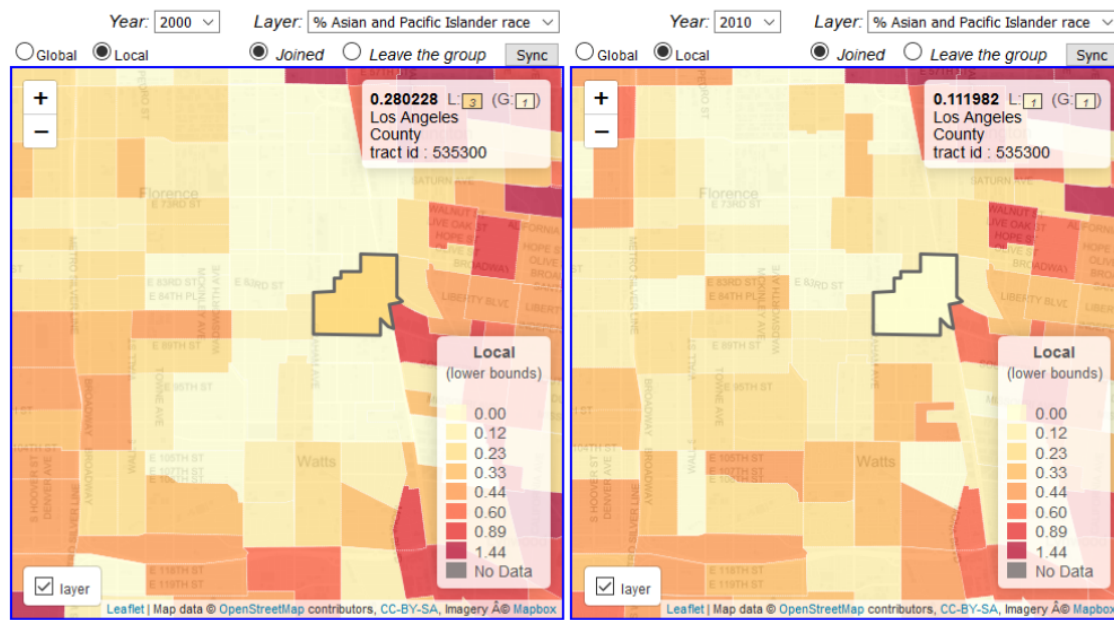
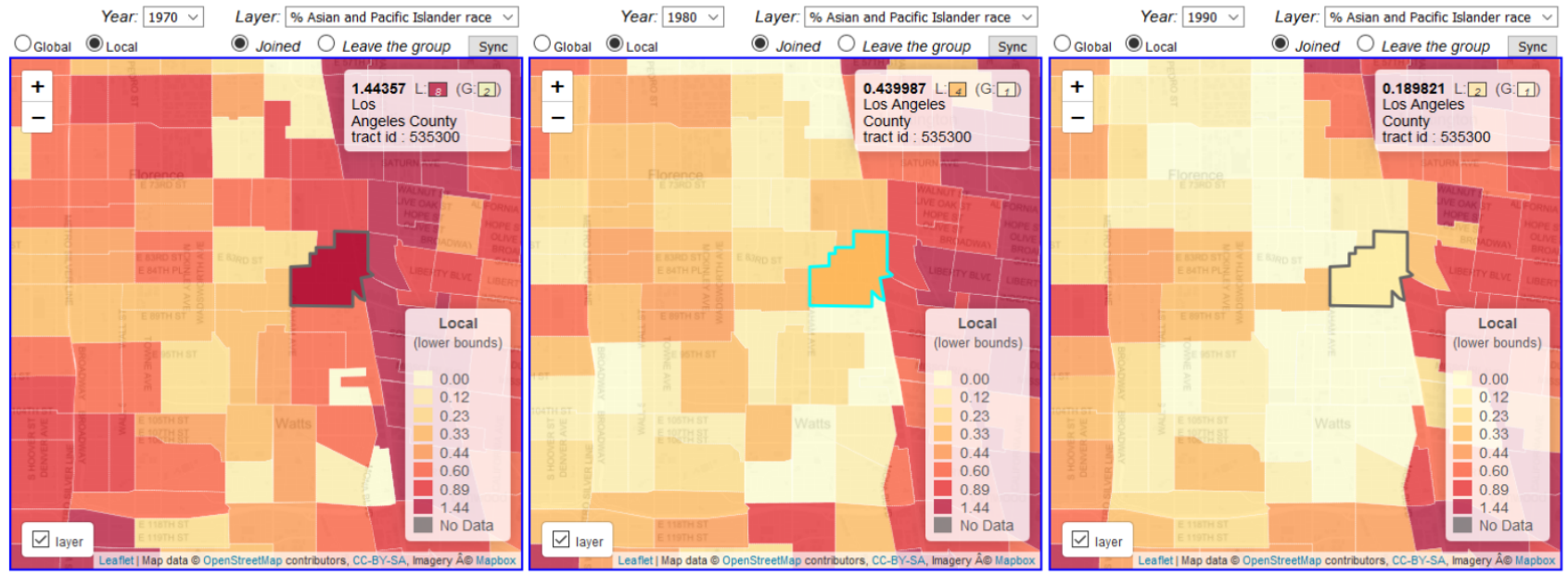
The selections above are valid only after you click "Set Globally" button. To enable "Set Globally", make all maps have the same extents by clicking one of "Sync" buttons below.

Class Intervals Adaptive to Map Extent

ACM provides users with an option to see maps with either a global classification or a local classification in any spatial extent.

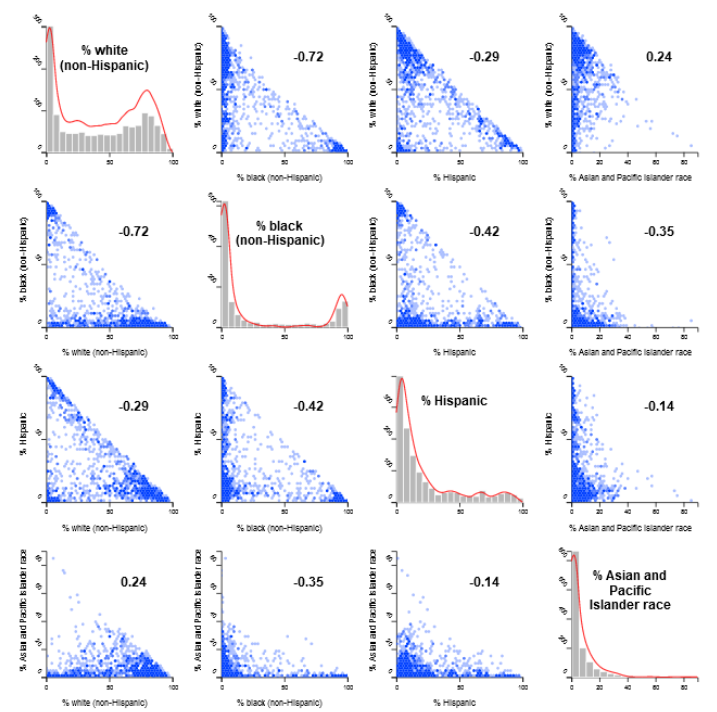
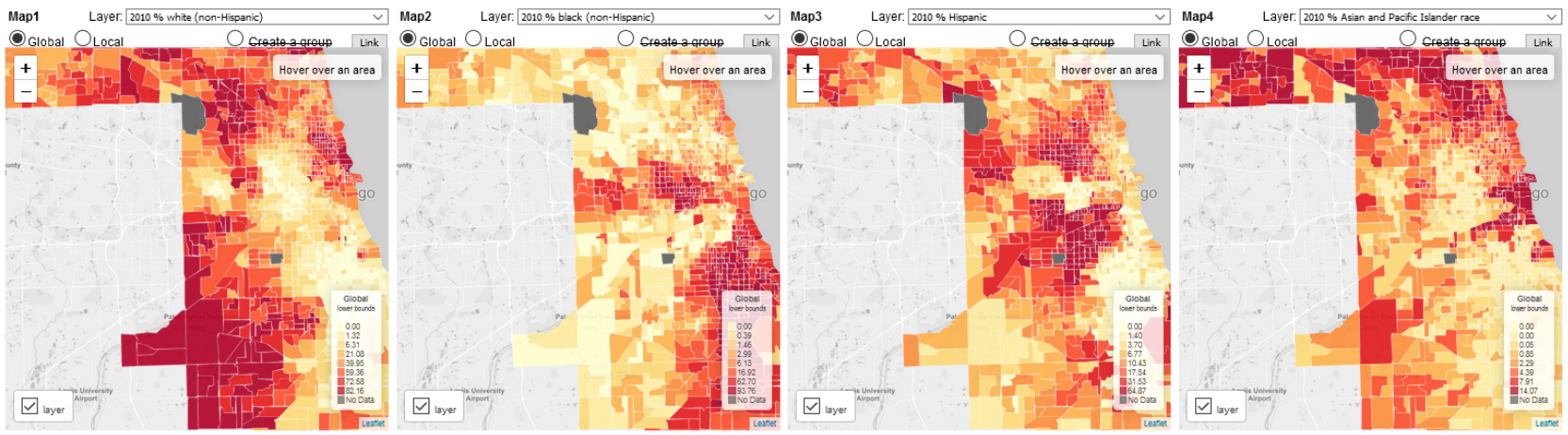
Global classification refers to the traditional choropleth mapping approach

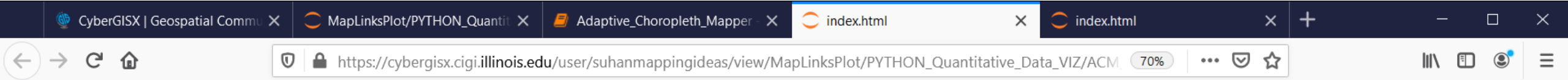
Local classification adaptively recomputes the class intervals by using values only within the current extent of the map. Whenever the user changes the map extent by panning and zooming, the classification intervals also change.



Initialize all maps Layer: **Default** Classification: **Quantile** 8 Global: **Yellow_to_Red** Local: **Yellow_to_Blue** Link All

The selections above are valid only after you click "Set Globally" button. To enable "Set Globally", make all maps have the same extents by clicking one of "Link" buttons below.



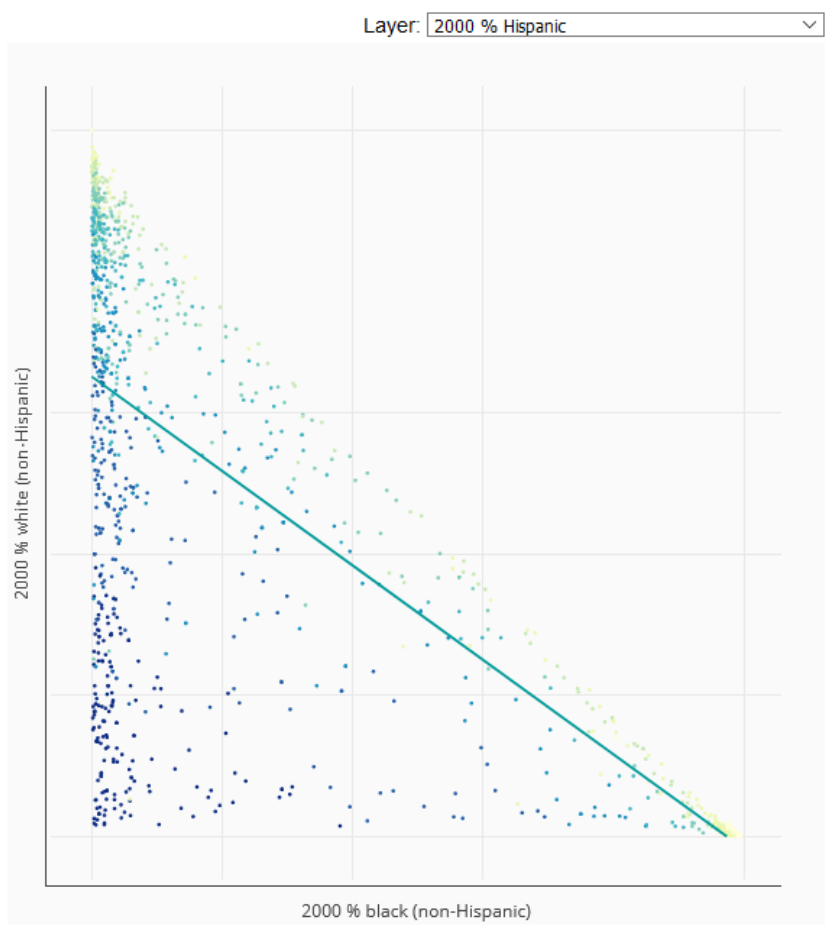
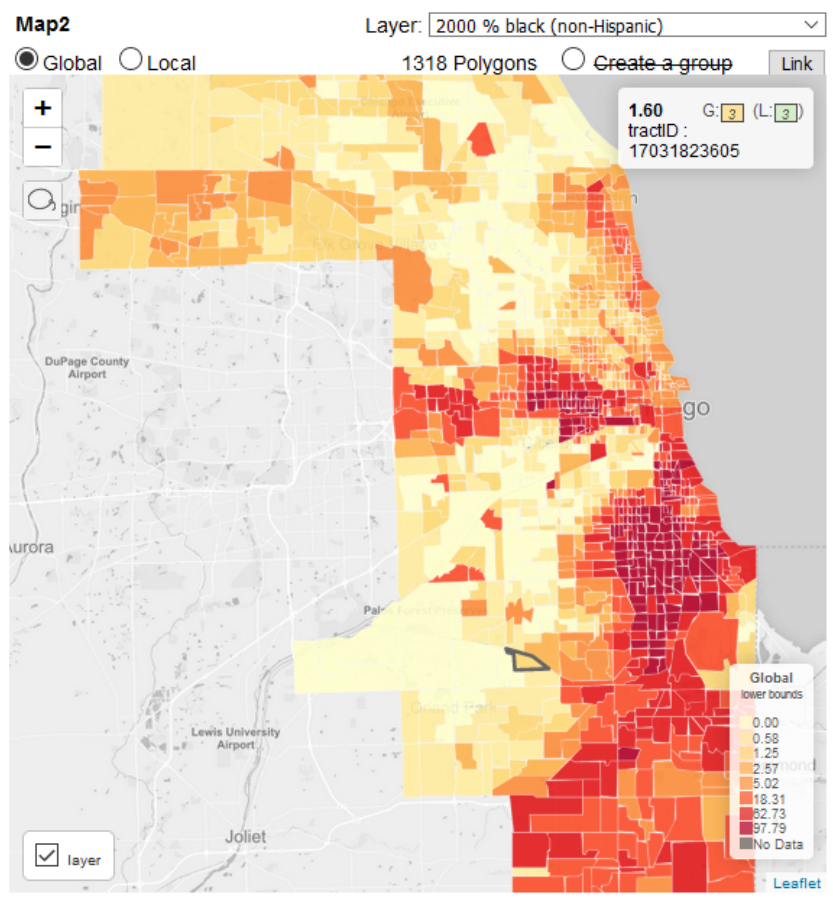
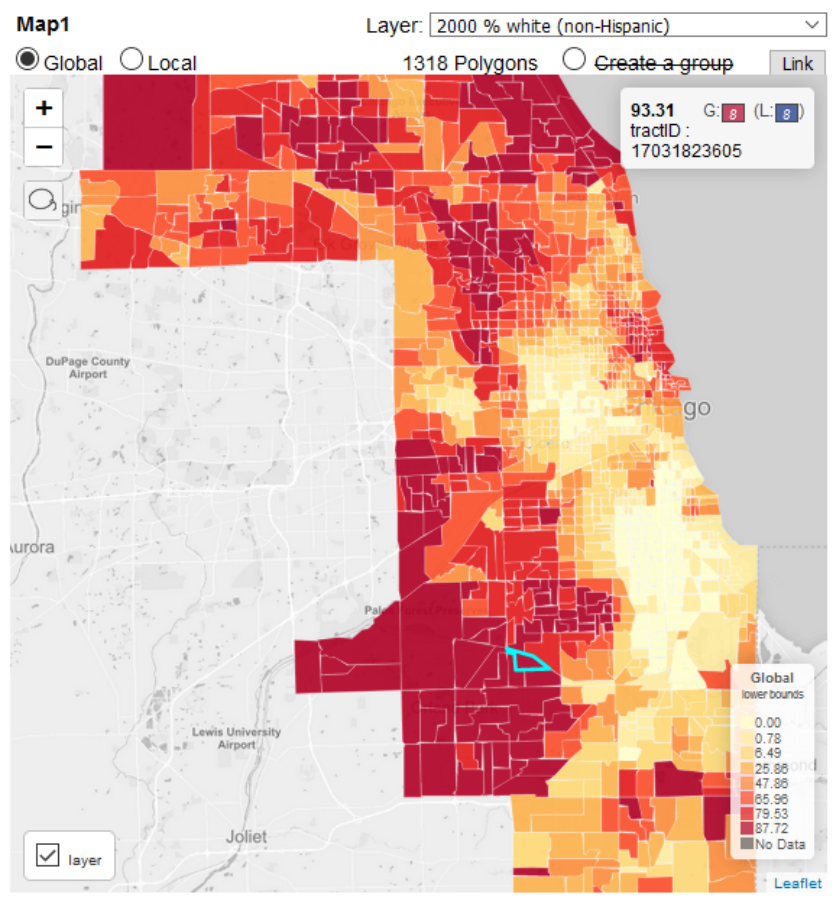


Adaptive Choropleth Mapper with Scatter Plot

Initialize all maps

Layer: **Default** Classification: **Quantile** **8** Global: **Yellow_to_Red** Local: **Yellow_to_Blue** Link All

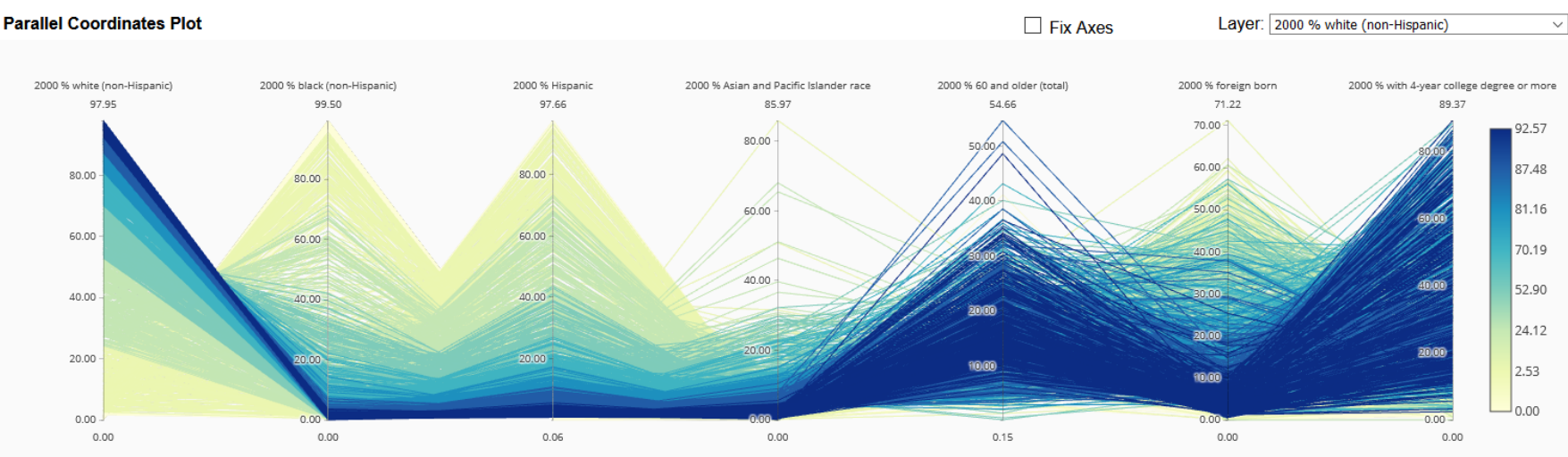
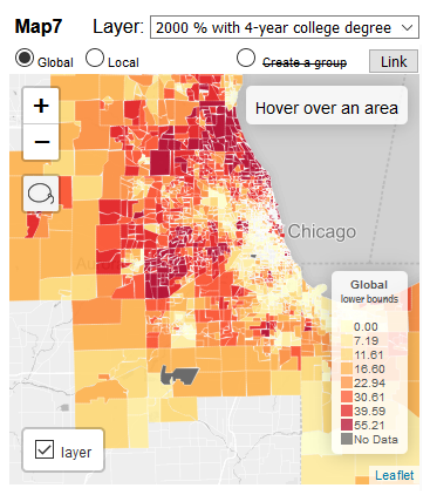
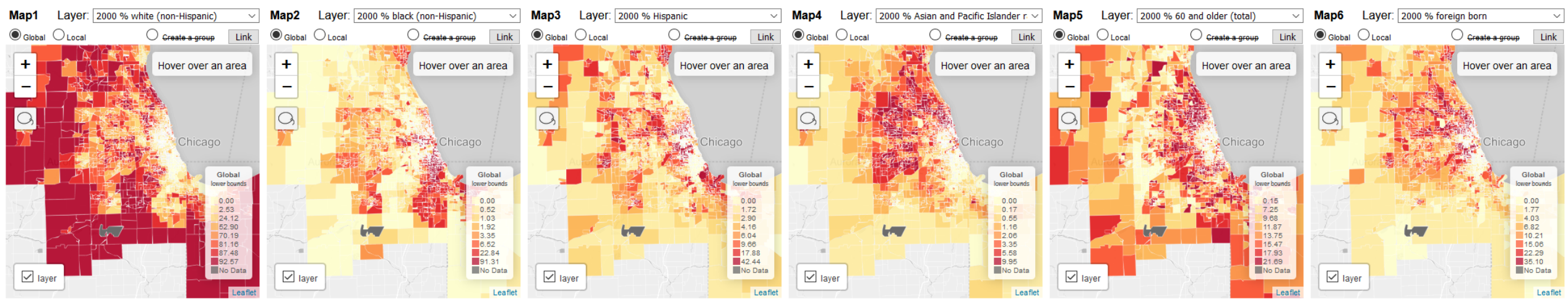
The selections above are valid only after you click "Set Globally" button. To enable "Set Globally", make all maps have the same extents by clicking one of "Link" buttons below.



Adaptive Choropleth Mapper with PCP

Initialize all maps | Layer: **Default** | Classification: **Quantile** | 8 | Global: **Yellow_to_Red** | Local: **Yellow_to_Blue** | Link All | **Set Globally**

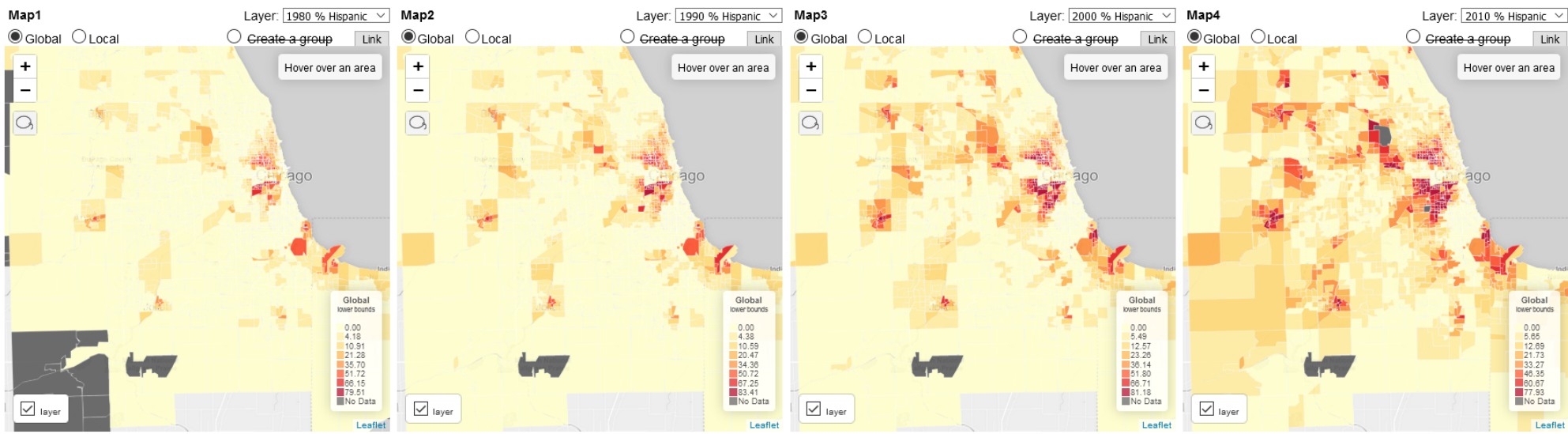
The selections above are valid only after you click "Set Globally" button. To enable "Set Globally", make all maps have the same extents by clicking one of "Link" buttons below.



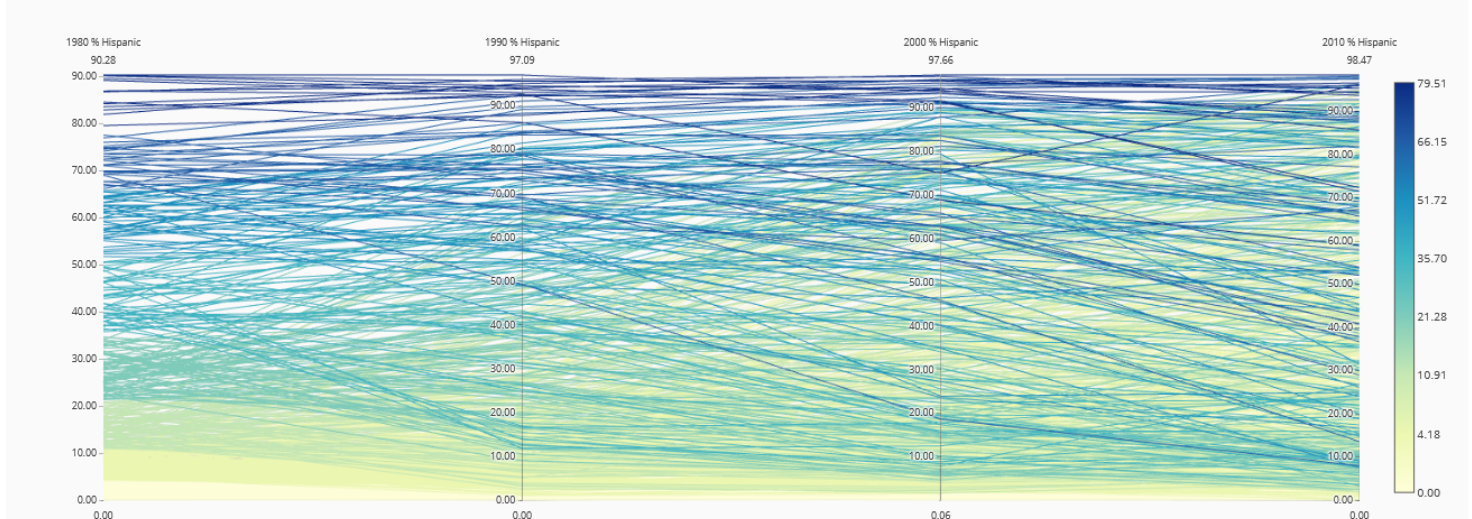
Adaptive Choropleth Mapper: Time Series

Initialize all maps | Layer: **Default** | Classification: **Natural Breaks** | 8 | Global: **Yellow_to_Red** | Local: **Yellow_to_Blue** | Link All | **Set Globally**

The selections above are valid only after you click "Set Globally" button. To enable "Set Globally", make all maps have the same extents by clicking one of "Link" buttons below.



Parallel Coordinates Plot



Longitudinal Neighborhood Change, Cook County (tract level)

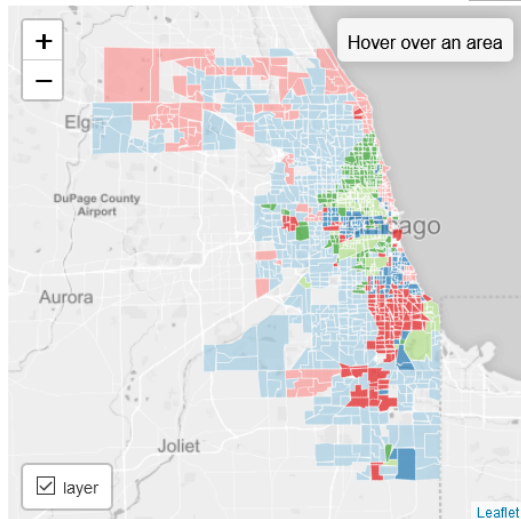
Initialize all maps

NEIGHBORHOOD belonging to: All Sequence

Link All

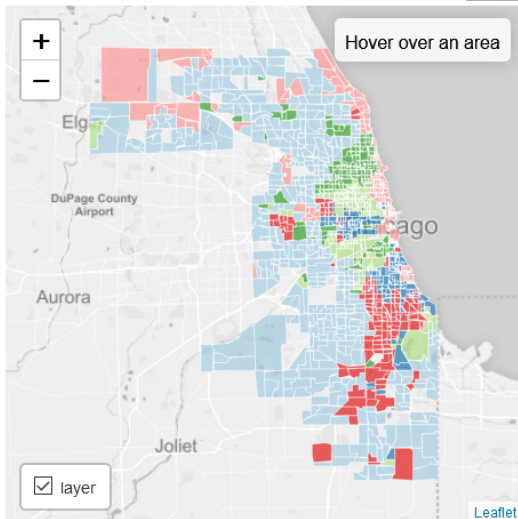
Year: 1980

Create a group Link



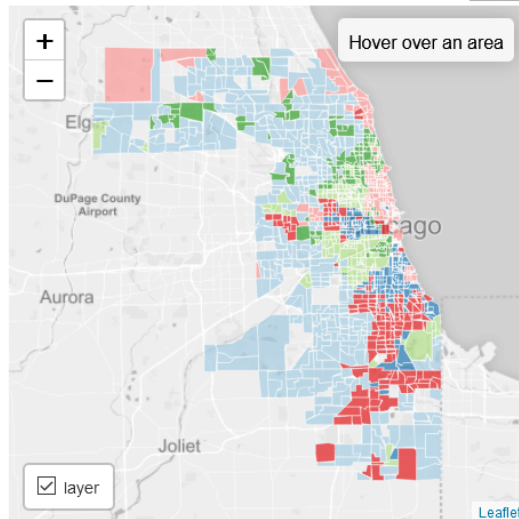
Year: 1990

Create a group Link



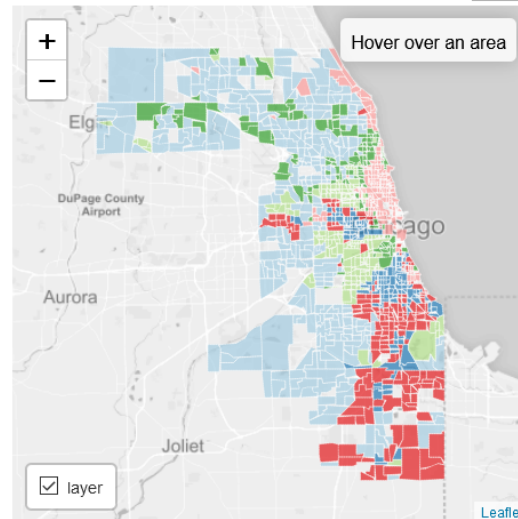
Year: 2000

Create a group Link



Year: 2010

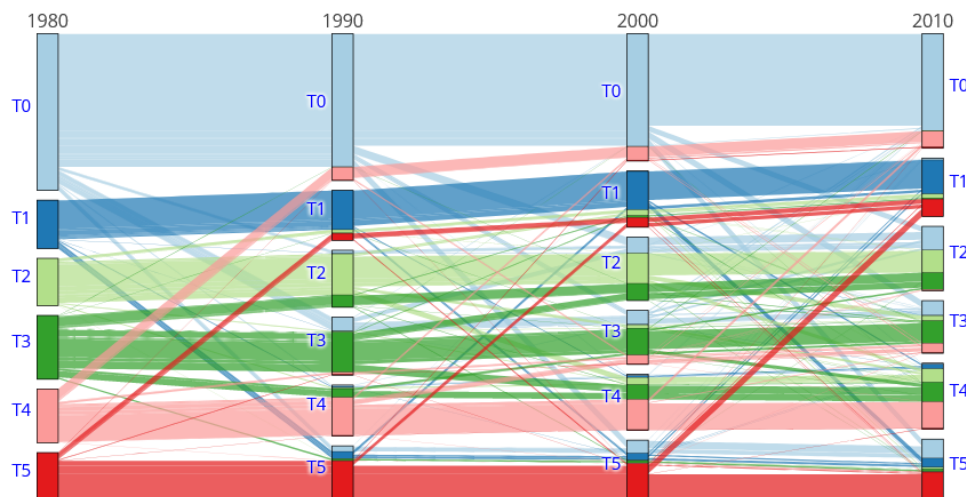
Create a group Link



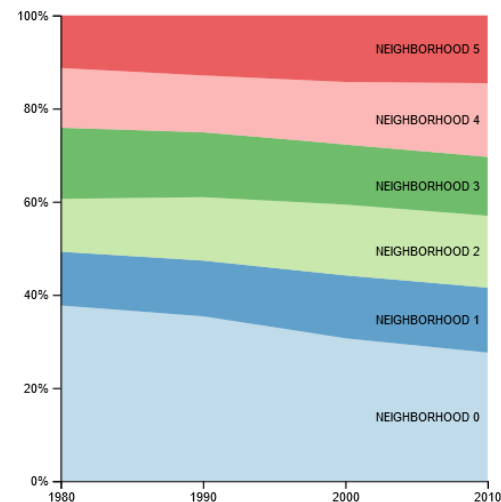
Transition of NEIGHBORHOOD

Color based on year: 1980

Tx: type



Temporal change in NEIGHBORHOOD



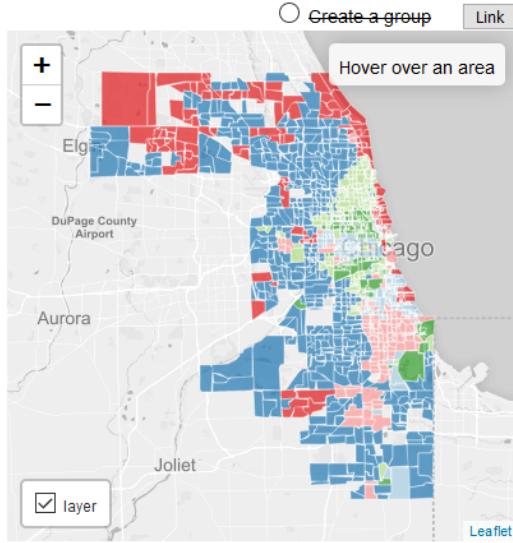
Qualitative Analysis Mapper (QAM)

Neighborhood, Cook County (tract level)

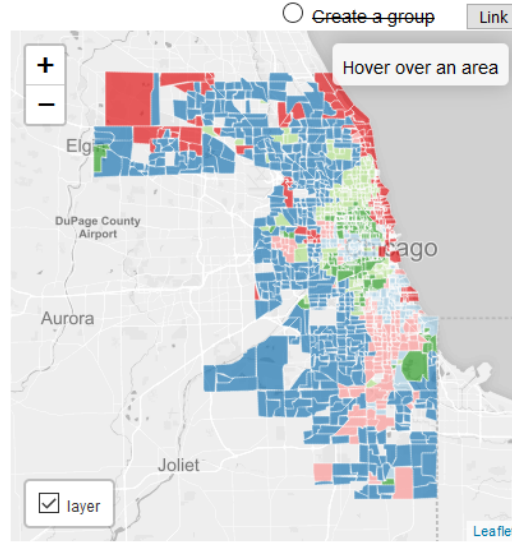
Initialize all maps

Link All

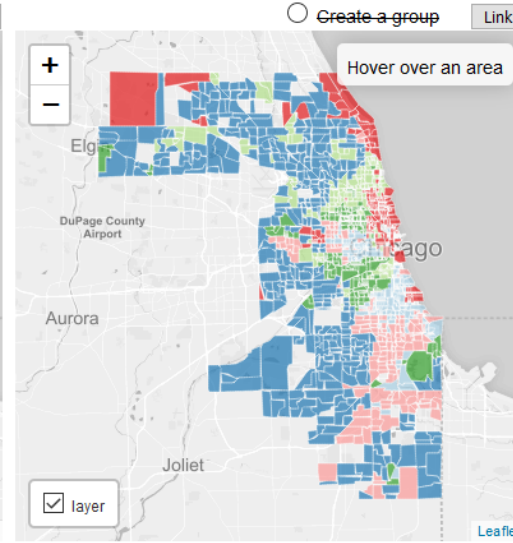
Year: 1980



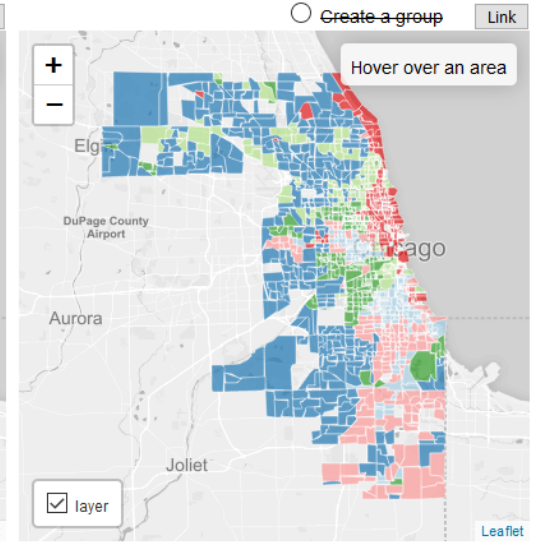
Year: 1990



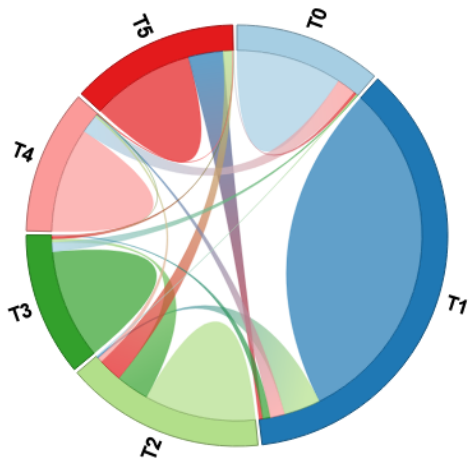
Year: 2000



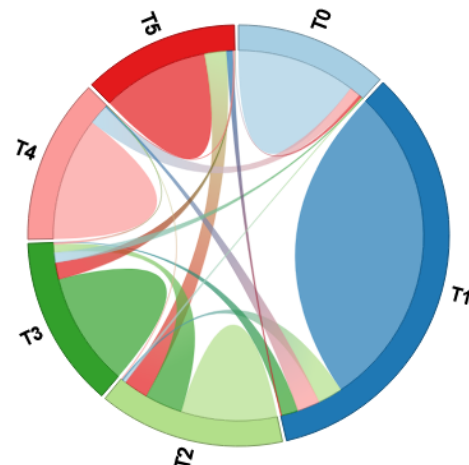
Year: 2010



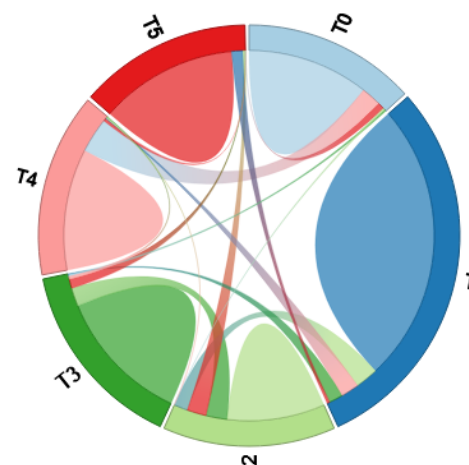
Transition between 1980 and 1990



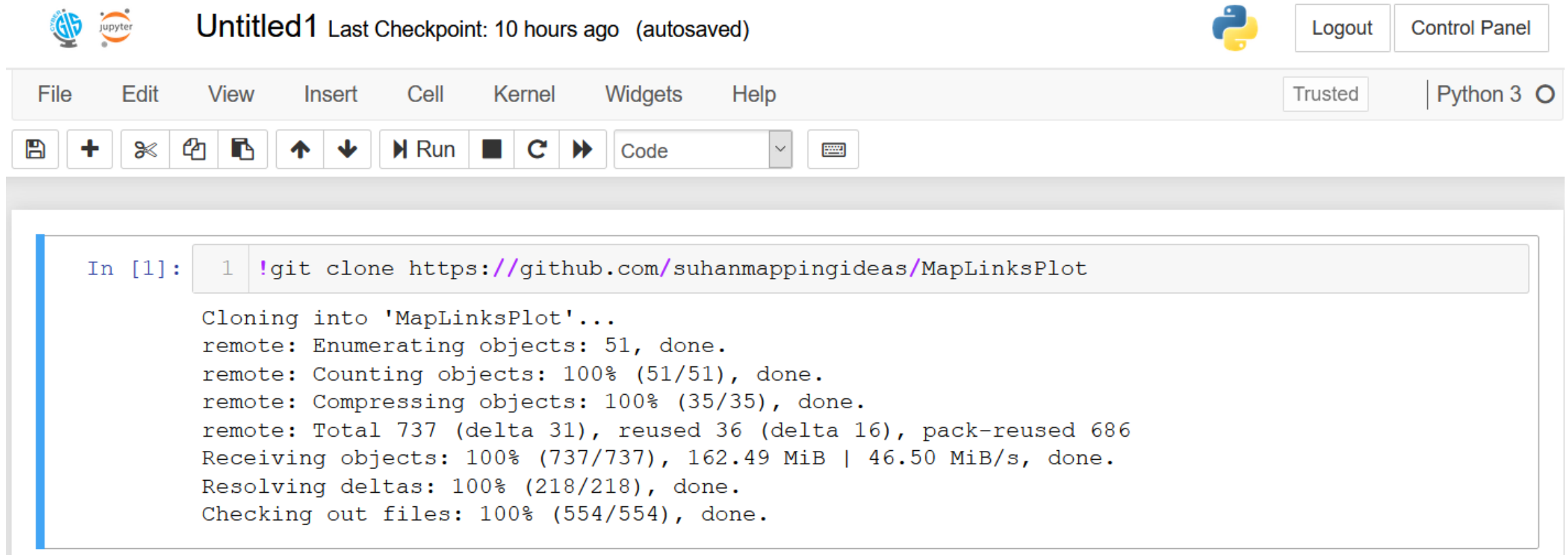
Transition between 1990 and 2000



Transition between 2000 and 2010



Clone the github repository of MapLinksPlot



The screenshot shows a Jupyter Notebook interface. At the top, there are logos for GIS and Jupyter, the text "Untitled1 Last Checkpoint: 10 hours ago (autosaved)", and a Python logo. On the right, there are buttons for "Logout" and "Control Panel". Below this is a menu bar with "File", "Edit", "View", "Insert", "Cell", "Kernel", "Widgets", and "Help". On the right of the menu bar, there are "Trusted" and "Python 3" indicators. A toolbar contains icons for saving, adding, deleting, copying, pasting, undo, redo, and running code. The main area shows a code cell with the following content:

```
In [1]: 1 !git clone https://github.com/suhanmappingideas/MapLinksPlot

Cloning into 'MapLinksPlot'...
remote: Enumerating objects: 51, done.
remote: Counting objects: 100% (51/51), done.
remote: Compressing objects: 100% (35/35), done.
remote: Total 737 (delta 31), reused 36 (delta 16), pack-reused 686
Receiving objects: 100% (737/737), 162.49 MiB | 46.50 MiB/s, done.
Resolving deltas: 100% (218/218), done.
Checking out files: 100% (554/554), done.
```