

## Esoteric Beliefs and Opposition to Corona Restrictions

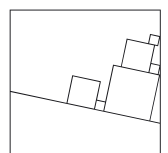
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# Esoteric Beliefs and Opposition to Corona Restrictions

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June 3, 2022

## Abstract

Disagreement over governmental measures against the spread of the Corona virus has led to increased societal division and polarization in many countries worldwide. Scholars typically locate the sources of resistance against these measures on the right of the political spectrum. This article argues that this explanation is too simple. Using fine-grained spatial data for Germany, it tests whether opposition to Corona restrictions (proxied with electoral support for a new party against governmental Corona measures) is systematically linked to esoteric and anthroposophical beliefs, which are traditionally found on the political left. Using new data on the distribution of natural healers, homeopathic doctors and Steiner schools, the article presents spatial analyses at the level of electoral districts and municipalities. The latter makes it possible to create matched samples for improved causal inference. Results confirm that both the presence of homeopathic doctors and Steiner schools are related to significantly higher opposition against Corona measures. This shows that resistance to governmental measures against the Corona pandemic originates from different societal groups, and will remain a major challenge for governments to address.

To limit the spread of the Coronavirus, governments worldwide have imposed sometimes drastic measures on citizens. Across many countries, restrictions of basic rights and freedoms were put in place, and continue to impact the lives of many. Not surprisingly, these measures are being heavily contested, and the varying levels of acceptance of Corona restrictions across different societal groups have become an important area of research. What characteristics determine whether people oppose face mask mandates or Covid-19 vaccinations, or deny the severity of the disease altogether? According to recent results, this resistance can clearly and overwhelmingly be located on the political

right. For example, research has shown that adherence to social distancing rules in Italy was significantly lower in provinces with higher support for right-wing parties (Barbieri and Bonini, 2021). This mirrors findings that support for Covid conspiracy theories is usually associated with right-wing authoritarianism (Hartman et al., 2021). A survey conducted by the Pew Research Center also confirms that opposition to Corona restrictions in some of the most advanced economies worldwide can primarily be found on the ideological right (Connaughton, 2021).

Still, this narrative is too simple. Corona restrictions are being contested by people from different backgrounds, many of which cannot be located on the political right. In several European countries, observers have claimed that rejection of Covid restrictions is related to esoteric beliefs and support of alternative healing methods, adherents of which are traditionally more likely to be found on the political left. Some research indeed points in this direction. For example, spirituality emerged as one consistent predictor of Covid-related conspiratorial beliefs (Gligorić et al., 2021). Other work suggests that public demonstrations against Corona measures were indeed attended by disproportionate numbers of people with esoteric and anthroposophical backgrounds (Frei and Nachtwey, 2022). Yet, it remains unclear whether this result holds more generally beyond the narrow cases studied in these works.

This paper shows that certain esoteric beliefs can systematically be linked to opposition to Corona restrictions. It uses evidence from Germany, where certain esoteric forms such as homeopathy and anthroposophy are deeply engrained in society and even institutionalized to a large extent. For example, homeopathic treatments are covered by many German private and public health insurances, and Steiner schools—while run by non-state organizations—are licensed as part of Germany’s education system. In addition, Germany features a great number of natural healers practicing alternative medicine. Common to these belief systems is that they rely on “powers” of different kinds, as for example natural “energies,” which do not hold up to systematic empirical observation

and lack support according to commonly accepted standards of scientific evidence.

How can we measure opposition to Corona restrictions systematically, with fine-grained spatial resolution? One way to do so would be via surveys. However, large surveys that are representative at the level of small administrative units are extremely expensive, and do not exist for Germany. Another way would be to use data on protest against Corona measures, as for example Wood et al. (2022). However, while some efforts are underway, a fine-grained and publicly available dataset still does not exist for Germany. This is why the analysis below makes use of election results. Germany held a major election in September 2021, in the midst of the pandemic. This election also gave rise to some new parties. One of them, the *Basisdemokratische Partei Deutschland* (in short, *dieBasis* [The Base]) grew out of Germany's main anti-Corona protest movement, and received considerable support. Due to the fact that it ran entirely on its critical stance towards governmental Corona measures (Schmitz-Vardar, 2021), it provides a consistent and accurate way to map opposition against Corona measures across Germany using voting results. Using high resolution geographic data, the analysis below tests whether electoral support for this party is systematically related to spatial indicators for esoteric beliefs.

## Research Design and Data

Regression analysis with spatial data is used to test the relationship between the presence of esoteric beliefs and opposition to Corona measures, the latter measured as support for *dieBasis* in the German parliamentary election in September 2021. The analysis uses two different levels of resolution: (i) electoral districts and (ii) municipalities.

## District Level

Data on election results at the electoral district level ( $N = 299$ ) was obtained from the German electoral commission (Bundeswahlleiter [German Federal Electoral Commission], 2021a). In Germany’s electoral system, voters have two votes, one for a constituency-level candidate, and one for a party list. To rule out candidate effects, I use the second vote for all election results in the analysis below. *dieBasis* received 1.4% of the (second) votes at the national level, with district-level results ranging from 0.6% to 3.5%. While this is not much compared to the established parties, it was not a bad result for the first national election the party participated in, making it the third-largest party among those below the 5% electoral threshold.

To gauge the prevalence of esoteric beliefs, I use data on the location of natural healers, homeopathic doctors and Steiner (“Waldorf”) schools. Natural healers and homeopathic doctors offer treatments in alternative medicine, relying on methods that have no scientific basis and are not proven to be effective in medical studies. Since medical services are overwhelmingly rendered to patients in person and not remotely, the location of a healer or a doctor is assumed to indicate that a significant population of patients exists in close proximity. For the indicator based on Steiner schools, more elaboration is required. In the German federal system, public education is one of the responsibilities of the state governments, which also decide about the location of public schools. Steiner schools, in contrast, are schools outside the governmental system. While receiving most of their funding from the state once they have been certified, they are founded in a bottom-up process based on the initiative of local associations. Hence, the presence of a local Waldorf school is indicative of a significant number of people supporting Steiner’s anthroposophical ideology.

The data for the analysis below was generated from publicly available information. The main German association of natural healers, the “Bund Deutscher Heilpraktiker”,

maintains a public directory of healers in Germany with 7751 entries.<sup>1</sup> This directory was converted to tabular format and only the street addresses were retained. A similar approach was used to obtain data on the distribution of homeopathic doctors across Germany. Doctors are registered with Germany’s professional organization for homeopathic doctors, the “Deutscher Zentralverein homöopathischer Ärzte” (DZVhÄ). The public directory contains 1790 entries with complete addresses of doctors.<sup>2</sup> Finally, the analysis uses data from Germany’s association of free Waldorf schools (“Bund Freier Waldorfschulen”, BFW), which publishes a freely accessible list of schools in Germany.<sup>3</sup> From this list, only the schools were extracted, and other facilities such as teacher training or convention centers were excluded. The addresses of healers, doctors and schools were geo-referenced using the Google Maps API to yield the geographic coordinates (longitude/latitude), such that they could be joined with a GIS dataset on district boundaries according to their location. This way, we obtain a count of healers, doctors and schools per district. Figure 1 maps these counts relative to the district population.

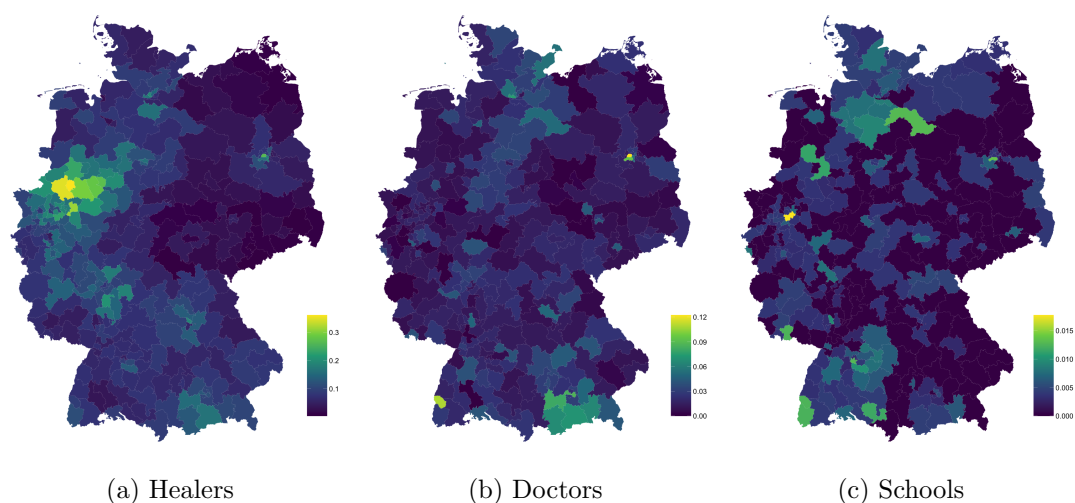


Figure 1: Rate of natural healers, homeopathic doctors and Steiner schools across Germany, per 1,000 population.

<sup>1</sup><https://www.bdh-online.de/patienten/therapeutensuche/>

<sup>2</sup><https://www.homoeopathie-online.info/arztsuche/>

<sup>3</sup><https://www.waldorfschule.de/schulen/schulsuche/schulverzeichnisse>

Healers are distributed unevenly across Germany. While the average number of healers per district is about 26, some districts have more than 100. If measured relative to the population, most of the districts with a high per capita rate of healers are located in the state of North-Rhine Westphalia (see map in Figure 1, left panel). Districts also exhibit great variation in the numbers of homeopathic doctors. Several have none, while others have more than 30 doctors. Relative to population, cities in the south such as Freiburg and Munich have the highest rates of homeopathic doctors, but also other major urban centers such as Berlin or Hamburg. Figure 1 (middle panel) displays the varying density of doctors across the country, showing the large concentration in the south. For Steiner schools, the city of Stuttgart appears close to the top of the list, since this is where the world’s first Steiner school was founded in 1919. Still, other districts also host several schools, such as Freiburg in the South-West or Berlin. The map in Figure 1 (right panel) shows the distribution across Germany.

## **Municipality Level**

For the analysis below, another dataset at a finer resolution (municipalities) was created. Municipality borders were obtained from the German Federal Agency for Cartography and Geodesy (2022). Election results were obtained from the from German electoral commission (2021*a*) at the level of municipal electoral districts ( $N = 94,668$ ) and aggregated to the level of municipalities. In many cases, several municipalities jointly count their mail-in ballots; these municipalities were combined and treated as a single one to properly attribute postal votes (which were influential in the 2021 election, due to the pandemic situation). After this aggregation, the final municipality dataset has 6,186 entries. Figure 2 shows the distribution of healers, doctors and schools at the municipality level.

The three maps in Figure 2 show that unsurprisingly, healers are much more widespread in Germany than doctors and schools. However, the maps also indicate differences be-



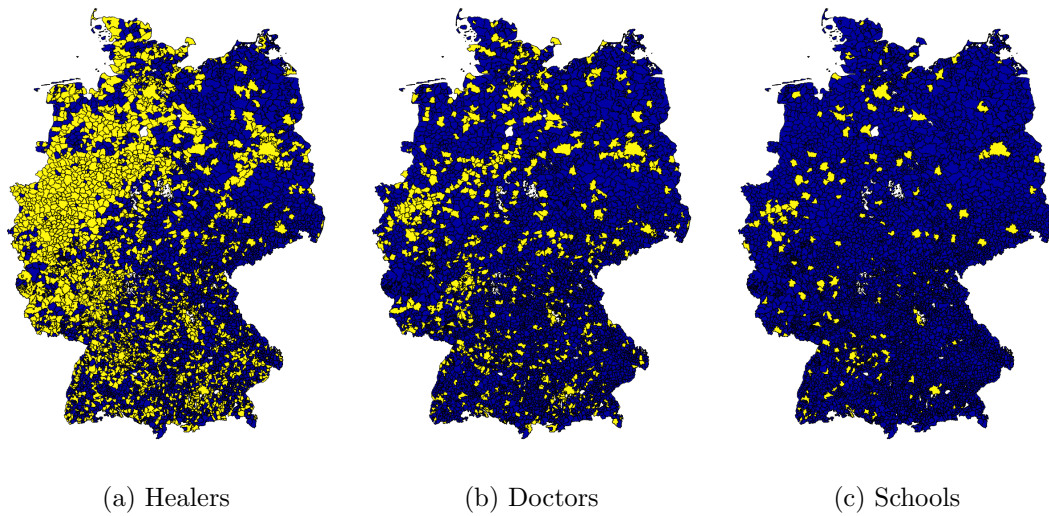


Figure 2: Presence of natural healers, homeopathic doctors and Steiner schools across municipalities in Germany.

tween East and West Germany, with esoteric beliefs—as measured by the three indicators—being much more widespread in the West. This can be recognized most clearly for natural healers, where the healer density is markedly lower in the five states that formerly constituted the German Democratic Republic (Figure 2, left panel). Similar, although less pronounced differences can be observed for homeopathic doctors (middle panel) and Steiner schools (right panel). This is to a large extent a historic legacy; schools outside the state-based educational system such as Waldorf schools were not permitted in the GDR. Homeopathic doctors and natural healers were barely tolerated, and their numbers remained very low. The analysis below eliminates these different legacies in the East and the West by focusing entirely on variation within the federal states.

## Results

The following sections present empirical results on the relationship between esoteric beliefs and electoral support for *dieBasis*, starting with the district level analysis, before moving on the municipality level.

## District Level

Before using multivariate regression, it is instructive to start with a bivariate comparison of the main variables of interest. Figure 3 presents scatter plots of how the different indicators of esoteric beliefs are related to opposition to Corona measures. For healers, the relationship is in the opposite direction of what we expect, with a higher density of healers being related to lower vote shares for *dieBasis* (left panel). This finding holds both in the East and the West of Germany. For homeopathic doctors (middle panel), the relationship is positive for electoral districts in the West, but negative for the East, indicating that the relationship between esoteric beliefs and resistance against Corona measures may be stronger in the West. Finally, schools (right panel) are positively related to support for *dieBasis* in both parts of the country. The plots show again that esoteric beliefs as measured by the three indicators are a lot more pervasive in the West, as the much shorter red lines indicate.

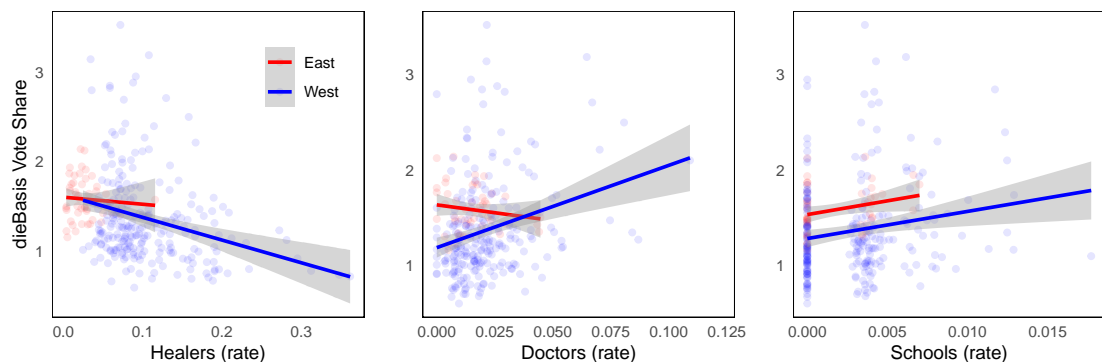


Figure 3: Scatter plots and linear fits of esoteric beliefs and *dieBasis* vote share, for electoral districts.

In the subsequent analysis, we test whether these relationships hold once we take into account potential confounders. The analysis uses different structural variables as controls, such as the degree of urbanization, the average household income, and the unemployment rate. These variables were obtained from an associated dataset with structural data for the electoral districts, created by the electoral commission (2021b).

All data are for the year 2020, which is the last available one in the collection. In addition, the analysis includes an indicator for urban districts, which takes the value of 1 if a district contains a major city with a population of 80,000 or above (or if the district belongs to one of the city states Berlin, Hamburg and Bremen). The location of these cities was obtained from SimpleMaps (2022). The district level models are OLS regressions with state level fixed effects and clustered standard errors at the state level. This nets out systematic differences between states, such as those between states in the East and the West. The predictor variables on the presence of esoteric beliefs are included as densities (per 1,000 population), to account for the different sizes of electoral districts.

	<i>Dependent variable:</i>					
	<i>dieBasis</i> vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Healer rate	-0.263 (0.706)				-0.712 (0.617)	-0.752 (0.629)
Doctors rate		4.448* (2.078)			4.001* (2.000)	4.213* (1.981)
Schools rate			22.682*** (4.191)		19.801*** (3.089)	
School (0/1)				0.141*** (0.047)		0.130** (0.048)
Urban	-0.078 (0.058)	-0.111 (0.069)	-0.111* (0.058)	-0.122* (0.066)	-0.126* (0.069)	-0.139* (0.078)
Income	0.008 (0.011)	-0.002 (0.017)	0.002 (0.010)	-0.00000 (0.012)	-0.003 (0.016)	-0.005 (0.018)
Unemployment	-0.036** (0.015)	-0.040* (0.021)	-0.037* (0.018)	-0.038* (0.019)	-0.044** (0.019)	-0.046** (0.020)
State FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	287	287	287	287	287	287
Adjusted R <sup>2</sup>	0.504	0.520	0.521	0.521	0.531	0.532

*Note:*

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 1: OLS regression results at the electoral district level. Dependent variable: *dieBasis* vote share. Standard errors clustered at the state level.

Models 1-3 in Table 1 present regression results using each of the three indicators for esoteric beliefs individually. The density of natural healers has no discernible effect on the vote share for *dieBasis*, while for homeopathic doctors and Steiner schools, the correlation is positive as expected. Model 4 in Table 1 uses an alternative binary indicator

(0/1) for the presence of a school, which receives a positive and significant coefficient. Models 5 and 6 show that the effects for doctors and schools persist in direction and magnitude when including all three independent variables jointly, which shows that the indicators have little overlap and measure different types of beliefs. Increasing the rate of doctors from the 5th to the 95th percentile in Model 5, the vote share for *dieBasis* increases by about 0.19 percentage points, while the same increase in the rate of Steiner schools is related to an increased vote share by 0.16 percentage points. In Model 6, the effect of doctors is about the same as in the previous model, while the effect of Steiner schools is easier to interpret; here, a district with a school is predicted to have a vote share for *dieBasis* that 0.13 percentage points higher than for a district without a school. The estimated coefficients for the control variables show that resistance to Corona measures is higher in more rural areas, and negatively correlated with unemployment.

### **Municipality Level**

Do the effects found above persist in the analysis at the municipality level? In the following, the regression analysis is repeated using the sample of municipalities. Due to the fact that municipalities are much smaller, there are much fewer healers, doctors or schools in each of them. Therefore, to ease interpretation, the models below include binary indicators (0/1) for the presence of each, rather than the per capita rate as in the models above. In addition, the models control for the population of each municipality as well as the average household income and the level of unemployment (for the year 2020). Urbanization is measured as the distance to the nearest city, using the dataset described above. The models include district level fixed effects and clustered standard errors. Table 2 shows the results.

Counter to the result above, Model 1 shows a positive effect of healers on the vote share for *dieBasis*, but the effect is small—*ceteris paribus*, a healer in a municipality is related to an increased vote share by 0.06 percentage points. This effect is higher for

<i>Dependent variable:</i>						
<i>dieBasis</i> vote share						
	(1)	(2)	(3)	(4)	(5)	(6)
Healer (0/1)	0.063** (0.022)				0.059** (0.022)	0.052* (0.022)
Doctor (0/1)		0.120*** (0.028)			0.103*** (0.027)	0.108*** (0.028)
School (0/1)			0.334*** (0.063)		0.308*** (0.062)	
Dist. school (log)				-0.298*** (0.061)		-0.290*** (0.061)
Population (log)	-0.113* (0.044)	-0.110* (0.046)	-0.103* (0.047)	-0.129** (0.044)	-0.158** (0.047)	-0.182*** (0.045)
Dist. city (log)	0.061 (0.069)	0.066 (0.068)	0.068 (0.068)	0.186** (0.067)	0.070 (0.067)	0.186** (0.066)
Income	0.007* (0.003)	0.007* (0.003)	0.007** (0.003)	0.005 (0.003)	0.007* (0.003)	0.005 (0.003)
Unemployment	-5.671** (2.021)	-6.118** (2.027)	-6.148** (2.022)	-5.520** (2.022)	-6.340** (2.032)	-5.772** (2.035)
District FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,048	6,048	6,048	6,048	6,048	6,048
Adjusted R <sup>2</sup>	0.333	0.334	0.335	0.341	0.337	0.343

Note:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Table 2: OLS regression results at the municipality level. Dependent variable: *dieBasis* vote share. Standard errors clustered at the district level.

doctors (Model 2), with a predicted increase of 0.12 percentage points. Having a school in a municipality is related to the largest increase in electoral support for *dieBasis*, by 0.33 percentage points (Model 3). Given the nation-wide election result for *dieBasis* of 1.4%, this is sizable effect. Model 4 uses again an alternative specification for the schools indicator, by including the (log-transformed) minimum distance to the nearest Steiner school. This variable receives a negative coefficient, which indicates that support for *dieBasis* decreases the further we move away from a school. Models 5 and 6 in Table 2 test all indicators in a single model, which shows that the direction and magnitude of the effects remains largely unchanged in the presence of the other indicators.

## Municipality Level with Matching

To improve causal identification in a final step in the analysis, genetic matching was used to pre-process the data (Diamond and Sekhon, 2013). Three matched samples

were generated, using the presence of healers, doctors or schools as treatment, respectively. Matched pairs of treated and control units were created by matching on the control variables in the above analysis: urbanization (distance to the nearest city), average household income and unemployment rate. In addition, matches were restricted to the same state. Figure 4 shows the balance plots for the three samples. Overall, matching greatly improved the balance (reduces the distance) between treated and control units, as we can see from the first line in the three plots. If we use the commonly accepted threshold of 0.1, the matched samples for doctors and schools are close to that threshold and can therefore be considered to be balanced. This is not the case for the healers sample, which remains unbalanced even after matching due to differences in the population variable. Therefore, results based on the latter sample should be interpreted with a lot of caution.

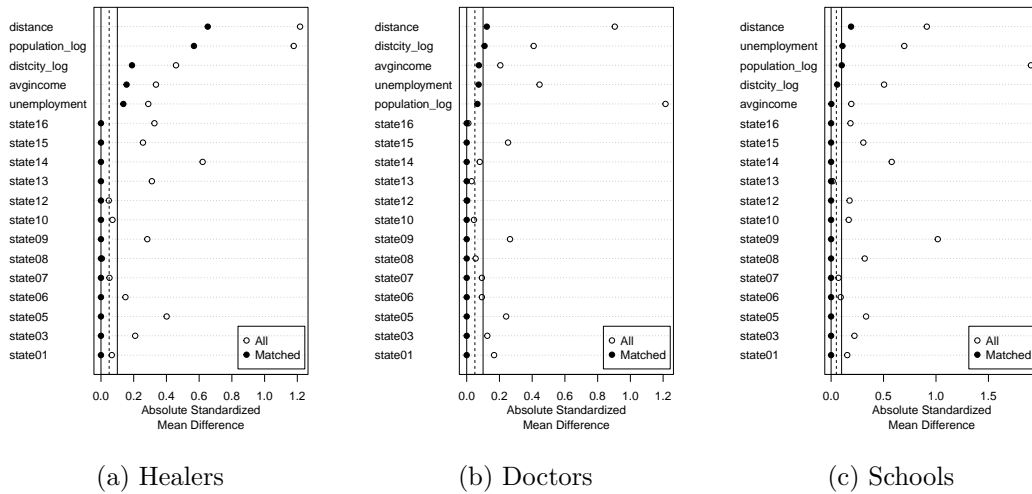


Figure 4: Balance plots for the healers (left), doctors (center) and schools treatment (right).

Using the three matched samples, we estimate the same regression models as above; the results are presented in Table 3. The three models confirm the positive effects found above, which are similar or even become stronger as compared to the previous results.

The coefficients indicate that vote shares for *dieBasis* are about 0.09 percentage points higher if a municipality has a homeopathic doctor, and about 0.4 percentage points higher if a Steiner school is located in a municipality. This difference is considerable, given that the average vote share of the party across Germany is only 1.4%. While the result for natural healers has to be treated with caution due to insufficient balance, these results provide robust evidence that electoral support for *dieBasis* in the 2021 election was associated with esoteric beliefs. Due to the setup of the analysis (exact matching on state, district fixed effects), these results are not due to differences between federal states.

	<i>Dependent variable:</i>		
	<i>dieBasis</i> vote share		
	(1)	(2)	(3)
Healer (0/1)	0.078*** (0.023)		
Doctor (0/1)		0.090** (0.033)	
School (0/1)			0.407*** (0.068)
Population (log)	-0.152** (0.055)	-0.156*** (0.043)	-0.794** (0.291)
Dist. city (log)	0.093 (0.070)	0.071 (0.045)	-0.243 (0.156)
Income	0.006* (0.003)	0.006* (0.002)	-0.011 (0.008)
Unemployment	-2.739 (1.981)	-1.767 (1.646)	-1.834 (2.608)
District FEs	Yes	Yes	Yes
Observations	3,484	1,380	242
Adjusted R <sup>2</sup>	0.387	0.464	0.504

*Note:* \* p<0.05; \*\* p<0.01; \*\*\* p<0.001

Table 3: OLS regression results at the municipality level on the matched samples. Dependent variable: *dieBasis* vote share. Standard errors clustered at the district level.

## Discussion

Governmental measures such as mask mandates (Huang et al., 2022) or vaccination campaigns (Haas et al., 2021) have proven to be effective in limiting the spread and

the impact of the Corona virus. Yet, in many countries, they have been met with considerable resistance in the population. This article shows that this resistance is partly linked to esoteric beliefs, which have a long history and are widespread in Germany and beyond. Usually, these esoteric beliefs were considered to be relevant only for individual choices such as medical treatment; however, during the Corona pandemic, it became apparent that these individual choices can have major societal implications. Using fine-grained election data for Germany, the analysis demonstrates that electoral support for a new party against governmental Corona measures is systematically linked to the presence of homeopathic doctors and Steiner schools in Germany. While this link has often been discussed controversially, this is the first systematic study so far that tests this claim using a comparative analysis that goes beyond narrow samples. While the results clearly indicate a relationship, the overall magnitude of Corona-related criticism that can be attributed to esoteric beliefs remains modest, since the overall voting result for the *dieBasis* party is low at the national level. In particular, the right-wing *Alternative für Deutschland* (AFD) that also ran against Corona measures absorbed much of these tendencies originating from the political right, with an overall result of 10.3% at the national level. This shows that resistance to Corona measures comes from very different societal groups, and therefore remains a major challenge for governments to address.

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