Paper Replication: Measuring Cultural Dynamics through the Eurovision Song Contest

Group 13
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Topic Motivation

- compare and extend paper with results of recent years [1]
- analyse relations between European countries based on voting behaviour
    - Measuring dynamics of cultures
    - Measuring subjective biases between pairs of countries
    - analyse whether other factors influence voting behaviour

[1] DAVID GARCÍA, & DORIAN TANASE (2013). MEASURING CULTURAL DYNAMICS THROUGH THE EUROVISION SONG CONTEST. *Advances in Complex Systems, 16(08), 1350037.*

Data

- Eurovision Voting Data from 2016 onwards
  - Jury- and Televotes separated
  - empirical Friend-or-Foe coefficient calculated from this data, for Jury- and Televoting respectively
- Varying parameters in ABMs
  - simulated points and Friend-or-Foe calculated per ABM

Research Question

Are Jury Voters less affected by Cultural Influences in Eurovision than Tele Voters?

Agent-Based Model Description - Null Model

- Countries can freely give points to other countries - they are only assigning a fixed total amount of points
- Sum of scores is a fixed value (Matches total possible sum in Real voting)
- Assigned votes are chosen at random

Null model

For each voting country c_v:

1. For each competing country c_c:
   - Sample $fit_v[c_c]$ from uniform distribution between 0 and 1
2. For each competing country c_c:
   - Assign $p_{v,c} = 58 * \frac{fit_v[c_c]}{\sum_c fit_v[c]}$

[1]

Agent-Based Model Description - Model 1

- Countries are allowed to give fixed scores (12, 10, 8, 7, 6, 5, 4, 3, 2, 1)
- Follows the rules of Eurovision
- The assignment of points is not influenced by anything else

Model 1

scores = $[12, 10, 8, 7, 6, 5, 4, 3, 2, 1]$

For each voting country c_v:

1. For each competing country c_c:
   - Sample $fit_v[c_c]$ from uniform distribution between 0 and 1
2. For each competing country c_c:
   - If $rank(fit_v[c_c]) \leq 10$: assign $p_{v,c} = scores[rank(fit_v[c_c])]$
   - Else: assign $p_{v,c} = 0$

[1]

Agent-Based Model Description - Affinity Model

- Countries are allowed to give fixed scores (12, 10, 8, 7, 6, 5, 4, 3, 2, 1)
- Each “vote” has a “quality” part (q) and,
- a culture part in the form of a **cultural Affinity Network**
  - Nodes are voting countries
  - Edge weights are from a normal distribution with variable Mu and Sigma
- Alpha determines the importance of either part

Affinity Model

scores = $[12, 10, 8, 7, 6, 5, 4, 3, 2, 1]$

w = affinity network

For each competing country c_c:

- sample $q[c_c]$ from empirical s'_c distribution

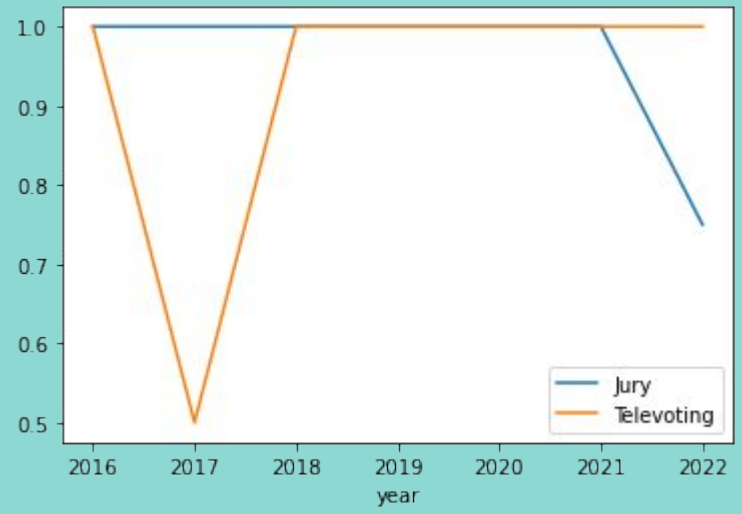
For each voting country c_v:

1. For each competing country c_c:
   - assign $fit_v[c_c] = \alpha q[c_c] + (1 - \alpha) w_{v,c}$
2. For each competing country c_c:
   - If $rank(fit_v[c_c]) \leq 10$: assign $p_{v,c} = scores[rank(fit_v[c_c])]$
   - Else: assign $p_{v,c} = 0$

[1]

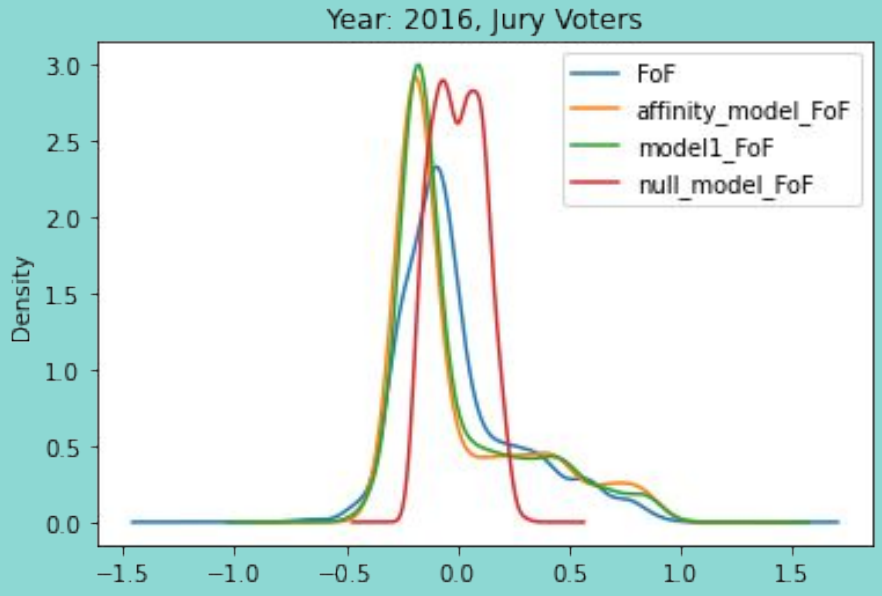
Agent-Based Model Description - Affinity Model - Objectivity Parameter

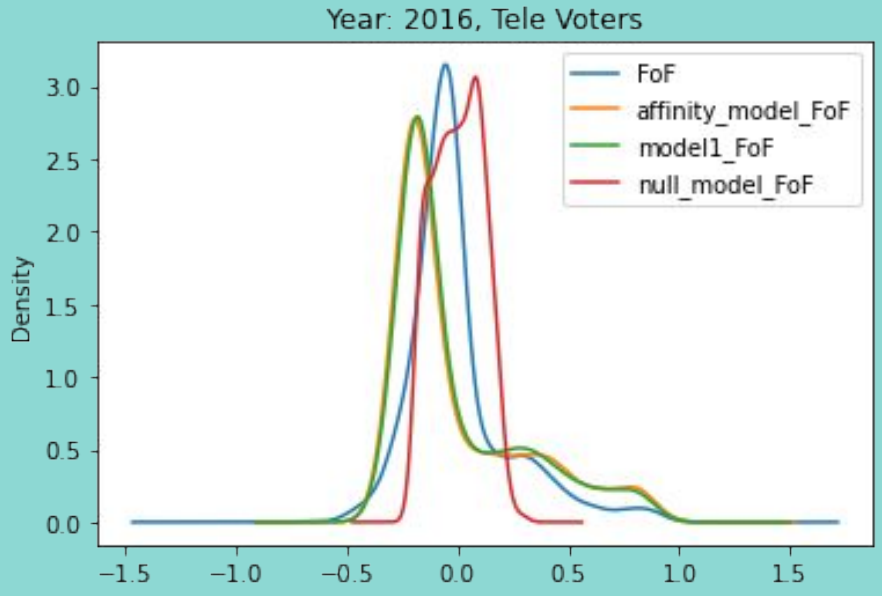
- “Objectivity” in voting parameter: Alpha
  - Low alpha => Low Objectivity => Higher influence of Culture
- Unlike the 2013 paper, we vary alpha (because we have separate Jury and Televoting data)
  - However, results are inconclusive: **We cannot say Jury voters are more objective**
  - **It seems that both Jury and Tele-Voters are essentially objective (high alpha)**
  - Year 2022 gives counter-intuitive results!



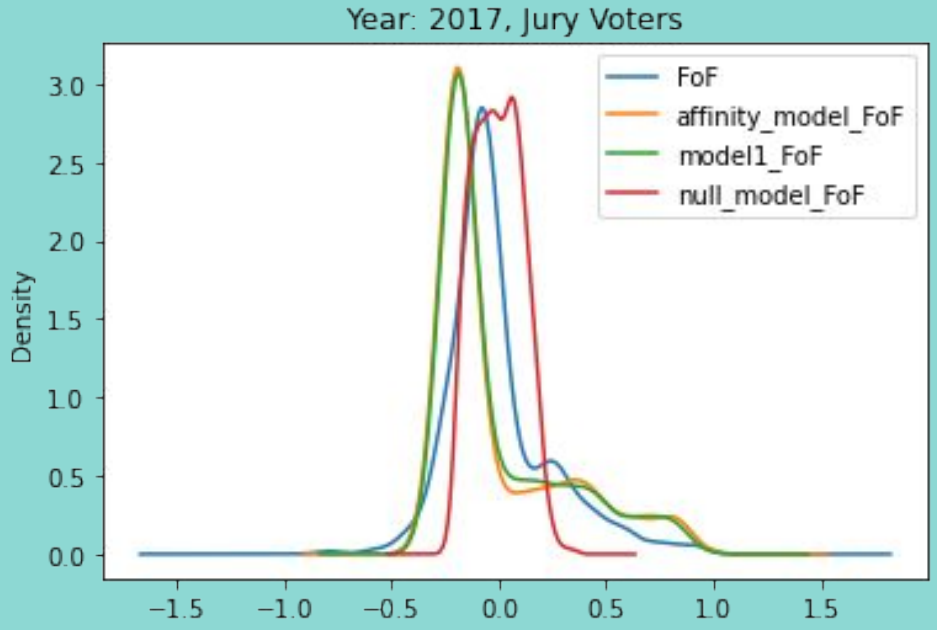
Model Analysis - 2016

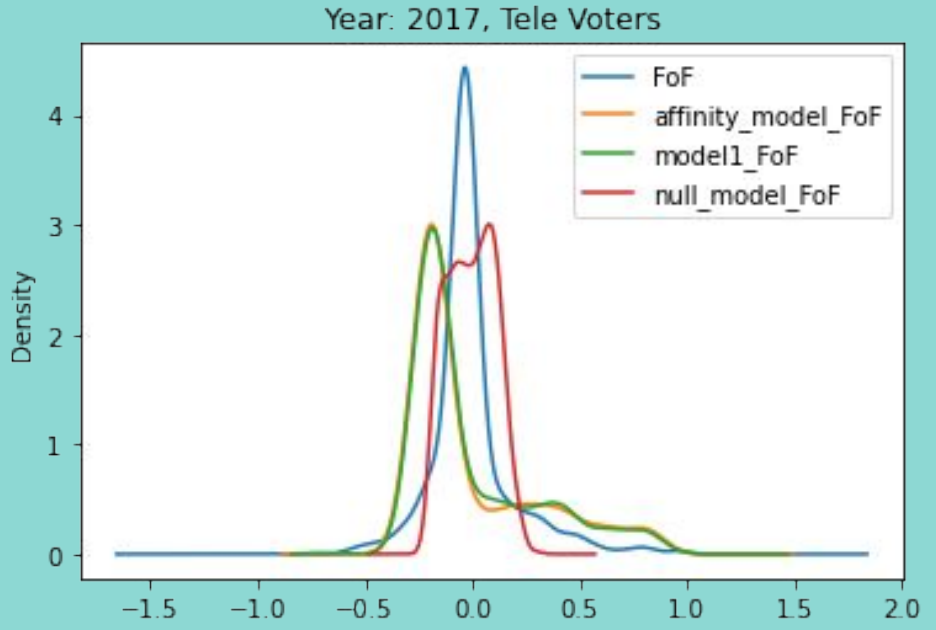
- Params causing minimum Kolmogorov-Smirnov selected
- Plotted and compared visually with the empirical FoF



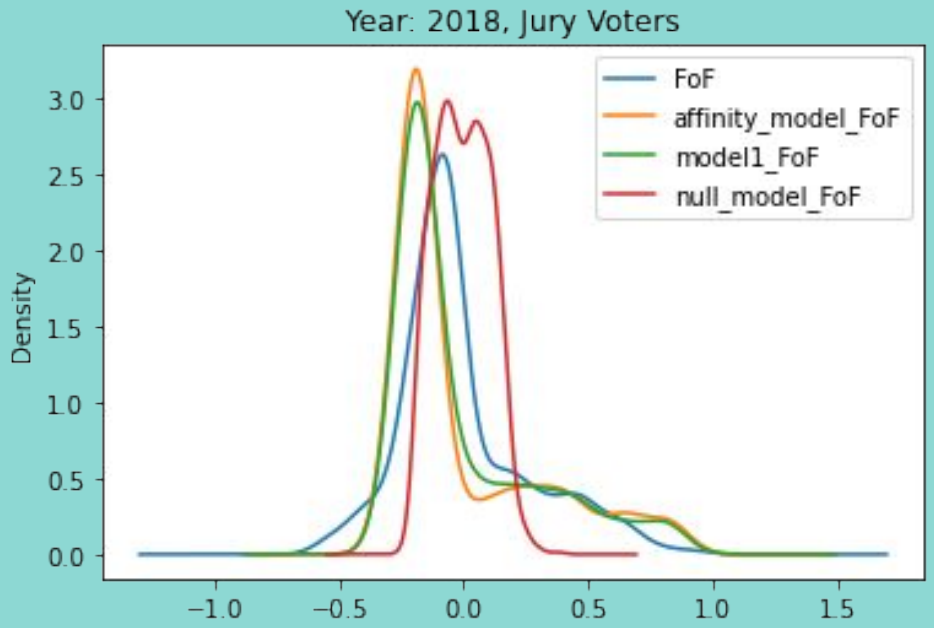


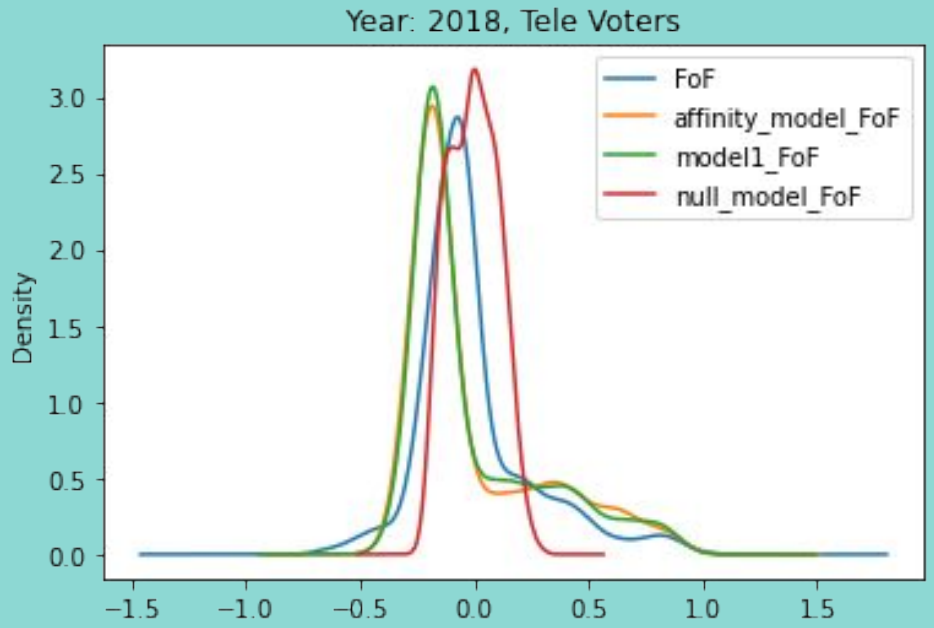
Model Analysis - 2017



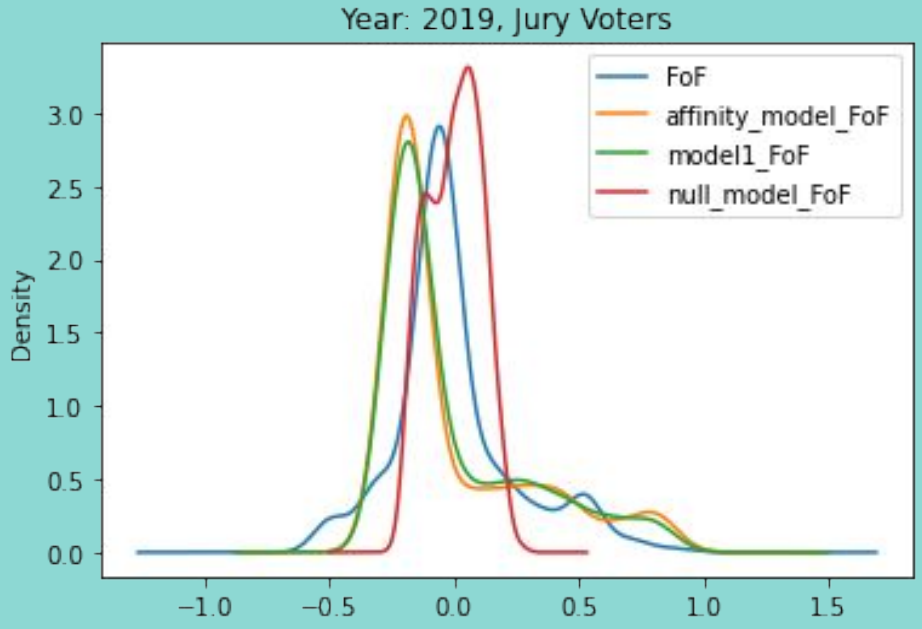


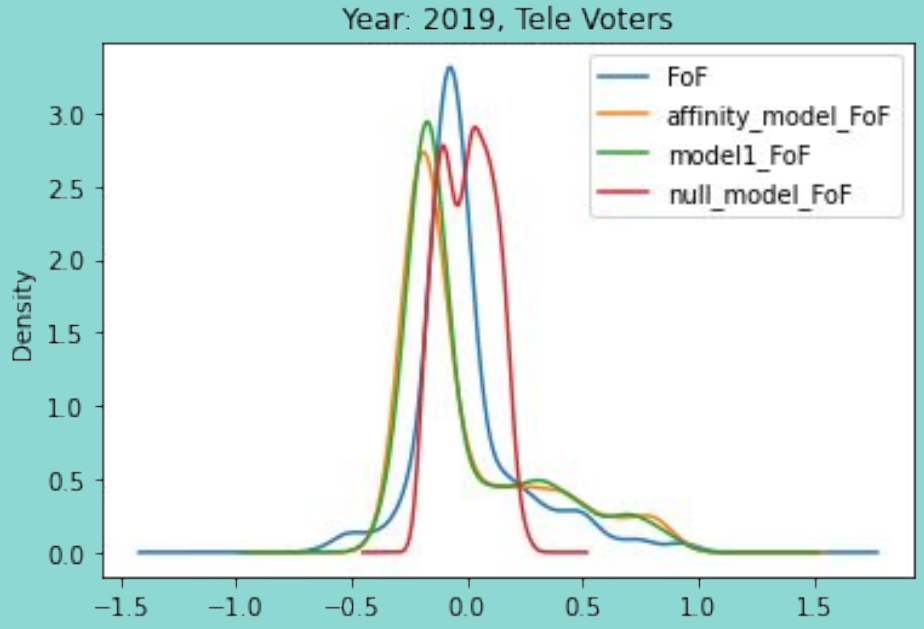
Model Analysis - 2018



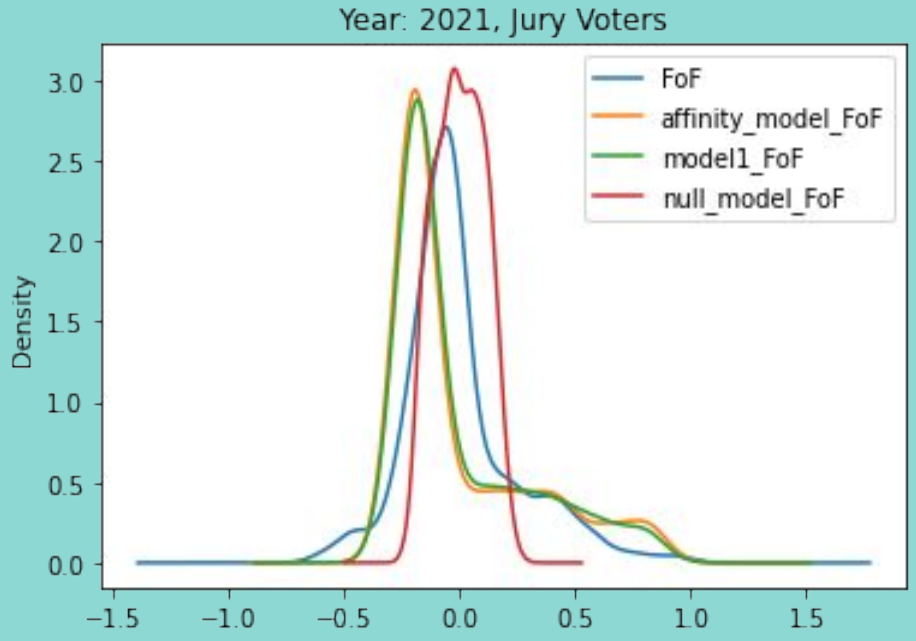


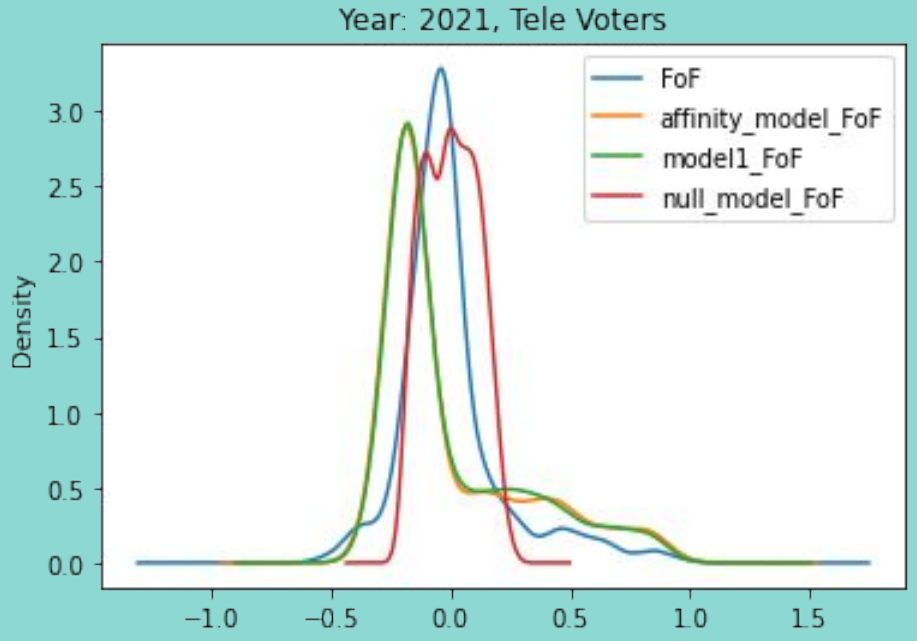
Model Analysis - 2019



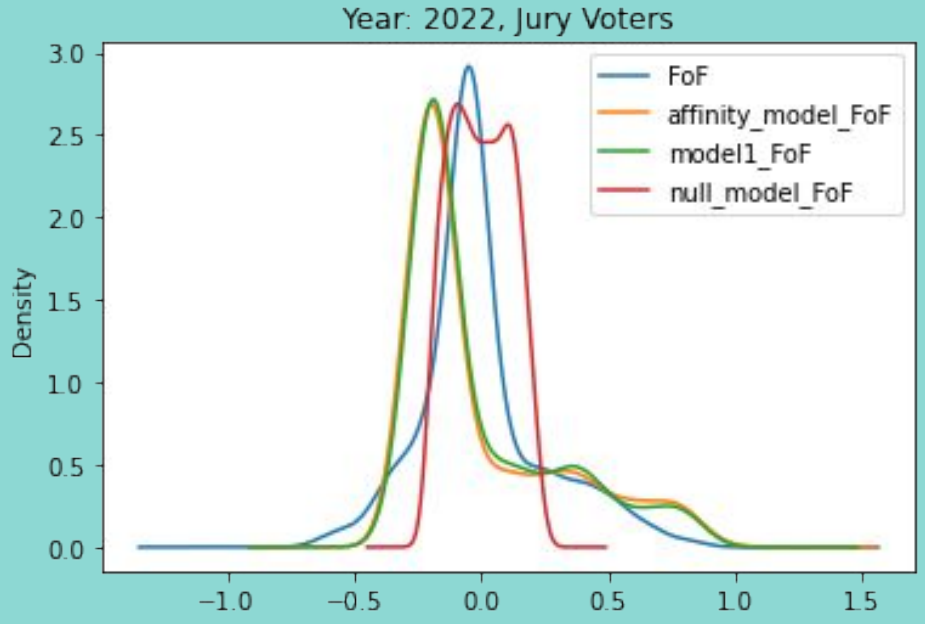


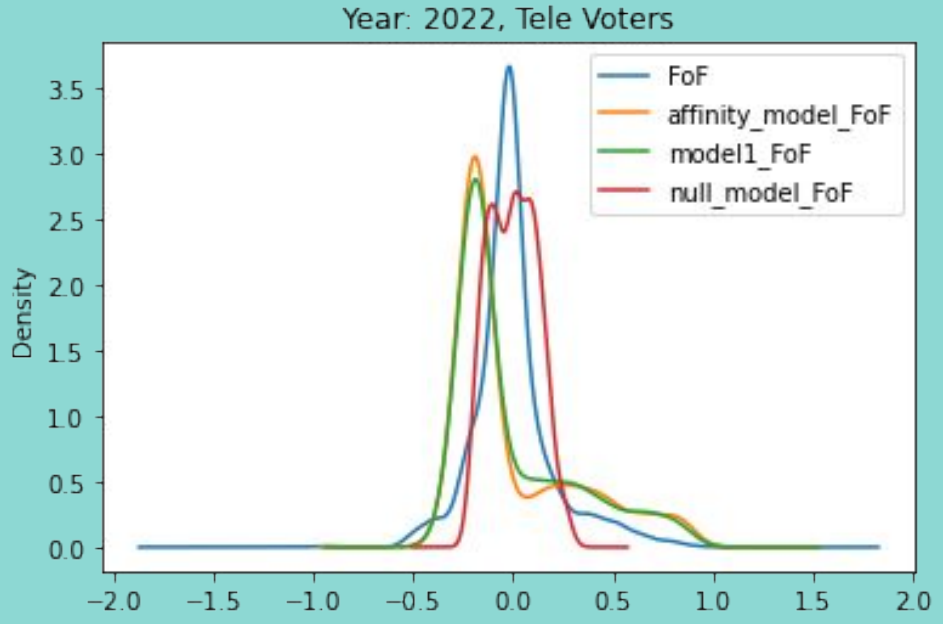
Model Analysis - 2021





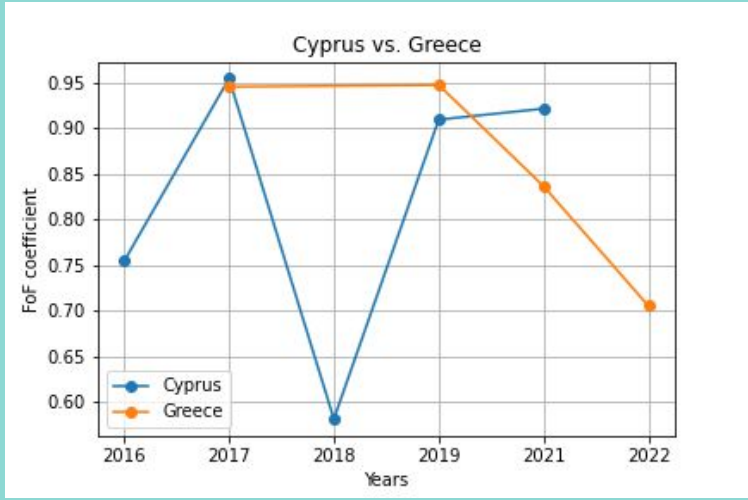
Model Analysis - 2022

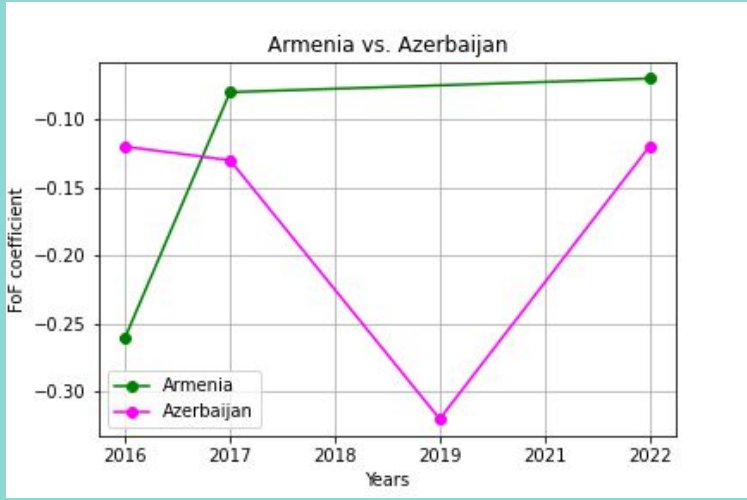


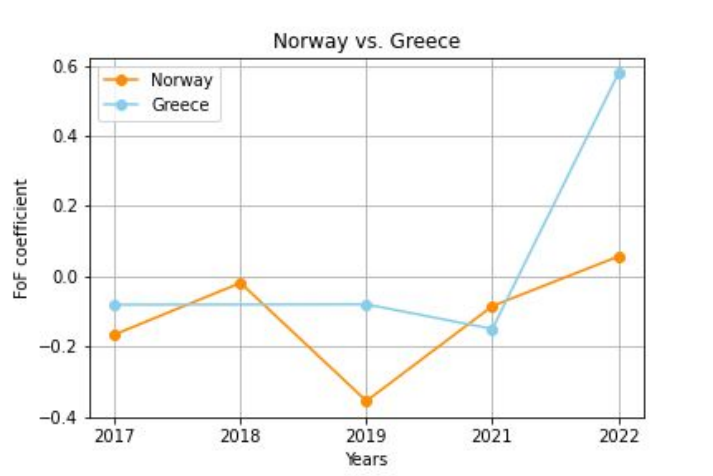


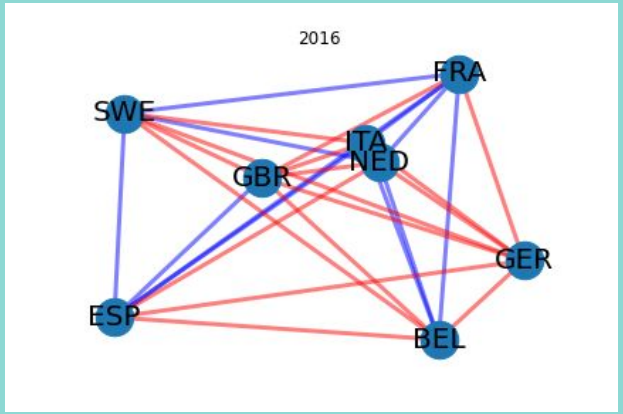
Model Analysis

- Computing FoF coefficient and analysing how well respective countries get along with each other
- Analysing EU-15 countries with the respective FoF coeffiecient
- (Note: EU-15 are EU member countries prior to 1 May 2004)

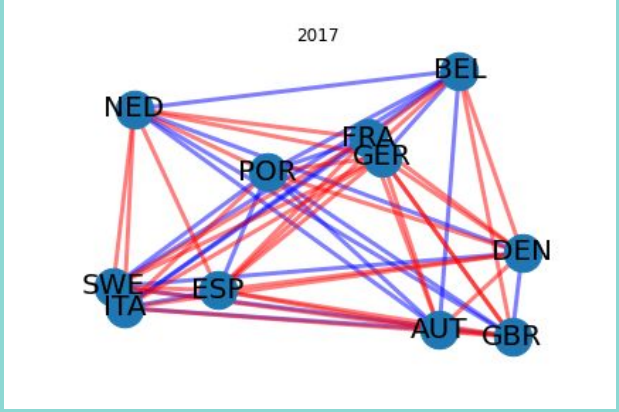

Cyprus vs. Greece
FoF coefficient
Years
Cyprus
Greece
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
2016
2017
2018
2019
2021
2022


Armenia vs. Azerbaijan
FoF coefficient
Years
Armenia
Azerbaijan
−0.10
−0.15
−0.20
−0.25
−0.30
2016
2017
2018
2019
2021
2022

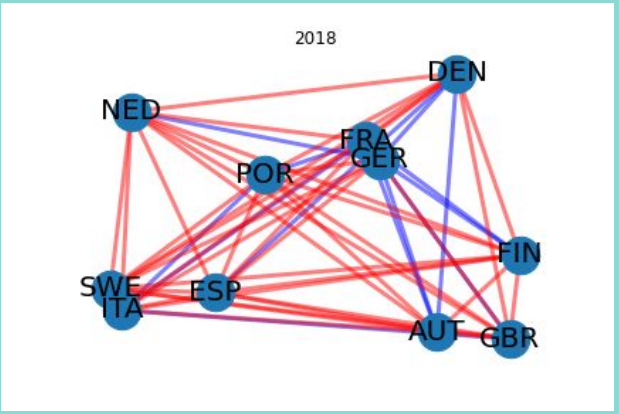

Norway vs. Greece
FoF coefficient
Years
Norway
Greece
0.6
0.4
0.2
0.0
−0.2
−0.4
2017
2018
2019
2021
2022



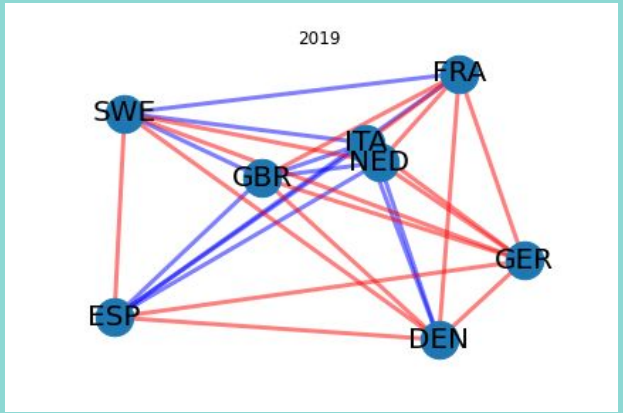
Brussels bombing (BEL), Böhmermann affair (GER), VW skandal (GER)



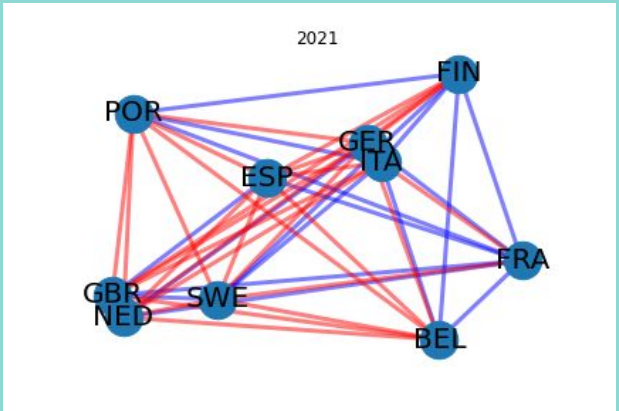
Brexit (GBR), Asylum-Policy (AUT)



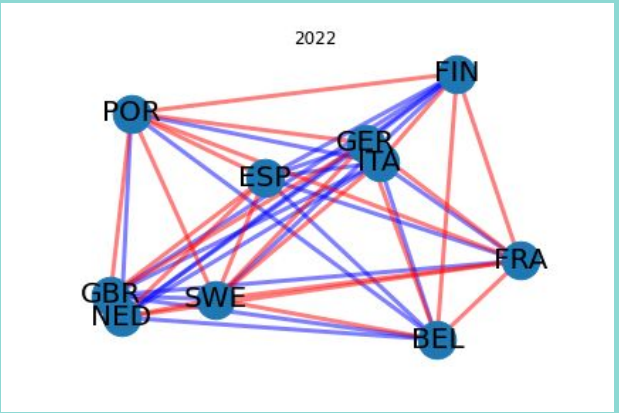
Independence of Catalonia (ESP), VW skandal (again) (GER)



FFF (SWE), fire in Notre-Dame (FRA)



Covid (everywhere)



War (UKR)

Conclusions

- The RQ cannot be answered conclusively
  - There are major fluctuations across years
  - We expected consistently lower values of alpha for Tele voters and higher values of alpha for Jury voters

Limitations

- The linear affinity model seems to be too simple
  - The voting is not random
- Only 6 years' data points were used
- More granular variations of Mu, Sigma and alpha should be applied in future work