

PV251 / Seminar #4

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# D3 Tutorial

HCI<sup>LAB</sup>

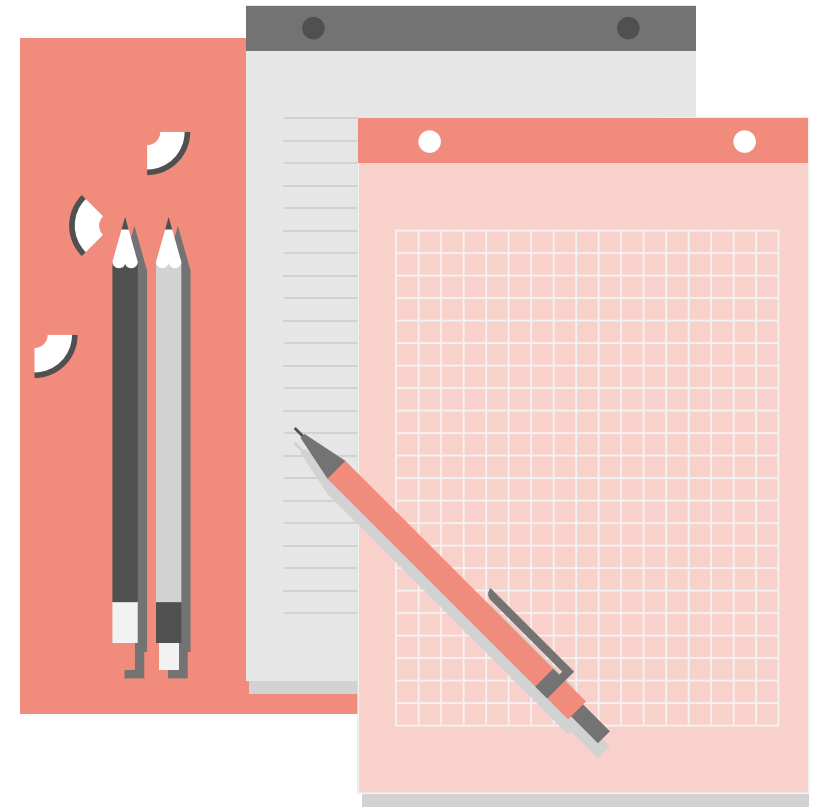
visitlab



*Pi Transition Paths* by Martin Krzywinski

# Today

- Next steps in semestral project
- D3 Tutorial
  - If working on your own laptop, install **Node.js**
  - Download the project from IS
    - On school PCs save it on drive J or local drives, **do not** use network drives ([\\ad.fi.muni...](#))
  - VS Code or other IDE
- Individual work





# **Semestral Project Next Steps**

# Project Implementation

- Start working on your project implementation
  - Choose technology (if you have any doubts, ask)
  - **Data preprocessing**
- No need to submit to IS, but I will ask about your progress next time



# Semestral Project Requirements

- Interactive data visualization project
- 2-3 linked views, interactive features (e.g., filtering) + short report
- **Technology:** up to you
  - Preferably web-based (so you can share it), e.g., JavaScript + D3, Plotly/Dash, Tableau, ...
- **Deadline:** ideally before attending exam, at the latest by **January 31<sup>st</sup> 2025**
- **Bonus points:**
  - Up to 3 points for project realisation
  - Up to 2 points for voluntary presentation

# Resources and Links

- Color selection: <https://colorbrewer2.org/>
- Maps:
  - [leaflet.js](#) – complete world maps (OpenStreetMaps), easy annotations, heatmaps, layers
  - Mapbox maps in Plotly: <https://plotly.com/python/maps/>
  - SVG: <https://simplemaps.com/resources/svg-maps>, <https://www.amcharts.com/svg-maps/>
  - GeoJSON: <https://observablehq.com/@deaxmachina/collection-of-maps>, Google 😊
- Tabular data: [Line-up.js](#) library for tabular visualization
- Deploying your application:
  - GitHub/GitLab pages
  - <https://glitch.com/> (<https://www.youtube.com/watch?v=3hVf4Giy5nc>)
  - <https://render.com/> (<https://github.com/thusharabandara/dash-app-render-deployment>)

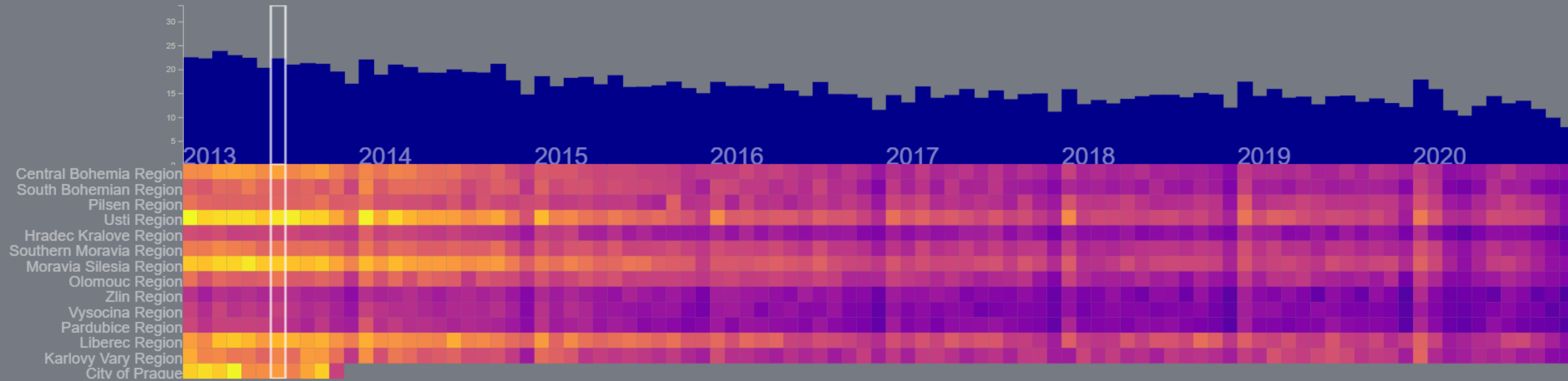
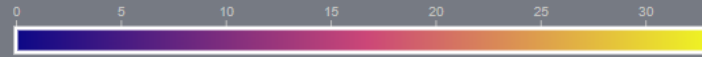
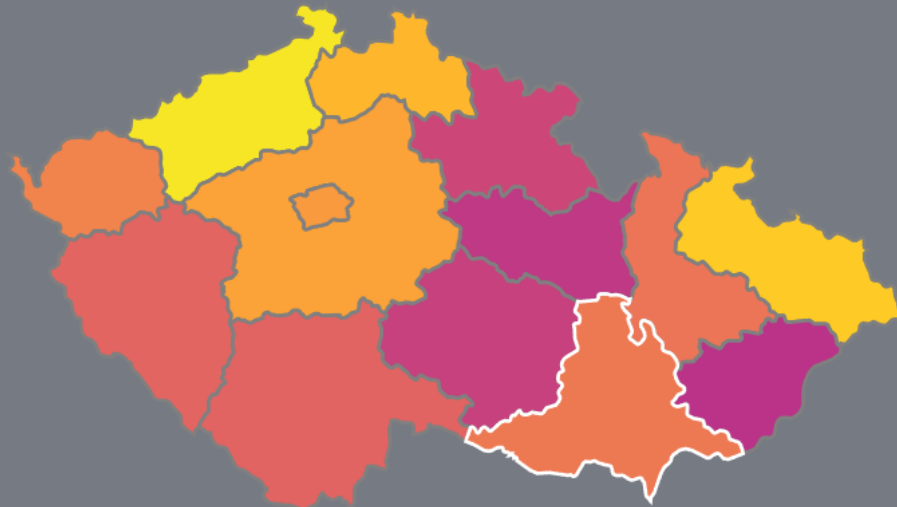
Three solid orange circles are positioned on a light gray background. One circle is at the top center, another is at the bottom left, and the third is at the bottom right.

# **D3 Tutorial**

# Criminality Index in Czech Republic

Data source: mapakriminality.cz

Selected Region: Southern Moravia Region







# You Will Need...

- Node.js
- **npm** (Node package manager, usually comes with Node.js installation)
- Terminal or Windows Command Prompt (⌘ Win + R -> cmd)
  - You can check Node and npm with:  

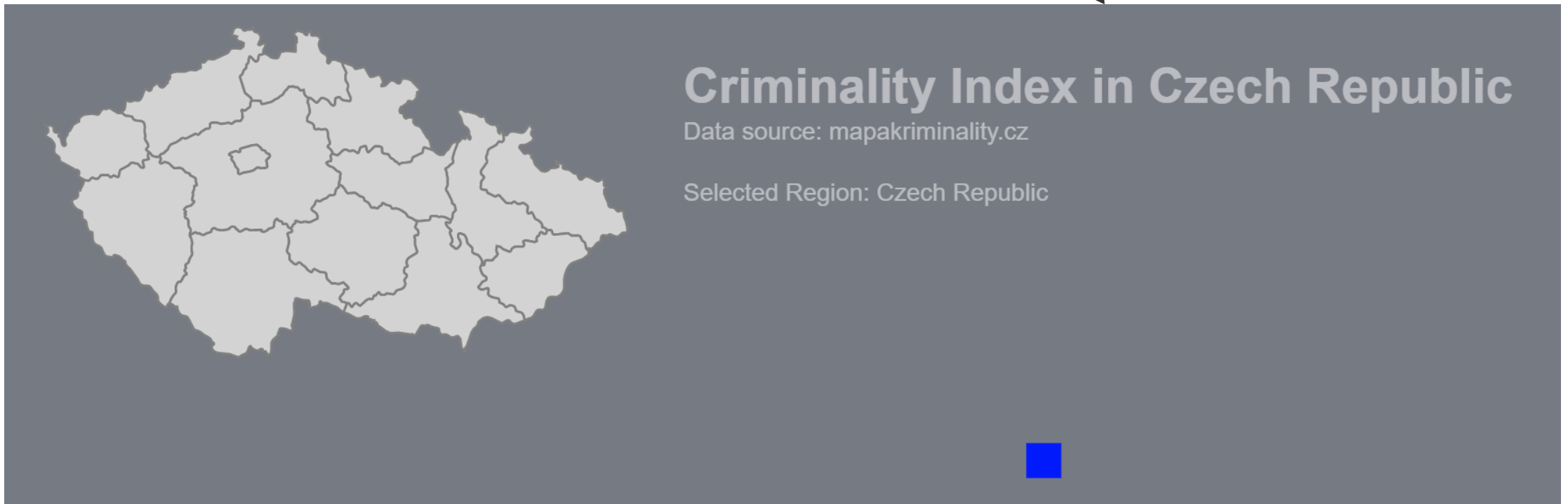
```
node -v
```

```
npm -v
```
- Some code **editor/IDE**
  - E.g., Visual Studio Code
- **Project** template from Study Materials
  - On school PCs save it on **drive J or local drives**, do not use network drives ([\\ad.fi.muni...](#))



# Getting Started

- In the project directory (D3\_tutorial\_start) run the following commands:
  - Install dependencies: `npm install`
  - Start the server: `node index.js`
- In the web browser check: `localhost:3000`  You should see this!



# Tasks

## Today

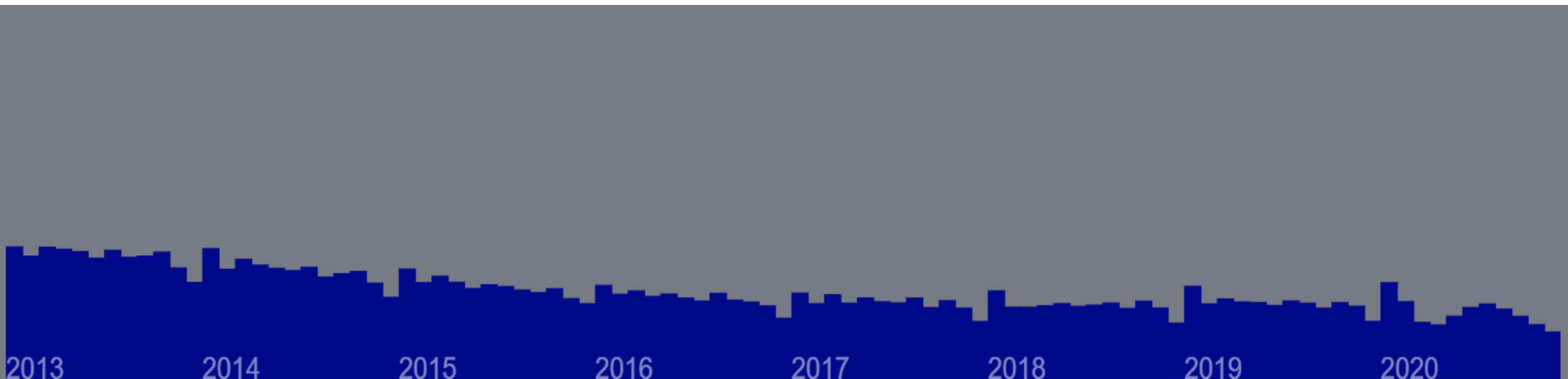
- 1) Create a bar chart of the number of average criminality index over the time
- 2) Create a heat map for all regions in the dataset

## Next seminar

- 3) Connect SVG map with the bar chart (select region on map)
- 4) Animate bar chart transitions
- 5) Connect heatmap with map (implement choropleth)

# Tasks 1: Create a bar chart of average criminality in CR

- 1) Compute width of the bar (leave some space on the left for heatmap labels)
- 2) Find highest value in all of the data for bar height normalization
- 3) Add individual bars
- 4) Add year labels



# Tasks 2: Create a heat map for all regions

- Individual work
- You can create your own color scheme – for color, use e.g., `d3.rgb(r, g, b)`
- For predefined color scale:

```
var scale = d3.scaleSequential().domain([min, max]).interpolator(d3.interpolatePlasma);  
var color = scale(value)
```

