

When Military Targeting of Hamas Combatants Was Misrepresented as Genocide: An Open-Source Data Analysis with a Focus on Israeli Airstrikes in the Gaza Urban Warfare, 2023–2024

Lewi Stone and Gregory Rose

Abstract

Israel stands accused in the United Nations principal court of perpetrating genocide against the Palestinian population in Gaza during the 2023–2024 Hamas-Israel war. A genocide is the intentional destruction of a population group. In this study, we analyze available open-source statistical data concerning Gazan civilian death rates, finding that the overall rate of women and child casualties, taken as an approximation for civilian casualties, significantly declines with the progression of the war and is far less than claims made by media sources. The civilian-to-combatant death ratio also significantly declines over the course of the war. The data shows that the IDF did not carry out indiscriminate attacks or bombings.

Keywords: casualty data analysis, Gaza genocide, Gaza October 7 war, Hamas human shields, international lawfare, urban warfare, war misinformation

In the International Court of Justice (ICJ) under the current presidency of Nawaf Salam of Lebanon, the crime of genocide is alleged against Israel.¹ It complements cases alleging the criminality of the Jewish leaders of Israel² brought by the chief prosecutor for the International Criminal Court (ICC), Karim Ahmad Khan, who has requested the issue of warrants for their arrest.³

Protests across the globe have centered around the deaths of, or injuries to, Palestinians. Pro-Palestinian/anti-Israel groups accuse Israel of attacking civilian populations and bombing in an indiscriminate, disproportionate, and genocidal fashion. Contemporary news media disseminate criminal accusations against the Jewish state, while social media accelerates their global spread by multitudes of influencers. No other war or geopolitical issue has so agitated the

publics of principally Christian and Islamic countries, where charges of Israeli bloodlust revive antisemitic blood libels. These United Nations cases alleging the most severe breaches of humanity's rights are reminiscent of medieval disputations and of Soviet show trials in which ancient arch-enemy Jews are transfigured into modern Israelis.

In this paper, we limit our considerations to the alleged crime of genocide, the “crime of crimes,” defined as “a crime committed with the intent to destroy a national, ethnic, racial or religious group, in whole or in part.”⁴ Within the international legal definition, a criminal intention to destroy the population group is what motivates culpable acts such as killing or causing serious mental or bodily harm, or imposing physical conditions calculated to destroy the

group. We focus on Gazan civilian deaths to assess whether genocide by Israel is in evidence, as distinct from targeting of Hamas combatants at the cost of collateral damage to the Gazan civilian population in an urban warzone. Thus, we assess the overall destructive impact and intention of Israeli military targeting operations. The paper is meant to complement our previous study on the mortality statistics of the Gaza war.⁵

Relevant to, but beyond the scope of our assessment of the open-source mortality data, are further statistics concerning Israeli facilitation of humanitarian assistance into Gaza to support the civilian population that provide evidence in contradiction of alleged genocide. Nor do we consider other wider humanitarian law questions, such as the proportionality of civilian deaths as compared to the military advantage of killing Hamas combatants in each Israeli military strike. The drafters of the 1948 Genocide Convention clarified in their discussions that:

[t]he infliction of losses, even heavy losses, on the civilian population in the course of operations of war, does not as a rule constitute genocide. In modern war belligerents normally destroy factories, means of communication, public buildings, etc. and the civilian population inevitably suffers more or less severe losses. It would of course be desirable to limit such losses. Various measures might be taken to achieve this end, but this question belongs to the field of the regulation of the conditions of war and not to that of genocide.⁶

Moreover, to assess proportionality of civilian deaths it would be necessary to evaluate each Israeli military strike in context, which would require resources well beyond our reach.

Our objective in this paper is to offer a preliminary assessment of data claimed to support allegations of overall intent and acts of genocide by the Israel Defense Forces (IDF). Specifically, we focus on the Israeli aerial bombing campaign in the first weeks of the war, when the alleged civilian death rate was at its

highest, and which informed the early allegations of genocide. What is the evidence that the ICJ judiciary might rely upon to evaluate genocide by Israel? How do we distinguish verifiable facts from disinformation, propaganda and psychological warfare? The available data has become a focus of fierce debate.

We find that the open-source casualty data shows that precision strikes on Hamas combatants dominated Israeli aerial targeting. Following the aerial campaign, the open-source casualty data emerging from the ground invasion shows increased precision in targeting and a sharply declining civilian to combatant death ratio. In brief, open-source data shows no genocide.

Data, Statistics, Allegations, and Disinformation

Hamas's attack on the early morning of Saturday, October 7, 2023, at the Israel-Gaza border, resulted in the massacre of 1,139 victims, mostly Israeli civilians and some military, but almost half from 24 different or dual nationalities. A further 247 hostages were kidnapped by Hamas and mostly hidden in the tunnels of Gaza for use as human bargaining chips. Soon after, the Israeli government responded with a declaration of war, with the stated mission to destroy Hamas and to return home the hostages.

Quantifying the Gazan war casualties over time has become an important feature of this war, given modern interests in data and visualization, and given its usefulness in providing information concerning the pace and evolution of events. Unfortunately, the unavailability of extensive mortality data of sufficient quality and reliability impedes proper evaluation of questions about the accuracy, proportionality and intent of Israeli targeting practices, making it difficult for external observers to piece together the "big picture" from the many inconsistent reports published. For extended periods of time, neither side released estimates of the number of Palestinian combatants who were killed over the war, or did not know them, and estimates of civilians killed are under debate. Following our

earlier work,⁷ here we make use of Gazan Ministry of Health (MoH) reports and publicly available open-source data to investigate: a) the distributions of civilian deaths as the war progressed and b) the degree to which the Israel Air Force (IAF) bombing attacks in the first phase of the war were precise or random, including whether any underlying patterns can be discerned from the data. This data provides an important glimpse into the manner in which the IDF has operated through the war.

Ostensibly scientific literature analyzing datasets of casualties in Gaza has been published recently. A 2023 paper in the *Lancet*⁸ suggested that traumatic injury deaths during the first three weeks of the war in the Gazan population prior to the ground operation “are likely to be largely civilian.” It gave the impression that the IDF makes use of random or haphazard bombing, as many reports by influential NGOs and in the media uncritically suggested. It was followed shortly by another paper in the *Lancet*⁹ that examined fatalities of UNRWA staff during the same period. It sought to prove that the Gazan MoH casualty statistics were not inflated, and so it extrapolated across the entire Gazan population the supposedly reliable UNRWA casualty data. However, subsequent analysis demonstrated that characteristics of UNRWA staff are not representative of Gaza’s civilian population (for example, children are not represented), and that the study has major statistical flaws.¹⁰

A further paper projected Gazan deaths forward for six months in 2024, from February 7 to August 6, based upon casualty data from October 7, 2023, to February 6, 2024.¹¹ Again, it incorrectly extrapolated the UNRWA staff’s traumatic injury death rates of adults and was based on problematic assumptions. While this study predicted some 53,000 injury deaths in their “status quo” scenario in these six months, in reality and in hindsight there proved to be very close to 12,000 deaths, according to Gazan MoH reports. Thus, the paper’s statistical predictions of the death toll were overestimated by more than 400%.

We explain below the MoH reporting methodology and discuss statistical issues in more detail, when considering the reliability of MoH data. In contrast to the article in the *Lancet* and the analysis in the later paper, the evidence suggests that the IAF airstrikes conducted in the early phases of the war were highly targeted rather than indiscriminate. Despite the IDF’s best efforts, aerial bombing in urban areas inevitably results in civilian deaths as collateral damage, but they are nevertheless almost always, if not always, targeted against Hamas.

Evidence from the Data Demonstrates Intent to Target Hamas and Not Civilians

After the 1972 Munich Olympics massacre of the Israeli Olympic team by the Black September group, Mossad—the Israeli spy agency—tracked down and executed the Palestinian terrorists responsible, one by one, as popularly recounted in Steven Spielberg’s 2005 film *Munich*. Immediately following the October 7, 2023, massacre of Israeli villagers by Hamas, a similar retribution against Hamas leaders has been in motion at the hands of the IDF. Mossad director David Barnea said that his service was “obliged” to hunt down the leaders of Hamas after its October 7 attack on Israel. It “will take time, as it took time after the slaughter in Munich, but our long arm will reach them in any place that they may be.”¹² Barnea then warned that everyone who “participated, directly or indirectly, in the slaughter of 7 October—they signed their own death warrant.” On October 15, 2023, the IDF chief of staff, Brigadier General Herzl Halevi, told the troops: “Our responsibility now is to enter Gaza, to go to the places where Hamas is preparing, acting, planning, launching. Attack them everywhere, every commander, every operative, destroy infrastructure.”¹³

The IDF’s primary objective in practice was to eliminate Hamas political leaders and commanders, neutralize its military brigades, and to eliminate Hamas combatants who

participated in the October 7 massacre.¹⁴ Our priority interest is on Hamas leaders for whom more public information is generally available. The key elected leaders of Hamas comprise eighteen Politburo members, although all but four lived outside Gaza, while there are sixteen “senior leaders” of Hamas, who mostly resided in Gaza. A list is given in Appendix 1 Tables A1 and A2 as derived from information published in early 2024. Hamas itself is ruled through a centralized hierarchy with these organizational leaders at the top, who are in complete control,¹⁵ then dominating the most powerful Gazan leadership clans and families.¹⁶

Important findings emerge simply by reviewing and identifying individuals and buildings hit during the initial aerial phase of the war, before the major ground forces movement into Gaza on October 26. We did this using open-source data provided by NGOs such as AIRWARS (a British online monitor of civilian casualties),¹⁷ the Palestinian Center for Human Rights¹⁸ and Al Mezan Center for Human Rights¹⁹ (both based in Gaza and linked to the PFLP terror organization),²⁰ the Meir Amit Intelligence and Terrorism Information Center (Israel),²¹ Israel Defense Forces reports,²² Gazan Ministry of Health reports,²³ and a selection of media publications and social media sites (Appendix 1), which were all checked and compared for consistency.

Hamas attacked Israel at 6:30 a.m. on Saturday morning of October 7. From Saturday midnight in a space of less than nine hours, eleven of the most senior leaders in Hamas, including three Politburo members or their residences, were successfully pinpointed and targeted. These individuals are all listed in Table 1. The Table lists thirty senior leaders and commanders who were targeted by airstrikes in the first three days. Many other Hamas operatives without leadership positions were also targeted in this time period but are not listed here due to the constraints of space and paucity of identification information.

The IDF destroyed the offices and targeted the home of Yahya Sinwar (12:40 a.m., October 8) who in practice is the most senior leader of Hamas; the property and houses of Hamas leader Younes and other senior leaders Fathi Hamad (4:15 a.m., Interior and Security), Kamal Awan (6:20 a.m., Education and Culture), Ghazi Hamad (6:55 a.m., Border Crossings), Nizar Awdallah (7:00 a.m.), Salah Bardawil (7:00 a.m.), Zakaria Abu Muamar (7:30 a.m.), Ismail Barhoun, Issam Dealis, Mahmoud al-Zahar; a second residence belonging to Politburo member Fathi Hamad (8:45 a.m., in Jabalia); and the residence of Suheil al-Hindi. A whole range of Hamas commanders and/or their residences were targeted in the next forty-eight hours including Hamdan Al Najjar “Abu Zaki” (Saturday, October 7, director of Clans Office Ministry of Interior), Abu Rakab (7:00 a.m., October 8, leader of Air Operations), Hamdan Al-Najjar (9:00 a.m., Ministry of Interior), Ayman Younis (brigade commander, eliminated), Anas al-Ghandour (leader of terrorist operations), Abu Zuhri (9:50 p.m., head of Political Department abroad), the military leader Mohammed Deif (see below), and Awad al Sultan (head of the Ministry of Martyrs).

In summary, during a thirty-six-hour period, some thirty Hamas leaders were targeted by the IDF, which either neutralized their Hamas target or damaged or destroyed their residences, as shown in Table 1. Roughly, this is about one Hamas leader every 1.2 hours. The actual number is likely to be far higher than thirty, given the limited data accessible. The evidence of the ability of the IDF to carry out targeted airstrikes on Hamas leaders in such a short span of time with this degree of precision is overwhelming.

By October 19, in less than two weeks, some thirteen of the eighteen listed Hamas senior leaders living in Gaza had either had their residences damaged or been themselves neutralized through airstrikes. At least five were killed. Some 100 operatives that we could identify were

targeted by this time, as reported in open-source data. See Appendix 1 for access to a more detailed and expanded list of 170 Hamas operatives targeted, and not just leaders, compiled over the war with the focus on the first four-five weeks. They are just a few of many, since the identities and deaths of Hamas operatives were deliberately being concealed by Hamas.

The extraordinary hit rate and lethal effectiveness of IAF in targeting of Hamas senior leaders suggests that the IAF was going to a lot of effort to target combatants rather than civilians. The goal of the IDF in this period evidently was also to apply deliberate pressure on Hamas leaders to release Israeli hostages.

A notable example of Hamas leaders seeking refuge in tunnels and in civilian shelters is Mohammed Diab Ibrahim al-Masri, a military commander and skilled rocket engineer. Al-Masri, who designed the widely used Qassam rocket, became a near-mythical national symbol in the Hamas movement. To evade Israeli attacks, he moved randomly from house to house in Gaza, sleeping every night in another location for decades, earning him the nickname “Al-Deif”—“the guest.” According to Israeli intelligence, Al-Deif and his brother were key architects of the October 7 massacre. On October 9/10, the IDF bombed his residence, although Al-Deif managed to escape. Eventually, on July 13, 2024, Israeli fighter jets targeted a compound in Gaza’s Khan Yunis, based on precise intelligence, which resulted in Al-Deif’s death.²⁴

According to detailed analyses, many families in Gaza, like Al-Deif’s, are closely aligned in their support for Hamas, whether by choice or through domination within the family and clan.²⁵ They provide storage of weapons, concealed bunker access points, launchers for rockets, ammunition caches, intelligence, logistical support, and more. Their participation in hostilities is a factor that the IDF may take into account when planning airstrikes. For example, if the IDF was aware that information on hidden kidnapped hostages is known to certain clan

leaders and/or of powerful families, the IDF would apply military pressure to them.

The datasets show that the IDF targeted particular family residences in multiple locations, either because they were seeking out a specific Hamas operative, or to pressure the family or to destroy weapons and terror infrastructure. An example is the residence of Yahya Sarraj, the Hamas-appointed mayor of Gaza City, who wrote in a *New York Times* article: “Without warning, a direct hit to my house on Oct. 22 killed my eldest son, Roshdi, a photo-journalist and filmmaker.”²⁶ Sarraj wrote: “It made me wonder if I could have been the target.” Given Yahya’s senior status in Hamas, it would be reasonable to assume that the IDF identified both Yahya and his personal residency as legitimate targets. Roshdi was a Hamas propagandist struck in the kitchen of the family home. The airstrike seems to have been carefully calibrated, as nine other Sarraj family members in the residence survived.

The targeting of residences of Hamas families raises questions about which family members are participants in hostilities (as combatants are legitimate military targets), and which precautions should be taken against harming civilians. These questions must be answered within the context of each targeted strike using the information available at the time to assess the specific military advantage of killing the combatants as compared to the unintended and collateral killing of persons not participating in the hostilities. However, that would require a review of each targeted strike individually, including the intelligence reasonably available to, the intentions of, and the precautions taken by, the responsible Israeli commanders at the relevant time, in order to assess the proportionality of civilian collateral damage in each strike, and that is not the objective of this paper. Instead, we assess here the evidence for genocide, which concerns the killing of a civilian population group, or part thereof, with the overall deliberate intention to destroy it.

The extraordinary “hit rate” of top-ranking Hamas terrorists and their residences could only be achieved by a combination of precision bombing, real-time intelligence for tracking of the terrorists concerned, and detailed information on the Hamas command structure maintained by the IDF. The data clearly shows that the IDF used its extraordinary ability to swiftly pinpoint and strike Hamas leaders and/or their residences in order to weaken Hamas. This culminated with the lethal precision-targeting of Ismail Haniyeh, the head of the Hamas Politburo, during his visit to Iran on July 31, 2024, although his home in Gaza had been

targeted much earlier on October 17, as indicated in Table 1.

Using open-source information, we show that IDF bombings in the opening phase of the war were not indiscriminate, as an extremely high proportion of known Hamas political leaders and military commanders and/or their residences were struck, clearly with intent to target them as combatants. Each of the fifty-two entries above indicates a Hamas leader and their role in Hamas, and whether they or their residences were targeted. An expanded list has been collated listing more targeted combatants over a longer time period—see Appendix 1.

TABLE 1. Israeli airstrikes on Hamas leadership in the first days of October 2023

| Target | Status | Responsibility | Date of aerial attack |
|--------------------|---------------------------|-------------------------------|-----------------------|
| Salem Abu Quta | Hamas Operative | Oct. 7 Massacre | Oct. 7 (8:00 p.m.) |
| Hamdan Al-Najjar | Leader | Minister of Interior & Clans | Oct. 7 (8:30 p.m.) |
| Muhammad Sinwar | Senior Leader | Brother to Hamas Chief | Oct. 7 |
| Yahya Sinwar | Senior Leader & Politburo | Chief Hamas Senior Leader | Oct. 8 (12:40 a.m.) |
| Fathi Hamad | Politburo | Interior & Security | Oct. 8 (4:15 a.m.) |
| Kamal Abu Awan | Senior Leader | Education & Culture | Oct. 8 (6:20 a.m.) |
| Ghazi Hamad | Senior Leader | Border Crossings Authority | Oct. 8 (6:55 a.m.) |
| Nizah Awadallah | Politburo | Hamas Founder, Finance | Oct. 8 (7:00 a.m.) |
| Salah al-Bardawil | Politburo | Spokesperson & Reforms | Oct. 8 (7:00 a.m.) |
| Zakaria abu Maamar | Senior Leader | Economic Department | Oct. 8 (7:30 a.m.) |
| Abu Rakab | Commander | Air Operations, Drones | Oct. 8 |
| Fathi Hamad | Politburo | Interior & Security | Oct. 8 (8:45 a.m.) |
| Suhail al-Hindi | Senior Leader | Head of UNRWA Union | Oct. 8 |
| Al-Nabaheen | Leader | Air Attacks | Oct. 8 |
| Sameh al-Siraj | Politburo | Internal Security | Oct. 8 |
| Rawhi Mustasha | Senior Leader | Prime Minister | Oct. 8 |
| Mahmoud al-Zahar | Senior Leader | Foreign Minister | Oct. 8 |
| Ismail Barhoum | Senior Leader | Finance | Oct. 8 |
| Essam al-Dalis | Senior Leader | Prime Minister | Oct. 8 |
| Al-Najjar Family | Leader | Minister of Interior | Oct. 8 (8:30pm) |
| Mohammed Deif | Senior Military Leader | Commands Izz ad-Din al-Qassam | Oct. 8 |
| Anas al-Ghandour | Commander | Terrorist Operations | Oct. 8 |
| Ziyad al Nakhala | Senior Leader (PIJ chief) | Designated Global Terrorist | Oct. 8 (4:30pm) |

(Continued)

TABLE 1. Israeli airstrikes on Hamas leadership in the first days of October 2023

| Target | Status | Responsibility | Date of aerial attack |
|--|--------------------------|---------------------------------------|-----------------------|
| Farah Hamed | Leader | Terrorist Operations | Oct. 8 |
| Mohammed Dahlan (atah) | Senior Leader | Fatah | Oct.8/9 |
| Zakar Abu Maamar | Senior Leader | Head Office Interior | Oct. 9 |
| Abu Zuhri | Leader | Head Political Department | Oct. 8 (9:50pm) |
| Rafat Abu Helal | Leader | Al-Nasser Brigade | Oct. 9 (1:20am) |
| Abu Obeida | Leader | Spokesman, Political Wing | Oct. 9 |
| Ali Mustafa Ali Daloul | Commander | Field (DFLP) | Oct. 9 |
| Ibrahim Al-Madhoun | Leader | National Relations | Oct 9 |
| Abd al-Fattah Dukhan | Leader | Hamas Founding Member | Oct. 10 |
| Ali Qadi | Commander | Nukhba Forces | Oct 10 |
| Omar al-Hindi | Commander | Nukhba Forces | Oct.11 |
| Mohammed Deif | Senior Leader | Leads Izz ad-Din al-Qassam | Oct. 10 |
| Zakaria abu Maamar | Senior Leader | Economic Department | Oct. 10 |
| Jawad abu Shamala | Senior Leader | Economic Department | Oct. 9 |
| Yasser al-Bardawil | Politburo | Senior Leader Family | Oct. 12 |
| Yusuf Abu Marzouq | Politburo | Brother of Politburo Senior Leader | Oct. 12 |
| Muhammad Shamala | Commander | Nukhba Elite Naval Force | Oct. 12 |
| Mussa Nasir | Commander (PIJ) | Founder of Al-Aqsa Brigade (PIJ) | Oct. 12 |
| Hamed Sinwar | Senior Leader | Brother of Senior Leader Y. Sinwar | Oct. 12 |
| Additional senior leaders below | | | |
| Merad abu Merad | Commander | Aerial Attacks in the Oct. 7 Massacre | Oct. 14 |
| Muetaz Eid | Commander | National Security | Oct. 14 |
| Bilal al Kedra | Commander | Nukhba Force; Oct. 7 Terrorist | Oct. 15 |
| Mohammed al-Masri | Senior Leader | Chief, Izz ad-Din al Qassam | Oct. 15 |
| Osama Mazini | Senior Leader | Shura Council / Education | Oct. 17 |
| Ismael Haniyeeh | Politburo | Chair | Oct. 17 |
| Ameen Nofal | Commander | Izz-ad-Din al-Qassam Brigades | Oct. 17 |
| Jamila al-Shanti | Senior Leader | Women's Division | Oct. 18 |
| Mohamed Awdallah | Senior Leader (Indirect) | Commander, Family of Senior Leader | Oct 18 |
| Abdel Deif | Senior Leader | Brother of M. Deif | Oct 19 |

Gaza Mortality Data and Issues about Its Reliability

The key source for war mortality analysis is the Gaza Ministry of Health (MoH). The MoH claims that its raw data was obtained directly from hospitals, morgues, and burials earlier in the war, although raw data from less reliable sources was added later in 2023 and through 2024.²⁷ Given that the Gazan MoH is directly under Hamas control, there has been considerable controversy concerning the validity of its dataset. The MoH extensive but erratic reports may be accessed via Appendix 2. The data is understood to be rearranged, modified, and republished by the Government Media Office (GMO), the Palestinian Authority, and the UN Office for Coordination in Humanitarian Affairs (OCHA).

For our analysis, we divide the Hamas reporting of casualty data in 2023 into four distinct data phases.

Phase 1: October 7–26. This phase covers the period of primary emphasis on aerial bombing. MoH published daily death counts in various outlets and an extensive summary report on October 26.

Phase 2: October 27–December 11. This phase covers the period when the IDF ground forces first entered Gaza on October 27 and operated in the North. The MoH published daily death counts until the northern health administration system at Al Shifa Hospital in Gaza City collapsed when IDF called for its evacuation in the second week of November and the GMO took over publication on November 11.²⁸

Phase 3: December 12–April 2024. This phase covers the period when IDF ground forces entered central Gaza at the beginning of December. The GMO published death reports every few days. MoH published two summary reports in December, followed by erratic reports until April 2024. In March two studies appeared demonstrating major problems with the system used by Hamas to count the death toll.²⁹

Phase 4: April 2024. This phase begins when Hamas and the UN changed their counting

methods. Phase 4 covers the April 11 MoH report and those following, which make use of a modified method of reporting that includes a new category for notifications of deaths online, such as via Google documents, which for the first time were included in “registered” data.

A simple scan of the MoH data reveals many inconsistencies and peculiarities, especially during Phase 2. For example, during Phase 2 the cumulative number of non-elderly adult male (aged eighteen to fifty-nine)³⁰ deaths *decreased* from 2,890 on November 4 *down* to 2,616 on November 5. But by definition cumulative numbers cannot decrease with time. It is as though 274 men have simply come back to life! The removal of dead males from the statistics also serves to inflate the apparent ratio of women and children killed. Indeed, if we look over the entire week of 2 November to 9 November, the deaths of non-elderly adult males—those in the prime fighting-age category of eighteen to fifty-nine—increased by a total of 92, yet the total deaths of all men, women and children increased by 1,757. It is as though the IDF were going to great lengths to target everyone *but* potential combatants! Aizenberg points out other major quirks in the datasets.³¹

From November 10, the MoH stopped releasing regular casualty updates with age and gender breakdowns, although it did intermittently release “total” death figures, as well as two reports in December. From November 10 onwards, the GMO became the primary source of information on daily deaths in Gaza. Its dataset introduced further inconsistencies during the Phase 2 period. In fact, the GMO data is even more implausible than the MoH’s. The most astonishing period occurred in December 1–8, when the recorded cumulative number of male deaths declined from 4,850 to 3,499, with multiple individual declines occurring over the period (December 2, December 5, December 8).³² Again, it is impossible for cumulative numbers to decline in time. Over the same period, the total number of reported women and children casualties increased from

10,664 to 13,991. That is: 1,351 men came back to life while 3,841 women and children died! This anomaly had the effect of dramatically increasing the women and children death ratio from 68% to 80%.

A report by the Washington Centre for Near East Policy³³ examined anomalies in the datasets and concluded that the datasets were unreliable and apparently manipulated. The unreliability of data published by Hamas during Phase 2 might also be explained by the collapse of Hamas data gathering and processing systems during that period. The Al Shifa Hospital provided central casualty statistics collation for all of Gaza and also hosted the Hamas headquarters in Gaza City. Clashes between Hamas and Israeli forces occurred at the hospital throughout November, leading to its evacuation. In news reports on December 19, the credibility of the MoH decreased further when its directors admitted that its hospitals were instructed and controlled by Hamas, which had physical offices within the hospitals.

Because of its glaring inconsistencies, any analysis that includes the Phase 2 dataset (or even any of its MoH/GMO/OCHA subsets) over the November until December 12 period should be considered so unreliable as to be meaningless. This conclusion automatically invalidates many statements appearing in the media concerning the cumulative data, such as “by December 31, 2023, 70% of the total death toll comprised of women and children.” The errors in Phase 2 data invalidate such estimates, and indicate more investigation is required.

A key factor to bear in mind is Hamas’s policy of suppressing information about combatant deaths. The Meir Amit Intelligence and Terrorist Information Center notes that ten years ago, in the 2014 Gaza war, “the Interior Ministry in Gaza posted a message on its Facebook page warning the Palestinians not to disclose details about terrorist operatives (those in the ‘Resistance’) killed during Operation Protective Edge.”³⁴ The center also notes that “Hamas’s policy is designed to create an image

of a large number of civilians who were killed, to strengthen the image that Israel is carrying out a “massacre” of civilians and to create an ostensibly factual infrastructure for a political, propaganda and legal campaign against Israel.”³⁵ Figure 1 (below) shows an image, from August 5, 2014, at 10:54 p.m., of the Interior Ministry’s Facebook page. The post states that it is forbidden to post images of Hamas soldiers because Israel “collects all the information and the reports [about the fallen] and uses them as evidence to justify its crimes against [the Palestinian] civilians” (translated from Figure 1).

Similarly, in the current conflict, we caution that Hamas’s announced casualty statistics



FIGURE 1. Copy of Facebook page as found in the Meir Amit Intelligence and Terrorist Information Center reports.³⁶

relating to individual incidents are also often very problematic. For example, in the incident at Al Ahli Hospital in Gaza City on October 17, 2023, several independent reports indicated a death toll of about 200 and several intelligence reports estimated approximately 50 deaths.³⁷ However, the MoH reported 471 nameless individuals killed, which is still the number in MOH records within Phase 1 of the dataset, and also the number published in the open-source data of AIRWARS (which monitors casualties by analyzing other online data sources such as social media). Furthermore, the incident was caused by Palestinian rocket fire rather than by Israeli missiles. Problematic statistics about casualty incidents were still reflected in these reports in the aftermath of the Israeli strike on August 10, 2024, when Hamas reported a death toll total of 100 civilians, but the IDF identified 38 terror operatives struck and almost no civilians.³⁸

The UN Downward Revision of the Gaza Death Toll

In March 2024, two studies appeared highlighting major problems with the system used by Hamas to count the death toll.³⁹ The problems were partially corroborated in the MoH report of April 11, 2024, which made clear that the bodies for over 10,000 of 34,000 claimed casualties could not be identified or were hypothesized in the new dataset it had just released. Soon after this, the UN revised its casualty estimates as shown in Figure 2 screenshots of the relevant UN webpage. Thus, on May 8 we learn that although there were 34,844 cumulative casualties in total, only 24,686 were identified, i.e., giving full details of name, gender, birth dates, and identity number. Some 10,158 were unidentified.

Since the genders of most, if not all, of the unidentified deaths were unknown, only the identified deaths could give useful information. As a result, the number of women (and children also) was changed. According to Figure 2, on May 6 the number of women casualties is listed as >9,000, while on May 8 the revised number

is listed as 4959—a reduction of at least 45%. On May 6 the number of children casualties is listed as >14,500, while on May 8 it was listed as 7,797, again at least some 46% lower. Simpson et al. set out a detailed discussion on Hamas's misclassification of more than 93% of its 6,629 unidentified deaths as women and children at the end of 2023. The GMO may well be deceptively increasing these ratios to conform with their propaganda narrative,⁴⁰ whereby the proportion of women and children casualties appears close to 70%. That 93% of the so-called unidentified deaths are women and children is a strong indication that the data has been manipulated, hence the UN's downward revision.

In addition to the above, the format of the MoH report was changed with the inclusion of an "elderly" category, which made it impossible to compare men and women casualty statistics from before April to after April, as the new "elderly" category was not disaggregated by gender. Furthermore, the lack of a category of natural deaths of the elderly suggests that the total figures include such deaths, which ordinarily would amount to over 5,000 per annum,⁴¹ and are not a result of war. All of these changes make clear that even the UN recognized a problem with the Gaza mortality data, and this led to their downward revision.

Proportion of Women and Children Deaths

We now provide a focused analysis of the available data to examine mortality patterns in the Gazan war. According to population demographers, the Gazan population is distributed across approximately 50% children, with adults divided evenly between males and females, each 25%, maintaining the 50:50 sex ratio. Therefore, indiscriminate airstrikes and killing of Gazans would comprise 75% women and children and 25% adult males. We refer to this proportion as WC = 75%. This demographic breakdown serves as the "random" mortality reference frame we use here. Indeed, a Gazan civilian casualty rate of 75% women and children has been frequently

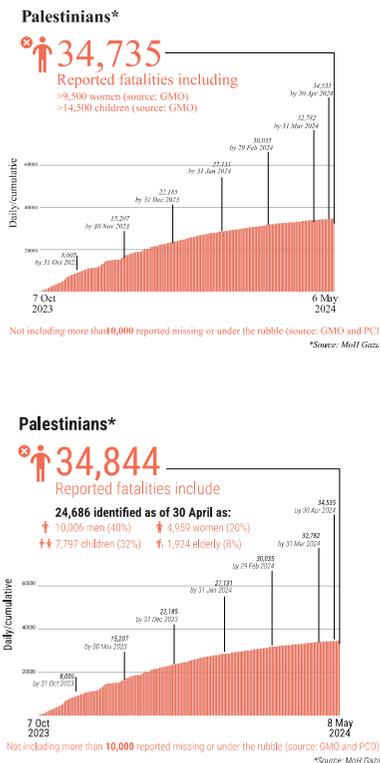


FIGURE 2. UN’s May 6 and May 8 OCHA reports.⁴²

asserted by UN sources as evidence in itself of Israeli indiscriminate killing and genocide.

Phase 1 (October 7–26). Analysis of the MoH data in data phase 1 of the war reveals that WC = 66.5% of the total deaths, i.e., 65.5% casualties were women and children. While this percentage is large, it is less extreme than the 75% random reference frame and reflects a deliberate avoidance of targeting civilians by the IDF.

Phase 2 (October 27–December 11) data are excluded from analysis because of their unreliability, as indicated above.

Phase 3 (December 12–31). For the third phase in December 2023, summary mortality data of southern Gaza and central hospitals can be found in MoH statistical reports, while the GMO published data every few days and

included statistics of northern hospitals derived from “reliable media reports.” The Tables in the MoH reports do not give direct information on the breakdown of women and children for all areas of Gaza. However, through careful calculations that compare the different datasets (MoH and GMO), and the two areas (north and south), we have found a way to reverse engineer these numbers.

Our calculations required willingness to work with the GMO data as well as the MoH reports and are given in more detail in Simpson et al.⁴³ We considered the Phase 3 period for all of Gaza, and for combined identified and unidentified deaths. In this case, women and children made up WC = 42% (1,225/3,825) of all overall deaths, separable into WC = 37% (1,010/2,729) in the north and WC = 53% (585/1096) in the center and south. Again, these observed proportions of women and children casualties are far lower than the 70% figure frequently cited in the media. Moreover, it should be emphasized that this finding is based upon Hamas’s own data.

A more accurate assessment is most likely obtained from examining just the MoH registered hospital-identified deaths in Phase 3 for southern and central Gaza. The hospital data casualties have all been identified and are therefore less likely to have been manipulated. In this case, the following monthly breakdown is found from analysis of the MoH reports: December 2023 WC = 52.9%; January_2024, WC = 43.4%. Both numbers are far below the 75% reference frame.

Reductions in Gaza Civilian to Combatant Ratio and in Total Casualties

During Phase 3 of the data in December, the estimated death toll of roughly 50% for women and children in southern and central Gaza hospital data is far smaller than the random reference of 75%. If we assume that the remaining one third of that 75% comprises of excess deaths that resulted from intentional killings, we can estimate a civilian to combatant

ratio in southern Gaza of 2:1 (there are some reasonable but nontrivial assumptions built into this calculation, in that it assumes that any indiscriminate killing would impact all ages and genders equally).

A similar calculation estimates a 0.97:1 ratio in northern Gaza where WC = 37%. This change in the proportion of civilian casualties across the geography (from southern to northern Gaza) is due to the switch from predominantly air to ground combat in the north. North Gaza's lower ratio likely resulted from local IDF operations employing fewer airstrikes and more ground forces (with the ground forces being comparatively more precise). The IDF's efforts to direct vulnerable civilians south may have also contributed.

In Phase 3 of the data, for both the MoH and GMO datasets, the total deaths across Gaza for December 12–31 (20 days) amounted to 3,566 (= 21,978-18,412). This is about half the 7,028 deaths for the same number of days at the start of the war, i.e., during Phase 1, October 7–26. Total casualty numbers steadily declined, so that, in August 6–25 2024, the total casualty numbers had lowered to 782, for the same nineteen-day period, which is 11% of the October 2023 figure (see Table 2). This reduction in total deaths likely reflects the same factors that reduced the ratio of civilian-to-military deaths: the replacement of airstrikes with comparatively more accurate ground operations, and an increased ability of IDF forces to engage Hamas terrorists directly, sometimes even by operating in the tunnels that were previously difficult to target from the air.

The same reduction in death rates was also noted during an earlier round of Hamas-Israel conflict in 2014.⁴⁴ It should be emphasized that these estimates of total casualties do not represent civilian deaths, as Hamas has not revealed how many are civilian and how many are combatants. Thus, these numbers over-represent civilian deaths. Moreover, many of the deaths are unidentified and cannot be verified. In the previous section, we discussed how the GMO manipulated the unidentified casualties to the point that the UN had to revise its estimates.

These results for 2023 are reasonably close to those suggested by the IDF. On December 5, 2023, IDF spokesperson Jonathan Conricus claimed that its forces had killed 6,000 Hamas combatants during the war. He elaborated that this represented a civilian-to-combatant death ratio of approximately 2:1, given the MoH's recent announcement of 16,000 total casualties.⁴⁶ On January 14, 2024, the IDF estimated that it had killed over 10,000 of the 40,000 trained and equipped Hamas combatants. Given that total deaths were supposedly at 26,000, this implied a civilian-to-combatant death ratio of 1.6 to 1 according to IDF calculations. By May 29, 2024, the IDF had estimated that 15,000 Hamas combatants were killed, and Hamas had claimed 36,171 casualties, bringing the civilian to combatant ratio close to 1.4:1. By August 15, 2024, the IDF had estimated that 17,000 Hamas combatants were killed, and Hamas had claimed just over 40,000 casualties, bringing the IDF calculation of the civilian to combatant ratio close to 1.35:1.⁴⁷

TABLE 2. Total casualty numbers (identified + unidentified) for different nineteen-day periods. Hamas has not revealed how many of these deaths are civilians and how many are combatants. The data is taken from GMO reports, and has been shown to be of limited reliability⁴⁵

| 19-day period | # casualties over 19 days | |
|-------------------------|---------------------------|------|
| October 7 to 26, 2023 | 7,028 | 100% |
| December 12 to 31, 2023 | 21,822-18,412 = 3,410 | 49% |
| August 6 to 25, 2024 | 40,435-39,653 = 782 | 11% |

With the high WC = 66.5% in October at the beginning of the war, and the difficulty in targeting Hamas combatants by air, we could expect a higher civilian-to-combatant death ratio for the first two-three weeks of the war. Clearly, there was a reduction in the civilian-to-combatant ratio over time. Furthermore, the reduction in Gazans deaths overall across the same period indicates the growing difficulty of targeting combatants who fled into hiding. Instead of total Gazan civilian casualties increasing across this period due to targeting of combatants hidden or embedded among civilians, total casualties decreased, demonstrating IDF reticence to cause higher collateral damage.

It is apparent that the rate of civilian deaths declined after the entrance of IDF ground forces into Gaza on October 26 reduced the need for IAF bombing operations. Both the reductions of the civilian to combatant ratio over time and of the number of total casualties provide strong statistical evidence that the IDF is not engaged in indiscriminate bombing. Rather, the evidence demonstrates that the IDF is engaged in intelligence-led targeting of Hamas combatants and is improving its efforts to protect civilians. Moreover, the declining rate of civilian deaths implicitly contradicts any genocidal intention. Nonetheless, whether in aerial or ground warfare, civilian deaths in Gaza remain the tragic consequence of battle in a dense urban environment where Hamas shields its combatants with civilians, often in sites constructed underground below schools, hospitals, and UN infrastructure.

Hamas Civilian Shielding and IDF Targeting Procedures

The IDF claims that it expends much effort to keep civilian casualties to a minimum. Airstrikes on residences are procedurally based on intelligence assessments that Hamas leaders, commanders, or operatives are identified at the targets' locations, or that weapons, ammunition, rockets, or missile launchers or firings are present. IDF operating procedures vary with

specific conditions of battle, such as to allow expedited decision making to protect soldiers in imminent danger, but standard operating procedures aim to ensure that planned airstrikes are first checked by legal experts to ensure they comply with international law. Israeli warnings issued by text, telephone, and pamphlets have called for evacuations in local target areas.⁴⁸

In contrast, Hamas has deliberately ensured that its infrastructure is embedded deeply within the Gazan civilian population. Some 400 to 500 hundred kilometers of Hamas underground military tunnels, which the IDF needs to eliminate, are located beneath the densely populated cities.⁴⁹ Tunnel entrances and exits are often at sensitive locations such as mosques, hospitals, and schools, as conclusive video footages have corroborated. In this way, Hamas has taken every opportunity to enmesh itself into the civilian population and use the civilians as human shields, quite possibly on a larger scale than known in any other modern war.

Hamas units have been observed operating within schools, hospitals, and residential buildings. As a commander of the IDF reported upon entering a Gazan town near Jabaliya: "There isn't a single house here without weapons, there isn't a house without [tunnel] infrastructure. It's unbelievable. In dozens of yards of homes we found dozens of rocket launchers," he said. "We found Kalashnikovs under mattresses, inside clothes closets . . . [T]hey were hidden in the homes."⁵⁰

Moreover, Hamas itself is likely to be directly responsible for over 20% of Gazan casualties reported by the Gazan MoH from misfire, friendly fire, and domestic suppression, calculated cumulatively. About 15% of Hamas rockets directed at Israel misfire within Gaza, as is well documented.⁵¹ Additional close-range friendly fire casualties would certainly exceed 10% in the Hamas operating environment of Gazan cities using civilian shields. Moreover, an unquantified number of civilians have died in known instances where Hamas has violently suppressed a

desperate populace.⁵² Finally, it should also be noted that a significant number of women and children are Hamas combatants.⁵³

Our point is not to compare Hamas and the IDF. They are different planetary systems in military terms. It is that Hamas has created a uniquely difficult operational environment for a conventional army to conduct itself under the rules of international humanitarian law as formulated in the nineteenth and the twentieth centuries. Hamas is embedded deep within the populace and urban infrastructure of Gaza; its shielding by civilians and its denial of any civilian defense are its main strategic strengths. Hamas's strategy is to use the death and suffering of civilians to force a halt on Israel. Hamas is willing to fight to the last civilian. Although not as effective for Hamas to deter the IDF as the Israeli hostages, the Gazan civilians are also Hamas hostages.

It is in the interests of Israel to minimize civilian deaths for a multitude of imperative reasons, including: 1) general morality and international law; 2) military morale and domestic social license; 3) international supply chain logistics and trade security; and 4) Israeli hostages' lives. Documented measures taken by the IDF to protect civilians include warnings, evacuations, and humanitarian aid. The High Level Military Group (HLMG)—an “independent body of former chiefs of staff, senior military officers and cabinet ministers from NATO countries with many decades of expertise at the highest level of land, air and sea conflict and the legality thereof”—conducted an in-country assessment of the Gaza conflict in July 2024, “visiting IDF military HQs from the top level; humanitarian aid installations and operations; units down to battalion level of command; and a visit inside Gaza” and observed that:⁵⁴

20. . . . In our view, the IDF has developed and implemented innovative procedures to mitigate the risk to civilians arising from attacks on valid military objectives. These procedures often result in suspension or cancellation of attacks

due to civilian risk estimates. IDF policy is that every service person adheres to specified Rules of Engagement, which conform with the Laws of Armed Conflict. We have conducted limited questioning of IDF commanders and front-line soldiers on the Rules of Engagement and are convinced that their understanding is fully coherent with the legally approved policies.

21. One of the most pertinent examples of innovative civilian risk mitigation is the Civilian Harm Mitigation Cell (CHMC), established prior to the conflict and in operation during every phase. The CHMC integrates digital map technology, updated hourly, and intelligence to show population density in each area of Gaza. Every IDF operations centre has access to this map which is cross-checked with real-time air surveillance to verify civilian presence.

22. IDF targeting of airstrikes is made in conjunction with the CHMC and influenced by civilian population density in a particular area. Selection of munition size is based on the nature of the military target, intelligence regarding enemy presence and the proximity of civilians.

23. It is our professional opinion that such a unit is extremely unusual, and we are not aware of any other military with a comparable risk mitigation methodology. We assess this is an unprecedented measure, along with millions of leaflet drops, phone calls, text and voice messages, to help commanders prevent or minimize risk to civilian life. . . .

Urban Wars in Comparison

In 2022, the UN Secretary-General lamented rising civilian casualty ratios globally, up to 9:1 in urban warfare.⁵⁵ For example, in Mariupol in Ukraine, casualties are estimated by the UN to be about 22,000 but are more likely to be 100,000 Ukrainian civilians (in only several months) and 10,000 combatants. In the final battles with ISIS in Mosul in 2017, the lowest estimated civilian casualties were 9,000 to 3,000 combatants. In the battles with the Tamil Tigers

in Sri Lanka in 2009, it was about 10,000 civilians and 4,000 combatants.

John Spencer, chair of urban warfare studies at the Modern War Institute at the United States Military Academy at West Point, discussed the above events. He observed in February 2024 that there is no historical comparison for the October 7, 2023, Gaza war, due inter alia to the extensive defensive and offensive tunnel system, embedded within the civil population, and use of rockets. He urged commentators to “stop comparing Israel’s war in Gaza to anything. It has no precedent.” “The closest comparison was the 1945 Battle of Manila, the largest urban conflict of World War II, which directly caused 100,000 civilian casualties, although U.S. and Filipino forces faced 17,000 Japanese soldiers, less than half the number of Hamas fighters today, and the Japanese were embedded within a Manila civilian population less than one half of Gaza’s population.” Spencer’s analyses remain authoritative despite critiques that decontextualize the Gaza warzone.⁵⁶

Within Gazan cities, where Hamas is deeply embedded in civilian infrastructure, it is extraordinary that civilian casualties are not multiples higher. In its urban warfare in the Gaza Strip, Israel claims a combatant to civilian ratio that is close to 1.3:1, despite the Hamas military strategy of human shielding. In the complex operational circumstances of urban warfare generally, military historian Lord Roberts of Belgravia told the British House of Lords in February 2024 that the Gazan civilian to combatant casualty ratio is “an astonishingly low ratio for modern urban warfare . . . and is a testament to the professionalism, ethics, and values” of the IDF.⁵⁷ It appears that the IDF is employing tactical opportunities and lessons learned to reduce civilian casualty ratios over time.

CONCLUSION

In this study, relying upon Hamas’s own Phase 3 dataset, women and children make up 46% of deaths for all of Gaza, 36% in the north and

50–55% in the center and south. This is far lower than the 75% women and children casualty rate to be expected from a random distribution of civilian deaths that might be observed in a genocide. Moreover, following the IDF aerial campaign, total deaths across Gaza for December 12–31 (twenty days) were less than half that for the same number of days during Phase 1, at the start of the war, that is, 3,566 casualties in the period of December 12–31 versus 7,028 casualties in the period of October 7–26. Datasets from 2024 are yet to be compared in detail, but recent reports show that, in August 2024, the average mortality rate is 11% of what it was in October 2023, with 728 deaths for the same nineteen-day period (see Table 2). The major slowdown in the war is also self-evident from the UN casualty rate plots given in Figure 1. These latter casualty estimates are not all civilians and would include a significant number of Hamas combatants. They also include deaths from Hamas misfiring of rockets and friendly fire, which can be of the order of 20%. There is also the strong possibility that they include a substantial number of natural deaths that are not a result of war.

A storm of condemnations asserted that the IDF recklessly and indiscriminately carpet-bombed Gaza with no consideration for civilians during Phase 1. The aerial phase of Israeli attacks on Hamas in Gaza (7,028 killed in nearly three weeks) was wrongfully compared to the British bombing of Dresden, which in a few nights killed 25,000 civilians, and to the bombing of Tokyo in 1945 (without an atomic bomb), which killed 100,000 citizens in a few hours. The huge difference here is that the Dresden and Japanese bombings were indiscriminate. In contrast, the Israeli aerial bombing campaign in October 2023 was targeted to neutralize Hamas combatants and the evidence demonstrates that it was informed by detailed intelligence, executed with precision technology, and took unprecedented precautions to protect civilians.

Analysis of the data corroborates this. The evidence in Phase 1 in October 2023 shows

intelligence-led targeting of combatants. By Phase 3 in 2023, it is clearly apparent that the civilian to combatant ratio is low relative to typically high ratios in urban armed conflict, between 1.3:1 and 2:1. In 2024 it is declining further.⁵⁸ The lower civilian casualties in the north were likely the result of airstrikes being less prevalent due to ground forces being more active there. The statistics asserting women and children casualties for Period 2, after October 2023, were exaggerated through manipulated data and faulty calculations, as was recognized by United Nations agencies themselves. Other data provided by Hamas itself, as well as by Israel and third parties, all demonstrate avoidance of civilians despite a warzone of deeply embedded urban combat.

Moreover, as noted in our introduction, infliction of losses upon the civilian population in the course of urban warfare is regulated by the laws of armed conflict as distinct from those concerning genocide.⁵⁹ The ICJ case brought by South Africa against Israel alleging genocide seems, on the evidence, to be unsupported.

The court's provisional ruling on January 26, 2024, held that South Africa had a "plausible right" to interim measures.⁶⁰ As it was summarized by the then-presiding judge, Joan Donoghue: "The court decided that the Palestinians had a plausible right to be protected from genocide and that South Africa had the right to present that claim in the court."⁶¹ Judge Donoghue explained that "[t]he court test for deciding whether to impose measures uses the idea of plausibility, but the test is the plausibility of the rights that are asserted by the applicant, in this case South Africa, so the court decided that the Palestinians had a plausible right to be protected from genocide, and that South Africa had the right to present that claim in the court." In "correcting what's often said in the media," she explained quite clearly that in

fact "it didn't decide that the claim of genocide was plausible."

To grant an ICJ provisional measure, the objective external factual evidence required to establish the plausibility of the protected right is minimal. If there is a risk of harm, plausibility of a right is found by the court. It is a low bar and, in a humanitarian case, crossing it is largely automatic. There are no tests for the threshold of risk. In its delivered judgement, the court crafted provisional measures in favor of South Africa in especially ambiguous and abstruse language to deliver a finding in this exceptionally politicized issue. The ICJ has made no finding yet on the actual plausibility of any actual occurrence of genocide alleged against Israel. It remains for the ICJ to consider the merits of the allegations in full.

South Africa is due on October 28, 2024 to submit to the court its evidence for the allegations of genocide but is reported to be seeking an extension of several months to prepare its submission.⁶² South Africa has been joined by Chile, Columbia, Libya, Mexico, Nicaragua, Palestine, Spain, and Turkey in bringing the allegations of genocide. It is now incumbent upon them to collect evidence to prove, if they can, Israel's guilt for committing genocide.

Seen in broader context, this genocide case is one of several attacks against Israel in the ICJ and is reinforced by charges against Jewish leaders of Israel in the International Criminal Court and also in many national courts, stirred up by criminal accusations against the Jewish state swirling around the globe on news and social media. International lawfare has transfigured medieval disputations and blasphemy trials into modern show trials. The ancient evil Jew is resurrected before us today in the form an Israeli arch-enemy transgressing humanity's most fundamental rights.

The best available evidence, nevertheless, shows no Gaza genocide by Israel. It demonstrates only the rhetoric of a modern blood libel.

Appendix 1—Tables

TABLE A1. Senior leaders (fifteen Hamas members + three additional high-ranking members)⁶³

| | |
|----------------------------|---|
| 15 (from official website) | Yahya Sinwar, Khalil al-Hayya, Mahmoud al-Zahar, Rawhi Mushtaha, Sameh al-Siraj, Marwan Issa (“Shadow Man”), Jamila al-Shanti, Fatima Sharab, Ghazi Hamad, Ismail Barhoum, Suheil al-Hindi (Education), Zakaria abu Maamar, Jawad Abu Shamala, Kamal Abu Awan, Issam al-Dalis |
| 3 (additional) | Osama Mazini, Ziyad (Hamas Shura Council), Ziyad al Nakhalah (Palestinian Islamic Jihad chief), Mohammed Deif (chief military leader) |

TABLE A2. Hamas Politburo (eighteen members)⁶⁴

| | |
|---------------------------------|--|
| 18 (mostly living outside Gaza) | Ismail Haniyeh, Saleh al-Aroui, Nizar Awadallah, Husam Badran, Salah al-Bardawil, Fathi Hamad, Khalil al-Hayya, Zaher Jabareen, Moussa Abu Marzouk, Khaled Mashal, Haroun abu Muhammad, Mohammed Nazzal, Abu Khalil al-Quds, Izzat al-Rishaq, Anu al-Abed Salah, Maher Jawad Salah, Yahya Sinwar, Sameh al-Siraj |
|---------------------------------|--|

Appendix 2—Data

Table 1 main text: We used a large number of open-source databases when assembling our dataset of airstrikes in the opening phases of the war, including:

Airwars:

“Israel and Gaza 2023,” Airwars, <https://airwars.org/conflict/israel-and-gaza-2023/>;

Meir Amit Intelligence and Terrorism Information Center:

“The Iron Swords—the First Gaza War in the South of Israel (Updated to 1 p.m., October 8, 2023),” Meir Amit Intelligence and Terrorism Information Center, October 9, 2023, <https://www.terrorism-info.org.il/en/the-iron-swords-the-first-gaza-war-the-war-in-the-south-of-israel-updated-to-1-p-m-october-8-2023/>;

“The Iron Swords—the War in the South of Israel (Updated to 1 p.m., October 9, 2023),” Meir Amit Intelligence and Terrorism Information Center, October 10, 2023, <https://www.terrorism-info.org.il/en/the-iron-swords-the-war-in-the-south-of-israel-updated-to-1-p-m-october-9-2023/>;

“Periodical Studies,” Meir Amit Intelligence and Terrorism Information Center, <https://www.terrorism-info.org.il/en/c/periodical-studies/page/>;

“Operation Iron Swords (Updated to 1 p.m., December 10, 2023),” Meir Amit Intelligence and Terrorism Information Center, December 11, 2023, <https://www.terrorism-info.org.il/en/operation-iron-swords-updated-to-1-p-m-december-10-2023/>;

IDF:

“Daily Recap: Hamas-Israel War November 13th, 2023—Day 38,” IDF, November 13, 2023, <https://www.idf.il/en/mini-sites/idf-recaps-daily-summaries-of-the-hamas-israel-war/hamas-war-daily-recaps/daily-recap-hamas-israel-war-november-13th-2023-day-38/>;

“Eliminated: Key Terrorist Operatives Eliminated by the IDF and ISA,” IDF, October 20, 2023, <https://www.idf.il/en/mini-sites/hamas-israel-war-24/all-articles/eliminated-key-hamas-terrorist-operatives-eliminated-by-the-idf-and-isa/>;

Palestinian Centre for Human Rights:

“Gaza under Attack: Civilian Objects Targeted and Destruction and Casualties Inflicted by Israeli Retaliatory Strikes,” Palestinian Centre for

Human Rights, October 9, 2023, <https://we4gaza.org/2023/10/09/gaza-under-attack-civilian-objects-targeted-and-destruction-and-casualties-inflicted-by-israeli-retaliatory-strikes/>;

MEZAN:

“Days 2–3: Palestinian Human Rights Organizations Call on the International Community to Intervene to Stop Israeli Massacres in Gaza and Provide Protection to Palestinian Civilians,” MEZAN, October 10, 2023, <https://www.mezan.org/public/en/post/46280/Palestinian-human-rights-organizations-call-on-the-international->

community-to-intervene-to-stop-Israeli-massacres-in-Gaza-and-provide-protection-to-Palestinian-civilians.

Our expanded list of Hamas leaders targeted in the first weeks of the war lists more targeted combatants over a longer time period and can be found online at the GoogleDrive repository, in the file Gaza_airstrikes.doc: https://drive.google.com/drive/folders/1PnfePh-6lyDafGvIunmNoz2oM9FjaPL4?usp=drive_link.

Gazan Ministry of Health reports used in this article may be found at the GoogleDrive repository at: https://drive.google.com/drive/folders/1PnfePh-6lyDafGvIunmNoz2oM9FjaPL4?usp=drive_link.

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In the present Convention, genocide means any of the following acts committed with intent to destroy, in whole or in part, a national, ethnic, racial or religious group, as such:
(a) killing members of the group; (b) causing serious bodily or mental harm to members of the group; (c) deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part . . .
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