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Abstract

We examine in this paper the determinants of access to transfers in the context of the Syrian refugee influx to Jordan, and, in particular, whether vulnerable refugees based on a multi-dimensional poverty index, have access to different kinds of transfers. We use a publicly-accessible, nationally-representative dataset that includes both registered and unregistered refugees to assess the adequacy of targeting of transfers. We analyze access to cash assistance and food vouchers as a function of refugee characteristics separately for those residing in camps and in host communities to identify different patterns of access across the two settings. Our findings indicate that transfers appear to be well-targeted to some vulnerable households in both settings including those with disabled members, those with a higher ratio of children among their members, and those with no workers. However, other markers of vulnerability, such as having an older household head, a high proportion of elderly members, or no educated members in the household, appear to be associated with reduced access to transfers. As a result, 37 percent of multidimensional poor households in both settings do not have access to any transfers. Outside the camp setting, these markers of vulnerability are also associated with a lack of registration, which is itself a major barrier to accessing transfers.

Keywords: Syrian refugees, cash transfers, food vouchers, multi-dimensional poverty, Jordan
JEL classification: I38, I32, H22, J15.

ملخص

تغطي هذه الدراسة محددات الوصول إلى التحويلات في سياق تدفق اللاجئين السوريين إلى الأردن، وبالأخص ما إذا كان اللاجئون المستضعفون، استنادًا إلى مؤشر الفقر المتعدد الأبعاد، يمكنهم الوصول إلى مختلف أنواع التحويلات. تستخدم الدراسة مجموعة بيانات متاحة للعامة ووطنية التمثيل، بحيث تشمل كلا من اللاجئين المسجلين وغير المسجلين لتقيم مدى كفاية استهداف عمليات التحويل. كما تقوم بتحليل إمكانية الوصول إلى المساعدة النقدية والقسائم الغذائية باعتبارها إحدى خصائص اللاجئين بخلاف المقيمين في المخيمات وفي المجتمعات المضيفة بهدف تحديد الأنماط المختلفة لإمكانية الوصول في الحالتين. تشير النتائج إلى أن استهداف التحويلات لبعض الأسر المستضعفة يبدو جيدًا في كلا الحالتين، بما في ذلك الأسر التي تتكون من أفراد ذوي احتياجات خاصة، والتي لديها نسبة أعلى من الأطفال بين أفرادها، والتي لا تتضمن عمال. ولكن يبدو أن علامات الاستضعاف الأخرى، مثل كبر سن رب الأسرة أو ارتفاع نسبة كبار السن في الأسرة أو وجود أفراد أسرة أميين، مرتبطة بانخفاض الوصول إلى التحويلات. وعليه، لا تستطيع 37% من الأسر التي تعاني من الفقر المتعدد الأبعاد في كلا الحالتين الوصول إلى أي تحويلات. وبخلاف حالة "المخيمات"، ترتبط علامات الاستضعاف هذه بنقص التسجيل، والذي يعد في حد ذاته عائقًا رئيسيًا أمام الوصول إلى التحويلات.

1. Introduction

There is growing evidence that cash assistance represents a highly effective form of aid that provides recipients the autonomy and dignity to meet their own needs while supporting local producers and markets (UNHCR 2016; ODI 2015) Cash assistance has also proven to be a more cost-efficient modality than in-kind aid. It has proven to be more efficient to deliver to recipients and, depending upon the context, it can also be equally more effective at delivering the desired outcomes compared to in-kind assistance (Mikulak 2018) . Receipt of cash transfers has been shown to have a number of positive effects for refugees. It helps households overcome financial barriers to accessing goods or services, e.g. school uniforms, cost of medicine (Hagen-Zanker, Ulrichs, and Holmes 2018). It enables beneficiaries to invest in assets or skills needed for work, or travel expenses to reach workplaces or service provider. Cash transfer can also reduce the need to resort to harmful coping mechanisms, such as selling assets, and reducing child labor and sending children to work (Rosati 2022; de Janvry et al. 2006) . Regular cash income can also contribute to reducing stress levels and improving psychosocial well-being of beneficiary households, strengthen their ability to participate in communal activities and focus on priorities beyond short-term survival. Secured source of income through cash transfer found to be impactful in improving livelihood opportunities and also enable beneficiaries to take the time and risk to search for (better) livelihood opportunities(Fisher et al. 2017; Taaffe, Longosz, and Wilson 2017; Molyneux, Jones, and Samuels 2016).

The question we examine in this paper is who gets access to transfers in the context of the Syrian refugee influx to Jordan, and, in particular, whether vulnerable refugees based on a multi-dimensional poverty index, have access to different kinds of transfers. Our primary contribution is to assess the adequacy of targeting of cash transfers using a publicly-accessible, nationally-representative data set that is independent of UNHCR registration data and that, therefore, includes both registered and unregistered refugees. We also us an alternative way of identifying the most vulnerable refugees based on the now widely used multi-dimensional poverty framework We provide a detailed comparison between the multi-dimensional poverty index (MPI) that we use, and the vulnerability assessment framework (VAF) used by UNHCR and the Consolidated Approach for Reporting Indicators of Food Security (CARI) used by WFP to target assistance to refugees. We also analyze access to cash assistance and food vouchers as a function of refugee characteristics separately for those residing in camps and in host communities to identify potential obstacles to access.

Access to food vouchers is much more universal than to cash transfers, but the two decisions are likely inter-related, which we take into account in our analysis. Since few households receive cash transfers but not food vouchers, we use a three-category outcome variable of (i) receiving both types of transfers, (ii) receiving one type (almost always food vouchers), (iii) receiving neither type of transfers. To account for our polychotomous outcome variable, we use a multinomial probit model to examine the household characteristics that determine access to transfers in both camp and host community settings.

One advantage of our analysis compared to previous work (Hanmer et al. 2020) that relied on UNHCR data on registered Syrian refugees is that we rely on a nationally representative survey that includes both registered and unregistered refugees. In fact, we identify registration as an important obstacle to accessing social assistance for vulnerable households that reside in host communities. We show that lack of registration is associated with old age and low levels of education, but that it is also more common among refugees that reside in temporary shelter outside official camps.

In Section 2 below we provide a brief background on Syrian refugees in Jordan, the transfer programs available to them, and the refugee registration process and how it relates to the receipt of transfers. Section 3 presents our data sources and some descriptive statistics. Section 4 introduces the MPI framework and compares it to the targeting systems used by UNHCR and WFP. Section 5 presents the methodology and results relating to the characteristics of Syrian refugee households associated with the receipt of cash transfers and food vouchers for in-camp and non-camp refugee populations. Section 6 presents results on the degree to which the receipt of transfers is related to vulnerability as measured by the MPI and the characteristics of vulnerable households identified in this way that are associated with non-receipt of transfers in both camp and non-camp settings. Given the importance of registration in determining such access, we analyze in Section 7 the determinants of registration. Section 8 concludes and draws out the policy implications.

2. Background

2.1. Syrian refugees in Jordan

Most Syrian refugees entered Jordan by crossing the Northern border informally. There are, therefore, varying estimates on the number for Syrian refugees in Jordan depending on the source of information. The 2015 Jordanian Population Census reports that 1.265 million Syrian individuals were in Jordan in December 2015, of whom 953 thousand were recorded as refugees (Department of Statistics (Jordan). The census enumerated a total population of 9.5 million, of whom 6.6 million were Jordanian. UNHCR reports that the number of registered Syrian refugees in Jordan as of October 2018 was 673 thousand, of whom 126 thousand (18.7 percent) resided in camps (Krafft, Razzaz, et al. 2019).

Comparing the Syrian refugee population to the host population using the JLMPS 2016 data, which is also our main source of data, Krafft, Sieverding, et al. (2019) found that 23 percent of Syrian refugee households were female-headed compared to 14 percent among the Jordanian host population. Young children, aged 0–5, were present in 64 percent of Syrian refugee households compared to 41 percent of Jordanian households. Older children, aged 6–17, were present in 70 percent of Syrian refugee households compared to 48 percent of Jordanian households. In contrast, while 19 percent of Jordanian households had an elderly member (aged 65+), only 10 percent of Syrian refugee households had an elderly member. Among currently married Syrian refugees, 9

percent had an absent spouse. This was considerably higher than the 1 percent of Jordanians whose spouse was absent (Krafft, Sieverding, et al. 2019).

Prior to 2016, Syrian refugees in Jordan were unable to work formally in Jordan, but this changed with the signing of the Jordan Compact, an agreement between the Jordanian government and the European Union (EU), which allowed for a certain number of work-permits for Syrian refugees. Nonetheless, the vast majority of employed Syrian refugees work informally (Assaad, Alsharawy, and Salemi 2019). In any case, employment rates for both men and women in Jordan are among the lowest in the world, and they are even lower among refugees (Assaad, Krafft, and Keo 2019). In 2016, 55 percent of Jordanian men of working age (15-64) were employed, as compared to only 38 percent of Syrian men. Employment rates among women are considerably lower, with 11 percent of Jordanian women and only 2 percent of Syrian women of working age being employed in 2016 (Assaad, Krafft, and Keo 2019). These figures suggest that many refugees' households have no workers in them and thus no pre-transfer income, two characteristics we use as explanatory factors in our model predicting receipt of transfers.

Food insecurity is a challenge for many Syrian refugees. Among Syrian refugees aged six and older, 44 percent reported that they did not consistently have square meals compared to 35 percent of Jordanians. In 2016, despite the greater prevalence of receiving food support, food insecurity was also higher in camps than host communities across all measures, regardless of receipt of food support. Amongst Syrian refugees living in camps and not receiving food support, 83 percent did not have square meal compared to 46 percent of non-camp counterparts. Those receiving food support did report slightly lower rates of hunger than those not receiving food support in both locations. For example, 66–68 percent of those receiving food support in camps reported the three broader measures of food insecurity (meals not square, skipped meals, and ate less), which was only slightly lower than those without food supports in camps (74–83 percent across measures) (Krafft, Sieverding, et al. 2019). Food insecurity is therefore an important measure of vulnerability which we include in our MPI index, but its relationship to the receipt of transfers is more complicated since it could be both a targeting criterion (as in the WFP CARI methodology) as well as an outcome of access to transfers.

2.2. Cash transfer programs for Syrian refugees in Jordan

Jordan has a relatively well-developed social safety net, which includes both contributory as well as non-contributory social assistance programs, but these programs are mostly directed toward Jordanian citizens, with non-nationals, such as Syrian refugees generally not eligible for them (Röth, Nimeh, and Hagen-Zanker 2017; Kawar, Nimeh, and Kool 2021). Nevertheless, there is a wide variety of social protection and humanitarian assistance programs for refugees in Jordan provided by international organizations and NGOs (Röth et al. 2017). Humanitarian assistance programs targeting refugees can be grouped into four categories: (i) cash assistance, vouchers and winterization schemes, (ii) education, (iii) employment and empowerment, and (iv) and protection. In this paper we limit our attention to programs providing cash transfers and food vouchers. The amount spent on cash transfer by UNHCR, WFP, and UNICEF alone in 2016 was US$ 252.5

Million, 28 percent of the US$ 889 Million. spent in total social assistance for refugees (Chehade, Mcconaghy, and Meier 2020). At the time of our survey in 2016/17, UNHCR and UNICEF provided regular cash transfers and WFP provided food vouchers, which were more recently converted to unconditional cash grants as described below.

UNHCR's cash transfer amount varies from $75 and $400 per household per month depending on household size and UNICEF disburses a monthly cash grant of $28 per child (Giordano et al. 2017; Boncenne et al. 2018). The UNHCR transfer is targeted to the most vulnerable refugee households using their Vulnerability Assessment Framework (VAF), which we discuss in more detail below. The level of cash assistance provided is based on the Survival Minimum Expenditure Basket (SMEB). The SMEB is recalculated each year to reflect changes in the economy. It is an estimate of the monthly expenditure per capita necessary for physical survival, however, it does not account for deprivation of a series of basic rights such as education and health costs. It acts as a measure for the amount needed to fulfil basic survival needs (shelter, food, and water/sanitation).

Hajati, the UNICEF cash transfer program, is an unconditional cash transfer for some of the most vulnerable families in Jordan whose children are registered in double-shift schools. The program is accessible to all children, irrespective of nationality or status, with each eligible child receiving 20 JD (US$ 28) a month during the school term. As of January 2018, Hajati assisted 53,333 children from 19,609 households. The program support dropped to 10,000 children in the 2018-19 academic year due to funding constraints faced by UNICEF. Hajati is an unconditional but labelled cash transfer targeted at the most vulnerable communities, aiming to encourage parents to increase school enrolment and retention for their children. There is some evidence that Hajati is effective in supporting both children's education and their overall socio-economic wellbeing, as well as in offering a protective measure against harmful coping mechanisms, including child labor and early marriage. (Boncenne et al. 2018).

WFP has been providing food assistance to Syrian refugees in Jordan since mid-2012. It has evolved from providing hot meals to paper vouchers to e-vouchers, and finally starting in 2017, after our data was collected, to unconditional cash transfers. Starting in July 2012, WFP provided hot meals at the Za'atari camp, which shifted to take home rations by October 2012. Provision of paper food vouchers started which were to be redeemed in food shops and supermarkets started in September 2012. A transition to e-vouchers began in January 2014 for all UNHCR registered Syrian refugees. (Luce 2014). In a phased approach starting in 2017, UNHCR began a transition from restricted (e-vouchers) to unrestricted cash assistance. This allowed beneficiaries to redeem the entirety or parts of their entitlement both at ATMs and WFP-contracted shops. A study conducted by the Boston Consulting Group (2017) found that food security of the recipient through unrestricted cash was superior or equal to those of vouchers.

WFP currently provides monthly food assistance to almost 500,000 refugees in Jordan. (World Food Programme 2022). This includes Syrians living in camps and the community and around 10,000 refugees from other countries, such as Iraq, Yemen, Sudan and Somalia. Refugees residing in camps use technologies such as blockchain and iris scanner to receive assistance, whereas those

living outside camp use ATMs to withdraw cash or use e-cards at one of the 200 contracted shops across the country (World Food Programme 2022).

Households classified as "extremely vulnerable" to food insecurity receive JOD 23 (USD 32) per person per month and households classified as "vulnerable" to food insecurity receive JOD 15 (USD 21) per person per month. WFP measures vulnerability to food insecurity through a composite indicator defined in the widely used Consolidated Approach for Reporting Indicators of Food Security (CARI methodology), which is described in more detail below.

A number of other programs other than cash transfers and food vouchers are oriented towards Syrian refugees. Several organizations such as UNHCR, the Norwegian Refugee Council (NRC) and Save the Children contribute to a large-scale winterization program in Jordan. These involve distribution of blankets, heating equipment and clothes, along with cash transfers. In 2020-21 about 90,000 families were supported under winterization program (Röth, Nimeh, and Hagen-Zanker 2017).

2.3. Registration of Syrian refugees in Jordan and its relationship to the receipt of social assistance

Registration is one of the key challenges that Syrian refugees face. Unregistered refugees lack access to basic services and much of the donor assistance, and risk deportation (Salemi, Bowman, and Compton 2018). Refugees must not only register with UNHCR but must also apply for Ministry of Interior cards to access most services. If they wish to reside outside the official refugees' camps, they also need an asylum seeking certificate (ASC) issued by UNHCR.

The UNHCR registration process includes the collecting and recording of personal data, such as biographic and biometric data, for persons of concern. The interview process allows for refugees to share their personal story. It helps in collecting the necessary personal data, review of submitted documents, verification of identity, and identification of immediate humanitarian and protection concerns. In addition to the detailed registration interview, UNHCR also records biometric data which includes taking an iris scan and an individual photograph. Biometric data ensures confidentiality of the data, provides a unique identity to the refugee, and protects against misrepresentation and fraud. This is a basic card, and irrespective of camp or non-camp residence most of the Syrian refuges have it (UNHCR 2020). It is estimated that about 97 percent Syrian refugees have UNHCR proof of registration card (Tiltnes, Zhang, and Pedersen 2019).

For Syrian refugees who live in Jordanian host communities, UNHCR also provides an asylum seeker certificate (ASC), a document which states that those listed on the certificate are "persons of concern" to UNHCR. The difference between UNHCR proof of registration and ASC is that the ASC provides access to some of the basic services. The ASC allows Syrians residing in host communities to access services and assistance provided outside the camps by UNHCR and other humanitarian agencies, such as cash, food, and subsidized healthcare (NRC 2016). Recent

estimates indicate that about 89 percent Syrian refugees have an ASC (Tiltnes, Zhang, and Pedersen 2019).

Regardless of whether they have registered with UNHCR as refugees, all Syrians living in Jordan are required to also register with the Jordanian Ministry of the Interior (MoI) and receive an MoI Card, which is valid only if the Syrian household continues residing in the district where the card was issued. (NRC Report, 2016). This crucial piece of documentation is required to access subsidized public healthcare and government-run education services. About 86 percent Syrian refugees are estimated to have MOI cards (Tiltnes, Zhang, and Pedersen 2019). To obtain an MoI card applicants need proof of identity, proof of address, an ASC (when residing outside camps), and a health certificate. Refugees who do not have access to any of these documents are unable to obtain MoI cards. Roughly one in ten Syrian refugees do not have any kind of Syrian identity papers. The most common type of identity papers is the family booklet (69 per cent), followed by the Syrian ID card (42 per cent) and the passport (32 per cent), and birth certificate (14 per cent) (Tiltnes, Zhang, and Pedersen 2019).

Refugee can open a mobile wallet account with the MoI card but need a valid passport to open a regular account with a financial institution. However, even when refugees are able to open an account, transactions on this account are often limited to cash-in and cash-out. (Microfinanza 2018). Table 1 summarizes the types of registration Syrian refugees are required to have depending on their residential status and the types of services that each type of registration entitles them to.

Table 1. Registration and utility of documentation

Syrian refugees' location	**UNHCR proof of registration card**	**Ministry of Interior (MoI) card**	**UNHCR Asylum Seeking Certificate (ASC)**
Syrian refugees residing in camp	Required	Required	Not required
Syrian refugees residing in host communities	Required	Required	Required
Utility of the documentation	Basic identity card. Does not give access to any benefits as such.	To access subsidized public healthcare and government-run education services	To access cash, food, and subsidized healthcare
What do these documents do not guarantee?	A comprehensive set of legal rights such as citizenship, marriage, or inheritance rights, nor does it automatically facilitate the right to work or the right to own property.		

Source: (NRC 2016; Tiltnes, Zhang, and Pedersen 2019; UNHCR 2020)

While JLMPS 2016 data is unable to distinguish between UNHCR registration, MOI registration or ASC status, it suggests that 80 percent of non-camp households and a 100 percent of camp households are registered. While having an MoI card and ASC status provides benefits to the Syrian refugees, this protection is both temporary and limited. ASC status and MoI cards are valid for a one-year renewable period only, and do not provide a comprehensive set of legal rights such as citizenship, marriage, or inheritance rights, nor do they automatically provide the right to work or the right to own property.

3. Data and descriptive statistics

We rely primarily in our analysis on the Jordan Labor Market Panel Survey (JLMPS) of 2016, which was carried out by the Economic Research Forum (ERF) in cooperation the Jordanian Department of Statistics (OAMDI 2018). It is the second wave of a longitudinal survey first implemented in 2010 on a nationally-representative sample of about 5,000 households. In 2016, the original households were tracked, so were households that split from them in the intervening period. In order to capture the large influx of Syrian refugees that happened around 2012/13, a refresher sample of 3,000 households was added, which oversampled neighborhoods with a high prevalence of non-Jordanian households in the 2015 population census. The resulting overall sample was made up of 7,229 households, including 554 Syrian refugee households with complete data, containing 2,826 individuals.[1] The sample included sub-samples from the three official refugee camps, Zaatari, Azraq and the Jordanian Emirati camp. This ensured that the survey captures a representative sample of Syrian refugees that is large enough to analyze their socioeconomic and demographic characteristics. The use of sampling weights is needed to ensure that the sample is representative of Syrian refugees in Jordan.

Despite the relatively small sample of Syrian households in the JLMPS, the comprehensive nature of the survey allows us to capture a wide range of characteristics of refugee household, which we can relate to the receipt of transfers. The survey also distinguishes between two types of transfers - food vouchers and cash – although it does not capture the value or the source of the transfers. To obtain information on the source and amount of the transfers, we rely in the descriptive analysis on a more recent source of data, the Survey of Young People in Jordan (SYPJ), carried out by UNICEF in 2020 and 2021on a nationally representative sample of Jordanian and Syrian households containing at least one youth aged 16 to 30 (Add reference to data set on ACSS data verse).[2]

Table 2 presents the share of Syrian refugee households with various characteristics in the JLMPS 2016 and SYPJ datasets. As shown in the table, the estimates from JLMPS 2016 and SYPJ are in the same order of magnitude but are not exactly the same. Differences arise from different sampling strategies (with SYPJ covering only households that contain youth) and different timing (with up to four years separating the two surveys). Based on the JLMPS 2016, 23 percent of Syrian refugee households receive cash transfers and 72 percent receive food vouchers, with 22 percent

[1] The survey methodology and sampling strategy is described in detail in Krafft & Assaad (2021). A publicly-use version of the microdata from JLMPS is available through ERF's Open Access Microdata Initiative (OAMDI 2018).
[2] SYPJ was carried out on a sample of 2,854 households of which 1,067 were Syrian-headed households. For more details, see Assaad et al. (2021). A public use micro sampe from SYPJ is available through the ACSS Dataverse (https://dataverse.theacss.org/).

receiving both kinds of transfers, 55 percent receiving only one type (mostly food vouchers) and 23 percent not receiving any transfers. Access to transfers is generally higher for the refugee population residing in camps, with only 11 percent of those in the camps not receiving any kind of transfer. There is a substantially higher proportion of households headed by women in the non-camp population than the camp population of Syrian refugees. Otherwise camp-based households tend to be more disadvantaged. They are somewhat less educated, more likely to have children, less likely to have seniors, much more likely to be in the lowest wealth decile, less likely to have employed members and pre-transfer income and more likely to suffer from food insecurity and crowding.

Table 2. Descriptive statistics for Syrian refugee households in JLMPS 2016 and SYPJ (proportion)

Variable	JLMPS 2016			SYPJ 2020-2021		
	All	In camp	Non camp	All	In camp	Non camp
Household in receipt of cash transfers	0.23	0.33	0.21	0.29	0.18	0.32
Household in receipt of food vouchers	0.72	0.80	0.71	0.59	0.77	0.54
Household in receipt of only one type of transfer	0.55	0.65	0.52	0.58	0.89	0.50
Household in receipt of both types of transfer	0.22	0.24	0.22	0.11	0.00	0.14
Household in receipt of neither type of transfer	0.23	0.11	0.26	0.31	0.11	0.36
Household with a female head	0.24	0.12	0.27	0.19	0.06	0.23
Household with a disabled member	0.29	0.28	0.29	n.a.	n.a.	n.a.
Households with a head above the age of 60	0.11	0.06	0.12	n.a.	n.a.	n.a.
Households with illiteracy as the highest education	0.07	0.07	0.04	0.02	0.06	0.02
Households with ability to read and write as the highest education	0.46	0.50	0.46	0.15	0.35	0.11
Ratio of children to all the members in the household	0.44	0.48	0.43	0.48	0.38	0.50
Ratio of seniors (>60 yrs.) to all the members in the household	0.05	0.02	0.05	0.01	0	0.01
Households in the lowest wealth decile	0.22	0.72	0.07	n.a.	n.a.	n.a.
Households with no pre-transfer income	0.55	0.66	0.52	n.a.	n.a.	n.a.
Households with no paid worker	0.53	0.66	0.49	0.50	0.42	0.52
Households with food insecurity	0.13	0.34	0.09	n.a.	n.a.	n.a.
Households with crowding	0.23	0.59	0.15	0.19	0.68	0.07
Households in the North	0.46	0.51	0.45	0.43	0.22	0.47
Sample size	554	366	188	1067	486	581

Source: calculated by authors based on data from JLMPS 2016 and SYPJ.
Notes:
n.a. refers to not available using the same definition as in JLMPS 2016.

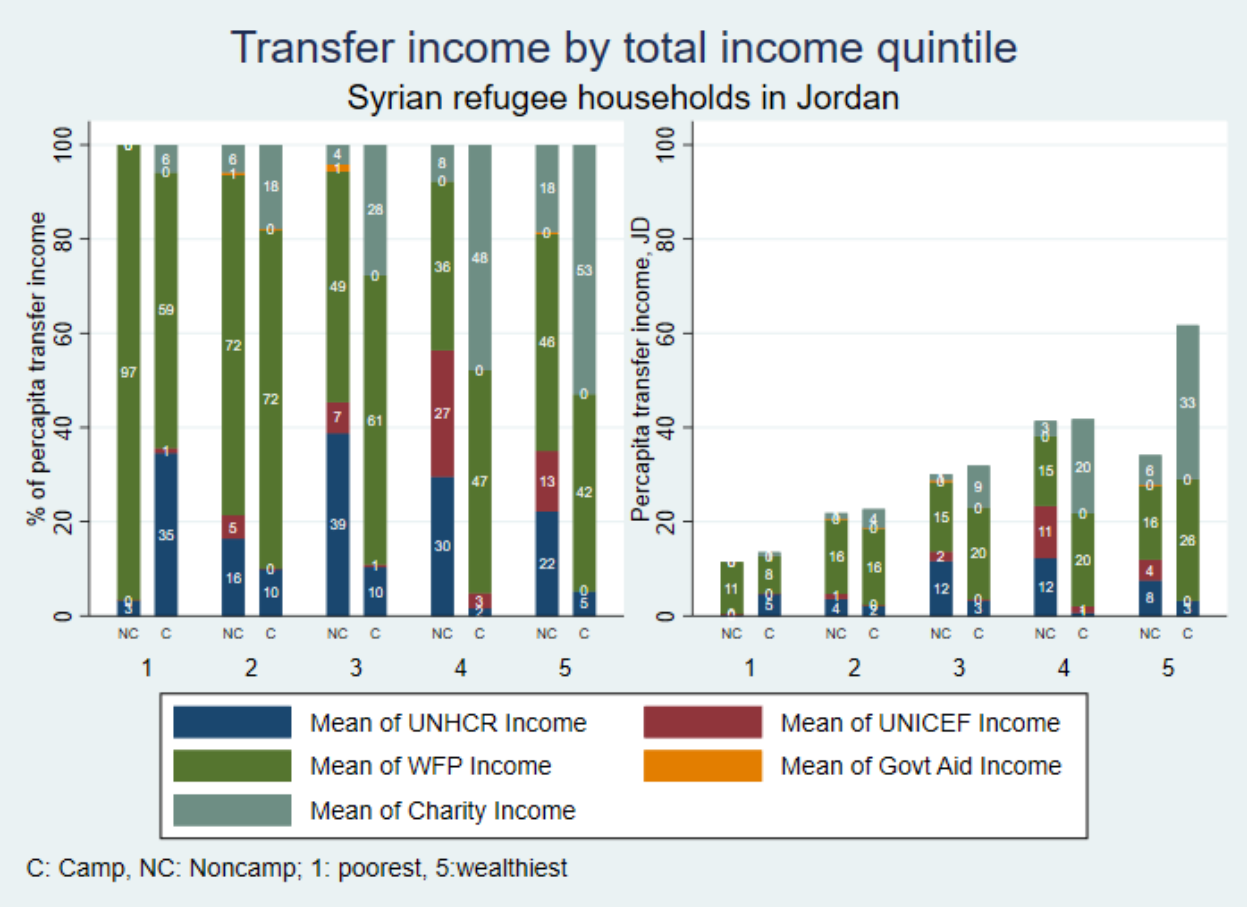
- Household with a disabled member: Any household member has a disability either from a longstanding or chronic illness or a mental or physical disability or is permanently disabled.
- Household with no pre-transfer income: Household's only income is from public and private transfers.
- Household has no paid worker: no member of the household was employed for pay or profit in the reference 3 months.
- Household with food insecurity: a household is considered food insecure if any member of the household has skipped meal a few times each month or most days/week or rarely or never ate three 'square meals' or often or mostly ate less food in a meal due to scarcity of food.
- Household with crowding: refers to households living in dwellings with more than three persons per room.

Since the JLMPS 2016 does not have information on the amount of the transfers received by Syrian refugee households and their source, we make use of the Survey of Young People in Jordan (SYPJ) to get this information across camp and non-camp settings. In the sources described below, please note that UNHCR and UNICEF have always provided cash transfers. As described above, WFP

shifted from food vouchers in 2012 to e-vouchers in 2014, to unrestricted cash transfers in 2017. As indicated in the SYPJ data, there is also some cash assistance provided by the Jordanian government and other private or religious charitable sources. Also note that the total income quintiles are based on income that includes the amount of transfers received.

As shown in the right panel of Figure 1, the amount of per capita transfer income rises steadily with total income quintile up to the fourth quintile in the non-camp population and all the way to the fifth quintile in the camp population. The composition of transfer income changes substantially as well as income rises. The amount received in WFP food vouchers is relatively uniform across camp and non-camp residence and across income quintile, although there is a tendency for it to increase with income, going from 9-11 JD per person in the lowest quintile to 16-26 JD per person in the highest quintile. As shown in the left-hand panel of the figure, those in the lowest income quintile outside camps are almost exclusively dependent on WFP vouchers for their transfer income. The proportion of other types of transfers, such as those from UNHCR and UNICEF increases steadily with income for the non-camp population up until the fourth income quintile. Those residing in camps appear to have limited access to these sources of income, but are more likely to receive charitable contributions, which also appear to rise as income rises. In fact, the highest income quintile in camps receives more than half its transfer income from these private charitable sources. Jordanian government aid is negligible across the board.

Figure 1. Composition and Amount of Per Capita Transfer Income Received by Syrian Refugees not in camps [NC] and in camps [C] by Total Income Quintile



4. The multi-dimensional poverty framework and the targeting of transfers

There is now an extensive literature attempting to extend the definition of poverty beyond the notion of income poverty to more broadly include lack of education, poor health, low living standards, access to employment, personal security and more (Santos and Alkire 2011). For this reason, since 1997, the *Human Development Reports* (*HDRs*) have introduced poverty measures that go beyond income poverty, including the Human Poverty Index (HPI), which was replaced by the Multidimensional Poverty Index (MPI) in 2010. We build an MPI based on JLMPS data and compare it to the criteria used by UNHCR and WFP to target their transfers.

4.1. Estimating the Multi-Dimensional Poverty Index (MPI) for Jordan

The Multidimensional Poverty Index (MPI) is based on the Alkire and Foster (Alkire and Santos 2010) dual cut-off method for poverty identification. The MPI can be thought of as the product of the MPI headcount H (measuring the share of the population that is multidimensionally poor), and

the weighted deprivation share of multidimensionally poor households A (measuring the weighted percentage of indicators, in which the multidimensionally poor are on average deprived). Both incidence and intensity of the deprivations are very relevant pieces of information for poverty measurement. Alkire and Santos (2010) identify three dimensions to be included in the MPI: health, education, and the standard of living. These dimensions have been chosen as there is consensus that any multidimensional poverty measure should at least include these three dimensions; for the ease of interpretability; and finally, for reasons of data availability (Dotter and Klasen 2014).

In the case of Jordan, we have adopted the three equally-weighted dimensions suggested by Alkire and Santos (2010) with a total of ten indicators, some of which are adapted to the availability of data in the JLMPS 2016 data set. The three dimensions, the indicators associated with them, and the weights associated with each are shown in Table 3. Associated with each indicator is a minimum threshold that defines deprivation, which is based on an international consensus of what is acceptable (such as the Millennium Development Goals or MDGs) (Santos and Alkire 2011). This minimum threshold is called a deprivation cutoff. We also note the standard references from the MPI literature that have used a similar indicator and cutoff.

Table 3. Dimensions and Indicators of Multi-Dimensional Poverty Index as Applied to the Jordanian Case

Dimension	Variables	Criterion – the household is deprived if	Weight of a variable	Overall weight of a dimension	Reference
Education	Years of schooling	No individual with more than 5 years of schooling	1/6	1/3	(Santos and Alkire 2011); (Admasu et al. 2021)
	School attendance	Any child in household not attending school up to class 8	1/6		(Santos and Alkire 2011 ; (Admasu et al. 2021)
Living Standards	Electricity	No electricity	1/18	1/3	(Santos and Alkire 2011); (Admasu et al. 2021
	Drinking water	No drinking water availability	1/18		(Santos and Alkire 2011) ; (Admasu et al. 2021)
	Sanitation	No toilet and sewage facility available	1/18		(Santos and Alkire 2011); (Admasu et al. 2021)
	Flooring	Low quality floor (wood, dirt, caravan & tent)	1/18		(Santos and Alkire 2011 2011)
	Asset ownership	Do not own more than one of a group of small assets (radio, TV, telephone, bike, motorbike, or refrigerator) *and* do not own a car or truck.	1/18		(Santos and Alkire 2011 ; (Dotter and Klasen 2014); (Admasu et al. 2021)
	Cooking fuel	Cooks with charcoal/firewood	1/18		(Santos and Alkire 2011); (Admasu et al. 2021)
Health	Food security	At least one member of the household has experienced one of the three food insecurities: skipped entire meal, didn't eat three meals, ate smaller meal in last 12 months	1/6	1/3	(Admasu et al. 2021)
	Access to health	No member of a household is able to access health facilities	1/6		(Dirksen 2020)

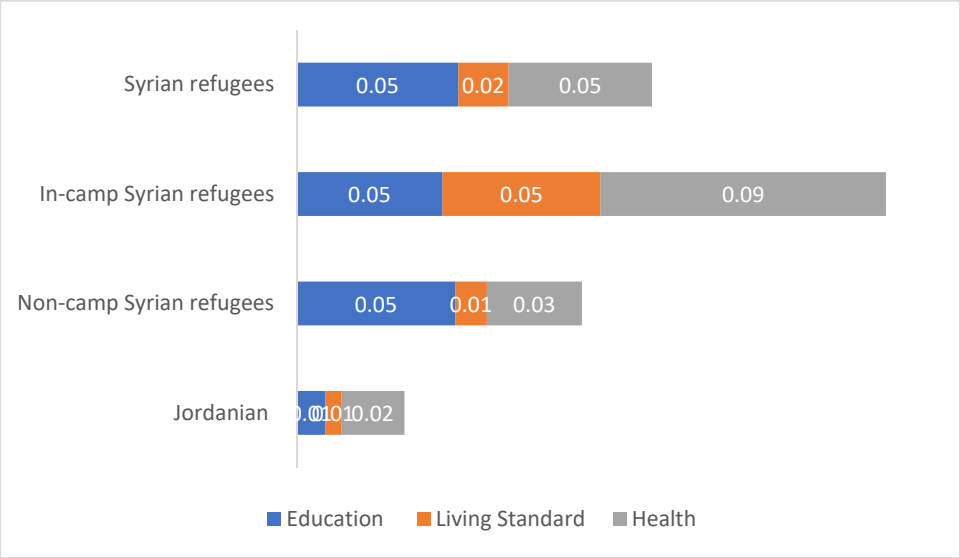
Source: compiled by authors using references listed in the last column of the table.

In selecting the indicators shown in Table 6, we attempted to hew as closely as possible to the standard literature on MPI (Santos and Alkire 2011; Dotter and Klasen 2014; Admasu et al. 2021). We also consulted the Oxford Poverty and Human Development Indicators (OPHI) Jordan Country Briefing 2017 (OPHI 2017). As in the literature, the dimensions chosen were: (i) education, (ii) living standards, and (iii) health. JLMPS 2016 data includes the same variables typically used for the education dimension, namely years of schooling and school attendance. Similarly, the usual indicators describing living standards, namely access to electricity, drinking water, sanitation, and flooring, asset ownership, and cooking fuel. However, the JLMPS 2016 dataset does not have the variables used in most of the standard MPI literature regarding the health component, namely nutrition and child mortality. Instead of these two variables we use food security (Admasu et al. 2021) and access to health care (Dirksen 2020). The selected deprivation cutoffs for each indicator are described in the third column of Table 6 are also mostly derived from the standard literature.

Figure 6 shows the average deprivation score c_i for Syrian refugees and the Jordanian host community and its breakdown across the three components.[3] The average c_i for all Syrian refugees is 0.12, rising to 0.19 for the in-camp population and falling to 0.09 for the non-camp population. In contrast, the average c_i for the Jordanian host community is just 0.04. Educational deprivation is similar across the camp and non-camp Syrian populations with mean value of ci of 0.05. Deprivation on the health dimension looms larger for the camp-based population than for those living in host communities. As expected, deprivation in living standards also looms relatively large for the camp population, which mostly resides in non-standard housing with limited access to services.

[3] See Appendix for the formulas used to calculate the deprivation score. A score of greater than zero means that the household suffers from at least one deprivation. A score of more that 0.333 is typically used to identify multi-dimensionally poor households.

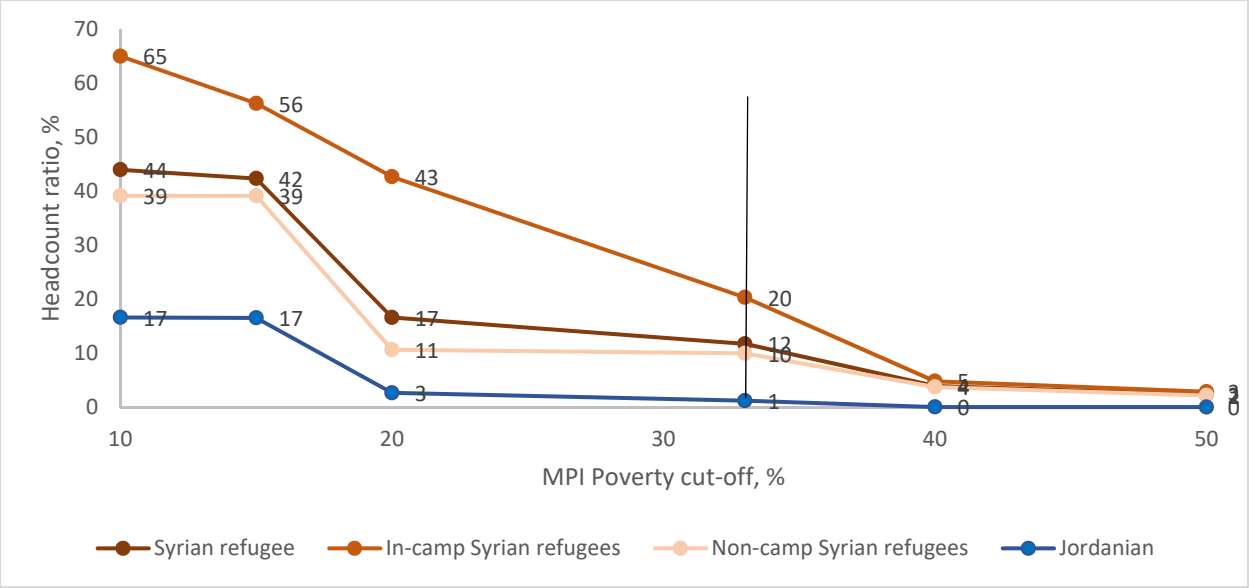
Figure 2. Mean Value of Deprivation Score *ci* for Syrian Refugees by Camp Residence and the Jordanian Host Population and its breakdown into its three dimensions



Source: Calculated by authors based on data from JLMPS 2016.

Figure 9 shows how the MPI headcount ratio changes with the choice poverty cutoff *k*. The hedcount ratio falls steadily for in-camp population from 65 to 5 percent for a c_i cut-off ranging from 10 to 40 percent. For the non-camp Syrian refugee population there is a large drop in the headlcount ratio as the cut-off goes from 15 to 20 percent and then it remans steady through 33 percent. At the typicallly used cutoff of 33 pecent, 20 percent of the camp population is deemed multi-dimensionally poor as compared to 10 percent of those residing in host communities and only 1 percent of Jordanians.

Figure 3. Sensitivity of the MPI Headcount Ratio to the Choice of Poverty Cutoff for Syrian Refugees by Camp Status and Jordanians



Source: Calculated by authors based on data from JLMPS 2016.

4.2. A comparison of the MPI index and the targeting criteria used by UNHCR and WFP

In this section, we compare targeting based on the MPI criteria we have developed using JLMPS 2016 data and the targeting mechanism used by UNCHR, namely the Vulnerability Assessment Framework (VAF) and that used by WFP, the Consolidated Approach for Reporting Indicators of Food Security (CARI).

4.2.1. Comparison of UNHCR's VAF indicators and JLMPS MPI indicators:

VAF includes an exhaustive list of variables to identify the vulnerable families eligible for cash transfers. The data is collected during the refugee registration process and is updated annually. As shown in Table 4, it covers the same three dimensions used in the MPI, namely education, health and living standards, but adds an additional dimension of financial security. In the education dimension, both the variables used in the MPI – years of schooling & school attendance -- are included in VAF in addition to a few other variables about children's school attendance. In the health dimension, both of the MPI variables – access to health services & food sufficiency – are included by VAF with the addition of a few more criteria, such as household age composition,

incidence of disability and chronic illness, and share of household expenditures on health. In food sufficiency VAF uses the CARI score developed by WFP (which we discuss below) in addition to some indicators of social vulnerability, such as the incidence of a single head and the dependency ratio of the household. In the living standards dimension, there are some overlaps in the variables used, such as source of drinking water and access to sanitary infrastructure, but the VAF does not include information included in the MPI such as access to electricity, quality of flooring, access to basic household durables, and type of cooking fuel. Conversely, it includes some variables not included in the MPI, such as crowding, shelter type, security of tenure, difficulty of moving, and threat of eviction. As mentioned above the VAF includes a fourth dimension – financial security -- not covered in the MPI, which includes information on poverty status as measured by expenditures per capita, the use of coping strategies by the household, the household dependency ratio, and household debt per capita.

Table 4. Comparison table of list of variables across Multidimensional Poverty Indicator (MPI), Vulnerability Assessment Framework (VAF) and Consolidated Approach for Reporting Indicators (CARI)

Dimension	**Multidimensional Poverty Indicator (MPI) variables** **(The household is MPI poor if,)**	**Vulnerability Assessment Framework (VAF) variables (Used by UNHCR)**	**Consolidated Approach for Reporting Indicators CARI Variables (Used by WFP)**
Education	Years of schooling: No individual with more than 5 years of schooling	1. Number of school-going children (Number) 2. Education attendance (% of children) 3. Missed 3+ years school (% of children) 4. Difficulty experienced (no, psychological, financial, severe) 5. Reasons for non-attendance (not interested, long distance to school, financial constraint, child marriage or disability) 6. Not enrolled in any education (Individual aged 15-17, individual aged 6-15)	Not covered
	School attendance: Any child in household not attending school up to class 8		Not covered
Health	Access to health services: No member of a household is able to access health facilities	1. MoI card (Y/N) 2. Medical access (Y/N), 3. Number of children (<5), 4. Number of adults (>60), 5. Number of instances of disability 6. Number of instances of chronic illness 7. The proportion of expenditure on health-related items	Not covered
	Food sufficiency: Over 12 months, alteast one member of the HH has experienced one of the three food insecurities: skipped entire meal, didn't eat three square meals, ate smaller meal in last 12 months.	1. The CARI (Consolidated Approach for Reporting Indicators of Food Security) score - Food consumption score - Expenditure on food - Coping strategy 2. Social vulnerability - dependency ratio - incidence of single-headed or fragile members	Food Consumption Score (FCS) (list of food consumed), reduced Coping Strategies Index (rCSI)
Living standards	Electricity: The household has no electricity.	Not covered	Not covered
	Drinking water: the household does not have access to clean drinking water	WASH: Source of water (piped & all others)	Not covered

	or clean water is more than 30 minutes' walk from home (roundtrip).		
	Sanitation: if the household lacks adequate sanitation or if their toilet is shared.	WASH: Latrine accessibility, shared latrine, perception of security in latrine environment	Not covered
	Not covered	WASH: % WASH expenditure to total expenditure	Not covered
	Not covered	WASH: vector evidence	Not covered
	Flooring: if the household has a dirt, sand or dung floor.	Not covered	Not covered
	Asset ownership: if they do not own more than one of a group of small assets (radio, TV, telephone, bike, motorbike, or refrigerator) and do not own a car or truck.	Not covered	Not covered
	Cooking fuel: if household cooks with wood, charcoal, or dung.	Not covered	Not covered
	Not covered	Shelter: Crowding (<1 to >4 range)	Not covered
	Not covered	Shelter: Shelter type (finished building, unfinished building, substandard, informal)	Not covered
	Not covered	Shelter: Security of tenure (formal written, no agreement)	Not covered
	Not covered	Shelter: Shelter mobility and accessibility (no difficulty, difficulty moving)	Not covered
	Not covered	Shelter: Threat of eviction (no threat to written notice of eviction)	Not covered
Financial security	Not covered	Poverty/welfare: expenditure per capita	Economic Capacity to Meet Essential Needs (ECMEN) OR Food Expenditure Share
	Not covered	Coping strategies: Ranging from no coping strategy to emergency coping strategy	Livelihood Coping Indicator for Food Security
	Not covered	Dependency ratio[4] : Dependency ratio less than 0.6 to more than 1.8	Not covered
	Not covered	Basic needs: debt per capita (25%) and Expenditure per capita &75%)	Not covered

Source: (Brown et al. 2019; United Nations World Food Programme 2021)

4.2.2. Comparison of WFP's CARI indicators and the JLMPS MPI indicators

As a targeting system primarily concerned with food security, the WFPs CARI system does not cover the education and living standards dimensions of deprivation. Moreover, within the health dimension, it does not cover access to health, but focuses exclusively on food security, which it does in a very detailed way.

With regard to measuring food insecurity, both the MPI and CARI use the frequency of how often family members have to deal with the food shortage by reducing food consumption. However, CARI uses a reference period of the last 7 days whereas our MPI indicator uses a reference period of one year. In addition, CARI includes a food consumption score based on the actual foods consumed by the household in the reference week, the expenditure on food as a ratio of total expenditures and as a ratio of the Minimum Expenditure Basket (MEB), and a "livelihood coping indictor" for food security.

[4] The dependency ratio is an indicator that describes the potentially economically active and inactive people in a household. Household members between the ages of 18 and 60 are considered as potentially economically active, while children from the ages of 0 to 17 and people above the age of 60 are considered as potentially inactive.

5. The determinants of receipt of transfers

5.1. Methodology

We estimate a multinomial probit model to distinguish between access to both types of transfers, only one type of transfer (mostly food vouchers), and no access to transfers at the household level. Few households receive cash but not food vouchers, so it is not necessary to distinguish which kind of transfer is received when only one type of transfer is received. The multinomial probit models have several advantages over the other alternative models that are suitable for polychotomous outcome variables, namely the multinomial logit model, and the ordered probit or logit models. Unlike the multinomial logit model, the multinomial probit does not make the independence of irrelevant alternatives assumption and is therefore more generally applicable. Although our dependent variable can be construed as ordered, an ordered model imposes a restriction that the explanatory variable affects the probability of each outcome in the same way, with different cutoffs in the overall index determining which option is selected. The multinomial probit model does not impose this restriction and allows for a different vector of coefficients to be estimated for the probability of each outcome relative to that of the base outcome.

We define a polychotomous outcome variable t that has the following categories: no receipt of transfers (t=0), one type of transfer (t=1), and both types of transfers (t=2). A latent variable y^*_{th} captures the unobserved propensity of household h to obtain outcome t, which depends on the observed household characteristics X_h as follows:

$y^*_{th} = \beta_t X_h + u_{th}$ for t=0,1, and 2

u_{th} is a set of random disturbances, which we assume to be independently and identically distributed. While we do not observe the latent variable y^*_{th}, we do observe the discrete outcome y_h , where,

$y_h = \text{t}$ if $y^*_{th} = {}_{t=1,2....T}max\ y^*_{th}$

The multinomial probit coefficients express the change in the probit index for each unit of change in the predictor. The sign of each coefficient describes the qualitative effect of each variable on participation in that activity relative to the base outcome. We set the base outcome to be t=1 or receipt of either type of transfers and estimate predicted probabilities of receiving neither or both types of transfers as a function of the explanatory variables.

A key independent variable that is included in the regression is whether the households live inside or outside a refugee camp. As was shown in the descriptive statistics, refugee households that are in camps are more likely to receive both types of transfers than refugee households outside of camps. This may be due to differences in the distribution of household characteristics inside and outside of camp. However, it can also be due to the different requirements and processes of receiving (different types of) transfers for households residing inside and outside the official refugee camps. Therefore, we created a dummy variable that takes value 1 if the household resides

in a refugee camp. This dummy variable is interacted with all other independent variables in the regression in order to show the different effects of each of the other characteristics on the probability of transfer receipt for households inside and outside refugee camps. The uninteracted coefficient of each of the explanatory variables other than the camp residence dummy is therefore the effect of that variable for non-camp households and the interaction term is the difference in effect between camp and non-camp households. To obtain the effect for camp households we add the two terms and conduct a test of the significance of their sum, which we show in a separate column.

The independent variables include the household demographic and economic characteristics listed in Table 2. It is important to acknowledge that several of these variables, especially the economic characteristics and the food security indicators, are likely to be endogenous to the receipt of transfers. However, they are still included in the regression analysis to provide some insight on the effectiveness of transfers in reaching the most vulnerable households. The results for these variables should be interpreted with caution.

5.2. Results relating to the determinants of the receipt of transfers

The coefficients of the multinomial probit model and the additional tests we describe above are shown in Table 5. In columns 2-4 of Table 5 we show the coefficient estimates of the equation for receiving no transfers (t=0) relative to receiving either transfer (t=1) for the non-cam and camp households and in columns 5-7, we show the equivalent coefficients for the equation of receiving both types of transfers relative to only one type. Predicted probabilities estimated using the two equations of the model as a function of selected explanatory variables camp and non-camp households are shown in

Figure 4.

As shown in Table 5, being a female headed household has almost opposite effects for camp and non-camp households. It significantly increases the probability of not receiving any transfers for camp households but increases the probability of receiving both types of transfers for non-camp households. The precise amount by which the two probabilities increase is shown in

Figure 4. Having a disability in the household increases the probability of receiving both transfers, but the increase is significant only for camp households. It also decreases the probability of no transfers, but the effects are statistically insignificant for both camp and non-camp households.

Having a household head who is older than 60 years of age significantly increases the probability of receiving no transfers for camp households. As shown in

Figure 4, the effect is present for non-camp households as well but is statistically insignificant. It has the opposite effect on the probability of receiving both transfers, although that effect is insignificant. This is therefore a potential marker of exclusion for a potentially vulnerable group of households.

Having at least one member with a formal educational certificate (primary or higher) significantly reduces the probability of receiving no transfers in non-camp settings but has no significant effect on receiving both types of transfers. As shown in

Figure 4, it also raises the probability of receiving both types of transfers in the non-camp setting, but that effect is not significant. This underscores the potential exclusion of households with no formally educated individuals from the receipt of transfers outside the camps potentially because they lack the necessary documentation for registration or because they are unable to negotiate the necessary bureaucracy.

A few remaining demographic variables have some weak effects. A higher ratio of elderly to adults in the household significantly raises the probability of receiving both types of transfers, but only in camp settings. A higher ratio of children to adults reduces the probability of receiving no transfers in both camp and non-camp settings, suggesting that transfers are successfully targeted to households with children.

Turning now to the more economic variables, we can see that transfers are successfully targeted to households in the lowest wealth decile and those with no workers, but only in camp settings. They do not however have a higher probability of receiving both types of transfers in either setting. However, households with no pre-transfer income and with an incidence of crowding are more likely not to receive any transfers, again with the result being significant only in camp settings. As shown in

Figure 4, the trend is the same in the non-camp setting for the no pre-transfer income variable, but the smaller sample size in that setting is likely resulting in the insignificant coefficients. Having an incidence of food insecurity does not affect the probability of households not receiving any transfers, but it is associated with a decreased probability of receiving both transfers. This could be a case of reverse causality, where households that receive only one kind of transfer are unable to improve their food security status as much as those that receive both.

Residing in the northern region as opposed to the central or southern regions of Jordan significantly reduces the probability of receiving no transfers both in camp and non-camp settings. This underscores the potential vulnerability of households that moved away from the norther region, which is closest to the Syrian border and where most of the camps are located and where presumably most of the refugee-serving organizations are active. Surprisingly, however, living in a locality with a higher concentration of Syrians reduces the probability of receiving both types of transfers in the non-camp setting.

Table 5. Coefficient estimates from a multinomial probit model. Coefficients for the probability of no transfers relative to one type of transfer (columns 2-4) and coefficients for both types of transfer relative to one type of transfer (columns 5-7)

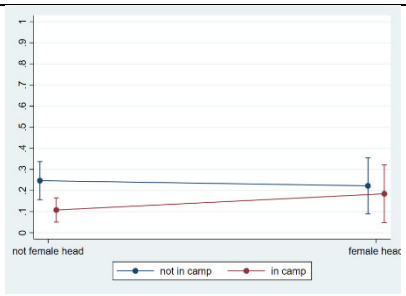
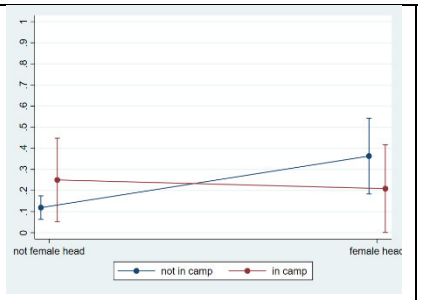
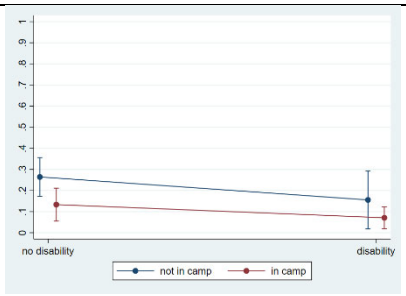
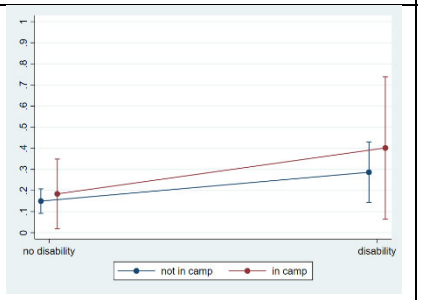
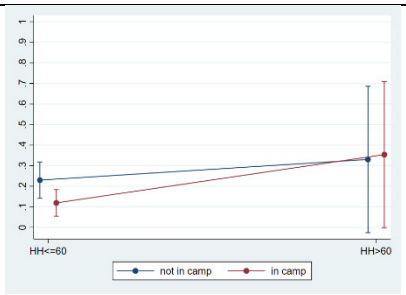
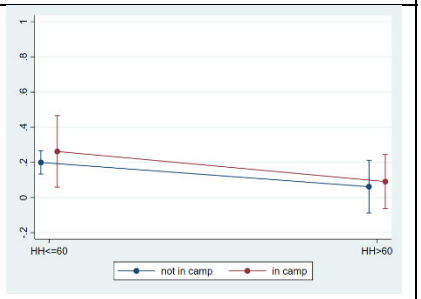
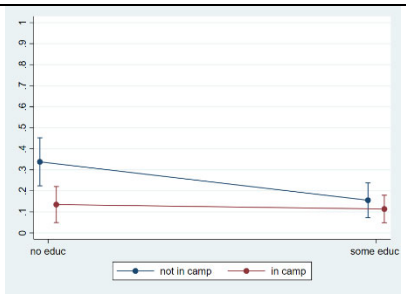
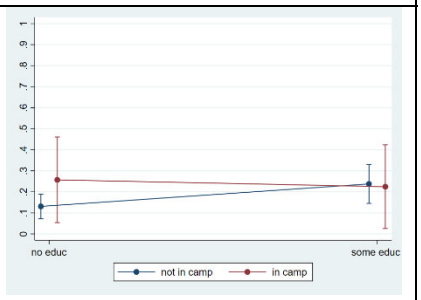
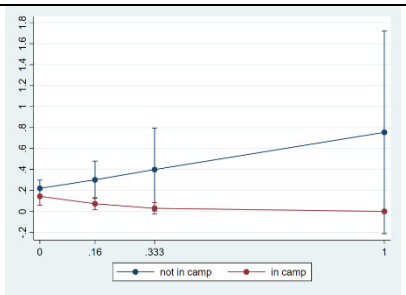
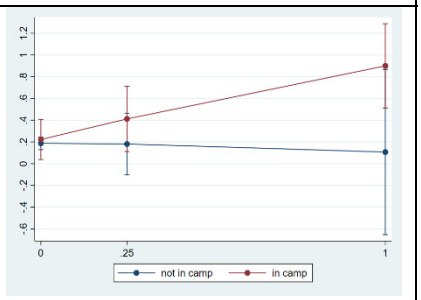
	No transfers to only one type of transfer			Both types of transfers relative to one type of transfers		
VARIABLES	Non-camp coefficient	Camp interaction term	Camp Coefficient (non-camp +	Non-camp coefficient	Camp Interaction term	Camp Coefficient (non-camp +

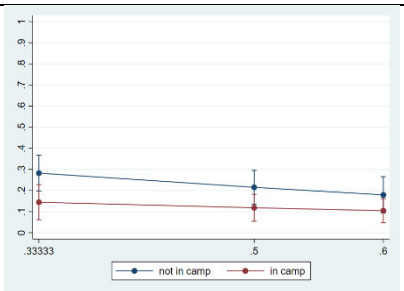
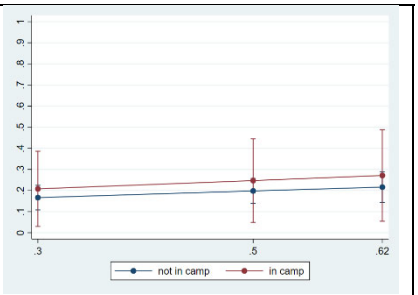
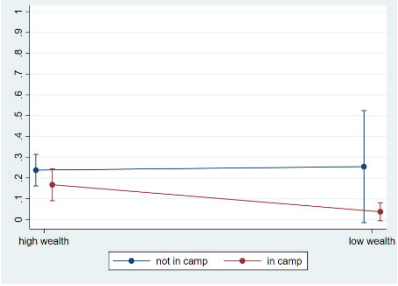
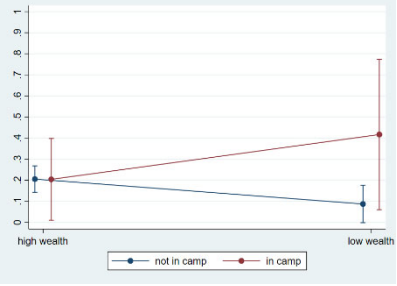
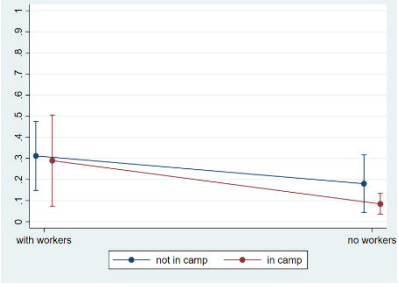
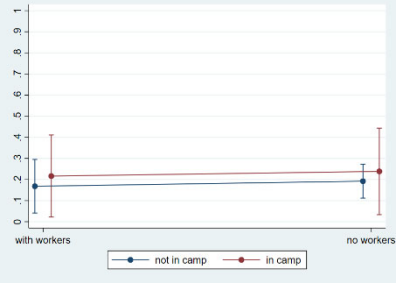
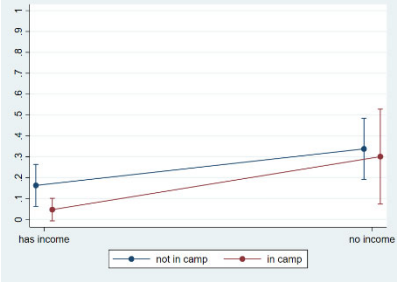
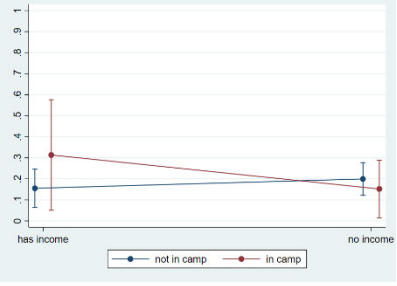
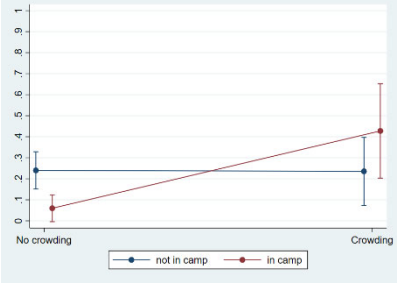
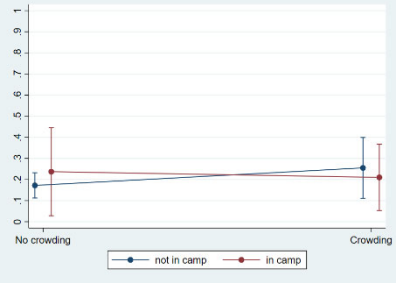
			interaction term)			interaction term)
Intercept	1.48	-2.25	-0.77	-1.98***	1.04	0.94
	(0.80)	(135)		(0.63)	(1.19)	
Female headed household	0.296	0.571	0.867*	1.493***	-1.609**	-0.116
	(0.509)	(0.703)		(0.528)	(0.640)	
Household with incidence of disability	-0.495	-0.206	-0.701	0.736	0.212	0.948*
	(0.596)	(0.797)		(0.461)	(0.686)	
Household head older than 60	0.360	1.538	1.898*	-1.182	0.299	-0.883
	(1.141)	(1.607)		(1.362)	(1.611)	
Household has at least one member with a formal educational certificate	-1.025**	0.687	-0.338	0.477	-0.678	-0.201
	(0.506)	(0.673)		(0.390)	(0.472)	
Ratio of elderly to adults in the household	3.109	-9.310*	-6.201	0.806	2.282	3.088*
	(3.241)	(5.356)		(4.615)	(4.964)	
Ratio of children to adults in the household	-2.239**	0.483	-1.756*	0.458	0.387	0.845
	(1.043)	(1.420)		(0.830)	(1.164)	
Household in lowest wealth decile	-0.0836	-2.043*	-2.1266**	-0.985	1.813**	0.828
	(0.872)	(1.233)		(0.645)	(0.915)	
Household has no workers	-0.807	-1.823	-2.63**	-0.0714	-0.0788	-0.1502
	(0.841)	(1.503)		(0.631)	(0.790)	
Household has no pretransfer income	1.257	1.328	2.585**	0.626	-1.147*	-0.521
	(0.776)	(1.502)		(0.462)	(0.687)	
Household has incidence of crowding	0.124	2.906***	3.03***	0.572	-0.128	0.444
	(0.655)	(1.064)		(0.555)	(0.672)	
Household has incidence of food insecurity	-0.362	0.700	0.338	0.776	-1.289*	-0.513**
	(1.149)	(1.210)		(0.659)	(0.705)	
HH lives in the Northern region	-1.332**	-1.091	-2.423***	0.702	-0.521	0.181
	(0.555)	(0.848)		(0.525)	(0.622)	
Proportion of Syrians in the household's local area	-2.123*	2.093	-0.03	-2.632**	1.394	-1.238
	(1.282)	(1.827)		(1.111)	(1.533)	

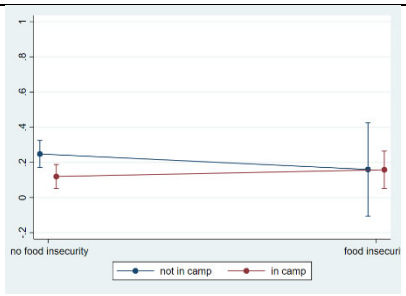
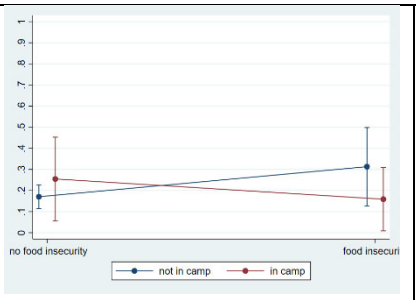
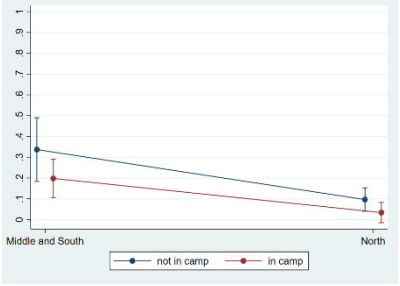
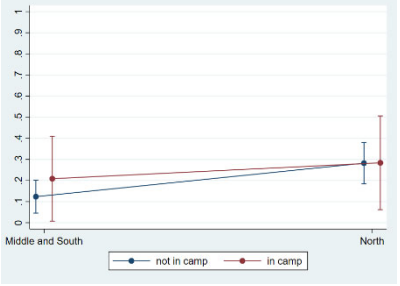
Source: Authors' estimates using data from JLMPS 2016.

Figure 4. Predicted probability from a multinomial probit model of receiving no transfers and receiving both types of transfers for camp and non-camp households as a function of selected explanatory variables

Covariate	No transfers	Both transfers

Female headed household		
Household with incidence of disability		
Household head older than 60		
Household has at least one member with formal education		
Ratio of elderly to adults in the household		

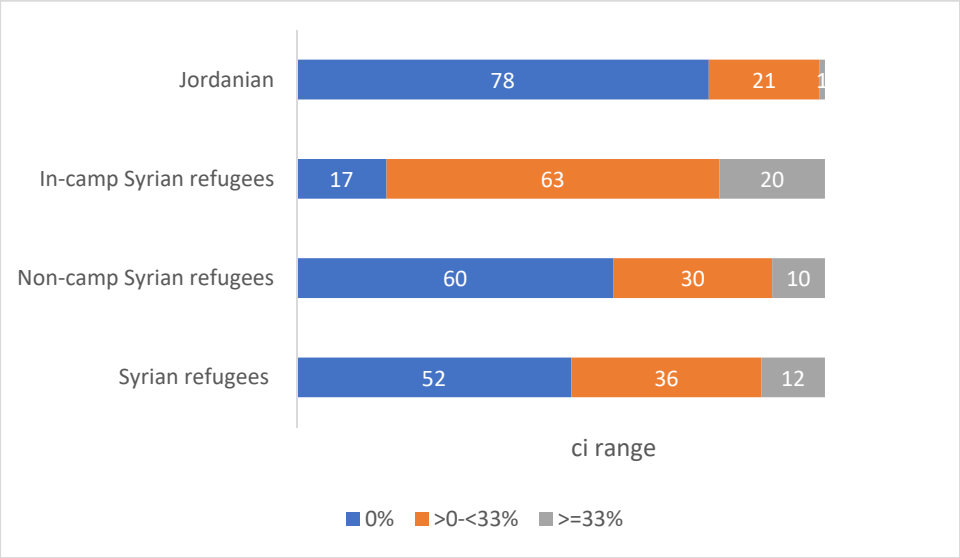
Ratio of children to adults in the household		
Household in lowest wealth decile		
Household has no workers		
Household has no pretransfer income		
Household has incidence of crowding		

Household has incidence of food insecurity		
HH is in the Northern region		

6. Do transfers reach the multidimensionally poor households?

We use the MPI framework to understand whether cash transfers and food vouchers reach the MPI poor among Syrian refugees in Jordan. In what follows we will classify Syrian refugees and Jordanians into three groups based on their deprivation score (c_i). We term those with $c_i=0$ and who therefore suffer none of the MPI deprivations "least MPI vulnerable", those with $0<c_i<0.333$ and who suffer some deprivations but do not reach the MPI poverty cutoff, "somewhat MPI vulnerable", and those with $c_i>=0.333$ and who are multi-dimensionally poor as the "MPI poor". The distribution of Syrian refugee households in-camp and non-camp and also of Jordanian households according to these three categories is shown in Figure 5. Only 17 percent of Syrian refugees in camp settings are in the least MPI vulnerable category, whereas the majority of them, 63 percent, are somewhat MPI vulnerable, followed by 20 percent who are MPI poor. For the non-camp population, 60 percent of them are least MPI vulnerable; 30 percent are somewhat MPI vulnerable, and 10 percent are MPI poor. For Jordanians, the majority of households, 78 percent, are least MPI vulnerable, followed by 21 percent who are somewhat MPI vulnerable, and only 1 percent are MPI poor. It is evident from this distribution that in-camp refugee populations are substantially more vulnerable than the non-camp population.

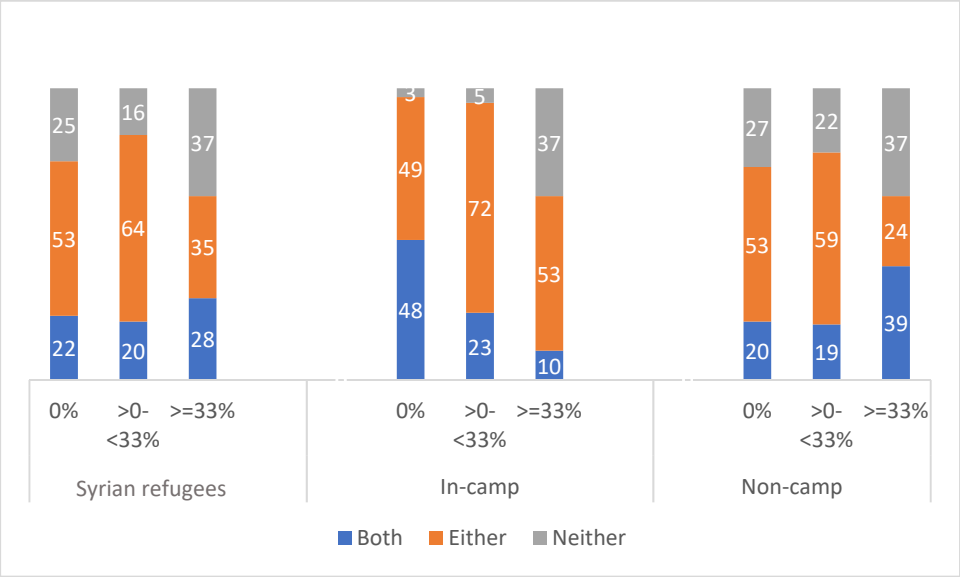
Figure 5. Distribution of Syrian Refugees by Camp Status and Jordanians by MPI Vulnerability Category



Source: Calculated by authors based on data from JLMPS 2016.
Note: The 0% category include the "least MPI vulnerable" (suffering no MPI deprivations), the >0-<33% category includes the "somewhat MPI vulnerable" who suffer some deprivations but do not reach the poverty cutoff, the >=33% category are the MPI poor.

We now examine the association between these three vulnerability categories and the receipt of one or both types of transfers. As shown in Figure 6, for the population of Syrian refugees as a whole, the intermediate category -- the somewhat MPI vulnerable -- has the lowest percent of not receiving any transfers, but, alarmingly, the MPI Poor have the highest percentage of not receiving any transfers (37 percent). They are thus more likely not to receive transfers than the least MPI vulnerable. This high proportion of non-receipt of transfers among the MPI poor is the same in both camp and non-camp settings, but as we saw earlier, there is a higher fraction of them in the camp setting. Conversely, the least MPI vulnerable in the camp setting, admittedly a small group, have the highest probability of receiving both types of transfers (48 percent), but the MPI poor outside the camps have the greatest chance of receiving both types of transfers. It thus appears that a small group of relatively privileged refugees in the camps have managed to negotiate the system well enough to access transfers. As we saw in the descriptive section, the JLMPS data also suggested that the better-off camp residents were also adept at accessing transfers from private charitable sources.

Figure 6. Percentage Receiving Different Combinations of Transfers by MPI Vulnerability Status – Syrian Refugees by Camp/Non-camp Status



Source: Calculated by authors based on data from JLMPS 2016.

Given the rather high proportion of the MPI poor that are unable to access any kind of transfers, it is worthwhile investigating the factors that are associated with this exclusion in both camp and non-camp settings. However, given our relatively small sample size and the fact that only 20 percent of Syrian refugees in camps and only 10 percent of those out of camps are MPI poor, we are unable to examine that limited group on its own. We therefore pool them with the intermediate category of "somewhat MPI vulnerable" to determine what factors are associated with exclusion from any transfer benefits for that specific group, which we call the "MPI vulnerable". The results of probit regressions for the characteristics associated with non-receipt of transfers among the MPI poor are shown in Appendix Figure 3 for the in-camp population and in Appendix Figure 4 for the non-camp population.

For the camp setting where registration is not an issue, we find that exclusion from transfers is associated with crowding and with lack of access to other services, such as health care and health insurance. In a sign of good targeting, MPI vulnerable households with an incidence of disability, a lack of drinking water, and an absence of flooring, walls or roofing using permanent materials are more likely to access transfers. This suggests that there are some in-camp households that have some MPI vulnerability, but that live in permanent housing with drinking water that are not receiving transfers.

For households in non-camp settings, lack of registration is associated with exclusion from transfers for the MPI vulnerable. Like those in camps, exclusion from transfers is associated with

lack of access to health care, but also, worryingly with the absence of educated persons in the household. Again, as a sign of good targeting, MPI vulnerable households with an incidence of disability and with no workers are more likely to receive transfers than those without these characteristics. When the registration variable is omitted, in reverse to in-camp households, households with flooring, walls or roofs that do not use permanent materials emerges as an indicator of exclusion and the effect of a lack of educated members grows stronger. This suggests that these two variables work through the registration variable in preventing access to transfers. There are thus vulnerable households outside of camps that live in non-permanent housing (possible in informal camp settlements) and with no educated members who are excluded from transfers by the fact that they are also unregistered. We explore the extent to which these variables contribute to the probability of being registered below.

7. Is registration a barrier to receiving assistance?

As mentioned earlier, to register as refugees and receive support, Syrians are required to have an asylum seeking certificate issued by the UNHCR and a service card issued by the MOI. The process of getting these documents, while straightforward, may still prove to be a challenge for some Syrian households. According to the NRC (2016) there are several barriers that may prevent Syrians from being able to apply for an MOI card. Firstly, there is an issue of eligibility; some Syrian refugees who left the camps without authorization cannot renew their asylum certificates or apply for an MOI card. These are likely the refugees living in non-standard housing in non-camp settings that we identified above as likely to be both vulnerable and excluded from the receipt of transfers. Secondly, proof of address was sometimes hard to get due to late payments on rent or refusal from landlords to cooperate. Thirdly, health certificates cost JOD 5 per person, so while they are relatively cheap, the costs may add up, especially for larger households. Fourthly, producing civil and legal documentation is not always straightforward. For example, some Syrian refugees could not show their identity documents to get the new MOI cards because they were lost or destroyed. Requesting new ones was either too costly, too involved, or not at all possible. Similarly, some families do not have access to birth certificate or marriage certificates that may be necessary to prove kinship (NRC 2016).

It is also important to note that Syrians who entered Jordan through the established legal process – with a passport through a regular port of entry under the procedures that existed prior to the Syrian conflict – do not require an asylum seeker certificate to receive the new MoI card. Regular entry was not possible after December 2013 and most Syrians in this category entered Jordan prior to early 2013.

To explore the issue of registration in relation to the receipt of transfers, we estimated a probit regression, where the dependent variable takes value 1 if the household is registered as a refugee and 0 otherwise. The list of independent variables is the same one that is used for the analysis of the determinants of receipt of transfers above. Since all in-camp refugees are registered, this registration analysis is limited to the sample of non-camp refugees.

Table 8 shows the average marginal effects from the probit regression of the probability of registration. The result confirms that non-camp households that live in non-permanent housing are much less likely to be registered, strongly suggesting that this is a highly vulnerable group of households whose lack of registration is preventing them from obtaining either decent housing or access to essential social support.

Another dimension of vulnerability with regard to registration is when there is a household head who is older than 60. This could explain why these households are less likely to access transfers as we have seen above. Finally, households residing in non-camp settings outside of the northern region of Jordan are less likely to be registered.

Table 6. Coefficient Estimates from a Probit Regression for the Probability of Being Registered in Non-Camp Settings

VARIABLES	- -
HH: none >5 yrs. of schooling	-0.168
	(0.126)
HH: no drinking water	0.0660
	(0.201)
HH: do not own >1 asset	0.170
	(0.139)
HH: food insecurity	-0.0991
	(0.117)
HH: head is a female	-0.0609
	(0.0961)
HH: no perm. roof/walls/hard floor	-0.276***
	(0.0938)
HH: members/room >=3	0.139
	(0.108)
HH: head is >60 yrs.	-0.198**
	(0.0962)
HH: incidence of disability	0.0133
	(0.0944)
HH: in north region	0.259***
	(0.0900)
HH: without worker	0.204
	(0.146)
HH: no access to health	-0.0445
	(0.100)
HH: no health insurance	-0.0611
	(0.104)
HH: no pre-transfer income	-0.244
	(0.152)
HH: in bottom decile	-0.0484
	(0.112)
Average of the dependent variable	0.8
Observations	187

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

8. Conclusions

We examined in this paper the household characteristics associated with the receipt of cash transfers and food vouchers among Syrian refugees in Jordan and the extent to which Syrian refugee households that are multi-dimensionally poor or vulnerable are able to access transfers. In all of our analyses we distinguished between the nearly four-fifths of refugees that reside among host communities and the one- fifth or so of them that reside in one of the three official refugee camps. The reason this distinction is important is that the camp-based population is a lot more visible to the UN organizations providing most of the cash transfers and food vouchers and may thus be subject to different targeting mechanisms and criteria.

Our findings indicate that transfers appear to be well-targeted to some vulnerable households in both settings including those with disabled members, those with a higher ratio of children among their members, and those with no workers. Some markers of vulnerability, such as being a female-headed household, appear to improve access to transfers only in non-camp settings, and others, such as being in the lowest wealth deciles only increase access to transfers in camp settings.

What is more concerning is that some aspects of vulnerability appear to be associated with reduced access to transfers, possibly explaining the relatively large fraction of multi-dimensionally poor households that are excluded from transfers. These include having a household head older than 60, which reduces access to transfers in both settings, and having a higher ratio of elderly among the members of the household, which is a factor in non-camp settings. Having a head older than 60 is also associated with non-registration in the non-camp setting. Having no educated members in the household is associated with reduced access to transfer in non-camp settings, a factor, which also be contributing to an inability to register. Finally, crowding is associated with reduced access to transfers in camp settings, which is somewhat surprising given the readily visible nature of crowding in that setting.

Residing outside the norther region of Jordan, where most of the refugee-oriented services are focused, is also associated with reduced access to transfers for refugees in both camp and non-camp settings. We also found that for those in non-camp settings not residing in the northern region is associated with lack of registration as refugees.

Our analysis of the relationship between multidimensional poverty and the receipt of transfers suggest that a substantial proportion of the multi-dimensionally poor (37 percent) in both and non-camp settings do not have access to any transfers. In the non-camp setting, this appears to be related to the inability to register, especially for a group of vulnerable households that reside in non-permanent housing, have low education levels, and are headed by an elderly person. In camp settings, it is not clear what drives the exclusion from transfers for multi-dimensionally poor households, but it is linked to lack of access to health services and health insurance and to crowding.

Our analysis suggests that inability to legally register as a refugee, either by obtaining the MOI service card or the asylum seeking certificate emerges as an important source of exclusion from social assistance, such as transfers, but also from decent housing and access to health services and health insurance for refugee populations living in host communities. This relatively invisible population of refugees is likely to be highly vulnerable along multiple dimensions and their exclusion from social supports such as transfers exacerbates their vulnerability. This is a population that is probably invisible to the international organizations that provide this social assistance and efforts must be made to identify it, assist it in the registration process, or at the very least exempt them from the registration requirement when it comes to the receipt of transfers. Given the greater visibility of the camp population to UNHCR and WFP, it is likely easier to identify those who are excluded from transfers in this setting and find out why they are excluded.

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Appendix

A. Multi-dimensional Poverty Index (MPI) Methodology

Each household is assigned a deprivation score (c_i) according to their deprivations in the component indicators shown in Table 3. The deprivation score for each household is calculated by taking a weighted sum of the all the deprivations, so that the deprivation score for each household lies between 0 and 1.

The score increases as the number of deprivations of the household increases and reaches its maximum of 1, when the household is deprived on all the component indicators. A household, which is not deprived in any indicator, receives a score of 0. The deprivation score c_i is calculated as follows:

$$c_i = w_1 \times I_1 + w_2 \times I_2 + w_3 \times I_3 + \cdots + w_d \times I_d$$

Where, $I_i = 1$ if the household is deprived in any indicator and $I_i = 0$ otherwise; and w_i is the weight attached to indicator i with $\sum_{i=1}^{d} w_i = 1$.

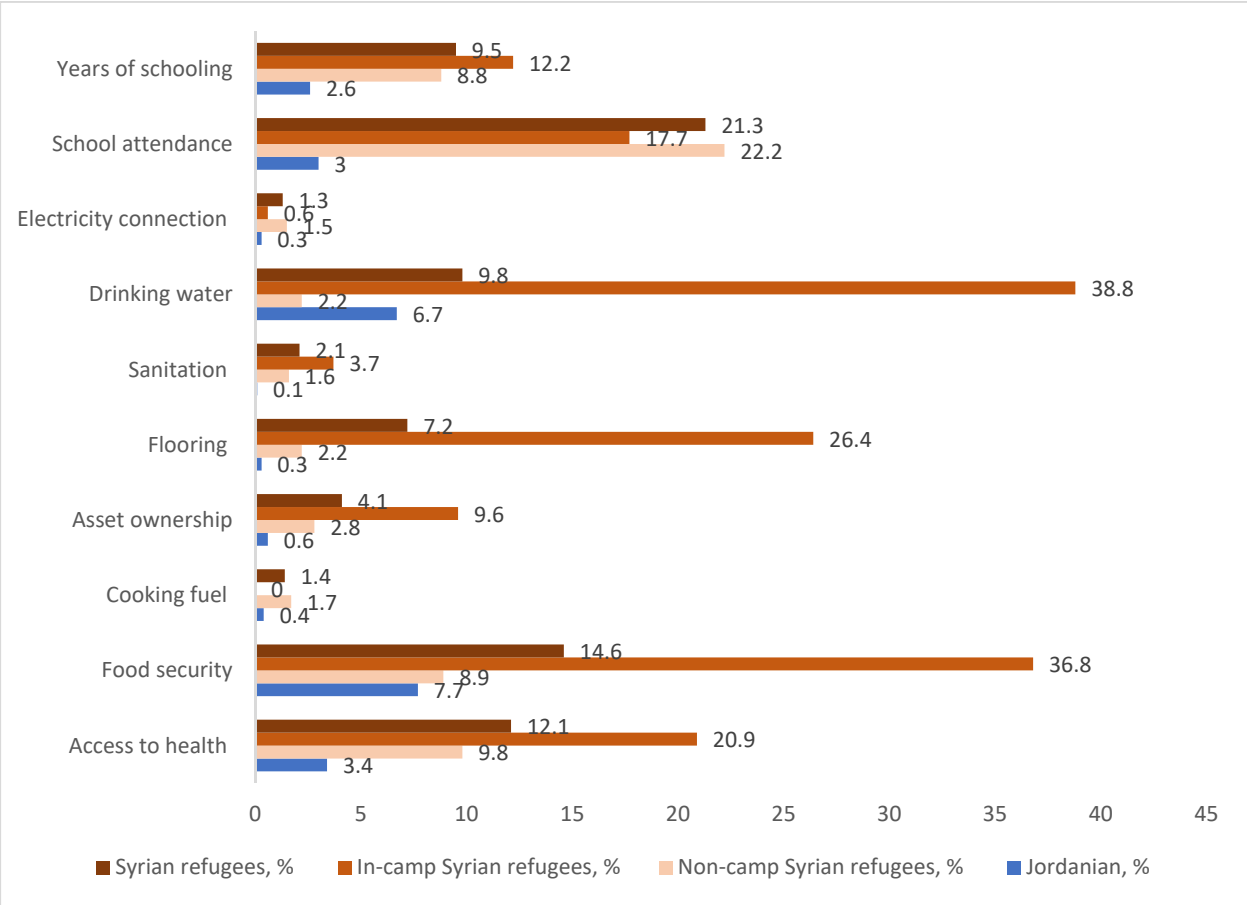
An overall cut-off or threshold is used to identify the multidimensionally poor, which in the Alkire-Foster methodology is called the "poverty cutoff". The poverty cut-off k is the minimum deprivation score c_i a household must have in order to be considered multi-dimensionally poor. Formally, someone is poor if $c_i \geq k$. In the standard MPI literature, a person or a household is identified as multidimensionally poor if their deprivation score, c_i is higher than or equal to 1/3. A censored deprivation score $c_i(k)$ is then calculated by setting the deprivation score of households with $c_i < k$, to 0.

The MPI combines two key pieces of information: (1) the proportion or incidence of households who experience multiple deprivations, and (2) the intensity of their deprivation: the average proportion of (weighted) deprivations they experience as indicated by their censored deprivation score. The MPI is the product of both: MPI = $H \times A$. The first component is called as the multidimensional headcount ratio (H): $H = q / n$. Here, q is the number of people who are multidimensionally poor and n is the total population. The second component is called the intensity (or breadth) of poverty (A). It is the average deprivation score of the multidimensionally poor people and can be expressed as: $A = \frac{\sum_{i=1}^{n} c_i(k)}{q}$.

Further breaking the c_i scores across the variables making up the three components of the MPI index, we can see in Appendix Figure 1 that drinking water and food insecurity have the almost highest score of deprivation for in-camp population. That means there are about 1/3rd individuals in-camp population who have no drinking water availability as well as At least one member of the household has experienced one of the three food insecurities: skipped entire meal, didn't eat three meals, ate smaller meal in last 12 months. The next variable contributing significantly to the c_i score for Syrian refugees living in-camp are flooring, access to health and school attendance. For non-camp population, school attendance, access to health and food security are most prominent

factors. Syrian refugees in camps have substantial deprivation in variables that make up the living standards components, compared to non-camp population.

Appendix Figure 1. Contribution of MPI variables to deprivation score ci for Syrian refugees by camp status and Jordanian Host Community (percentage)



Source: Calculated by authors based on data from JLMPS 2016.

In Appendix Table 1, we compare the composition of our deprivation index in the case of Jordanian nationals with that reported by the Oxford Poverty and Human Development Initiative (OPHI, 2017).[5] OPHI, 2017 used the Demographic and Health Survey for Jordan in the year 2012. As explained above, with the exception of variables in the health dimension, the variables in the education and living standards dimensions are defined in an almost identical fashion. We can readily see that the contribution of each dimension is fairly close across the two estimates. The education dimension contributes 23.9 percent in the OPHI index and 23.6 percent in our MPI index. Living Standards contribute 2.4 percent in the OPHI

[5] OPHI calculated the MPI exclusively for Jordanian nationals.

index and 32.9 percent for ours. The health contributes the most in both the cases, 73.7 percent in OPHI's index and 43.5 percent in ours.

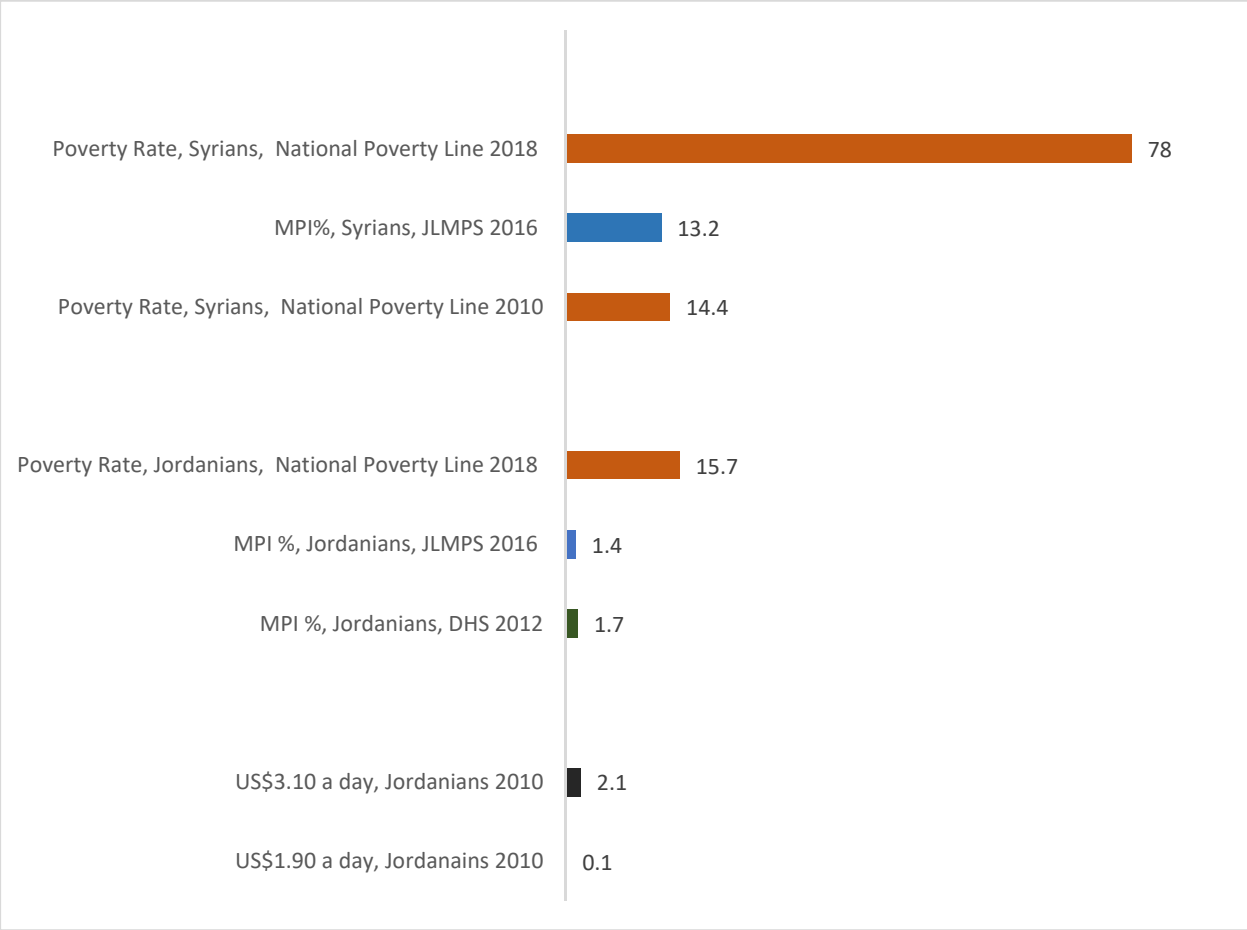
Appendix Table 1. Comparison of composition of our deprivation score to that of the OPHI Jordan Country Briefing

Source: OPHI Country Briefing 2017: Jordan				Source: Author's calculation		
Data: Demographic and Health Surveys for Jordan, 2012 (Only Jordanians)				Data: Jordan Labor Market Panel Survey, 2016 (Only Jordanians)		
Dimension	**Variable**	**ci, %**	**Dimension, %**	**Variable**	**ci, %**	**Dimension, %**
Education	Years of schooling	3.8	23.9	Years of schooling	11.8	23.6
	School attendance	20.1		School attendance	11.8	
Housing	Electricity	0.7	2.4	Electricity	1.3	32.9
	Drinking water	1.2		Drinking water	26.4	
	Sanitation	0.1		Sanitation	0.3	
	Flooring	0.3		Flooring	1.0	
	Asset ownership	0.1		Asset ownership	2.3	
	Cooking fuel	0		Cooking fuel	1.7	
Health	Nutrition	34.1	73.7	Food security	30.2	43.5
	Child mortality	39.6		Access to health	13.3	
	Total	100	100		100	100

Source: Compiled by authors from OPHI (2017) and authors calculation from JLMPS 2016 data.

We also compare MPI using JLMPS, 2016 with other standard poverty measures. MPI calculation using JLMPS 2016 data for Syrian and Jordanian population in Jordan is shown in blue color in Appendix Figure 2. The standard and latest MPI poverty measure for the Jordanians using Demograhic and Health survey, 2012 (OPHI 2017b) is 1.7 percent. Using JLMPS (2016) only for Jordanians we get this value as 1.4 percent. MPI at 2012 is quite close to World Bank poverty estimate of popuation below $ 3.1 a day. We dot not have latest value of the World Bank estimate available to make comparison with our MPI estimate. According to Governemnt of Jordan's national povety line, poverty rate for Jordanians for the year 2010 - before Syrian refugees came to Jordan - was 14.4 percent, whereas in 2018, 15.8 percent Jordanians and 78 percent Syrian refugees were below the poverty line.

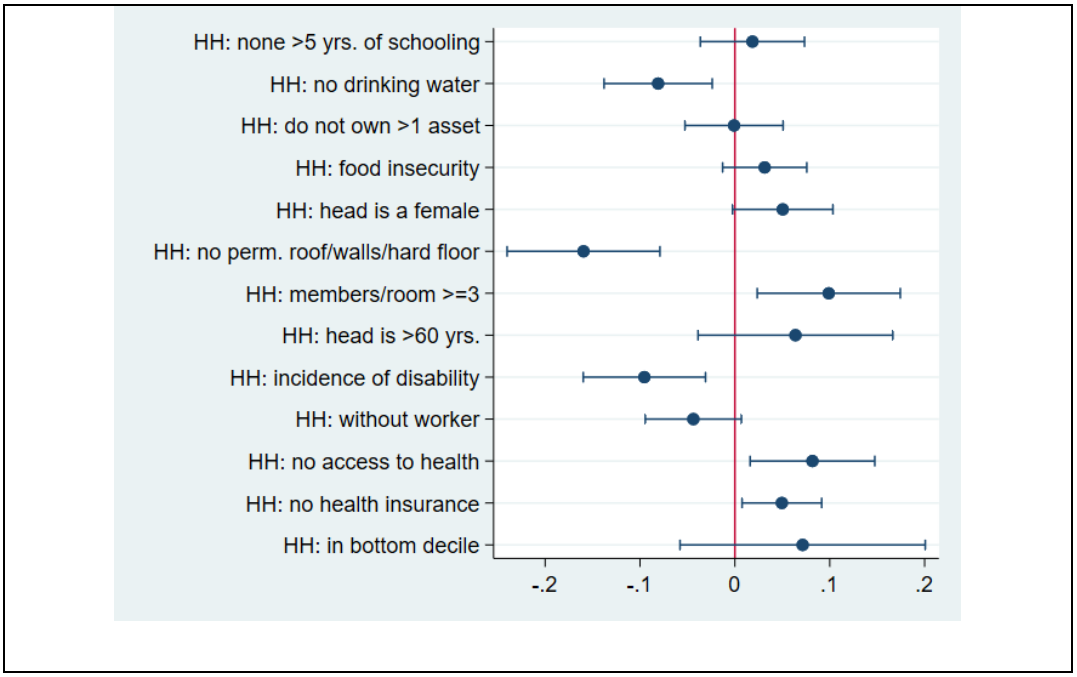
Appendix Figure 2. Poverty Rates in Jordan according to Various Sources and Methodologies



Source: Compiled by authors from (OPHI 2017; UNICEF 2020; World Bank Group 2020) and authors' calculations based on data from JLMPS 2016.

B. Correlates of non-receipt of transfers for the MPI-Vulnerable

Appendix Figure 3. Correlates of non-receipt of transfers for the MPI vulnerable (for those households ci>0). Coefficient Plots from a Probit Regression. In-Camp Population



Appendix Figure 4. Correlates of non-receipt of transfers for the MPI vulnerable (for those households ci>0). Coefficient Plots from a Probit Regression. Non-camp population.

Excluding registration variable as a control	Including registration variable as a control