

Advanced Interaction



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Overview

Additional interactions - clicking and drag/drop

Zooming into countries

Showing additional cities on zoom

Panning using drag/drop

Zooming

Full scale map limits amount of data we can show

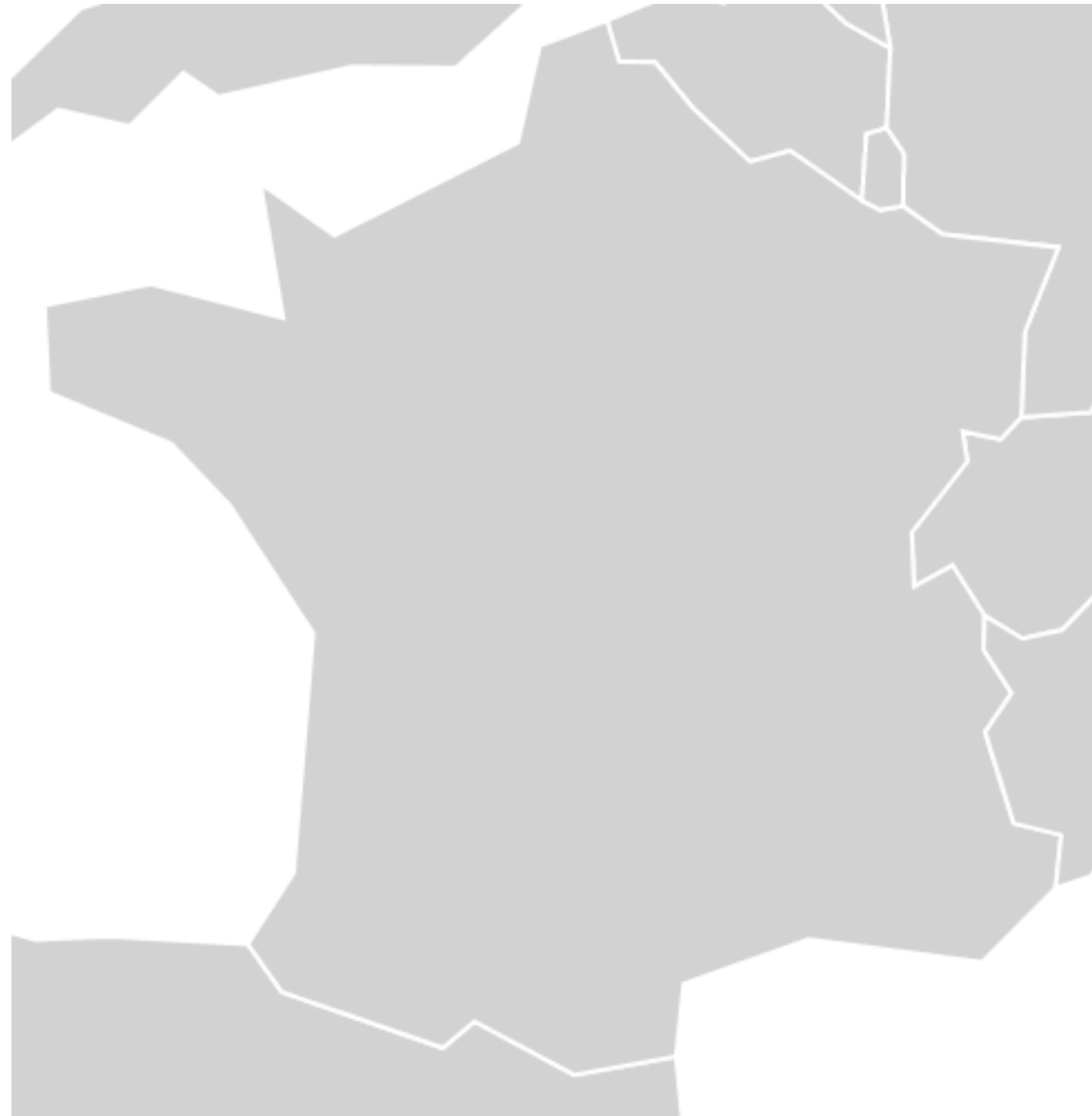
Some countries are much smaller than others

Zooming allows us to deep dive into individual countries

Zooming - Bounding Box



Zooming - Bounding Box

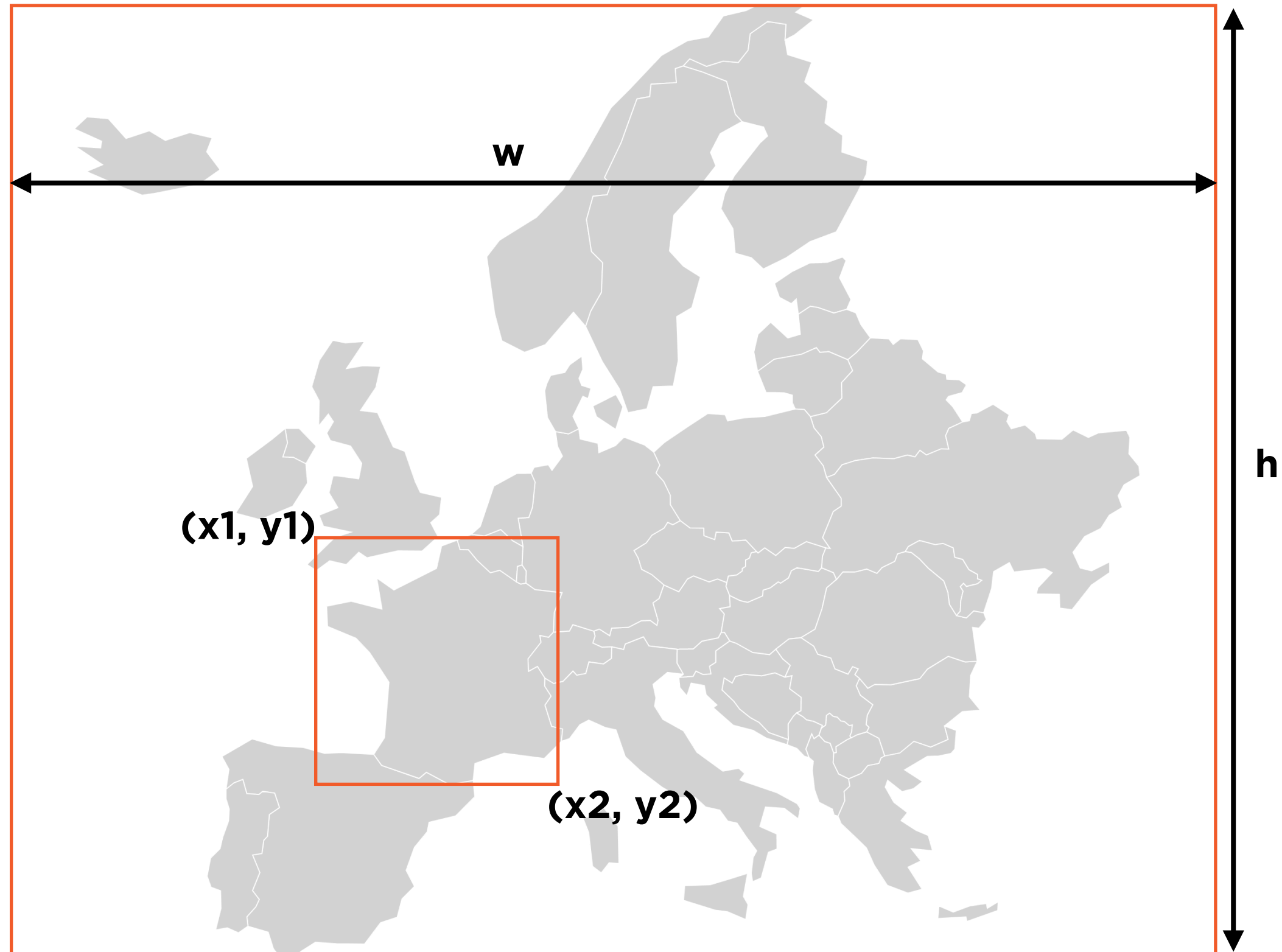


Zooming into
Bounding Box

Scale - How much to enlarge the map

Translation - How much to move the map

Zooming - Bounding Box



Scale Calculation

Scale (x) - (bounding-box-width/width)

Scale (y) - (bounding-box-height/height)

Scale - min(scale(x), scale(y))

Translation Calculation

Translation to center

(current center) - (new center)

X: $(\text{width}/2) - \text{scale} * (\text{x1} + \text{x2})/2$

Y: $(\text{height}/2) - \text{scale} * (\text{y1} + \text{y2})/2$

Demo

Add click listener to each country

Zoom into country on click

Zoom out when clicking on zoomed-in country

Showing
Additional
Cities

Unfeasible to show multiple cities of each country

Zooming in gives us more screen real estate

Display multiple cities of a country once it's zoomed into

Processing City Data

City data for countries in Europe present in CSV format

Select top five cities by population

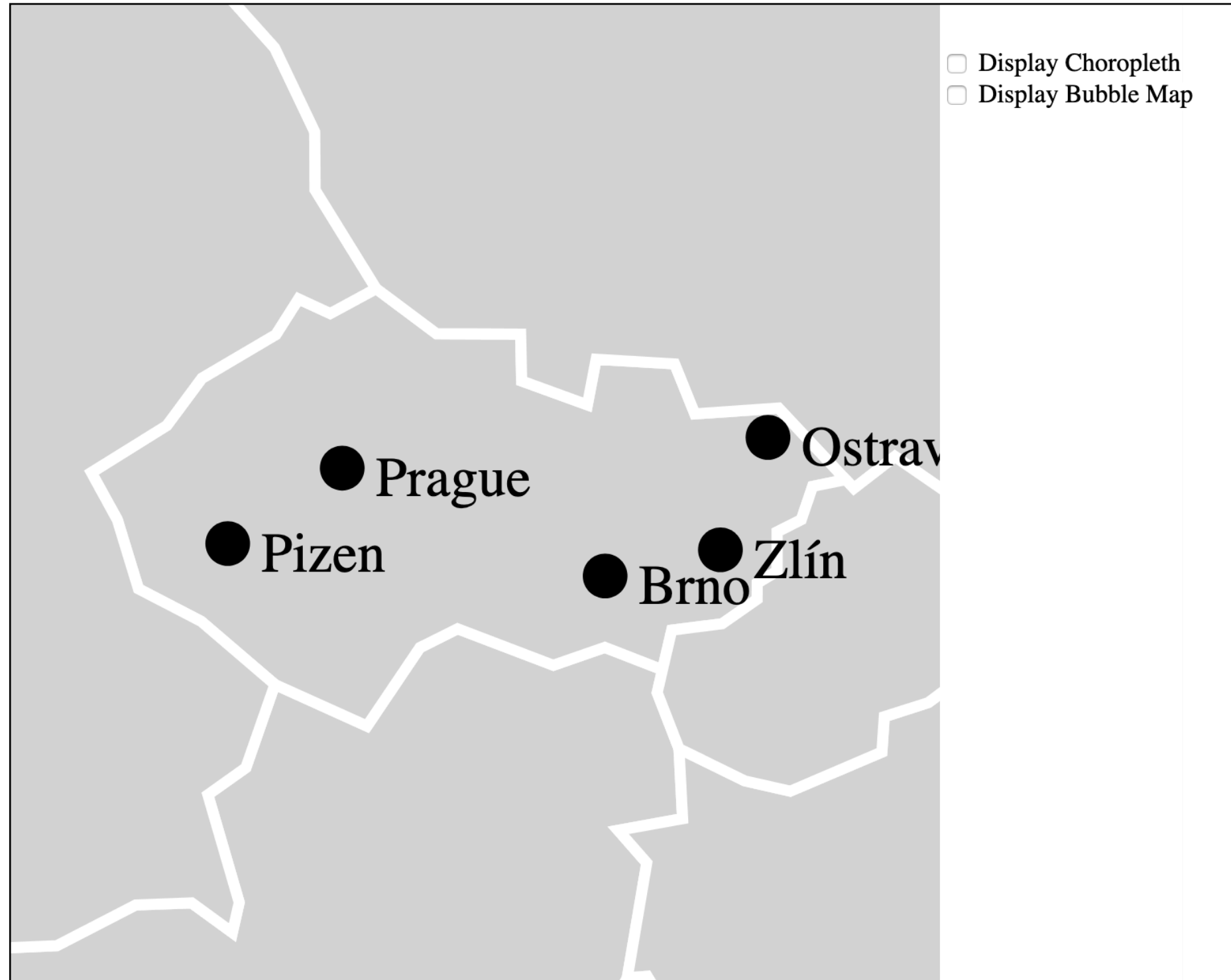
Attach city data to country properties in TopoJSON

Demo

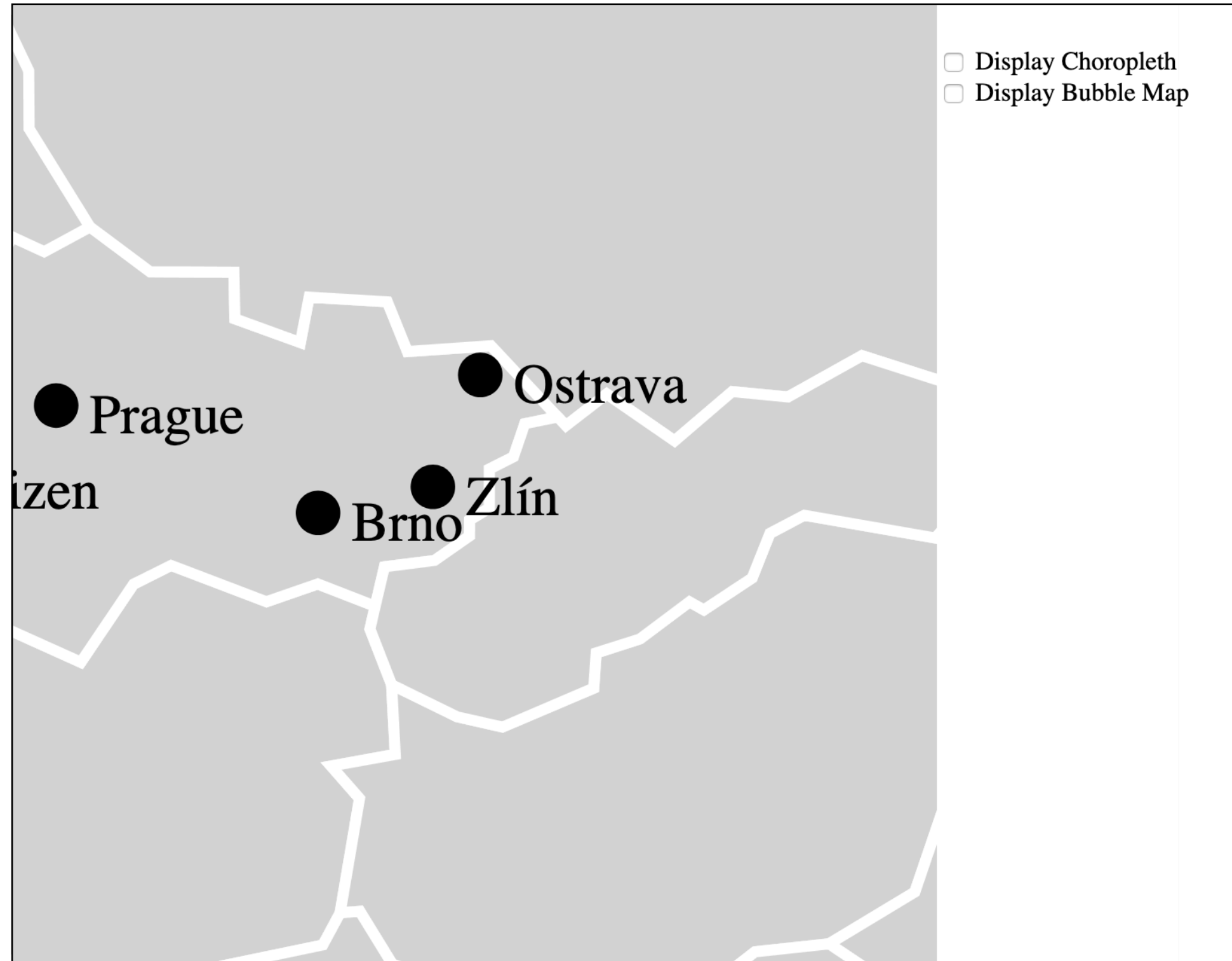
Process CSV data for additional cities

Display and hide city data on zoom

Panning



Panning



Panning

Moving the map around using drag and drop

Helps in viewing areas of map near boundaries or corners

D3 drag module provides an abstraction for panning

Panning with D3 Drag



Demo

Add D3 drag listener

**Translate map according to diff
co-ordinates**

Summary

Zooming is just scaling + translation

Transitions are important

Data should be added only after the transition is complete

Zooming and panning allows the user to explore maps in more detail