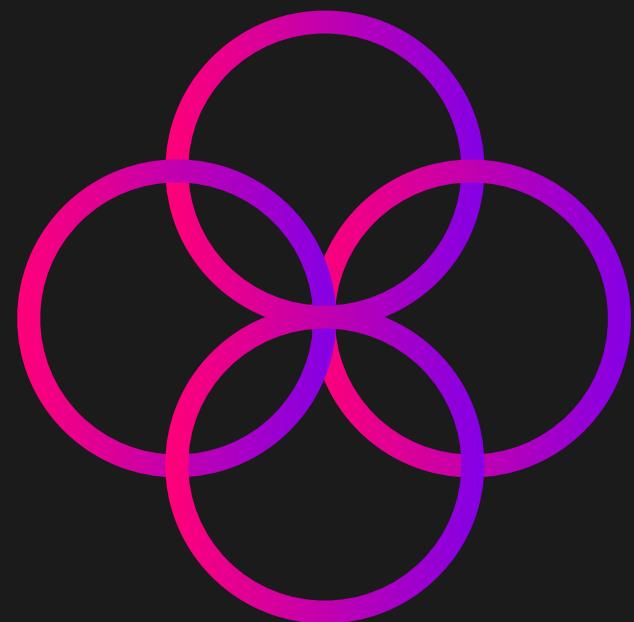


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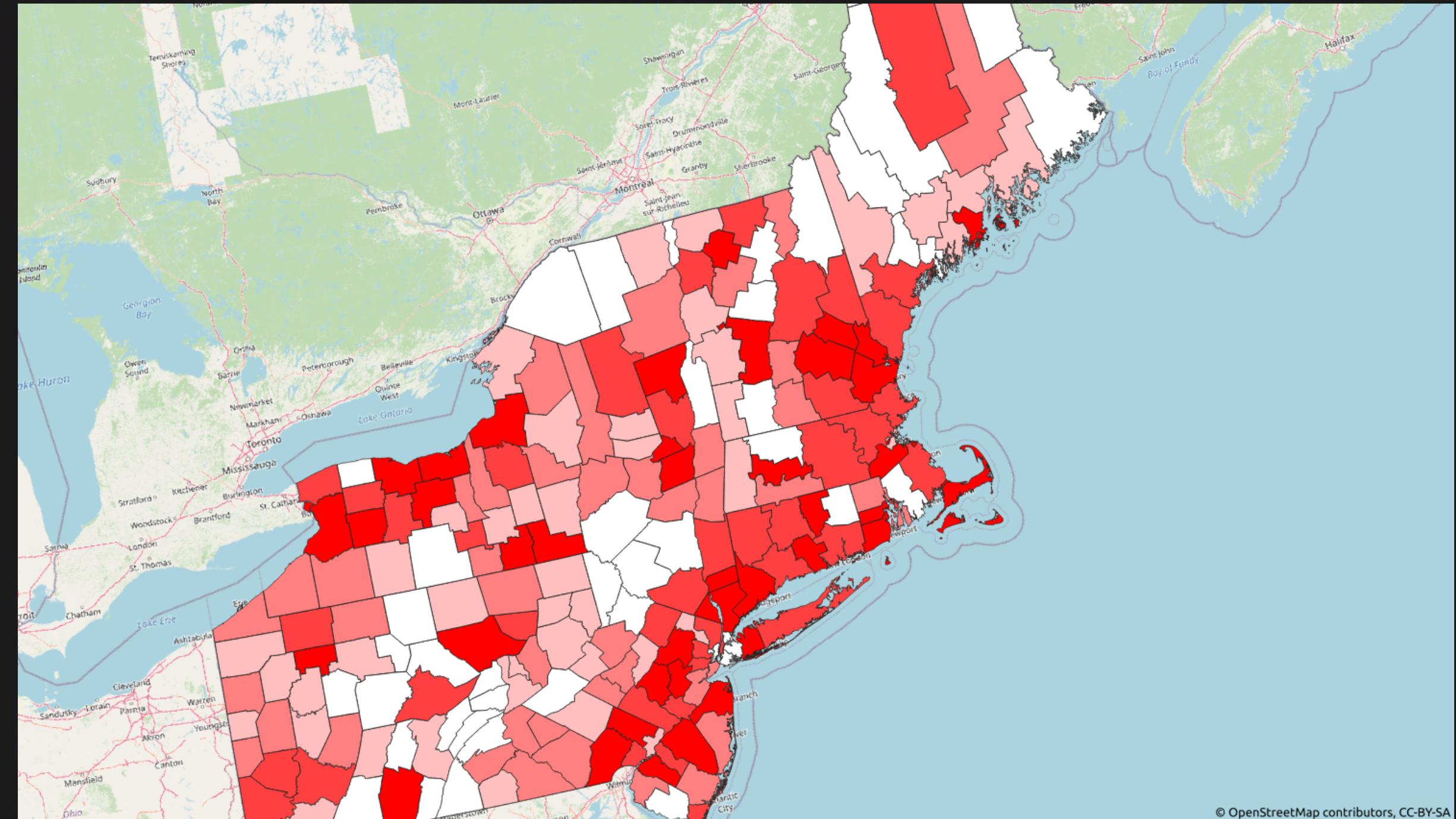
Pyinterpola~~t~~e: Spatial Interpolation of Areal Data with Python



GeoPython
2021

PYINTERPOLATE

Problem #1: Choropleth map == Visual Bias



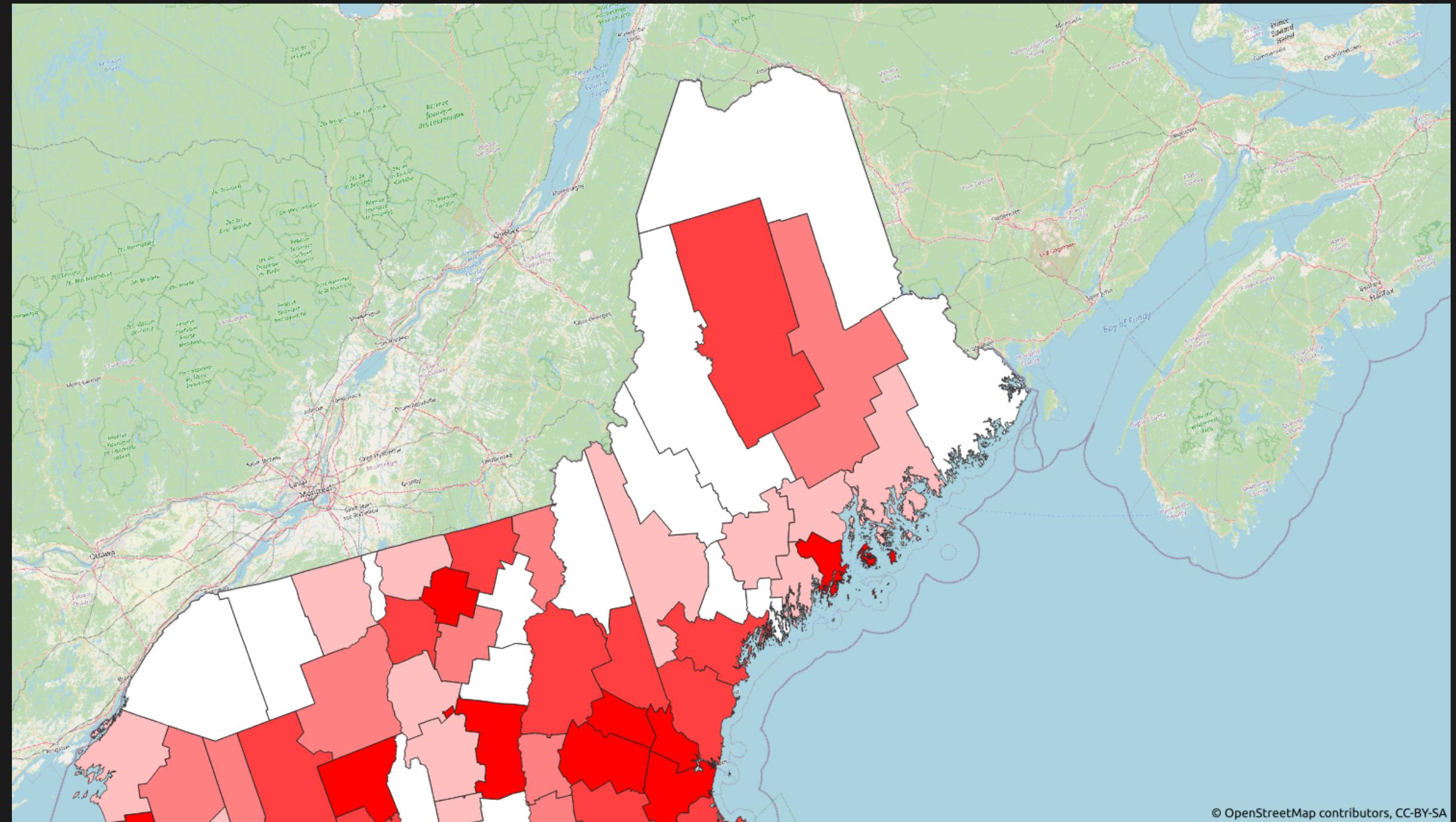
<https://link.springer.com/article/10.1007/s42489-019-00026-y>

GeoPython
2021

PYINTERPOLATE

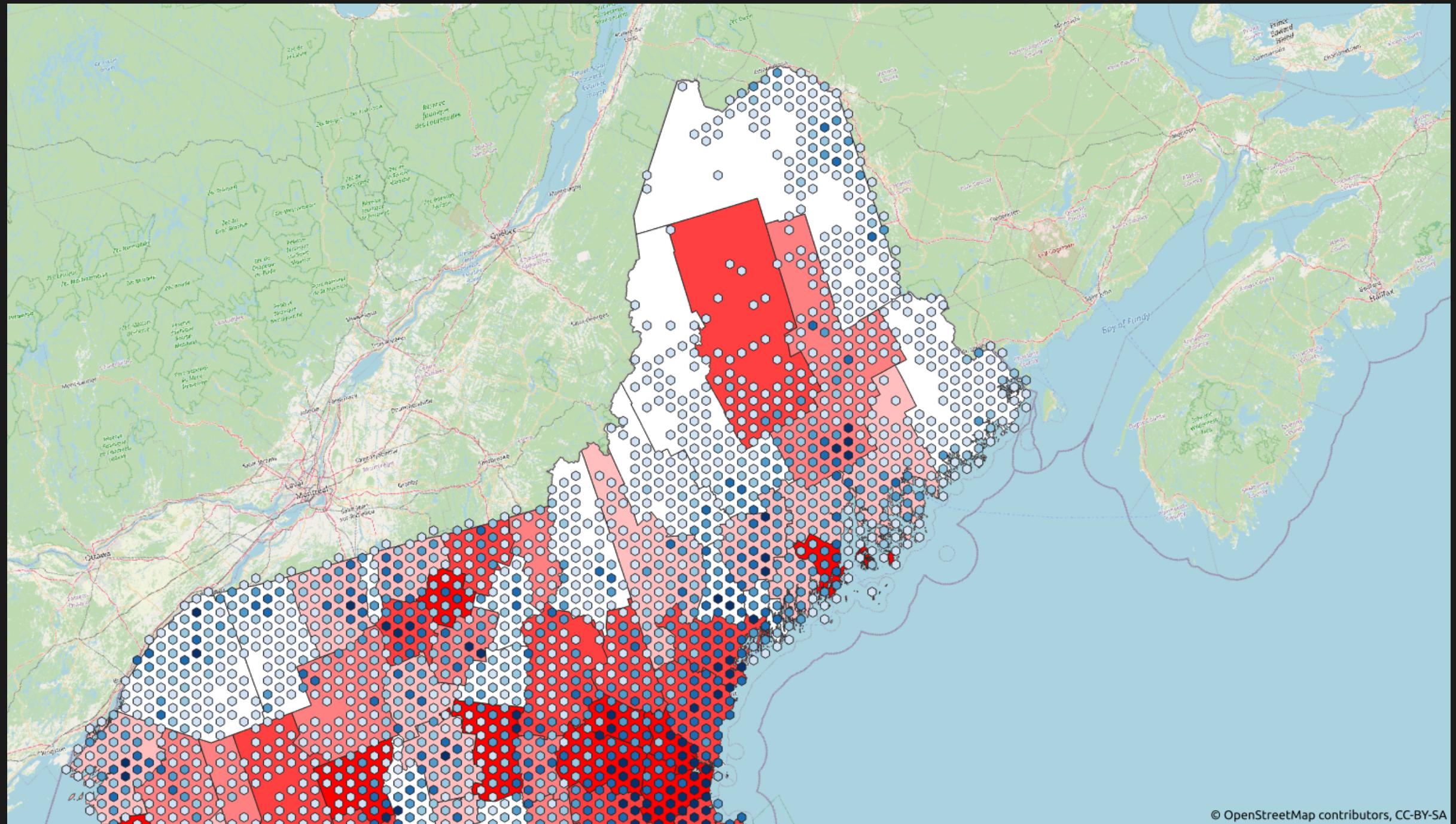
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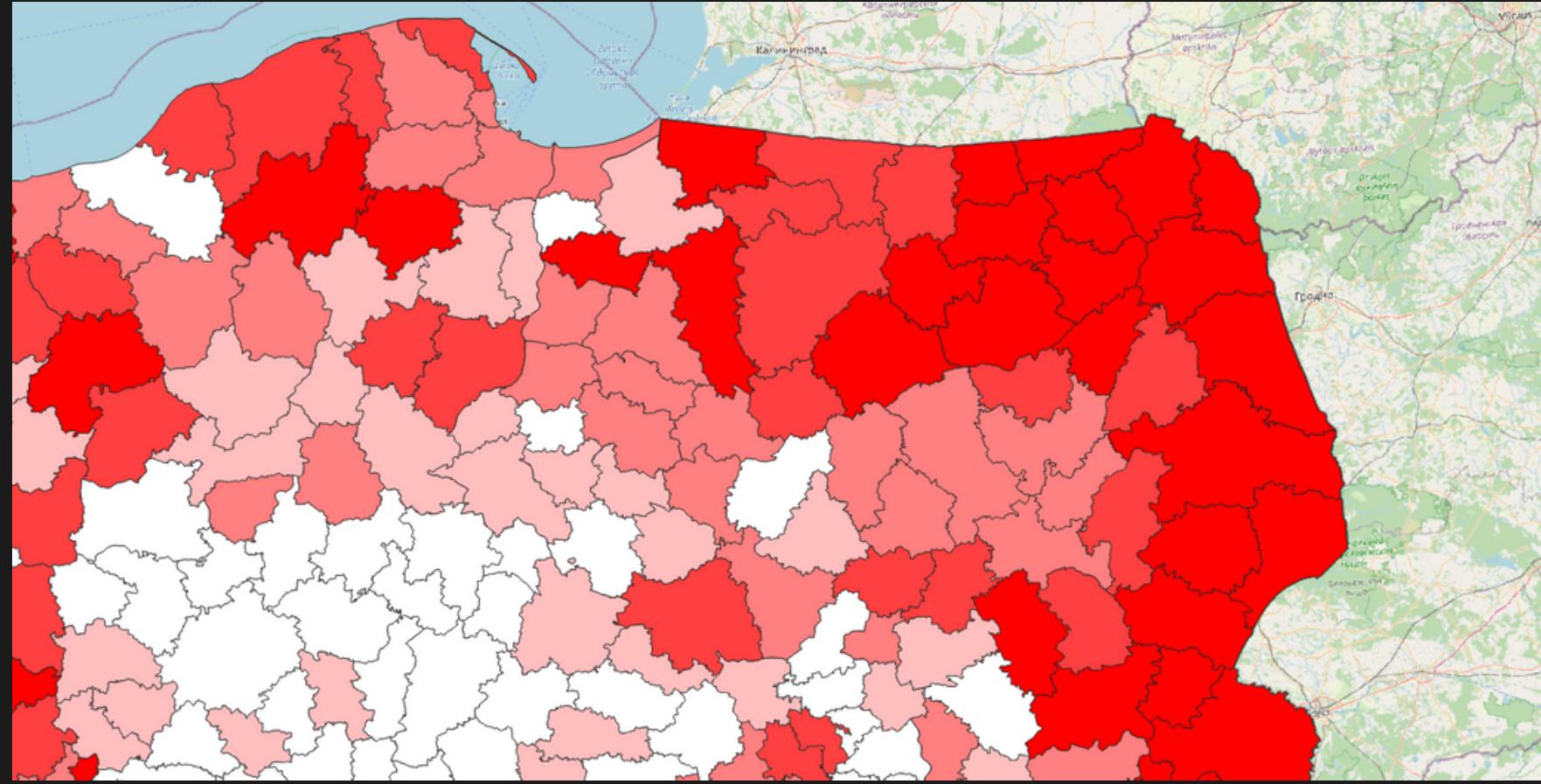
Problem #1:
Choropleth map
== Visual Bias



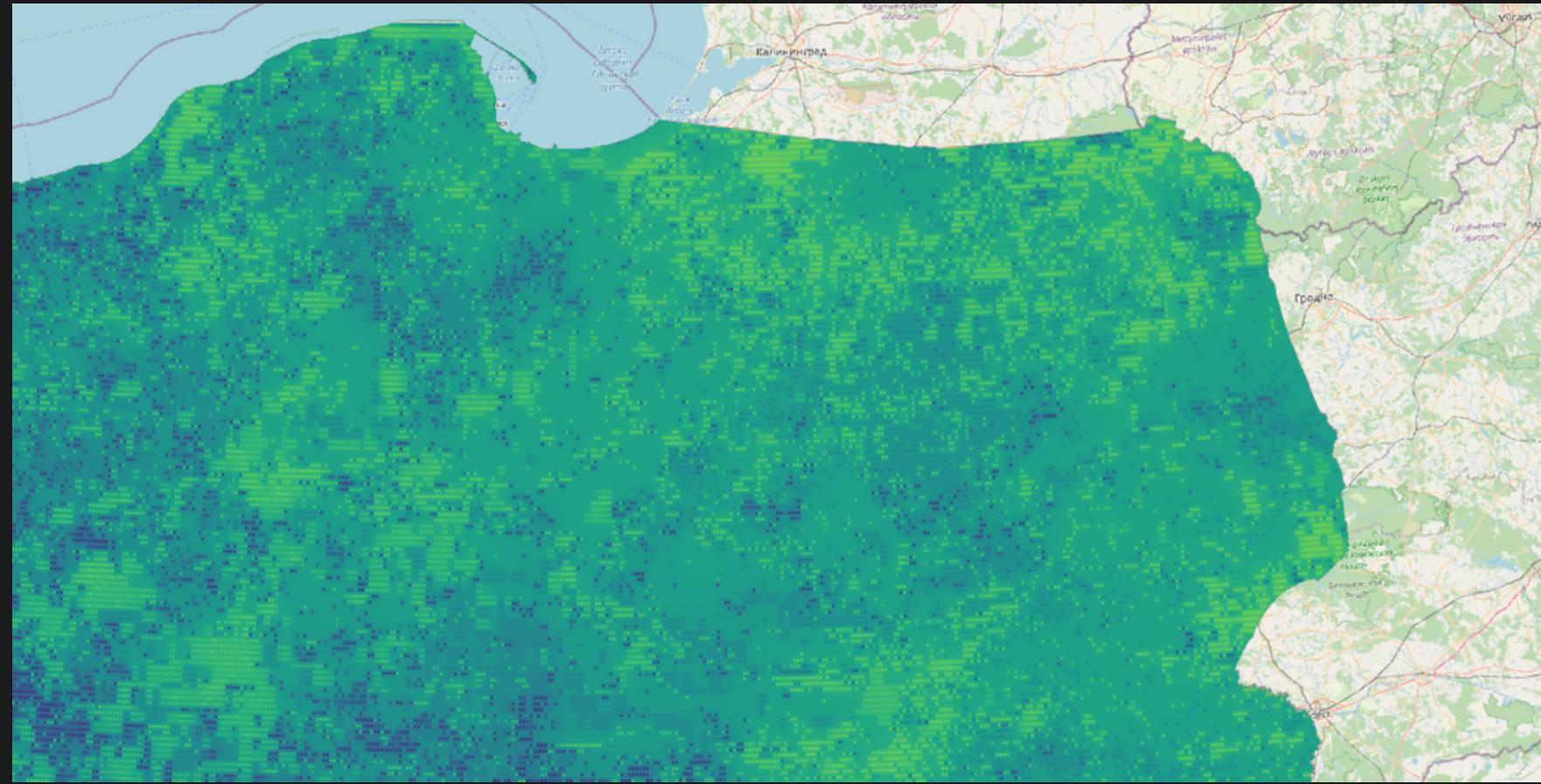
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GeoPython
2021

PYINTERPOLATE



Problem #2:
Big Scale ==
Wrong Input for
Modeling

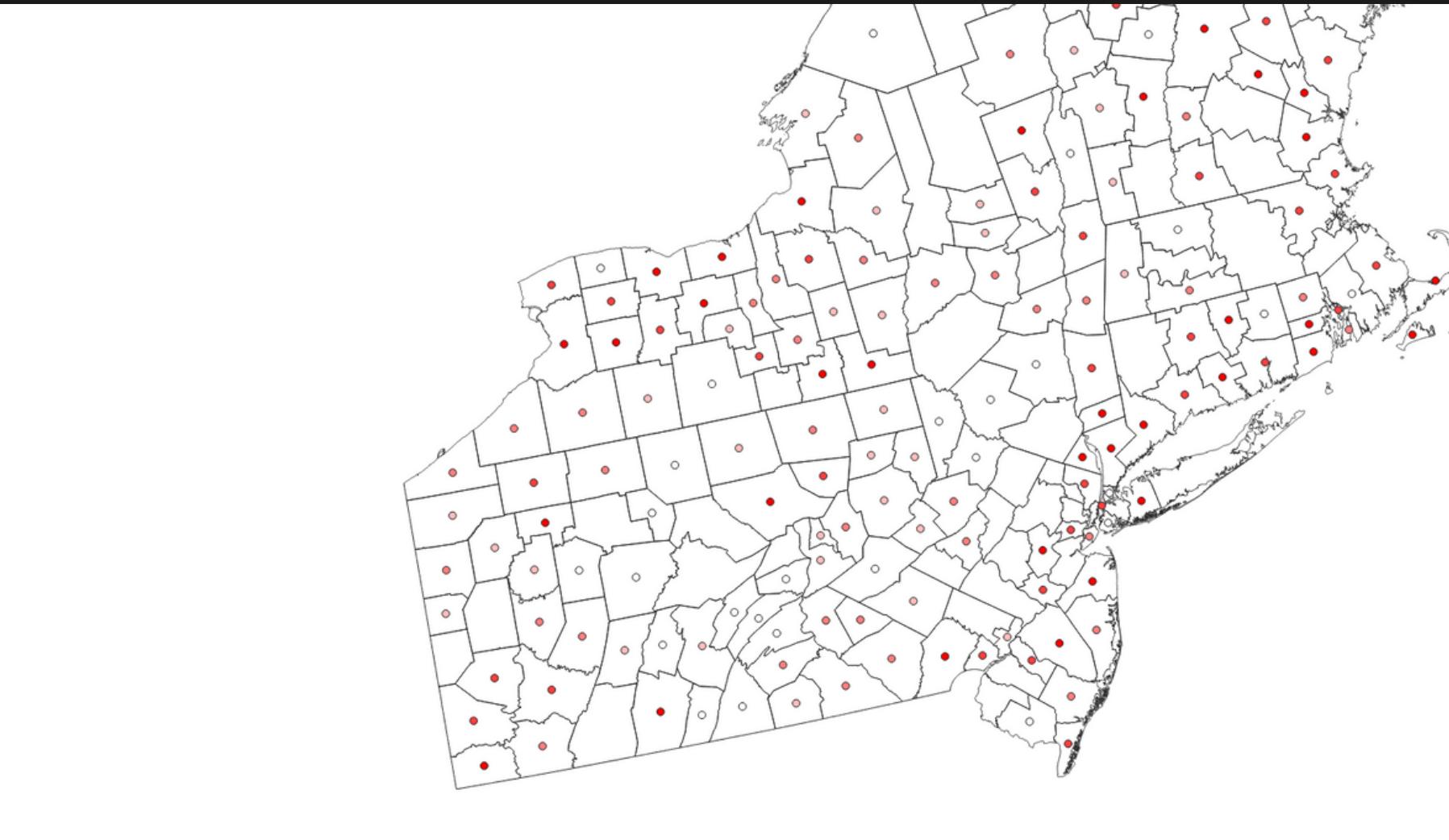


Poisson Kriging

CENTROID-BASED | AREA-TO-AREA | AREA-TO-POINT

Centroid-based

Areas fall into their respective centroids.



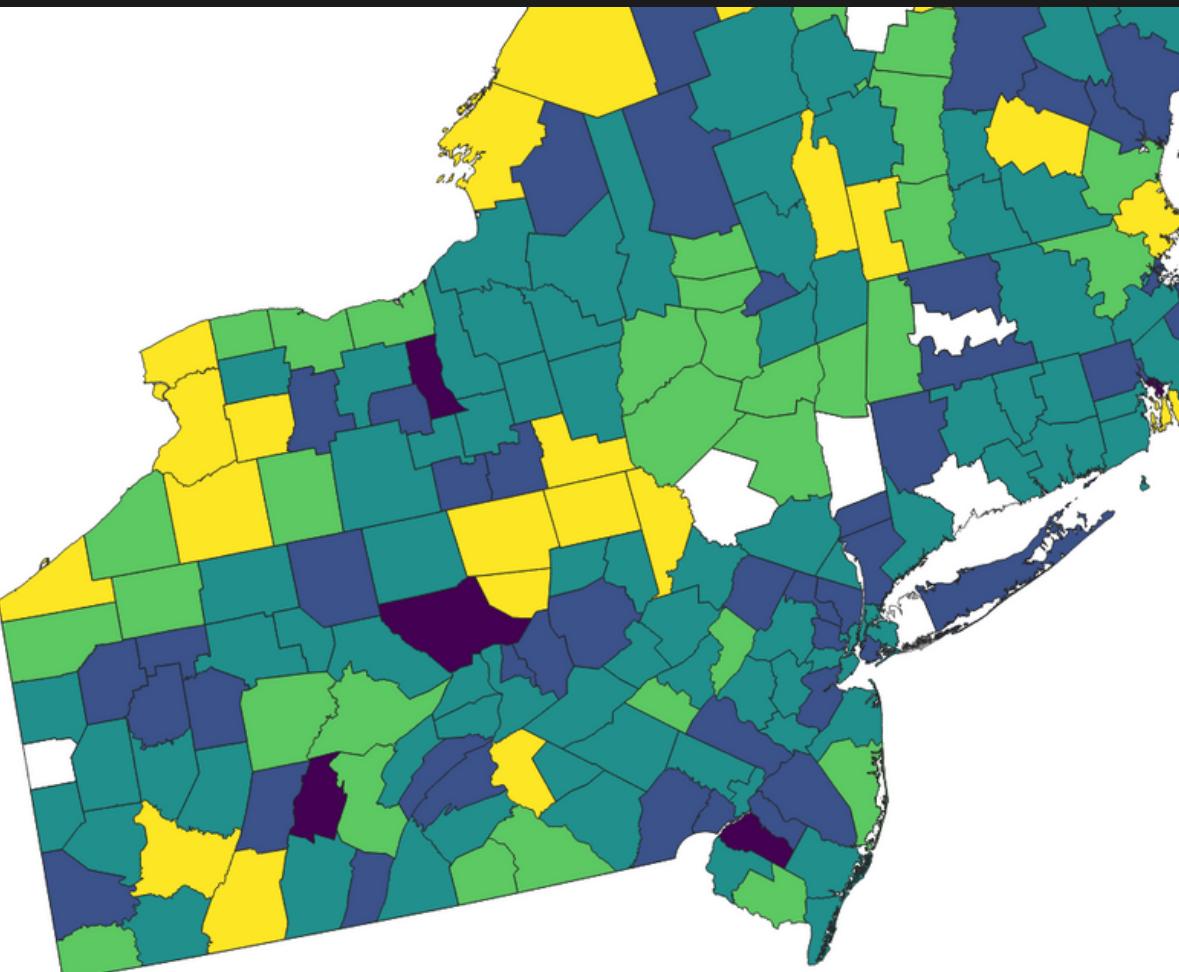
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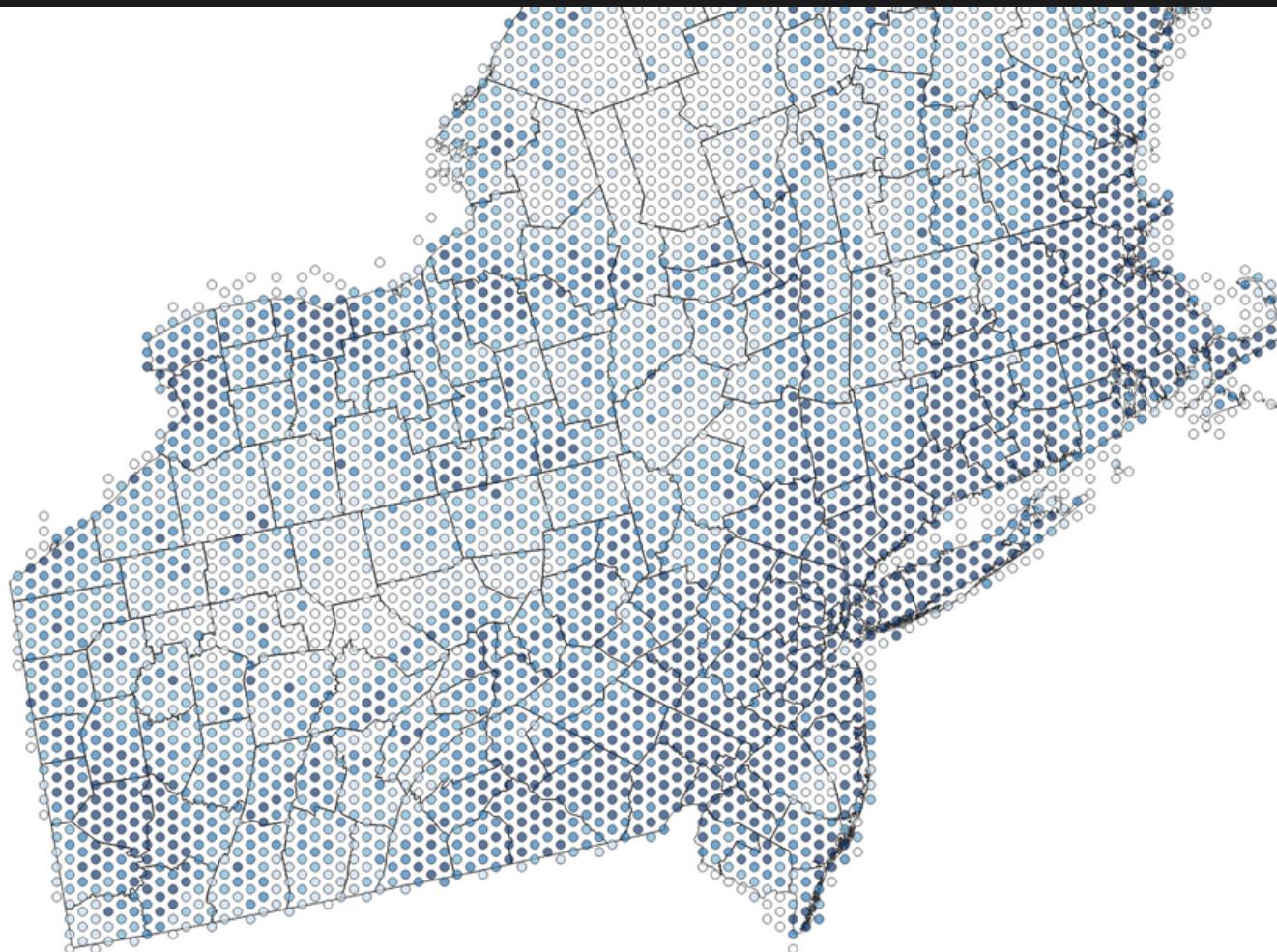
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Area-to-Area (Smoothing)

Preserves information about areas' shapes and sizes and smooths choropleth maps. Can be useful to avoid small numbers problem when small population

Poisson Kriging

CENTROID-BASED | AREA-TO-AREA | AREA-TO-POINT



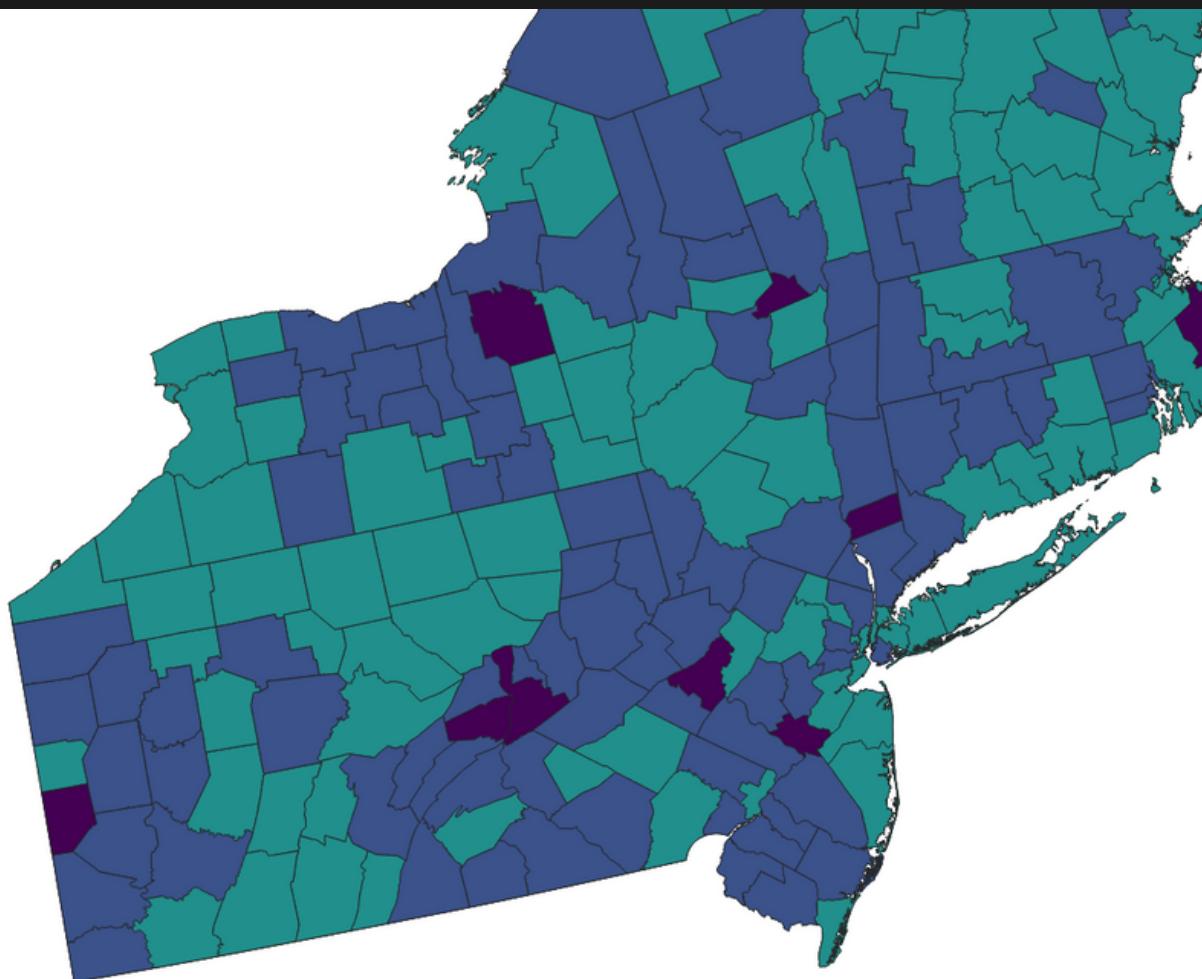
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2021

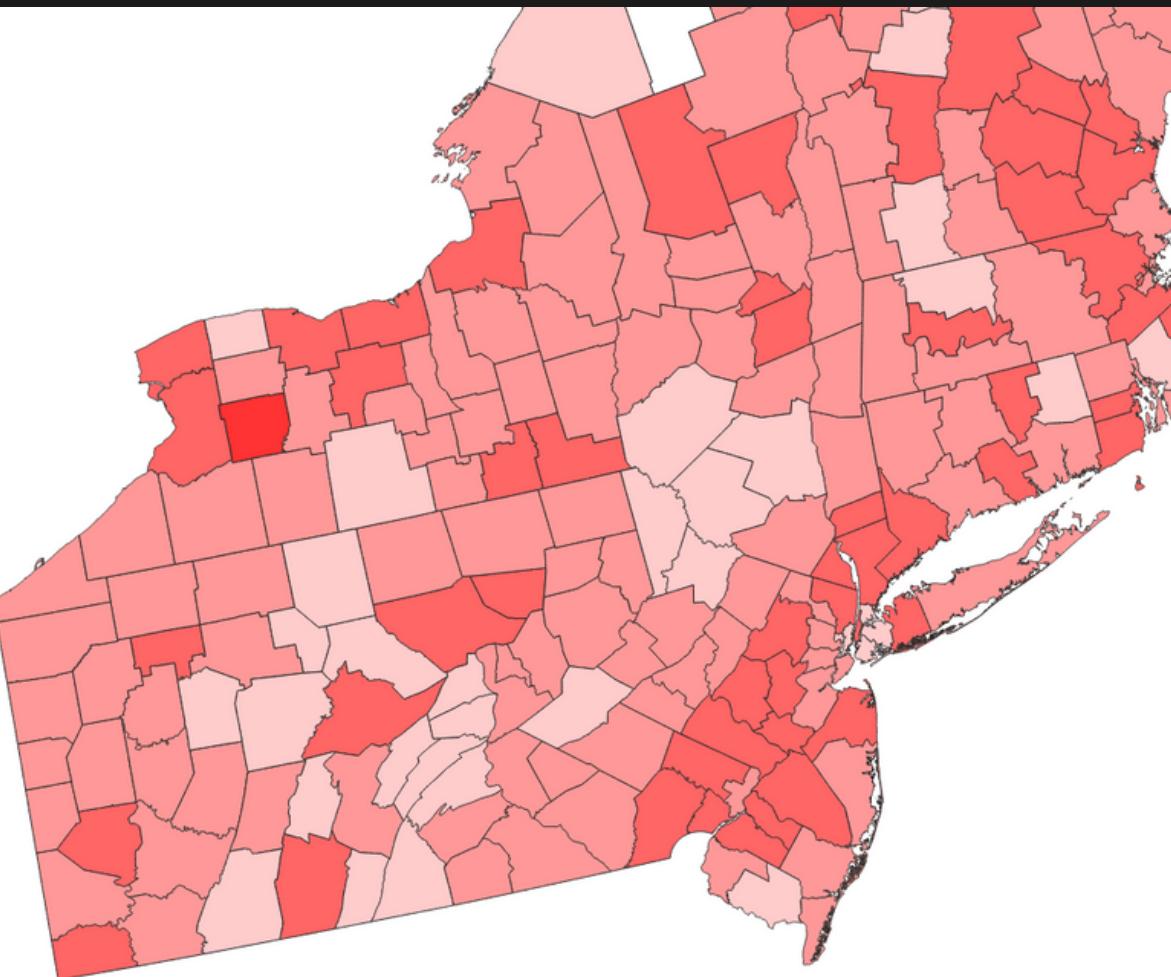
PYINTERPOLATE

Area-to-Point (Change of Support)

Downscales process into
smaller units.

Poisson Kriging

CENTROID-BASED | AREA-TO-AREA | AREA-TO-POINT



GeoPython
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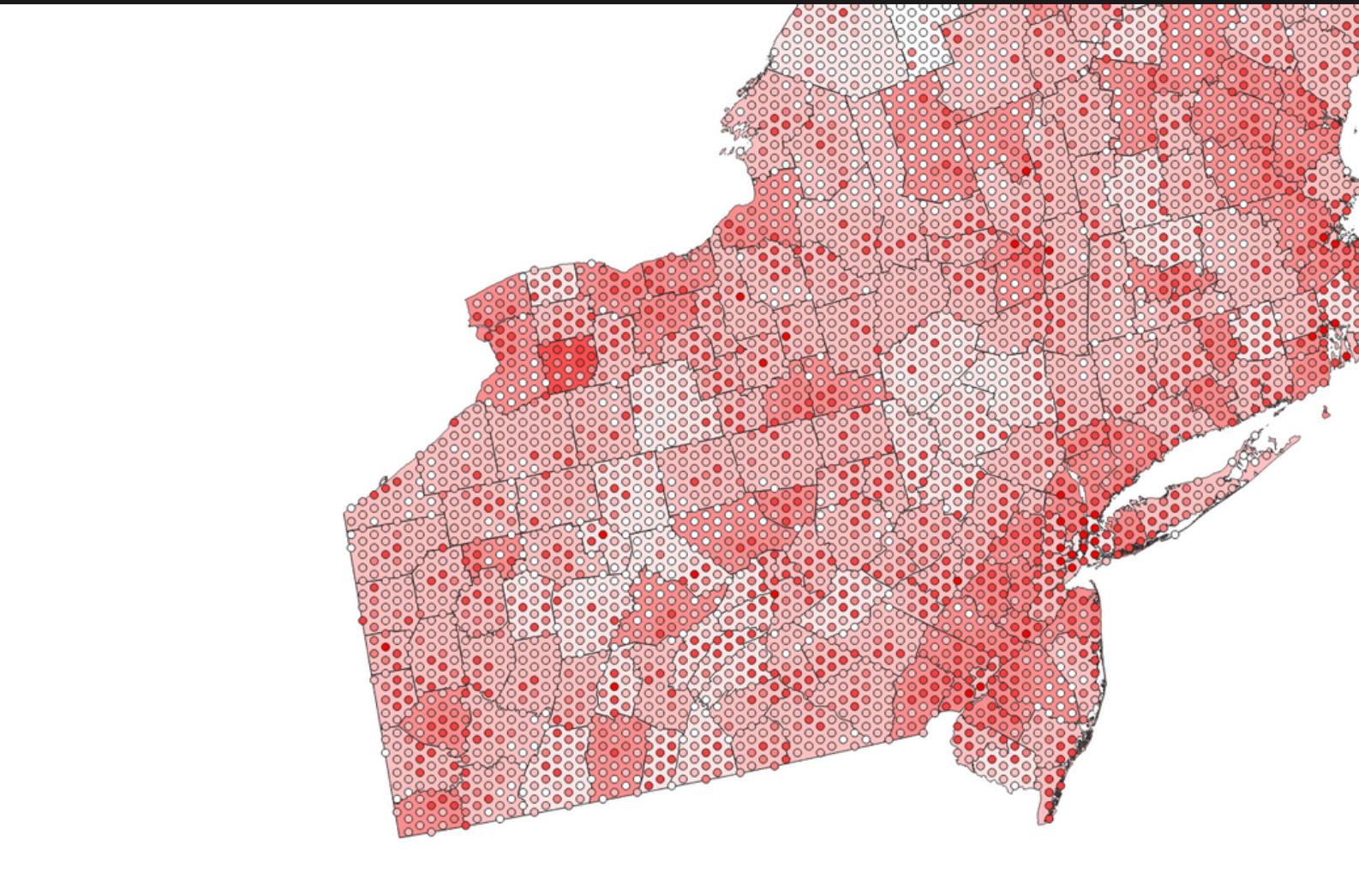
PYINTERPOLATE

Area-to-Point (Change of Support)

Downscales process into
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Poisson Kriging

CENTROID-BASED | AREA-TO-AREA | AREA-TO-POINT



GeoPython
2021

When can we use it?

#1 Process **is** spatially correlated at a reasonable distance.

#2 We have an access to the linked variable, e.g. population units if we analyze social variables or sampling point units if we analyze ecological data.

When we shouldn't use it?

#1 Process is random at a given scale.

#2 Process is not a rate, as example crimes per population or number of elephants seen per time at a specific location.

Example Pipeline

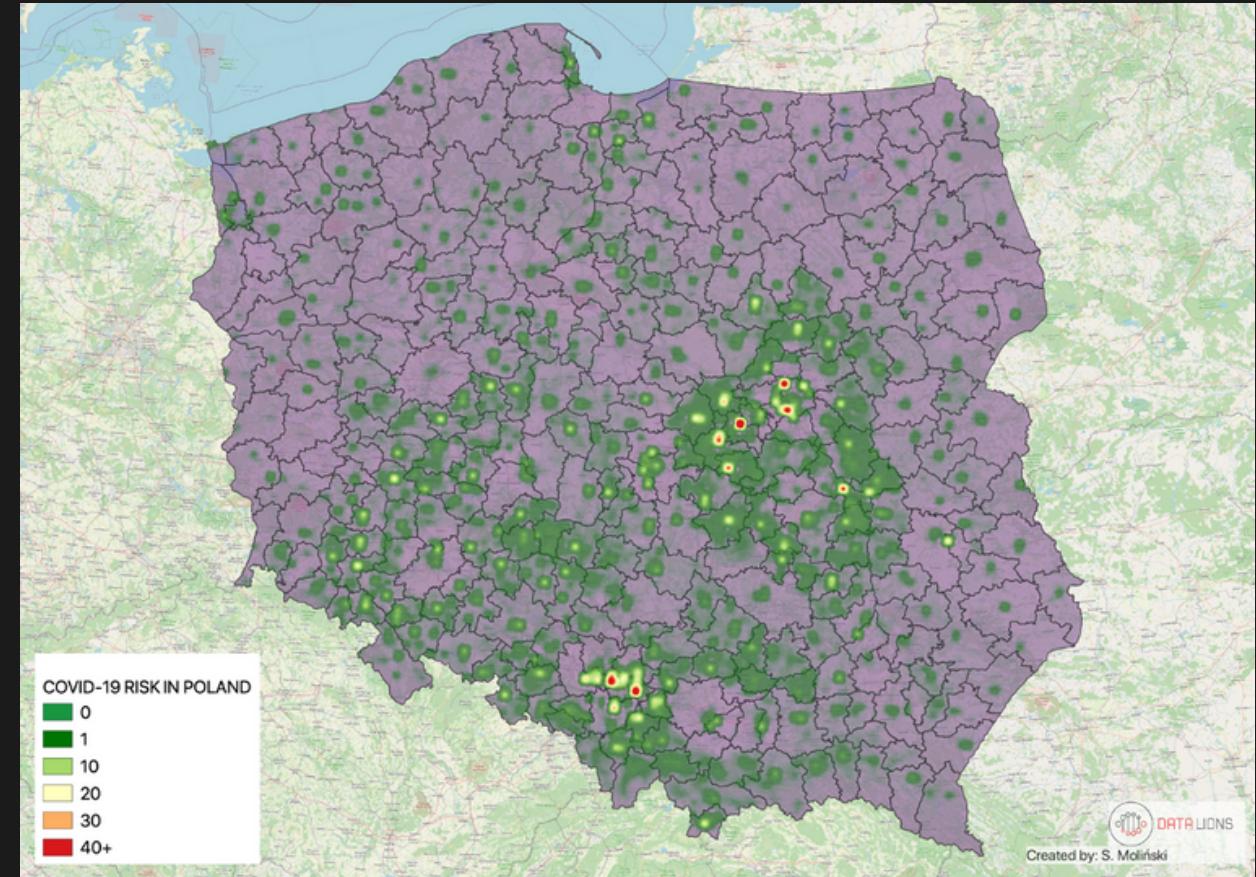
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PYINTERPOLATE

INPUT: COVID-19
per COUNTY

OUTPUT: Population at risk
per population block

Agent-based
model



PYINTERPOLATE

(Core)
Dependencies



Main Functionalities

- point and areal Kriging



- semivariogram modeling



- spatial interpolation

- Multiprocessing

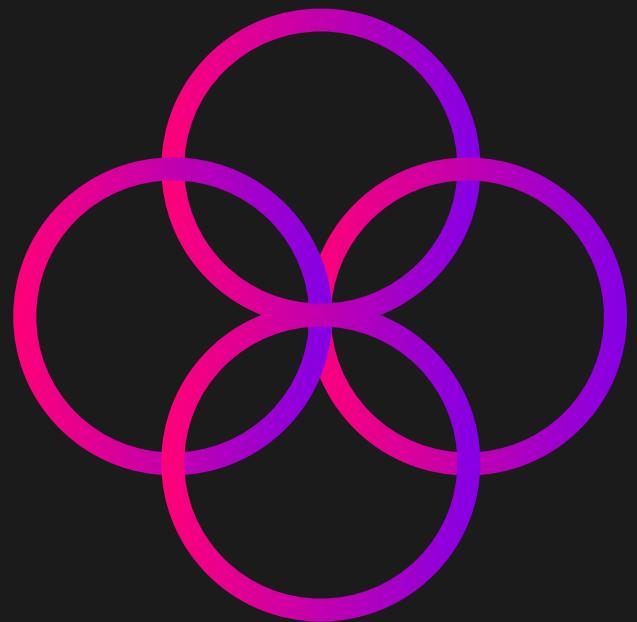
- More interpolation techniques

Future



- New i/o data sources

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Useful Links

COMMUNITY

<https://discord.gg/3EMuRkj>

PACKAGE /
TUTORIALS

<https://github.com/szymon-datalions/pyinterpolate>

EMAIL ADDRESS

simon@ml-gis-service.com

PYPI

<https://pypi.org/project/pyinterpolate/>