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**Working Paper**

## The Effects of Israeli Policies on Palestinians' Basic Needs in the Occupied West Bank and East Jerusalem

IZA Discussion Papers, No. 17176

**Provided in Cooperation with:**

IZA – Institute of Labor Economics

*Suggested Citation:* Parigi, Marta; Oskorouchi, Hamid R. (2024) : The Effects of Israeli Policies on Palestinians' Basic Needs in the Occupied West Bank and East Jerusalem, IZA Discussion Papers, No. 17176, Institute of Labor Economics (IZA), Bonn

This Version is available at:

<https://hdl.handle.net/10419/302693>

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# The Effects of Israeli Policies on Palestinians' Basic Needs in the Occupied West Bank and East Jerusalem

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ISSN: 2365-9793

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## ABSTRACT

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# The Effects of Israeli Policies on Palestinians' Basic Needs in the Occupied West Bank and East Jerusalem\*

This study quantitatively evaluates conclusions of NGOs, UN agencies, and the International Court of Justice denouncing the purported practices of apartheid by Israel. We gauge the impact of Israeli policies on Palestinian basic needs using a bespoke index and a novel instrumental variable (IV)—georeferenced mentions of Old Testament sites within a five-kilometre radius of each Palestinian locality. The instrument's exclusion restriction is validated by robustness checks and placebo tests (e.g., employing a placebo-IV built using New Testament-only landmarks). Our findings corroborate qualitative and legal research documenting how Israel's policies systematically undermine Palestinians' rights, potentially constituting an apartheid regime. This work could serve as evidence in prospective legal proceedings.

**JEL Classification:** D74, J71, K33

**Keywords:** Palestine, Israel, basic needs, discrimination, apartheid

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\* This paper uses both publicly available information and restricted access survey data from the Palestinian Central Bureau of Statistics (PCBS). The survey data can be obtained by filing a request directly with the PCBS: [https://www.pcbs.gov.ps/site/lang\\_en/600/default.aspx](https://www.pcbs.gov.ps/site/lang_en/600/default.aspx). The authors are willing to assist. Funding: The authors did not receive any funding for this study. Disclosure Statements: The authors of this study have no compelling conflict of interest to disclose. The opinions expressed in this article are solely those of the authors and do not necessarily reflect the views or positions of the institutions with which they are affiliated. The authors of this study have no compelling conflict of interest to disclose. The opinions expressed in this article are solely those of the authors and do not necessarily reflect the views or positions of the institutions with which they are affiliated.

## 1. Introduction

The term *apartheid* originally referred to a system of racial segregation implemented in South Africa after 1948. However, the International Convention on the Suppression and Punishment of the Crime of Apartheid (ICSPCA)—ratified in 1976—used the term to denounce a more general crime against humanity. Since the adoption of the 2002 Rome Statute of the International Criminal Court, it now explicitly applies to all systemic racially discriminatory policies from any state.

In recent years, prominent international, Palestinian, and Israeli human rights NGOs have published extensive reports denouncing the Israeli apartheid system that affects Palestinians living in Israel and the Occupied Palestinian Territories (OPT) (Amnesty International 2022a; Human Rights Watch 2021; Muhareb et al. 2022; B'Tselem 2022). For example, Amnesty International concluded that “the totality of the [Israeli] regime of laws, policies, and practices [...] demonstrates that Israel has established and maintained an institutionalized regime of oppression and domination of the Palestinian population for the benefit of Jewish Israelis – a system of apartheid – wherever it has exercised control over Palestinians’ lives since 1948” (p. 266; Amnesty International 2022a). UN Special Rapporteurs have agreed that Israel’s policies and enforcement may amount to an apartheid system despite no international law body recognizing Israel as an apartheid state (UN Human Rights Council 2022b, 2023a). For instance, in a report to the Human Rights Council, Michael Lynk, former UN ‘Special Rapporteur on the situation of human rights in the Palestinian Territory occupied since 1967’, concluded that Israel has enforced an apartheid system in Palestine in a post-apartheid era (p. 18; UN Human Rights Council 2022b).

Similarly, the International Human Rights Clinic at Harvard Law School and the Addameer Prisoner Support and Human Rights Association’s joint submission to the United Nations Independent International Commission of Inquiry on the Occupied Palestinian Territory asserts

that Israel's actions in the Occupied West Bank amount to the crime of apartheid under international law (p. 1; IHRC and Addameer 2022). Most recently, in its July 2024 advisory opinion on the legality of the Israeli occupation, the International Court of Justice (ICJ) found that Israel's "near-complete separation" of people in the territories it occupies breaches international law<sup>1</sup> concerning segregation and apartheid (pp. 64-65; ICJ 2024).

According to ICSPCA, apartheid policies and practices establish and maintain "domination by one racial group of persons over any other racial group of persons and systematically oppress them" (Article II; UN General Assembly 1973). Such subjugation can manifest as denials of the rights to life and liberty (e.g., murder, bodily and mental harm, arbitrary arrests, and unlawful imprisonments), imposition of inhuman living conditions, exclusion from political, social, economic, and cultural life, or the denial of basic human rights and freedoms (e.g., right to work, food, education, health, expression, association, nationality, and freedom of movement). It also encompasses any measure designed to divide a population along racial lines, including the expropriation of land belonging to a racial group or its members, exploitation of labour, and the persecution of organizations and persons that oppose apartheid (UN General Assembly 1973).

This study quantitatively analyses whether such policies, as described by NGOs and UN Special Rapporteurs, systematically deprive Palestinians living in the Occupied West Bank including East Jerusalem of their basic needs. Our limited geographical focus within the OPT acknowledges the highly heterogeneous nature of Israel's discriminatory measures in the territories it has controlled

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<sup>1</sup> The Court has found that Israel's legislation and measures constitute a breach of Article 3 of the International Convention on the Elimination of all Forms of Racial Discrimination (CERD): "States Parties particularly condemn racial segregation and apartheid and undertake to prevent, prohibit and eradicate all practices of this nature in territories under their jurisdiction" (UN General Assembly 1965).

since 1948. This circumstance impedes the formulation of a unified indicator, as the discriminatory policies to which Palestinians are subjected vary based on their place of residence and legal status. Our site selection of the West Bank and East Jerusalem is driven by data availability and the presence of sufficient spatial variation to facilitate meaningful quantitative analysis; it does not imply that the Palestinians living elsewhere face less dire circumstances.

In the first part of this empirical work, we draw on Amnesty International research to construct an index that aggregates quantifiable discriminatory and segregation policies imposed against Palestinians. The index includes the proportion of Israeli-only (or primarily) bypass roads in the local road network, the number of Israeli military checkpoints, individuals displaced by Israeli house demolitions, the extent of firing zones, and settler attacks on Palestinian civilians, private and agricultural property, and places of worship. The second part uses an instrumental variable approach to estimate the causal effects on Palestinian basic needs. Our set of outcome variables—built using the Palestinian Central Bureau of Statistics’ *2018 Socio-Economic and Food Security Survey* (SEFSec)—comprises proxies for food diversity and access to water, education, and healthcare.

Discrimination, violence, and restrictions are not randomly distributed across the West Bank. Rather, they are concentrated around the Israeli settlements (Miaari and Lee 2024), which are often deliberately established near Old Testament Bible sites (Israel Ministry of Foreign Affairs 2015; Amnesty International 2022a). Therefore, we instrument our index using the number of sites referenced in the Old Testament within a 5-kilometer (or 10-kilometer) radius from each Palestinian locality centroid. To test the robustness of our empirical approach, we compare the results obtained from bivariate instrumental variable (IV) regressions to those that also employ an extensive set of meaningful control variables. We also conduct several robustness and falsification

tests. The latter estimates a series of reduced form regressions using a placebo-IV constructed using New Testament biblical landmarks, which should not correlate with Israeli restrictions and settler violence.

Our results indicate that Israeli restrictions severely hamper the basic needs of Palestinians in the Occupied West Bank and East Jerusalem. Most importantly, this article provides the first causal, quantitative evidence that the detrimental effects experienced by Palestinians are systematically inflicted by Israeli measures (not incidental consequences). The systematic nature of these practices—a fundamental attribute of an apartheid system—wields structured and institutionalized policies to discriminate against and suppress a specific population group.

Establishing an apartheid system does not necessarily require explicit statements of intent (Amnesty International 2022a; Cassese 2013); it can be inferred from the context of systematic and repeated acts of discrimination and destruction. Likewise, international courts have deduced intent even in some genocide cases (e.g., see *Bosnia and Herzegovina v. Serbia and Montenegro*; ICJ 2007) where systematic targeting and mistreatment of a specific group superseded the need for an explicit verbal manifestation.<sup>2</sup> Therefore, our causal evidence reinforces the argument that Israel could be imposing an apartheid regime against Palestinians in the Occupied West Bank and East Jerusalem and can stand as evidence in any future legal proceedings.

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<sup>2</sup> In paragraph 371 of the judgment on the application of the Convention on the Prevention and Punishment of the Crime of Genocide (*Bosnia and Herzegovina v. Serbia and Montenegro*), the International Court of Justice states that “specific intent (*dolus specialis*) of those directing the course of events is clear from the consistency of practices, particularly in the camps, showing that the pattern was of acts committed ‘within an organized institutional framework’” (p. 156, ICJ 2007).



## 2. Background

After the 1967 Six-Day War, Israel undertook military occupation and a settlement policy in the Syrian Golan Heights, Gaza, and the West Bank (including East Jerusalem). Subsequent Israeli governments have expanded these policies (UN General Assembly 2022a), resulting in the construction of 239 Israeli settlements<sup>3</sup> that now control 42% of the land in the West Bank and host approximately 700,000 illegal settlers (UN Human Rights Council 2023b). The international community—including the UN Security Council (2016) and the ICJ (2004)—accepts that settlement building and accompanying efforts to forcibly remove Palestinian families from their homes is illegal under international law.

Nevertheless, the Israeli government continues to enact measures designed to establish and expand illegal Israeli settlements and incrementally segregate Palestinian communities (Amnesty International 2022a). Furthermore, Palestinians endure Israeli checkpoints, roadblocks, and bypass roads; a separation wall along the West Bank’s western border (465 of 704 kilometres have been completed); frequent house demolitions; forced displacement of civilians; arbitrary arrests; land confiscation; and the designation of closed military zones (UN General Assembly 2022a; Amnesty International 2022a). According to the International Court of Justice, the construction of physical barriers and constant expansion of settlements is illegal under international law. It is part of a *de facto* annexation of the West Bank (ICJ 2004) that aims to strategically fragment and isolate

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<sup>3</sup> This enumeration encompasses 156 settlements authorized by Israel, albeit deemed illegal under international law. Among these, 7 are enclaves situated within the city of Hebron and another 11 are located within East Jerusalem. Additionally, there are 90 settlement outposts that are either unauthorized or semi-authorized.

Palestinian communities while augmenting the settler population and illicitly extending their landholdings (UN General Assembly 2022a).

Several recent UN Special Rapporteurs and NGOs (international, Palestinian, and Israeli) have concluded that these restrictions amount to a system of apartheid that favours the growing settler population at the expense of Palestinians (UN Human Rights Council 2022b, 2023a). For example, the UN Special Rapporteur Michael Lynk likened the Israeli occupation to annexation. He argued that the political system in the OPT privileged one group while subjecting another to military rule and restriction—meeting the criteria of apartheid (UN Human Rights Council 2022b).<sup>4</sup>

## **2.1. Israeli policies in the West Bank and East Jerusalem**

This study analyses a subset of Israeli policies that Amnesty International has determined oppress Palestinians living in the Occupied West Bank and East Jerusalem (Amnesty International 2022a). This limited focus is necessitated by the inherent challenges associated with quantifying some of Israel’s discriminatory measures.

Some of these measures are applied to the entire West Bank population (resulting in no variability). For instance, the entire Palestinian population residing in the OPT is subject to Israeli military

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<sup>4</sup> The Special Rapporteur Michael Lynk concludes by stating, “[i]n recent decades, the inexorable Israeli occupation has become indistinguishable from annexation [...]. The political system of entrenched rule in the Occupied Palestinian Territory that endows one racial-national-ethnic group with substantial rights, benefits and privileges while intentionally subjecting another group to live behind walls and checkpoints and under a permanent military rule [...] without rights, without equality, without dignity and without freedom satisfies the prevailing evidentiary standard for the existence of apartheid” (UN Human Rights Council 2022b).

rule.<sup>5</sup> Meanwhile, Israelis living in or visiting the OPT are subject to civil jurisdiction (Amnesty International 2022a). The illegal separation wall also impacts the mobility of every Palestinian inhabitant of the West Bank, as well as the overall economic development of the region.<sup>6</sup> Therefore, we cannot include such measures due to the lack of statistical variability. However, their exclusion likely means that the results presented here, in fact, underestimate the negative impacts on Palestinian livelihoods.

Similarly, there is a dearth of data for other measures, or if the data exists, it could not be meaningfully integrated with a household survey. For example, we lacked access to comprehensive microdata on what Amnesty International (2022a) calls flagrant violations of international humanitarian law. The US Department of State (2022) states “credible reports” of arbitrary arrests, administrative detentions, torture, collective punishments, and extrajudicial killings of Palestinians, including children, by Israeli officials.<sup>7</sup> Regrettably, the aggregate data on these incidents is spatially anonymized, rendering it unsuitable for micro-level analyses.

Nevertheless, most Israeli measures designed to segregate, displace, or expel Palestinians from their land meet the necessary criteria for meaningful inclusion in a micro-level analysis. Moreover,

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<sup>5</sup> The Coordination of Government Activities in the Territories (COGAT) is a sub-division of the Israeli Ministry of Defense responsible for administrating civilian matters in the Occupied Territories. The COGAT’s Major General reports directly to the Israeli Minister of Defense (B’Tselem 2004).

<sup>6</sup> The heterogenous effects of this barrier are not directly proportional to its distance from each locality. Instead, they hinge on intricate dynamics that remain unmeasurable in the absence of specific survey indicators. The separation barrier has isolated 150 Palestinian communities situated between the barrier and the 1948 Green Line—9.4% of the West Bank’s area (Amnesty International 2022a). The household survey representative at the governorate level utilized in this study documents households residing in these isolated communities; however, their representation is negligible. They constitute a mere 0.03% of the sample, making them inconsequential in constructing an index and the subsequent regression analyses.

<sup>7</sup> According to the Israeli Prison Service, 129 children aged 12 to 17 were under detention for security-related offences as of September 2022 (B’Tselem 2022).

several United Nations agencies and Israeli NGOs meticulously record the impacts of these policies with a high degree of spatial and temporal granularity.

## **2.2. Restrictions on freedom of movement**

Israel's most visible and impactful discriminatory measures are probably its 400-kilometer racially segregated road network and the installation of military checkpoints. Israel has expropriated Palestinian land in the West Bank to build so-called bypass roads exclusively (sometimes primarily) for Israeli settlers (UN Human Rights Council 2023a; Amnesty International 2022a). Palestinians are completely forbidden from about 130 kilometres of these roads. The remaining network (265 kilometres) is only accessible to Palestinians who hold a "special movement permit," which is granted at the discretion of the Israeli military (B'Tselem 2004; UN OCHA 2018b). In 2004, only 0.001% of the Palestinian population living in the West Bank held this permit (B'Tselem 2004).<sup>8</sup>

Palestinians are allocated about 390 kilometres of the main road network (UN OCHA 2018b), although using these roads entails crossing one or more Israeli military checkpoints where individuals and vehicles are subjected to comprehensive inspections. The Israeli military often completely closes these roads for private travel, only permitting public transportation and commercial vehicles. At certain entry points (e.g., around Nablus), Palestinians are forced to cross checkpoints on foot and procure a new vehicle on the other side (B'Tselem 2004).

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<sup>8</sup> Unfortunately, the current number of "special movement permit" holders is unknown. B'Tselem (2004) obtained this figure directly from the IDF.

Figure 1 displays the roads ‘freely’ accessible to Palestinians in green, while bypass roads exclusively or primarily for Israeli use are illustrated in red. The comparison (of panels a and b) reveals a stark contrast: the Israeli bypass road network is well-connected and consistent, while its Palestinian counterpart is markedly fragmented. Palestinians are regularly forced into 2-to-3-hour detours on secondary and unpaved roads to reach destinations that were once accessible in 10 or 20 minutes (UN Human Rights Council 2007).

[Figure 1 about here]

Almost all of the West Bank’s road network is interspersed with pervasive military checkpoints, roadblocks, gates, and fences (Amnesty International 2022a). These impediments reach far beyond partially restricted and prohibited roads; they extend into the peripheries of Palestinian cities, villages, and agricultural regions near the separation wall and East Jerusalem (Amnesty International 2022a).<sup>9</sup> Most permanent and partial checkpoints are characterized by immovable structures, often including watchtowers and obstructions (i.e., large concrete slabs, earth dikes, and ditches). However, the permanent checkpoints are constantly staffed by armed military personnel and often have dedicated areas for vehicle inspection, gated pedestrian passageways, and turnstile gates (Amnesty International 2022a; UN OCHA 2020). The UN OCHA (2020) counted 705 obstacles of “non-negligible impact” in the West Bank in 2018.

[Figure 2 about here]

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<sup>9</sup> Younger Palestinian adults residing in the West Bank are not allowed through the checkpoints into East Jerusalem without a special permit issued by the Israeli military authorities (Amnesty International 2022a).

Figure 2 presents the spatial distribution of both fixed and partial checkpoints (in 2018), excluding semi-permanent obstacles like road gates, concrete slabs, earth dikes, and ditches. Road segments that are (partially) restricted for Palestinians host a significant number of the immovable checkpoints. Their concentration intensifies near cities and villages that can be reached by circumventing bypass roads.

These restrictions' effects on Palestinian livelihoods are well documented by an emerging stream of quantitative causal literature. For example, Miaari and Lee (2024) found that Palestinian students attending schools near an Israeli checkpoint are 0.4-0.7 standard deviations more likely to fail their final high school exam. Similarly, Cali and Miaari (2018) found that Israeli mobility restrictions in the West Bank are causally responsible for higher unemployment, lower hourly wages, and increased daily hours worked, amounting to a 6% loss of the gross domestic product (in 2007). It is worth noting that, the ICJ, in its recent advisory opinion on Israel's practices and measures in the Occupied Palestinian Territory, including East Jerusalem, concluded that the Israeli imposed movement restrictions on the Palestinians "amount to prohibited discrimination" under international law (p. 60; ICJ 2024).<sup>10</sup>

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<sup>10</sup> Specifically, the ICJ states that Israel's discriminatory movement restrictions breach the International Covenant on Civil and Political Rights (Art. 2, paragraph 1, and 26; UN General Assembly 1966a), the International Covenant on Economic, Social and Cultural Rights (Art. 2, paragraph 2; UN General Assembly 1966b), and the International Convention on the Elimination of all Forms of Racial Discrimination (Art. 2; UN General Assembly 1965).

### 2.3. Land and resource dispossession

The Israeli land confiscation policy used to construct the bypass roads and separation wall was also deployed to create so-called “firing zones” (Amnesty International 2022a). In the 1970s, Israel designated approximately 18% of the West Bank as firing zones<sup>11</sup> for Israeli military training (UN OCHA 2012). Palestinians are prohibited from these areas unless they hold difficult-to-obtain permits (UN OCHA 2017). However, 38 Palestinian communities exist within these zones, many of which were established before the restrictions (UN OCHA 2017). Palestinians residing in and around these areas are some of the most vulnerable; they face significant challenges in accessing grazing land, agricultural land, and essential infrastructure like water, electricity, healthcare, and education (UN OCHA 2012).

[Figure 3 about here]

As Figure 3 shows, most of the firing zones are either strategically situated in the Jordan Valley region or near Ramallah, Nablus, and Hebron. The firing zones in the northern Jordan Valley effectively separate Palestinian communities from vital natural resources and fertile soil (Amnesty International 2022a). The firing zones in the southeast incorporate regions inhabited by

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<sup>11</sup> Unlike other closed military areas around settlements and between the Green Line and the separation wall, the size of the firing zones has remained unchanged since their inception (UN OCHA 2012). Notably, 17.7% of these firing zones encroach upon land that the Oslo Accord designated as exclusively administered by the Palestinian Authority (Area A).

marginalized Bedouin herding communities, the group most recurrently and readily dislocated from their land due to their rural lifestyles (mostly in Area C<sup>12</sup>) (UNDP 2017).

Israel claims these firing zones are essential military training facilities; however, two recently declassified documents from 1979 and 1981 penned by then-Minister of Agriculture Ariel Sharon reveal a different perspective. Sharon plainly asserted that the firing zones were crucial for the project of segregating Palestinians communities<sup>13</sup> and expanding Israeli settlements<sup>14</sup> (Israeli State Archives 1979, 1981). This was later echoed by Avi Niam, the Director General for the Ministry for Settlement Affairs, who stated that Israeli policies in the West Bank aimed to “obstruct Palestinian territorial continuity” (Amnesty International 2022a). More blatantly, in 2021, Israel proposed the annexation of the Jordan Valley in a narrowly defeated Knesset motion. This represented “a most serious violation of international law” (Guterres 2020) and underscored Israel’s explicit intention to relegate Palestinians to disjointed enclaves (UN Human Rights Council 2019).

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<sup>12</sup> As a result of the 1995 Israeli-Palestinian Interim Agreement on the West Bank and Gaza Strip (Oslo II Agreement), the territory of the West Bank comprises three areas: A, B, and C. The Palestinian Authority has full and partial civil administration over Areas A and B, respectively. However, Israel exerts complete authority (including planning and zoning) over Area C, which constitutes more than 60% of the West Bank’s land.

<sup>13</sup> Ariel Sharon’s statement at the 1981 meeting of the Ministerial Committee on Settlement Affairs reads as follows: “There is a phenomenon, which has been going on for several years, of the Arab population of the Negev physically connecting with the Arabs of Mount Hebron. A situation has arisen in which the border deepens into our territory. We must quickly create a settlement buffer zone that will separate Mount Hebron from the Jewish community in the Negev” (p. 1: Israeli State Archives 1981).

<sup>14</sup> Ariel Sharon’s statement at the 1979 joint-government-World Zionist Organization meeting reads as follows: “As the person who initiated the firing zones in 1967, they were all intended for one purpose, to allow Jewish settlement there [...]. As soon as the Six-Day War ended, I was still sitting with my division in Sinai. In Sinai, I sketched these firing zones at the time. The purpose of these areas was to preserve a reserve of land [...]. The firing zones were seized for one purpose: it was our land reserve for settlement” (p. 23: Israeli State Archives 1979).



The firing zones, together with the rest of the Israeli imposed restrictions, have a profound impact on Palestinian agriculture in the West Bank. These restricted areas—constituting approximately 18% of the West Bank—significantly impede farming practices in some of the most fertile and productive grazing lands (UNCTAD 2015). The restrictions also disproportionately divide water resources, with settlers consuming nearly 80% of the West Bank’s underground water (Amnesty International 2009). Finally, the firing zones intensify Palestinians’ mobility challenges (see previous section on the segregated roads), contribute to price inflation, and exacerbate food insecurity (Cavatorta and Pieroni 2013).

#### **2.4. Demolitions and displacement**

It is well-documented that Israeli governing bodies routinely engage in the demolition and seizure of Palestinian structures (both residential and non-residential). The UN Human Rights Committee concluded that this Israeli policy aims to divide Jewish and Palestinian communities and amounts to racial segregation (UN Human Rights Council 2023b). From 2012 to 2022, a total of 7,735 Palestinian structures in the West Bank and East Jerusalem were demolished by Israeli authorities (UN Human Rights Council 2023b). This included 2,845 homes, 1,640 structures funded by humanitarian donors, 620 facilities for water, sanitation, and hygiene, and 21 schools (UN Human Rights Council 2023b). Israeli officials generally cite a lack of official construction permits (especially in Area C) and, in a few cases (146), they invoke military grounds (UN Human Rights Council 2023b).

According to the UN Human Rights Council (2023b), the construction permit system demonstrates clear discrimination. From 2016 to 2020, only 0.94% of Palestinian applicants received a permit to construct in Area C (24 out of 2,550), while 8,356 permits were granted for Israeli settlement

housing units (based on Israeli Civil Administration Service numbers). The UN Human Rights Council (2023b) also asserts that Israeli destruction of Palestinian private property—without even purporting an alleged ‘military necessity’—amounts to a war crime under Article 147 of the Fourth Geneva Convention (International Committee of the Red Cross 1949).

Concerningly, many of those affected are related to individuals suspected or convicted of attacking Israeli soldiers or civilians (1,002 from 2001 to 2023). If determined to be an act of collective punishment (Amnesty International 2022a), this would breach Article 33 of the Fourth Geneva Convention (International Committee of the Red Cross 1949). Demolitions—which officially aim to deter Palestinian attacks—were halted in 2005 after Major General Udi Shani deemed them both in violation of international law and ineffective. However, they resumed again in 2014 after the abduction of three Israelis in the West Bank (B'Tselem 2017).

Figure 4 delineates the geographical distribution of Israeli demolitions in the West Bank and East Jerusalem in 2017 and 2018 (refer to panel a). As expected, most demolitions took place in and around East Jerusalem, predominantly in the region east of the city.<sup>15</sup> Many demolitions were also documented near Nablus, the southern Hebron hills (adjacent to firing zone 918), and the northern part of the Jordan Valley. In total, the demolitions displaced 10,845 Palestinians (half of whom are children) from 2012 to 2022, causing significant psychological distress (UN Human Rights Council 2023b). The High Commissioner of the UN Human Rights Council (2023b) also affirms that Israeli demolitions target productive infrastructure (e.g., agricultural wells, water tanks, or

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<sup>15</sup> The large number of demolitions east of Jerusalem is partly explained by the E1 plan. The Israeli authorities aim to connect the large settlement of Ma'ale Adumim to Jerusalem, effectively disconnecting the northern and southern parts of the West Bank and isolating East Jerusalem from the rest of the Palestinian territory. According to Resolution 2334 of the UN Security Council (2016), this plan is illegal under international law.

barns) which inevitably cause long-term economic damage (especially since rebuilding such infrastructure requires obtaining a permit from the Israeli authority). Finally, the ICJ noted that both punitive demolitions as well as the Israeli permit system and the related demolitions amount to prohibited racial discrimination under international law (p. 61 & p. 64; ICJ 2024)

[Figure 4 about here]

## **2.5. Settler violence**

Israeli civilians are increasingly targeting Palestinians, their property, and their cultural and religious sites in the West Bank and East Jerusalem (UN Human Rights Council 2023b). In 2022 alone, the UN documented 739 settler violence incidents (UN Human Rights Council 2023b). According to the UN Human Rights Council (2023b), the violence seeks to harm and terrorize Palestinians. Furthermore, the Israeli security forces refuse to protect Palestinians from settler attacks, and frequently join or enable such attacks, making it difficult to distinguish between settler and army violence (UN General Assembly 2022b; UN Human Rights Council 2022a). The ICJ, in its July 2024 advisory opinion, has concluded that not only Israel systematically fails to prevent and punish settler violence, but it also uses excessive force against Palestinians, including physical, psychological, and sexual harassment towards both men and women (ICJ 2024, p. 46; ).

Yesh Din (2024), an Israeli human rights organization, has documented the pervasive impunity for Israeli settlers who commit violent acts against Palestinians. Between 2005 and 2023, the Israeli police refused to investigate 81% of the cases opened; only 3% of cases ended with a conviction

(Yesh Din 2024).<sup>16</sup> Even these figures fail to reflect the full scale of the problem, as many victims (37%) never file a complaint out of general distrust or a fear of losing their work or movement permit (Yesh Din 2024). Therefore, some human rights organizations have concluded that this “state-sponsored” violence is symptomatic of an apartheid regime (Amnesty International 2022b) that facilitates the Israeli expropriation of Palestinian territory (B'Tselem 2021).

Figure 4 (panel b) maps the spatial distribution of settler attacks in the West Bank from 2017 to 2018. The highest density of attacks occurred in East Jerusalem and north of Ramallah, though most other localities suffered at least 25 attacks during the same period. These attacks involved various forms of aggression against Palestinian civilians and their assets, including physical assaults, property damage, incursions into places of worship, and land degradation (e.g., burning and uprooting of olive trees or contaminating soil with sewage water). According to a UN Human Rights Council (2023b) report, there is a marked increase in settler violence during the olive harvest season, with the 2022 harvest season seeing approximately 60 settler attacks against Palestinian agricultural property. These attacks resulted in at least 49 Palestinian injuries, the vandalism of 1,400 olive trees, and the harvest theft of another 1,000 trees (UN Human Rights Council 2023b). The UN Human Rights Council (2023b) warns that Palestinians’ rights are severely endangered by Israeli settler violence and the Israeli army’s complicity.

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<sup>16</sup> The organization conducted an analysis of 1,644 cases of Israeli civilian violence against Palestinians in the Occupied West Bank, excluding incidents that occurred in East Jerusalem and after October 2023.

### 3. Data and Measures

#### 3.1. Household survey data

This study uses household-level microdata from the Palestinian Central Bureau of Statistics' 2018 Socio-Economic and Food Security Survey (PCBS 2018),<sup>17</sup> which provides a nationally representative dataset of rich sociodemographic and food security information on households living in the West Bank and Gaza Strip (PCBS 2018). The sample is stratified by administrative level (first administrative division), type of locality (urban, rural, or refugee camp), and area type (Area C or not). Although the whole survey encompasses 9,926 households residing in the OPT, we only include data for the 5,591 households residing in the West Bank (including East Jerusalem). The survey's confidentiality obscures precise household locations but does allow for georeferencing at the locality level (218 localities).

*Outcome variables.* We derived a set of proxies for Palestinian basic needs from this dataset, including a Food Consumption Score (FCS), the probability of experiencing a least one water shortage in the six months prior to the survey, and distances in minutes from essential public services such as food markets, secondary schools, public health centres, and pharmacies. The FCS, a widely used proxy for food diversity, measures household-level food access over a one-week period based on the consumption frequency of eight food groups<sup>18</sup> weighted by their nutritional importance (WFP 2008). Households report the number of days on which they consumed each

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<sup>17</sup> Carried out since 2009 in collaboration with the Food Security Sector, led jointly by the World Food Program and Food and Agriculture Organization working closely with the United Nations Relief and Works Agency for Palestine.

<sup>18</sup> Main staples, pulses, vegetables, fruit, meat/fish/egg, milk, sugar, and oil.

food group (minimum zero and maximum seven), and researchers sum these numbers while adjusting for each component's relative WFP-defined weights, yielding an aggregate score for each food group. The final index is a continuous measure that assigns a value between 0 and 112 (highest food diversity). The threshold for designating Palestinian households as severely or moderately food insecure was set at 45 and 62, respectively (PCBS 2016). A binary variable quantifying water access was assigned a value of one if a household experienced at least one instance of water shortage in the six months preceding the interview date, and zero otherwise. It is important to note that households reporting rain and well water as their primary water sources were assigned a value of zero. Any shortage in these cases is more likely attributable to climatic and geological factors than a direct consequence of Israeli policies.<sup>19</sup> We then constructed a series of variables that measure the self-reported distance (in minutes) from each household dwelling to essential services. The ensuing analyses employ the inverse hyperbolic transformation of these variables. Analogous to the interpretation of coefficients corresponding to logarithmically transformed variables, the interpretation of the regression coefficients, when the distance measures act as outcome variables, is expressed as percentage values.

*Control variables.* Finally, we selected a set of variables to account for potential confounding effects at the household level. This set encompasses data pertaining to the age, gender, employment

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<sup>19</sup> In accordance with Israeli Military Order 158, implemented in 1967, Palestinians are precluded from constructing any new water installations, including those intended for rainwater collection, without an official permit from the Israeli army (Amnesty International 2017). Consequently, instances where rain or well water have been declared as the primary water source indicate that either permits for such installations have been granted by the Israeli army or these installations are being maintained unlawfully. Regardless of the circumstances, it is evident that these structures have remained unaffected by the Israeli policy of demolitions up until the point of data collection.

status<sup>20</sup>, and educational attainment level of the household head<sup>21</sup>, a household dependency ratio<sup>22</sup>, and locality proximity to the closest governorate capital (in kilometres). Additionally, it includes categorical information on whether the household dwelling is situated in a rural, urban, or refugee camp area.

### **3.2. Data and measures on discriminatory policies**

We gathered information on Israeli discriminatory policies imposed against Palestinians from a variety of data sources. A UN OCHA (2018b) access restriction map (PDF) of the West Bank was used to identify Israeli-imposed movement restrictions. We extracted and manually georeferenced the network of bypass roads (i.e., inaccessible or restricted to Palestinians) from the PDF map onto the complete West Bank road network as depicted by the OpenStreet Map Contributors (2020) line shapefile of Palestine primary roads.<sup>23</sup> The UN OCHA (2018b) map provided the location of all permanent and partial checkpoints as of 2018; we also employed a checkpoints-only georeferenced version, which UN OCHA kindly provided to the authors (UN OCHA 2018a). Next, we measured the extent of land inaccessible to Palestinians and the number of civilian infrastructure demolitions and civilians displaced using the UN OCHA (2019) polygon shapefile

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<sup>20</sup> We excluded individuals who are out of the labor force from the category of the unemployed.

<sup>21</sup> We employ this variable as a categorical measure with the following levels: illiterate, literate, elementary, preparatory, secondary, intermediate diploma, bachelor's, higher diploma, masters', and Ph.D.

<sup>22</sup> This ratio measures the number of dependent members (0-13 and >65 years old) by the number economically active members (14-64 years old) multiplied by 100.

<sup>23</sup> This manipulation was performed using ArcGIS.

of Israeli firing zones and the UN OCHA (2023a) geo-referenced database (2009-2023) on house demolitions and related displacement, respectively.

Finally, the information on settler violence in the OPTs (2017-2018) comes from the Negotiation Affair Department (2023) daily reports on settler-related violence. This data, reorganized into tabular format by The Jerusalem Fund (2019), provides detailed geographic locations<sup>24</sup>, the number of dead and injured, and parties involved in incidents ranging from assaults on individuals, raids to private properties, attacks on places of worship, and environmental damage (mainly on Palestinian agricultural land). We derived a subsample of settler violent events against Palestinian civilians from this detailed database, manually filling in missing geographic coordinates whenever possible.<sup>25</sup>

*Discrimination index.* We constructed a composite indicator termed the “discrimination index” based on descriptive and qualitative evidence pertaining to Israeli discriminatory policies. First, we leveraged the theoretical framework presented in the background section and the previously referenced data sources to construct a series of metrics at the locality level to proxy Palestinian exposure to Israeli discriminatory practices. Each metric of the proposed composite index was computed within a 5-kilometer radius from the survey locality centroid, with an alternative consideration of a 10-kilometer radius for robustness check exercises. Exposure to the bypass road network was quantified by constructing the ratio of primary roads inaccessible or restricted to

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<sup>24</sup> In a small number of cases, this data reports the locality of the violent event but not the geographical coordinates. In such cases we obtain these missing coordinates either from the OCHA shapefile or by searching Google Maps.

<sup>25</sup> The final dataset includes 1,106 violent episodes perpetrated by Israeli settlers in the West Bank from 2017 to 2018, 93% of all original events in the research time frame, with about 7% dropped as impossible to locate.



Palestinians to the entirety of the West Bank road network within a 5-kilometer radius of each locality. This ratio (as opposed to simply measuring the length of the bypass roads near a locality) enabled us to negate any infrastructure-related confounders. Subsequently, we tallied the number of fixed and partial Israeli checkpoints, the area of land designated as a closed firing zone in square kilometres, and the number of civilians displaced due to Israeli house demolitions, all within the selected 5-kilometer radius from each locality centroid.<sup>26</sup> Lastly, we generated four variables to categorize each settler-related violence event (i.e., assaults on individuals, raids on private properties, attacks on places of worship, and environmental damage) and enumerated them within the selected locality radius.<sup>27</sup>

Following guidelines provided in the OECD/EU/EC-JCR (2008) handbook on constructing composite indicators, we aggregated these eight dimensions into a single composite index. We then examined correlation levels between each pair of dimensions to circumvent redundancy, which could result in a less efficient indicator. Figure 5 depicts the corresponding correlation matrix and demonstrates that, except for the number of house demolitions and displaced civilians, the remaining selected dimensions do not overlap (based on Pearson correlation coefficient  $<0.50$ ). Subsequently, we standardized each measure by subtracting its mean and dividing the result by the estimated standard deviation. We then aggregated the standardized versions of these variables using an arithmetic average approach. Despite the simplicity of interpretation and lack of reliance

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<sup>26</sup> Because measures built using the number of house demolitions and people displaced as a result are highly correlated (Pearson correlation coefficient = 0.98), they cannot be employed simultaneously in the same index. However, it should be noted that using the number of demolitions instead of the number of displaced individuals does not change the results.

<sup>27</sup> If an incident encompasses multiple acts of violence, such as attacks on civilians and damage to agriculture, we categorize it within each pertinent index dimension.

on specific assumptions associated with indicators constructed using this additive aggregation method, these indicators remain sensitive to outliers and suffer from full compensability between dimensions.

[Figure 5 about here]

To address these issues and enhance robustness, we also deployed a geometric average approach, which mitigates the aforementioned problems associated with additive aggregation methods (OECD/EU/EC-JCR 2008). We assigned equal weights when aggregating the dimensions, as the existing theory on Israeli discriminatory practices does not provide a measure of their relative importance. Lastly, we constructed an alternative version of our index by excluding the four settler-related violence dimensions from the composite index. This was done to test the effect of the legally enforced Israeli discriminatory policies alone, after conditioning for settler violence. For the sake of comparability, we transformed each version of the composite indicator using a min-max normalization, which places the indicators on a range of 0 (no discrimination) to 100 (maximum within sample discrimination level).<sup>28</sup>

### **3.3. IV data: geo-referenced mentions of biblical landmarks**

To address potential endogeneity issues in estimating the effect of the Israeli discriminatory policies on Palestinian basic needs, we constructed an instrumental variable that counts the number

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<sup>28</sup> *Normalized value* =  $\frac{x-min}{max-min} * 100$

of Old Testament biblical landmarks within a 5-kilometer radius of each locality centroid. We utilized the Open Bible (2001) georeferenced database of the most likely locations of each biblical landmark, which reports 576 unique places mentioned in the Bible (of which 146 are located within the Occupied West Bank and East Jerusalem). The use of this variable was justified both by the fact that discrimination is greater closer to illegal Israeli settlements and that these settlements are often purposely established near actual or alleged biblical landmarks (Israel Ministry of Foreign Affairs 2015; Amnesty International 2022a). It is worth noting that multiple biblical landmarks in the database have alternative coordinates, often in different countries. This is an interesting feature in favour of this IV exogeneity (see below). We further differentiated between places mentioned in the Old and the New Testament<sup>29</sup> to construct an IV based only on Old Testament landmarks and a placebo-IV using New Testament sites. If a site was mentioned in both Testaments, we assigned it to the Old Testament group.

### **3.4. Other relevant data sources and constructs**

We enhanced the SEFSec 2018 household-level data with several significant locality-level measures. Primarily, we derived an index of land suitability for prospective agricultural expansion from the Global 10 arc-seconds (approximately 300 meters at the equator) land suitability raster maps developed by Cengic et al. (2020). We employed the mosaic cropland layer (>50% crops), which utilizes Artificial Neural Network models to relate information on agricultural conversion

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<sup>29</sup> Old Testament books: Genesis, Exodus, Leviticus, Numbers, Deuteronomy (the Pentateuch); Joshua, Judges, Chronicles 1, Chronicles 2, Samuel 1, Samuel 2, Kings 1, Kings 2, Ezra, Nehemiah (historical introduction); Isaiah, Ezekiel, Hosea, Amos, Micah, Zechariah (prophetic books); New Testament books: Acts of the Apostles, Luke, John, Mark, and Matthew.

for the period 2003-2013 with data on soil, water resources, topography, and climate. This indicator quantifies the probability—ranging from zero (indicating no agricultural suitability) to one (indicating highest suitability: >50% crop coverage)—of a specific grid cell being suitable for agricultural use in the future. We computed a variable that measures the average land suitability within a 5-kilometer radius from each locality centroid.<sup>30</sup> Importantly, this indicator does not quantify current agricultural activity, only the potential for it. Including this control in our models allowed us to eliminate any potential confounding effect of land quality while not absorbing part of the effect of exposure to discriminatory policies.

This study also utilized the UN OCHA (2023b) database to examine Palestinian casualties associated with Israeli military operations conducted during the 2017-2018 period. Given the relatively low number of Palestinian casualties during this period (a total of 74), as compared to other periods, we chose to construct a binary variable instead of a count measure. This dummy assumes a value of one if there has been at least one fatality caused by the Israeli military within a 10-kilometer radius<sup>31</sup>, and zero otherwise. We are unaware of the specific details of these incidents, so we cannot categorize this variable as part of the discriminatory policies, and instead leave it as a control variable.

Finally, we established a proxy for tourism in the West Bank and East Jerusalem (inclusive of the illegal Israeli settlements) by quantifying the number of hotels within a 5-kilometer radius of each locality. The authors collected this data from Google Places in 2021, adhering to the methodology

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<sup>30</sup> Because the area used to measure agricultural suitability is constant for each locality, computing an average or a sum does not affect the statistical variability.

<sup>31</sup> We decided to measure this variable at a radius of 10 kilometers to circumvent overrepresentation of zeros.

delineated by Otterbach et al. (2021). Regrettably, due to the constraints of the Google Places API service, which precludes the retrieval of past listings, our data pertains to the three-year period after the culmination of the survey. We also used various other data sources to produce descriptive statistics and maps, including the Tufts University Academic Data Services (2022) Palestinian localities shapefile, the B'Tselem (2019) geocoded statistics on settlement and settler population (259 settlements), and the UN OCHA (2016) West Bank and Gaza Strip municipal boundaries shapefile.

#### 4. Methodology

This paper employs a 2-SLS approach that exploits the random variation in the Old Testament biblical landmark locations to assess the causal impact of Israeli discriminatory practices (aggregated into an index) on Palestinian basic needs. Equation (1) presents the first-stage regression, where  $DI_l$  represents the potentially endogenous discrimination index,  $IV_l$  is the number of Old Testament landmarks within a 5 kilometres radius,  $HH_i$  and  $L_l$  are two vectors of household- ( $i$ ) and locality-level ( $l$ ) control variables, respectively, and  $\eta_i$  is an individual-level idiosyncratic error term. Similarly, the structural model presented in equation (2) alternatively regresses one of the outcome variables presented above ( $Y_i$ ) on the fitted values of the discrimination index from the first-stage regression ( $\widehat{DI}$ ), and the full set of control variables measured at the household- and locality level. We estimate all models both as bivariate and multivariate regressions and correct the standard errors for the clustered nature of our analysis (locality-level).

$$DI_l = \gamma_0 + \gamma_1 IV_l + \sum_{k=2}^n \gamma_k \cdot HH_i + \sum_{j=1}^n \delta_j \cdot L_l + \eta_i \quad (1)$$

$$Y_i = \beta_0 + \beta_1 \widehat{DI}_i + \sum_{k=2}^n \beta_k \cdot HH_i + \sum_{j=1}^n \theta_j \cdot L_i + \epsilon_i \quad (2)$$

Our IV approach is justified in light of the multiple sources of potential endogeneity. One source of coefficient bias when using a naïve OLS estimator is migration, which may induce non-random measurement error and omitted variable bias. For example, if a household moved due to exposure to Israeli discriminatory policies in the two-year period before the survey, we might mis-assign it within the discrimination index. Individuals tend to move away from places of higher insecurity, so this creates a downward bias. On the other hand, households self-select into migration; those with higher socioeconomic status are able to leave insecure contexts. This could cause us to overestimate the assumed negative effect of violence because better-off households systematically select into lower treatment doses, increasing their observed average outcome. The actual direction of the migration-related bias, therefore, is determined by the difference between the downward measurement error and the upward self-selection biases. However, migration represents only a minor issue in the West Bank context, given that just 1.9% of 2018 SEFSec households reported having changed residence since 2015 (including moves within the same locality). In fact, according to the 2010 Palestinian migration survey, less than 5% of West Bankers live in a locality other than their mother's place of origin (PCBS 2010). This lack of internal mobility reflects Israeli policies that limit freedom of movement, particularly during certain historical periods such as the Second Intifada (Mansour and Rees 2012).

A second source of potential bias is that the settler violence intensity measures may be inaccurately georeferenced in small or remote villages. A full 7% of events in the settler violence database were neither georeferenced nor manually locatable in Google Maps. Furthermore, remote villages often have limited economic opportunities and infrastructures, and the lack of a nearby police station

may reduce the incidence of crime reporting.<sup>32</sup> In this case, the bias would underestimate the possible negative effect of violence intensity, as worse-off households are classified into lower treatment doses.

Finally, a classic omitted variable bias could also result from the inability to control for key unobservable characteristics that may correlate with both the discrimination index and outcome variables. The intensity of Israel's discriminatory policy is not random; it explicitly attempts to support Israeli settlers (UN Human Rights Council 2022b). Such a correlation represents a threat to causality since most settlements are located on strategic hilltops with agriculturally fertile and natural-resource-rich lands (Handel 2014). Assuming a positive correlation between settlement proximity, levels of discrimination, and economically advantageous characteristics, omitting the latter would result in an underestimation of the assumed negative effect of discriminatory practices. However, our ability to control for settlement proximity in a series of robustness checks directly addresses this issue, despite probably causing some degree of downward collider-stratification bias.

#### **4.1. Instrumental variable approach**

To address these sources of bias, we estimate the nexus between the discrimination index and Palestinian basic needs through a novel IV approach based on the number of geolocated references to Old Testament biblical landmarks within a radius of 5 (or 10) kilometres of each locality

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<sup>32</sup> The probability of a crime being reported depends on the location of the closest police station, which is often inside a settlement according to Society of St. Yves - Catholic Center for Human Right 2018.

centroid in the Occupied West Bank and East Jerusalem<sup>33</sup>. This IV is supported by two main arguments. First, Israeli discrimination practices are disproportionately intense in Palestinian localities where settlers are present (e.g., in the vicinity of the illegal settlements - see Figure 5). Second, Israel uses the biblical landscape of the Occupied West Bank to inform its settlement locations (Israel Ministry of Foreign Affairs 2015; Amnesty International 2022a). The establishment and maintenance of new settlements involves both official measures to displace Palestinians from their land and a tolerance of (or even promotion of) settler violence (Amnesty International 2022b).

[Figure 6 about here]

Figures 5 and 6 show the spatial clustering of settlements and Hebrew biblical landmarks. The maps reflect the persistent efforts by Israeli policymakers and settlers to expand the occupation of the West Bank. Consequently, numerous instances of settler attacks and Israeli restrictions, such as checkpoints, can be observed near Old Testament sites that are relatively far from existing settlements. For example, military checkpoints, settler attacks, and house demolitions are commonplace around Jenin (north of Nablus) and in the southwestern West Bank (near the shrine of Abu Abeida), where multiple Old Testament sites exist.

Figure 7 provides a schematic representation of our identification strategy. In this figure, rectangles and ovals denote exogenous and endogenous variables, respectively, while dashed arrows illustrate the causal path of our IV approach. We classify the variable measuring Israeli army incidents and

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<sup>33</sup> We only consider the sites within the Occupied West Bank and East Jerusalem borders.



the number of hotels by locality as “bad controls” (parallelograms and light grey arrows). This classification is due to their simultaneous influence by the endogenous regressor of interest and potential impact on the outcome variable, which could absorb a portion of the treatment effect.<sup>34</sup> Consequently, we opt to exclude these variables from the primary regression model but incorporate them in a series of secondary regressions aimed at validating the robustness of our IV approach. We also recognize land quality and tourism as potential channels that could introduce a downward bias in our estimates. However, we are able to both observe and control for these factors (see below).

[Figure 7 about here]

From a quantitative perspective, the number of Old Testament biblical landmarks negatively correlates with the distance between Palestinian localities and the nearest Israeli settlement (see the correlation matrix in Figure 5). Conversely, this IV is positively related to the ratio of bypass roads, number of Israeli checkpoints, extent of closed firing zones, number of displaced civilians from Israeli house demolitions, settler violence, and the discrimination index. Table 1, which presents the results of the first-stage regressions, confirms the non-weakness of our IV even after correcting the standard errors for the clustered nature of the survey data (218 localities) with the partial F-statistics always well above the threshold of 10.

[Table 1 about here]

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<sup>34</sup> For instance, an increased number of checkpoints could deter the mobility of international tourists who might opt to refrain from visiting localities in the West Bank, ultimately diminishing the operations of Palestinian tourism providers. Conversely, households residing in areas where a higher number of Israeli restrictions and settler attacks are prevalent might be more frequently targeted by the Israeli army.

We advocate for the validity of the exclusion restriction (with supporting empirical evidence), which posits no correlation between the error term and the instrument (i.e., the IV has no direct effect on the second-stage outcome variable other than through the endogenous instrumented regressor), despite its empirical untestability. Specifically, we argue that scripture-based biblical sites from the 8th to 5th century BCE are entirely unrelated to the current socioeconomic conditions of West Bank residents, except through Israeli settler presence and Israeli restrictions. Moreover, given the inherent uncertainty in georeferencing these sites and the prohibition on non-settler Israeli citizens from entering areas A and B, these sites hold little to no relevance for even non-settler Israeli religious pilgrimages. Even if such tourism were to exist, the benefits to Palestinians would be marginal at best, potentially leading to a slight underestimation of the presumed negative impact of discriminatory policies. We empirically validated this assertion by estimating regressions (presented below) that explicitly account for a proxy of tourism. We also respond to the critique that a higher concentration of Old Testament biblical sites may correlate with more fertile and natural resources-rich land by explicitly controlling for locality-level agricultural suitability.

Furthermore, Table 2 presents a falsification test that regresses a placebo-IV of the distance from each Palestinian locality centroid to the nearest New Testament site<sup>35</sup> on all proxies of Palestinian basic needs. This placebo-IV shares the same potential limitations as our main IV but should not

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<sup>35</sup> Because the number of New Testament sites is relatively small (blue starts in panel b, Figure 6), we opt for the use of a distance measure rather than a count of the sites. Our main results are also robust when employing an IV constructed as the distance to each Old Testament site (results available under request), but we prefer a count-based measure because it is less likely to pick-up any endogenous variation.

be causally associated with Israeli settler presence. Therefore, we posit it as both a valid and pertinent falsification exercise. This test, which relied on the same sample size and statistical power as the first-stage regressions reported in Table 1, revealed that the New Testament sites did not produce statistically significant effects on any of the measures of Palestinian basic needs.

[Table 2 about here]

## **5. Results and discussion**

### **5.1. Summary statistics**

According to the summary statistics reported in Table 3, the average dependency ratio for a SEFSec household in 2018 stood at 34%. Household heads (only 10% of whom were women) had an average age of 48 years, an unemployment rate of 4%, and 85% had finished at least primary schooling. Most of the West Bank population inhabited urban areas, with 23% in rural areas and 6% in refugee camps. In food diversity, the average FCS is relatively high at 75, aligning with the OPT's middle-income status. The average commute to primary services ranges from approximately 7 minutes to the nearest food market to 13 minutes to the closest secondary school. The representative Palestinian household in our sample resides in 5-kilometers (10-kilometer) areas where 2.8 (17.5) square kilometres are designated as closed firing zones, and the proportion of bypass roads to the entire road network is 15% (17%). On average, this representative household also encounters 3 (9) checkpoints within the vicinity of the community, which has witnessed 17 (49) houses demolished by the Israeli army and 38 (96) settler attacks in the two years preceding the interview date.

[Table 3 about here]

## 5.2. Regression results

In Table 4, we present the results of our main IV regression model of the effect of the discrimination index on Palestinian basic needs. We also report the corresponding full regression results in Table A1. This specification controls for all control variables presented above, except for those that we have labelled as “bad controls” (i.e., the locality-level probability of Palestinian casualties by the Israeli army and the number of hotels). For each outcome variable, we present both bivariate (odd columns) and multivariate regressions (even columns). The effect of the discrimination index is always statistically significant and detrimental to Palestinian basic needs. Furthermore, these results remain stable when including a comprehensive set of meaningful control variables. For example, on average, each additional percentage point (p.p.) of the discrimination index, measured within 5 kilometres of the locality centroid, causes a 0.2 point decrease in the FCS and a 0.8 p.p. increase in the probability of experiencing a water shortage. Similarly, one p.p. increase in the index increases travel time to the closest food market, secondary school, pharmacy, and public health centre by 0.9, 0.5, 0.6, and 1 percent, respectively. These results display the same sign stemming from their OLS counterparts, as delineated in Table A2. However, it is noteworthy that the statistical significance of the latter is not consistently observed. Indeed, the naïve OLS model, due to its inability to account for unobservable variables that may introduce an upward bias (such as the economic development of proximate Israeli settlements), is likely to yield estimates that understate the actual impact of the discrimination index on the fulfilment of basic needs among the Palestinian population.

In the lower part of Table 4, we contextualize the IV estimates by computing the magnitude of these effects for an average household subjected to mean or third quartile levels of discrimination. This exercise is deemed insightful, given that 41% and 25% of the Palestinian households surveyed in 2018 were exposed to a level of discrimination surpassing the average and the third quartile, respectively. A household exposed to an average (or third quartile) level of discrimination experienced an FCS decrement by 6 (10) points and an augmentation in the probability of encountering a water shortage by 27 (41) p.p. This average Palestinian household faces increased commuting times to basic services by 18%-30%, and 23%-46% when exposed to average or third quartile levels of the discrimination index, respectively.

[Table 4 about here]

### **5.3. Robustness checks**

Beyond the IV placebo analysis delineated in Table 2, we further scrutinized the validity of our IV methodology through a sequence of robustness checks. These checks incorporated variants of the discrimination index, a more comprehensive set of control variables, the estimation of overidentified models through a heteroskedasticity-based synthetic IV estimator (Lewbel 2012), and the use of a subsample omitting East Jerusalem and Bethlehem.

In the initial series of robustness checks, our primary IV model was replicated by either utilizing a discrimination index calculated at a 10-kilometer radius from each locality's centroid or by aggregating its dimensions using a geometric mean approach. The outcomes delineated in Tables A3 and A4, remain largely consistent with the principal results exhibited in Table 4.

Table A5 presents the results of regressions that use a version of the discrimination index that excludes any settler violence measure together with the full set of controls (i.e., with the addition

of an Israeli army attack dummy and a hotel count), while also directly controlling for the settler-related violence variables and the distance between each locality centroid and the closest settlement. Because the post-estimation test of a 2SLS regression of this specific model signals IV-weakness<sup>36</sup>, we opt for a heteroskedasticity-based IV approach that simultaneously combines our Old Testament external IV to a set of synthetic IV constructed exploiting first-stage heteroskedasticity. Another advantage of employing this alternative estimator is that it enables us to further assess the validity of our methodological approach through Sargan's J test for over-identified restrictions.

As expected, the corresponding regression results culminate into smaller but economically relevant effect sizes (especially for the FCS and water shortage outcomes), as part of the effect is likely absorbed by the settler-related violence controls. Most importantly, these complementary results indicate that settler violence is only partially responsible for the detrimental effects on Palestinian basic needs. Concurrently, the legally imposed Israeli restrictions bear causal and additive responsibility for the disruption of Palestinian livelihoods. Subsequently, in another robustness check presented in Table A6, we found that our results were robust even when we estimated the main model (Table 4) employing the heteroskedasticity-based IV approach outlined above and controlling for the full set of observable confounders (including each locality's distance to the closest Israeli settlement). Importantly, we found that Sargan's J statistics always failed to reject the null (that the instrument is exogenous) in all synthetic IV specifications.

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<sup>36</sup> This is likely due to the inclusion of all four settler violence variables in the set of controls.

Finally, in Table A7, we estimated the 2SLS equations using a subsample that omits households residing in East Jerusalem, any locality within the Jerusalem governorate situated outside the separation wall,<sup>37</sup> and the locality of Bethlehem. We conducted this test for two reasons. Firstly, Palestinian residents of East Jerusalem encounter unique movement restrictions vis-à-vis their West Bank counterparts, with the majority maintaining a permanent resident permit if they do not exit the country for a period exceeding seven years without returning. Secondly, we aimed to assess the robustness of our IV approach, excluding the regions with the highest concentration of Old and New Testament biblical sites. East Jerusalem and Bethlehem are also the areas most impacted by international tourism. Assuming a beneficial effect of tourism on Palestinian livelihoods, their inclusion in the sample could result in an underestimation of the negative effect of the discrimination index. As illustrated in Table A6, the omission of this subsample from the analysis intensifies the detrimental effects of the discrimination index on the FCS and the probability of a water shortage, with the effects being 50% and 75% larger than when using the full sample, respectively. These results are both contextually and econometrically coherent, as the population of East Jerusalem cannot be readily isolated from the Israeli economy. Moreover, the exclusion of households residing in areas with high tourism might eliminate any anticipated downward bias. In contrast, the results on commuting time to basic services remained consistent (though those associated with distance to the nearest secondary school and pharmacy were not statistically significant).

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<sup>37</sup> These localities include Jerusalem (Al Quds), Umm Tuba, Jabal Mukabar, Silwan, and Al Ka'abina (Tajammu' Badawi).

## 6. Conclusions

This study produced compelling quantitative evidence underscoring the adverse impact of Israeli discriminatory practices on the basic needs of Palestinians residing in the Occupied West Bank and East Jerusalem. These findings not only corroborate numerous qualitative and legal analyses condemning the segregative character of such practices, but also suggest that these policies are responsible for the systematic degradation of Palestinian living conditions. Higher ‘discrimination index’ scores (which measured several mobility restrictions, land dispossession, house demolitions, and settler violence) corresponded with worse household food and water security and longer travel times to basic services (markets, schools, public health centres, and pharmacies). For example, a percentage point increase in this index has an FCS effect size comparable to the magnitude produced by about six Boko Haram-related fatalities in Nigeria (George, Adelaja, and Weatherspoon 2020) or by 0.3 household-level deaths due to the 2002-2007 Côte d’Ivoire civil war (Dabalen and Paul 2014). Importantly, these effect sizes remain considerable even when settler violence is excluded from the index, signalling the detrimental effect of the *legally imposed* Israeli restrictions on Palestinian living conditions.

Our results support several recommendations already issued by multiple UN agencies, prominent NGOs, and the ICJ. Primarily, Israel must end its occupation of the Palestinian territory and cease its settlement plans in the West Bank and East Jerusalem (ICJ 2024). The persistent presence and continual expansion of these unlawful (UN Security Council 2016) settlements (facilitated by successive Israeli administrations) pose a significant impediment to the Palestinian pursuit of self-determination and rights to a dignified life. Israel’s settlement strategy in the West Bank is a flagrant contravention of United Nations Security Council Resolutions 446, 2026, and 2334. Endeavours to construct new illicit settlements through the expropriation of Palestinian land



continue unabated without the imposition of punitive measures. In April 2024, the Israeli government seized and declared as its property an additional 800 hectares of Palestinian fertile territory situated in the Jordan Valley amidst three unauthorized settlements to the east of Nablus. Neither the United States nor the European Union have hitherto enacted meaningful measures to operationalize Resolution 2026.<sup>38</sup> Furthermore, as recently articulated by the ICJ, Israel must “provide full reparation for the damaged caused by its internationally wrongful acts to all natural and legal persons concerned” (73; ICJ 2024).

In July 2024, the Court delineated that Israel, through the enforcement of its prolonged military occupation characterized by discriminatory practices, is infringing upon its obligations under international law. In fact, the recently issued ICJ advisory opinion on the legality and the consequences of Israel’s occupation of Palestinian land concludes that the segregative nature of the measures imposed by Israel contravenes, among the others, article 3 of the CERD, which prohibits the crime of apartheid (p. 64; ICJ 2024). Our analysis lends quantitative credence to the Court’s argument.

In fact, by prioritized causality, our research provides explicit evidence that Israeli restrictions systematically violate fundamental Palestinian human rights, such as the rights to food, education, health, and freedom of movement, and that these are not merely consequential effects. Our results are in line with similar causal studies have found that Israel’s discriminatory restrictions on freedom of movement negatively affect Palestinians’ rights to work and education (Cali and Miaari

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<sup>38</sup> In February 2024, the United States, for the first time, approved sanctions against a dozen Israeli settlers accused of undermining peace, security, and stability in the West Bank (Biden 2024). Moreover, the United States are also considering impose sanctions against the Israeli army Netzah Yehuda battalion for alleged human rights violations against Palestinians. However, the European Union has yet to reach a consensus on imposing sanctions on the settlers.

2018; Miaari and Lee 2024). Notably, several legal scholars have posited that establishing apartheid (and not merely incidental racism or inequality) requires evidence of systematic oppression aimed at establishing or maintaining racial domination (Kemp and Nortje 2023; Cassese 2013). Consequently, we argue that this research could stand as evidence in prospective future legal proceedings against Israel.

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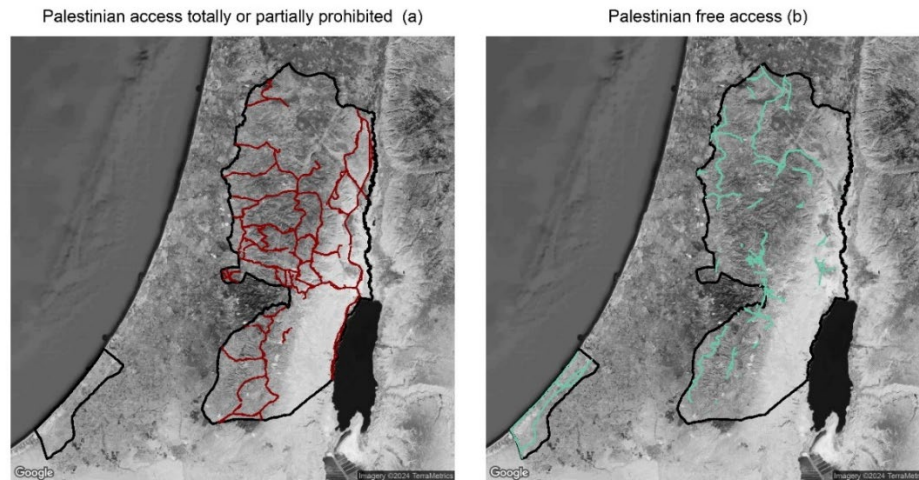
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## Figures

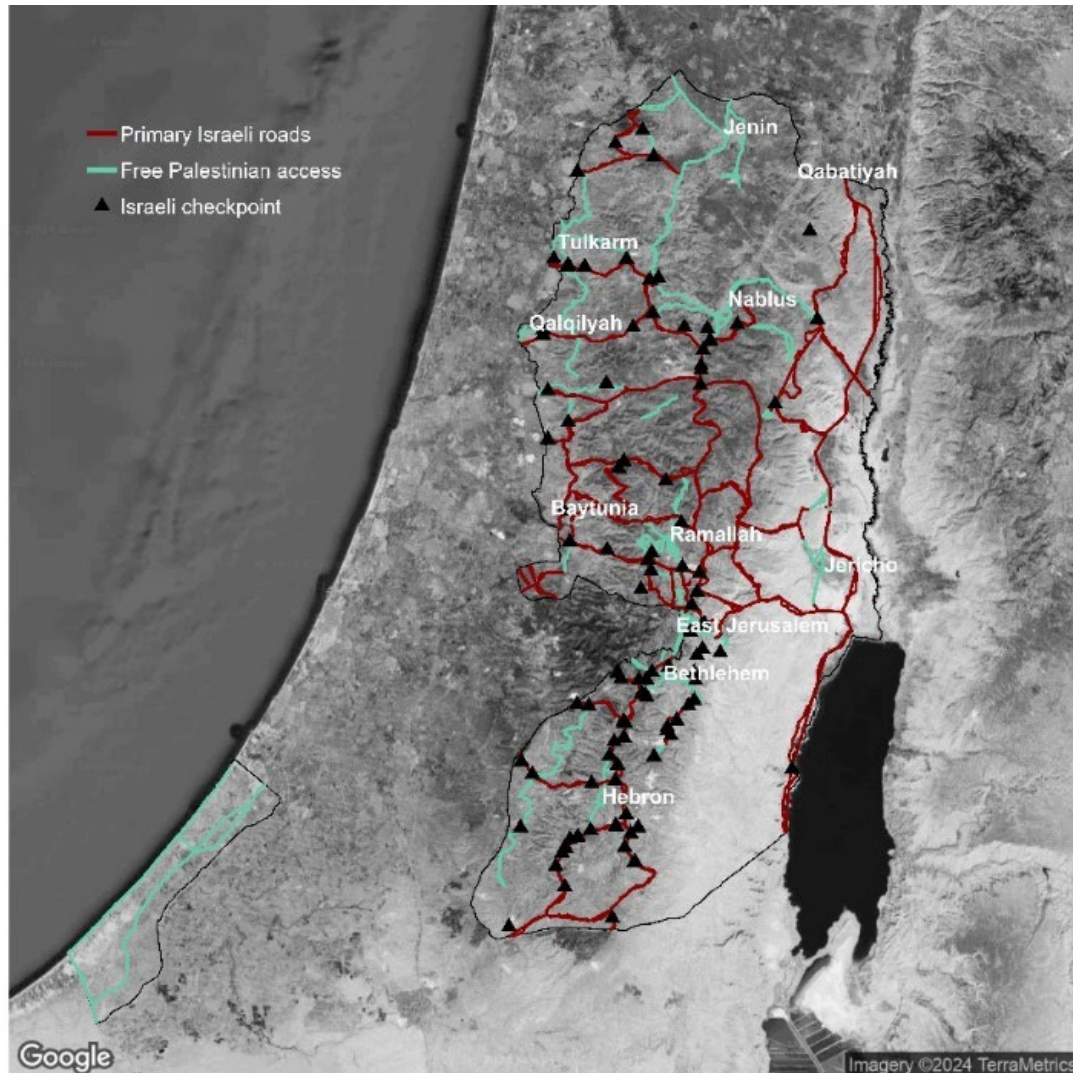
Figure 1 – Israeli bypass and Palestinian main road network in the West Bank (2017)



*Notes:* Drawn by authors using the UN OCHA (2018b) map of West Bank movement restrictions. Original UN OCHA map of bypass roads digitalized by the authors using QGIS version 3.28.2 “Firenze” over the OpenStreet Map Contributors (2020) ESRI shapefile of the Palestinian road and street networks. The road network depicted in the figure includes expressways, main, and regional roads; it excludes any internal and secondary roads.



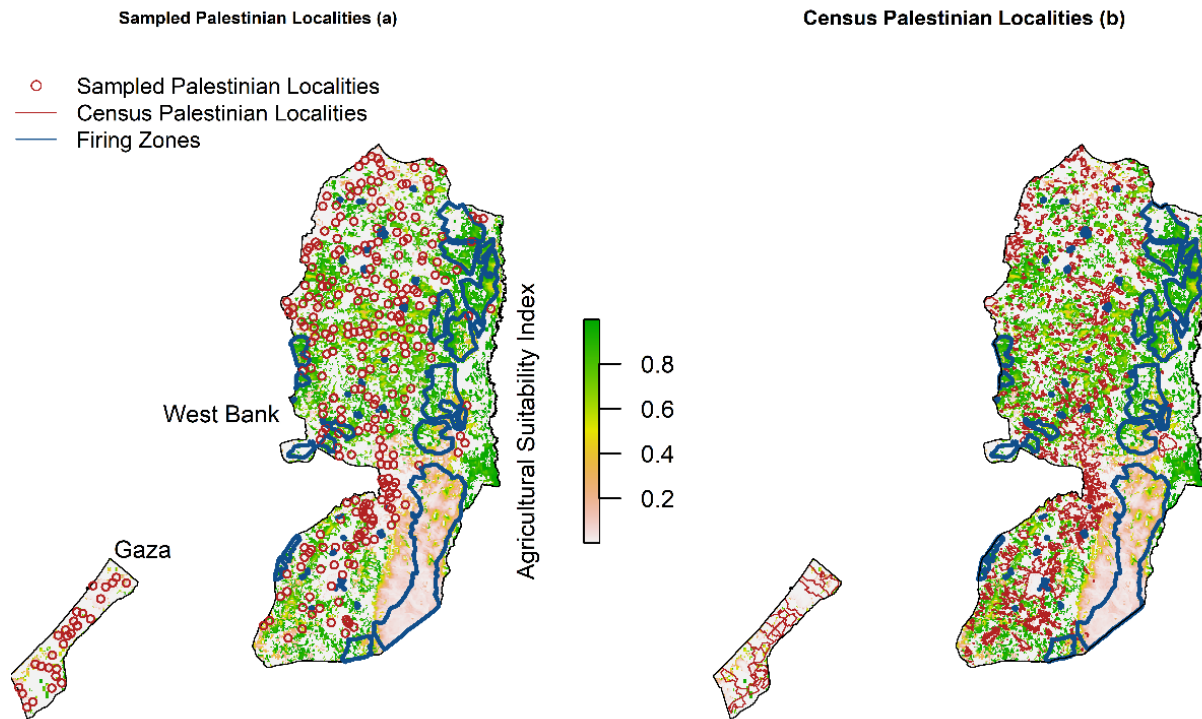
*Figure 2 –Israeli checkpoints on the main road network (2018)*



*Notes:* Drawn by authors using the UN OCHA (2018b) map of West Bank movement restrictions. Original UN OCHA map of bypass roads digitalized by the authors using QGis version 3.28.2 “Firenze” over the OpenStreet Map Contributors (2020) ESRI shapefile of Palestinian road and street networks. The georeferenced data on fixed and partial checkpoints is based on a map of West Bank restrictions kindly provided by the UN OCHA. The road network depicted in the figure includes expressways, main, and regional roads; it excludes any internal and secondary roads.

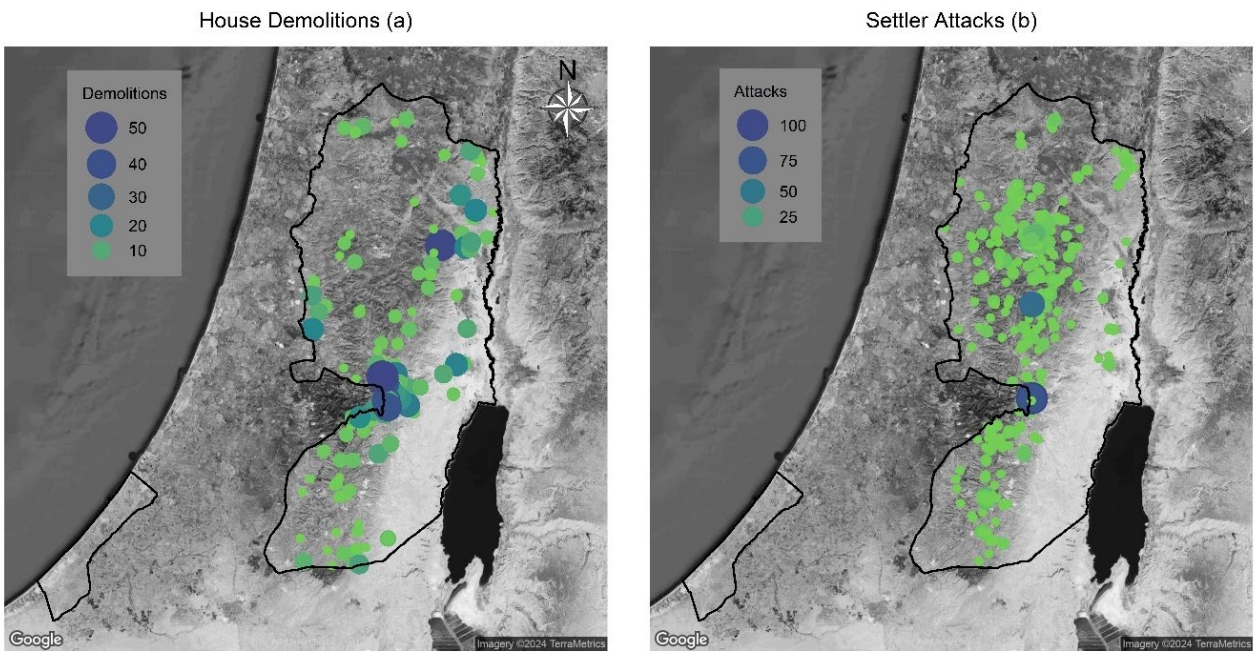


*Figure 3 – Firing zones and Palestinian localities (2018)*



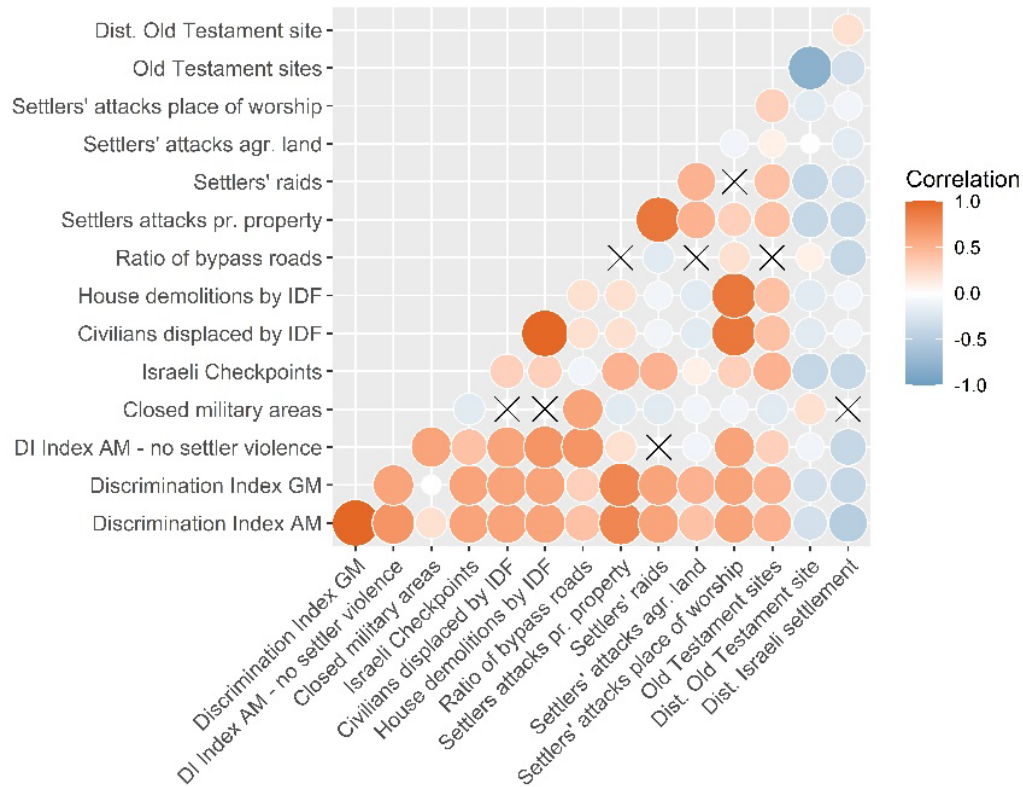
*Notes:* Drawn by authors using the following data sources: PCBS (2018) SEFSec Palestinian localities (panel a), the Tufts University Academic Data Services (2022) shapefile of Palestinian localities (panel b), the UN OCHA (2019) shapefile of Israeli firing zones, and the Cengic et al. (2020) global raster of agricultural suitability. The latter index, based on data from 2003 to 2013, quantifies the suitability of each grid cell (resolution 10 arc-seconds) for agricultural conversion. The index values range from zero (indicating the lowest suitability) to one (indicating the highest suitability). For more on this index, please see the data section below.

*Figure 4 – House demolitions and settler attacks (2017-2018)*



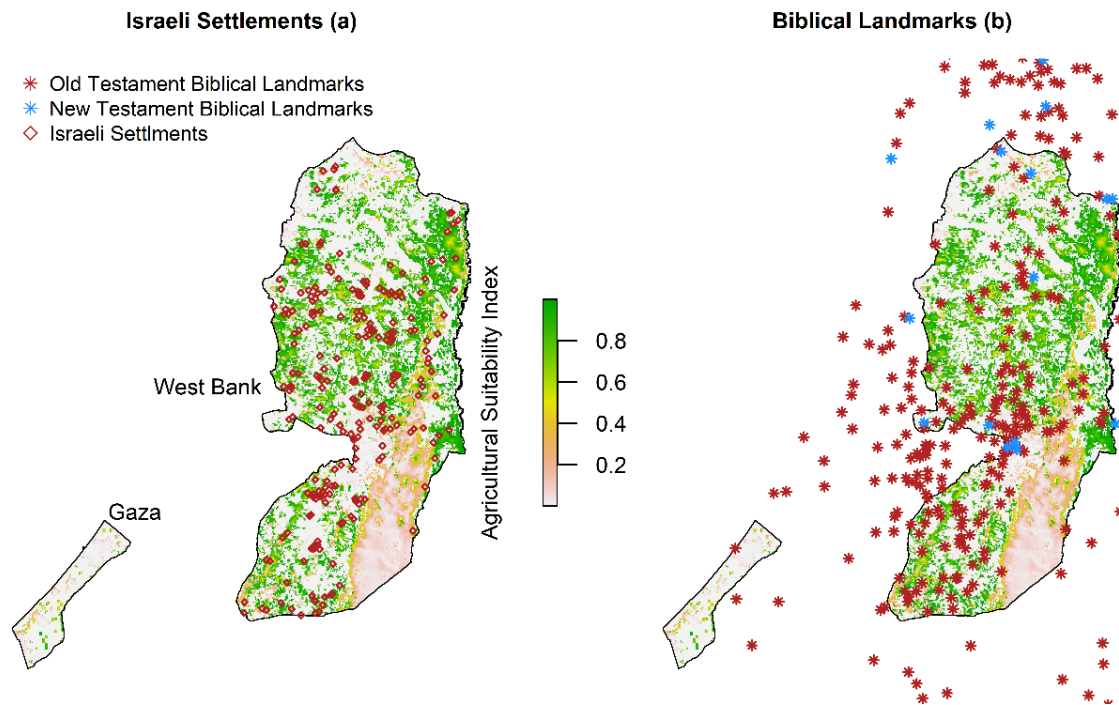
*Notes:* Drawn by authors using the following sources: UN OCHA (2023a) data on demolitions and displacement in the West Bank (2009-2023; panel a), and The Jerusalem Fund (2019) Israeli settler violence database (panel b).

Figure 5 - Correlation matrix for key study indicators



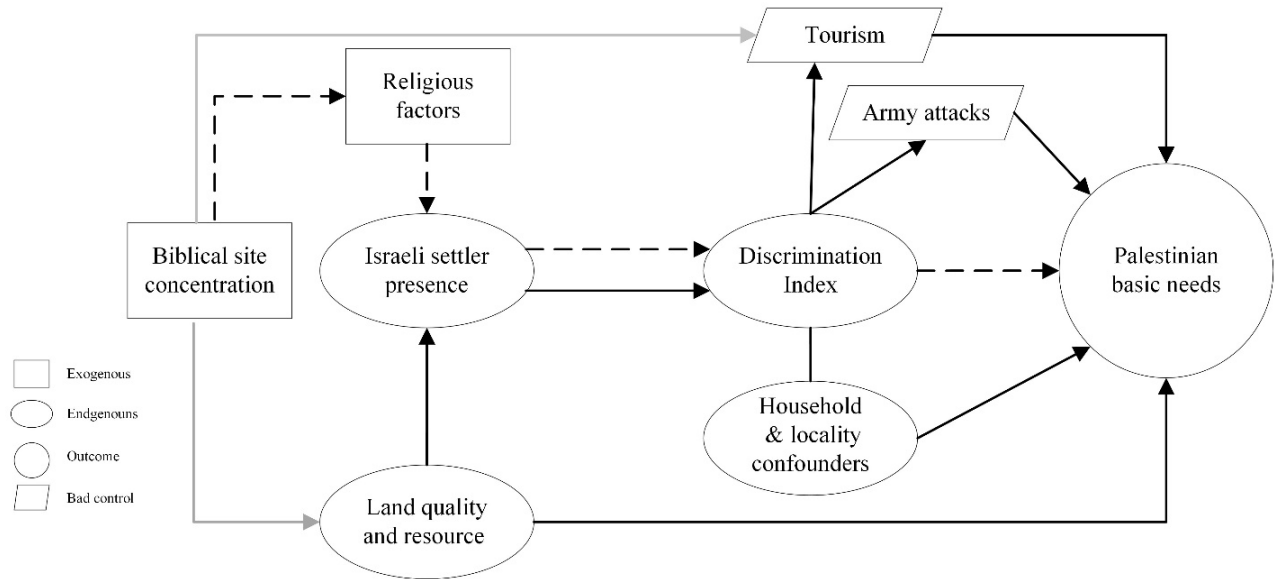
Notes: Estimates obtained using 2018 SEFSec survey data at the household-level, B'Tselem (2019) geolocated information on Israeli settlements, Open Bible (2001) geo-referenced database of biblical sites, the Cengic et al. (2020) agricultural suitability index raster image, UN OCHA (2023a) data on demolitions and displacement in the West Bank (2009-2023), the Tufts University Academic Data Services (2022) shapefile of Palestinian localities (panel b), the UN OCHA (2019) shapefile of Israeli firing zones, UN OCHA (2018b) map of West Bank movement restrictions, and The Jerusalem Fund (2019) Israeli settler violence database. Gray cells marked with an "X" signal non-statistically significant correlation level.

Figure 6 - Israeli settlements and biblical sites in the OPT



*Notes:* Drawn by the authors using B'Tselem (2019) geolocated information on Israeli settlements, Open Bible (2001) geo-referenced database of biblical sites, and the Cengic et al. (2020) agricultural suitability index raster image.

Figure 7 - Causal Acyclic Diagram



Notes: Drawn by the authors.

## Tables

Table 1 – First-stage regressions

	<i>Dependent variable:</i>								
	Discrimination Index								
	5Km Arithmetic Mean			5Km Geometric Mean.		Excluding Jerusalem/Bethlehem		10Km Arithmetic Mean	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Old Testament sites (5Km)	14.618*** (3.280)	13.722*** (2.898)	9.006*** (2.313)	14.452*** (3.295)	12.880*** (2.874)	10.291*** (2.653)	10.057*** (2.482)		
Old Testament sites (10Km)								19.748*** (3.163)	19.035*** (2.678)
<b>Controls</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>
<b>“Bad” controls</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>
F-stat (partial)	19.86	22.42	15.16	19.23	20.09	15.05	16.42	38.97	50.5
Observations	5,591	5,591	5,591	5,591	5,591	5,417	5,417	5,591	5,591
R2	0.288	0.318	0.4	0.294	0.333	0.19	0.236	0.371	0.395
Adjusted R2	0.288	0.316	0.398	0.294	0.331	0.19	0.233	0.371	0.393

*Notes:* Estimates obtained using 2018 SEFSec survey data at the household-level. The vector of control variables includes age, gender, employment status, and educational attainment level of the household head, a household dependency ratio, locality proximity to the closest governorate capital (in kilometres), and locality-level agricultural suitability index. The vector of “bad controls” includes the locality-level number of hotels, the distance to the closest Israeli settlement, and a locality-level dummy taking on value one if the Israeli army caused at least one fatality in the two years before the survey, and zero otherwise. Standard errors clustered at the locality level. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 2 – IV placebo tests

	<i>Dependent variable:</i>					
	FCS	Water shortage	Food market	School	Pharmacy	Health centre
	(1)	(2)	(3)	(4)	(5)	(6)
Distance New Testament Site (km)	-0.152 (0.100)	0.005 (0.005)	0.001 (0.004)	0.003 (0.003)	0.002 (0.003)	-0.0004 (0.003)
<b>Controls</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
Observations	5,589	5,591	5,590	5,590	5,590	5,590
R <sup>2</sup>	0.085	0.035	0.039	0.030	0.044	0.033
Adjusted R <sup>2</sup>	0.082	0.032	0.036	0.026	0.041	0.029
F Statistic	28.780***	11.287***	12.532***	9.443***	14.336***	10.436***

*Notes:* Estimates obtained using 2018 SEFSec survey data at the household level. The vector of control variables includes age, gender, employment status, and educational attainment level of the household head, a household dependency ratio, locality proximity to the closest governorate capital (in kilometres), and locality-level agricultural suitability index. Standard errors clustered at the locality level. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 3 – Descriptive Statistics

Variable	N	Mean	St. Dev.	Min	Max
<i>Outcome Variables</i>					
Food consumption score	5,589	74.743	18.449	0	112
Water shortage (dummy)	5,591	0.245	0.430	0	1
Time to food market (min)	5,590	7.182	5.946	0	100
Time to school (min)	5,590	12.719	7.953	0	110
Time to pharmacy (min)	5,590	9.651	6.679	0	100
Time to health centre (min)	5,590	11.505	8.204	0	200
<i>Apartheid Index and its dimensions</i>					
DI arithmetic mean - 5Km radius (n-score)	5,591	29.639	22.967	0	100
DI arithmetic mean - 10Km radius (n-score)	5,591	42.147	27.703	0	100
DI geometric mean - 5Km radius (n-score)	5,591	24.863	22.164	0	100
Closed military areas - 5Km radius (Km <sup>2</sup> )	5,591	2.857	7.116	0	64.560
Closed military areas - 10Km radius (Km <sup>2</sup> )	5,591	17.539	27.971	0	159.042
Israeli checkpoints - 5Km radius (count)	5,591	2.954	2.736	0	12
Israeli checkpoints - 10Km radius (count)	5,591	9.148	6.858	0	27
Displaced by IDF - 5km radius (count)	5,591	27.274	88.793	0	501
Displaced by IDF - 10km radius (count)	5,591	71.880	164.15	0	725
Houses demolished by IDF - 5Km radius (count)	5,591	17.444	47.346	0	243
Houses demolished by IDF - 10Km radius (count)	5,591	49.428	92.878	0	410
Ratio of bypass roads over all roads - 5Km radius	5,591	0.153	0.151	0	0.999
Kilometres of bypass roads - 5Km radius	5,591	41.334	24.703	0.503	160.635
Ratio of bypass roads over all roads - 10Km radius	5,591	0.171	0.136	0	0.869
Kilometres of bypass roads - 10Km radius	5,591	136.856	78.561	16.203	412.759
Settlers' attacks against civilians - 5Km radius	5,591	7.399	9.876	0	59
Settlers' attacks against civilians - 10Km radius	5,591	20.325	21.887	0	81
Settlers' raids in civilian private property - 5Km radius	5,591	18.929	24.662	0	135
Settlers' raids in civilian private property - 10Km radius	5,591	49.671	50.502	0	184
Settlers' destruction/damage of agricultural land - 5Km radius	5,591	0.847	1.598	0	7
Settlers' destruction/damage of agricultural land - 10Km radius	5,591	3.100	4.328	0	17
Settlers' attacks against places of worship - 5Km radius	5,591	10.625	43.932	0	218
Settlers' attacks against places of worship - 10Km radius	5,591	23.563	62.571	0	218

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*Instrumental variable & related measures*



Number of Old Testament Sites - 5Km radius (count)	5,591	1.501	0.932	0	3.260
Number of Old Testament Sites - 10Km radius (count)	5,591	2.593	0.912	0	4.159
Distance to the nearest Old Testament Site (Km)	5,591	2.771	2.341	0.035	12.806
Distance to the nearest New Testament Site (Km)	5,591	16.06	9.99	0.296	39.139
Distance to the closest Israeli settlement (Km)	5,591	3.500	2.922	0.303	21.032
<i>Household-level control variables</i>					
Head age	5,591	44.889	15.62	18	98
Head is male	5,591	0.900	0.300	0	1
Head is unemployed	5,591	0.0400	0.196	0	1
Household dependency ratio	5,591	33.793	26.473	0	100
Head highest level of education					
Head is illiterate	5,591	0.055	0.228	0	1
Head is literate	5,591	0.081	0.273	0	1
Head completed elementary	5,591	0.184	0.387	0	1
Head completed preparatory	5,591	0.324	0.468	0	1
Head completed secondary	5,591	0.160	0.367	0	1
Head has intermediate diploma	5,591	0.065	0.247	0	1
Head has bachelors	5,591	0.113	0.317	0	1
Head has higher diploma	5,591	0.001	0.035	0	1
Head has masters'	5,591	0.012	0.11	0	1
Head has Ph.D.	5,591	0.003	0.052	0	1
Household type					
Household is urban	5,591	0.707	0.455	0	1
Household is rural	5,591	0.232	0.422	0	1
Household is in camp	5,591	0.061	0.239	0	1
<i>Additional control variables measured at the locality level</i>					
Agricultural land suitability - 5Km radius	5,591	0.025	1.002	-1.734	3.599
Agricultural land suitability - 10Km radius	5,591	0.019	1.003	-2.149	2.349
Distance to nearest governorate capital (km)	5,591	6.108	4.780	0.071	23.322
IDF killed/injured at least one civilian - 10Km radius (dummy)	5,591	0.934	0.248	0	1
Number of hotels - 5Km radius (count)	5,591	8.557	13.074	0	55

*Notes:* Estimates obtained using 2018 SEFSec survey data at the household-level.

Table 4 – The effect of Israeli policies on Palestinian basic needs (IV)

<i>Dependent variable:</i>												
	FCS		Water shortage		Food market		School		Pharmacy		Health centre	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
DI (AM-5Km)	-0.214*** (0.062)	-0.220*** (0.068)	0.008** (0.003)	0.009*** (0.003)	0.008*** (0.003)	0.009*** (0.003)	0.005** (0.002)	0.005* (0.003)	0.003 (0.002)	0.006** (0.002)	0.009*** (0.002)	0.010*** (0.003)
Effects for the average household exposed to mean levels of discrimination index (41% of the sample above mean-level)												
	-6.33	-6.51	0.24	0.27	0.24	0.27	0.15	0.15	0.09	0.18	0.27	0.30
Effects for the average household exposed to third quartile level of discrimination index (25% of the sample above third quartile-level)												
	-9.75	-10.02	0.36	0.41	0.36	0.41	0.23	0.23	0.14	0.27	0.41	0.46
<b>Controls</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>
F-stat (partial)	19.86	22.42	19.86	22.42	19.86	22.42	19.86	22.42	19.86	22.42	19.86	22.42
Observations	5,589	5,589	5,591	5,591	5,590	5,590	5,590	5,590	5,590	5,590	5,590	5,590

*Notes:* Estimates obtained using 2018 SEFSec survey data at the household-level. The vector of control variables includes age, gender, employment status, and educational attainment level of the household head, a household dependency ratio, locality proximity to the closest governorate capital (in kilometres), and locality-level agricultural suitability index. Standard errors clustered at the locality level. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## Appendix A

*Table A.1 – The effect of Israeli policies on Palestinian basic needs (IV – full results)*

	<i>Dependent variable:</i>											
	FCS		Water shortage		Food market		School		Pharmacy		Health centre	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Discrimination Index	-0.214*** (0.062)	-0.220*** (0.068)	0.008** (0.003)	0.009*** (0.003)	0.008*** (0.003)	0.009*** (0.003)	0.005** (0.002)	0.005* (0.003)	0.003 (0.002)	0.006** (0.002)	0.009*** (0.002)	0.010*** (0.003)
Head is male		4.821*** (1.098)		0.006 (0.045)		0.013 (0.034)		0.049* (0.028)		0.044 (0.036)		0.074*** (0.028)
Head age (years)		0.051** (0.025)		-0.002*** (0.001)		-0.002** (0.001)		-0.002*** (0.001)		-0.003*** (0.001)		-0.004*** (0.001)
Head is unemployed		-4.288** (1.681)		-0.059 (0.047)		0.005 (0.057)		0.040 (0.046)		-0.011 (0.052)		-0.052 (0.048)
Head is literate (ref. ill.)		3.567** (1.656)		-0.012 (0.038)		-0.096 (0.060)		-0.098** (0.045)		-0.160*** (0.052)		-0.149*** (0.046)
Head completed elementary (ref. ill.)		7.399*** (1.420)		-0.025 (0.039)		-0.141** (0.058)		-0.142*** (0.054)		-0.179*** (0.053)		-0.164*** (0.048)
Head completed preparatory (ref. ill.)		9.860*** (1.522)		-0.024 (0.039)		-0.186*** (0.057)		-0.168*** (0.051)		-0.243*** (0.051)		-0.217*** (0.054)
Head completed secondary (ref. ill.)		10.076*** (1.718)		-0.082 (0.053)		-0.168*** (0.061)		-0.188*** (0.057)		-0.278*** (0.063)		-0.243*** (0.058)
Head has intermediate diploma (ref. ill.)		9.773*** (2.040)		-0.011 (0.055)		-0.134** (0.068)		-0.205*** (0.061)		-0.269*** (0.063)		-0.301*** (0.063)
Head has bachelors (ref. ill.)		12.059*** (1.901)		-0.086* (0.051)		-0.143** (0.064)		-0.305*** (0.061)		-0.290*** (0.067)		-0.278*** (0.067)
Head has higher diploma(ref. ill.)		17.138*** (5.680)		-0.076 (0.172)		0.047 (0.136)		0.012 (0.188)		0.251 (0.249)		0.037 (0.263)
Head has masters' (ref. ill.)		15.756*** (2.946)		0.015 (0.090)		-0.140 (0.097)		-0.204** (0.086)		-0.239** (0.112)		-0.216** (0.091)
Head has Ph.D. (ref. ill.)		17.089*** (4.479)		-0.039 (0.094)		-0.306* (0.157)		-0.557** (0.221)		-0.528*** (0.172)		-0.355** (0.147)
Household is rural (ref. urban)		1.726 (2.252)		-0.111 (0.071)		-0.188** (0.096)		-0.134 (0.088)		-0.049 (0.092)		-0.112 (0.093)
Household is in camp (ref. urban)		-1.840 (3.239)		-0.016 (0.096)		-0.129 (0.193)		0.097 (0.130)		-0.098 (0.169)		-0.060 (0.126)
Dependency Ratio		0.031*** (0.011)		0.0005 (0.0003)		0.001** (0.0004)		0.0001 (0.0003)		0.001* (0.0003)		0.0002 (0.0003)

Distance to governorate capital (km)	-0.706** (0.305)		0.012 (0.012)		0.031*** (0.012)		0.016 (0.011)		0.029*** (0.010)		0.019** (0.009)	
Agr. Suitability Index (z-scores)	2.427** (1.154)		0.024 (0.044)		-0.051 (0.051)		-0.021 (0.034)		-0.038 (0.038)		-0.022 (0.038)	
Constant	80.791*** (1.749)	69.017*** (3.887)	-0.011 (0.076)	0.022 (0.127)	2.198*** (0.089)	2.246*** (0.180)	2.924*** (0.086)	3.081*** (0.150)	2.672*** (0.076)	2.740*** (0.133)	2.681*** (0.076)	2.880*** (0.123)
F-stat (partial)	19.86	22.42	19.86	22.42	19.86	22.42	19.86	22.42	19.86	22.42	19.86	22.42
Observations	5,589	5,589	5,591	5,591	5,590	5,590	5,590	5,590	5,590	5,590	5,590	5,590

Notes: Estimates obtained using 2018 SEFSec survey data at the household-level. Standard errors clustered at the locality level. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

*Table A.2 – The effect of Israeli policies on Palestinian basic needs (OLS)*

<i>Dependent variable:</i>												
	FCS		Water shortage		Food market		School		Pharmacy		Health centre	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
DI	-0.064 (0.047)	-0.050 (0.038)	0.001 (0.001)	0.0004 (0.001)	0.003 (0.002)	0.003* (0.002)	0.003* (0.001)	0.003** (0.001)	0.001 (0.001)	0.001 (0.001)	0.004*** (0.001)	0.004*** (0.001)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	5,589	5,589	5,591	5,591	5,590	5,590	5,590	5,590	5,590	5,590	5,590	5,590
R <sup>2</sup>	0.008	0.083	0.002	0.020	0.011	0.048	0.012	0.039	0.001	0.045	0.034	0.063
Adjusted R <sup>2</sup>	0.008	0.080	0.002	0.017	0.011	0.045	0.012	0.036	0.0004	0.042	0.034	0.059
F Statistic	45.859***	27.925***	10.038***	6.438***	64.774***	15.736***	69.209***	12.445***	3.110*	14.466***	197.281***	20.639***

Notes: Estimates obtained using 2018 SEFSec survey data at the household-level. The vector of control variables includes age, gender, employment status, and educational attainment level of the household head, a household dependency ratio, locality proximity to the closest governorate capital (in kilometres), and locality-level agricultural suitability index. The vector of “bad controls” includes the locality-level number of hotels, the distance to the closest Israeli settlement, and a locality-level dummy taking on value one if the Israeli army caused at least one fatality in the two years before the survey, and zero otherwise. Standard errors clustered at the locality level. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

*Table A.3 – The effect of Israeli policies on Palestinian basic needs (IV – 10-kilometer measures)*

	<i>Dependent variable:</i>											
	FCS		Water shortage		Food market		School		Pharmacy		Health centre	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
DI (10-km)	-0.169*** (0.053)	-0.164*** (0.051)	0.005** (0.002)	0.005** (0.002)	0.007*** (0.002)	0.007*** (0.002)	0.003* (0.002)	0.003* (0.002)	0.003* (0.002)	0.003* (0.002)	0.006*** (0.002)	0.006*** (0.002)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
F-stat (partial)	38.97	50.5	38.97	50.5	38.97	50.5	38.97	50.5	38.97	50.5	38.97	50.5
Observations	5,589	5,589	5,591	5,591	5,590	5,590	5,590	5,590	5,590	5,590	5,590	5,590

*Notes:* Estimates obtained using 2018 SEFSec survey data at the household-level. The vector of control variables includes age, gender, employment status, and educational attainment level of the household head, a household dependency ratio, locality proximity to the closest governorate capital (in kilometres), and locality-level agricultural suitability index. The vector of “bad controls” includes the locality-level number of hotels, the distance to the closest Israeli settlement, and a locality-level dummy taking on value one if the Israeli army caused at least one fatality in the two years before the survey, and zero otherwise. Standard errors clustered at the locality level. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

*Table A.4 – The effect of Israeli policies on Palestinian basic needs (IV – DI geometric mean)*

	<i>Dependent variable:</i>											
	FCS		Water shortage		Food market		School		Pharmacy		Health centre	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
DI (geom. mean)	-0.217*** (0.063)	-0.234*** (0.073)	0.008** (0.003)	0.010*** (0.003)	0.009*** (0.003)	0.010*** (0.004)	0.005** (0.002)	0.006* (0.003)	0.003 (0.002)	0.006** (0.003)	0.009*** (0.003)	0.011*** (0.003)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
F-stat (partial)	19.23	20.09	19.23	20.09	19.23	20.09	19.23	20.09	19.23	20.09	19.23	20.09
Observations	5,589	5,589	5,591	5,591	5,590	5,590	5,590	5,590	5,590	5,590	5,590	5,590

*Notes:* Estimates obtained using 2018 SEFSec survey data at the household-level. The vector of control variables includes age, gender, employment status, and educational attainment level of the household head, a household dependency ratio, locality proximity to the closest governorate capital (in kilometres), and locality-level agricultural suitability index. The vector of “bad controls” includes the locality-level number of hotels, the distance to the closest Israeli settlement, and a locality-level dummy taking on value one if the Israeli army caused at least one fatality in the two years before the survey, and zero otherwise. Standard errors clustered at the locality level. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

*Table A.5 – The effect of Israeli policies on Palestinian basic needs (IV - DI no settler Violence)*

	<i>Dependent variable:</i>					
	FCS (1)	Water shortage (2)	Food market (3)	School (4)	Pharmacy (5)	Health centre (6)
DI (no settler violence)	-0.147*** 0.048	-0.004*** 0.001	0.015*** 0.004	0.007*** 0.003	0.016*** 0.003	0.013*** 0.004
Controls	Yes	Yes	Yes	Yes	Yes	Yes
“Bad controls”	Yes	Yes	Yes	Yes	Yes	Yes
Distance to nearest settlement	Yes	Yes	Yes	Yes	Yes	Yes
Settler violence	Yes	Yes	Yes	Yes	Yes	Yes
F-stat (partial)	23.491	23.543	23.511	23.511	23.511	23.511
J-test (p-value)	0.834	0.292	0.663	0.152	0.208	0.098
Observations	5,589	5,591	5,590	5,590	5,590	5,590

*Notes:* Estimates obtained using 2018 SEFSec survey data at the household-level. The vector of control variables includes age, gender, employment status, and educational attainment level of the household head, a household dependency ratio, locality proximity to the closest governorate capital (in kilometres), locality-level agricultural suitability index, The vector of “bad controls” includes the locality-level number of hotels, the distance to the closest Israeli settlement, and a locality-level dummy taking on value one if the Israeli army caused at least one fatality in the two years before the survey, and zero otherwise. All regressions additionally control for Israeli settler attacks against Palestinian civilians, their property, agricultural land, and place of worship. Standard errors clustered at the locality level. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

*Table A.6 – The effect of Israeli policies on Palestinian basic needs (IV - controls for “bad controls” and distance from nearest settlement)*

	<i>Dependent variable:</i>					
	FCS (1)	Water shortage (2)	Food market (3)	School (4)	Pharmacy (5)	Health centre (6)
DI	-0.132** 0.062	-0.004*** 0.001	0.007*** 0.002	0.004* 0.002	0.005*** 0.002	0.008*** 0.002
Controls	Yes	Yes	Yes	Yes	Yes	Yes
“Bad controls”	Yes	Yes	Yes	Yes	Yes	Yes
Distance to nearest settlement	Yes	Yes	Yes	Yes	Yes	Yes
F-stat (partial)	23.716	14.169	23.754	23.754	23.754	23.754
J-test (p-value)	0.184	0.167	0.549	0.867	0.758	0.156
Observations	5,589	5,591	5,590	5,590	5,590	5,590

*Notes:* Estimates obtained using 2018 SEFSec survey data at the household-level. The vector of control variables includes age, gender, employment status, and educational attainment level of the household head, a household dependency ratio, locality proximity to the closest governorate capital (in kilometres), and locality-level agricultural suitability index. The vector of “bad controls” includes the locality-level number of hotels, the distance to the closest Israeli settlement, and a locality-level dummy taking on value one if the Israeli army caused at least one fatality in the two years before the survey, and zero otherwise. Standard errors clustered at the locality level. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

*Table A.7 – The effect of Israeli policies on Palestinian basic needs (IV – excludes East Jerusalem and Bethlehem)*

	<i>Dependent variable:</i>											
	FCS		Water shortage		Food market		School		Pharmacy		Health centre	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
DI	-0.257** (0.106)	-0.303*** (0.104)	0.013*** (0.005)	0.014*** (0.004)	0.009* (0.005)	0.010** (0.005)	0.005 (0.004)	0.005 (0.004)	0.002 (0.003)	0.005 (0.004)	0.010** (0.004)	0.011** (0.004)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
F-stat (partial)	15.05	16.42	15.05	16.42	15.05	16.42	15.05	16.42	15.05	16.42	15.05	16.42
Observations	5,415	5,415	5,417	5,417	5,416	5,416	5,416	5,416	5,416	5,416	5,416	5,416

*Notes:* Estimates obtained using 2018 SEFSec survey data at the household-level and excluding observations residing in localities belonging to the East Jerusalem governorate which are outside the separation wall (Jerusalem, Umm Tuba, Jabal Mukabar, Silwan, and Al Ka'abina), and Bethlehem). The vector of control variables includes age, gender, employment status, and educational attainment level of the household head, a household dependency ratio, locality proximity to the closest governorate capital (in kilometres), and locality-level agricultural suitability index. The vector of “bad controls” includes the locality-level number of hotels, the distance to the closest Israeli settlement, and a locality-level dummy taking on value one if the Israeli army caused at least one fatality in the two years before the survey, and zero otherwise. Standard errors clustered at the locality level. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01



## Appendix B

### Replication data

Dataset name	Author	Format	Access	Web link	Notes
Socio-Economic & Food Security Survey 2018	PCBS	Stata (dta)	Registration required	<a href="#">Here &amp; PCBS Contacts</a>	—
Israeli settler violence database (2004-2018)	The Jerusalem Fund	Excel	Publicly available	<a href="#">Here</a>	Georeferencing at the locality level was partially performed manually by the authors.
Global 10 Arc-Seconds Land Suitability Maps for Projecting Future Agricultural Expansion [Raster]	Cengic et al.	Raster (TIFF)	Publicly available	<a href="#">Here</a>	We employ the mosaic cropland with >50% raster layer.
Data on demolition and displacement in the West Bank (2009-2023)	UN OCHA	Tabular (csv)	Publicly available	<a href="#">Here</a>	We only consider demolitions that occurred between 2017 and 2018.
Israeli Firing Zones (Closed Military Areas) in the West Bank [Shapefile]	UN OCHA	Shapefile (polygon)	Publicly available	<a href="#">Here</a>	—
West Bank access restrictions	UN OCHA	Vectorial image (PDF)	Publicly available	<a href="#">Here</a>	Digitalized by the authors using OpenStreep Map data (see below). This study uses the 2018 version of the map, which can be requested directly from OCHA or retrieved using the Internet Archive.
State of Palestine road and street networks	OpenStreet Map	Shapefile (line)	Publicly available	<a href="#">Here</a>	—
Israeli checkpoints in West Bank	UN OCHA	Shapefile (point)	Request from OCHA	—	Data provided by UN OCHA directly. This study uses the 2018 version of the shapefile, which can be requested directly from OCHA. Alternatively, the checkpoint locations can be manually georeferenced using the OCHA 2018 West Bank access restrictions map (see above).
Data on Palestinian casualties (locality-level)	UN OCHA	Tabular (cvs)	Publicly available	<a href="#">Here</a>	We only use demolitions that occurred between 2017 and 2018.

Israeli settlements in the West Bank	B'Tselem	Georeferenced csv	Publicly available	<a href="#">Here</a>	Csv transformed into a point shapefile using a “+proj=longlat +datum=WGS84 +no_defs” projection.
Bible Geocoding Database: based on The Holy Bible, English Standard Version 2001, Crossway, Wheaton, USA	Open Bible	Tabular (csv)	Publicly available	<a href="#">Here</a>	Csv transformed into a point shapefile using a “+proj=longlat +datum=WGS84 +no_defs” projection.
Google Places – Hotels in the West Bank (2021)	The authors of this study	Shapefile (point)	Restricted access	—	This data was collected by the authors in 2021 and cannot be made public due to restrictions imposed by Google. However, we share the replication code for collecting the hotel listing using Google Places API. We do not guarantee the stability of this code as the Google Place API constantly changes. The replicators can expect a cost of 70 USD to perform this task. It should also be noted that Google Places does not allow for retrieving past versions of its listings. However, this data on hotels only feeds a set of robustness test regressions and is not required to replicate the main results.