Syrian Refugee Inflows, Health Care Access, and Childhood Vaccination in Turkey*

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Abstract

We study the impact of the arrival of Syrian refugees to Turkey on access to health care resources and subsequent changes in infectious disease rates among native children. Employing a distance-based instrument, we find that native children living in regions that received large inflows of Syrian refugees experienced an increase in their risk of catching an infectious disease compared to children in less affected regions. In contrast, we find no evidence of significant changes in noninfectious diseases such as diabetes, cancer, or anemia. The findings also reveal that the number of health care professionals and hospital beds per capita declined in provinces that received large refugee inflows. We also document a decline in native children's probability of being fully vaccinated in provinces that received large refugee inflows. Although contact with potentially infected

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refugees may increase disease spread among natives, the migration-induced supply constraints in health care access may also worsen health outcomes in host countries.

1 Introduction

Armed conflicts and climate change forcibly displace millions of people worldwide every year. According to the UNHCR (2020), 82.4 million people experienced forced displacement in 2020, 26.4 million of whom live as refugees abroad. Developing countries host 86% of these refugees despite facing numerous resource constraints. Previous studies have documented that forced migration aggravates the disease burden in host countries because of the arrival of refugees with poor health (Montalvo and Reynal-Querol 2007; Baez 2011; Ibáñez et al. 2021). However, the increase in infectious diseases could also be driven by a decline in the availability of health care resources, including health care professionals or hospital beds per capita, which might induce a reduction in the utilization of preventative health care services such as the vaccination of children and thereby increase the spread of infectious diseases.

In this paper, we examine the impact of Syrian refugee inflows on the supply of health care resources, the subsequent changes in childhood vaccination behavior, and the prevalence of infectious diseases among children in Turkey.[1] UNHCR (2021) reports that Turkey currently hosts the highest number of refugees in the world, as 3.7 million Syrian refugees are settled in Turkey.[2] Turkey has made significant improvements in its healthcare system since the early 2000s, leading to an increase in the ratio of fully vaccinated children between ages 0 and 2 from 54% in 2003 to 81% in 2008 (*Turkey Demographic and Health Survey* 2003, 2008). However,

[1]For the purposes of our study, we focus on childhood infectious diseases such as measles, diphtheria, etc., which can be avoided by the implementation of affordable interventions such as adequate systems for immunization and healthcare.

[2]In March 2011, the violent response of the Bashar Al-Assad regime to peaceful civil protests triggered a destructive civil war in Syria, which rapidly spread across several regions of this country. As a result, more than 6.3 million people have fled their homeland, migrating to bordering countries such as Turkey, Lebanon, and Jordan.

the rapid population increase in refugee-receiving areas may have reduced access to health care services, including vaccination of children, in the absence of adequate investments in the supply of healthcare professionals and infrastructure.

To investigate this question, we exploit the differential arrival of refugees after the outbreak of the Syrian civil war in March 2011 across Turkish provinces as an exogenous shock to native health outcomes in host regions. However, it is possible that the settlement of refugees across regions was not random. Following Del Carpio and Wagner (2016) and Erten and Keskin (2021), we use a weighted average of the travel distance between Syrian governorates and Turkish regions/provinces as an instrument to predict the location choice of refugees in the first stage of an instrumental variable (IV) model. This empirical strategy allows us to account for potential endogeneity in the timing and level of refugee arrivals across provinces in Turkey. The inclusion of region-specific time trends further ensures that the results are not driven by pre-existing trends in outcomes observed in a particular region, including the Southeastern Turkey that received large refugee inflows.

Our results show that native children living in regions that received large inflows of Syrian refugees experienced an increase in their risk of catching an infectious disease compared to children in less affected regions.[3] In contrast, we found no evidence of significant changes in noninfectious diseases such as diabetes, cancer, or anemia. At the same time, we find that the number of health care professionals and hospital beds per capita declined in provinces that received large refugee inflows compared to provinces that received fewer. Although the Turkish government invested heavily in the supply of doctors, nurses, and midwives in host regions, it did not fully offset decline in per-person availability of health care resources driven

[3]We focus on health outcomes of native children since we do not have information on refugee children over time in our data sets.

by the rapid increase in the local population.

We then examine whether the reductions in access to health care providers affect the use of preventative health care services such as the vaccination of children. Our findings reveal a significant decline in the vaccination of children in provinces that received a higher share of refugees compared to less affected provinces. These reductions in childhood vaccination might have further contributed to increases in the spread of vaccine-preventable diseases in affected regions.

Examining alternative channels through which refugee inflows might impact native children's health outcomes, we find no evidence of a significant impact of refugee inflows on mothers' time spent with children or their wealth. Altogether, we conclude that although contact with potentially infected refugees might increase disease spread among natives, the migration-induced supply constraints in health care access may have also worsened health outcomes in Turkey.

Our paper makes several contributions to the existing literature. First, our paper is closely related to papers examining the public health consequences of hosting large refugee populations in communities. For example, Ibáñez et al. (2021) find that higher refugee inflows from Venezuela to Colombia are associated with an increase in vaccine-preventable diseases, including chickenpox and tuberculosis. Similarly, Baez (2011) reported an increasing incidence of diarrhea and fever as well as childhood mortality in northwestern Tanzania after it was flooded by more than 500,000 refugees from Burundi and Rwanda. Both of these papers attribute the increase in infectious diseases to direct transmission from the refugee population, which arrives at the host country with a high disease prevalence from their war-torn countries.

Our paper differs from these studies by examining the potential mechanisms driving the increased prevalence of infectious diseases in host regions, with a

particular focus on the availability of health care services. Specifically, we highlight the role of supply constraints stemming from overburdened health clinics, hospitals, and health care providers as an unanticipated flow of migrants seek health care services in the host country. Interestingly, the burden on health care systems in more refugee-receiving areas carries parallels to the strains on health care resources across many countries during the COVID-19 pandemic. Indeed, the pandemic-related service closures have led to substantial reductions in utilization of health care services by children and young people even in developed countries (Chanchlani et al. 2020; Bell et al. 2020). UNICEF (2021) reports that the pandemic interrupted vaccination campaigns around the world, resulting in 23 million children not receiving basic childhood vaccines. Overall, our study represents a comprehensive analysis of the causal relationship between vaccination and forced migration.

One paper closely related to ours is by Aygün et al. (2021), who focus on the effects of refugee inflows on mortality rates for different age groups, finding no evidence of a significant impact. While it is important to examine potential effects on these extreme outcomes, investigating the impacts on prevalence of infectious diseases in early childhood—whether they result in child mortality or not—is important for several reasons. As shown by previous studies, improved early-life health care and the completion of childhood vaccines have significant later life impacts on cognition, earnings and health risks during adulthood. For instance, Bleakley (2003) examines the impact of eradicating malaria in the United States, Bharadwaj et al. (2013) and Bütikofer et al. (2019) focus on the impacts of early life health interventions, and Bloom et al. (2011) and Driessen et al. (2015) examine the effects of childhood vaccinations on school attendance and cognition. Thus, a possible change in vaccination rates and infectious disease prevalence in early

childhood in response to refugee inflows may have a wide range of indirect impacts on the host country in the long run.

Finally, our study relates to a growing body of empirical work on the effects of Syrian refugee inflows on the labor markets (Del Carpio and Wagner 2016; Ceritoglu et al. 2017; Aksu et al. 2022), housing markets (Tumen 2016; Balkan et al. 2018), educational systems (Tumen 2019), political outcomes (Altındağ and Kaushal 2020), domestic violence (Erten and Keskin 2021) and other outcomes in Turkey.[4] Despite using a similar identification strategy, our paper is the first one to document the effects of refugee inflows on infectious disease prevalence and childhood vaccination in Turkey.

Overall, our findings have several policy implications as we explain in more detail in Section 5. First, it is crucial to increase investments in health care resources in areas with greater concentration of refugees in host countries. Second, a related policy implication is the implementation of widespread vaccination campaigns that cover all vaccine-preventable diseases for refugee and native children. These campaigns should also include investments in new vaccination sites in host communities with high refugee populations. Designing early action plans on these fronts can help confront the potential spread of infectious diseases, which might have long-lasting effects on human capital accumulation of children.

The remainder of this paper is organized as follows. In Section 2, we provide background information on the Syrian refugee inflows to Turkey. Section 3 discusses the data and the identification strategy we employ in our analysis. Section 4 presents the empirical results, and Section 5 concludes the paper.

[4]For overviews of the broader literature on the effects of refugee inflows on host countries, see Becker and Ferrara (2019) and Maystadt et al. (2019).

2 Background

Starting in March 2011, protests in Syria inspired by Arab Spring events called for President Bashar al-Assad's removal. These protests were violently suppressed by Syrian troops (Slackman 2011). Following this suppression, civil unrest grew and expanded into an international conflict including various armed groups and countries. As a result, 6.7 million Syrians were internally displaced, and approximately 6.6 million have fled Syria since 2011 (UNHCR 2021). Among those who have fled, 3.6 million currently live in Turkey and compose approximately 5% of Turkey's population (UNHCR 2021). This significant increase in population took place over a short period of time: The number of refugees rose steadily from 145,000 at the end of 2012 to 1.5 million by the end of 2014 (Appendix Figure A1). Furthermore, the spatial distribution of refugees varied across provinces. As shown in Figure 1, in provinces bordering Syria, up to 19% of their population consisted of refugees by the end of 2013, while many other provinces experienced a far smaller inflow.

Syrian refugees predominantly originate from northwestern Syria, where the conflict began. Figure A2 shows that the largest shares of refugee outflows originated from Aleppo (36%), Idleb (21%), al-Raqqah (11%), Lattakia (9%), and Hamah (8%). In a survey implemented by the Directorate General of Migration Management of Turkey (DGMM), the majority of refugees (close to 80%) reported lower transportation costs as the main reason they chose to migrate into Turkey instead of other countries (DGMM 2013).

In October 2011, the Turkish government enacted a temporary protection regime, which provided a range of rights and services to Syrian refugees in Turkey, including free access to education, health services, social assistance, and freedom of movement within Turkey. In addition, Syrian refugees were assured no forced

return, which allowed the refugees to legally cross the Turkish border without the fear of deportation.

Since the beginning of their arrival, the Turkish government offered generous healthcare coverage to the Syrian refugees upon their registration with the local authorities in each province. Registered Syrian refugees were immediately given temporary protection status, which allowed them to receive medical care as needed (ORSAM 2015). Refugees who lived in camps had free access to healthcare facilities in the camp, but if more comprehensive treatment was needed, they were sent to nearby public hospitals.[5] Refugees living outside the camps also had free access to health care services.[6] It has been reported that the hospitals in border provinces offer approximately 30% to 40% of their services to Syrian refugees, which creates capacity constraints and leads to delays in service delivery (ORSAM 2015).

The Turkish Ministry of Health in collaboration with UNICEF and WHO carried out several health campaigns targetting refugee population. One of these was a polio mop-up vaccination campaign from 2013 to 2015.[7] In the five cities with the highest refugee concentrations—namely, Mardin, Hatay, Kilis, Sirnak, and

[5]The Syrian refugees were initially located in 25 refugee camps in the southeastern region of the country near the Turkish-Syrian border. However, as the civil war became a humanitarian crisis, the number of individuals seeking refuge in Turkey rapidly exceeded the capacity of these camps. In 2017, camps were hosting approximately 8% of the refugee population, and the majority of refugees have moved and resettled across the provinces of Turkey (European Commission 2017).

[6]The share of private care in Turkey is relatively small compared to the public sector. For example, 18% doctors' consultations occurred in the private sector in 2015 (TOBB 2017). In order to reduce the burden on public hospitals, migrant health centers that provide primary care were opened in cities with high refugee populations. These centers employed some Syrian doctors and other health care professionals in addition to the Turkish ones. By 2017, there were approximately 50 such centers and this number has increased to 185 as a part of a joint effort between Turkey and the EU (Ekmekci 2017; Ministry of Health of Turkey 2022). Despite these efforts, it has been reported that many Syrian refugees tend to bypass primary health care in these centers and seek care at the hospital level (OCHA 2018). By 2022, over 100 million in- and outpatient care services were provided to Syrian refugees (Ministry of Health of Turkey 2022).

[7]A key reason for targeting polio was that 35 cases of polio were confirmed in Syria in 2013. Syria was polio-free prior to the civil war. Turkey has been polio-free since 1998, and the vaccination campaign was successful in preventing an outbreak.

Sanliurfa—both Syrian and Turkish children aged 0–59 months were vaccinated against polio. In six other cities with Syrian refugee camps, only Syrian children were vaccinated against polio. In 2014, the campaign was extended to Syrian children in Istanbul, targeting all children in districts with high refugee populations (UNICEF 2014). This campaign was specifically designed to vaccinate children against polio and did not cover other diseases. In 2017, another vaccine campaign was launched targeting refugee children under the age of five with the goal of completing the vaccines that they had missed (Turkish Medical Association 2019).

3 Data and Empirical Methodology

3.1 Data

We combine two types of data in our empirical analysis: (i) province-level data on refugee inflows to Turkey, number of healthcare professionals, number of hospital beds, and trade volume with Syria and (ii) individual-level data on childhood vaccination, disease prevalence, and socioeconomic outcomes.

3.1.1 Data on Refugee Inflows, Healthcare Professionals, Hospital Beds and Trade

The information on the number of refugees in Turkish provinces come from two sources. First, the UNHCR (2022) provides data on the number of total Syrian refugees in Turkey on a monthly basis from 2011 to date.[8] Second, following Altindag et al. (2020), we combine the estimates on province-level refugee populations in 2014 released by the Ministry of Interior with the aggregate counts from

[8]Note, however, that there are several missing observations in the dataset.

UNHCR to estimate refugee numbers in each province.[9] For all 81 provinces in Turkey, we obtain the share of refugees in a given province by dividing the number of registered refugees by total province population. Since refugees may move into other provinces or out of the country after their registration, the figures released by UNHCR reflecting the number of registered refugees in each province are likely to have some degree of measurement error.

Figure 1 illustrates the geographical distribution of Syrian refugees using the share of refugee inflows in the province population across Turkey in 2013. The provinces with the highest refugee shares are Kilis (19%), Hatay (6%), and Sanliurfa (5%), which are all located on the Turkish-Syrian border. Provinces farther from the border have generally received fewer refugees relative to their population. Istanbul, Izmir, and Ankara are the three largest cities in Turkey and are centers for economic activity. Hence, they also have a relatively high refugee share. The average share of refugee inflows in the province population across Turkey was 1 percent in 2013.

We use two additional sources of data to construct our instrument. First, we use data on the population of each Syrian governorate in 2011 – prior to the civil war – from the Syrian Central Bureau of Statistics. Second, we utilize Google Maps to calculate the travel distance between each governorate in Syria and each province in Turkey. Note that there are six border crossings between Turkey and Syria: 2 in Hatay and 1 each in Gaziantep, Kilis, Mardin, and Sanliurfa. Syrian refugees used different border crossings depending on their home governorates

[9]For the months where refugee numbers were not updated, we use linear interpolation to fill the gaps. For annual analyses, we take the end of the year refugee numbers. Since the geographic allocation of Syrian refugees in Turkey is stable over time (Altindag et al. 2020), we use the 2014 allocation shares to estimate province-level refugee counts over time. Also note that the Ministry of Interior, Presidency of Migration Management (2022)'s DGMM—the Turkish migration authority—provides annual data on the number of registered refugees at the national level between 2011 and 2022. The refugee counts here largely overlap with the UNHCR numbers in the post 2013 period, but they underestimate the count between 2011-2013.

and their destination provinces in Turkey. To calculate our distance measure, we take the shortest travel path between two locations. Due to the open-door policy in Turkey toward Syrian refugees, there was no reason for Syrian refugees to use illegal pathways to enter the country.

Moreover, we use data on the trade volume between each Syrian governorate and 81 Turkish provinces provided by the Turkish Statistical Agency to control for economic linkages between these regions.

Finally, we use data on the number of health professionals and hospital beds provided by the 2008–2016 Health Statistics Yearbooks. These data are published annually by the Turkish Ministry of Health. The data include aggregate figures from private and public sectors.

3.1.2 Data on Vaccination, Disease Prevalence, and Related Outcomes

We use two sources of individual-level data. First, we use four rounds of the Turkish Demographic and Health Surveys (TDHS) conducted in 2003,2008, 2013 and 2018.[10] Second, we use five rounds of the Turkish Health Surveys (THS) conducted every two years from 2008 to 2016. We will describe these data sources next and present summary statistics.

The TDHS data are nationally representative household surveys that provide information on demographics and health outcomes for women and children, including vaccination of young children. More specifically, it asks women whether their children aged between 0 and 3 have been vaccinated against certain diseases. This dataset also captures which of the 81 provinces the respondent lives in.

[10]Note that in 2018 TDHS, the information on province of residence is not directly provided. Instead, we use the information provided on the migration history for each women and assign their last province of migration as the province of residence. For women who do not report migration history, we use their childhood province as the province of residence.

Panel A of Table 1 presents descriptive statistics for demographic characteristics and vaccination outcomes of children using the 2003–2018 TDHS data. Section I of Panel A shows that the average age of children was 1.2, and approximately half of them were girls. It also provides information on mothers' characteristics, including their education, whether they speak Turkish, type of area they live in (rural vs. urban), and age. The mothers average 28.3 years of age, approximately 28 percent of them live in a rural area, 5 percent does not speak Turkish (i.e., the interview was conducted in Kurdish, Arabic, or other), and 26 percent have completed high school or above.

Section II of Panel A in Table 1 provides summary statistics for vaccination outcomes. We observe that the total number of vaccines received by children increased from 5.72 in the pre-war period to 6.47 in post-war period.[11] We examine whether a child completed the three doses of the hepatitis B and the diphtheria, pertussis, tetanus vaccines as well as if they received a single dose of tuberculosis and measles vaccines. We focus on the completion of three doses for the hepatitis B and the diphtheria, pertussis, tetanus vaccines since having completed all doses of vaccines is considered a good measure of the strength of immunization and is therefore frequently used in the literature as well as by organizations such as the Global Alliance for Vaccines and Immunizations (GAVI) (Arevshatian et al. 2007; GAVI 2015). In Section II of Panel A in Table 1, we observe slight increases in the national shares of children who were fully vaccinated against individual diseases with the exception of measles. As Appendix Table A1 shows, tuberculosis and measles require one dose of vaccine, while hepatitis B and diphtheria, pertussis, and tetanus require three doses to be completed. In all surveys combined, 88

[11]For consistency, we exclude the polio vaccine from our analysis, since its dosage and application method changed during our sample period.

percent of children had completed the tuberculosis vaccine, nearly 64 percent of children had completed the diphtheria, pertussis, and tetanus vaccines, and 66 percent of children had completed the measles vaccine.[12]

The THS data are also nationally representative household surveys, providing rich information on health outcomes, including disease prevalence among children. In particular, the THS data provide information on whether children aged 0 to 6 have experienced different infectious and noninfectious diseases in the past six months. For our purposes, we confidentially obtained information on 26 regions from the THS data.[13]

Panel B of Table 1 presents summary statistics for disease prevalence among 0- to 6-year-old children using the 2008–2016 THS data. Section I indicates that the average age of children was 3 years, and approximately half of them were girls. It also provides information on the educational attainment of the household head. Section II provides summary statistics on the prevalence of diseases among children. In the prewar period from 2008 to 2010, approximately 9 percent of children had experienced an infectious disease within the past six months, and this increased to 10 percent in the postwar period from 2012 to 2016. Similarly, the prevalence of other infectious diseases, such as upper and lower respiratory diseases, exhibited an increase of approximately 1 to 2 percentage points. There was no such marked increase at the national level for cancer, diabetes, or anemia, with diarrhea being the only exception.

[12]In general, the average vaccination rates for the first doses of vaccines or one-dose vaccines range from approximately 85 to 90 percent (with the exception of the measles vaccine), while those for second doses are lower, and those for the third doses are the lowest, at 64 to 67 percent. This is despite the fact that children are supposed to receive the third doses of these vaccines when they turn 6 months old, as shown in Appendix Table A1.

[13]In Turkey, the regions are classified into 5 geographical regions (West, South, Central, North, and East) reflecting differences in socioeconomic development levels and demographic conditions within the country. In addition, there are 12 (NUTS1) and 26 (NUTS2) statistical regions following EU regulations.

3.2 Identification

We compare children's outcomes in locations that are exposed to larger refugee inflows with those in locations that are less exposed to such inflows before and after the Syrian civil war began. However, the resettlement of refugees is a potentially endogenous decision. In particular, refugees may decide to settle in provinces with growing labor markets and better health infrastructure, which would result in a spurious negative correlation between refugee inflows and infectious disease prevalence. Hence, Ordinary Least Squares (OLS) would underestimate the effects of refugee inflows on the health outcomes of children. However, it is also plausible that refugees settle in smaller cities with lower cost of living and potentially worse health infrastructure. In that case, the OLS estimates may be upward biased. Moreover, the settlement decisions of refugees may be affected by a range of other factors, including ethnic or religious networks, differences in local policies, and potential overcrowding in areas close to the border. In addition, the measurement error in province-level refugee inflows is likely to create attenuation bias in the OLS estimates.

We use an IV approach following previous literature (Card 2001; Del Carpio and Wagner 2016; Erten and Keskin 2021) to address these issues. In particular, we estimate the following specification at the 26 region level using the 2008–2016 THS data:

$$Y_{irt} = \beta(R/Pop)_{rt} + \gamma X_{irt} + \sigma Z_{rt} + \delta_r + \delta_t + \epsilon_{irt} \tag{1}$$

where Y_{irt} is the outcome for child i in region r in year t; $(R/Pop)_{rt}$ is the number of refugees as a share of region population in year t; X_{irt} represents the individual-level controls, including child's age, gender, and indicator variables for the edu-

cational attainment of the household head; Z_{rt} represents the region-level, time-varying controls, including the trade volume of each region with Syria and the baseline trade volume interacted with a time indicator (both in logs); δ_r represents the region fixed effects; and δ_t represents the year fixed effects. In addition, to control for unobserved regional time trends, we include 12 region-specific time trends, and 12 region–year fixed effects, in separate regressions.[14] Since the Syrian civil war began in 2011, the number of Syrian refugees prior to 2011 in any region of Turkey is zero. We cluster standard errors at the region level to account for serial correlation in outcomes within regions.

We estimate a similar specification at the 81 province level using the four rounds of TDHS data over 2003–2018, comparing children's vaccination outcomes in provinces more affected by the Syrian refugee inflows to less affected ones before and after the civil war began. At the individual level, we control for child's age, gender, and month of birth, whether the mother lives in a rural area, whether her mother tongue is Turkish, and indicator variables for her educational attainment. At the province level, we control for the trade volume of each province with Syria and the baseline trade volume interacted with a time indicator (both in logs). Following Aygün et al. (2021), we include 5 region-specific linear trends and 5 region–year fixed effects in separate regressions to account for unobserved regional trends.[15]

In addition, we examine the effects of refugee inflows on health care resources by estimating the following specification at the 81-province level using data from the 2008-2016 Health Statistics Yearbooks published by the Turkish Ministry of

[14]Note that since the geographic information in the THS data is at the level of 26 regions, it cannot be matched to 5 region classification in which some regional borders cross through 26 regions.

[15]In the Appendix, we also present more saturated models using 26 region-specific linear trends, 26 region–year fixed effects, and 26 region time-varying province GDP and unemployment rates, in separate regressions.

Health:

$$Y_{pt} = \beta(R/Pop)_{pt} + \sigma Z_{pt} + \delta_p + \delta_t + u_{pt} \tag{2}$$

where Y_{pt} is a health care resource outcome in province p in year t; $(R/Pop)_{pt}$ is the number of refugees as a share of province population in year t; Z_{pt} represents the province-level, time-varying controls, including the trade volume between each province and Syria and the baseline trade volume interacted with a time indicator (both in logs); δ_p represents the province fixed effects; and δ_t represents the year fixed effects. We cluster standard errors at the province level to account for serial correlation in outcomes within provinces. Similarly, following Aygün et al. (2021), we include 5 region-specific linear trends and 5 region–year fixed effects in separate regressions to account for unobserved regional trends.[16]

Following Del Carpio and Wagner (2016) and Erten and Keskin (2021), our instrument exploits the fact that the travel distance from the Syrian governorate from which refugees depart to each province in Turkey where they settle is an important predictor of where they settle. The instrument for the refugee inflows at any point in time for each province in Turkey is calculated as follows:

$$IV_{pt} = \sum_s \frac{1}{\tau_{sp}} \pi_s R_t \tag{3}$$

where τ_{sp} is the travel distance from each Syrian governorate s to a Turkish province p, π_s is the share of the Syrian population in each governorate s in 2011 (prewar),[17] and R_t is the number of registered Syrian refugees in Turkey in year t (measured

[16] In the Appendix, we present more saturated models using 26 region-specific linear trends, 26 region–year fixed effects, and 26 region time-varying province GDP and unemployment rates, in separate regressions.

[17] The total population by governorate in 2011 according to civil affairs records is released by the Syrian Arab Republic Central Bureau of Statistics.

in thousands).[18] Since there are 13 origin governorates in Syria and 81 Turkish provinces, this results in 1053 origin-destination pairs for use as an instrument to predict the location choices of the refugees in the first stage of our IV model.[19] We also note that since the number of registered Syrian refugees in Turkey takes the value of zero in years prior to 2011, the instrument also takes the value of zero for these years. We construct a region-level instrument using the same expression, with the only difference being the use of 26-region-level data to calculate distance between Turkish regions and Syrian governorates.

Our empirical framework includes region/province fixed effects to account for any time-invariant heterogeneity across regions/provinces and year fixed effects to control for any macroeconomic shocks at the national level. Our instrument thus relies on variation within regions/provinces observed before and after the Syrian civil war began. In addition, the inclusion of trade volumes at the regional level accounts for the potential disruption of trade linkages between Turkey and Syria due to the Syrian civil war. Moreover, we use specifications that include the baseline trade volume interacted with time to control for the differential impact of baseline economic linkages between regions over time. The latter could be important if regions with initially stronger economic linkages with Syria face a greater or weaker change in their health outcomes for reasons that are unrelated to refugee inflows from Syria. Finally, any time-invariant characteristics of regions, such as distance to the border or initial economic development, are already controlled for using region fixed effects.

[18]The choice of a distance-based instrument is in line with the previous literature focusing on *gravity models of migration*. These models are based on the intuition that as the distance between two locations increases, the migration flows between them decrease. However, as the overall population size increases in these locations, we observe larger numbers of people moving between them (Anderson 2011).

[19]We treat Damascus and Rif-Dimashq as a single governorate.

4 Effects of the Syrian Refugee Inflows

4.1 Infectious and Noninfectious Disease Prevalence

We begin by testing whether the prevalence of infectious diseases changed in response to Syrian refugee inflows, and we also examine whether the noninfectious disease prevalence changed as a placebo check. Table 2 provides the first-stage regression results. Column (1) regresses the share of Syrian refugee inflows in the region population on the distance instrument while controlling for region and year fixed effects. Column (2) controls for region-level trade volume with Syria, and column (3) adds baseline trade volume with Syria interacted with the year fixed effects. Finally, columns (4) and (5) separately account for 12 region specific linear trends and 12 region–year fixed effects. The findings indicate a strong positive correlation, which implies that the Turkish regions closer to more populated Syrian governorates received more refugee inflows. The F-statistics are far above 10, indicating that the instrument strongly predicts the share of refugees in the region population.

Table 3 presents the estimates of the impact of refugee inflows on disease prevalence in Turkey. The IV estimates reported in the first row of Table 3 indicate that the children located in regions that received large refugee inflows experienced an increase in their probability of catching an infectious disease compared to those in less affected regions. The magnitude of the estimated coefficient implies that a one-standard-deviation increase in the refugee share results in a 4.5-percentage-point (0.025 x 1.801) increase in the probability of having an infectious disease, corresponding to a 45 percent increase relative to the mean.[20]

[20]In Appendix Table A2, we provide the reduced-form estimates, which are consistent with our

Moreover, we observe similar increases in highly infectious upper and lower respiratory problems.[21] The IV estimates in the second and third rows of Table 3 indicate that a one-standard-deviation increase in the refugee share leads to 2.6 and 1.2 percentage point increases in upper respiratory and lower respiratory diseases, respectively. These correspond to 7 and 13 percent increases relative to the mean.

In contrast, we find no evidence that refugee inflows had a significant impact on other diseases. The remaining IV estimates in Table 3 reveal no evidence of consistently significant changes in the prevalence of cancer, diabetes, diarrhea, or anemia in regions that received large refugee inflows compared to less affected regions.[22] This is not surprising given that cancer, diabetes, and anemia are non-infectious diseases, and while diarrhea is an infectious disease, it is not vaccine preventable, and its transmission is mostly through drinking water and food, with person-to-person transmission being much less common.[23]

Appendix Table A3 provides a placebo check by using pre-treatment data from 2008 to 2010 and assigning the 2016 values for refugee share and the instrumental variables for each province to the 2010 data. The IV estimates indicate no evidence of a significant impact for any outcomes with the exception of anemia, which has a negative and significant coefficient estimate for the first specifications. However, this effect disappears once we control for 12 region–year fixed effects. Overall, these results indicate that pre-trends in infectious disease outcomes are unlikely to drive our estimates. Moreover, we include time-varying GDP and unemployment rate measured at 12 region level to control for changes in local economic conditions

IV estimates.

[21] We note that some respiratory diseases, such as pneumococcus and tuberculosis, are vaccine preventable.

[22] Only for the case of diarrhea, one out of five specifications show a marginally positive significant coefficient, while all the other specifications are insignificant and most are indistinguishable from zero.

[23] See, for example, Nelson and Williams (2014).

during our sample period. Appendix Table A4 shows that our estimates are robust to adding these additional control variables. Finally, our results are robust to excluding regions with the highest shares of refugee inflows and to excluding highly populated provinces from the sample, as shown in Appendix Tables A5 and A6.

4.2 Health Care Professionals and Hospital Beds

In this section, we examine whether Syrian refugee inflows had a significant impact on the number of health care professionals and hospital beds per capita at the province level.[24] Table 4 presents the estimates of the impact of refugee inflows on health care resources in Turkey. Columns (1)–(5) provide the OLS estimates, while columns (6)–(10) provide the IV estimates. The IV estimates in columns (6)–(10) for the first four outcomes are all negative and significant. These results indicate that provinces that received a larger share of refugee inflows experienced a decline in doctors per capita, midwives per capita, and nurses per capita compared to less exposed provinces. However, we find no evidence of a significant impact on hospital beds per capita. These results are similar to Aygün et al. (2021), who also find significant declines in doctors per capita and midwives per capita, an imprecisely estimated but large decline in nurses per capita, and no significant impacts on hospital beds per capita. The magnitude of the IV estimate in the first row of column (10) with a full set of controls indicates that a one-standard-deviation increase in the refugee share results in 0.06 fewer doctors per person (0.108

[24]The per capita values are calculated by dividing the number of health care professionals and hospital beds by the total population, including natives and refugees, in each province.

x 0.520), corresponding to a 4 percent decline relative to the mean.[25,26] Similarly, a one-standard-deviation increase in the refugee share leads to 0.03 fewer midwives per person and 0.06 fewer nurses per person. These effect sizes correspond to a 3 percent decline in midwives per person and a 3 percent decline in nurses per person.[27]

To examine whether these effects are driven by the number of health professionals or the total population, Appendix Table A8 presents estimates of the effects of Syrian refugee inflows on the number of health professionals and hospital beds in each province. For ease of interpretation, we take the natural logarithm of the dependent variables. The IV estimates indicate that the number of doctors, midwives, nurses, and hospital beds increased in absolute terms in provinces that received a larger share of refugee inflows, suggesting that the government increased investments in these health resources. However, these increased investments were not sufficient to keep the ratio of these health resources to province population constant since the province population is growing due to large refugee inflows. As a result, we observe in a decline in health resources in per capita terms in more affected regions as reported in Table 4.

As a placebo check, in Appendix Table A9, we restrict the sample to the pre-treatment period from 2008 to 2011 and assign the 2016 values of refugee share and instrument variables for each province to 2011 data. The IV estimates reported in columns (4)–(6) indicate no evidence of a significant pre-trend in these outcome

[25]Note that the standard deviation of the refugee share in the province population varies by sample period.

[26]In Appendix Table A7, we also provide the reduced-form estimates, which are consistent with our IV estimates.

[27]We also note that the magnitudes of the IV estimates are quite close to the OLS estimates, suggesting that the endogenous sorting of the refugees based on local health infrastructure does not play a significant role in this context. Indeed, while the IV estimates slightly differ from the OLS estimates, the Durbin-Wu-Hausman test suggests that the OLS estimates are consistent at any conventional significance level for all variables in Table 4.

variables observed prior to the arrival of Syrian refugees.[28]

We conduct three robustness checks to test the sensitivity of our health care resource estimates to alternative sample specifications. First, we include 26 region province GDP and unemployment rate, and separately add 26 region specific linear trends and 26 region–year fixed effects in alternate specifications to account for time-varying changes in local economic conditions as well as unobserved regional trends over time. Appendix Table A10 reports these results, which are consistent with our main estimates. The only difference is that we observe a significant decline in hospital beds per capita in specifications that separately include 26 region specific trends and 26 region-year fixed effects. Second, we exclude Gaziantep, Adiyaman, and Kilis, which constitute the Gaziantep NUTS2 region that received the highest number of Syrian refugees as a share of its population, to test whether our results are sensitive to their exclusion. The results reported in Appendix Table A11 are consistent with our primary estimates. Lastly, we exclude Istanbul, Ankara, and Izmir, which are the most populous cities with large labor markets and good health infrastructure, to test whether potential sorting of refugees into these provinces affects our results. The results presented in Appendix Table A12 are consistent with our main estimates.

Altogether, these results indicate that although the number of health professionals increased in regions that received larger shares of refugees, this increase was not large enough to offset the decline in the per capita availability of health professionals in more affected provinces. As a result, the host provinces that received a disproportionate inflow of refugees experienced a potential shortage of doctors, nurses, and midwives as well as of hospital beds per person relative to less

[28]Only for the case of nurses per capita, we observe one significant coefficient in one out of five estimates, and it is in the opposite direction compared to the main estimates reported in Table 4.

affected regions.

4.3 Vaccination Outcomes

One of the consequences of declining access to health care providers in regions that receive large refugee inflows could be a reduction preventative health care behaviors, including the vaccination of children. In this section, we proceed by testing the effects of Syrian refugee inflows on vaccination outcomes. Table 5 presents the estimates of the impact of refugee inflows on vaccination outcomes in Turkey. Columns (1)–(5) provide the OLS estimates, while columns (6)–(10) provide the IV estimates. The IV estimates in columns (6)–(10) are all negative and significant for all vaccination outcomes. These results indicate that children in provinces that received a larger share of Syrian refugees were less likely to be fully immunized than children in less affected provinces. The magnitude of the IV estimate in the first row of column (6) implies that a one-standard-deviation increase in the refugee share results in 0.43 fewer vaccines (0.067 x 6.345 = 0.43) being received by children, corresponding to a 7% decline relative to the outcome mean. Similarly, a one-standard-deviation increase in the refugee share results in a 7-percentage-point decline in the probability of receiving three doses of the hepatitis B vaccine, a 8-percentage-point decline in the probability of receiving the three doses of the diphtheria, pertussis, tetanus vaccine, a 4-percentage-point decline in the probability of receiving the tuberculosis vaccine, and a 10-percentage-point decline in the probability of receiving the measles vaccine. These effect sizes correspond to 11%, 13%, 4%, and 16% declines relative to the mean.[29]

The reduction in vaccination rates following the declines in per-person access

[29] Appendix Table A13 provides the reduced-form estimates, which are consistent with our IV estimates.

to health care professionals is also consistent with evidence from previous studies. Anand and Bärnighausen (2007) examine the impact of health care worker density on the vaccination outcomes in 49 developing countries using DHS data. They find that a higher density of nurses leads to an increased availability of vaccination services and a higher likelihood of a child being vaccinated.

As a placebo test, Appendix Table A14 provides regression results by using pre-treatment data from the 2003 and 2008 TDHS and assigning the 2013 values for refugee share and the instrumental variables for each province to the 2008 data. The regression results from the fully controlled specification in column (6) indicate no evidence of a significant impact of refugee inflows on vaccination outcomes prior to the arrival of refugees. These results also suggest that pre-trends in the outcome variables are unlikely to drive our estimates.

Moreover, Appendix Table A15 show that our estimates remain consistent after the inclusion of 26 region controls such as time-varying regional GDP and unemployment rate, 26 region specific trends, or 26 region-year fixed effects. Finally, Appendix Tables A16 and A17 show that we obtain consistent estimates when we exclude those provinces with the highest shares of refugee inflows and when we exclude highly populated provinces from the sample.

4.4 Time Use and Wealth Changes

Since Syrian refugees were not legally authorized to work until 2016, most of them were employed informally at lower wages than native workers. In earlier work, Erten and Keskin (2021) showed that because of their informal sector work, Syrian refugees predominantly displaced native women in the work force as opposed to native men, since native women were much more likely to work in informal sectors

such as agriculture and in low-wage service industries. If women are less likely to work, this can have two opposing effects on their probability of vaccinating their children. On the one hand, mothers' income levels may decline, which may make it harder for them to bear the costs of vaccination. However, the negative income effect is unlikely to occur in this particular context, since all vaccination costs are fully covered by the government. On the other hand, when women are less likely to work, they may have more time available to bring their children to health clinics for vaccination.

Panel A of Table 6 reports estimates for the effects of Syrian refugee inflows on women's time spent with their children. More specifically, we use the 2008, 2013 and 2018 TDHS data, which provide information on the types of childcare performed primarily by women within the household.[30] The results presented in Table 6 provide no evidence of a significant change in women's performance of childcare activities in or outside of the home.

Finally, although the DHS data do not have specific information on income earned, they provide indicators of wealth in quintiles. Using this measure, we test whether the potential income effects induced by Syrian refugee inflows led to changes in women's position in the distribution of wealth. The results displayed in Panel B of Table 6 indicate no evidence of significant changes in the probability of being below or above the median of the wealth index in response to refugee inflows. Overall, we conclude that the time use and wealth changes channels do not provide an explanation for our results.

[30]We note that these measures do not completely account for changes in the time allocated to childcare activities. Unfortunately, none of the data sources has specific daily time allocation information for men or women.

5 Conclusion

In this paper, we study the impact of differential inflows of Syrian refugees across Turkish provinces following the outbreak of the Syrian civil war in 2011 on access to health care resources and subsequent changes in infectious disease rates among native children in Turkey. Our findings show that native children living in regions that received large refugee inflows experienced an increase in their risk of catching an infectious disease compared to children in less affected regions. In contrast, we find no evidence of significant changes in noninfectious diseases such as diabetes, cancer, or anemia.

Our results also indicate that although the Turkish government increased its allocation of health professionals to regions with large refugee inflows, this supply response did not fully offset the increases in the local population, leaving the affected regions with a lower doctor-to-patient ratio. The resulting decline in access to health care resources might have led to a reduction in native children's probability of being fully vaccinated in more affected regions, further contributing to the spread of infectious diseases.

Our findings indicate that the arrival of Syrian refugees has put substantial pressure on health care resources, reducing the per-person availability of health professionals in the more affected regions of Turkey. The resulting resource constraints have worsened child health outcomes in host communities by reducing children's probability of being fully immunized against infectious diseases.

Our study has several policy implications. First, addressing such serious health concerns requires greater investments in health care resources. Given the fact that most of the host communities are financially and logistically constrained, there is an important role for international aid agencies to provide targeted investments in

increasing the supply of doctors, nurses, and other trained healthcare workers—preferably those who speak the native language of forced migrants—in areas with the greatest concentration of refugees.

Second, another important policy implication of our study is the implementation of widespread vaccination campaigns to reduce infectious disease burden. These campaigns might include investing additional vaccination sites in host communities with high refugee inflows. These improvements in capacity should be accompanied by information campaigns for effective messaging around the importance of vaccines. Such vaccine campaigns should include not only refugee children but also native children who are affected indirectly through the overburdening of health care resources.

Lastly, our study findings call for taking these actions as an immediate response on the part of the native health authorities and international refugee agencies instead of waiting a considerable amount of time. The earlier investments in health care resources and implementation of vaccination campaigns take place, the faster the spread of infectious diseases will be contained and the smaller the long-term negative consequences on health, cognition, and schooling outcomes.

6 Data and Code Availability

The Turkish Demographic Health Surveys are obtained from the DHS program. Their data availability policy prohibits the distribution of data to non-registered users. However, interested researchers can access this dataset by completing a form on `https://dhsprogram.com/data`. The Turkish Health Surveys can be accessed through Turkish Institute of Statistics website (`https://www.tuik.gov.tr/Home/Index`) with permission. The final replication codes will be deposited in the

Harvard Dataverse.

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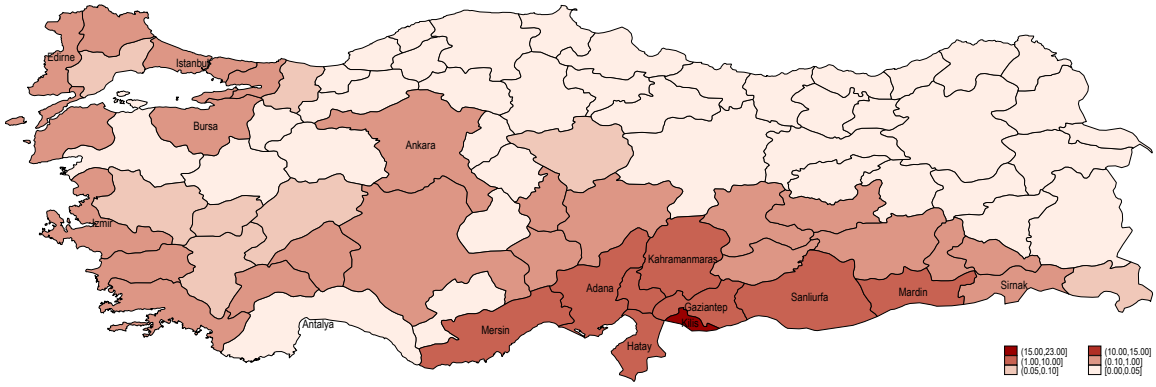
FIGURE 1: SHARE OF SYRIAN REFUGEES IN TURKISH POPULATION (IN %), 2013



Note: The data comes from the UNHCR. The figure plots the proportion of Syrian refugee population in province population in Turkey in 2013.

Table 1: Summary Statistics

Panel A: 0-3 Year-old Children in 2003–2018 TDHS

	Pre-war period (2003-2008)	Post-war period (2013-2018)	Whole period (2003–2018)				
	Mean	Mean	Mean	S.D.	Min	Max	Obs.
I. Demographic variables							
Child age	1.32	1.00	1.20	0.97	0.00	3.00	9261
Female	0.48	0.50	0.49	0.50	0.00	1.00	9261
Mother:							
Completed primary school	0.53	0.30	0.44	0.50	0.00	1.00	9261
Completed secondary school	0.10	0.22	0.15	0.35	0.00	1.00	9261
Completed high school	0.13	0.21	0.16	0.37	0.00	1.00	9261
Completed above high school	0.07	0.15	0.10	0.30	0.00	1.00	9261
Non-Turkish speaker	0.07	0.03	0.05	0.23	0.00	1.00	9261
Rural	0.31	0.23	0.28	0.45	0.00	1.00	9261
Age	27.74	29.11	28.27	5.68	15.00	48.00	9261
II. Vaccination outcomes							
Number of Vaccines	5.72	6.47	6.01	2.47	0.00	8.00	9261
Hepatitis B completed	0.57	0.74	0.64	0.48	0.00	1.00	8487
Diphteria, pertussis, tetanus completed	0.66	0.73	0.69	0.46	0.00	1.00	8539
Tuberculosis completed	0.87	0.90	0.88	0.32	0.00	1.00	9206
"Measles completed	0.66	0.65	0.66	0.47	0.00	1.00	9071

Panel B: 0-6 Year-old Children in 2008–2016 THS

	Pre-war period (2008–2010)	Post-war period (2012–2016)	Whole period (2008–2016)				
	Mean	Mean	Mean	S.D.	Min	Max	Obs.
I. Demographic variables							
Child age	3.18	3.11	3.13	1.9	0	7	14,771
Female	0.50	0.49	0.49	0.50	0	1	14,771
Household head completed:							
Primary school	0.39	0.33	0.35	0.48	0	1	14,771
Secondary school	0.09	0.12	0.11	0.31	0	1	14,771
High school	0.17	0.18	0.17	0.38	0	1	14,771
Above high school	0.10	0.15	0.13	0.34	0	1	14,771
II. Disease outcomes							
Infectious diseases	0.09	0.10	0.10	0.29	0	1	14,740
Upper respiratory diseases	0.35	0.37	0.37	0.48	0	1	14,747
Lower respiratory diseases	0.08	0.09	0.09	0.28	0	1	14,747
Cancer	0.00	0.00	0.00	0.03	0	1	14,771
Diabetes	0.00	0.00	0.00	0.04	0	1	14,762
Diarrhea	0.26	0.31	0.29	0.45	0	1	14,746
Anemia	0.10	0.09	0.09	0.29	0	1	14,667

Notes: The table presents the means, standard deviations, minimum and maximum values, and the number of observations for children aged 0-3 in 2003–2018 TDHS in Panel A, and from the 2008–2016 THS for children aged 0-6 in Panel B. The variables are described in Appendix A.

Table 2: First-stage Regression Results

	Dependent variable: Share of refugees in region population				
	(1)	(2)	(3)	(4)	(5)
Distance instrument	0.013***	0.013***	0.013***	0.013***	0.013***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)
Observations	14771	14771	14771	14771	14771
F-statistic	247.93	245.16	351.20	749.18	708.20
Region and year fixed effects	x	x	x	x	x
Log trade volume		x	x	x	x
Baseline trade × year fixed effects			x	x	x
12 region specific linear trends				x	
12 region–year fixed effects					x

Notes: Data for the instrument and refugee shares come from the Turkish Ministry of Interior, Syrian Arab Republic Central Bureau of Statistics, Google maps, and UNHCR. These are matched to the 2008–2016 THS at the 26 region level. The regressions report OLS estimates from regressing the distance instrument on the share of Syrian refugee inflows in region population. All specifications control for 26 region and year fixed effects. Column (2) adds 26 region-level trade volume with Syria, and column (3) controls for baseline trade volume in 2008 with Syria interacted with year fixed effects. Columns (4) and (5) add 12 region specific linear time trends and 12 region–year fixed effects, respectively. Standard errors are clustered at the 26 region level. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

Table 3: Effects of Refugee Inflows on Infectious and Noninfectious Disease Prevalence

	OLS					IV				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Infectious diseases										
Refugee share	1.221***	1.220***	1.383***	1.712***	1.715***	1.404***	1.403***	1.514***	1.793***	1.801***
	(0.324)	(0.307)	(0.325)	(0.261)	(0.157)	(0.238)	(0.223)	(0.270)	(0.263)	(0.171)
Observations	14740	14740	14740	14740	14740	14740	14740	14740	14740	14740
Outcome mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Upper respiratory diseases										
Refugee share	0.506*	0.503*	0.691**	1.038***	0.907***	0.625**	0.622*	0.746**	1.305***	1.038***
	(0.253)	(0.266)	(0.313)	(0.293)	(0.322)	(0.316)	(0.338)	(0.373)	(0.341)	(0.294)
Observations	14747	14747	14747	14747	14747	14747	14747	14747	14747	14747
Outcome mean	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
Lower respiratory diseases										
Refugee share	0.447*	0.446*	0.558**	0.338	0.349**	0.662***	0.661***	0.748***	0.569**	0.479**
	(0.238)	(0.230)	(0.250)	(0.199)	(0.141)	(0.198)	(0.198)	(0.205)	(0.238)	(0.205)
Observations	14747	14747	14747	14747	14747	14747	14747	14747	14747	14747
Outcome mean	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Cancer										
Refugee share	0.002	0.002	-0.002	-0.006	-0.007	-0.005	-0.005	-0.008	-0.011	-0.013
	(0.006)	(0.006)	(0.009)	(0.016)	(0.014)	(0.008)	(0.008)	(0.011)	(0.016)	(0.015)
Observations	14771	14771	14771	14771	14771	14771	14771	14771	14771	14771
Outcome mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diabetes										
Refugee share	0.008	0.008	0.010	-0.005	0.002	0.012	0.012	0.014	-0.001	0.002
	(0.016)	(0.017)	(0.021)	(0.026)	(0.025)	(0.017)	(0.019)	(0.021)	(0.025)	(0.022)
Observations	14762	14762	14762	14762	14762	14762	14762	14762	14762	14762
Outcome mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diarrhea										
Refugee share	-0.022	-0.023	-0.170	0.295	0.349	0.061	0.061	-0.014	0.385	0.497*
	(0.313)	(0.302)	(0.321)	(0.242)	(0.213)	(0.279)	(0.267)	(0.277)	(0.322)	(0.279)
Observations	14746	14746	14746	14746	14746	14746	14746	14746	14746	14746
Outcome mean	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Anemia										
Refugee share	-0.240	-0.241	-0.125	-0.026	-0.135	-0.160	-0.161	-0.091	0.080	-0.047
	(0.166)	(0.155)	(0.189)	(0.147)	(0.170)	(0.168)	(0.157)	(0.185)	(0.148)	(0.165)
Observations	14667	14667	14667	14667	14667	14667	14667	14667	14667	14667
Outcome mean	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Region and year fixed effects	x	x	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x		x	x	x	x
Baseline trade × year fixed effects			x	x	x			x	x	x
12 region specific linear trends				x					x	
12 region–year fixed effects					x					x

Notes: Data are from the 2008–2016 THS. Columns (1)–(5) report OLS estimates from using the share of Syrian refugee inflows in region population as an explanatory variable. Columns (6)–(10) report IV estimates from instrumenting the share of Syrian refugee inflows in region population by the distance instrument. All specifications control for 26 region and year fixed effects as well as the individual characteristics, including child's age, gender, and indicator variables for the educational attainment of the household head. Columns (2)–(5) and (7)–(10) also control for 26 region-level trade volume, and columns (3)–(5) and (8)–(10) control for baseline trade volume in 2008 interacted with year dummies. Columns (4)–(5) and (9)–(10) add 12 region specific linear time trends and 12 region–year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the 26 region level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table 4: Effects of Refugee Inflows on Health Care Professionals and Hospital Beds

	OLS					IV				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Doctors per capita										
Refugee share	-0.442***	-0.443***	-0.436***	-0.409***	-0.392***	-0.656***	-0.656***	-0.662***	-0.564***	-0.520***
	(0.081)	(0.082)	(0.084)	(0.090)	(0.090)	(0.204)	(0.204)	(0.217)	(0.191)	(0.184)
Observations	891	891	891	880	880	891	891	891	880	880
Outcome mean	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Midwives per capita										
Refugee share	-0.234***	-0.235***	-0.239***	-0.268***	-0.278***	-0.194***	-0.193***	-0.196***	-0.217***	-0.245***
	(0.019)	(0.019)	(0.021)	(0.022)	(0.025)	(0.064)	(0.064)	(0.068)	(0.071)	(0.073)
Observations	891	891	891	880	880	891	891	891	880	880
Outcome mean	0.81	0.81	0.81	0.80	0.80	0.81	0.81	0.81	0.80	0.80
Nurses per capita										
Refugee share	-0.520***	-0.519***	-0.457***	-0.445***	-0.443***	-0.546***	-0.547***	-0.437**	-0.517***	-0.510**
	(0.116)	(0.114)	(0.090)	(0.096)	(0.103)	(0.198)	(0.196)	(0.184)	(0.200)	(0.204)
Observations	891	891	891	880	880	891	891	891	880	880
Outcome mean	1.80	1.80	1.80	1.79	1.79	1.80	1.80	1.80	1.79	1.79
Hospital beds per capita										
Refugee share	-0.265*	-0.266*	-0.321***	-0.482***	-0.479***	0.096	0.098	0.030	-0.232	-0.192
	(0.141)	(0.138)	(0.117)	(0.112)	(0.125)	(0.360)	(0.359)	(0.349)	(0.319)	(0.347)
Observations	891	891	891	880	880	891	891	891	880	880
Outcome mean	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53
Region and year fixed effects	x	x	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x		x	x	x	x
Baseline trade × year fixed effects			x	x	x			x	x	x
5 region specific linear trends				x					x	
5 region–year fixed effects					x					x

Notes: Data are from the 2008–2018 Health Statistics Yearbooks published annually by the Turkish Ministry of Health. Columns (1)–(5) report OLS estimates from using the share of Syrian refugee inflows in province population as an explanatory variable. Columns (6)–(10) report IV estimates from instrumenting the share of Syrian refugee inflows in province population by the distance instrument. All specifications control for province and year fixed effects. Columns (2)–(5) and (7)–(10) also control for province-level trade volume, and columns (3)–(5) and (8)–(10) control for baseline trade volume in 2008 interacted with year dummies. Columns (4)–(5) and (9)–(10) add 5 region–year fixed effects and 5 region specific linear time trends, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table 5: Effects of Refugee Inflows on Vaccination Outcomes

	OLS					IV				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Number of vaccines										
Refugee share	-0.642	-0.675	-0.765	-2.980**	-2.310**	-2.436*	-2.371*	-2.977*	-8.246***	-6.345**
	(0.568)	(0.550)	(0.599)	(1.257)	(1.119)	(1.397)	(1.386)	(1.667)	(2.961)	(2.620)
Observations	9261	9261	9233	9233	9233	9261	9261	9233	9233	9233
Outcome mean	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86
Hepatitis B completed										
Refugee share	-0.055	-0.061	-0.082	-0.435***	-0.333**	-0.239	-0.235	-0.392	-1.290***	-1.048**
	(0.123)	(0.113)	(0.116)	(0.150)	(0.134)	(0.210)	(0.211)	(0.280)	(0.500)	(0.454)
Observations	8488	8488	8462	8462	8462	8488	8488	8462	8462	8462
Outcome mean	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Diphtheria, pertussis, tetanus completed										
Refugee share	-0.302**	-0.316***	-0.325***	-0.548***	-0.429**	-0.789**	-0.781**	-0.865**	-1.410***	-1.260**
	(0.117)	(0.105)	(0.104)	(0.174)	(0.174)	(0.314)	(0.310)	(0.342)	(0.467)	(0.510)
Observations	8541	8541	8514	8514	8514	8541	8541	8514	8514	8514
Outcome mean	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Tuberculosis completed										
Refugee share	-0.205***	-0.213***	-0.232***	-0.372***	-0.292***	-0.284**	-0.284**	-0.387***	-0.652***	-0.533**
	(0.059)	(0.057)	(0.059)	(0.115)	(0.097)	(0.124)	(0.122)	(0.146)	(0.234)	(0.219)
Observations	9210	9210	9182	9182	9182	9210	9210	9182	9182	9182
Outcome mean	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Measles completed										
Refugee share	-0.242*	-0.245*	-0.257**	-0.456***	-0.394**	-0.792***	-0.786***	-0.884***	-1.495***	-1.505***
	(0.142)	(0.132)	(0.120)	(0.146)	(0.160)	(0.278)	(0.285)	(0.315)	(0.457)	(0.528)
Observations	9074	9074	9046	9046	9046	9074	9074	9046	9046	9046
Outcome mean	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Region and survey year fixed effects	x	x	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x		x	x	x	x
Baseline trade × survey year fixed effects			x	x	x			x	x	x
5 region specific linear trends				x					x	
5 region–survey year fixed effects					x					x

Notes: Data are from the 2003, 2008, 2013 and 2018 TDHS. Columns (1)–(5) report OLS estimates from using the share of Syrian refugee inflows in province population as an explanatory variable. Columns (6)–(10) report IV estimates from instrumenting the share of Syrian refugee inflows in province population by the distance instrument. All specifications control for province and survey year fixed effects as well as the individual characteristics, including child's age, gender, month of birth indicator variables, and indicator variables for the mother's educational attainment, whether she lives in a rural area, and whether her mother tongue is Turkish. Columns (2)–(5) and (7)–(10) also control for province-level trade volume, and columns (3)–(5) and (8)–(10) control for baseline trade volume in 1998 interacted with survey year dummies. Columns (4)–(5) and (9)–(10) add 5 region specific linear time trends and 5 region–survey year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table 6: Effects of Refugee Inflows on Time Use and Wealth

	OLS					IV				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Time spent with children										
Time spent with children at home										
Refugee share	0.119	0.118	0.128	0.240*	0.159*	-0.013	-0.012	0.045	0.558**	0.103
	(0.098)	(0.098)	(0.099)	(0.133)	(0.094)	(0.182)	(0.179)	(0.162)	(0.257)	(0.147)
Observations	3814	3814	3805	3805	3805	3814	3814	3805	3805	3805
Outcome mean	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Time spent with children outside of home										
Refugee share	0.041	0.060	0.094	0.182	0.131	-0.309	-0.311	-0.118	0.223	-0.127
	(0.239)	(0.217)	(0.204)	(0.219)	(0.236)	(0.313)	(0.308)	(0.207)	(0.241)	(0.243)
Observations	4088	4088	4074	4074	4074	4088	4088	4074	4074	4074
Outcome mean	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Panel B: Wealth index										
Below median: wealth index										
Refugee share	0.219	0.223	0.233	0.154	0.124	0.317*	0.317*	0.390**	0.074	0.143
	(0.172)	(0.174)	(0.173)	(0.168)	(0.151)	(0.176)	(0.175)	(0.179)	(0.245)	(0.155)
Observations	5285	5285	5268	5268	5268	5285	5285	5268	5268	5268
Outcome mean	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Above median: wealth index										
Refugee share	-0.136	-0.139	-0.137	-0.035	0.061	-0.313**	-0.313**	-0.305*	-0.131	-0.013
	(0.194)	(0.197)	(0.197)	(0.177)	(0.142)	(0.160)	(0.158)	(0.163)	(0.237)	(0.193)
Observations	5285	5285	5268	5268	5268	5285	5285	5268	5268	5268
Outcome mean	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Region and survey year fixed effects	x	x	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x		x	x	x	x
Baseline trade × survey year fixed effects			x	x	x			x	x	x
5 region specific linear trends				x					x	
5 region–year fixed effects					x					x

Notes: Data are from the 2008, 2013 and 2018 TDHS. Columns (1)–(5) report OLS estimates from using the share of Syrian refugee inflows in province population as an explanatory variable. Columns (6)–(10) report IV estimates from instrumenting the share of Syrian refugee inflows in province population by the distance instrument. All specifications control for province and survey year fixed effects as well as the individual characteristics, including child's age, gender, month of birth indicator variables, and indicator variables for the mother's educational attainment, whether she lives in a rural area, and whether her mother tongue is Turkish. Columns (2)–(5) and (7)–(10) also control for province-level trade volume, and columns (3)–(5) and (8)–(10) control for baseline trade volume in 1998 interacted with survey year dummies. Columns (4)–(5) and (9)–(10) add 5 region–survey year fixed effects and 5 region specific linear time trends, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

FOR ONLINE PUBLICATION

Appendix A List of Variables

Outcome Variables:

- Infectious diseases: A dummy variable equal to one if the child had any infectious diseases in the last six months. Here, infectious diseases are defined as "infectious and communicable diseases" such as measles, varicella, and mumps.
- Upper respiratory diseases: A dummy variable equal to one if the child had an upper respiratory disease in the last six months.
- Lower respiratory diseases: A dummy variable equal to one if the child had a lower respiratory disease in the last six months.
- Cancer: A dummy variable equal to one if the child had cancer in the last six months.
- Diabetes: A dummy variable equal to one if the child had diabetes in the last six months.
- Diarrhea: A dummy variable equal to one if the child had diarrhea in the last six months.
- Anemia: A dummy variable equal to one if the child had anemia in the last six months.
- Number of vaccines: Total number of vaccines a child received. Since we only look into Hepatitis B, DPT, tuberculosis and measles, this variable can take a maximum value of 8.
- Hepatitis B completed: A dummy variable equal to one if the child received the three doses of hepatitis B vaccine.
- Diphtheria, pertussis, tetanus completed: A dummy variable equal to one if the child received the three doses of diphtheria, pertussis, tetanus vaccine.
- Tuberculosis completed: A dummy variable equal to one if the child received the tuberculosis vaccine.
- Measles completed: A dummy variable equal to one if the child received the measles vaccine.
- Doctors per capita: Number of doctors divided by the total population including natives and refugees in the region.

- Midwives per capita: Number of midwives divided by the total population including natives and refugees in the region.
- Nurses per capita: Number of nurses divided by the total population including natives and refugees in the region.
- Hospital beds per capita: Number of hospital beds divided by the total population including natives and refugees in the region.

Covariates:

- Household head's educational attainment (mutually exclusive categories):
  - Completed primary school: A dummy variable equal to one if the household's head completed primary school (i.e., completed 5 years of schooling).
  - Completed secondary school: A dummy variable equal to one if the household's head completed secondary school (i.e., completed 8 years of schooling).
  - Completed high school: A dummy variable equal to one if the household's head completed high school (i.e., completed 11 years of schooling).
  - Completed above high school: A dummy variable equal to one if the household's head completed any educational degrees above high school, such as college or above (i.e., completed more than 11 years of schooling).
- Mother's educational attainment (mutually exclusive categories):
  - Completed primary school: A dummy variable equal to one if the mother completed primary school (i.e., completed 5 years of schooling).
  - Completed secondary school: A dummy variable equal to one if the mother completed secondary school (i.e., completed 8 years of schooling).
  - Completed high school: A dummy variable equal to one if the mother completed high school (i.e., completed 11 years of schooling).
  - Completed above high school: A dummy variable equal to one if the mother completed any educational degrees above high school, such as college or above (i.e., completed more than 11 years of schooling).
- Mother's age: The current age of the mother.
- Child's age: The current age of the child.
- Female: A dummy equal to one if the child is female.
- Non-Turkish speaker: A dummy variable equal to one if the mother does not speak Turkish (i.e., the TDHS interview was conducted in a language other than Turkish).

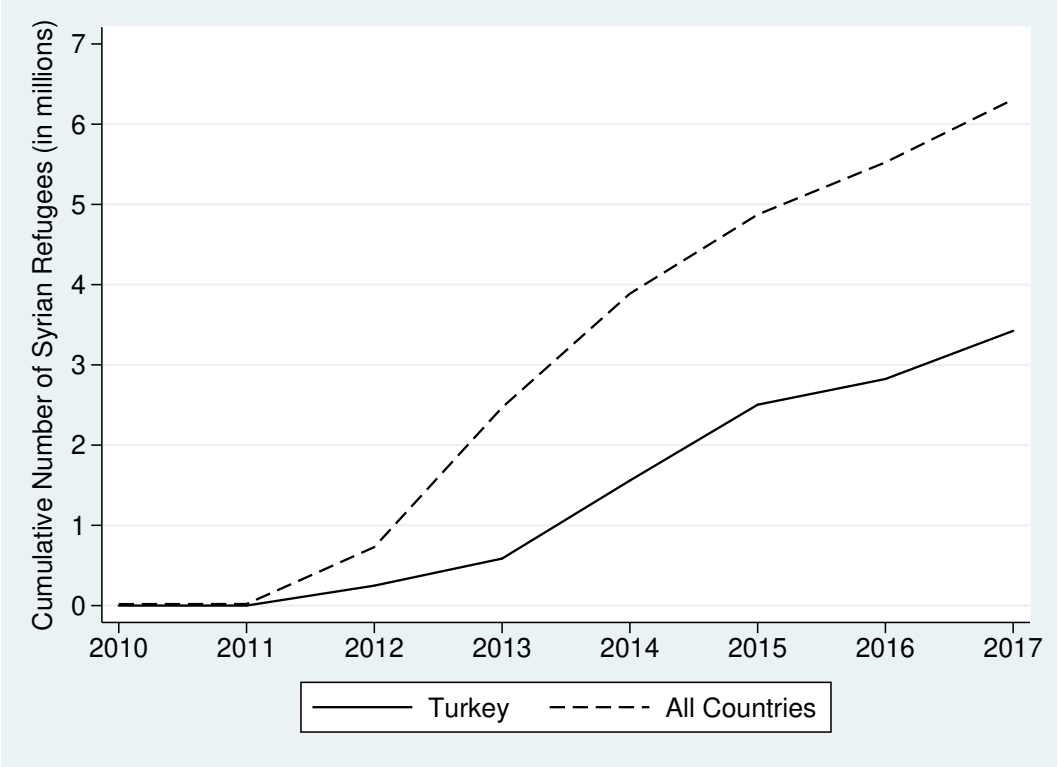
- Lives in a rural area: A dummy variable equal to one if the mother lives in a village.
- Province dummies: Dummy variables for each of the 81 provinces where the respondent lives.
- Region dummies: Dummy variables for each of the 26 regions where the respondent lives.

Additional Outcome Variables in Appendix B:

- Time spent with children at home: A dummy variable equal to one if the respondent is the person who is primarily spending time with children at home, including playing games, reading books, watching TV, etc.
- Time spent with children outside of home: A dummy variable equal to one if the respondent is the person who is primarily spending time with children outside of home, including going to the park, movies, etc.
- Below median wealth index: A dummy variable equal to one if the respondent has a wealth index below the median.
- Above median wealth index: A dummy variable equal to one if the respondent has a wealth index above the median.
- Doctors (in logs): The natural logarithm of the total number of doctors.
- Midwives (in logs): The natural logarithm of the total number of midwives.
- Nurses (in logs): The natural logarithm of the total number of nurses.

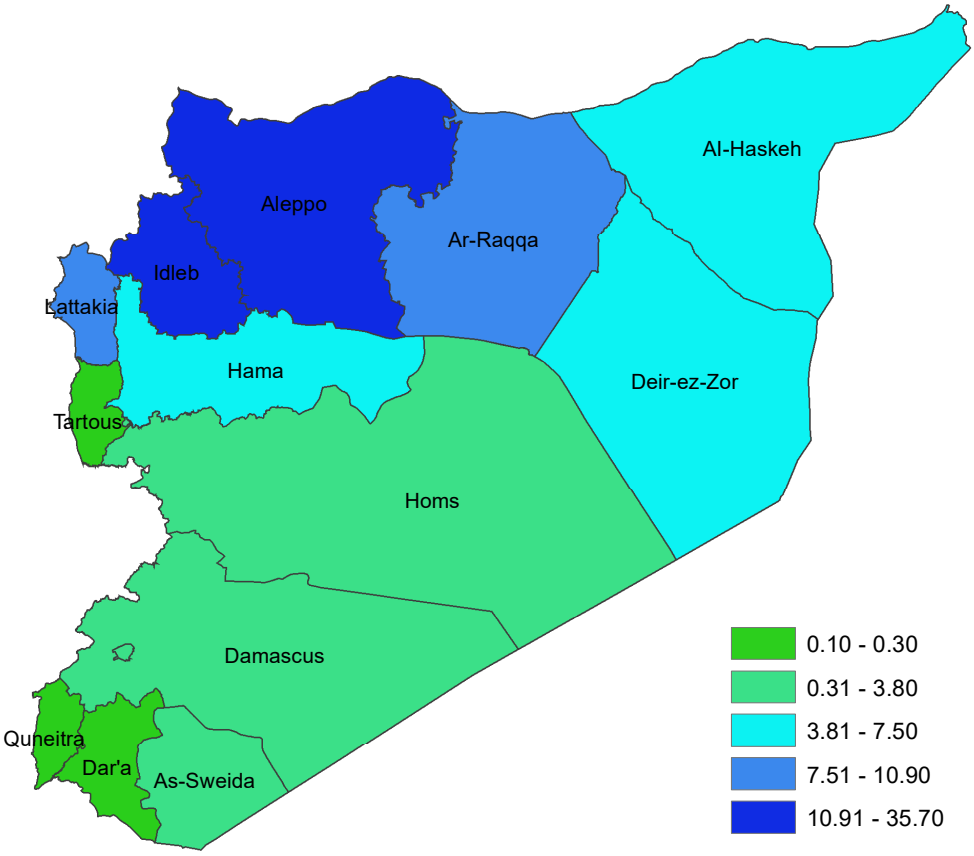
Appendix B Additional Tables

FIGURE A1: NUMBER OF SYRIAN REFUGEE INFLOWS



Note: The data comes from the official number of Syrian refugees reported by the UNHCR online database.

FIGURE A2: ORIGIN OF SYRIAN REFUGEES (IN %)



Note: The data comes from the DGMM (2013).

Table A1: Recommended Child Immunization Schedule in Turkey

	At birth	1st month	2nd month	4th month	6th month	12th month	18th month	24th month
Hepatitis B	I	II			III			
BCG			I					
DTaP-IPV-Hib			I	II	III		B	
Pneumococcus			I	II	III	B		
Measles, mumps, rubella						I		
Varicella						I		
Hepatitis A							I	II
Oral polio					I		II	

Notes: BCG refers to tuberculosis; DTaP refers to diphtheria, tetanus, pertussis; IPV refers to inactive polio vaccine; Hib, Haemophilus influenza B. The letter "B" refers to repeated doses of vaccines. This information is provided by the Turkish Ministry of Health.

Table A2: Reduced-form Effects on Infectious and Noninfectious Disease Prevalence

	(1)	(2)	(3)	(4)	(5)
Infectious diseases					
Distance Instrument	0.019***	0.019***	0.019***	0.023***	0.023***
	(0.004)	(0.003)	(0.004)	(0.004)	(0.002)
Observations	14740	14740	14740	14740	14740
Outcome mean	0.10	0.10	0.10	0.10	0.10
Upper respiratory diseases					
Distance Instrument	0.008*	0.008*	0.009*	0.017***	0.013***
	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)
Observations	14747	14747	14747	14747	14747
Outcome mean	0.37	0.37	0.37	0.37	0.37
Lower respiratory diseases					
Distance Instrument	0.009***	0.009***	0.009***	0.007**	0.006**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Observations	14747	14747	14747	14747	14747
Outcome mean	0.09	0.09	0.09	0.09	0.09
Cancer					
Distance Instrument	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	14771	14771	14771	14771	14771
Outcome mean	0.00	0.00	0.00	0.00	0.00
Diabetes					
Distance Instrument	0.000	0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	14762	14762	14762	14762	14762
Outcome mean	0.00	0.00	0.00	0.00	0.00
Diarrhea					
Distance Instrument	0.001	0.001	-0.000	0.005	0.006*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Observations	14746	14746	14746	14746	14746
Outcome mean	0.29	0.29	0.29	0.29	0.29
Anemia					
Distance Instrument	-0.002	-0.002	-0.001	0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	14667	14667	14667	14667	14667
Outcome mean	0.09	0.09	0.09	0.09	0.09
Region and year fixed effects	x	x	x	x	x
Individual characteristics	x	x	x	x	x
Log trade volume		x	x	x	x
Baseline trade × year fixed effects			x	x	x
12 region specific linear trends				x	
12 region–year fixed effects					x

Notes: Data are from the 2008–2016 THS. Columns (1)–(5) report reduced-form estimates by using the distance instrument as an explanatory variable. All specifications control for 26 region and year fixed effects as well as the individual characteristics, including child's age, gender, and indicator variables for the educational attainment of the household head. Columns (2)–(5) also control for 26 region-level trade volume, and columns (3)–(5) control for baseline trade volume in 2008 interacted with year dummies. Columns (4)–(5) add 12 region specific linear time trends and 12 region–year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the 26 region level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A3: Placebo Test for the Effects of Refugee Inflows on Infectious and Noninfectious Disease Outbreaks using Pre-treatment Data

	OLS				IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Infectious diseases								
Refugee share	-0.107	-0.068	-0.157	0.192	-0.181	-0.174	-0.233	0.026
	(0.258)	(0.261)	(0.266)	(0.274)	(0.224)	(0.227)	(0.232)	(0.288)
Observations	4835	4835	4835	4835	4835	4835	4835	4835
Outcome mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Upper respiratory diseases								
Refugee share	-0.542	-0.675	-0.197	-0.534	-0.687	-0.714	-0.446	-0.352
	(0.573)	(0.570)	(0.611)	(0.563)	(0.578)	(0.607)	(0.620)	(0.577)
Observations	4839	4839	4839	4839	4839	4839	4839	4839
Outcome mean	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Lower respiratory diseases								
Refugee share	0.353**	0.332*	0.372**	-0.149	0.232	0.227	0.241	-0.129
	(0.160)	(0.161)	(0.179)	(0.104)	(0.158)	(0.158)	(0.184)	(0.111)
Observations	4835	4835	4835	4835	4835	4835	4835	4835
Outcome mean	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Cancer								
Refugee share	0.010	0.012	0.006	-0.000	-0.005	-0.004	-0.009	-0.012
	(0.007)	(0.008)	(0.010)	(0.014)	(0.013)	(0.013)	(0.013)	(0.018)
Observations	4854	4854	4854	4854	4854	4854	4854	4854
Outcome mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diabetes								
Refugee share	0.014	0.012	0.027	0.042*	0.016	0.015	0.024	0.026
	(0.015)	(0.016)	(0.027)	(0.023)	(0.024)	(0.025)	(0.032)	(0.026)
Observations	4847	4847	4847	4847	4847	4847	4847	4847
Outcome mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diarrhea								
Refugee share	-0.422	-0.394	-0.159	0.008	-0.426	-0.421	-0.289	-0.031
	(0.291)	(0.291)	(0.293)	(0.289)	(0.352)	(0.360)	(0.420)	(0.316)
Observations	4839	4839	4839	4839	4839	4839	4839	4839
Outcome mean	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Anemia								
Refugee share	-0.159	-0.184	-0.245	0.277	-0.422**	-0.429**	-0.484**	0.103
	(0.240)	(0.243)	(0.242)	(0.244)	(0.199)	(0.200)	(0.236)	(0.244)
Observations	4782	4782	4782	4782	4782	4782	4782	4782
Outcome mean	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Region and year fixed effects	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x
Log trade volume		x	x	x		x	x	x
Baseline trade × year fixed effects			x	x			x	x
12 region–year fixed effects				x				x

Notes: Data are from the 2008–2010 THS. We assign the 2016 values of refugee share and instrument variables for each province to 2010 data. Columns (1)–(4) report OLS estimates from using the share of Syrian refugee inflows in region population as an explanatory variable. Columns (5)–(8) report IV estimates from instrumenting the share of Syrian refugee inflows in region population by the distance instrument. All specifications control for 26 region and year fixed effects as well as the individual characteristics, including child's age, gender, and indicator variables for the educational attainment of the household head. Columns (2)–(4) and (6)–(8) also control for 26 region-level trade volume, and columns (3)–(4) and (7)–(8) control for baseline trade volume interacted with year dummies. Columns (4) and (8) also control for 12 region–year fixed effects. The variables are described in Appendix A. Standard errors are clustered at the 26 region level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A4: Effects of Refugee Inflows on Infectious and Noninfectious Disease Prevalence Controlling for 12 Region GDP and Unemployment Rate

	OLS						IV					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Infectious diseases												
Refugee share	1.221***	1.220***	1.383***	1.359***	1.691***	1.715***	1.404***	1.403***	1.514***	1.480***	1.804***	1.801***
	(0.324)	(0.307)	(0.325)	(0.302)	(0.233)	(0.157)	(0.238)	(0.223)	(0.270)	(0.246)	(0.239)	(0.171)
Observations	14740	14740	14740	14740	14740	14740	14740	14740	14740	14740	14740	14740
Outcome mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Upper respiratory diseases												
Refugee share	0.506*	0.503*	0.691**	0.676**	1.016***	0.907***	0.625**	0.622*	0.746**	0.741**	1.254***	1.038***
	(0.253)	(0.266)	(0.313)	(0.328)	(0.294)	(0.322)	(0.316)	(0.338)	(0.373)	(0.369)	(0.321)	(0.294)
Observations	14747	14747	14747	14747	14747	14747	14747	14747	14747	14747	14747	14747
Outcome mean	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
Lower respiratory diseases												
Refugee share	0.447*	0.446*	0.558**	0.592**	0.320	0.349**	0.662***	0.661***	0.748***	0.673***	0.531**	0.479**
	(0.238)	(0.230)	(0.250)	(0.253)	(0.206)	(0.141)	(0.198)	(0.198)	(0.205)	(0.233)	(0.237)	(0.205)
Observations	14747	14747	14747	14747	14747	14747	14747	14747	14747	14747	14747	14747
Outcome mean	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Cancer												
Refugee share	0.002	0.002	-0.002	-0.005	-0.006	-0.007	-0.005	-0.005	-0.008	-0.010	-0.013	-0.013
	(0.006)	(0.006)	(0.009)	(0.010)	(0.015)	(0.014)	(0.008)	(0.008)	(0.011)	(0.011)	(0.015)	(0.015)
Observations	14771	14771	14771	14771	14771	14771	14771	14771	14771	14771	14771	14771
Outcome mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diabetes												
Refugee share	0.008	0.008	0.010	0.011	-0.003	0.002	0.012	0.012	0.014	0.017	0.001	0.002
	(0.016)	(0.017)	(0.021)	(0.020)	(0.026)	(0.025)	(0.017)	(0.019)	(0.021)	(0.021)	(0.025)	(0.022)
Observations	14762	14762	14762	14762	14762	14762	14762	14762	14762	14762	14762	14762
Outcome mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diarrhea												
Refugee share	-0.022	-0.023	-0.170	-0.208	0.242	0.349	0.061	0.061	-0.014	-0.074	0.332	0.497*
	(0.313)	(0.302)	(0.321)	(0.289)	(0.247)	(0.213)	(0.279)	(0.267)	(0.277)	(0.269)	(0.321)	(0.279)
Observations	14746	14746	14746	14746	14746	14746	14746	14746	14746	14746	14746	14746
Outcome mean	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Anemia												
Refugee share	-0.240	-0.241	-0.125	-0.167	-0.030	-0.135	-0.160	-0.161	-0.091	-0.109	0.073	-0.047
	(0.166)	(0.155)	(0.189)	(0.171)	(0.148)	(0.170)	(0.168)	(0.157)	(0.185)	(0.161)	(0.145)	(0.165)
Observations	14667	14667	14667	14667	14667	14667	14667	14667	14667	14667	14667	14667
Outcome mean	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Region and year fixed effects	x	x	x	x	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x	x		x	x	x	x	x
Baseline trade × year fixed effects			x	x	x	x			x	x	x	x
12 region GDP and unemployment				x	x	x				x	x	x
12 region specific linear trends					x						x	
12 region–year fixed effects						x						x

Notes: Data are from the 2008–2016 THS. Columns (1)–(6) report OLS estimates from using the share of Syrian refugee inflows in region population as an explanatory variable. Columns (7)–(12) report IV estimates from instrumenting the share of Syrian refugee inflows in region population by the distance instrument. All specifications control for 26 region and year fixed effects as well as the individual characteristics, including child's age, gender, and indicator variables for the educational attainment of the household head. Columns (2)–(6) and (8)–(12) also control for 26 region-level trade volume, and columns (3)–(6) and (9)–(12) control for baseline trade volume in 2008 interacted with year dummies. Columns (4)–(6) and (10)–(12) add 12 region GDP and unemployment. Columns (5)–(6) and (11)–(12) add 12 region specific linear time trends and 12 region–year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the 26 region level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A5: Effects of Refugee Inflows on Infectious and Noninfectious Disease Prevalence excluding Gaziantep, Adiyaman, and Kilis

	OLS					IV				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Infectious diseases										
Refugee share	1.237***	1.234***	1.402***	1.847***	1.821***	1.480***	1.477***	1.581***	1.998***	1.998***
	(0.378)	(0.358)	(0.373)	(0.251)	(0.170)	(0.243)	(0.229)	(0.280)	(0.232)	(0.178)
Observations	14567	14567	14567	14567	14567	14567	14567	14567	14567	14567
Outcome mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Upper respiratory diseases										
Refugee share	0.436	0.428	0.613*	0.794**	0.605	0.580*	0.572	0.680*	1.139***	0.816**
	(0.277)	(0.285)	(0.328)	(0.339)	(0.357)	(0.352)	(0.373)	(0.399)	(0.406)	(0.341)
Observations	14572	14572	14572	14572	14572	14572	14572	14572	14572	14572
Outcome mean	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Lower respiratory diseases										
Refugee share	0.568***	0.566***	0.686***	0.543***	0.551***	0.841***	0.838***	0.921***	0.864***	0.753***
	(0.202)	(0.197)	(0.216)	(0.146)	(0.122)	(0.197)	(0.209)	(0.188)	(0.265)	(0.259)
Observations	14571	14571	14571	14571	14571	14571	14571	14571	14571	14571
Outcome mean	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Cancer										
Refugee share	0.001	0.001	-0.004	-0.023*	-0.025***	-0.007	-0.007	-0.010	-0.031**	-0.035***
	(0.005)	(0.005)	(0.009)	(0.012)	(0.009)	(0.009)	(0.009)	(0.011)	(0.013)	(0.011)
Observations	14595	14595	14595	14595	14595	14595	14595	14595	14595	14595
Outcome mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diabetes										
Refugee share	-0.004	-0.004	-0.003	-0.027	-0.023	0.001	0.001	0.003	-0.022	-0.020
	(0.008)	(0.010)	(0.015)	(0.025)	(0.026)	(0.012)	(0.014)	(0.017)	(0.024)	(0.024)
Observations	14586	14586	14586	14586	14586	14586	14586	14586	14586	14586
Outcome mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diarrhea										
Refugee share	0.051	0.049	-0.104	0.399	0.426	0.146	0.144	0.074	0.507	0.638
	(0.328)	(0.317)	(0.341)	(0.314)	(0.278)	(0.283)	(0.273)	(0.280)	(0.450)	(0.389)
Observations	14570	14570	14570	14570	14570	14570	14570	14570	14570	14570
Outcome mean	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Anemia										
Refugee share	-0.177	-0.181	-0.058	-0.163	-0.324**	-0.078	-0.082	-0.014	-0.036	-0.199
	(0.170)	(0.163)	(0.201)	(0.149)	(0.128)	(0.179)	(0.175)	(0.199)	(0.155)	(0.144)
Observations	14492	14492	14492	14492	14492	14492	14492	14492	14492	14492
Outcome mean	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Region and year fixed effects	x	x	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x		x	x	x	x
Baseline trade × year fixed effects			x	x	x			x	x	x
12 region specific linear trends				x					x	
12 region–year fixed effects					x					x

Notes: Data are from the 2008–2016 THS. Sample excludes Gaziantep, Adiyaman and Kilis. Columns (1)–(5) report OLS estimates from using the share of Syrian refugee inflows in region population as an explanatory variable. Columns (6)–(10) report IV estimates from instrumenting the share of Syrian refugee inflows in region population by the distance instrument. All specifications control for 26 region and year fixed effects as well as the individual characteristics, including child's age, gender, and indicator variables for the educational attainment of the household head. Columns (2)–(5) and (7)–(10) also control for 26 region-level trade volume, and columns (3)–(5) and (8)–(10) control for baseline trade volume interacted with year dummies. Columns (4)–(5) and (9)–(10) add 12 region specific linear time trends and 12 region–year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the 26 region level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

TABLE A6: EFFECTS OF REFUGEE INFLOWS ON INFECTIOUS AND NONINFECTIOUS DISEASE PREVALENCE EXCLUDING ISTANBUL, ANKARA, AND IZMIR

	OLS					IV				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Infectious diseases										
Refugee share	1.221***	1.220***	1.347***	1.676***	1.670***	1.358***	1.356***	1.457***	1.763***	1.750***
	(0.314)	(0.298)	(0.321)	(0.237)	(0.134)	(0.239)	(0.224)	(0.270)	(0.235)	(0.136)
Observations	13994	13994	13994	13994	13994	13994	13994	13994	13994	13994
Outcome mean	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Upper respiratory diseases										
Refugee share	0.505*	0.503*	0.569*	0.891***	0.739*	0.474*	0.470	0.519	1.026***	0.838**
	(0.252)	(0.275)	(0.318)	(0.315)	(0.360)	(0.276)	(0.298)	(0.338)	(0.324)	(0.329)
Observations	14001	14001	14001	14001	14001	14001	14001	14001	14001	14001
Outcome mean	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Lower respiratory diseases										
Refugee share	0.430*	0.429*	0.523**	0.311*	0.305***	0.656***	0.655***	0.747***	0.523**	0.415**
	(0.238)	(0.230)	(0.252)	(0.177)	(0.104)	(0.198)	(0.199)	(0.204)	(0.207)	(0.168)
Observations	14004	14004	14004	14004	14004	14004	14004	14004	14004	14004
Outcome mean	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Cancer										
Refugee share	0.003	0.003	-0.000	-0.003	-0.004	-0.003	-0.003	-0.006	-0.007	-0.008
	(0.005)	(0.005)	(0.009)	(0.016)	(0.014)	(0.008)	(0.008)	(0.012)	(0.017)	(0.014)
Observations	14025	14025	14025	14025	14025	14025	14025	14025	14025	14025
Outcome mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diabetes										
Refugee share	0.009	0.008	0.010	-0.007	0.001	0.011	0.011	0.013	-0.007	0.002
	(0.016)	(0.017)	(0.021)	(0.027)	(0.025)	(0.017)	(0.019)	(0.022)	(0.025)	(0.023)
Observations	14018	14018	14018	14018	14018	14018	14018	14018	14018	14018
Outcome mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diarrhea										
Refugee share	-0.030	-0.030	-0.122	0.374	0.420*	0.135	0.134	0.098	0.512	0.584**
	(0.330)	(0.321)	(0.332)	(0.233)	(0.208)	(0.258)	(0.249)	(0.257)	(0.338)	(0.280)
Observations	14001	14001	14001	14001	14001	14001	14001	14001	14001	14001
Outcome mean	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Anemia										
Refugee share	-0.247	-0.248	-0.167	-0.046	-0.176	-0.200	-0.201	-0.145	0.029	-0.101
	(0.159)	(0.150)	(0.185)	(0.164)	(0.199)	(0.166)	(0.155)	(0.188)	(0.159)	(0.185)
Observations	13928	13928	13928	13928	13928	13928	13928	13928	13928	13928
Outcome mean	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Region and year fixed effects	x	x	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x		x	x	x	x
Baseline trade × year fixed effects			x	x	x			x	x	x
12 region specific linear trends				x					x	
12 region–year fixed effects					x					x

Notes: Data are from the 2008–2016 THS. Sample excludes Ankara, Istanbul and Izmir. Columns (1)–(5) report OLS estimates from using the share of Syrian refugee inflows in region population as an explanatory variable. Columns (6)–(10) report IV estimates from instrumenting the share of Syrian refugee inflows in region population by the distance instrument. All specifications control for 26 region and year fixed effects as well as the individual characteristics, including child's age, gender, and indicator variables for the educational attainment of the household head. Columns (2)–(5) and (7)–(10) also control for 26 region-level trade volume, and columns (3)–(5) and (8)–(10) control for baseline trade volume in 2008 interacted with year dummies. Columns (4)–(5) and (9)–(10) add 12 region specific linear time trends and 12 region–year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the 26 region level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A7: Reduced-form Effects on Health Care Professionals and Hospital Beds

	(1)	(2)	(3)	(4)	(5)
Doctors per capita					
Distance Instrument	-0.017***	-0.017***	-0.017***	-0.018***	-0.017***
	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)
Observations	891	891	891	880	880
Outcome mean	1.45	1.45	1.45	1.45	1.45
Midwives per capita					
Distance Instrument	-0.005*	-0.005*	-0.005	-0.007	-0.008
	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)
Observations	891	891	891	880	880
Outcome mean	0.81	0.81	0.81	0.80	0.80
Nurses per capita					
Distance Instrument	-0.014**	-0.014**	-0.011*	-0.016**	-0.016**
	(0.006)	(0.006)	(0.006)	(0.007)	(0.008)
Observations	891	891	891	880	880
Outcome mean	1.80	1.80	1.80	1.79	1.79
Hospital beds per capita					
Distance Instrument	0.003	0.003	0.001	-0.007	-0.006
	(0.009)	(0.009)	(0.009)	(0.013)	(0.014)
Observations	891	891	891	880	880
Outcome mean	2.53	2.53	2.53	2.53	2.53
Region and year fixed effects	x	x	x	x	x
Log trade volume		x	x	x	x
Baseline trade × year fixed effects			x	x	x
5 region specific linear trends				x	
5 region–year fixed effects					x

Notes: Data are from the 2008–2018 Health Statistics Yearbooks published annually by the Turkish Ministry of Health. Columns (1)–(5) report reduced-form estimates by using the distance instrument as an explanatory variable. All specifications control for province and year fixed effects. Columns (2)–(5) also control for province-level trade volume, and columns (3)–(5) control for baseline trade volume in 2008 interacted with year dummies. Columns (4) and (5) add 5 region specific linear trends and 5 region–year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A8: Effects of Refugee Inflows on the Number of Health Professionals and Hospital Beds

	OLS					IV				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Doctors (in logs)										
Refugee share	0.373***	0.372***	0.341***	0.323***	0.344***	0.332***	0.333***	0.273***	0.312***	0.372***
	(0.030)	(0.030)	(0.026)	(0.043)	(0.046)	(0.077)	(0.077)	(0.088)	(0.078)	(0.083)
Observations	891	891	891	880	880	891	891	891	880	880
Outcome mean	6.65	6.65	6.65	6.67	6.67	6.65	6.65	6.65	6.67	6.67
Midwives (in logs)										
Refugee share	0.290***	0.290***	0.264***	0.224***	0.216***	0.357***	0.357***	0.318***	0.298***	0.270***
	(0.031)	(0.031)	(0.023)	(0.037)	(0.039)	(0.092)	(0.092)	(0.087)	(0.104)	(0.098)
Observations	891	891	891	880	880	891	891	891	880	880
Outcome mean	6.06	6.06	6.06	6.07	6.07	6.06	6.06	6.06	6.07	6.07
Nurses (in logs)										
Refugee share	0.533***	0.533***	0.520***	0.439***	0.453***	0.708***	0.708***	0.700***	0.553***	0.600***
	(0.063)	(0.065)	(0.061)	(0.055)	(0.056)	(0.168)	(0.168)	(0.170)	(0.133)	(0.143)
Observations	891	891	891	880	880	891	891	891	880	880
Outcome mean	6.86	6.86	6.86	6.89	6.89	6.86	6.86	6.86	6.89	6.89
Hospital beds (in logs)										
Refugee share	0.609***	0.608***	0.542***	0.393***	0.400***	0.916***	0.917***	0.825***	0.605***	0.645***
	(0.184)	(0.182)	(0.153)	(0.103)	(0.110)	(0.328)	(0.327)	(0.298)	(0.224)	(0.248)
Observations	891	891	891	880	880	891	891	891	880	880
Outcome mean	7.19	7.19	7.19	7.22	7.22	7.19	7.19	7.19	7.22	7.22
Region and year fixed effects	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x		x	x	x	x
Baseline trade × year fixed effects			x	x	x			x	x	x
5 region specific linear trends				x					x	
5 region–year fixed effects					x					x

Notes: Data are from the 2008–2018 Health Statistics Yearbooks published annually by the Turkish Ministry of Health. Columns (1)–(5) report OLS estimates from using the share of Syrian refugee inflows in province population as an explanatory variable. Columns (6)–(10) report IV estimates from instrumenting the share of Syrian refugee inflows in province population by the distance instrument. All specifications control for province and year fixed effects. Columns (2)–(5) and (7)–(10) also control for province-level trade volume, and columns (3)–(5) and (8)–(10) control for baseline trade volume in 2008 interacted with year dummies. Columns (4)–(5) and (9)–(10) add 5 region–year fixed effects and 5 region specific linear time trends, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A9: Placebo Test for the Effects of Refugee Inflows on Health Professionals and Hospital Beds using Pre-treatment Data

	OLS					IV				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Doctors per capita										
Refugee share	0.023	0.024	0.081*	0.063	0.051	-0.024	-0.023	0.079	0.078	-0.020
	(0.038)	(0.037)	(0.044)	(0.044)	(0.042)	(0.075)	(0.075)	(0.088)	(0.105)	(0.126)
Observations	324	324	324	320	320	324	324	324	320	320
Outcome mean	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Midwives per capita										
Refugee share	0.023	0.024	0.039	0.075	0.040	-0.017	-0.017	0.006	0.061	-0.060
	(0.056)	(0.055)	(0.048)	(0.046)	(0.043)	(0.069)	(0.069)	(0.061)	(0.060)	(0.118)
Observations	324	324	324	320	320	324	324	324	320	320
Outcome mean	0.81	0.81	0.81	0.79	0.79	0.81	0.81	0.81	0.79	0.79
Nurses per capita										
Refugee share	0.163	0.152	0.238*	0.251*	0.216	0.052	0.035	0.184	0.135	0.641**
	(0.173)	(0.182)	(0.137)	(0.132)	(0.134)	(0.233)	(0.241)	(0.188)	(0.224)	(0.309)
Observations	324	324	324	320	320	324	324	324	320	320
Outcome mean	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Hospital beds per capita										
Refugee share	0.066**	0.065*	0.066*	0.095***	0.068***	0.002	0.001	-0.004	-0.009	-0.014
	(0.032)	(0.033)	(0.033)	(0.033)	(0.024)	(0.067)	(0.068)	(0.070)	(0.098)	(0.077)
Observations	324	324	324	320	320	324	324	324	320	320
Outcome mean	0.64	0.64	0.64	0.62	0.62	0.64	0.64	0.64	0.62	0.62
Region and year fixed effects	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x		x	x	x	x
Baseline trade × year fixed effects			x	x	x			x	x	x
5 region specific linear trends				x					x	
5 region–year fixed effects					x					x

Notes: Data are from the 2008–2011 Health Statistics Yearbooks published annually by the Turkish Ministry of Health. We assign the 2016 values of refugee share and instrument variables for each province to 2011 data. Columns (1)–(5) report OLS estimates from using the share of Syrian refugee inflows in province population as an explanatory variable. Columns (6)–(10) report IV estimates from instrumenting the share of Syrian refugee inflows in province population by the distance instrument. All specifications control for province and year fixed effects. Columns (2)–(5) and (7)–(10) also control for province-level trade volume, and columns (3)–(5) and (8)–(10) control for baseline trade volume in 2008 interacted with year dummies. Columns (4)–(5) and (9)–(10) add 5 region–year fixed effects and 5 region specific linear time trends, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A10: Effects of Refugee Inflows on Health Care Professionals and Hospital Beds with 26 Region Controls

	OLS						IV					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Doctors per capita												
Refugee share	-0.442***	-0.443***	-0.436***	-0.434***	-0.435***	-0.418***	-0.656***	-0.656***	-0.662***	-0.676***	-0.985***	-0.632***
	(0.081)	(0.082)	(0.084)	(0.079)	(0.091)	(0.148)	(0.204)	(0.204)	(0.217)	(0.222)	(0.303)	(0.174)
Observations	891	891	891	891	891	891	891	891	891	891	891	891
Outcome mean	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Midwives per capita												
Refugee share	-0.234***	-0.235***	-0.239***	-0.244***	-0.293***	-0.308***	-0.194***	-0.193***	-0.196***	-0.212***	-0.693***	-0.395***
	(0.019)	(0.019)	(0.021)	(0.024)	(0.068)	(0.086)	(0.064)	(0.064)	(0.068)	(0.068)	(0.228)	(0.089)
Observations	891	891	891	891	891	891	891	891	891	891	891	891
Outcome mean	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Nurses per capita												
Refugee share	-0.520***	-0.519***	-0.457***	-0.465***	-0.570***	-0.613**	-0.546***	-0.547***	-0.437**	-0.470**	-1.444***	-0.993***
	(0.116)	(0.114)	(0.090)	(0.095)	(0.180)	(0.235)	(0.198)	(0.196)	(0.184)	(0.186)	(0.520)	(0.316)
Observations	891	891	891	891	891	891	891	891	891	891	891	891
Outcome mean	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Hospital beds per capita												
Refugee share	-0.265*	-0.266*	-0.321***	-0.340***	-0.553***	-0.634***	0.096	0.098	0.030	-0.046	-0.745**	-0.921***
	(0.141)	(0.138)	(0.117)	(0.109)	(0.145)	(0.181)	(0.360)	(0.359)	(0.349)	(0.318)	(0.328)	(0.268)
Observations	891	891	891	891	891	891	891	891	891	891	891	891
Outcome mean	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53
Province and year fixed effects	x	x	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x	x		x	x	x	x	x
Baseline trade × year fixed effects			x	x	x	x			x	x	x	x
26 region GDP and unemployment				x	x	x				x	x	x
26 region specific linear trends					x						x	
26 region–year fixed effects						x						x

Notes: Data are from the 2008–2018 Health Statistics Yearbooks published annually by the Turkish Ministry of Health. Columns (1)–(6) report OLS estimates from using the share of Syrian refugee inflows in province population as an explanatory variable. Columns (7)–(12) report IV estimates from instrumenting the share of Syrian refugee inflows in province population by the distance instrument. All specifications control for province and year fixed effects. Columns (2)–(6) and (8)–(12) also control for province-level trade volume, and columns (3)–(6) and (9)–(12) control for baseline trade volume in 2008 interacted with year dummies. Columns (4)–(6) and (10)–(12) control for 26 region GDP and unemployment. Columns (5)–(6) and (11)–(12) add 26 region specific linear time trends and 26 region fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A11: Effects of Refugee Inflows on Health Care Professionals and Hospital Beds excluding Gaziantep, Adiyaman, and Kilis

	OLS					IV				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Doctors per capita										
Refugee share	-0.892***	-0.902***	-0.923***	-0.931***	-0.864***	-1.172***	-1.174***	-1.212***	-1.023***	-0.935**
	(0.189)	(0.196)	(0.235)	(0.295)	(0.317)	(0.381)	(0.383)	(0.411)	(0.370)	(0.385)
Observations	858	858	858	847	847	858	858	858	847	847
Outcome mean	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
Midwives per capita										
Refugee share	-0.287***	-0.294***	-0.314***	-0.218*	-0.267*	-0.165	-0.166	-0.167	-0.017	-0.065
	(0.081)	(0.080)	(0.086)	(0.122)	(0.142)	(0.151)	(0.152)	(0.169)	(0.192)	(0.208)
Observations	858	858	858	847	847	858	858	858	847	847
Outcome mean	0.82	0.82	0.82	0.80	0.80	0.82	0.82	0.82	0.80	0.80
Nurses per capita										
Refugee share	-1.168***	-1.156***	-0.927***	-0.988***	-1.033***	-0.768*	-0.766*	-0.557	-0.865	-0.858
	(0.321)	(0.317)	(0.337)	(0.365)	(0.363)	(0.400)	(0.395)	(0.434)	(0.557)	(0.546)
Observations	858	858	858	847	847	858	858	858	847	847
Outcome mean	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81
Hospital beds per capita										
Refugee share	0.620*	0.601*	0.465	0.192	0.216	0.921	0.919	0.843	0.664	0.857
	(0.360)	(0.349)	(0.380)	(0.574)	(0.625)	(0.610)	(0.607)	(0.650)	(0.776)	(0.870)
Observations	858	858	858	847	847	858	858	858	847	847
Outcome mean	2.56	2.56	2.56	2.57	2.57	2.56	2.56	2.56	2.57	2.57
Region and year fixed effects	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x		x	x	x	x
Baseline trade × year fixed effects			x	x	x			x	x	x
5 region specific linear trends				x					x	
5 region–year fixed effects					x					x

Notes: Data are from the 2008–2018 Health Statistics Yearbooks published annually by the Turkish Ministry of Health. Sample excludes Gaziantep, Adiyaman and Kilis. Columns (1)–(5) report OLS estimates from using the share of Syrian refugee inflows in province population as an explanatory variable. Columns (6)–(10) report IV estimates from instrumenting the share of Syrian refugee inflows in province population by the distance instrument. All specifications control for province and year fixed effects. Columns (2)–(5) and (7)–(10) also control for province-level trade volume, and columns (3)–(5) and (8)–(10) control for baseline trade volume in 2008 interacted with year dummies. Columns (4)–(5) and (9)–(10) add 5 region specific linear time trends and 5 region–year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A12: Effects of Refugee Inflows on Health Care Professionals and Hospital Beds excluding Istanbul, Ankara, and Izmir

	OLS					IV				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Doctors per capita										
Refugee share	-0.452***	-0.452***	-0.461***	-0.421***	-0.409***	-0.678***	-0.678***	-0.720***	-0.612***	-0.584***
	(0.084)	(0.085)	(0.092)	(0.092)	(0.094)	(0.212)	(0.212)	(0.238)	(0.206)	(0.204)
Observations	858	858	858	847	847	858	858	858	847	847
Outcome mean	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
Midwives per capita										
Refugee share	-0.235***	-0.235***	-0.239***	-0.267***	-0.278***	-0.190***	-0.190***	-0.192***	-0.214***	-0.243***
	(0.019)	(0.020)	(0.022)	(0.022)	(0.025)	(0.066)	(0.066)	(0.072)	(0.072)	(0.073)
Observations	858	858	858	847	847	858	858	858	847	847
Outcome mean	0.82	0.82	0.82	0.81	0.81	0.82	0.82	0.82	0.81	0.81
Nurses per capita										
Refugee share	-0.530***	-0.529***	-0.480***	-0.459***	-0.456***	-0.583***	-0.584***	-0.492**	-0.562***	-0.558***
	(0.118)	(0.116)	(0.098)	(0.099)	(0.107)	(0.205)	(0.204)	(0.195)	(0.210)	(0.215)
Observations	858	858	858	847	847	858	858	858	847	847
Outcome mean	1.79	1.79	1.79	1.78	1.78	1.79	1.79	1.79	1.78	1.78
Hospital beds per capita										
Refugee share	-0.270*	-0.271*	-0.345***	-0.495***	-0.494***	0.068	0.069	-0.042	-0.271	-0.244
	(0.141)	(0.138)	(0.113)	(0.113)	(0.125)	(0.349)	(0.348)	(0.329)	(0.314)	(0.334)
Observations	858	858	858	847	847	858	858	858	847	847
Outcome mean	2.52	2.52	2.52	2.53	2.53	2.52	2.52	2.52	2.53	2.53
Region and year fixed effects	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x		x	x	x	x
Baseline trade × year fixed effects			x	x	x			x	x	x
5 region specific linear trends				x					x	
5 region–year fixed effects					x					x

Notes: Data are from the 2008–2018 Health Statistics Yearbooks published annually by the Turkish Ministry of Health. Sample excludes Ankara, Istanbul and Izmir. Columns (1)–(5) report OLS estimates from using the share of Syrian refugee inflows in province population as an explanatory variable. Columns (6)–(10) report IV estimates from instrumenting the share of Syrian refugee inflows in province population by the distance instrument. All specifications control for province and year fixed effects. Columns (2)–(5) and (7)–(10) also control for province-level trade volume, and columns (3)–(5) and (8)–(10) control for baseline trade volume in 2008 interacted with year dummies. Columns (4)–(5) and (9)–(10) add 5 region specific linear time trends and 5 region–year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A13: Reduced-form Effects on Vaccination Outcomes

	(1)	(2)	(3)	(4)	(5)
Number of vaccines					
Distance Instrument	-0.035*	-0.034*	-0.044*	-0.117***	-0.099**
	(0.020)	(0.019)	(0.026)	(0.040)	(0.041)
Observations	9261	9261	9233	9233	9233
Outcome mean	5.86	5.86	5.86	5.86	5.86
Hepatitis B completed					
Distance Instrument	-0.003	-0.003	-0.006	-0.018***	-0.017**
	(0.003)	(0.003)	(0.004)	(0.006)	(0.007)
Observations	8488	8488	8462	8462	8462
Outcome mean	0.62	0.62	0.62	0.62	0.62
Diphtheria, pertussis, tetanus completed					
Distance Instrument	-0.011***	-0.011***	-0.013**	-0.020***	-0.020**
	(0.004)	(0.004)	(0.005)	(0.006)	(0.008)
Observations	8541	8541	8514	8514	8514
Outcome mean	0.67	0.67	0.67	0.67	0.67
Tuberculosis completed					
Distance Instrument	-0.004**	-0.004**	-0.006**	-0.009***	-0.009**
	(0.002)	(0.002)	(0.002)	(0.003)	(0.004)
Observations	9210	9210	9182	9182	9182
Outcome mean	0.87	0.87	0.87	0.87	0.87
Measles completed					
Distance Instrument	-0.011***	-0.011***	-0.013***	-0.021***	-0.024***
	(0.003)	(0.003)	(0.004)	(0.005)	(0.007)
Observations	9074	9074	9046	9046	9046
Outcome mean	0.65	0.65	0.65	0.65	0.65
Province and survey year fixed effects	x	x	x	x	x
Individual characteristics	x	x	x	x	x
Log trade volume		x	x	x	x
Baseline trade × survey year fixed effects			x	x	x
5 region specific linear trends				x	
5 region–survey year fixed effects					x

Notes: Data are from the 2003, 2008, 2013 and 2018 TDHS. Columns (1)–(5) report reduced-form estimates by using the distance instrument as an explanatory variable. All specifications control for province and survey year fixed effects as well as the individual characteristics, including child's age, gender, month of birth indicator variables, and indicator variables for the mother's educational attainment, whether she lives in a rural area, and whether her mother tongue is Turkish. Columns (2)–(5) also control for province-level trade volume, and columns (3)–(5) control for baseline trade volume in 1998 interacted with year dummies. Columns (4)–(5) add 5 region specific linear time trends and 5 region–survey year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A14: Placebo Test for the Effects of Refugee Inflows on Vaccination Outcomes using Pre-treatment Data

	OLS				IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Number of vaccines								
Refugee share	13.351*	13.428*	12.971*	10.846*	15.040**	14.998**	8.793	3.976
	(7.279)	(7.669)	(6.663)	(6.326)	(7.102)	(7.146)	(5.743)	(6.737)
Observations	5688	5684	5673	5673	5688	5684	5673	5673
Outcome mean	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54
Hepatitis B completed								
Refugee share	1.870**	1.967**	1.856**	1.573*	3.379***	3.388***	1.987**	1.459
	(0.797)	(0.876)	(0.719)	(0.822)	(1.230)	(1.225)	(0.926)	(1.158)
Observations	5108	5106	5094	5094	5108	5106	5094	5094
Outcome mean	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Diphtheria, pertussis, tetanus completed								
Refugee share	2.773**	2.792**	2.721**	3.282***	2.877*	2.877*	2.060	2.765
	(1.051)	(1.131)	(1.038)	(1.208)	(1.472)	(1.479)	(1.502)	(1.871)
Observations	5208	5206	5193	5193	5208	5206	5193	5193
Outcome mean	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Tuberculosis completed								
Refugee share	0.343	0.351	0.300	-0.271	0.128	0.127	-0.476	-1.526
	(1.189)	(1.230)	(1.136)	(0.913)	(1.154)	(1.158)	(0.977)	(1.047)
Observations	5654	5651	5639	5639	5654	5651	5639	5639
Outcome mean	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Measles completed								
Refugee share	0.495	0.518	0.469	0.038	1.066	1.067	0.544	-0.080
	(0.672)	(0.711)	(0.668)	(0.802)	(0.775)	(0.775)	(0.700)	(1.027)
Observations	5544	5542	5529	5529	5544	5542	5529	5529
Outcome mean	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Province and survey year fixed effects	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x
Log trade volume		x	x	x		x	x	x
Baseline trade × survey year fixed effects			x	x			x	x
5 region–survey year fixed effects				x				x

Notes: Data are from the 2003 and 2008 TDHS. We assign the 2013 values of refugee share and instrument variables for each province to 2008 data. Columns (1)–(4) report OLS estimates from using the share of Syrian refugee inflows in province population as an explanatory variable. Columns (5)–(8) report IV estimates from instrumenting the share of Syrian refugee inflows in province population by the distance instrument. All specifications control for province and survey year fixed effects as well as the individual characteristics, including child's age, gender, month of birth indicator variables, and indicator variables for the mother's educational attainment, whether she lives in a rural area, and whether her mother tongue is Turkish. Columns (2)–(4) and (6)–(8) also control for province-level trade volume, and columns (3)–(4) and (7)–(8) control for baseline trade volume interacted with survey year dummies. Columns (4) and (8) add 5 region–survey year fixed effects. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A15: Effects of Refugee Inflows on Vaccination Outcomes with 26 Region Controls

	OLS						IV					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Number of vaccines												
Refugee share	-0.642	-0.675	-0.765	-0.627	-2.868	-1.429	-2.436*	-2.371*	-2.977*	-2.639*	-8.965***	-7.577**
	(0.568)	(0.550)	(0.599)	(0.630)	(1.812)	(1.210)	(1.397)	(1.386)	(1.667)	(1.571)	(3.293)	(3.709)
Observations	9261	9261	9233	9233	9233	9233	9261	9261	9233	9233	9233	9233
Outcome mean	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86
Hepatitis B completed												
Refugee share	-0.055	-0.061	-0.082	-0.045	-0.383**	-0.245	-0.239	-0.235	-0.392	-0.368	-1.387**	-1.851**
	(0.123)	(0.113)	(0.116)	(0.143)	(0.169)	(0.166)	(0.210)	(0.211)	(0.280)	(0.287)	(0.562)	(0.811)
Observations	8488	8488	8462	8462	8462	8462	8488	8488	8462	8462	8462	8462
Outcome mean	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Diphtheria, pertussis, tetanus completed												
Refugee share	-0.302**	-0.316***	-0.325***	-0.289**	-0.486***	-0.282	-0.789**	-0.781**	-0.865**	-0.848**	-1.560***	-2.002**
	(0.117)	(0.105)	(0.104)	(0.118)	(0.184)	(0.179)	(0.314)	(0.310)	(0.342)	(0.348)	(0.502)	(0.802)
Observations	8541	8541	8514	8514	8514	8514	8541	8541	8514	8514	8514	8514
Outcome mean	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Tuberculosis completed												
Refugee share	-0.205***	-0.213***	-0.232***	-0.236***	-0.254**	-0.186*	-0.284**	-0.284**	-0.387***	-0.353**	-0.484**	-0.499*
	(0.059)	(0.057)	(0.059)	(0.064)	(0.123)	(0.104)	(0.124)	(0.122)	(0.146)	(0.138)	(0.226)	(0.273)
Observations	9210	9210	9182	9182	9182	9182	9210	9210	9182	9182	9182	9182
Outcome mean	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Measles completed												
Refugee share	-0.242*	-0.245*	-0.257**	-0.250	-0.416**	-0.396*	-0.792***	-0.786***	-0.884***	-0.964***	-1.834***	-2.796***
	(0.142)	(0.132)	(0.120)	(0.159)	(0.169)	(0.223)	(0.278)	(0.285)	(0.315)	(0.351)	(0.566)	(0.995)
Observations	9074	9074	9046	9046	9046	9046	9074	9074	9046	9046	9046	9046
Outcome mean	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Province and year fixed effects	x	x	x	x	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x	x		x	x	x	x	x
Baseline trade × year fixed effects			x	x	x	x			x	x	x	x
26 region GDP and unemployment				x	x	x				x	x	x
26 region specific linear trends					x						x	
26 region–year fixed effects						x						x

Notes: Data are from the 2003, 2008, 2013 and 2018 TDHS. Columns (1)–(6) report OLS estimates from using the share of Syrian refugee inflows in province population as an explanatory variable. Columns (7)–(12) report IV estimates from instrumenting the share of Syrian refugee inflows in province population by the distance instrument. All specifications control for province and survey year fixed effects as well as the individual characteristics, including child's age, gender, month of birth indicator variables, and indicator variables for the mother's educational attainment, whether she lives in a rural area, and whether her mother tongue is Turkish. Columns (2)–(6) and (8)–(12) also control for province-level trade volume, and columns (3)–(6) and (8)–(12) control for baseline trade volume in 1998 interacted with survey year dummies. Columns (4)–(6) and (10)–(12) control for 26 region GDP and employment. Columns (5)–(6) and (11)–(12) add 26 region specific linear time trends and 26 region–survey year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A16: Effects of Refugee Inflows on Vaccination Outcomes excluding Gaziantep, Adiyaman, and Kilis

	OLS					IV				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Number of vaccines										
Refugee share	-0.675	-0.732	-0.898	-3.187	-2.414	-3.159	-3.089	-4.221*	-9.080**	-6.355*
	(0.843)	(0.803)	(0.828)	(2.150)	(1.962)	(2.005)	(1.991)	(2.398)	(4.264)	(3.456)
Observations	8663	8663	8635	8635	8635	8663	8663	8635	8635	8635
Outcome mean	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88
Hepatitis B completed										
Refugee share	0.049	0.041	0.007	-0.381	-0.265	-0.238	-0.235	-0.508	-1.437*	-1.070*
	(0.140)	(0.121)	(0.125)	(0.261)	(0.225)	(0.293)	(0.293)	(0.413)	(0.763)	(0.629)
Observations	7967	7967	7941	7941	7941	7967	7967	7941	7941	7941
Outcome mean	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Diphtheria, pertussis, tetanus completed										
Refugee share	-0.302**	-0.316***	-0.325***	-0.548***	-0.429**	-0.789**	-0.781**	-0.865**	-1.410***	-1.260**
	(0.117)	(0.105)	(0.104)	(0.174)	(0.174)	(0.314)	(0.310)	(0.342)	(0.467)	(0.510)
Observations	8541	8541	8514	8514	8514	8541	8541	8514	8514	8514
Outcome mean	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Tuberculosis completed										
Refugee share	-0.227**	-0.232**	-0.259***	-0.371	-0.255	-0.294*	-0.295*	-0.476***	-0.579**	-0.414*
	(0.100)	(0.099)	(0.090)	(0.223)	(0.174)	(0.165)	(0.165)	(0.184)	(0.294)	(0.238)
Observations	8614	8614	8586	8586	8586	8614	8614	8586	8586	8586
Outcome mean	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Measles completed										
Refugee share	-0.187	-0.191	-0.210	-0.429**	-0.316	-0.893*	-0.886*	-1.049**	-1.652**	-1.550**
	(0.228)	(0.210)	(0.189)	(0.181)	(0.195)	(0.466)	(0.472)	(0.530)	(0.736)	(0.767)
Observations	8485	8485	8457	8457	8457	8485	8485	8457	8457	8457
Outcome mean	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Province and survey year fixed effects	x	x	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x		x	x	x	x
Baseline trade × survey year fixed effects			x	x	x			x	x	x
5 region specific linear trends				x					x	
5 region–survey year fixed effects					x					x

Notes: Data are from the 2003, 2008, 2013 and 2018 TDHS. Sample excludes Gaziantep, Adiyaman and Kilis. Columns (1)–(5) report OLS estimates from using the share of Syrian refugee inflows in province population as an explanatory variable. Columns (6)–(10) report IV estimates from instrumenting the share of Syrian refugee inflows in province population by the distance instrument. All specifications control for province and survey year fixed effects as well as the individual characteristics, including child's age, gender, month of birth indicator variables, and indicator variables for the mother's educational attainment, whether she lives in a rural area, and whether her mother tongue is Turkish. Columns (2)–(5) and (7)–(10) also control for province-level trade volume, and columns (3)–(5) and (8)–(10) control for baseline trade volume in 1998 interacted with survey year dummies. Columns (4)–(5) and (9)–(10) add 5 region specific linear time trends and 5 region–survey year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A17: Effects of Refugee Inflows on Vaccination Outcomes excluding Istanbul, Ankara, and Izmir

	OLS					IV				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Number of vaccines										
Refugee share	-0.534	-0.568	-0.216	-2.198*	-1.947*	-2.139*	-2.122*	-1.779	-5.981**	-5.423**
	(0.588)	(0.572)	(0.698)	(1.166)	(1.068)	(1.258)	(1.257)	(1.388)	(2.479)	(2.479)
Observations	8041	8041	8013	8013	8013	8041	8041	8013	8013	8013
Outcome mean	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
Hepatitis B completed										
Refugee share	-0.068	-0.077	-0.026	-0.323**	-0.284**	-0.284	-0.284	-0.236	-0.937**	-0.873**
	(0.118)	(0.109)	(0.130)	(0.140)	(0.133)	(0.213)	(0.213)	(0.222)	(0.390)	(0.410)
Observations	7334	7334	7308	7308	7308	7334	7334	7308	7308	7308
Outcome mean	0.61	0.61	0.62	0.62	0.62	0.61	0.61	0.62	0.62	0.62
Diphtheria, pertussis, tetanus completed										
Refugee share	-0.257**	-0.276***	-0.222**	-0.417***	-0.336**	-0.719**	-0.719**	-0.669**	-1.102***	-1.022**
	(0.109)	(0.097)	(0.100)	(0.144)	(0.150)	(0.289)	(0.284)	(0.299)	(0.414)	(0.461)
Observations	7389	7389	7362	7362	7362	7389	7389	7362	7362	7362
Outcome mean	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Tuberculosis completed										
Refugee share	-0.219***	-0.227***	-0.190***	-0.346***	-0.274***	-0.338***	-0.341***	-0.303**	-0.632***	-0.496**
	(0.064)	(0.064)	(0.067)	(0.111)	(0.093)	(0.130)	(0.131)	(0.139)	(0.245)	(0.217)
Observations	7994	7994	7966	7966	7966	7994	7994	7966	7966	7966
Outcome mean	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Measles completed										
Refugee share	-0.201	-0.200	-0.151	-0.334***	-0.305**	-0.730***	-0.730***	-0.687***	-1.198***	-1.267***
	(0.134)	(0.122)	(0.109)	(0.116)	(0.134)	(0.255)	(0.259)	(0.258)	(0.388)	(0.470)
Observations	7864	7864	7836	7836	7836	7864	7864	7836	7836	7836
Outcome mean	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Province and survey year fixed effects	x	x	x	x	x	x	x	x	x	x
Individual characteristics	x	x	x	x	x	x	x	x	x	x
Log trade volume		x	x	x	x		x	x	x	x
Baseline trade × survey year fixed effects			x	x	x			x	x	x
5 region specific linear trends				x					x	
5 region–survey year fixed effects					x					x

Notes: Data are from the 2003, 2008, 2013 and 2018 TDHS. Sample excludes Ankara, Istanbul and Izmir. Columns (1)–(5) report OLS estimates from using the share of Syrian refugee inflows in province population as an explanatory variable. Columns (6)–(10) report IV estimates from instrumenting the share of Syrian refugee inflows in province population by the distance instrument. All specifications control for province and survey year fixed effects as well as the individual characteristics, including child's age, gender, month of birth indicator variables, and indicator variables for the mother's educational attainment, whether she lives in a rural area, and whether her mother tongue is Turkish. Columns (2)–(5) and (7)–(10) also control for province-level trade volume, and columns (3)–(5) and (8)–(10) control for baseline trade volume in 1998 interacted with year dummies. Columns (4)–(5) and (9)–(10) add 5 region specific linear time trends and 5 region–survey year fixed effects, respectively. The variables are described in Appendix A. Standard errors are clustered at the province level. ***, **, and * denote significance at the 1, 5, and 10 percent levels.