The Impact of Exposure to Refugees on Prosocial Behavior

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Abstract

Does exposure to refugees affect natives' prosocial behavior? If so, do changes in prosocial behavior also extend to existing migrants? We administer a survey of a representative sample of Lebanese respondents and measure their prosocial behavior toward Syrian refugees, Palestinian migrants, and other Lebanese. Combining our survey data and data on refugee settlements, we find that individual proximity to refugees is positively correlated with trust towards refugees, and that there is a positive spillover toward Palestinian migrants. Taken together, the evidence highlights how inter-group contact can help mitigate the negative effects of mass migration.

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The 2015 European "refugee crisis" has created renewed interest in the effects of migration on political and social outcomes. A number of studies have assessed how exposure to refugees affects natives' behavior, particularly in the realm of voting behavior (e.g., Steinmayr 2021; Hangartner et al. 2019 and Bratsberg et al. 2019). Yet, we currently lack evidence whether exposure to refugees affects natives' prosocial behavior. What is more, there is currently no systematic evidence whether a new wave of refugee settlement changes natives' prosocial behavior towards existing migrant populations, or results in a "hardening" of in-group preferences. Such spillover effects are highly relevant given that most destination countries already host other groups of migrants and refugees, and recent work by Fouka, Mazumder and Tabellini (2020*a*,*b*) has demonstrated in the US context that migration impacts relationships between ethnic groups more broadly. Finally, existing studies on natives' reactions to refugees have focused on the developed world. Yet, the top five hosting countries are all middle or low-income countries—Turkey, Pakistan, Lebanon, Iran and Uganda. Together, they host nearly one third of all global refugees (UNHCR, 2017).

To fill these gaps, this paper provides evidence on the social impact of refugee settlements on the social fabric of the host country using original survey data gathered from a representative sample in Northern Lebanon. Besides bringing fresh evidence from a developing country, our paper adds to the existing literature by measuring both the direct impact on native-refugee relations, as well as what we believe is the first evidence of the spillover effects of refugee settlement on an established migrant group. Lebanon constitutes an ideal setting in which to study the impact of mass refugee settlement: The Syrian civil war has resulted in a large influx of Syrian refugees, and Lebanon has an exceptionally ethnically and religiously diverse population with a history of ethnic conflict (see Camarena and Hägerdal, 2020 for detailed background and work on refugees in Lebanon).

To estimate the effect of refugee settlement on natives' prosocial behavior, we administer a survey of a representative sample of Lebanese respondents, and elicit their self-reported prosocial behavior toward i) Syrian refugees; ii) Palestinian migrants; and

iii) Lebanese residents.[1] We then geo-code respondents' distance to refugee settlements to study the impact of exposure to refugees on social preferences. In so doing, we make use of the fact that Lebanon—unlike most neighboring countries—uses a unique approach toward refugee settlement whereby refugees are allowed to settle among the general population, resulting in marked variation in Lebanese natives' proximity to refugee settlements. Despite reports of economic conflict between natives and Syrian refugees in areas of co-habitation that dominate the headlines (e.g. The World Bank, 2013, UNDP, 2017), and evidence that economic conflict can lead to social conflict (Ray and Esteban, 2017), our results show that proximity to refugees is *positively* correlated with natives' prosocial behavior toward Syrian refugees. Additionally, our evidence suggests that proximity to refugees has a positive spillover effect on other migrant groups: Lebanese natives in closer proximity to Syrian refugees report higher levels of prosociality towards Palestinian refugees.[2]

However, since the refugees' choice of settlement location in Lebanon is endogenous, these correlations are only suggestive. To explore whether there is a causal relationship between exposure and prosocial preferences, we estimate both a linear model that controls for potential confounders that may jointly influence refugee settlement and pro-social

[1]The survey was conducted by a local survey firm, REACH, which has extensive experience in Lebanon. Each interview began with the enumerator stating: "Hello , my name is...and I am from REACH, a research company and we are currently conducting a survey about social and economic issues of residents in this region," followed by an estimate of the length of the interview, assurances that the response will be anonymous, and clarification that the participant is free to quit the survey at any time.

We would also like to note that at the time we initiated the survey, our research institute did not have access to an IRB. However, in lieu of an IRB our survey was reviewed by several colleagues and we made every effort to ensure that our survey met ethical and professional standards and did not cause any undue burden on respondents nor would interfere with any political processes.

[2]In a companion paper, Hager and Valasek (2022), we explore the impact of priming Lebanese respondents with questions about the "refugee crisis" on prosocial behavior. In that paper, we document a negative direct effect of the prime on prosocial behavior towards Syrian recipients, but do not find any evidence of negative spillovers towards Palestinian recipients. This suggests that spillovers may be asymmetric.

behavior (wealth, accessibility and population density) and IV model. We find that the positive relationship between exposure and prosocial preferences is robust all models, suggesting that in the case of Lebanon, the positive impact of personal contact outweighs any negative impact of economic conflict.

Our analysis provides important insight into how factors at the micro level—in this case individual contact with refugees—impact individual reactions to macro events, a question of high theoretical relevance. Specifically, the evidence on the political impact of the refugee crisis in Europe suggests that individuals, on average, reacted to the macro event of the crisis by increasing support for anti-immigrant parties (see Hangartner et al., 2019).[3] However, at the micro level both positive contact and inter-group conflict with refugees may impact individual reactions to macro events (see Paluck, Green and Green, 2019 an overview of the literature on contact and discrimination and Ray and Esteban, 2017 for an overview of the literature on ethic conflict): Our study suggests that individual contact with Syrian refugees results in a direct increase in prosocial preferences towards both new and existing refugees, and can mitigates the negative reaction to the macro event of the refugee crisis. If taken at face-value, the evidence showcases how potential negative social effects of refugee settlement can be offset: by housing refugees in close proximity with natives—a method championed by the Lebanese government.

Design

Sample To explore the impact of refugee settlement on natives' prosocial behavior, we recruited a sample of 1,000 Lebanese respondents from districts in the immediate north of Lebanon—an area with sustained exposure to Syrian refugees.[4] To gain a representative sample, we employed a multi-stage random sampling method. Our primary sampling units (PSUs) were 1km x 1km grid cells. Within each randomly selected PSU, we recruited

[3]Also, in a related project we also present evidence that priming our Lebanese sample to think about the refugee crisis led to a negative impact on prosocial preferences towards refugees. This result confirms a negative average impact of the macro event of the crisis in Lebanon.

[4]The project was pre-registered at `https://osf.io/cqpx2`.

a number of respondents proportional to the number of inhabitants within the grid (for additional information on refugee settlement and sampling, see Section A.2 in the Online Appendix).

Outcome To measure prosocial behavior, we used a proxy questionnaire that administered four well-established experimental measures of prosociality: trust, reciprocity, altruism and cooperation (see Falk et al. 2016). In order to measure prosocial behavior toward i) Syrian refugees; ii) Palestinian migrants; and iii) other Lebanese residents, we varied the identity of the recipient in the pseudo-experimental games between a Syrian, Lebanese and Palestinian. We elicited responses from respondents for all three identities, but randomly varied the order of the recipient identity, and for certain empirical tests we only use responses from the first identity to avoid order effects (as specified in our pre-registration document). Our primary measure of prosocial behavior is the pseudo-experimental measure of trust. But we also consider a composite prosociality index, consisting of a weighted sum of the four measures.

Treatment: Proximity to refugees Our explanatory variable, is respondents' proximity to the nearest refugee settlement. Specifically, we measure the distance between the centroid of respondents' PSU and the nearest temporary refugee settlement registered with the UNHCR. While this is an imperfect measure of local exposure, to verify that proximity is correlated with self-reported contact with refugees, we asked respondents how many Syrian individuals they interacted with in the last month. We find that this measure of self-reported contact is positively correlated with proximity to refugee settlements (see Figure 1 in the Online Appendix).

Hypotheses We consider the local impact of proximity to Syrian refugees on social capital. We hypothesize that social capital is impacted by proximity to new refugees through two channels: contact and conflict. First, a large literature within social psychology has established that personal contact can lead to a decrease in discrimination of out-group individuals (Allport, 1954). Given a closer physical proximity to refugees,

natives living close to refugee settlements arguably have a greater degree of contact with refugees, which would have a positive effect on trust. Second, a large literature in economics and political science has established that polarized ethnic diversity can lead to inter-group conflict as groups compete over scarce resources (Ray and Esteban, 2017). Given the high ethnic diversity of communities hosting refugee populations, combined with the increased economic pressures of an increased population, the conflict mechanism predicts a negative impact of proximity on trust. Due to strong anecdotal evidence of social conflict between natives and refugees in Northern Lebanon (see The World Bank, 2013 and UNDP, 2017), in the balance, we expect the conflict mechanism to dominate the contact mechanism:

Hypothesis 1. *Lebanese trust towards the Syrian recipient is decreasing in proximity to refugees. [H1]*

Related, the conflict hypothesis would point to a hardening of in-group solidarity, which would have a positive impact on native's in-group social capital:

Hypothesis 2. *Lebanese in-group trust is increasing in proximity to refugees. [H2]*

Next, an influx of new refugees may impact the relationship between the native population and established refugee/migrant groups. Again, we hypothesize that there are two potential channels of impact: First, social capital towards new and established refugees may be positively linked, as the two groups are implicitly associated through their joint refugee status. Second, the relative social status of established refugee groups may be negatively linked with new refugees, as the introduction of a new group may reduce the perceived social distance between natives and the established refugees. On the balance, we expect the joint association effect to dominate:

Hypothesis 3. *Lebanese social capital towards both refugee groups is positively correlated, and Lebanese trust towards the Palestinian recipient is decreasing in proximity to Syrian refugees.*[5] *[H3]*

[5]In contrast to Syrian refugees, Palestinian refugees are constrained to reside in designated refugee

Lastly, to explore mechanisms driving the impact of proximity to refugees on social capital and to validate our measure of proximity, we also elicit the following measures of conflict and contact: Resource competition [Economic], see question 39 in the survey; Cultural threat [Psychological], question 42; and Contact [Psychological], question 40. (We report these results in detail in the Appendix.)

Analysis

Here we assess whether respondents' prosocial behavior is correlated with their proximity to Syrian refugees. We consider three different pre-registered models here: a basic correlation, a linear model that controls for potential confounders that may jointly influence refugee settlement and pro-social behavior (wealth, accessibility and population density); and lastly an IV model.[6] We also present the results of a model that includes a religion dummy (Syrian refugees are primarily Muslim), and a self-reported measure of nationalism—a natural predictor of prosociality.[7]

camps, and there is only one Palestinian refugee camp in our sampling area, compared to hundreds of Syrian temporary refugee camps. This limits exposure to Palestinian refugees and, importantly, means that proximity to Syrian refugee settlements does not imply proximity to Palestinian refugees.

[6]Note that we pre-registered a test for a negative effect of proximity, and therefore are unable to test for a positive effect; we therefore present two-sided t-tests (with errors clustered at the PSU level) in Table 1. We also present the results for trust here—the results are comparable for our index measure of prosocial preferences (see Table 1 in the Appendix).

[7]Religion and nationalism were not pre-registered control variables and results are qualitatively similar without these controls.

Table 1: Impact of proximity on trust

Recipient	Syrian					Palestinian	Lebanese
	(1)	(2)	(3)†	(4)	(5)†	(6)	(7)
Trust	OLS	OLS	OLS	2SLS	2SLS	2SLS	2SLS
Distance	-0.913*	-0.614	-0.834*	-1.870*	-2.662**	-1.861*	0.786
	(0.513)	(0.491)	(0.499)	(0.993)	(1.089)	(0.969)	(1.047)
Wealth		0.0434**	0.0495**	0.0409**	0.0462**	0.0388*	0.0463***
		(0.0203)	(0.0196)	(0.0203)	(0.0196)	(0.0204)	(0.0170)
Accessibility		0.631**	0.712**	0.584*	0.641**	0.667**	0.529*
		(0.311)	(0.300)	(0.314)	(0.305)	(0.324)	(0.285)
Density		0.0506	0.0342	0.0488	0.0303	0.0596	-0.00498
		(0.0682)	(0.0672)	(0.0707)	(0.0713)	(0.0638)	(0.0411)
Age		-0.0206***	-0.0139*	-0.0211***	-0.0146**	-0.0184**	-0.0225***
		(0.00708)	(0.00724)	(0.00710)	(0.00731)	(0.00806)	(0.00727)
Female		0.482**	0.513***	0.479**	0.514***	0.301	0.161
		(0.188)	(0.186)	(0.187)	(0.185)	(0.185)	(0.197)
Muslim			1.713***		1.816***		
			(0.266)		(0.275)		
Nationalism			-0.177		-0.0771		
			(0.212)		(0.222)		
N	1000	1000	1000	1000	1000	1000	1000

This table reports coefficient estimates and standard errors (clustered at the PSU level) of OLS and 2SLS regressions, instrumented with altitude, with the dependent variable of the amount sent to the recipient of the trust game.

† Non-preregistered models, included as ex post robustness check.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In a first step, we simply correlate proximity to refugees and prosocial behavior. In line with the heterogeneity analysis, the correlation between distance and trust is negative. Lebanese respondents that are closer to refugees are more trusting toward Syrian recipients. The correlation is similar (though less precisely estimated) when controlling for potential pre-treatment confounders. The results are reported in Table 1, Column 2. The coefficient on the distance to the nearest refugee shelter remains negative, but is not statically significant.

In a second step, we want to provide further evidence that the connection is causal. Despite controlling for confounders, Syrian refugees do not settle at random. We therefore also pre-registered an instrumental variable analysis, using altitude as an instrument for refugee settlement. Using data from UNHCR, we document that Syrian refugees did not settle in the mountainous terrain of Mount Lebanon, while the lower parts of the country were heavily settled (see Figure 4 in the Online Appendix). This settlement pattern is primarily due to the difficulty of constructing suitable temporary shelter at higher altitudes, where winters are quite severe. In fact, the availability of cheap and suitable housing is the main factor driving refugees' choice of location (UN-Habitat and UNHCR, 2018) and only 2 percent list "community with the same background" as the main reason for their location choice. This has resulted in local-level variation in refugee settlement patterns in Northern Lebanon and, importantly, there are reasons to believe that altitude has no direct effect on prosocial preferences once we control for the aforementioned potential confounds.[8][9]

We then use altitude as an IV for respondents' proximity to refugee shelters. Reassuringly, the results of the first stage of our 2SLS estimation show a significant and large positive correlation between altitude and distance to the nearest refugee settlement

[8]There are, of course, channels that may cause attitudes towards refugees to be different in mountainous areas: they are generally less populated, less accessible, less wealthy and, in Lebanon, less Muslim. However, these are precisely the confounds that we control for. Therefore, the identifying assumption is that altitude is *conditionally* independent from attitudes towards refugees.

[9]We also provide additional evidence in the Appendix in Section A.3 supporting a causal effect of exposure to refugees on prosocial preferences towards Syrians using a pre-registered fuzzy RDD design.

(first-stage F-stat of 9.23). Importantly, as seen in column (4) of Table 1, the estimated impact of the distance to the nearest refugee shelter on the prosocial preferences index remains negative and of similar size to the coefficient of the OLS regression. Columns (3) and (5) show that the result is robust to controlling for self-reported religion (grouped by Muslim/Not Muslim) and nationalism, showing that the result is not driven by a different religious composition at higher altitudes.

Additionally, we consider the impact of proximity to refugees on Lebanese respondent's reported in-group prosocial preferences. Across all regression models, we find no evidence of a causal effect of proximity to Syrian refugees on native's in-group prosocial preferences, showing that there is no evidence that either the salience of the refugee crisis or proximity to refugees results in an increased focus on in-group prosocial preferences.

In the context of Lebanon—whose unique approach to allowing Syrian refugees settle among the local population has led to reports of conflict between natives and Syrian refugees in areas of co-habitation (e.g., The World Bank, 2013, UNDP, 2017)—the finding that proximity to refugees is positively related to prosocial preferences to refugees is surprising. Given the reports of conflict, our pre-registered hypothesis was that proximity to refugees would be negatively correlated with prosocial preferences towards refugees. In the observational data we find no evidence of a negative causal effect of proximity to refugees on prosocial behavior. Instead, the results of our analysis point towards a *positive* effect of proximity to refugees on native's prosocial behavior, suggesting that positive contact outweighs inter-group conflict. Lastly, column (4) of Table 1 shows that proximity to Syrian refugees has a positive impact on native's prosocial preferences towards Palestinian refugees. Importantly, this suggests that contact with Syrian refugees has a positive spillover on other migrant groups.

Conclusion

The so called "refugee crisis" has raised important questions regarding the ability of societies and political institutions to adjust to a massive influx of victims of forced migration.

Our study contributes to our understanding of this question by providing novel systematic evidence on the wider social impact of the refugee crisis, and by documenting the spillover effect of the refugee crisis on social cohesion between natives and existing migrant groups. Additionally, by focusing on two dimensions of impact, we are able to document the interaction between impact at the macro level with impact at the micro level. Specifically, our findings suggest that the potential negative social impact of the macro event of the refugee crisis is mitigated by micro-level contact enabled when refugees integrate into local communities. While there is a need for further research to address the additional questions raised by this study, our findings also highlight certain policy implications regarding the settlement of refugees, suggesting that countries may be better off following Lebanon's approach of allowing refugees to settle among the local population, rather than in centralized camps.

References

Allport, GW. 1954. *The Nature of Prejudice.* Addison-Wesley.

Bratsberg, Bernt, Jeremy Ferwerda, Henning Finseraas and Andreas Kotsadam. 2019. "How Settlement Locations and Local Networks Influence Immigrant Political Integration." *American Journal of Political Science* .

Calonico, Sebastian, Matias D. Cattaneo and Rocio Titiunik. 2014. "Robust nonparametric confidence intervals for regression-discontinuity designs." *Econometrica* 82(6):2295–2326.

Camarena, Kara Ross and Nils Hägerdal. 2020. "When Do Displaced Persons Return? Postwar Migration among Christians in Mount Lebanon." *American Journal of Political Science* 64(2):223–239.

Falk, Armin, Anke Becker, Thomas Dohmen, David Huffman and Uwe Sunde. 2016. "The Preference Survey Module: A Validated Instrument for Measuring Risk, Time, and Social Preferences." *IZA Discussion Paper Series* 9674.

Ferris, Elizabeth and Kemal Kirisci. 2016. *Syrian Refugees: Challenges to Host Countries and the International Community.* Brookings Institution Press.

Fouka, Vasiliki, Soumyajit Mazumder and Marco Tabellini. 2020*a*. "Changing In-Group Boundaries: The Effect of Immigration on Race Relations in the US." *Working Paper* .

Fouka, Vasiliki, Soumyajit Mazumder and Marco Tabellini. 2020*b*. "From Immigrants to Americans: Race and Assimilation During the Great Migration." *Working Paper* .

Hager, Anselm and Justin Valasek. 2022. "The Impact of Forced Migration on In-Group and Out-Group Social Capital." *Mimeo* .

Hangartner, Dominik, Elias Dinas, Moritz Marbach, Konstantinos Matakos and Dimitrios Xefteris. 2019. "Does Exposure to the Refugee Crisis Make Natives More Hostile?" *American Political Science Review* 113(2):442–455.

Paluck, Elizabeth Levy, Seth Green and Donald Green. 2019. "The contact hypothesis re-evaluated." *Behavioural Public Policy* 3(2):129–158.

Ray, Debraj and Joan Esteban. 2017. "Conflict and Development." *Annual Review of Economics* 9(1):263–293.

Steinmayr, Andreas. 2021. "Contact versus Exposure: Refugee Presence and Voting for the Far Right." *The Review of Economics and Statistics* 103(2):310–327.

The World Bank. 2013. Lebanon: Economic and Social Impact Assessment Of The Syrian Conflict. Technical report.

UN-Habitat and UNHCR. 2018. Housing, Land and Property Issues of Syrian Refugees in Lebanon from Homs City: Implications of the Protracted Refugee Crisis. Technical report UN-Habitat Lebanon.

UNDP. 2017. The Burden of Scarce Opportunities: The Social Stability Context in Central and West Bekaa. Conflict analysis report UNDP.

UNHCR. 2017. "Global Trends: Forced Displacement in 2016.".

A Online Appendix

A.1 Additional Statistical Tables and Figures

We also explore the mechanisms involved in the positive effect of proximity to refugees on native's social capital towards refugees by exploring the following channels of impact:

1. **Resource competition [Economic]:** Refugee settlement may increase competition over local governmental and economic resources, which may *decrease* social capital toward Syrians. We measure resource competition using an additive index (see question 39 in the survey).

2. **Cultural threat [Psychological]:** Refugee settlement may increase perceived cultural threat thereby *reducing* social capital toward Syrians. We measure cultural threat using a feeling thermometer toward Syrians (see question 42 in the survey).

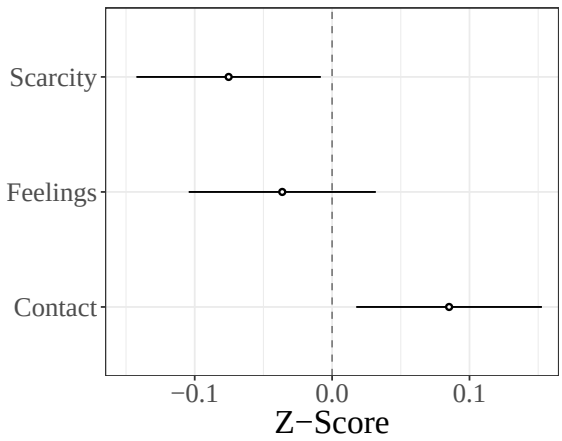
3. **Contact [Psychological]:** Refugee settlement may increase contact between Syrians and Lebanese thereby *increasing* social capital toward Syrians. We measure contact using a standard measure (see question 40 in the survey).

As seen in Figure 1, proximity to refugees is, unsurprisingly, correlated with higher contact.

Factors associated with the conflict mechanism, however, are not positively correlated with proximity. Proximity is not positively correlated with a feeling of cultural threat and respondents with a higher degree of proximity to refugees are less likely to experience high degrees of resource competition, due either to endogenous selection of refugees in areas with high economic activity and government resources, or due to the fact that refugees result in a higher degree of economic activity and a greater allocation of government resources.

These findings further suggest that the correlation between proximity and social capital is due to the contact effect dominating the conflict effect: a higher degree of proximity to Syrian refugees results in a greater degree of contact, and our data show that, rather

Figure 1: Mechanisms: Social capital and proximity



This figure shows the correlation between respondents' proximity to refugee settlements and their response to the scarcity of resources (Q39), a "feeling thermometer" towards Syrian Refugees (Q42), and how many Syrians they have interacted with in the last month (Q40).

than increasing economic and cultural conflict, this contact results in a positive impact on social capital between natives and refugees with positive spillovers to other migrant communities.

The following table replicates Table 1 with the amount sent in the trust game as the dependent variable rather than the social capital index. Note that the findings are equivalent for both measures of social capital.

Table 2: Impact of proximity on prosocial preferences

Recipient	Syrian					Palestinian	Lebanese
	(1)	(2)	(3)†	(4)	(5)†	(6)	(7)
Index	OLS	OLS	OLS	IV	IV	IV	IV
Distance	-0.161	-0.0954	-0.160	-0.465*	-0.709***	-0.353	0.0944
	(0.118)	(0.110)	(0.110)	(0.251)	(0.272)	(0.230)	(0.223)
Wealth		0.0110**	0.0126***	0.0103**	0.0117***	0.0132***	0.0156***
		(0.00430)	(0.00412)	(0.00433)	(0.00419)	(0.00439)	(0.00364)
Accessibility		0.109	0.129*	0.0957	0.108	0.138*	0.124**
		(0.0728)	(0.0702)	(0.0728)	(0.0709)	(0.0757)	(0.0596)
Density		0.00756	0.00311	0.00702	0.00195	0.00582	-0.0131**
		(0.0120)	(0.0118)	(0.0127)	(0.0129)	(0.0111)	(0.00652)
Age		-0.00510**	-0.00340*	-0.00524***	-0.00362*	-0.00509**	-0.00541***
		(0.00199)	(0.00198)	(0.00201)	(0.00202)	(0.00207)	(0.00166)
Female		0.160***	0.169***	0.159***	0.169***	0.122**	0.0599
		(0.0471)	(0.0462)	(0.0469)	(0.0459)	(0.0498)	(0.0474)
Muslim			0.459***		0.490***		
			(0.0737)		(0.0745)		
Nationality			-0.0245		0.00540		
			(0.0527)		(0.0549)		
N	1000	1000	1000	1000	1000	1000	1000

This table reports coefficient estimates and standard errors (clustered at the PSU level) of OLS and 2SLS regressions, instrumented with altitude, with the dependent variable of an index of prosocial preferences.

† Non-preregistered models, included as ex post robustness check.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

A.2 Additional Background and Design Features

Here we provide more detail on the background of refugee settlement in Lebanon and on our sampling methods.

A.2.1 Background on Syrian Refugee Settlement

Since the onset of the Syrian civil war in 2011, Lebanon has seen a massive inflow of refugees from Syria and currently hosts the largest number of refugees per capita of any country in the world (UNHCR, 2017). In contrast to neighboring countries, Lebanon did not limit the entry of refugees, or restrict refugee settlement to limited areas within Lebanon. The decision to not restrict refugee settlement was taken in an attempt to avoid the establishment of permanent refugee camps for Syrian refugees, and a related measure banned the erection of permanent structures (for example concrete buildings or foundations) for the purpose of housing new refugees (Ferris and Kirisci, 2016).

As a result, Syrian refugees were left with two primary housing options: locate in existing residential buildings or settlements composed of temporary structures. In our study area (Northern Lebanon) the proportion of Syrian refugees located in temporary settlements is relatively high, with rates varying between 22 percent in Akkar and 49 percent in Bekka. Therefore, temporary settlements are arguably a good proxy for exposure to Syrian refugees in Northern Lebanon.[10]

Additionally, it is also helpful to understand the main factors driving the locational decision of Syrian refugees. UN-Habitat and UNHCR (2018) survey refugee households in Lebanon and provide self-reported data on the main reason for refugee's locational choice; 51 percent of households list housing cost, 20 percent list proximity to family/relatives, 10 percent list proximity to work, and 2 percent list "community with the same background" as the main reason for the location choice. The survey results indicate that housing costs are a much more important concern than the characteristics of the local community.

[10] We verify this below by demonstrating that proximity to temporary settlements is positively correlated with a self-reported measure of contact.

Moreover, the survey suggests that there is an important dynamic aspect to refugee settlement at play in Lebanon that is commonly observed in migration decisions more generally: if the first family member moves to a location, due primarily to housing costs or proximity to work, than it becomes more likely that other family members will select the same location.

A.2.2 Additional Information on Sampling

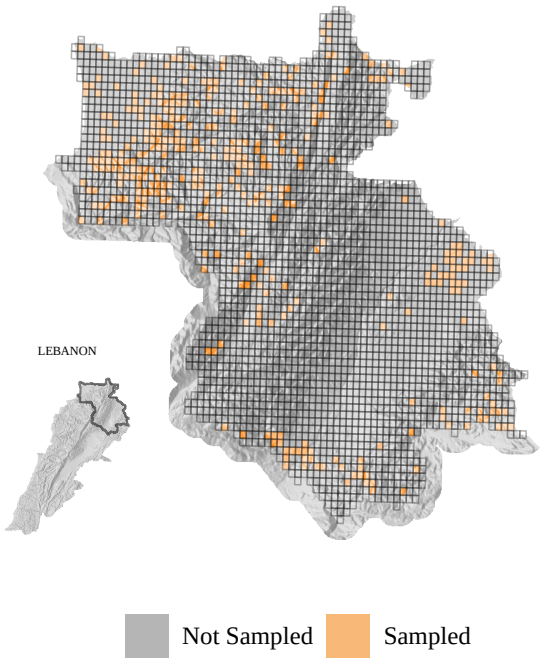
To gain a representative sample of Northern Lebanon's Lebanese resident population, we employed a multi-stage random sampling method. Our primary sampling units (PSUs) are 1km x 1km grid cells. We superimposed these grids unto a map of our sampling area. We defined our sampling area as the districts in the immediate north of Lebanon. These are: Akkar, Hermel and the very north-eastern part of Baalbek. In choosing this sampling area, we consulted with local experts in order to exclude highly insecure areas. In this process, we removed administrative districts in Balbeek that lie to the very east (an area where the Lebanese army had recently attacked the Islamic State in Iraq and Syria) and areas only reachable with offroad vehicles (namely, the very tip of Akkar). The overall sampling area is presented in Figure 2.

In a second step, we drew a random sample of PSUs, weighted by the size of the Lebanese resident population, respectively. Overall, we drew a sample of 1,000 Lebanese residents. We estimated the number of Lebanese residents using data from the GHS population grid (Freire and Pesaresi, 2015).[11] We estimated the number of Syrian refugees using data from UNHCR (see Figure 4). The agency provides up-to-date information on Syrian refugees settlements, and we relied on the most recent estimate from June 30, 2017.

The randomly selected PSUs of the two samples—the *Refugee* sample and the *Resident*

[11]Given that the GHS population grid uses an algorithm to determine population density, we went through all PSUs by hand on GoogleMaps in order to discard PSUs that were erroneously determined as housing residents. This is the case, for instance, when large plantations, warehouses or factories are mistakenly interpreted as apartments or houses.

Figure 2: Sampling area



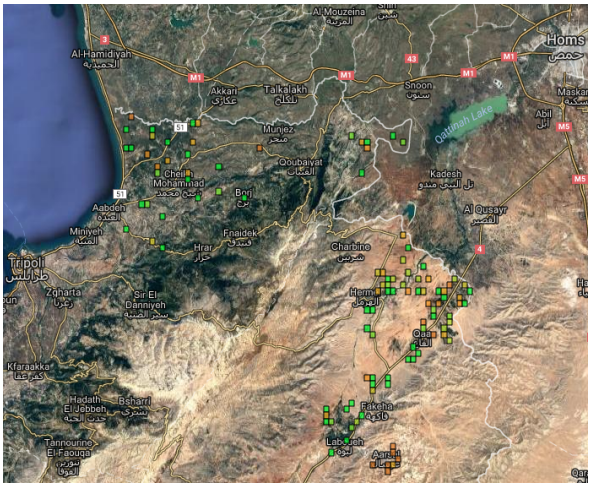
Notes: The map plots the sampling area, squares denote PSUs.

sample—are shown in two maps in Figure 3. As can be seen, the Lebanese *Resident* sample (Figure b) is more dispersed, while the Refugee sample (Figure a) clusters in a few areas. The maps also show interesting idiosyncrasies in refugee settling patterns. Notably, Syrian refugees are very unlikely to settle in the mountainous region of the Mount Lebanon. To see this, note that the area around Charbine houses almost no refugees, but a sizable number of Lebanese residents.

Within the selected PSUs, we will recruit a number of respondents proportional to the number of inhabitants within the grid. Within the grids, households are chosen by means of a random walk starting at randomly selected starting points. Within each household, we randomly recruited one participant by listing all household members over the age of 18 and choosing one of them using a dice.

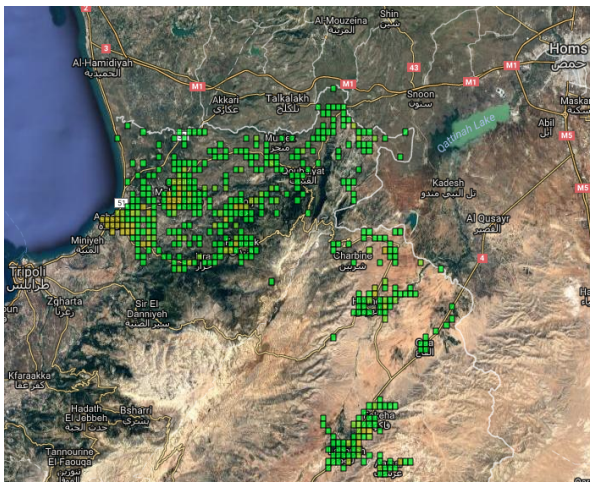
Figure 3: Sampling strategy

(a) Refugee sample



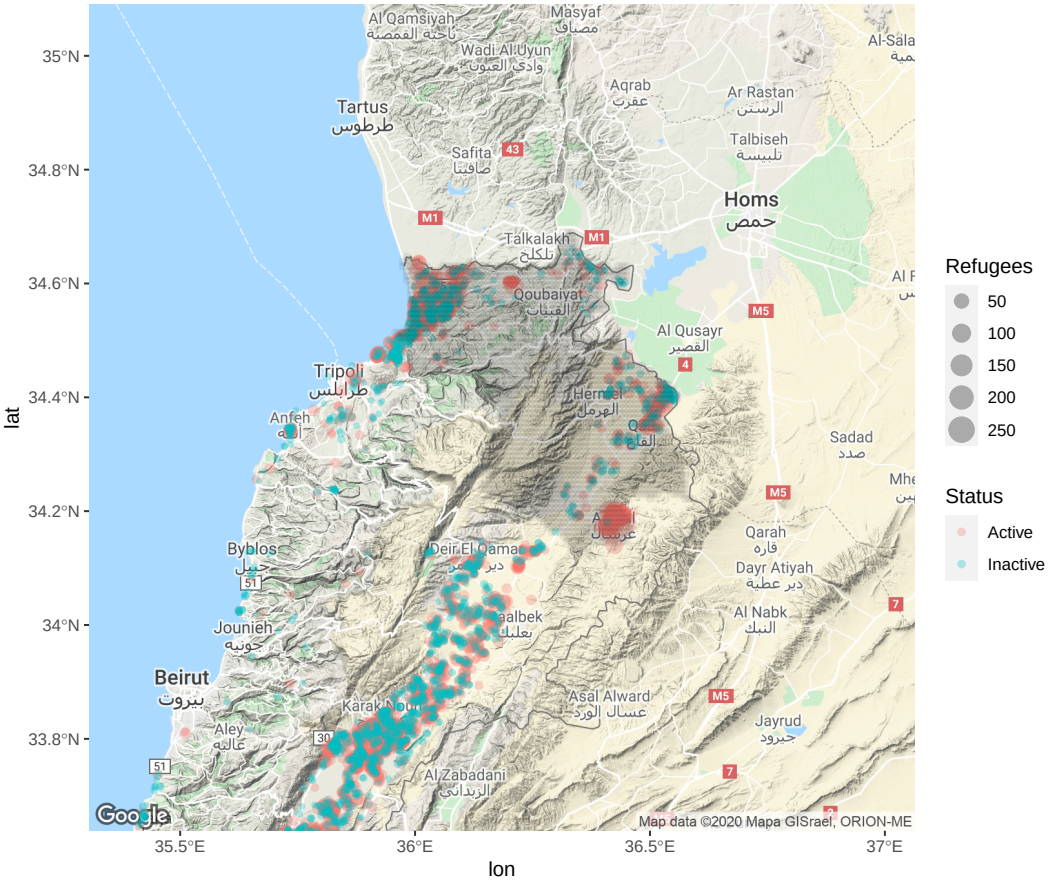
Notes: Randomly drawn proportional Refugee sample.

(b) Resident sample



Notes: Randomly drawn proportional Resident sample.

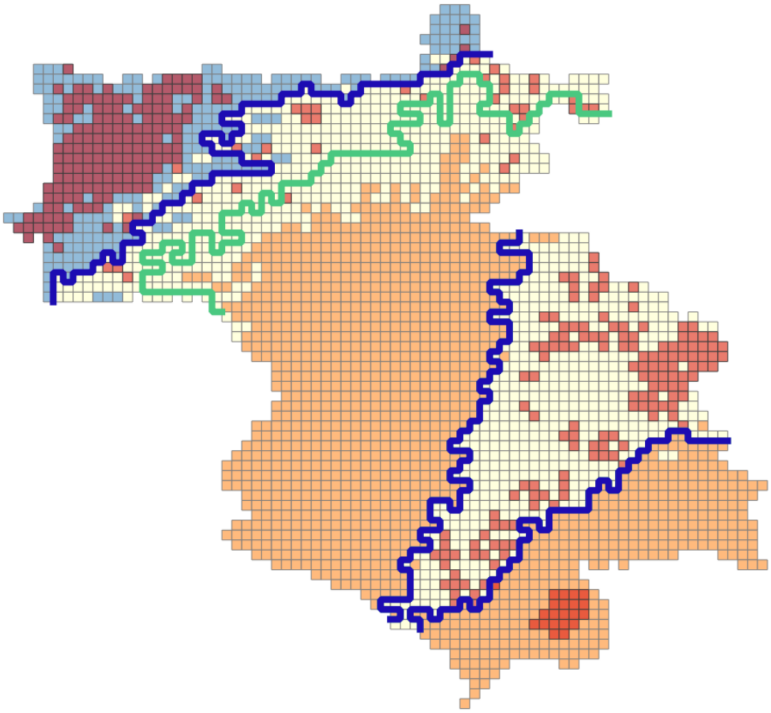
Figure 4: Refugee settlements



A.3 Fuzzy Regression Discontinuity Design

In a fourth step, we exploit the fact that refugee settlement, by and large, does not take place in high altitudes. As Figure 4 demonstrates, the mountainous area of the Mount Lebanon is essentially uninhabited by Syrian refugees. We use this fact to construct a local fuzzy discontinuity design. Specifically, we take advantage of two altitude thresholds—above 550 meter in the North and above 950 in the South (see Figure 5)—which determine whether Lebanese individuals are exposed or not exposed to informal refugee settlements. These thresholds constitute our forcing variables. In order to determine the optimal bandwidth, we use the procedure presented in Calonico, Cattaneo and Titiunik (2014).

Figure 5: Discontinuity Thresholds

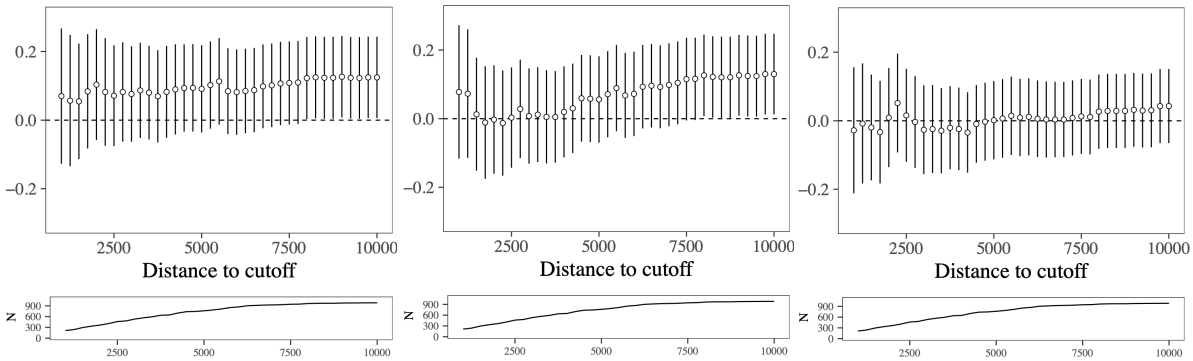


Notes: The map plots the pre-registered discontinuity thresholds in refugee settlement patterns. Blue squares denote PSUs below 550 meter, while white squares denote PSUs between 550 and 950 meters. Orange squares are above 950 meters. Red squares denote refugee settlements.

The following figures (Figure 6) show the estimates for our baseline OLS model, again controlling for the aforementioned potential confounds, substituting a dummy for "not exposed" (below cutoff) for the distance to refugee settlements. Note that the coeffi-

Figure 6: Difference in coefficient on exposure dummy

(a) Syrian Recipients. (b) Palestinian Recipients. (c) Lebanese Recipients.



cient estimate of the exposure dummy remains relatively stable as our forcing variable moves closer to the cutoff threshold for Syrian and Lebanese recipients. For Palestinian recipients, however, the estimate tends towards zero.

A.4 Survey

Instructions to enumerators:

- If not otherwise specified, mark only one answer choice.
- If not otherwise specified, do not read out the answer choices.
- Anything in square brackets is information for the enumerator, which must not be read out lout.

A. Section A

Let's start with a few questions about yourself.

1. What is your citizenship?
    a. Lebanese
    b. Other, namely _____ → [*If other, exclude from interview. Say:* "Thank you very much for your time. This time around, however, we only want to interview Lebanese citizens."

2. Gender [*Fill in gender of respondent*]
    a. Male
    b. Female

3. Housing [*Fill in the type of housing of respondent*]
    a. Camp
    b. Shared apartment
    c. Separate apartment
    d. Shared house
    e. Separate house
    f. Other, _____ [*Fill in*]

4. How old are you? [*Fill in years*]
    a. _____ years

5. What is your highest level of education? [*Read out answer choices*]
    a. No formal education
    b. Incomplete primary school
    c. Complete primary school
    d. Incomplete secondary
    e. Complete secondary
    f. Some university-level education, without degree
    g. University-level education, with degree
    h. Other, _____ [*Fill in*]

6. What is your marital status?
    a. Married
    b. In a relationship
    c. Divorced

d. Separated
e. Widowed
f. Single

7. How many children do you have?
   a. _____ [*Fill in number*]

8. What is your primary occupation? [*Read out answer choices*]
   a. Full time employee (30 hours a week or more)
   b. Part time employee (less than 30 hours a week)
   c. Self-employed / owns business
   d. Retired
   e. Housewife / houseman
   f. Student
   g. Unemployed
   h. Other, namely _____ [*Fill in*]

9. Which of the following best describes your profession? If you do not currently work, characterize your major work in the past. [*Read out answer choices*]
   a. No profession
   b. Agriculture and fishing
   c. Manufacturing
   d. Construction
   e. Trade and repair
   f. Hotels and restaurants
   g. Transport and communications
   h. Education
   i. Health and social work
   j. Other, namely _____ [*Fill in*]

10. How many persons live in your household, including you?
    a. _____ [*Fill in number*]

11. What is the total approximate income of your household in USD each month?
    a. _____ USD

12. What percentage of your household income comes from money transfers from relatives who either work abroad or in another Lebanese city?
    a. _____ %

13. Where were you born? [*Fill in country and city*]
    a. Country: _____
    b. City: _____

14. What is your religion?
    a. Christian Maronite Catholic

b. Christian Greek Orthodox
c. Christian Melkite Catholic
d. Christian Armenian Apostolic
e. Muslim Sunni
f. Muslim Shia
g. Druze
h. Atheist / Agnostic / No belief
i. Other, namely _____ [*Fill in*]

15. How often do you pray during a given week? [*Fill in number*]
    a. _____

16. How important is religion in your life?
    a. Very important
    b. Important
    c. Neither important, nor unimportant
    d. Unimportant
    e. Very unimportant

17. I'd like you to think of your three closest neighbors. Can you tell me their nationality?
    a. Neighbor 1 _____ [*Fill in nationality*]
    b. Neighbor 2 _____ [*Fill in nationality*]
    c. Neighbor 3 _____ [*Fill in nationality*]

B. Section B

18. In general, how willing are you to take risks? Please use a scale from 0 to 10, where 0 means "*completely unwilling to take risks*" and a 10 means "*very willing to take risks*".
    a. _____ [*Fill in number*]

19. How willing are you to give up something today in order to get more in the future? Again, indicate your answer on a scale from 0 to 10, where 0 means "*completely unwilling to do so*" and a 10 means you "*very willing to do so*".
    b. _____ [*Fill in number*]

20. On a scale from 0 (not at all) to 10 (perfectly), how well does the following statement describe you as a person? "As long as I am not convinced otherwise, I assume that people have only the best intentions."
    a. _____ [*Fill in number*]

[*The next question includes several random elements. In total, there are many different versions of the following question. Please take care in programming this question. Please also include variables that note which words respondents were assigned to.]*

21. Now, we would like to introduce you to a hypothetical Syrian refugee named Mohamad. Mohamad is 24 years old. He has been contemplating whether to migrate toward the European Union to apply for asylum. Friends told Mohamad that refugees are [*randomize:* ostracized / welcomed] in Europe. He also heard that refugees have a [*randomize:* good / poor] chance of gaining full-time employment in the EU. His friends also said that certain European countries have recently put in place [*randomize:* less / more] strict border controls. At the same time, the economic situation in Mohamad's home region has [*randomize:* deteriorated / improved]. Meanwhile, the security situation continues to be [*randomize:* poor / good].

    Given this information, what would you advise Mohamad to do? [*Read out answer choices*]
    a. Definitely not migrate
    b. Probably not migrate
    c. Unsure
    d. Probably migrate
    e. Definitely migrate

22. How about yourself, on a scale from 1 to 10, how likely are you to migrate elsewhere in the coming years? 1 means very unlikely, while 10 means very likely.
    a. _____ [*Fill in number*]

23. And, if you were to migrate, what could country would you like to go to?
    a. _____ [*Fill in country*]

C. Section C

[*The following <u>three</u> questions should only be asked to 50% of all Lebanese respondents. It should be **<u>randomized</u>** whether a respondent receives these three questions or not. Please take care in programming this randomization. Please also include a variable that notes whether a respondent was assigned the questions or not.]*

24. Currently, Lebanon is hosting over one million refugees from Syria. We'd like to ask you a couple of questions related to the refugee crisis. How have you and your family been personally affected by the refugee crisis? [*Read out answer choices]*
    a. Positively affected
    b. Neutrally affected
    c. Negatively affected

25. How do you think Lebanon as a whole has been affected by the refugee crisis? [*Read out answer choices]*
    a. Positively affected
    b. Neutrally affected
    c. Negatively affected

26. Do you support Lebanon's response to the refugee crisis? [*Read out answer choices]*
    a. Yes, absolutely
    b. Yes, by and large
    c. No, not really
    d. No, not definitely not

[Next, there are three blocks of questions, A, B and C. Each block includes four similar (but not identical) sets of questions. These bocks must be put in ***random*** *order. That is, it should be* ***randomized*** *whether a respondent first receives Questions 27 – 30 and then Questions 31 to 34 and then Questions 35 to 38 or whether the ordering will be different (e.g., first Q31 to 34, then Q27 to 20 and then Q35 to 38). Please take care in programming this randomization. Please also include a variable that notes in which order the blocks were asked.]*

Block A

Next, I'd like you to think of the following situation: You and a Syrian refugee nearby named Omar both participate in a study. You do not know Omar, but you know that he is a 35-year refugee from Syria. In the study, you and Omar will be asked to make choices about how to assign a certain amount of money.

27. Imagine the following game. Both you and Omar get $10. Next, you and Omar have to give any amount of that money to the other person. You decide first. Omar decides second. Importantly: Each Dollar that you transfer to Omar, the Syrian refugee, will be tripled by us and then given to Omar. That means, if you give $1 of your $10 to Omar, you then have $9, while Omar will have $10 plus 3 times $1, so $13. Then, Omar can decide to send some money back to you. Let's now play this game. How much of your $10 do you give to Omar, which we then triple?
    a. _____ [*Fill in number*]

28. Next, imagine that we play the game again. Again, both you and Omar get $10. This time, Omar decides first and you second. Imagine that Omar, the Syrian refugee, transfers $3 of his $10 to you. That means, he remains with $7, while you get 3 times $3 (we have tripled the amount). Overall, you end up with your original $10 plus an additional $9, so $19 in total. Now, it is your turn to give money back. How much of the $19 would you transfer back to Omar?
    a. _____ [*Fill in number*]

29. Now, we'd like to play a different game. This time, you get $20. You are then asked to give any amount of that money to Omar, the Syrian refugee. This will be the end of the study. You will remain with $20 minus whatever you have given to Omar. How much would you transfer to Omar?
    a. _____ [*Fill in number*]

30. Finally, we would like to play another game. Imagine you and Omar, the Syrian refugee, both simultaneously have to choose between two options, *Cooperate* or *Not Cooperate*. That is, when you choose between *Cooperate* or *Not Cooperate*, you do not know what Omar has chosen. And Omar also does not know what you have chosen. The amount you and Omar are paid depends on both of your choices.
    1) If you choose to *Not Cooperate* and Omar also does *Not Cooperate*, you both get $5.
    2) If you choose to *Cooperate* and Omar chooses to *Cooperate*, you each receive $10.
    3) If you choose to *Not Cooperate* and Omar chooses to *Cooperate*, then you receive $20 and Omar receives $0.
    4) If you choose to *Cooperate* and Omar chooses to *Not Cooperate*, then you receive $0 and Omar receives $20.

    Would you choose to *Cooperate* or to *Not Cooperate*?
    a) Cooperate
    b) Not Cooperate

Block B

Imagine the following situation: You and a Lebanese individual nearby named Rami both participate in a study. You do not know Rami, but you do know that he is a 37-year old Lebanese citizen. In the study, you and Rami will be asked to make choices about how to assign a certain amount of money.

31. Imagine the following game. Both you and Rami get $10. Next, you and Rami have to give any amount of that money to the other person. You decide first. Rami decides second. Importantly: each Dollar that you transfer to Rami, the Lebanese citizen, will be tripled by us and then given to Rami. That means, if you give $1 of your $10 to Rami, you then have $9, while Rami will have $10 plus 3 times $1, so $13. Then, Rami can decide to send some money back to you. Let's now play this game. How much of your $10 do you give to Rami, which we then triple?
    a. _____ [*Fill in number*]

32. Next, imagine that we play the game again. Again, both you and Rami get $10. This time, Rami decides first and you second. Imagine that Rami, the Lebanese citizen, transfers $3 of his $10 to you. That means, he remains with $7, while you get 3 times $3 (we have tripled the amount). Overall, you end up with your

original $10 plus an additional $9, so $19 in total. Now, it is your turn to give money back. How much of the $19 would you transfer back to Rami?

a. _____ [*Fill in number*]

33. Now, we'd like to play a different game. This time, you get $20. You are then asked to give any amount of that money to Rami, the Lebanese citizen. This will be the end of the study. You will remain with $20 minus whatever you have given to Rami. How much would you transfer to Rami?

    a. _____ [*Fill in number*]

34. Finally, we would like to play another game. Imagine you and Rami, the Lebanese citizen, both simultaneously have to choose between two options, *Cooperate* or *Not Cooperate*. That is, when you choose between *Cooperate* or *Not Cooperate*, you do not know what Rami has chosen. And Rami also does not know what you have chosen. The amount you and Rami are paid depends on both your choices.

    5) If you choose to *Not Cooperate* and Rami also does *Not Cooperate*, you both get $5.
    6) If you choose to *Cooperate* and Rami chooses to *Cooperate*, you each receive $10.
    7) If you choose to *Not Cooperate* and Rami chooses to *Cooperate*, then you receive $20 and Rami receives $0.
    8) If you choose to *Cooperate* and Rami chooses to *Not Cooperate*, then you receive $0 and Rami receives $20.

    Would you choose to *Cooperate* or to *Not Cooperate*?

    a) Cooperate
    b) Not Cooperate

Block C

Imagine the following situation: You and a Palestinian refugee nearby named Adham both participate in a study. You do not know Adham, but you do know that he is a 33-year old Palestinian refugee. In the study, you and Adham will be asked to make choices about how to assign a certain amount of money.

35. Imagine the following game. Both you and Adham get $10. Next, you and Adham have to give any amount of that money to the other person. You decide first. Adham decides second. Importantly: each Dollar that you transfer to Adham, the Palestinian refugee, will be tripled by us and then given to Adham. That means, if you give $1 of your $10 to Adham, you then have $9, while Adham will have $10 plus 3 times $1, so $13. Then, Adham can decide to send some money back to you. Let's now play this game. How much of your $10 do you give to Adham, which we then triple?

    a. _____ [*Fill in number*]

36. Next, imagine that we play the game again. Again, both you and Adham get $10. This time, Adham decides first and you second. Imagine that Adham, the Palestinian refugee, transfers $3 of his $10 to you. That means, he remains with $7, while you get 3 times $3 (we have tripled the amount). Overall, you end up with your original $10 plus an additional $9, so $19 in total. Now, it is your turn to give money back. How much of the $19 would you transfer back to Adham?
    a. _____ [*Fill in number*]

37. Now, we'd like to play a different game. This time, you get $20. You are then asked to give any amount of that money to Adham, the Palestinian refugee,. This will be the end of the study. You will remain with $20 minus whatever you have given to Adham. How much would you transfer to Adham?
    a. _____ [*Fill in number*]

38. Finally, we would like to play another game. Imagine you and Adham, the Palestinian refugee, both simultaneously have to choose between two options, Cooperate or Not Cooperate. That is, when you choose between Cooperate or Not Cooperate, you do not know what Adham has chosen. And Adham also does not know what you have chosen. The amount you and Adham are paid depends on both your choices.
    9) If you choose to *Not Cooperate* and Adham also does *Not Cooperate*, you both get $5.
    10) If you choose to *Cooperate* and Adham chooses to *Cooperate*, you each receive $10.
    11) If you choose to *Not Cooperate* and Adham chooses to *Cooperate*, then you receive $20 and Adham receives $0.
    12) If you choose to *Cooperate* and Adham chooses to *Not Cooperate*, then you receive $0 and Adham receives $20.

    Would you choose to *Cooperate* or to *Not Cooperate*?
        a) Cooperate
        b) Not Cooperate

D. Section D

39. In your view, to what extent are the following resources scarce in this neighborhood? Please rate it from 0 (not scarce at all) to 10 (very scarce). [*Fill in number*s]
    a. Water: _____
    b. Electricity: _____
    c. Food: _____
    d. Supplies: _____
    e. Clothing: _____

40. In the last month, how many Syrian and Lebanese individuals have you interacted with. This does not include your family or friends. [*Fill in number*s]

a. Syrians: _____
b. Lebanese: _____

41. We have spoken to many people in this area and they have all described themselves in different ways. Some people describe themselves in terms of their religion or nationality. Others describe themselves in economic terms, such as working class, middle class, or a farmer. Which specific group do you feel you belong to first and foremost? [*Read out answer choices*]
    a. Nationality
    b. Religion
    c. Class

42. On a scale from 0 to 100, where 0 means (very cold) and 100 means (very warm), how warm or cold do you feel toward Syrian refugees?
    a. _____ [*Fill in number*]

43. Lebanon has seen migrants come from many countries. Two big groups are Syrians and Palestinians. To what extent do you think these two groups are similar or different? Please answer on a scale from 0 (very similar) to 10 (very different).
    a. _____ [*Fill in number*]

44. Last, would you be happy to give us your phone number so that we can stay in touch with you?
    a. _____ [*Fill in number*]

Thank you very much for agreeing to participate in this survey. Your participation means a lot to us!

[End of survey]