

# Displaced Loyalties: The Effects of Indiscriminate Violence on Attitudes Among Syrian Refugees in Turkey

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## Abstract

How does regime-inflicted indiscriminate violence affect refugees' political attitudes? Using a survey of 1,384 Syrian refugees in Turkey, we leverage variation in home destruction caused by barrel bombs to examine the effect of violence on refugees' political preferences. We find that refugees who lose their home to barrel bombs are less supportive of the opposition, and are more likely to say no armed group in the conflict represents them. Suggestive evidence supports two explanations: First, refugees blame the opposition for provoking regime violence. Second, those who lost their homes are more supportive of ending the war and finding peace.

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For refugees who have fled civil conflict, experiences with violence before leaving likely intensify their negative views of the armed group that perpetrated that violence. Does exposure to violence also increase support for the groups opposed to the perpetrators of violence? Or, does it cause refugees to revoke their support for armed groups across the board, whatever side they are on? We examine this question in the context of Syrian refugees in Turkey, many of whom faced regime-caused violence prior to their departure. This question is of interest to political scientists, first, because it is relevant to the experiences and political activities of millions of refugees from numerous recent and ongoing conflicts. It is also of interest for scholars of civil conflict, as civilian refugees who do not return and form diaspora communities remain influential through their connections to their country of origin, by providing a flow of remittances to fuel political and armed groups (e.g. Lindley, 2010), or even directly supplying arms and giving military support (Hockenos, 2003). Further, many civilians eventually return home—and indeed many already have. According to official statistics, between 2016 and 2021, more than 300,000 Syrians have already returned to Syria (UNHCR, 2022c). Finally, while political and armed elites play key roles in decisions about peace and conflict, ultimately their ability to maintain order rests on appealing to what civilians want (Hoddie and Hartzel, 2010), including returnees.

Civilians remaining in the conflict zone are expected to choose their loyalties in light of the ongoing security risks they face from armed groups vying for territorial control (see e.g. Kalyvas, 2006). By contrast, civilians that become refugees, now in a new country, may take a range of factors into considerations when deciding their loyalties. Among these, we consider how individuals' emotional and psychological responses to violence could increase or reduce support for the opposition. In particular, one might expect that if violence generates greater anger against its perpetrators, this might also translate into greater support for the opposing armed group(s) in hopes of punishing or removing the regime. Alternatively, however, those who face direct violence could adopt more “pro-peace” or “weary” attitudes in response (see e.g. Tellez, 2018; Hazlett, 2016), revoking support for all kinds of violence, and by extension, for armed groups on all sides. Finally, we consider a blame attribution channel that would suggest an anti-opposition effect: refugees may blame the opposition, either for provoking the regime, or failing to protect their community from it.

Our study examines the Syrian civil war, focusing exclusively on the attitudes of refugees, against whom indiscriminate violence has been used extensively by a domestic incumbent government against its own population. A substantial number of Syrians have been exposed to indiscriminate violence, much of it in the form of barrel bombings. Although precise figures are

not available, more than 11,000 civilians are estimated to be killed by barrel bombs, including thousands of women and children (SNHR, 2017; Amnesty International, 2020). Still, these horrific barrel bombings have not been well studied. With the notable exception of Tyner (2016), almost no published academic work has shed light on the impact of such indiscriminate violence in Syria. What is more, we are only beginning to learn how the millions of civilian refugees who have fled such violence view the conflict and the parties fighting in it.<sup>1</sup>

Employing an original survey of 1,384 Syrian refugees living outside of camps in Turkey in the summer and fall of 2016, we ask how a particular harm—losing one’s home to barrel bombing—turns civilians towards insurgents or away from them. We focus on harms caused by barrel bombs because these terrifying weapons are highly indiscriminate within the targeted neighborhoods, allowing a within-neighborhood comparison that greatly reduces potential confounding.

We find, first, that those who lost their home to barrel bombing perceive the regime as more threatening: They are more likely to view the Assad government as the largest personal threat to their own security and to the security of a future Syria. This supports the expectation that indiscriminate violence makes civilians feel more threatened by its perpetrator, which could motivate protection-seeking from the perpetrator’s opponents. Yet, and to our primary question, refugees who experience these additional losses do *not* show greater affinity towards the armed opposition or any other insurgent group operating in Syria. Rather, those who lose homes are *less* likely to report support for the opposition, and are commensurately more likely to report that no party to the conflict represents their interests. They are also more approving of fellow Syrians who refuse to choose sides in the conflict. We also consider the evidence for “blame-attribution” and “war-weariness” mechanisms, and find suggestive evidence for both. While we argue our conditioning strategy and the low accuracy of barrel bombs greatly reduces the scope for unobserved confounding, we also conduct sensitivity analyses that describe what strength of residual confounding would be required to alter our conclusion. Further, we consider the ways in which “selection into” the study population (refugees in Turkey at the time of the survey) threatens the (internal) validity of our estimated effect within this group, and describe analyses that help to mitigate this concern.

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<sup>1</sup>Recent exceptions include the Arab Barometer Survey of Syrian refugees in Jordan and Lebanon (Ceyhun, Huseyin Emre, 2017) and work by Corstange (2019) on public opinion of Syrians in Lebanon regarding the conflict. See also Mironova et al. (2019a) and Mironova et al. (2019b) that study determinants of Syrians’ commitment to rebellion and risk preferences, respectively, using data from surveys conducted among Syrians both inside and outside Syria.

# 1 Background

## 1.1 Related literature

Our work seeks to begin learning about how refugees' attitudes toward combatants are shaped by their experiences with indiscriminate violence during war time. One relevant feature of our question is that we focus on a situation with ongoing violence at the time of the research. Unfortunately, there are very few empirical studies of civilian attitudes *toward combatants during wartime* at all,<sup>2</sup> and very little attention has been given to how direct exposure to incumbent-inflicted indiscriminate violence shapes individual perceptions about insurgent groups. Undoubtedly, the paucity of studies examining actual effects of individual-level exposure to indiscriminate violence during a conflict is partly due to the logistical and security challenges associated with such research. As such, there is a heavy reliance on remote, aggregate measures, such as territorial control and death counts.

A second relevant feature of the particular case we study is the focus on violence that, as we shall illustrate below, was perpetrated solely by the incumbent regime. By contrast, most existing studies on this topic focus on cases where violence has been perpetrated by external actors. For instance, all the cases of indiscriminate artillery shelling cited in Lyall (2009) are by foreign actors.<sup>3</sup> Recent published work on other forms of indiscriminate violence focus similarly on cases with external counter-insurgents, such as aerial bombardment by the US in Vietnam, (Kocher et al., 2011; Dell and Querubin, 2017) or collateral damage by Coalition forces in Iraq (Kondra and Shapiro, 2012).

Nonetheless, there is a rich and growing literature on related questions regarding categories of violence and their impact. Below we review some of these concepts before turning to a description of our expectations regarding the influence of indiscriminate violence on the attitudes of refugees towards armed actors and political outcomes.

Categories of violence are sometimes contentious, but scholars of civil conflict routinely draw a conceptual distinction between “selective violence”—instances when combatants and/or the civilians suspected of supporting combatants are targeted based on personalized information about their actions (Kalyvas, 2006)—and “indiscriminate violence”, which targets everyone in a particular area with no effort to determine guilt or innocence (Downes, 2007). Straus (2015) usefully introduces the term “group-selective violence”, where one can say *groups* are targeted but violence

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<sup>2</sup>Some notable exceptions are Lyall et al. (2013) in Afghanistan and Fair et al. (2016) in Pakistan.

<sup>3</sup>These cases are France in Algeria, United States in Vietnam and Iraq, Soviet Union in Afghanistan, Russia during the first Chechen War, Britain in Afghanistan and Israel during the Lebanon War (332).

is effectively indiscriminate within those targeted groups or areas. This term captures well the case of the barrel bomb attacks we study here: The Assad regime dropped barrel bombs in opposition-controlled areas of Syria without any targeting *within* those areas for a number of reasons, which we discuss in greater detail below.

While our interest lies in the reactions of refugees, who have escaped the conflict zone, a major thread of the literature on civil conflict to date has theorized the responses of civilians remaining in the conflict zone, with implications for the strategic choices made by armed actors. Notwithstanding important theoretical differences we discuss below, some of the considerations of civilians theorized in this literature may apply to refugees, and particularly to refugees thinking about family members who remain captive in the conflict zone. According to Kalyvas (2006), a regime that perpetrates violence indiscriminately (at the individual level) may push civilians to support the insurgents, either because these civilians become more vengeful towards the perpetrators of violence (Anderson, 2005; Hashim, 2006) or because they turn to the opposition in search of protection (Goodwin, 2001). Further, in a territory held firmly by one party, indiscriminate violence committed by the other may make civilians feel the incumbent is incapable of providing protection or is responsible for provoking violence (Souleimanov and Siroky, 2016). Such violence may thus cause (captive) civilians to reduce support or loyalty toward the party holding that territory<sup>4</sup>.

In one pioneering attempt to study effects of violence on individual attitudes toward the warring parties themselves during conflict in Afghanistan, Lyall et al. (2013) reveal that civilians suffering violence perpetrated by the International Security Assistance Force shift attitudinal support towards the Taliban, but the opposite does not hold. The authors argue that this asymmetry in responses suggests the need to “integrate perceptions of harm and other individual level characteristics into our models...to understand how violence is understood by civilians and how it affects both attitudes and subsequent behavior” (Lyall et al., 2013, 19). Our work takes up that call, examining how regime-inflicted indiscriminate violence shapes Syrian refugees’ loyalties towards the insurgent opposition.

Other relevant studies are interested in how exposure to violence shapes various types of “civic” behaviors and attitudes, including participation in civil society, political engagement and altruistic actions and beliefs. We refer the reader to Bauer et al. (2016) for an extensive review of this work, some of it quasi-experimental, on cooperation and other potentially pro-social reactions to violence. Despite this plethora of work on how violence effects attitudes and behaviors, there are still very few rigorous empirical studies of civilian attitudes *toward combatants* during wartime, undoubtedly

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<sup>4</sup>For related empirical work, see Downes (2007), Kalyvas and Kocher (2007), Lyall (2009), Kocher et al. (2011), Dell and Querubin (2017), Schutte (2017)

because of the logistical and security challenges mentioned above.

## 1.2 Expectations

This study is not designed to confirm an *ex ante* directional hypothesis but rather to empirically assess the effects of indiscriminate violence on support for the opposition in this context, recognizing that existing theory could reasonably point to either a pro- or anti-opposition effect.

The main factor suggesting that refugees exposed to regime-perpetrated violence would *increase support* to the opposition is the obvious one: a desire, emotional or otherwise, to support those who oppose the perpetrators of the violence. Others who have studied the consequences of indiscriminate violence during counterinsurgency campaigns—albeit violence carried out by external actors (Anderson, 2005; Hashim, 2006)—have found that incumbent-inflicted indiscriminate violence makes civilians feel more threatened and less sympathetic towards its perpetrators. One might reasonably expect that such a reaction would further translate into increased support for the opposition, the natural enemy of the regime.

However, a range of other factors are either ambiguous in the direction of effect they predict, or suggest the opposite. Those leading to ambiguous predictions include considerations regarding the safety of an individual’s remaining family, community members, and friends in the conflict zone. It is unclear what this consideration predicts regarding how exposure to violence affects support of the opposition: the answer may be contingent on whether people believe that with additional support the opposition could “win”, or whether the longer the opposition fights, the more destruction will occur. Further, knowing full-well that the opposition failed to protect their own neighborhood from the regime, these individuals have little if any reason to expect the opposition will protect others in those areas, and thus little reason to support them. Finally, refugees may have strong feelings about the future direction of their country. Having suffered the brutality of the regime first hand, refugees experiencing violence may be more pro-opposition, believing the regime is unfit to rule. However, they may also feel that the opposition is ill-equipped to rule or unlikely to win, in which case we may not see such a response.

Two additional theoretical possibilities suggest why regime-caused violence could reduce refugees’ support for the opposition. The first is “blame attribution”: civilians may blame the opposition for regime violence, either because they believe the opposition provoked it, or because the opposition failed to protect civilians against it. Although we emphasized above that the captive civilian model of conflict dynamics differs from the situation we study, Kalyvas (2006) endeavors to explain the use of apparently irrational *indiscriminate* violence in the captive civilian model

by suggesting that an armed group, without any control of a given territory, may hope that civilians will blame their incumbent for failing to protect them. Though indiscriminate violence will not make its perpetrators popular with targeted civilians, it could expose the weakness of armed actors who fail to protect civilians or who are thought to have provoked that violence. Likewise, Lyall (2009) and Pechenkina et al. (2019) describe contexts in which indiscriminate violence by the state is likely to be viewed as a response to insurgent provocation, leading civilians to blame the insurgents for bringing violence down on them. Second, we consider the possibility that the dominant emotional or psychological reaction to violence is not anger that then leads to support of the opposition as a means of countering the regime, but rather a “weary” or “pro-peace” effect of violence on individuals, by which exposure to violence may generate more pacific attitudes, increase desire for a settlement, and even decrease demands to harshly punish the perpetrators (see e.g. Hazlett, 2016; Tellez, 2018 for recent evidence at the individual level, and works such as Levy and Morgan, 1986 on earlier country-level notions of war-weariness). Such an effect, if dominant, could cause individuals to feel that violence is not a viable strategy, thus revoking support for all groups that use violence, including the armed opposition. As both “blame attribution” and the “weary”/“pro-peace” effect of violence could generate reduced support for the opposition among refugees experiencing more violence, we employ a variety of questions to test the plausibility of these mechanisms (Section 3.5).

## 2 The Syrian Civil War and Displacement

The Syrian civil war was sparked by protests that began in March 2011, when children were detained and reportedly tortured for writing graffiti denouncing the Assad regime on the walls of their school in Der’a (McHugo, 2014). Soon the protests spread to other cities and were met with a harsh response from the regime (Hokayem, 2013). By July 2012, the initial protests that were largely semi-urban and peaceful, had turned into a brutal civil war, fought between Syrian government forces and multiple rebel factions, including both secular and Islamist groups (McHugo, 2014). Around the same time, the government began aerial bombardments of opposition-controlled areas. In mid-2013, government forces in Aleppo began using barrel bombs (Amnesty International, 2015). In response, the UN Security Council has adopted Resolution 2139, which explicitly demands an end to the indiscriminate use of weapons, including barrel bombs (UNSC, 2014). However, this resolution was not effective in curbing barrel bomb attacks. The regime has also continued to use this weapon extensively throughout the war in other opposition-controlled areas of Syria, including in Idlib, Hama, Homs, and the suburbs of Damascus (SNHR, 2017).

By 2019 the war was slowly coming to an end with the victory of the Assad regime, thanks in large part to heavy support from Russia and Iran. The human costs have been devastating: Close to 600,000 people are estimated to have died (SOHR, 2020), including more than 11,000 civilian deaths because of barrel bomb attacks (Amnesty International, 2020). More than 13 million Syrians have been displaced. Among those displaced, more than 6 million had to leave Syria and have become refugees (UNHCR, 2022a). Turkey hosts the largest number of Syrian refugees (UNHCR, 2022b) and is the primary destination for Syrians exposed to indiscriminate violence in the civil war, and especially to barrel bombs. According to the statistics provided by the Turkish Directorate General of Migration Management (DGMM), as of March 17, 2022, 3,751,889 registered Syrian refugees resided in Turkey. Less than 2% of these refugees are currently settled in the 7 camps run by the Turkish government, and the vast majority live among the Turkish population in urban areas. About half of all refugees are living in 4 provinces of Turkey: İstanbul, Gaziantep, Hatay, and Şanlıurfa.<sup>5</sup>

At the time of our survey, there were no officially released data on the origin areas or settlement patterns of refugees entering Turkey.<sup>6</sup> The absence of official data on refugee movements required us to obtain much of our preliminary information through key informant interviews at civil society organizations serving Syrian refugee communities in Turkey. To our knowledge, the data we collected subsequently is the largest and most comprehensive survey of the political attitudes of Syrian refugees in Turkey.

### 3 Methods

We focus on estimating the effect of losing one’s home to barrel bombing on support for the opposition and a number of supporting outcomes. The key assumption is that because they are inaccurate, barrel bombs may be targeted to particular small geographic areas (neighborhoods, defined in Section 3.3) but within these areas they cannot be effectively targeted to a certain building rather than others. If there is exactly zero ability to preferentially hit one building rather than another within a neighborhood, then a within-neighborhood comparison of those whose homes were destroyed to those whose homes were not would allow us to estimate a causal effect with zero confounding bias. More conservatively, although we have reason to believe targeting within neighborhoods is highly unreliable, one can always doubt that such assumptions hold precisely or contemplate that some degree of partial targeting is possible. We thus also examine how

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<sup>5</sup>The province-level numbers of registered Syrian refugees in Turkey are available at <https://www.goc.gov.tr/gecici-koruma5638>.

<sup>6</sup>The one exception is the report published by the Turkish Disaster and Emergency Management Authority (AFAD, 2013) based on a survey conducted in 2013, before barrel bombings were being used heavily in the Syrian civil war.

hypothetical non-zero amounts of within-neighborhood targeting (and thus confounding) would influence the results through sensitivity analyses (Section 4.6). Our goal in this analysis is “internal validity”, i.e. estimating the effect within the sample in hand. However, in Appendix C.2, we describe the conditions under which the process by which individuals “select into” our sample (i.e. by choosing to come to Turkey and to stay until the time of the survey) can bias even our estimate of the effect within this group. We also provide analyses that help mitigate this concern in 4.5.

In what follows, we describe both the arguments for barrel bombs’ inaccuracy and other features of our research design.

### 3.1 The inaccuracy of barrel bombs

The lack of within-neighborhood targeting of barrel bombs is supported by two arguments: technical limitations and strategic purpose. Regarding technical limitations to targeting, notwithstanding efforts reportedly made by the Syrian military to predict where barrel bombs may land by considering wind speed and other factors,<sup>7</sup> such strategies appear to be insufficient to direct bombing below the neighborhood level. Barrel bombs are improvised explosive devices (IEDs) typically made from oil barrels, fuel tanks, gas cylinders or other large metal containers packed with explosives and metal fragments like nails and machine parts to increase their lethality, which are then dropped from helicopters and planes.

As SNHR (2017) reports at length, helicopters drop these bombs, weighing between 50 and 1000kg.s, while still moving and from an altitude of three to five kilometers to minimize exposure to the man-portable air defense (MPAD) surface-to-air missiles. In evidence of their inaccuracy, although one helicopter frequently drops multiple bombs (generally two to four) within a few seconds, the individual bombs may land 500 meters apart from each other (SNHR, 2017, 14).

The second argument for the indiscriminate nature of barrel bomb attacks derives from Assad regime’s objective in using them: to make certain areas inhospitable to civilians so they either withdraw support for the opposition or leave the area. The goal of these bombing was not to kill rebel fighters. In fact, barrel bombings did not focus on the front lines where active fighting was occurring and where rebels were known to be operating. Rather, areas away from the front line were most heavily targeted, in an effort to clear them of civilian communities. As one member of the Civil Defense, a voluntary group of rescue workers, in Aleppo told Amnesty International in 2015, “The people who have been killed are not the people who were fighting.” Furthermore, we know from interviews and the reporting of humanitarian organizations that civilians on the ground

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<sup>7</sup>Gibbons-Neff (2015). We thank an anonymous reviewer for noting this.

can see and hear a barrel bomb fall, yet they cannot know exactly where it will ultimately strike. This inability to discern where destruction will occur prevents civilians from effectively avoiding harm. A shopkeeper in Aleppo remarked, “After you see the barrel falling you don’t know where to go...Sometimes we accidentally run towards the barrel.” (Amnesty International, 2015).

### 3.2 Survey Sampling

The aim of our sampling strategy was to sample out-of-camp Syrian refugees living in the four Turkish locations where we worked. This involved three stages: First, we selected Turkish provinces with the highest number of Syrians present: İstanbul, Hatay, Şanlıurfa and Gaziantep.<sup>8</sup> Syrians in these provinces comprise 50 percent of all out-of-camp Syrians living in Turkey. Figure 1 shows all provinces of Turkey, with the number of Syrian refugees in each indicated by color. The four darkest areas are those selected. In earlier fieldwork in these provinces, we learned that the vast majority of refugees from Syria are Sunni Muslims. The Syrians residing in Gaziantep are mostly Sunni Arabs, while many Syrian Kurds live in Şanlıurfa, and the smaller population of Alawite Syrians are more likely to reside in Hatay or Istanbul. Given the political complexities and sensitivities around religious identity in Turkey, we were unable to ask our respondents directly about sect. We were, however, able to ask respondents about the languages they spoke, namely whether or not they spoke Kurdish.

Next, we chose districts within these provinces that have the highest concentration of Syrians, according to information we collected in 2015 during our interviews with NGOs that assist Syrian refugees in these provinces. Finally, within each neighborhood with a heavy concentration of Syrians, our enumerators randomly chose a street and then randomly selected households on that street. The enumerators asked if the household is Turkish or Syrian. If Turkish, they randomly selected another household on the street. If Syrian, the male head of the household was asked to participate in the survey if he was at home.<sup>9</sup> If the male head of the household was not at home or (in rare cases) if the female head of household opened the door, she was asked to participate. If the respondent agreed to participate, the enumerators proceeded to the survey. Having completed at most 10 interviews per street, our enumerators randomly picked another street and made the next round of interviews using the same sampling procedure.

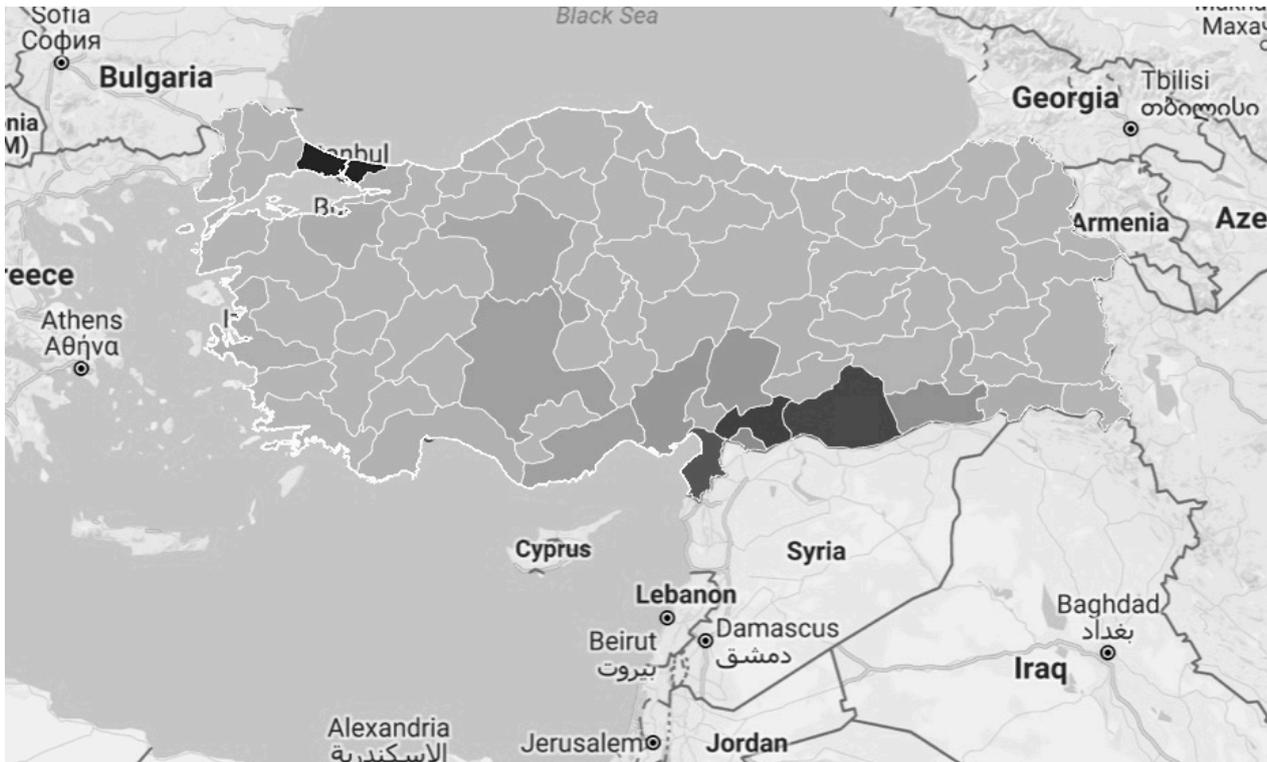
Research with refugee populations in areas proximate to conflict zones pose unique risks and

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<sup>8</sup>According to the figures provided by Directorate General of Migration Management (DGMM), at the time of our survey, the number of Syrians living in each of these provinces were as follows: İstanbul: 397,456; Hatay: 377,053, Şanlıurfa: 395,823, Gaziantep: 318,290.

<sup>9</sup>We would have of course preferred to use a Kish grid or other randomization procedure to choose who to survey within each household, however, this was determined to be too inconsistent with cultural norms.

Figure 1: Distribution of Syrian Refugees in Turkey



challenges (Cronin-Furman and Lake, 2018; Jacobsen and Landau, 2002) that we considered seriously when designing our work. We completed IRB review for our research at both US and Turkish institutions. We conducted several rounds of qualitative work prior to our survey to assess Syrians' willingness to discuss their attitudes to the conflict and experiences of violence without inflicting duress. Our survey itself was implemented with the aid of a research firm, Infakto, which has extensive experience surveying Syrians in the areas where we worked. Together with their staff and our translators, we ensured the cultural appropriateness, political acceptability, and personal sensitivity of the questions asked. We also conducted thorough in-person training with the enumerators to ensure their compliance with best practices, particularly informed consent, detecting signals of discomfort, and the ability of participants to drop out of the survey at any time. Questions regarding personal, family, or community experiences with violence were kept as minimal, brief, and as non-specific as possible. In addition, respondents were offered a card with the details of an organization that offers free psycho-social support services for refugees and their families across Turkey.

The overall response rate (completed interviews divided by attempts) was approximately 34%, but this rate varied across different provinces: respondents agreed to participate per 5-6 attempts in İstanbul, per 2 attempts in Gaziantep and Şanlıurfa, and per 4-5 attempts in Hatay.

### 3.3 Location data

In practice, obtaining the location of respondents' homes in Syria presented logistical challenges, as only 18% were able to locate their homes using Google Maps on their enumerator's smart device to obtain GPS coordinates. Instead, the most accurate method we were able to employ began by asking participants to identify the governorate, city and neighborhood in which they used to live. If they are from a rural area, we then asked which village they are from. Using this information about respondents' original homes, we matched each respondent to one of the administrative units in Syria, using the list provided by United Nations Cartographic Section (UNCS) and United Nations Office for Coordination of Humanitarian Affairs (OCHA).<sup>10</sup> For our respondents from the capital cities of governorates such as Aleppo or Ar-Raqqqa, these administrative units are neighborhoods in these cities. For our respondents from outside the cities, these administrative units are either small provincial towns or villages.<sup>11</sup>

The mean and the median area of the 27 urban neighborhoods included in our post-matching sample (see below, Section 3.6) is 1.18 and 0.92 square kilometers, respectively. The mean and the median area of non-urban neighborhoods is 5.92 and 3.82 square kilometers, respectively. Note that a circle with an area of 1 square kilometer has a radius of 564 meters. If two bombs dropped together can land 500m apart, as reported—and there is further inaccuracy in timing and positioning of the drop itself relative to a given target—this leaves little hope for even approximate targeting of blocks or buildings within a given neighborhood, particularly in urban neighborhoods. Conditioning on neighborhoods of this size therefore helps considerably in ensuring individuals within these units have similar risks of having their homes destroyed. As we describe below, our results hold when we limit our analysis to urban neighborhoods, or to neighborhoods below the median size.

### 3.4 Home destruction

Our analyses focus narrowly on whether individuals' homes were destroyed by barrel bombs as the harm in question. This measure is uniquely well suited to the inferential challenges at hand because whether a person's house is destroyed (or not) is based only on its location relative to where barrel bombs happen to strike. That is, the inability to target barrel bombs within a neighborhood alone implies that the probability of a home being destroyed does not vary within neighborhood—regardless of factors such as how risk tolerant a person is, their attitudes, their support for the

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<sup>10</sup>The list is available at <https://data.humdata.org/dataset/syrian-arab-republic-administrative-boundaries-popul>

<sup>11</sup>Overall, we were not able to match 135 respondents to a unit because either the respondent failed to provide any information or we were not able to match respondent's answer to the available list of administrative units.

opposition, the behavior of their family members, etc. We emphasize that suffering harms from indiscriminate violence beyond having one's home destroyed clearly matter, both in human terms and in terms of their effects on civilian attitudes, even if we have no means to examine their causal effects. A complete description of the concerns that prevent us from using measures other than *House destroyed due to barrel bomb* is given in Section B in the Appendix.

An important assumption we require is that our respondents know with reasonable accuracy whether their homes were destroyed by barrel bombing, despite them possibly having left before this occurred. Refugees that we interviewed prior to the survey relayed confidence that they and others know the nature of the attacks their neighborhood experienced. They know whether their neighborhood was damaged or not, near the front line or not, and indeed whether or not barrel bombs were used.<sup>12</sup> If one witnessed their home's destruction, they will know for certain the cause. If any neighbors witnessed the destruction, again refugees will often find out about the extent of the damage and the cause of the destruction, as they are understandably highly motivated to seek out this information through their social networks and any other resources available to them.<sup>13</sup>

Available eyewitness accounts of attacks that involve both barrel bombs and missiles also indicate that witnesses were able to distinguish between these different types of attacks and the damage they cause. For instance, an eyewitness account of multiple airstrikes on and around a Red Crescent center in Urm al-Kubra in Western Aleppo in 2016 describes it as follows: "I stopped about 200 meters away from the Red Crescent center when I heard the sound of the helicopters attacking the location. I saw two helicopters drop four barrel bombs at approximately 7:12. A few minutes later, another strike was carried out by two Russian warplanes which targeted the same location with two thermobaric missiles that caused a huge explosion and fires. We couldn't see anything in the darkness of the night but the flames. After that, the helicopters came back and dropped other four barrel bombs." (SNHR, 2016)<sup>14</sup> Similarly, one Syrian interviewee working with children who had witnessed bombings told us that even they were able to discern between barrel bombings and other types of airstrikes based on the sounds that accompanied such acts of violence.<sup>15</sup> Consistent with the purpose of driving civilians out, barrel bombing largely occurred

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<sup>12</sup>As one interviewee described it, "The type of damage can reveal the source of the damage and since the explosive barrels tend to have a similar effect range it can be determined through simple observation at the location." Interview conducted on July 2, 2018.

<sup>13</sup>We later came to realize that in the context of our survey, it is possible for participants to have mistakenly thought we were asking if their house was destroyed only prior to when they left. It is unlikely that this is the case for most respondents, owing to the relatively large proportion of respondents saying their house was destroyed by barrel bombs (22% in our sample), despite many leaving in the earlier part of the violence. However if this did occur, it would cause a fraction of those whose homes were destroyed to report otherwise, mitigating the effect we find towards zero.

<sup>14</sup>Several other eyewitness accounts of barrel bomb attacks in different governorates of Syria are available in SNHR (2017).

<sup>15</sup>Interview conducted in Kilis, Turkey on October 8, 2015.

in neighborhoods that were not yet emptied, and thus where witnesses were present.<sup>16</sup>

We note that to the degree there may be non-random measurement error — with some individuals more likely to “over-report” their home being destroyed than others — we would expect that it is the more pro-opposition/anti-regime refugees who are more likely to report their home being destroyed by barrel bombs. If true, this would suggest a bias towards higher opposition support among those who lose their home, but our finding is in the opposite direction. Finally, regarding the context and who civilians hold responsible for these attacks, it is widely known that these barrel bombs have only been used by the Syrian regime, and not by Russian or international coalition forces (SNHR, 2017).

### 3.5 Outcome Measures

Here we briefly describe the most important questions for our outcomes of interest and the names of the variables (italicized) that we construct using the answers to those questions. For questions with categorical outcomes, binary responses were constructed, and we used the resulting variables when they were relevant to our research question and contained at least 5% of the responses.

#### Primary outcomes

Our first two primary outcomes are designed to measure threat perception, with the expectation that individuals who lost homes to barrel bombing will find the regime to be a greater threat to themselves and to the country,

- In your opinion, which of the following groups I will read is the biggest security threat to the country of Syria?: (i) ISIS, (ii) Assad regime, (iii) Opposition groups, (iv) Other armed groups, (v) International powers. [Variable name: *Top threat to Syria: Assad* ]
- In your opinion, which of these do you consider the biggest security threat to you personally in a future Syria?: (i) ISIS; (ii) Assad regime; (iii) Opposition groups; (iv) Other armed groups; (v) International powers. [Variable name: *Top threat to you: Assad*]

The next and arguably most important outcome measures the degree of support for the main parties,

- Which party to the conflict do you think most closely represents your interests? (Open-

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<sup>16</sup>In our sample, when asked if their home was barrel bombed, only 9 percent of our respondents from barrel bombed neighborhoods chose “don’t know” or “no response”. In another recent survey conducted by the Turkish Disaster and Emergency Management Authority (AFAD) among 2,461 Syrian refugees in Turkey, only about 16 percent of respondents did not know the status of their house (AFAD, 2017).

ended). [Variable names: *Support opposition*; *Support no party*]

The two final primary outcomes assess the salience of position-taking and anger towards individual members of the regime,

- If a member of your community refused to take a position in support of any side to the conflict, would you approve? (Yes or No). [Variable name: *Neutrality acceptable*]
- If you encountered a fellow Syrian that you knew had fought with the regime and that person needed immediate life-saving assistance, would you help the person? (Yes or No) [Variable name: *Would help regime member*]

## Mechanism measures

Further analyses consider evidence for possible mechanisms. To assess whether refugees might blame the opposition for the regime’s violence, we ask

- In a post-war Syria, what do you think are appropriate punishments for members of the opposition who killed civilians?: (i) they should not be punished; (ii) they will get their own punishment; (iii) they should have to admit their actions and seek forgiveness from those they harmed; (iv) they should serve time in jail; (v) they should be tried by an international court; (vi) they should be executed; (vii) they should be tried by Syrian National Courts; (viii) they should be tried by Syrian Local Administration Councils. [Variables names: *Execute opposition*]

In evaluating whether exposure to violence might influence support for the opposition through a “weary”/“pro-peace” mechanism we ask,

- What kind of political settlement do you think the leadership that most closely represents you should accept in order to put an end to the violence?: (i) Accept a peace settlement that ends the fighting, regardless of who maintains control; (ii) Accept a peace settlement that ends the fighting, but only if Syria becomes a federal country with some areas outside of the Assad regime’s control; (iii) Accept a peace settlement that ends the fighting, but only if the regime is removed entirely from Syria; (iv) No political settlement is acceptable, fighting should continue until an outright military victory. We construct two variables from this question. The first, which groups responses (i) and (ii), measures willingness to compromise in the name of peace. The second, which equals one if the respondent answered (iv), measures a desire to continue fighting. [Variable names: *Compromise for peace*; *Fight until victory*]

- If a family member of yours spoke out publicly calling for an end to fighting, to what extent would you agree?: (i) strongly agree; (ii) agree; (iii) indifferent; (iv) disagree; (v) strongly disagree. [Variable name: *Support peace if family does*, equalling one when response was “agree” or “strongly agree”]

We structured the last questions above, *Support peace if family does* in this way because we were concerned there may be a social prohibition on calling for peace, which might be disarmed somewhat by asking whether the respondent would agree with a family member who called for it. Finally, one reason individuals may report being less supportive of the opposition or continued fighting might be simply that they are less socially engaged or active overall. To consider this, we asked:

- Do you do any volunteer work for services that help Syrian refugees? (Yes or No). [Variable name: *Volunteer for refugees*]
- How closely do you follow the news from Syria? (Yes or No) [Variable name: *Follow Syria news*]

### 3.6 Estimation strategy: Matching and Regression with Sensitivity

Our strategy requires conditioning on neighborhood, i.e. comparing those who did and did not lose their homes to barrel bombs *within* each neighborhood. Furthermore, we also make comparisons only within gender, both in the interest of conducting separate analyses by gender, and because we note a moderate (but insignificant) tendency for more men than women to report losing their homes to barrel bombs. We note that a larger percentage of men also report large scale damage to their homes than women in the survey conducted by the Turkish Disaster and Emergency Management Authority in 2013 (AFAD, 2013). Conditioning on neighborhood and gender is straightforwardly achieved by exact matching, using the `Matching` package for R (Sekhon, 2011). As employed here, this produces an average treatment effect on the treated (ATT) estimate, as each treated unit is matched to control units, or otherwise dropped if no control is available. The Abadie-Imbens standard errors for matching (Abadie and Imbens, 2006) are used to construct 95% confidence intervals.

We also present results from a regression (OLS) model, which includes available pre-treatment covariates, with an indicator for gender and fixed effects for neighborhood. This regression model is then used in the sensitivity analyses to determine what bias would be suffered due to confounders

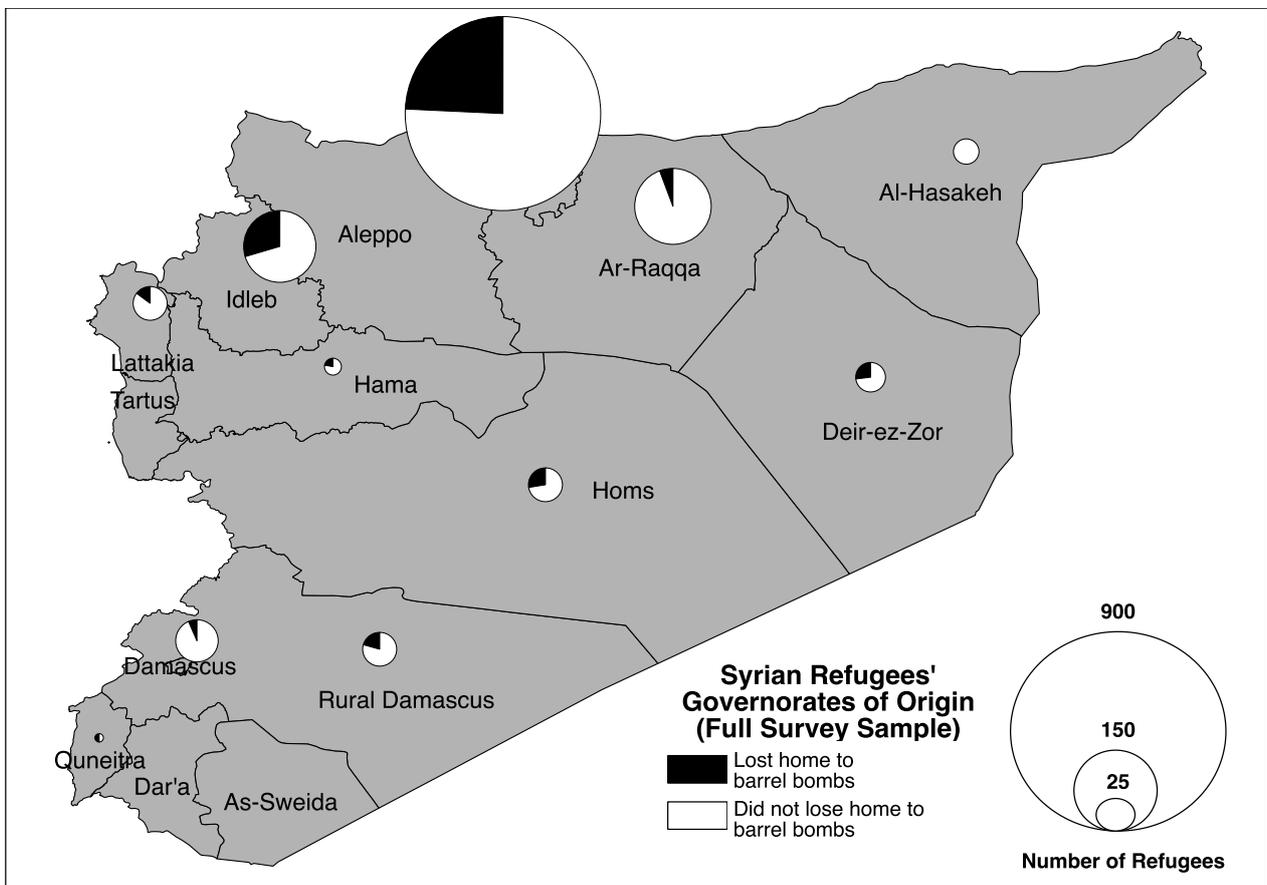
of varying strengths, described in Section 4.6.

## 4 Results

### 4.1 Descriptives

The diverse geographic distribution of our sample of 1,384 respondents is given in Figure 2, by Syrian governorate. While 67% of the respondents are from Aleppo, 10% are from Ar-Raqqa, and 9% are from Idleb. Among those from Aleppo, 24% lost their homes to barrel bombs. In Ar-Raqqa and Idleb, 6% and 30% of the respondents lost their homes to barrel bombs, respectively.

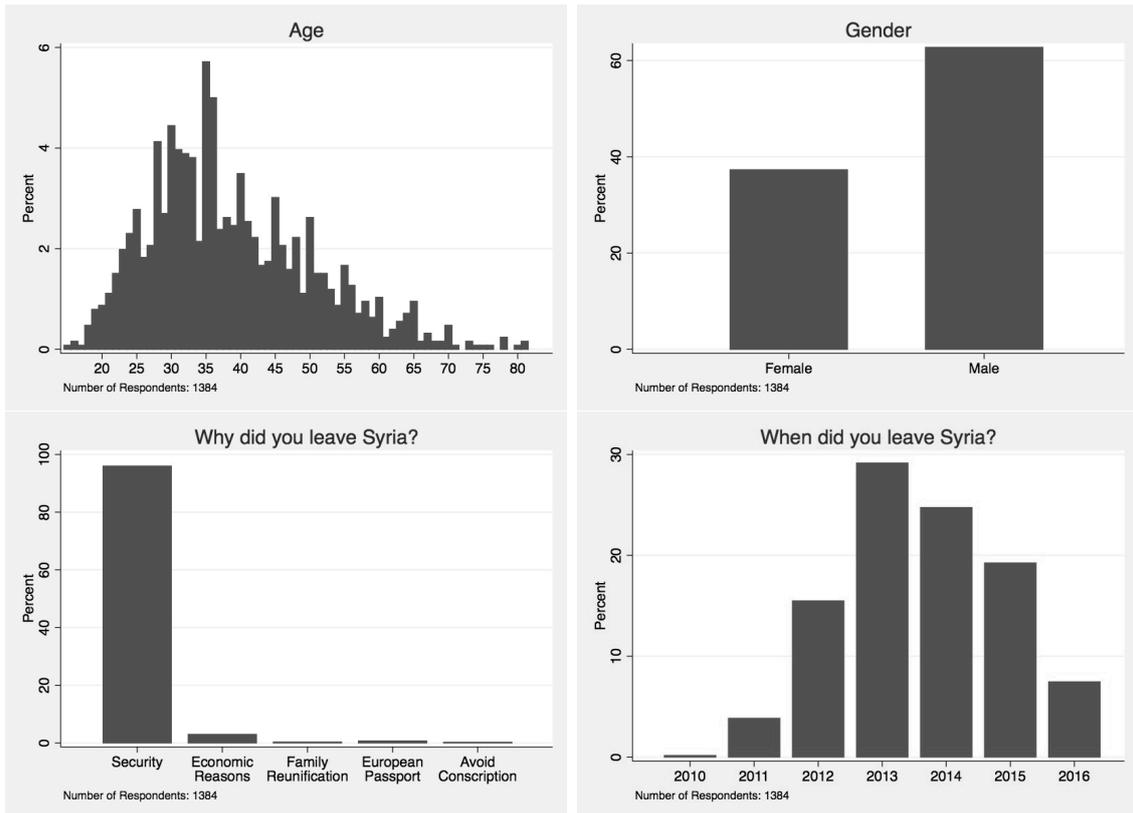
Figure 2: Survey sample



Our sample is relatively well-balanced on gender with 37% being female, despite the difficulty of interviewing Syrian refugee women that has affected other surveys of Syrians, in which the gender ratio is highly imbalanced (e.g. Giebler, 2015). Figure 3 shows the distribution of age in our sample together with several other demographics. The descriptive statistics for additional variables are shown for the full sample in Table 1.

Most of our respondents are young or middle-aged Syrians. It is also important to note that when asked for the main reason why they left Syria, an overwhelming majority of our respondents (96%) specified security concerns, as opposed to other reasons, such as economic considerations,

Figure 3: Key Demographic Descriptives



*Note:* Key demographic statistics: Age distribution (*top left*), gender distribution (*top right*), stated reason for leaving Syria (*bottom left*), and year departing Syria (*bottom right*).

family reunification, escaping to Europe, or avoiding conscription. 80% of respondents left Syria in 2013 or later, when the fighting became especially severe, and barrel bombs became a widely used form of attack by the Assad regime, especially in Aleppo (Amnesty International, 2015). 13% of our sample are Kurdish speakers.

## 4.2 Distribution of Violence

Out of 1384 participants in our survey, 303 (22%) report losing their homes to barrel bombs.<sup>17</sup> In the matching analyses below, we can only use participants who provided accurate information on their neighborhood of origin, which reduces the numbers to 264 who lost their homes to barrel bombs and 832 who did not.

The violence experienced by those in our sample is almost entirely due to the regime and its supporters, and not the opposition or other insurgent groups. Fewer than 0.4% of respondents reported having a family member or even a neighborhood member injured by insurgent violence.

<sup>17</sup>While our identification strategy requires focusing narrowly on one type of violence, for descriptive purposes we report the levels of violence experienced by participants in Table B.2 in the Appendix. We inquired about various forms of violence, including injury or death due to insurgent violence, either in their family or neighborhood. We also asked about torture and injury or death due to sniper fire. Rates on all of these forms of violence were extremely low, and thus they are not reported in the table.

Table 1: Descriptive characteristics of sample

	Mean	Std.Dev.	N
<b><i>Demographics</i></b>			
Male	0.63	0.48	1384
Age	38.61	11.86	1260
Employed before attack	0.54	0.50	1366
Kurdish	0.13	0.33	1384
Education	1.59	1.03	1102
Children	0.92	0.27	1384
Rooms in house	3.10	1.61	1334
Lived in an urban area in Syria	0.67	0.47	1353
Has family members in Syria	0.90	0.30	1384
km to market	0.94	0.88	1376
km to school	0.65	0.57	1379
km to hospital	1.56	1.08	1375
Year left Syria	2013.62	1.27	1383
<b><i>Outcome Variables</i></b>			
Top threat to Syria: Assad	0.35	0.48	1267
Top threat to you: Assad	0.48	0.50	1258
Support opposition	0.50	0.50	1384
Support no party	0.49	0.50	1384
Neutrality acceptable	0.33	0.47	1290
Would help regime member	0.54	0.50	1224
<b><i>Mechanism Variables</i></b>			
Follow Syria news	0.50	0.50	1384
Volunteer for refugees	0.64	0.48	1225
Execute opposition	0.37	0.48	1210
Compromise for peace	0.43	0.50	1072
Fight until victory	0.08	0.28	1072
Support peace if family does	0.78	0.42	1328

*Note:* Descriptive statistics on key demographic statistics, on each outcome variable used, and on variables that we examine regarding potential mechanisms.

Likewise, a predominant form of violence people would be likely to experience due to insurgents is sniper fire, and again only 0.4% of respondents report having a family member injured or killed in sniper fire. This is consistent with our understanding of the violence faced in the areas our respondents came from at the time we surveyed: massive violence due to the Assad regime and its supporters, mostly through aerial forms of bombardment. For these reasons, concerns or interpretations that involve reactions to insurgent-caused violence against civilians do not likely apply in this case.

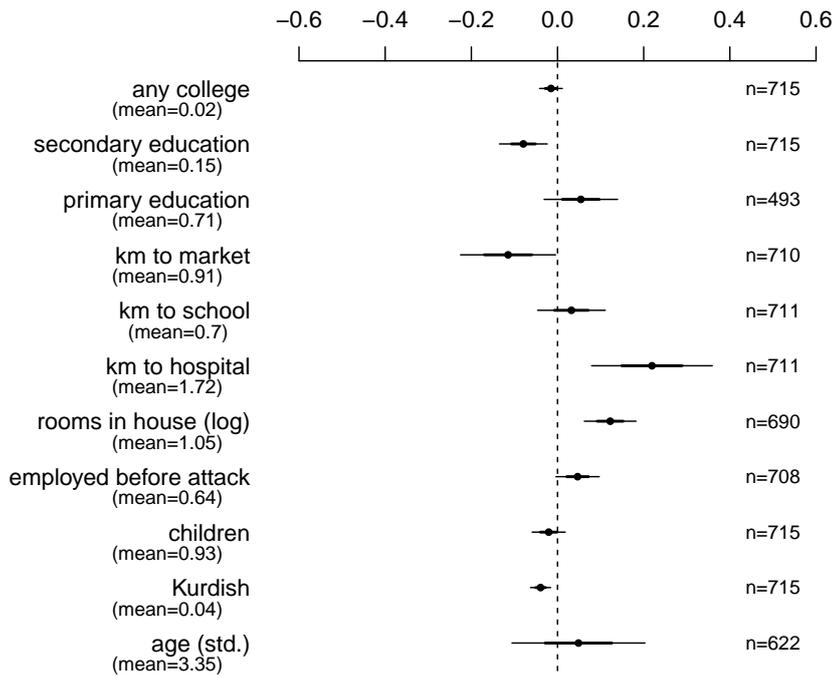
### 4.3 Balance

Before proceeding to effect estimates, an empirical implication of our “no within-neighborhood targeting” assumption is that within a given neighborhood, we would expect those whose homes were destroyed to be similar to those whose homes were not destroyed in terms of their pre-

treatment characteristics. That is, we expect “conditional balance”, though this is insufficient to ensure the identification strategy holds, as it is blind to unobserved confounders.

To test for conditional balance we simply use the same matching approach we use for effect estimation (exact matching on neighborhood and gender), but consider each pre-treatment covariate as if it were an outcome. We hope to find no (placebo) “effect” of having one’s house destroyed on these covariates if losing one’s home to barrel bombing is indeed random within each neighborhood-gender stratum. We use this procedure to check conditional balance on covariates available to us in

Figure 4: Conditional Balance/ Placebo Test



*Note:* Plots showing conditional balance, given neighborhood and gender. Each pre-treatment covariate is treated as if it were an outcome variable, and the “effect” (imbalance) of the treatment is estimated on each via exact matching on neighborhood and gender. The  $n$  shown gives the number of unique treated units plus unique control units contributing to each estimate. Whiskers show the 90% (thick) and 95% (thin) confidence intervals using Abadie-Imbens standard errors.

the survey that are effectively “pre-treatment”, i.e. unaffected by barrel-bombing. These include the (log) number of rooms in the house (*rooms in house (log)*), whether the respondent spoke Kurdish (*Kurdish*), whether the person worked prior to leaving (*employed before attack*), number of children prior to the crisis (*children*), and age in years which we standardize to improve visualization (*age (std.)*). To test whether houses that were destroyed tended to be closer to schools, markets, or hospitals (which might be expected if there is effective within-neighborhood targeting that defies our no within-neighborhood targeting assumption), we check balance on the approximate distances from each participant’s home to the nearest market (*km to market*), school (*km to*

*school*), or hospital (*km to hospital*).<sup>18</sup> We also include education, with indicators for completing primary school (*primary education*), secondary school (*secondary education*), and any college (*any college*).<sup>19</sup> Note that balance is irrelevant for neighborhood-level features, such as urban/non-urban or neighborhood size, since the matching approach conditions on neighborhood. Further, some variables that may at first seem to be of interest for balance testing are post-treatment, such as self-reported socio-economic status, which would very likely be influenced by having one’s home destroyed.

The conditional balance as visualized in Figure 4 is imperfect. While some variables such as age, number of children, and employment in Syria are relatively well balanced, we also see some notable imbalances. Perhaps the most striking imbalance is on *km to hospital*. This imbalance is relatively small in real terms, at 0.22 kilometers (or a standardized imbalance of 0.20 SD), and notably, not in the anticipated direction of concern: Had it been possible to target barrel bombs, knowing that hospitals were a target in general, we would worry that those losing their homes to barrel bombs would be nearer to hospitals, but we find they are slightly farther. It is possible that hospitals were effectively targeted by other weapons such as rockets or mortars, and that barrel bombing was then less concentrated in these areas. On the other hand, we see imbalance in the opposite direction on *km to market*, again with a small magnitude (0.11 km or a standardized imbalance of 0.13 SD). Additional imbalances include that those with secondary or college education are slightly less likely to have lost their home, and homes with more rooms were more likely to be destroyed. The latter imbalance is mechanically sensible, simply because homes with more rooms are larger and thus more likely to be hit. This could in principal generate a bias due to socioeconomic differences between those whose homes were and were not destroyed. These imbalances reinforce that while one would ideally estimate effects under an assurance of zero confounding bias, we must also consider how varying degrees of confounding might impact the result and particularly how much confounding would be required to alter the conclusion through sensitivity analysis (Section 4.6).

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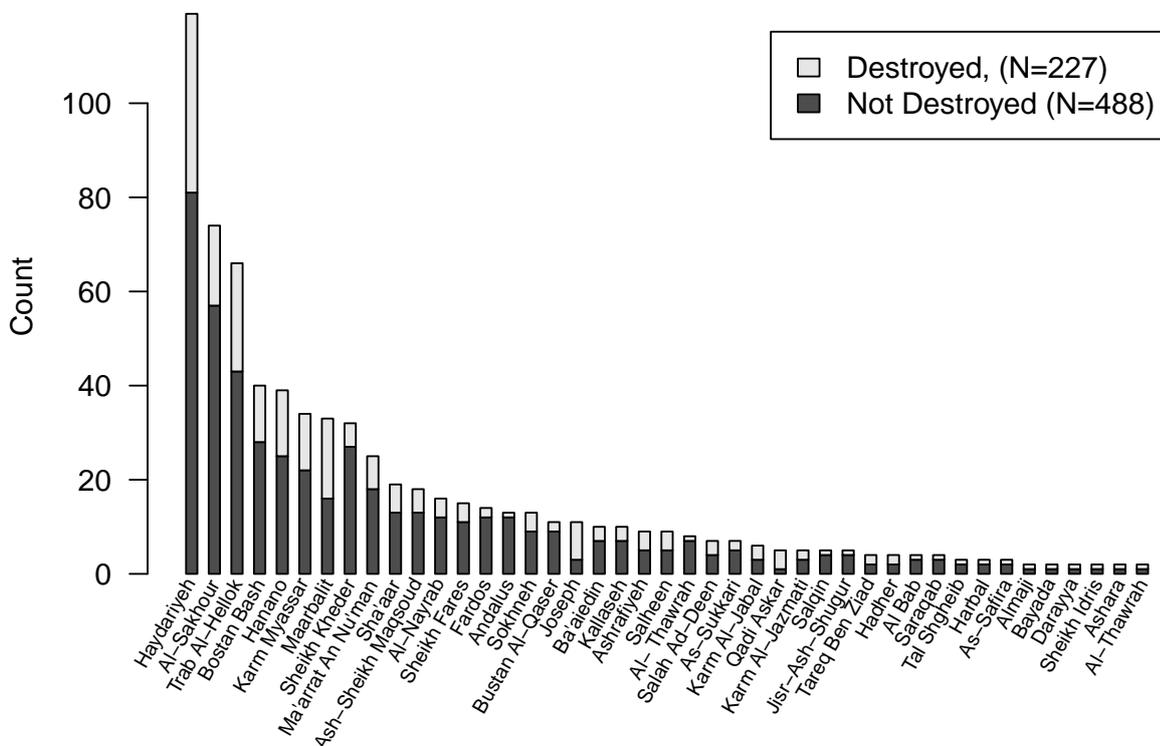
<sup>18</sup>The distance variables are approximations constructed as follows: we asked individuals about the walking time to each of these locations, giving options of zero to five minutes, between five and 15 minutes, 15 to 30 minutes, or more than 30 minutes. We then replace the answer with a numerical value using the middle of each interval (i.e. 2.5 minutes for the zero to five minute category), using 45 minutes for the “over 30” category. We then divide this by 15 to achieve approximate distances in kilometers (km).

<sup>19</sup>All participants in the survey were 18 or over when surveyed, but could have been 14-15 years old in 2012. Thus, for a small fraction of younger participants, it is possible that *any college* or even *education secondary* could be influenced by exposure to barrel bombs. However, since this pertains to only a small portion of the sample, we decided to consider them pre-treatment.

## 4.4 Effect Estimates

As is often the case with matching estimators, the estimate is not an average effect for everybody, but rather the average among those who lost their homes (i.e. an average treatment effect among the treated, or ATT). The post-matching sample contains 227 individuals whose homes were destroyed by barrel bombs, after dropping 37 individuals from the “treated” group for whom a match could not be found. The “control” group is drawn from 488 unique observations. The number of unique observations found in each geographic location is shown in Figure 5.

Figure 5: Respondents by neighborhood after matching



*Note:* Barplot showing number of (unique) respondents included in the data from each neighborhood, after matching on location and gender, for those who lost homes (grey) or did not (black) due to barrel bombing.

Urban neighborhoods, mostly in Aleppo, make up 27 of the 43 neighborhoods in the post-matching sample, while the remaining 16 neighborhoods are in small provincial towns. About 83% of the unique observations after matching come from Aleppo, and out of these, 97% are from the city of Aleppo. The map in Figure 6 shows the number of (unique) individuals contributing to the estimate falling in various neighborhoods of Aleppo city. The proportion of refugees in the matched sample from Aleppo is large because among all governorates in Syria, Aleppo suffered the most concentrated number of barrel bombings.<sup>20</sup> 12% of the unique observations after matching

<sup>20</sup>According to an interview with a representative of the Violation Documentation Center, Aleppo suffered 3,124 barrel bomb related deaths between January 2014 and March 2015, with the most intense campaigns occurring in the fall of

come from Idleb, and 3% are from Ar-Raqqa. The neighborhoods of Aleppo included in our sample are known to be mostly Sunni, while none of them are Alawite, the sect of the president Bashar Assad (CAERUS, 2014, 91-93).<sup>21</sup>

Figure 6: City of Aleppo: Locations included in matched sample

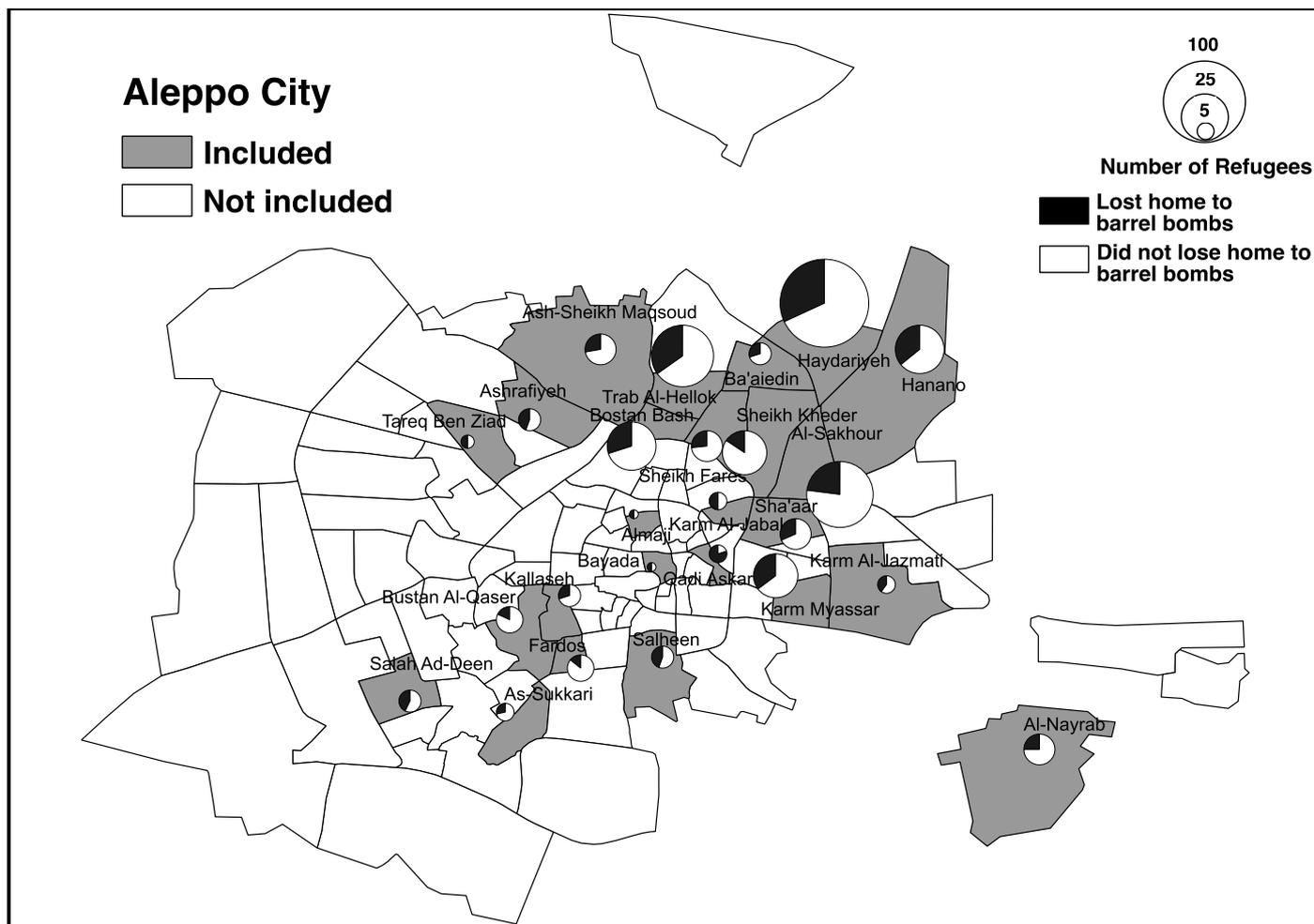
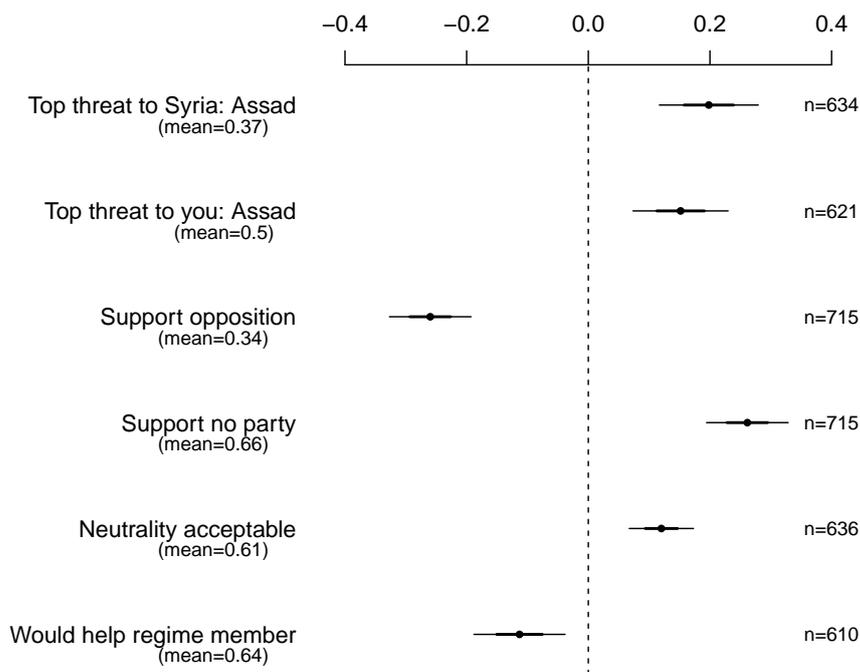


Figure 7 shows effect (ATT) estimates for losing one's home to barrel bombs, having matched on neighborhood and gender. Whiskers show 90% (thick) and 95% (thin) confidence intervals, using the Abadie and Imbens (2006) standard errors. Numerical results are available in Appendix Table A.1. The first two results regard effects on perceived threats. Those who lost homes to barrel bombing are 20 percentage points more likely to find Assad to be the number one threat to the country, and 15 percentage points more likely to say Assad is the number one threat to them personally ( $p < 0.001$ ). Given the paper's theoretical motivation to understand whether indiscriminate violence turns people towards or away from the opposition, it would also be interesting to see the effect on naming the opposition as the primary threat to Syria. However, fewer than 1% do so in the entire sample.

2014. Barrel bombing in Aleppo subsided in February 2015. Interview conducted on October 1, 2015 in Istanbul, Turkey.

<sup>21</sup>The only neighborhoods in our sample that are mixed with Muslim and Christian or Yazidi residents are Ash-Sheikh Maqsoud, Ashrafiyeh and Tareq ben Ziyad.

Figure 7: Main Estimates: Effects of Home Destroyed by Barrel Bombing



*Note:* ATT estimates for the effect of having house destroyed on attitudes related to perceived threat and security. Conditioning on neighborhood and gender is done by exact matching. Whiskers show the 90% (thick) and 95% (thin) confidence intervals using Abadie-Imbens standard errors.)

The remaining results shown in Figure 7 are about attitudes towards armed groups. Support for the opposition is 26 percentage points *lower* among those who lost homes to barrel bombs ( $p < 0.001$ ). No other party appears to gain that lost support. Instead, a corresponding increase is seen for “no party”: those who lost homes to barrel bombs are 26 percentage points *more* likely to say that “no party” represents their views ( $p < 0.001$ ).<sup>22</sup>

Those who lose homes to barrel bombs also prove less willing to provide life saving support to a regime member, by 11 percentage points ( $p < 0.003$ ). This suggests a very reasonable anger towards regime members. However, this does not mean that those who lost their homes feel that others should be obligated to take their side. When asked if it is acceptable for other civilians to refuse to take a position in the current conflict, those who lost homes to barrel bombs are actually 12 percentage points ( $p < 0.001$ ) *more* likely to report that neutrality is acceptable.

Several additional analyses have been reserved for the Appendix. While the above analyses have conditioned at the finest geographic level available, the size of these units can vary considerably. Limiting our analysis only to the urban areas (removing the 16 non-urban units that make it through the matching process) therefore allows finer conditioning that makes targeting within

<sup>22</sup>As readers will recall, this was an open-ended question. Since fewer than 1% said Assad most closely represents them, we do not show effects for this.

these units even more difficult. As shown in Appendix Figure C.1, the results are very similar, supporting the same substantive conclusions. Similarly, limiting the analysis to the neighborhoods at or below the median size again produces similar results (Figure C.2). We note that we might have reasonably focused only on the urban areas in order to maximize the credibility of the no within-neighborhood targeting assumption, but chose to use the more inclusive estimates as our main results, particularly since they do not materially differ.

## 4.5 Selection Into the Sample and Internal Validity

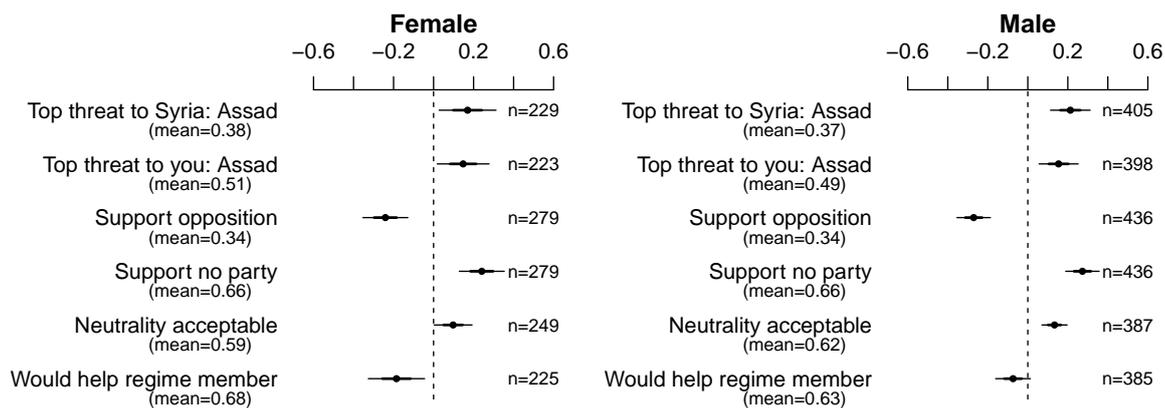
One concern to keep in mind in this study, as in any study of selected populations such as refugees, is whether the “selection into the sample” process that occurs only changes the population about whom we make an inference, or if it also threatens the internal validity of the effect we estimate within this population. While we cannot rule this out, in Appendix C.2, we discuss several scenarios in which seemingly plausible selection processes would or would not bias our estimate and the possible directions of these biases.

A related analysis we conduct begins with the supposition that, if selection into the sample biases the effect estimate, it quite possibly does so in different ways for women than for men, since women and men face very different reasons and pressures in deciding whether to leave Syria (see e.g. Pearlman, 2016). In Figure 8, we split the sample by gender and conduct the same analysis in both subsets. Some variation and loss of statistical power are expected, but the pattern of results is very similar across genders. This suggests that if selection into the sample is biasing our estimates of the effects within this group, it either does so very little, in the same ways for men and women, or in ways that happen to perfectly counteract existing differences in the true effects between the genders, across all six outcomes.

## 4.6 Confounding and Sensitivity

While we have sought to reduce the threat of confounding by conditioning on geographic areas small enough that barrel bombs cannot effectively be targeted within them, we do not claim to have confidently ruled it out, and provide here results that show how estimates would look under varying degrees of confounding. Suppose that (even restricting to the urban or smaller-than-median neighborhoods) at least a weak, probabilistic degree of targeting is possible within these areas. If so, it is easy to think of potential confounders such that individuals whose homes are more likely to be destroyed are *more* likely to be pro-opposition. For example, being pro-opposition itself could lead one’s building (or other sub-neighborhood area) to be known as sympathetic to

Figure 8: Effect Estimates by Gender



*Note:* ATT estimates for the effect of having house destroyed on attitudes related to security, by gender. Conditioning on neighborhood is done by exact matching. Whiskers show the 90% (thick) and 95% (thin) confidence intervals.)

the opposition, and thus subject to greater targeting. This would drive a positive relationship between having one’s home destroyed and being pro-opposition. We observe just the opposite in our results. It is more difficult, however, to think of confounders that would make those who are more likely to lose their homes also be *less* supportive of the opposition, as needed to “explain away” the observed result. Similarly, it is difficult to think of confounders that would make those who are more likely to lose their homes also be *more* supportive of “no party”.

### Formal Sensitivity Analysis

To formally examine how strong confounding would have to be to account for our estimates, we employ the method of Cinelli and Hazlett (2020), which provides sensitivity statistics for linear regression models.<sup>23</sup> Table 2 shows estimates for a simple linear model (OLS) that mimics the matching estimator used above by including location and gender fixed effects to realize the within neighborhood and gender comparison, but that also includes the set of pre-treatment covariates used above for balance testing. The addition of these covariates does not change any estimate by more than a half a percentage point. For each outcome, the OLS-based effect estimate is similar to those shown in Figure 7 from matching in terms of magnitude, sign, and statistical significance. In addition to the basic OLS estimates, Table 2 is augmented by several quantities that describe the sensitivity of the result to unobserved confounding.

To explain the sensitivity results, we focus first on the effect of having one’s home destroyed

<sup>23</sup>The approach has similarities to sensitivity analyses used in prior quasi-experimental work on violence—such as Blattman (2009), which employs the method of Imbens (2003)—but has a number of advantages. First, this approach does not require functional form assumptions on the treatment model, nor distributional assumptions on confounding variables. Second, for reasons described in Cinelli and Hazlett (2020), procedures used for “benchmarking” with observed covariates in numerous existing approaches can be misleading.

Table 2: Regression result with Sensitivity Information

Treatment: <i>House destroyed by barrel bomb</i>						
Outcome Variable	Estimate	SE	t-value	$RV$	$RV_{\alpha=0.05}$	dof
Top threat to Syria: Assad	0.20	0.05	4.25	16%	8.8%	619
Top threat to you: Assad	0.15	0.05	2.69	10%	2.9%	610
Support opposition	-0.16	0.05	-3.23	12%	4.9%	643
Support no party	0.16	0.05	3.28	12%	5.1%	643
Neutrality acceptable	0.23	0.03	8.00	27%	21%	627
Would help regime member	-0.27	0.06	-4.86	19%	12%	543

*Note:* OLS regression results with sensitivity statistics. All pre-treatment covariates previously used for balance checking are included in the regression. The treatment variable is always the indicator for having one’s home destroyed by barrel bombs. Estimates are similar to the matching results shown in Figure 7. The  $RV$  and  $RV_{\alpha}$  describe the degree of confounding that would be required to overturn the result, described in the text. The dof is the model residual degrees of freedom.

by barrel bombs on support for the opposition, since this is central to our theoretical question and results.<sup>24</sup> Table 2 reports that the model estimates 16 percentage point lower support for the opposition (95% CI of [-.26, -.06],  $t = -3.23$ ,  $p = 0.001$ ) among those whose homes were destroyed by barrel bombs. The “robustness value” ( $RV$ ) of 12% characterizes how this effect will change under confounding. It has the interpretation that counfounders explaining any less than 12% of the residual variance of both *Home destroyed due to barrel bomb* (the exposure) and of *Support opposition* (the outcome) would not be sufficient to explain away all of the observed relationship. Similarly, if we wish to know how much confounding it would take to no longer find a statistically significant result, the  $RV_{\alpha=0.05}$  value of 4.9% summarizes the answer: Confounding would have to explain at least 4.9% of the residual variance of both the treatment and outcome in order to reduce the estimated effect to the boundary of insignificance at  $\alpha = 0.05$ . Table 2 presents these estimates and summary sensitivity statistics for all eight of our outcome variables. As summarized by the  $RV$ , results for other outcomes are largely similar to those for *Support opposition* or *Support no party* in that confounding of a similar strength would be required to overturn the result.

There is no particular  $RV$  or other diagnostic that certifies a result as “robust”, since they only describe the confounding required to change the result and can not say anything about the confounding present. Here, it is difficult to imagine what unobservables could explain 12% of the residual variation in the indicator for having one’s home destroyed, given that there is so little ability to target home destruction conditionally on neighborhood. Note that a confounder that explains 12% of residual variance has a correlation with home loss (and the outcome) of  $\sqrt{12\%} \approx 35\%$  after accounting for covariates—a substantially strong relationship. Such exercises do not rule out the possibility of confounding, but they do refine critiques as to what would be

<sup>24</sup>The results are nearly identical (with the opposite sign) for *support no party*, since these two are effectively counterparts.

needed to alter our conclusions.<sup>25</sup>

Finally, for confounding to change our conclusions, it would also have to explain far more variation in exposure and outcome than even the most predictive observed covariates. The variable *km to hospital* has the most worrying apparent imbalance (and thus strength of relationship to the exposure), and it explains a larger share of residual variation in the outcome (*Support opposition*) than any other covariate. Suppose for a moment that confounding is “as strong as” *km to hospital*, meaning it explains as much residual variation in exposure and the outcome. This would nevertheless only shrink the implied estimate on *Support opposition* from -0.16 down to -0.14 percentage points, with an adjusted t-statistic of -2.77. In fact, to completely eliminate the estimate, confounding would have to explain almost seven times as much of the residual variance in exposure and the outcome as *km to hospital*. Similar analyses can be repeated with other variables, but *km to hospital* proves to be the hardest such test.

## 4.7 Mechanisms: Blame and Weariness

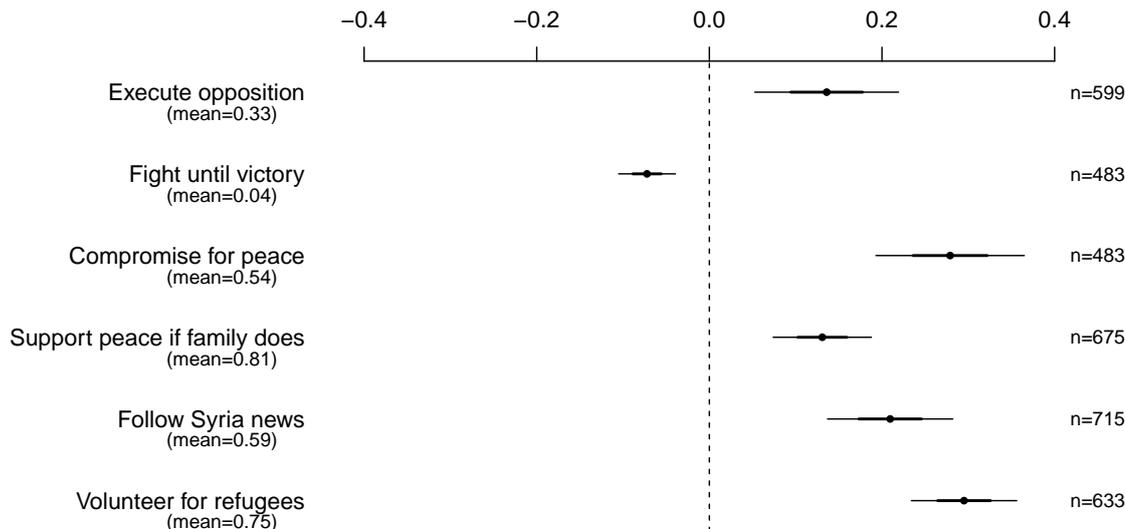
Why might refugees react to regime-caused destruction in this way, not only failing to show increased support for the opposition, but showing *reduced* support for them? We can rule out that individuals were directly attacked by the opposition (See Section 4.2). Two possible mechanisms introduced above that could explain this effect are that civilians blame the opposition for provoking the regime’s violence and/or failing to protect communities from it (*blame attribution*), and a “pro-peace” or “weary” effect of violence, by which people who face the worst violence are more likely to denounce the use of violence by any party, and thus revoke support for the armed opposition and dropping demands for military victory.

In our case, because the aerial bombardments cannot easily be stopped by any technology under the opposition’s control, we find it more plausible that civilians blame the opposition for attracting violence from the regime rather than for failing to stop the bombs as such. We find suggestive evidence for this: As shown in Figure 9, the proportion of respondents saying opposition fighters culpable for civilian deaths should be executed rises by almost 14 percentage points ( $p = 0.001$ ) among those who lose their homes to barrel bombs. This finding is consistent with an argument that respondents who lost homes not only turn away from the opposition, but also harbor greater anger towards opposition fighters who brought harm to civilians and thus want to punish them harshly.

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<sup>25</sup>We expand on this analysis in Appendix D with a contour plot (Figure D.3) showing the adjusted estimate for unobserved confounding that explains any combination of the treatment and outcome.

Figure 9: Effects of barrel bombing on additional variables: evidence for possible mechanisms



*Note:* ATT estimates for variables used to examine plausibility of possible mechanisms. All procedures are identical to those used to estimate the main effect estimates above; only the outcome variables differ.

We also find supportive evidence for a “weary” or “pro-peace” effect of violence on individuals. As shown in Figure 9, those who lose homes to barrel bombing are a surprising 28 percentage points more likely to support plans that call for compromise in order to achieve peace ( $p < 0.001$ ), and they are 7 percentage points ( $p < 0.001$ ) less likely to demand that the opposition fights until an outright military victory. Similarly, another question asks if participants would agree to support peace if a family member does. Again, the purpose of this question was to disarm a possible social prohibition against calling for peace in this community, by proposing that a family member already supports the idea. Individuals who lost homes to barrel bombs were 13 percentage points ( $SE=0.003$ ) more likely to agree or strongly agree to call for peace under this condition compared to those who did not lose their home to barrel bombing ( $p < 0.001$ ). Collectively this is clearly suggestive evidence of a pro-peace or wearying effect of losing one’s home to barrel bombing. Again, this runs contrary to the biases that would most naturally be expected if the “no within-neighborhood targeting” assumption fails: within neighborhood, if there is variation in the risk of having one’s home destroyed, one would expect it was those who were more militant and resistant to peace who would be targeted, whereas we find the opposite.

Finally, one might ask whether the apparently “weary” effect is really just the product of depression, political apathy and/or social withdrawal (see e.g. Pham et al., 2009). This appears to be unlikely. For one, we find that those who lost homes to barrel bombs report following what is happening in Syria “very closely” or “somewhat closely” in the news 21 percentage points ( $p <$

0.001) more often than those who did not lose their homes. Those losing homes to barrel bombings are also 30 percentage points more likely to report supporting their fellow refugee community through volunteer work ( $p < 0.001$ ). This suggests that exposure to violence does not lead to social withdrawal in our case, and instead generates a pro-social, altruistic response towards other fellow refugees, though not towards regime members (note our findings above about decreased willingness to help a regime member in need of life saving assistance). These findings are consistent with and contribute to a burgeoning literature on the potentially pro-social consequences of exposure to violence, at least parochially, as reviewed in Bauer et al. (2016).

## 5 Discussion

Among refugees, the experience of regime-caused violence before leaving is expected to increase antipathy towards the regime. Like others who have studied the consequences of indiscriminate violence during counterinsurgency campaigns—albeit violence carried out by external actors (Anderson, 2005; Hashim, 2006)—we find the expected evidence that incumbent-inflicted indiscriminate violence makes civilians feel more threatened and less sympathetic towards its perpetrators.

By contrast, the consequence of regime-inflicted violence on attitudes toward the opposition are more difficult to predict and we could reasonably expect either that anger towards the regime fuels support of the opposition, or that civilians who experience this violence choose to turn away from the opposition as well. We find strong evidence of the latter in this case. Among Syrian refugees we surveyed in Turkey, those who lost their homes due to regime-led barrel bombing were far less supportive of the opposition, with a concomitant increase in the proportion saying that “no party” represents their views. Those refugees who lose their homes to barrel bomb attacks are also more accepting of other community members who wish to remain neutral and are less adamant that they take a side. All of these estimates are very similar by gender. While we argue there is relatively little room for confounding given our reliance on within-neighborhood comparisons and the inaccuracy of barrel bombs, even confounding as strong as any of the observed variables, such as distance to the nearest hospital, would not substantially change the estimate.

Further, the two main mechanisms we anticipated could generate this response were blame attribution and a weary or pro-peace effect of exposure to violence. We find evidence that individuals who lost their homes are more angry with the opposition, supporting the blame attribution mechanism. We also find evidence that civilians who lost their homes are more weary or pro-peace, being less likely to support continuing to fight to achieve outright victory and being more willing to compromise for peace or support a family member who calls for peace. Further these effects

are to be distinguished from social withdrawal or apathy, as individuals who lost their homes are also reportedly more likely to follow the conflict in the news and to volunteer to help refugees locally. Collectively then, both the blame attribution and the weary/pro-peace mechanisms are plausible explanations for and further boost our confidence in an anti-opposition effect of exposure to regime-caused violence.

## 5.1 Limitations and next steps

This study is not without its shortcomings. First, we have endeavoured to minimize the scope for confounding through both our research design and sensitivity analysis but we cannot rule it out entirely. Furthermore, our results do not speak to how other civilian groups, such as those who have remained in Syria, or who have gone to places other than Turkey, might react to regime-inflicted indiscriminate violence. Finally, this study was made simpler by the fact that the refugees we worked with faced violence almost entirely committed by or on behalf of the regime, and not the opposition. Cases where individuals face violence from multiple sides (as seen in other areas of the Syrian conflict), may generate a different type of response, and would be equally worth examining.

Nevertheless, our findings provide an additional building block in our knowledge of how civilians respond to violence. Particularly interesting avenues for future work could include the study of other conflict circumstances sharing the key central elements that shaped our theoretical question and expectations in this case. The first key condition in our case is that violence is targeted to groups (such as communities thought to support the opposition or insurgents) but is indiscriminate within some measurable social or geographic unit. Such a condition aids in allowing credible inferences by providing a degree of conditionally random variation in exposure to violence. The second key condition in our case is that the civilians in question were able to and did flee the conflict zone. Indeed, the enormous numbers of refugees around the world – many forced out of their homes by civil conflict – demand that we begin to better understand the dynamics of conflicts in which civilians flee. We hope this work stimulates further theoretical and empirical work on questions such as how porous borders or other conditions favoring mass displacement alter the strategic logic of indiscriminate violence during conflict, and how refugees, many of whom seek to return home eventually, respond to such atrocities.

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