

European Parties Explorer

A Visual Analytics system for European politics



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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

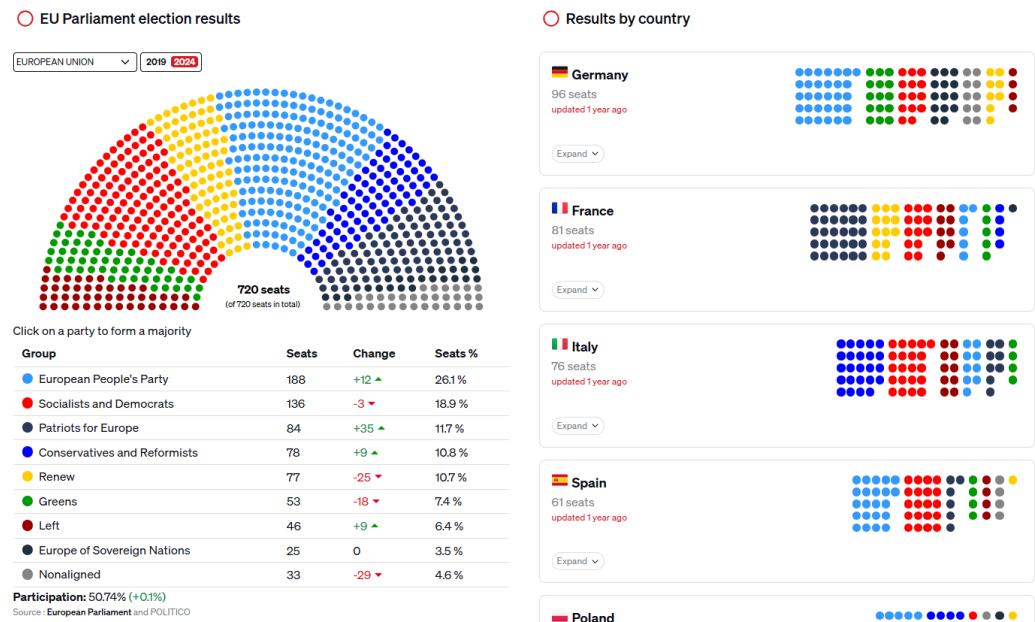
Background

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

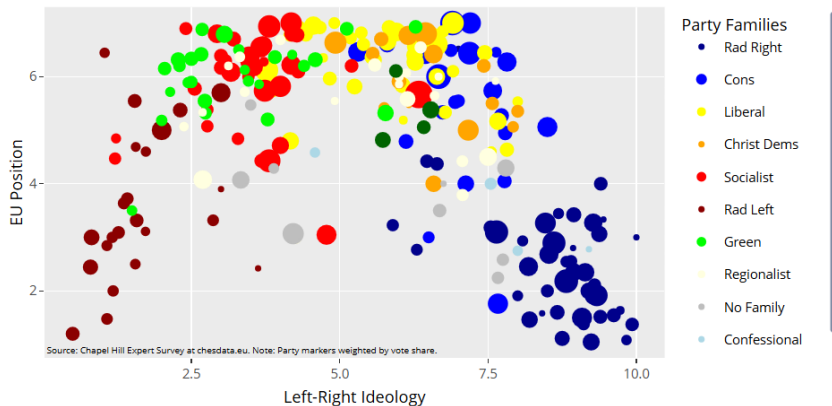
The Chapel Hill Expert Survey (CHES)

- 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

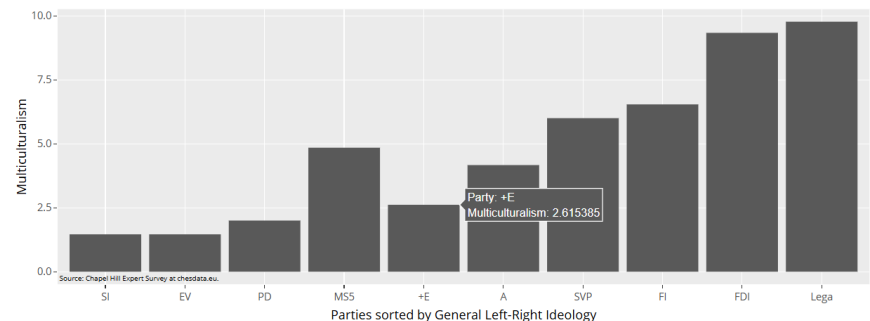
Q1: How would you describe the GENERAL POSITION ON EUROPEAN INTEGRATION that the party leadership took during 2019?

	1: Strongly opposed	Opposed	Somewhat opposed	Neutral	Somewhat in favor	In favor	7: Strongly in favor
CON	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LAB	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LIBDEM	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Green	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SNP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plaid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Brexit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
DUP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Left-Right Ideology vs EU Position in all countries 2024



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

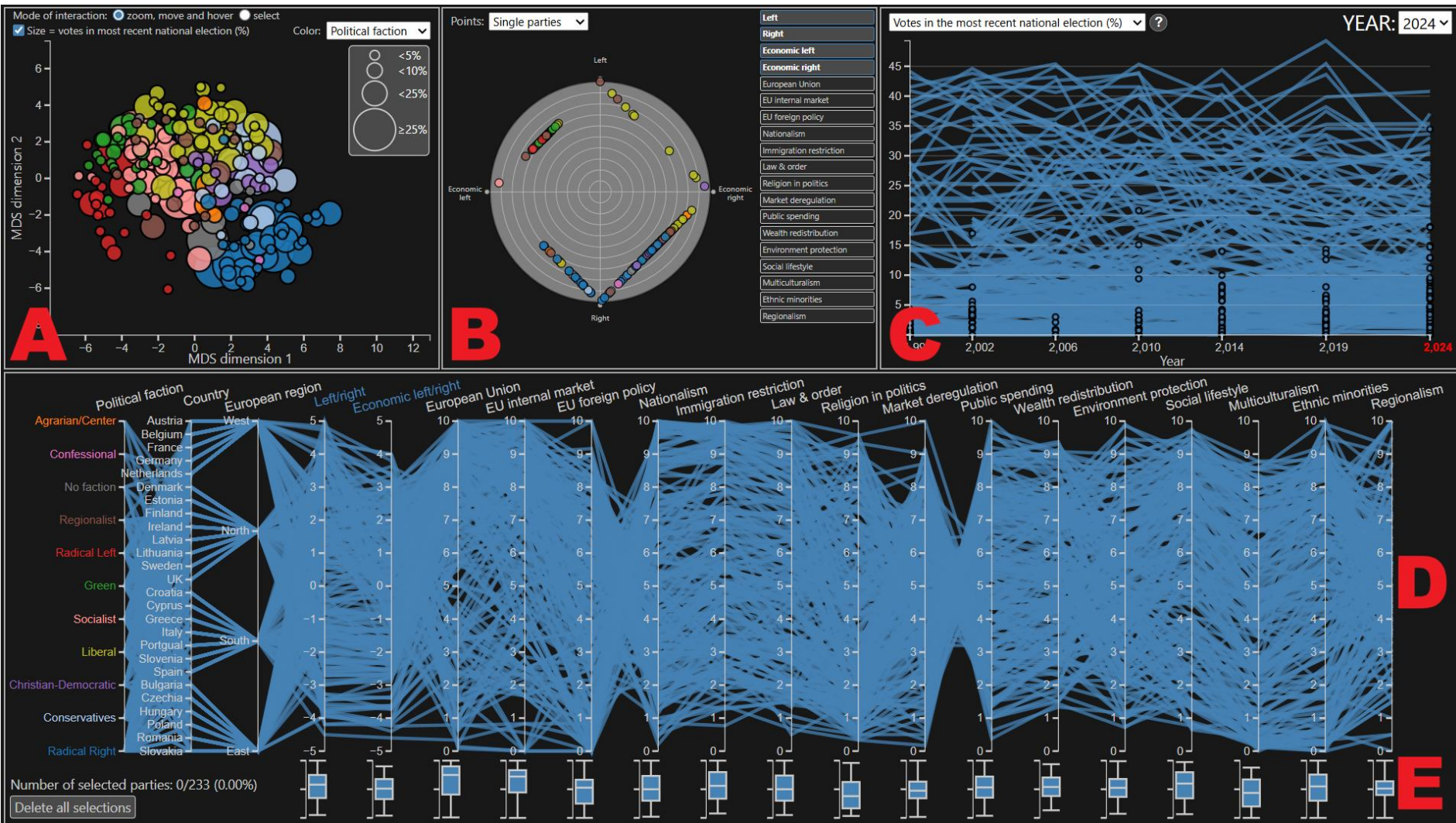
- **FR1**: high-dimensional analysis
- **FR2**: multi-granularity comparisons
- **FR3**: temporal evolution
- **FR4**: point-in-time analysis
- **FR5**: coordinated exploration

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

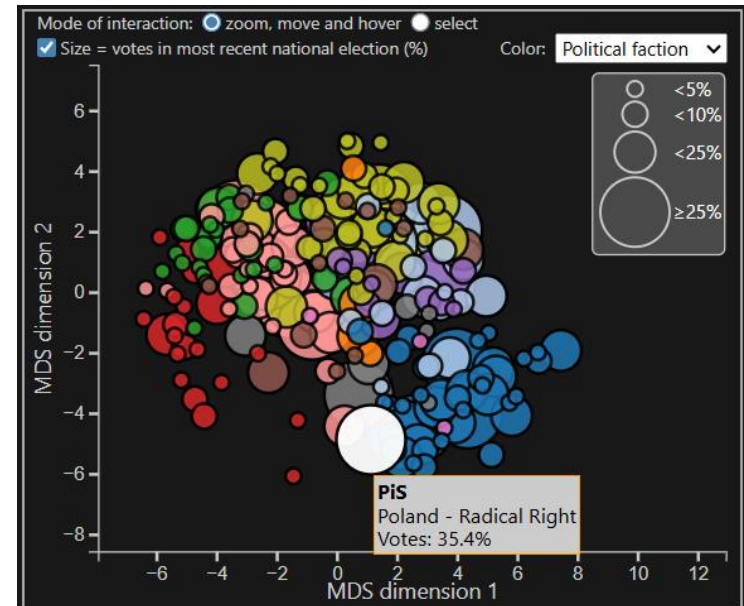
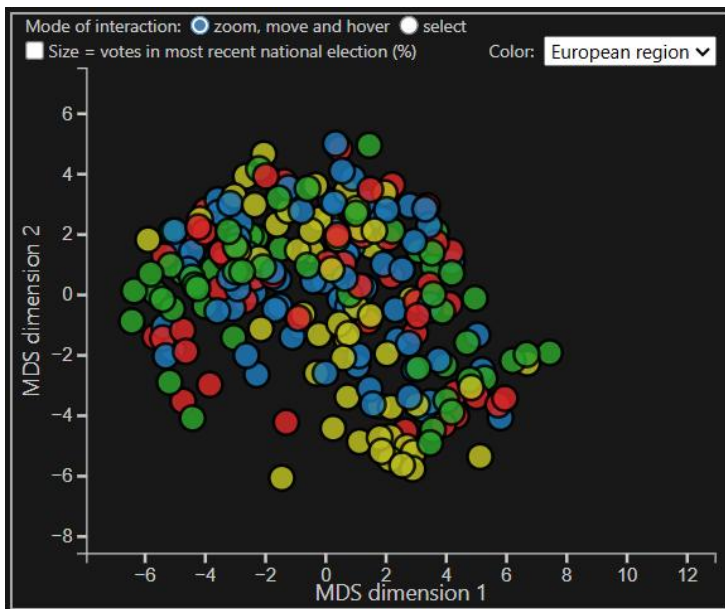
European Parties Explorer



Scatter plot and dimensionality reduction

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

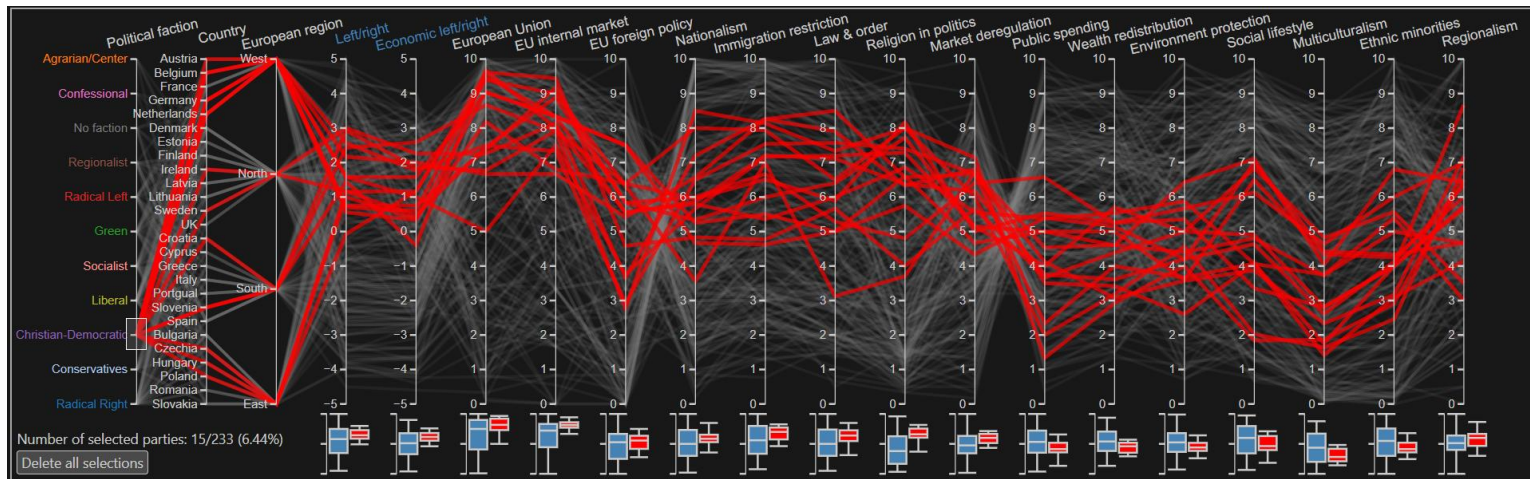
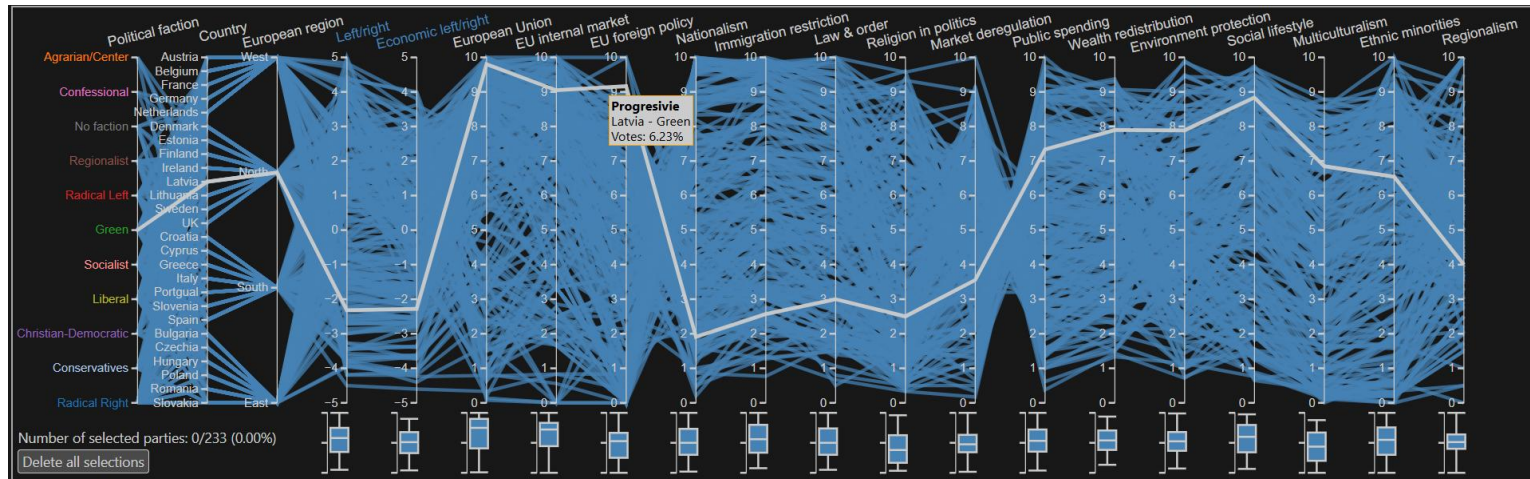
- MDS applied to each survey year
- Only the distances matter



- 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

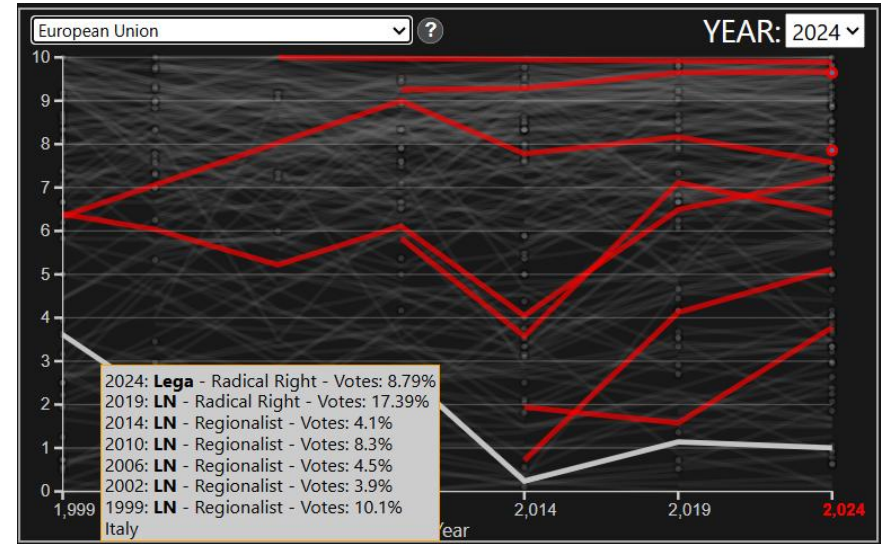
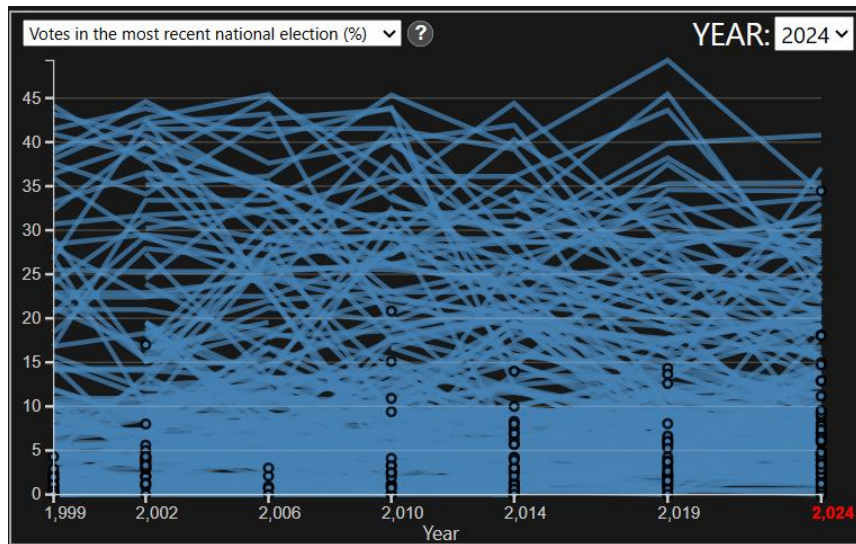
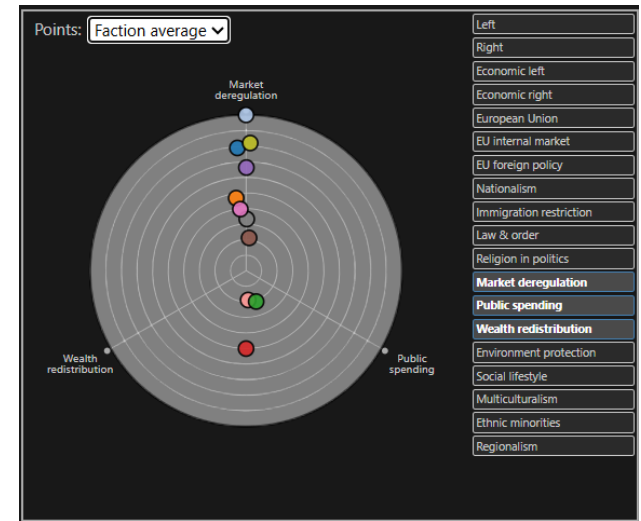
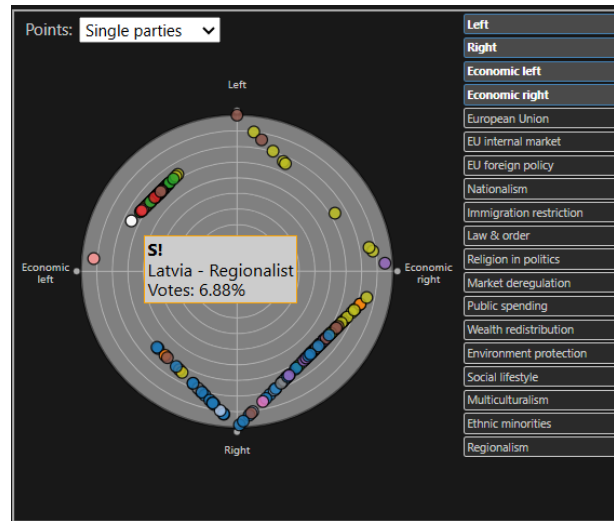
Data attributes on the axes – FR1, FR2, FR4, FR5



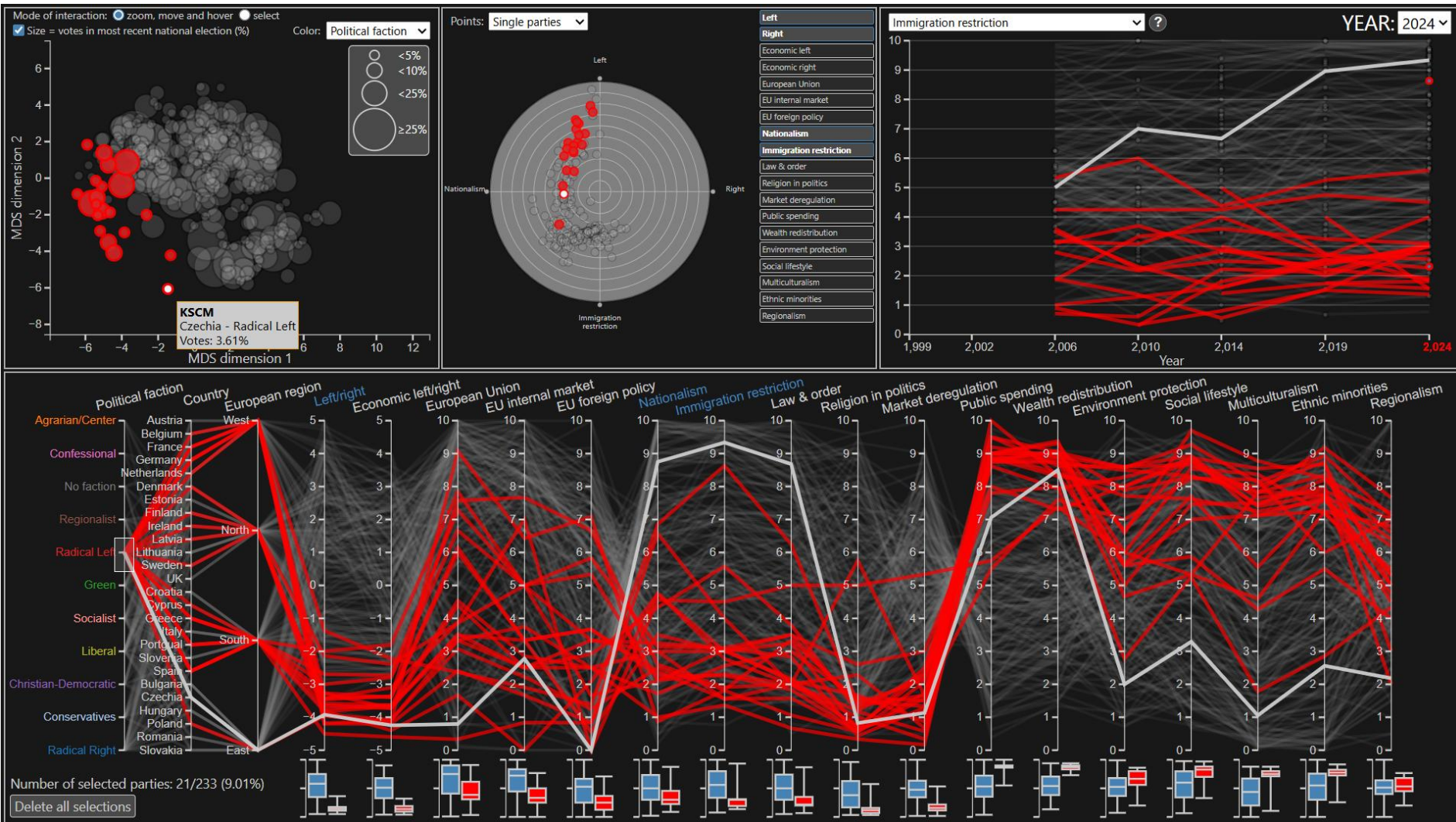
RadViz, line chart

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

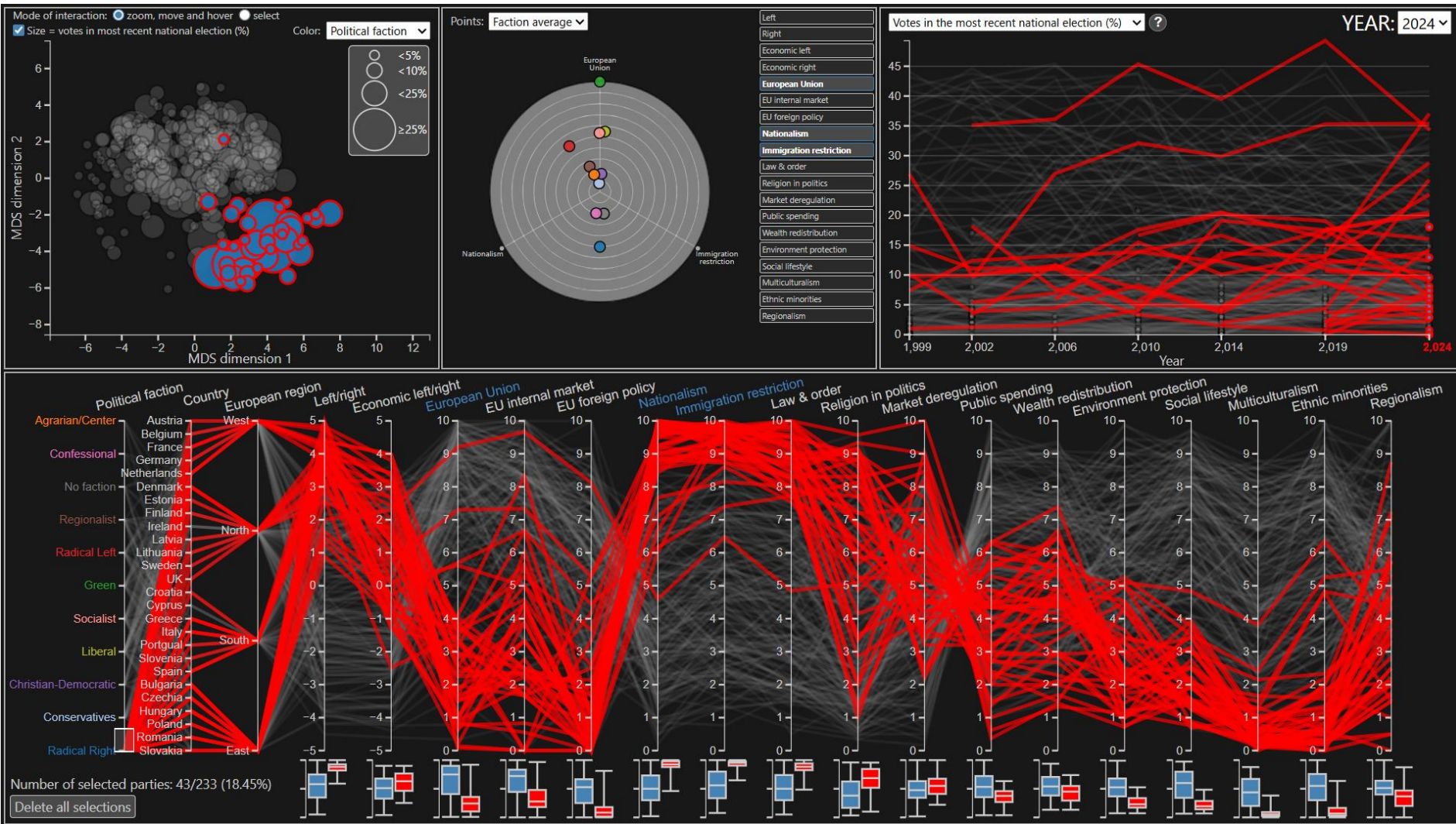
Temporal trends -
FR3, FR4, FR5



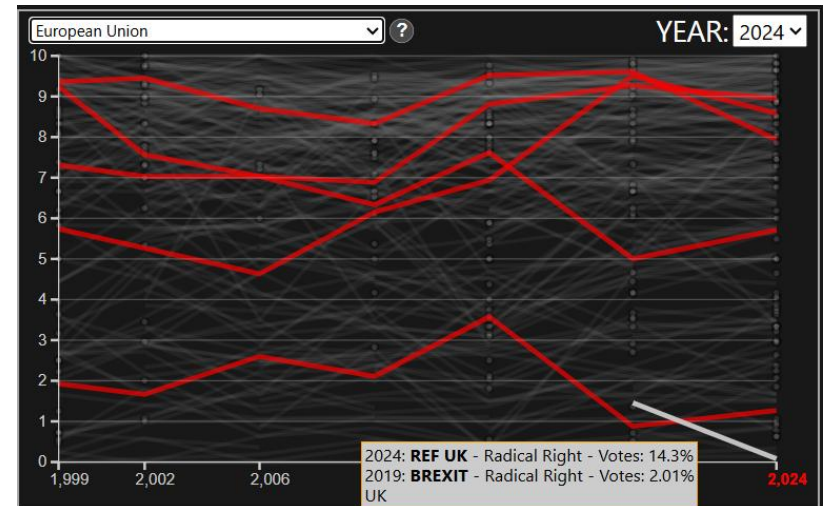
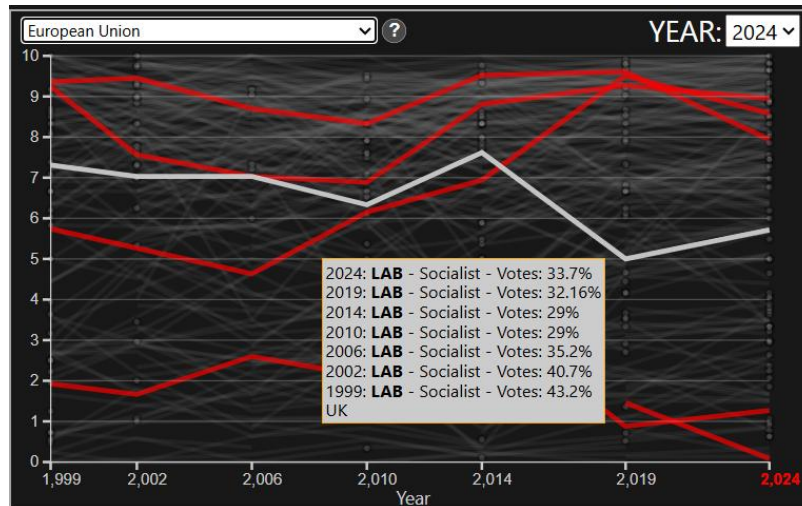
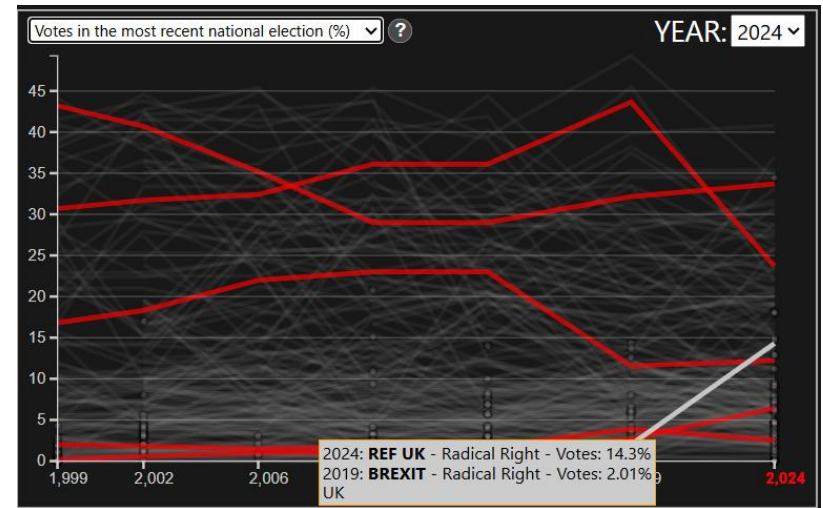
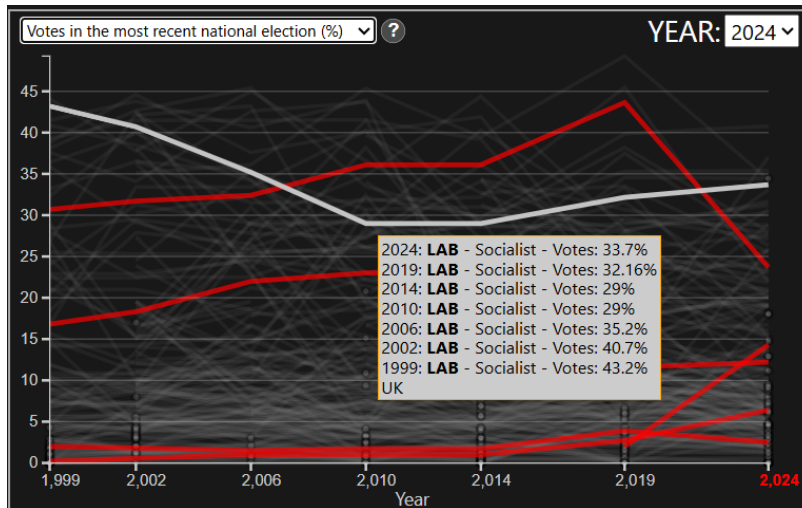
Case study: outlier parties



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!