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An Analysis of Healthcare Utilization, Access, and Health Conditions

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Syrian Refugees and Native Health in Türkiye: An Analysis of Healthcare Utilization, Access, and Health Conditions

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Abstract

This study examines the impact of Syrian refugees on the health outcomes of Turkish nationals, including healthcare utilization, access to care, and overall health conditions. Utilizing the 2008-2022 Türkiye Health Survey micro datasets, it applies an instrumental variable strategy to mitigate endogeneity resulting from non-random refugee settlement. The findings indicate a significant increase in inpatient care within high-refugee-density regions; however, no significant effects were observed regarding specialist visits, outpatient care, family practitioner visits, or dental care among the native population. Furthermore, the research highlights improved access to healthcare services for Turkish nationals as a consequence of the influx. Early impact analyses conducted following the refugee shock reveal a transient decline in outpatient and dental care utilization among Turks, which can be attributed to the insufficient preparedness of the Turkish healthcare system at that time. Heterogeneous analyses demonstrate varied effects across demographics: females exhibit significant positive outcomes in inpatient care, while males display no alterations. Individuals with less than a high school diploma residing in high-refugee-density areas report heightened inpatient care utilization and deteriorating health conditions. In contrast, highly educated individuals remain largely unaffected and indicate improved health, potentially due to enhanced employment opportunities for educated females. Additionally, individuals earning below the median income also exhibit increased inpatient care utilization and declining health. In summary, we contend that improvements in healthcare service delivery are a consequence of enhanced infrastructure in refugee-dense regions, which include increased availability of hospital beds and healthcare personnel.

Keywords

Syrian refugees, Healthcare utilization, Türkiye, Health outcomes, Access to care

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1. Introduction

In recent years, conflicts, civil wars, and political instability in various parts of the world have forced millions of people to leave their countries and have increasingly brought the issue of forced migration to the agenda. As of the end of 2023, 122.6 million people worldwide were forcibly displaced due to persecution, conflict, violence, human rights violations, or events that seriously disrupted public order. Low- and middle-income countries host 71% of refugees forced to leave their countries (UNHCR Global Trends, 2023). Consequently, these significant migration flows exert considerable pressure on public services, particularly affecting health services.

The entry of large numbers of refugees can strain the resources of health systems, leading to overcrowding and overloading health facilities. Refugee migration can affect the health systems of host countries through different channels (Gushulak et al., 2010). For example, refugees often come from areas with limited access to healthcare and may have preexisting health conditions that require treatment. Providing healthcare to these individuals can be challenging, especially for host countries with limited resources (Akik et al., 2019). In addition, forced migration can also lead to the spread of infectious diseases (Baez, 2011; Ibáñez et al., 2021; Erten et al., 2023). Refugees can bring unusual diseases to the host country, and the lack of appropriate screening and treatment facilities can increase the risk of outbreaks (Ibáñez et al., 2021; Gushulak et al., 2010). This paper examines the effects of the Syrian refugee influx on healthcare utilization, health outcomes, and healthcare service delays in Türkiye. For this purpose, we utilize the 2008-2022 Türkiye Health Survey micro datasets to investigate the causal effect of the mass refugee influx on Turkish citizens.

The Syrian refugee crisis exemplifies a notably significant instance of large-scale forced migration and its potential repercussions on host nations, with Türkiye serving as a principal recipient. A particularly significant recent instance of forced migration is that of Syrians who were forced to leave their country as a result of the civil war that began in March 2011. Due to their proximity, Syrian migrants' primary destinations have been Türkiye, Lebanon, Jordan, and Iraq. Türkiye is hosting nearly half of the 6.3 million Syrian refugees who have left their country as of 2023 (UNHCR Global Trends, 2023). The number of Syrian immigrants in Türkiye, exceeding 3 million, has profoundly impacted the capacity and efficiency of public services in the country. Health systems are one of the areas where this impact is most intensely felt, raising concerns about its potential impact on local populations.

This study utilizes the differential inflow of Syrian refugees into Türkiye since 2011 across 26 regions as an exogenous shock to assess various health measures among the Turkish population in response to the posed

questions. The non-random settlement of refugees presents a considerable challenge to causal identification. To isolate the effect of refugees on various health indicators of Turkish people, such as healthcare utilization and health outcomes, we apply the instrumental variable strategy using distance-based instrumental variables to address endogeneity due to non-random settlement, following Del Carpio and Wagner (2015).

To understand the potential implications of this influx on the Turkish healthcare system, it is essential to outline its key characteristics. Türkiye's health system is primarily based on the provision of health services by the public. Universal health insurance is implemented in Türkiye, and Turkish citizens can benefit from public health centers for a minimum fee. Registered Syrian refugees can also benefit from the same services as Turkish citizens and access health services without incurring any costs (Aygün et al., 2021). Additionally, unregistered Syrians can utilize emergency and preventive health services free of charge. Given this framework, the large influx has the potential to significantly increase demand for health services, and, especially if there is no improvement in public health resources, there is a risk of pressure on the provision of public health services to host country citizens.

The results of the study indicate an increase in inpatient care utilization in regions with a high density of refugees compared to areas with fewer refugees. In contrast, our main findings demonstrate no significant effect on specialist visits among the native population. Similarly, we find no evidence suggesting an impact on outpatient care, family practitioner visits, or dental care attributable to the inflow of refugees. Notably, the delay in healthcare services experienced by native individuals has substantially improved as a result of the influx of refugees.

Next, we turn our attention to the evidence regarding the early impact of refugee inflows in order to ascertain whether the mass influx has induced a decline in the utilization of healthcare services by the Turkish population. Our findings reveal a significant and negative reduction in the utilization of outpatient and dental care during the initial years following the refugee shock. This decline in outpatient and dental services is particularly pronounced when contrasted with inpatient care, which did not exhibit a similar early impact from the refugee influx. We attribute this initial reduction in access to outpatient and dental care for the Turkish nationals primarily to the inadequacy of the Turkish healthcare system's preparedness to manage effectively the abrupt and substantial increase in demand. Indeed, the number of Syrian patients seeking care, particularly for outpatient and dental services, escalated dramatically in these early years. However, it is imperative to acknowledge, and this will be elaborated upon later, that the specific impact on outpatient and dental care utilization by the Turkish population was temporary, with services adjusting as the healthcare system adapted to the evolving demographic landscape.

Additionally, we provide heterogeneous analyses that reveal the effects of refugee migrations based on gender, education level, and income level. Our findings regarding gender indicate statistically significant and positive outcomes in inpatient care for females. Conversely, we observe no significant outcomes for males. Furthermore, individuals with less than a high school diploma residing in areas with a higher concentration of refugees utilize more inpatient care and make more specialist visits compared to high school graduates living in less affected regions. Additionally, their health conditions deteriorate more than those of their counterparts in regions with lower refugee density. Highly educated individuals' healthcare utilization appears unaffected by the presence of refugees. The most striking result to emerge from the heterogeneous analysis is that females with higher education report an enhanced health status when residing in regions that host a substantial population of Syrian refugees. This noteworthy outcome can be attributed to the improved employment circumstances of these women as a consequence of the influx of refugees. Additional data analysis reveals that individuals earning below the median income utilize more inpatient care services while utilizing less outpatient care, although this lacks a strong statistical significance.

Building upon this empirical evidence, the following sections will contextualize our findings in the existing refugee migration and healthcare literature. Recent attention has increasingly focused on refugees' access to healthcare services. For instance, Akbulut et al. (2019) report high utilization of healthcare services by Syrian refugees, along with significant public costs incurred by Türkiye, despite challenges faced by refugees regarding system navigation, health literacy, language barriers, cultural incompatibility, psychosocial issues such as discrimination, and difficulties in accessing affordable medication and adequate translation services (Barış et al., 2025; Kargın, 2018; Savas et al., 2016; Assi et al., 2019). Another significant study conducted by Tayfur et al. (2019) argues that preventative services, particularly vaccinations and maternal/child health, remain suboptimal, especially for refugees residing outside of camps. Despite these challenges, the health system has demonstrated considerable resilience (Tuncay et al., 2022), and Turkish health and migration laws have evolved (Ekmekci, 2017; Barış et al., 2025). However, studies addressing the effects of immigrants on the utilization of health services by locals in regions with a high density of immigrants are limited. This study aims to address this deficiency and bridge the gap in this area.

The existing literature in Türkiye regarding the Syrian refugee crisis predominantly focuses on the health outcomes of the native population. For example, Erten et al. (2023) demonstrate that native children residing in regions with a higher density of refugees are more likely to suffer from infectious diseases compared to those living in areas with fewer refugees. Furthermore, a study by Aygün et al. (2021) finds no substantial evidence of a significant effect on native mortality rates across age groups due to refugee inflows. The study most closely related to ours, conducted by Akyol and Yılmaz (2025), reports an improved health status among high-skilled males and a lack of significant evidence regarding its effect on females.

While the existing literature in Türkiye has shed light on the health outcomes of the native population in response to the refugee crisis, our study distinguishes itself by concentrating on the effects of the refugee crisis on access to healthcare services, delays in healthcare services, and the health status of locals. Access to essential healthcare services represents a major area of interest within the field of health economics, particularly concerning women and children. The literature firmly establishes that enhanced access to health services can lead to improved health outcomes (Zhang et al., 2017). This perspective is corroborated by Atun et al. (2013), who demonstrated that access to health services in Türkiye resulted in significant reductions in infant, under-five, and neonatal mortality rates. We further investigate the heterogeneous effects of immigrants on diverse demographic groups, focusing on the most disadvantaged individuals, including those with below-median income, lower educational attainment, and females.

In addition to its unique focus on access to healthcare and health service delays, our study contributes to the broader literature examining the multifaceted impacts of the Syrian refugee influx in Türkiye on domestic violence (Erten and Keskin, 2021), housing markets (Balkan et al., 2018), labor markets (Akgündüz et al., 2015; Del Carpio and Wagner, 2015; Aksu et al., 2022), firm outcomes (Akgündüz et al., 2018), and education (Tumen, 2019). Although we employ a similar identification strategy to these studies, the present research investigates, for the first time, the effects of the significant refugee influx on healthcare access, encompassing inpatient, specialist, outpatient, dental, and family practitioner visits, as well as health service delays and health outcomes.

With the aforementioned contributions, this study aims to provide practical implications for policymakers. Assessments on possible delays, restrictions in the health service system, and how the infrastructure adapts to the refugee crisis conditions will guide future policy development processes.

The remainder of this paper is structured as follows: Section 2 details the data, while Section 3 discusses empirical methodology. Empirical findings are presented in Section 4. Section 5 reports heterogeneous results. Mechanisms are explained in Section 6. Section 7 reports results from the robustness analysis. Section 8 discusses the results in light of the study's findings and offers policy recommendations for future interventions.

2. Data

This study employs data derived from the "Türkiye Health Survey," a series of biennial surveys administered by the Turkish Statistical Institute (TurkStat) between 2008 and 2022. The surveys are nationally representative household surveys designed to address deficiencies in official health records, which typically lack comprehensive individual-level data (individuals aged 15 years and above). The surveys gather extensive information regarding individuals' general health status, encompassing chronic diseases, functional limitations

in daily activities and self-care, healthcare service utilization, medication and vaccine usage, and anthropometric measurements such as height and weight. The survey questions inquire about the 12 months preceding the date of the survey's administration for each individual. We obtained confidential information regarding 26 regions, specifically at the Nomenclature of Territorial Units for Statistics level 2 (NUTS-2).

All survey waves were combined to create a pooled cross-sectional dataset, enabling comparative analyses of pre- and post-intervention periods. Weighted descriptive statistics for outcome and demographic variables are presented in Table 1. Within our sample, 10% of individuals reported having been hospitalized overnight in a healthcare facility for at least one night. Sixty-two percent of individuals stated that they had consulted a specialist physician, while 51% utilized outpatient services provided by Turkish health institutions. Similarly, the percentage of individuals who had visited a family physician within the preceding year was 56%. The lower frequency of visits to family physicians compared to specialists among Turkish citizens may be attributable to the relatively limited scope of services offered by the former compared to the latter. Given the perception of dental care as somewhat of a luxury, nearly one-third of the individuals surveyed had accessed dental care services in the last 12 month.

15% of the sample comprised individuals who experienced delays in accessing healthcare services. Approximately 34% of individuals reported being restricted in their daily activities. Sixty-four percent of the sample indicated that they were in good health. However, a comparison of the latter two percentages reveals that nearly all individuals who did not rate their general health as good also reported limitations in their daily lives due to their health conditions.

Descriptive statistics of the demographic variables indicate a nearly equal gender distribution within the sample, with women comprising 50.6% of participants. The average age of participants is 41 years, with considerable variance observed across the sample. The mean age of 41, despite the exclusion of individuals under 15 years of age, suggests a relatively young sample population. The household income variable exhibits substantial variability, with a mean of 721 Turkish Lira (values adjusted for inflation, using 2003 as the base year). Regarding employment status, 40% of the individuals in the dataset are classified as employed.

Further to the primary demographic variables, this study also examines the educational attainment and marital status of the participants. Analysis of the sample reveals that 9% are classified as illiterate, a figure considerably higher than the 2.4% illiteracy rate reported among Turkish citizens aged 6 and above in the 2023 official national statistics (TurkStat, 2024). This discrepancy may be partially attributed to the study's focus on individuals aged 15 and older, thereby excluding younger cohorts, who tend to exhibit higher literacy rates. Consequently, the observed illiteracy rate in the sample is elevated. The most substantial proportion of the sample, approximately 34%, holds a primary school diploma as their highest educational attainment. In terms

of marital status, at the time of the survey, 26% of the sample were single (never married), 66% were married, 2% were divorced, and approximately 6% were widowed.

3. Econometric Specification

We investigate the impact of refugee inflows on native health outcomes using a panel data framework. Our empirical strategy estimates the following baseline equation, mimicking Del Carpio and Wagner (2015):

$$Y_{irt} = \alpha + \beta \frac{Refugees_{rt}}{Natives_{r2011}} + \gamma X_{irt} + \mu_r + \tau_t + \varepsilon_{irt} \qquad (1)$$

where Y_{irt} represents the outcome of interest for individual i in region r and year t. The main explanatory variable, $\frac{Refugees_{rt}}{Natives_{r2011}}$, captures the refugee-to-native ratio, defined as the number of refugees in region r in year t scaled by the pre-shock native population (i.e., the 2011 population). This scaling avoids potential biases, such as the divisor bias highlighted in the literature (Kronmal, 1993), which could arise when using contemporaneous population as the denominator. β is our parameter of interest and measures the causal impact of refugee inflows on native outcomes.

The vector X_{irt} includes individual characteristics that may influence native health outcomes. Specifically, we control for variables such as gender, age, education level, and marital status. These controls aim to account for time-invariant heterogeneity across individuals. To address unobserved heterogeneity, μ_r and τ_t represent 26 region (NUTS-2) and year fixed effects, respectively. Region fixed effects capture time-invariant characteristics of regions, while year fixed effects control for common shocks that affect all regions in a given year. Additionally, we include 12 region (NUTS-1)-specific linear time trends and 12 region (NUTS-1)-specific year fixed effects to account for differential pre-trends across NUTS-1 regions. This approach allows us to control for heterogeneity in outcome trends across regions. All regressions are weighted by sampling weights of the individuals provided by the surveys. To allow for correlation in error terms over time within regions, we cluster standard errors at the NUTS-2 level.

Since the refugee influx began in late 2011 due to the Syrian conflict, we consider 2012 to be the treatment onset year. The difference-in-differences (DiD) framework assumes that there are parallel trends between treatment and control regions in the absence of the refugee shock. Violating this assumption will lead to biased estimates of β. We test this assumption in the robustness section using placebo exercises and find no evidence of pre-treatment trend violations.

The non-random settlement of refugees poses a significant challenge to causal identification. Refugees may choose regions based on observable or unobservable factors correlated with native outcomes, potentially

biasing ordinary least squares (OLS) estimates. To address this concern, we implement a two-stage least squares (2SLS) strategy, instrumenting the refugee-to-native ratio with a distance-based instrument:

$$IV_{rt} = \sum_{s=1}^{13} \frac{\pi_s T_t}{d_{rs}} \qquad (2)$$

where T_t is the total number of refugees in Türkiye in year t, d_{rs} is the travel distance from Turkish province r to governorate s in Syria, and π_s is the share of Syrians in governorate s prior to the conflict in 2011. This instrument leverages the geographical variation in proximity to Syrian governorates, weighted by pre-war Syrian population shares, and the temporal variation in the total refugee stock. For our purposes, we utilize province-level instruments within the NUTS-2 regions to construct our regional-level instrument for each year.

Our identification assumption posits that, conditioned on regional and year fixed effects alongside control variables, the instrument impacts native outcomes solely through its influence on the refugee-to-native ratio. In essence, our distance-based instrument remains uncorrelated with outcome trends prior to the shock. To substantiate this assumption, we implement an event study design, illustrating that the instrument does not correlate with pre-treatment outcome trends.

By employing a comprehensive set of controls, fixed effects, and an instrumental variables strategy, our analysis aims to provide credible estimates of the causal impact of refugee inflows on native health outcomes, contributing to the broader literature on the socio-economic effects of migration.

4. Results

While significant progress has been made, the specific role of Syrian refugees in health outcomes such as access to healthcare, health service delays, and overall health conditions of the native population remains underexplored. In this section, we will present the first-stage estimates and then discuss our main findings. Following this, we will show the results of our heterogeneous analysis, and in the concluding section, we will examine the potential mechanisms that may elucidate our main findings.

Table 2 shows the first-stage estimation results obtained from regressing the refugee-to-native ratio on the distance instrument. Across all specifications, as shown in columns 1 and 3, we find strong first-stage estimates that exceed the accepted threshold in the literature. In other words, high F-statistics indicate that our distance instrument is a good predictor of the refugee-to-native ratio, which explains the settlement patterns of migrants and is the key variable of interest in this research.

Table 3 presents OLS and 2SLS estimates of the Syrian refugee shock on several health outcome variables of Turkish citizens. The influx of refugees contributed to more utilization of inpatient care services by Turkish

citizens, albeit lacking strong statistical significance. Quantitatively, a one percentage point increase in the Syrian ratio (because our independent variable is between 0 and 1, going from 0 to 1 means a 100% change) leads to a 0.00103 (coefficient is 0.103) increase in the likelihood of Turkish citizens receiving inpatient care, corresponding to a 1 percent increase (0.00103/0.101) relative to the mean. Regarding other outcome variables, coefficient estimates reveal no significant effects, indicating no difference between regions with varying concentrations of refugees in terms of specialist visits, outpatient care, family practitioner visits, and dental care utilization.

It is worth noting that differences also exist regarding delays in health services. In other words, Syrian refugees may enhance residents' access to healthcare services by mitigating delays. For instance, a one percentage point increase in the refugee-to-native ratio (between 0 and 1) results in a 0.007 (coefficient is 0.710) reduction in the likelihood of delayed care among Turkish citizens, which is significant at the 1% level, corresponding to an approximately 4.7% decline relative to the mean. Further analysis shows no evidence of a change in the health status of Turkish individuals owing to the large-scale refugee shock.

The findings derived from the preliminary effects analysis of Syrian refugees are presented in Table 4, which maintains sample coverage from 2008 to 2016. This table is revealing in several respects. Firstly, the inflow of refugees does not appear to impact inpatient care utilization among Turkish citizens during the initial years of the shock. Secondly, a statistically significant inverse relationship is observed between the density of Syrian refugees and outpatient healthcare utilization among Turkish citizens. Specifically, Turkish individuals residing in areas with higher refugee concentrations exhibit a reduced propensity to utilize outpatient care services when compared to their counterparts in regions with lower refugee densities. Quantitatively, a one percentage point increase in the refugee-to-native population ratio results in a 0.016 decrease in the probability of outpatient utilization by the native population, representing a 3.43 percent relative decrease from the mean (the mean of outpatient visits during the early years is 0.466). Thirdly, we also identify a significant negative impact of refugees on the dental care utilization of native individuals, indicating that natives are less likely to access dental care services in the most affected regions. The observed decline in outpatient and dental care services during the early years may be attributed to the Turkish healthcare system's inadequate preparation for this shock and its subsequent inability to respond effectively to these outcomes. In relation to this point, as noted by Akbulut et al. (2019), the number of Syrian patients receiving health services from public hospitals in 2011 was 16,988. In contrast, this figure rose to 4,113,893 by 2015, representing a 242-fold increase. Moreover, Tuncay et al. (2022) report that the number of Syrian patient visits increased from 2012 to 2014, with a substantial number of health applications for outpatient care and only 10% of the applications pertaining to inpatient care. Tuncay et al. (2022) further note that dental care applications among Syrian refugees ranked

among the most common health applications between 2012 and 2014. Note that the impact proved to be temporary, fading as the healthcare system adjusted to the surge (see Table 4).

5. Heterogeneous results

This section addresses heterogeneous analysis, focusing on the impact of Syrian refugees on health outcomes across various subgroups. We specifically examine low-educated, female, and low-income Turkish citizens, as these groups represent the most disadvantaged segments of the population.

Table 5 shows the impact of the Syrian migrant shock on various health indicators for Turkish males across columns 1 through 3, reporting 2SLS estimates. As for healthcare utilization, we find no evidence of migrant shock impacting Turkish males. Concerning healthcare service delays, Turkish males who live in impacted areas report that they have more access to healthcare services than their counterparts who live in less impacted areas. Regarding their health conditions, no significant evidence has been found.

Table 5 also summarizes the heterogeneous outcomes of Turkish females across columns 4-6. What stands out in the table is that our preferred specification in column 6 indicates a statistically significant and positive impact of Syrian refugees on female inpatient care utilization. Furthermore, access to healthcare services (i.e., reduced delays) has been enhanced for females due to the influx of Syrian refugees in regions with a dense refugee population, which significantly surpasses the outcomes for males as well. A possible explanation for this might be that the Turkish government provides more health professionals and infrastructure to the area because of the migrant shock generated by the Syrian war, which we will discuss in detail below in the mechanism section. Furthermore, there is no evidence to suggest that Syrian refugees have an impact on specialist visits, outpatient care, dental care, or the visits of family practitioners.

We further examine the impact of the refugee shock for individuals with high school and higher education levels across columns 1-3 in Table 6. Our findings indicate no evidence of refugee inflows affecting healthcare utilization, including inpatient, outpatient, and specialist visits, among highly educated Turkish citizens. When it comes to health service delays, these individuals benefit from improved access to healthcare services as a result of the increasing number of refugees arriving in the region. Of interest here is the improved health condition for this subsample. There are at least two possible explanations for this result. Firstly, it seems possible that these results are due to the improved healthcare access (i.e., reduced delays) in the region where the Syrian refugees are densely populated. Another possible explanation for the improved health conditions of highly educated individuals may be articulated as follows: Akyol and Yılmaz (2025) present findings that are consistent with our observations in this regard and underscore the significance of the labor market status of these individuals in elucidating the enhanced health status. Additionally, Akgündüz and Torun (2020) indicate

that the influx of refugees compelled native workers, particularly those with higher education, to transition from manual-intensive positions to more complex employment roles. To further elaborate on this mechanism, we also provide a channel analysis on the employment status of individuals in the mechanism section.

Next, we also examine the effects of refugees on individuals with less than a high school education, as reported in columns 4-6 of Table 6, which presents the 2SLS estimates. What we observe in the table is that the refugee shock generates a statistically significant and positive impact on those with less than a high school degree in terms of inpatient care utilization. Regarding their specialist visit, there is suggestive evidence that the migrant shock yields a statistically significant and positive effect. Furthermore, individuals are less likely to experience delays in health services and report deteriorating health conditions associated with the presence of refugees. It appears plausible that the reduced overall health of less-educated individuals may stem from job losses or challenges in employment search attributable to the refugee crisis. In this context, Akyol and Yılmaz (2025) indicate that males with lower levels of education are less likely to secure employment as a result of the shock. Therefore, in our mechanism analysis, we segregate the heterogeneity analysis by gender and educational level to ascertain the origin of this effect.

Finally, Table 7 shows the results for Turkish nationals in the sample with incomes above the median, as indicated in column 1. We find null effects of the refugee shock for all healthcare utilization variables. Regarding health service delays, similar to other subsamples, the situation has improved as a consequence of the influx of refugees. Moreover, regarding their health conditions, we find no significant evidence of refugees on natives with above median income. We then assess the impact of the shock on individuals with incomes below the median, as shown in column 2 of Table 7. It appears that they increase their inpatient care utilization due to the shock. On the contrary, we find no evidence that other health utilization variables change due to the shock.

6. Mechanisms

In this section, we explore the extent to which healthcare infrastructure, such as health personnel and healthcare institutions, plays a role in natives' access to healthcare services and their health conditions. What emerges from the results reported here is that the Syrian refugee influx increased the inpatient care utilization of females. It could be that officials have increased the number of healthcare infrastructure, such as health professionals and hospital beds, in the regions where the refugee influx was massive. Indeed, it can be seen from the findings in Table 8 that the massive refugee influx led to an increased total number of beds in the region. Another finding is that the number of practitioners and specialists in refugee-densely populated regions has increased. These results corroborate the findings of Aygün et al. (2021), who found that the Turkish government increased the number of health personnel in regions affected by refugees.

Another notable finding emerging from the previous results is that health service delays have improved across all subsamples. In other words, delays in the health system have decreased due to the influx of refugees, allowing natives greater access to healthcare services. It is possible that natives have benefited from enhanced healthcare infrastructure, including more healthcare personnel and hospital beds, as noted in Table 8.

Moreover, individuals who possess less than a high school diploma reported deteriorating health conditions as shown in Table 6. To further clarify whether the adverse effects of the shock on overall health are influenced by the gender of the native individual, we provide comprehensive results in Table 9. It appears that the effect predominantly arises from less-educated males. This finding stands in contrast to the results obtained by Akyol and Yılmaz (2025), who identified inconclusive outcomes concerning this particular subsample. Additionally, our study posits that a large-scale refugee influx has a significant and positive effect on the overall health of highly educated females. This observation also contradicts the findings of Akyol and Yılmaz (2025), who reported no evidence of an impact of refugees on the health status of females.

To explore the potential mechanisms behind these, we investigate the possible impact of refugees on the total, formal, and informal employment status of native men and women, categorized by their educational attainment, as shown in Table 9. We find evidence indicating a statistically significant and positive impact on the formal employment status of less-educated men and a negative impact on their informal employment, which then overall has no significant effect on the total employment level of men, leading us to conclude that this factor does not contribute to the observed results regarding men's health. Conversely, we observe a significant and positive influence of refugees on the formal employment status of highly educated females and a null effect on their informal employment, leading to a higher level of total employment, which may partially account for the improvement in the health condition of females within this subsample. Of interest here is the increase in formal employment opportunities in the market for women with at least a high school degree, driven by the refugee influx.

Together, these results provide important insights into the effects of a massive refugee influx on health outcomes of the native population, especially for highly educated females and low-educated males.

7. Robustness Analysis

The validity of our instrument relies on the assumption that health outcomes trends in provinces with high and low instrument values would have been the same, conditional on the set of covariates, in the absence of the refugee shock. To test this assumption, we conduct a placebo regression (similar to Aksu et al., 2022) using residual trends, the results of which are presented in Table 10. For this test, we restrict our sample to the pre-shock period, covering the years 2008 to 2010, during which we do not expect any effects from immigration.

In this placebo test, we compute residual trends by regressing the dependent variable on the set of controls from our specification, then regressing these residuals on the instrument's value in 2022. The results, shown in Table 10, reveal coefficients that are very close to zero and statistically insignificant, providing further support for the assumption that the instrument is uncorrelated with residual trends.

Moreover, following Erten and Keskin (2021), we employ an event study design to validate the use of our instrument further. This framework enables us to observe leads and lags, allowing us to determine if there is any pre-shock trend in our outcome variables. For this purpose, we estimate the following equation:

$$Y_{irt} = \sum_{t=2008}^{2022} \beta_t (IV_{2022} * Year_t) + \gamma X_{irt} + \mu_r + \tau_t + \varepsilon_{irt} \qquad (3)$$

where IV_{2022} is the cross-section element of our instrument in 2022 and β_t are the coefficients of interests for different years.[**] The remaining variables are identified as in Equation (1). Figure 1 depicts the β_t coefficients for the periods before and after the influx across our outcome variables. It is evident from the figure that, for most of these variables—including inpatient, outpatient, delay, and melancholia—we do not observe any pre-existing trend. For those outcomes where a significant trend is observed during the pre-shock period, the magnitudes of the coefficients are negligible, approaching zero, and thus are not of substantive concern. Consequently, this event study analysis provides no evidence of pre-trends in our outcome variables, suggesting that, conditional on the control variables, the trends in healthcare outcomes would have been similar in regions with high and low shares of refugees, in the absence of the refugee influx.

[Figure 1 here]

8. Conclusion

This study set out to explore the influence of a large refugee inflow into Türkiye on health outcomes, including access to care (i.e., delay in health services), healthcare utilization, and health outcomes. This study has identified that hospital stays for local people in areas with many refugees increased significantly. Besides, there is no evidence of an effect on other health outcomes in the long run, such as specialists, outpatient care, family doctor visits, or dental care. The research has also shown that refugees did not affect the overall health of the local people. In addition, the investigation of a significant refugee shock has shown that delays in access to health services by Turkish nationals improved because of the refugees. Looking closer at the timeline, in the

[**] Turkish Health Surveys were conducted in the years 2008, 2010, 2012, 2014, 2016, 2019, and 2022. As the year preceding the shock is 2011 and there was no survey conducted in that year, the year 2012 is omitted from the analysis as the baseline year.

early years after the refugees arrived, there was a considerable decrease in outpatient and dental care for Turkish citizens.

Our heterogeneity analysis results have found that women have seen positive changes in hospital care, while men have seen no significant changes. People with less than a high school diploma who lived in areas with many refugees used more hospital care and specialist visits, and their health deteriorated. One of the more significant findings to emerge from this study is that highly educated women reported better health in areas with many Syrian refugees, likely because they found better jobs due to the refugees. Another significant finding was that people earning below the median income used more hospital care and showed a decrease in outpatient care, and their health suffered.

The empirical findings in this study provide a new understanding of the significant refugee shock on the health outcomes of the native population and provide important information about how a large number of refugees affects healthcare use and health for local people, especially for highly educated women, less-educated men, and low-income earners. The findings will be of interest to public policymakers regarding how to handle migration well, especially forced migration. When people are forced to leave their homes, we need to understand every step of their journey: before they leave, during their travels, when they arrive, if they are stopped, and when they go back home. If we understand this, policymakers can stop problems in local healthcare systems and keep the people in the host country healthy (Zimmerman et al., 2011).

A limitation of this study is that our identification is predicated on the number of refugees across 26 regions of Türkiye, which constitutes an aggregate measure. Utilizing province-level refugee information would be significantly more advantageous; however, our micro data sets do not permit us to ascertain the locations of Turkish nationals at the provincial level. Notwithstanding these limitations, the study indicates that the accommodation and integration of refugees into the existing system is of paramount importance for the local populace, enabling them to access the care they require without foregoing any treatment.

Good policy also means remembering that migration's effects last longer than just the first group arriving. To avoid problems and long-term issues, we must think about future generations as much as the present. This focus on all generations is important for people to fit in well and for strategies to work (Arpino & De Valk, 2018). Studies show that populations change because of migration. For example, people born in the host country might move away from areas that are becoming more diverse (Frey, 1996). Nevertheless, foreign-born residents in the host country are less likely to leave areas that are getting new migrants (Bartel, 1989; Bartel & Koch, 1991; Gurak & Kritz, 2000; Kritz & Nogle, 1994). These different moving patterns can mean that people's health is affected differently depending on their birthplace. In this context, further work is needed to fully understand the implications of these moving patterns for both locals and refugees.

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Table 1. Descriptive Statistics

Outcome variables	Mean	SD	Observations
Inpatient utilization	0.101	0.302	133291
Specialist visit	0.624	0.484	132780
Outpatient utilization	0.513	0.499	133178
Family practitioner visit	0.562	0.496	132457
Dental care utilization	0.309	0.462	132868
Healthcare Service Delay	0.149	0.356	128390
Health condition	0.639	0.480	133332
Melancholia	0.574	0.495	132722
Demographic variables			
Female	0.506	0.499	133291
Age	40.680	17.285	133291
Household Income	721.235	421.582	132702
Education level			
Illiterate	0.092	0.289	133291
Literate but no educational degree	0.055	0.228	133291
Primary school	0.335	0.472	133291
Secondary school or equivalent	0.186	0.389	133291
High school or equivalent	0.189	0.391	133291
College or above	0.142	0.349	133291
Marital Status			
Never married	0.260	0.438	133291
Married	0.658	0.474	133291
Divorced	0.024	0.154	133291
Widowed	0.056	0.231	133291

Notes: The table presents the means, standard deviations, and the number of observations for outcome and control variables used in our regression analysis. We use individual survey weights.

Table 2. First-Stage Regression Results

Dependent variable: Syrian refugee share			
	(1)	(2)	(3)
Distance instrument	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)
F-statistics	116.424	260.500	149.328
Individual-level characteristics	+	+	+
26 region and year fixed effects	+	+	+
12 region-linear year effects	-	+	-
12 region-year fixed effects	-	-	+
N	133354	133354	133354

Notes: The data are from the Turkish Health Surveys (2008-2022). In columns 1-3, we regress the Syrian refugee share on the distance instrument, a set of region- and year-specific control variables, and individual-level characteristics, including gender, age, education level, and marital status. Standard errors in parentheses clustered at the 26-region level. We use individual survey weights in all specifications. * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 3. Effects of Refugee-to-Native Ratio on Health Outcomes

	OLS			2SLS			
Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	Mean outcome
Inpatient utilization	0.117**	0.138*	0.079	0.081	0.116*	0.103*	0.101
	(0.049)	(0.080)	(0.054)	(0.057)	(0.064)	(0.056)	
						[0.409]	
N	133291	133291	133291	133291	133291	133291	
Specialist visit	-0.095	0.023	0.182	-0.209	0.204	0.298	0.624
	(0.170)	(0.274)	(0.157)	(0.187)	(0.278)	(0.196)	
						[0.417]	
N	132780	132780	132780	132780	132780	132780	
Outpatient utilization	-0.266	-0.421	-0.464	-0.623	-0.548	-0.455	0.513
	(0.382)	(0.438)	(0.498)	(0.393)	(0.415)	(0.441)	
						[0.475]	
N	133178	133178	133178	133178	133178	133178	
Family practitioner visit	-0.019	0.012	0.237	-0.000	0.358	0.479	0.562
	(0.288)	(0.249)	(0.294)	(0.353)	(0.343)	(0.409)	
						[0.618]	
N	132457	132457	132457	132457	132457	132457	
Dental care utilization	-0.130	-0.248**	-0.118	-0.116	-0.055	0.115	0.309
	(0.109)	(0.113)	(0.081)	(0.135)	(0.090)	(0.115)	
						[0.594]	
N	132868	132868	132868	132868	132868	132868	
Healthcare Service Delay	-0.485**	-0.339*	-0.581***	-0.943***	-0.750***	-0.710***	0.149
	(0.207)	(0.177)	(0.207)	(0.309)	(0.256)	(0.252)	
						[0.021]	
N	128390	128390	128390	128390	128390	128390	
Health condition	-0.064	-0.288	-0.001	0.150	-0.289**	-0.021	0.639
	(0.125)	(0.171)	(0.117)	(0.147)	(0.146)	(0.103)	
						[0.857]	
N	133332	133332	133332	133332	133332	133332	
Individual-level characteristics	+	+	+	+	+	+	
26 region and year fixed effects	+	+	+	+	+	+	
12 region-linear year effects	-	+	-	-	+	-	
12 region-year fixed effects	-	-	+	-	-	+	

Notes: The data are from the Turkish Health Surveys (2008-2022). Columns 1-3 report coefficients on a refugee-to-native ratio from estimating equation (1) by OLS. Columns 4-6 report coefficients on a refugee-to-native ratio from estimating equation (1) by IV, implementing a distance instrument. In these regressions, we control for a set of region- and year-specific variables, as well as individual-level characteristics, including gender, age, education level, and marital status. Standard errors in parentheses clustered at the 26-region level. We use individual survey weights in all specifications. * p < .1, ** p < .05, *** p < .01.

Table 4. Early Effects of Refugee-to-Native Ratio on Health Outcomes

	OLS			2SLS			
Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	Mean outcome
Inpatient utilization	0.127	0.183***	0.191**	0.057	0.097*	0.150	0.101
	(0.078)	(0.051)	(0.088)	(0.074)	(0.058)	(0.098)	
						[0.359]	
N	93465	93465	93465	93465	93465	93465	
Specialist visit	-0.574*	-0.070	-0.143	-0.504	0.206	0.221	0.611
	(0.332)	(0.421)	(0.311)	(0.333)	(0.525)	(0.487)	
						[0.846]	
N	92954	92954	92954	92954	92954	92954	
Outpatient utilization	-1.176***	-1.061**	-1.171*	-1.892***	-1.573***	-1.602**	0.466
	(0.351)	(0.487)	(0.683)	(0.363)	(0.529)	(0.737)	
						[0.178]	
N	93352	93352	93352	93352	93352	93352	
Family practitioner visit	-0.244	0.239	0.194	-0.245	0.969	0.731	0.537
	(0.396)	(0.300)	(0.435)	(0.492)	(0.615)	(0.656)	
						[0.610]	
N	92631	92631	92631	92631	92631	92631	
Dental care utilization	-0.434***	-0.496***	-0.556***	-0.506***	-0.416***	-0.445***	0.291
	(0.106)	(0.085)	(0.098)	(0.127)	(0.135)	(0.073)	
						[0.054]	
N	93042	93042	93042	93042	93042	93042	
Healthcare Service Delay	-0.104	-0.195	-0.405*	-0.727**	-0.791***	-0.756**	0.073
	(0.258)	(0.195)	(0.228)	(0.330)	(0.264)	(0.306)	
						[0.119]	
N	89700	89700	89700	89700	89700	89700	
Health condition	-0.071	-0.333	0.035	0.110	-0.415	-0.014	0.648
	(0.183)	(0.278)	(0.234)	(0.229)	(0.293)	(0.245)	
						[0.958]	
N	93506	93506	93506	93506	93506	93506	
Individual-level characteristics	+	+	+	+	+	+	
26 region and year fixed effects	+	+	+	+	+	+	
12 region-linear year effects	-	+	-	-	+	-	
12 region-year fixed effects	-	-	+	-	-	+	

Notes: The data are from the Turkish Health Surveys (2008-2016). Standard errors in parentheses clustered at the 26-region level. * $p < .1$, ** $p < .05$, *** $p < .01$. Please see Table 3 for other details.

Table 5. Effects of Refugee-to-Native Ratio on Health Outcomes by Gender

	2SLS - Male				2SLS - Female			
Dependent variable	(1)	(2)	(3)	Mean outcome	(4)	(5)	(6)	Mean outcome
Inpatient utilization	0.089**	0.027	0.060	0.085	0.073	0.201***	0.145**	0.116
	(0.044)	(0.052)	(0.047)		(0.070)	(0.078)	(0.065)	
			[0.486]				[0.328]	
N	60984	60984	60984		72307	72307	72307	
Specialist visit	-0.256	0.267	0.377	0.555	-0.165	0.138	0.209	0.691
	(0.236)	(0.273)	(0.231)		(0.165)	(0.281)	(0.162)	
			[0.380]				[0.440]	
N	60746	60746	60746		72034	72034	72034	
Outpatient utilization	-0.654*	-0.520	-0.410	0.467	-0.594	-0.582	-0.495	0.558
	(0.360)	(0.385)	(0.418)		(0.429)	(0.450)	(0.469)	
			[0.489]				[0.518]	
N	60948	60948	60948		72230	72230	72230	
Family practitioner visit	-0.012	0.339	0.501	0.488	0.009	0.365	0.444	0.632
	(0.301)	(0.283)	(0.340)		(0.402)	(0.399)	(0.469)	
			[0.370]				[0.705]	
N	60605	60605	60605		71852	71852	71852	
Dental care utilization	-0.099	0.021	0.099	0.292	-0.128	-0.121	0.129	0.326
	(0.124)	(0.091)	(0.133)		(0.159)	(0.108)	(0.104)	
			[0.692]				[0.527]	
N	60780	60780	60780		72088	72088	72088	
Healthcare Service Delay	-0.824***	-0.602***	-0.567***	0.132	-1.068***	-0.889***	-0.835***	0.164
	(0.284)	(0.206)	(0.179)		(0.342)	(0.303)	(0.313)	
			[0.082]				[0.004]	
N	57952	57952	57952		70438	70438	70438	
Health condition	0.110	-0.343***	-0.093	0.711	0.209	-0.218	0.084	0.569
	(0.112)	(0.087)	(0.112)		(0.197)	(0.245)	(0.182)	
			[0.652]				[0.763]	
N	61008	61008	61008		72324	72324	72324	
Individual-level characteristics	+	+	+		+	+	+	
26 region and year fixed effects	+	+	+		+	+	+	
12 region-linear year effects	-	+	-		-	+	-	
12 region-year fixed effects	-	-	+		-	-	+	

Notes: The data are from the Turkish Health Surveys (2008-2022). Standard errors in parentheses clustered at the 26-region level. * $p < .1$, ** $p < .05$, *** $p < .01$. Please see Table 3 for other details.

Table 6. Effects of Refugee-to-Native Ratio on Health Outcomes by Education

	2SLS - HS and above				2SLS - Less than HS			
Dependent variable	(1)	(2)	(3)	Mean outcome	(4)	(5)	(6)	Mean outcome
Inpatient utilization	-0.085	0.021	-0.056	0.077	0.126***	0.131*	0.147**	0.112
	(0.106)	(0.093)	(0.056)		(0.047)	(0.072)	(0.066)	
			[0.715]				[0.302]	
N	43414	43414	43414		89877	89877	89877	
Specialist visit	-0.462	0.045	0.098	0.625	-0.110	0.266	0.385*	0.624
	(0.300)	(0.392)	(0.165)		(0.171)	(0.273)	(0.228)	
			[0.788]				[0.413]	
N	43325	43325	43325		89455	89455	89455	
Outpatient utilization	-0.730	-0.597	-0.292	0.521	-0.541	-0.509	-0.485	0.508
	(0.463)	(0.489)	(0.456)		(0.383)	(0.397)	(0.455)	
			[0.639]				[0.477]	
N	43398	43398	43398		89780	89780	89780	
Family practitioner visit	-0.094	-0.102	-0.058	0 .530	0.018	0.534	0.658	0.577
	(0.344)	(0.321)	(0.320)		(0.393)	(0.373)	(0.461)	
			[0.905]				[0.520]	
N	43223	43223	43223		89234	89234	89234	
Dental care utilization	-0.228	-0.122	0.090	0.375	-0.053	-0.024	0.145	0.276
	(0.265)	(0.187)	(0.200)		(0.136)	(0.110)	(0.109)	
			[0.792]				[0.503]	
N	43334	43334	43334		89534	89534	89534	
Healthcare Service Delay	-1.040***	-0.860***	-0.816**	.175	-0.921***	-0.697***	-0.655***	0.135
	(0.302)	(0.332)	(0.341)		(0.349)	(0.235)	(0.229)	
			[0.060]				[0.009]	
N	41726	41726	41726		86664	86664	86664	
Health condition	0.352**	0.156	0.559***	0.797	0.100	-0.441***	-0.214**	0.560
	(0.160)	(0.126)	(0.177)		(0.162)	(0.164)	(0.107)	
			[0.138]				[0.305]	
N	43426	43426	43426		89906	89906	89906	
Individual-level characteristics	+	+	+		+	+	+	
26 region and year fixed effects	+	+	+		+	+	+	
12 region-linear year effects	-	+	-		-	+	-	
12 region-year fixed effects	-	-	+		-	-	+	

Notes: The data are from the Turkish Health Surveys (2008-2022). Standard errors in parentheses clustered at the 26-region level. * $p < .1$, ** $p < .05$, *** $p < .01$. Please see Table 3 for other details.

Table 7. Effects of Refugee-to-Native Ratio on Health Outcomes by Median Income

	2SLS - Above Median	Mean outcome	**2SLS - Below Median**	Mean outcome
Dependent variable	(1)		(2)	
Inpatient utilization	0.026	0.089	0.170***	0.113
	(0.090)		(0.049)	
	[0.835]		[0.144]	
N	64503		68788	
Specialist visit	0.395	0.645	0.144	0.603
	(0.350)		(0.194)	
	[0.698]		[0.647]	
N	64337		68443	
Outpatient utilization	-0.239	0.530	-0.648	0.496
	(0.563)		(0.415)	
	[0.808]		[0.331]	
N	64470		68708	
Family practitioner visit	0.541	0.562	0.350	0.560
	(0.401)		(0.480)	
	[0.318]		[0.731]	
N	64182		68275	
Dental care utilization	0.198	0.342	0.020	0.276
	(0.191)		(0.122)	
	[0.516]		[0.889]	
N	64362		68506	
Healthcare Service Delay	-0.720**	0.177	-0.671***	0.120
	(0.349)		(0.223)	
	[0.063]		[0.004]	
N	62041		66349	
Health condition	-0.007	0.700	-0.122	0.579
	(0.142)		(0.112)	
	[0.975]		[0.525]	
N	64514		68818	
Individual-level characteristics	+		+	
26 region and year fixed effects	+		+	
12 region-year fixed effects	+		+	

Notes: The data are from the Turkish Health Surveys (2008-2022). In the current sample, the median household income is 646.9205 Turkish liras. Standard errors in parentheses clustered at the 26-region level. * p < .1, ** p < .05, *** p < .01. Please see Table 3 for other details.

Table 8. Effects of Refugee-to-Native Ratio on Healthcare Infrastructure

	OLS				2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Specialist Doctors at Health Institutions of Ministry of Health								
	11.806	12.572	17.821*	25.402***	-9.086	-7.391	21.321***	36.763***
	(8.730)	(9.443)	(10.556)	(5.315)	(12.701)	(13.497)	(7.388)	(5.484)
N	1458	1458	1458	1215	1458	1458	1458	1215
Total Number of Beds								
	277.236***	140.898**	127.954*	82.483**	340.826***	145.789***	148.724***	97.725***
	(66.792)	(55.875)	(69.947)	(37.632)	(68.193)	(38.972)	(45.729)	(26.814)
N	1458	1458	1458	1215	1458	1458	1458	1215
Doctors at Institutions of Ministry of Health								
	46.155**	58.178***	63.470***	74.383***	5.566	33.727*	67.731***	95.063***
	(19.817)	(16.059)	(20.563)	(11.204)	(37.245)	(18.236)	(18.195)	(14.895)
N	1458	1458	1458	1215	1458	1458	1458	1215
Total Number of Practitioners								
	52.480***	44.687***	50.923***	45.592***	51.791***	35.428***	51.401***	51.639***
	(14.062)	(8.316)	(9.446)	(8.585)	(16.912)	(9.939)	(10.239)	(9.844)
N	1458	1458	1458	1215	1458	1458	1458	1215
Total Number of Midwives								
	29.298***	13.817	19.451	21.206	41.161***	24.870**	18.051	26.187**
	(5.969)	(10.245)	(14.450)	(13.058)	(10.005)	(10.402)	(14.498)	(12.640)
N	1458	1458	1458	1215	1458	1458	1458	1215
Total Number of Specialist Doctors								
	3.857	16.364**	20.447**	15.220	-58.123	-7.884	24.581**	26.676*
	(14.645)	(6.430)	(8.402)	(9.493)	(41.798)	(17.639)	(10.067)	(13.892)
N	1458	1458	1458	1215	1458	1458	1458	1215
Nurse-Midwives at Health Institutions of Ministry of Health								
	62.764	51.469	50.921	92.627*	91.299**	63.210	54.451	105.383*
	(40.693)	(54.622)	(81.109)	(54.966)	(40.699)	(42.640)	(60.395)	(54.255)
N	1458	1458	1458	1215	1458	1458	1458	1215
Nurses at Health Institutions of Ministry of Health								
	33.175	37.595	32.283	70.663	49.704	41.663	37.433	78.798*
	(35.944)	(45.902)	(69.350)	(45.023)	(32.178)	(35.559)	(49.451)	(44.362)
N	1458	1458	1458	1215	1458	1458	1458	1215
Number of Beds in Private Hospitals								
	74.541	5.739	-2.434	-17.935	87.390	26.037	18.547	-1.019
	(53.455)	(42.347)	(58.920)	(30.984)	(56.346)	(39.079)	(54.826)	(37.287)
N	1458	1458	1458	1215	1458	1458	1458	1215
Number of Private Health Institutions								
	0.718*	0.204	0.056	-0.074	0.892**	0.114	0.014	-0.082
	(0.389)	(0.313)	(0.417)	(0.274)	(0.414)	(0.315)	(0.282)	(0.189)
N	1458	1458	1458	1215	1458	1458	1458	1215
81 provinces and year fixed effects	+	+	+	+	+	+	+	+
26 region-linear year effects	-	+	-	-	-	+	-	-
26 region-	-	-	+	+	-	-	+	+

year fixed effects								
Province-level characteristics	-	-	-	+	-	-	-	+

Notes: This analysis utilizes data from the TurkStat Health Statistics covering the period 2005-2022. Columns 1-4 report Ordinary Least Squares (OLS) regression coefficients for the effect of the refugee-to-native ratio on healthcare infrastructure in Türkiye. We use native population in 2011 as fixed. Columns 5-8 present coefficients from Instrumental Variable (IV) estimations, which employ a distance-based instrument to address potential endogeneity. All models include a comprehensive set of controls: region- and year-specific fixed effects, and city-level characteristics, notably the proportions of the population at different educational attainment levels and per capita Gross Domestic Product (GDP). Standard errors, reported in parentheses, are clustered at the province level (N=81). All specifications are weighted using the 2011 native population at the city level. Significance levels are denoted as: * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Table 9. Effects of Refugee-to-Native Ratio on Health Conditions by Education and Gender

	2SLS - HS and above		2SLS - Less than HS	
Dependent variable	Male	Female	Male	Female
Health condition	0.331	0.919***	-0.270***	-0.129
	(0.304)	(0.121)	(0.088)	(0.191)
	[0.560]	[0.023]	[0.185]	[0.642]
N	23413	20013	37595	52311
Possible				
Mechanisms:				
Employed	0.205	0.395**	0.180	-0.073
	(0.350)	(0.171)	(0.195)	(0.103)
	[0.766]	[0.029]	[0.906]	[0.628]
N	23416	20013	37602	52323
Employed Formal	0.298	0.409**	0.638**	0.015
	(0.298)	(0.181)	(0.304)	(0.069)
	[0.620]	[0.026]	[0.341]	[0.906]
N	23416	20013	37602	52323
Employed Informal	-0.094	-0.014	-0.457***	-0.088*
	(0.168)	(0.022)	(0.154)	(0.046)
	[0.694]	[0.604]	[0.185]	[0.167]
N	23416	20013	37602	52323
Melancholia	-0.021	0.218	0.418***	0.930***
	(0.146)	(0.154)	(0.144)	(0.218)
	[0.918]	[0.452]	[0.182]	[0.202]
N	23361	19978	37390	51993
Individual-level characteristics	+	+	+	+
26 region and year fixed effects	+	+	+	+
12 region-year fixed effects	+	+	+	+

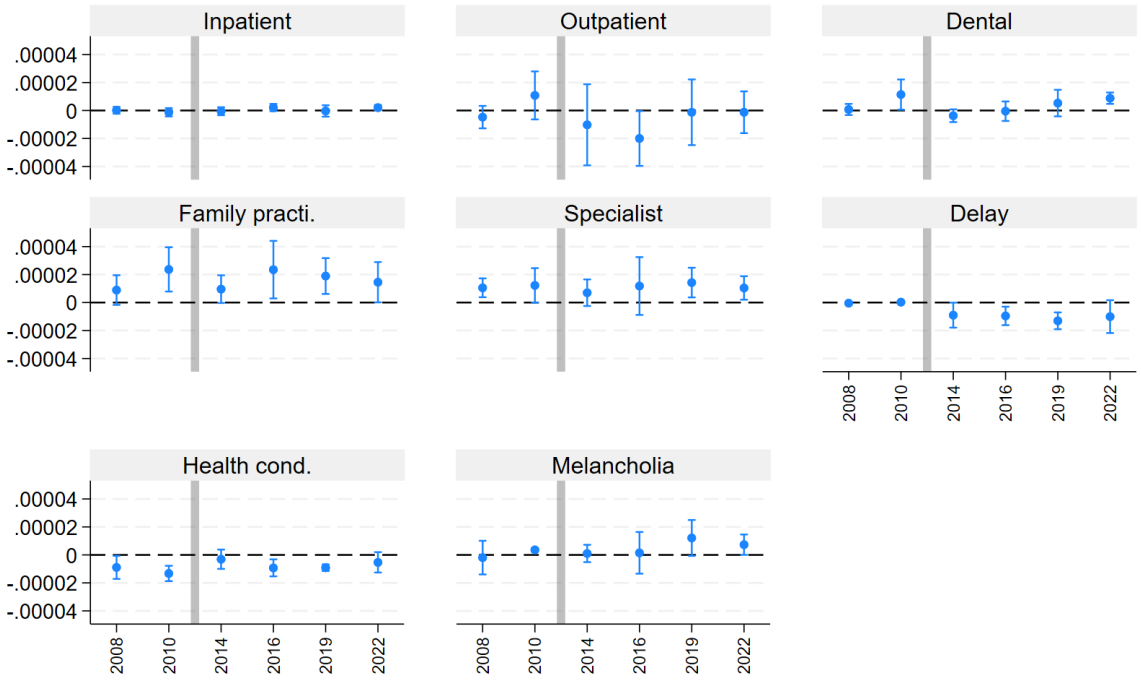
Notes: The data are from the Turkish Health Surveys (2008-2022). Standard errors in parentheses clustered at the 26-region level. * $p < .1$, ** $p < .05$, *** $p < .01$. Please see Table 3 for other details.

Table 10. Placebo Regressions of Pre-Shock Residual Trends in Dependent Variables on the Instrument

Dependent variable	(1)	(2)	(3)
Inpatient utilization	-0.000002***	-0.000001**	-0.000001
	(0.000001)	(0.000001)	(0.000001)
			[0.405]
N	29077	29077	29077
Specialist visit	0.000007***	0.000005***	0.000002**
	(0.000002)	(0.000001)	(0.000001)
			[0.082]
N	28810	28810	28810
Outpatient utilization	0.000010***	0.000007**	0.000002
	(0.000003)	(0.000003)	(0.000003)
			[0.699]
N	29017	29017	29017
Family practitioner visit	0.000009***	0.000009***	0.000001
	(0.000003)	(0.000002)	(0.000003)
			[0.768]
N	28533	28533	28533
Dental care utilization	0.000003**	0.000003	0.000000
	(0.000002)	(0.000002)	(0.000001)
			[0.800]
N	28850	28850	28850
Healthcare Service Delay	0.000006**	0.000001	0.000002
	(0.000002)	(0.000001)	(0.000001)
			[0.275]
N	29102	29102	29102
Health condition	-0.000006***	-0.000004***	-0.000002**
	(0.000001)	(0.000001)	(0.000001)
			[0.148]
N	29085	29085	29085
Melancholia	-0.000005***	-0.000002*	-0.000001
	(0.000002)	(0.000001)	(0.000001)
			[0.524]
N	28694	28694	28694
Individual-level characteristics	+	+	+
26 region and year fixed effects	+	+	+
12 region-linear year effects	-	+	-
12 region-year fixed effects	-	-	+

Notes: The data are from the Turkish Health Surveys (2008-2010). Columns 1-3 report coefficients on the distance instrument, where we regress residual trends of the dependent variable on the value of the instrument in 2022. We obtain residuals after regressing the dependent variable on a set of region- and year-specific control variables and individual-level characteristics, including gender, age, education level, and marital status. Standard errors in parentheses clustered at the 26-region level. We use individual survey weights in all specifications. * p < .1, ** p < .05, *** p < .01.

Figure 1. Event study



Notes: Figure 1 displays the β_t coefficients for the periods before and after the influx across our outcome variables, as estimated in equation (3). This comparison examines the health outcomes of Turkish natives in high- and low-refugee areas before and after the refugee shock to observe if any pre-trend exists in these regions in terms of health outcomes.