



# Mapping spatial data

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Things to consider when mapping

# Factually correct

- May seem obvious but can be easy to accidentally plot points in the wrong place or colour the wrong regions
- Checking after plotting is important, especially when sharing information with others



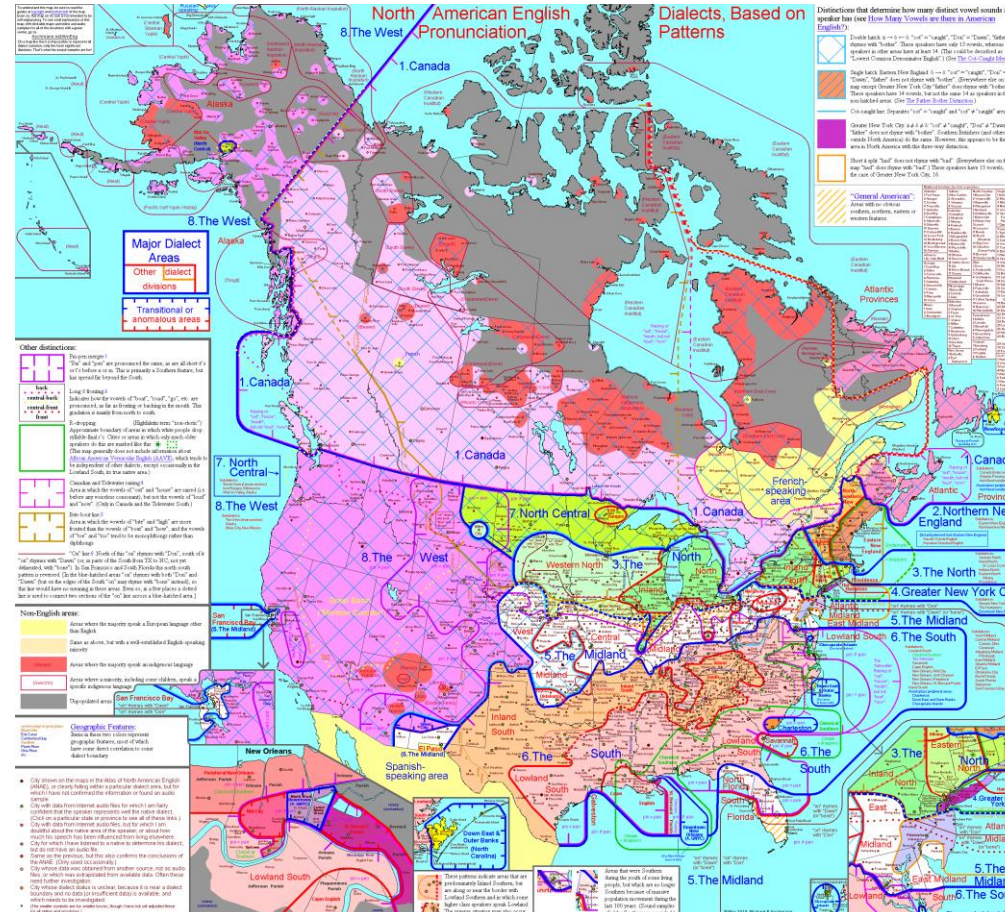
# Interpretability

- Some maps can overwhelm the reader, providing too much information or focussing on the wrong information
- Getting someone else to proof read your map after plotting is a good way to see which areas stand out to them



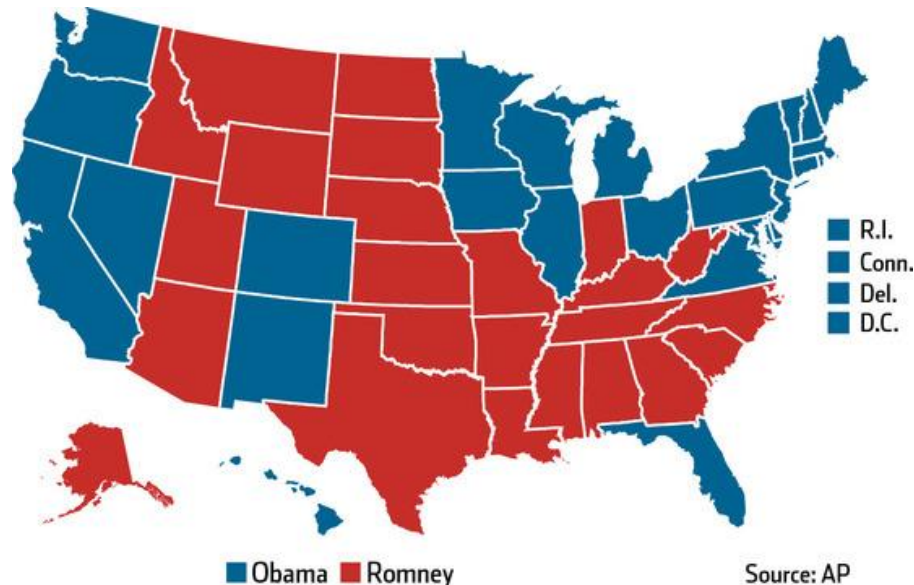


# Interpretability



# Colour

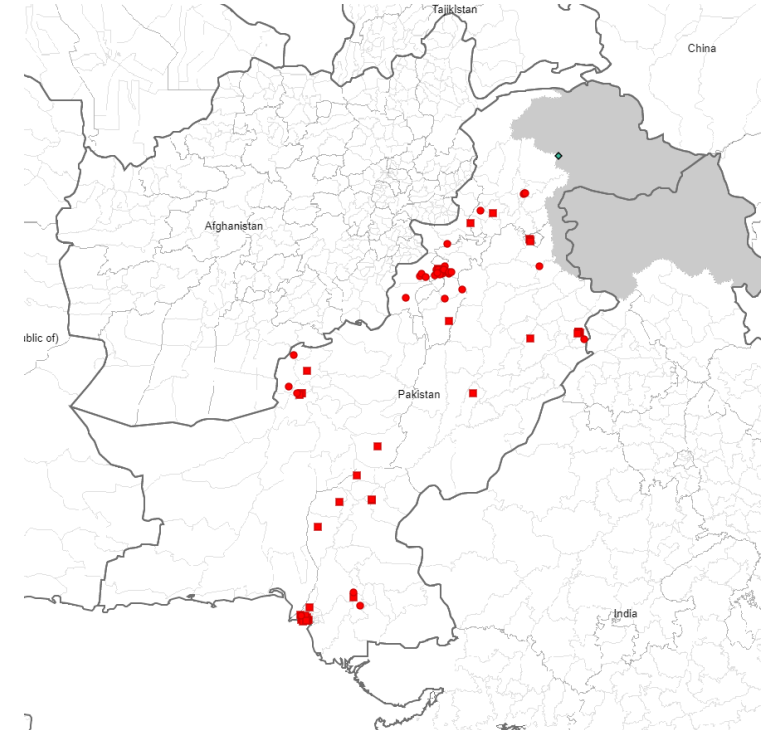
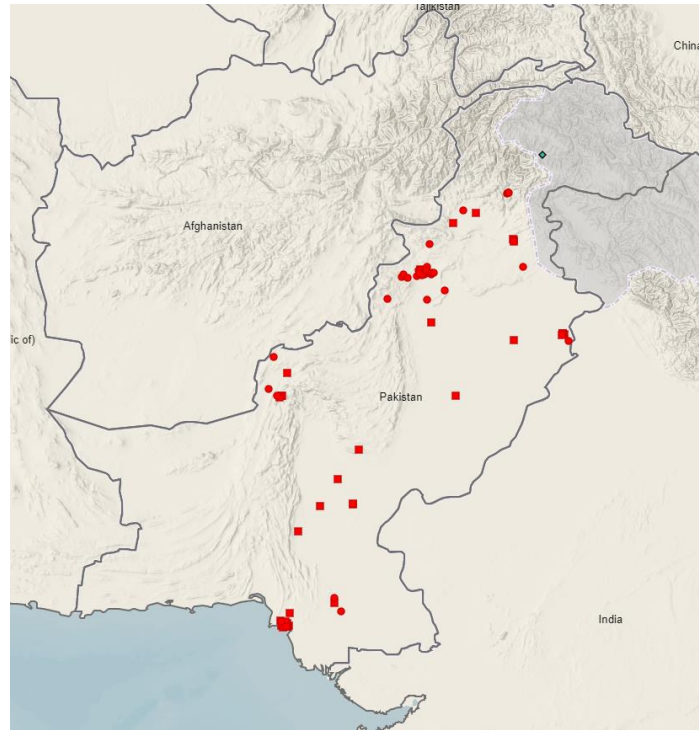
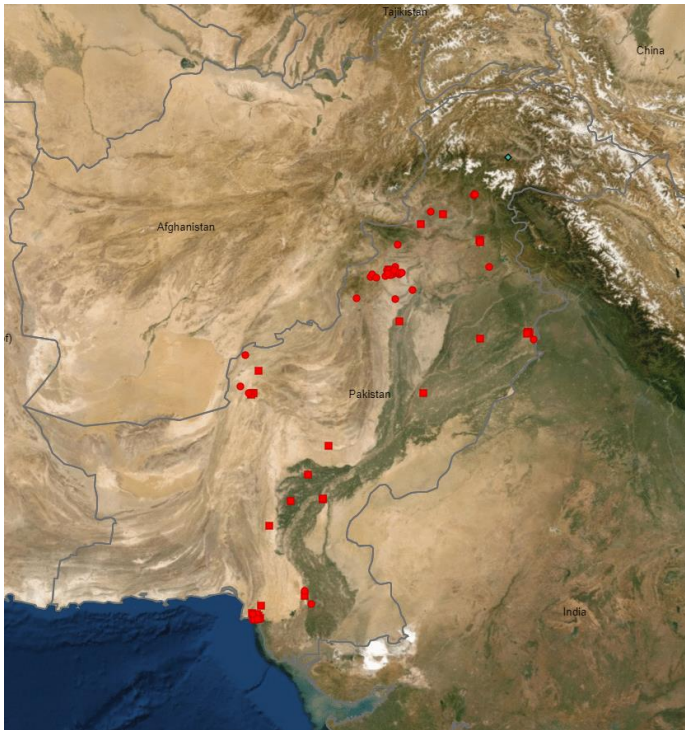
- Colour is subjective, different people can see different colours differently and have opinions on what looks right.
- Print and computer monitors can differ, colours can also be encoded differently online, considering final use is important.



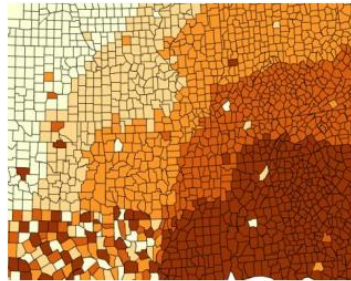


# Background colours

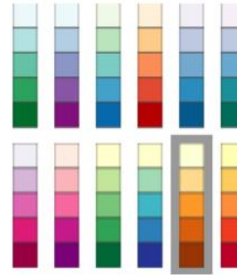
- Where information is not the primary interest of the map, keeping it plain or at higher transparency aids interpretation



# Different colour scales are appropriate for different data types



Multi-hue:

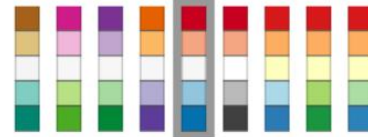
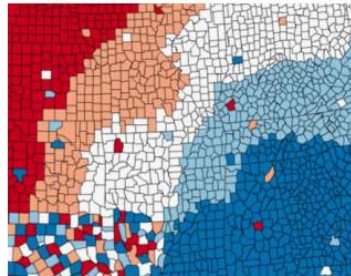


Single hue:



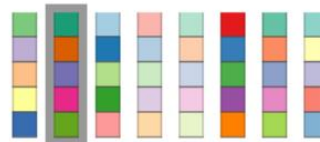
## Sequential

example: # car owners per square mile



## Diverging

example: % votes for Democratic or Republican candidate

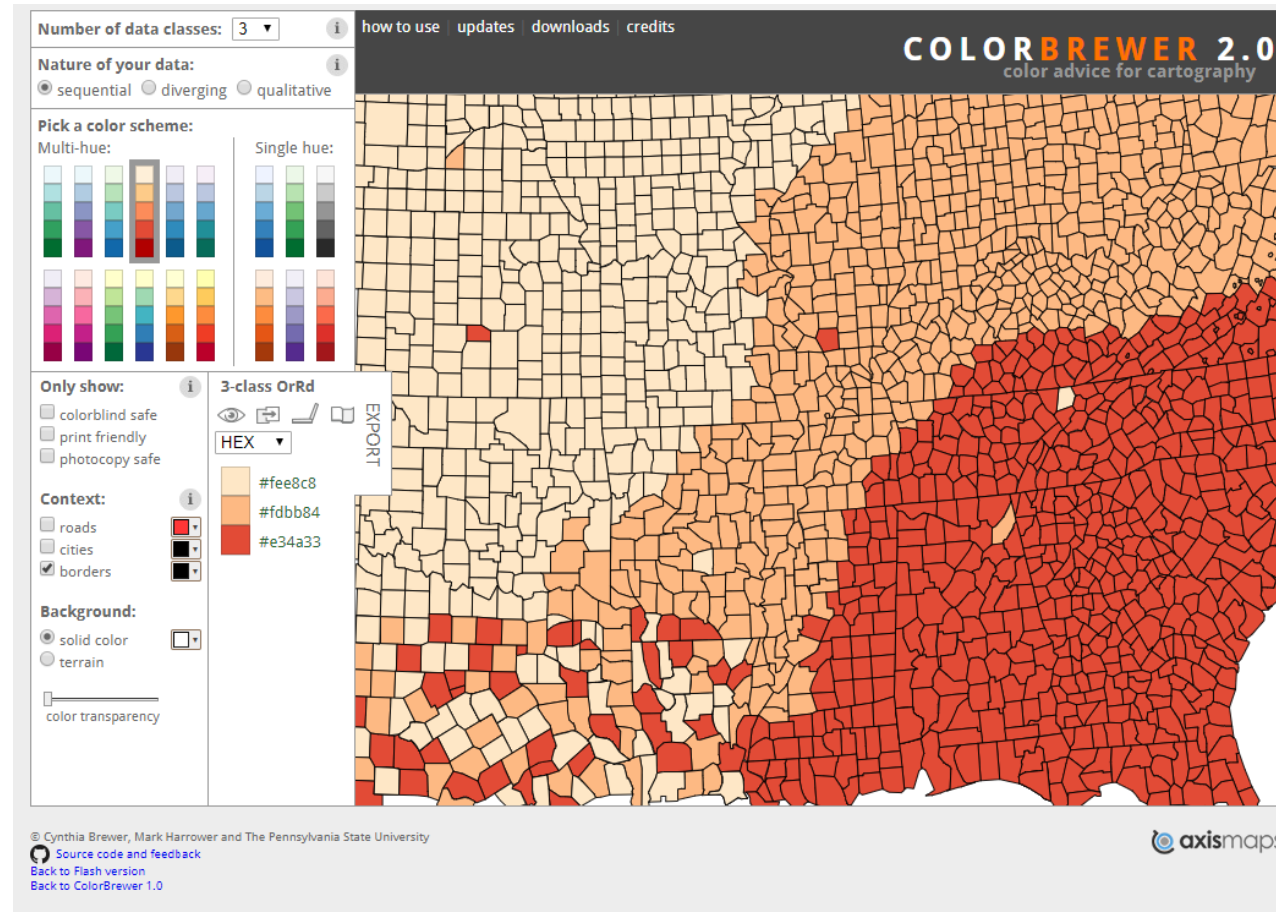


## Qualitative

example: most popular pet by county



Color Brewer: <http://colorbrewer2.org>



# Data type

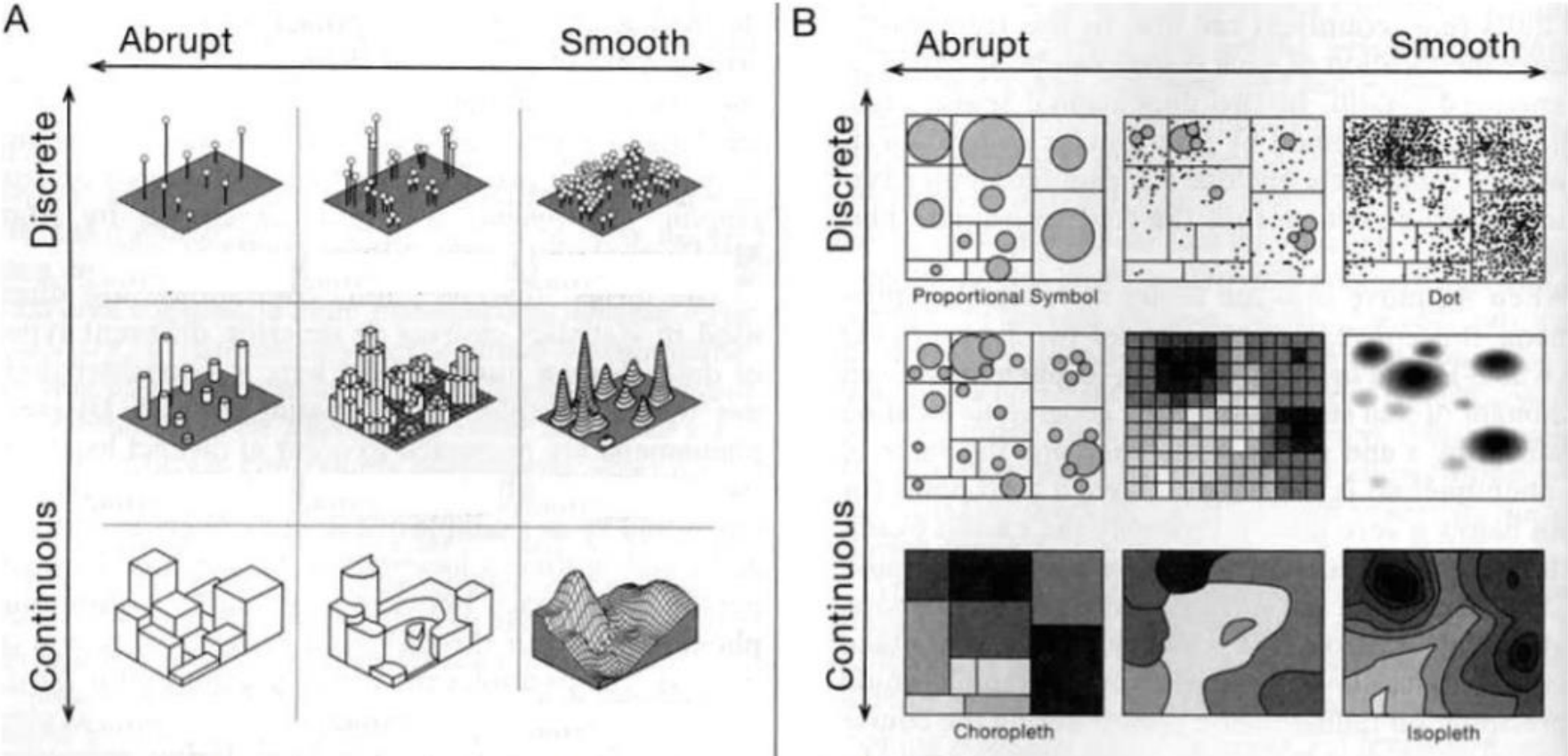


Image courtesy of: "Thematic Cartography and Geovisualization" Figure 5.1

# Data type

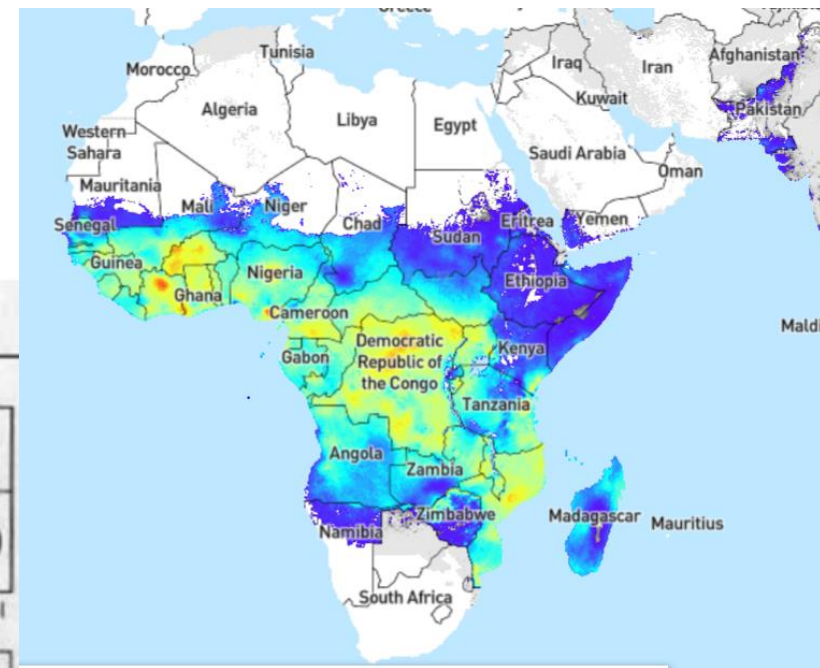
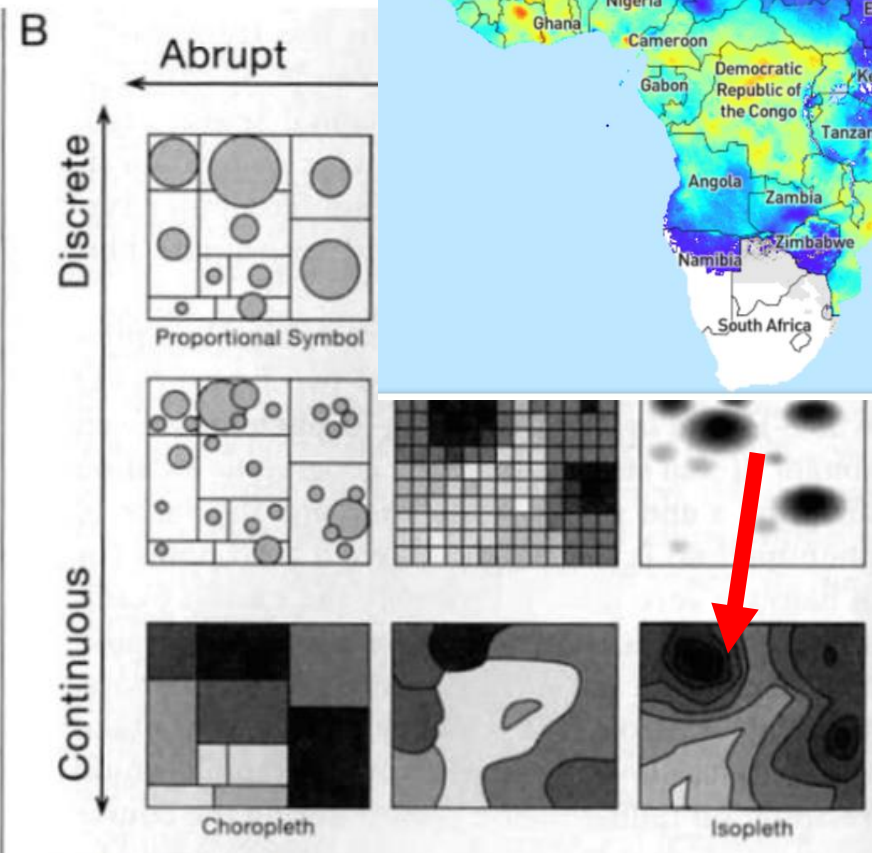
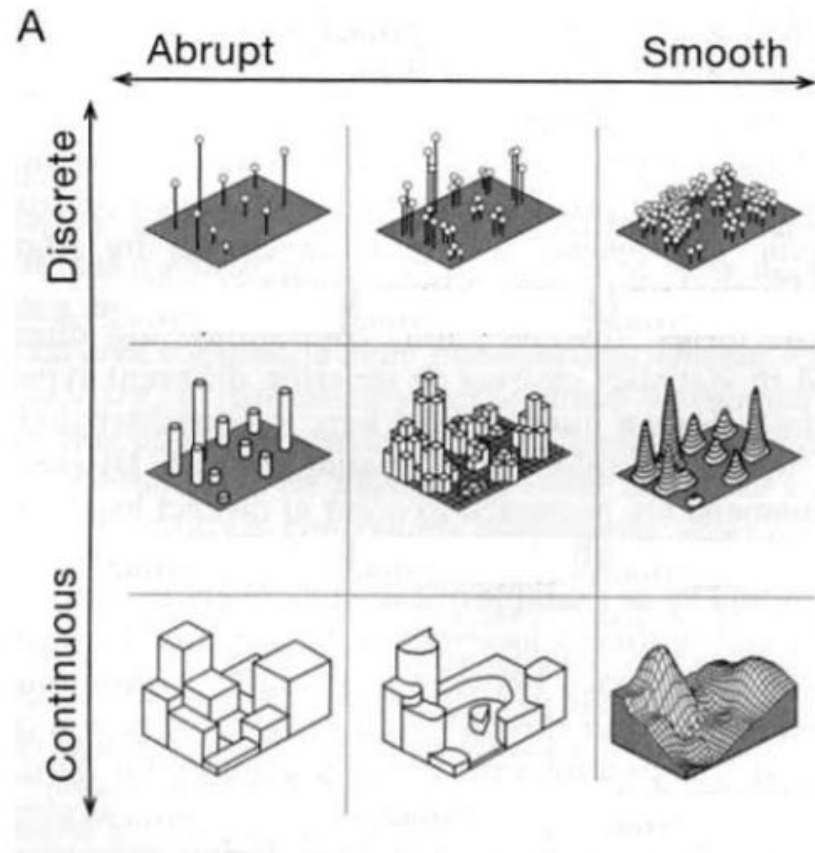
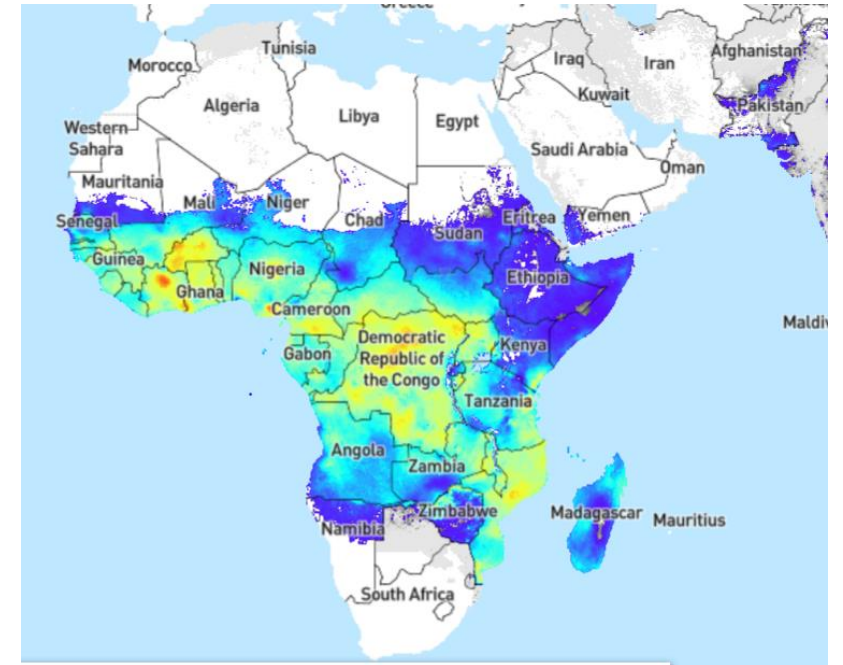


Image courtesy of: "Thematic Cartography and Geovisualization" Figure 5.1



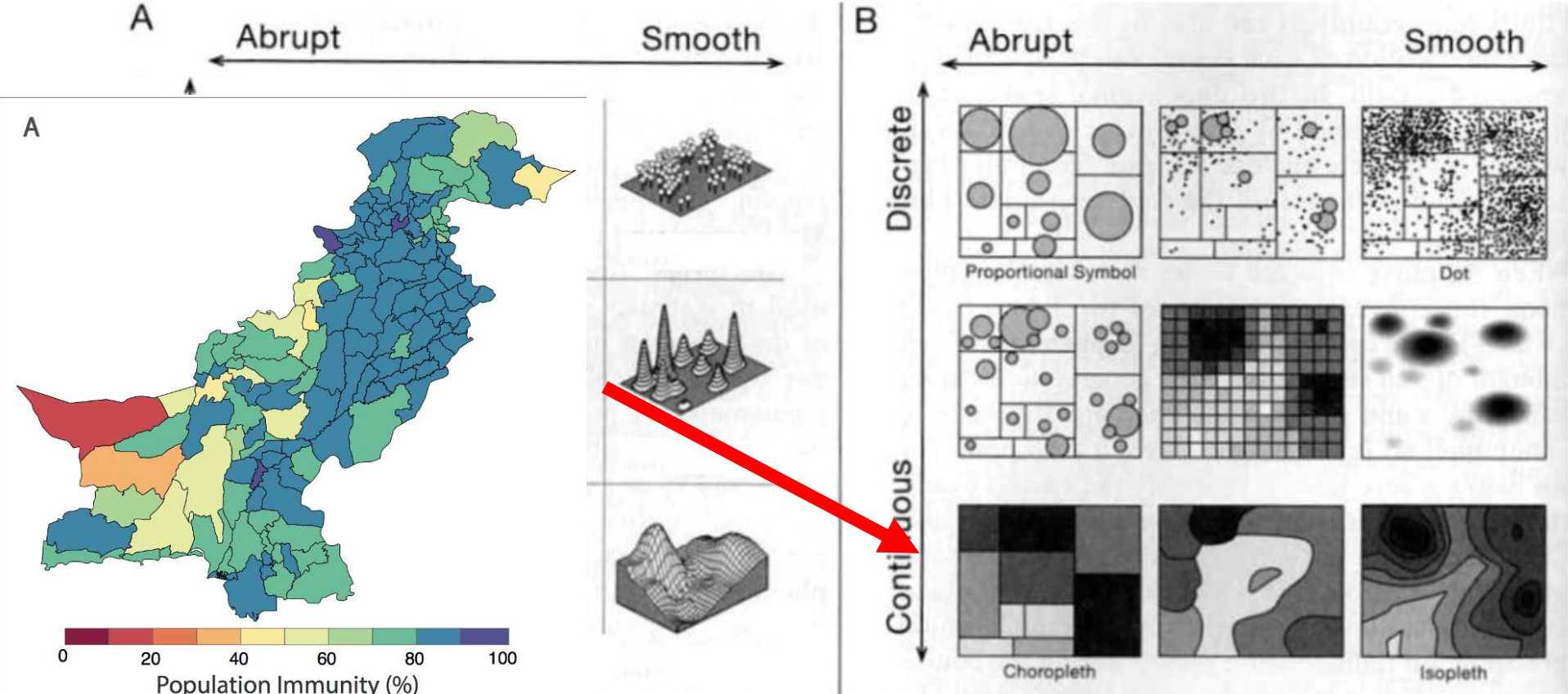
# Isopleth maps

- For continuous, smooth data
- Colour by the level of a variable – these are Malaria risk maps
- Often used for things such as rainfall or temperature which change over space smoothly.
- Easy to interpret



*map.ox.ac.uk*

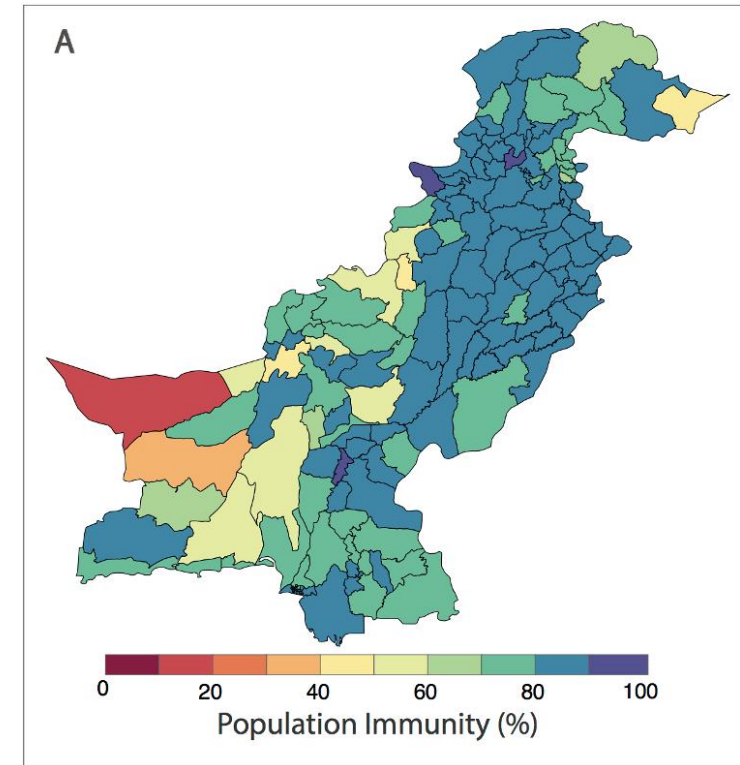
# Data type



"Cartography and Geovisualization" Figure 5.1

# Choropleth maps

- Continuous data which is abrupt, usually at the borders of defined regions.
- Choropleth maps show more clearly which administrative units are most important
- Lose detail at the sub-regional level as it assumes data is uniform across the area.
- Can make larger places seem important even if they have very small population



*Natalia Molodecky*



# Data type

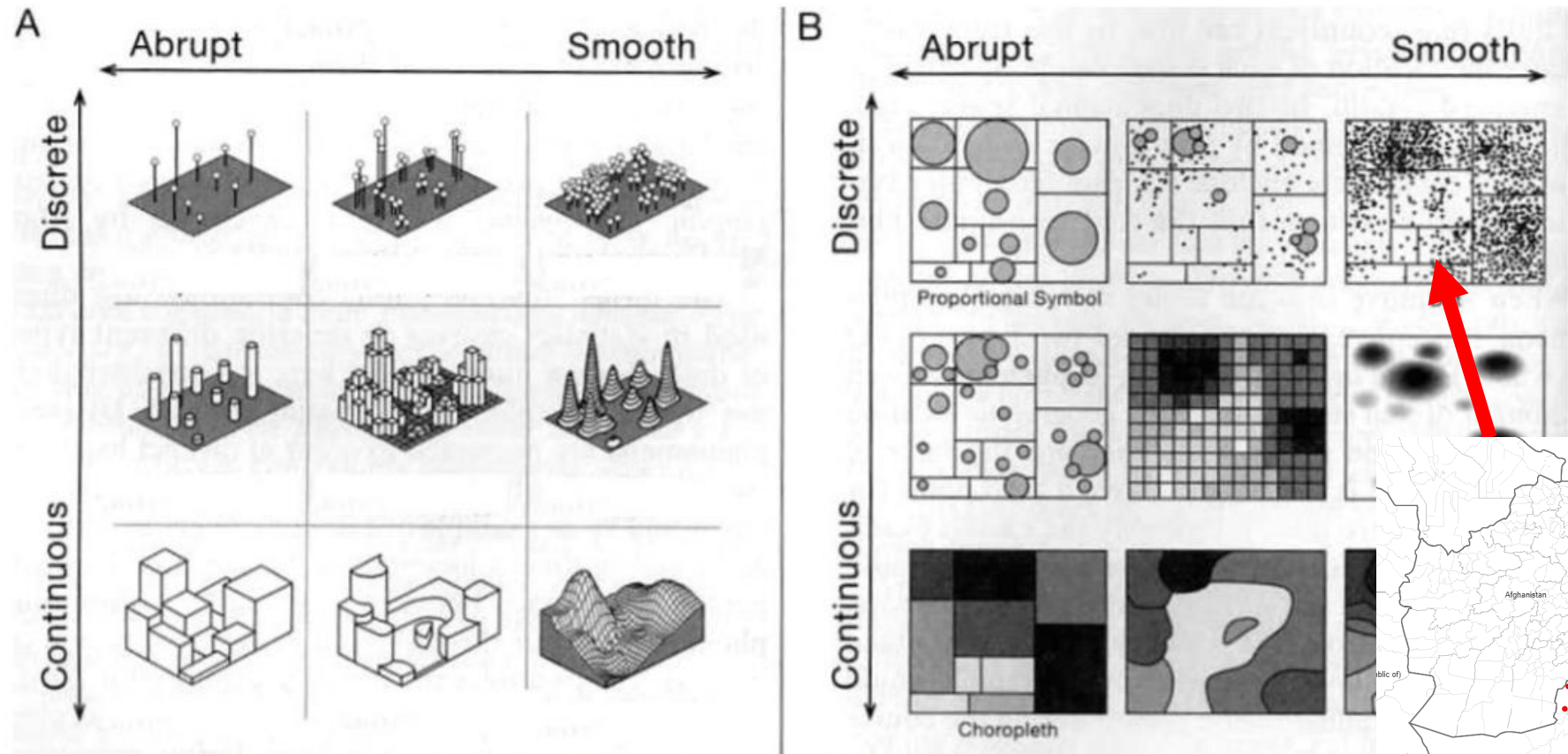
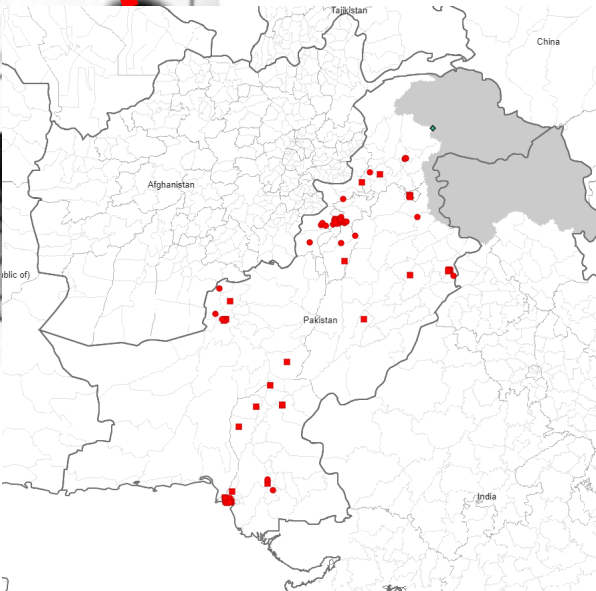
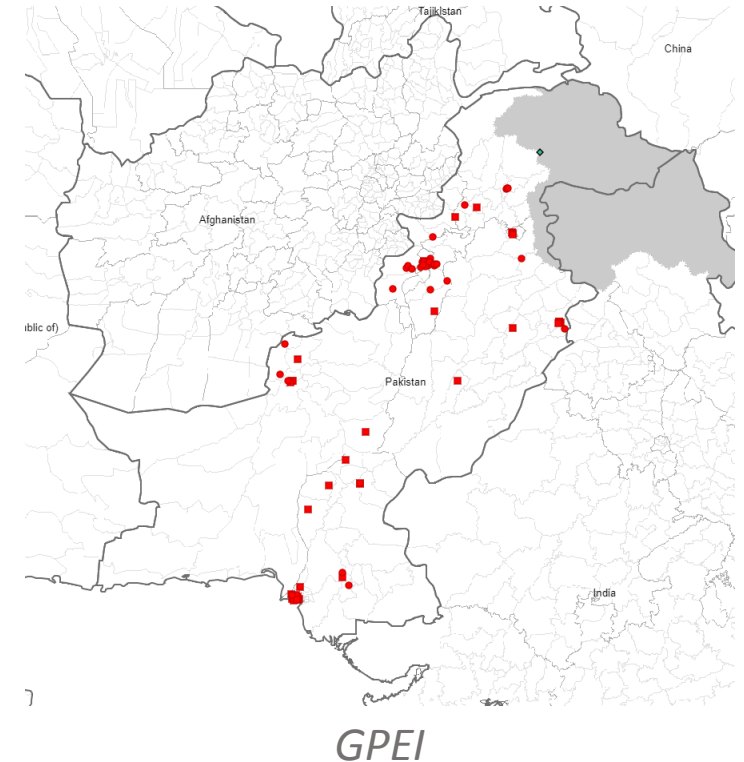


Image courtesy of: "Thematic Cartography and Geovisualization" Figure 5.1



# Dot maps

- Good for discrete data such as occurrence of an event.
- Usually used where individual events are recorded rather than for aggregated counts (we will break this rule in the R session!)
- Not very informative for uniform data.
- Easy to understand and show density well.



# Data type

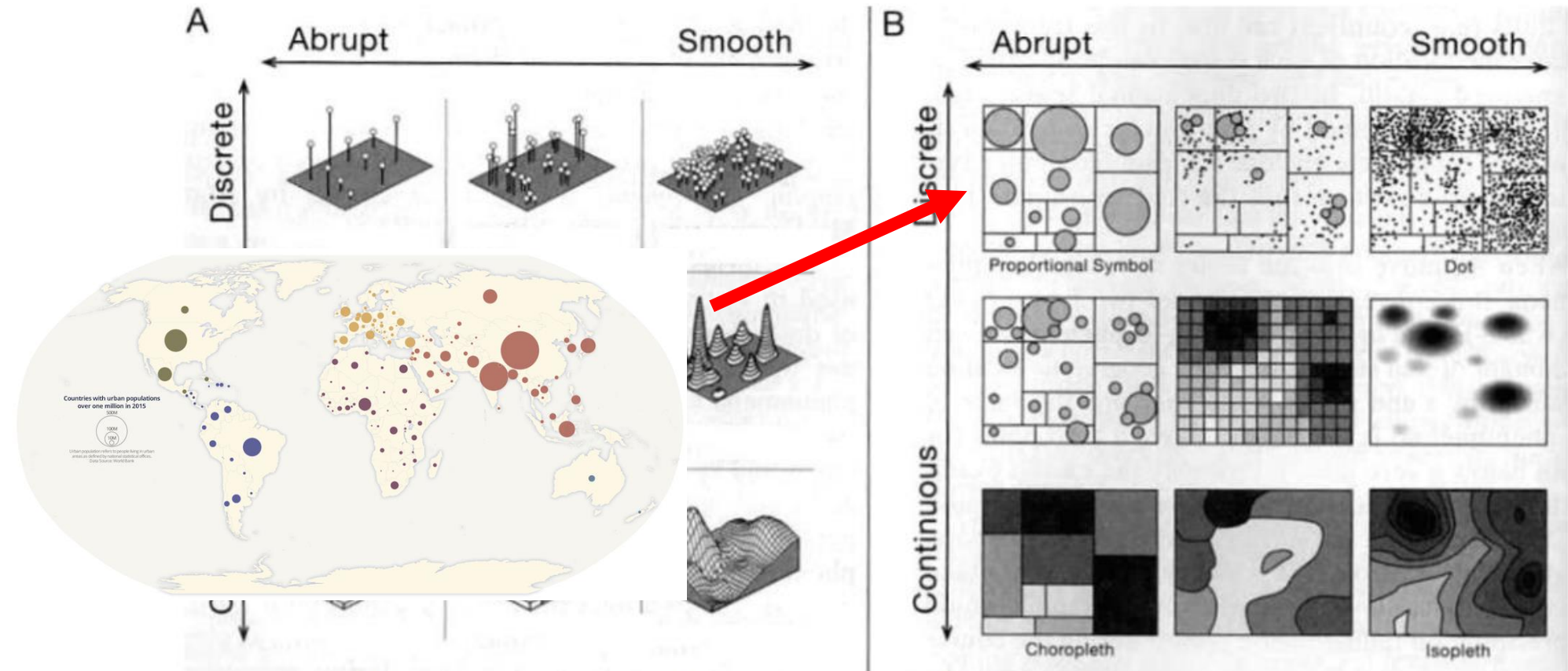
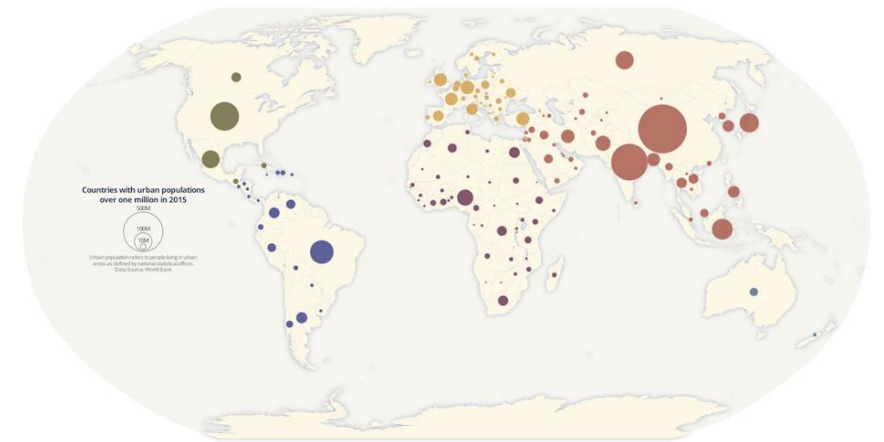


Image courtesy of: "Thematic Cartography and Geovisualization" Figure 5.1



# Proportional maps

- Good for discrete data such as counts within specific areas.
- Symbol size increases with value
- Gives a good idea of relative size quickly
- Not often seen so people are bad at interpreting them. Not helped by size of circles being difficult to estimate



*World urban population density*

# Scale

- The extent of a map should only cover what is relevant to the data, insets can be used to show the wider context

# Can your map stand alone?

- The best maps are self explanatory, with a legend for anything which may be unclear.
- Labels can aid interpretation



# Visualising spatial data in R