Predictors of AfD party success

A Bayesian modeling approach
of the 2017 German federal elections

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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 is quite unique in German post-war politics. Consequently, AfD's upsurge has sparked an intensive debate as to the why's 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.
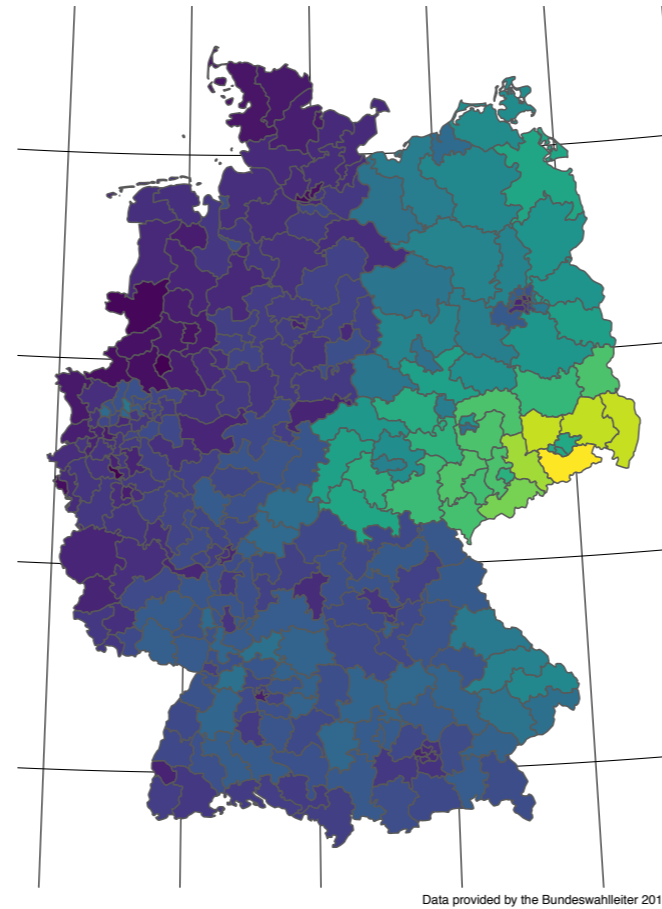

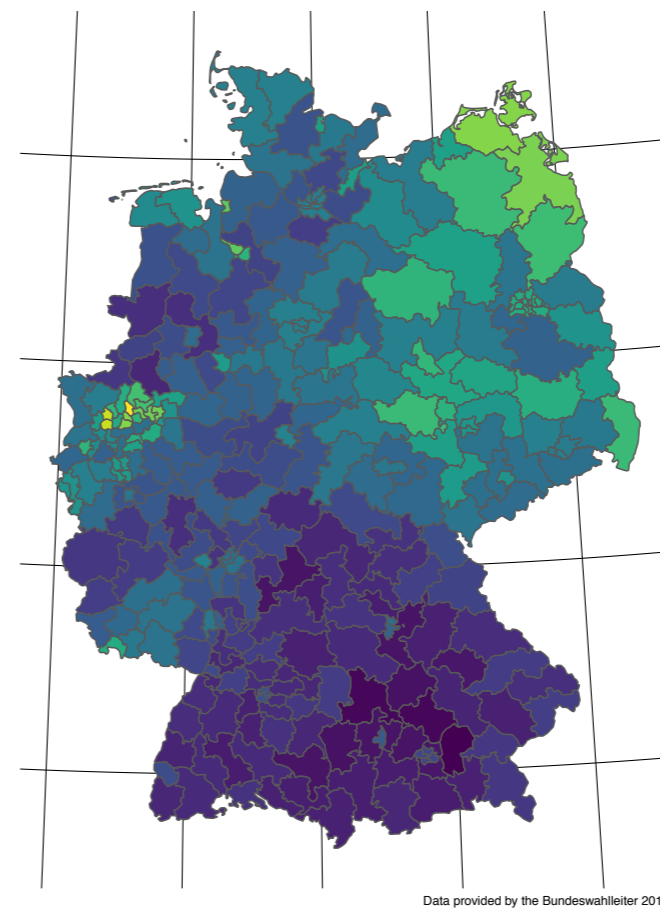*Figure 1.* AfD votes in the 2017 federal election.
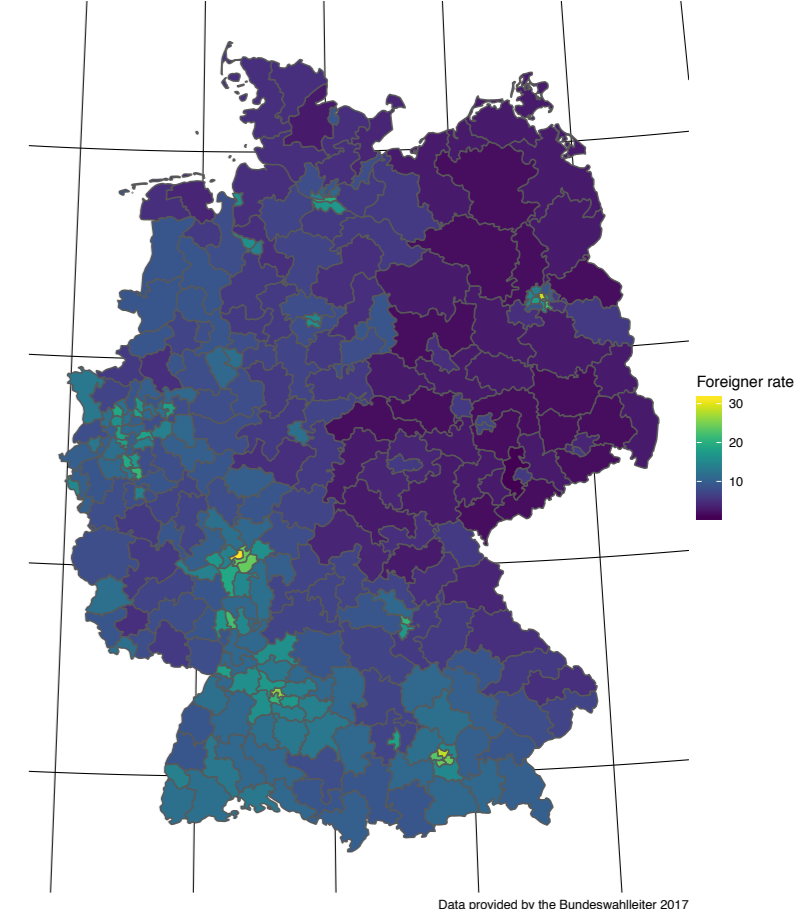

Figure 2. Unemployment rates in German districts.

Figure 3. Migration rates in German districts.

Methods: Bayesian multilevel 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 used 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.

Design. The study is based on a cross-sectional, observational design thereby precluding strong causal conclusions. Predictors were selected according to widely circulating folk theories of AfD success.

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.
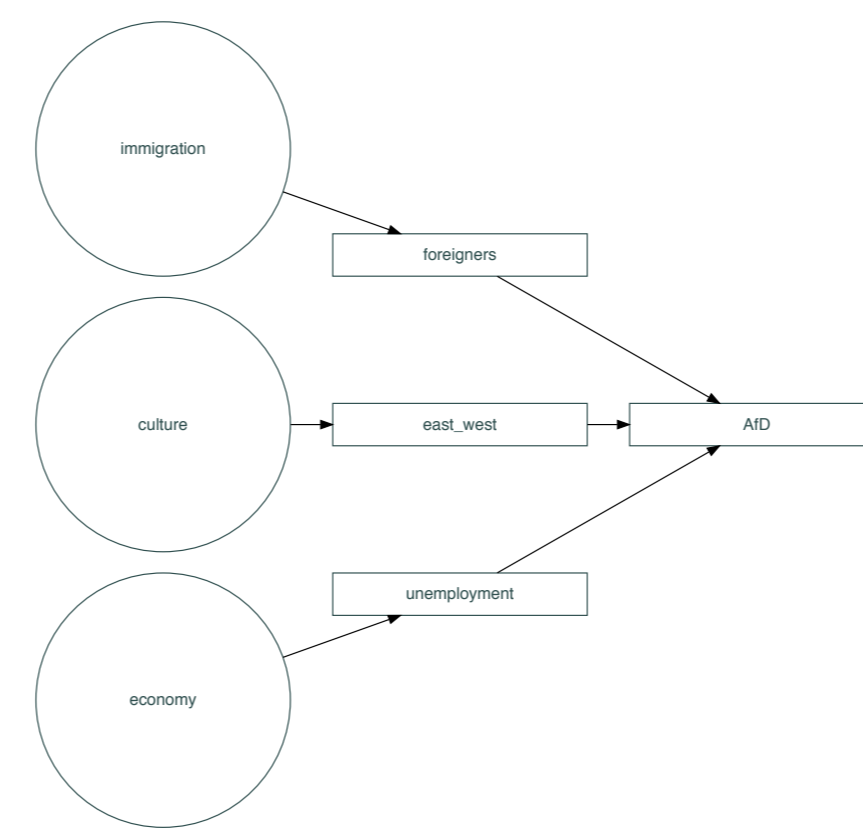

Figure 4. Research model.

$$\text{AfD}_i \sim \mathcal{N}(\mu_i, \sigma)$$
$$\mu_i = \beta0_{[east]} + \beta1 \cdot \text{foreign} + \beta2 \cdot \text{unemp}$$
$$\beta0_{[east]} \sim \mathcal{N}(0,1)$$
$$\beta1 \sim \mathcal{N}(0,1)$$
$$\beta2 \sim \mathcal{N}(0,1)$$
$$\sigma \sim \mathcal{N}(0,1)$$

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 multi level 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). Figure 7 shows the mass intervals for the main coefficients of the best model. A comparison between estimated and observed AfD votes per electoral district is shown in Figure 8.

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	m12_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.
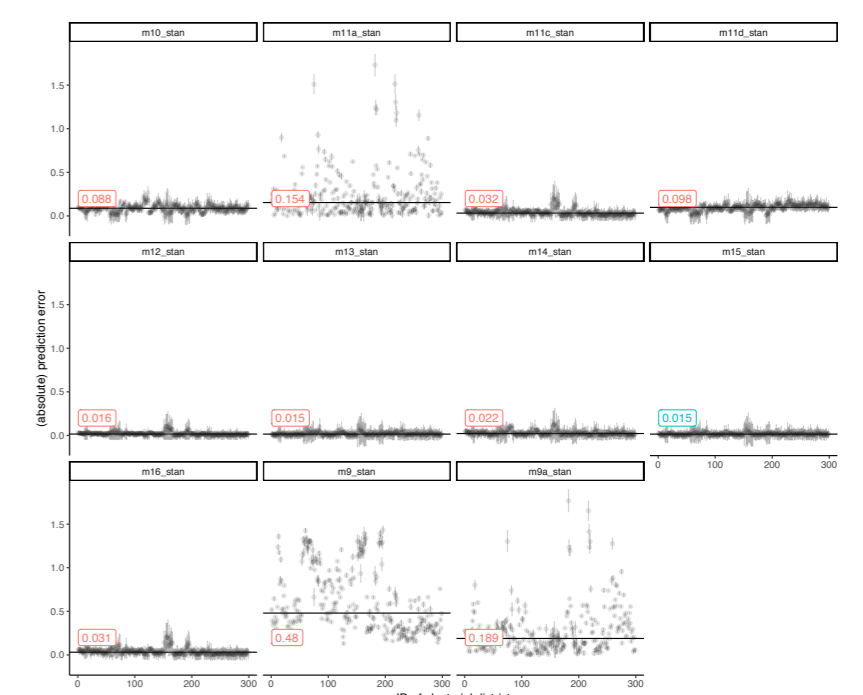

Figure 6. Prediction errors of all models.

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 field lacks strong theories that explain the pathways of voting behavior, particularly 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 whys and hows of of societal and electoral will articulation.
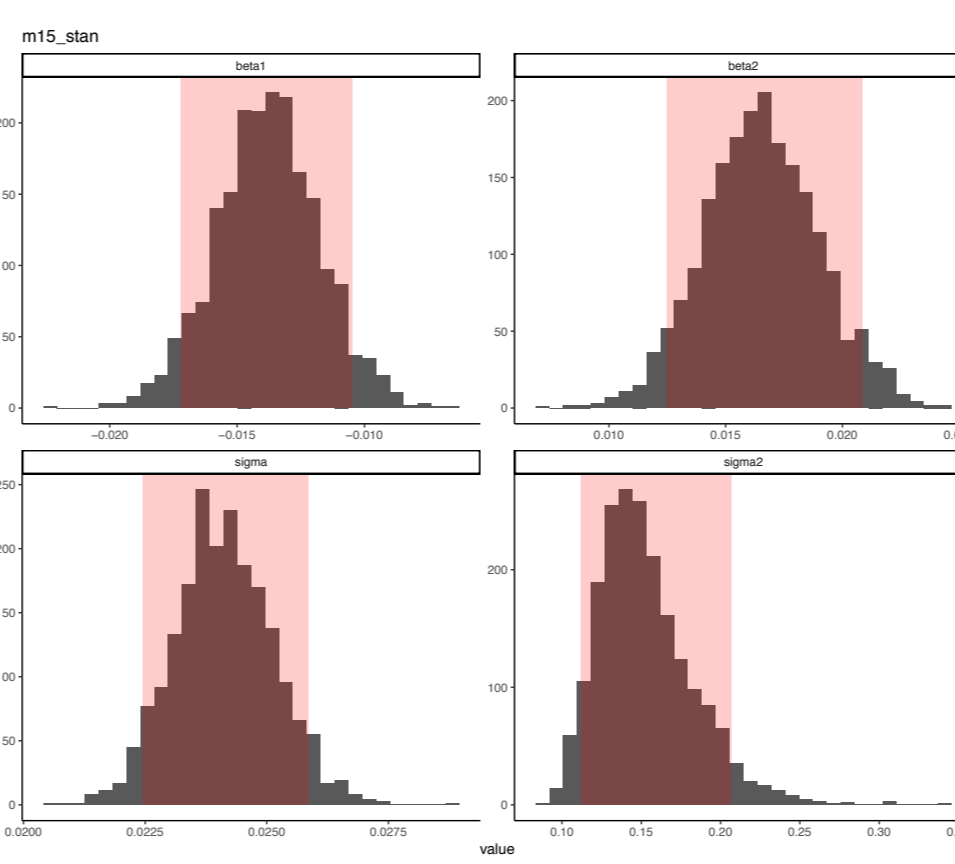

Figure 7. Mass intervals of model coefficients of the best model (model m15_stan).
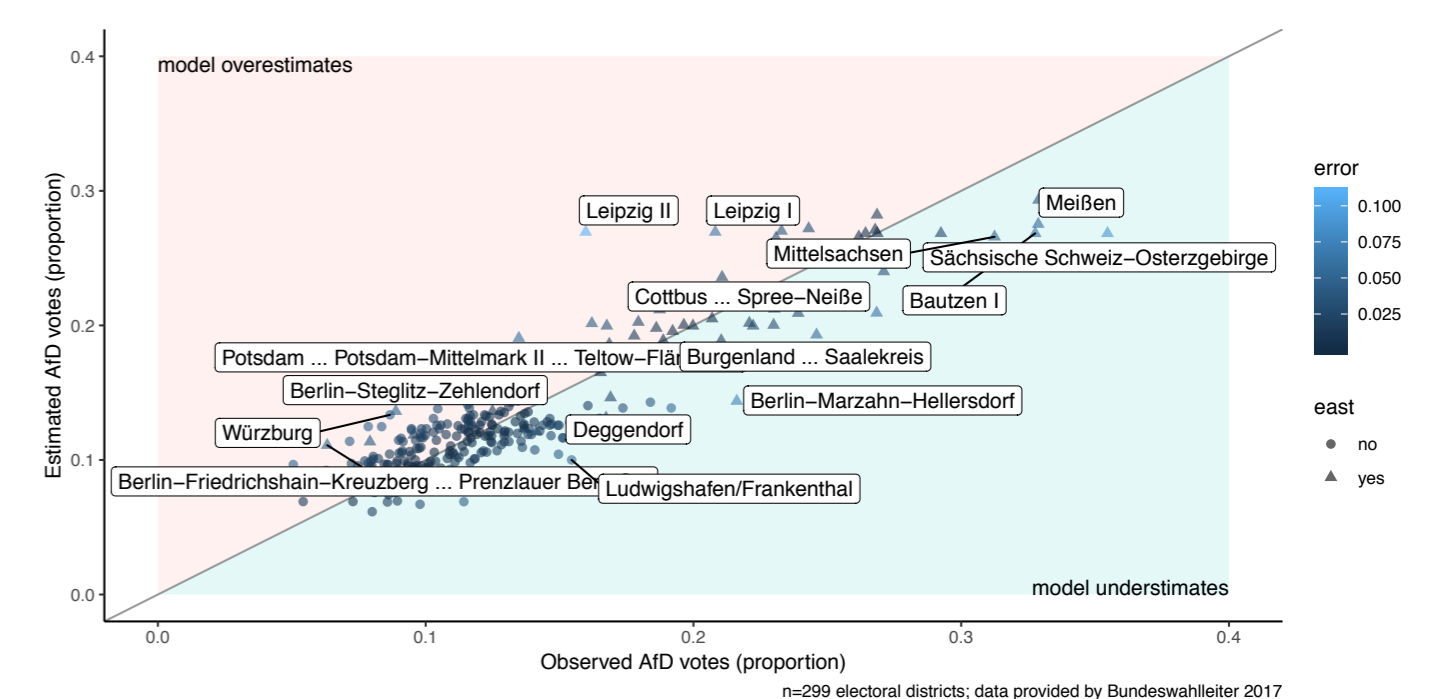

Figure 8. Comparison of observed and estimated AfD votes per district. The prediction errors highlight model weaknesses that warrant further scrutiny.

Literatur
McElreath, R. (2016). *Statistical rethinking*. New York City, NY: Academic Press.
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