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Abstract

The Social Consequences of the Increase in Refugees to Germany 2015–2016

by Marco Giesselmann, David Brady and Tabea Naujoks*

More than one million refugees migrated to Germany in 2015-2016. The increase in refugees was rapid, visible and controversial, and varied substantially across German districts. Therefore, the increase provides unique leverage for analyzing the consequences of immigration and ethno-linguistic heterogeneity. We innovatively focus on within-district/within-person change with individual-level panel data and precise measures of district-level refugee shares. Using the German Socio-Economic Panel 2009-2017, we analyze three-way (person, year and district) fixed effects models of five exclusionary beliefs and behaviors. At the national level, concerns about immigration and social cohesion and strong far right party support increased at the same time as refugee shares increased. However, district-level refugee shares are robustly negatively associated with concerns about immigration and (less robustly) with strong far right party support. They are also not associated with concerns about social cohesion, residential moves, or subjective fair tax rates. Interaction estimators reveal that where unemployment is high, there are positive relationships between refugee shares and concerns about immigration and residential moves. Aside from high unemployment districts however, the results mostly support contact theory, and contradict fractionalization and minority threat theories. Overall, rising district-level refugee shares reduced or at least did not heighten exclusionary beliefs and behaviors.

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More than one million refugees migrated to Germany in 2015-2016. The refugees were largely driven by wars in the Middle East and Afghanistan, and their migration was catalyzed by over-crowded and inhumane conditions in refugee camps in the Middle East, Turkey and southeastern Europe (Fitzgerald 2019). While many rich countries, such as the U.K, France and especially the U.S. blocked refugees, Germany and Sweden relaxed barriers to entry. Germany openly stopped enforcing the European Union's (EU) Dublin settlements and several politicians proclaimed a "welcome culture" (Liebe et al. 2018). Prime Minister Merkel even stated: "It is not in my, nor anybody else's power to control how many people come to Germany."[1] Because Germany already had somewhat friendly refugee policies, well-developed networks fueled even greater migration and consolidated Germany as Europe's prime destination (Mansour-Ille et al. 2019).

A dramatic increase in refugees resulted. In the Fall of 2015, Frankfurt's airport contained endless rows of cots in the hallways, and refugees filled hotels in Berlin. 2015-2016 is often framed as a singular event. However, it is better characterized as part of a long term process that intensely accelerated in 2015 (Tjaden and Heidland 2021). In 2008, the number of "Erstanträge" (first-time applicants for asylum) in Germany reached a 30-year low of 28,000. After a modest increase from 2008 to 2012, this number rose more than 50% each year and reached an all-time high of 745,545 in 2016 (BAMF 2018).[2] In 2009, the average German resided in a district (i.e. Kreis) with a refugee share of 0.58% of the population. By 2017, the average German resided in a district with a refugee share of 2.03%. While the

1 See: https://www.tagesspiegel.de/politik/fluechtlingspolitik-angela-merkel-den-aufnahmestopp-gibt-es-nicht/12422322.html

2 According to the OECD (2021), the U.S. received 261,970 "inflows of asylum seekers" and Germany received 722,364 in 2016. Because the U.S. population was almost four times larger, Germany received about 10.8 times as many refugees on a per capita basis. While the majority were granted asylum in Germany, only 84,994 were actually granted asylum by the U.S. in 2016 (and remarkably, only 11,814 in 2020) (see: https://www.wrapsnet.org/admissions-and-arrivals/).

highest refugee share of a German district was 3.2-3.9% 2009-2013, the highest share rose to 5% in 2014, 9.1% in 2015, and 13% in 2016. This is a more dramatic increase in refugees than well-studied refugee events like the Mariel Boatlift.[3]

The increase in refugees was highly visible and politically controversial (Czymara and Schmidt-Catran 2017; Gerhards et al. 2016; Helbling et al. 2017; Holmes and Castaneda 2016; Meidert and Rapp 2019). Refugee migration increased pressure on the housing market (Kürschner Rauck and Kvasnicka 2017). Public discourse routinely linked refugees to crime and claimed that asylum was masking their true motivation to gain access to German social welfare programs. The PEGIDA movement (Patriotic Europeans Against the Islamicisation of the Occident) experienced renewed enthusiasm as tens of thousands joined their protests and hundreds of thousands followed them on social media. There was widespread publicity of migrants harassing and assaulting women on New Year's Eve 2015/2016 in Cologne (Frey 2020). The media and far right politicians linked refugees to events such as the 2016 driving of truck into a Berlin Christmas Market that killed 12 and injured 56 (Jackle and Konig 2018; Mosel et al. 2019; Nagel and Lutter 2020). Subsequently, refugees were often violently attacked (Frey 2020; Jackle and Konig 2018). After 2015, Germany saw a dramatic increase in support for the far right anti-immigrant political party Alternative für Deutschland (AfD) (Arzheimer and Berning 2019).

The increase in refugees to Germany presents a unique opportunity to inform salient theoretical debates about the social consequences of increasing immigration and ethno-

[3] The Mariel Boatlift arrivals were only 3.9% of the Miami metropolitan population in 1980. Miami was already the most immigrant intensive city in the U.S. for at least a decade before the Mariel boatlift, the Mariel immigrants were less than a tenth as large as the preexisting Cuban population, and only about half of the arrivals settled in Miami (Card 1990: 246, Table 2) Hence, the Mariel boatlift was a smaller exogenous shock to Miami than the increase in refugees was for many German districts (Fitzgerald 2019).

linguistic heterogeneity. The refugee increase crystalizes the visible rise in immigration that most European countries experienced in recent decades.[4] It also exemplifies the pervasive controversies over multiculturalism in rich democracies. The settlement of refugees varied substantially across German districts and the refugee population share increased rapidly in a short period of time. As a result, we can exploit the sudden and varied increase in refugee shares across German districts to assess the social consequences.

All of this is enhanced by the fact that the German Socio-Economic Panel (SOEP) has been collecting geographically-identified individual-level panel data for many years before, during and after the increase. We incorporate precise administrative data on district-level refugee shares of the population. This enables an innovative analysis of within-person/within-district change. Based on three-way (person, year and district) fixed effects models, we assess the relationship between refugee shares and five exclusionary beliefs and behaviors: concerns about immigration and social cohesion, strong support for far right parties, residential moves and subjective fair tax rates. Therefore, our approach can rigorously test the effects of the increase in refugees to Germany specifically and increasing immigration and ethno-linguistic heterogeneity generally.

4 Although refugees are a minority of immigrants, this also contributed to an increase in overall immigration. From 1995 to 2012, the proportion of migrants in Germany stagnated at about 9% of the population. Since 2013, the share of migrants increased consistently, reaching an all-time high of 11.7% of the population in 2017 (Statistisches Bundesamt 2020).

THEORETICAL BACKGROUND

The increase in refugees was a particularly important historical event that warrants study in its own right. It also represents key aspects of the more general phenomena of increasing immigration and ethno-linguistic heterogeneity to affluent democracies. Therefore, we frame our study with fractionalization, minority threat, and contact theories. We then turn to the specific literature on the German refugee increase and the empirical implications for our analysis.

Fractionalization Theory

Fractionalization theory advances the influential claim from political economy that ethno-linguistic heterogeneity undermines the production and maintenance of public goods (Banerjee et al. 2005; Desmet et al. 2009; Luttmer 2001; Miguel and Gugerty 2005). Purportedly, ethno-linguistic homogeneity facilitates and heterogeneity undermines social class solidarity (Alesina and Glaeser 2004; Enos and Gidron 2018; Hechter 2004; Lipset and Marks 2000), trust, and social cohesion (Dinesen et al. 2020; Koopmans and Schaeffer 2016; Schaeffer 2016; Van der Meer and Tolsma 2014), and support for social policy and redistribution (Fullerton and Dixon 2009). Heterogeneity has exclusionary consequences partly because of widely recognized (albeit socially constructed) differences in salient social and physical characteristics, difficulties communicating across groups, fewer network ties between groups, and high transaction costs for bridging these divides (Koopmans and Schaeffer 2016). Individuals tend to presume they can sanction only fellow group members for non-cooperation (Habyarimana et al. 2007), and perceive other groups as less deserving of public assistance (Enos and Gidron 2018).

Heterogeneity – measured with objective shares of different ethnic, linguistic, religious and nationality groups – has been shown to have exclusionary consequences at the national (Alesina and Glaeser 2004), state/regional, and local level (Koopmans et al. 2015).

For example, across U.S. cities, metropolitan areas, and counties, Alesina and colleagues (1999) demonstrate a negative relationship between ethnic fragmentation and spending on public goods like education, roads, sewers and waste disposal. According to this highly influential fractionalization literature, rising ethno-linguistic heterogeneity should heighten exclusionary beliefs and behaviors. Heterogeneity purportedly undermines trust, community and social cohesion and increases the cultural salience of boundaries between ethnic and linguistic groups (Koopmans et al. 2015). Fractionalization scholars have specifically argued that heterogeneities resulting from immigration should reduce preferences for social policy and redistribution (Alesina and Glaeser 2004; Breznau and Eger 2016).

Minority Threat Theory

Unlike fractionalization theory's focus on heterogeneities in general, minority threat theory distinguishes between a dominant majority and subordinate minority. Minority threat theory posits that the dominant group feels superior to and entitled to advantages over an alien subordinate group (Blumer 1958; Bobo and Hutchings 1996). Minority threat is caused by the fear and suspicion that a growing subordinate group represents a "felt challenge" to the dominant group's privilege (Blumer 1958: 5). Politicians and the media construct the dominant group's identity and cultivate the perception of minority threat (Czymara and Dochow 2018). These subjective perceptions combine with conflicts over resources to cause beliefs and behavior that reflect the dominant group's desire to maintain and protect their advantage over the subordinate minority (Blalock 1967; Enos and Gidron 2018). Indeed, the objective immigrant share in one's local community predicts perceived immigrant share (Koopmans and Schaeffer 2016), which predicts perceived group threat, which predicts discrimination and anti-immigrant threat (Schlueter and Scheepers 2010).

Many use minority threat theory to explain the consequences of rising immigration. At both national (Kaya and Karakoç 2012; Legewie 2013; Meseguer and Kemmerling 2016;

Quillian 1995; Semyonov et al. 2006) and local levels (Schlueter and Scheepers 2010), rising foreign born populations trigger anti-immigrant sentiments. Rising immigration heightens concerns about immigration (Czymara and Dochow 2018), support for far right anti-immigrant political parties (Kitschelt 1997; Rydgren 2008), preferences for greater spending on police and law enforcement (Fink and Brady 2020), and residential moves out of neighborhoods (Crowder et al. 2011; Hall and Crowder 2014). Immigrants represent competitive threats to the native group (Ceobanu and Escandell 2010), and heighten subjective anxieties about the fear of crime and the erosion of dominant cultural norms (Eitle and Taylor 2008; Wang 2012). Scholars find larger threat effects when there has been a sudden influx of immigrants to previously homogenous places (Fink and Brady 2020; Hall and Crowder 2014), and when that sudden influx coincides with immigration being nationally salient in the media (Hopkins 2010). Thus, rapid increases in immigration exemplify Blumer's (1958: 7) claim that threats "usually become pronounced only as a consequence of grave disorganizing events that allow for the formation of a scapegoat."

Contact Theory

In contrast to fractionalization and minority threat theories, contact theory has long held that actual interactions and engagements with outgroups will encourage tolerance, respect, and even compassion (Allport 1954; Pettigrew 2008). According to contact theory, exposure to immigrants increases knowledge about and empathy to immigrants, reduces anxiety and uncertainty, and engenders trust. By facilitating perspective-taking, contact reduces natives' sense of immigrant threat and increases outgroup friendship (Adida et al. 2018; McLaren 2003). Indeed, a meta-analysis of 516 studies finds that 95% of studies report a negative relationship between contact and prejudice (Pettigrew and Tropp 2006).

Contact tends to facilitate outgroup acquaintances when children and inter-ethnic partners can broker engagement (Schaefer 2013), when immigrants differ from those at the

bottom of pre-existing ethno-racial hierarchies (Dixon 2006; Fox 2004), where natives and immigrants are economically interdependent, and where immigrants have multiple cross-cutting identities (Baldassarri and Abascal 2020). Yet, contact does not need to meet optimal interaction conditions, and even simple exposure and non-verbal encounters are relevant (Pettigrew and Tropp 2006). Simply having a nearby large immigrant population in the Netherlands facilitates contact with immigrants, and contact subsequently reduces anti-immigrant sentiments (Schlueter and Scheepers 2010). Similarly, a greater Hispanic share of the population in one's state reduces the view that Latinos are lazy (Fox 2004).

Contrary to fractionalization and minority threat, but consistent with contact theory, several studies find that immigration does not actually reduce trust (Abascal and Baldassarri 2015) or preferences for social policy and redistribution (Auspurg et al. 2019; Brady and Finnigan 2014; Burgoon 2014; Charnysh 2019; Steele 2016). Increasing immigration is even positively associated with preferences for certain social policies (Brady and Finnigan 2014), especially in countries with multicultural policies (Kwon and Curran 2016). For example, Burgoon and colleagues (2012) find that the percent foreign born in one's occupation is positively associated with support for redistribution.[5]

A key theme in contact theory is that subnational- or local-level exposure to immigrants can counteract national-level immigrant threats (Baldassarri and Abascal 2020). For example, Weber (2015) finds that while national-level immigration in Europe augments negative views of immigrants, regional-level immigration has the opposite effect. Despite pervasive anti-immigrant sentiments in France, large immigrant shares in one's sub-national region decrease xenophobic attitudes (Jolly and DiGiusto 2014). Fox (2004) shows that a

5 On balance, contact with immigrants may boost support for redistribution because it heightens perceptions of economic insecurity and competition for jobs (Burgoon et al. 2012). If this is the case, contact might actually increase welfare chauvinism (Kitschelt 1997; Marx and Naumann 2018) or nationalist definitions of "community".

large Hispanic population one's state attenuates the otherwise negative relationship between viewing Latinos as lazy and support for welfare spending.

Empirical Implications of the German Refugee Increase

The theories above refer to immigration and ethno-linguistic heterogeneity generally. Though a more specific case, the increase in refugees to Germany provides an opportunity to apply these general theories. The increase in refugees was a dramatic change in a short period of time and varied substantially across Germany. Refugees were highly visible and politically controversial, perceived as culturally and ethno-racially different from natives, unlikely to be quickly integrated into economic and social networks, and often framed as a threat.

Scholars have recently begun to analyze the social consequences of the increase in refugees to Germany (Czymara 2021; Czymara and Schmidt-Catran 2017; Fitzgerald 2019; Frey 2020; Jackle and Konig 2018; Mader and Schoen 2018; Marx and Naumann 2018; Nagel and Lutter 2020; Steele and Abdelaaty 2019; Tjaden and Heidland 2021).[6] For instance, Meidert and Rapp (2019) demonstrate that Germans viewed refugees as a greater threat than and less favorably than intra-EU migrants. Kellermann and Winter (2018) find that an increase in asylum seekers in an electoral district is positively associated with AfD vote shares. Gehrsitz and Ungerer (2018) find that while the AfD benefitted from rising national-level concerns about immigration and the controversy over refugees, district-level refugee inflows actually undermined AfD votes. Exploiting that about half of rural east German municipalities received refugees, Schaub and colleagues (2021) find that a binary

[6] Other European countries also experienced related increases. In the Greek isles, Hangartner and colleagues (2019) find that exposure to refugees induced strong exclusionary beliefs and behaviors. In Greece, increasing refugees are associated with an increase in the share of votes for the far right party Golden Dawn (Vasilakis 2017). Comparing Turkish cities, Fisunoglu and Sert (2018) find no effect of the refugee share on incumbent party vote share. Across municipalities in the state of Upper Austria, Steinmayr (2021) finds that exposure to refugees passing through increased Far Right votes while hosting refugees reduced Far Right votes.

operationalization of the presence of refugees did not influence anti-immigrant sentiments. By contrast, Liebe and colleagues (2018) find that while Germans initially expressed support for the normative "welcome culture", they also preferred to not have refugees in their vicinity and over time support for refugees declined.

This literature is certainly valuable. Like us, most view the sudden and large increase in refugees as a quasi-exogenous shock via an unexpected dramatic acceleration. Like us, several model the effects of contextual refugee shares on individuals. Nevertheless, prior research has not been able to incorporate all the advantages of our approach. Particularly important, past studies are vulnerable to the confounding of unobserved characteristics of places and individuals. Even though the refugee increase was fairly exogenous, districts were not randomly assigned refugees. Further, individuals could select into or out of districts with varying increases in refugees. To the best of our knowledge, no study analyzes individual-level panel data nested within local contexts before, during and after the increase in refugees. Hence, we uniquely exploit the within-person and within-district variation in exposure to the increase in refugees. Moreover, we unite this distinctive panel approach with precise measures of district-level refugee shares, multiple outcomes, and a longer term perspective.[7]

We are fairly impartial about how best to measure the social consequences of the increase in refugees. We focus on exclusionary beliefs and behaviors that have been the subject of related research and are pertinent to the theories above. As we explain below, we include all relevant outcomes that are constantly available over a sufficient period of time. Concerns about immigration is a well-established measure of both salience of migration and

[7] Only a handful use panel data (e.g. Mader and Schoen 2018) and a few of those have been internet panels (e.g. Czymara and Schmidt-Catran 2017; Marx and Naumann 2018). A few nest the individual-level panel SOEP in localities over a longer period of time to predict concerns about immigration (Maxwell 2019). For instance, Czymara and Dochow (2018) analyze district-level immigrant (not refugee) shares and media effects.

anti-immigrant sentiments (Maxwell 2019; Lancee and Pardos-Prado 2013), and has previously been linked to ethnic diversity (Lancee and Schaeffer 2015), ethnic competition (Lancee and Pardos-Prado 2013; Kratz 2021) and perceived threat (Czymara and Dochow 2018). Concerns about social cohesion has been a major source of debate about immigration and ethnic diversity (Koopmans et al. 2015; Schaeffer 2016; Van der Meer and Tolsma 2014) and is influenced by both objective and perceived immigration (Koopmans and Schaeffer 2016). Far right party support has been one of the most widely studied outcomes of rising immigration (Arzheimer and Berning 2019; Marx and Naumann. 2018; Rydgren 2008; Schaub et al. 2021). It is often considered a strong expression of opposition to immigration (Margaryan et al 2019). Subjective fair tax rates capture an individual's support for redistribution and relates to prior research on immigration and redistribution preferences (Brady and Finnigan 2014; Breznau and Eger 2016; Burgoon 2014; Jessen et al. 2017). Finally, exit is one of the classic options that individuals exercise in response to rising immigration and heterogeneity (e.g. the classic "White flight" response to neighborhood ethno-racial heterogeneity in the U.S.). Hence, residential moves are an especially concrete and objective exclusionary behavior (Crowder et al. 2011; Hall and Crowder 2014).

For concerns about immigration and social cohesion, and far right party support, fractionalization and minority threat theories expect that rising district-level refugee shares should have positive effects. According to contact theory, however, rising refugee shares should have negative effects on these three outcomes. Both fractionalization and minority threat theories would expect that rising refugee shares should increase residential moves. Contact theory does not clearly expect that rising refugee shares would result in a change in residential moves, though one might expect a negative relationship. Finally, for subjective fair tax rates, fractionalization and minority threat would expect negative effects while contact theory would expect positive or no effects.

In both the immigration and refugee literatures, the interaction with unemployment is one of the most common themes (Ceobanu and Escandell 2010; Kaya and Karakoç 2012; Legewie 2013; Schmidt-Catran and Spies 2016; Semyonov et al. 2006; Van der Meer and Tolsma 2014). Where both refugee shares and unemployment rates are high or increasing, refugees are likely to be perceived as an even greater concern. A precarious economic environment might even be a necessary cause for the activation of immigrant threat. Rising unemployment fuels far right political parties, especially as those parties actively frame immigrants as competitive threats and since far right parties appeal to the unemployed and economically marginalized (Kitschelt 1997: Rydgren 2008). Plausibly, a context of high or rising unemployment could blunt the hypothesized negative relationship between contact and exclusionary beliefs and behaviors. For all these reasons, our analyses also include tests for interactions between rising district-level refugee shares and unemployment rates.

DATA AND METHODS

Our analyses are based on the German Socio-Economic Panel (SOEP, see Giesselmann et al. 2019). With annual data collection since 1984, the SOEP is one of the world's longest running nationally representative panel surveys. Our sample is composed of adults in private households who are not immigrants or their descendants. For the analyses of subjective fair tax rates, the sample is employed adults.

Several features of the SOEP make it particularly suitable for our research. First, unlike cross-sectional surveys, the SOEP offers a unique two-level panel structure that enables us to examine individuals cross-nested in districts over time. This allows us to control for district-level heterogeneity, and changing district-level compositions stemming from individual-level heterogeneity. Second, the SOEP has approximately 20,000 respondents annually and more than 150,000 person-years in the waves 2009-2017. Third, the SOEP

provides fine-grained geographic differentiation and locates respondents in districts. Fourth, the SOEP contains a variety of exclusionary beliefs and behaviors.

Our analyses focus on the period 2009-2017. While the peak of the increase is usually identified as 2015-2016, there was a gradual buildup that traces back to 2008/2009 (Tjaden and Heidland 2021, see also Figure 2 below). Our choice of period therefore takes a longer term perspective and thereby more thoroughly exploits over-time variation.[8] In robustness checks, we re-estimate the models on the narrower 2012-2017 period. The increase is generally viewed as ending in 2017. In 2016, the EU agreed to subsidize Turkey in exchange for containing refugees and collaborated to close the "Balkan route." Moreover, the admistrative data on local level refugee shares have only been provided through 2017.[9]

For transparency, the online appendix will include our code and the data on district-year refugee shares. The SOEP is publicly available so replication is feasible. That said, the district-level geographic identifiers have strict data protection restrictions (Giesselmann et al. 2019). We gained access to confidential data through the SOEP in residence program. We use the cross-sectional weights and Stata v16.

[8] This period also roughly covers the changing paradigms in Germany. As recently as 2010, Chancellor Merkel claimed multiculturalism has "utterly failed" and people from different cultural backgrounds living happily "side by side did not work" (https://www.theguardian.com/world/2010/oct/17/angela-merkel-german-multiculturalism-failed). By 2015, Merkel had become a key leader of the "culture of welcome."

[9] It is possible that the 2015-2017 period was unusual – either particularly favorable for refugees because of the "welcome culture" or particularly hostile because of mobilization and media/political discourse. Therefore, robustness checks (available upon request) test the temporal stability of the refugee shares coefficient by interacting it with the 2015-2017 period. For all dependent variables, interaction coefficients reveal no significant differences in the coefficients for refugee shares 2009-2014 and 2015-2017.

Dependent Variables

Our analysis incorporates five salient outcomes with sufficient data availability in the SOEP.[10] Table 1 displays sample statistics.

[10] We exhaust all the SOEP's relevant outcomes with sufficient temporal coverage. Arguably, the remaining potential outcomes have insufficient temporal coverage: Left/Right scale (2009, 2014, 2019), trust (2008, 2013, 2018), donations (2010, 2015, 2018), governmental tasks (2002, 2017), and attitudes towards refugees (2016, 2018).

Table 1: Sample Descriptive Statistics

	Years	n	% n/N	Mean	SD	Min	Max
Dependent Variables							
Immigration Concerns	2009-2017	167827	89.0	0.699		0	1
Social Cohesion Concerns	2015-2017	56469	98.0	0.895		0	1
Strong Far Right Party Support	2009-2017	163427	86.1	0.006		0	1
Residential Moves	2009-2017	184509	97.8	0.056		0	1
Subjective Fair Tax Rates[a]	2009,2011, 2013,2015, 2017	44776	43.0	0.283	0.130	0	0.9
Key District-level Independent Variable							
% Refugees	2009	401	100	0.478	0.366	0	3.2
	2010	401	100	0.503	0.375	0	3.1
	2011	401	100	0.514	0.381	0	3.2
	2012	401	100	0.560	0.39	0	3.5
	2013	401	100	0.631	0.401	0	3.9
	2014	401	100	0.788	0.457	0	5
	2015	401	100	1.130	0.687	0	9.1
	2016	401	100	1.792	1.061	0	13
	2017	401	100	1.884	1.144	0	13.1
Pooled	2009-2017	3609	100	0.920	0.839	0	13.1
Change Score	2009-2017	401	100	1.406	0.928	-0.9	11.3
Individual-Level Variables							
HH Income (logged)	2009-2017	188571	99.9	7.421	0.511	0	13.469
Employed	2009-2017	188571	99.9	0.636		0	1
Unemployed	2009-2017	188571	99.9	0.041		0	1
Pensioner	2009-2017	188571	99.9	0.195		0	1
Other Inactive	2009-2017	188571	99.9	0.128		0	1
Married	2009-2017	187800	99.6	0.584		0	1
No Child in HH	2009-2017	188573	100	0.619		0	1
1 Child in HH	2009-2017	188573	100	0.162		0	1
2+ Children in HH	2009-2017	188573	100	0.219		0	1
Other District-level Independent Variables							
GDP Per Capita (thousands)	2009-2017	3609	100	32.816	14.399	12.8	180.6
% Unemployed	2009-2017	3609	100	6.423	3.051	1.2	17.8

[a] Only available for employed persons.

Data Sources: SOEP v34, BBSR Bonn

The SOEP measures *immigration concerns* with the question: "How concerned are you about the immigration to Germany?" Responses are dichotomized into 1="very"/"somewhat" and 0="not". In robustness checks, we also test all three responses as a

quasi-metric and an alternative dichotomization (1=very and 0=somewhat/not [Czymara and Dochow 2018]). This outcome is available for all years 2009-2017.

Next, *social cohesion concerns* is measured with the question "How concerned are you about the social cohesion in society?" Again, responses are dichotomized into 1=very/somewhat and 0=not (with the same robustness checks as immigration concerns). This variable is only available during and after the peak of the increase (i.e. 2015-2017).

Respondents with *strong support for far right parties* are those who "very" or "fairly" support far right parties (reference=weak/moderate support, support any other party, and no support for any party).[11] This strategy identifies persons who explicitly express support for a dedicated anti-immigration agenda and thereby express strong exclusionary beliefs. We define far right parties to include the AfD since 2015, the National Democratic Party (NPD), the Republikaners, and the Deutsche Volksunion (DVU) (Arzheimer and Berning 2019; Avdeenko and Siedler 2017).[12] In robustness checks below, we test the binary of any support and the metric scale (0-5 from no support to very strong).

Fourth, the SOEP allows one to construct a measure of *subjective fair tax rates* (Jessen et al. 2017) as a measure of desired contribution to redistribution. First, all employed respondents (56-64% of respondents) are asked if their gross (pretax) or net (posttax) labor income is unfair (at least 31% report unfairness in each wave). Second, those reporting an unfair income are requested to quantify what they define as fair gross and net incomes. For respondents who reported unfairness, we use the quotient of subjective fair net and fair gross

11 In the SOEP, party preference is measured in a three-step process. First, respondents report whether s/he supports any party. Only if s/he does, the respondent is asked which party. The amount of support is then measured on a five-point scale ("very week" to "very strong").

12 We code the AfD as far right starting in 2015 because of their shift from being principally an EU-skeptic party to a more explicitly anti-immigrant party in 2015. In analyses available upon request, the results are robust if we code the AfD as *always* a far right. The AfD was established in April 2013, so this only affects 2014.

income. For respondents who did not report unfairness, we use the quotient of the respondent's actual gross and net income. We subtract these scores from 1 to convert to subjective fair tax rates. The average subjective tax rate is 28% (see Table 1). This measure is available biannually in the 2009, 2011, 2013, 2015, and 2017 waves.[13] Unfortunately, the more widely used items measuring preferences for social policy and redistribution were only collected by the SOEP in 2002 and 2017.

Finally, we measure *residential moves* as changes of residence identified by the interviewer. The interviewer collects this information from new or remaining residents at the old residence. It is supplemented by requests at resident agencies, mail requests at former respondents, or statements of respondents. Our measure indicates whether or not a move occurs within the subsequent 12 months *after* an interview. This strategy captures moves of persons who eventually drop out of the sample and largely circumvents the attrition problem related to residential moves. This outcome is available all waves, 2009-2017.

13 While the question wording was stable across waves, the filter-question detecting persons with perceived unfair incomes slightly changes over time. Therefore, it is important that we include year fixed effects in the models to control for measurement variance artifacts.

Context-Level Refugees Variable

The *refugee* share is measured as a % of district population. Districts are the lowest sub-national level with consistently provided administrative data on refugees.[14] The data is from the Indicators and Maps for Spatial and Urban Development (INKAR) database (BBSR Bonn 2020). INKAR is managed by the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR Bonn), which collects, refines, and distributes statistics from different federal agencies. INKAR uses information from the central register of foreigners ("Ausländerzentralregister"), which in turn collects data from local and regional immigrant agencies and is administered by the Federal Office for Migration and Refugees. Refugees are defined as non-German citizens who reside in Germany because of humanitarian reasons.[15] This indicator is available for all years (2009-2017), refers to the year-end date and can be merged to the SOEP using confidential geographic identifiers.[16] We retrieved the data in July 2020, and we will report it in the online appendix.

14 Some may wonder if MICROM (Micromarketing-Systeme und Consult GmbH) neighborhood-level data would be preferable. Implausibly however, and despite the well-documented increase in refugees, the share of non-EU migrants in the average German neighborhood only increased from 1.98% to 1.99% from 2012 to 2017. Hence, the MICROM data appears to miss recent refugee migration to Germany.

15 Technically, the indicator we use is "humanitarian migrants" (i.e. Schutzsuchende) whereas "refugee" (i.e. Flüchtlinge) is strictly defined as only those granted asylum. Our indicator includes asylum seekers pending a decision, those who received a negative decision but have not been deported, and those not granted asylum but who are allowed to reside.

16 During 2015-2016, the authorities were sometimes unable to process the large number of refugees. Therefore, some appear in this data with a time-lag, and we assume that year-end date figures reasonably measure refugee shares in the reference year. However, one could argue that year-end rates constitute the treatment for the subsequent year – given most SOEP-interviews are conducted in the first half of the year. As well, while we assume reaction time is fairly immediate (Czymara and Dochow 2018), some outcomes like party support may respond more slowly. Therefore, we added robustness checks with lagged refugee share, which yield similar results (see below).

There are 401 districts and an average of about 100,000 households per district. In addition to being the most granular administrative data available, districts are an appropriate contextual level. Districts are major administrative units in Germany. Many public services (e.g. public transportation, schools, sports/leisure associations) and several social policies (e.g. childcare, public housing) are governed at the district-level. Further, districts show considerable variation in refugee shares (see Figure 1 below).

Largely, refugees were located in districts by a top-down multi-level administrative process. Refugees were first assigned to one of the German states (i.e. Länder) based on the Königssteiner Schlüssel (a quota system based on population, economic performance and fiscal revenue). States then followed different approaches to the distribution of refugees to lower administrative units (counties, districts, municipalities), but usually took also size, population and resources into account (Bogumil et al. 2016). Of course, there were differences between the official policy and the implementation in practice. Policymakers, especially at the municipal level, negotiated the assignment process. States varied in allowing refugees to move outside assigned districts. State- and regional authorities often operated in emergency mode and were not always able to execute administrative specifications, leading to sometimes erratic location processes (Bogumil et al. 2016).Some refugees self-selected into certain districts, and refugees were allowed more freedom of movement upon receiving asylum. Therefore, while the assignment process was quasi-exogenous, it was not random.

Other Independent Variables

Because our models concentrate on within-person variation only, this means we net out stable differences between individuals such as ethnicity and sex. Because we focus only on within-district variation, we remove stable differences between districts (e.g. urban/rural). For the most part, this even controls for relatively stable differences between districts that do not change meaningfully 2009-2017 such as population and population density.

Nevertheless, because exclusionary beliefs and behaviors may still vary across time-varying demographic and economic characteristics, we still include a few individual- and district-level controls (see Table 1).[17] Labor force status is measured as categorical variable and based on an LFS-measure. We differentiate between *employed*, *unemployed*, *retired* and otherwise *inactive* persons. Two demographic variables differentiate between *married* and *unmarried* persons, and persons in households *without*, *one*, and *two or more children*. The SOEP group's measure of *household income* is included, which is equivalized by the square root of household members and logged. At the district-level, we include *unemployment rates* and *GDP per capita* as controls.

Estimation Technique

Prior research is vulnerable to potential confounding of the relationships between refugee shares and exclusionary beliefs/behaviors with unobserved characteristics of districts, individuals, and time. At the district-level, the assignment of refugees was not random and relatively stable unobserved characteristics (e.g., affluence, a moderate political climate) could be correlated with refugee shares. If so, cross-sectional associations between refugee shares and exclusionary beliefs include the effects of these unobservables. By focusing only on within-district change, we remove such stable district-level characteristics. Further, such unobserved characteristics could be correlated with changing district-level trends in exclusionary beliefs/behavior. Therefore, as a robustness check, we also include analyses with district-level slopes for time, which remove such district-level trends.

At the individual-level, particularly exclusionary respondents could be more likely to exit districts with increasing refugee shares. If so, the share of persons with exclusionary beliefs/behaviors in such districts would decrease over time, and the remaining population

[17] We do, however, not include age because it is collinear in a two-way FE design (i.e. including individual and time FEs).

would be selectively pro-refugee. By focusing only on within-person change, we remove such stable individual-level characteristics and the corresponding compositional effects.

At the year level, over-time changes across Germany could be due to processes that are not specific to the increasing refugee shares actually present in a district. By focusing only on within-year differences (in the individual- and district-level change), we remove such temporal idiosyncrasies shared across districts.

Ultimately, our approach identifies any effects of refugee shares from: (a) changes within individuals over-time as the district changes around them net of national-level shared changes; (b) changes within individuals over-time as they move across districts net of differences between these districts and of national-level shared changes. Of course, we also identify the effects net of individual- and district-level control variables.

Formally, our data is composed of individual respondents who are observed over time and cross-nested in districts and years. Given this multilevel structure, equation (1) describes the basic model:

(1) $y_{it} = \beta_0 + \beta_1 refugee_{j_{(i,t)}t} + w_{it}$

where the outcome y of person *i* at time *t* depends on the district-level refugee share at time *t* in district *j* and the effect of unobservables w for person *i* at time *t*. Accordingly, w_{it} can be described as five-way error-term (Andrews et al. 2006):

(2) $w_{it} = \phi_{j_{(i,t)}} + n_{j_{(i,t)}t} + \mu_t + \alpha_i + e_{it}.$

For each person *i* at time *t*, the error term consist of *(a)* a district-specific component $\phi_{j_{(i,t)}}$ which includes effects of time-invariant district-level variables; *(b)* a district-time specific component $n_{j_{(i,t)}t}$, which includes effects of time-varying district-level characteristics; *(c)* a time specific component μ_t, which includes effects of national-level time-varying characteristics; *(d)* a person-specific component α_i, which includes effects of time-constant

person-level variables; and *(e)* an occasion-specific component e_{it}, which includes effects of time-varying person-specific characteristics.

If district-level refugee share is correlated with the variables included in w_{it}, the simple regression estimate of β_1 will be biased. Therefore, we employ a three-way fixed effects (FE) estimation (Andrews et al. 2006) to weaken the assumption of uncorrelated unobservables.

While simple two-way FE models are routinely used to control for unobserved regional heterogeneity $\phi_{j_{(i,t)}}$ and temporal heterogeneity μ_t in cross-regional research (Giesselmann and Schmidt-Catran 2019), three-way FE models are less common. In our case, persons are not fixed in nesting districts, but might move from one district to another. The resulting compositional changes (and their effects) are neither included in $\phi_{j_{(i,t)}}$ nor in μ_t (but in α_i), and therefore neither controlled by time-, nor district-level FEs. The two-dimensional longitudinal structure of the SOEP, however, allows us to remove the person-level error component α_i.

Note as well, $n_{j(it)t}$ includes several time-varying district characteristics, which may also be correlated with district refugee share. For example, economic performance may influence selection of refugees into districts. Therefore, we incorporate several time-varying district-level controls. Altogether, our estimation of (1) is summarized in equation (3):

$$(3) \qquad \hat{y}_{it} = \beta_0 + \beta_1 rate_{jt} + \theta' X + \sum_{j=1}^{N-1} \gamma_j \, d_j + \sum_{i=1}^{n-1} \delta_i \, p_i + \sum_{T=1}^{T-1} \zeta_t \, a_t + \sum_{T=1}^{T-1} \varphi_{t1} \, east \, a_t + w_{it},$$

where $\sum_{j=1}^{N-1} \gamma_j \, d_j$ is a set of district dummies d_j with coefficients γ_j; $\sum_{i=1}^{n-1} \delta_i \, p_i$ is a set of person-level dummies p_i with coefficients δ_i; $\sum_{T=1}^{T-1} \zeta_t \, a_t$ is a set of year dummies a_t with coefficients ζ_t; $\sum_{T=1}^{T-1} \varphi_{t.} \, east \, a_t$ are sets of region-specific year dummies allowing for different trends in eastern and western parts of Germany; and X is a vector of time-varying

covariates on district- and individual-level with coefficient-Vector θ'. The error w_{it} now solely consists of e_{it} and a residual version of $n_{j_{(i,t)}t}$.

To estimate (3), we use linear regression for all dependent variables. Thus, for all but one dependent variable, (3) translates into a FE linear probability model. Unfortunately, FE logit models only use units with variation in the dependent variable to identify the parameters. This discards the meaningful cases that do not change even though refugee shares are increasing. Therefore, we only estimate FE-logit models for robustness tests.

Although we use an even more stringent three-way FE approach, recent scholarship raises concerns with causal interpretations of two-way FE models (Callaway et al. 2021; Wooldridge 2021). These concerns include effect heterogeneity, variation in treatment timing and trend heterogeneity across districts.

With regard to the non-random location processes of refugees in Germany, our data could be vulnerable to selection of refugees into district-level response-to-treatment patterns. Following Wooldridge (2021), who shows that multi-level FE estimators are consistent even when selection is correlated with effect heterogeneity, we maintain our estimators are unbiased. We argue that our estimators are also not particularly vulnerable to effect heterogeneity across periods. This is because there is hardly any variation in treatment *timing* across German districts, but more in its "*dosage*". Nevertheless, robustness checks focus only on the core period of the refugee increase 2012-2017 (see Figure 2 below).

Finally, the parallel trends assumption may not be met in our analytical design. Specifically, a visual inspection of Figure 1 below reveals systemic east/west disparities in the increase in refugees. This may coincide with region-specific dynamics in exclusionary beliefs/behaviors (Auspurg et al. 2019), which consequently may confound our estimates. Therefore, following Auspurg and colleagues (2019), we specify interaction terms between the time-FEs and an east/west indicator to allow for different year effects in eastern and

western Germany in the main models (see equation 3). An additional robustness test removes the parallel trend assumption entirely – and therefore also differences in dynamics between, for example, urban and rural areas – by including district-specific slopes for a continuous time variable (fixed effects individual slopes [FEIS], Brüderl and Ludwig 2015).

Regarding inference, we report standard errors clustered at the district level as a robustness test. Further robustness tests confine the models to western Germany and substitute planning regions (instead of districts).

For the analyses of interaction effects between district-level unemployment and refugee shares, we use a rigorous within-district within-unit interaction approach. The three-way double demeaned interaction estimator (dd-IE) is implemented through adding interactions of district- and time-dummies with person-level demeaned macro-variables (to control for district-level effect heterogeneity [Giesselmann and Schmidt-Catran 2019]) and person-level demeaned factors (to control for individual-level effect heterogeneity [Giesselmann and Schmidt-Catran 2020]).

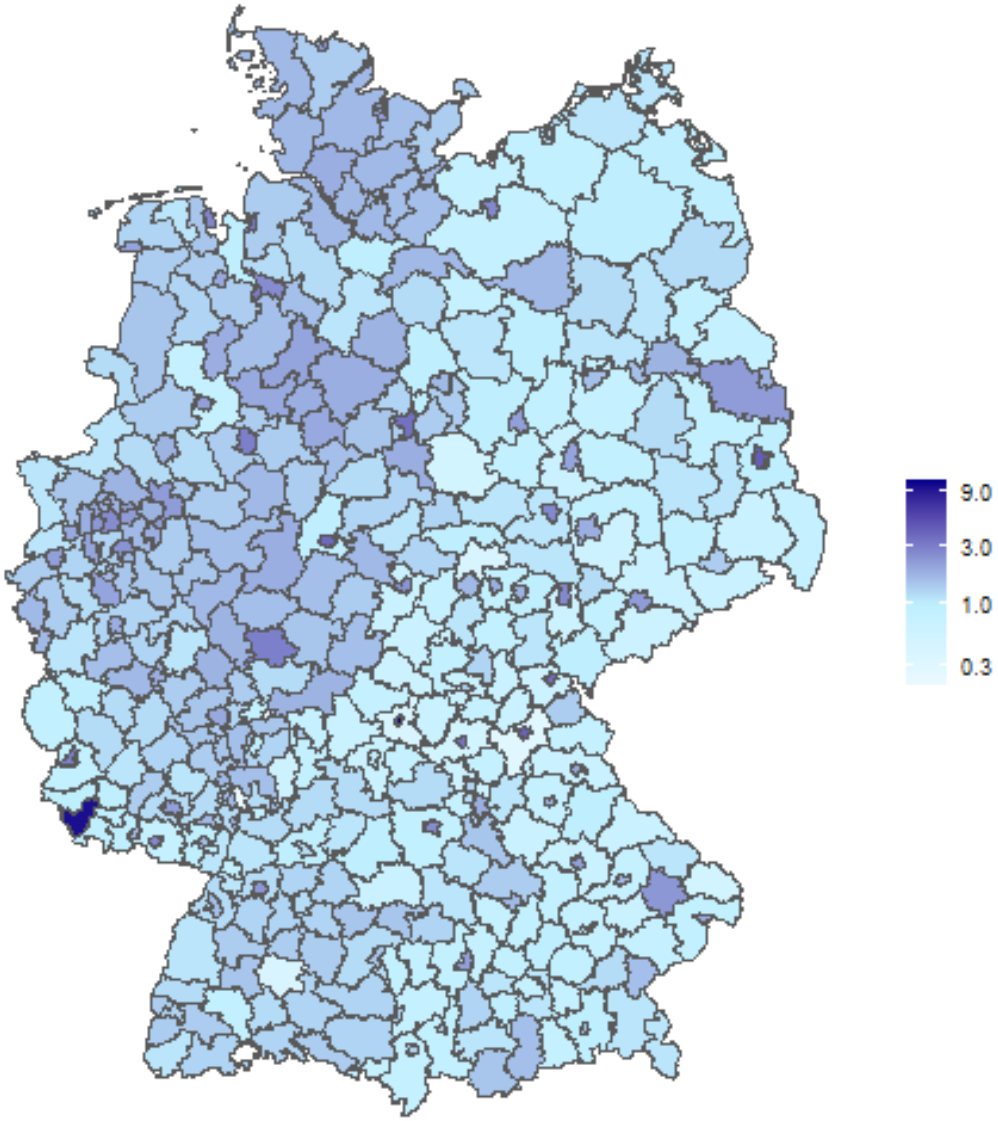
RESULTS

Descriptive Patterns

Figure 1 displays the percentage point increase in refugee shares across German districts, 2009-2017. There was substantial variation over time and across districts amidst the nation-wide increase. At the district-level, the average refugee share was more than 4 times higher in 2017 than in 2009. On average across districts, the refugee share increased about 1.4 percentage points (see Table 1).[18] The refugee share increased more than 10 percentage points in two districts, some districts never received any refugees, and a few saw declines.

[18] A random district is expected to have an increase which deviates about one percentage point (or 70 percent) from this average increase of 1.4 percentage points.

Figure 1: The Percentage Point Increase in the Refugee Share of the Population Across Districts in Germany, 2009-2017

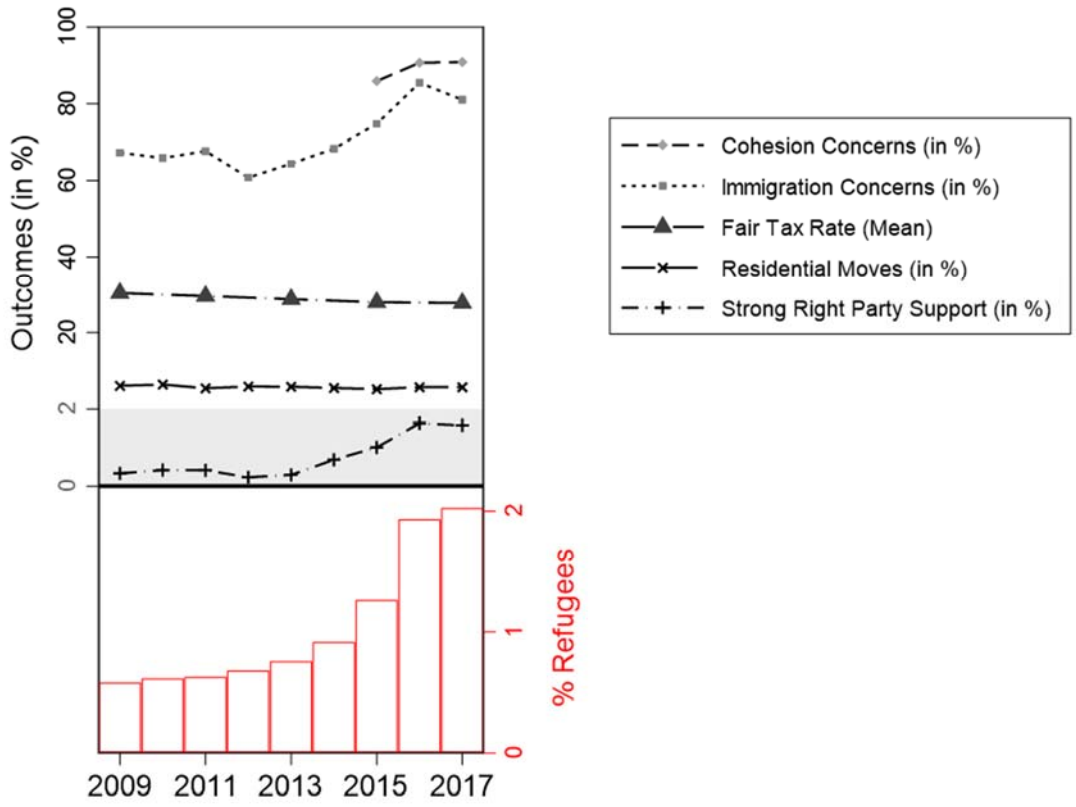


(Source: BBSR Bonn 2020)

Figure 2 overlays the trends in the means of the individual-level dependent variables on the overall refugee shares over time (at the overall individual-, not district-level). While the refugee share increased dramatically 2009-2017, two dependent variables increased considerably, one increased moderately, one was stable and one declined. Concerns about

immigration and strong far right party support increased especially after low points around 2012. By 2016, more than 85% of respondents had concerns about immigration and almost 2% strongly supported far right parties. Concerns about social cohesion also rose from 86% in 2015 to about 90% in 2017. By contrast, residential moves were stable, and subjective fair tax rates declined (about 2.7 percentage points). Hence, except the last two outcomes, the overall, nation-wide trends suggest a rise in exclusionary beliefs and behaviors.

Figure 2: Trends in Means of Dependent Variables and Refugee Shares in Germany, 2009-2017

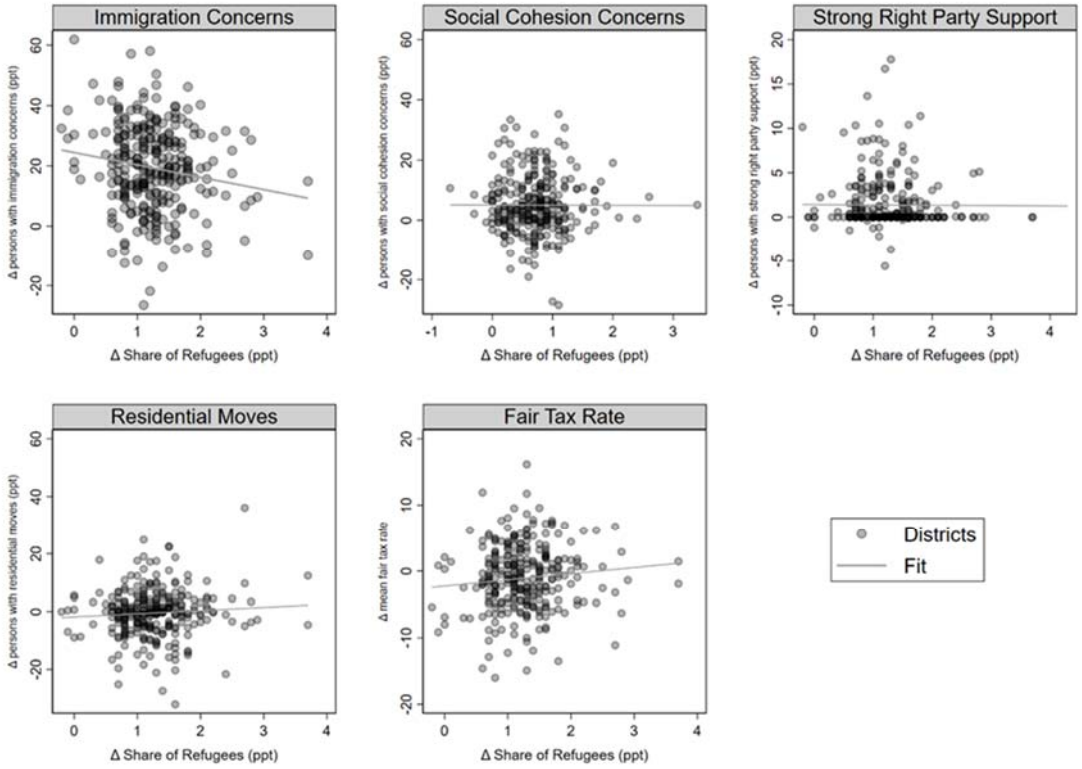


(Source: SOEP v34, BBSR Bonn 2020)

The next question is whether these co-occurring nation-level over-time trends – in refugee shares and exclusionary beliefs and behaviors – are reflected in associations at the district-level (see Figure 3). Figure 3 concentrates on the district-level changes from 2012 to

2017 – the more intense period of the increase in refugees (except concerns about social cohesion, which is only available 2015-2017). The x-axis is the change in refugee shares.

Figure 3: District-Level Change Scores 2012-2017 in Percentage Points: Dependent Variables by Refugee Shares



Notes: Source SOEP v34, BBSR Bonn 2020 (N=285). Weighted bivariate correlations. Due to data availability, reference periods for social cohesion (2015-2017) and subjective fair tax rates (2013-2017) differ. Two outlier districts with Δ Refugees > 9 percentage points were omitted. 112 Districts with n(Persons)<20 were omitted.

Inspection of the y-axes reveals that the clear majority of districts experienced increases in concerns about immigration and stong far right party support. This is consistent with the overall nation-wide trends. However, the increases in concerns about immigration were actually greater in districts with smaller increases in refugee shares. Indeed, the upper left panel shows a fairly steep negative district-level correlation between changes in concerns about immigration and refugee shares. Also, increases in strong far right party support are similar across districts with high or low increases in refugee shares. Further, increases in

social cohesion concerns are unrelated to increasing refugee shares and there are only very slight positive relationships between refugee shares and residential moves and subjective fair tax rates. Thus, contrary to the co-occuring nation-level trends, the correlations in district-level changes reveal no evidence of strong positive relationships between increasing refugee shares and exclusionary beliefs and behaviors.

Remember, however, that moves of particularly exclusionary individuals out of districts with increasing refugee shares could attenuate the correlations between simple district-level changes. Further, the two time point 2012-2017 bivariate correlations between unweighted district-level means could mask potential relationships.

Three-Way FE Models

Table 2 reports the three-way FE models. The top row features the coefficient for district-level refugee shares. For each outcome, the first reduced-form model omits all individual- and district-level controls and focuses solely on refugee shares. The second model includes individual- and district-level controls. Refugee shares are significantly negatively associated with concerns about immigration and strong far right party support. Increasing refugee shares are negatively signed for concerns about social cohesion, and positively signed for residential moves and subjective fair tax rates. However, refugee shares are not significantly associated with any of those three outcomes. None of these main models in Table 2 reveals a significant increase of exclusionary beliefs and behaviors as a response to increasing refugee shares. Hence, none of the results in Table 2 endorse fractionalization and threat theories. The estimates for concerns about immigration and far right party support reveal a significant decrease of exclusionary beliefs with increasing refugee shares and are therefore consistent with contact theory.

Table 2: Three-Way FE Linear Regression Models of Exclusionary Beliefs and Behaviors

	Immigration Concerns[a]		***Cohesion Concerns***[a]		***Strong Right Support***[a]		***Residential Moves***[a]		***Fair Tax Rates***[b]	
	Model A1	Model A2	Model B1	Model B2	Model C1	Model C2	Model D1	Model D2	Model E1	Model E2
District-level										
% Refugees	-.021***	-.025***	-.002	-.002	-.003***	-.002**	.003	.004	.002	.002
	(.004)	(.004)	(.005)	(.006)	(.001)	(.001)	(.002)	(-.002)	(.002)	(.002)
% Unemployment		.004		.006		-.0003		.006***		-.002
		(.003)		(.007)		(.001)		(.002)		(.001)
GDP Per Capita		-.001		.0002		-.0002		.001***		.001**
(thousands)		(.001)		(.001)		(.0001)		(.0004)		(.0003)
Individual-level										
HH Income (ln)		.015***		-.000		.001		-.017***		.024***
		(.004)		(.007)		(.001)		(.002)		(.003)
Unemployed		.010		-.024*		.001		.008*		
		(.007)		(.011)		(.001)		(.004)		
Pensioner		.004		-.034**		-.003*		-.006		
		(.006)		(.012)		(.001)		(.004)		
Inactive (other)		.002		-.023**		-.000		-.007**		
		(.005)		(.008)		(.001)		(.003)		
Married		.015*		-.030*		.002		-.002)		.004
		(.006)		(.013)		(.001)		(.004)		(.003)
One Child		-.003		.050***		-.002		-.019***		-.016***
		(.005)		(.011)		(.001)		(.003)		(.002)
2+ Children		-.019*		.034		-.001		-.042***		-.023***
		(.008)		(.018)		(.002)		(.004)		(.004)
Constant	.742***	.615***	.636***	.572***	.016	.021	-.067	-.057	.248***	.073
	(.058)	(.075)	(.142)	(.169)	(.012)	(.015)	(.035)	(.045)	(.027)	(.038)

Observations	162245	162245	55994	55994	158113	158113	180765	180765	43592	43592
Number of Districts	401	401	401	401	401	401	401	401	401	401

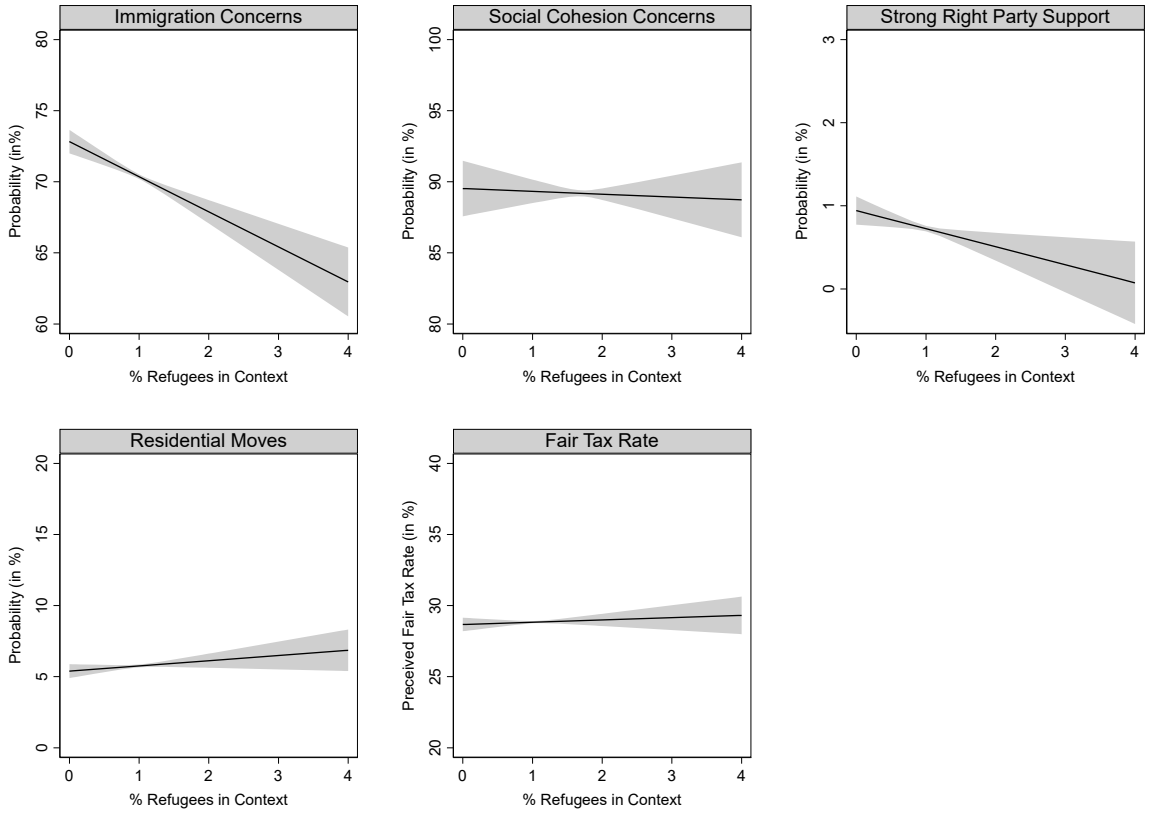
Notes: Models also include fixed time trends for east and west regions. Standard errors in parentheses.
Data Sources: SOEP v34, BBSR Bonn
[a]Linear Probability Model
[b]Linear Model
* p<.05, ** p<.01, *** p<.001 (two-tailed tests).

The magnitude of these statistically significant coefficients also suggests substantively significant effects. For a one percentage point increase in district-level refugee shares, the probability of having concerns about immigration declines by about 0.02-0.03. The coefficient grows when we include district-level controls in model A2. Recall, the overall mean for concerns about immigration is about 0.7 (see Table 1). For a one percentage point increase in refugee shares, the probability of strong support for far right parties declines by about 0.002-0.003. The coefficient shrinks when we include district-level controls in model C2. Recall, the mean strong far right party support is only 0.006 (see Table 1).

Figure 4 displays the predicted probabilities for each outcome across the prototypical range of district-level refugee shares. That is, Figure 4 uses the slopes from the second models in Table 2 to make predictions across the middle 90% of the distribution of district-level refugee shares (i.e. 0-4%). These projections hold other variables constant at their means and refer to an average point in time within the observational window.

In districts with near zero refugee shares, about 73% of respondents have concerns about immigration and about 1% of respondents strongly support far right parties. Where refugee shares approach 4%, the share of persons with immigration concerns are about 10 percentage points lower and strong support for far right parties approaches zero. It may be helpful to contextualize these results with other studies. For example, a 0-4% shift in refugee shares is predicted to: (a) have a similar sized impact on concerns about immigration as long-term unemployment (Kratz 2021); (b) offset about 75% of the average German 9/11-effect, and (c) amount to about 70% of the difference between persons with left- and radical right party preference (Czymara and Dochow 2018).

Figure 4: Predicted Values of Exclusionary Beliefs and Behaviors Across District-Level Refugee Shares



Notes: Graphs by Dependent Variable. Source SOEP v34, BBSR Bonn 2020. Predicted values are for a prototypical individual in a prototypical district (i.e. all covariates fixed at mean values). Shading is 95% C.I.'s. 3-way FE models (Models A2-E2, Table 2). The mapped range of the prediction reflects the 90%-core distribution for district-level independent variables.

The results for the controls can be reported succinctly. District-level unemployment is significantly positively associated with residential moves. District-level GDP per capita is significantly positively associated with residential moves and subjective fair tax rates. At the individual-level, household income is significantly positively associated with immigration concerns and subjective fair tax rates and significantly negatively associated with residential moves. Being a pensioner, inactive, and married, and having 2+ children are all significantly associated with a few outcomes.

Table 3 shows up to 10 robustness checks. Across all alternatives estimations, district-level refugee shares are significantly negatively associated with concerns about immigration.

This finding appears to be very robust. The lack of a significant relationship is also robust for subjective fair tax rates.

Table 3: Robustness Tests: Coefficients for Contextual Refugee Shares Across Different Specifications and Estimations

	Immigration Concerns *(Model A2)*	***Cohesion Concerns*** *(Model B2)*	***Strong Right Support*** *(Model C2)*	***Moves*** *(Model D2)*	***Fair Tax Rates*** *(Model E2)*
Main 3-Way Models	-.025***	-.002	-.002**	.004	.002
Cluster Robust SEs	-.025**	-.002	-.002	.004	.002
Metric Scale DV	-.044***	.020	-.002	-	-
Alternative Dichotomization	-.019***	.022*	-.001	-	-
3-Way FE 2012-2017	-.022***	-.002	-.003**	.005*	.002
3-Way FEIS	-.021**	.003	-.002	.008	-.003
Lagged Indep. Variable	-.018***	.005	-.004***	.004	.002
Unweighted Results	-.011**	.003	-.001	.002	.001
Western Germany Only	-.021***	.002	-.002*	.007*	-.002
Planning Region Level (N=96)	-.034***	.018	-.002	.012**	-.003
FE-Logit	-.124***	.191***	-.569***	.162***	

Note: FE linear regression models, replicating models A2-E2 (Table 2).
Data Sources: SOEP v34, BBSR Bonn
* p<.05, ** p<.01, *** p<.001

District-level refugee shares remain significantly positively associated with strong support for far right parties in 4 of 10 alternative approaches. Focusing just on 2012-2017, only including west Germany, using lagged refugee shares and in logit models, a rising refugee share is significantly negatively associated with strong far right party support. In fact, if we use lagged refugee shares, the coefficient for far right parties is robustly and significantly negative with an alternative dichotomization, the metric scale, and cluster robust SEs (not shown). Also, none of the 10 alternative approaches show refugee shares are positively signed (and none are significantly positive) for strong support for far right parties.

In 8 of the 10 alternative approaches, district-level refugee shares continues to be insignificantly related to concerns about social cohesion. The coefficient is negatively signed in three models and positively signed in 8 models. That said, 2 of the 11 robustness checks (with alternative dichotomization or logit) reveal significant positive relationships between refugee shares and cohesion concerns.

In 4 of 8 alternatives, district-level refugee shares are still not significant for residential moves. In the 2012-2017 period, in western Germany only, when refugee shares are measured at the planning region instead of district level, and in logit models, we find a significant positive association with residential moves. Although we contend that the estimation strategy in Table 2 is most justified, we acknowledge that there is *some* evidence of a significant positive association between refugee shares and residential moves.

Interactions with District-Level Unemployment

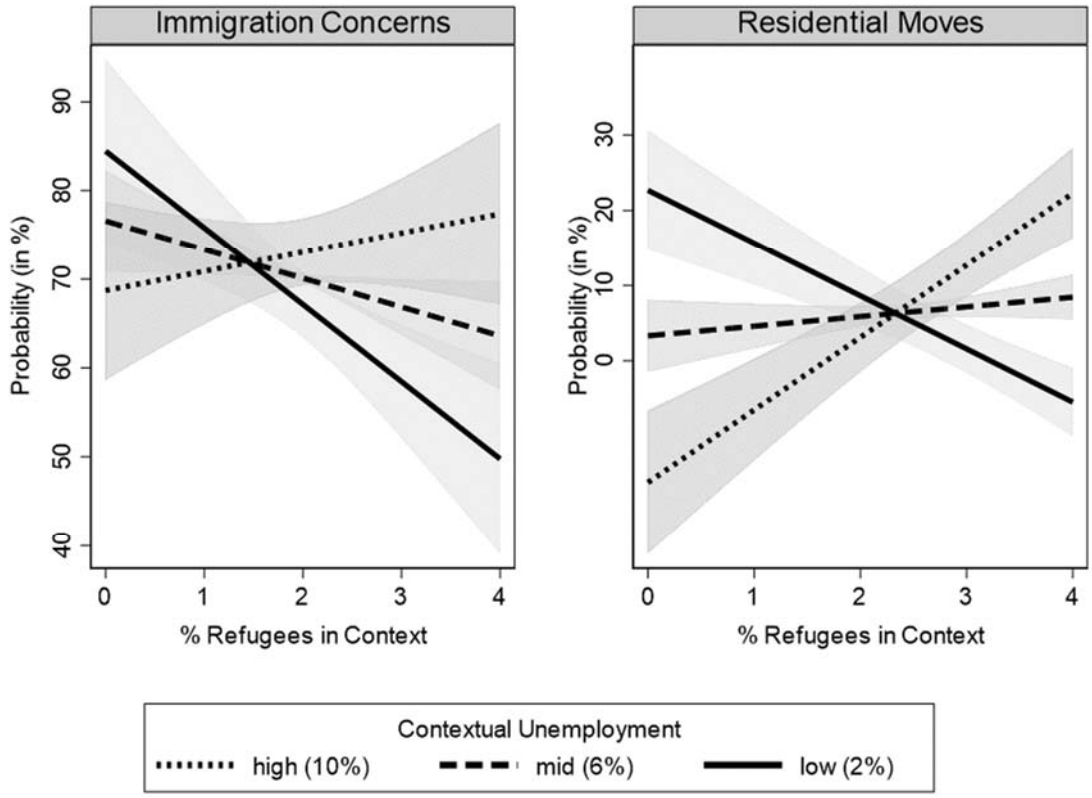
As motivated above, it is plausible that the relationship between district-level refugee shares and the outcomes varies across district-level unemployment rates. In Table 4, we interact refugee shares and unemployment rates. Table 4 shows that refugee shares significantly positively interact with unemployment rates for concerns about immigration and residential moves. We do not find significant interactions for the other three outcomes. In Figure 5, we display the predicted probabilities across the core (i.e. middle 90%) range of the two district-level variables for the outcomes with significant interactions.

Table 4: Three-Way FE Linear Regression Models of Exclusionary Beliefs and Behaviors With Interactions Between District-Level Refugee Shares and Unemployment

	Immigration Concerns[a]	***Cohesion Concerns***[a]	***Strong Right Support***[a]	***Residential Moves***[a]	***Fair Tax Rates***[b]
	Model A3	Model B3	Model C3	Model D3	Model E3
District-level					
% Refugees[c]	.028	-.123	-.012	-.216***	-.024
	(.041)	(.099)	(.008)	(.025)	(.023)
% Unemployment[c]	.080***	-.145	-.009	-.053***	-.030*
	(.024)	(.126)	(.005)	(.015)	(.015)
% Unemployment *	.014**	.030	.0004	.021***	-.0002
% Refugees	(.005)	(.030)	(.001)	(.003)	(.003)
GDP Per Capita	-.004***	.016	-.0003	-.001	.002***
(thousands)	(.001)	(.009)	(.000)	(.001)	(.001)
Individual-level					
HH Income (ln)	.013**	.0002	.0001	-.016***	.023***
	(-.004)	(-.007)	(-.001)	(-.002)	(-.003)
Unemployed	.008	-.021	.001	.008*	
	(.007)	(.012)	(.001)	(.004)	
Pensioner	.004	-.043***	-.003*	-.004	
	(.007)	(.012)	(.001)	(.004)	
Inactive (other)	.001	-.023**	.000	-.006*	
	(.005)	(.008)	(.001)	(.003)	
Married	.015*	-.031*	.001	.001	.003
	(-.006)	(-.013)	(-.001)	(-.004)	(-.003)
One Child	-.004	.057***	-.002	-.019***	-.017***
	(.005)	(.011)	(.001)	(.003)	(.003)
2+ Children	-.019*	.041*	-.001	-.041***	-.025***
	(.008)	(.019)	(.002)	(.004)	(.004)
Constant	.727***	.090	.036*	.200***	.079
	(.085)	(.442)	(.017)	(.051)	(.046)
Observations	162245	55994	158113	180765	43592
Number of Districts	401	401	401	401	401

Note: Models also include fixed effect heterogeneity (for % Unemployment and % Refugees) and fixed time trends for east and west regions. Standard errors in parentheses.
Data Sources: SOEP v34, BBSR Bonn
[a]Linear Probability Model
[b]Linear Model
[C]oefficients refer to a random reference district
* p<.05, ** p<.01, *** p<.001 (two-tailed tests).

Figure 5: Conditional Effect of District-Level Refugee Share by Unemployment Rate



Notes: Graphs by dependent variable. Source SOEP v34, BBSR Bonn. Predicted values are for a prototypical individual in a prototypical district (i.e. all covariates fixed at means). Shading is 95% C.I.'s. 3-way FE models (Models A3-E3, Table 4). The mapped range of the prediction reflects the 90%-core distribution for district-level independent variables.

Figure 5 shows the negative relationship between district-level refugee shares and immigration concerns is conditional on district-level unemployment. As Table 2 shows, rising refugee shares are negatively associated with concerns about immigration in a district with average unemployment. Yet, the estimated interaction coefficient predicts an increase in the estimated effect of refugee shares by about 0.014 for every 1 percentage point increase in the unemployment rate. Thus, in a district with low unemployment rates (i.e. 2%), the negative association is predicted to be even stronger. However, the coefficient for refugee shares switches its sign if the unemployment rate exceeds its mean by about 2 percentage points. Consequently, the coefficient is predicted to be statistically and substantively

significantly positive where unemployment rates are very high (i.e. 10%+). Instead of alleviating concerns about immigration, the refugee share will fuel concerns about immigration in the context of high unemployment.

For residential moves, Figure 5 reveals a similar pattern. The (effectively) zero association between refugee shares and residential moves is conditional on an average district-level unemployment. If district-level unemployment increases about 1 percentage point, the effect of district-level refugee shares on residential moves is expected to increase significantly by about 0.02 units. If the unemployment rate switches from its district-level mean of 6% to very high unemployment of 10%, the estimated coefficient for refugee shares on residential moves shifts from 0.004 to 0.12. Thus, the likelihood of residential moves is predicted to increase significantly by about 8.8 percentage points with an increase in refugee shares of about 1 percentage point in a district that exceeds average unemployment by 4 percentage points.

Table 5 provides a variety of robustness checks on the interaction results in Table 4. In general, the interactions between district-level refugee shares and unemployment are robust. Like in Table 4, the interactions are never statistically significant for cohesion concerns, strong far right party support, or subjective fair tax rates.

Table 5: Robustness Tests: Coefficients for Interactions of Contextual Refugee Shares and Unemployment Across Different Specifications and Estimations

	Immigration Concerns	***Cohesion Concerns***	***Strong Right Support***	***Moves***	***Fair Tax Rates***
	(Model A3)	*(Model B3)*	*(Model C3)*	*(Model D3)*	*(Model E3)*
Main 3-Way Models	.014**	.03	.004	.021***	-.0002
Cluster Robust SEs	.014	.03	.004	.021**	-.0002
Metric Scale DV	.017*	.052	.0001	-	-
Alternative Dichotomization	.003	-.014	-.0002		
3-Way FE 2012-2017	.010	.03	.0001	.021***	-.0002
3-Way FEIS	.017***	.047	.0001	.022***	-.0002
Lagged Indep. Variable	.002	.018	-.001	.0001	-.0002
Unweighted Results	.014**	.096	.004	.017***	.0005
Western Germany Only	.005	.045	.001	.032***	-.0001
Planning Region Level (N=96)	.004	.035	.001	-.006	.024

In 3 of the 9 alternatives, the interaction remains significantly positive for immigration concerns. When clustering the standard errors at the district-level, using an alternative dichotomization of the dependent variable, using only the 2012-2017 period, using lagged refugee shares, in western Germany, and using the planning region instead of the district-level, the interaction is positively signed but not statistically significant.

In 5 of 7 alternatives, the interaction remains significantly positive for residential moves. The insignificant coefficient for lagged refugee shares is plausibly due to the fact that the dependent variable measures prospective moves. The other exception is that the interaction is not significant (and is even negatively signed) when we use the planning region instead of district level. Nevertheless, the positive interaction between district-level refugee shares and unemployment appears to be generally robust for residential moves.

DISCUSSION

The 2015-2016 increase in refugees to Germany was a significant historical event and was highly visible and politically controversial. As well, the increase provides unique leverage for analyzing the consequences of rising immigration and ethno-linguistic heterogeneity. We innovatively focus on within-district/within-person change by combining individual-level panel data and precise measures of district-level refugee shares. We analyze three-way FE models of five different salient exclusionary beliefs and behaviors. Our analyses are motivated by and can inform fractionalization, minority threat, and contact theories. To put our results in context, we work backwards through those theories.

For contact theory, rising district-level refugee shares should reduce concerns about immigration and cohesion, strong far right party support and residential moves. Indeed, our strongest finding is that rising refugee shares are robustly and significantly negatively associated with concerns about immigration. Contact theory is also supported by the (less robust) finding that rising refugee shares are negatively associated with strong far right party support. As well, contact theory is supported by the fact that refugee shares do not significantly increase concerns about cohesion, subjective fair tax rates or residential moves.

Threat theory would expect rising district-level refugee shares to increase concerns about immigration and cohesion, strong far right party support and residential moves and to decrease subjective fair tax rates. The analyses yield very little evidence in support of the generic version of threat theory. At best, some robustness checks reveal some evidence of positive effects for concerns about cohesion and residential moves. However, our main models and the majority of the evidence fails to reveal robust effects on cohesion concerns or residential moves. Further, the occasional significant positive coefficients use strategies that have real limitations and are less preferred than our main models. For instance, the 96 planning regions are far more aggregated from and distal than the district. Also, logit models

discard cases where the dependent variables do not change even though refugee shares are increasing. Hence, most of the models and the stronger evidence contradict threat theory.

The results also contradict fractionalization theory. Fractionalization theory would expect positive relationships between rising district-level refugee shares and concerns about immigration and cohesion, strong far right party support, residential moves, and especially subjective fair tax rates. Aside from the aforementioned occasional robustness checks supporting threat theory, the results fail to support fractionalization theory.

One prevalent conditional hypothesis, especially for threat theory, is that refugee shares should be especially likely to cause exclusionary beliefs and behaviors in a context of high unemployment. Indeed, we show a significant positive interaction between refugee shares and unemployment rates for immigration concerns and residential moves. Our results suggest it takes high/substantially increasing levels of unemployment for refugee shares to trigger these reactions. Rather than generic immigrant threat processes, our evidence contributes to the growing literature that suggests that the activation of immigrant threat may require high unemployment rates.

It is essential to put this finding in context, however. The principal reason for migrating is to find employment and job opportunities are usually a key determinant of immigrant destinations. Further, the German government factored economic performance into the quota for refugee settlement. Hence, most districts with rising refugee shares are not districts with very high unemployment. Nevertheless, our findings suggest that the way to avoid minority threat and fractionalization is to ensure that refugees do not get located in high unemployment contexts. If governments place refugees in contexts that do not have high unemployment, policymakers should be able to suppress contextual threat effects and to substantively reduce exclusionary beliefs and behaviors.

Although we find that rising district-level refugee shares mostly reduced or at least did not heighten exclusionary beliefs and behaviors, it is important to acknowledge the descriptive national-level trends in Figure 2. Recall, concerns about immigration and cohesion and strong far right party support increased at the same time that refugee shares rose nationally. Recall as well, the AfD saw huge increases in vote shares after the increase in refugees and no one disputes that the increase in refugees was controversial. These trends raise the question: how can these national-level trends occur while our analyses show very little evidence of a relationship between rising district-level refugee shares and heightened exclusionary beliefs and behaviors?

It appears that two cross-cutting social processes may occur at different levels simultaneously. At the national level, the rise in exclusionary beliefs and behaviors could be at least partly a consequence of the threat constructed after the national-level increase in refugees. At the district-level however, rising refugee shares lead to contact and reduced exclusionary beliefs and behaviors. In districts, these two processes seem to come together in almost paradoxical ways. There is heightened exclusionary beliefs/behaviors over time in the majority of districts. Yet, exclusionary beliefs/behaviors are stronger in districts with smaller growth in refugee shares and weaker in districts with greater growth in refugee shares. This is consistent with Czymara and Dochow's (2018) findings that (a) threat is largely transported through political controversy and media attention and therefore converted to concerns on the national level; and (b) greater national level media attention has a more powerful effect on concerns about immigration in districts with small (not large or growing) immigrant shares. Similarly, this complements Gehrsitz and Ungerer's (2018) finding that while national-level refugee inflows were associated with AfD votes, local-level refugee inflows undermined AfD

votes. At the risk of over-simplification, local level contact appears to counteract national level threats (Baldassarri and Abascal 2020; Fox 2004; Weber 2015).[19]

If this two-level cross-cutting social process is happening, our evidence could provide some support for both contact and threat theory. This is consistent with a key theme in the classic minority threat literature (Blumer 1958). That is, threat is activated more by entrepreneurial politicians and the media rather than contact with objective minority population shares. As Blumer remarks (1958: 6), "It is not the experience with concrete individuals in daily association that gives rise to the definitions of the extended, abstract groups. . .The collective image of the abstract groups grows up not by generalizing from experiences gained in close, first-hand contacts but through the transcending characterizations that are made of the group as an entity. . .in the 'public arena.'"

To the extent this is correct, the evidence would favor threat theory over fractionalization theory. Threat theory can operate at the national level separate from local level processes. By contrast, fractionalization theory predicts heterogeneity at both national and local levels to cause exclusionary beliefs/behaviors. Further, fractionalization theory mainly focuses on objective shares of the population. By contrast, threat theory always emphasized subjectively perceived shares and the social construction of threat.

Of course, more research is needed on the increase in refugees to Germany specifically, and the consequences of immigration and ethno-linguistic heterogeneity generally. We can suggest several directions. First, scholars can apply our research design to analyze other objective economic and social outcomes beyond residential moves. Given the

19 We also estimated models including both planning region and district levels. In those four-way FE models, district-level refugee shares have a robustly significant negative coefficient for immigration concerns. This confirms our interpretation that district-level contact is not just capturing some upper-level covariation. In addition, this provides some ex-post justification for treating districts as the relevant local context.

German refugee increase was much larger and more widespread, it would be useful to revisit the debate about the employment consequences of immigrants based on the Miami Mariel Boatlift (Card 1990). Second, one can investigate longer term social consequences from the increase in refugees. For example, did voters' immediate shift towards the AfD result in enduring political realignments? Third, one can compare and interact objective refugee shares with subjective perceptions and media and politicians' constructions of refugees (Czymara and Dochow 2018). Fourth, it would be useful to open the black box of contact to investigate how the increase in refugees played out at the neighborhood level in terms of local visibility, friendship, local media, local politics, and community mobilization welcoming refugees and immigrants (Maxwell 2019). Fifth, future analyses can test the effects of district-level refugee shares on sub-samples based on key individual characteristics like education or employment. Sixth, studies should explore the potential cross-cutting processes by integrating national, planning region, and district levels of analysis.

In conclusion, this study provides a cautiously encouraging perspective on the political and social feasibility of multiculturalism and ethno-linguistic heterogeneity. Even though Germany experienced a dramatic social change in a short period of time, and even though it was controversial nationally, the local district-level reaction was more inclusionary than expected. Germans exposed to greater district-level refugee shares became less – not more – concerned about immigration. To a certain extent, Germans exposed to greater district-level refugee shares expressed less – not more – strong support for far right parties. Moreover, Germans experienced dramatic increases in district-level refugee shares without expressing greater concerns about cohesion or undertaking more residential moves or desiring lower tax rates. For the most part, and where unemployment was not high, Germans who encountered greater refugee shares in their local districts did not respond with exclusionary beliefs and behaviors. As rich democracies continue to receive immigrants, and

become more ethno-linguistically heterogeneous, the German experience suggests that exclusionary beliefs and behaviors can be reduced through contact.

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