The Impact of Living Arrangements (In-Camp versus Out-of-Camp) on the Quality of Life

Case Study of Syrian Refugees in Jordan

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Abstract

Refugee camps are believed to represent safe havens for forcibly displaced persons, but studies looking at refugees' quality of life in camps are few. This paper explores how Syrian refugees' quality of life in camps in Jordan differs from that of Syrian refugees residing outside camps. Using data from the Syrian Refugee and Host Community Survey, the study measures life quality through indicators of subjective life experience and material living conditions. Data are analyzed using advanced statistical methods (difference-in-difference and propensity score matching) to control for selection bias that could skew estimates of causal effects. The results show that refugees living outside camps enjoy a higher quality of life than those living in camps. Out-of-camp refugees are less likely to live below the national abject poverty line or in overcrowded houses. They possess more household assets, are more satisfied with access to services, and report higher life satisfaction. Refugee camps appear to serve as safe havens for refugees who lack the capability to exit camps, and camps could be redundant for those who possess adequate capabilities and freedom to function in the urban and peri-urban areas.

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1. Introduction

More than 26 million people were refugees in 2019, the highest number ever recorded in history (UNHCR, 2019). Refugees are one of the most vulnerable people on earth, frequently experiencing persecution, war, or violence, and most likely not in position to return to their home countries due to safety concerns. Many of them have been tortured, raped, witnessed deaths of family and friends, while losing their assets, social standings, and statuses (Verme et al., 2016). They also face integration challenges in host countries, which makes them vulnerable to socio-economic exclusion. According to the United Nations High Commissioner for Refugees (UNHCR) (2019), most refugees are hosted in countries or territories already affected by food insecurity and welfare challenges. Competition between refugees and host and other migrant groups compounds the refugees' despair. Several studies have reported low income and poor housing, educational achievement, and health among refugee populations. These challenges are often more severe for female-headed refugee households (Hanafi, Chaaban, & Seyfert, 2012; Sharkey, Johnson, & Dean, 2011; Verme et al., 2016). According to the World Bank (2020), refugees tend to trade off quality of life (QOL) in host countries in exchange for staying alive.

The hosting arrangement for refugees is often controversial in recipient countries. While it is mainly the mandate of the UNHCR or the United Nations Relief and Works Agency (UNRWA) to receive refugees, whether refugees live in a refugee camp[1] or among the population is at the discretion of local policy or the refugee's choice. Refugee camps are not intended to provide permanent, sustainable solutions but rather temporary safe havens (UNHCR 2014a). Indeed, at the early stage of arrival, planning to host refugees in camps could be useful for administrative purposes. Refugee camps can foster a sense of belonging and community spirit among the refugees (UNHCR 2014b). The camps have a harmonized management system composed of several non-governmental organizations (NGOs) to support refugees. For most host governments, camps are preferred to better control public order. Host governments could also use camps to minimize competition between refugees and host populations.

Nevertheless, camps present challenges, which may make them undesirable for many refugees. Camps tend to limit refugees' rights and freedoms, and activities in camps can be

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[1] According to UNHCR, refugee camps are temporary facilities built to provide immediate protection and assistance to people who have been forced to flee due to conflict, violence or persecution.

restricted. Camps increase the vulnerability of refugees to disease outbreaks due to overcrowding. Camps—especially those situated far from the cities—isolate refugees and reduce their capability to integrate. As such, camps may create dependency and barriers to QOL improvement for refugees.

Globally, some 60 percent of refugees opt to live outside camps either because of these challenges or because no camps are available (UNHCR, 2014b). Living out of camps also comes with opportunities and challenges. While living among the population may increase refugees' freedom, integration, and likelihood to participate in economic activities, out-of-camp refugees may forego the safety nets provided in camps. In urban areas, refugees may struggle to pay rent and end up living in substandard dwellings (UNHCR, 2014a). Nonetheless, whether refugees live in or out-of-camps, they have the right to access adequate shelter where they can live in dignity, with fewer socio-economic vulnerabilities and improved QOL (UNHCR, 2014a).

There has been increased research on refugee influx and QOL. Recently, the case of Syrian refugees, now the world's worst refugee crisis, has received most of the attention. Many researchers have analyzed how the influx of Syrian refugees affects the QOL of both host populations and Syrian refugees (Azevedo, Yang, & Inan, 2016; Aziz, Hutchinson, & Maltby, 2014; Balkan & Tumen, 2016; Chaaban, Seyfert, Salti, & El Makkaoui, 2013; Doocy, Lyles, Akhu-Zaheya, Burton, & Burnham, 2016; Krafft & Assaad, 2019; Tumen, 2016; Verme et al., 2016; World Bank, 2020). However, there is little evidence on how living arrangements affect the Syrian refugees' QOL (Abdo, Sweidan, & Batieha, 2019; Ginn, 2020).[2]

Moreover, while researchers have assessed gender difference and obstacles that affect Syrian refugee women, the extent to which these gendered barriers affect the QOL of refugee households headed by women living in versus out-of-camp has not been explored (Hanmer, Rubiano, Santamaria, & Arango, 2020; Kilicoglu, 2020; UNHCR, 2014c). Another shortcoming in the refugee QOL literature is lack of in versus out-of-camp analysis. This dimension has some

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[2] Except the work Ginn (2020), which is currently a working paper, I could not find any research that uses a quasi-experimental method to investigate the causal impact of hosting arrangement on the quality of life of Syrian refugees. Abdo et al (2019) analyzed only the quality of life of out-of-camp Syrian refugees.

policy relevance, which is that it could show how differences in camp location and administration affect refugees.

This paper aims to analyze how the living arrangement (camp vs. out-of-camp) affects Syrian refugees' QOL by studying the case of Syrian refugees hosted in Jordan. Besides its policy relevance, another reason for looking at Syrian refugees in Jordan is availability of data. The Syrian Refugee and Host Community Survey (SRHCS) implemented in 2015 in Jordan allows comparing living conditions of separate samples of out-of-camp and in-camp refugees, as well as a sample of a host population. While Jordan hosts Syrian refugees in two refugee camps, Zaatari and Al Azraq, most refugees live outside camps in urban, peri-urban, and rural areas of the country. How has the decision to live out-of-camp improved their QOL? Does living out-of-camp reduce deprivations and vulnerability of female-headed refugee households? Moreover, does living in either of the two camps affect the refugees' QOL? This paper investigates these issues.

Data are analyzed using the difference-in-difference and propensity score matching methods. Combining these methods helps control selection bias and other unobserved variables that could bias estimates of causal effects. Multidimensional indicators are used to measure QOL to capture deprivations that cannot be measured by income indicators alone. These indicators include life satisfaction, satisfaction with access to services, household assets, risk of overcrowding, income and poverty levels.

The results show that living in a camp reduces QOL for refugees. On average, refugees in camps are 36 percent more likely to live below the national abject poverty line, meaning that they find it difficult to meet daily basic needs. They are 37 percent more likely to live in overcrowded shelters. They own fewer household assets than refugees living outside camps (-2.85 assets) and are less satisfied with water, electricity, and sewerage access. They also report lower life satisfaction by 0.76 step in a 10-step Cantril Ladder measurement of life satisfaction. The QOL indicators differ by gender. Female-headed refugee households living in camps were more deprived of material living conditions and subjective quality of life than male-headed households. However, moving out-of-camps tends to benefit them more in terms of poverty reduction. There are also noticeable differences in quality of life between refugees in different camps; indicators imply that refugees living in camps situated closer to the city enjoy higher quality of life.

The rest of this paper is organized as follows. Section 2 offers some background to the paper, providing context for Syrian refugees and their QOL in Jordan. Section 3 introduces a multidimensional quality-of-life indicator. Section 4 explains the methodology used in this paper, describing the data, identification strategy, and analysis method. Section 5 presents results of the statistical analysis, while section 6 presents conclusions and policy implications.

2. Syrian Refugees in Jordan

The war in the Syrian Arab Republic has turned into a decade-long crisis, and refugees from Syria form the largest share of international displaced persons. About 5.5 million Syrians are registered as refugees in Turkey (65%), Lebanon (16%), Jordan (12%), Iraq (4%), and other countries (3%). Many Syrian refugees settle in urban and peri-urban regions in these host countries (World Bank 2020). The number of refugees living in camps has declined since 2017. Many refugees seem to prefer living outside the crowded camps and to escape the precarious living conditions and enjoy the freedom to live with relatives and friends and to find work. According to the World Bank (2020), most Syrian refugees are under age 40 years (87%), which means they could be more energetic and likely to live in places where they can work. The World Bank (2020) study also showed that many refugee households have children, and about 70 percent of the refugees received at least some elementary education. Nevertheless, they are disproportionally poor compared to the host population and compared to the economic status of the refugees before leaving Syria (Verme et al., 2016).

Jordan has been receiving Syrian refugees since 2011, and it is currently hosting the second-highest Syrian refugees per capita after Lebanon. A Jordanian Ministry of Planning and International Cooperation (MoPIC, 2020) report estimates that Jordan hosts about 1.36 million Syrians, covering registered and non-registered refugees, equivalent to approximately 15 percent of Jordan's total population. The report also estimates that about 90 percent of the refugees live out of camps, and some 10 percent live in camps. As of December 2020, 661,991 Syrian refugees had registered with UNHCR, of which about 126,832 (19%) live in camps (UNHCR, 2020c). This suggests that roughly 800,000 Syrian refugees are living among the host population. The majority of Syrian refugees in Jordan are working-age people and mostly settle in four governorates: Amman, Mafraq, Irbid, and Zarqa.

A majority of in-camp refugees live in the Zaatari and Azraq camps. These camps are under joint administration of the Syrian Refugee Affairs Directorate (SRAD) and UNHCR. The Zaatari camp is among the world's largest refugee camps, currently hosting the highest number of Syrian refugees in the world. It opened in July 2012, about a year and four months after the Syrian crisis onset. It is located just 10km away from Mafraq city and close to the Jordan-Syrian border. The camp currently hosts about 77,497 refugees, significantly more than its official capacity of 60,000. Many refugees have already established businesses within the camp. Following the overcrowding in the Zaatari refugee camp, the Azraq camp was opened in April 2014. The Azraq camp is located farther away from the nearest Azraq city (20km from Azraq) and Syrian border (90km) compared to the Zaatari camp. It is home to 37,012 Syrian refugees, as of the third quarter of 2019 (UNHCR, 2020b, 2020a). The camp has up to 130,000 refugee capacity and has adopted a village-based approach to improve sense of ownership and belonging (UNHCR, 2020a).

Although the camps differ in terms of location, time of establishment, capacity, and administration, their inhabitants broadly share the same demographic characteristics. In both camps, about 20 percent of residents are under the age of 5, and between 25 percent (Azraq) and 30 percent (Zaatari) live in households headed by women. The UNHCR and other NGOs support camp residents through provision of targeted assistance in the form of cash and sometimes "in-kind" core relief items (CRIs), such as blankets, cooking utensils, and bed sheets. All camp refugees receive 23 Jordanian dinars (JD 23), or about US$ 32 per person per month through the World Food Programme's (WFP) blockchain system to cover food needs. The camp administration also provides employment assistance by facilitating work permits, advertising job vacancies, and providing camp residents with training opportunities. Almost one in three people of working-age in the camps hold work permits thanks to a recent favorable Jordanian government policy. Schools and health centers around the camps benefit the refugees as well as neighboring communities.

Despite these benefits, Syrian refugees—like any other humans—are rational and continuously seek to reside in places where they perceive more freedom and better livelihood opportunities. Most Syrian refugees in Jordan have opted to live outside camps because it may improve their ability to search for jobs (World Bank, 2020). According to the UNHCR (2020c), the share of camped refugees to the total population of registered Syrian refugees in Jordan

decreased from 55 percent in 2013 to 19 percent in 2020. This reduction is the result of both new arrivals preferring to reside outside the camps, as well as the departure of refugees after some years in the camps.

However, several reports have shown that out-of-camp refugees often live in bad living conditions, work in informal jobs, and pay high rent (World Bank, 2020). Considering that they maintain lower contact with officials, they may lack access to information and may not be fully informed about their rights. These issues can put out-of-camp refugees at a disadvantage compared to camp residents, affecting their QOL (Verme et al., 2016).

Indeed, the debate on refugee QOL in and out of camps has received some attention. It is even more critical in Jordan, where many refugees can choose to live either in or out of camps. In the survey of refugees, Abdo et al. (2019) found that Syrian refugees scored significantly lower than Jordanians in the psychological health and social relationships domains. Krafft et al. (2019) explained that both camp and out-of-camp Syrian refugees living in Jordan face challenges in participating in the labor market, but refugees residing in camps suffer higher food insecurity. Elsayed (2019) showed that camp refugees suffer worse living conditions; they mainly live in smaller living areas, have worse access to public facilities, and have less ownership of durable assets. Ginn (2020) found that out-of-camp refugees are more likely to work and receive higher household earnings. Gender researchers have also shown that the Syrian refugee households headed by women in Jordan cope with increased risk of poverty, insecurity, and vulnerability compared to male-headed refugee households (Care, 2016; Hanmer et al., 2020; Mohammad, Abu Awad, Creedy, & Gamble, 2018; UNHCR, 2014c). While most of these papers were conducted using simple descriptive statistics, which does not allow for presumptive conclusions, this paper takes a broader perspective by looking at differences between in-camp and out-of-camp refugees using multidimensional QOL indicators and advanced statistical methods.

3. What do I mean by multidimensional quality of life?

"Quality of life" (QOL) refers to an individual's general well-being, including positive and negative everyday life experiences. It is a broader metric than economic participation and living standards, including various factors that influence human capabilities and functioning.

Most previous studies have measured QOL narrowly by focusing on income, an approach that researchers have often criticized. Diener & Suh (1997) elaborate on the limitations of the income-only QOL approach, include the failure of increased income to guarantee happiness or to reduce several deprivations experienced by the poor. These criticisms paved the way for broader multidimensional QOL assessments (Alkire & Foster, 2011a; Nussbaum & Sen, 1993).

Multidimensional QOL assessment is critical in a situation of forced displacement. Refugees may be economically engaged yet have low life satisfaction due to exploitation or multidimensional deprivations in nutrition, health, education, employment, and shelter (Becchetti & Rossetti, 2009; Sand & Gruber, 2018). These deprivations disproportionally affect refugees' QOL compared to the host population. The level at which these issues affect refugees living in camps may also differ from how they affect refugees living out of camps. Another issue is that the income indicator alone may not provide reliable information about refugee welfare. For example, refugees may not be truthful about their earnings if they conceive that the purpose of the survey is to plan for refugee assistance or resettlement. Therefore, for policy consideration and proper targeting, the multidimensional QOL indicator is appropriate in understanding refugees' deprivations, whether they live in or out of camps.

Generally, multidimensional measures encompass several indicators, such as income, health, education, living standards, empowerment, quality of work, threat of violence, and housing conditions (OPHI, 2016). However, as a framework for poverty measurement, researchers can measure a person's or a group's QOL using any combination of the indicators that reflect policy needs and priorities (Alkire & Foster, 2011; Robeyns, 2005). As such, different research groups have adopted different sets of indicators. For instance, the Oxford Poverty and Human Development Initiative (OPHI) and the United Nations Development Programme (UNDP) adopted a measure of 10 indicators categorized under the three dimensions of poverty: health, education, and living standards (Alkire et al., 2020). Stiglitz, Sen, & Fitoussi (2009) also provided nine QOL dimensions including material living condition; productive or other main activity; health; education; leisure and social interactions; economic security and physical safety; governance and basic rights; natural and living environments; and overall experience of life.

Following the recommendation of Stiglitz, Sen, & Fitoussi (2009) that QOL should be measured comprehensively, linking both subjective and objective conditions, I adopted two dimensions

to measure refugee QOL. The first dimension is the overall experience of life, or "life satisfaction", and the second is the material living conditions.[3]

The "life satisfaction" indicator assesses people's subjective well-being. It is popular for use in studies of refugees because it requires respondents to reflect on, and make an overall assessment of, their life happiness, including wealth, security, and hopes for the future. "Life satisfaction" tends to be an overall reflective evaluation that uses a Likert response scale of between 0 to 10, where 0 means not satisfied and 10 completely satisfied. However, it is left for the respondent to define what "satisfaction" means and the scaling of his/her satisfaction; thus, it is a subjective indicator of well-being.

"Material living condition" captures households' objective living conditions and opportunities, including material deprivations and housing conditions that directly affect their QOL. Material deprivations refer to the level at which households are able to have the consumption goods and services needed in a society at a given time. Several indicators could measure material deprivations. One typical indicator is the ability or inability for households to meet basic food needs at above the national abject poverty level. Other measures of deprivations may include counting the number of household assets, such as beds, air conditioners, and cooking utensils. The availability of housing and housing conditions can also be captured by calculating overcrowding and satisfaction with accommodation services, such as water and electricity.

4. Data and Identification Methodology
4.1. The survey
The World Bank Development Economics Data group conducted the Syrian Refugees and Host Communities Survey (SRHCS) in 2015 by surveying registered and unregistered refugees (Krishnan, Munoz, Riva, Sharma, & Vishwanath, 2019). The survey was designed to produce comparable findings on living conditions and quality of life of Syrian refugees and host communities in Jordan, Lebanon, and Kurdistan. The Jordanian survey is designed from the adjusted sample frame of the 2005 Jordanian population. The SRHCS assesses the socio-

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[3] Note that 3 dimensions—productive or other main activity, health, and education—were the subjects of the work of Ginn (2020). More so, the remaining 4 dimensions—leisure and social interactions, economic security and physical safety, governance and basic rights, and natural and living environments— will be discussed in a follow-up study.

economic and living conditions of a sample of Syrian refugees living in the Al Azraq and Zaatari camps and refugees and Jordanian citizens living in the surrounding governorates.

I retrieved the following data from the survey: characteristics of the refugees' household head, household income per capita, household dwelling, access to services such as electricity and water, assets accumulation, and overall life experience. The survey also has some retrospective information on pre-crisis characteristics, such as the household head's economic status in Syria, household earnings in 2010 before the crisis, household assets in Syria, and the number of years the household has been living in Jordan. The estimations in this paper use this information as control variables.

4.2. Identification strategy

Using an immigration survey to evaluate causal impacts often faces identification threat (Borjas, 2018). In other words, refugees who are surveyed in camps may be different from refugees who are surveyed in the cities, leading to selection bias. I identify three reasons selection bias can arise in this research. Refugees may self-select to live outside of the camp because they:

(a) have social networks in the cities who can accommodate them.

(b) have more access to finance to pay for the rent, or

(c) because of their economic desire for access to jobs (Malaeb & Wahba 2019).

I confront refugees' self-selectivity by employing the difference-in-difference (DiD) method and the propensity score matching method. The DiD method is used to estimate the effect of a given instrument on a treatment group and a control group over time, attributing any differences to the effect of treatment membership (Athey & Imbens, 2006; Lechner, 2010). While the DiD controls for baseline differences in the outcome of interest, it holds a parallel trend assumption, for which it is difficult to account. This parallel trend assumption requires that the difference between the treatment and control group should be constant over time in the absence of the treatment. However, it is possible that some factors could change the composition of either the treated or control group over time. Following Gibson & McKenzie (2014) and Stuart et al. (2014), I combine the DiD with the propensity score matching method to increase the likelihood of the parallel trend assumption holding.

Allowing γ be the impact outcome for a refugee household and T as a dummy variable for a time, equal to 1 when T is 2015 after the crisis and 0 when T is 2010 before the crisis. Also, if H is a dummy for group membership to a given hosting arrangement, equal 1 for refugee households living in camps and 0 for refugee households living out-of-camp, then $H * T$ is the interaction variable between hosting arrangement and time. I then specify the following DiD equation:

$$\gamma = \beta_o + \beta_1 T + \beta_2 H + \beta_3 (H * T) + \varepsilon \qquad (1)$$

Where β_o is the intercept, which is the level of life satisfaction before the crisis; β_1 is the change in life satisfaction over time for both camp and out-of-camp refugees; β_2 is the change in life satisfaction between in-camp and out-of-camp refugees; β_3 is the DiD coefficient of interest, which gives the average treatment effect of hosting arrangement (average treatment on the treated, ATT) of the households over time. The standard error ε is clustered at the household level.

The above specification adjusts for baseline differences in the impact outcome of in-camp and out-of-camp refugees. However, I have argued that hosting arrangements may affect men and women differently or refugees living in different camps differently. Intuitively, refugees living in camps closer to cities may have more opportunities to integrate and expand their social networks with the host population than those living in camps located very far from a city. Therefore, I capture the gendered heterogeneous treatment effect by comparing the female-headed refugee households' QOL compared and to refugee male-headed households. The specification is done by dividing the result into gendered subgroups and checking if the ATT is different for the subgroups. For the camp versus camp analysis, I repeated equation 1 but ran the analysis with Zaatari or Azraq separately as the treatment group.

According to Rosenbaum & Rubin (2006), the propensity score is the conditional probability of being assigned to a treatment group given pre-treatment characteristics. Briefly, the propensity score captures the probability (probit regression) that a refugee lives in a camp conditional to pre-crisis characteristics. This probability (p) is given as:

$$\rho\,(\chi) = \Pr(H = 1|\chi) = E(H|\chi) \qquad (2)$$

Where $H = \{0,1\}$ indicates the membership to a treatment group, and χ is a set of pre-crisis characteristics. According to Caliendo & Kopeinig (2008), if the propensity score is known,

then the average treatment effect of the associated treatment outcome on the treated (ATT), can be estimated, provided that certain assumptions are not violated. Some of these assumptions include the Conditional Independence Assumption (CIA), which implies that selection is based on pre-treatment characteristics not affected by the treatment. The other assumption is the common support or overlap condition, which implies that individuals with similar pre-treatment characteristics have a positive probability of being both in the treated or control group (Rosenbaum & Rubin, 2006).

Becker & Ichino (2002) specified that the average treatment effect on the treated (ATT) of a potential outcome Y_{1i} could be estimated from a population i using the propensity score $p(\chi_i)$

$$ATT = E\{Y_{1i} - Y_{0i} \mid D_i = 1\}$$

$$ATT = E[E\{Y_{1i} - Y_{0i} \mid D_i = 1, p(\chi_i)\}$$

$$ATT = E[E\{Y_{1i} \mid D_i = 1, p(\chi_i)\} - E\{Y_{0i} \mid D_i = 0, p(\chi_i)\} \mid D_i = 1] \tag{3}$$

I followed the recommendation of Caliendo & Kopeinig (2008) and Heckman, Lalonde, & Smith (1999) to ensure that the above assumptions are not violated. I only included pre-crisis characteristics that I assume will simultaneously influence the decision to live in or out of a camp. Moreover, the data for both the treated and the control groups were from the same source. The pre-crisis characteristics included are age of household head, gender of household head, marital status of household head, whether the household head was employed or operating a business in Syria before the crisis, household asset index before the crisis, whether the household earned enough for basic needs in 2010, and the number of months the household has been living in Jordan. I also included the square for the continuous variables and interactions for dummy variables in estimating the propensity score to improve balance.

I chose three different matching algorithms: Nearest Neighbor, Nearest Neighbor with a caliper of 1 percent, and Kernel functions. The definitions and trade-offs of these methods are available in Caliendo & Kopeinig's (2008) work. It is a common practice for researchers to use more than one matching algorithm to check result consistency and robustness. I also checked if the samples are sufficiently balanced by comparing the baseline differences between treated and control groups before and after matching. One way to do this is to plot a graph that shows the region of common support (see Figure 1 in the appendix). Rubin (2011) also proposes other ways of testing the quality of the matching. The first is calculating the absolute

standardized difference of the means of the linear index of the propensity score in the treated and (matched) non-treated group (Rubin's' B). The second way is calculating the ratio of treated to (match) non-treated variances of the propensity score index (Rubin's R). Rubin's B should be less than 25 and Rubin's R should be between 0.5 and 2 for the samples to be considered sufficiently balanced. Another method recommended by Sianesi (2004) is to use the pseudo-R2s before and after matching. The pseudo-R2 after matching should be very low and have no systematic differences. The results of these balance checks are found in Table 2 in the Appendix.

The ATT of equation 1 (DiD) estimates the hosting arrangement's impact on refugees' "life satisfaction" between 2010 and 2015 for households within the common-support region.[4] The ATT of equation 3 (propensity score matching) estimates the impact on "material living conditions" because the baseline level of the material living condition could not be retrieved from the survey.

4.3. Summary statistics

The analyses are based on a total sample of 2,399 refugee households displaced by the Syrian crisis, including registered and unregistered refugees. Most refugees started arriving in Jordan in 2010, and the mean year of stay is 3.5 years. About 50 percent of the surveyed households lived outside of camps. Among the camp residents, 832 households lived in the Zaatari refugee camp, and 359 lived in the Azraq refugee camp.

The main dependent variables (the outcomes of interest) are "life satisfaction" and the refugees' "material living conditions".

The life satisfaction question is:

> *"Think about your overall satisfaction with your life over the last few years: your happiness, wealth, security, hope for the future, etc. For each year (from 2005 to 2020), how do you rate your life on a scale of 1-10, with 1 meaning, 'my life could not be worse,' and 10 meaning 'my life could not be better'?"*

The question, therefore, is a combination of retrospective, present feelings, and projection for the future. The descriptive result (2005 to 2020) is described in the Figures 1 - 3; however, I

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[4] An alternative specification could be to use a fixed-effect model. For consistency, I discuss only the results of the DiD in this main paper but placed the results of the fixed-effect model in the Appendix.

selected only 2010 and 2015 for the DiD analysis. The reason is that 2010 captures the respondents' quality of life just before the crisis, and 2015 is the latest data source. The other years are equally important; for instance, 2005 shows the difference in life satisfaction several years before the crisis, and 2017 to 2020 shows their projected life satisfaction, which seems to be converging.

Figure 1 compares the life satisfaction of in-camp and out-of-camp refugees, and the host population. It shows that the Syrian refugees generally tended to have higher life satisfaction than the Jordanian population before the crisis in 2005. However, as the Syrians became refugees in Jordan after 2010, their life satisfaction plummeted significantly until 2013. Both in-camp and out-of-camp refugees report improving life satisfaction starting in 2013, and they are very optimistic about the future. There are two ways to explain this trend. One is that their life satisfaction improved due to objective improvements in their circumstances, perhaps due to the change in the law in 2013 that gave priority to Syrians to obtain work permits. The second is the possibility of refugees adapting to their living conditions. This situation, especially adaptation of subjective life experiences, returns us to the need to evaluate QOL with several indicators.

Figure 2 shows that refugees living out of camps, especially those living in Amman, Jordan's capital city, reported less decline in their life satisfaction between 2010 and 2015. There is also a difference in the QOL refugees living in the Zaatari camp report compared to refugees living in the Azraq camp. Figure 3 shows that between 2010 and 2015, the life satisfaction of the host population tends to follow a similar trend irrespective of their place of residence, whether living close to camps (for example, those living in Zarqaa and Mafraq) or far from camps (for example, in Amman). Nevertheless, the host population living in Amman tends to be less optimistic about their future life satisfaction.[5]

I measured "material living conditions" from the income and expenditure perspective. It captures the deprivations in income, assets, services, and housing, directly affecting refugees' QOL. For income deprivation, I measured household income per capita, the share of

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[5] It is beyond the scope of this paper to explain the reasons for the reduced projected life satisfaction of the host population in the capital. But I suspect that the influx of refugees may have something to do with it.

households who could lend up to JD 150 to fellow refugees, and the share of refugees living under the Jordanian national 2010 abject poverty line (JD 336 per individual per year) .

The ability to lend to fellow refugees depicts the households' level of savings and their social capabilities, which are essential QOL elements. Households below the national abject poverty line are considered to be at risk of experiencing deprivations in food poverty and other basic needs. Asset accumulation is calculated by aggregating the essential household assets (excluding business assets) that refugee households owns.[6] Access to service measures the refugees' satisfaction with overall access to water, sewerage, garbage disposal, and electricity. The risk of overcrowding is measured by calculating the number of rooms a household has per adult equivalent. The result of the unmatched differences between in-camp and out-of-camp refugees is shown in the upper side of Table 1. Note that this result *does not* imply the real impacts, as it does not control for baseline and time-variant differences.

Figure 1: Assessment of overall subjective experience of life for in-camp, out-of-camp refugees, and the host population

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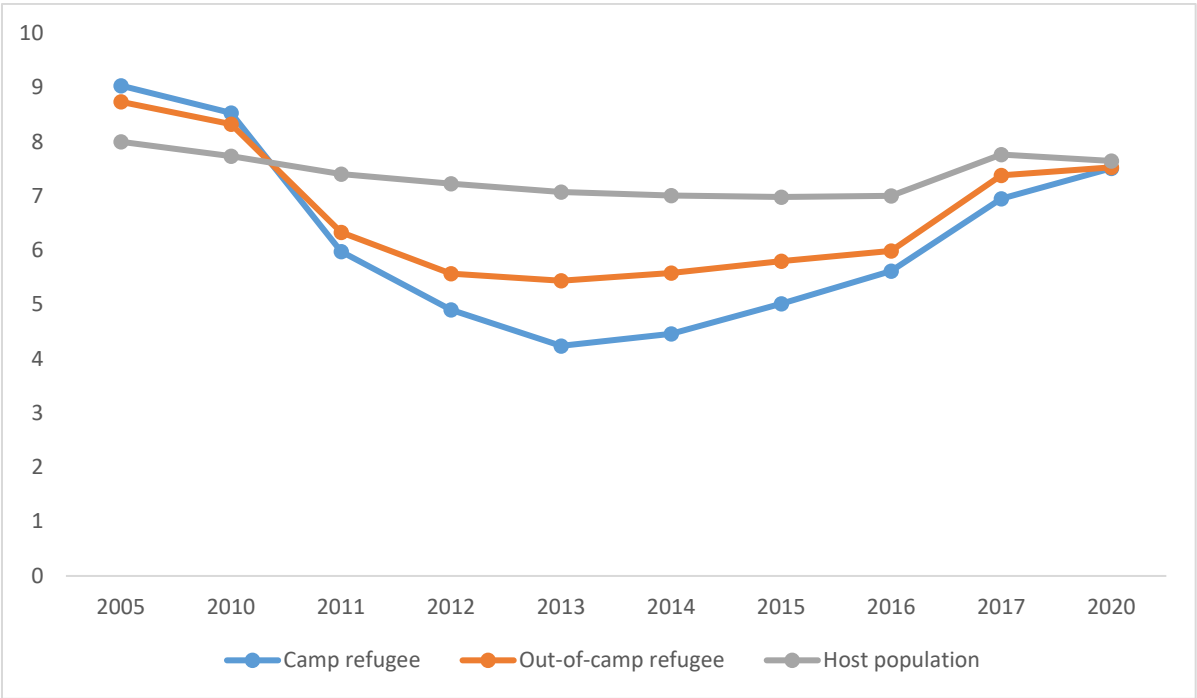
[6] We aggregated 17 assets from the survey including air conditioners, microwaves, laptops, cars, motorcycles, washing machines, water heating system, refrigerators, burners, radio, tvs, DVD recorder, cable receivers, cable subscriptions, camera, cell phones, and home heating systems.

Figure 2: Disaggregated assessment of the overall subjective experience of life for refugees according to place of residence.
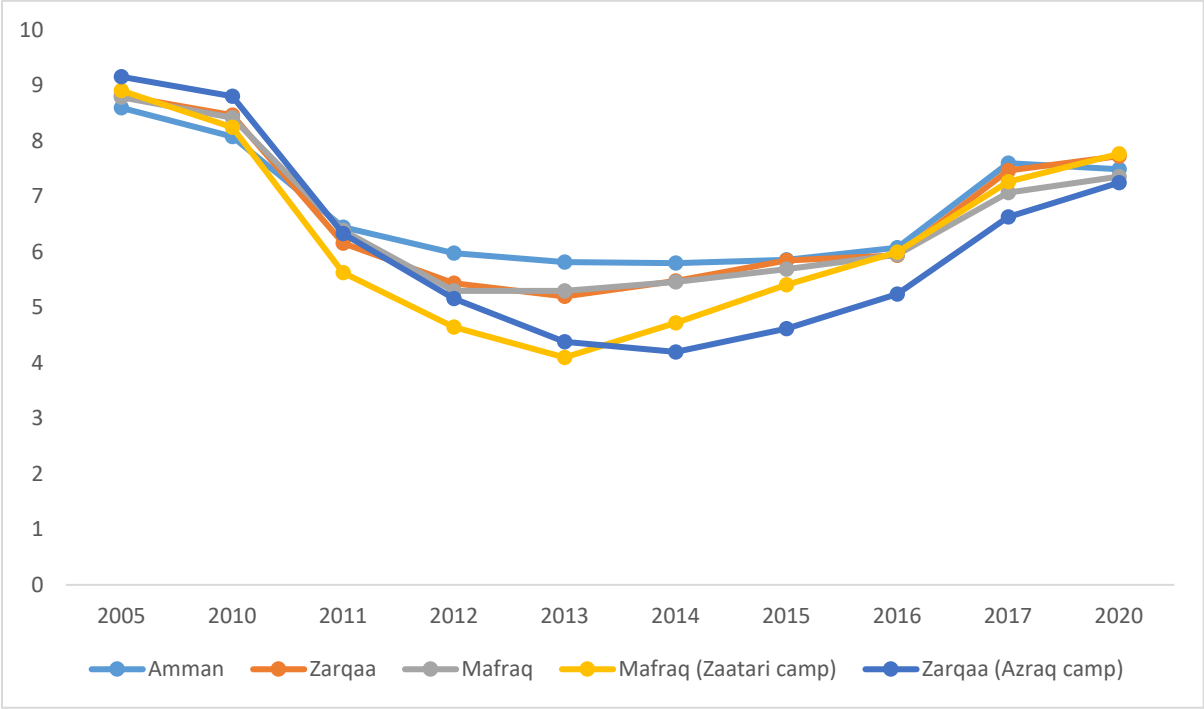

Figure 3: Disaggregated assessment of the overall subjective experience of life for the host population according to place of residence.
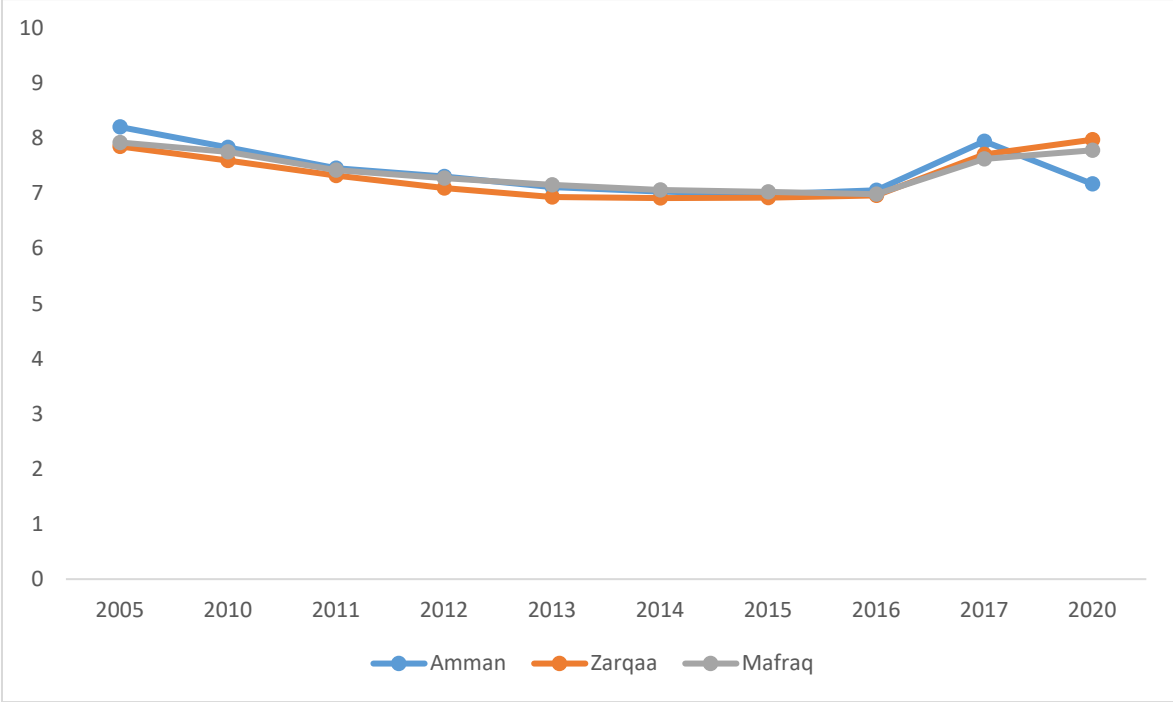
Table 1 shows the baseline difference between the in-camp and out-of-camp refugees' characteristics before the crisis. The average age of the household head for the total sample is 40. However, the household heads living out of camps on average are slightly older than the household heads living in camps. The difference is about 1.5 years. About 14 percent of the total sample are households headed by women. Female-headed households are more likely to live in camps than out of camps. Thus, 16 percent of the in-camp refugee households are female-headed compared to 13 percent living out of camps. Linking with the literature on gender and refugee studies, I assume the reasons female-headed households are more likely to live in camps in contrast to male-headed households are disproportionate gender inherent deprivations and vulnerability women face in the cities. For instance, the greater difficulties for women to secure jobs or accommodations compared to men.

Furthermore, households with bigger household sizes are more likely to live out-of-camp (n = 6) than households with smaller household sizes (n = 5). This result may be linked to the limited space per household available in camps. A bigger household size means a greater likelihood of having working-age members, implying more capability to pay rent.

Although there is no significant difference in the economic situation between in-camp and out-of-camp households before the crisis, the in-camp households tend to have a larger asset base than out-of-camp households in Syria before the crisis. This asset disparity in favor of camp refugees may seem paradoxical, considering that assets may proxy for wealth and expenditure or the ability to afford rent (Harttgen & Vollmer, 2013). However, considering that many of these assets were either destroyed in the crisis or have become low liquidity value, households who stock assets may become less wealthy during a crisis, leading to lower ability to afford rent in cities.

One concern is whether the estimation should also capture refugee time of arrival in Jordan based on the fact that early arriving refugees are more likely to establish networks, integrate, and navigate daily living experiences, thus to move out of camps or achieve higher QoL. Thus, I added arrival time (month of stay) as part of the baseline control characteristics. Since I restrict my analysis to the region of common-support, thanks to the propensity score, there will be no significant difference between groups in whether they arrive early or later in Jordan.

Table 1: Summary of the variables included in the analyses

	Total sample	Camp refugees	Out-of-camp refugees	Mean difference
Impact outcome of interest				
Overall quality of life (2010)	8.35	8.42	8.28	0.14
Overall quality of life (2015)	5.48	5.17	5.80	-0.63***
Risk of overcrowded dwelling	0.88	0.70	1.06	-0.36***
Asset index	5.99	4.49	7.46	-2.96***
Satisfaction with overall access to service	2.84	2.52	3.17	-0.65***
Income per capita per month	41.14	33.65	48.53	-14.88***
Share of household in abject poverty	0.46	0.64	0.28	0.35***
Share of households that can lend 150 J	0.12	0.09	0.17	-0.08***
Control variables				
Age of household head	39.99	39.14	40.82	-1.68***
Age of household head squared	1740	1678	1801	-123***
Household head is a female	0.14	0.16	0.13	-0.03***
Household head is currently married	0.89	0.88	0.89	-0.01
Household size	5.85	5.63	6.05	-0.42***
The household head was employed or operating a business in Syria before the crisis	0.25	0.25	0.23	0.02
The household head was studying and working before the crisis	0.002	0.0025	0.0016	0.001
Household asset index in Syria	2.60	2.71	2.49	0.22***
Household asset index in Syria squared	8.93	9.83	8.04	1.80***
Share of household that earn enough for basic needs in 2010 (in Syria)	0.87	0.86	0.87	-0.01
Number of months in Jordan	44.60	39.23	49.43	-10.20***
Number of months in Jordan squared	2182	1724	2633	-909***
Number of observations	2399	1191	1208	

N/B differences were tested using t-test; *** means significant at 1%, ** means significant at 5% and * means significant at 10%

5. Results

5.1. Impact on life satisfaction

Table 2 shows the result of the impact on life satisfaction. It first presents the OLS result, which reflects the situation without the propensity score matching. I discuss the result of the nearest neighbor matching with caliper because it showed the best match between the treated and control groups (see the matching quality in the Appendix). The results of the other matching algorithms were consistent with the one I report (also in Appendix). The DiD method estimates that living in camps significantly decreases refugees' life satisfaction by 0.76 step on the Cantril ladder at a standard error of 0.13. This result implies that moving from a camp to out-of-camp can significantly improve refugees' overall life satisfaction. As shown further, the higher life satisfaction of the out-of-camp refugees is consistent with a lower probability of abject poverty. Living outside of camps offers several benefits to refugees, including freedom, which is difficult to quantify in monetary terms. It also allows integrating faster with native populations and improves the chances of finding employment. This finding is very important in the Jordanian context, where refugees are generally allowed to work.

A concern would be if the increase in refugees' life satisfaction will lead to negative spillover effect (Gibson & McKenzie, 2014), where there may be a concomitant decrease in life satisfaction for the host population. Based on my results, I could not conclude that there is strong negative spillover to the host population. Figure 1 shows that the host population's life satisfaction trend remained relatively unchanged through 2010 and 2015 compared to the refugee groups, although they perceive that the future could be worse. Malaeb & Wahba (2019) researched whether the influx of Syrian refugees has displaced natives in the Jordanian labor market. They find that the influx of Syrian refugees was more likely to cause immigrants' labor displacement than the host population. Azevedo et al. (2016) found a similar result when investigating the impact of Syrian refugees on the host community in Turkey. Therefore, I do not think that the increase in life satisfaction of out-of-camp refugees comes at the expense of life satisfaction of the native population.

5.2. Impacts on material living conditions

The impact outcome indicators for material living conditions include material deprivations in income, poverty level, savings, assets, but also in housing in terms of overcrowding and satisfaction with accommodation services. These indicators can be seen as part of the

mechanisms that cause the disparity in overall life satisfaction between refugees in and out-of-camps. I analyzed them directly from the ATT of propensity score specification. The result on household earnings (income per capita) shows that camp refugees are significantly more likely to have lower income per capita than out-of-camp refugees. Camp refugees typically earn an average of JD33.65 per capita per month, whereas out-of-camp refugees earn about JD48.53. After controlling for pre-crisis characteristics, refugee households living in camps earn on average JD14.77 per household member less than refugees living out-of-camps. Ginn (2020) showed that camp residents' low income is not associated with assistance dependency as male camp residents are more likely to show readiness to work than out-of-camp counterparts. But the challenge is that camp residents often lack access to jobs compared to out-of-camp residents. Although camp officials provide some assistance for camp refugees to secure resident permits and help them in job search, Ginn showed that males living in camps are less likely to have worked at least one hour in the last 30 days. There is also concern that out-of-camp refugees' additional income may be canceled by the high rent they pay; but as I will show, this additional income helped many out-of-camp refugees meet basic needs.

Material deprivation is a function of whether households meet their basic or psychological needs such as food, water, clothing, and a comfortable place to sleep. The abject poverty measure allows estimation of the share of households at the risk of deprivation with respect to these basic needs. About 62 percent of households living in camps are at risk of living in abject poverty compared to 28 percent for those living outside of camps. The difference after controlling for pre-crisis characteristics is 36—a very significant finding. Indeed, refugees are entitled to some form of blockchain cash transfer, but even after controlling for amount of aid received, the result still shows that camp refugees are more at risk of deprivations in basic needs. The camp refugees are also less likely to say they are able to lend up to JD150 to friends. The estimate shows that households living out of camps possess 7 of the 17 included assets on average. Although this asset level is generally low, it is double that of camp households.

Furthermore, I assessed the shelter adequacy and satisfaction with accommodation services by the two groups. The number of people per shelter is one of the impact indicators UNCHR uses to measure shelter adequacy or overcrowding (UNHCR, 2014a). It is common practice to consider that children will pair in rooms. Hence, I measure shelter adequacy, which I called "risk of overcrowding", by the number of rooms per adult equivalent, with children below 12

years counting as half. I considered all living space, including bedroom, kitchen, sitting room, and toilet. The higher the number of living spaces per adult equivalent, the more space available in the household. On average, I found 1 living space per adult equivalent for refugees living out of camps compared to the 0.7 living space for refugees in camps. After controlling for baseline characteristics, the difference (0.36) is very statistically significant. This implies that camp refugees are 36 percent more likely to live in overcrowded shelters. Besides having more living space, households living outside of camps are more likely to be satisfied with their access to accommodation services such as sewerage, electricity, water, and garbage disposal. The level of satisfaction with these services was ranked 1 to 4, with 4 being "very satisfied". The result shows that out-of-camp refugees record an average of 3.17 satisfaction compared to 2.52 for refugees living in camps, and the difference (0.65) is statistically significant. These results imply that even though out-of-camp refugees pay rents, they enjoy value for their money. Moreover, research has associated overcrowded living conditions with faster disease spread between households (McNicholas, Lennon, Crampton, & Howden-Chapman, 2000), perhaps explaining why disease outbreaks are prevalent in refugee camps (Rehr et al., 2018).

Table 2: Result of impact outcomes on household living in refugee camps

	OLS	NNM-trim
Overall quality of life	-0.77	-0.76
	(0.13)***	(0.13)***
Risk of overcrowded dwelling	-0.35	-0.37
	(0.02)***	(0.02)***
Asset index	-2.56	-2.85
	(0.09)***	(0.09)
Satisfaction with overall access to service including water and electricity	-0.58	-0.64
	(0.03)***	(0.03)**
Income per capita per month	-13.32	-14.77
	(1.37)***	(1.66) ***
Share of household in abject poverty	0.32	0.36
	(0.02)***	(0.03)**
Share of households that can lend out 150 J	-0.07	-0.09
	(0.01)***	(0.02)**

N/B: The Table shows the ATT for the various impact outcomes. The treatment group is camp households, and the control is out-of-camp households. Hence, ATT = camp households – out-of-camp households. The overall quality of life (or subjective life satisfaction) was estimated using DiD, while other impact indicators were estimated directly from the propensity score matching. OLS means ordinary least square is the baseline equation without controls. NNM is the nearest neighbor matching, NNM-trim is the nearest neighbor matching with a caliper of 1%, and KFM is kernel function matching. Numbers in bracket are standard errors. The NNM-trim is the reported equation. *** means significant at 1%, ** means significant at 5%, and * means significant at 10%

5.3.   Heterogeneous treatment effects

Analysis of two crucial heterogeneous treatment effects makes a valuable contribution for policy decisions. The first is the impact of moving out of camps on female-headed households. The estimate shows that female-headed households are in general more vulnerable than male-headed households, whether they live in or out of camps. Table 3 shows that, on average, female-headed households earn less, are more likely to be at risk of deprivation in basic needs, and own fewer household assets. They are also less likely to report increased life satisfaction if they move out of camps. The gendered disaggregated DiD analysis, based on common-support regions, estimates that moving out of camps increases the steps in the Cantril ladder by 0.76 point for male-headed households, but only 0.67 point for female-headed households. In general, after controlling for pre-crisis differences, female-headed households living in camps earn JD4.34 less than male-headed counterparts. One positive result is that women headed households are less likely to live in overcrowded houses both in and out of camps. This result may be because of absence of the male head. About 78 percent of female-headed households in camps are at risk of abject poverty compared to 61 percent of male-headed households. Poverty nevertheless reduces for both groups when they move out of camps. Moving out-of-camp also tends to decrease female-headed household poverty more than for male-headed households: the share of households below the abject poverty level reduced by 47 percent for female-headed households who moved out of camps, but the reduction is only 31 percent for relocating male-headed households.

Table 3: Heterogeneous treatment effect on gender of the household head

	Female-headed households			Male-headed households		
	Camp	Out-of-camp	ATT	Camp	Out-of-camp	ATT
Life satisfaction			-0.67(0.35)*			-0.76(0.14)***
Risk of overcrowded dwelling	0.76	1.07	-0.31(0.07)***	0.69	1.03	-0.34(0.03)***
Asset index	4.25	7.20	-2.96(0.22)***	4.57	7.34	-2.78(0.11)***
Satisfaction with overall access to service including water and electricity	2.57	3.09	-0.51(0.09)***	2.51	3.13	-0.63(0.04)***
Income per capita per month	30.06	44.26	-14.20(3.92)***	34.48	47.24	-12.76(2.07)***
Share of household in abject poverty	0.78	0.31	0.47(0.07)***	0.60	0.29	0.31(0.03)***
Share of households that can lend out 150 J	0.04	0.08	-0.03(0.04)**	0.10	0.18	-0.09(0.02)***
Number of observations	152	191		1056	974	

N/B the Table shows the heterogeneous treatment effect by gender of the household head. It can be used to compare the quality of life for female (male) headed households living camp with that living out-of-camp. It also shows the differences

I also estimated heterogeneous treatment effect differences between the two camps (Table 4). Generally, the result shows that the camp where refugees reside does effect quality of life (QOL). The estimate shows that refugees living in the Azraq camp suffer lower QOL than refugees living in the Zaatari camp. In particular, the Azraq camp reduces life satisfaction compared to out-of-camp refugees by 1.5 steps, while the reduction is 0.61 step in the Zaatari camp.

Furthermore, the estimate for material living conditions shows that refugees in the Azraq camp tend to have less living space, meaning that they are more likely to live in an overcrowded shelter: living space is about 0.78 per adult equivalent for refugees in Zaatari, significantly higher than the 0.5 in Azraq. The difference is statistically significant before and after controlling for pre-crisis characteristics. Other important differences are asset possessions and satisfaction with services. Zaatari refugees have an average of 5.3 household assets, double the 2.3 assets owned by refugees in the Azraq camp. Zaatari refugees are equally more likely to say that they are satisfied with electricity, sewerage, and water than Azraq refugees. There seems to be no difference in income and poverty indicators between refugees living in the Zaatari and Azraq camps before and after controlling for pre-crisis differences. The Zaatari refugees' better-living conditions in terms of asset possession, satisfaction with services, and low overcrowding may be associated with its location and years of existence. As noted, Zaatari camp is closer to the nearest city in Jordan, and most refugees living in Zaatari camp had arrived earlier than those living in the Azraq camp. The location of the camp and the longer time of stay has given the Zaatari refugees more opportunity to integrate, move freely in and out of camps, and improve their life quality.

Table 4: Heterogeneous treatment effect on the different camps

	ATT
The overall quality of life(Zaatari camp out-of-camp refugees)	-0.61 (0.11)***
The overall quality of life(Azarq camp out-of-camp refugees)	1.50(0.19)***
Risk of overcrowded dwelling	0.30(0.03)***

Asset index	2.98(0.44)***
Satisfaction with overall access to service including water and electricity	0.67(0.07)***
Income per capita per month	-7.04(3.78)
Share of household in abject poverty	0.08(0.05)
Share of households that can lend out 150 J	0.03(0.04)

N/B The Table shows the heterogeneous treatment effect by the campsite. It can compare refugees' quality of life in Zaatari with those living in the Azraq campsite. The ATT is the average treatment on the treated. Numbers in bracket are standard errors. The NNM-trim is the reported equation. *** means significant at 1%, ** means significant at 5%, and * means significant at 10%

6. Conclusion

The hosting arrangement for refugees matters in terms of their quality of life (QOL). This analysis of the case of Syrian refugees living in Jordan confirms that refugees' QOL is low, but refugees living out of camps enjoy relatively higher QOL than those living in camps. The result is significant after controlling for pre-displacement assets and demographic characteristics, and robust across different life indicators. Also, impacts from some key indicators vary when looking at subgroups of refugee households, such as those headed by women compared to men. Despite being deprived in terms of several outcome indicators compared to male-headed households, female-headed households can significantly reduce their poverty level when they move out of camps. This study also identified key QOL differences between the main Azraq and Zaatari camps. Refugees in the Zaatari camp—located close to Amman, and which has been hosting refugees for a longer time—generally enjoy higher QOL compared to refugees in the Azraq camp situated far away from any city.

The findings from this study have important academic and policy implications. Academically, this research represents one of the few early attempts to highlight how forced-displacement affects refugee populations differently. Meanwhile, policy makers require information on how hosting arrangements affect refugees and host populations. Evidence-based solutions, such as those indicated by this study, are paramount for making policy adjustments to improve refugee hosting strategies. This study uses an approach for projecting possible future outcomes of settlement by accessing existing conditions using available data.

The results of this study argue that refugees of the same origin living in the same host country may experience quality-of-life differences based on where they are hosted – either in camps or out of camps. The issue of hosting arrangements and refugee QOL is important for refugee policies, for which there is currently a push towards sustainable settlement and shelter

options beyond camps. Evidence from this research implies that camps only serve as safe-havens for refugees who lack the capabilities to exit camps. In territories that allow camp exit, camps could be redundant for those who possess adequate capabilities to function in urban and peri-urban areas.

Another important implication of this study is that the decision to exit camps should not be left only to the choice of refugees. Using the logic of Sen's (1995) explanation of adaptive preference, as crises become protracted, some refugees may need to be nudged to exit camps. The longer they stay, the more they become deeply deprived due to camp specific challenges, and they may become acquiescent to their conditions and lose the capability to change their situation independently. Sen argued that some people, especially women exposed to chronic deprivation, may stop desiring basic human goods in unequal societies because they either lack the capabilities to achieve such basic goods or because they come to believe that these goods are not for them. Hence, camp-based programs to improve refugee capabilities and psychological perceptions are essential for promoting life skills away from camps. These programs are particularly needed for female-headed refugee households living in camps.

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Appendix

Figure 1: Propensity score graph for nearest neighbor matching with a caliper of 1%
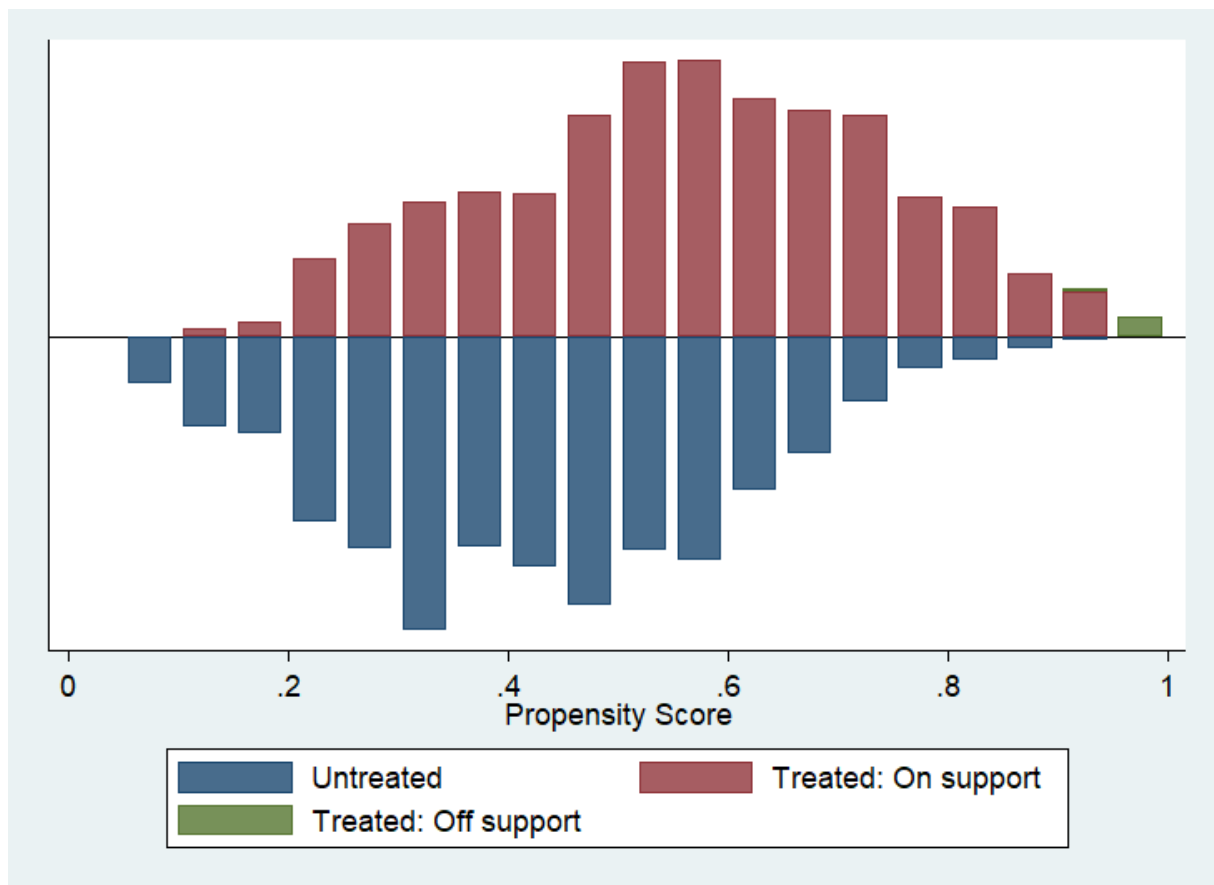
Table 1: Analysis of overall quality of life using a fixed-effect method

	Ols	fixed
All sample	-0.77(0.13)***	-0.77(0.10)***
Female headed	-0.68(0.35)*	-0.68(0.28)**
Male headed	-0.77(0.14)***	-0.77(0.11)***
Camp vs Camp	1.34(0.21)***	1.34(0.16)***

Table 2: Quality and sensitivity analysis

	Number of observation off support Out-of-camp(Camp)	Number of observation on support Out-of-camp(Camp)	Pseudo R2 before matching	Pseudo R2 after matching	P> chi² before matching	P> chi² after matching	Mean standardized bias before matching	Mean standardized bias after matching	Total bias reduction (%)	Rubins' B (R) before matching	Rubins' B (R)after matching
		Overall life satisfaction									
NNM	0 (58)	2416 (2324)	0.112	0.002	0.000	0.216	24.50	2.90	88.16	81.4 (1.09)	14.2 (1.33)
NNM trim	0 (22)	2416 (2360)	0.112	0.004	0.000	0.004	24.50	3.20	86.94	81.4 (1.09)	14.2 (1.33)
KBM	0 (58)	2416 (2324)	0.112	0.001	0.000	0.928	24.50	1.10	95.51	81.4 (1.09)	5.7 (1.07)
		Material living conditions									
NNM	0 (29)	1208 (1162)	0.112	0.001	0.000	0.897	24.5	2.00	91.84	81.3 (1.09))	8.5 (1.02)
NNM trim	0 (11)	1208 (1180)	0.112	0.003	0.000	0.334	24.5	2.10	91.43	81.3 (1.09)	13.1 (1.45)
KBM	0 (29)	1208 (1162)	0.112	0.001	0.000	0.993	24.5	1.10	95.51	81.3 (1.09)	5.7 (1.07)

Table 3: Result of impact outcomes on household living in refugee camps

	OLS	NNM	NNM-trim	KFM
Overall quality of life	-0.77 (0.13)***	-0.73 (0.13)**	-0.76 (0.13)***	-0.73 (0.13)***
Risk of overcrowded dwelling	-0.35 (0.02)***	-0.36 (0.02)**	-0.37 (0.02)***	-0.36 (0.02)**
Asset index	-2.56 (0.09)***	-2.80 (0.09)	-2.85 (0.09)	-2.80 (0.09)
Satisfaction with overall access to service including water and electricity	-0.58 (0.03)***	-0.63 (0.03)**	-0.64 (0.03)**	-0.63 (0.03)**
Income per capita per month	-13.32 (1.37)***	-13.27 (1.66) ***	-14.77 (1.66) ***	-13.50 (1.56) ***
Share of household in abject poverty	0.32 (0.02)***	0.35 (0.03)**	0.36 (0.03)**	0.34 (0.02)**
Share of households that can lend out 150 J	-0.07 (0.01)***	-0.09 (0.02)**	-0.09 (0.02)**	-0.07 (0.02)**

N/B: The Table shows the ATT for the various impact outcomes. The treatment group is camp households, and the control is out-of-camp households. Hence, ATT = camp households − out-of-camp households. The overall quality of life (or subjective life satisfaction) was estimated using DiD, while other impact indicators were estimated directly from the propensity score matching. OLS means ordinary least square is the baseline equation without controls. NNM is the nearest neighbor matching, NNM-trim is the nearest neighbor matching with a

caliper of 1%, and KFM is kernel function matching. Numbers in bracket are standard errors. The NNM-trim is the reported equation. *** means significant at 1%, ** means significant at 5%, and * means significant at 10%