

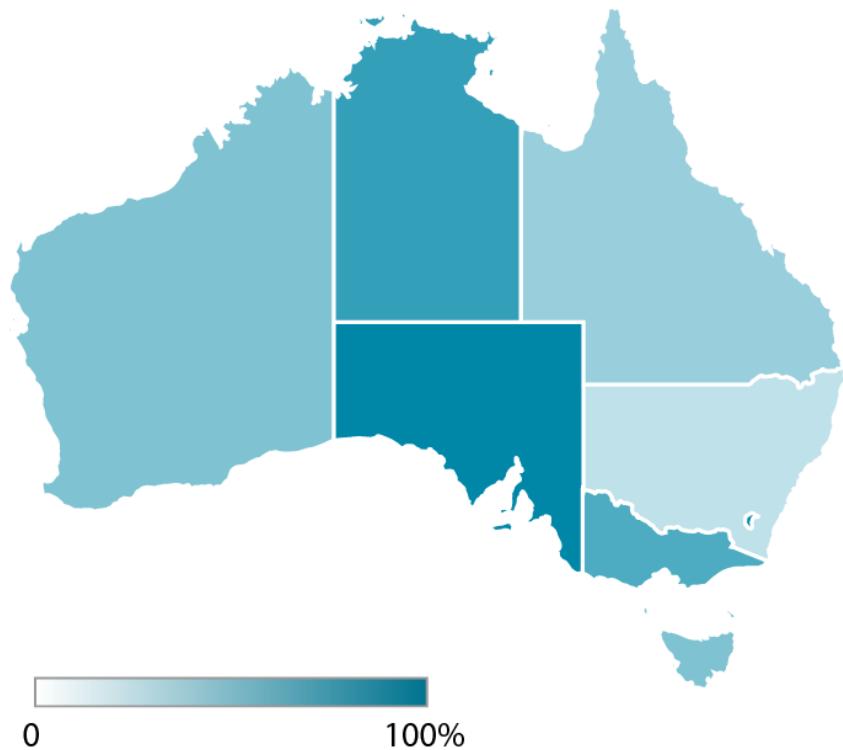
# FIT3179 Data Visualisation

Week 7: Choropleth Maps and Bin Maps

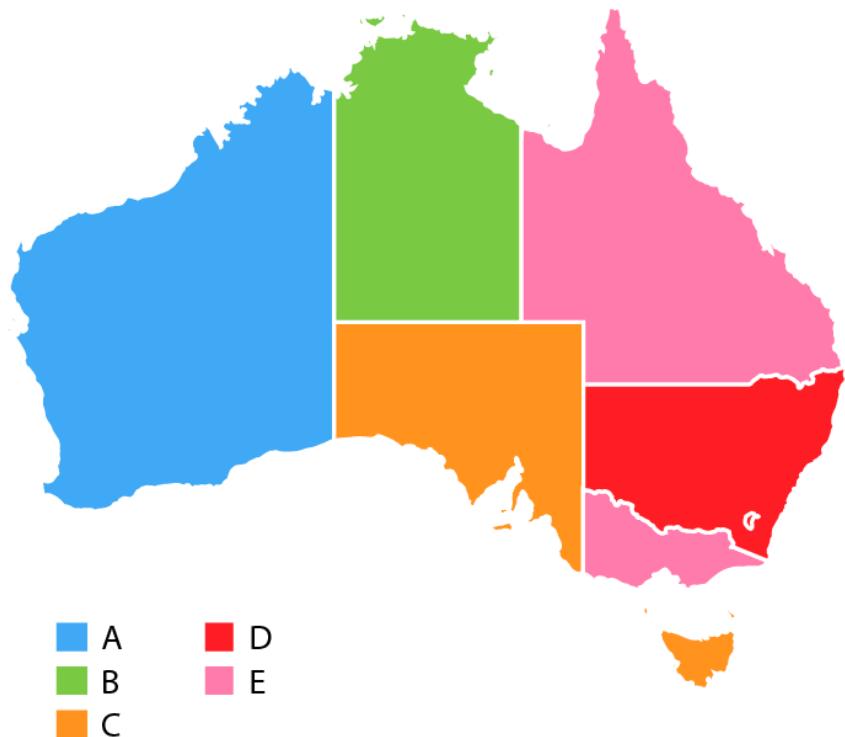


Choropleth maps can show categorical, ordered, or quantitative data

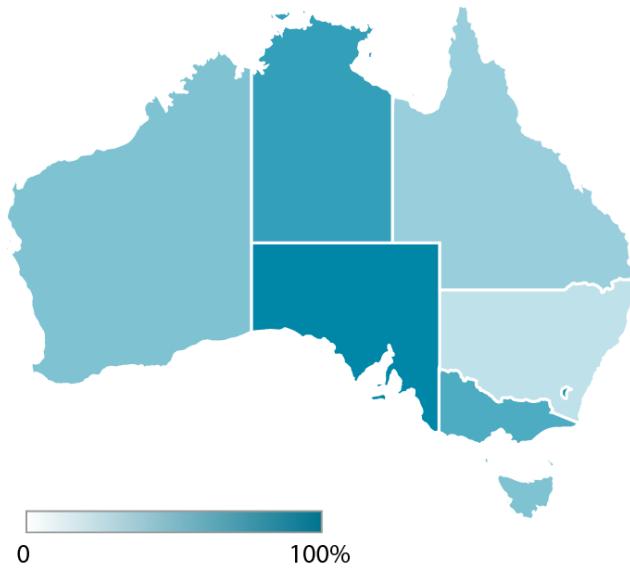
Quantitative



Categorical

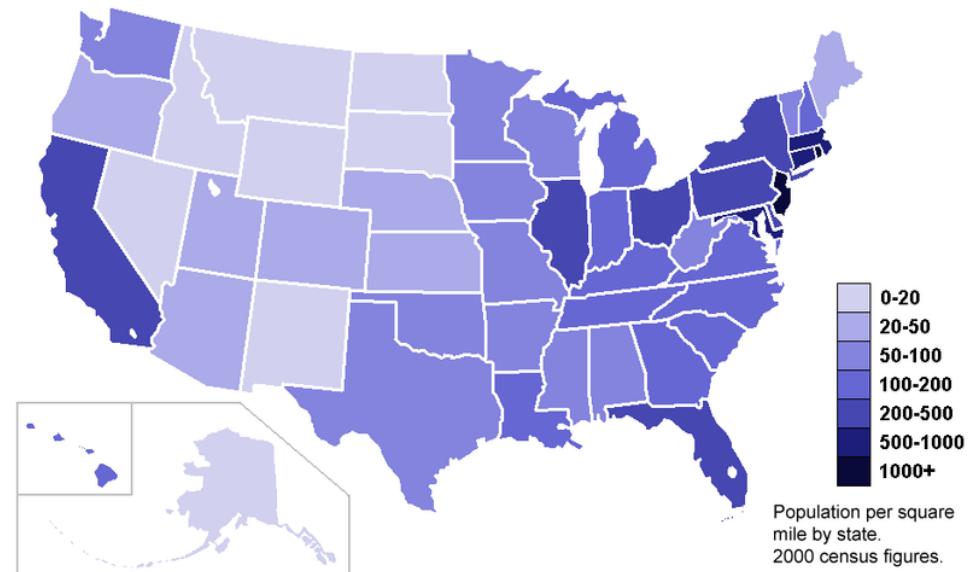


# Colour for Quantitative Choropleth Maps



- Primarily luminance changes: the greater the value, the darker.
- Slight change in hue is possible, to increase the number of distinguishable colours. Change hue for diverging distributions.
- Change in saturation is possible, but should not be main variable.

- **What?**
  - Geographic region data
  - Attribute per region
- **Why?**
  - Task: find correlation, trends, outliers.
- **How?**
  - Marks: geographic regions
  - Channel: Mainly luminance for quantitative attribute
  - Scalability:  
hundreds of regions
  - Requires an area-preserving map projection

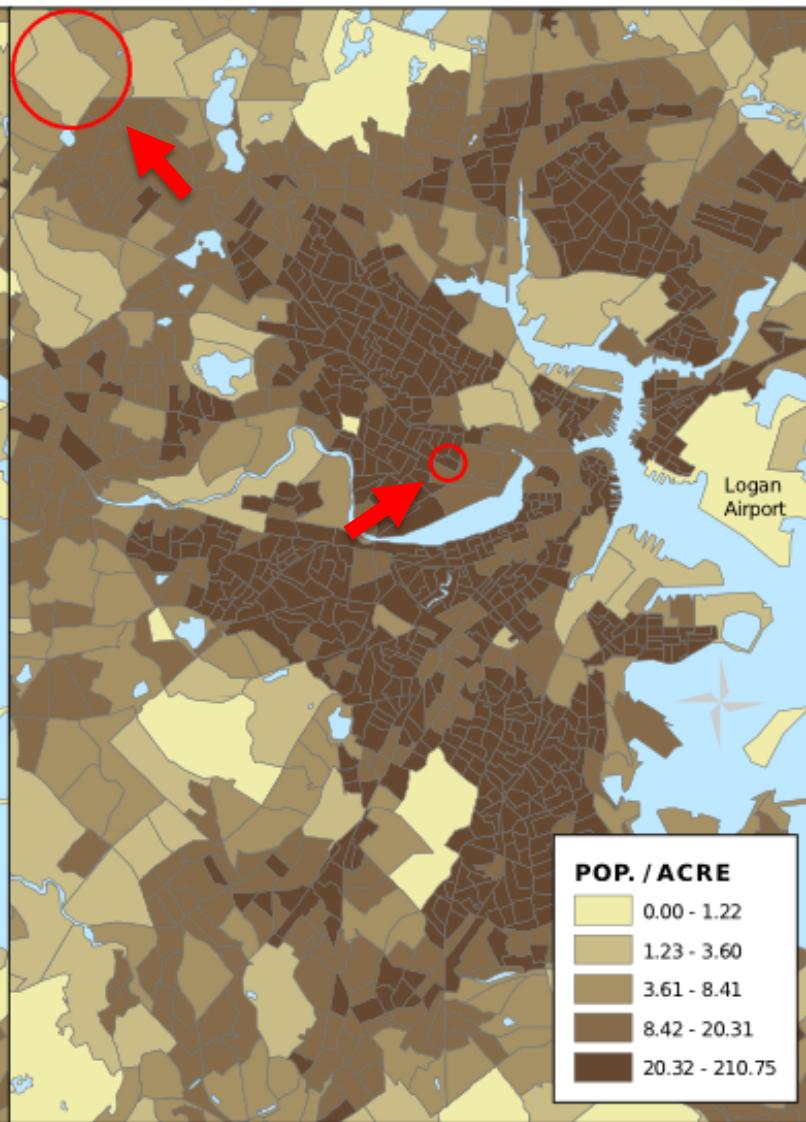


**Important: Normalise attribute values!**

Total Population of 2000 Census Block Groups



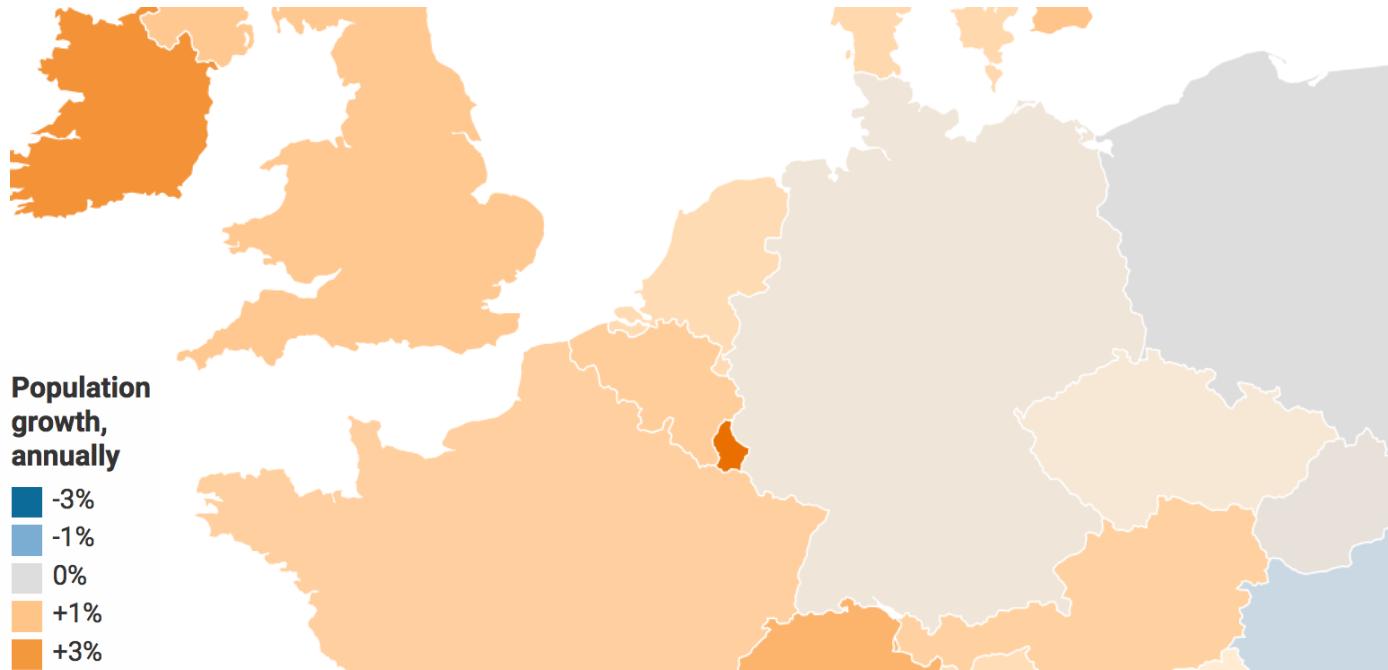
Population Density of 2000 Census Block Groups



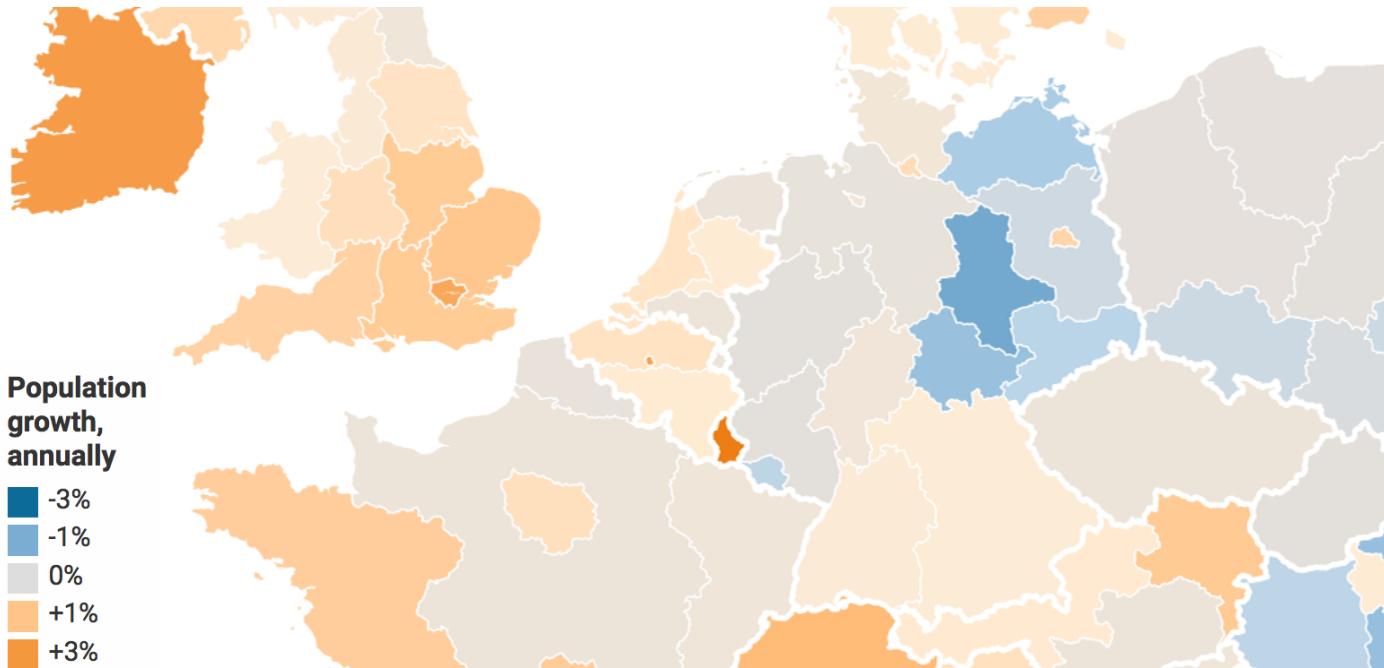
## Choropleth map rule

**Generally do not map raw values, but normalise values by area if possible. Use percentages or rates otherwise.**

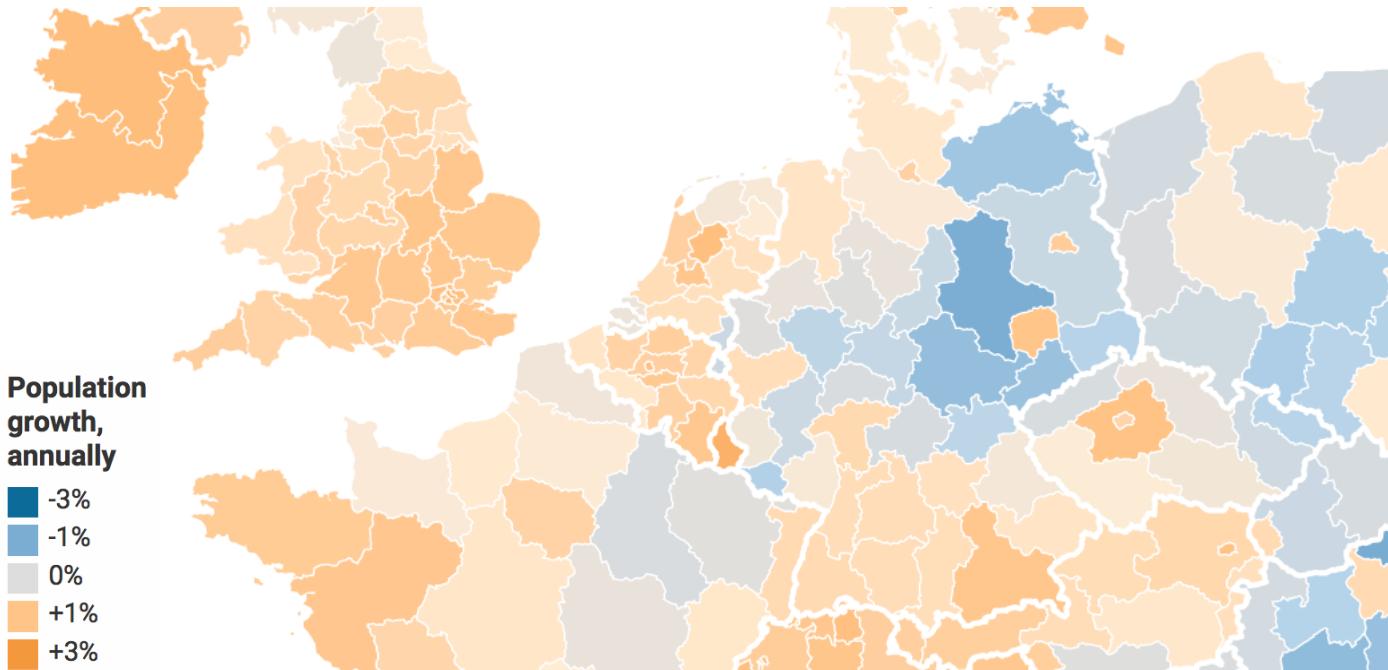
# Choropleth – Level of Detail



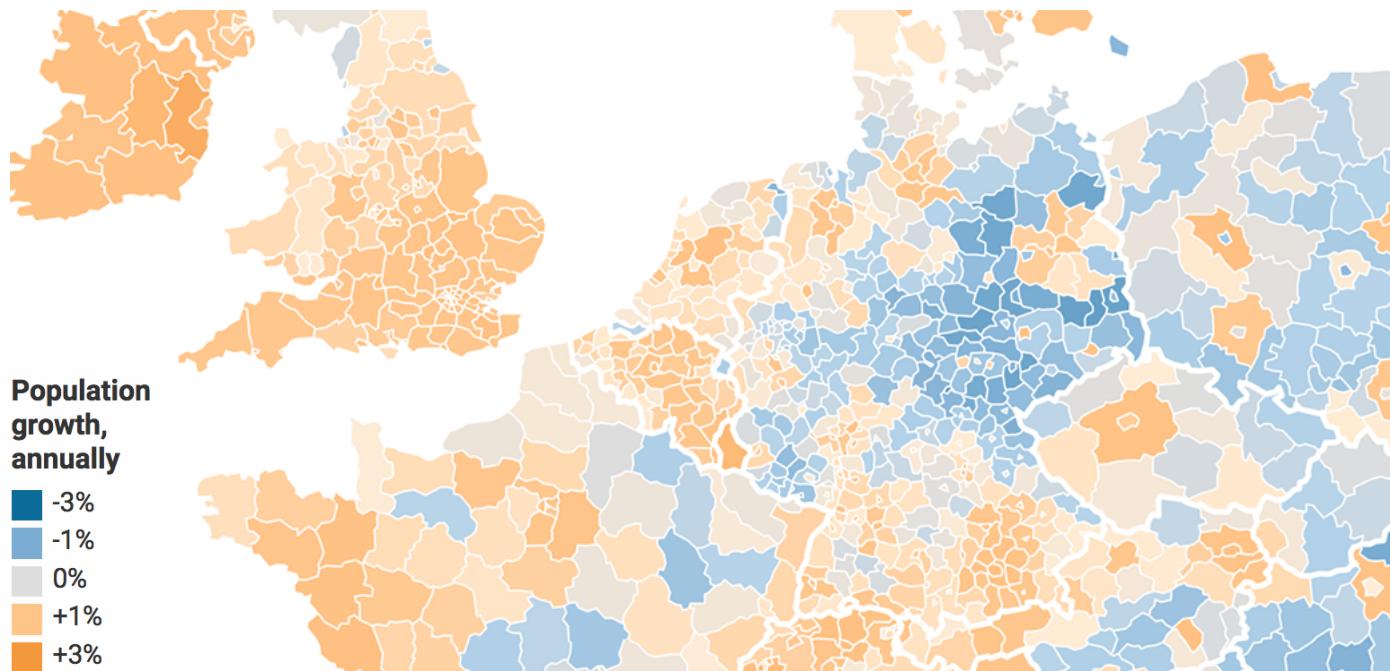
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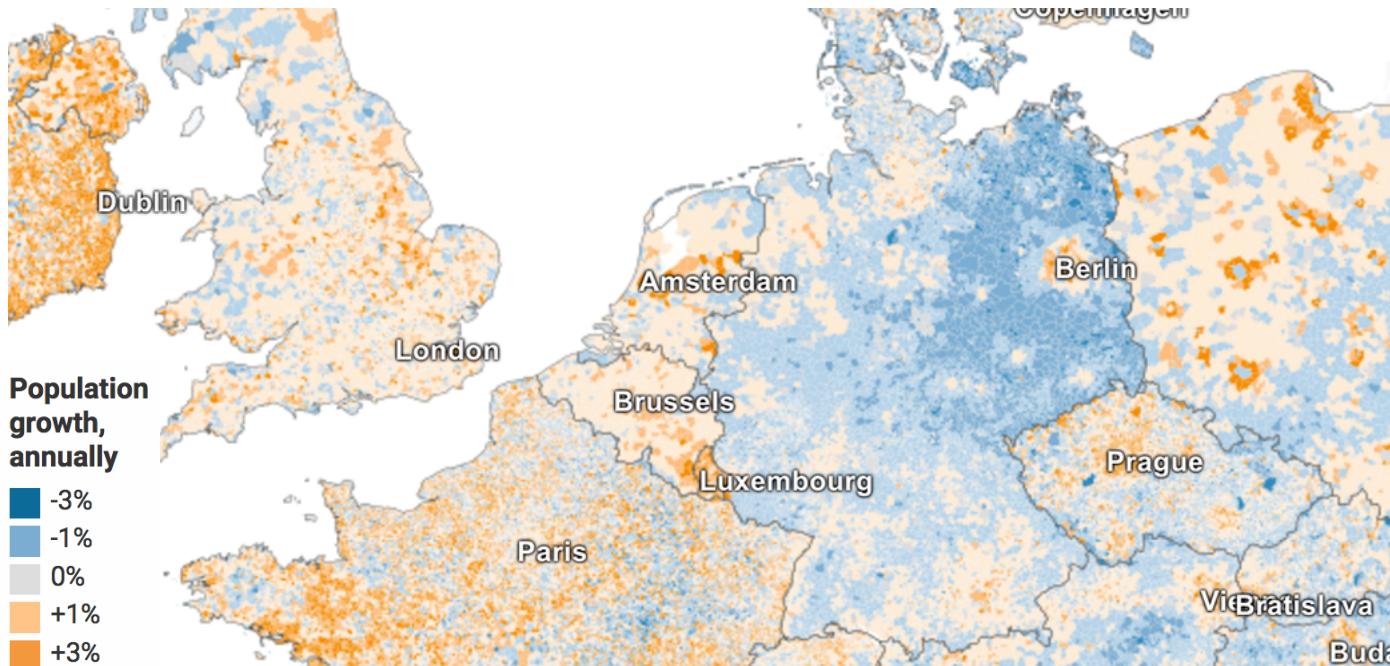
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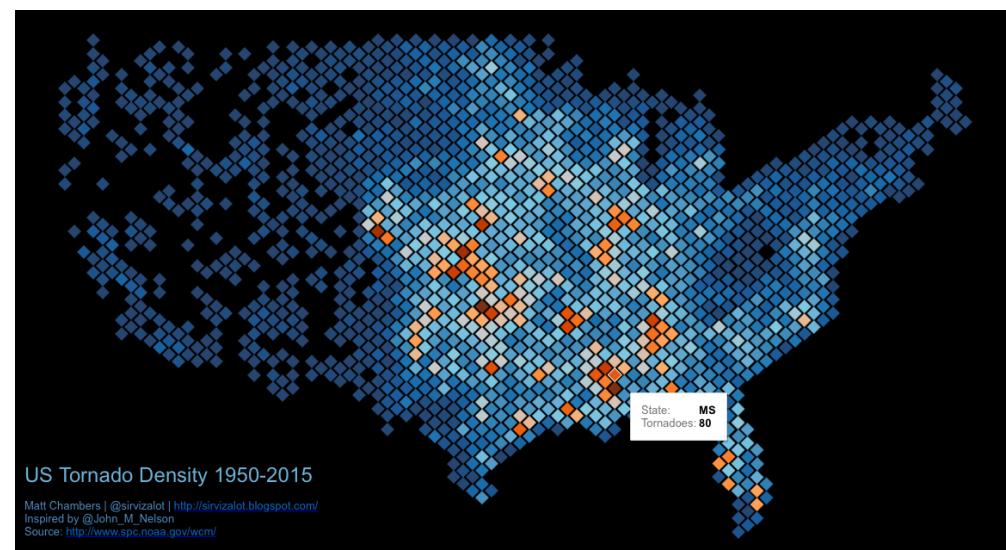
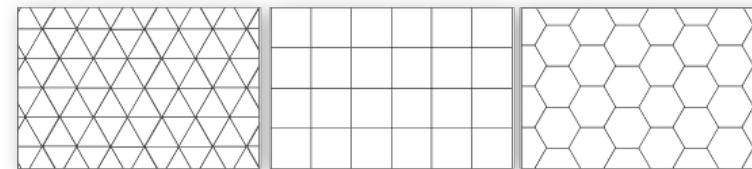
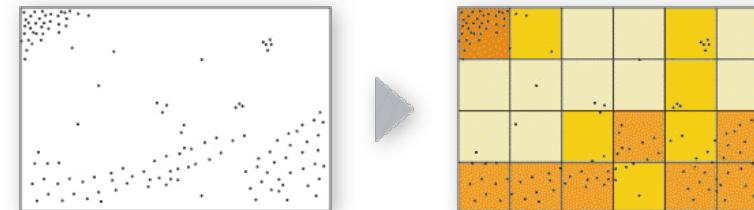


# Choropleth – Level of Detail



- **What?**
  - Geographic points
- **Why?**
  - Task: find correlation, trends, outliers.
- **How?**

- Marks: regular areas (triangles, squares, hexagons)
- Channel: Mainly luminance for quantitative attribute
- Scalability: millions of points
- Requires an area-preserving map projection when binning
- Careful selection of bin size
- Sometimes there is a need to normalise values. Example: normalize #crime by population.

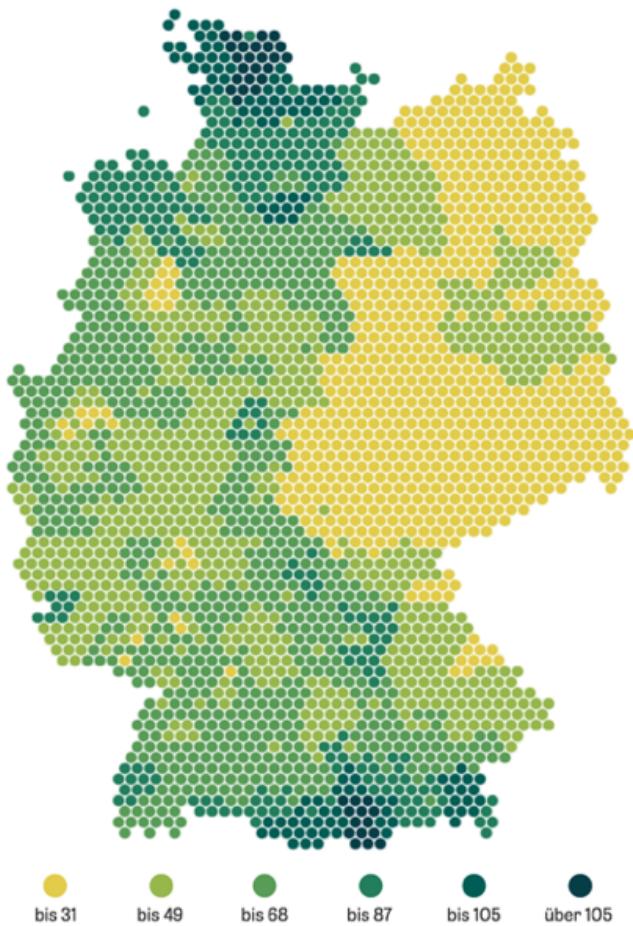


Bin map created with Tableau

<https://www.tableau.com/about/blog/2016/7/how-create-density-maps-using-bins-tableau-56511>

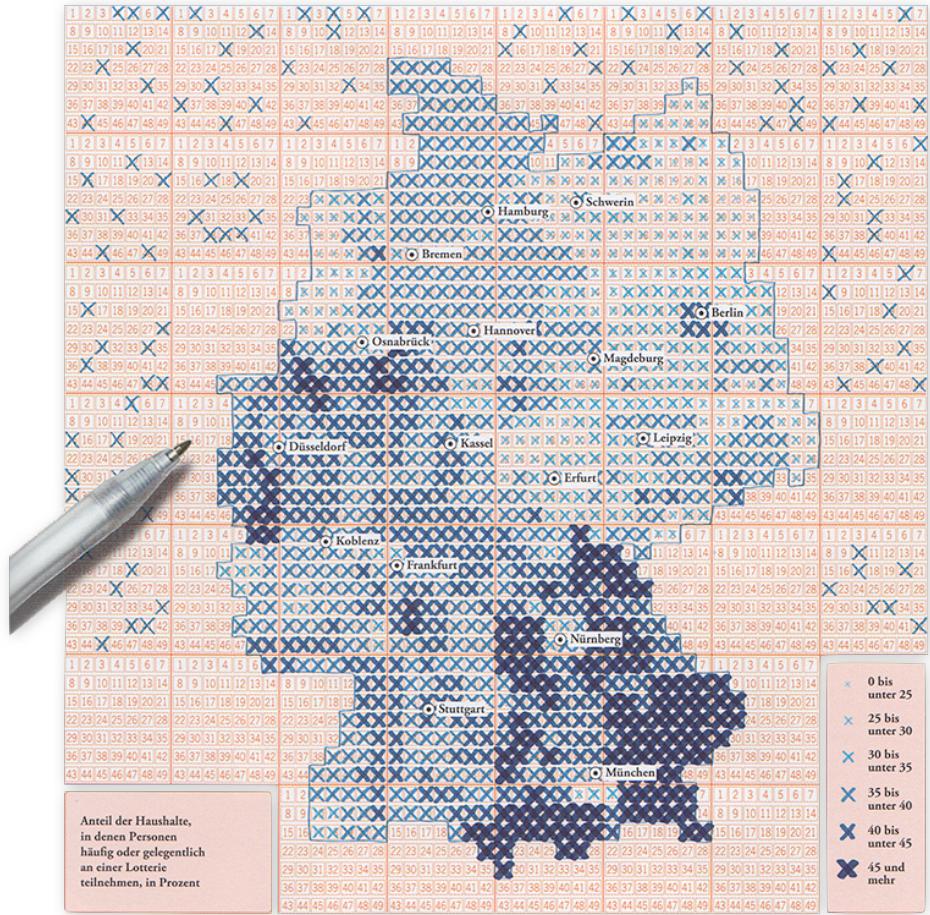
# Bin maps

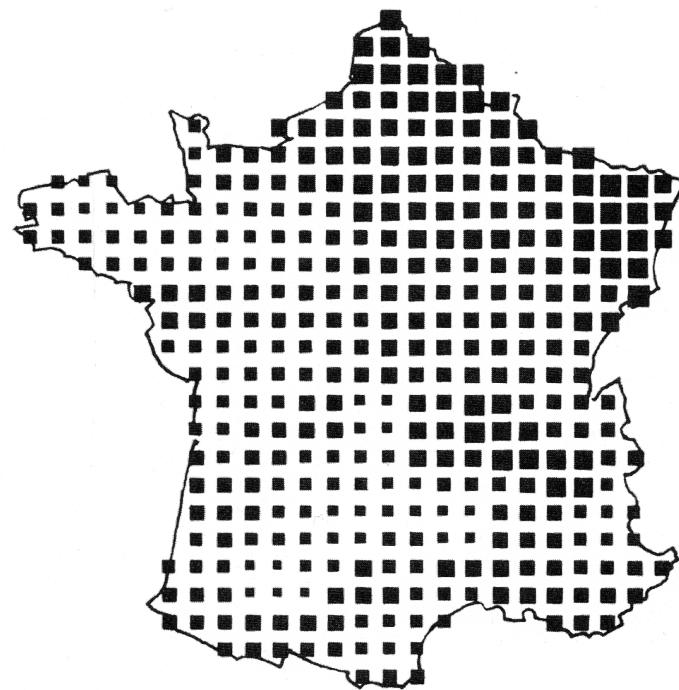
Camper vans per 10,000 people, 2014



Totals are normalised because they correlate with population.

Households with lottery players  
(class limits at 25, 30, 35, 40, and 45 percent)





Source: Jacques Bertin: Sémiologie graphique.