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Do asylum seekers foster happy communities? Natives' life satisfaction responses to the spatial distribution of asylum seekers in Germany.

Abstract

How the presence of asylum seekers impacts natives in terms of subjective well-being has not been established to date. This paper seeks to give an answer to this question by researching how the spatial distribution of asylum seekers across counties affects citizens of local receiving communities in terms of subjective well-being. The natural experiment that is on one hand provided by the German semi-random distribution system of asylum seekers, and on the other hand by the unexpected large influx of asylum seekers during and since the refugee crisis (2004-2005), will be exploited in this paper. I draw on high-quality NUTS3 level panel-data from the German Socio-Economic Panel (SOEP) in combination with data on the regional distribution of asylum seekers from the Research Data Centre (RDC) for 2010-2019. An OLS fixed effects method is used combining both individual, year and regional fixed effects. On average, there is no statistically significant relationship found between the county share of asylum seekers and natives' life satisfaction. Further subgroup analyses reveal no statistically significant effects either, except for natives aged 35 or less, who are found to be impacted positively. Exploring the impact of asylum seeker shares on seven domains of well-being (health, sleep, work, income, dwelling and leisure) revealed solely statistically insignificant effects. Conclusions regarding statistical significance are based solely on the presented significance stars due to an issue with the standard errors.

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The views stated in this thesis are those of the author and not necessarily of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

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1. Introduction

“Wir schaffen das!” With these famous three words, spoken during a period by many referred to as the European Refugee Crisis, German Chancellor Angela Merkel premiered Germany’s new open-door policy towards asylum seekers, offering hope to hundreds of thousands of individuals trying to escape the atrocities of the Syrian civil war. Although the number of non-EU first-time asylum applications in Europe peaked in 2015, hitting a record since 1985, the numbers have not returned to the pre-crisis level ever since. In other words, European countries have been facing mounting numbers of asylum seeker inflows for years. The proliferation of environmental issues and the continuation of wars, such as the ongoing one between Russia and Ukraine, make it highly unlikely that this number will decrease. As a result, heated discussions among politicians, media and policymakers about the admission, distribution and integration of these people have been a contemporary ubiquity.

In reaction to Merkel’s decision to open borders to Syrian refugees in 2015, many Germans showed eagerness to help refugees, wanting to showcase the country’s welcoming culture. Others, on the other hand, disapproved and felt betrayed, even driving the neo-fascist party Alternative for Germany (AfD) to praise a renewed anti-immigrant agenda. Strongly opposing attitudes towards asylum seekers are not new, but are a phenomenon characterized by the term Not In My Backyard (NIMBY) (Lubbers et al., 2006; Zorlu, 2017). Driving people’s opposition is the fear that the influx of asylum seekers threatens the well-being of locals living near these centres (Lubbers et al., 2006; Zorlu, 2017). Despite the abundance of controversies and debates existing around immigration policies, how the presence of asylum seekers impacts their German hosts in terms of subjective well-being (henceforth; SWB) remains a question unanswered to date. This paper aims to fill this knowledge gap by investigating the impact of county shares of asylum seekers on the life satisfaction of German natives in local hosting communities.

SWB measures are considered good proxies for well-being and utility, having been used increasingly in the field of economics (Dolan et al., 2008; Frey & Stutzer, 2002) and public policy (Stiglitz et al., 2010), for example, by the OECD (OECD, 2013). One major strength of SWB measures, compared to objective measures of utility, is that it empowers individuals to weigh different aspects of their life according to their perception of what shapes their well-being and to what extent. As a result, SWB measures function as a summary indicator of both objective and subjective costs and benefits of certain events. On the other hand, SWB measures are relatively sensitive to behavioural biases. Due to, for instance, context effects (e.g., moods, the way a question is posed), these measures can be less precise. Overall, however, in an extensive review and summary of numerous studies testing the reliability and validity of SWB measures, the OECD concluded that the signal-to-noise ratio of SWB measures is sufficiently high, leading to a consensus that these measures are good complements to objective well-being indicators (OECD, 2013).

To provide an answer to the research question of this paper – how regional asylum seeker shares impact the life satisfaction of individuals in German receiving communities – I exploit two sources of (quasi-) random variation: (1) the sudden surge in asylum seeker inflows 2014-15 due to the Syrian war and Germany opening its borders as a reaction to it, and (2) the allocation of asylum seekers across states according to a fixed quota system, and based on current (in practice often limited) capacities across counties. For this, I draw on high-quality German individual-level longitudinal data in combination with data on the spatial distribution of asylum seekers for 2010-2019.

This paper makes three contributions to the current stream of literature. First, currently, only the topics of immigration in general and ethnic diversity in relation to well-being are explored. Research linking hosting community well-being to asylum seeker inflows specifically, has remained a territory uncharted, especially on a regional level. To my knowledge, this paper is the first to examine such a nexus. Moreover, previous research linking immigration to natives' well-being has shown substantial differences between native subgroups in terms of how their SWB impacted by migration inflows. Taking into account the possibility for differential effects to exist among several subgroups of natives, this study does not only cover the main effects but also calculates separate subgroup estimates. This will be done by dividing the sample along several individual characteristics, including gender, age, household income, marital status, birth region, completed years of education and employment status. Finally, to explore some of the potential paths via which asylum seekers could impact natives' subjective well-being, the impact of asylum seekers shares on seven domains of subjective well-being will be examined too. These domains include health, sleep, work, household income, personal income, dwelling and leisure.

The presence of asylum seekers has been theorized and proven to impact natives' SWB in both positive and negative ways. For example, Social Identity Theory (Tajfel & Turner, 1979) predicts intergroup conflict between natives and newcomers, which could impact natives' SWB negatively. On the other hand, members of asylum seeker hosting communities could be incentivized to show prosocial behavior, which, in addition to having more multicultural experiences, might lead to positive well-being effects through increased creativity, personal growth and an increased self-image (Curry et al., 2018; Lane, 2017; van der Zee et al. 2016). In the literature review section, I elaborate further on these, and several other channels that might shape the effect of asylum seekers' presence on natives' SWB. From this theoretical analysis follows that the relationship between the county share of asylum seekers and the SWB of locals in hosting communities is the outcome of a tradeoff of both negative and positive influences, resulting in a hypothesized neutral effect on the population as a whole.

As I will explain further in section 2.3, the bigger the characteristic differences between natives and asylum seekers, the greater is the potential for acculturative stress (Oberg, 2016), which can result in anger and violence (Howley et al., 2020; Phinney et al., 2001; van der Zee et al., 2016). Because of

this, I hypothesize that Germany-born residents are more negatively impacted by higher shares of asylum seekers than Germans with a migration background.

Next, previous research has found the impact of immigration in general on natives' well-being to differ depending on several native individual characteristics. For example, elderly as well as unemployed natives have been found to be impacted by migration inflows negatively (Howley et al., 2020; Ivlevs and Veliziotis, 2018), whereas young and employed individuals have been found to be impacted positively (Ivlevs and Veliziotis, 2018). In part, this could be explained through the Conflict- and Social Identity Theory framework (Tajfel & Turner, 1979), which predicts that competition for resources fuels intergroup conflict. Students, who are typically younger, might not perceive immigrants as a threat to their economic existence to the same extent as older individuals. Furthermore, someone who is unemployed and looking for a job might perceive asylum seekers as a bigger threat than an employed individual. As a result, those who feel more threatened by asylum seekers are also likely more hostile towards them, lowering their subjective well-being. In addition, several studies show that younger and highly educated individuals are not only less hostile towards refugees than other societal groups (Dempster & Hargrave, 2017), they have also been shown to have a greater openness towards cultural diversity compared to older populations (Vala & Costa-Lopes, 2010). Based on this information, I hypothesize that the relationship between the county share of asylum seekers and natives' well-being is positive for younger, as well as economically active individuals, but negative for the elderly and the economically disadvantaged (i.e., lower income families, lowly educated individuals and the unemployed). In addition to age, household income, and completed years of education, as a robustness check, I will also present separate estimates by gender, marital status and birth region.

Before discussing the results and, specifically, the statistical significance of the obtained estimates, it should be noted that all conclusions regarding statistical significance in this paper are drawn based on the displayed significance stars. Unfortunately, due to an issue with the reported standard errors, none of the claims regarding statistical significance in this paper are made with full confidence. This should be taken into account when interpreting the results of this paper.

The main findings reveal no statistically significant relationship between the share of asylum seekers in a county and the life satisfaction of locals in receiving communities, meaning that the main hypothesis, that there is a neutral population effect, cannot be rejected. Moreover, the economic significance is extremely small, further supporting this notion. Further subgroup analyses show that, only for individuals aged 35 or younger, a statistically significant positive impact is found. This is in line with the hypothesis that young individuals are positively affected by asylum seekers. That this positive effect is found specifically among younger individuals could be a result of their greater openness to cultural diversity (Vala & Costa-Lopes, 2010), making them more prone to experience the benefits of multiculturalism and more likely to engage in prosocial behavior than older individuals.

Increased creativity, personal growth, and better self-image as a result have the potential to enhance their SWB (Curry et al., 2018; Lane, 2017; van der Zee et al. 2016).

One of the challenges assigned to policymakers consists of distributing asylum seekers in a way that minimizes negative externalities and balances the cost and benefits related to the establishment of asylum seekers' accommodation facilities to both newcomers and receiving communities. This paper aims to support policymakers by providing insights on how the subjective well-being of members of local hosting communities is affected by the shares of asylum seekers in German counties.

The remainder of this paper is organized as follows. Section 2 covers past literature on migration and well-being, and discusses potential channels that could drive my results. In section 3, I elaborate on the German legal system regarding the allocation of asylum seekers and discuss its implications for the causality of my estimates. Section 4 describes the data and shows the summary statistics. Section 5 discusses this paper's methodology. In section 6, the results will be presented. The internal validity of the results will be discussed in section 7. Finally, section 8 concludes.

2. Literature Review

Most of the migration literature measures the impact of migration inflows on objective measures of well-being, or analyses how migrants themselves are affected by migration. Although the last decade has seen a modest increase in the number of studies trying to understand how natives' subjective well-being specifically is affected by immigration, it is mostly the impact of immigration in general that has been researched. In this section, I first discuss the most important findings of studies analyzing the impact of immigration in general on subjective measures of well-being. Then, the (potential) impact of the spatial concentration of asylum seekers on the subjective well-being of locals in receiving communities is reviewed.

2.1. Past research on immigration and well-being

The two pioneering studies that related immigration to natives' subjective well-being found overall positive effects and found that the effects differ depending on native characteristics (Akay et al., 2014; Betz & Simpson, 2013). Betz and Simpson (2013) used a combination of five waves of European Social Survey (ESS) data (2002-2010) on 26 European countries and macroeconomic OECD statistics to determine how country-level migrant flows impact individual happiness. They applied country- and year-fixed effects and found that recent (one- and two-year lagged) immigration flows are positively related to receiving populations' happiness levels. However, the results are argued to be too small to make an impact, and are found to be insignificant in the long term. Rather than applying a within-country comparison approach, Akay et al. (2014) focused on a single country, Germany. They used individual panel data from the German Socio-Economic Panel (henceforth; SOEP) between 1998 and

2009, and studied how native Germans' life satisfaction levels were affected by the spatial concentration of immigrants in 96 regional policy regions in Germany. This time, a positive correlation was found between immigrant share and the natives' SWB, but it was only significant for female immigrants. In addition, the effects appear stronger for natives that are male, younger, married, highly educated, employed, in West-Germany residing and middle-income earning. This paper uses an approach very similar to the one of Akay et al. (2014), but differs in the fact that it focuses on asylum seekers specifically and uses data from more recent years (2010 – 2019).

Then, following the footsteps of Akay et al. (2014), more single-country analyses were performed in studies covering the United States (US), United Kingdom (UK), Germany, and Switzerland, finding mixed results. For instance, in the United States, between 2005 and 2010, only small negative effects were found of immigrant compositions on native SWB, with the effects appearing stronger for whites than for other native racial groups (Kuroki, 2018). Four studies solely focusing on the United Kingdom (UK), exploiting British Household Panel Survey (BHPS) data as well as UK Household Longitudinal Study (UKHLS) data between 2000 and 2017, find mostly insignificant average effects. The first study used Local Authority District (henceforth; LAD) level data from the BHPS on Wales and England between 2003 and 2008. Despite a statistically insignificant average effect, Ivlevs & Veliziotis (2018) found that life satisfaction significantly increased with local-level migration inflows from citizens of the A8 countries¹, for younger people and employed individuals. It decreased in the case of unemployed, economically inactive, and older individuals. These results are driven by the 'migration shock' of 2004, and long-term estimates are insignificant. Second, a report for the Migration Advisory Committee in the UK found positive but modest overall effects at the LAD level but insignificant effects at the neighbourhood level (Giulietti & Yan, 2018). The effects vary depending on natives' ages, gender, education level and employment status but are generally small and insignificant. Lastly, Papageorgiou, (2018) and Howley et al. (2020) find insignificant effects of immigration on natives' well-being, except for a negative effect for natives older than 70. They covered England between 2009 and 2015 and all four UK counties between 2004 and 2016, respectively. The most recent paper on this topic uses German SOEP, Swiss Household Panel (SHP) and BHPS in combination with UKHLS data for 1990-2017, 2000-2017 and 2004-2017, respectively, and finds overall natives' well-being to be positively affected in Germany, negatively affected in Switzerland and not significantly affected in the UK (Giovanis, 2022), seemingly in line with the results found by the aforementioned single-country studies.

Two other recent studies have used a multi-country analysis approach similar to Betz & Simpson (2013). One study relating increases in the countries' share of immigrants to the life satisfaction of receiving populations in 28 EU countries found no lasting effect of immigrant share on

¹ The A8 countries are countries that joined the European Union in 2004. These countries include Czech Republic, Slovakia, Poland, Hungary, Slovenia, Estonia, Latvia, and Lithuania.

natives' SWB (O'Connor, 2020). Data on life satisfaction was extracted from Eurobarometer repeated cross-section data, covering the years 1990 until 2017. Estimating separate effects by the immigrants' continent of origin, refugee status, ages, and education level did not provide different results. Finally, using longitudinal data on the subjective well-being of old-aged natives in 29 European countries from 2004 until 2017 from the Survey of Health, Ageing and Retirement (SHARE), Akdede & Giovanis (2022) found well-being increases in Northern-Western and Eastern European countries and decreases in the South of Europe with migration.

In sum, the impact of asylum seekers on natives' subjective well-being remains relatively understudied. Studies on the effects of immigration in general on natives' SWB provide mixed results, with some studies suggesting a positive relationship (e.g., Akay et al., 2014), other studies a negative relationship or and others suggesting no effects (e.g., O'Connor, 2020). The effects differ depending on native characteristics, like age and gender, immigrant characteristics, and country of residence. As mentioned in the introduction, some of the potential drivers of some these differences could be as follows. First, competition for resources, which is largely responsible for intergroup conflict according to Tajfel and Turner (1979), could play a bigger role among economically vulnerable individuals, like low-educated, low-income, and unemployed individuals, potentially explaining why they are often impacted by the presence of asylum seekers more negatively than other groups. Second, young people have shown greater openness towards cultural diversity (Vala & Costa-Lopes, 2010), likely allowing them to be more open to the benefits associated with increased multiculturalism, like creativity and personal growth (Curry et al., 2018; Lane, 2017; van der Zee et al. 2016). Endogeneity concerns are in most papers tackled by using a combination of time and/or regional fixed effects. Some studies also use two-stage least squares, employing a lagged version of the migration variable as an instrumental variable. To the best of my knowledge, this study is the first to examine a potential relationship between asylum seeker inflows and native subjective well-being on the regional level in Germany.

2.2 Asylum seekers versus other types of migrants

One of the main limitations of the existing literature on migration and native well-being is that most of these studies use a predictor that relates to immigration in general, like net migrant inflows (e.g., Akay et al., 2014; Ivlevs & Veliziotis, 2018), meaning they don't differentiate between different types of migrants. It is important to study the effects of asylum seekers specifically, as their backgrounds and experiences lead them to interact differently with and to be perceived differently by native populations, thus impacting natives in other ways.

For instance, Meidert and Rapp (2019) find that compared to immigrant workers from European Union countries, refugees are perceived more negatively by native populations. A potential explanation could be that culturally, asylum seekers, who often originate from non-European countries, differ more from natives than European migrants, making natives more likely to classify asylum seekers as part of

the out-group, potentially threatening natives' well-being (as explained in more detail in section 2.3). Second, the circumstances asylum seekers face upon arrival, such as their housing situation, are very different, and, asylum seekers are generally less accustomed to Western life, often lacking social ties and experience with Western institutions (Singer et al., 2006). Third, their reasons for moving, as well as moving experiences, are different. Rather than solely moving to seek economic opportunities abroad, asylum seekers often move out of necessity. For instance, they flee violent conflict in their origin countries (Teteny et al., 2019). Fourth, Chin and Cortes (2015) find that refugees in the US score worse in terms of human capital. Specifically, they are more likely to have poor health and have more psychological problems than other types of migrants. Refugees' English proficiency is also found to be less, as is the probability of having completed college. Finally, asylum seekers are, by law, not allowed to work until their application is processed, meaning they're excluded from local labour markets.

Because of these differences, the impact of asylum seekers on natives' life satisfaction will most likely not be the same as that of other groups of migrants. Several often-mentioned channels, like local labour markets, are not relevant in this study, while other channels, like multiculturalism, could gain importance. In section 2.3, I outline several channels through which I expect locals' subjective well-being to be impacted by asylum seeker shares.

2.3. The relationship between Asylum Seekers and SWB

Despite the relative lack of studies focusing specifically on asylum seekers and the subjective well-being of native populations, at the basis of my hypothesis that the former impacts the latter lie a variety of concepts and empirical findings that I outline below. Considering how immigrants, and, in particular, asylum seekers, are found and theorized to impact other aspects of natives' lives, there is potential for a significant relationship to exist between asylum seekers and native populations' subjective well-being. First, a potential positive relationship is explored.

In a paper using the same data and context as Akay et al. (2014), ethnic diversity has been found to positively impact hosting populations' well-being levels (Akay et al., 2017). Furthermore, despite natives' safety concerns associated with the presence of asylum seekers (which will be further explained later in this section), Dröes & Koster (2020) find that safety perceptions do not decrease in neighbourhoods after Refugee Centers (henceforth, RCs) are opened. Another common fear among natives is that asylum seekers' presence leads to increased crime. However, the crime effects related to immigration are found to be relatively small (Bell et al., 2013).

The question that arises, is what could explain these empirical findings. Natives' subjective well-being could be enhanced by the presence of asylum seekers in several different ways. The integration of natives and asylum seekers leads to multicultural experiences, which are a source of creativity and personal growth (for an overview of the literature on biculturality, see van der Zee et al., 2016). Moreover, SWB could potentially be influenced positively by the presence of asylum seekers as

communities feel more purpose by helping refugees, and because they experience an increased self-image. Prosocial behaviour can significantly increase SWB through mechanisms like these (Curry et al., 2018; Lane, 2017).

Exploring a potential negative relationship between regional asylum seeker shares and natives' SWB, one of the ways in which immigrants could negatively impact natives' well-being is also through local diversity. The reason is twofold: (1) a higher share of asylum-seekers implies a more diverse community, *ceteris paribus*, and (2) local ethnic and cultural diversity are found to negatively impact natives' subjective well-being in the US and the UK (Kuroki, 2018; Longhi, 2014). Kuroki (2018) applies the following logic to explain these findings. Suppose Becker's (1957) central assumption from his theory of taste-based discrimination (i.e., that people prefer their race over another) is true. In that case, the (dis)utility resulting from changes in the local racial and migrant population should be reflected in measures of life evaluation. It should be noted that significant negative effects are only found for white, as opposed to non-white and foreign-born natives, with older populations being affected more heavily than younger ones. Based on this information, I hypothesize that individuals born in Germany are more negatively affected by the local share of asylum seekers than natives originating from other countries.

Digging deeper into the underlying reasons for locals to oppose immigration and diversity, it becomes apparent that negative attitudes towards asylum seekers, or immigration generally, are related to a broad range of factors, like economic threats as well as safety, and culture. Negative perceptions are found to be driven by the fear that the presence of asylum seekers (and immigrants more generally) threatens locals' safety, destabilizes the cultural and social status quo, or threatens the economic well-being of natives, through for instance, local labour markets or the devaluation of real estate (Bauer et al., 2000; Dempster & Hargrave, 2017; Esses et al., 2017; Giovanis, 2022; Mangum & Block, 2018; Yigit & Tatch, 2017). In the next two paragraphs, I use a psychological framework to explain how these fears determine natives' responses to asylum seekers, and discuss the implications for natives' well-being levels. Regarding and partially confirming the last fear, the openings of Refugee Centers (RCs) led to a decrease in housing prices in Dutch local hosting communities (Dröes & Koster, 2020). Using housing prices as a proxy for SWB, the authors also found that, as RCs are opened in their neighbourhood, dissatisfaction with residents' neighbourhood increased, residents' willingness to move within two years increased, as well as experienced nuisance.

How these negative attitudes towards asylum-seekers lead to negative well-being effects for natives can be explained through the lens of two interwoven psychological theories: Conflict Theory (CT) and Social Identity Theory (SIT) (Tajfel & Turner, 1979). According to CT, when groups compete for resources (e.g., economic resources or mating partners) they feel and act more hostile towards each other, which could lead to intergroup conflict. Social Identity Theory, which can be seen as an expansion and elaboration of its precursor CT, describes how intergroup conflict can arise, even in the absence of

competition for resources. The theory assumes that one's psychological well-being is greatly determined by the state of the group that a person feels they belong to, as individuals review part of their own identity, called their Social Identity, in relation to this group. This is because belonging to a certain group can provide the individual with stability, meaning, purpose and direction, fostering a healthy mental state (Haslam et al., 2009; Howley et al., 2020). However, fueling this positive sense of self is not only the perception of belongingness to an ingroup, but also the distinction from and discrimination against the outgroup (Haslam et al., 2009). Asylum seekers, often having different religious stands, backgrounds, language and other characteristics than natives, are likely to be perceived as members of the outgroup and thus as less trustworthy (Mangum & Block, 2018), making them more likely to be discriminated against (Howley et al., 2020).

The destabilization of groups is caused by processes that threaten the boundaries between in and outgroup, like integration and acculturation. They can lead to negative well-being effects as cultural transitions cause distress among groups, called "acculturative stress" (also described as "culture shocks") (Oberg, 2016). As members of both groups feel the pressure to assimilate and give up a part of their ethnic identity, this process often results in depression, anger, and, it is suggested, at times, even violence (Howley et al., 2020; Phinney et al., 2001; van der Zee et al., 2016). Hence, based on (1) UK and US evidence on local diversity (Kuroki, 2018; Longhi, 2014), (2) observed anti-immigration attitudes and (3) Social Identity Theory, a negative relationship could also exist between asylum seeker shares and locals' well-being.

From the listed empirical studies and theories above, it can be concluded that there is a big potential for asylum seekers to impact members of hosting communities in different directions, pointing to a potential tradeoff between the negative consequences of increased asylum seeker shares, like intergroup behaviour as explained by Social Identity Theory, and positive ones, like increased amounts of multicultural experiences and prosocial behaviour. Whether the inflow of asylum seekers affects natives' subjective well-being negatively or positively largely depends on these aspects.

3. Background

Asylum seekers arriving in Germany are not free to choose where they want to settle, but are by law obliged to adhere to a predetermined procedure. Specifically, they are obligated to report their arrival to a state organization or the border authorities, after which they are sent to a reception facility and their asylum procedure begins (Federal Office for Migration and Refugees, 2016). The initial distribution of asylum seekers across federal states is done by a computerized system called EASY (*Erstverteilung Asylbegehrende*, initial distribution of asylum seekers). The percentage of asylum seekers each Federal State receives is computed annually according to the *Königstein key* (Federal Office for Migration and Refugees, 2016), a fixed quota system ensuring a fair distribution of asylum seekers across Germany,

based on population sizes and tax returns. The idea behind this allocation is that this way, states that are relatively less wealthy or that have smaller populations share less of the burden (Seethaler-Wari, 2018). After arriving in the Federal State, asylum seekers are accommodated according to current capacities. Asylum seekers are legally prohibited from accessing the labour market and are given monthly allowances that should cover basic needs, like food and medical treatments. Although on paper, refugees are sent to reception centres or accommodated in decentralized housing, unexpected large inflows, especially during and since the refugee crisis, as well as capacity problems (e.g., due to pre-existing housing shortages) are some of the factors contributing to many asylum seekers often being sent to tent camps, empty sports halls, abandoned military camps, or other ad hoc solutions being applied.

Asylum seekers being allocated to states and counties according to the fixed quota system and short-term hosting capacities, especially in combination with the large and sudden increase of asylum seeker inflows during and since the refugee crisis, provide a setting that could be viewed as a quasi-natural experiment. Considering that it is state and local authorities, and not asylum seekers themselves, who decide where asylum seekers will reside while their asylum procedure is pending, at least one source of endogeneity that would arise if asylum seekers would self-select themselves into counties based on characteristics that correlate with the life satisfaction of natives is resolved.² Naturally, a completely random allocation (i.e., unrelated to county characteristics that impact life satisfaction) by state authorities of asylum seekers would be the most desirable setting in terms of causality. If state authorities hosted asylum seekers in counties depending on county characteristics that correlate with life satisfaction, the resulting selection bias would invalidate my estimates. An example of this would be if state agents host large numbers of asylum seekers in areas with little or low-quality public facilities, which simultaneously drives down life satisfaction in these areas. This concern is discussed further in section 5.

4. Data and Summary Statistics

4.1 Data sources

Three distinct data sources are used in this research. The main source of data providing variables on German natives is the German Socio-Economic Panel (SOEP). SOEP is a large as well as nationally representative dataset of longitudinal nature, containing an extensive set of information on individual and household characteristics. Starting in 1984, SOEP initially only covered West Germany, but in 1990

² It should be noted that this is the main limitation in all studies mentioned in section 2.1.

it was extended to the whole country. The last available wave is from 2020, marking a total of 37 waves. One strength of this dataset is the low rate of attrition, adding to the validity of this research.

Table 1
Descriptive statistics.

	Low share		High share		All	
	Mean	s.d.	Mean	s.d.	Mean	s.d.
Life satisfaction	7.284	(1.727)	7.396	(1.712)	7.340	(1.720)
Asylum seekers per 100,000	191.751	(89.049)	735.006	(592.132)	464.623	(503.825)
Number of asylum seekers	553.262	(613.692)	2,855.736	(3,421.559)	1,709.772	(2,719.024)
<i>Individual characteristics</i>						
Age	48.440	(16.514)	48.416	(16.870)	48.428	(16.694)
Males (%)	0.459	(0.498)	0.469	(0.499)	0.464	(0.499)
West (%)	0.792	(0.406)	0.790	(0.407)	0.791	(0.406)
Household income (log)	7.854	(0.578)	7.879	(0.610)	7.867	(0.595)
Household size (log)	0.964	(0.512)	0.949	(0.531)	0.956	(0.522)
Education (years)	12.154	(2.724)	12.142	(2.886)	12.148	(2.806)
Married (%)	0.626	(0.484)	0.611	(0.488)	0.618	(0.486)
Seperated (%)	0.025	(0.157)	0.025	(0.155)	0.025	(0.156)
Single (%)	0.200	(0.400)	0.218	(0.413)	0.209	(0.407)
Divorced (%)	0.093	(0.290)	0.090	(0.286)	0.091	(0.288)
Widowed (%)	0.053	(0.224)	0.051	(0.220)	0.052	(0.222)
Partner abroad (%)	0.001	(0.032)	0.003	(0.059)	0.002	(0.048)
Registered same-sex partnership living together (%)	0.002	(0.039)	0.002	(0.046)	0.002	(0.042)
Registered same-sex partnership living apart (%)	0.000	(0.015)	0.000	(0.019)	0.000	(0.017)
Employed full-time (%)	0.389	(0.488)	0.372	(0.483)	0.381	(0.486)
Employed part-time (%)	0.147	(0.355)	0.150	(0.357)	0.149	(0.356)
Vocational training (%)	0.021	(0.144)	0.023	(0.149)	0.022	(0.146)
Irregularly employed part-time (%)	0.058	(0.234)	0.057	(0.233)	0.058	(0.234)
Unemployed (%)	0.383	(0.486)	0.396	(0.489)	0.390	(0.488)
Sheltered workshop (%)	0.001	(0.029)	0.001	(0.034)	0.001	(0.032)
Germany born (%)	0.825	(0.380)	0.752	(0.432)	0.788	(0.409)
Foreign born (%)	0.175	(0.380)	0.248	(0.432)	0.212	(0.409)
No migration background (%)	0.776	(0.417)	0.695	(0.460)	0.735	(0.441)
1st generation migrant (%)	0.175	(0.380)	0.248	(0.432)	0.212	(0.409)
2nd generation migrant (%)	0.049	(0.216)	0.057	(0.232)	0.053	(0.224)
<i>County characteristics</i>						
Youth rate (per 100 (%))	16.189	(1.727)	16.093	(1.346)	16.146	(1.567)
GDP per capita (in 1000 €)	33.268	(15.025)	35.795	(15.847)	34.410	(15.451)
Unemployment rate (per 100 (%))	5.926	(3.019)	6.184	(2.660)	6.043	(2.865)
Proportion female (per 100 (%))	50.811	(0.694)	50.749	(0.671)	50.783	(0.684)
County N	2,061		1,700		3,761	
Individual N	115,937		117,004		232,941	

Notes: Source: SOEP 2010-2019. This table show descriptive statistics of the variables listed in the first column. for individuals in counties with low or high shares of asylum seekers (division based on the median value 357.1) and for the full sample. Mean and standard deviations per subsample are given as indicated in the top two rows. Standard deviations in parentheses.

From this dataset, the dependent variable to measure SWB is extracted: life satisfaction. Life satisfaction is generally considered a good proxy for SWB and has been shown to correlate with other measures of SWB used in the literature, like mental health and happiness (e.g., Clark & Oswald, 1994;

Kahneman & Sugden, 2005). The life satisfaction variable contains the answers on an 11-point scale to the following question: “How satisfied are you with your life, all things considered?”. Possible answers range from the lowest value of 0 (“completely dissatisfied”) to the highest value of 10 (“completely satisfied”). Other variables extracted from SOEP are of individual socio-economic nature, like age, birth region and marital status.

The SOEP dataset also contains information on the respondents’ place of residence, on several regional levels, including the federal states, spatial planning regions, counties, municipalities, and even zip codes. The spatial nature of SOEP data allows for linking the individual SOEP data to data from the Research Data Centre of the Federal Statistical Office in Germany (henceforth, RDC). From the RDC, data on the number of asylum seekers for the years 2010 until 2019 are obtained for the 401 counties (NUTS3 units) by type of accommodation, gender, age and world region of origin. Considering that data on asylum seekers is only available for the years 2010-2019, the total sample in this research is restricted to this time frame. The explanatory variable in this research, the share of asylum seekers in the county, is calculated by dividing the number of asylum seekers in a given county in a given year by the total county population. For presentation purposes, these ratios are multiplied by 100,000 in the results section.

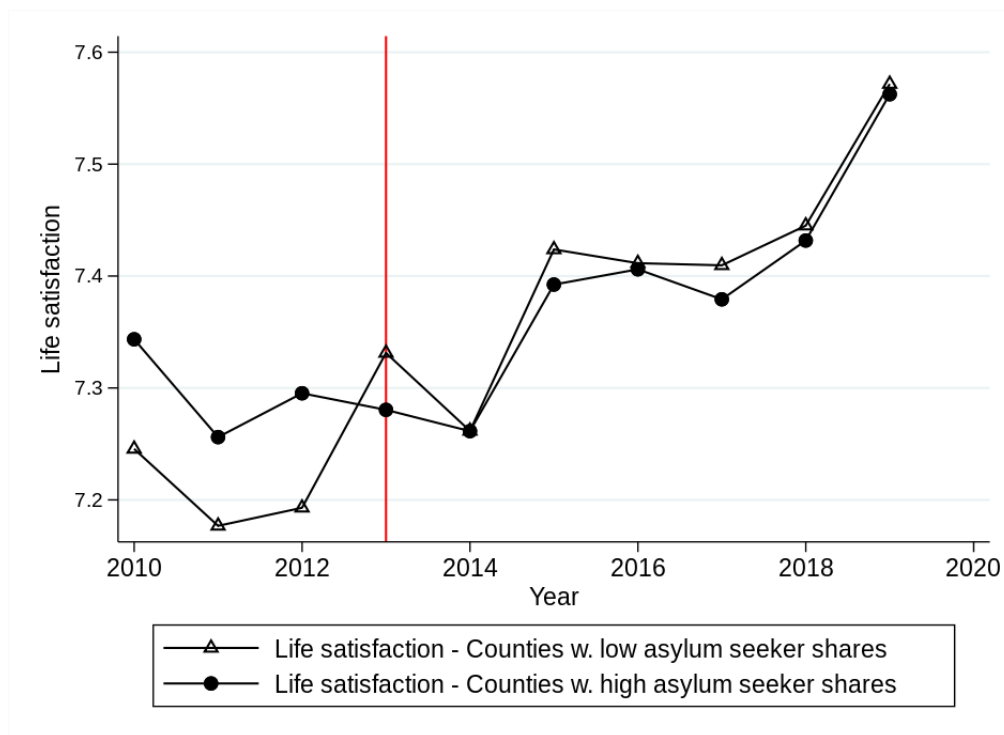


Figure 1: Life satisfaction scores over time. *Notes:* This figure shows yearly annual life satisfaction rates, separately for counties with low or high shares of asylum seekers. High (low) exposure refers to counties with shares of asylum seekers above (including and below) the median value 357.1 asylum seekers per 100,000 in a county (NUTS3 unit). Life satisfaction is measured on a scale from 0 (lowest value) to 10 (highest value). The red line indicates the year with the sharp and sudden increase in asylum seeker inflows in 2014.

The third source of data used in this research is the INKAR dataset, which is kept by the Federal Office for Building and Regional Planning. From this dataset, information on county characteristics is obtained, like the youth rate, GDP per capita, unemployment rate and the proportion of females. These characteristics will be used as county-level control variables.

4.2 Summary statistics

In Table 1, descriptive statistics are shown for all variables used in the analysis. The summary statistics are depicted separately for locals from counties with low and high asylum seeker shares, as well as for the full sample. The distinction between high and low-share counties is based on the median value of 357.1 asylum seekers per 100,000 inhabitants. An inspection of Table 1 shows that among the individual and county characteristic variables, no major differences between low- and high-share counties exist.

Next, life satisfaction scores over time for individuals in counties with high- and low shares of asylum seekers are presented in Figure 1. Before 2013, the pre-trends followed a similar pattern in terms of life satisfaction scores. Between 2012 and 2014, life satisfaction seems to improve shortly among low-share counties, whereas it decreases among counties with high shares. Although in the years following 2014, low asylum seeker share counties seem to report slightly higher life satisfaction scores, both groups follow a similar pattern of general increases, pointing to a potential neutral impact.

5. Methodology

In order to estimate how the life satisfaction of natives is impacted by the share of asylum seekers in local receiving communities, a panel data model is used. The baseline linear regression model, explaining life satisfaction (LS) for individual i in county j at year t , and including time, regional and individual effects as well as time-varying individual-level and regional-level control variables, can be expressed as follows:

$$LS_{ijt} = \beta_1 SAS_{jt} + \beta_2 Z_{jt} + \beta_3 X_{ijt} + \beta_4 County_j + \beta_5 T_t + u_i + \epsilon_{ijt} \quad (1)$$

where SAS stands for the share of asylum seekers in terms of the county population (this number is multiplied with 100,000 for presentation purposes), Z is a vector of county-level characteristics, X is a vector of individual-level socio-demographic characteristics, $County$ a vector containing 439 county dummies, T a vector containing nine year dummies, and u_i the individual fixed effect. The unobserved error term is captured by ϵ . The coefficients to be estimated are indicated by the β 's, β_1 capturing the main effect of the county-share of asylum seekers on the life satisfaction of individual natives. A linear estimation model is used as implicitly the SWB variable life satisfaction is assumed to be cardinal. My

empirical setup, which builds on models by Ivlevs & Veliziotis (2018), Akay et al. (2014) and Gehrsitz & Ungerer (2022), employs an ordinary least squares fixed effects (OLS-FE) design with a continuous treatment variable.

As mentioned briefly in section 3, in order to obtain valid estimates, the treatment itself must be uncorrelated with county characteristics. An example of this not being the case would be if, systematically, most asylum seekers were sent to more youthful counties or counties with lots of empty housing. A recent paper by Gehrsitz & Ungerer (2022) tackles this issue by calculating state fixed effects-correlations between several economic and social county characteristics using data from 2013 (the period before the refugee crisis). They find that, with the exception of the county share of Germans, all correlations are insignificant. Although it should be kept in mind that there could still be (other) unobserved county characteristics correlated with the treatment (in other years), these findings are very promising, making it quite unlikely that this assumption does not hold.

Time-invariant individual-level German native personal characteristics are controlled for using individual fixed effects. In addition, several individual-level control variables are added: age, age squared, (log) household income, years of education, gender, whether someone was born in Germany, migration background, marital status and employment status. In addition, I control for several county-level characteristics. These include the county youth share, GDP per capita, the unemployment rate and the proportion of females. These control variables are all widely recorded in the existing literature on immigration and well-being (Akay et al., 2014, 2017; Howley et al., 2020; Ivlevs & Veliziotis, 2018; Longhi, 2014; Papageorgiou, 2018). The reasons for the inclusion of control variables are (1) to soak some of the variance to get lower standard errors and (2) to create a quasi-random treatment, i.e., a treatment conditional on the included control variables. Year dummies are added to the model to account for year-specific influences on life satisfaction. Finally, a full set of 439 county dummies are added to the model, accounting for spatial heterogeneity.

Apart from obtaining baseline results, I am interested in seeing whether the effect of asylum seekers shares on natives' life satisfaction is different for different subgroups of German natives. Therefore, subsection 6.3 will present separate estimates by migration background and separately for different age groups, genders, marital statuses, employment statuses, income groups, migration backgrounds, health statuses and education levels. All results are presented in the next section.

6. Results

6.1 Benchmark results

In this section, the benchmark model estimates are outlined first. Note that due to an issue with the standard errors, I draw conclusions regarding statistical significance based solely on the reported

significance stars. However, none of the claims regarding statistical significance in this paper are made with full certainty. This should be taken into account when interpreting the results. Furthermore, for exposition purposes, only the main OLS regression estimates are shown in the tables.

Table 2 presents the estimates of four regression analyses. The outcome variable is life satisfaction on a scale from 1 to 10, and the predictor is the share of asylum seekers in a county. In column one of Table 2, the OLS-regression estimate is positive and significant, suggesting a positive influence of an increase in the asylum seeker share on the well-being of natives on average. Specifically, this would imply that with every additional asylum seeker in a county (per 100,000 original inhabitants), natives' life satisfaction scores increase by 0.016 on a scale from 0 to 10. The estimate is significant at a 0.1% significance level.

Considering this model's extremely low explanatory power, in column two, several time-invariant and time-varying control variables are added. In particular, control variables for the former category include age, age squared, gender, migration background and whether the respondent is born in Germany. Control variables that fall under the latter category include individual characteristics household income (log), household size (log), years of education, marital status and employment status, as well as county-level control variables youth share, GDP per capita, unemployment rate and proportion of females. The estimate is slightly less positive, namely 0.012. Furthermore, the estimate loses statistical power, but remains statistically significant at a significance level of 5%. On the other hand, the model explains 7.5% of the variation according to the R-squared statistic, which is an increase of 7.5 percentage points compared to the model in column 1.

Table 2
Benchmark results.

	OLS (1)	OLS (2)	OLS-FE (3)	OLS-FE (4)
AS share (per 100,000)	0.016*** (0.000)	0.012* (0.000)	0.002 (0.000)	0.002 (0.000)
Controls	No	Yes	No	Yes
Individual FE	No	No	Yes	Yes
Time FE	No	No	Yes	Yes
County FE	No	No	Yes	Yes
Observations	258,863	232,941	243,681	219,159
R-squared	0.000	0.075	0.605	0.612

Notes: Source: SOEP 2010-2019. The dependent variable in all regressions is life satisfaction, measured on a scale from 0 (lowest value) to 10 (highest value). Columns one to four show the regression coefficients for regressions where the independent variable is continuous, measuring the share of asylum seekers in terms of the county population (per 100,000). The regression in column two includes individual control variables age, age squared, household income (log), household size (log), years of education, gender, whether someone is born in Germany, migration background, marital status and employment status, as well as county-level control variables youth share, GDP per capita, unemployment rate and proportion of females. In column three, county, individual and year fixed effects are included only. In the fourth and last regression all previously mentioned control variables are included except time-invariant characteristics age, gender, migration background and whether respondent is born in Germany, as well as previously mentioned fixed effects. Standard errors are in parentheses and are clustered at the NUTS3 level. * p<0.05. ** p<0.01. *** p<0.001.

Next, in column three, all control variables are left out, and instead, three types of fixed effects are included: individual fixed effects, year fixed effects and county fixed effects. The model's explanatory power increases again with 53 percentage points to an R-squared level of 60.5%. The OLS-FE estimate is positive at 0.002, yet, it is statistically insignificant.

Finally, in column four, both the fixed effects are included, as well as the earlier mentioned control variables, except time-invariant controls, which the model automatically drops due to the fixed effects. The regression estimate is again positive and statistically insignificant at the height of 0.002. This implies an increase of 0.002 on a 0-10 scale in natives' life satisfaction as the share of asylum seekers increases by 1 (per 100,000), or, in other words, it implies there is no statistically significant effect. Moreover, the economic significance of the estimate is extremely low. Out of the included control variables estimates, household income (log) is statistically significant and positive, whereas the variables educational training in years and the county unemployment rate are both significantly negative. Interestingly, like in the Akay et al. (2014) benchmark estimates, in comparison to model 3, adding control variables to a model that already included fixed effects does not affect the AS share estimate. The model in column four will be used as the baseline model throughout the rest of this paper.

Table 3
Benchmark results with categorical predictor

	(1)	(2)	(3)	(4)
1st quantile AS share	Ref.	Ref.	Ref.	Ref.
2nd quantile AS share	0.022*** (0.010)	0.017*** (0.016)	0.010** (0.015)	0.008* (0.014)
3rd quantile AS share	0.035*** (0.010)	0.027*** (0.019)	0.012* (0.019)	0.007 (0.020)
4th quantile AS share	0.040*** (0.010)	0.028*** (0.018)	0.015** (0.023)	0.011 (0.024)
Controls	No	Yes	No	Yes
Individual FE	No	No	Yes	Yes
Time FE	No	No	Yes	Yes
County FE	No	No	Yes	Yes
Observations	258,863	232,941	243,681	219,159
R-squared	0.001	0.075	0.605	0.612

Notes: Source: SOEP 2010-2019. The dependent variable in all regressions is life satisfaction, measured on a scale from 0 (lowest value) to 10 (highest value), consisting of four dummies representing one quantile of the share of asylum seekers (the first quartile being the reference category). The regressions in column two includes individual control variables age, age squared, household income (log), household size (log), years of education, gender, whether someone is born in Germany, migration background, marital status and employment status, as well as county-level control variables youth share, GDP per capita, unemployment rate and proportion of females. In column three, county, individual and year fixed effects are included only. In the fourth and last regression all previously mentioned control variables are included except time-invariant characteristics age, gender, migration background and whether respondent is born in Germany, as well as previously mentioned fixed effects. Standard errors are in parentheses and are clustered at the NUTS3 level. * p<0.05. ** p<0.01. *** p<0.001.

6.2 Non-linear estimation

In the previous section, the estimates of the three variations of the baseline model, as well as from the baseline model itself, are presented. In Table 3, the same models are used as in Table 2, except this time, the dependent variable is categorical instead of continuous. The interpretation of the estimates is as follows: the estimates for each quartile of the share of asylum seekers show the difference in life satisfaction compared to being in the first (i.e., lowest) quartile. Again, the first three columns show positive and significant results, with the last model having slightly less statistically significant estimates. Column 4, which shows the results the baseline model including a categorical outcome variable, shows positive estimates for the second, third and fourth quartiles. However, only the estimate for the second quartile is statistically significant. This implies that, conditional on the included controls, being in the second, as opposed to in the first quartile, increases life satisfaction by 0.008 on a scale from 0-10. For the third and last quartile, the null hypothesis, that the life satisfaction of locals is different in these counties compared to the first quartile counties, cannot be rejected, meaning no statistically significant effect is found. In addition, again, the economic significance of the obtained estimates is incredibly low.

6.3 Subgroup analysis

In this section, the relationship between asylum seeker inflows and natives' life satisfaction is estimated for different subgroups. Specifically, Table 4 shows the estimated coefficients using the baseline model from column four of Table 2 respectively separately for natives with no migration background, natives who are first-generation migrants and for second-generation migrants. Natives who have a first or second-generation migration background appear to be positively influenced by asylum seeker inflows, whereas the estimate for Germans without a migration background is negative.

Although all estimates are statistically insignificant, the signs seem to confirm the hypotheses from Social Identity Theory. This could be explained as follows. Germans with a migration background may share characteristics with newcomers and may therefore feel that the group they belong to expands. As explained previously in the literature review, this could foster a healthy mental state, leading to higher life satisfaction among these groups than among native Germans with no migration background.

Next, the data is partitioned along several individual characteristics. The characteristics on the basis of which subgroups are formed include gender (male/female), age (three groups, thresholds at ages 35 and 50), income (first quantile, second and third quantile combined, and the fourth quantile), marital status (married or not married), whether the respondent is born in East or West Germany, whether someone has less or more than 11 years of education and whether someone is (un)employed. The estimates are presented in Table 5. Heterogeneous estimates in specifications with interaction effects – rather than per subsample - are presented in Appendix Table A1 and Table A2.

Table 4
Heterogeneity analysis: results by natives' migration background.

	Migration background		
	None	First Generation	Second Generation
AS share (per 100,000)	-0.001 (0.000)	0.010 (0.000)	0.015 (0.000)
Control variables	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
County FE	Yes	Yes	Yes
Observations	163,586	44,309	11,252
R-squared	0.620	0.593	0.608

Notes: Source: SOEP 2010-2019. This table shows the regression coefficients for three regressions where the dependent variable is life satisfaction, measured on a scale from 0 (lowest value) to 10 (highest value), and the predictor is the share of asylum seekers in a county (per 100,000). Included in all regressions are time fixed effects, county fixed effects and individual fixed effects, as well as (native) individual control variables household income (log), household size (log), years of education, marital status and employment status, and county-level control variables youth share, GDP per capita, unemployment rate and proportion of females. Standard errors are in parentheses and are clustered at the NUTS3 level. * p<0.05 ** p<0.01 *** p<0.001.

Table 5
Heterogeneity analysis

	Gender		Age			Income		
	Male	Female	≤ 35	36-49	≥ 50	1st Q.	2-3rd Q.	4th Q.
Asylum seeker share	0.001 (0.000)	0.003 (0.000)	0.013* (0.000)	-0.009 (0.000)	0.003 (0.000)	0.006 (0.000)	0.004 (0.000)	0.003 (0.000)
Observations	100,971	118,184	50,246	67,848	97,274	51,718	102,817	51,658
R-squared	0.623	0.605	0.592	0.628	0.647	0.634	0.622	0.628
	Marital status		Region		Years of education		Employment status	
	Married	Not married	West	East	≤ 11	> 11	Employed	Unemployed
Asylum seeker share	0.002 (0.000)	0.000 (0.000)	0.003 (0.000)	-0.000 (0.000)	0.002 (0.000)	0.002 (0.000)	-0.001 (0.000)	0.004 (0.000)
Observations	135,344	81,697	172,642	46,286	88,926	129,732	80,533	80,313
R-squared	0.618	0.621	0.607	0.620	0.604	0.620	0.618	0.654

Notes: Source: SOEP 2010-2019. This table shows the regression coefficients for regressions where the dependent variable is life satisfaction, measured on a scale from 0 (lowest value) to 10 (highest value), and the predictor is the share of asylum seekers in a county (per 100,000), by subgroups of German residents of receiving communities. Included in all regressions are time fixed effects, county fixed effects and individual fixed effects, as well as (native) individual control variables household income (log), household size (log), years of education, marital status and employment status, and county-level control variables youth share, GDP per capita, unemployment rate and proportion of females. Standard errors are in parentheses and are clustered at the NUTS3 level. * p<0.05 ** p<0.01 *** p<0.001.

Interestingly, none of the Table 5 estimates are statistically significant, except for the estimate for individuals aged under 35. This suggests that asylum seeker inflows positively relate to life satisfaction for individuals who are 35 years old or younger. In particular, if the number of asylum seekers in a county would increase by one, per 100,000 locals, the life satisfaction of natives would improve by 0.013 (on a scale from 0 to 10). The other estimates are insignificant, implying that for these subgroups,

there is no statistically significant effect of asylum seeker inflows on the life satisfaction of natives. Note that again, all obtained estimates have a very low level of economic significance too.

As explained in the literature review, a potential reason for this positive and significant impact among the younger population may be an increased involvement with newcomers as well as being more open and receptive to cultural exchanges. Prosocial behaviour, in addition, may lead to an increased self-image, which in turn could enhance subjective well-being. Similarly, multicultural experiences enhance creativity and lead to personal growth, which both have the potential to positively influence well-being positively as well (Curry et al., 2018; Lane, 2017; van der Zee et al. 2016).

6.4 Domain-specific well-being

This section examines potential channels behind the main results. Adopting a similar approach to Akay et al. (2014), I examine how the share of asylum seekers relates to different domains of satisfaction. The domains that will be considered are satisfaction with health, sleep, work, household income, personal income, dwelling and leisure. Seven regressions are run, where each time the dependent variable is a different domain of satisfaction, representing the answers to the question of how satisfied the respondent is at the time of the questionnaire with the specific domain, on a scale from 0-10. The results are listed in Table 6.

Table 6
Domain-specific subjective well-being.

	Health	Sleep	Work	Income (hh)	Income (p)	Dwelling	Leisure
Asylum seeker share	-0.000 (0.000)	-0.004 (0.000)	0.006 (0.000)	-0.003 (0.000)	0.001 (0.000)	-0.001 (0.000)	-0.004 (0.000)
Observations	217,920	205,491	130,865	207,496	206,591	208,767	185,947
R-squared	0.651	0.625	0.534	0.693	0.676	0.595	0.608

Notes: Source: SOEP 2010-2019. This table shows the regression coefficients for seven regressions where the dependent variable is one of seven satisfaction domains (indicated in the top row), measured on a scale from 0 (lowest value) to 10 (highest value), and the predictor is the share of asylum seekers in a county (per 100,000). Included in all regressions are time fixed effects, county fixed effects and individual fixed effects, as well as (native) individual control variables household income (log), household size (log), years of education, marital status and employment status, and county-level control variables youth share, GDP per capita, unemployment rate and proportion of females. Standard errors are in parentheses and are clustered at the NUTS3 level. * p<0.05 ** p<0.01 *** p<0.001

The estimates in Table 6 show that asylum seeker shares are positively related to satisfaction with work and personal income, whereas a negative link is found for the health, sleep, household, dwelling and leisure satisfaction domains. Although there is a slight variation in magnitude and sign of the estimated coefficients, again, none of the estimated coefficients are statistically significant at the 5% level or lower. In conclusion, there is no statistically significant relationship found between the county share of asylum seekers and well-being in any of the health, sleep, work, income, dwelling and leisure domains.

7. Causality

To ensure the internal validity of this paper's estimates, several potential threats to causality will be scrutinized next.

7.1 Sorting issues

The German procedure for distributing incoming asylum seekers across the country provides a set-up that closely resembles a natural experiment. As explained in section 3, this is because the distribution of asylum seekers follows a nationally predetermined allocation principle, based on the *Königstein key*. As the distribution of asylum seekers is done by a computerized system that does not have access to any individual characteristics, there is no chance of asylum seekers sorting into specific states based on state or native characteristics.

In addition, sorting within the state is also unlikely for two reasons. First, asylum seekers themselves have no autonomy in deciding where they will reside from the moment they sign up with the German authorities; it is decided for them by state-level agents. Second, especially around and since the year 2015, overwhelming numbers of incoming asylum seekers often left these agents with no choice but to place asylum seekers wherever they could find or create any capacity. Therefore, it is highly unlikely that the spatial distribution of asylum seekers correlates with individual native or county characteristics that also correlate with life satisfaction. In other words, the share of asylum seekers in a county is unlikely driven by county levels of life satisfaction. Thus, sorting of asylum seekers, which, if present, could lead to reverse causality and upward bias, is therefore not considered a major threat to causality in this research.

7.2 Moving responses to asylum seeker inflows

Another threat to causality would be present if German locals moved between counties in response to asylum seeker inflows, and more specifically, if they moved to counties with fewer (or more) asylum seekers as a direct result of asylum seeker inflow-related alterations to their life satisfaction. The result of this would be that measured life satisfaction among remaining locals does not give an accurate representation of the full effect of asylum seeker inflows, meaning the estimated coefficients would be biased upwards (in case unhappy locals move away).

Whether self-selection is present and biasing the results is tested next. The results are depicted in Table 7. In column 1, a regression is run using one-year lagged values of the share of asylum seekers as the treatment variable, and resident out-migration as the dependent variable. Concretely, the dependent variable is a dichotomous variable taking on a value of 1 if the resident has ever moved and 0 if the resident has never moved. Looking at the estimate in the first column of Table 7, no statistically

significant relationship is found between the one-year lagged values of the share of asylum seekers and residents moving.

Table 7
Regression by moving status.

	Residents out-migration	Sample	
		Non-movers	Full sample
Lagged AS share	-0.010 (0.000)		
AS share		0.002 (0.000)	0.002 (0.000)
Observations	177,892	209,153	219,159
R-squared	0.301	0.615	0.612

Notes: Source: SOEP 2010-2019. This table shows regression coefficients for three regressions. The first uses out-migration of residents (i.e., whether residents have ever moved to a different county) as the dependent variable and one-year lagged values of the share of asylum seekers as the independent variable. The last two regressions are the same as the benchmark regressions, where the sample being restricted to non-movers first. Included in both regressions are time fixed effects, county fixed effects and individual fixed effects, as well as (native) individual control variables household income (log), household size (log), years of education, and county-level control variables youth share, GDP per capita, unemployment rate and proportion of females. Standard errors in parentheses and are clustered at the NUTS3 level. * p<0.05 ** p<0.01 *** p<0.001.

The second column of Table 7 shows the estimate of running the baseline regression excluding natives who have a history of moving (i.e., who have ever moved). For comparison purposes, column 3 presents the estimates of the baseline regression including movers. Excluding movers from the regression generates the same coefficient as well as level of (in)significance as the baseline regression that includes movers. From this, I conclude that it is unlikely that there are asylum seeker-related crowding-out effects biasing the results in this paper.

Table 8
Robustness: other outcome variables

	Number of AS	Share of AS
Number of asylum seekers	-0.001 (0.000)	
Asylum seeker share (per 100,000)		0.002 (0.000)
Observations	219,159	219,159
R-squared	0.612	0.612

Notes: Source: SOEP 2010-2019. This table shows the regression coefficients for two regressions where the dependent variable is life satisfaction and the predictor is indicated in the top row. AS stands for Asylum Seekers, and the predictor is on the county (NUTS3) level. Included in both regressions are time fixed effects, county fixed effects and individual fixed effects, as well as (native) individual control variables household income (log), household size (log), years of education, marital status and employment status, and county-level control variables youth share, GDP per capita, unemployment rate and proportion of females. Standard errors are in parentheses and are clustered at the NUTS3 level. * p<0.05 ** p<0.01 *** p<0.001.

7.3 Further checks

As a robustness check, the baseline regression is run using the number of asylum seekers as the outcome variable, instead of the share of asylum seekers. Table 8 presents the result of this (as well as the baseline) regression in column 1 (column 2). Interestingly, the sign of the estimate flips to negative, however, the estimate remains statistically insignificant, implying again no significant relationship between asylum seeker inflows and local natives' life satisfaction.

8. Conclusion

In this paper, I have researched whether and to what extent there is a relationship between the spatial distribution of asylum seekers in terms of county populations and the life satisfaction of residents of asylum-seeker-receiving communities in Germany between 2010 and 2019. For this, I have exploited the sudden unanticipated large influx of asylum seekers in Germany in and since 2014-15, which, in combination with the existence of a predetermined system for the distribution of asylum seekers, creates a set-up that largely resembles a natural experiment.

Three sources of data are used in this paper. First, I use individual-level panel data from the German Socio-Economic Panel for information on life satisfaction and individual characteristics. Second, county-level data on yearly asylum seeker numbers is provided by the Research Data Centre of the Federal Statistical Office. Third, yearly information on county-level characteristics is obtained from the German INKAR dataset, which is kept by Federal Office for Building and Regional Planning.

The contributions to the current stream of literature are as follows. First, to the best of my knowledge, this is the first paper that researches how the life satisfaction among German natives is impacted by the spatial distribution of a specific type of migrant, namely asylum seekers. The main findings of this paper reveal no statistically significant impact of county asylum seeker shares on the life satisfaction of locals in receiving communities. However, these, and all other findings of this paper, should be treated with caution, as the conclusions drawn in this paper are based solely on the presented significance stars due to an issue with the standard errors.

Second, this paper uses a highly disaggregated level of data, namely the NUTS3 level, thus allowing for the use of very regional, namely county, fixed effects. In comparison to models that did not include any fixed effects revealed high levels, the baseline model drastically improved its explanatory power.

Third, separate estimates are presented along several individual characteristics, taking into account the potential for the effects to hit different societal groups differently. When dividing the sample into subsamples along individual characteristics migration background, gender, age, income, marital status, birth region, years of education and employment status, most estimates are negative and

insignificant. For individuals aged 35 or less, having one additional asylum seeker in a county, per 100,000 county inhabitants, improves natives' life satisfaction scores (on a scale from 0-10) significantly by 0.013. This could potentially be explained by this group of people being most involved with newcomers, gaining more positive utility from helping asylum seekers and an increased exchange of cultural values and knowledge as a result.

Finally, the impact of county asylum seekers shares is estimated on seven distinct domains of satisfaction, or in other words, potential channels, that could be behind the baseline results. Although all insignificant, satisfaction with work, personal income and leisure are found to be positively linked to asylum seeker shares, whereas satisfaction with health, sleep, household income and dwelling are negatively related.

The estimates in this paper should be treated with some caution for several reasons. First, the results in this paper only reflect short-term effects. It would therefore be recommended to inspect the long-term impact of asylum seekers presence in future research. Second, as pointed out by Gehrsitz & Ungerer (2022), the data on asylum seekers may suffer from measurement error, as well as time lags, creating a potential for less precise estimates. Moreover, the number of asylum seekers that are reported to reside in a county may be below the actual number. This potential underreporting should be taken into account as well.

Given the natural experiment that the refugee crisis, in combination with the German allocation system, presents, future research on this ubiquitously pressing topic is encouraged further. I hope that the insights of this paper give policymakers more clarity on the well-being effects of asylum seeker inflows, as well as that it highlights the unique opportunities for further research in this field.

9. Appendix

Table A1

Heterogeneity analysis by subgroup gender, age and income with interaction

	Gender	Young age	Old age	Income
AS share (per 100,000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Male # AS share (per 100,000)	0.000 (0.000)			
Age ≤ 35 # AS share (per 100,000)		0.000** (0.000)		
Age ≤ 35		0.059** (0.022)		
Age ≥ 50 # AS share (per 100,000)			0.000 (0.000)	
Age ≥ 50			0.001 (0.023)	
Income Q2-3 # AS share (per 100,000)				-0.000 (0.000)
Income Q4 # AS share (per 100,000)				-0.000 (0.000)
Income: Q2-Q3				0.055** (0.021)
Income: Q4				-0.002 (0.030)
Observations	219,159	219,159	219,159	219,159
R-squared	0.612	0.612	0.612	0.612

Notes: Source: SOEP 2010-2019. This table shows the regression coefficients for regressions where the dependent variable is life satisfaction, measured on a scale from 0 (lowest value) to 10 (highest value), and the predictor is the share of asylum seekers in a county (per 100,000). Included in all regressions are time fixed effects, county fixed effects and individual fixed effects, as well as (native) individual control variables household income (log), household size (log), years of education, marital status and employment status, and county-level control variables youth share, GDP per capita, unemployment rate and proportion of females. Standard errors are in parentheses and are clustered at the NUTS3 level. * p<0.05 ** p<0.01 *** p<0.001.

Table A2

Heterogeneity analysis by subgroup marital status, region, education and employment with interaction

	Marital Status	Region	Education	Employment
AS share (per 100,000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Married # AS share (per 100,000)	-0.000 (0.000)			
Married	0.168*** (0.028)			
West-Germany # AS share (per 100,000)		-0.000 (0.000)		
> 11 years of education # AS share (per 100,000)			-0.000 (0.000)	
> 11 years of education			-0.099 (0.060)	
Employed # AS share (per 100,000)				-0.000 (0.000)
Employed				0.136*** (0.026)
Observations	219,159	219,159	219,159	165,423
R-squared	0.612	0.612	0.612	0.628

Notes: Source: SOEP 2010-2019. This table shows the regression coefficients for regressions where the dependent variable is life satisfaction, measured on a scale from 0 (lowest value) to 10 (highest value), and the predictor is the share of asylum seekers in a county (per 100,000). Included in all regressions are time fixed effects, county fixed effects and individual fixed effects, as well as (native) individual control variables household income (log), household size (log), years of education, marital status and employment status, and county-level control variables youth share, GDP per capita, unemployment rate and proportion of females. Standard errors are in parentheses and are clustered at the NUTS3 level. * p<0.05 ** p<0.01 *** p<0.001.

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