Forced Migration and Reproductive Health Care Services: Evidence from Turkey

Aya Aboulhosn*

December 29, 2025

Link to the latest version: here

Abstract

How do mass demand shocks affect access to healthcare services, and are wealthier regions better equipped to absorb these shocks? Mass migration represents a significant shock to public health goods provision, as increased demand from migrants can strain pre-existing healthcare capacity. I provide new evidence on these questions by studying how Turkish women's access to reproductive healthcare services was affected by the Syrian refugee influx into Turkey following the 2011 civil war. Using a distance-based instrument, I find that Turkish women in areas more exposed to refugees are *more* likely to receive prenatal and postnatal care. The main mechanisms suggest a shift from public to private sector healthcare utilization, following the crowding out of public services. The increase in private healthcare usage is concentrated among Turkish women in top wealth quintiles and more developed provinces, whereas the effects disappear in less developed regions. On the supply side, I observe a reallocation of healthcare professionals and hospital beds from the public to private sector—but only in developed provinces. These findings highlight the crucial role the private sector can play in alleviating the burden on the public healthcare system, and how policymakers can optimize the distribution of public health services.

JEL Codes: J13; R23; I10

Keywords: Forced migration; Healthcare Services; Private Sector

*American University Department of Economics, Washington DC, USA. aa3701a@american.edu.
I would like to thank my committee members Nathan Larson, Austin Davis, and Maria Caballero Sanchez for their guidance and valuable feedback. I am grateful to Berkay Özcan, Bilge Erten, and Ahmed Elsayed, for their valuable comments and support. I would also like to thank conference and seminar participants at the AEA/ASSA Annual Meeting (2025), EEA Annual Meeting (2025), Towson International Development Economics Symposium, Salisbury University, and Georgetown University's Conference on Political Economy & Development. I am appreciative of the continued support from J-PAL MENA.

1 Introduction

Mass migration and its impact on resource availability present significant challenges for host countries. Over the last decade, forced displacement has risen sharply, with an estimated 89.3 million people forcibly displaced worldwide (UNHCR 2021). Syria, whose civil war began in 2011, is the top source country with 6.8 million migrants. Turkey is the top receiving country with 3.8 million Syrian migrants (UNHCR 2021). This has large implications for migrant and host populations, especially in the provision of essential public goods.

Healthcare is a crucial but often overlooked sector. Many migrants require immediate healthcare upon arrival due to the collapse of healthcare systems in their home countries, and the dangerous journey to the host country. Maternal healthcare, in particular, tends to be the first point of contact between migrant women, their children, and the host healthcare system (WHO 2022). Importantly, following the arrival of Syrian migrants in 2011, the Turkish government introduced a temporary protection regime that granted registered Syrian refugees free access to public services, including healthcare.[1]

This raises important and unanswered questions about how mass migration affects healthcare provision in a recipient country. To address this, I estimate the impact of Syrian migrants on Turkish women's use of reproductive healthcare services. I further investigate how the supply of healthcare resources shifts between the public and private sector, and whether the strength of public and private responses is different in wealthier provinces than in poorer ones.[2] My results challenge the conventional view that migrants pose a burden to natives—my results show Turkish women living in provinces with more migrants use more reproductive healthcare resources, primarily through an increase in private sector usage and in more developed provinces. Importantly, this suggests the private sector can play a critical role in absorbing the increased demand for public

[1] Syrian migrants in Turkey have an average fertility rate of 5.3 children per mother, more than double the average 2.3 children per mother among Turkish women (Demographic and Survey 2018), thus their need for reproductive healthcare services is high.

healthcare services after a mass migration wave.

This paper addresses a gap in the recent and growing literature on how migrants affect natives' health outcomes; while existing work focuses on outcomes like mortality and infectious disease, this paper studies how migration affects the healthcare system. Ibáñez et al. (2021) find Venezuelan refugees in Colombia increased infectious disease incidence, while Baez (2011) documents higher child mortality in northern Tanzania following the arrival of Rwandan and Burundian refugees. In Turkey, Aygün et al. (2021) find no effect of Syrian refugees on infant or elderly mortality, whereas Erten et al. (2023) find lower vaccination rates and higher infectious disease incidence among children. Yet little is known about how migration affects the healthcare system more broadly—across public and private sectors—or how natives adjust their healthcare use by household and regional wealth. Understanding these dynamics has large implications for the allocation of healthcare resources across private and public sectors.

I examine the causal impact of Syrian migrants on i. Turkish natives' usage of reproductive healthcare services, such as prenatal care, postnatal care, ultrasounds and blood sample withdrawals during prenatal checkup, which healthcare practitioner delivered the child (ex: doctor or nurse), and the choice between public or private facilities ii. changes to the per capita supply of private and public sector healthcare professionals (doctors, nurses and midwives) and the number of hospital beds, and iii. heterogeneous effects of household and regional wealth levels to shed light on whether more developed provinces in Turkey are better equipped to withstand a migration shock.[3] My analysis uses the Turkish Demographic and Health Surveys (2003, 2008, 2013 and 2018), Labor Force Surveys (2008-2015), administrative province-level healthcare resources data from the Turkish Ministry of Health (2009-2016), and province-level refugee-to-native ratios from the Turkish migration authorities and UNHCR.

[2] I define regional differences in wealth to mean either provinces with above-the-median GDP per capita levels, or below-the-median GDP per capita levels

[3] More developed provinces are defined as those with above-the-median GDP per capita levels. I use year-specific median GDP per capita levels to classify provinces into above- and below-median groups within each survey wave. This allows me to compare outcomes across provinces that were relatively wealthier or poorer in their respective years.

To causally answer these questions is challenging because migrant resettlement is non-random; Syrian refugees may self-select into Turkish provinces with better economic opportunities or greater access to services, creating endogeneity concerns. To address this, I employ a well-established distance-based instrument variable (IV) that predicts refugee settlement using travel distances between 13 Syrian governorates and 81 Turkish provinces, following Del Carpio and Wagner (2016), Erten and Keskin (2021), Aksoy and Tumen (2021), and others.[4] For robustness, I implement an alternative IV from Altindag and Kaushal (2021), which exploits the pre-war share of Arabic speakers in Turkey; both approaches yield similar results.

My results show that native women in refugee-dense provinces were more likely to use reproductive health services than those in provinces with fewer migrants. A one standard deviation increase in refugee presence raises the probability of receiving prenatal and postnatal care by 2.6 and 3.6 percentage points, respectively. Higher exposure also increases the likelihood of receiving ultrasounds, and having a doctor (rather than a nurse or midwife) attend the birth. These increases are driven by provinces with above-median GDP per capita, with no significant effects in below-median GDP per capita provinces. Since migration inflows are typically expected to strain healthcare systems, the observed increase in healthcare use appears counterintuitive. To better understand this, I investigate three potential mechanisms.

As a first mechanism, I examine whether Turkish women in refugee-dense provinces increase their use of private healthcare. If some native women shift to private-sector providers when the public sector becomes overcrowded, this could help explain why access to reproductive healthcare does not decline. My findings support this mechanism: Turkish women in the top wealth quintiles are positively and significantly more likely to use private healthcare in response to more migrants. This effect is driven by wealthy women living in more developed provinces, and disappears in less developed provinces.

As a second mechanism, I assess whether the availability of public and private

[4] Other papers include Akgündüz (2023); Tumen (2021) Ceritoglu et al. (2017); Erten and Keskin (2021); Aksu et al. (2022)

healthcare resources—specifically, healthcare professionals (doctors, nurses, and midwives) and hospital beds (both in total and per capita terms)—changes in response to increased migrants in Turkey. I find provinces with more migrants gain more (total) public hospital beds, doctors, nurses and midwives, relative to provinces with less migrants, suggesting the Turkish government invested in more healthcare resources in response to more migrants. However, these gains were not commensurate with the population increase, and per capita public hospital beds, doctors, nurses, and midwives in provinces with more migrants saw a decline relative to provinces with less migrants. In contrast, the private sector responded differently, where per capita private hospital beds, nurses, and midwives increased, but only in wealthier provinces. Together, the rise in private healthcare use among wealthy women and the shift of healthcare workers from the public to private sector in wealthier provinces—which may be better equipped to handle a mass migration shock—help explain the increase in natives' maternal healthcare usage.

As a third mechanism, I consider whether the observed effects could be explained by the internal relocation of healthcare professionals within Turkey. Provinces receiving more migrants could generate higher demand for healthcare workers, thus healthcare workers may choose to relocate from low-demand to high-demand provinces. I find no evidence to support this mechanism.

The main results described earlier show that migrant inflows affect the healthcare usage of Turkish women. Building on these findings, I also examine whether the higher rates of usage in more migrant-dense provinces translate into improved health outcomes for children. That is, greater use of reproductive healthcare resources among native women could lead to positive downstream effects on their children. I focus on three outcomes: infant mortality, mother-reported child size at birth, and birth weight and height. The results suggest a modest decline in infant mortality and marginal improvements in child size and weight.

This paper makes three main contributions. First, I exploit an exogenous migra-

tion shock to provide causal evidence on how natives' healthcare utilization changes. This remains largely unexplored, as most prior work has examined direct health outcomes rather than healthcare use (Ibáñez et al. 2021; Erten et al. 2023; Baez 2011; Aygün et al. 2021). Second, I distinguish between public and private sector responses, offering new evidence on the private sector's capacity to absorb the increased demand of public healthcare resources. Third, I examine the heterogeneous effects of household and regional wealth, showing that wealthier Turkish provinces are better able to withstand a migration influx, with wealthy women driving the increase in private healthcare usage.

Finally, this paper contributes to the growing literature on the effects of Syrian migrants in Turkey, which has examined outcomes such as labor market dynamics (Del Carpio and Wagner 2016; Aksu et al. 2022; Ceritoglu et al. 2017; Aracı et al. 2022), domestic violence (Erten and Keskin 2021), education (Tumen 2018; Tumen 2021), and environmental impacts (Aksoy and Tumen 2021). Notably, Aracı et al. (2022) and Aksoy and Tumen (2021) show that negative impacts on the labor market and environment are also mitigated in regions with higher development and better local governance.

There are several policy implications here. First, this paper shows that the private sector can play a critical role in alleviating the pressure on public healthcare systems during large migration inflows. Second, the transition of wealthier women into private healthcare may potentially free up public resources for poorer women. Third, since the positive results are driven by wealthier provinces and higher-income women, this highlights the need for targeted investments in public healthcare infrastructure in less developed regions to ensure equitable access. Fourth, while perceptions of competition for resources between host populations and migrants may create political and socioeconomic tensions, the findings suggest that migration may not necessarily reduce total resources but rather redistribute them within the healthcare market. This leaves governments with the critical role of creating policies to address the reallocation of such

resources.

The remainder of this paper is as follows. Section 2 provides background on the Syrian civil war and the Turkish healthcare system. Section 3 describes the data sources, and Section 4 details the identification strategy. Section 5 summarizes the main results, while Section 6 examines the three mechanisms. Section 7 presents additional results, and Section 8 provides sensitivity checks. Section 9 concludes.

2 Background

2.1 Syrian Migration into Turkey

The Arab Spring began in 2010 with the fall of Mubarak's regime in Egypt, and quickly spread to other parts of the Middle East, such as Libya, Tunisia and Syria. In March 2011, protests began in Syria under Bashar al Assad's regime. What began as protests for political change quickly transformed into a brutal conflict. Over the last decade, it is estimated that over 300,000 civilians have been killed, with over 6 million forcefully displaced (UNHCR 2021). Most Syrian refugees relocated to neighboring Turkey, Lebanon and Jordan.

In anticipation of the inflow of migrants, the Turkish government built over 20 refugee camps by 2012, mainly along the Turkish-Syrian southern border. Turkey adopted an open door policy and established the Temporary Protection Regime, which granted temporary residence permits to Syrians who registered in the province they relocated to. This allowed Syrians a guarantee of staying in Turkey without any possibility of involuntary repatriation, and provided access to a wide array services such as healthcare and education. One limitation of the residency permit is it did not grant access to the formal labor market, hence many Syrian refugees eventually found themselves working in the informal sector.

Migrants living both in and outside of camps were given access to healthcare facilities for free. For those living in the camps, access to healthcare facilities were

provided on site, but for migrants who needed more comprehensive care for complications or treatment was unavailable on site, those individuals were transferred to public hospitals within the area. Public hospitals in provinces near the Turkish-Syrian border reported that about 30 to 40 percent of their services went to Syrian migrants (ORSAM 2015). To offset some of the burden to the public healthcare system, the Turkish government built migrant health centers and hired some Syrian healthcare professionals to help run them (Ekmekci 2017).

Initially, Syrians relocated to the refugee camps that were set up along the border, but the large volume of migrants eventually outpaced the availability of resources and space in these camps. As such, the majority of Syrian migrants, about 92%, now live across the provinces in Turkey, and are mainly concentrated in provinces closest to Syria (European Commission 2018). To get a sense of the number of migrants, during the year 2012, the number of Syrian refugees reached about 500,000 individuals. This number jumped up quickly to 1.5 million refugees by the end of 2014 and today, about 3.6 million migrants live in Turkey (UNHCR 2021). That is about five percent of the Turkish population.

2.2 Turkish Healthcare System

The Turkish healthcare system underwent significant reforms since the early 2000s, particularly through the Health Transformation Program (HTP) initiated in 2003. This program aimed to expand access to public healthcare by consolidating various health insurance schemes under the Social Security Institution (SGK), increasing the number of public hospitals, and improving primary care services through the introduction of family medicine, along with the enhancement of maternal and child health. Public sector healthcare saw considerable investments in infrastructure and personnel, leading to greater service availability across the country (Ökem and Çakar 2015). Along with these public sector expansions, the private healthcare sector experienced rapid growth, particularly in major cities like Istanbul and Ankara. Overall, this period saw

the government investing heavily in public health infrastructure while simultaneously encouraging private sector investment (Venkateswaran and Singh 2022).

Beyond expanding infrastructure, the HTP also emphasized universal health coverage (UHC) by reducing out-of-pocket payments, and ensuring that nearly the entire population was covered by some form of health insurance by the mid-2010s. These reforms contributed to measurable improvements in health outcomes, including declines in infant and maternal mortality, increased vaccination coverage, and improved access to essential medicines (Atun et al. 2013; OECD 2021). However, challenges persisted, particularly around regional disparities in service availability, and the strain on public hospitals due to rising demand.[5]

3 Data Sources

My primary dataset is the Turkish Demographic and Health Surveys (DHS), an individual level dataset with four cross sectional periods (2003-2018) for women aged 15-49. The survey is conducted recurrently and includes detailed information on demographic characteristics, labor market behavior, fertility measures, and importantly, the use of reproductive healthcare services like prenatal care, postnatal care, ultrasounds and blood sample withdrawals during prenatal check up, which healthcare practitioner delivered the child (ex: doctor or nurse), and whether the individual used these services in a private or public healthcare facility.

The second dataset is a province-level, panel dataset of the administrative number healthcare resources from the Turkish Ministry of Health from 2009-2016. I calculate the per capita number of hospital beds, doctors, nurses and midwives for each province over this period, distinguishing between the public and private sector.

The third dataset is the individual-level, repeated cross sectional Turkish Labor Force Surveys (LFS) conducted annually at the district-level (NUTS2) for years 2008-

[5] Although the expansion of the healthcare system was large, Appendix Table 2 shows no pre-trends of the main outcomes.

2015. The LFS contains modules on household composition, employment status, and education levels. The dataset details if the respondent graduated with a health degree and has been living permanently in the province they were born in. If not, the respondent is asked the year they relocated to a different province. I use this information to construct a proxy measure of internal relocation of healthcare workers across the Turkish provinces.

I also use data on the Syrian refugee population from the Turkish Migration Authorities and UNHCR. I divide the number of registered refugees by the native population for each province for each year to construct a province and time-varying ratio of migrants to natives.[6] The distance-based IV, detailed in the next section, is the weighted average of the shortest travel distance from each of the 13 Syrian governorates to each of the 81 Turkish provinces. The pre-war share of the Syrian population for each Syrian governorate in 2011 comes from the Syrian Central Bureau of Statistics as part of the IV construction. Figure 1 presents a detailed map illustrating the concentration of Syrian migrants in Turkey at the provincial level in 2014. Notably, most migrants settled in provinces closest to the Syrian border, including areas such as Kilis, Hatay, Sanliurfa, and Gaziantep.

I combine province and time-varying migrant-to-natives ratio and distance-IV with each of the three individual-level datasets to estimate the causal impact of mass migration on Turkish women's use of healthcare resources, the per capita public and private number of hospital beds, doctors, nurses and midwives, and the internal relocation of native healthcare workers.

3.1 Demographic and Health Surveys

The Demographic and Health Surveys (DHS) is a nationally representative survey conducted by the Hacettepe University Institute of Population Studies in collaboration with the Ministry of Development and the Ministry of Health. The survey is face-to-

[6] The migrant to native ratio is between 0 and 1

face and comprises women aged 15-49. To select the sample, DHS uses a weighted, multi-stage, stratified cluster drawn from all regions in Turkey and, in addition, with an urban-rural segmentation.

The DHS encompasses a wide array of subjects on socio-economic characteristics of women, maternal and child health, use of reproductive healthcare services, and fertility behavior. I use the four most recent waves (2003, 2008, 2013, 2018), and restrict my sample to ever-married women aged 15-49 who gave birth 12 months preceding the survey. Imposing this restriction avoids potential measurement error for births predating the 2011 migration shock, and accounts for any changes to fertility behavior, thus avoiding a mechanical effect (see working paper Aboulhosn et al. 2025, who show an increase to natives' fertility behavior in response the Syrian migration wave).

My outcomes of interest are the use of prenatal care, postnatal care, ultrasounds, blood sample withdrawals, who delivered the child (doctor or nurse), and if the respondent received care in a public or private facility. "Prenatal care" is a binary variable equal to 1 if the mother received prenatal care at least once for births preceding the survey by 12 months, and 0 otherwise. Similarly, "Postnatal care" is equal to 1 if the mother received postnatal care at least once for births preceding the survey by 12 months, and 0 otherwise. The remaining outcomes take on the same binary specification, such as "received an ultrasound," "doctor delivered the baby," and "miscarriage." "Private healthcare" usage is a binary variable equal 1 if the responded received care in a private facility at least one time for either an antenatal visit, postnatal visit, for the delivery of the child, and 0 otherwise.

I also measure the potential downstream effects of using more reproductive healthcare services on child health outcomes—namely "infant mortality", and standard anthropometric measures defined by the WHO. These include "weight-for-age", "height-for-age" and "weight-for-height." To supplement the analysis of these standardized measures, I use subjective measurements of the child's size at birth as observed by the mother.

Table 1 displays the summary statistics. The average woman in the sample is

27 years old and has 6.1 years of completed schooling. 75 percent of the population reports Turkish to be their primary language.[7] The total probability of receiving prenatal care is at 87 percent, and similarly 92 percent for postnatal care. 63 percent of the sample reported a doctor delivered their child, a larger fraction than the 25 percent who reported a nurse delivered their child. The use of private healthcare stands at 15 percent.

Table 1 also divides the sample into the pre-war period (2003-2008) and post-war period (2013-2018). The demographic characteristics across the two time periods remain relatively stable except years of schooling which increase from 5 to 7 years (Panel A).[8] The use of healthcare resources changes substantially between these two periods as well (Panel B). Prenatal care use rose from 79 to 97 percent, and postnatal care use rose from 87 to 96 percent. The percent of doctors delivering the child rose from 51 percent to 78 percent, whereas the likelihood of nurses delivering the child dropped from 35 to 11 percent. Women were more likely to have a blood sample withdrawal, up from 76 to 95 percent, and more likely to use private healthcare which rose from 8 percent to 24 percent. Appendix Table 12 further details the descriptive statistics by above-median and below-median GDP per capita levels for pre-war and post-war periods.

3.2 Turkish Statistical Institute (TurkStat)

The province-level analysis on healthcare resources comes from the Turkish Ministry of Heath, is publicly available on the Turkish Statistical Institute (TurkStat) website. The annual data is at the NUTS3 level (81 provinces) from 2009-2016, and provides a sample of 648 observations. This includes time and province-varying data on the number of hospital beds, doctors, nurses, and midwives. The data distinguishes whether each of

[7] I control for mother tongue to account for any differences between the Kurdish and Turkish populations

[8] The 1997 education reforms increased the years of compulsory education from 5 to 8 years. In 2012, another reform increased compulsory education to 12 years, however, this new policy affects later cohorts only and cannot be observed yet

the four resources belong to the public or private sector.

To accurately measure the impact of Syrian migrants on the availability of healthcare resources, I generate per capita measures of the number of hospital beds, doctors, nurses and midwives. For public healthcare resources, I divide the number of each resource by the total population (natives + refugees). For private healthcare resources, I divide the number of each resource by the total population of natives only. I only include natives in the denominator because the barrier to entry into the private healthcare sector for Syrian refugees is too high. I match these data with i) demographic characteristics like the total trade volumes between Turkey and Syria, higher education levels and total unemployment and ii) the ratio of migrants-to-natives for each province-time observation. Appendix Table 1 details the descriptive statistics used in the analysis of healthcare resources across Turkey.

3.3 Turkish Labor Force Surveys

The Turkish Labor Force Survey (LFS) is a nationally representative, repeated cross-sectional household survey of Turkey and the official source of labor market statistics. I use annual data (2008-2015) which contains approximately 180,000 households per year. The LFS asks all respondents detailed questions about the household composition, education and employment. I create an outcome variable based on responses to three questions: i) the year an individual relocated to a province different than the province they were born in ii) subject studied in university iii) current employment status. I restrict the sample to individuals aged 20-65 as they comprise working-age individuals. The final sample includes 16,121 individuals.

I construct a measure of the internal relocation of healthcare workers using these three questions from the LFS. First, I restrict the sample to university graduates of working age (20-65) that graduated in the subject of "health" as a proxy for healthcare workers. Second, I use a question that asks if the individual has been living permanently in the province they were born in. If not, the year of relocation to a different province

is available. Thus, my outcome variable "Relocated after 2011" equals 1 for individuals who moved provinces between 2012 and 2015, and 0 for individuals who moved provinces between 2008 and 2011. I evaluate the impact of Syrian migration on the probability of natives relocating internally within Turkey, given they are a healthcare worker (proxied by if they graduated with a degree in "health") to test my third mechanism.

4 Identification Strategy

Equation 1 provides the OLS specification for the individual-level analysis that exploits two sources of variation, namely the ratio of Syrian refugees to native population at the provincial level, before and after the shock:

$$Y_{ipt} = \alpha + \beta_1 RefugeePopulation_{pt} + \beta_2 X_{ipt} + \beta_3 P_{pt} + \delta_p + \vartheta_t + \varepsilon_{ipt} \tag{1}$$

where Y_{ipt} is the outcome of interest for woman i residing in province p in interview year t. The main outcomes include the probability of receiving prenatal, postnatal care, ultrasounds and blood sample withdrawals during prenatal check up. Additional outcomes capture the likelihood of receiving care from a doctor or nurse, and the probability of utilizing private healthcare services. $RefugeePopulation_{pt}$ is the independent variable of interest, measured as the ratio of registered Syrian refugees to the native population for each of the 81 provinces in a given year. [9] X_{ipt} controls for individual characteristics, including years of schooling, rural or urban residence, mother tongue, age, and age squared. P_{pt} are province level controls, such as trade volumes between Syria and Turkey or baseline trade interacted with time. Since some evidence shows exports in nearby provinces increased following the refugee influx, controlling for trade volumes helps isolate the changes in maternal healthcare usage to the refugee shock itself, rather than confounding effects of heightened economic activity. δ_p are province fixed effects that absorb time-invariant differences in any unobserved factors varying

[9] The ratio of Syrian to natives only includes registered Syrian refugees and does not include non-registered refugees, so there may be some measurement error that may underestimate the results

across provinces. ϑ_t are year fixed effects that capture the impact of aggregate shocks that affect all provinces contemporaneously. ε_{ipt} is the error term. Standard errors are clustered at the province level in all specifications.

Equation 2 provides the specification for the aggregate-level analysis of healthcare resources from the Turkish Ministry of Health. I exploit the same two sources of variation (time and province). My outcome variables are at the province-level:

$$Y_{pt} = \alpha + \beta_1 RefugeePopulation_{pt} + \beta_2 X_{pt} + \delta_p + \vartheta_t + \varepsilon_{pt} \tag{2}$$

where Y_{pt} is the log of hospital beds, doctors, nurses and midwives per 1000 individuals in province p in year t. I run separate analyses for the public sector and private sector. $RefugeePopulation_{pt}$ is the ratio of migrants to natives in province p in year t (same as Equation 1). X_{pt} controls for province-level demographic characteristics like trade volumes between Syria and Turkey, the share of university graduates, and total unemployment. δ_p are province fixed effects, ϑ_t are year fixed effects and ε_{pt} is the error term.

A potential threat to identification may be the self-selection of migrants into provinces in Turkey. The decision of where to resettle in Turkey is potentially endogenous, as refugees may choose provinces based on local labor market conditions, networks, and other socio-economic factors. If local conditions pull migrants into specific provinces, then their relocation would be non-random and it may be those local conditions that drive the usage of maternal healthcare resources rather than the migration shock itself. To overcome this challenge, I use a well-established instrument for the concentration of Syrian refugees measured as the travel distances from Syrian governorates to Turkish provinces following Del Carpio and Wagner (2016) and Aksoy and Tumen (2021), among others. This assumes travel distance is a key predictor of refugee resettlement patterns and only impacts the use of maternal healthcare resources through the refugee concentration itself.

The instrument is calculated as follows:

$$IV_{pt} = \sum_{s} (1/T_{sp}) \prod_{S} R_t \tag{3}$$

where T_{sp} is the distance from each Syrian governorate s to a Turkish province p. Π_s is the pre-war share of the Syrian population in each Syrian governorate s for the year 2011, and R_t is the number of registered Syrian refugees in Turkey in year t. Since there are 13 Syrian origin governorates and 81 Turkish provinces, this results in 1053 origin-destination pairs used as an instrument to predict the resettlement decision of the Syrian refugees.

Two important assumptions for the validity of the instrument are the relevance and exclusion restriction. The first identification assumption is the distance instrument and migrant-to-natives ratio must be correlated (relevance). At the onset of the civil war, the Turkish government built refugee camps in provinces that received the most refugees, close to the Turkish-Syrian border. Shortly after, many Syrians left the camps due to overcapacity and settled among the native population in Turkey. By 2013 most of the Syrians left the camps and moved to nearby areas, and in 2014, the percentage of Syrians who lived outside of the camps was about 90%. Figure 1 shows the allocation of Syrian migrants across Turkey in 2014, where evidently the vast majority of refugees resettled in the south, along the Turkish-Syrian border. This includes provinces in dark red, such as Gaziantep, Kilis, Hatay and Sanliurfa, and suggests distance played a key role in where refugees decided to relocate.

The second identification assumption is that distance affects the utilization of maternal healthcare resources only through geographical proximity-induced variation in the migrant-to-native population ratio (exclusion restriction). One potential threat to identification is if the distance instrument is correlated with unobserved trends in the use of maternal healthcare resources across regions in Turkey, due to, for example, differences in initial economic development. However, the inclusion of province and time fixed effects ensures all time-invariant characteristics of the provinces are controlled for, in addition to macroeconomic conditions that affect all provinces simultaneously.

Another potential threat may be the increased economic activity along the Turkey-Syria border following the onset of the war, which may lead to a positive income effect for natives. This may encourage more mothers to seek maternal healthcare, especially in private sector facilities. If this is the case, the overall effect of increases to maternal healthcare utilization would be indistinguishable from the increase in economic activity. However, this is unlikely to be an issue since I account for potential increases in economic activity by controlling for province-level trade volumes between Turkey and Syria.

Finally, the validity of the instrument assumes the trends in maternal healthcare utilization across the provinces would have evolved similarly in the absence of the refugee shock, conditional on province and time fixed effects and a set of covariates. Appendix Table 2, discussed in Section 8.2, reports the results of a placebo test, which indicate no evidence of differential pre-trends in maternal healthcare usage prior to the influx of refugees.

5 Results

5.1 Migrant Effects on Reproductive Healthcare Services

Table 2 reports OLS estimates from equation (1) and IV estimates from equation (3). The IV results (bottom panel) indicate that greater exposure to Syrian migrants significantly increases Turkish women's use of prenatal and postnatal care. Specifically, the IV estimates in Column 1 show a one standard deviation increase in the migrant-to-natives ratio (0.049) raises the probability of receiving prenatal care by 2.6 percentage points (0.049×0.528). This is a 3 percent increase relative to the mean. Column 2 shows a one standard deviation increase in the presence of refugees increases the probability of receiving postnatal care by 3.6 percentage points, or an increase of 3.9 percent relative to the mean. The high F-statistic in the first stage implies a strong instrument—both relevant and correlated with the endogenous treatment variable. That is, shorter travel distances between Syrian governorates and Turkish provinces correspond to a higher

migrant-to-natives ratio in those provinces, as indicated by the positive coefficient in the first stage. The direction and significance levels of the OLS and IV estimates are relatively similar, with the IV estimates exhibiting slightly higher coefficients. Overall, the evidence suggests native women more exposed to migrants are more likely to use prenatal and postnatal care.

Table 2 further explores heterogeneity by regional wealth levels in Turkey. The sample is divided into provinces with above-the-median GDP per capita levels, and below-the-median GDP per capita levels (Columns 3-6). The IV estimates in Columns 3 and 4 suggest the increase in prenatal and postnatal care utilization is primarily concentrated in wealthier provinces (with above-the-median GDP per capita levels). In contrast, the effects disappear for poorer provinces (with below-the-median GDP per capita levels) as indicated by the null effects in Columns 5 and 6. This suggests wealthier provinces primarily drive the uptick in natives' usage of prenatal and postnatal care.

Table 3 tests whether higher refugee exposure increases the likelihood that native women's deliveries are attended by a doctor rather than a nurse. Because doctors generally receive more years of training, and with higher levels of specialization compared to nurses, a shift toward doctor-attended deliveries may be suggestive evidence of improved care quality. Column 1 shows that Turkish women in provinces with greater refugee exposure are significantly more likely to have a doctor-attended delivery, while Column 2 shows a significant decline in nurse-attended deliveries, consistent with a substitution towards doctors. To examine heterogeneity in regional wealth across Turkey, the sample is again divided into provinces with above-the-median GDP per capita levels and below-the-median GDP per capita levels. Columns 3 and 4 show that the rise in doctor-attended deliveries is concentrated in wealthier provinces (above-the-median GDP per capita), with a corresponding decline in nurse-attended deliveries. By contrast, in poorer provinces (below-the-median GDP per capita), Columns 5 and 6 show no statistically significant change in who attends the delivery (doctor vs. nurse). Because Turkish women more exposed to migrants are more likely to have a doctor rather

than nurse deliver their child, especially in wealthier areas, the quality of care for native women living in these areas may have improved.

For further investigation, Table 4 presents whether native women received other types of reproductive healthcare services, such as an ultrasound and blood sample withdrawal. Column 1 indicates a positive and significant increase in the probability of receiving an ultrasound. Column 2 similarly shows a positive and significant increase in the probability of a blood sample withdrawal. Similarly, the heterogeneity in provincial wealth is evident, with above-the-median GDP per capita provinces primarily driving the increase in ultrasounds for Turkish women with more exposure to Syrian migrants (Column 3), whereas the effects disappear for below-the-median GDP per capita provinces (Columns 5).

Finally, Table 5 displays the effects of increased migrant exposure on incidents of miscarriage and stillbirth for Turkish women. Because native women are experiencing higher utilization rates of prenatal and postnatal care, improved health outcomes (downstream effects of higher healthcare utilization) may occur for both native women and their children. Although Table 5 shows no effects on the likelihood of miscarriages and stillbirths, regardless of provincial wealth, Section 7 shows some evidence of improvements in child health outcomes such as subjective size at birth (as observed by the mother), and birth weight and birth height.

5.2 Public Healthcare Resources—A crowding out effect?

I examine whether the Turkish government allocated more public healthcare resources to provinces with higher refugee exposure. Table 6 evaluates the impact of the migration shock on the total number of public healthcare resources including hospital beds, doctors, nurses and midwives. The IV results show significant and positive increases in all public healthcare resources, with a strong first-stage F-statistic of 34.59 and a high t-statistic. A 10 percentage point increase in the migrant-to-natives ratio increases the total number of public hospital beds by 11 percent, doctors by 7.2 percent, nurses

by 8.4 percent and midwives by 6.3 percent. These findings suggest that the Turkish government responded to the refugee influx by expanding public healthcare capacity in the most affected provinces.

Next, I evaluate the effect of higher refugee exposure on the per capita number of public hospital beds, doctors, nurses and midwives to determine if the increased investment in public healthcare resources was sufficient to offset the population increase. Columns 2-4 in Table 7 indicate the public doctors-to-population ratio, nurses-to-population ratio, and midwives-to-population ratio significantly decreased in provinces with greater refugee exposure.[10] Column 1 suggests the hospital beds-to-population ratio marginally decreased. Specifically, a 10 percentage point increase in the refugee-to-native ratio leads to a 4.7 percent decrease in public doctors per capita, a 4.6 percent decrease in public nurses per capita, and a 3.3 percent decrease in public midwives per capita. Additionally, I observe a 2.3 percent decline in public hospital beds per capita.[11]

Taken together, evidence from Table 6 and Table 7 suggests that while the Turkish government may have provided additional resources to the public healthcare sector in response to the influx of refugees, these investments were insufficient to maintain the pre-treatment healthcare resources-to-population ratio. The decline in per-capita public healthcare resources of hospital beds, doctors, nurses and midwives suggests an overcrowding in the public healthcare system.

Table 8 examines the heterogeneity in regional wealth by separating the sample of provinces with above-the-median and below-the-median GDP per capita levels to measure the impact of the migration wave on per capita public healthcare resources for wealthy versus poorer provinces. Panel A estimates the effects on above-the-median GDP per capita provinces, where the negative and significant coefficients suggest a per capita decline in public doctors, nurses and midwives, with no effect on hospital beds. Column 2 shows a 10 percentage point increase in the refugee-to-natives ratio leads to

[10] The per capita public sector numbers are calculated as, for example, the total number of doctors divided by the total population (natives + refugees) for each of the 81 provinces in each year. For comparability purposes, Appendix Table 10 runs the same analysis, but divides by the native population only.

[11] The estimates are similar to Erten et al. (2023) and Aygün et al. (2021)

a 2.6 percent decline in the per capita number of public doctors. Similarly, Column 3 shows a 10 percentage point increase in the refugee-to-natives ratio results in a 5.5 percent decrease in public nurses per capita, and Column 4 shows a 3.3 percent decrease in public midwives per capita.

Panel B evaluates below-the-median GDP per capita provinces and, like Panel A, the negative and significant coefficients suggest a per capita decline in public doctors, nurses and midwives. The estimations show a 10 percentage point increase in the refugee-to-natives ratio leads to a 5.6 percent decline in doctors, 3.2 percent decline in nurses and 2.6 percent decline in midwives per capita. In both above-the-median GDP per capita provinces (Panel A) and below-the-median GDP per capita provinces (Panel B), public resources per capita decline in response to more migrants. The estimates suggest some differences in magnitude, with wealthier provinces seeing a larger per capita decline in public nurses and midwives, but a smaller decline in per capita public doctors.

Overall, the evidence suggests that although the Turkish government allocated more public healthcare resources to migrant-affected areas, it was not enough to compensate for the increase in population. Given the overcrowding effect in the public healthcare sector, what then, can explain the increase in the use of reproductive healthcare services for Turkish women living in provinces with more refugees? The next section will detail the mechanisms.

6 Mechanisms

6.1 Demand Side: A Shift of Natives from Public to Private Sector

A significant outcome of public healthcare overcrowding may be a transition into the private healthcare sector by native women who can afford it. Private healthcare is typically associated with higher service quality and less susceptibility to overcrowding as

compared to the public sector (Ünal and Yılmaz 2025). Table 10 estimates the probability of receiving privatized maternal healthcare for native women (in the top two wealth quintiles) with more exposure to Syrian migrants.[11] The estimations in Column 1 are positive and significant, suggesting that wealthy native women may have shifted toward private healthcare, reflected in the higher probability of using maternal healthcare services from private institutions. To get a sense of the magnitude, one standard deviation in the increase in the presence of Syrian refugees leads to a 7 percentage point increase (.049 x 3.631 + .049 x -2.10) in the utilization of private healthcare services for wealthy women, equivalent to a 23 percent increase relative to the mean (.07/.30).

Table 10 separates the sample of women living in provinces with above-the-median GDP per capita and below-the-median GDP per capita levels to assess whether regional wealth plays a role in the transition of affluent Turkish natives to the private healthcare sector in response to the Syrian migration. Column 2 presents the estimates for above-the-median GDP per capita provinces, and Column 3 presents the estimates for below-the-median GDP per capita provinces. Column 2 indicates that wealthy native women living in wealthier provinces primarily drive the shift to privatized maternal healthcare, as the coefficient is sizeable, positive and significant. On the other hand, the effects disappear in Column 3. The estimates in Column 3 suggest for poorer provinces, being a wealthy native woman alone is not sufficient to transition to the private healthcare space—but must be coupled with living in wealthy provinces.

6.2 Supply Side: A Shift of Healthcare Workers from Public to Private

An important potential downstream effect of migrants crowding out the public healthcare system could be healthcare workers substituting out of the public sector and into the private sector. Overwhelming demand, resource shortages, and generally poorer

[11] The wealth index is calculated by the DHS and defined as "a composite measure of a household's cumulative living standard. The wealth index is calculated using easy-to-collect data on a household's ownership of selected assets, such as televisions and bicycles; materials used for housing construction; and types of water access and sanitation facilities."

working conditions in the public system could incentivize doctors, nurses, and midwives to leave the public sector for better opportunities in the private sector. Wealthier provinces are likely better equipped to expand private healthcare provision and possess a greater capacity to attract healthcare professionals compared to poorer regions.

To investigate this possibility, I estimate the effect of Syrian refugees on per capita private healthcare resources, separated by wealthy versus poorer provinces, in Table 9.[12] Panel A demonstrates above-the-median GDP per capita provinces experience a per capita increase in private healthcare resources, specifically for the number of hospital beds, nurses and midwives. Columns 1, 3 and 4 show a 10 percentage point increase in the refugee-to-natives ratio leads to a 5.5 percent increase in the number of hospital beds, 3.9 percent increase in nurses and 1 percent increase in midwives in the private sector. Column 2 suggests the number of private doctors per capita does not change, possibly because doctors tend to be less elastic than nurses and midwives.

On the other hand, more exposure to Syrian migrants in poorer provinces does not lead to any changes in the per capita supply of private healthcare resources. The estimates in Panel B of Table 9 display null results for the per capita number of private hospital beds, doctors, nurses and midwives in below-the-median GDP per capita provinces. This provides suggestive evidence that healthcare workers who transition from the public to private healthcare sector primarily do so in wealthier provinces. Based on the previous results from Table 7 and Table 8, it is plausible that healthcare personnel who previously worked in the public sector transitioned to the private sector in wealthy provinces that experienced a higher influx of Syrian refugees. Consistent with the main results, the changing dynamics of the healthcare system seem to mainly occur in wealthier provinces only.

The transition of wealthy Turkish natives in more developed provinces to the private healthcare space shown in the previous section, coupled with an increase in private

[12] The per capita private sector numbers are calculated, for example, as the total number of doctors divided by the total native population for each of the 81 provinces in each year, as the temporary residency permits granted by the Turkish government gave Syrian refugees access to public healthcare services only. Appendix Table 9 shows the per capita private sector results without disaggregating by GDP per capita.

healthcare resources per capita in more developed provinces, is one of the main findings of this paper. The increased demand for private healthcare by wealthy natives, and the supply side transition of healthcare workers from the public to private sector suggests an important shift in the dynamics of the healthcare industry in Turkey. Given that private healthcare is associated with a financial cost, it stands to reason wealthy women are more likely to be able to afford private healthcare, and importantly, wealthy provinces may be better equipped to improve their private healthcare infrastructure. Wealthy native women may have to pay a higher financial cost to access private healthcare, but the shift to privatized healthcare may free up resources in the public healthcare space for more vulnerable groups.

6.3 Internal Relocation of Healthcare Workers

Provinces that received a large number of migrants experienced an increase in demand for healthcare services and shifts to the supply of healthcare workers. One potential reason for these shifts may be the internal relocation of Turkish healthcare workers between provinces. Turkish healthcare workers may choose to relocate to provinces with more refugees because there may be a higher demand for their services in those areas.

To test this, I use data from the Turkish Labor Force Survey for the years 2008-2015 to assess whether Turkish natives with more exposure to Syrian migrants were more likely to relocate to a different province after 2011, given the individual graduated from university with a health degree. I restrict the sample to adults of working age from 20-65 years because in Turkey, for example, a nursing degree takes two years to complete, so any individual entering university at the typical age of 18 would likely have graduated and started working by age 20. Table 11 displays the estimates of how the internal relocation of native healthcare workers responds to the Syrian migration shock. The results indicate null effects on the probability of a health worker relocating to a different province for the total sample, wealthier provinces, and poorer provinces.

Therefore, I rule out this mechanism.

7 Additional Results

This section examines the downstream effects of Syrian refugee migration on several child health outcomes using data from the 2003–2018 rounds of the Turkish Demographic and Health Surveys. If Turkish women are more likely to use reproductive healthcare services, it is important to assess if any downstream health effects are observed for their children. Three distinct outcomes are assessed: infant mortality, child size as perceived by the mother at birth, and anthropometric indicators including weight-for-age, weight-for-height, and height-for-age z-scores. Across specifications, results are disaggregated by provinces with above and below median GDP per capita levels to assess heterogeneous effects.

7.1 Infant Mortality

Appendix Table 4 presents the estimates of the impact of Syrian refugees on infant mortality, defined as death within the first year of life. The results show no statistically significant relationship between the migrant-to-natives ratio and infant mortality in the total sample. However, in provinces with above-the-median GDP per capita levels, there is a statistically significant decline in the infant mortality rate, suggesting these wealthier areas saw improved child survival outcomes. The effects disappear for below-the-median GDP per capita provinces. The decline in infant mortality for wealthier provinces suggests that the presence of refugees meaningfully altered survival outcomes in the first year of life, plausibly as a downstream effect of Turkish mothers receiving more reproductive healthcare services in these areas. However, the same cannot be said for the total sample and poorer provinces.

7.2 Child Size As Observed At Birth By Mother

Turning to subjective measures of child health, Appendix Table 5 reports the effect of Syrian migrants on the likelihood that a Turkish mother reports her newborn as average size or larger at birth. For the total sample, I observe a marginally significant and positive effect on the likelihood a mother reports her child to be average size or larger. This effect is concentrated in more developed provinces, where the magnitude and significance levels are higher. In less developed provinces, no effects are observed. These findings suggest a modest improvement in perceived birth size outcomes, however since the measure is subjective, it may not necessarily reflect actual increases in birth sizes.

7.3 Anthropometric Measures—Birth Weight and Height

To test objective measures of child size, Appendix Table 6 reports changes in anthropometric measures of child health like weight-for-age, height-for-age and weight-for-height Z scores. Weight-for-Age (WAZ) measures a child's weight relative to age and sex, and is used to assess being underweight, which can reflect both chronic and acute malnutrition. Weight-for-Height (WHZ) measures a child's weight relative to height, and is used to assess wasting (acute malnutrition) and being overweight. Height-for-Age (HAZ) measures a child's height relative to age and sex, and is used to assess stunting.

Appendix Table 6 shows that increased exposure to Syrian migrants leads to positive and significant improvements in weight-for-age (WAZ) in the total sample (Column 1). To interpret the magnitude of the coefficient, a one standard deviation increase in the ratio of migrants to natives leads to .137 standard deviation increase in the weight-for-age Z score (.049 x 2.803)—a moderate increase. There are no effects on weight-for-height and height-for-age Z scores in the total sample. When separating the sample into above and below median GDP per capita provinces, the estimates show positive and significant increases in weight-for-height and weight-for-age. There are no effects for all three anthropometric measures in below median provinces. The results

suggest some improvements in objective birth sizes as a potential downstream effect of Turkish mothers receiving more healthcare services.[13]

8 8 Robustness

8.1 Alternative IV

To supplement the analysis, I use an alternative identification strategy that relies on the province-level, pre-war share of Arabic speakers in Turkey in 1965 to predict the resettlement patterns of Syrian refugees. This language instrument follows Altindag and Kaushal (2021) and is based on the shift-share approach (Card 2001). The logic behind this instrument is that previous patterns of migration are a strong predictor of future migration for individuals that come from the same ethnic background. The language instrument is defined as follows:

$$\text{Pred. Inflow}_{\text{pt}} = \left(\text{ArabicSpeakingPop }_{\text{p,1965}} / \text{ TotalPop }_{\text{p,1965}}\right) \text{R}_{\text{t}} \tag{3}$$

where Pred. Inflow$_{pt}$ interacts the share of Arabic speakers by province population for the year 1965 with the number of registered Syrian refugees in Turkey in year t. A substantial number of ethnic Arabs lived in Turkey and remained there after the Ottoman Empire was partitioned after World War I. Syrian refugees may choose to relocate to provinces with a higher share of Arabic speakers due to improved opportunities for integration or fewer language barrier challenges. One important note is before the start of the civil war, Syrian migration to Turkey was almost zero. Table 12 uses the language IV to assess the effects of Syrian refugees on the use of maternal health care resources and provides similar results to the distance-IV.

Specifically, Table 12 uses the alternative language IV to estimate the effects of Syrian refugees on the use of prenatal and postnatal care, and divides the sample into

[13] There may be some degree of measurement error because of missing data in 2008. Not all children have official records of their birth weight and height (which then, would be recalled by the mother)

provinces with above and below median GDP per capita levels. The results in Columns 1 and 2 are positive and significant for the total sample, showing that native women with higher exposure to migrants have a higher probability of receiving prenatal and postnatal care. These effects are evident in more developed provinces, with Columns 3 and 4 exhibiting positive and significant estimates, but disappear in less developed ones. These findings are exceptionally consistent with the estimates from the distance instrument.

8.2 Placebo Tests

To test the reliability of my main results concerning the timing of the treatment, I conduct placebo analyses using DHS data from 2003 and 2008, designating 2008 as the treatment year using 2018 migrant-to-natives values in Appendix Table 2 and Appendix Table 3. This approach allows me to assess whether any observed shifts in natives' use of reproductive healthcare services might have occurred prior to the actual treatment period, potentially due to unobserved factors. The absence of statistically significant effects in these earlier years suggests that changes in healthcare service utilization cannot be attributed to factors independent of the refugee inflows. These findings suggest the main results reported in Table 2 and the substitution to private healthcare in Table 10 only emerge after 2012, when Turkey began receiving a substantial number of refugees.

8.3 Event Study

Appendix Figure 2 displays an event study to illustrate the impact of refugee inflows on antenatal and postnatal care utilization over time. On the left hand side (antenatal care), the pre-treatment years (2003 and 2008) show effects close to zero, indicating no evidence of pre-trends. In contrast, a significant and positive effect emerges by 2013, and the effect remains positive but smaller by 2018. This may imply stronger short-run refugee inflow effects on the increase in antenatal care utilization. On the right hand side (postnatal care), the coefficient for 2008 is near zero. A large increase appears by

2013 and persists into 2018, without much of a decline. Taken together, the placebo tests and event study suggest no evidence of pre-trends.[14]

8.4 Excluding Large Metropolitan Cities from the Sample

I test whether the results are sensitive to the exclusion of the two largest metropolitan cities in Turkey—Istanbul and Ankara. One potential issue of dividing the sample into above and below the median province GDP per capita levels is that the large metropolitan areas may drive the variation in reproductive healthcare usage, and their healthcare systems could be affected by other factors that vary over time during this period. For example, these two cities have good healthcare infrastructure and constitute a large, growing share of private sector facilities which may not only be due to refugee inflows.[15] Thus, it is important to show whether the effects still survive if Istanbul and Ankara are removed from the sample. Appendix Table 7 shows indeed that removing these two cities still results in a higher probability of natives' utilization of prenatal and postnatal care, driven by above-the-median GDP per capita levels. Appendix Table 8 shows that wealthier women living in more developed provinces in Turkey continue to substitute out of the public healthcare space into the private healthcare space, thus confirming the main results are not sensitive to the inclusion of large cities.

9 Conclusion

This paper assesses the impact of an exogenous migration shock—Syrian refugees entering Turkey—on the utilization of reproductive healthcare resources, shifts to the supply of public and private sector resources, and heterogeneous effects by household and regional wealth. Native women with higher exposure to refugees are more likely to have prenatal and postnatal checkups, ultrasounds, and blood sample withdrawals. When exploring heterogeneous effects by dividing the sample of provinces into above-the-

[14] Postnatal care data for 2003 is unavailable in the dataset

[15] Istanbul and Ankara contain 35 percent of all private hospitals in Turkey as of 2022 (https://www.statista.com/statistics/1330922/turkey-number-of-private-hospitals-by-city/)

median and below-the-median GDP per capita, the estimates show developed provinces are primarily driving the results. The distinction between more developed and less developed provinces is important because it may inform policymakers of where additional healthcare resources need allocation.

To understand why a migration shock led to a higher usage of healthcare resources, I explore three mechanisms. I measure how public and private sector healthcare resources like hospital beds, doctors, nurses and midwives respond to a migration shock. I find that although provinces with more migrants saw an overall increase in public healthcare resources, the public per capita levels of doctors, nurses and midwives declined. Although the Turkish government invested substantive resources in the healthcare system, it was not enough to offset the per capita decline. When assessing the impact of Syrian refugees on private healthcare resources, I find an increase in per capita hospital beds, nurses and midwives but only in wealthy provinces. This suggests there may be a supply side transition of public healthcare workers to the private healthcare space—but only for developed provinces.

Separately I test, on the demand side, whether native women were more likely to use the public or private healthcare system in response to the migration wave. My results show that wealthy native women are more likely to seek private healthcare services in areas with more exposure to refugees, and the results are also driven by above-the-median GDP per capita provinces. This suggests that the crowding out of the public healthcare system led to a transition of native wealthy women to the private healthcare space, but only in wealthy provinces. Finally, I test whether the shift in the supply of healthcare workers may be coming from internal relocation of healthcare workers between provinces in Turkey, where I find null results and rule out this mechanism.

I use two complementary instrument variables, both with consistent results. Using a distance based instrument that predicts the relocation patterns of Syrian refugees, and additionally an alternative instrument that calculates the pre-war share of Arabic

speakers in Turkish provinces, both methods show an increased utilization of maternal healthcare resources. This paper is unique because it is the first to assess the impact of a migration shock on the usage of maternal healthcare, and how this leads to not only a transition of native women into the private healthcare system, but also a shift of healthcare professionals into the private sector.

One policy implication of these findings is that the private healthcare sector can help alleviate the burden of overcrowding in public hospitals, particularly in more developed provinces where a transition to privatized healthcare seems to have taken place. Since the shift has primarily occurred in more developed provinces and among women of higher wealth quintiles, the Turkish government may consider investing in additional resources in less developed provinces. This could come in the form of subsidies or some type of incentives for less developed provinces to invest in the private healthcare sector, or to increase the affordability and access to private healthcare. At the same time, the overcrowding in the public healthcare system was enough to lead to a shift into privatized healthcare for wealthier demographics, and that may free up resources for more vulnerable populations in the public sector.

References

Aboulhosn, Aya, Cevat Giray Aksoy, and Berkay Ozcan (2025). *Refugee Immigration and Natives' Fertility*. CESifo Working Paper Series 11683. CESifo.

Akgündüz, Yusuf Emre (2023). "Refugees and Housing: Evidence from the Mortgage Market". In: *World Bank Economic Review* 37.1. Examines how Syrian refugee inflows influenced the Turkish housing market (mortgage, construction activity, housing size), pp. 147–176.

Aksoy, Cevat Giray and Semih Tumen (2021). "Local Governance Quality and the Environmental Cost of Forced Migration". In: *Journal of Development Economics* 149.

Aksu, Ege, Refik Erzan, and Murat Guray Kirdar (2022). "The Impact of Mass Migration of Syrians on the Turkish Labor Market". In: *Labour Economics* 76.

Altindag, Onur and Neeraj Kaushal (2021). "Do Refugees Impact Voting Behavior in the Host Country? Evidence from Syrian Refugee Inflows to Turkey". In: *Public Choice* 186.2, pp. 149–178.

Aracı, Doğu Tan, Murat Demirci, and Murat Güray Kırdar (2022). "Development Level of Hosting Areas and the Impact of Refugees on Natives' Labor Market Outcomes in Turkey". In: *European Economic Review* 145, p. 104132.

Atun, Rifat, Sedef Aydın, Sarbani Chakraborty, Sinan Sümer, Meltem Aran, Ilker Gürol, and Recep Akdağ (2013). "Universal Health Coverage in Turkey: Enhancement of Equity". In: *The Lancet* 382.9886, pp. 65–99.

Aygün, A., M. G. Kirdar, and B. Tuncay (2021). "The Effect of Hosting 3.4 Million Refugees on Native Population Mortality". In: *Journal of Health Economics* 80.

Baez, Javier (2011). "Civil Wars Beyond Their Borders: The Human Capital and Health Consequences of Hosting Refugees". In: *Journal of Development Economics* 96.2, pp. 391–408.

Card, David (2001). "Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Immigration". In: *Journal of Labor Economics* 19.1, pp. 22–64.

Ceritoglu, Esra, H. Burcu G. Yunculer, Huzeyfe Torun, and Semih Tumen (2017). "The Impact of Syrian Refugees on Natives' Labor Market Outcomes in Turkey: Evidence from a Quasi-Experimental Design". In: *IZA Journal of Labor Policy* 6.1, p. 5.

Del Carpio, Ximena V. and Mathis Wagner (2016). *The Impact of Syrian Refugees on the Turkish Labor Market*. Tech. rep. WPS 7402. Forthcoming in Journal of Labor Economics. World Bank Group.

Demographic and Health Survey (2018). *Turkey Demographic and Health Survey 2018*. Tech. rep. Available at the Demographic and Health Surveys (DHS) Program. Ankara, Turkey: Hacettepe University Institute of Population Studies, Presidency of Turkey Directorate of Strategy and Budget.

Ekmekci, Perihan Elif (2017). "Syrian Refugees, Health and Migration Legislation in Turkey". In: *Journal of Immigrant and Minority Health* 19, pp. 1434–1441.

Erten, Bilge and Pinar Keskin (2021). "Female Employment and Intimate Partner Violence: Evidence from Syrian Refugee Inflows to Turkey". In: *Journal of Development Economics* 150.

Erten, Bilge, Pinar Keskin, Miray Omurtak, and Ilhan Can Ozen (2023). "Syrian Refugee Inflows, Health-Care Access, and Childhood Vaccination in Turkey". In: *World Bank Economic Review* 37.1, pp. 127–146.

European Commission (2018). *European Commission Turkey Report 2018*. Tech. rep. European Commission.

Ibáñez, Ana María, Sandra V. Rozo, and María J. Urbina (2021). "Forced Migration and the Spread of Infectious Diseases". In: *Journal of Health Economics* 79.

OECD (2021). *Health at a Glance 2021: OECD Indicators*. Paris: OECD Publishing.

Ökem, Zeynep Güldem and Mehmet Çakar (2015). "What Have Health Care Reforms Achieved in Turkey? An Appraisal of the Health Transformation Programme". In: *Health Policy* 119.9, pp. 1153–1163.

ORSAM (2015). *Effects of the Syrian Refugees on Turkey*. Tech. rep. Ortadoğu Stratejik Araştırmalar Merkezi.

Tumen, Semih (2018). *The Impact of Low-Skill Refugees on Youth Education*. Working Paper IZA DP No. 11869. Institute of Labor Economics (IZA), Discussion Paper No. 11869.

— (2021). "The Effect of Refugees on Native Adolescents' Test Scores: Quasi-Experimental Evidence from PISA". In: *Journal of Development Economics* 150, p. 102633.

Ünal, Ece and Sema Yılmaz (2025). "Healthcare Sector Dynamics in Turkey (2002–2022): Trends, Breakpoints, and Policy Implications (Privatization in the Hospital Sector)". In: *Healthcare* 13.6, p. 622.

UNHCR (2021). *Global Trends: Forced Displacement in 2021*. Tech. rep. United Nations High Commissioner for Refugees.

Venkateswaran, S. and A. K. Singh (2022). *Health System in Turkey: Reforms, Transformations, and Challenges*. Tech. rep. CSEP Working Paper 36. Centre for Social and Economic Progress.

WHO (2022). *World Report on the Health of Refugees and Migrants*. Tech. rep. World Health Organization.

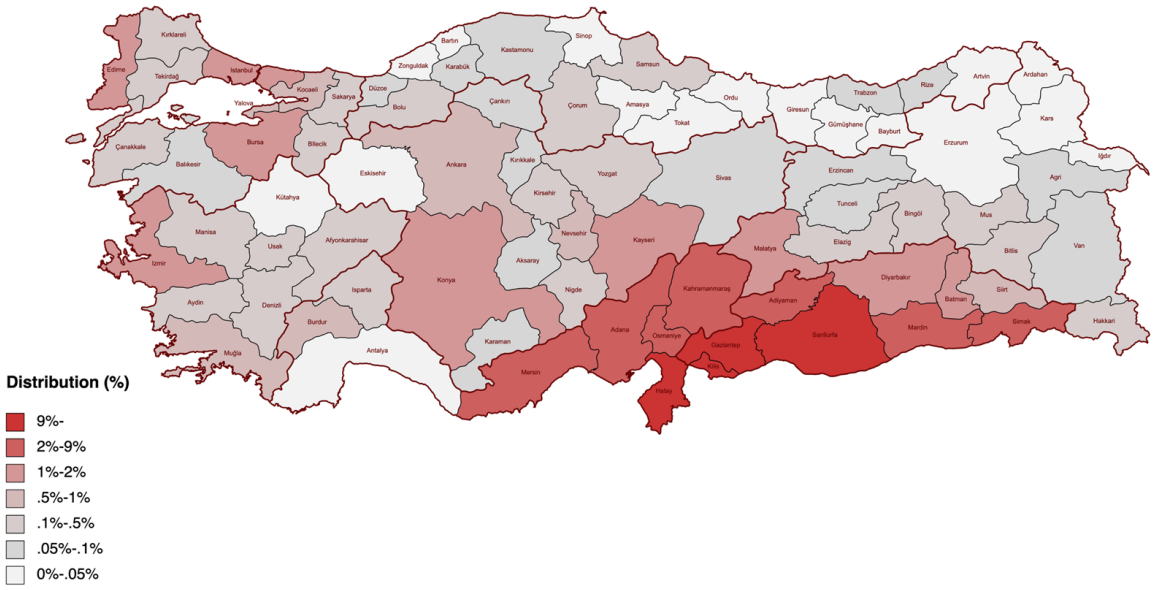

Figure 1: Geographic Distribution of Syrian Refugees, 2014. *Sources:* AFAD and TURKSTAT (2014). *Notes:* The map shows the province-level concentration of Syrian refugees in Turkey.

Table 1: Summary Statistics–Demographic and Health Surveys

	Pre-war (2003–2008)	**Post-war** (2013–2018)	**Whole period** (2003–2018)				
Demographic Characteristics	**Mean**	**Mean**	**Mean**	**SD**	**Min**	**Max**	**Obs.**
Age	26.79	27.96	27.29	5.73	15	46	3,098
Turkish first language	0.73	0.77	0.75	0.43	0	1	3,095
Rural	0.34	0.29	0.32	0.47	0	1	3,098
Years of schooling	5.18	7.36	6.12	4.41	0	21	3,098
Husband's years of schooling	7.25	8.78	7.91	4.06	0	21	3,072
Number of children	2.59	2.32	2.47	1.76	0	14	3,098
Wealth levels	2.56	2.63	2.59	1.38	1	5	3,098
Healthcare usage outcomes							
Prenatal care	0.79	0.97	0.87	0.34	0	1	3,083
Postnatal care	0.87	0.96	0.92	0.27	0	1	2,169
Doctor delivered child	0.51	0.78	0.63	0.48	0	1	3,096
Nurse delivered child	0.35	0.11	0.25	0.43	0	1	3,096
Received ultrasound	0.91	0.98	0.95	0.23	0	1	2,812
Blood sample taken	0.76	0.95	0.85	0.43	0	1	2,813
Private healthcare	0.08	0.24	0.15	0.36	0	1	3,097
Infant mortality	0.015	0.009	0.013	0.125	0	1	3,098

Table 2: Impact of Syrian Refugee Migration on Natives' Receipt of Maternal Health Care

	Total sample		Above-median province GDP		Below-median province GDP	
OLS Estimation	**Received Pre-natal care**	**Received Post-natal care**	**Received Pre-natal care**	**Received Post-natal care**	**Received Pre-natal care**	**Received Post-natal care**
Refugee/pop. ratio	0.259*	0.308	0.292***	0.983***	-0.162	-0.018
	(0.152)	(0.210)	(0.110)	(0.223)	(0.148)	(0.125)
Observations	3,080	2,167	1,413	919	1,667	1,248
IV Estimation	**Received Pre-natal care**	**Received Post-natal care**	**Received Pre-natal care**	**Received Post-natal care**	**Received Pre-natal care**	**Received Post-natal care**
Refugee/pop. ratio	0.528*	0.733***	0.311***	1.071***	-0.505*	-0.229
	(0.286)	(0.267)	(0.116)	(0.205)	(0.294)	(0.221)
First-stage coef.	0.013***	0.013***	0.010***	0.010***	0.023***	0.023***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.004)	(0.004)
First-stage F stat	48.76	47.98	217.05	178.55	13.03	14.44
Observations	3,080	2,167	1,413	919	1,667	1,248

Source: Demographic and Health Survey, 2003–2018. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, and mother tongue. The IV estimates instrument refugee concentration using the distance instrument. Sample: ever-married women aged 15–49 who gave birth in the last year.

Table 3: Impact of Syrian Refugee Migration on Who Provided Assistance During Delivery

	Total sample		Above-median province GDP		Below-median province GDP	
IV Estimation	**Doctor Delivered Child**	**Nurse Delivered Child**	**Doctor Delivered Child**	**Nurse Delivered Child**	**Doctor Delivered Child**	**Nurse Delivered Child**
Refugee/pop. ratio	1.273***	-1.097***	1.008***	-0.896**	0.711	-0.691
	(0.408)	(0.403)	(0.378)	(0.384)	(0.471)	(0.452)
First-stage coef.	0.013***	0.013***	0.010***	0.010***	0.023***	0.023***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.004)	(0.004)
First-stage F stat	48.771	48.771	216.682	216.682	13.021	13.021
Observations	3,093	3,093	1,417	1,417	1,676	1,676

Source: Demographic and Health Survey, 2003–2018. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, and mother tongue. The IV estimates instrument refugee concentration using the distance instrument. Sample: ever-married women aged 15–49 who gave birth in the last year.

Table 4: Impact of Syrian Refugee Migration on Receipt of Essential Services During Antenatal Check-up

	Total sample		Above-median province GDP		Below-median province GDP	
IV Estimation	**Received Ultrasound**	**Blood Sample Taken**	**Received Ultrasound**	**Blood Sample Taken**	**Received Ultrasound**	**Blood Sample Taken**
Refugee/pop. ratio	0.480**	0.744**	0.596***	0.309	0.009	0.377
	(0.248)	(0.344)	(0.171)	(0.350)	(0.187)	(0.370)
First-stage coef.	0.013***	0.013***	0.010***	0.010***	0.022***	0.022***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.004)	(0.004)
First-stage F stat	46.72	46.71	202.93	202.93	12.57	12.61
Observations	2,809	2,810	1,310	1,310	1,499	1,500

Source: Demographic and Health Survey, 2003–2018. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, and mother tongue. The IV estimates instrument refugee concentration using the distance instrument. Sample: ever-married women aged 15–49 who gave birth in the last year.

Table 5: Impact of Syrian Refugee Migration on Incident of Miscarriage/Stillbirth

	Total sample	Above-median province GDP	Below-median province GDP
IV Estimation	**Experienced Miscarriage/Stillbirth**	**Experienced Miscarriage/Stillbirth**	**Experienced Miscarriage/Stillbirth**
Refugee/pop. ratio	-0.149	0.162	-0.196
	(0.263)	(0.257)	(0.382)
First-stage coef.	0.013***	0.010***	0.022***
	(0.002)	(0.001)	(0.004)
First-stage F stat	48.93	213.79	13.00
Observations	3,091	1,423	1,668

Source: Demographic and Health Survey, 2003–2018. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, and mother tongue. The IV estimates instrument refugee concentration using the distance instrument. Sample: ever-married women aged 15–49 who gave birth in the last year.

Table 6: Impact of Syrian Refugee Migration on Total Public Healthcare Resources

IV Estimation (logs)	**# of Hospital Beds**	**# of Doctors**	**# of Nurses**	**# of Midwives**
Refugee/pop. ratio	1.109***	0.720***	0.848***	0.636***
	(0.150)	(0.102)	(0.113)	(0.121)
First-stage coef.	0.0002***	0.0002***	0.0002***	0.0002***
	(0.000)	(0.000)	(0.000)	(0.000)
First-stage F stat	34.59	34.59	34.59	34.59
Observations	648	648	648	648

Source: TurkStat, 2009–2016. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Controls include year fixed effects, province fixed effects, and province-level demographics (total trade volumes, unemployment rate, education level). The IV estimates instrument refugee concentration using the distance instrument.

Table 7: Impact of Syrian Refugee Migration on Per Capita Public Healthcare Resources

IV Estimation (logs)	**# of Hospital Beds**	**# of Doctors**	**# of Nurses**	**# of Midwives**
Refugee/pop. ratio	-0.228*	-0.470***	-0.457***	-0.330***
	(0.125)	(0.069)	(0.100)	(0.070)
First-stage coef.	0.0002***	0.0002***	0.0002***	0.0002***
	(0.000)	(0.000)	(0.000)	(0.000)
First-stage F stat	34.59	34.59	34.59	34.59
Observations	648	648	648	648

Source: TurkStat, 2009–2016. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Controls include year fixed effects, province fixed effects, and province-level demographics (total trade volumes, unemployment rate, education level). The IV estimates instrument refugee concentration using the distance instrument.

Table 8: Impact of Syrian Refugee Migration on Per Capita Public Healthcare Resources by Province GDP Levels

IV Estimation (logs)	# of Hospital Beds	# of Doctors	# of Nurses	# of Midwives
Panel A: Above-the-Median Provinces				
Refugee/pop. ratio	-0.152	-0.263**	-0.553***	-0.338**
	(0.260)	(0.134)	(0.190)	(0.134)
First-stage coef.	0.0001***	0.0001***	0.0001***	0.0001***
	(0.000)	(0.000)	(0.000)	(0.000)
First-stage F stat	48.45	48.45	48.45	48.45
Observations	319	319	319	319
Panel B: Below-the-Median Provinces				
Refugee/pop. ratio	-0.218	-0.595***	-0.326***	-0.261***
	(0.135)	(0.081)	(0.117)	(0.082)
First-stage coef.	0.0002***	0.0002***	0.0002***	0.0002***
	(0.000)	(0.000)	(0.000)	(0.000)
First-stage F stat	28.27	28.27	28.27	28.27
Observations	329	329	329	329

Source: TurkStat, 2009–2016. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Controls include year fixed effects, province fixed effects, and province-level demographics (total trade volumes, unemployment rate, education level). The IV estimates instrument refugee concentration using the distance instrument.

Table 9: Impact of Syrian Refugee Migration on Per Capita Private Healthcare Resources by Province GDP Levels

IV Estimation (logs)	# of Hospital Beds	# of Doctors	# of Nurses	# of Midwives
Panel A: Above-the-Median Provinces				
Refugee/pop. ratio	0.553**	0.097	0.391**	0.101***
	(0.220)	(0.109)	(0.180)	(0.034)
First-stage coef.	0.0001***	0.0001***	0.0001***	0.0001***
	(0.000)	(0.000)	(0.000)	(0.000)
First-stage F stat	48.45	48.45	48.45	48.45
Observations	319	319	319	319
Panel B: Below-the-Median Provinces				
Refugee/pop. ratio	0.144	-0.080	-0.033	-0.011
	(0.122)	(0.064)	(0.095)	(0.021)
First-stage coef.	0.0002***	0.0002***	0.0002***	0.0002***
	(0.000)	(0.000)	(0.000)	(0.000)
First-stage F stat	28.27	28.27	28.27	28.27
Observations	329	329	329	329

Source: TurkStat, 2009–2016. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Controls include year fixed effects, province fixed effects, and province-level demographics (total trade volumes, unemployment rate, education level). The IV estimates instrument refugee concentration using the distance instrument.

Table 10: Impact of Syrian Refugee Migration on Private Healthcare Usage by Women in Top Wealth Quintiles

	Total sample	**Above-median province GDP**	**Below-median province GDP**
IV Estimation	**Private Healthcare**	**Private Healthcare**	**Private Healthcare**
Refugee/pop. Ratio x Woman in Top Wealth Quintiles	3.631**	7.005***	1.451
	(1.451)	(2.019)	(1.224)
Refugee/pop. Ratio	-2.101	-4.248	-0.671
	(1.573)	(3.749)	(0.795)
Top Wealth Quintiles	0.109***	0.070***	0.136***
	(0.020)	(0.015)	(0.033)
First-stage coef.	0.014***	0.011***	0.023***
	(0.002)	(0.001)	(0.003)
First-stage F stat	1,554.93	2,643.78	1,120.81
Observations	3,094	1,425	1,669

Source: Demographic and Health Survey, 2003–2018. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, mother tongue, and log trade. The IV estimates instrument refugee concentration using the distance instrument. Sample: ever-married women aged 15–49 who gave birth in the last year.

Table 11: Impact of Syrian Refugee Migration on Internal Relocation of Turkish Health Care Workers

	Total sample	**Above-median province GDP**	**Below-median province GDP**
IV Estimation	**Relocated after 2011**	**Relocated after 2011**	**Relocated after 2011**
Refugee/pop. ratio	0.011	-0.014	0.003
	(0.007)	(0.035)	(0.004)
First-stage coef.	0.015***	-0.011***	0.020***
	(0.004)	(0.003)	(0.004)
First-stage F stat	1,909.81	3,059.15	8,800.53
Observations	16,121	8,547	7,574

Source: Turkish Labour Force Survey, 2008–2015. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the NUTS2 level. Controls include year fixed effects, NUTS2 fixed effects, age, age squared, rural/urban, education, marital status, and trade volumes. The IV estimates instrument refugee concentration using the distance instrument. Sample: individuals aged 20–65 who graduated in a health field; outcome equals 1 if relocated after 2011, 0 otherwise.

Table 12: Impact of Syrian Refugee Migration on Receipt of Services: Language IV

	Total sample		Above-median province GDP		Below-median province GDP	
IV Estimation	**Received Pre-natal care**	**Received Post-natal care**	**Received Pre-natal care**	**Received Post-natal care**	**Received Pre-natal care**	**Received Post-natal care**
Refugee/pop. ratio	1.517**	2.013***	0.445***	1.767***	1.161	1.855
	(0.662)	(0.734)	(0.108)	(0.097)	(0.822)	(1.522)
First-stage coef.	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
First-stage F stat	29.46	24.46	104.97	253.24	5.86	6.03
Observations	3,080	2,167	1,413	919	1,667	1,248

Source: Demographic and Health Survey, 2003–2018. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, and mother tongue. IV instruments refugee concentration using the *language* instrument. Sample: ever-married women aged 15–49 who gave birth in the last year.

Appendix for Forced Migration and Reproductive Health Care Service: Evidence from Turkey

Appendix Table 1: Descriptive Statistics of Healthcare Resources—Turkish Ministry of Health

	Pre-war (2009–2011)	**Post-war** (2012–2016)	**Whole period** (2009–2016)				
Variable	**Mean**	**Mean**	**Mean**	**SD**	**Min**	**Max**	**Obs.**
Public Healthcare Resources *(per 1,000 people)*							
Hospital beds	1.870	1.875	1.873	0.612	0.666	5.861	648
Doctors	0.937	0.975	0.961	0.163	0.593	1.571	648
Nurses	1.237	1.483	1.391	0.382	0.645	2.830	648
Midwives	0.772	0.779	0.776	0.272	0.258	2.073	648
Private Healthcare Resources *(per 1,000 people)*							
Hospital beds	0.241	0.349	0.309	0.245	0.000	1.189	648
Doctors	0.194	0.224	0.213	0.148	0.000	0.980	648
Nurses	0.153	0.212	0.190	0.140	0.000	1.274	648
Midwives	0.035	0.031	0.033	0.026	0.000	0.145	648
Demographic Characteristics							
Total trade volume by provinces	1.952e+09	4.900e+08	1.038e+09	1.323e+10	0	1.962e+11	648
Total unemployment rate	3.648	5.347	4.710	1.619	0.838	13.779	648
Higher education index	6.404	9.953	8.622	3.170	1.901	21.833	648

Source: TurkStat, 2009–2016.

Appendix Table 2: Placebo Test for the Impact of Syrian Refugee Migration on Natives' Receipt of Maternal Health Care

	Total sample		Above-median province GDP		Below-median province GDP	
Received Pre-natal care	**OLS**	**IV**	**OLS**	**IV**	**OLS**	**IV**
Refugee/pop. ratio	0.289	0.636	0.316	0.254	-0.303	0.525
	(0.331)	(0.415)	(0.248)	(0.261)	(0.241)	(0.938)
First-stage coef.	0.013***	0.013***	0.010***	0.010***	0.023***	0.023***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.004)	(0.004)
First-stage F stat	–	50.81	–	264.85	–	5.50
Observations	1,749	1,749	823	823	926	926

Source: Demographic and Health Survey, 2003 and 2008. Placebo construction assigns 2018 province-level refugee share and the distance IV to 2008 data. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, and mother tongue. IV instruments refugee concentration using the distance instrument. Sample: ever-married women aged 15–49 who gave birth in the last year.

Appendix Table 3: Placebo Test of Impact of Syrian Refugee Migration on Private Healthcare Usage by Women in Top Wealth Quintiles

	Total sample	Above-median province GDP	Below-median province GDP
IV Estimation	**Private Healthcare**	**Private Healthcare**	**Private Healthcare**
Refugee/pop. Ratio x Woman in Top Wealth Quintiles	0.693	0.577	0.272
	(0.679)	(0.551)	(2.328)
Refugee/pop. Ratio	0.436	0.879***	1.318
	(0.273)	(0.186)	(0.811)
Top Wealth Quintiles	0.062**	0.023	0.118**
	(0.030)	(0.030)	(0.055)
First-stage coef.	0.014***	0.011***	0.023***
	(0.002)	(0.001)	(0.003)
First-stage F stat	1,554.93	2,643.78	1,120.81
Observations	1,761	834	927

Source: Demographic and Health Survey, 2003 and 2008. Placebo construction assigns 2018 province-level refugee share and the distance IV to 2008 data. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, mother tongue, and log trade. IV instruments refugee concentration using the distance instrument. Sample: ever-married women aged 15–49 who gave birth in the last year.

Appendix Table 4: Impact of Syrian Refugee Migration on Infant Mortality

	Total sample	Above-median province GDP	Below-median province GDP
IV Estimation	**Infant Mortality**	**Infant Mortality**	**Infant Mortality**
Refugee/pop. ratio	0.016	-0.093**	0.096
	(0.060)	(0.041)	(0.101)
First-stage F stat	48.75	216.69	13.02
Observations	3,095	1,418	1,677

Source: Demographic and Health Survey, 2003–2018. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, and mother tongue. IV instruments refugee concentration using the distance instrument. Sample: ever-married women aged 15–49 who gave birth in the last year.

Appendix Table 5: Impact of Syrian Refugee Migration on Child Size as Observed by the Mother

	Total sample	Above-median province GDP	Below-median province GDP
IV Estimation	**Child Size Avg. or Higher**	**Child Size Avg. or Higher**	**Child Size Avg. or Higher**
Refugee/pop. ratio	0.461*	0.705**	0.351
	(0.255)	(0.329)	(0.477)
First-stage F stat	48.75	214.49	13.03
Observations	3,094	1,425	1,669

Source: Demographic and Health Survey, 2003–2018. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, and mother tongue. IV instruments refugee concentration using the distance instrument. Sample: ever-married women aged 15–49 who gave birth in the last year.

Appendix Table 6: Impact of Syrian Refugee Migration on Anthropometric Measures of Children Born in the Past Year

	Total sample			Above-median province GDP			Below-median province GDP		
IV Estimation	**Weight-for-Age**	**Weight-for-Height**	**Height-for-Age**	**Weight-for-Age**	**Weight-for-Height**	**Height-for-Age**	**Weight-for-Age**	**Weight-for-Height**	**Height-for-Age**
Refugee/pop. ratio	2.803**	1.730	1.770	4.924***	5.375***	0.711	-2.507	-2.213	-1.179
	(1.417)	(1.152)	(1.236)	(1.231)	(1.470)	(0.856)	(2.683)	(2.507)	(2.215)
First-stage F stat	69.94	69.94	69.94	511.35	511.35	511.35	9.38	9.38	9.38
Observations	1,820	1,820	1,820	894	894	894	926	926	926

Source: Demographic and Health Survey, 2003–2018. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, and mother tongue. IV instruments refugee concentration using the distance instrument. Sample: ever-married women aged 15–49 who gave birth in the last year.

Appendix Table 7: Impact of Syrian Refugee Migration on Receipt of Maternal Healthcare—Excluding Ankara and Istanbul

	Total sample		Above-median province GDP		Below-median province GDP	
IV Estimation	**Received Pre-natal care**	**Received Post-natal care**	**Received Pre-natal care**	**Received Post-natal care**	**Received Pre-natal care**	**Received Post-natal care**
Refugee/pop. ratio	0.236	0.554**	0.306**	1.036***	-0.541*	-0.229
	(0.212)	(0.269)	(0.129)	(0.241)	(0.296)	(0.221)
First-stage coef.	0.013***	0.013***	0.010***	0.010***	0.023***	0.023***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.004)	(0.004)
First-stage F stat	60.58	62.83	231.97	198.84	13.23	14.44
Observations	2,765	1,962	1,208	714	1,557	1,248

Source: Demographic and Health Survey, 2003–2018. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, and mother tongue. IV instruments refugee concentration using the distance instrument. Sample: ever-married women aged 15–49 who gave birth in the last year; Ankara and Istanbul excluded.

Appendix Table 8: Impact of Syrian Refugee Migration on Private Healthcare Usage by Women in Top Wealth Quintiles—excluding Ankara and Istanbul

	Total sample	**Above-median province GDP**	**Below-median province GDP**
IV Estimation	**Private Healthcare**	**Private Healthcare**	**Private Healthcare**
Refugee/pop. Ratio x Woman in Top Wealth Quintiles	3.344**	6.022***	1.615
	(1.385)	(1.767)	(1.230)
Refugee/pop. Ratio	-0.064	-0.070	0.563
	(0.326)	(0.343)	(0.766)
Top Wealth Quintiles	0.098***	0.077***	0.117***
	(0.021)	(0.021)	(0.029)
First-stage coef.	0.014***	0.011***	0.023***
	(0.002)	(0.001)	(0.003)
First-stage F stat	1,554.93	2,643.78	1,120.81
Observations	2,779	1,220	1,559

Source: Demographic and Health Survey, 2003–2018. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Standard errors clustered at the province level. Controls include year fixed effects, province fixed effects, years of schooling, age, age squared, rural/urban, and mother tongue. IV instruments refugee concentration using the distance instrument. Sample: ever-married women aged 15–49 who gave birth in the last year; Ankara and Istanbul excluded.

Appendix Table 9: Impact of Syrian Refugee Migration on Total Private Healthcare Resources

IV Estimation (logs)	**# of Hospital Beds**	**# of Doctors**	**# of Nurses**	**# of Midwives**
Refugee/pop. ratio	1.749*	0.563	0.005	0.365
	(0.941)	(0.475)	(0.729)	(0.558)
First-stage coef.	0.0002***	0.0002***	0.0002***	0.0002***
	(0.000)	(0.000)	(0.000)	(0.000)
First-stage F stat	34.59	34.59	34.59	34.59
Observations	648	648	648	648

Source: TurkStat, 2009–2016. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Controls include year fixed effects, province fixed effects, and province-level demographics (total trade volumes, unemployment rate, education level). The IV estimates instrument refugee concentration using the distance instrument.

Appendix Table 10: Impact of Syrian Refugee Migration on Per Capita Public Healthcare Resources (Turkish only)

IV Estimation (logs)	**# of Hospital Beds**	**# of Doctors**	**# of Nurses**	**# of Midwives**
Refugee/pop. ratio	0.785***	0.401***	0.502**	0.304**
	(0.191)	(0.125)	(0.196)	(0.136)
First-stage coef.	0.0002***	0.0002***	0.0002***	0.0002***
	(0.000)	(0.000)	(0.000)	(0.000)
First-stage F stat	12.765	12.765	12.765	12.765
Observations	648	648	648	648

Source: TurkStat, 2009–2016. Notes: ***, **, * indicate 1%, 5%, and 10% significance levels, respectively. Controls include year fixed effects, province fixed effects, and province-level demographics (total trade volumes, unemployment rate, education level). The IV estimates instrument refugee concentration using the distance instrument.

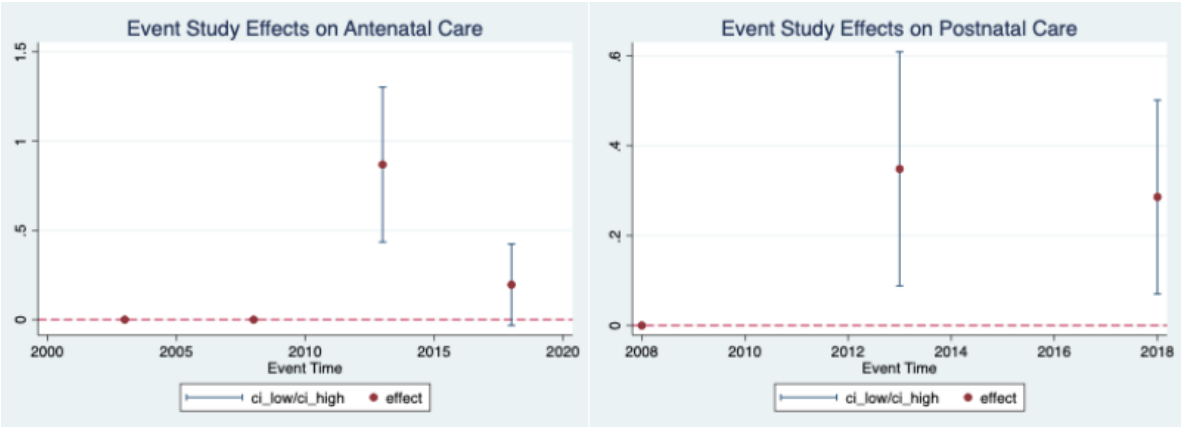

Figure 2: Event Study for Antenatal and Postnatal Care. *Sources:* Demographic and Health Survey for years 2003-2018. Note: Data on postnatal care unavailable for year 2003.

Appendix Table 12: Summary Statistics – Demographic and Health Surveys, by Province GDP Levels

	Above-median GDP		Below-median GDP	
	Pre-war (2003–2008)	**Post-war** (2013–2018)	**Pre-war** (2003–2008)	**Post-war** (2013–2018)
Demographic Characteristics				
Age	26.91	28.31	26.67	27.67
Turkish first language	0.79	0.80	0.68	0.66
Rural	0.28	0.23	0.39	0.40
Years of schooling	5.56	8.21	4.80	6.69
Husband's years of schooling	7.28	9.07	7.22	8.55
Number of living children	2.55	2.07	2.63	2.51
Wealth levels	2.76	2.98	2.35	2.36
Healthcare Usage Outcomes				
Prenatal care	0.80	0.98	0.79	0.96
Postnatal care	0.93	0.97	0.82	0.95
Doctor delivered child	0.53	0.83	0.49	0.72
Nurse delivered child	0.33	0.06	0.37	0.16
Received ultrasound	0.92	0.98	0.91	0.98
Blood sample taken	0.75	0.96	0.77	0.95
Private healthcare	0.10	0.35	0.05	0.16
Infant mortality	0.02	0.01	0.01	0.01