The impact of the Syrian Refugee Crisis on the health access in Turkey: A synthetic control analysis

Hüseyin İkizler
Presidency of Strategy and Budget, Turkey
huseyin.ikizler@sbb.gov.tr

Aslı Dolu
Izmir Bakırçay University, Turkey
asli.dolu@bakircay.edu.tr

Emre Yüksel
Presidency of Strategy and Budget, Turkey
emre.yuksel@sbb.gov.tr

Abstract:

One of the most critical determinants of a healthy life is the level of accessibility to health services when needed. The literature defines the unmet need for healthcare services as "whether the individual (in the last twelve months) cannot apply to a doctor despite the need for medical examination or treatment." One of the main reasons to cause an unmet health care need is the expensive healthcare cost due to increased demand. Mainly, there are increases in demand due to reasons such as population growth and migration movements. Turkey experienced a large-scale migration as a consequence of the Syrian civil war. Based on the Disaster and Emergency Management Agency figures, as of 2018, Turkey is home to about 3.4 million Syrian refugees under temporary protection status. İkizler et al. (2020) point out that this large-scale migration results in a nearly 6.3% increase in unmet healthcare need at the beginning of the refugee crisis. However, the effect weakens gradually. This paper aims to support the results of İkizler et al. (2020) by exploiting the synthetic control method, and OECD's and EUROSTAT's country-level data set related to health care. Note that Turkey is an outlier country in terms of unmet healthcare needs, especially in the 2009-2010 period. Although this makes the synthetic series slightly different from Turkey's series, the results provide intuitive information.

TÜRKİYE
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1. Motivation:

One of the most critical determinants of a healthy life is the level of accessibility to health services when needed. However, some groups of individuals may encounter barriers to health care. The "unmet healthcare needs" (UHCN) is considered a good proxy that reflects healthcare access. UHCN is defined as an individual's inability to refer to a doctor if s/he needs healthcare during the last twelve months (Levesque et al., 2008; Sibley and Glazier, 2009).

Health access becomes an important issue for the countries that especially faced a mass refugee influx due to Syria's civil war, which began in the early months of spring 2011. During the war, millions of people became forcibly displaced, many to neighboring countries such as Turkey, Iraq, Lebanon, Jordan, and Egypt. By the end of 2019, 6.6 million Syrians had become refugees outside of Syria, according to the UNHCR. Approximately 3.4 million Syrian refugees live in non-campaign settlements in various cities in 2018, which is nearly 95 percent of the total number of Syrian refugees living in Turkey.[1]

A growing literature analyzes unmet health care needs (Sibley and Glazier, 2009; Connoly and Wren, 2017; Chongthawonsatid, 2021). There also exist studies that identify the determinants of the unmet health care needs, specifically of older people (Joo et al., 2020; Ahn et al., 2013), of migrants (Jang et al., 2018; Chowdhury et al., 2021), and of women (Vuillermoz et al., 2017; Chae and Kim, 2020).

However, little is known about how refugees' mass influx impacts the local population's unmet health needs. Our central hypothesis is that an unanticipated increase in population may escalate UHCN through a possible increase in health demand. The closest study to our paper is that of İkizler et al. (2020), who find that mass refugee influx increases the ratio of the UHCN arising mainly from systemic reasons, especially at the beginning of the migration crisis. İkizler et al. (2020) exploit regional differences to analyze the large-scale migration impact using a differences-in-difference strategy. Unlike İkizler et al. (2020), we use the synthetic control method, and OECD's and EUROSTAT's country-level data set related to health care.

Note that Turkey is an outlier country in terms of unmet healthcare needs, especially in the 2009-2010 period. Although this makes the synthetic series slightly different from Turkey's series, the results may provide intuitive knowledge. Using a synthetic control method, we could not find any statistically significant impact of refugees' mass influx on the UHCN of the native-born population. The result suggests that this refugee impact did not spread to the country-level. The significant refugee impact on UHCN that İkizler et al. (2020) find can be considered regional.

The outline of the paper is as follows: We begin with our data sets. In Section 3, we introduce our estimation approach. We present our results in Section 4, and then we conclude.

2. Data:

In this study, the primary data set is The European Union Statistics on Income and Living Conditions (EU-SILC) database that provides timely and comparable statistics on income, poverty, social exclusion, and living conditions. We use data for a health condition, health problem, health limitation, and housing condition for the period 2008-2019. From EUROSTAT, we also obtain macroeconomic measures to set-up synthetic control. The variables that we introduce in our model are based on Andersen Healthcare Utilization Model (1968).[2]

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[1] For detail information, see İkizler et al. (2020).
[2] For detail information, see İkizler et al. (2020).

The followings are the main reasons for the unmet healthcare need:

1. Financial difficulty/Could not afford to (too expensive or not covered by insurance fund),
2. Could not take time because of work, care for children or others,
3. Too far to travel to healthcare organizations/no means of transportation,
4. Fear of doctor/hospitals/examination/treatment,
5. Giving too late time for an appointment,
6. Wanted to wait and see if the problem got better on its own,
7. Did not know any good doctor or specialist and
8. Other reasons.

The literature divides these reasons into three categories: availability of healthcare, accessibility, and acceptability of available health care. Availability of health care refers to long waiting times; service is not available when needed or is not available in the area. Unmet needs due to accessibility are related to cost or transport issues. The remaining are related to the individuals' preferences (Sibley and Glazier, 2009). In this study, we consider only unmet healthcare needs due to systematic reasons because governments cannot regulate the UHCN due to personal reasons.

3. Methodology:

The study aims to estimate the difference between the observed unmet healthcare needs (UHCN) in Turkey[3] after 2012 compared to what the score would have been without the Syrian refugees' surge. To determine the impact of the mass influx of refugees on the UHCN of the indigenous population, we use the Synthetic Control Method (SCM) developed by Abadie and Gardeazabal (2003) and Abadie et al. (2010, 2015). Synthetic control is a data-driven way of finding the counterfactual (i.e., how the trajectory of outcome variables would evolve had the structural reform not been implemented) in generalized Difference-in-Differences (DID) estimation (Adhikari et al., 2018; Nowrasteh et al., 2020).

We estimate a counterfactual UHCN for countries in the absence of the 2012 refugee shock as a weighted average of similar countries to construct a synthetic control. SCM determines these weights by matching countries that share similar observable characteristics with Turkey. For a given set of weights, the method estimates the refugee surge's impact as the difference, or gap, between Real Turkey's UHCN and Synthetic Turkey's UHCN.

Using the notation of Abadie et al. (2010), we first describe the SCM for settings when the intervention group consists of only a single unit. To describe the process, let Y_j be the sample mean of an outcome of interest for country j. The estimated intervention effect α for Turkey ($j = 1$) is constructed as a weighted average of $J + 1$ donor countries of the form:

$$\alpha = Y_1 - \sum_{j=2}^{J+1} w_j^* Y_j$$

This procedure considers a vector of weights $W = (w_2, \dots, w_{j+1})$, where j indicates units in the control countries, such that each weight is non-negativity for all donor units ($1 \geq w_j \geq 0$) and $w_2 + \dots + w_{j+1} = 1$. Each choice of W gives a set of weights and characterizes a possible synthetic control.

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[3] We also applied the Synthetic Control Model to Sweden and Finland.

A Synthetic Turkey must be constructed from a donor pool of comparable countries to avoid interpolation bias from comparing countries with vastly different characteristics. SCM hence produces a figure with two-time series, one of the treated country (Turkey) and one for the synthetic control. In the empirical results section, we show these two lines; for UHCN, we visually examine the post-2012 differences to assess whether they are large relative to the pre-event differences (2008-2019).

4. Empirical Results:

After the Syrian civil war that broke out in 2011, Turkey is one of the most affected countries by refugees' migration. In our estimation methodology, we use these countries individually to constitute the treatment group. The rest of the 33 countries establish the synthetic control unit.

Figure 1 presents the actual "unmet health care needs" of Turkey. Turkey is an outlier country in terms of unmet healthcare needs, especially in the 2009-2010 period, so the synthetic series is slightly different from the real Turkey series. Even so, this model provides us with intuitive knowledge about the impact of the mass influx of refugees on Turkey's UHCN. According to this result, the mass influx of refugees does not significantly affect the UHCN of the native-born population.

Even though we control for the 2009 crisis, we observe that the synthetic values of the UHCN for Turkey do not coincide well, especially for the period 2009-2010. The results suggest that the impact of the mass influx of refugees on Turkey's UHCN ceases to exist, wiped away mostly by the government's increase in health investment.

Figure 1: Treated and Synthetic Values of the UHCN for Turkey
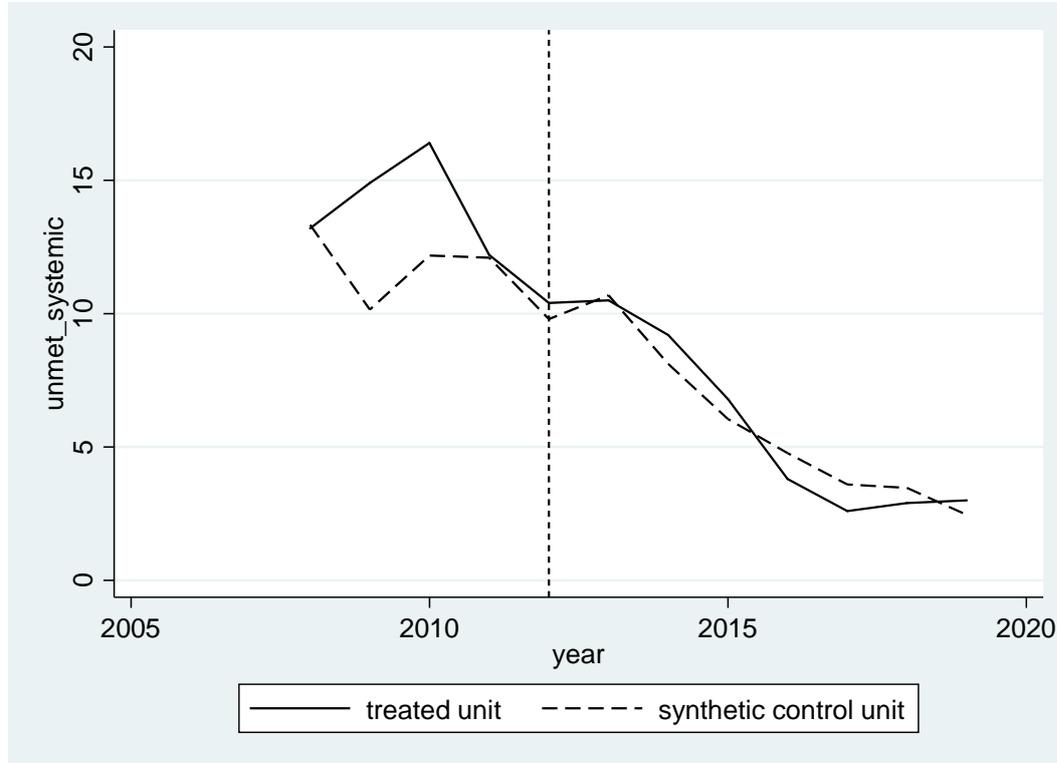

Table 1 demonstrates the synthetic and treated values of the variables applied in the synthetic control model. These values must be close to each other in terms of the success of the

recognized model. While the synthetic model is formed, the values of unmet healthcare needs for some years are also included in the control group.

Table 1: Treated and synthetic values for Turkey

	Treated	**Synthetic**
Unmet healthcare needs (2008)	13.2	13.4
Unmet healthcare needs (2009)	14.9	10.2
Unmet healthcare needs (2011)	12.2	12.0
Education Level	71.7	18.3
GDP per capita	51.8	48.5
Health condition-bad	11.5	11.4
Health condition-fair	20.9	27.1
Health condition-good	54.6	45.7
Health condition-very good	11.2	12.8
Health Problem	30.2	25.7
Household Type	48.5	49.5
Housing Problems	30.7	22.7
Labor intensity of household	12.0	8.8
Health Limitation-severe	7.8	5.3
Health Limitation-some	19.5	16.6

Sweden and Finland are at the top of European countries that suffer the most mass influx of refugees compared to their population (UNHCR, 2016). We also present the impact of Syrian refugees' mass influx on Sweden and Finland's unmet health care needs in Appendix. We notice that for those countries, the downward trend before 2012 does not remain afterward. In line with our expectations, Syrian refugees' mass influx increases the UHCN in these countries, especially after 2015.

5. Conclusion

This paper has examined the impact of the mass refugee influx on Turkey's UHCN by exploiting the synthetic control method. We have tested the hypothesis that the mass refugee influx increases the ratio of the UHCN arising mainly from systemic reasons.

Although the synthetic values of the UHCN for Turkey do not coincide well, especially for the period 2009-2010, the model provides us with intuitive knowledge about the impact of the mass influx of refugees on Turkey's UHCN. The results suggest that the impact of refugees' mass influx on Turkey's UHCN ceases to exist. This result confirms that the Health Transformation Program's health investments are appropriate to wipe away the possible impact of refugees' mass influx.

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Appendix:

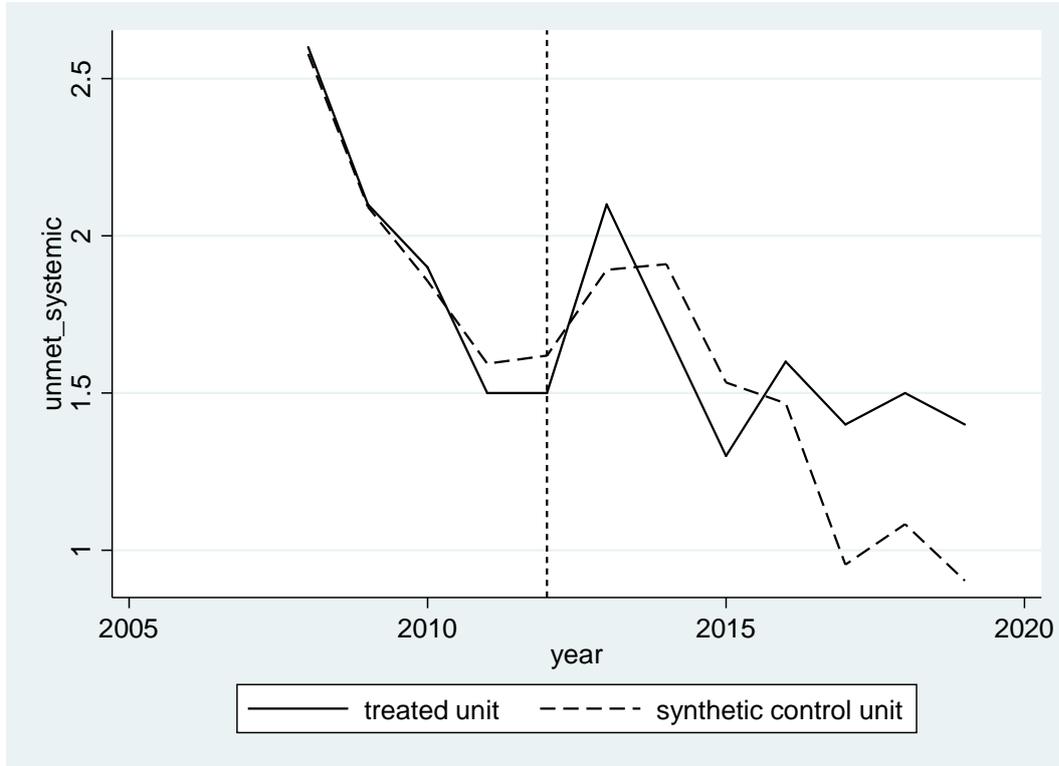**Figure A1: Treated and Synthetic Values of the UHCN for Sweden**

Figure A2: Treated and Synthetic Values of the UHCN for Finland