



---

**Research Article/Araştırma Makalesi**

## **The Impact of Immigration on Native Suicides: An Empirical Evidence from Türkiye**

*Göçün Yerli İntiharlar Üzerindeki Etkisi: Türkiye'den Ampirik Bir Kanıt*

**Zeynep ELİTAŞ<sup>1</sup>**

---

**Abstract**

This study aims to present empirical evidence on the effect of immigration on native suicides from Türkiye, which has welcomed a massive influx from Syria since 2011. This study focuses on the period between 2009 and 2016 using a quasi-experimental design, which accounts for the self-selection of immigrants to provinces in Türkiye and eliminates a possible bias. An IV-2SLS estimation is conducted to find the causal effect of the Syrian influx on native suicides. The findings show that while the Syrian influx to Türkiye has not increased overall and male suicides, it has increased the crude female suicide rates. The increase is 1.31 percentage points in crude suicide rates when there is a one-percentage-point increase in the provincial refugee share. The results are consistent with the literature, which show evidence that the Syrian influx worsened women's labor market conditions and promoted male polygamy in Türkiye. This study fulfills a gap in the literature lacking the effect of immigration on suicide by presenting evidence from a case in which the host country received more than 3.5 million Syrian refugees in a period of less than ten years. The study calls for stronger policy measures for Türkiye against female unemployment and polygamy in refugee-intensive provinces of the country. More generally, the study shows that host countries' immigration policies should account for all characteristics of the areas in their refugee settlement process.

**Jel Codes:** J61, J68, J12, C26

**Keywords:** Suicide, Immigration, Employment Displacement, Female Suicide, Polygamy

---

<sup>1</sup> Assistant Prof. Dr., Labor Economics and Industrial Relations Department, FEAS, Anadolu University, zeynepelitas@anadolu.edu.tr, ORCID: 0000-0002-0715-8447



Elitaş, Z. (2023). The Impact of Immigration on Native Suicides: An Empirical Evidence from Türkiye. *Fiscoeconomia*, 7(3), 2010-2024. Doi: 10.25295/fsecon.1313427

## Öz

Bu çalışma, 2011'den bu yana Suriye'den büyük bir akını karşılayan Türkiye'de, göçün yerli intiharlar üzerindeki etkisine ilişkin ampirik kanıtlar sunmayı amaçlamaktadır. Çalışma, 2009 ve 2016 yılları arasındaki dönem için, göçmenlerin kendi kendine seçimini açıklayacak ve olası bir sapmayı ortadan kaldıracak olan yarı-deneysel tasarım yöntemini kullanmıştır. Suriyeli akının yerli intiharlar üzerindeki nedensel etkisini bulmak için IV-2SLS tahmini yapılmıştır. Bulgular, Türkiye'ye Suriyeli akının genel ve erkek intiharlarını artırmazken, kaba kadın intihar oranlarını artırdığını göstermektedir. İl mülteci payında yüzde bir puanlık artış olduğunda, kaba intihar oranlarında artış 1,31 puan olmaktadır. Sonuçlar, Suriyeli akının Türkiye'de kadınların işgücü piyasası koşullarını kötüleştirdiğini ve erkeklerin çok eşliliğini teşvik ettiğini gösteren yazındaki sonuçlarla tutarlıdır. Bu çalışma, on yıldan kısa bir süre içinde 3,5 milyondan fazla Suriyeli mülteci alan bir ülke vakasından elde edilen kanıtları sunarak, göçün intihar üzerindeki etkisinin araştırıldığı yazındaki bir boşluğu doldurmaktadır. Çalışma, ülkenin mülteci yoğun illerinde kadın işsizliğine ve çok eşliliğe karşı Türkiye için daha güçlü politika önlemleri çağrısında bulunmaktadır. Daha genel olarak, çalışma, ev sahibi ülkelerin göç politikalarının, mülteci yerleşim süreçlerinde bölgelerin tüm özelliklerini hesaba katması gerektiğini göstermektedir.

**Jel Kodları:** J61, J68, J12, C26

**Anahtar Kelimeler:** *İntihar, Göç, İstihdam Göçü, Kadın İntiharı, Çok Eşlilik*

## 1. Introduction

Suicide is a challenging problem of the contemporary era and is very sensitive to the transformations of societies. Immigration is one of the main elements that force communities to change. The gaps in development levels and population increase rates between the regions and the wars in unstable geographies are the main drivers of immigration. Immigration supports the development of the host countries by strengthening their labor force. It contributes to the world's peace by bringing cultures closer. It saves innocent people from politically unstable countries from possible persecution. On the other hand, immigration may lead to several adverse consequences in the host countries, such as unemployment and wage reduction for natives, increased crime rates, and internal migration. Adaptations to host countries can be challenging, especially when massive waves of people immigrate in a very short period. Türkiye is such a country, which has become a host to millions of Syrian refugees just within a few years after the start of the civil war in Syria in 2011.

An analysis of the consequences of immigration is essential for the migration planning policies, especially in regions that are the possible target of massive migration waves. Adaptation of immigrants into host countries is dynamic, and unexpected outcomes may occur during this process. Thus, policymakers should consider all possible outcomes in designing immigration planning and policies. In the neighborhood of a geopolitically important and disputed area, Türkiye has witnessed several waves of immigration since its foundation. From the 1990s to the present, immigration waves from Bulgaria, Iraq, Syria, and Afghanistan have changed the country in many aspects. Among these waves, the Syrian influx to the country, which started after the civil war in Syria beginning in 2011, is unprecedented in the country's history and the region's recent history once the number of refugees is concerned. According to current official data, the number of Syrian refugees in Türkiye is above 3.5 million. Türkiye's role in absorbing the Syrian influx is also essential for the Europe region as shown by the EU-Türkiye agreement signed in March 2016 to keep the Syrian immigrants in Türkiye in exchange for funding support and free movement rights for Turkish citizens in Europe.

The Syrian influx provokes lots of studies, but, as far as we know, none of these studies examines the effect of the Syrian immigration on the suicides of natives in the country. Instead, the literature focuses on labor market outcomes. It comes up with the finding that the influx hit disadvantaged groups more since the immigrants in Türkiye are generally compete for low-wage jobs with the natives in the country.

This study analyzes the effects of immigration on suicides in the case of Türkiye, using a quasi-experimental design, which accounts for the self-selection of immigrants to provinces in Türkiye. This study estimates the effect of the provincial shares of Syrian refugees on the provincial suicide numbers and crude suicide rates. The findings suggest that the refugee share does not increase overall and male suicides at the province-level. However, increasing in the refugee share in a province increases the province-level female suicides. The findings are consistent with the studies suggesting that the Syrian refugee influx to Türkiye hit Turkish women more than men in terms of worsened labor market conditions and marriage dynamics for Turkish women.

## 2. Theory and Literature

Since Durkheim, suicide is attributed to social changes in which some groups become more prone to the transformation process (Wray et al., 2011). As an engine of social change, immigration's effect on suicides has attracted much attention from the literature. However, studies mainly focus on the suicides of immigrants, arguing that social exclusion and integration problems lead to higher suicide rates among immigrants (Wadsworth & Kubrin, 2007; Mirsky et al., 2011). That immigration can also increase the suicide of natives as well as immigrants for the same reasons is overlooked. For example, exclusion from the workforce is one of the most typical ones faced by natives in intensive immigration waves. Unemployment is a strongly predicts of suicides (Blakely et al., 2003; Barr et al., 2012; Milner et al., 2013; Denney et al., 2009; Kubrin & Wadsworth, 2009; Recker & Moore, 2016). Besides, immigration may induce significant changes in the host country's marriage dynamics, inducing a shift in the female/male sex ratio, especially when the majority of immigrants are male or female. A change in the female/male sex ratio may trigger suicides of worsened gender (Kuroki, 2014). The new marriage dynamics may start conflicts between spouses by altering outside options of husbands or wives. And there is a high association between marriage conflicts and suicide rates (Anderson & Genicot, 2015; Stevenson & Wolfers, 2006). These conflicts may result in family disruption, divorce, or separation, which are other risk factors for suicides (Denney et al., 2009; Kubrin & Wadsworth, 2009; Recker & Moore, 2016). Denney (2010) shows that disruption of family formation is also associated with higher suicide risk.

Borjas et al. (1996) show that immigration-related labor supply shocks are associated with lower native wages and that native migration as a response to immigration into a specific area leads to an underestimation of this effect on the wages. According to Edo (2015), in France, immigration does not decrease the wages of natives who are subject to inflexible employment contracts but harms their employment. On the other hand, natives with flexible wage contracts also experience wage reductions due to competition with immigrants. Borjas (2006) demonstrates that the employment displacement and wage effects of immigration are relieved by native outflows from refugee-intensive regions to the other regions. Borjas (2003) reveals that a 1 percent increase in wages is associated with a 0.3 percent reduction in the wage of natives.

The possible displacement effects of immigration are also seen in the case of the Syrian influx to Türkiye. Del Carpio & Wagner (2015) shows that the Syrian influx led to the displacement of some disadvantaged groups, such as agricultural, informal, lower educated, and female labor from employment in Türkiye. In parallel, Ceritoglu et al. (2017) suggests that the more vulnerable parts of the country, including women, are hit most by this influx. The displacement of natives with immigrants working for lower wages is so high that it reduces consumer prices in the country (Balkan & Tumen, 2016). Furthermore, Erdoğan (2014) represents a comprehensive discussion on social acceptance and integration of those refugees.

The Syrian influx changed the marriage dynamics in Türkiye against women in Türkiye by promoting a polygamous lifestyle only for men, especially in refugee intensive Turkish residences. In most Turkish-Syrian marriages, the groom is Turkish, and the bride is Syrian. A marriage of a Turkish woman to a Syrian man is exceptional (Doğaner, 2021). Çelik & Vural



Elitaş, Z. (2023). The Impact of Immigration on Native Suicides: An Empirical Evidence from Türkiye. *Fiscoeconomia*, 7(3), 2010-2024. Doi: 10.25295/fsecon.1313427

---

(2018) suggests that the Syrian influx increased the second marriages of Turkish men who officially married a native woman in Kilis province in Türkiye. Çelik & Vural (2018) show how this process is depressive for senior native wives in the region. Aksu (2018) shows that the Syrian influx increased the number of illegal marriages between married Turkish men and Syrian women. Besides, a significant number of these brides are too young. Aksu (2018) demonstrates that it is depressing for Turkish women to be forced by men to accept the patriarchal polygamy in the refugee-intensive regions.

### 3. Data and Empirical Approach

#### 3.1. Data

This study uses the data from 81 provinces of Türkiye from 2009 to 2016. The provincial shares of Syrian refugees are taken from the reports Ministry of Interior<sup>2</sup>. Turkish Statistical Office (TurkStat) provides the local number of male, female, and total suicides as publicly open data. We exclude the year 2012 from the estimations since the number of refugees is deficient but non-negligible. Therefore, the period from 2009 and 2016 excluding 2012, is focused on in the analyses.

Table 1 shows the average province-level crude suicide rates. Türkiye's yearly average of crude suicide rate from 2009 to 2016 is 4.3. According to the table, 28 percent of average suicides are committed by females, on average. Tunceli is the province with the highest average suicide rate in the period. Ardahan and Aydin follow Tunceli. Tunceli and Ardahan is from the eastern part of the country, while Aydin is from the western part and has a highly industrialized economy. Among the three most developed provinces, İstanbul, Ankara, and İzmir, İzmir is the leading province in the overall suicide rates.

---

<sup>2</sup> See <https://www.goc.gov.tr/faaliyet-raporlari> and <https://www.afad.gov.tr/suriye-raporlari> for the province-level Syrian refugee shares in Türkiye.

**Table 1: The Province-Level Crude Suicide Rates in Türkiye**

Province Name	Total	Male	Female	Province Name	Total	Male	Female
Adana	4.65	3.26	1.39	İzmir	4.86	3.81	1.06
Adıyaman	3.58	2.41	1.17	K. Maraş	3.35	2.14	1.20
Afyon	4.77	3.33	1.44	Karabük	3.67	2.72	0.95
Ağrı	4.36	2.22	2.15	Karaman	5.85	4.63	1.22
Aksaray	3.24	2.32	0.92	Kars	5.63	3.76	1.88
Amasya	3.35	2.70	0.65	Kastamonu	4.99	3.73	1.26
Ankara	3.89	2.97	0.92	Kayseri	4.70	3.30	1.40
Antalya	4.84	3.52	1.32	Kilis	3.63	2.46	1.17
Ardahan	7.85	5.11	2.74	Kırıkkale	3.68	3.00	0.68
Artvin	3.20	2.23	0.97	Kırklareli	4.69	3.65	1.04
Aydın	7.06	5.34	1.72	Kırşehir	4.59	3.47	1.12
Balıkesir	4.91	3.75	1.16	Kocaeli	3.12	2.47	0.65
Bartın	4.29	2.77	1.52	Konya	3.76	2.61	1.15
Batman	3.69	2.17	1.51	Kütahya	4.21	3.12	1.09
Bayburt	2.27	1.45	0.82	Malatya	3.89	2.93	0.97
Bilecik	5.68	4.57	1.11	Manisa	4.01	2.99	1.02
Bingöl	5.93	3.84	2.08	Mardin	2.96	1.86	1.10
Bitlis	3.20	1.37	1.83	Muğla	5.74	4.41	1.33
Bolu	3.93	3.22	0.71	Muş	5.76	2.99	2.77
Burdur	6.29	4.34	1.95	Nevşehir	4.16	3.20	0.96
Bursa	4.23	3.42	0.81	Niğde	4.84	3.71	1.13
Çanakkale	5.29	4.03	1.26	Ordu	3.45	2.45	1.00
Çankırı	2.58	2.10	0.48	Osmaniye	3.95	2.74	1.21
Corum	4.70	3.53	1.17	Rize	2.43	2.04	0.38
Denizli	5.94	4.57	1.36	Sakarya	2.78	2.21	0.57
Diyarbakır	4.48	2.74	1.74	Samsun	3.53	2.68	0.86
Düzce	3.03	2.20	0.83	Şanlıurfa	2.98	1.67	1.30
Edirne	6.18	5.14	1.04	Siirt	4.11	2.43	1.69
Elazığ	5.32	3.38	1.93	Sinop	4.79	3.56	1.23
Erzincan	3.91	2.84	1.07	Şırnak	3.54	2.26	1.28
Erzurum	3.53	2.29	1.23	Sivas	3.65	2.64	1.02
Eskişehir	5.72	4.32	1.40	Tekirdağ	4.29	3.39	0.91
Gaziantep	3.78	2.64	1.14	Tokat	3.70	2.72	0.99
Giresun	2.97	2.23	0.73	Trabzon	3.64	2.35	1.29
Gümüşhane	1.95	1.42	0.53	Tunceli	9.51	7.40	2.11
Hakkâri	3.40	2.25	1.15	Uşak	5.51	4.05	1.46
Hatay	2.75	2.16	0.59	Van	4.23	2.20	2.03

İçel	4.92	3.40	1.52	Yalova	3.34	2.47	0.87
İğdır	4.64	3.51	1.13	Yozgat	2.67	1.93	0.74
İsparta	4.83	3.47	1.37	Zonguldak	4.98	3.50	1.48
İstanbul	3.22	2.47	0.75	<b>Türkiye</b>	4.29	3.07	1.22

**Notes:** The number of suicides for 81 provinces in Türkiye is derived from TurkStat for t period between 2009 and 2016. The total numbers of suicides in these 8 years are presented.

### 3.2. Empirical Approach

This study uses the IV estimation methodology to estimate the effect of the provincial refugee share on the provincial suicides. After the initial days of immigration, when refugees stayed at camps in the Turkish provinces near the Syrian border, they started to select where to live in Türkiye. Hence, the refugee province becomes endogenous with the provinces' socio-economic structures, which are highly associated with suicides in provinces. The provincial refugee shares are instrumented with a variable constructed by following Del Carpio & Wagner (2015) and Tumen (2019) to account for the self-selection of the refugees to the Turkish areas; otherwise, which can lead to biased estimates. The year 2012 is excluded from the estimations since, in this year, the number of refugees was relatively small, and exact locations were not yet announced. Thus, the analysis covers the years from 2009 to 2016, excluding 2012.

$$S_{p,t} = \alpha_0 + \alpha_1 X_{p,t} + \alpha_2 I_{p,t} + f_p + f_t + (f_p x f_t) + \varepsilon_{p,t} \quad (1)$$

$$Y_{p,t} = \beta_0 + \beta_1 X_{p,t} + \beta_2 S_{p,t} + f_p + f_t + (f_p x f_t) + \epsilon_{p,t} \quad (2)$$

Equations (1) and (2) demonstrate the econometric specification used in the study. Equation (1) is the first stage estimation of the standard IV-2SLS procedure. In this equation, S denotes the province-level share of the Syrian refugees, X represents control variables including GDP, Population, and the share of citizens whose mother language is Arabic in the province in 1965. Arabic-speaking population share from 1965 is used as a control variable since the refugees with a higher Arabic population can attract more refugees. I represents the instrument used in the first stage of estimation.

For the instrument and choice of control variables, we follow Tumen (2019), which uses the strategy of Del Carpio & Wagner (2015), which constructs a distance-population based instrument for 26 NUTS-2 regions for Türkiye. Tumen exploits the same approach but expands it for 81 NUTS3 level provinces for Türkiye. This instrument is calculated by multiplying the number of refugees in Türkiye by a summation of the series. The series is a function of the distances of the Turkish provinces to the 14 Syrian governorates and their population shares in Syria. The equation below shows the derivation of the instrument. I denotes the instrument. Subscripts p and t specify the corresponding Turkish province and the year, orderly.  $P_t$  shows the number of refugees in Türkiye in the given year.  $S_i$  shows the share of Syrians in the governorate i, the maximum value of which is equal to 14.  $D_{p,i}$  shows the shortest distance of the Turkish province to the given governorate among 14 Syrian governorates.

$$I_{p,t} = P_t \sum_{i=1}^{14} s_i (d_{p,i})^{-1} \quad (3)$$

Equation (2) represents the second stage estimation of the effect of the provincial refugee share on suicides. The subscripts  $p$ , and  $t$  denote the province and year, orderly. Türkiye uses the NUTS classification system for its regions and provinces. Türkiye has 81 provinces, and these provinces are used to create provincial fixed effects. NUTS-2 level aggregates these 81 provinces into 26 regions by combining neighboring provinces exploiting similar characteristics. This level is used to construct region-year interaction to account for region-specific changes that occurred in time, shown by  $(f_p x f_t)$ .  $Y$  denotes the corresponding suicide variable, two forms of which are used in this study. These forms are the log number of province-level suicides and crude suicide rates by provinces. In the estimations, two specifications are used. The first is the basic estimation without any controls, and the second estimation is extended to include all controls. When the dependent variable is crude suicide rate, the population level of the province is not included since the dependent variable itself is a ratio of suicides to the province's population. In all specifications, standard errors are clustered at the province level. Diversification of dependent variables and model specifications prevent us from depending on any estimation, which can be sensitive to the choice of the dependent variable.

#### 4. Estimation Results

Table 2 shows the OLS estimation results of the effect of the province-level refugee share on the overall, male, and female crude suicide rates. A one-percentage-point increase in the refugee share increases the overall crude suicide rate in the province by 2.2 percentage points, female crude suicide rate by 1.23 percentage points, and male crude suicide rate by almost 1 percentage point according to the basic estimation. Extended estimation enriched by the additional controls slightly increases the coefficient on female suicides to 1.38 and decreases the coefficient on male suicides to 0.85. Table 3 shows that the results on crude suicide rates are supported by the estimations on the logarithm of the number of suicides. The only exception is that the coefficient on male suicides becomes insignificant when the log number of suicides is used as a dependent variable.



**Table 2: OLS Estimation of Immigration on the Crude Suicide Rates**

	<u>Specification1</u>			<u>Specification2</u>		
	Total	Females	Males	Total	Females	Males
Refugee Share	2.231 (0.542)***	1.235 (0.455)***	0.996 (0.400)**	2.231 (0.442)	1.380 (0.524)**	0.851 (0.372)**
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
YearXRegion interactions	Yes	Yes	Yes	Yes	Yes	Yes
GDP	No	No	No	Yes	Yes	Yes
Population	No	No	No	No	No	No
Arabic Population	No	No	No	Yes	Yes	Yes
# of observations	567	567	567	567	567	567
# of clusters	81	81	81	81	81	81

**Notes:** The dependent variables are the crude suicide rates of total, male, and female populations. The covered years in the estimation are 2009, 2010, 2011, 2013, 2014, 2015, and 2016. We cluster the standard errors in the NUTS-3 province level. The stars show the significance levels as follows: \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

However, it should be noted that one must be very careful in evaluating an OLS estimate in this case since it can pose a bias, which can stem from the location choice of the refugees among the Turkish provinces. If their location choices are endogenous with the dependent variable, the estimated coefficient will be biased. An IV estimation is conducted to account for this bias and to get reliable estimates. Yet, OLS estimates are still important to interpret the direction of self-selection of the Syrian immigrants, which can be derived by comparing the OLS and IV estimates.

**Table 3: OLS Estimation of Immigration on the Log Number of Suicides**

	<u>Specification I</u>			<u>Specification II</u>		
	Total	Females	Males	Total	Females	Males
Refugee Share	0.546 (0.173)***	0.958 (0.302)***	0.142 (0.250)	0.547 (0.143)***	1.173 (0.249)***	0.080 (0.283)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
YearXRegion interactions	Yes	Yes	Yes	Yes	Yes	Yes
GDP	No	No	No	Yes	Yes	Yes
Population	No	No	No	Yes	Yes	Yes
Arabic Population	No	No	No	Yes	Yes	Yes
# of observations	567	567	567	567	567	567
# of clusters	81	81	81	81	81	81

**Notes:** The dependent variables are the logs of the province-level numbers of total, male, and female suicides. The covered years in the estimation are 2009, 2010, 2011, 2013, 2014, 2015, and 2016. We cluster the standard errors in the NUTS-3 province level. The stars show the significance levels as follows: \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

The IV estimations show that the provincial refugee share does not significantly affect the total and male suicides. This result is not sensitive to the dependent variable choice or the model specification. On the other hand, refugee flows significantly increase female suicides. The effect size shows slight changes from basic specifications to extended specifications. Table 4 shows that a one-percentage-point increase in the refugee share increases the female suicide rate by 1.35 percentage points, according to the basic specification. In the extended specification, the effect decreases to 1.31 percentage points.

**Table 4: IV Estimation of Immigration on the Crude Suicide Rates**

	<u>Specification I</u>			<u>Specification II</u>		
	Total	Females	Males	Total	Females	Males
Refugee Share	1.179 (1.314)	1.357 (0.404)***	-0.178 (1.071)	0.785 (1.421)	1.310 (0.403)***	-0.524 (1.158)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
YearXRegion interactions	Yes	Yes	Yes	Yes	Yes	Yes
GDP	No	No	No	Yes	Yes	Yes
Population	No	No	No	No	No	No
Arabic Population	No	No	No	Yes	Yes	Yes
# of observations	567	567	567	567	567	567
# of clusters	81	81	81	81	81	81
<i>Ftest</i>	6.41	6.41	6.41	8.1	8.1	8.1

**Notes:** The results from second stage estimation of IV-2SLS procedure, with the F-statistic from the first stage. The dependent variables are the crude suicide rates of total, male, and female population. The estimated years are 2009, 2010, 2011, 2013, 2014, 2015, and 2016. We cluster the standard errors in the NUTS-3 province level. The stars show the significance levels as follows: \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

Table 5 shows the estimation results of the model with the log number of suicides as the dependent variable. A one percentage point increase in the provincial refugee share is associated with a 0.956 log point increase in the female suicides, according to the essential estimation. The effect increases to 1.119 log points in the extended analysis, in which a new set of controls, GDP, population, and the share of the Arabic population in the province, are included. Since the dependent variable is in logarithmic form, interpretation of the parameter requires an inverse logarithmic transformation. According to the basic model, if the refugee share increases by 10 percentage points, the number of suicides increases by 9.6 percent.

On the other hand, a 1% increase in the refugee share increases the female suicides by 1.1 percent, according to the comprehensive estimation. Thus, the increases in refugee share and female suicides are close to one-to-one, supporting the estimations of the crude suicide rates. The new set of controls improves the F statistic of the IV estimation from 6.41 to 8.40 and the statistical significance level of the parameter of interest.

**Table 5: IV Estimation of Immigration on the Log Number of Suicides**

	<u>Specification1</u>			<u>Specification2</u>		
	Total	Females	Males	Total	Females	Males
Refugee Share	2.231 (0.542)***	1.235 (0.455)***	0.996 (0.400)**	2.231 (0.442)	1.380 (0.524)**	0.851 (0.372)**
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
YearXRegion interactions	Yes	Yes	Yes	Yes	Yes	Yes
GDP	No	No	No	Yes	Yes	Yes
Population	No	No	No	No	No	No
Arabic Population	No	No	No	Yes	Yes	Yes
# of observations	567	567	567	567	567	567
# of clusters	81	81	81	81	81	81

**Notes:** The results from second stage estimation of IV-2SLS procedure, with the F-statistic from the first stage. The dependent variables are the logs of the province-level numbers of total, male, and female suicides. The covered years in the estimation are 2009, 2010, 2011, 2013, 2014, 2015, and 2016. We cluster the standard errors at the NUTS-3 province level. The stars show the significance levels as follows: \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

A comparison between the IV and OLS estimates shows that the OLS's significant coefficient on total suicides becomes insignificant in the IV estimation. This change indicates that immigrants self-select themselves into the provinces where the suicides are already higher. It is not puzzling once the increased association of socio-economic development with suicide rates and immigrants' choice to live in these are considered. The upward bias in effect on total suicides is corrected in the IV estimation. On the other hand, OLS estimation gives a significant coefficient for female suicides, which remains significant in the IV estimation, but with slightly lower coefficients in the IV estimates.

The results are consistent with the studies in the literature, which show that the refugee influx to the country excluded Turkish women from employment and changed marriage dynamics against them. The results call for a detailed investigation of how much the labor market and marriage market are responsible for the results.

## 5. Conclusion

This study shows that the Syrian influx to Türkiye has not increased overall and male suicides. On the other hand, the findings show that the Syrian refugee influx to Türkiye increased suicide among Turkish women, which constitutes a group influenced more by this immigration in terms of the consequences of the labor market and marriage market. These problems existed before the immigration waves in the form of low participation and employment rates. Plural marriages of Turkish men were common in eastern parts of the country even before migration waves. However, some ever-existing problems of women in Türkiye have been



Elitaş, Z. (2023). The Impact of Immigration on Native Suicides: An Empirical Evidence from Türkiye. *Fiscoeconomia*, 7(3), 2010-2024. Doi: 10.25295/fsecon.1313427

---

aggravated since the Syrian refugee flow. Unfortunately, the raised problems seem to have increased suicides, according to the findings of the study. Therefore, the measures against female unemployment and illegal plural marriages should be discussed by governmental and non-governmental institutions urgently. Female empowerment policies targeting the labor market may be effective in the medium or long term. Institutional measures against illegal marriages in the region may protect Turkish and Syrian women from male polygamy, even in the short run. There are also lessons to be drawn for prospective host countries from the experience of Türkiye in terms of regional settlement policies. Specifically, regional characteristics need to be investigated in detail in the planning of the refugee settlements, not only for immigrants but also for natives, to ensure a healthy adaptation process. Studies from different country experiences show that when migrants and natives share similar outside options and cultural norms, and more generally similar behaviors, immigration no longer has detrimental effects. Therefore, economic policies should target to design those outside options in favor of both the natives and the immigrants. Such policies encouraging the cultural integration of these two groups are expected to decrease the negative effect of immigration on native outcomes.<sup>3</sup> Future research might focus on addressing the specific policy recommendations and modelling them. It is important to estimate the effectiveness of those policies quantitatively in order to develop a deeper understanding of quantitative priors for the likelihood of success of suggested policies. For this sake, future studies might conduct subjective well-being analyses following different country examples.

## References

- Aksu, K. (2018). War Hits the Women: Marriage as Syrian Women's Coping Mechanism and Its Impact on Turkish Women. *Electronic Turkish Studies*, 13.
- Anderson, S. & Genicot, G. (2015). Suicide and Property Rights in India. *Journal of Development Economics*, 114, 64-78.
- Balkan, B. & Tumen, S. (2016). Immigration and Prices: Quasi-Experimental Evidence from Syrian Refugees in Turkey. *Journal of Population Economics*, 29, 657-686.
- Barr, B., Taylor-Robinson, D., Scott-Samuel, A., McKee, M. & Stuckler, D. (2012). Suicides Associated with the 2008-10 Economic Recession in England: Time Trend Analysis. *BMJ*, 345, e5142.
- Blakely, T. A., Collings C. S. & Atkinson J. (2003). Unemployment and Suicide: Evidence for a Causal Association?. *Journal of Epidemiology & Community Health*, 57, 594-600.
- Borjas, G. J. (2003). The Labor Demand Curve is Downward Sloping: Reexamining the Impact of Immigration on the Labor Market. *The Quarterly Journal of Economics*, 118, 1335-1374.
- Borjas, G. J. (2006). Native Internal Migration and the Labor Market Impact of Immigration. *Journal of Human Resources*, 41, 221-258.

---

<sup>3</sup> See for example Edo (2015) and Shaw, Dorling & Smith (2006).



Elitaş, Z. (2023). The Impact of Immigration on Native Suicides: An Empirical Evidence from Türkiye. *Fiscoeconomia*, 7(3), 2010-2024. Doi: 10.25295/fsecon.1313427

- Borjas, G. J., Freeman R. B. & Katz L. F. (1996). Searching for the Effect of Immigration on the Labor Market. *The American Economic Review*, 86, 246-251.
- Çelik, I. A. & Vural, F. (2018). Suriyeli Mülteci Kadınların Kuma Dramı: Kilis İli Örneği. *OPUS Uluslararası Toplum Araştırmaları Dergisi*, 8, 341-382.
- Ceritoglu, E., Gurcihan Yunculer H. B., Torun, H. & Tumen, S. (2017). The Impact of Syrian Refugees on Natives' Labor Market Outcomes in Turkey: Evidence from a Quasi-Experimental Design. *IZA Journal of Labor Policy*, 6, 1-28.
- Del Carpio, X. & Wagner, M. (2015). *The Impact of Syrian Refugees on the Turkish Labor Market*. Unpublished Manuscript, World Bank. Report No: WPS7402, 1.
- Denney, J. T. (2010). Family and Household Formations and Suicide in the United States. *Journal of Marriage and Family*, 72, 202-213.
- Denney, J. T., Rogers R. G., Krueger P. M. & Wadsworth, T. (2009). Adult Suicide Mortality in the United States: Marital Status, Family Size, Socioeconomic Status, and Differences by Sex. *Social Science Quarterly*, 90, 1167-1185.
- Doğaner, A. (2021). Kültürel Bir Olgu Olarak Osmaniye'de Suriye'den Göç Edenlerle Evlilikler. *Motif Akademi Halkbilimi Dergisi*, 14, 24-38.
- Erdoğan, M. M. (2014). Syrians in Turkey: Social Acceptance and Integration. *HUGO Executive Summary and Report*, November 2014.
- Kubrin, C. E. & Wadsworth, T. (2009). Explaining Suicide Among Blacks and Whites: How Socioeconomic Factors and Gun Availability Affect Race-specific Suicide Rates. *Social Science Quarterly*, 90, 1203-1227.
- Kuroki, M. (2014). The Effect of Sex Ratios on Suicide. *Health Economics*, 23, 1502-1510.
- Milner, A., Page A. & LaMontagne, A. D. (2013). Long-term Unemployment and Suicide: A Systematic Review and Meta-Analysis. *PloS One*, 8, e51333.
- Mirsky, J., Kohn R., Dolberg P. & Levav, I. (2011). Suicidal Behavior Among Immigrants. *Social Psychiatry and Psychiatric Epidemiology*, 46, 1133-1141.
- Recker, N. L. & Moore, M. D. (2016). Durkheim, Social Capital, and Suicide Rates Across US Counties. *Health Sociology Review*, 25, 78-91.
- Shaw, M., Dorling, D. & Smith, G. D. (2006). Poverty, Social Exclusion, and Minorities. M. Marmot & R. G. Wilkinson (Ed.), *Social Determinants of Health*. Oxford University Pres, Oxford.
- Stevenson, B. & Wolfers, J. (2006). Bargaining in the Shadow of the Law: Divorce Laws and Family Distress. *The Quarterly Journal of Economics*, 121, 267-288.
- Tumen, S. (2019). Refugees and 'Native Flight' from Public to Private Schools. *Economics Letters*, 181, 154-159.
- Wadsworth, T. & Kubrin, C. E. (2007). Hispanic Suicide in US Metropolitan Areas: Examining the Effects of Immigration, Assimilation, Affluence, and Disadvantage. *American Journal of Sociology*, 112, 1848-1885.



Elitaş, Z. (2023). The Impact of Immigration on Native Suicides: An Empirical Evidence from Türkiye. *Fiscaeconomia*, 7(3), 2010-2024. Doi: 10.25295/fsecon.1313427

---

Wray, M., Colen, C. & Pescosolido, B. (2011). The Sociology of Suicide. *Annual Review of Sociology*, 37, 505-528.

---

**Ethical Approval:** The author declares that ethical rules are followed in all preparation processes of this study. In the case of a contrary situation, Fiscaeconomia has no responsibility, and all responsibility belongs to the study's author.