

European Parties Explorer

A Visual Analytics system for European politics



SAPIENZA
UNIVERSITÀ DI ROMA

Candidate
Stefano Bonetti

Advisor
Prof. Simone Lenti

Presenting European Parties Explorer

- Visual application for supporting the **data-driven analysis of European national parties**
- Built on a dataset gathering information about parties and their ideologies (**Chapel Hill Expert Survey**)

Objective: discovering facts and statistics regarding European politics from 1999 to 2024 and observing how the European political landscape has evolved

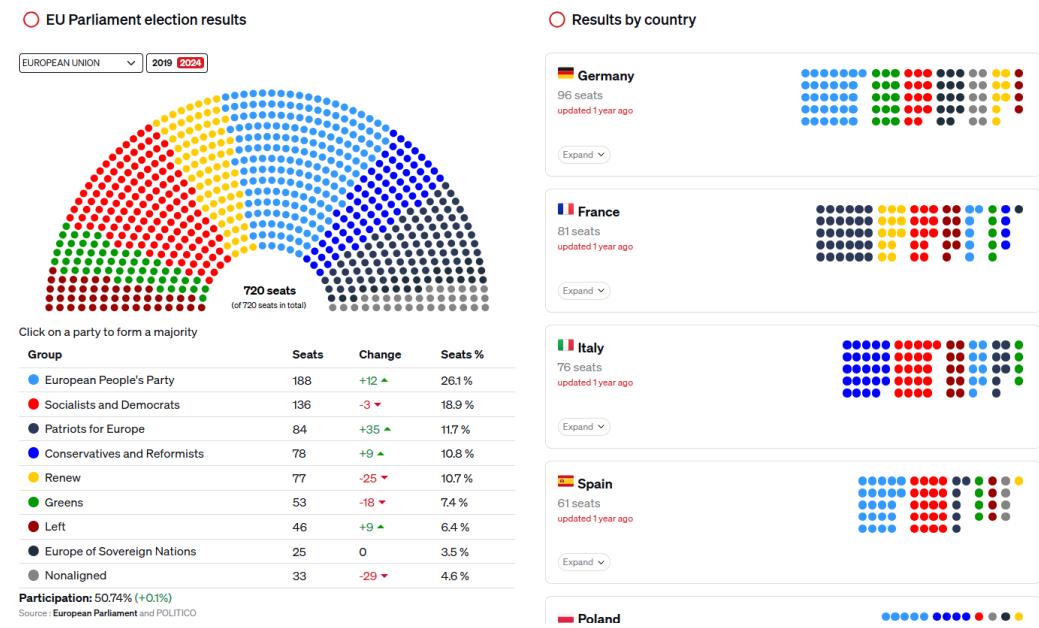
Background

Current approaches in data-driven political analysis:

- Academic statistical studies (examples of insights: green parties becoming pro-EU^[1], more support for Euroscepticism after the 2008 crisis^[2])
- Election result charts
- Data journalism

Most of them deal with just displaying data

No unified system for a deeper visual political analysis!



Source: Politico.eu

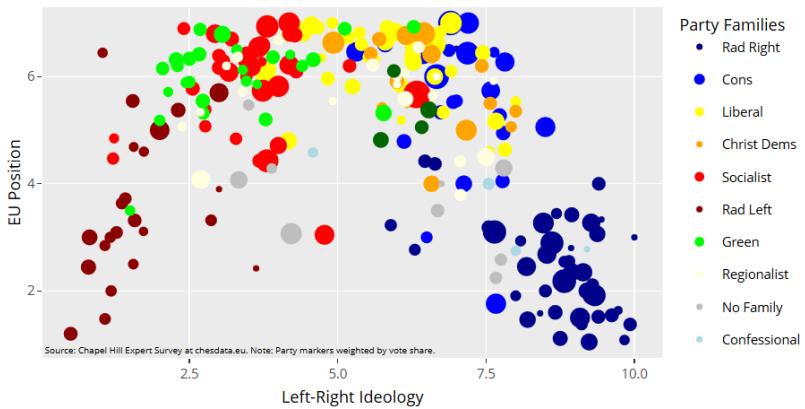
[1] Bakker et al., 2022

[2] Hobolt and De Vries, 2016

The Chapel Hill Expert Survey (CHES)

- Academic project created by political scientists, its mission is to “estimate party positioning on ideology and policy issues, [...] for national parties”^[1]
- Based on surveys, reliable^{[2][3][4]}
- Relevant topics: votes, economy, EU, minorities, immigration

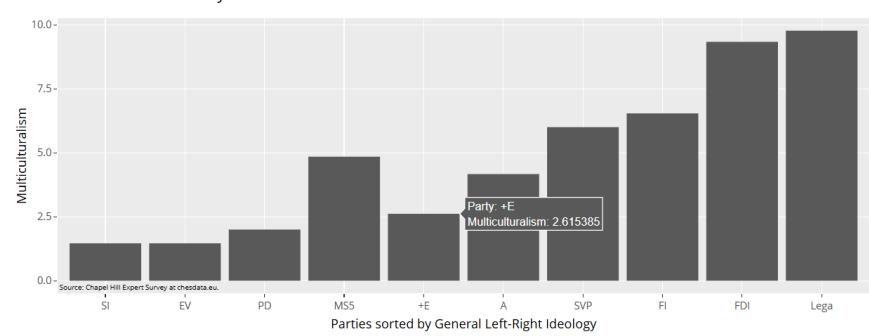
Left-Right Ideology vs EU Position in all countries 2024



Q1: How would you describe the GENERAL POSITION ON EUROPEAN INTEGRATION that the party leadership took during 2019?

	1: Strongly opposed	Opposed	Somewhat opposed	Neutral	Somewhat in favor	In favor	7: Strongly in favor
CON	○	○	○	○	○	○	○
LAB	○	○	○	○	○	○	○
LIBDEM	○	○	○	○	○	○	○
Green	○	○	○	○	○	○	○
SNP	○	○	○	○	○	○	○
Plaid	○	○	○	○	○	○	○
Brexit	○	○	○	○	○	○	○
DUP	○	○	○	○	○	○	○

Multiculturalism in Italy 2024



Source of pictures: chesdata.eu

[1] chesdata.eu

[2] Steenbergen and Marks, 2007

[3] Bakker et al., 2015

[4] Hooghe et al., 2010

User analysis

Users → Tasks (analysis patterns) → Requisites → Implementation

Possible users:

1. **Voters**

- “Novice” users, the goal is decision-making
- Find the ideal party and how coherent it is

2. **Journalists**

- Broader perspective, the goal is analysing and explaining
- Write articles based on historical data, report on a country’s political situation, verify claims by politicians

3. **Political scientists**

- Domain experts, need an efficient way to navigate CHES
- Analyse arbitrary groups of parties, find trends and outliers, observe opinions on a topic

Analysis patterns and functional requirements

- **Single party analysis:** comparing and filtering parties
- **Aggregate analysis:** groups of parties as analysis element
 - Analysis of aggregations computed from the data (**factions, countries, topics**) or arbitrary ones created by the user on the spot

Functional requirements

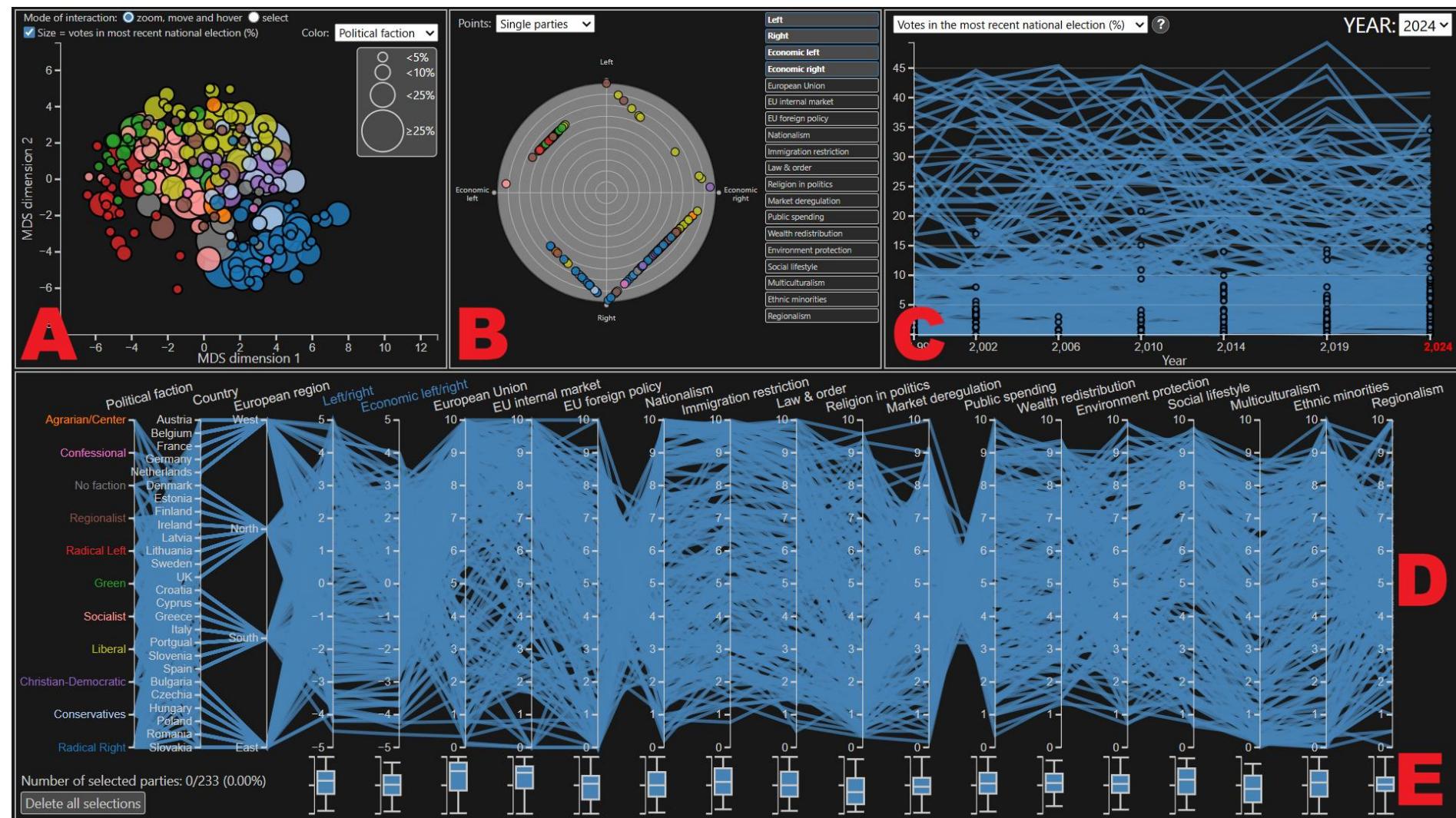
- **FR1:** high-dimensional analysis
- **FR2:** multi-granularity comparisons
- **FR3:** temporal evolution
- **FR4:** point-in-time analysis
- **FR5:** coordinated exploration

Data preprocessing

From the original 1999-2024 Chapel Hill Expert Survey

- Attributes filtering
 - Different survey structure, redundant questions
- Countries filtering
 - Too few experts for Malta and Luxembourg
- Missing data
 - Small parties
- Scales adjusting
 - 0 = against, 10 = in favour

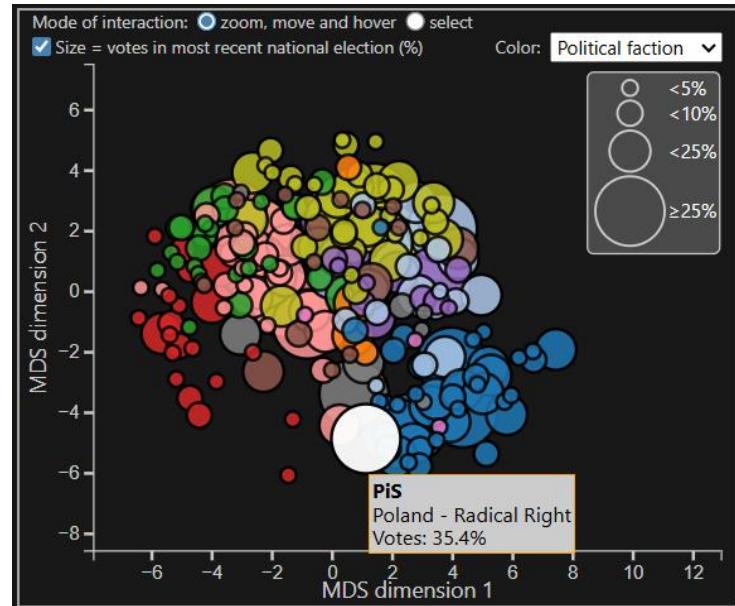
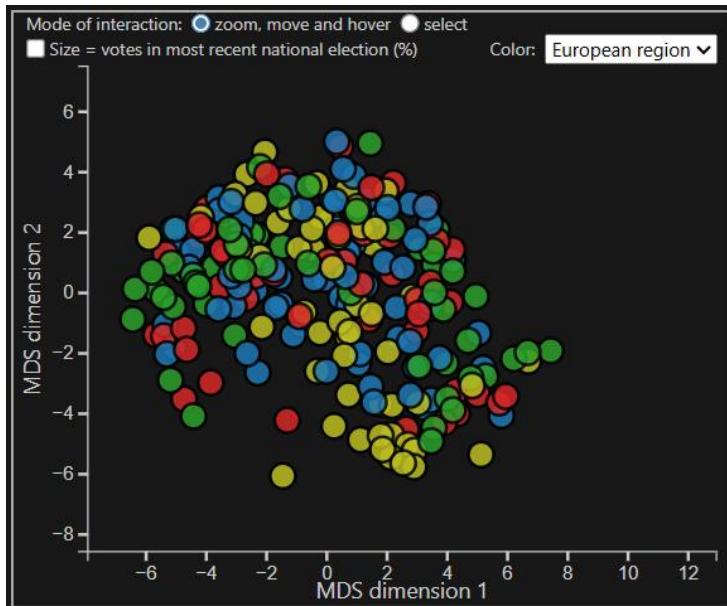
European Parties Explorer



Scatter plot and dimensionality reduction

Dimensionality reduction: map data from a high-dimensional space to a 2D one

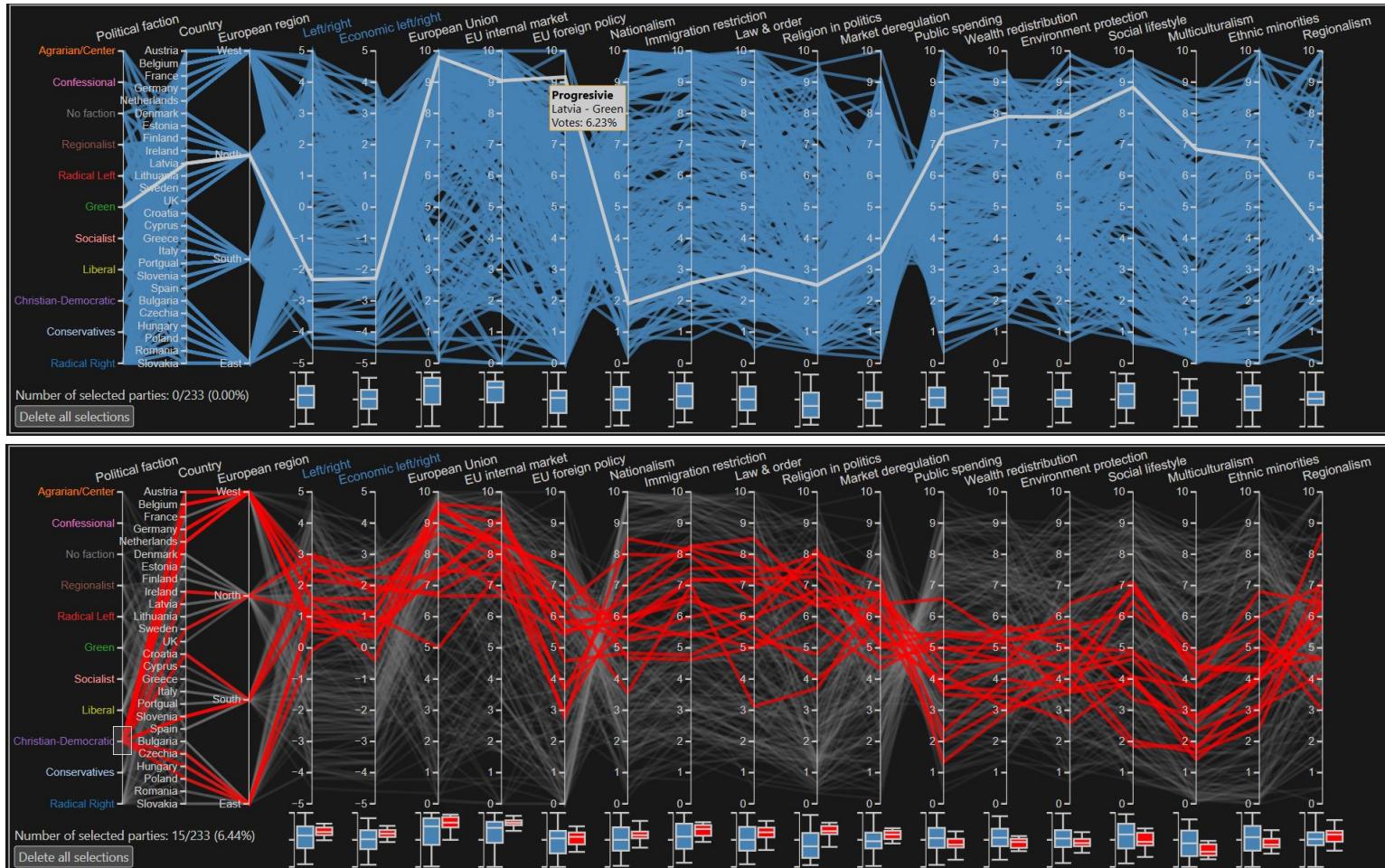
- MDS applied to each survey year
- Only the distances matter



- Colour by faction or European region (North, South, East, West)
- Four circle sizes by votes received (no cluttering)
- Brush, hover, zoom
- FR2, FR4, FR5

Parallel coordinates and box plots

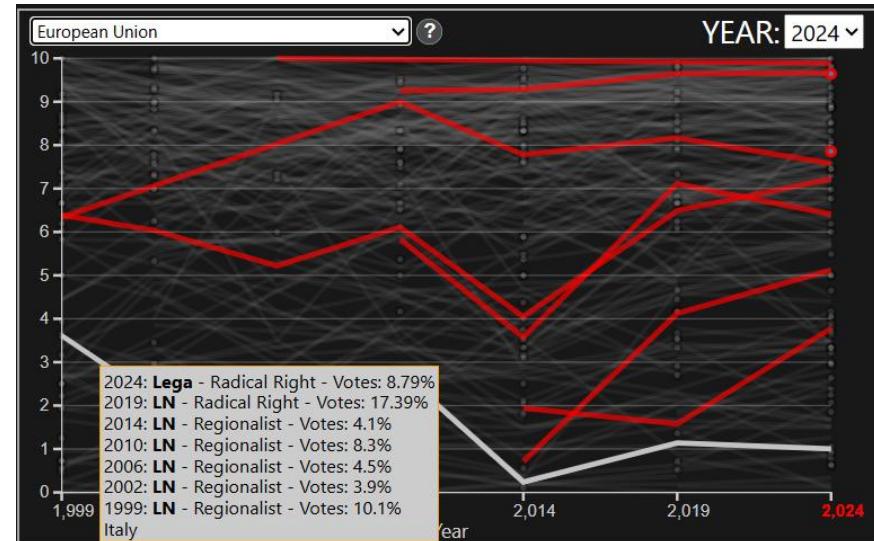
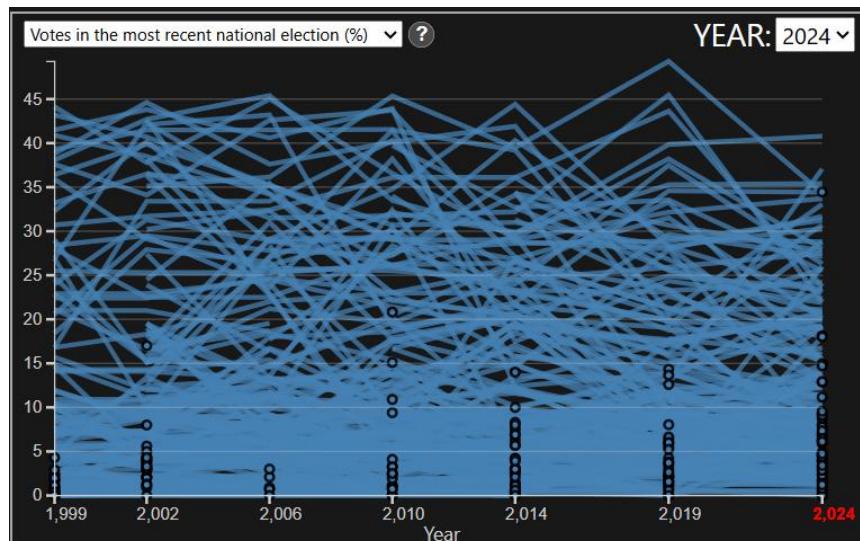
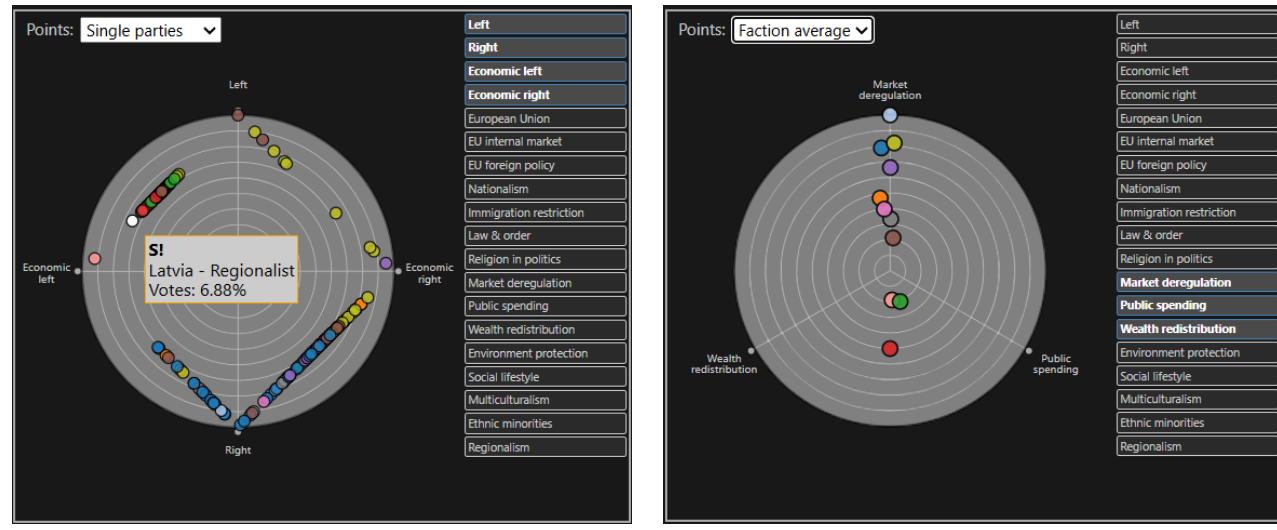
Data attributes on the axes – FR1, FR2, FR4, FR5



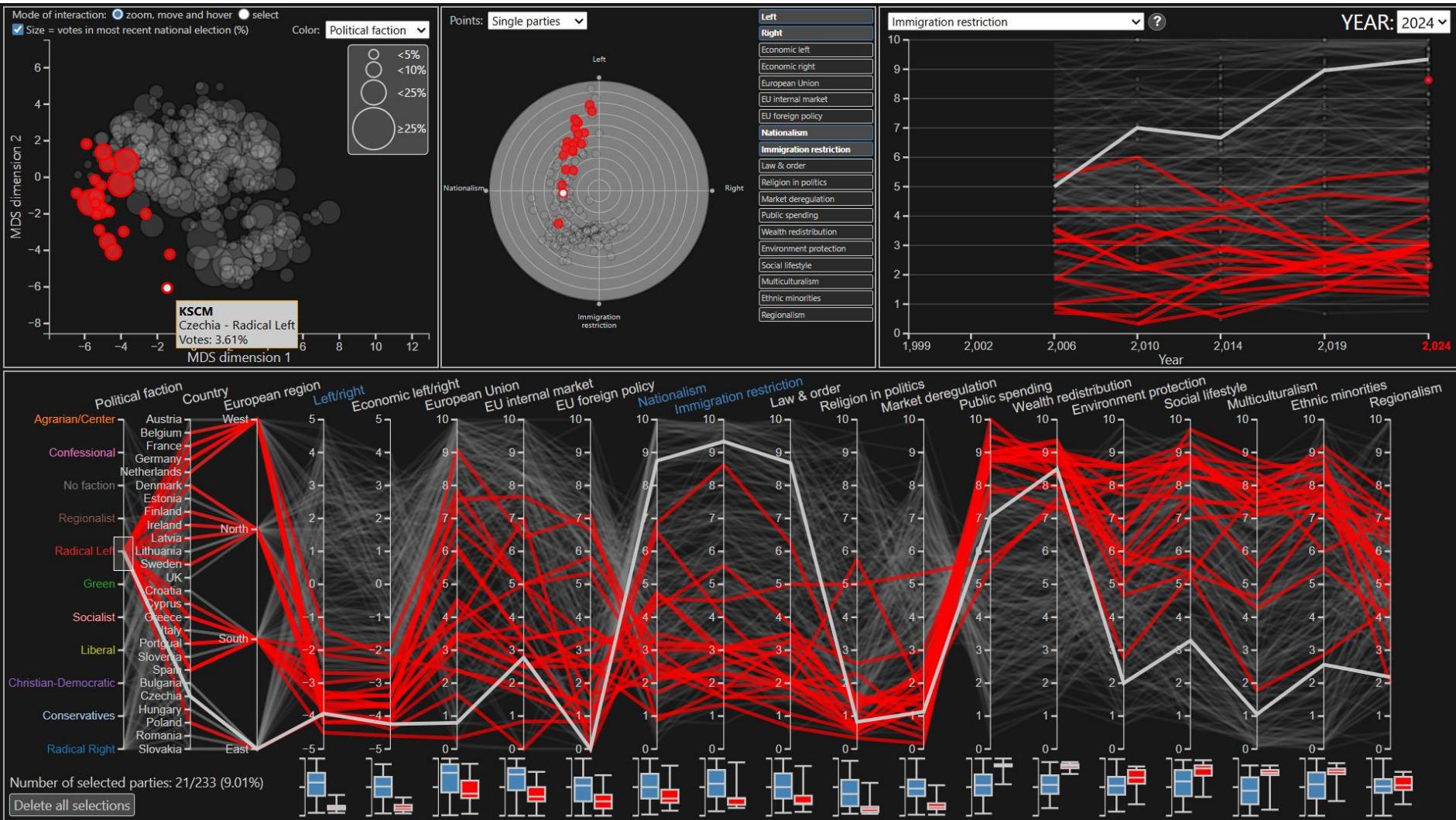
RadViz, line chart

Analyse a subset
of attributes - FR1,
FR2, FR4, FR5 →

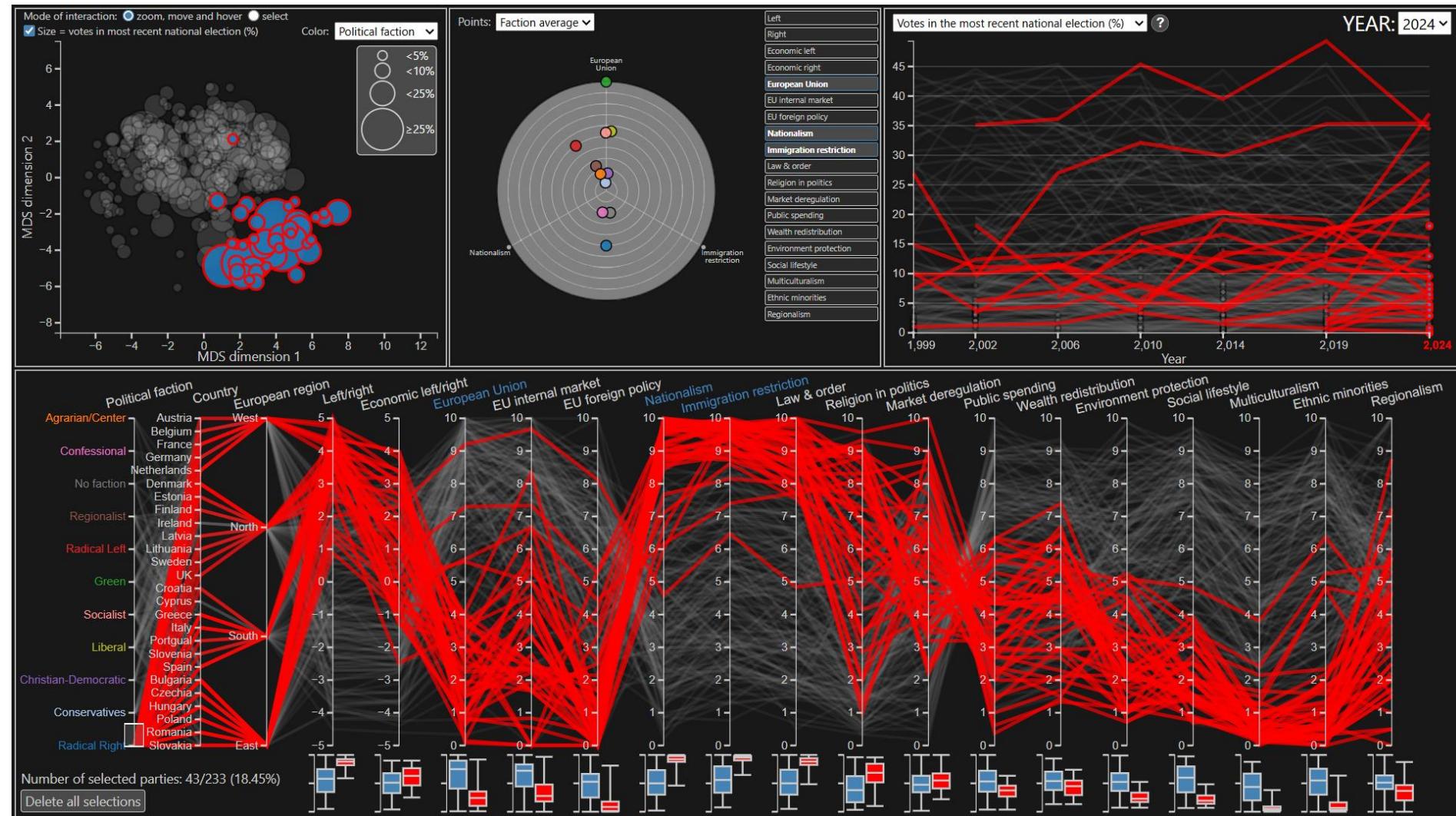
Temporal trends -
FR3, FR4, FR5



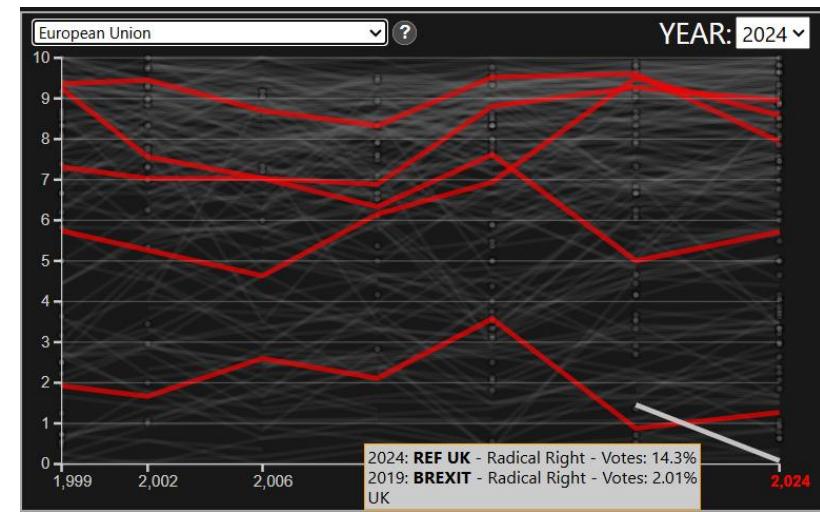
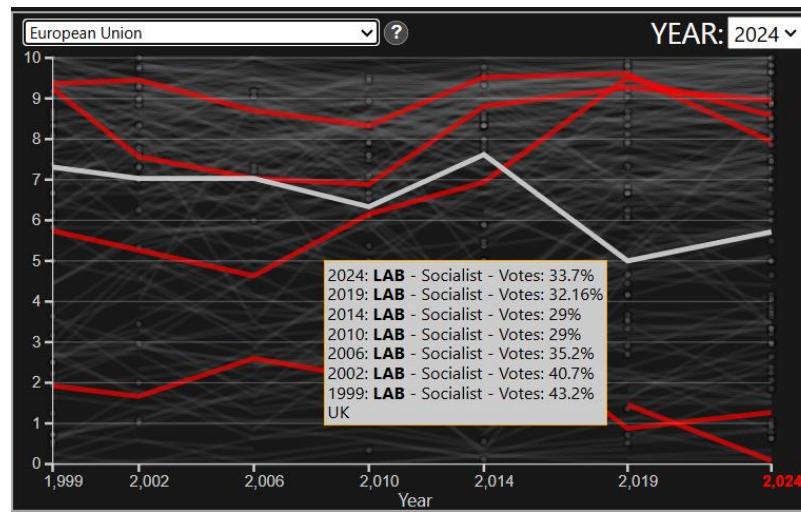
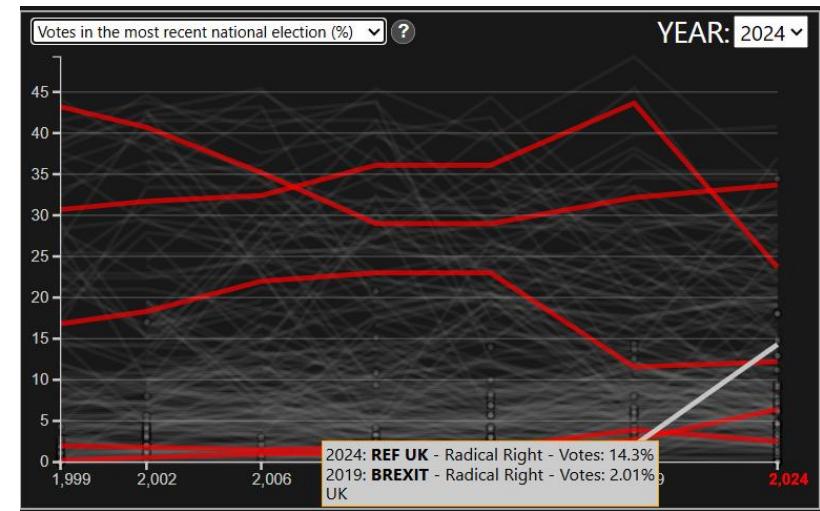
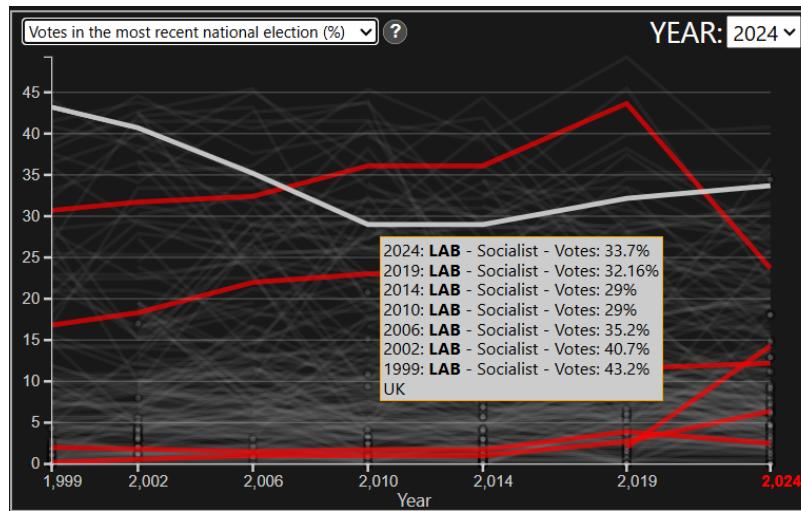
Case study: outlier parties



Case study: the rise of the radical right



Case study: Europeanism and Brexit



Conclusions

- **What we did:**
 - Visual Analytics system for navigating the complex European political landscape thanks to a political science dataset (CHES)
 - Analysis of the domain, identification of user personas, translation of their needs in functional requirements guiding the application design
- **Limitations:** low frequency of surveys, difficulty for casual users
- **Future work:** extend analytical capacity with automatic computations, guidance, and data from other sources

www.github.com/stes24/european-parties-explorer
<https://stes24.github.io/european-parties-explorer/>

THANK YOU FOR YOUR ATTENTION!