Predictors of AfD party success

A Bayesian modeling approach
of the 2017 German federal elections

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Poster URL: https://data-se.netlify.com/download/afd-wahlerfolg.pdf

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What factors fuel the AfD election success?

The party "Alternative fuer Deutschland" (AfD) is a right-wing to far-right political party in Germany. Founded in 2013, it that has managed to gain seats in all states parliaments as well as in the federal parliament within a short period of time. The AfD became the third-largest party in Germany after the 2017 federal elections. Such striking success in quite unique in German post-war politics. Consequently, AfD's upsurge has sparked an intensive debate as to the why and hows of this success. Some explanations of AfD's electoral success have been brought forward by scholars but also some "folk theories" circulate. In this study, we test some folk theories highlighting potential causes of AfD electoral success such as unemployment, migration rate, age, and east/west cultural differences. Our data are based on the German federal election results (2017), alongside with structural data on each German electoral district (*n*=299). Our analysis is novel insofar as a more rigorous Bayesian multilevel modeling is applied.
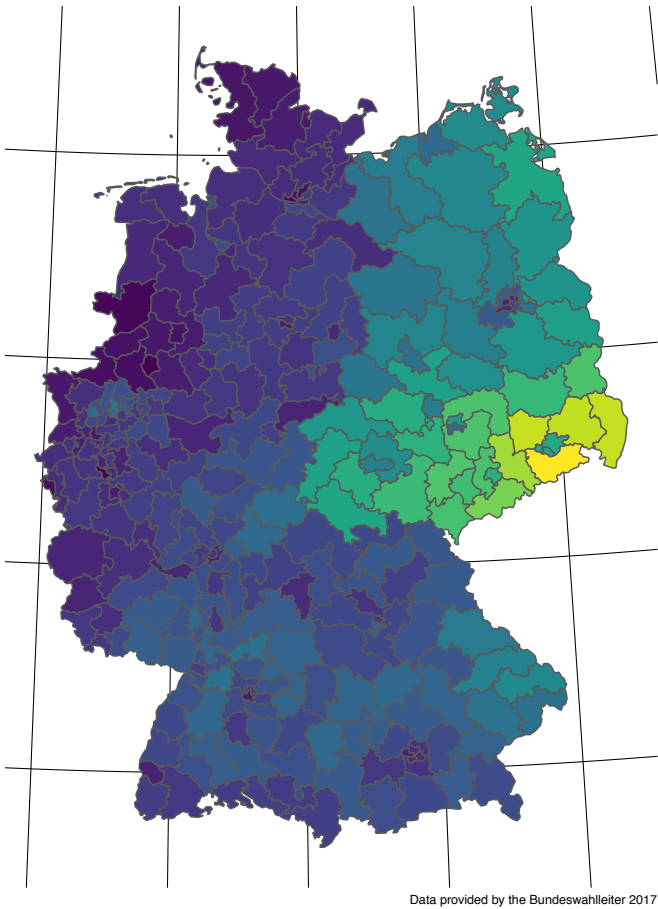

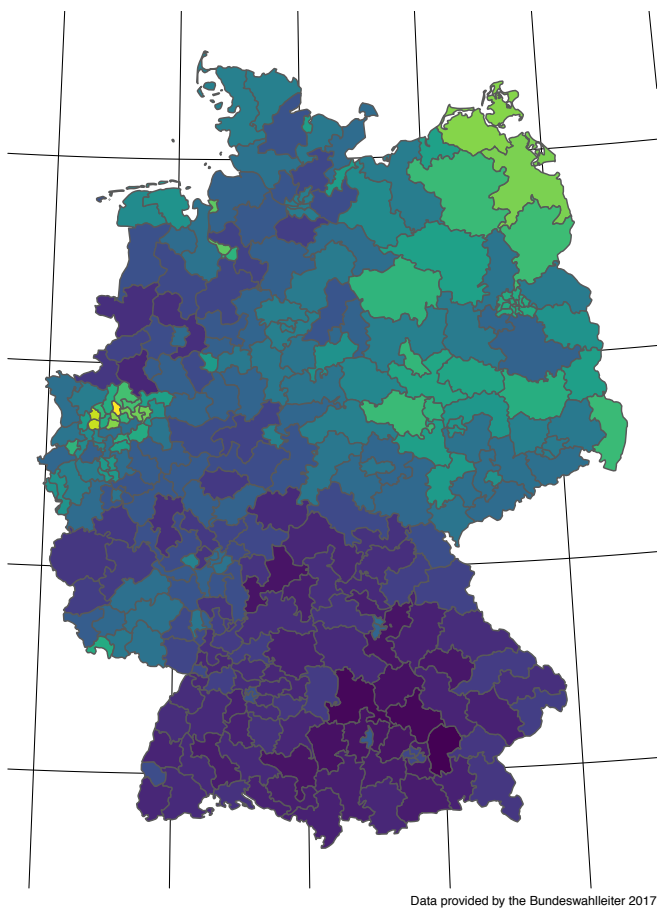*Figure 1*. AfD votes in the 2017 federal election.
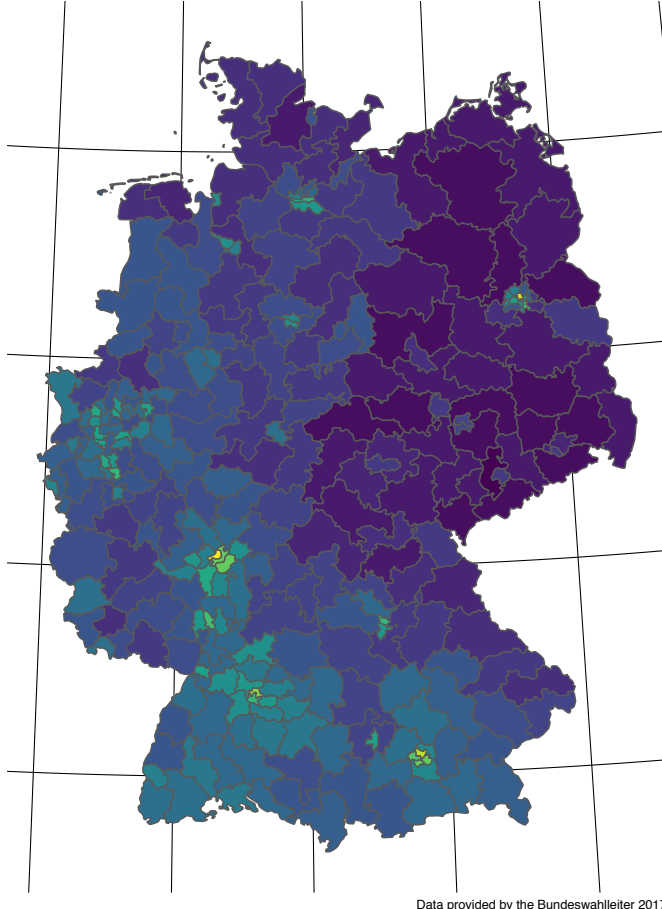

Figure 2. Unemployment rates in German districts.

Figure 3. Migration rates in German districts.

Methods: Bayesian linear regression

Sample. All data were obtained from the Bundeswahlleiter (2017). There were no missing values, and we confirm that the data were not transformed in any other way than reported here. z-Values were as model inputs.

Hypotheses. Three factors were hypothesized to exert an effect on the AfD votes: a) unemployment rate (positive), b) foreigner rate (positive), and c) East Germany (positive). All effects are assumed linear.

Analysis. Stan was used via the R packages rstan and rethinking (McElreath, 2017). For model estimation, Hamiltonian Markov Chain Monte Carlo (MCMC) with 2000 iterations, 2 chains, 1/2 burn-in time, was used. Information criteria (WAIC) served for model comparison. In an explorative matter, we included *federal state* as predictor and compared the model variations.
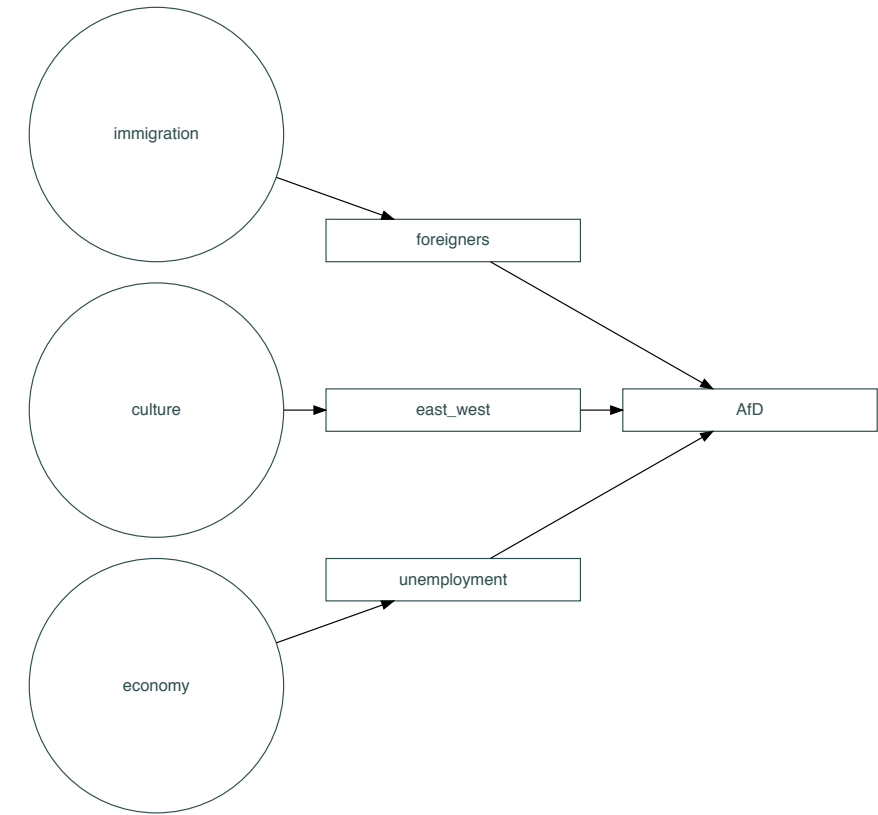

Figure 4. Research model.

$$\text{AfD}_i \sim \mathcal{N}(\mu_i, \sigma)$$
$$\mu_i = \beta 0_{[east]} + \beta 1 \cdot \text{foreign} + \beta 2 \cdot \text{unemp}$$
$$\beta 0_{[east]} \sim \mathcal{N}(0,1)$$
$$\beta 1 \sim \mathcal{N}(0,1)$$
$$\beta 2 \sim \mathcal{N}(0,1)$$
$$\sigma \sim \mathcal{N}(0,1)$$

Figure 5. Model specification of our research model. Prior distributions were assumed to be standard normal. Notes. beta0: East Germany, beta1: foreigner rate, beta2: unemployment rate. Unit of observation is one electoral district (*n*=299).

Results: Limited support for proposed model

Interestingly, neither immigration (foreigner) rate nor unemployment rate played an important role. *East Germany* proved to be a more impactful predictor. However, federal state came out as the strongest predictor of AfD voting success. In sum, the model state combined *state*, *foreigner* rate, and *unemployment* rate turned out to be best in class (cf. Table 1, model *m15_stan*). Figure 6 compares the (absolute) prediction errors between all models tested. The trace plot of the best model supported convergence of the model (not depicted).

Table 1
Model comparison

	model	predictors	WAIC	pWAIC	dWAIC	weight	SE	dSE
1	m15_stan	state+for+unemp (ML)	-1356.32	21.73	0.00	1.00	34.91	
2	m13_stan	state (ML)	-1298.50	19.17	57.82	0.00	33.63	15.03
3	m14_stan	east+for+unemp (ML)	-1136.45	6.53	219.87	0.00	30.24	33.64
4	m11c_stan	area (ML)	-951.15	111.74	405.16	0.00	31.27	37.11
5	m11c_stan	unemp	-894.09	4.02	462.23	0.00	37.03	39.86
6	m16_stan	null (intercept)	-885.56	3.35	470.76	0.00	38.15	40.53
7	m10_stan	for+unemp+east	-533.01	3.77	823.31	0.00	16.02	37.66
8	m11d_stan	east	-509.22	0.59	847.09	0.00	10.88	36.40
9	m9_stan	for+unemp+east[]	625.56	6.92	1981.88	0.00	33.87	38.82
10	m9a_stan	for+unemp	808.28	4.72	2164.60	0.00	34.09	39.30
11	m11a_stan	for	813.89	4.14	2170.21	0.00	35.22	39.86

Notes. ML: multi level. WAIC: smaller values are better. pWAIC: effective number of parameters. Weight: Relative favorability of model. SE: Standard error of WAIC. Standard error of the different between each WAIC and the smallest WAIC in the set.
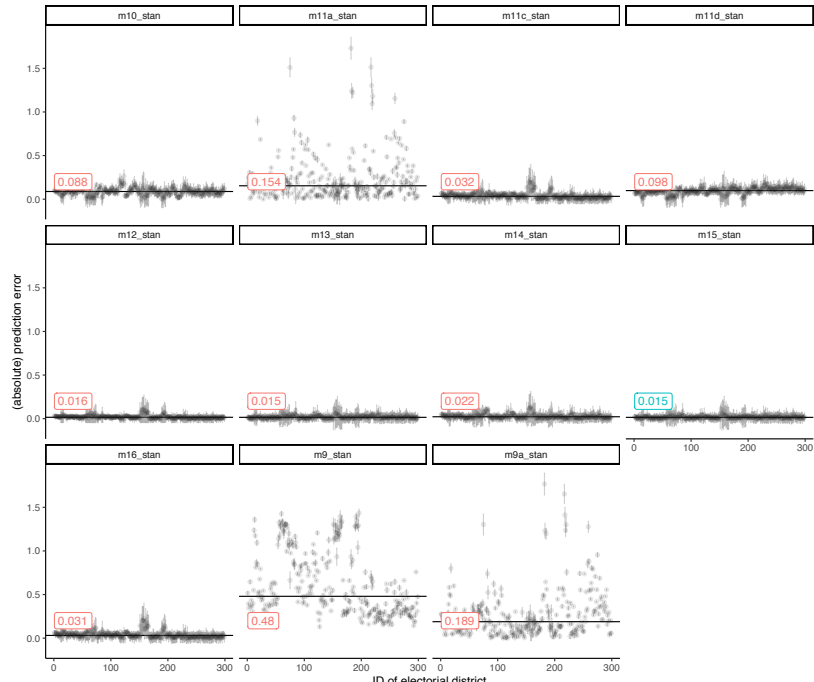

Figure 5. Prediction errors of all models.

Conclusion: Unknown role of State aspects

It can only be speculated as to why the state played a pivotal role in these models. A state can be seen as a bundle of shared cultural values, local socioeconomic factors, the impact of the aging society, or the influence of local politicians, to name a few. To be clear, the present model is simplistic. It remains unknown which (causally) relevant factors have been missed out. Sadly, the filed lacks strong theories that explain the pathways of voting behavior, particularly for the rise of (right-wing) populist parties. Given the importance of political liberty, and in the light of the experiences (and horrors) of populism in the 20th century Europe, it remains a duty to shed light on the why's and how's of societal and electoral will articulation.
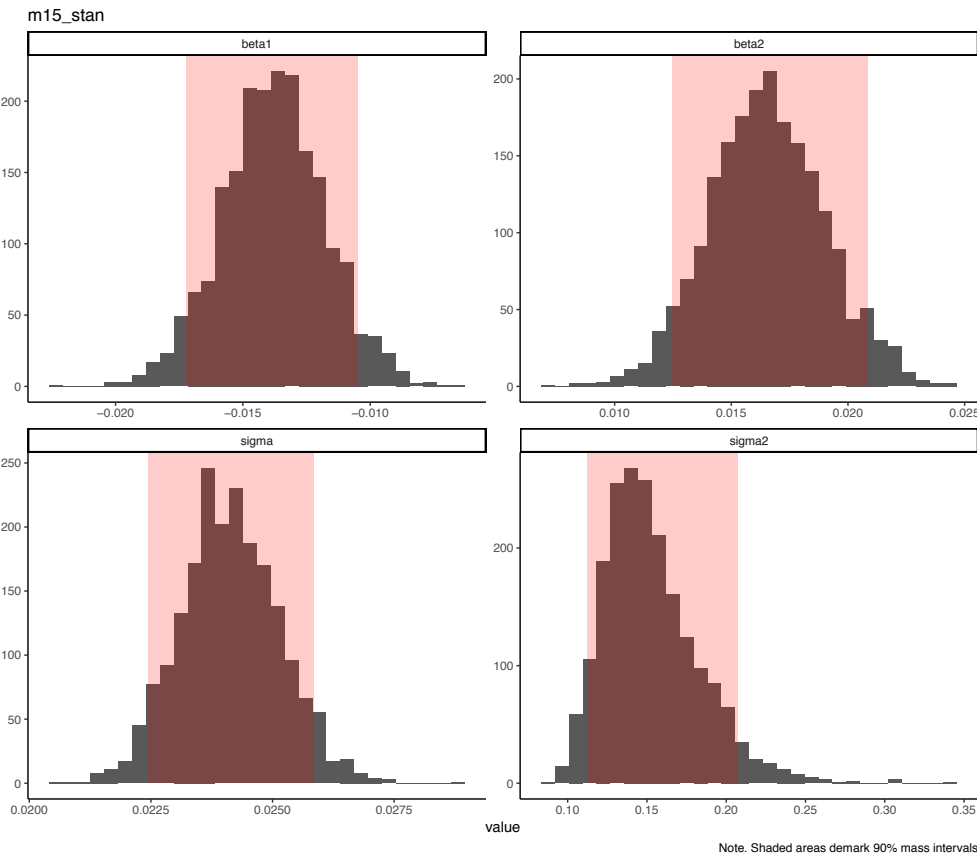

Figure 6. Mass intervals of model coefficients of the best model (model m15_stan)
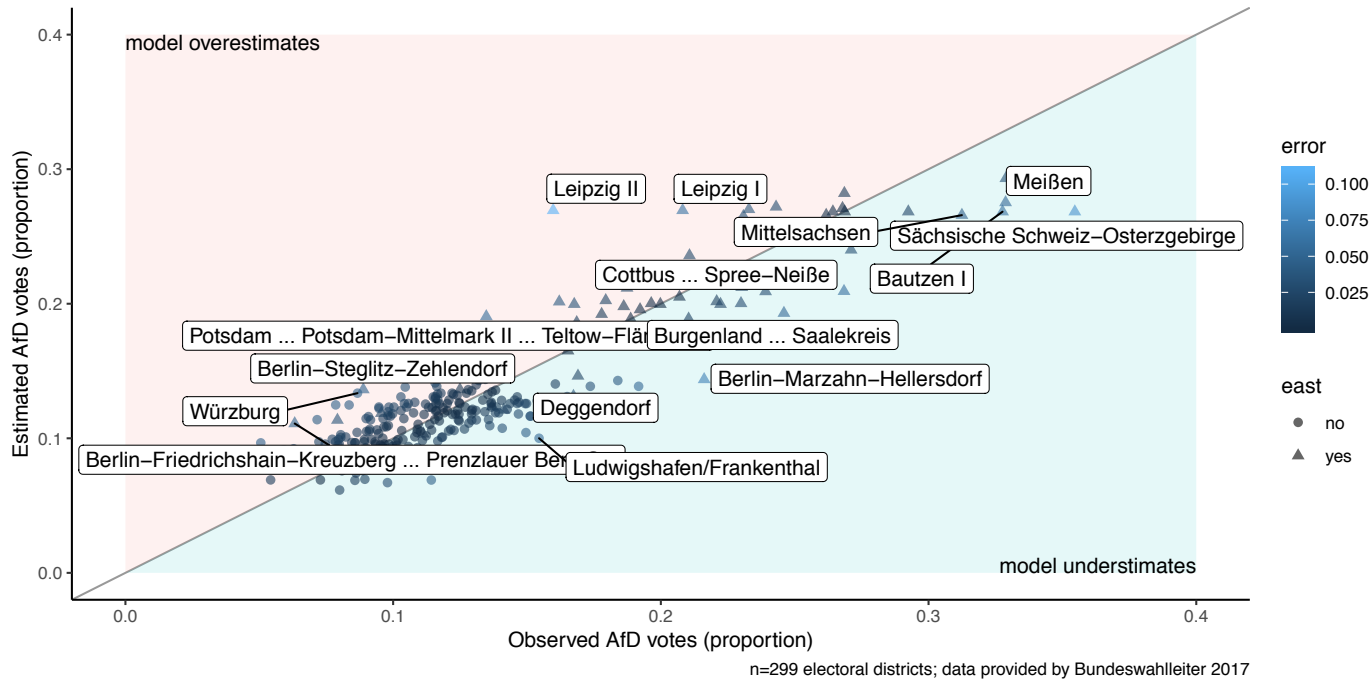

Figure 7. Comparison of observed and estimated AfD votes per district. The prediction errors highlight model weaknesses that warrant further scrutiny.

Literatur
McElreath, R. (2016). *Statistical rethinking*. New York City, NY: Academic Press.
Bundeswahlleiter. (2017-10-01). Strukturdaten für die Wahlkreise, Wahlergebnisse der Bundestagswahl 2017. Retrieved from https://www.bundeswahlleiter.de

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Project URL: https://github.com/sebastiansauer/polits_tweet_mining
Poster URL: https://data-se.netlify.com/download/populism-tweets.pdf
Report URL (German): https://sebastiansauer.github.io/psy_pol/blog/populismus-tweets/

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Can populisms of politicians be estimated by analyzing speech data from Twitter?

With the re-surge of (right-wing) populism amongst countries on a global scale, the question of causes, and a deeper understanding of pathways, demands preoccupation. This study proposes to estimate individual populism levels of politicians (and, in consequence, of parties) by speech analyses of Twitter messages (tweets). Scholars are struggling to define populisms due to its varieties, but narratives of our „pure people" and „threats from outside" prevail. In addition, low-complexity and anti-pluralistic solutions to complex societal problems continue to provide wide-spread currency (Berbuir, Lewandowsky, & Siri, 2015).

In the present work, populism is defined by referring to Poppers (pre-)theory of the open society, as antidote to the tribal society, or „horde" (Popper, 1972). Advocates of the tribal-type society advocate for strong hierarchical leaders, strict rules, demand acceptance (as opposed to discussion) of „truths", adopt narratives of „blood and soil", or „we against them", and cherish heroistic traits and behavior. In sum, populist tendencies may be characterized as complexity-reducing, even anti-rational, and intra-group cohesive patterns. According to Popper, tribal societies have a totalitarian core, going back to Plato as its spiritus rector.

Operationalization

Populism is operationalized by eight indicators in this study. Their median value give the total populism score per person.

Indicator
word shortness
ratio of negative/positive words
proportion of negative words
proportion of emotional words
negative emotion score
overall emotion score
proportion of CAPITAL letters
ratio of adjectives to adverbs

Data and data aggregation

- 400k ($4*10^5$) tweets from German politicians
- 32k tweets from Donals Trump
- Yielding approx. $6.3*10^6$ words
- 200 politicians (mainly) from the list *German Politicians* (Deutsche Welle)
- 7 political parties included: AfD, CDU, CSU, FDP, Grüne, Linke, SPD, Trump/GOP
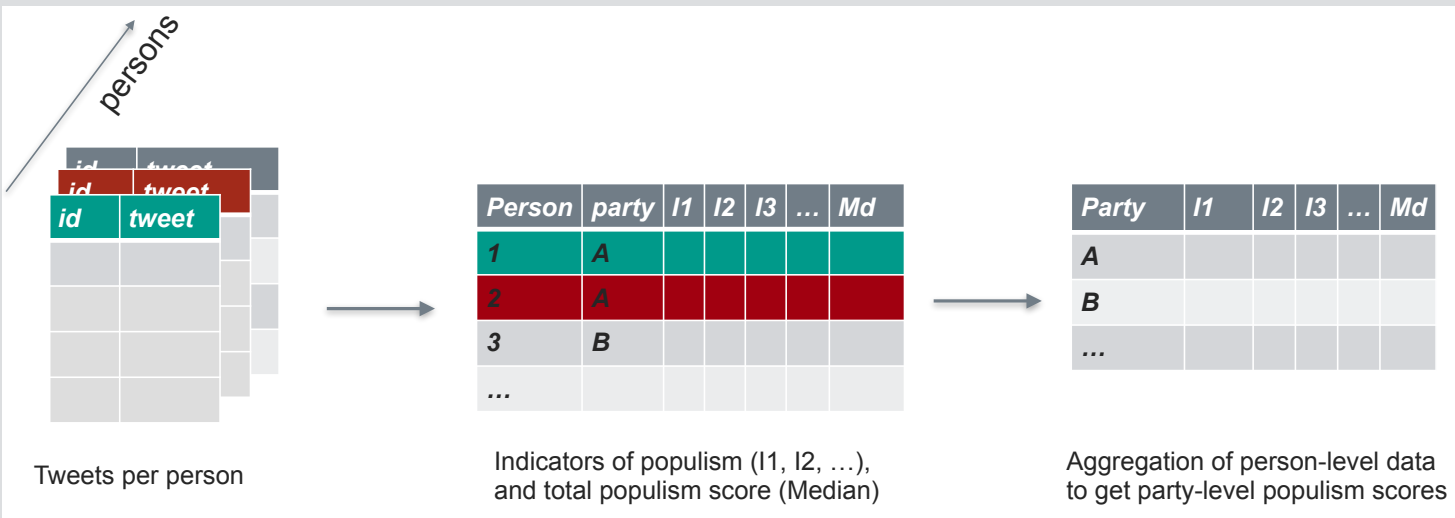- Data were collected in August 2017
- R code and data freely accessible

Figure 1. Eight Populism indicator scores (*z*-values) are computed from tweets data per person. Person-level data is further aggregated to party-level data. Overall score is computed as the median value.

Results: AfD shows highest populism score*

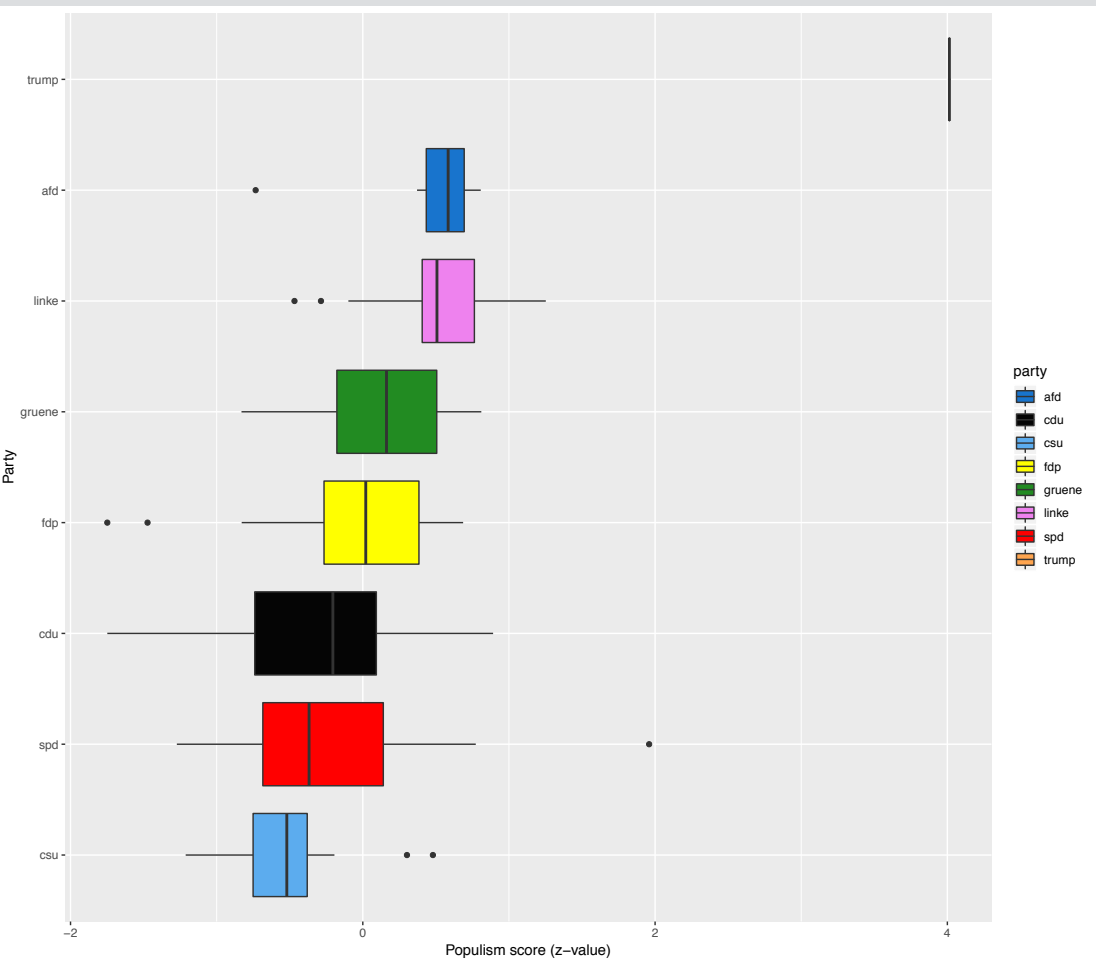*within German parties. However, Trump's score is by far the largest.

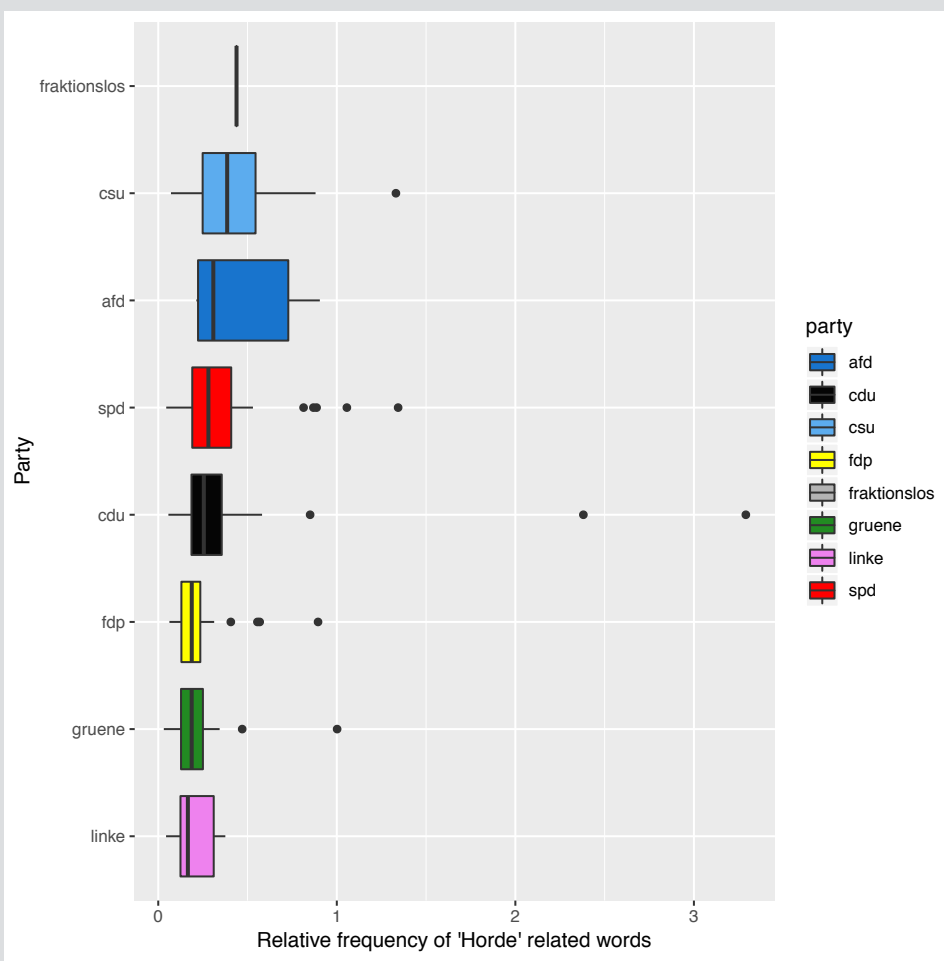*Figure 2.* German party scores are led by AfD and The Linke

Figure 3. The relative frequency of ‚horde' related words** is highest for AfD

Discussion

- Indicators were chosen with some degree of subjectivity
- More/different analyses warranted
- Statistical uncertainty not covered
- Was the sample representative for German politician chatter?
- Association with external criteria is still unknown
- Novel way to estimate populism that scales well

Figure 4. Populism indicator scores (*z*-values) for each party. Some parties show similar patterns such as CSU, CDU and SPD.
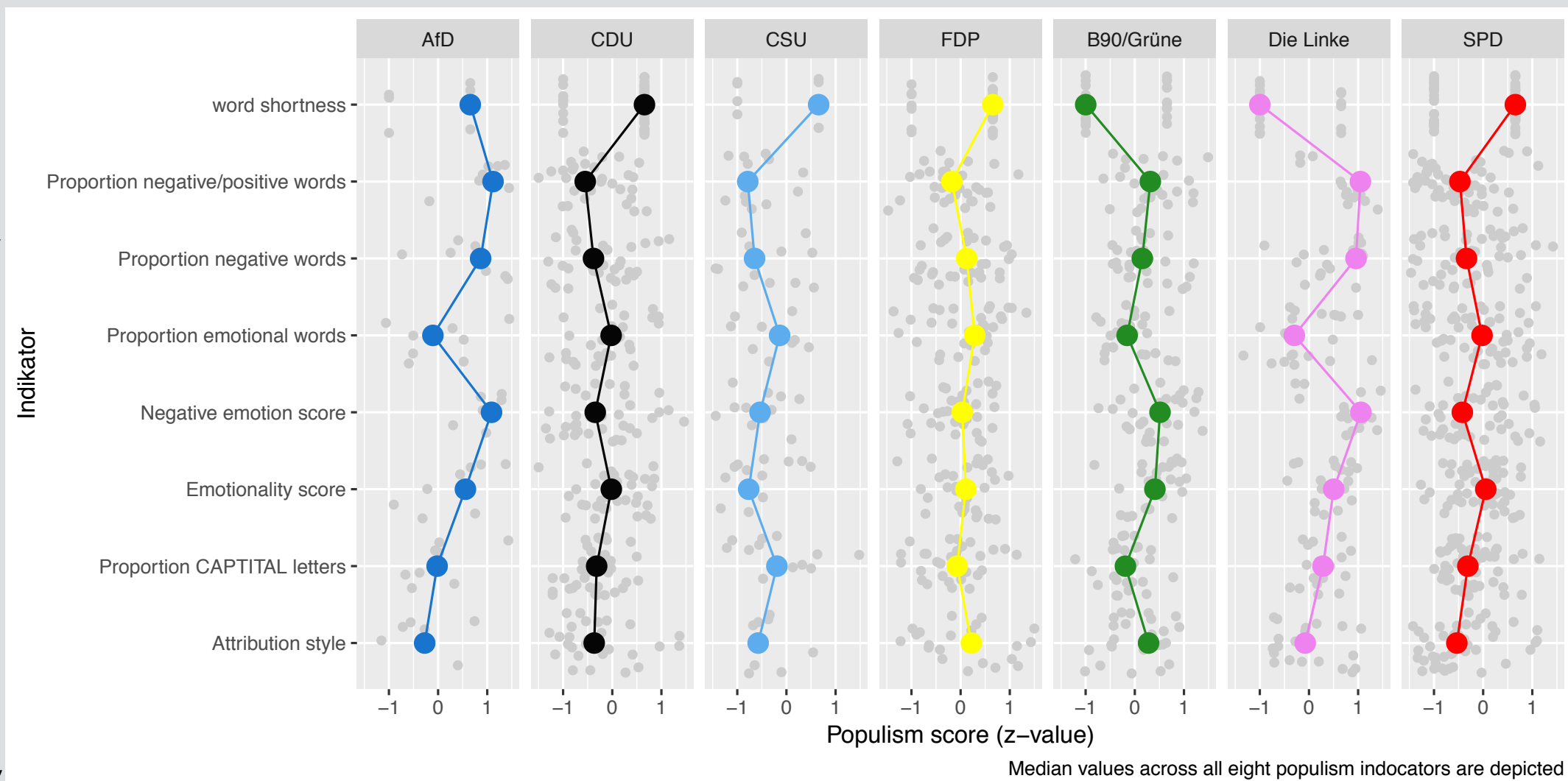
** Stamm, Bund, Volk, Heimat, Sieg, Boden, Blut …
https://osf.io/b6ge7/

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Popper, K. (1972). *Die Offene Gesellschaft und ihre Feinde*. Bern: Francke UTB.